VOLUME 3 – DATA RECORDS

Sydney Drinking Water Catchment Audit 2013-2016

June 2017

Document history

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Contents

Abbreviations

Alluvium	Alluvium Consulting Australia Pty Ltd
AWD	Available water determination
BFRMP	Bush Fire Risk Management Plan
BFMC	Bush Fire Management Committee
BLR	Basic landholder rights
BRIMS	Bushfire Risk Information Management System
DEST	Commonwealth Department of Environment, Sport and Tourism
DO	Dissolved oxygen
DPI	NSW Department of Primary Industries
DWE	NSW Department of Water & Energy
EEC	Endangered Ecological Community
ELA	Eco Logical Australia Pty Ltd
EPL	Environment Protection Licence
FM Act	NSW *Fisheries Management Act*
GDE	Groundwater Dependent Ecosystem
HRNVE	Hybrid Riparian Native Vegetation Extent
LTAAEL	Long-term average annual extraction limits
PSAT	Pollution assessment source tool
RCI	NSW River Condition Index
RFS	NSW Rural Fire Service
RVE	Riparian Vegetation Extent
SCA	Sydney Catchment Authority
SoE	State of Environment
STP	Sewage treatment plant
TLGE	Total licensed groundwater entitlement
TN	Total nitrogen
TP	Total phosphorus
Tur	Turbidity
WFP	Water Filtration Plant
WM Act	NSW *Water Management Act*

1 Prior audit recommendations

Status of 2013 Catchment Audit recommendations

Ref.	Recommendations	Agency	Status at 30 June 2016
Audit methodology			
2013/1	The SCA lead the implementation of an integrated ecosystem health database to collate and maintain information for the catchment with support from OEH and other government agencies. The spatial database should contain all data and metadata required for the assessment of the gazetted Catchment Health Indicators	WaterNSW, OEH	Complete A new spatial database environment has been created and populated with data from WaterNSW and other local, state and federal government agencies that address the 'spatially-enabled' Catchment Health Indicators. This database will continue to be populated with new data as it becomes available. A register of data for catchment health indicators is available in the spatial database. Please note that the ecosystem health database is not one single database, but refers to a register of data stored in all WaterNSW spatial databases.
Land use and human settlements			
2013/2	In the management of the Special Areas the SCA shall continue to make recommendations to the DP&I, which are commensurate with their Principles for Managing Mining and CSG Impacts.	WaterNSW	Complete WaterNSW continues to make recommendations to the DP&E, which are commensurate with its Principles for Managing Mining and CSG Impacts. Recommendations were also made to the Planning Assessment Commission, Department of Resources and Energy and to Dams Safety Committee commensurate with its Principles for Managing Mining and CSG Impacts.
2013/3	OEH should finalise the Upland Swamp Environmental Assessment Guideline and provide clear measures of impact and clarity around the determination of the severity of such impacts.	OEH	In progress OEH and the Department of Planning and Environment are currently developing a “Policy Framework for Biodiversity Offsets for Threatened Upland Swamps and Associated Threatened Species Impacted by Longwall Mining Subsidence”. The intent of the Policy is to align the assessment of impacts on Upland Swamps and the provision of offsets consistent with the Framework for Biodiversity Assessment and the Biodiversity Offset Policy for Major Projects.
2013/4	DP&I approval conditions should be set considering risk management zones around	DP&E	Complete

Ref.	Recommendations	Agency	Status at 30 June 2016
	ecological features, such as streams and swamps that have 'special significance status'. These risk management zones should be extended a lateral distance of 400 m on each side of the feature or, if greater, by a 40° projection angle from the vertical down to the coal seam which is proposed to be extracted, as recommended in the Strategic Review (DoP 2008a).		DP&E approval conditions always consider important ecological values, such as threatened species, endangered ecological communities, upland swamps and significant watercourses. Approval conditions to protect these ecological values are ordinarily set by using strict performance measures which control the level of allowable impact to "nil", "negligible", "minor" or "as predicted in the EIS". Significant impacts are also subject to offset requirements. Risk management zones should be seen as the area around important ecological features where environmental impact assessment must consider the risks of mining in that area causing impacts to that feature. They are not a "set back" from the feature, and such "set-backs" were not recommended by the Southern Coalfield Inquiry (DoP 2008a). DP&E always considers the risks of impact to such features from mining conducted within 400 m of the feature.
2013/5	DPI, SCA, OEH, NOW, DP&I and Sydney Water should collaborate to develop a risk assessment methodology to assess the impacts of mining, CSG and industrial developments on water resources in the catchment.	DP&E, WaterNSW, OEH, DPI Water, DPI Industries	Complete DP&E considers that risk assessment processes are most usefully applied in the case of individual developments. This is particularly the case since there are a very limited number of mining proposals in the catchment, there are no active CSG proposals in the catchment and industrial developments in the catchment are well managed under the existing processes of the SEPP (Sydney Drinking Water Catchment) 2011 (which requires a "Neutral or Beneficial Effect" on water quality). DP&E was not consulted on the terms of this recommendation, and does not consider that a "risk assessment methodology" is either necessary or a key priority.
2013/6	Sydney Water reviews their Catchment to Tap risk assessments for the Blue Mountains to ensure that dry weather sewer overflow discharges are minimised.	Sydney Water	Complete Sydney Water has included a public health risk item in the Catchment to Tap risk assessment for Cascades, Warragamba, Orchard Hills and Prospect drinking water systems. These water supply systems are potentially affected by dry weather overflows occurring in the Blue Mountains catchment. The risk assessment includes current controls

Ref.	Recommendations	Agency	Status at 30 June 2016
			used to minimise dry weather overflow discharges in the Blue Mountains catchment. Sydney Water has also included the environmental risks from dry weather overflows in its wastewater risk assessment.
Water availability			
2013/7	NOW should extend existing monitoring to include groundwater quality data as well as groundwater levels to establish a baseline for groundwater resources in the Catchment.	DPI Water	In progress DPI Water is leading a Water Monitoring Framework which shall expand groundwater monitoring (levels and quality) in the coal basins of NSW, including areas within the Sydney drinking water catchment. The program is scheduled over five years 2015/16 to 2019/20.
Water quality			
2013/8	The SCA should refine investigation of hotspots of sporadic *Cryptosporidium* contamination to sites not proximate to STPs to determine the sources, genotypes, and potential human health risks.	WaterNSW	Complete WaterNSW will investigate hotspots of sporadic *Cryptosporidium* contamination at additional sites identified by the Catchment Auditor that are not related to STPs (such as E706 Kangaroo River at Hamden Bridge, E488 Wollondilly River at Jooriland and E531 Werriberri Creek at Werombi) to determine the sources, genotypes, and potential human health risks. The Pathogen Campaign Monitoring Program has been specifically designed to better understand pathogen risks in the catchment and water supplies and includes hotspots of *Cryptosporidium* contamination. The major hotspots are covered by the campaign monitoring program, which targets sampling at the high flow (=highest risk) times. The exception, E706 (near the Hampton bridge in the Kangaroo River), is being tested for *Cryptosporidium* viability/genotyping when oocysts are detected at sufficient concentration to do so.
2013/9	The SCA use the existing data (including PSAT) to develop a predictive tool to evaluate catchment management scenarios for the reduction of diffuse sources of nutrient pollution.	WaterNSW	Complete A new version of the Pollution Source Assessment Tool was delivered in June 2015, with exception of gully erosion module. The new version of PSAT has the capability to run scenario testing for climate change, future planning,

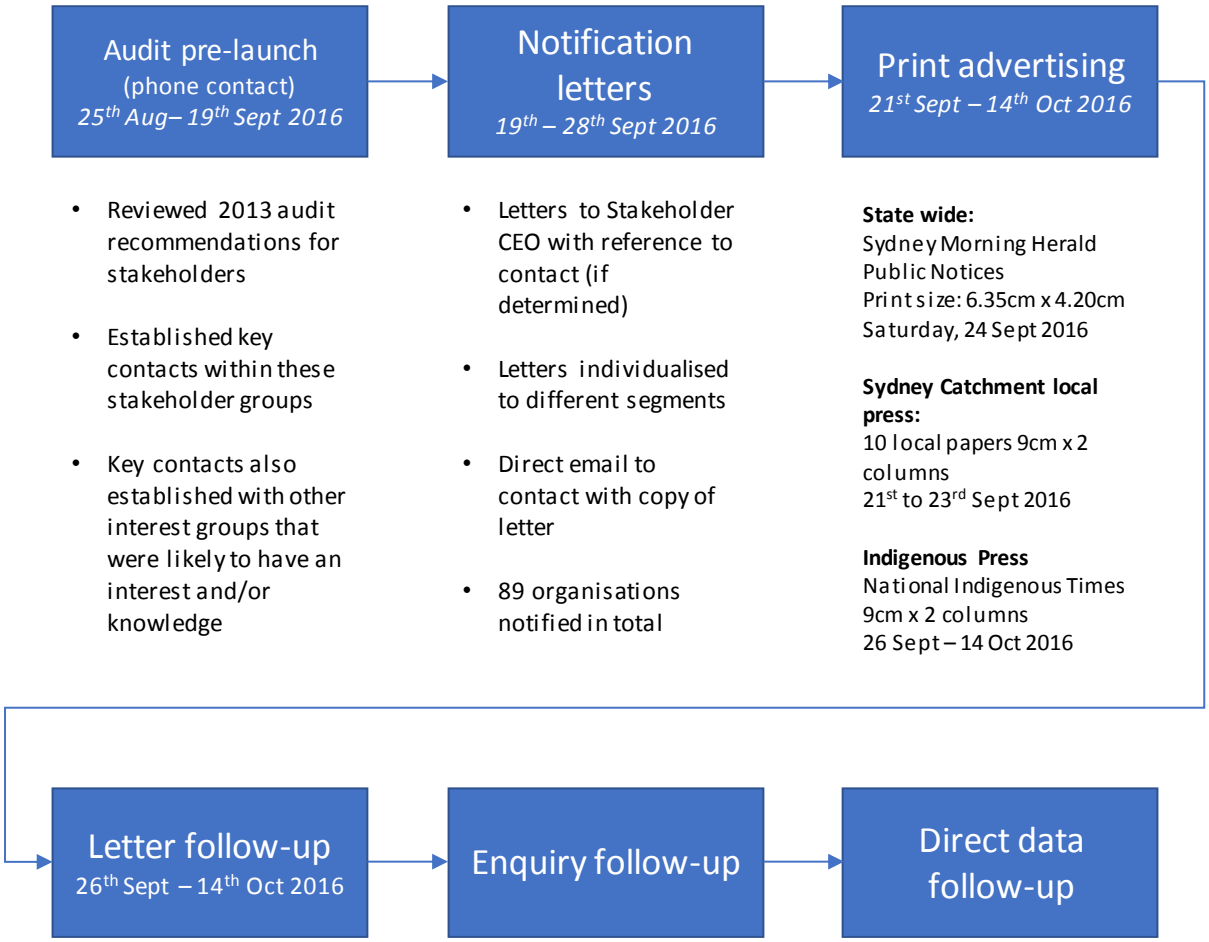
Ref.	Recommendations	Agency	Status at 30 June 2016
			development and land uses, and wet and dry weather.
2013/10	The SCA undertake targeted projects to ground- truth the effectiveness of Catchment improvement activities at a drainage unit scale to verify the prioritisation of on-ground works via PSAT and use this information as feedback to the Land Management Database.	WaterNSW	In Progress This is addressed firstly by the grazing trial, which is being conducted at two sites in the Kangaroo Valley. Sampling has continued in rain events during the past year. As yet the results have not provided sufficient data to warrant further statistical analysis. Secondly, the sewage treatment plant evaluation study found that oocyst infectivity in raw sewage was high but was reduced by UV treatment to negligible concentrations of infective oocysts. Total Nitrogen and Phosphorous in raw sewage were reduced by 85.5% and 97% respectively by the improved sewage treatment process used at Lithgow.
Biodiversity and habitats			
2013/11	OEH and CMAs should investigate the potential to update the data on the extent and condition of native and riparian vegetation in the Catchment for the next audit period.	OEH, LLS	In progress OEH has recently completed a high resolution map of woody extent for NSW. This new data replaces an earlier version based on Landsat imagery (25 metre pixel resolution) with a SPOT5 derived product having a five metre pixel resolution. This level of detail is unprecedented in Australia. The layer does not differentiate native from non-native vegetation, but for the majority of the Sydney drinking water catchments it would be predominantly native. Analysis of the woody extent values for each of the sub- catchments encompassing the Sydney Drinking Water Catchment Area has been completed. This new map layer will shortly become available for download through the OEH Open Data Portal or by request.
2013/12	OEH, SCA, CMAs and other relevant agencies collaborate to develop and apply a standardised procedure for assessing the extent and condition of wetlands in the Catchment.	OEH, WaterNSW, LLS	In progress OEH convened an interagency workshop and undertook a stakeholder survey in September 2014 to explore the development of a NSW Wetland Inventory, including Sydney's drinking water catchment. This inventory project will map the location, distribution and extent of wetlands, develop a

Ref.	Recommendations	Agency	Status at 30 June 2016
			standardised set of core biophysical data for wetlands, and assess wetland condition, values, threats and significance. A detailed business case has been developed, although funding for implementation is yet to be secured.
2013/13	The SCA and other government agencies ensure that all monitoring program sites are incorporated into a spatial database (Recommendation 1) to enable agencies to coordinate and leverage programs across the Catchment to promote systematic data collection.	WaterNSW	Complete A new spatial database environment has been created and populated with data from WaterNSW and other local, state and federal government agencies that address the 'spatially-enabled' catchment monitoring sites. This database will continue to be populated with new data as it becomes available. A register of catchment monitoring sites is available for the spatial database.
2013/14	The SCA and OEH should investigate the causes of the decline in the condition of macroinvertebrates at core sites in the Catchment.	WaterNSW, OEH	Complete WaterNSW undertook a review into the apparent decline in macroinvertebrates at some core sites within the catchment. Trend analysis identified a decline in macroinvertebrate health predominantly in sites west of Shoalhaven River. Additional monitoring sites have been established to assess this further. The other site that declined was E706, which was subject to a substantial change in its edge environment.

Source: WNSW 2015-16 Annual Catchment Management Report – Appendix 1

2 Stakeholder consultation

2.1 Process for stakeholder consultation



2.2 Notification letters

*(**note**: each segment letter differed slightly, emphasising data areas relevant to the segment)*

Dear xxxx

Re: Input into the 2016 audit of the Sydney Drinking Water Catchment

Every three years an audit is undertaken for the Minister responsible for the *Water NSW Act 2014* to assess the condition of the Sydney Drinking Water Catchment. This audit is an important record of catchment condition over time.

The 2016 Catchment Audit is commencing in September 2016. It will assess the state of the catchment against some key indicators of catchment health over the period from 1 July 2013 to 30 June 2016.

The indicators used to determine catchment health are across four themes:

- Land use and human settlements
- Biodiversity and habitats
- Water availability
- Water quality

A list of the18 gazetted catchment health indicators and previous audits can be found at http://www.waternsw.com.au/about/legislation/catchment-audits.

Data Request

For the purposes of the 2016 audit, we are seeking information relating to the catchment and the audit themes and indicators. If your organisation holds relevant and suitable data that can be shared, we would appreciate it if you could email **catchmentaudit@ecoaus.com.au**

A representative of the audit team will contact you to discuss the relevance of the data and how it can be shared with the auditors.

General Responses

We also welcome your general comments on any matter that may be relevant to the catchment audit. Your response can be emailed to **catchmentaudit@ecoaus.com.au,** or posted to **Sydney Drinking Water Catchment Audit 2016, PO Box 12, Sutherland NSW 1499.** The closing date for all submissions is **14 October, 2016.**

Please note, any submission may be made publicly available through the audit report. Please also be aware we are seeking submissions from the general community in relation to this audit.

A central contact for any enquiry is Brian Keogh on m.0408 028 269. He would be happy to answer any further questions about the audit.

Thanks for your attention in this matter.

Yours sincerely,

Beth Medway
Catchment Audit Coordinator

2.3 Notifications

The total number of organisations notified, and invited to submit, was eighty-nine.

Segment Interest Groups for the Sydney Drinking Water Catchment Audit 2016

Segment	Number of organisations notified
Data custodians (excl. local councils)	14
Local councils	14
WaterNSW Customers	4
Aboriginal organisations	23
National parks and conservation groups	13
Government functional agencies	8
Professional Water Industry Associations	4
Farming industry Groups	3
Energy providers	4
Mining Industry Groups and Companies	5
Total	**89**

The table below lists the organisations that received audit notification letters inviting submissions in relation to the audit.

Sydney Drinking Water Audit Notification Letters

Segment	Organisations
Data Custodians	WaterNSW
	Local catchment councils (see list below)
	Environment Protection Authority (EPA)
	Metropolitan, South East and Central Tablelands Local Land Services
	Australian Bureau of Statistics (ABS)
	Department of Planning and Environment
	Department of Primary Industries (DPI) including Fisheries NSW, DPI Water and Division of Resources and Energy
	Office of Environment and Heritage (OEH) including the National Parks and Wildlife Service (NPWS) and the Heritage Office

Segment	Organisations
	Rural Fire Service (RFS)
Local Councils	Lithgow
	Oberon
	Blue Mountains
	Wolldondilly
	Upper Lachlan
	Wingecarribee
	Shoalhaven
	Goulburn Mulwaree
	Kiama
	Eurobodalla
	Queanbeyan Palerang
	Campbelltown
	Sutherland
	Wollongong
Customers	Sydney Water Corporation
	Other water supply customers
Aboriginal organisations	NSW Aboriginal Land Council
	Deerubbin Local Aboriginal Land Council
	Gandangarra Local Aboriginal Land Council
	Tharawal Local Aboriginal Land Council
	Illawarra Local Aboriginal Land Council
	Nowra Local Aboriginal Land Council
	Pejar Local Aboriginal Land Council
	Batemans Bay Local Aboriginal Land Council
	Gundungurra Tribal Council
	Other organisations with Aboriginal knowledge

Segment	Organisations
National parks and conservation groups	National Parks Association of NSW
	Nature Conservation Council of NSW
	Blue Mountains Conservation Society
	Colong Foundation for Wilderness
	Greater Blue Mountains World Heritage Advisory Committee
	Rivers SOS (organisation no longer active)
	Robertson Environmental Protection Society
	Total Environment Centre
	Blue Mountains World Heritage Institute
	Sutherland Shire Environment Centre
	Knitting Nannas Against Coal
	Coal Free Southern Highlands
	Lock the Gate
	Other Local Environment, Conservation and Community Associations
Government functional agencies	The Bureau of Meteorology (BOM)
	Roads and Maritime Services (RMS)
	Division of Local Government
	Natural Resources Commission
	NSW Police Force
	State Emergency Service (SES)
	NSW Ministry of Health
	NSW Public Works
Professional water industry associations	Stormwater NSW and The Stormwater Industry Association
	Australian Water Association and Water Services Association of Australia (WSAA)
Farming industry groups	Industry Groups including NSW Farmers Federation, Dairy NSW and Dairy Industry Association of Australia
Energy providers	Energy Australia (operators of Mt Piper)

Segment	Organisations
	Delta Electricity (no longer in the Catchment, sold to Energy Australia)
	Endeavour Energy
	Transgrid
Mining groups and companies	Minerals Council
	Peabody Energy (Helensburgh Coal Pty Ltd)
	South 32 Illawarra Coal
	Centennial Coal
	Wollongong Coal Limited

2.4 Print advertising

State based media
An advertisement was placed in the Sydney Morning Herald, Public Notice section and published on Saturday, 24 September, 2016. Publishing was in both hardcopy and digital versions of the paper.

The actual print size was 6.35cm x 4.20cm. The layout and wording is given below:

Audit of Sydney's Drinking Water Catchment 2016

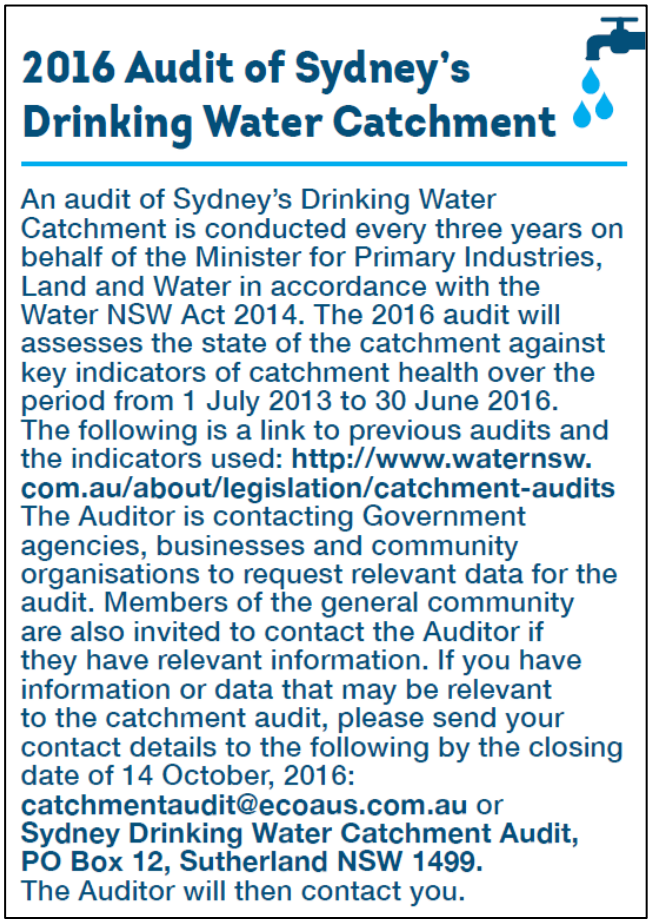
An audit of Sydney's Drinking Water Catchment is conducted every three years on behalf of the Minister for Primary Industries, Land and Water in accordance with the Water NSW Act 2014. The 2016 audit will assesses the state of the catchment against key indicators of catchment health over the period from 1 July 2013 to 30 June 2016.

The following is a link to previous audits and the indicators used: http://www.waternsw.com.au/about/legislation/catchment-audits
The Auditor is contacting Government agencies, businesses and community organisations to request relevant data for the audit. Members of the general community are also invited to contact the Auditor if they have relevant information. If you have information or data that may be relevant to the catchment audit, please send your contact details to the following by the closing date of 14 October, 2016:catchmentaudit@ecoaus.com.au or Sydney Drinking Water Catchment Audit, PO Box 12, Sutherland NSW 1499.
The Auditor will then contact you.

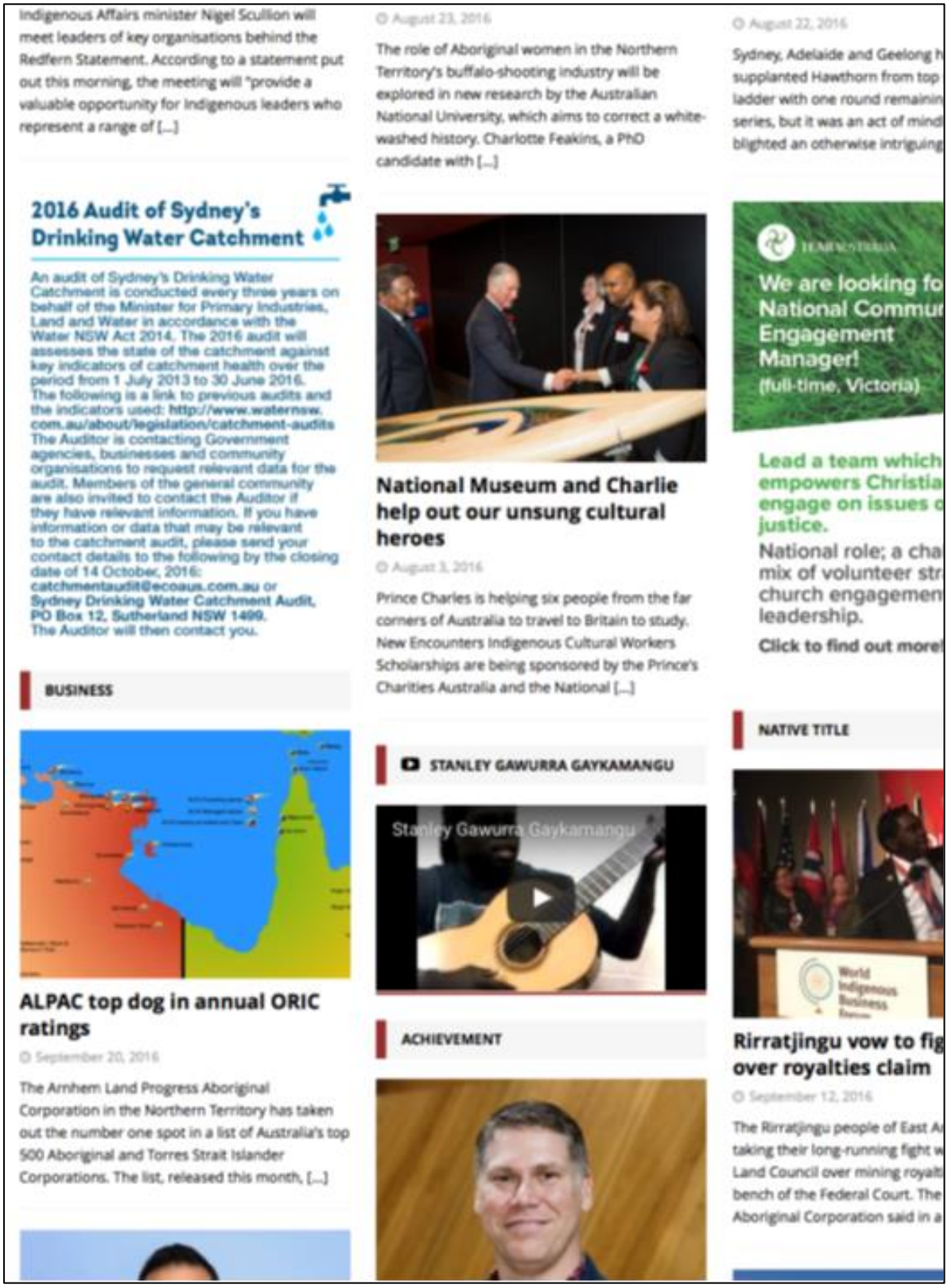
An advertisement was places in the regional publications below:

Publication	Run date
Blue Mountains Gazette	21/09/2016
Braidwood Tallaganda Times	21/09/2016
Crookwell Gazette	22/09/2016
Goulburn Post	23/09/2016
Lithgow Mercury	23/09/2016
Oberon Review	22/09/2016
Shoalhaven and Nowra News	23/09/2016
South Coast Register	21/09/2016
Southern Highland News	21/09/2016
Wollondilly Advertiser	21/09/2016

The advertisements were 9cm by 2 columns. The published dates were 21st to the 23rd of September. The layout and wording is given below:



The National Indigenous Times is an online publication. An advertisement inviting submissions was displayed on the front page from 26th September to the 14th October 2016. The display appearance is shown below.



Indigenous Affairs minister Nigel Scullion will meet leaders of key organisations behind the Redfern Statement. According to a statement put out this morning, the meeting will "provide a valuable opportunity for Indigenous leaders who represent a range of [...]

2016 Audit of Sydney's Drinking Water Catchment

An audit of Sydney's Drinking Water Catchment is conducted every three years on behalf of the Minister for Primary Industries, Land and Water in accordance with the Water NSW Act 2014. The 2016 audit will assesses the state of the catchment against key indicators of catchment health over the period from 1 July 2013 to 30 June 2016. The following is a link to previous audits and the indicators used: http://www.waternsw.com.au/about/legislation/catchment-audits The Auditor is contacting Government agencies, businesses and community organisations to request relevant data for the audit. Members of the general community are also invited to contact the Auditor if they have relevant information. If you have information or data that may be relevant to the catchment audit, please send your contact details to the following by the closing date of 14 October, 2016: catchmentaudit@ecoaus.com.au or Sydney Drinking Water Catchment Audit, PO Box 12, Sutherland NSW 1499. The Auditor will then contact you.

BUSINESS

ALPAC top dog in annual ORIC ratings

September 20, 2016

The Arnhem Land Progress Aboriginal Corporation in the Northern Territory has taken out the number one spot in a list of Australia's top 500 Aboriginal and Torres Strait Islander Corporations. The list, released this month, [...]

August 23, 2016

The role of Aboriginal women in the Northern Territory's buffalo-shooting industry will be explored in new research by the Australian National University, which aims to correct a white-washed history. Charlotte Feakins, a PhD candidate with [...]

National Museum and Charlie help out our unsung cultural heroes

August 3, 2016

Prince Charles is helping six people from the far corners of Australia to travel to Britain to study. New Encounters Indigenous Cultural Workers Scholarships are being sponsored by the Prince's Charities Australia and the National [...]

STANLEY GAWURRA GAYKAMANGU

Stanley Gawurra Gaykamangu

ACHIEVEMENT

August 22, 2016

Sydney, Adelaide and Geelong h... supplanted Hawthorn from top ... ladder with one round remainin... series, but it was an act of mind... blighted an otherwise intriguing...

HOMESTRETCH

We are looking fo... National Commu... Engagement Manager! (full-time, Victoria)

Lead a team which ... empowers Christia... engage on issues o... justice.

National role; a cha... mix of volunteer str... church engagemen... leadership.

Click to find out more!

NATIVE TITLE

World Indigenous Business

Rirratjingu vow to fig... over royalties claim

September 12, 2016

The Rirratjingu people of East A... taking their long-running fight w... Land Council over mining royalt... bench of the Federal Court. The... Aboriginal Corporation said in a...

2.5 Consultation with public authorities

The following public authorities provided comment on the draft audit documents and were consulted extensively on the appropriateness feasibility of recommended responses:

- Department of Planning and Environment
- Department of Primary Industries (Water)
- Environment Protection Authority
- Metropolitan Water Directorate
- Office of Environment and Heritage
- WaterNSW
- Wingecarribee Shire Council

3 Community organisations in the catchments

LLS organisation	Community organisations involved in on-ground works and natural resource management advocacy
Central Tablelands LLS	Central Tablelands LLS advised that nine community organisations are involved in on-ground works for natural resource management activities in the catchments including Lithgow and Oberon Landcare Association; Lithgow Oberon Pest Management Group; Lithgow and Districts Community Nursery; Tuglow Landcare; Jenolan Landcare; Lithgow and Districts Landcare group; Lithgow Environment Group; State Mine Gully Landcare and Vale of Clywdd Landcare. Central Tablelands LLS advised that three community organisations are actively involved in natural resource management advocacy in the catchments including Colong Foundation for Wilderness; Blue Mountains Conservation Society and Lithgow Environment Network.
South-East LLS	South East LLS has advised that 41 community organisations are involved in on-ground works for natural resource management activities in the catchments and these are summarised below. South East LLS advised there are four active Landcare and Bushcare Network groups in the Wingecarribee area. The Bushcare Network groups are supported by Wingecarribee Shire Council. Active groups include Basket Creek Landcare; Moss Vale Landcare Group Inc and Mt Gibraltar Landcare / Bushcare; and Penrose Wetlands Conservation Group. South East LLS advised there ten active Landcare groups in the Goulburn area, including FROGS (Goulburn Wetlands); Heffernans Creek Catchment; Mulwaree Ponds; Roslyn; Taralga; Tarlo / Middlearm; Wombeyan Caves (NPWS); West Goulburn Bushland Reserve Group Inc; Arthursleigh (annual planting by Sydney University Landcare); and Tablelands Farming Systems. South East LLS advised there are 21 active Landcare groups in the Upper Shoalhaven area, including Bombay; Boro Creek; Braidwood Rural; Braidwood Urban; Bungonia Park Trust; Bungendore; Flood Creek Non-Nativist Landcare Group; Friends of Mongarlowe River; Jacqua Creek; Majors Creek; Mongarlowe; Reedy Mulloon Creek; Sheep Station Creek; Snowball; Tomboye; Tallong Parke Estate; Tarago; Taylor's Creek; Upper Deua; Windellama and Braidwood Garlic Growers. South East LLS advised two indigenous groups are involved in natural resource management in the catchment including the Moyengully Natural Resource Management Group and the Yamanda Aboriginal Association. Other organisations that undertake on-ground natural resources management activities include Small Farms Network Capital Region; Future Plans Network; Bungendore Farmers Markets and Southern Harvest. South East LLS advised that seven community organisations are actively involved in natural resource management advocacy in the catchments including Nature Conservation Council of NSW; Friends of Thirlmere Lakes; Rivers SOS; Lock the Gate Alliance; Protect Sydney's Water Alliance; Illawarra Residents for Responsible Mining; and 4nature.
Greater Sydney LLS	Greater Sydney LLS has advised that the total number of community groups (involved in on-ground works and advocacy for natural resource management) in their part of the drinking water catchments is 13.

Council	Summary of key water management themes in current Community Strategic Plans
Blue Mountains City Council	The Blue Mountains community was surveyed in 2012 to identify priority actions for looking after the environment in the following 5 to 10 years. The highest priority response was to clean and maintain stormwater systems and waterways/creeks (Blue Mountains Council, 2013). This community is located close to the Blue Mountains World Heritage Area and water supply storages, and their CSP indicates awareness of these sensitive environments is high. There is recognition of pressures on waterways arising from development and that protection of Sydney's drinking water catchment is a high priority. A key strategy in their CSP is to protect, maintain and enhance natural waterways and water catchments.
Goulburn-Mulwaree Council	The Goulburn-Mulwaree community has identified key goals of safe and secure potable water supply systems for their community coupled with programs to conserve and recycle water. Providing efficient sewerage systems that incorporate flexibility for expansion is also a key goal (Goulburn-Mulwaree Council, 2014). The Goulburn-Mulwaree community has also identified a sustainable environment goal to protect waterways and catchments, and ensure that development complies with water quality protection principles. Their water relevant sustainable environment performance indicators focus on reduced potable water consumption.
Lithgow City Council	The Lithgow community identified that directions in their 2007 plan remained current for 2013, with the exception that the community had identified water supply security and flood risk as additional key concerns (Lithgow City Council, 2013). Water supply and sewerage capacity were considered potential barriers to growth and development. Improved and augmented water supply infrastructure with provision of a new dam to service the Lithgow LGA was a desired outcome. The cumulative impacts of on-site effluent discharges on natural watercourses and poorly regulated activities in catchments of local dams and the Sydney drinking water catchment were identified as key challenges. Reducing potable water consumption was another key target.
Oberon Council	The Oberon community has identified water quality and security as major social, economic and environmental challenges (Oberon Council, 2015). The community has identified secure water supply for domestic and industrial uses as a key requirement. Effective collection and treatment of sewage is also desired. Supplying water to support agriculture and forestry industries that the community prosperity relies upon is an important outcome, whilst it is acknowledged that this needs to be balanced with environmental needs.
Palerang Council	The Palerang community has concerns for the impacts of human activity, population growth, development and climate change on flood risk and loss of water resources (Palerang Council, 2013). The community acknowledges they have a key role to play in sustainable use of natural water resources, protecting water quality and ensuring adequate environmental flows. The community desires to see water efficiency as being integral within all new development and that development only occurs within the constraints of the available water resources and associated natural resources.
Queanbeyan City Council	The Queanbeyan community desires to see sustainable and integrated water management across the LGA (Queanbeyan City Council, 2013). The community has a key focus on water supply and conservation with a goal to limit the increase in water use per capita. The community desires to continue their program to promote efficient water use for residents and businesses. The community also desires to see the Queanbeyan River cared for to continue to develop the potential of the river for passive and active recreation tourist uses.
Shoalhaven City Council	The Shoalhaven community bridges areas within the drinking water catchment and others draining to the ocean. The community desires to see development managed in a sustainable manner to avoid impacts on natural environments. The community desires to see water supply and sewerage infrastructure planned to meet growth requirement, but only implement the works in response to timing of new development. The community desires to see sustainable and responsible stormwater management measures implemented. The outcomes Council is seeking to achieve are associated with reducing water conservation, water supply and sewerage.
Upper Lachlan Council	The Upper Lachlan community environmental objectives include ensuring that drinking water quality within towns and villages meets standards and that development integrates the principles of ESD.
Wingecarribee Shire Council	The Wingecarribee Shire community has identified that water quality and climate change are key issues for their LGA (Wingecarribee Shire Council, 2011). The community has identified a goal to conserve key natural resources with a specific focus on ensuring no development occurs that would threaten the natural resources as a water catchment.
Wollondilly Shire Council	The Wollondilly Shire community seeks sustainable population growth maintaining the rural living and a network of sustainable towns (Wollondilly Shire Council, 2013). They desire to see waterways protected and

Council	Summary of key water management themes in current Community Strategic Plans
	to continue living a healthy lifestyle in rural surrounds. They encourage sustainable agriculture and associated industries. They have high expectations that waterways will be protected and have opposed mining under rivers and coal seam gas projects. The community is concerned with ensuring population growth is managed to avoid impacts on the natural environment. Key environmental strategies have been adopted to protect and conserve waterways, riparian lands and groundwater dependent ecosystems.
Wollongong City Council	The Wollongong community has identified climate change, sea level rise and water quality management as significant issues in their LGA that will need to be addressed into the future (Wollongong City Council, 2012). The community has key goals to see that coastal areas, waterways and the natural environment are protected, managed and enhanced. The community desires to see a focus on new urban release areas to ensure development is sympathetic to the environment and water resources. Their strategies are particularly targeted to areas between the escarpment and beaches that comprise most land in the LGA.

4 Climate records during the audit period

Data from the Australian Bureau of Meteorology was used to map rainfall over the audit period July 2013 to June 2016. The maps are provided below and summarised here.

Trends over the period 2013-16
Rainfall in the Sydney water supply catchment for the audit period was average to above average. The sub-catchments south of Braidwood in particular received above average rainfall (Upper Shoalhaven River, Jerrabattagulla Creek, Back Creek and Round Mountain Creek), as did upper parts of the Braidwood Creek and Mongarlowe River sub-catchments.

Further detail of trends during the audit period is provided below to give context to the discussion

Annual trends
Rainfall in the Sydney water supply catchment for the period July 2013 to June 2014 was average to very much below average. The northern and eastern sub-catchments in particular had very much below average rainfall, from the Lower Cox's River in the north to the Nepean River in the east and Mid Shoalhaven River in the south.

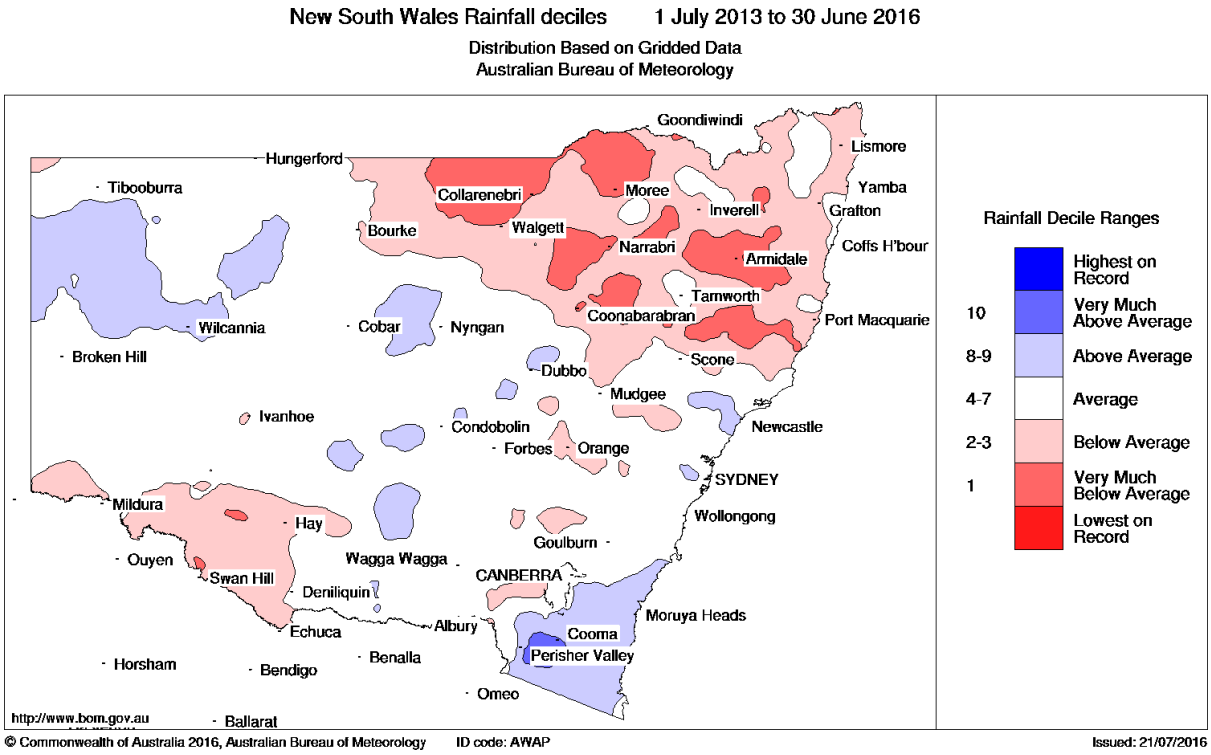
Rainfall for the period July 2014 to June 2015 was above average in most sub-catchments, but average in the region round the Mulwaree River and Boro Creek sub-catchments.

Rainfall for the period July 2015 to June 2016 was above average in the southeast of the water supply catchment (Upper Shoalhaven River, Jerrabattagulla Creek, Back Creek and Round Mountain Creek, Braidwood Creek, Mongarlowe River and Endrick River sub-catchments) and average elsewhere.

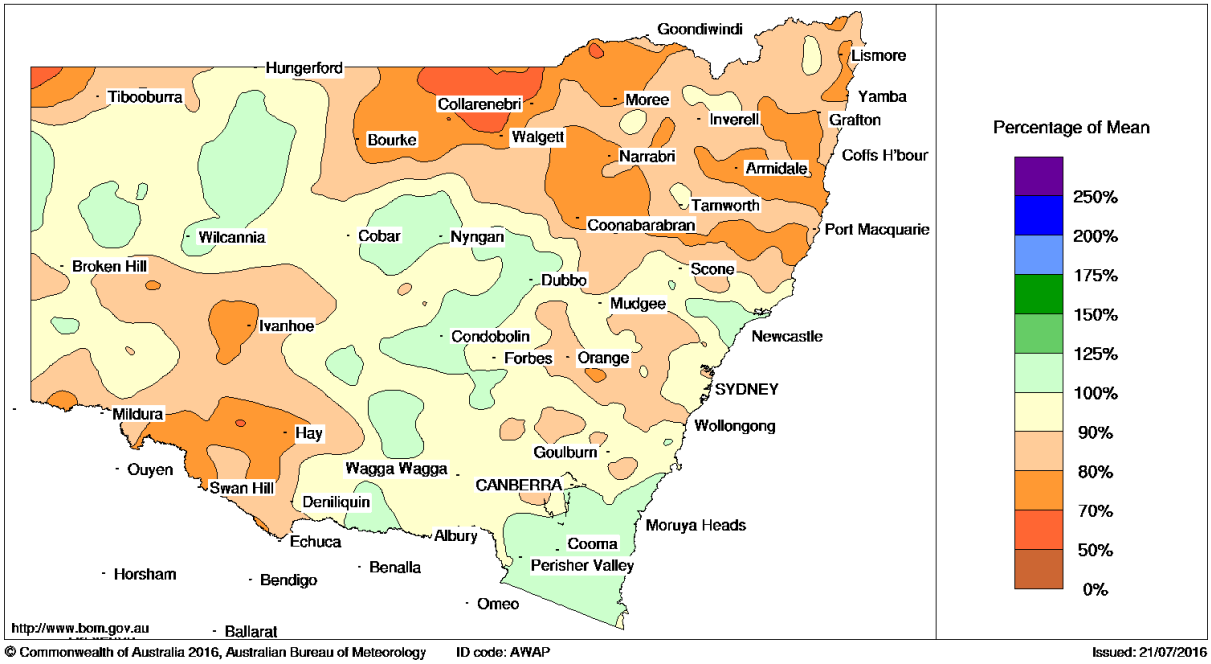
Recent seasonal trends
Rainfall for spring 2015 was below average in most sub-catchments, but average in sub-catchments around Sydney (Kowmung River, Lower Coxs River, Lake Burragorang, Blue Mountains, Werri Berri Creek, Little River, Upper Nepean River and Woronora River) and also in sub-catchments south of Braidwood (Upper Shoalhaven River, Jerrabattagulla Creek, Back and Round Mountain Creeks and Braidwood). Rainfall in the Upper Wollondilly River sub-catchment and northern parts of the Mulwaree River sub-catchment was very much below average.

Rainfall for summer 2015-16 was predominantly average, though the Woronora River sub-catchment and sub-catchments south of Braidwood (Upper Shoalhaven River, Jerrabattagulla Creek, Back and Round Mountain Creeks and Braidwood) experienced above average rainfall. In contrast, rainfall in the upper Wollondilly River sub-catchment was below average.

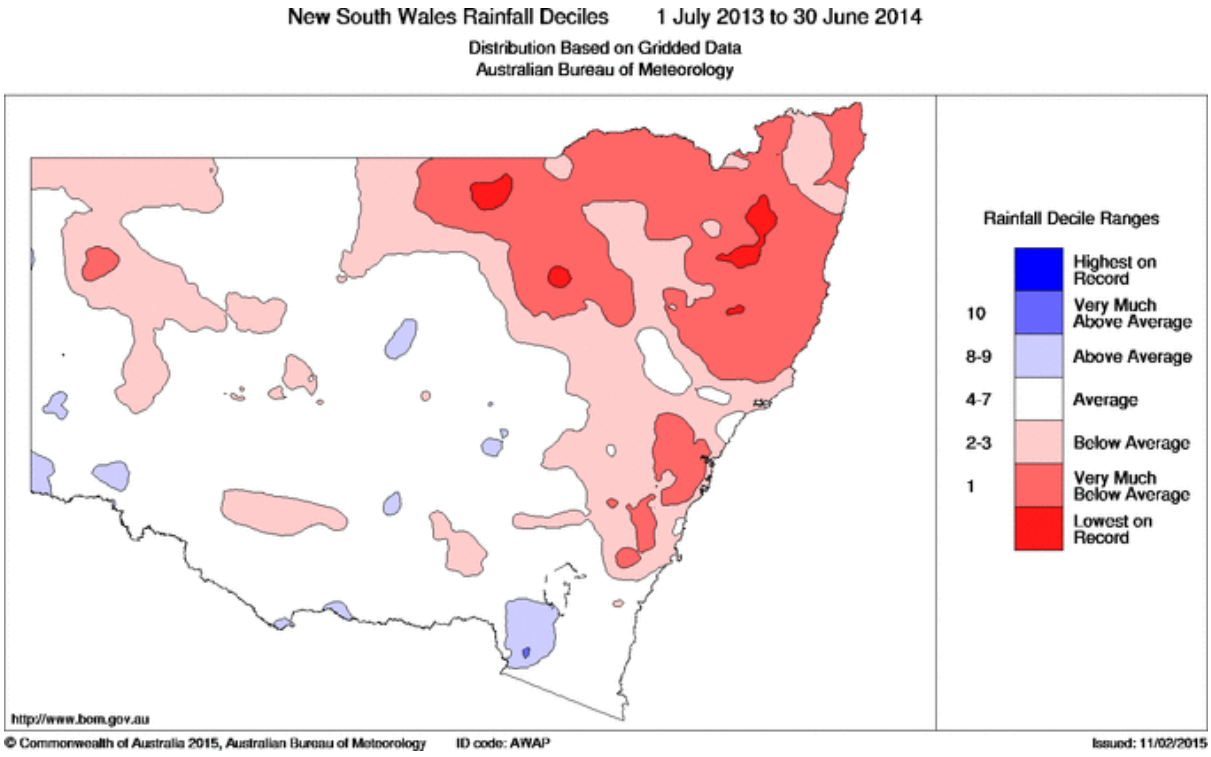
Rainfall for autumn 2016 was below average to very much below average across almost all catchments, except for the Upper Wollondilly River sub-catchment, which mostly had average rainfall. Rainfall for the Kowmung River, Wollondilly River, Mulwaree River and Reedy creek sub-catchments was predominantly below average. Rainfall in all other sub-catchments was largely very much below average.



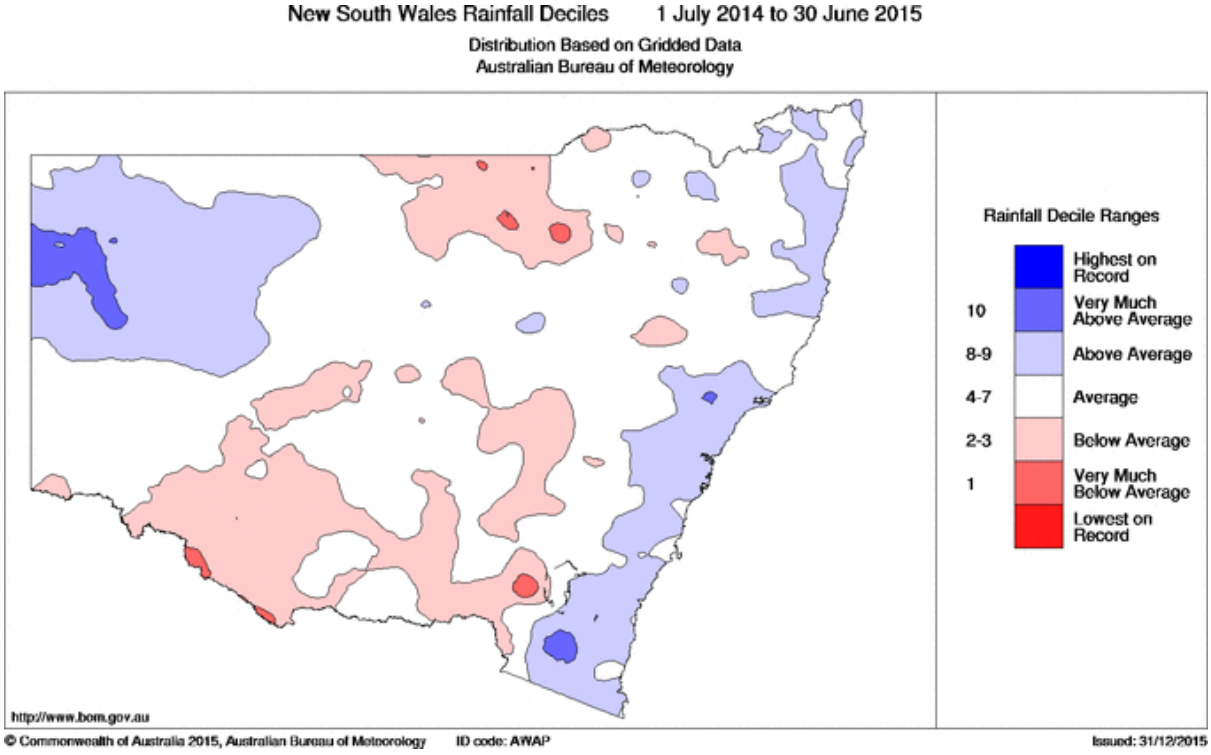
Rainfall Deciles 1 July 2013 to 30 June 2016 (BoM)



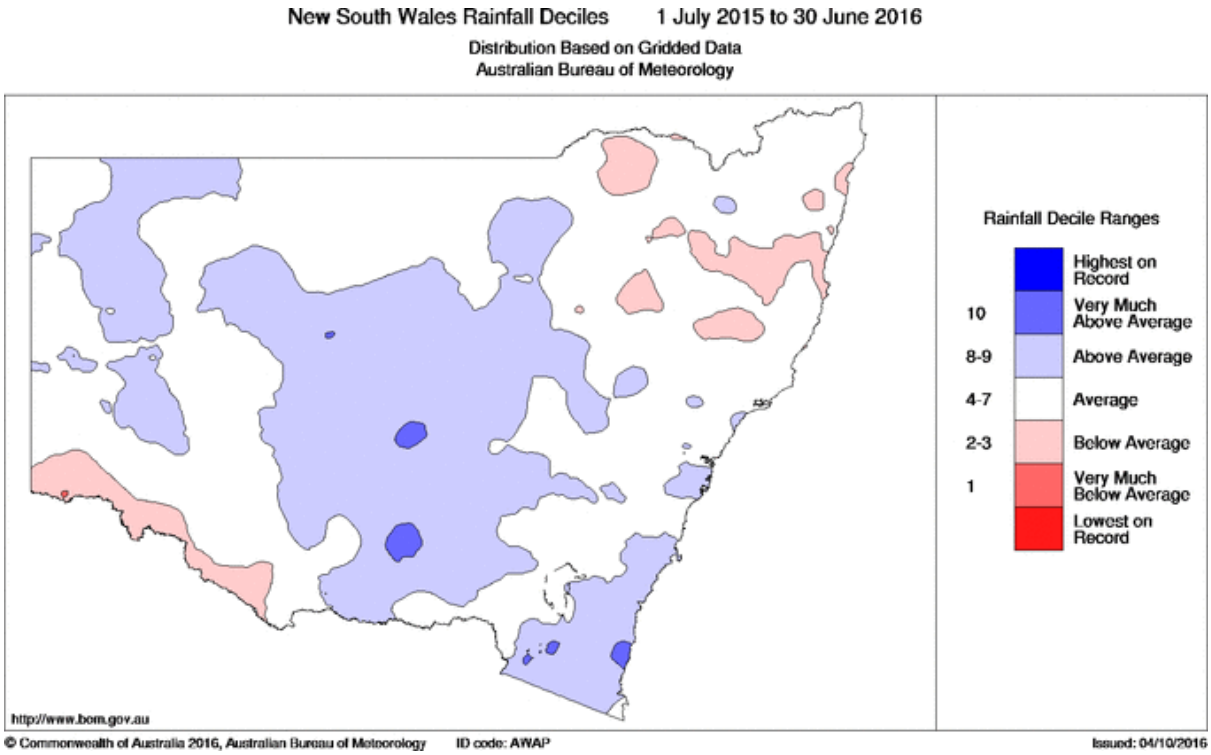
Rainfall Percentages 1 July 2013 to 30 June 2016 (BoM)



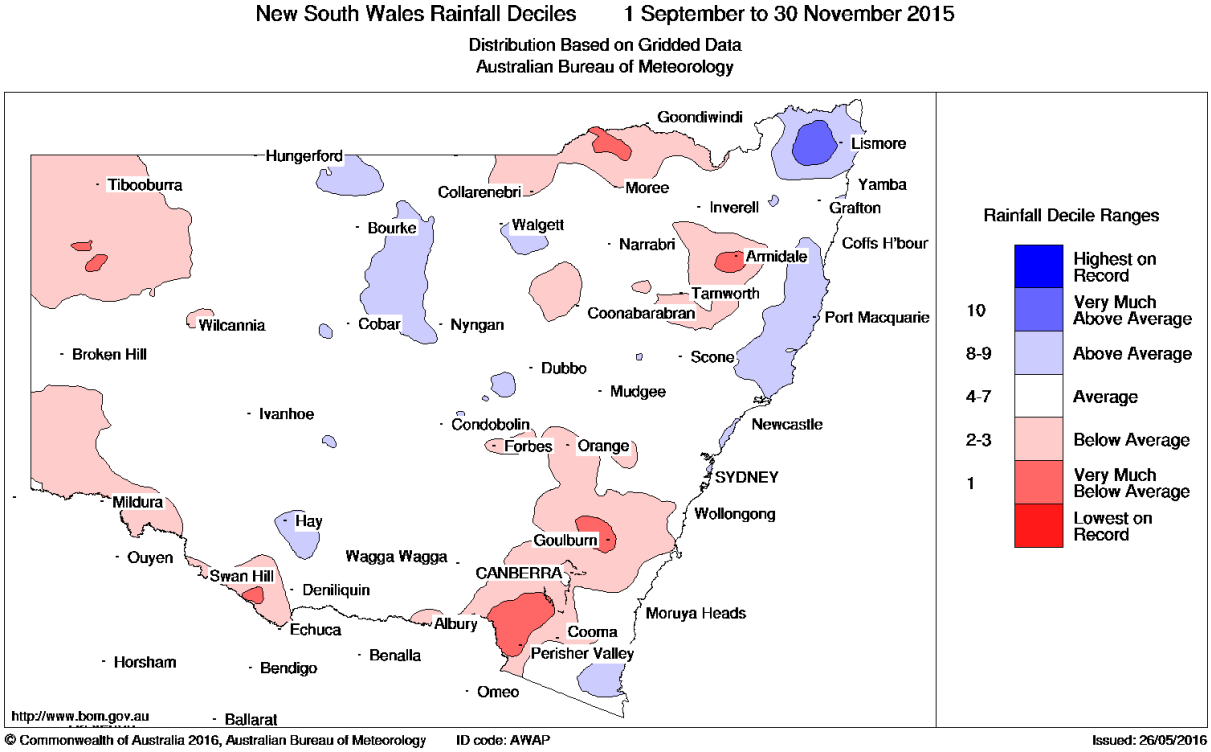
Rainfall deciles 2013-14 (BoM)



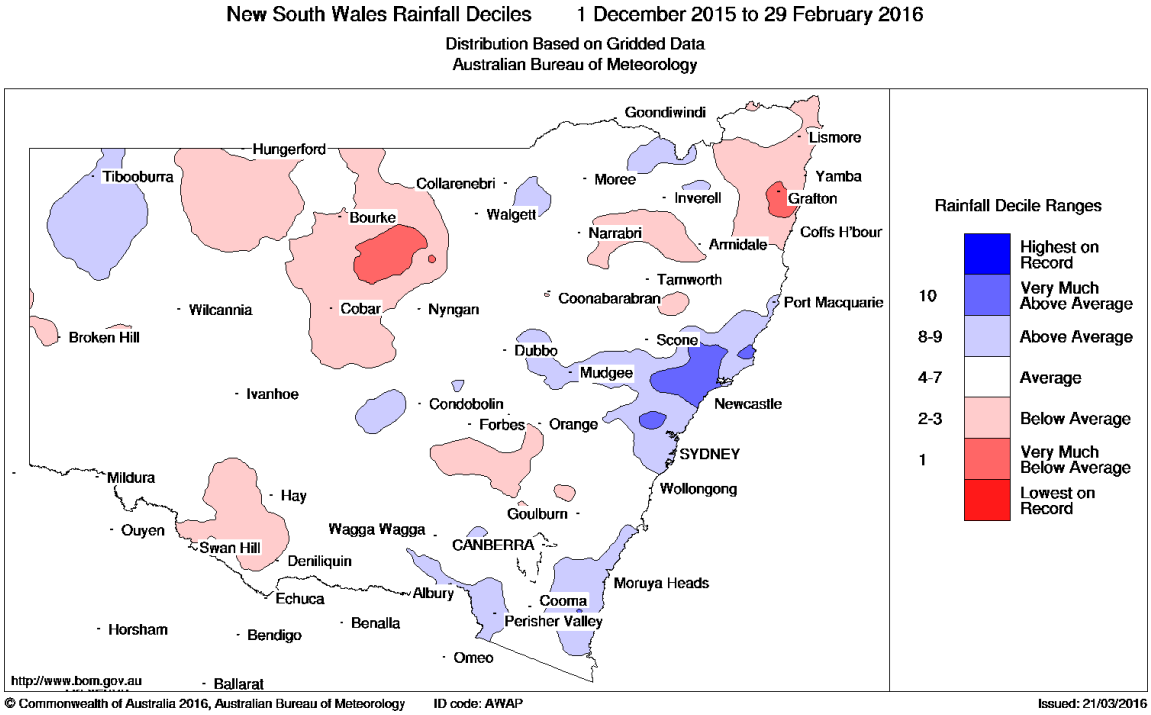
Rainfall deciles 2014-15 (BoM)



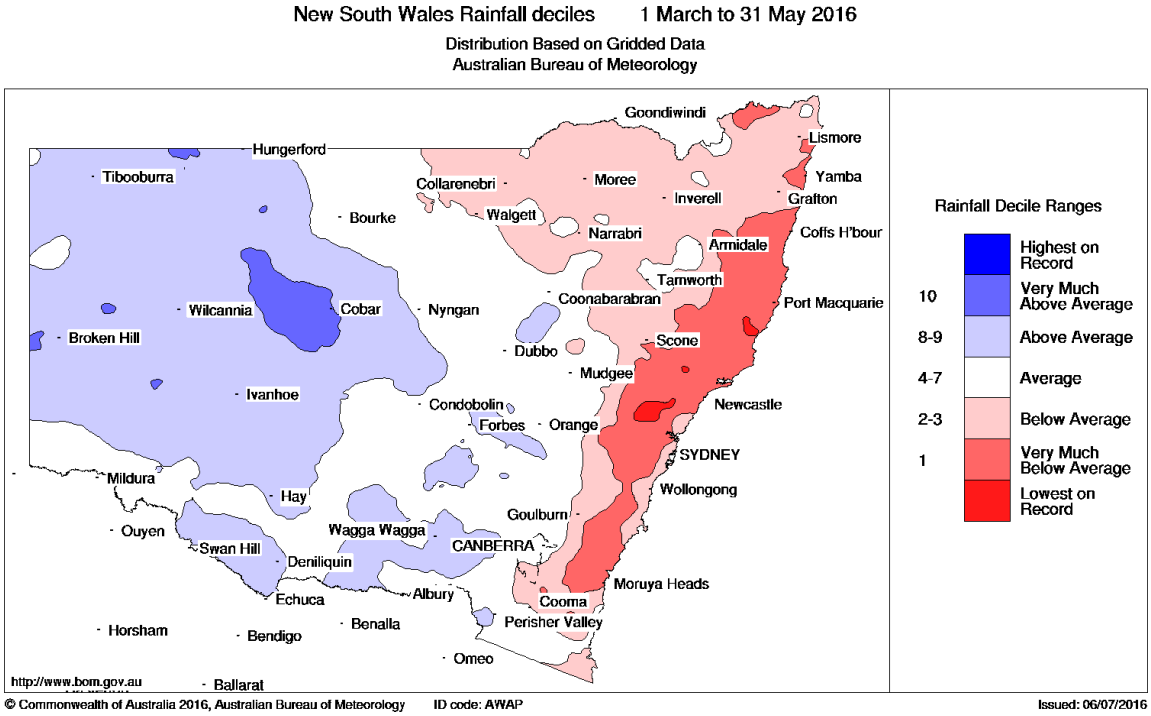
Rainfall deciles 2015-16 (BoM)



Rainfall Deciles 1 September to 30 November 2015 (BoM)



Rainfall Deciles 1 December 2015 to 29 February 2016 (BoM)



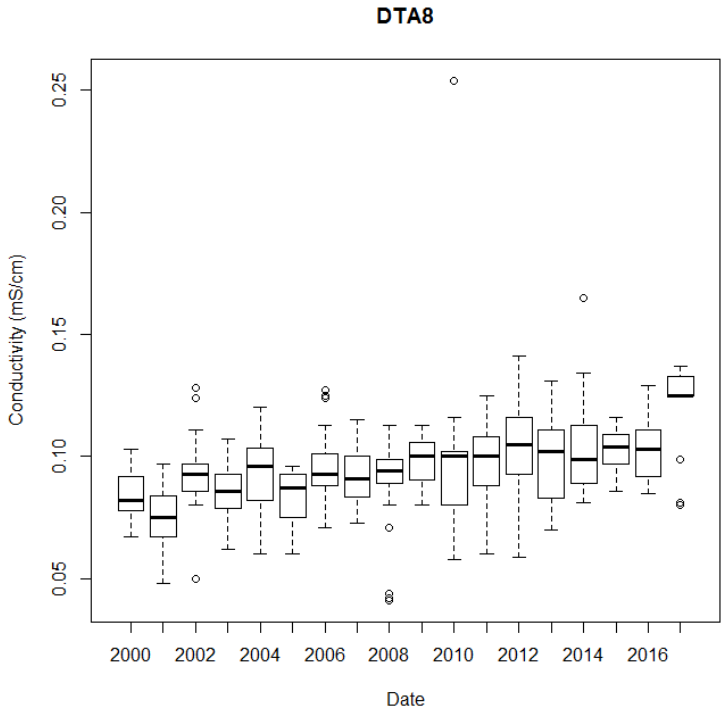
Rainfall Deciles 1 March to 31 May 2016 (BoM)

5 Water quality statistical analysis method

The aim of the water quality analysis was to establish long-term trends and short term trends (past three years), and monitoring whether the water quality was predictable in recent years. At storage sites (dams) the monitoring was carried out at different depths and therefore the analysis investigated whether the values at these depths were predictably within limits. A simple linear regression model was fitted using time, harmonics (for seasonal influences), day-of-the-week and depth as explanatory variables. Flow was not used as an explanatory variable as this is only available at a limited number of catchment stations. This model fitted both the mean and variance parameters of the distribution which was assumed to be normally distributed. When the data departed significantly from the normal distribution a Box-Cox transformation of the data to approximate normality was applied before fitting this model.

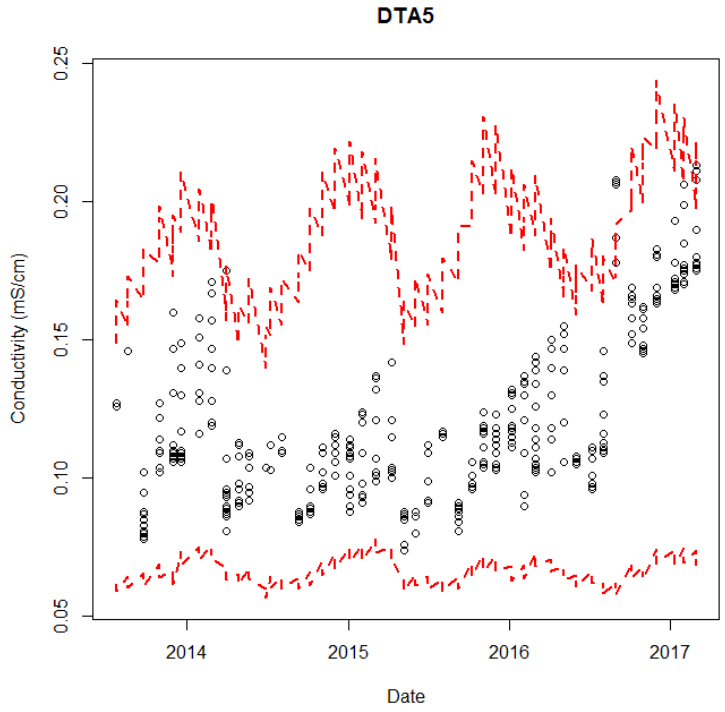
Long-term trend assessment tested whether the location (mean) increases or decreases significantly over the history of the data at the 5% level of significance. Long terms increases or decreases in variability were are tested at the 5% level of significance.

An example of long-term variation is examined by looking at annual parallel boxplots, e.g., the conductivity in mS\cm is increasing over many years at site DTA8 in the chart below:

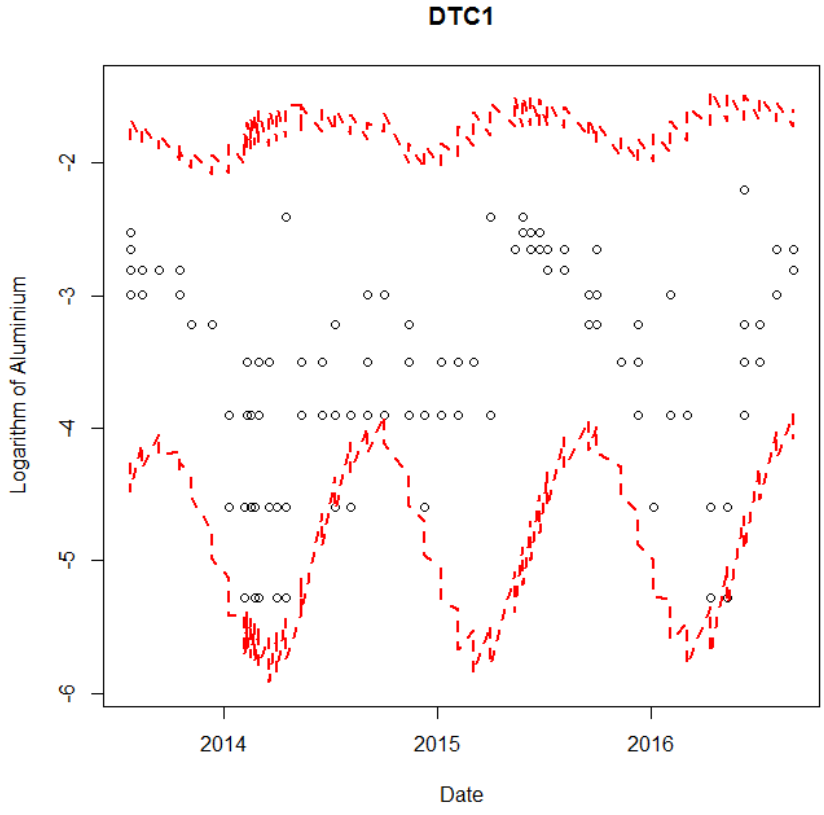


Long-term variation was also interpreted from the fitted model in terms of the significance of the time variable parameter in the model, e.g., if the transformation to normality is monotonically increasing as the variable increases, then a significant positive/negative regression coefficient for time indicates a significant increasing/decreasing trend. On the other hand if the transformation to normality is monotonically decreasing as the variable increases, then a significant negative regression coefficient for time indicates a significant increasing trend.

The significant short term trends were assessed on whether the trends remain within prediction boundaries, e.g., for conductivity at site DTA5 where the trend in 2017 as increasing significantly in the chart below. These boundaries take into consideration the seasonal influences on both the location and dispersion.



The models involving depth are complex and at times the threshold limits defining the predictable region for measurements shifts a great deal. In others there is little differences at the various depths measures are taken at. Other challenges is when seasonal influences the lower limit of the predictable region more than the upper limits e.g. in examining a significant increasing trend for logarithm of Aluminium at site DTC1 in the chart below.



6 Water quality statistical results – summary

	analyte		Turbidity	(NTU)			
Station	**3 yr trend**	**20 yr trend**	**20 yr variation**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Stable	ns	ns	Seasonal in trend and variability	2.96	3.26	72
E130	Stable	Increasing	Increasing	Seasonal in trend and variability	1.69	1.61	82
E157	Stable	ns	ns	Seasonal in trend and variability	2.25	1.575	78
E203	Stable	Increasing	Increasing	Seasonal in variability	4.23	4.8575	78
E206	Stable	Increasing	Increasing	Seasonal in trend and variability	2.6	12.63	82
E210	Stable	Decreasing	Decreasing	Seasonal in variability	3.6	1.4	82
E243	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.8	0.57	82
E332	increasing	Decreasing	Decreasing	Seasonal in trend and variability	11.6	13.4	84
E409	Stable	Decreasing	ns	Seasonal in trend and variability	2.25	3.725	128
E450	Increasing	Decreasing	Decreasing	Seasonal in trend and variability	1.9	3.0725	80
E488	Stable	ns	Decreasing	Seasonal in trend and variability	3.03	4.05	78
E531	Stable	Decreasing	ns	Seasonal in trend and variability	3.905	0.8	84
E551	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.665	0.775	64
E602	Stable	Increasing	Increasing	Seasonal in trend and variability	2.3	1	76
E604	Stable	ns	ns	Seasonal in trend and variability	0.5	1.125	88
E609	Stable	ns	Decreasing	Seasonal in trend and variability	4.7	2.675	78
E610	increasing	ns	Increasing	Seasonal in trend and variability	1.8	2.5	75
E6131	increasing	ns	Decreasing	Seasonal in trend and variability	4.4	4.1	76
E677	increasing	ns	Increasing	Seasonal in trend and variability	1.7	2.5	84
E680	increasing	ns	Decreasing	Seasonal in trend and variability	2.3	2	84
E706	Stable	Decreasing	Decreasing	Seasonal in trend and variability	4.4	3.21	106
E822	Increasing	Decreasing	Increasing	Seasonal in trend and variability	1.9	1.5	82
E847	Stable	ns	Increasing	Seasonal in trend and variability	3.5	4.45	78
E860	Increasing	ns	Increasing	Seasonal in trend and variability	3.4	5.225	86
E861	Increasing	Decreasing	Decreasing	Seasonal in trend and variability	3.6	5.85	79
E890	Stable	Decreasing	Decreasing	Seasonal in trend and variability	7.9	4.3	89
E891	Increasing	Decreasing	Decreasing	Seasonal in trend and variability	5.05	6.475	72
Storage sites							
DWA12	Decreased	ns	Increasing	Seasonal in trend and variability	0.99	0.91	595
DWA15	Decreased	Decreasing	Increasing	Seasonal in trend and variability	1.06	0.98	133
DWA19	Decreased	Decreasing	Decreasing	Seasonal in trend	1.855	1.2825	126
DWA2	Decreased	Decreasing	Decreasing	Seasonal in trend and variability	0.78	1.11	845
DWA21	Stable	Decreasing	Decreasing	Seasonal in trend and variability	1.43	0.74	126
DWA27	Stable	Increasing	Decreasing	Seasonal in trend and variability	1.04	1	617
DWA311	Decreased	Decreasing	Increasing	Seasonal in trend and variability	1.67	0.965	147
DWA39	Stable	Decreasing	Decreasing	Seasonal in trend and variability	2.9	1.7	252
DWA9	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.81	1.1	1458
RPR1	Stable	Increasing	Decreasing	Seasonal in trend and variability	1.2	0.7	969
RPR6	Stable	Increasing	Decreasing	Seasonal in trend and variability	1.7	1.2	788
DAV1	Increasing	Decreasing	Decreasing	Seasonal in trend and variability	0.5	0.7	329
DAV7	Increasing	Decreasing	Increasing	Seasonal in trend and variability	1	1.3	378
DCA1	Stable	Decreasing	ns	Seasonal in trend and variability	0.6	0.9	352
DCO1	Stable	Decreasing	Decreasing	Seasonal in trend and variability	1.7	1.35	315
DNE1	Increasing	Increasing	Decreasing	Seasonal in trend and variability	12.6	12.75	175
DNE2	Increasing	Increasing	Decreasing	Seasonal in trend and variability	2.1	2.5	485
DWO1	increased	Decreasing	Decreasing	Seasonal in trend and variability	1.5	2.5	483
DGC1	Stable	Decreasing	Decreasing	Seasonal in trend and variability	1.58	1.2875	370
DLC1	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.74	0.6075	154
DTC1	Decreasing	Decreasing	Decreasing	Seasonal in trend and variability	0.5	0.25	372
DBP1	Insufficient data	Decreasing	Decreasing	Seasonal in trend and variability	5.7	4.6	117
DFF6	Stable	Increasing	Decreasing	Seasonal in trend	5.3	4.3	237
DTA1	Increasing	Increasing	Decreasing	Seasonal in trend and variability	4.2	8	251
DTA3	NA	Decreasing	Increasing	Seasonal in trend and variability	NA	NA	NA
DTA5	Increasing	Increasing	Decreasing	Seasonal in trend and variability	5.4	5.85	251
DTA8	Increasing	Increasing	Decreasing	Seasonal in trend and variability	5.3	3.5	267
DWI1	Increasing	Increasing	Increasing	Seasonal in trend and variability	10.9	5.3	267
	ns = not significant						

	analyte		Conductivity Field (mS/cm)				
Station	**3 yr trend**	**20 yr trend**	**20 yr variability**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Increased	ns	ns	Seasonal in trend	0.239	0.0705	36
E130	Increased	ns	Decreasing	Seasonal in trend	0.087	0.039	41
E157	Decreased	Decreasing	Decreasing	Seasonal in variability	0.074	0.006	39
E203	Decreased	Decreasing	ns	Seasonal in trend	0.276	0.2075	39
E206	Stable	Increasing	Decreasing	Seasonal in trend	0.299	0.103	41
E210	Decreased	Increasing	Decreasing	Seasonal in trend & variability	0.269	0.042	41
E243	Decreased	Increasing	Decreasing	Seasonal in trend & variability	0.12	0.016	41
E332	Decreased	Increasing	Decreasing	Seasonal in trend & variability	0.2185	0.12825	42
E409	Decreased	Increasing	ns	Seasonal in trend & variability	0.789	0.3345	64
E450	Decreased	Increasing	Increasing	Seasonal in trend & variability	0.423	0.32125	40
E488	Decreased	Decreasing	Increasing	Seasonal in trend & variability	0.355	0.2045	39
E531	Stable	Increasing	Decreasing	Seasonal in trend & variability	0.3445	0.07425	42
E551	Decreased	Decreasing	Increasing	Seasonal in trend & variability	0.562	0.21475	32
E6006	Increased	ns	Decreasing	Seasonal in variability	0.087	0.011	43
E602	Stable	Increasing	Decreasing	Seasonal in trend	0.075	0.01675	38
E604	Unclear	Increasing	Decreasing	Seasonal in trend & variability	0.14	0.02525	44
E608	Increased	ns	Decreasing	Seasonal in trend	0.142	0.02925	42
E609	Increased	Increasing	ns	Seasonal in trend & variability	0.112	0.0225	39
E610	Decreased	ns	Decreasing	ns	0.1	0.04125	38
E6131	Stable	ns	Decreasing	Seasonal in trend	0.2005	0.06225	38
E677	Stable	Increasing	Decreasing	Seasonal in trend & variability	0.174	0.02	42
E680	Stable	Decreasing	Increasing	Seasonal in trend & variability	0.0965	0.014	42
E706	Stable	Increasing	Decreasing	Seasonal in trend & variability	0.115	0.0249	53
E822	Stable	Increasing	ns	Seasonal in trend & variability	0.056	0.004	41
E847	Stable	Decreasing	Decreasing	Seasonal in trend & variability	0.11	0.031	39
E860	Stable	Decreasing	Increasing	Seasonal in trend & variability	0.082	0.016	43
E861	Stable	ns	Decreasing	Seasonal in trend & variability	0.1055	0.0265	40
E890	Unclear	Decreasing	Decreasing	Seasonal in trend	0.113	0.077	45
E891	Stable	Increasing	Decreasing	Seasonal in trend	0.4635	0.0785	36
Storage sites							
DWA12	Increased	Increasing	Decreasing	Seasonal in trend & variability	0.186	0.012	595
DWA15	Increased	Increasing	Decreasing	Seasonal in trend & variability	0.184	0.013	133
DWA19	Increased	Increasing	Decreasing	Seasonal in trend & variability	0.1775	0.013	126
DWA2	Increased	Increasing	Decreasing	Seasonal in trend & variability	0.186	0.01125	840
DWA21	Increased	Increasing	Decreasing	Seasonal in trend & variability	0.18	0.017	126
DWA27	Increased	Increasing	Increasing	Seasonal in trend & variability	0.191	0.011	616
DWA311	Increased	Increasing	Decreasing	Seasonal in trend & variability	0.197	0.013	147
DWA39	Increased	Increasing	Increasing	Seasonal in trend & variability	0.204	0.01375	126
DWA9	Increased	Increasing	Decreasing	Seasonal in trend & variability	0.187	0.008	726
RPR1	Stable	Decreasing	Decreasing	Seasonal in trend & variability	0.192	0.009	572
RPR6	Stable	Decreasing	Increasing	Seasonal in trend & variability	0.19	0.007	458
DAV1	Decreased	Increasing	Decreasing	Seasonal in trend & variability	0.07	0.004	315
DAV7	Decreased	Increasing	Decreasing	Seasonal in trend & variability	0.07	0.005	357
DCA1	Stable	Increasing	Decreasing	Seasonal in trend & variability	0.076	0.004	315
DCO1	Decreased	Increasing	Increasing	Seasonal in trend & variability	0.086	0.006	301
DNE1	Decreased	Decreasing	Decreasing	Seasonal in trend & variability	0.068	0.008	140
DNE2	Decreased	Increasing	Increasing	Seasonal in trend & variability	0.079	0.006	394
DWO1	Decreased	Increasing	ns	Seasonal in trend	0.106	0.005	462
DGC1	Decreased	Increasing	Decreasing	Seasonal in trend & variability	0.028	0.003	363
DLC1	Increased	Decreasing	Increasing	Seasonal in trend & variability	0.087	0.013	147
DTC1	Increased	Decreasing	Increasing	Seasonal in trend & variability	0.071	0.018	364
DBP1	Increased	Increasing	Decreasing	Seasonal in trend	0.093	0.011	105
DFF6	Stable	ns	Decreasing	Seasonal in trend & variability	0.073	0.006	236
DTA1	Increased	Increasing	Increasing	Seasonal in trend & variability	0.102	0.0125	251
DTA3	Decreased	Increasing	Decreasing	Seasonal in trend & variability	NA	NA	NA
DTA5	Increased	Increasing	Increasing	Seasonal in trend & variability	0.104	0.0175	251
DTA8	Decreased	Increasing	ns	Seasonal in trend & variability	0.103	0.0185	259
DWI1	Stable	Decreasing	Decreasing	Seasonal in trend & variability	0.072	0.004	255
	ns = not significant						

	analyte		dissolved oxygen				
Station	**3 yr trend**	**20 yr trend**	**20 yr variation**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Decreasing	Increasing	Decreasing	Seasonal in trend & variability	96.5	6.425	36
E130	Decreasing	ns	Decreasing	Seasonal in trend & variability	97.6	9.3	41
E157	Stable	Increasing	Decreasing	Seasonal in trend & variability	91.1	5.3	39
E203	Stable	Increasing	Decreasing	Seasonal in trend & variability	93	4.3	39
E206	Stable	Increasing	Decreasing	Seasonal in trend & variability	98	4.2	41
E210	Decreasing	ns	ns	Seasonal in trend & variability	90.6	16	41
E243	Decreasing	Increasing	Increasing	Seasonal in trend & variability	93.8	9.9	41
E332	Stable	ns	ns	Seasonal in trend & variability	78.25	15.325	42
E409	Decreasing	ns	Decreasing	Seasonal in trend & variability	80.8	29.675	64
E450	Decreasing	ns	Decreasing	Seasonal in trend & variability	88.7	7.05	40
E488	Increasing	Increasing	Decreasing	Seasonal in trend & variability	103	9.8	39
E531	Stable	ns	ns	Seasonal in trend & variability	72.5	27.525	42
E551	Stable	Decreasing	ns	Seasonal in trend & variability	60.85	25.5	32
E6006	Decreasing	ns	Decreasing	Seasonal in trend & variability	93.7	15.2	43
E602	Stable	Increasing	Decreasing	Seasonal in trend & variability	104	3.625	38
E604	Increasing	Increasing	Decreasing	Seasonal in trend & variability	98.8	6.325	44
E608	Decreasing	Increasing	Decreasing	Seasonal in trend	96.85	5.6	42
E609	Decreasing	Increasing	Increasing	Seasonal in trend & variability	90.9	7.45	39
E610	Stable	ns	Decreasing	Seasonal in trend & variability	96.4	5	38
E6131	Decreasing	Decreasing	Decreasing	Seasonal in trend & variability	92.8	9.925	38
E677	Stable	ns	Increasing	Seasonal in trend & variability	86.7	16.25	42
E680	Increasing	Increasing	ns	Seasonal in trend & variability	100.35	5.6	42
E706	Decreasing	Increasing	ns	Seasonal in trend & variability	104.1	9.2	53
E822	Stable	Increasing	Decreasing	Seasonal in trend & variability	94.5	5.3	41
E847	Increasing	Increasing	Decreasing	Seasonal in trend & variability	104.4	5.1	39
E860	Decreasing	Increasing	Decreasing	Seasonal in trend & variability	101.3	4.7	43
E861	Stable	Increasing	Decreasing	Seasonal in variability	101.85	4.425	40
E890	Decreasing	ns	ns	Seasonal in trend & variability	66.5	20.9	45
E891	Stable	Increasing	ns	Seasonal in trend and variability	88.4	42.55	36
Storage sites							
DWA12	Stable	Decreasing	Decreasing	Seasonal in trend & variability	93.5	19.9	581
DWA15	Increasing	Decreasing	Increasing	Seasonal in trend & variability	94.9	29.2	133
DWA19	Stable	Decreasing	Increasing	Seasonal in trend & variability	89.3	23.5	126
DWA2	Stable	Decreasing	Decreasing	Seasonal in trend & variability	91.6	17.2	845
DWA21	Decreasing	Decreasing	Increasing	Seasonal in trend & variability	91.6	21.325	126
DWA27	Stable	Decreasing	Decreasing	Seasonal in trend & variability	91.95	21.275	610
DWA311	Stable	Decreasing	ns	Seasonal in trend & variability	90.2	17.7	147
DWA39	Stable	Decreasing	Increasing	Seasonal in trend & variability	90.5	12.125	126
DWA9	Decreasing	Decreasing	Decreasing	Seasonal in trend & variability	91	14.3	729
RPR1	Stable	Decreasing	Decreasing	Seasonal in trend & variability	98.2	6.1	969
RPR6	Decreasing	Decreasing	Decreasing	Seasonal in trend & variability	98.2	6.9	781
DAV1	Increased	Decreasing	Decreasing	Seasonal in trend & variability	101.3	13.9	329
DAV7	Stable	Decreasing	ns	Seasonal in trend & variability	99.15	10.375	378
DCA1	Stable	ns	Decreasing	Seasonal in trend & variability	100	9.9	357
DCO1	Stable	Increasing	ns	Seasonal in trend & variability	98.95	18.15	322
DNE1	Stable	Decreasing	ns	Seasonal in trend & variability	92.3	12.2	175
DNE2	Decreasing	Decreasing	ns	Seasonal in trend & variability	98.9	16.95	488
DWO1	Increasing	Decreasing	Decreasing	Seasonal in trend & variability	98.8	11.3	483
DGC1	Stable	Decreasing	Decreasing	Seasonal in trend & variability	84.8	6.35	370
DLC1	Stable	Decreasing	Decreasing	Seasonal in trend & variability	87.2	7.5	154
DTC1	Stable	Decreasing	Decreasing	Seasonal in trend & variability	84.9	5.75	379
DBP1	Stable	ns	Increasing	Seasonal in trend & variability	94	23.4	117
DFF6	Decreasing	ns	Decreasing	Seasonal in trend & variability	98	5.3	237
DTA1	Stable	Decreasing	Increasing	Seasonal in trend & variability	86.3	30.2	251
DTA3	NA	ns	ns	Seasonal in trend & variability	NA	NA	NA
DTA5	Stable	Decreasing	Increasing	Seasonal in trend & variability	89.5	24.75	251
DTA8	Stable	Decreasing	Increasing	Seasonal in trend & variability	92	21.5	267
DWI1	Stable	ns	ns	Seasonal in trend & variability	96.1	8.1	267
	ns = not significant			NB: (Only data with depth <6m - ecologically avaiable)			

	analyte		Ammonia	(mg/L)			
Station	**3 yr trend**	**20 yr trend**	**20 yr variation**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0	38
E130	Stable	Decreasing	Decreasing	Seasonal in variation	0.0025	0	40
E157	Stable	Decreasing	Decreasing	Seasonal in trend	0.0025	0.0045	42
E203	Stable	Decreasing	ns	Seasonal in trend	0.018	0.0205	40
E206	Decreased	Decreasing	Decreasing	Seasonal in variation	0.0025	0.0095	44
E210	Stable	ns	ns	Seasonal in trend and variation	0.008	0.01175	44
E243	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0.00325	42
E332	Decreased	ns	ns	Seasonal in trend and variation	0.044	0.0705	42
E409	Increased	Decreasing	ns	Seasonal in trend and variation	0.0025	0.011	66
E450	Stable	Decreasing	ns	Seasonal in trend	0.0025	0.0115	43
E488	Decreased	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0.003	39
E531	Stable	Decreasing	ns	Seasonal in trend and variation	0.009	0.0125	44
E551	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0	32
E6006	Stable	Decreasing	Decreasing	ns	0.0025	0	44
E602	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0	40
E604	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0	49
E608	Stable	Decreasing	Decreasing	ns	0.0025	0	44
E609	Stable	Decreasing	Decreasing	Seasonal in variation	0.012	0.00775	42
E610	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0	38
E6131	Stable	Decreasing	Decreasing	Seasonal in variation	0.0025	0	41
E677	Decreased	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0	39
E680	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.006	0.0105	44
E706	Increased	Decreasing	Increasing	ns	0.0175	0.023	50
E822	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0	45
E847	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0.0055	37
E860	Unclear	Decreasing	Increasing	Seasonal in trend and variation	0.0025	0.0045	41
E861	Unclear	Decreasing	Increasing	Seasonal in trend and variation	0.0025	0	40
E890	Stable	Decreasing	ns	Seasonal in trend and variation	0.0025	0	45
E891	Stable	Decreasing	Decreasing	Seasonal in variation	0.0025	0	36
Storage sites							
DWA12	Decreasing	Decreasing	Increasing	Seasonal in trend and variation	0.0025	0	178
DWA15	Increased	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0.00675	40
DWA19	Increased	Decreasing	Decreasing	Seasonal in variation	0.0025	0.00725	42
DWA2	Stable	Decreasing	Increasing	Seasonal in trend and variation	0.0025	0.00625	210
DWA21	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0.0065	37
DWA27	Stable	Decreasing	Increasing	Seasonal in trend and variation	0.0025	0	175
DWA311	Increased	Decreasing	Increasing	Seasonal in trend and variation	0.0025	0.0045	41
DWA39	Stable	Increasing	Increasing	Seasonal in trend and variation	0.0025	0.0055	40
DWA9	Stable	Decreasing	ns	Seasonal in trend and variation	0.0025	0.0035	195
					NA	NA	NA
RPR1	Stable	Decreasing	Increasing	Seasonal in trend and variation	0.0025	0.0055	94
RPR6	Decreasing	ns	Increasing	Seasonal in trend and variation	0.0025	0.0055	64
DAV1	Increasing	Decreasing	Increasing	Seasonal in trend and variation	0.0025	0.0145	88
DAV7	Increasing	Decreasing	Increasing	Seasonal in trend and variation	0.0025	0.0075	120
DCA1	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0055	0.02025	90
DCO1	Decreasing	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0.0205	84
DNE1	Increased	Decreasing	Decreasing	Seasonal in trend and variation	0.0225	0.006	8
DNE2	Increased	Decreasing	Decreasing	Seasonal in trend and variation	0.016	0.023	95
DWO1	Decreasing	Decreasing	Increasing	Seasonal in trend and variation	0.01	0.0125	84
DGC1	Decreasing	Decreasing	Decreasing	Seasonal in trend and variation	0.0155	0.02075	82
DLC1	Decreasing	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0.0125	39
DTC1	Stable	Decreasing	Decreasing	Seasonal in trend and variation	0.0025	0.0045	82
DBP1	Insufficient data				0.013	0.01475	20
DFF6	Increasing	Increasing	Increasing	Seasonal in trend and variation	0.0025	0.0095	81
DTA1	Increasing	Decreasing	Increasing	Seasonal in trend and variation	0.0155	0.02725	78
DTA3	Stable	Decreasing	ns	Seasonal in trend and variation	NA	NA	NA
DTA5	Stable	Decreasing	Increasing	Seasonal in trend and variation	0.025	0.03	81
DTA8	Increasing	ns	Increasing	Seasonal in trend and variation	0.0175	0.0325	118
DWI1	Increasing	Decreasing	Increasing	Seasonal in trend and variation	0.01	0.041	76
	ns = not significant						

	analyte		Nox	(mg/L)			
Station	**3 yr trend**	**20 yr trend**	**20 yr variation**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Unclear	Increasing	Increasing	Seasonal in trend and Variation	0.006	0.009	38
E130	Unclear	Increasing	ns	Seasonal in trend and Variation	0.0205	0.0365	40
E157	Stable	ns	Decreasing	Seasonal in trend and Variation	0.1975	0.15975	42
E203	Decreased	Decreasing	ns	Seasonal in trend	0.5265	2.6205	40
E206	Decreased	ns	Decreasing	Seasonal in trend and Variation	0.5015	0.384	44
E210	Decreased	Increasing	ns	Seasonal in trend and Variation	0.0705	0.1445	44
E243	Stable	Decreasing	Decreasing	Seasonal in trend and Variation	0.0055	0.0065	42
E332	Increased	Decreasing	Decreasing	Seasonal in trend and Variation	0.115	0.1635	42
E409	Increased	Decreasing	Decreasing	Seasonal in trend and Variation	0.0045	0.07525	66
E450	Stable	ns	Decreasing	Seasonal in trend and Variation	0.019	0.0405	43
E488	Decreased	ns	Decreasing	Seasonal in trend and Variation	0.007	0.0155	39
E531	Stable	Decreasing	Decreasing	Seasonal in trend and Variation	0.0345	0.04975	44
E551	Stable	ns	ns	Seasonal in trend and Variation	0.006	0.04575	32
E6006	Decreased	Decreasing	Decreasing	Seasonal in trend and Variation	0.001	0.002	44
E602	Stable	Decreasing	Decreasing	Seasonal in trend and Variation	0.003	0.00525	40
E604	Increased	ns	ns	Seasonal in variation	0.093	0.054	49
E608	Increased	Increasing	Decreasing	Seasonal in trend	0.081	0.045	44
E609	Increased	Increasing	ns	Seasonal in variation	0.0305	0.028	42
E610	Stable	Decreasing	Decreasing	Seasonal in variation	0.002	0.003	38
E6131	Decreased	Decreasing	ns	Seasonal in trend and Variation	0.002	0.008	41
E677	Stable	Decreasing	Increasing	Seasonal in trend and Variation	0.001	0.002	39
E680	Stable	Decreasing	ns	Seasonal in trend and Variation	0.019	0.02525	44
E706	Decreased	ns	ns	Seasonal in trend and Variation	0.109	0.0835	46
E822	Stable	ns	ns	Seasonal in trend and Variation	0.01	0.015	45
E847	Increased	ns	ns	Seasonal in trend and Variation	0.009	0.035	37
E860	Increased	ns	Increasing	Seasonal in trend and Variation	0.003	0.012	41
E861	Stable	ns	ns	Seasonal in trend and Variation	0.001	0.00725	40
E890	Stable	Decreasing	Increasing	Seasonal in variation	0.002	0.007	45
E891	Increased	Decreasing	ns	Seasonal in trend and Variation	0.003	0.0215	36
Storage sites							
DWA12	Decreased	Increasing	Increasing	Seasonal in trend and Variation	0.0895	0.10175	178
DWA15	Increased	ns	Decreasing	Seasonal in trend and Variation	0.0515	0.09275	40
DWA19	Decreased	Increasing	Increasing	Seasonal in trend and Variation	0.012	0.06875	42
DWA2	Decreased	Increasing	Increasing	Seasonal in trend and Variation	0.108	0.116	265
DWA21	Unclear	Increasing	Increasing	Seasonal in trend and Variation	0.012	0.052	37
DWA27	Unclear	Increasing	Increasing	Seasonal in trend and Variation	0.087	0.121	175
DWA311	Decreased	ns	ns	Seasonal in trend and Variation	0.052	0.15	41
DWA39	Decreased	Increasing	Increasing	Seasonal in trend and Variation	0.0285	0.132	40
DWA9	Decreased	Increasing	ns	Seasonal in trend and Variation	0.108	0.1045	251
				Seasonal in trend and Variation	NA	NA	NA
RPR1	Stable	Increasing	Increasing	Seasonal in trend and Variation	0.018	0.043	94
RPR6	Decreased	ns	ns	Seasonal in trend and Variation	0.0175	0.0485	64
DAV1	Decreased	Decreasing	ns	Seasonal in trend and Variation	0.012	0.02375	88
DAV7	Stable	ns	Increasing	Seasonal in trend and Variation	0.004	0.019	120
DCA1	Increased	Increasing	Decreasing	Seasonal in trend and Variation	0.012	0.01675	90
DCO1	Stable	Increasing	Decreasing	Seasonal in trend and Variation	0.002	0.013	84
DNE1	Stable	ns	Decreasing	Seasonal in trend and Variation	0.2	0.013	8
DNE2	Stable	Increasing	Decreasing	Seasonal in trend and Variation	0.175	0.0565	95
DWO1	Stable	ns	Decreasing	Seasonal in trend and Variation	0.065	0.01975	84
DGC1	Decreased	ns	Decreasing	Seasonal in trend and Variation	0.0305	0.0155	82
DLC1	Decreased	ns	ns	Seasonal in trend and Variation	0.062	0.0435	39
DTC1	Decreased	Decreasing	Increasing	Seasonal in trend and Variation	0.033	0.03775	82
DBP1	Unclear	ns	Increasing	Seasonal in trend and Variation	0.0275	0.1355	20
DFF6	Increased	Decreasing	Increasing	Seasonal in trend and Variation	0.003	0.135	81
DTA1	Decreased	Decreasing	Increasing	Seasonal in trend and Variation	0.0715	0.10825	78
DTA3	Na	ns	Increasing	Seasonal in trend and Variation	NA	NA	NA
DTA5	Unclear	Decreasing	ns	Seasonal in trend and Variation	0.039	0.082	81
DTA8	Unclear	Increasing	ns	Seasonal in trend and Variation	0.053	0.12975	118
DWI1	Increased	ns	Increasing	Seasonal in trend and Variation	0.027	0.1075	76
	ns = not significant						

	analyte		Total Nitrogen	(mg/L)			
Station	**3 yr trend**	**20 yr trend**	**20 yr variation**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Increased	Increasing	Decreasing	Seasonal in trend and variability	0.235	0.29	52
E130	Decreased	Increasing	Decreasing	Seasonal in trend and variability	0.225	0.235	74
E157	Increased	Decreasing	Decreasing	Seasonal in trend and variability	0.355	0.1775	82
E203	Unclear	Decreasing	Increasing	ns	0.99	2.315	86
E206	Decreased	Decreasing	Decreasing	Seasonal in trend	0.89	0.39	181
E210	Decreased	ns	ns	Seasonal in trend and variability	0.285	0.14	44
E243	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.06	0.04	42
E332	Stable	ns	Decreasing	Seasonal in trend and variability	0.88	0.3025	192
E409	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.78	0.37	117
E450	Stable	ns	Decreasing	Seasonal in trend and variability	0.66	0.4175	134
E488	Unclear	Increasing	Decreasing	Seasonal in trend and variability	0.63	0.52	68
E531	Increased	Decreasing	Decreasing	Seasonal in trend and variability	0.28	0.1825	84
E551	Unclear	Decreasing	Decreasing	Seasonal in trend and variability	0.135	0.1125	32
E6006	Decreased	Decreasing	ns	Seasonal in trend	0.105	0.1525	92
E602	Unclear	Decreasing	Increasing	Seasonal in trend and variability	0.11	0.21	105
E604	Unclear	Decreasing	Decreasing	Seasonal in variability	0.33	0.29	124
E608	Unclear	ns	ns	Seasonal in variability	0.2	0.27	75
E609	Decreased	Decreasing	ns	ns	0.235	0.315	88
E610	Decreased	Decreasing	Decreasing	Seasonal in trend and variability	0.08	0.09	71
E6131	Decreased	ns	ns	Seasonal in trend and variability	0.245	0.3225	124
E677	Unclear	Decreasing	Decreasing	Seasonal in trend and variability	0.12	0.2125	80
E680	Decreased	Decreasing	Decreasing	Seasonal in trend and variability	0.16	0.075	103
E706	Increased	ns	ns	Seasonal in trend and variability	0.45	0.1925	168
E822	Decreased	Increasing	ns	Seasonal in trend and variability	0.355	0.3	154
E847	Increased	ns	ns	Seasonal in trend and variability	0.47	0.425	143
E860	Decreased	ns	Decreasing	Seasonal in trend and variability	0.64	0.44	161
E861	Decreased	Increasing	Decreasing	Seasonal in trend and variability	0.47	0.39	129
E890	Unclear	ns	Decreasing	Seasonal in trend and variability	0.3	0.27	45
E891	Decreased	Increasing	Increasing	ns	0.9	0.915	142
Storage sites							
DWA12	Decreased	Increasing	Increasing	Seasonal in trend	0.37	0.085	155
DWA15	Decreased	ns	Decreasing	Seasonal in trend and variability	0.35	0.09	36
DWA19	Stable	ns	Decreasing	Seasonal in trend and variability	0.315	0.05	38
DWA2	Unclear	Increasing	Increasing	Seasonal in trend and variability	0.4	0.12	230
DWA21	Stable	Increasing	ns	Seasonal in trend	0.32	0.06	33
DWA27	Unclear	Increasing	Increasing	Seasonal in trend and variability	0.37	0.07	153
DWA311	Decreased	Increasing	Decreasing	Seasonal in trend and variability	0.38	0.13	37
DWA39	Stable	Increasing	Increasing	Seasonal in variability	0.39	0.1525	40
DWA9	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.38	0.09	251
RPR1	Stable	Decreasing	ns	Seasonal in trend and variability	0.24	0.06	82
RPR6	Increased	Increasing	Decreasing	Seasonal in variability	0.26	0.05	60
DAV1	Stable	Decreasing	ns	Seasonal in trend and variability	0.15	0.02	80
DAV7	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.16	0.04	114
DCA1	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.16	0.04	84
DCO1	Decreased	Decreasing	Decreasing	Seasonal in trend and variability	0.22	0.03	75
DNE1	Decreased	Increasing	Decreasing	Seasonal in trend and variability	0.41	0.04	11
DNE2	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.36	0.08	89
DWO1	Unclear	ns	Increasing	Seasonal in variability	0.2	0.04	76
DGC1	Decreased	Decreasing	ns	Seasonal in trend	0.16	0.07	71
DLC1	Decreased	Decreasing	Increasing	Seasonal in variability	0.2	0.065	35
DTC1	Unclear	Decreasing	Increasing	Seasonal in variability	0.25	0.14	70
DBP1	NA	NA	NA	NA	0.325	0.115	18
DFF6	Increased	Decreasing	ns	Seasonal in trend and variability	0.33	0.18	73
DTA1	Decreasing	Increasing	Increasing	Seasonal in trend and variability	0.37	0.1525	68
DTA3	insufficient data	ns	Increasing	Seasonal in trend and variability	NA	NA	NA
DTA5	Stable	Increasing	ns	Seasonal in trend and variability	0.34	0.1225	70
DTA8	Increased	ns	Decreasing	Seasonal in trend and variability	0.31	0.1	101
DWI1	Increased	Decreasing	ns	Seasonal in trend	0.33	0.12	62
	ns = not significant						

	analyte	F reactive Phosphorus		(mg/L)			
Station	**3 yr trend**	**20 yr trend**	**20 yr variation**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Increased	ns	Increasing	Seasonal in trend and variability	0.005	0.004	35
E130	Decreased	ns	ns	Seasonal in trend and variability	0.004	0.00275	38
E157	Unclear	Decreasing	Increasing	Seasonal in trend	0.003	0.0025	39
E203	Stable	Decreasing	ns	ns	0.011	0.00875	38
E206	Stable	Decreasing	Increasing	Seasonal in trend and variability	0.0085	0.00875	42
E210	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.002	0.002	41
E243	Decreased	ns	ns	Seasonal in trend and variability	0.003	0.002	40
E332	Stable	Decreasing	Increasing	Seasonal in trend and variability	0.004	0.004	41
E409	Increased	Decreasing	Increasing	Seasonal in trend and variability	0.0115	0.02275	64
E450	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.003	0.006	41
E488	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.002	0.0045	37
E531	Decreased	Decreasing	Increasing	Seasonal in trend	0.003	0.002	42
E551	Decreased	ns	Increasing	Seasonal in trend and variability	0.0035	0.00275	30
E6006	Decreased	Decreasing	Increasing	ns	0.002	0.001	42
E602	Decreased	Decreasing	Increasing	Seasonal in trend	0.002	0.00175	38
E604	Decreased	ns	Increasing	Seasonal in variability	0.003	0.002	42
E608	Decreased	Increasing	Increasing	Seasonal in variability	0.004	0.002	42
E609	Decreased	ns	Increasing	ns	0.003	0.002	39
E610	Decreased	ns	Increasing	Seasonal in trend and variability	0.003	0.002	37
E6131	Decreased	ns	Increasing	Seasonal in trend and variability	0.003	0.002	38
E677	Decreased	Decreasing	Increasing	Seasonal in variability	0.002	0.001	38
E680	Decreased	ns	Increasing	Seasonal in variability	0.003	0.004	41
E706	Stable	Decreasing	Increasing	ns	0.009	0.006	43
E822	Decreased	ns	Increasing	Seasonal in variability	0.005	0.003	41
E847	Decreased	ns	ns	ns	0.006	0.004	36
E860	Descreased	ns	ns	Seasonal in trend and variability	0.007	0.004	41
E861	Decreased	Decreasing	ns	ns	0.005	0.003	39
E890	Decreased	Decreasing	Increasing	Seasonal in trend	0.006	0.0035	43
E891	Decreased	ns	Decreasing	Seasonal in trend	0.0135	0.0055	36
Storage sites							
DWA12	Decreased	Decreasing	Increasing	ns	0.002	0.0035	178
DWA15	Decreased	Decreasing	Increasing	Seasonal in trend	0.002	0.003125	40
DWA19	Increased	Decreasing	Increasing	Seasonal in trend and variability	0.00075	0.00225	42
DWA2	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.002	0.0035	265
DWA21	Increased	Decreasing	Increasing	Seasonal in trend and variability	0.001	0.0015	37
DWA27	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.001	0.0025	175
DWA311	Decreased	Decreasing	Increasing	Seasonal in variability	0.002	0.0025	41
DWA39	Decreased	Decreasing	Increasing	Seasonal in trend	0.002	0.002	40
DWA9	Stable	Decreasing	Increasing	Seasonal in variability	0.002	0.003	251
RPR1	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.002	0.0025	94
RPR6	Decreased	ns	ns	ns	0.001	0.0015	64
DAV1	Unclear	Decreasing	Increasing	Seasonal in trend and variability	0.001	0.0015	97
DAV7	Stable	Decreasing	Increasing	Seasonal in trend and variability	0.001	0.0015	146
DCA1	Stable	Decreasing	Increasing	Seasonal in variability	0.0005	0.0015	93
DCO1	Decreased	Decreasing	Increasing	ns	0.002	0.0025	85
DNE1	Decreased	Decreasing	ns	Seasonal in trend and variability	0.002	0.00225	24
DNE2	Decreased	Decreasing	Increasing	ns	0.002	0.002	99
DWO1	Stable	Decreasing	Increasing	Seasonal in trend and variability	0.002	0.001125	84
DGC1	Decreased	ns	Increasing	ns	0.003	0.001	84
DLC1	Decreased	ns	Increasing	ns	0.002	0.001	41
DTC1	Decreased	Increasing	Increasing	Seasonal in variability	0.002	0.002	84
DBP1	Decreased	Decreasing	Increasing	ns	0.003	0.00325	20
DFF6	Decreased	Decreasing	Increasing	Seasonal in variability	0.001	0.0015	81
DTA1	Decreased	ns	Increasing	Seasonal in variability	0.005	0.003	78
DTA3	NA	Decreasing	Increasing	Seasonal in variability	NA	NA	NA
DTA5	Decreased	Increasing	ns	Seasonal in variability	0.004	0.003	81
DTA8	Decreased	ns	ns	Seasonal in trend	0.004	0.005	118
DWI1	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.001	0.0015	76
	ns = not significant						

	analyte	Total Phosphorus		(mg/L)			
Station	**3 yr trend**	**20 yr trend**	**20 yr variation**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Increased	Increasing	Decreasing	Seasonal in trend and variability	0.235	0.29	52
E130	Decreased	Increasing	Decreasing	Seasonal in trend and variability	0.225	0.235	74
E157	Decreased	Decreasing	Decreasing	Seasonal in trend	0.355	0.1775	82
E203	Stable	Decreasing	ns	Seasonal in variation	0.99	2.315	86
E206	Decreased	ns	Decreasing	Seasonal in trend and variability	0.89	0.39	181
E210	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.285	0.14	44
E243	Stable	ns	Decreasing	Seasonal in trend and variability	0.06	0.04	42
E332	Stable	ns	Increasing	Seasonal in trend	0.88	0.3025	192
E409	Stable	Decreasing	Decreasing	Seasonal in trend and variability	0.78	0.37	117
E450	Decreased	Increasing	Decreasing	Seasonal in trend and variability	0.66	0.4175	134
E488	Decreased	Increasing	Decreasing	Seasonal in trend and variability	0.63	0.52	68
E531	Decreased	Increasing	Decreasing	Seasonal in trend and variability	0.28	0.1825	84
E551	Decreased	ns	Decreasing	Seasonal in trend and variability	0.135	0.1125	32
E6006	Unclear	Increasing	ns	Seasonal in trend	0.105	0.1525	92
E602	Stable	Increasing	Increasing	Seasonal in trend	0.11	0.21	105
E604	Stable	Increasing	Increasing	Seasonal in trend and variability	0.33	0.29	124
E608	Decreased	Increasing	Increasing	Seasonal in trend	0.2	0.27	75
E609	Decreased	Increasing	ns	Seasonal in trend and variability	0.235	0.315	88
E610	Decreased	Increasing	Increasing	Seasonal in trend and variability	0.08	0.09	71
E6131	Unclear	Increasing	ns	Seasonal in trend	0.245	0.3225	124
E677	Unclear	Increasing	Increasing	Seasonal in variability	0.12	0.2125	80
E680	Decreased	Increasing	Increasing	Seasonal in trend and variability	0.16	0.075	103
E706	Increased	Increasing	Decreasing	Seasonal in trend	0.45	0.1925	168
E822	Increased	Increasing	Decreasing	ns	0.355	0.3	154
E847	Stable	Increasing	Increasing	Seasonal in trend	0.47	0.425	143
E860	Stable	Increasing	Decreasing	Seasonal in variability	0.64	0.44	161
E861	Unclear	Increasing	ns	Seasonal in trend	0.47	0.39	129
E890	Unclear	Increasing	Decreasing	Seasonal in trend	0.3	0.27	45
E891	Increased	Increasing	ns	Seasonal in trend and variability	0.9	0.915	142
Storage sites				Seasonal in trend and variability			
DWA12	Decreased	Increasing	Increasing	Seasonal in trend and variability	0.006	0.0055	178
DWA15	Decreased	ns	Decreasing	Seasonal in trend and variability	0.007	0.003	40
DWA19	Stable	Decreasing	ns	Seasonal in trend and variability	0.0095	0.003	42
DWA2	Decreased	Increasing	Increasing	Seasonal in trend and variability	0.006	0.0065	268
DWA21	Stable	ns	ns	Seasonal in trend and variability	0.009	0.003	37
DWA27	Stable	Increasing	Increasing	Seasonal in trend	0.006	0.0055	175
DWA311	Stable	ns	ns	ns	0.006	0.0055	41
DWA39	Stable	Increasing	Increasing	Seasonal in trend and variability	0.0105	0.006	40
DWA9	Stable	Increasing	Increasing	Seasonal in trend and variability	0.006	0.0065	251
RPR1	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.006	0.0045	94
RPR6	Decreased	ns	Increasing	ns	0.0025	0.0045	64
DAV1	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.0025	0.0035	99
DAV7	Decreased	Decreasing	Increasing	Seasonal in trend and variability	0.005	0.0045	150
DCA1	Decreased	ns	Increasing	Seasonal in trend and variability	0.0025	0.0045	107
DCO1	Unclear	Increasing	ns	Seasonal in trend and variability	0.007	0.005	97
DNE1	Increased	Increasing	Decreasing	Seasonal in trend	0.018	0.007	29
DNE2	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.012	0.005	102
DWO1	Unclear	Decreasing	ns	Seasonal in trend and variability	0.0025	0.0035	86
DGC1	Decreased	Increasing	Increasing	Seasonal in trend and variability	0.009	0.005	82
DLC1	Decreased	ns	Increasing	Seasonal in variability	0.005	0.0055	39
DTC1	Stable	Decreasing	ns	Seasonal in variability	0.006	0.003	82
DBP1	Stable	ns	Increasing	Seasonal in trend and variability	0.023	0.009	20
DFF6	Increased	Increasing	Decreasing	ns	0.015	0.008	81
DTA1	Decreased	Increasing	ns	Seasonal in variability	0.02	0.012	78
DTA3	NA	Decreasing	Increasing	Seasonal in trend	NA	NA	NA
DTA5	Stable	Increasing	ns	Seasonal in trend and variability	0.023	0.009	81
DTA8	Stable	Increasing	Decreasing	ns	0.0275	0.00875	118
DWI1	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.021	0.008	76
	ns = not significant						

	analyte		Aluminium	(mg/L)			
Station	**3 yr trend**	**20 yr trend**	**20 yr variation**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Increased	Decreasing	Decreasing	Seasonal both in trend and variability	0.085	0.25825	104
E130	Stable	Decreasing	Decreasing	Seasonal in variability	0.023	0.129	80
E157	Decreased	Increasing	ns	Seasonal both in trend and variability	0.046	0.24	73
E203	Stable	Decreasing	Increasing	Seasonal in variability	0.49	0.5025	43
E206	Decreased	Increasing	Decreasing	Seasonal in trend	0.076	0.482	94
E210	Stable	ns	Decreasing	Seasonal both in trend and variability	0.142	0.30875	38
E243	Stable	Increasing	Decreasing	Seasonal both in trend and variability	0.055	0.066	45
E332	Stable	Increasing	Decreasing	Seasonal in variability	0.308	0.3255	79
E409	Stable	Increasing	Decreasing	Seasonal both in trend and variability	0.065	1.56675	82
E450	Decreased	Increasing	Decreasing	ns	0.03	0.301	61
E488	Decreased	Increasing	ns	Seasonal both in trend and variability	0.2	0.8575	127
E531	Increased	Increasing	Decreasing	Seasonal both in trend and variability	0.2	0.388	89
E551	Stable	Increasing	Decreasing	Seasonal both in trend and variability	0.0075	0.006	28
E6006	Increasing	Increasing	Increasing	Seasonal in trend	0.07	0.03	3
E602	Stable	Increasing	Decreasing	Seasonal both in trend and variability	0.055	0.06525	74
E604	Stable	Increasing	Increasing	Seasonal both in trend	0.035	0.035	4
E608	Decreasing	Increasing	Increasing	ns	0.05	0.01	4
E609	Unstable	Increasing	Increasing	Seasonal both in trend and variability	0.06	0.02	2
E610	Stable	ns	Decreasing	Seasonal both in trend and variability	0.125	0.1525	72
E6131	Decreased	Increasing	ns	Seasonal both in trend and variability	0.5	0.865	124
E677	Decreased	ns	ns	Seasonal both in trend and variability	0.145	0.465	80
E680	Decreased	Increasing	ns	Seasonal both in trend and variability	0.02	0.005	3
E706	Stable	Increasing	ns	Seasonal both in trend and variability	0.35	0.443	136
E822	Decreased	Increasing	ns	Seasonal in variability	0.0815	0.06725	56
E847	Increasing	Increasing	ns	Seasonal both in trend and variability	0.263	0.484	25
E860	Decreased	Increasing	Decreasing	Seasonal both in trend and variability	0.14	0.3145	106
E861	Stable	Increasing	Decreasing	ns	0.183	0.3525	71
E890	Increasing	Increasing	Decreasing	Seasonal in trend	0.1825	0.113	26
E891	Increasing	Increasing	Decreasing	Seasonal in trend	0.005	0.165	69
Storage sites							
DWA12	Decreased	Increasing	ns	Seasonal both in trend and variability	0.02	0.02	178
DWA15	Decreased	Decreasing	ns	Seasonal both in trend and variability	0.025	0.02	40
DWA19	Stable	Decreasing	ns	Seasonal both in trend and variability	0.03	0.03	42
DWA2	Stable	Increasing	Decreasing	Seasonal both in trend and variability	0.03	0.04	221
DWA21	Stable	ns	ns	Seasonal both in trend and variability	0.03	0.02	37
DWA27	Stable	Increasing	ns	Seasonal both in trend and variability	0.03	0.03	175
DWA311	Stable	Decreasing	ns	Seasonal both in trend and variability	0.04	0.06	41
DWA39	Decreased	ns	ns	Seasonal both in trend and variability	0.055	0.0475	38
DWA9	Stable	Increasing	Increasing	Seasonal both in trend and variability	0.03	0.04	194
RPR1	Stable	Increasing	Increasing	Seasonal both in trend and variability	0.04	0.02	79
RPR6	Stable	Increasing	Increasing	Seasonal in variability	0.07	0.05	140
DAV1	Stable	Increasing	Increasing	Seasonal both in trend and variability	0.02	0.03	99
DAV7	Stable	Increasing	Increasing	Seasonal both in trend and variability	0.03	0.02	151
DCA1	Decreasing	Increasing	Decreasing	Seasonal both in trend and variability	0.08	0.1	113
DCO1	Decreasing	Increasing	Decreasing	Seasonal both in trend and variability	0.04	0.06	103
DNE1	Increased	Increasing	Decreasing	Seasonal both in trend and variability	0.57	0.46	45
DNE2	Decreasing	Increasing	Decreasing	Seasonal both in trend and variability	0.14	0.14	134
DWO1	Increased	Increasing	Decreasing	Seasonal both in trend and variability	0.12	0.1175	138
DGC1	Increasing	Increasing	Decreasing	Seasonal both in trend and variability	0.18	0.085	94
DLC1	Decreasing	ns	ns	ns	0.02	0.01	45
DTC1	Increased	Increasing	ns	Seasonal both in trend and variability	0.03	0.03	93
DBP1	Increased	Increasing	Increasing	ns	0.17	0.1	17
DFF6	Stable	Decreasing	ns	Seasonal both in trend and variability	0.17	0.16	81
DTA1	Stable	Increasing	ns	Seasonal in trend	0.19	0.2275	78
DTA3	No data	ns	Increasing	Seasonal in trend	NA	NA	NA
DTA5	Stable	Increasing	Decreasing	Seasonal in variability	0.19	0.23	81
DTA8	Stable	Increasing	Decreasing	Seasonal both in trend and variability	0.14	0.1	118
DWI1	Increased	Increasing	ns	Seasonal in trend	0.27	0.17	76
	ns = not significant						

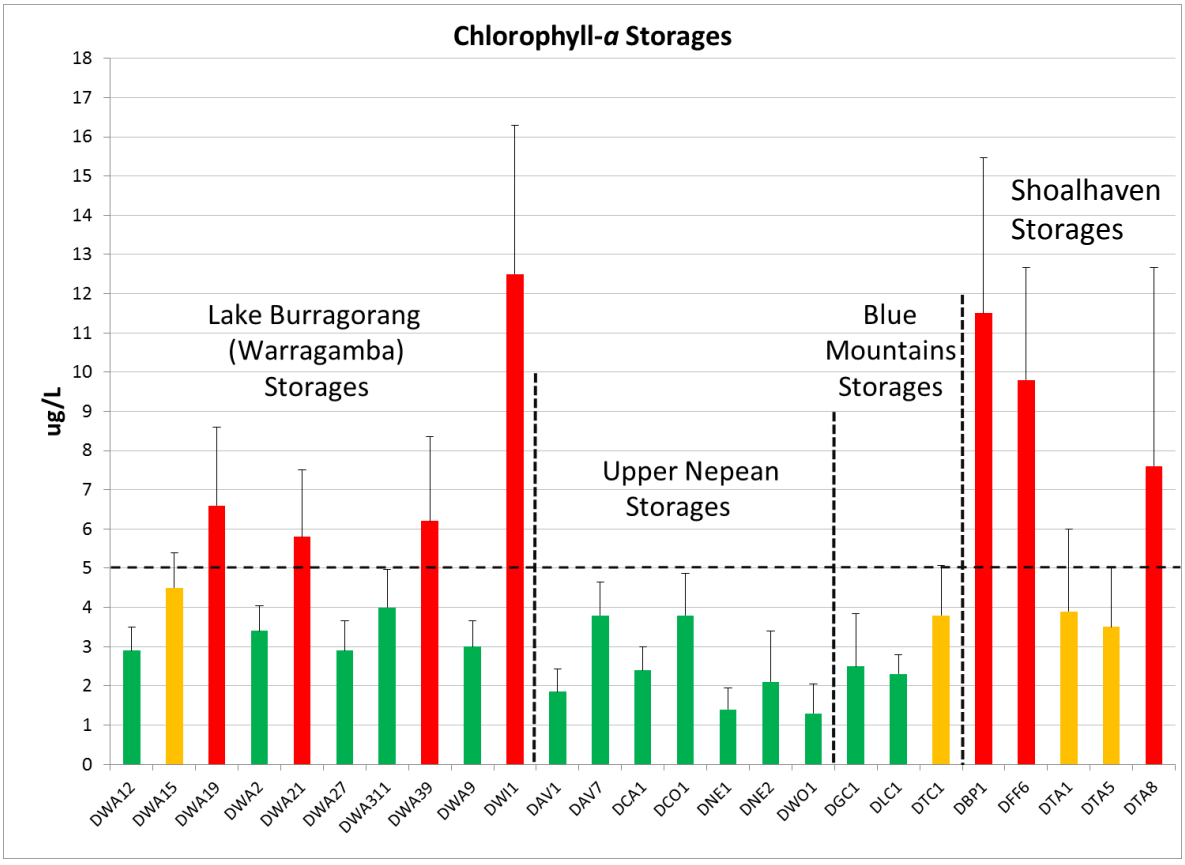
	analyte		Iron	(mg/L)			
Station	**3 yr trend**	**20 yr trend**	**20 yr variation**	**Seasonality**	**Median**	**I/Q range**	**# observations**
Catchment sites							
E083	Unclear	Increasing	Decreasing	Seasonal in trend and variability	0.21	0.37	49
E130	Unclear	Increasing	Decreasing	Seasonal in trend and variability	0.17	0.1325	72
E157	Unclear	Increasing	Decreasing	Seasonal in trend and variability	0.66	1.625	79
E203	Increasing	Increasing	Decreasing	Seasonal in trend and variability	0.54	0.4925	38
E206	Unclear	Increasing	Decreasing	Seasonal in trend and variability	0.9	0.965	179
E210	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.71	0.38	41
E243	Increasing	Increasing	Decreasing	Seasonal in trend and variability	0.31	0.255	40
E332	Increased	Increasing	Decreasing	Seasonal in trend	0.94	0.645	191
E409	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.62	0.7525	94
E450	Stable	Increasing	Decreasing	Seasonal in trend and variability	1.385	1.4825	132
E488	Unclear	Increasing	Decreasing	Seasonal in trend and variability	0.76	1.7875	66
E531	Decreased	Increasing	Decreasing	Seasonal in trend and variability	1.17	0.4675	82
E551	Deceased	Increasing	ns	Seasonal in trend and variability	0.195	0.22	30
E6006	Increasing	Increasing	ns	Seasonal in trend	0.625	0.515	90
E602	Unclear	Increasing	Decreasing	Seasonal in trend and variability	0.9	0.68	103
E604	Unclear	Increasing	Increasing	ns	0.42	0.97	109
E608	Decreased	Increasing	ns	Seasonal in trend and variability	0.4	0.515	74
E609	Unclear	ns	Decreasing	Seasonal in trend	1.06	0.99	85
E610	Stable	ns	Decreasing	ns	0.32	0.235	71
E6131	Stable	Increasing	Decreasing	Seasonal in trend	0.91	0.68	120
E677	Increased	Increasing	ns	Seasonal in trend	0.67	0.57	79
E680	Decreased	Increasing	ns	Seasonal in trend	0.75	0.44	101
E706	Decreased	Increasing	ns	Seasonal in trend and variability	0.89	1.02	161
E822	Unclear	Increasing	ns	Seasonal in trend and variability	0.62	0.4525	148
E847	Increased	Increasing	Decreasing	Seasonal in trend and variability	1.89	3.18	142
E860	Decreased	Increasing	Decreasing	Seasonal in variability	1.15	1.08	161
E861	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.92	0.77	125
E890	Increased	Increasing	Decreasing	Seasonal in trend and variability	1.43	0.89	43
E891	Increased	Increasing	Decreasing	Seasonal in trend and variability	3.04	5.4	142
Storage sites							
DWA12	Decreased	Increasing	ns	Seasonal in trend and variability	0.05	0.07	178
DWA15	Stable	Decreasing	Increasing	Seasonal in trend and variability	0.08	0.1375	40
DWA19	Stable	Decreasing	ns	Seasonal in trend and variability	0.14	0.11	42
DWA2	Decreased	Increasing	ns	Seasonal in trend and variability	0.05	0.085	222
DWA21	Decreased	Decreasing	ns	Seasonal in trend and variability	0.1	0.07	37
DWA27	Stable	Increasing	ns	Seasonal in trend and variability	0.06	0.11	175
DWA311	Unclear	Decreasing	ns	Seasonal in trend and variability	0.08	0.14	41
DWA39	Decreased	Increasing	Increasing	Seasonal in trend and variability	0.16	0.14	40
DWA9	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.05	0.075	193
RPR1	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.06	0.03	79
RPR6	Stable	Increasing	Increasing	Seasonal in trend and variability	0.09	0.04	145
DAV1	Stable	Increasing	ns	Seasonal in trend and variability	0.05	0.05	99
DAV7	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.12	0.07	151
DCA1	Unclear	Increasing	Decreasing	Seasonal in trend and variability	0.23	0.09	113
DCO1	Increased	Increasing	Decreasing	Seasonal in trend and variability	0.18	0.14	103
DNE1	Increased	Increasing	Decreasing	Seasonal in trend	0.58	0.4	45
DNE2	Stable	Increasing	Decreasing	Seasonal in trend	0.42	0.22	136
DWO1	Decreased	Increasing	Decreasing	Seasonal in trend and variability	0.245	0.11	138
DGC1	Decreased	ns	ns	Seasonal in trend and variability	0.565	0.485	94
DLC1	Decreased	Increasing	ns	Seasonal in trend	0.16	0.09	45
DTC1	Stable	ns	Decreasing	Seasonal in trend and variability	0.085	0.05	94
DBP1	Increased	Increasing	Decreasing	Seasonal in trend and variability	0.57	0.23	17
DFF6	Increased	ns	Increasing	Seasonal in trend and variability	0.26	0.17	81
DTA1	Increased	Increasing	ns	Seasonal in trend and variability	0.61	0.385	78
DTA3	Stable	ns	Increasing	Seasonal in trend and variability	NA	NA	NA
DTA5	Stable	Increasing	ns	Seasonal in trend and variability	0.62	0.28	81
DTA8	Stable	Increasing	Decreasing	Seasonal in trend and variability	0.62	0.2	118
DWI1	Increased	Increasing	ns	Seasonal in trend and variability	0.55	0.23	76
	ns = not significant						

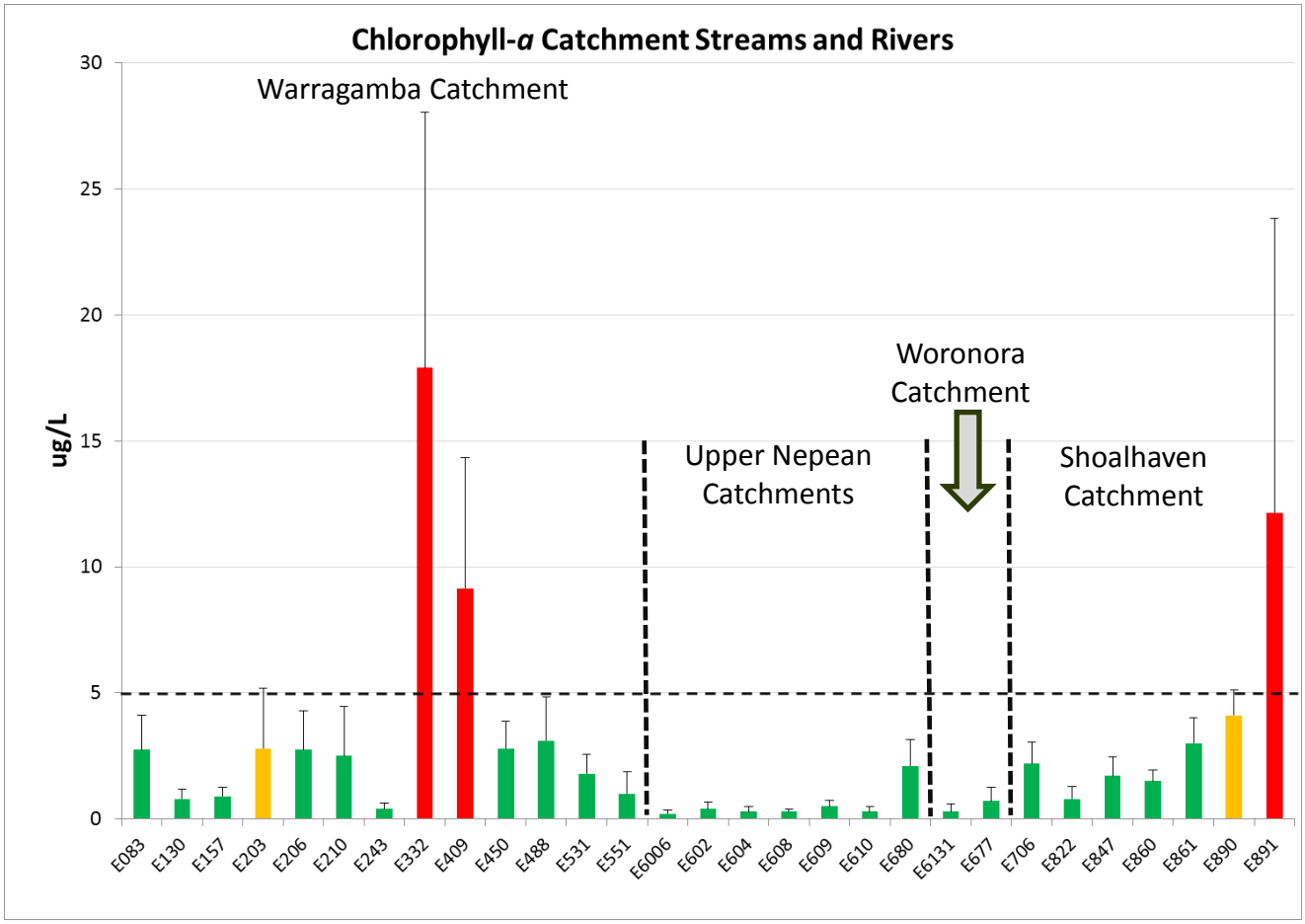
7 Water quality station charts

7.1 Analytes for storages and catchments

Data for the audit period from WaterNSW monitoring sites in catchment streams and storage reservoirs were assessed with reference to relevant guidelines (**Volume 2, Section 2.1 Table 2**) to determine if the 'ecosystem and raw water quality' was:

- **Good** – defined as when the median value complied with the relevant guideline for that analyte
- **Poor** - defined as when the median value complied with the guideline for that analyte, but when compared to the interquartile range it often failed to comply with the guideline
- **Very poor** - defined as when the median value for that indicator was outside the recommended values for that analyte.




Chlorophyll-a Catchment Streams and Rivers
ug/L
30
25
20
15
10
5
0
Warragamba Catchment
Upper Nepean Catchments
Woronora Catchment
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
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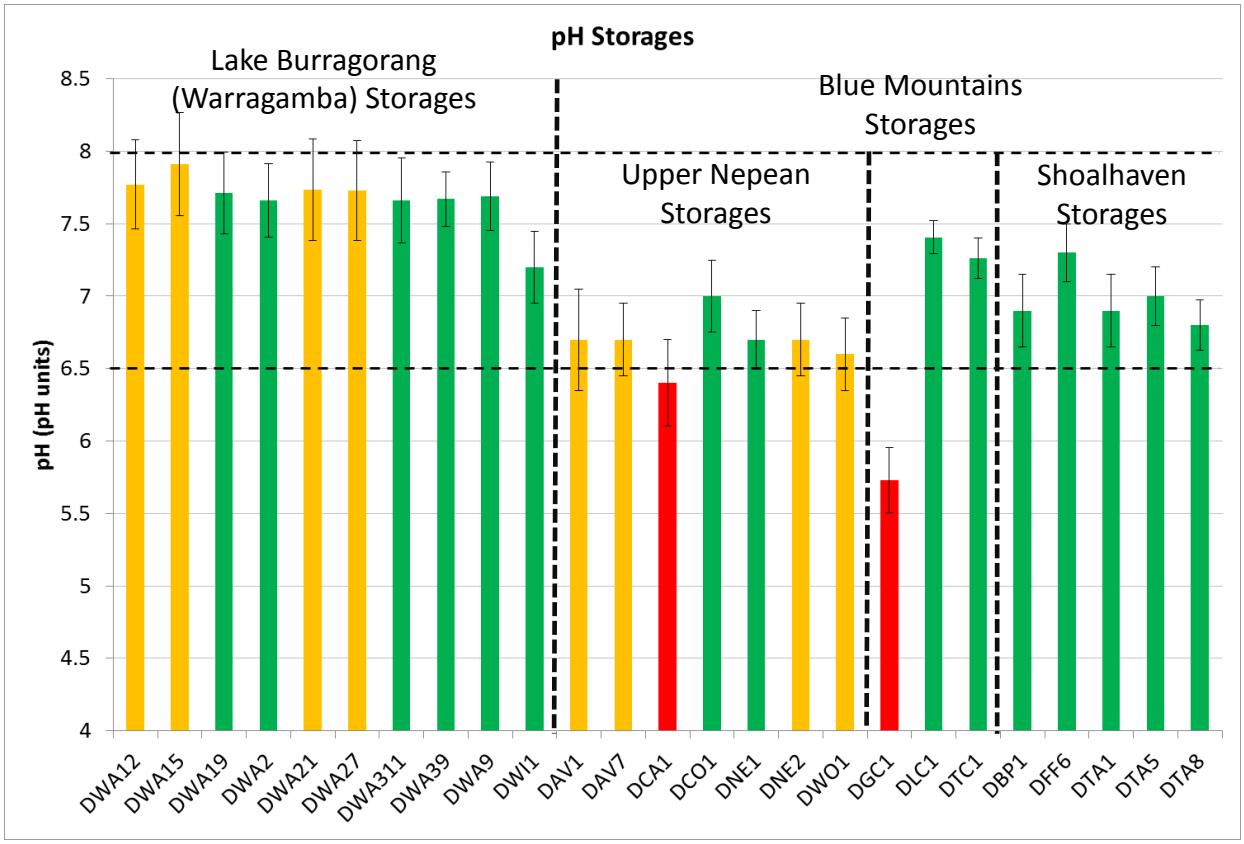
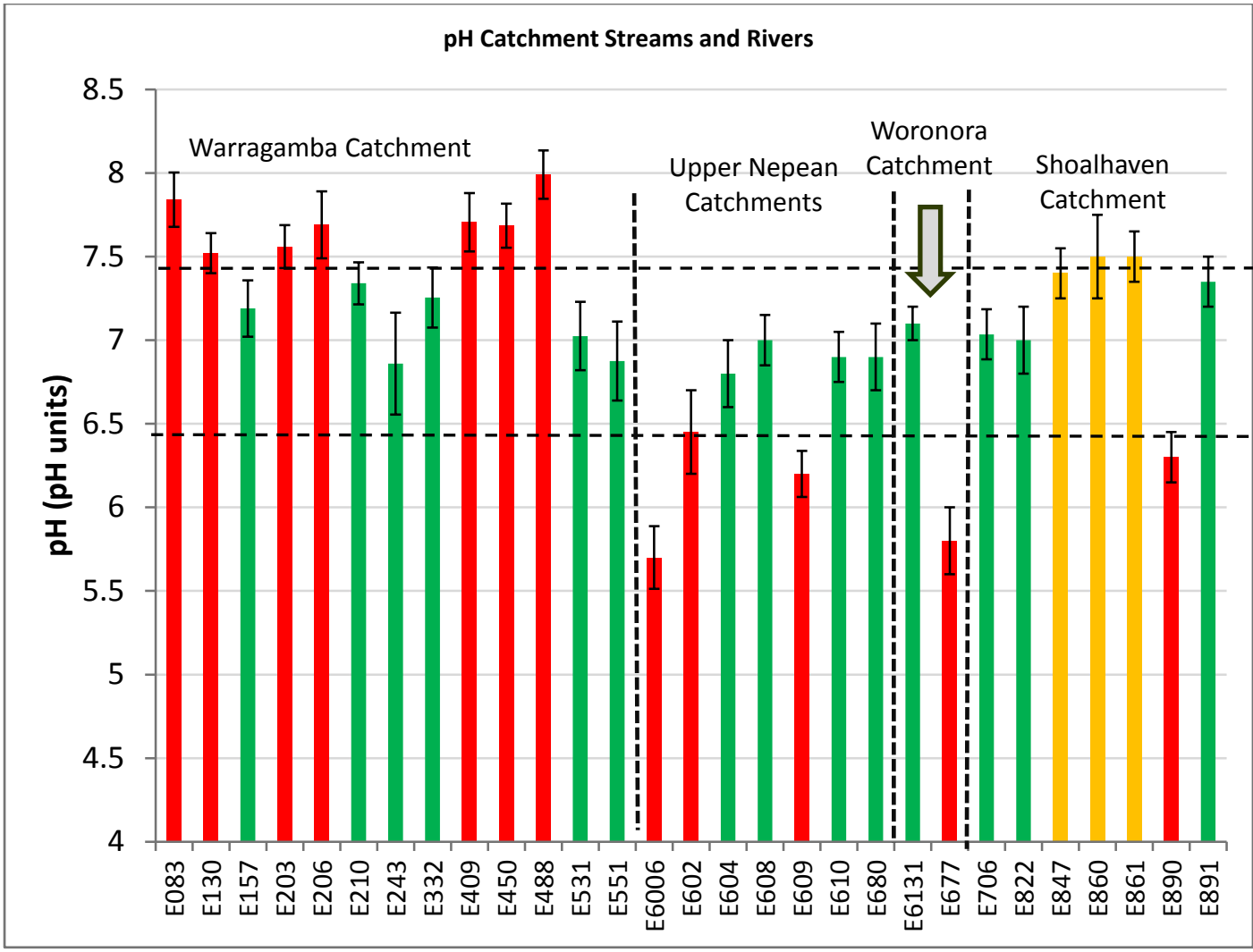
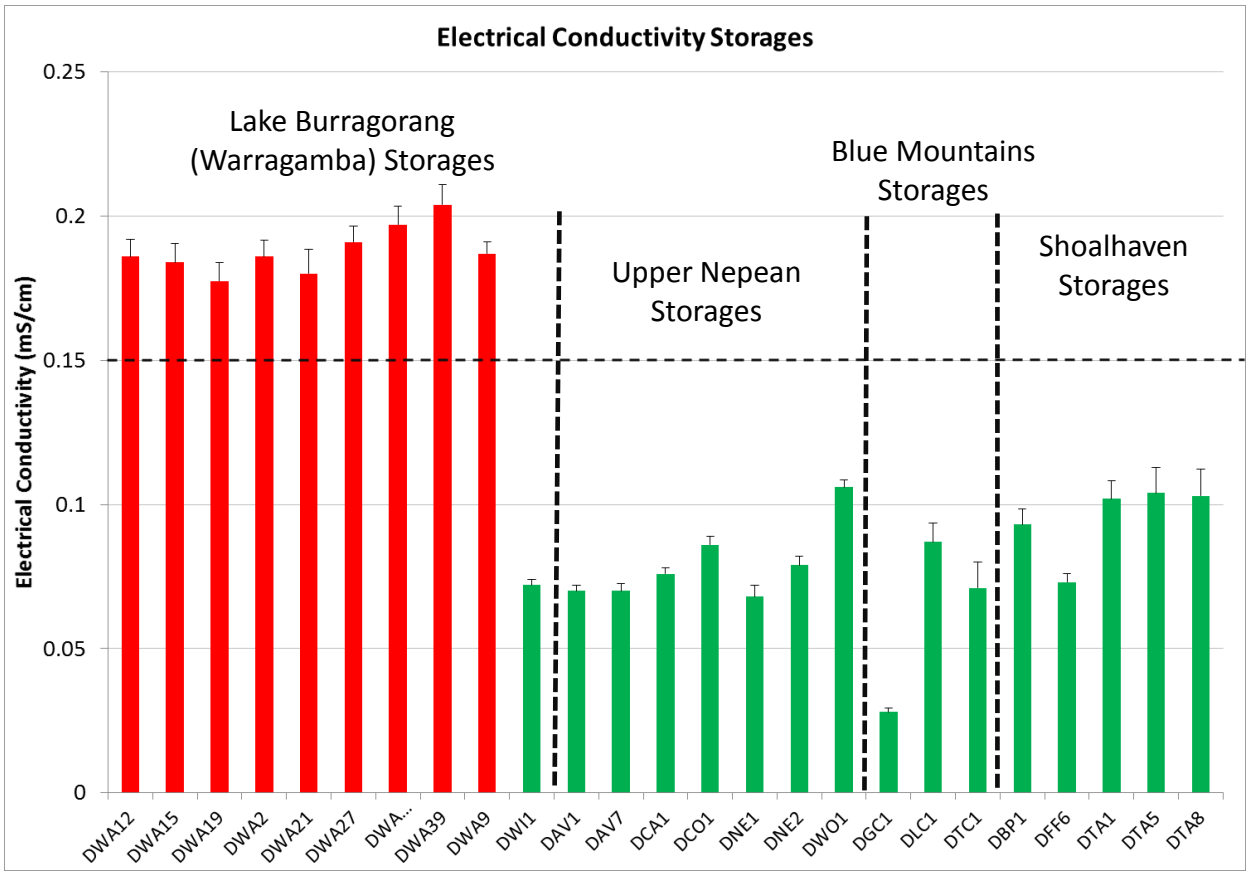
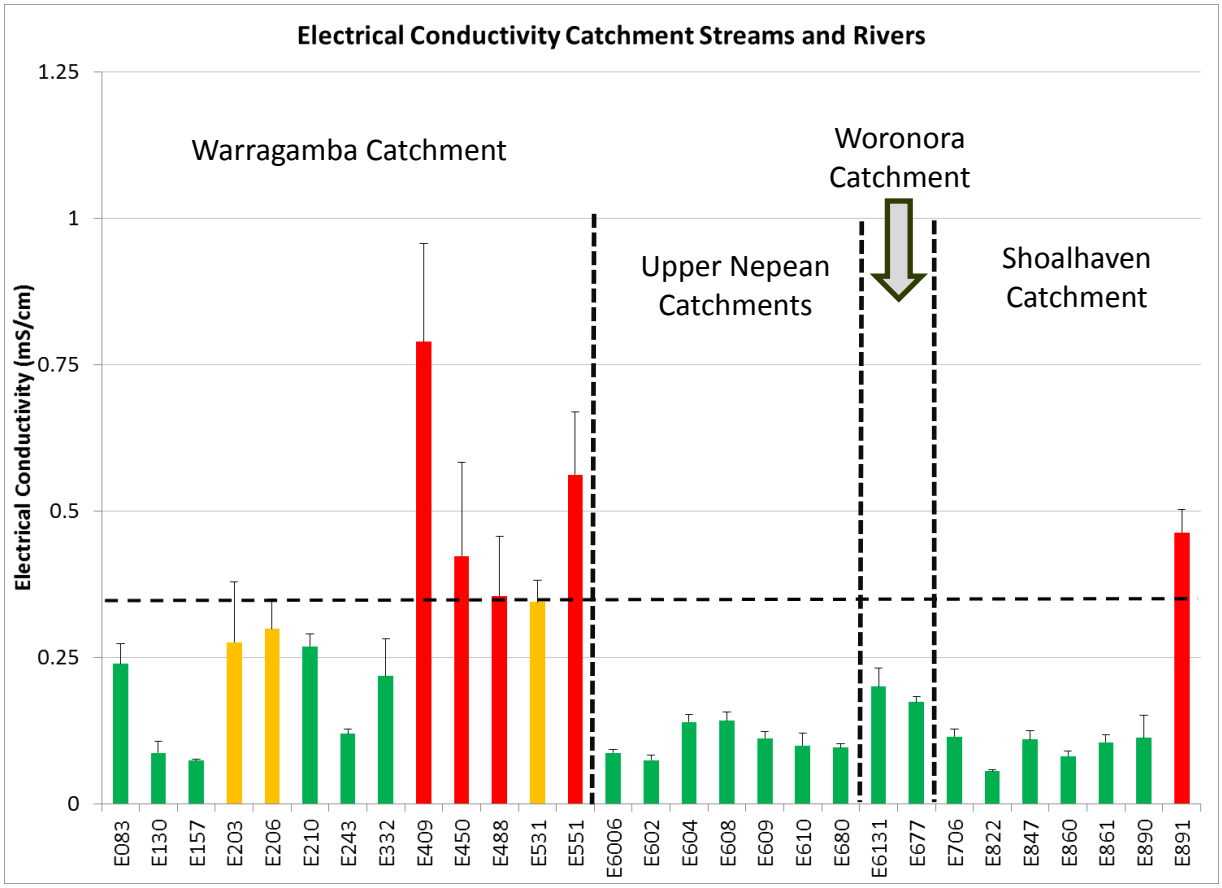
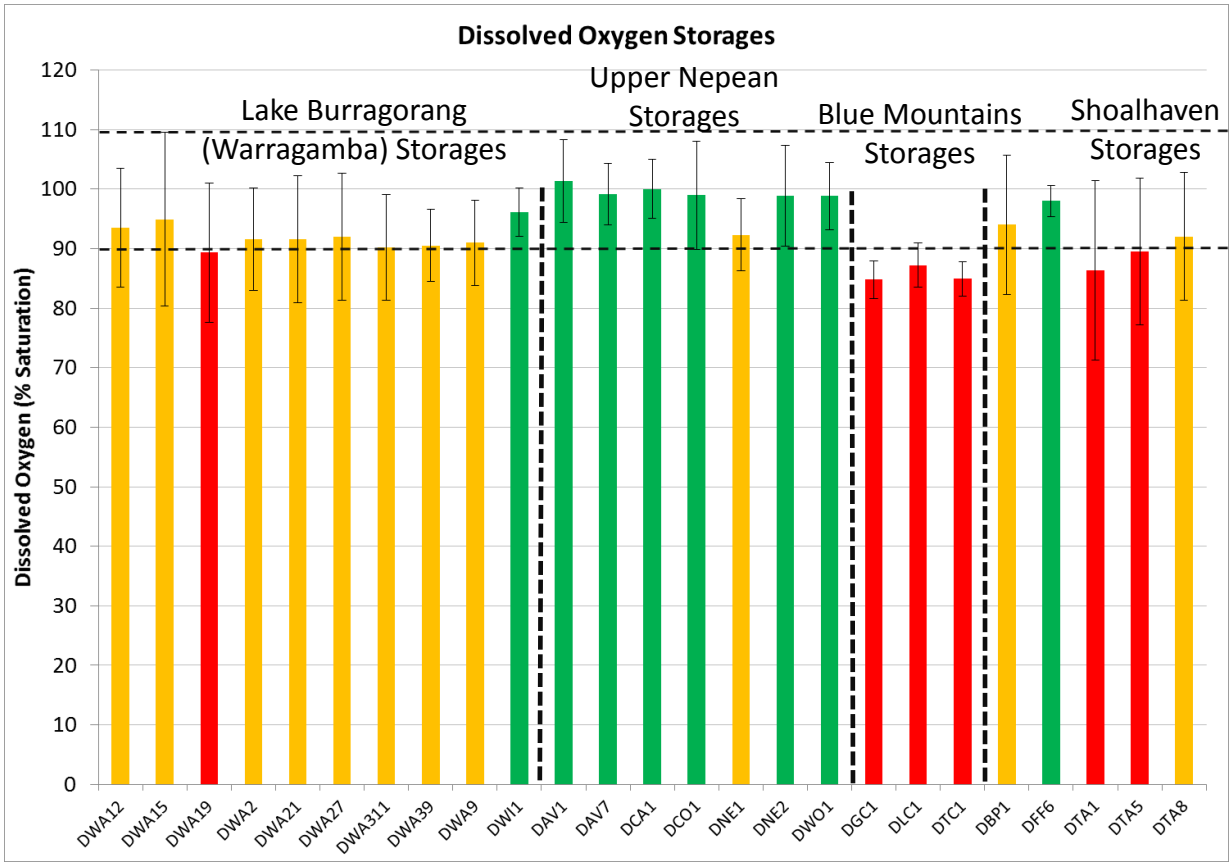
E706
E822
E847
E860
E861
E890
E891

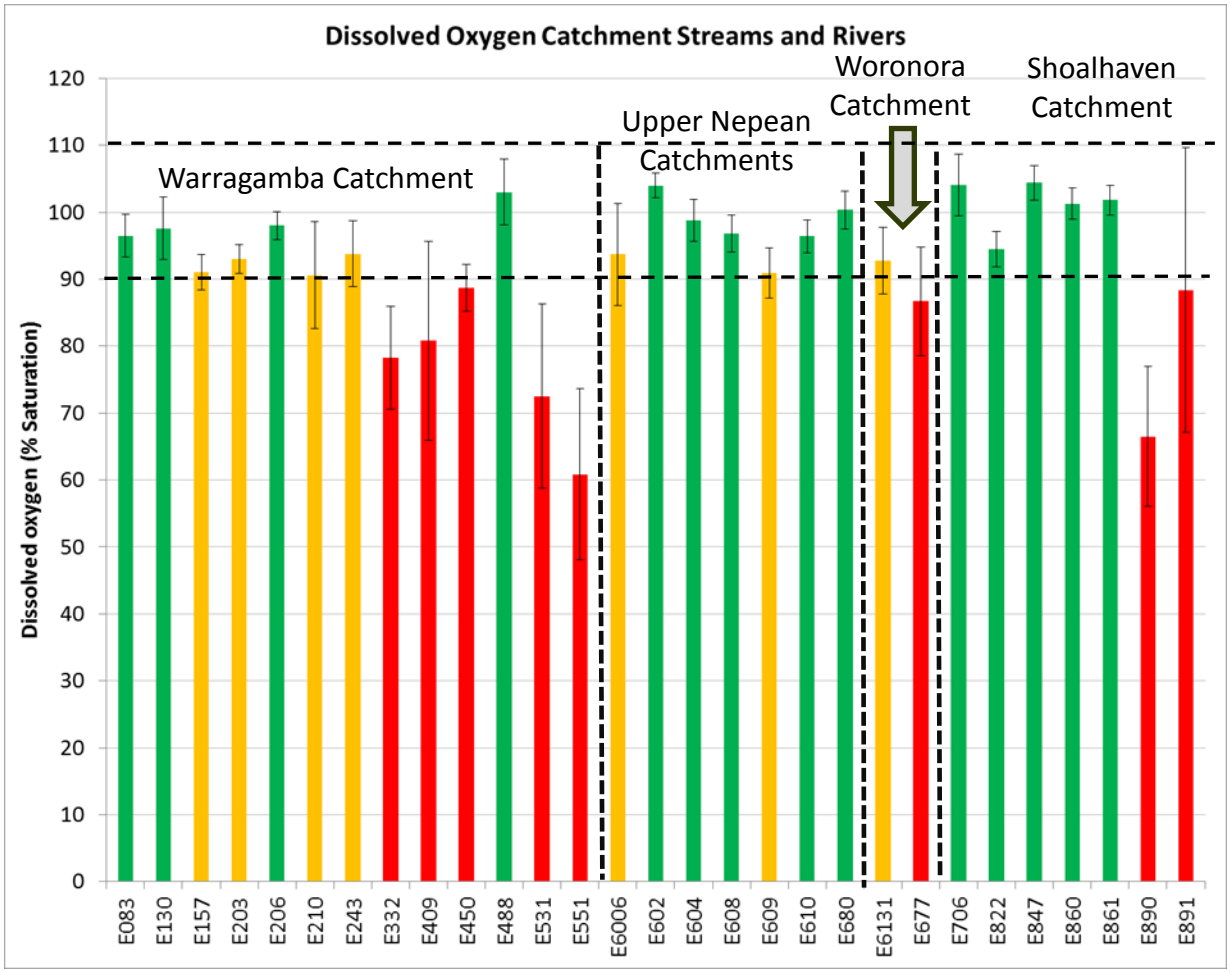

pH Storages
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
pH (pH units)
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA311
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8

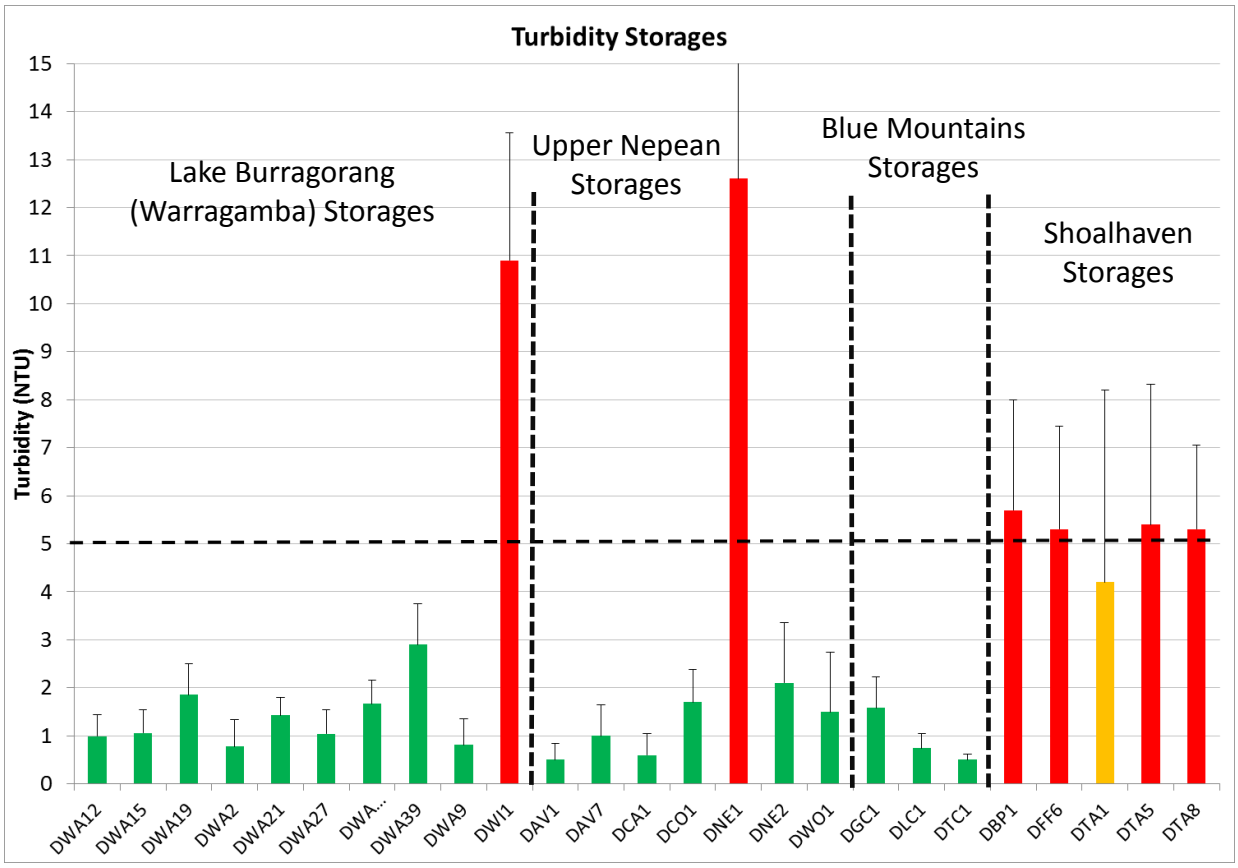

pH Catchment Streams and Rivers
pH (pH units)
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
Warragamba Catchment
Upper Nepean Catchments
Woronora Catchment
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

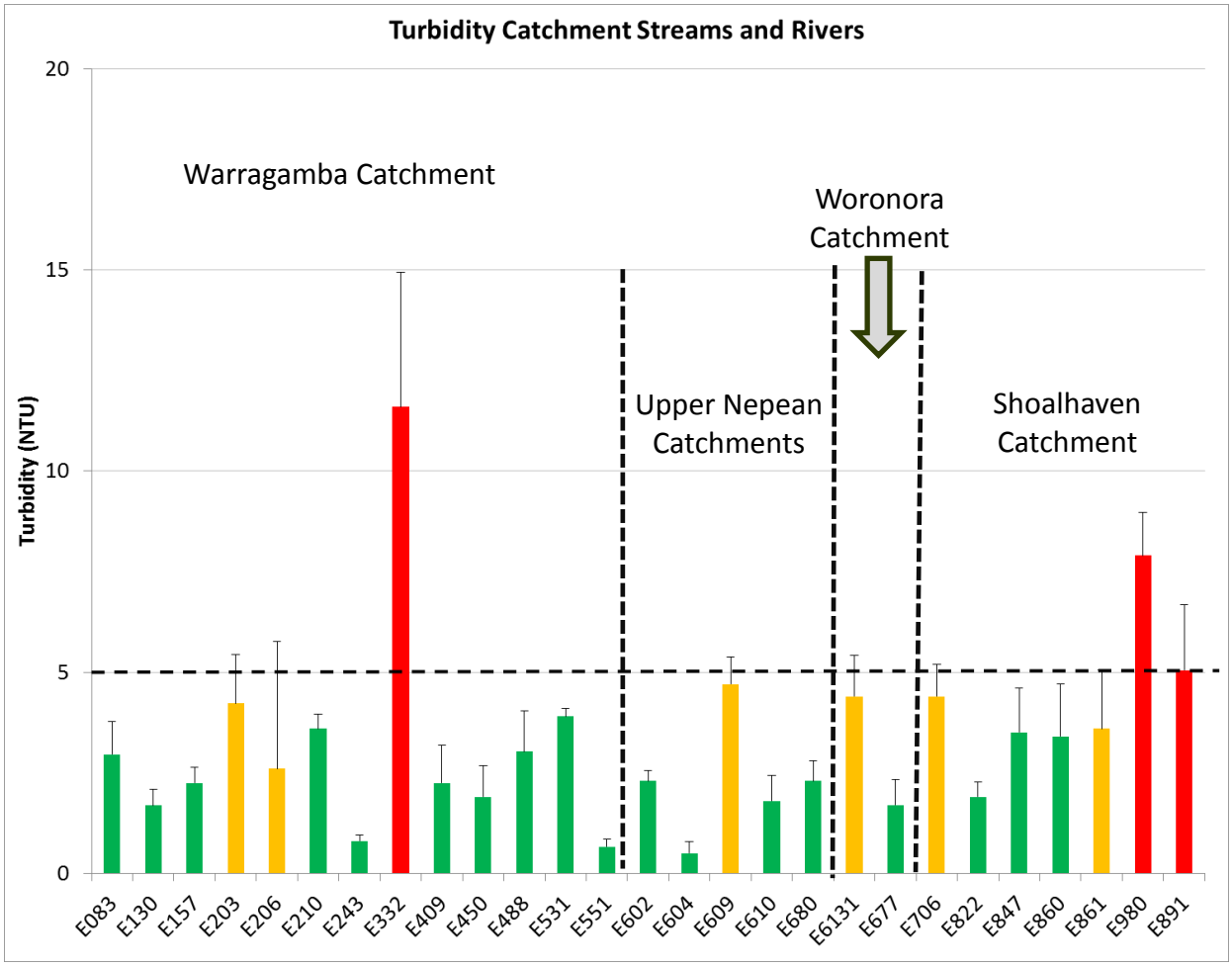

Electrical Conductivity Storages
Electrical Conductivity (mS/cm)
0.25
0.2
0.15
0.1
0.05
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA...
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8

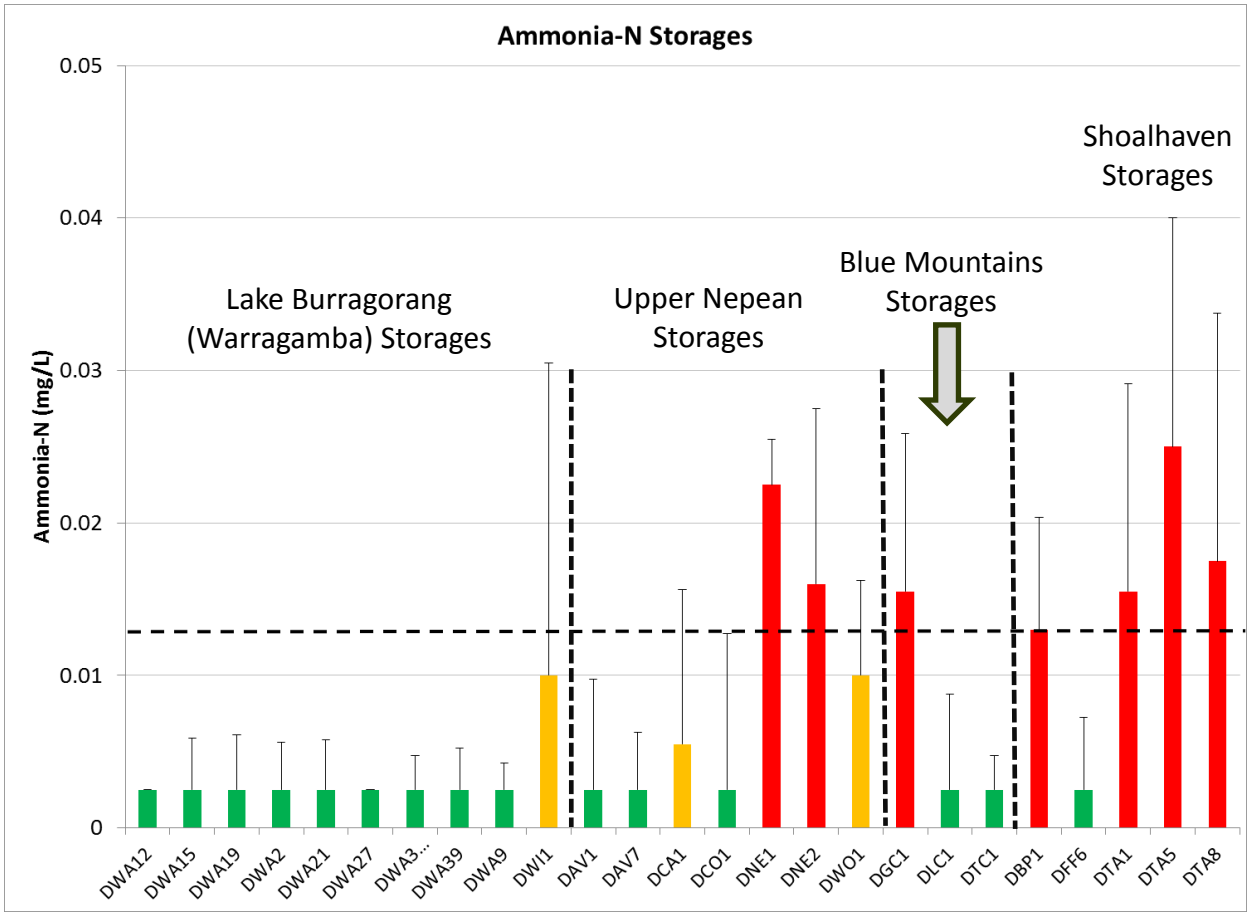

Electrical Conductivity Catchment Streams and Rivers
Electrical Conductivity (mS/cm)
1.25
1
0.75
0.5
0.25
0
Warragamba Catchment
Upper Nepean Catchments
Woronora Catchment
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

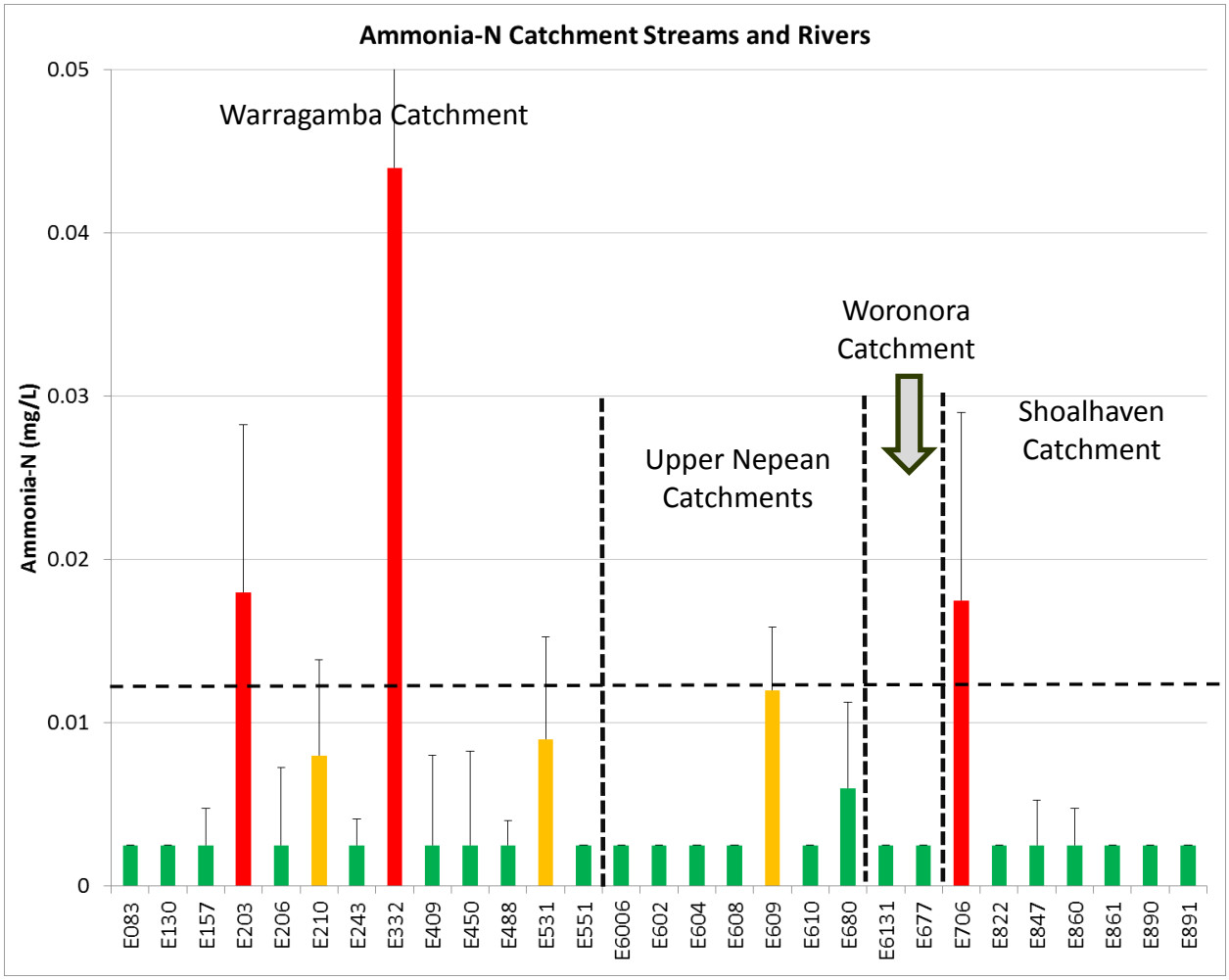

Dissolved Oxygen Storages
Dissolved Oxygen (% Saturation)
120
110
100
90
80
70
60
50
40
30
20
10
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA311
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8

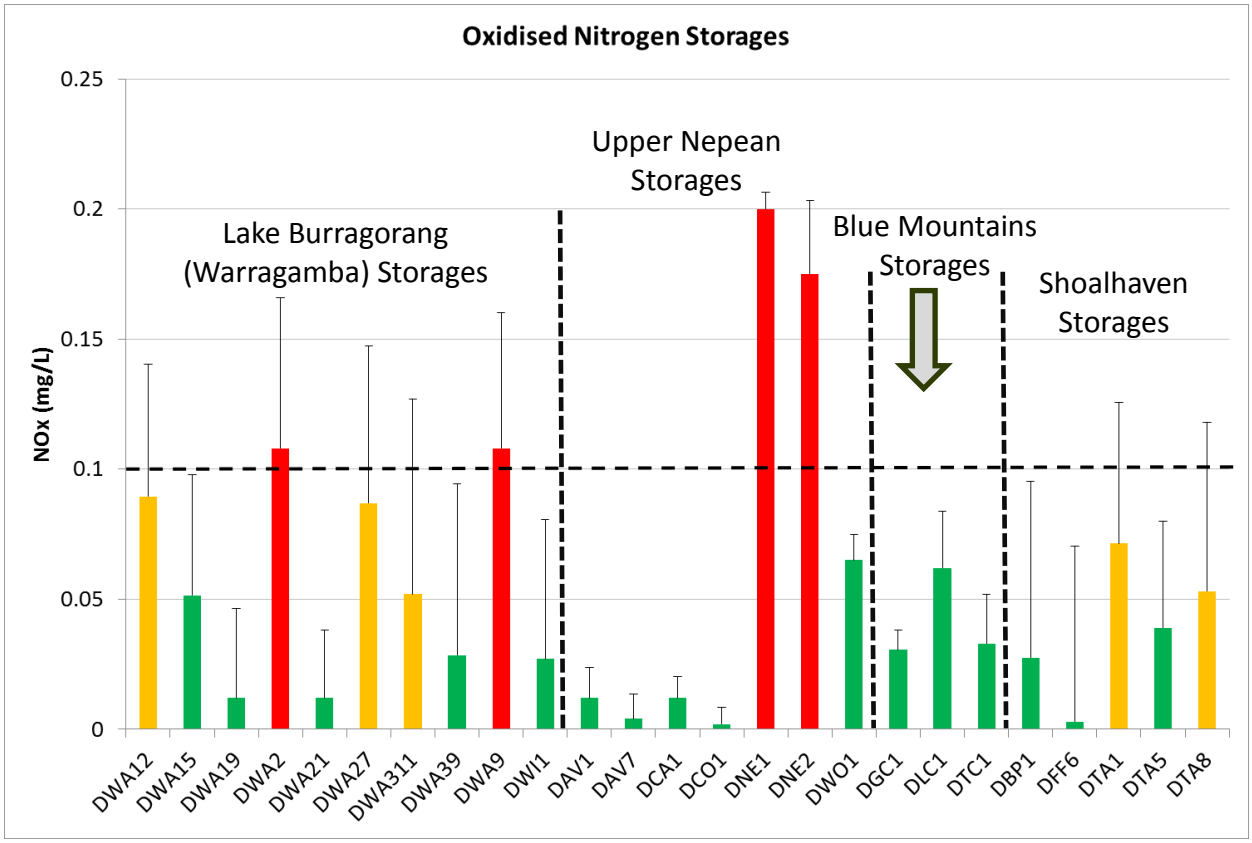

Dissolved Oxygen Catchment Streams and Rivers
Dissolved oxygen (% Saturation)
120
110
100
90
80
70
60
50
40
30
20
10
0
Warragamba Catchment
Upper Nepean Catchments
Woronora Catchment
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

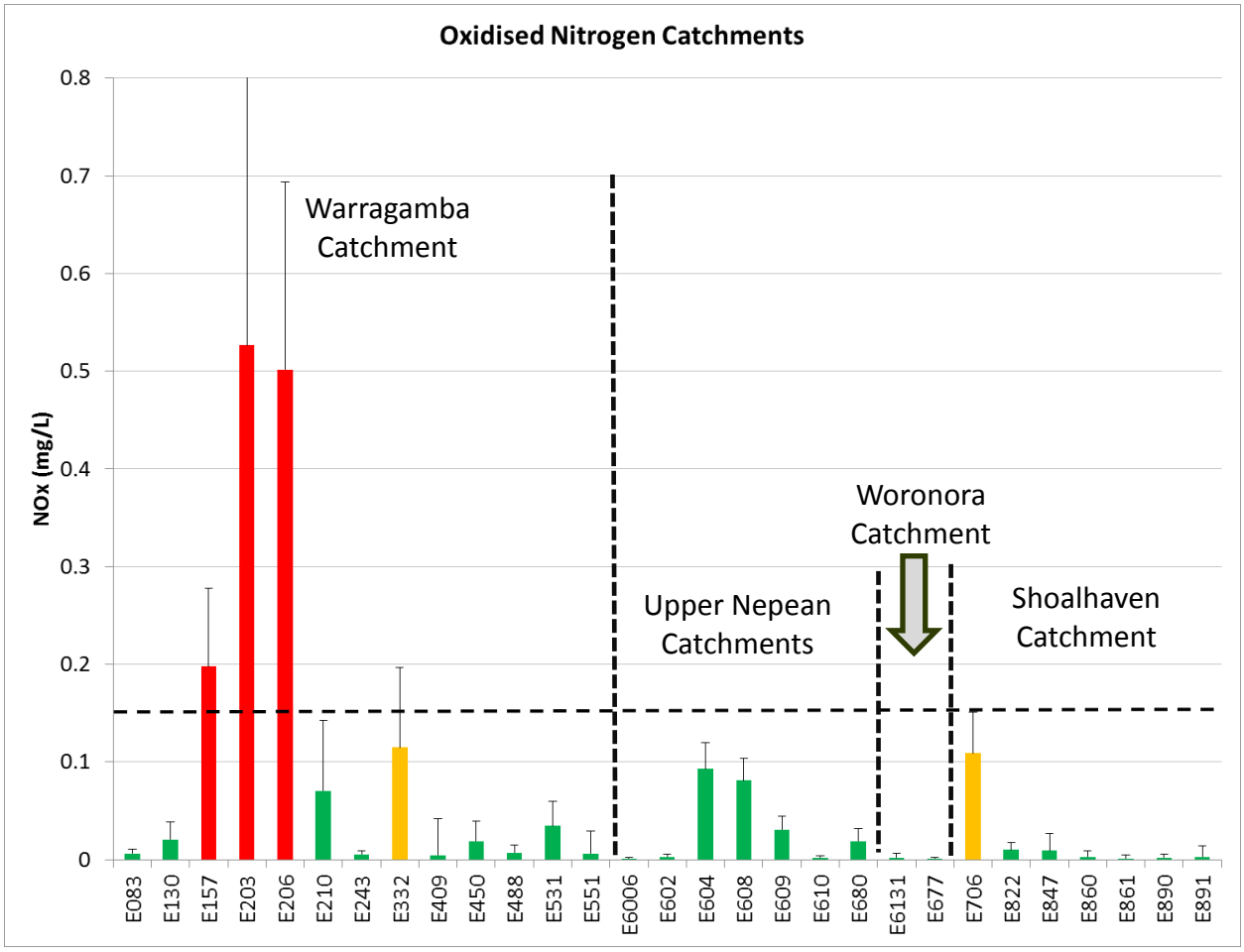

Turbidity Storages
Turbidity (NTU)
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA...
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8

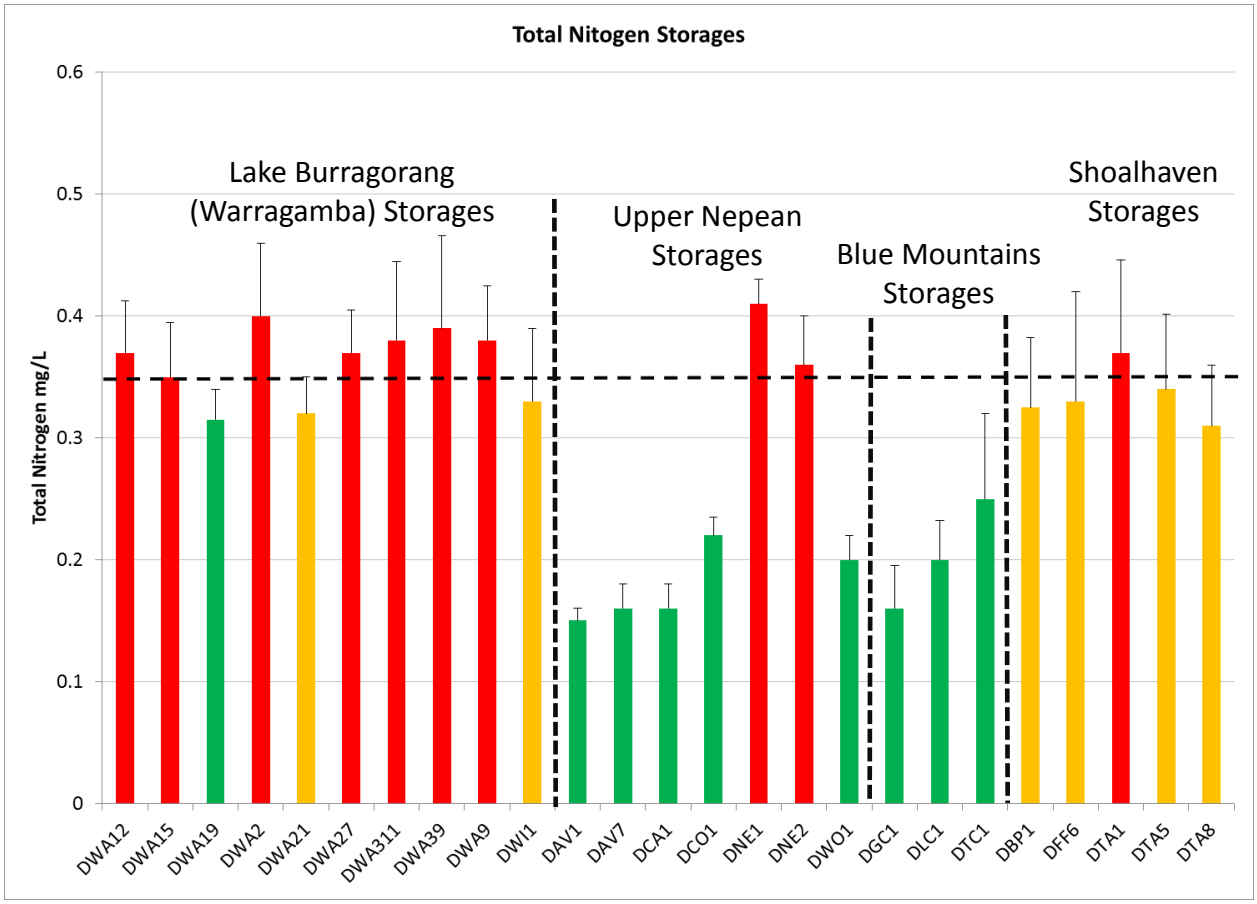

Turbidity Catchment Streams and Rivers
Turbidity (NTU)
20
15
10
5
0
Warragamba Catchment
Woronora Catchment
Upper Nepean Catchments
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E602
E604
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E980
E891

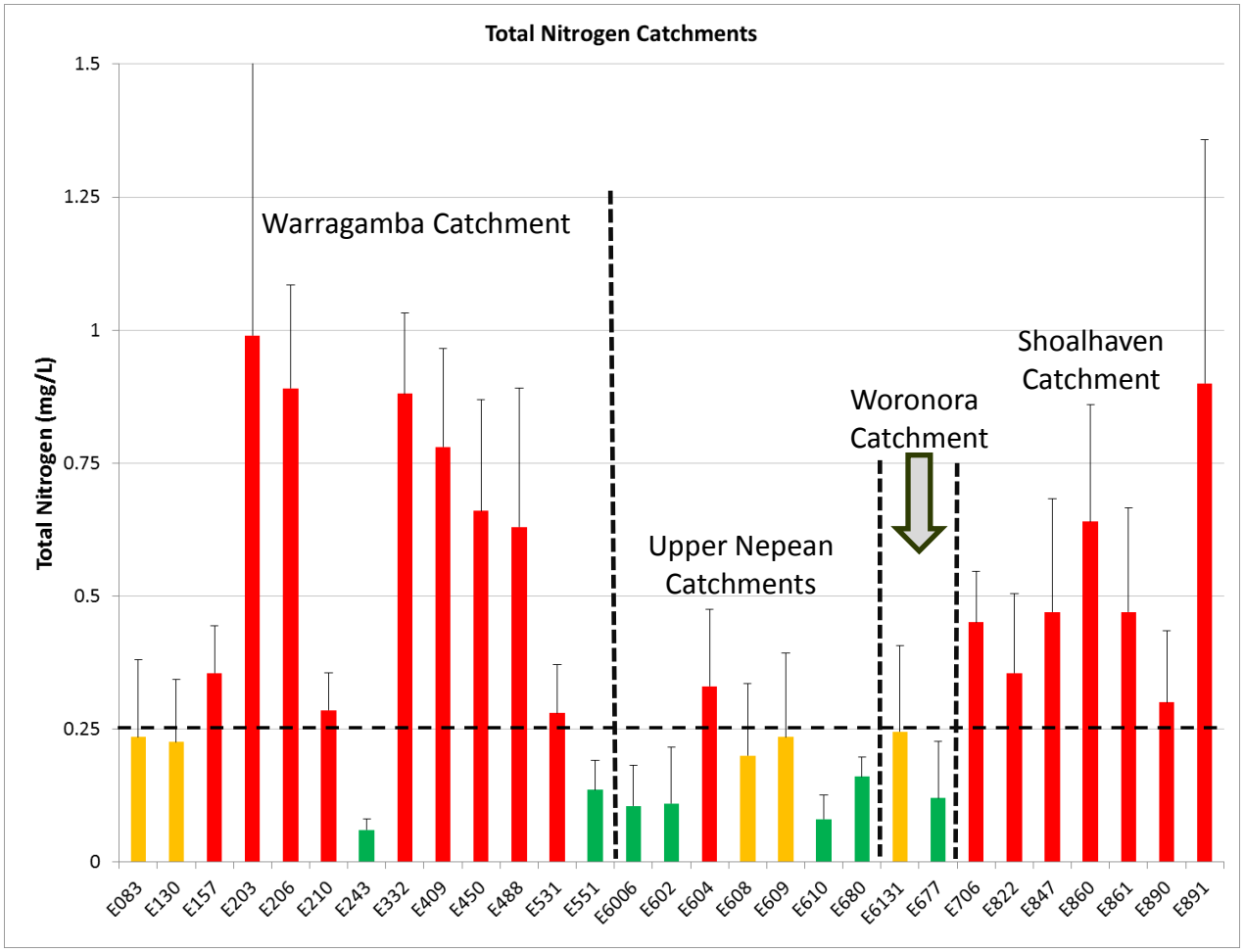

Ammonia-N Storages
Ammonia-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA3...
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8

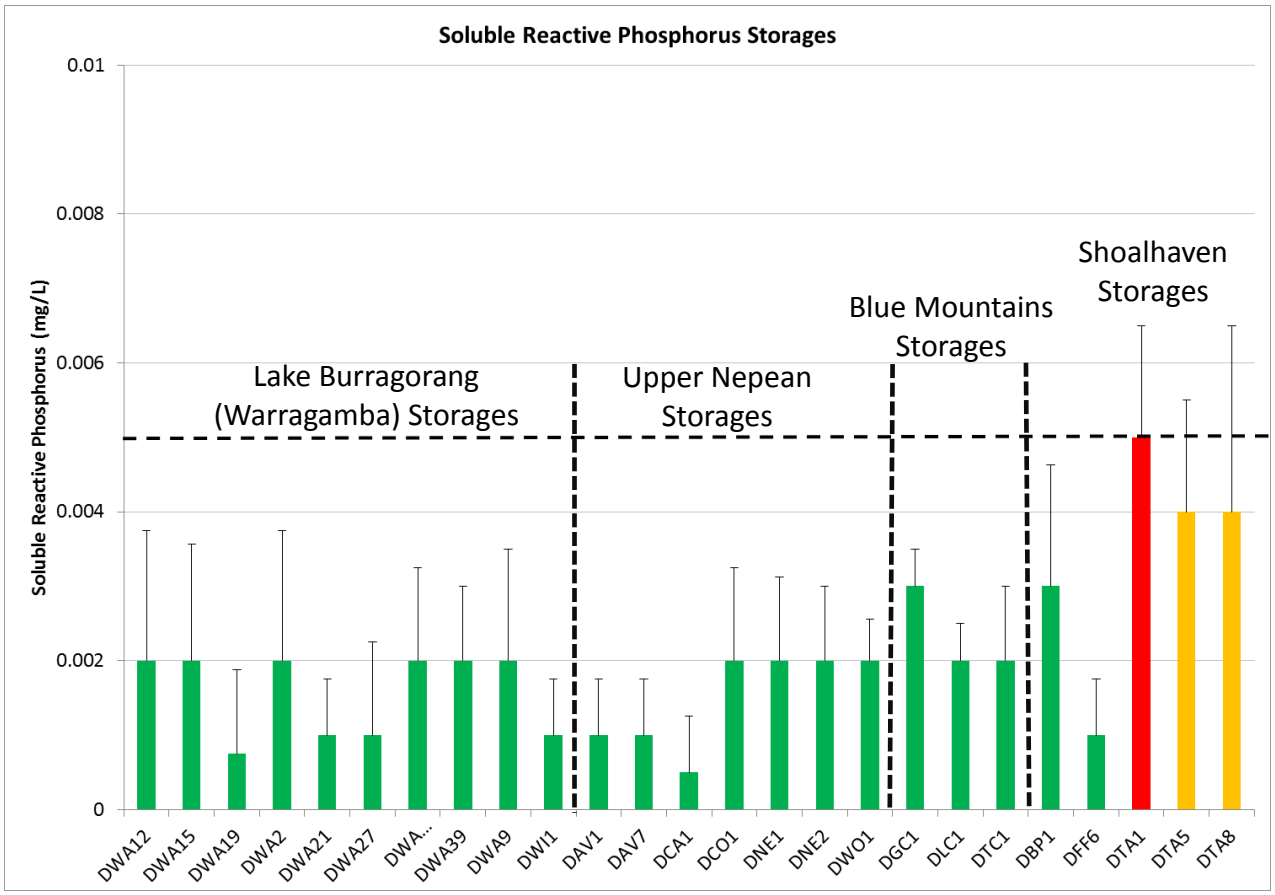

Ammonia-N Catchment Streams and Rivers
Ammonia-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0
Warragamba Catchment
Upper Nepean Catchments
Woronora Catchment
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

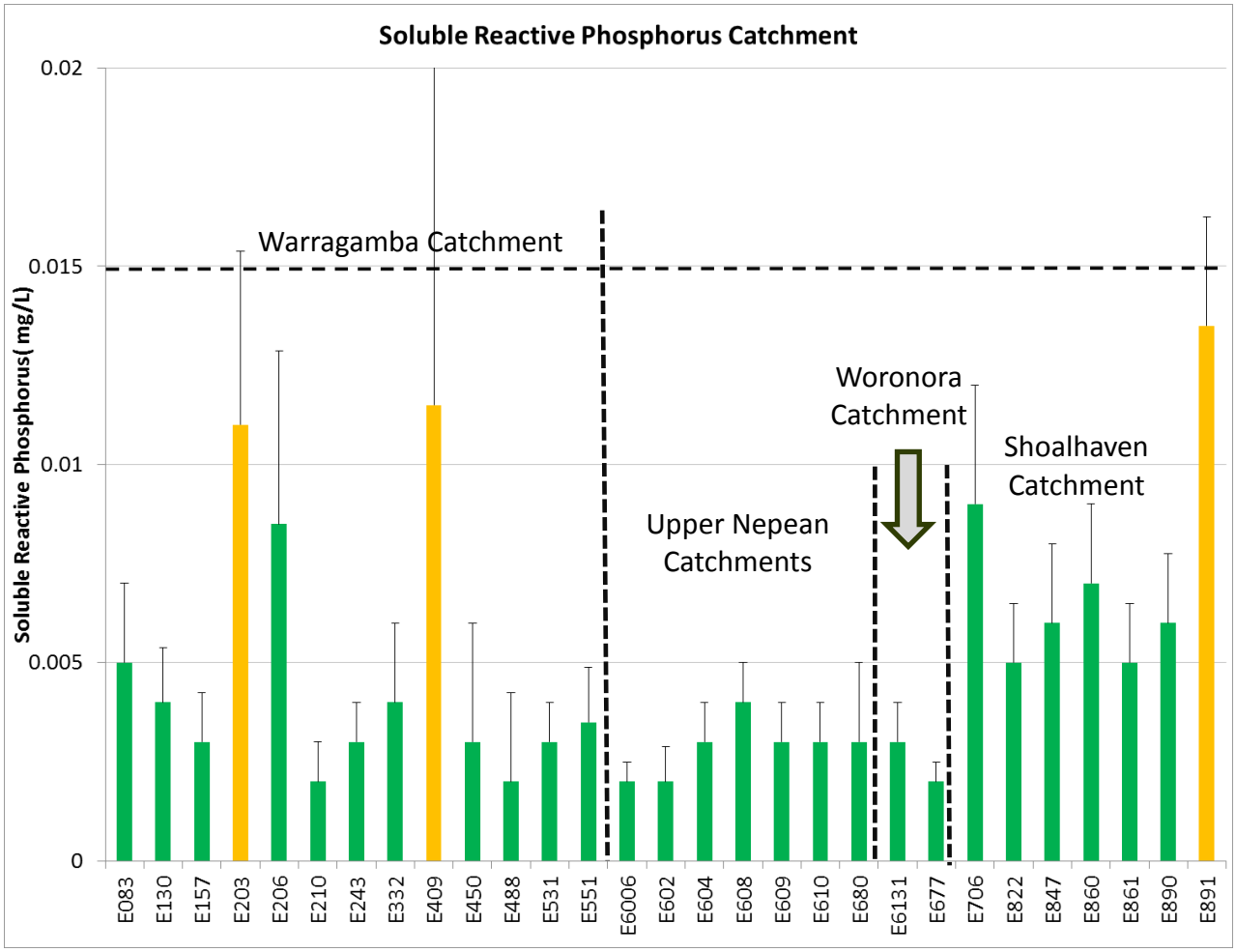

Oxidised Nitrogen Storages
NOx (mg/L)
0.25
0.2
0.15
0.1
0.05
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA311
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8

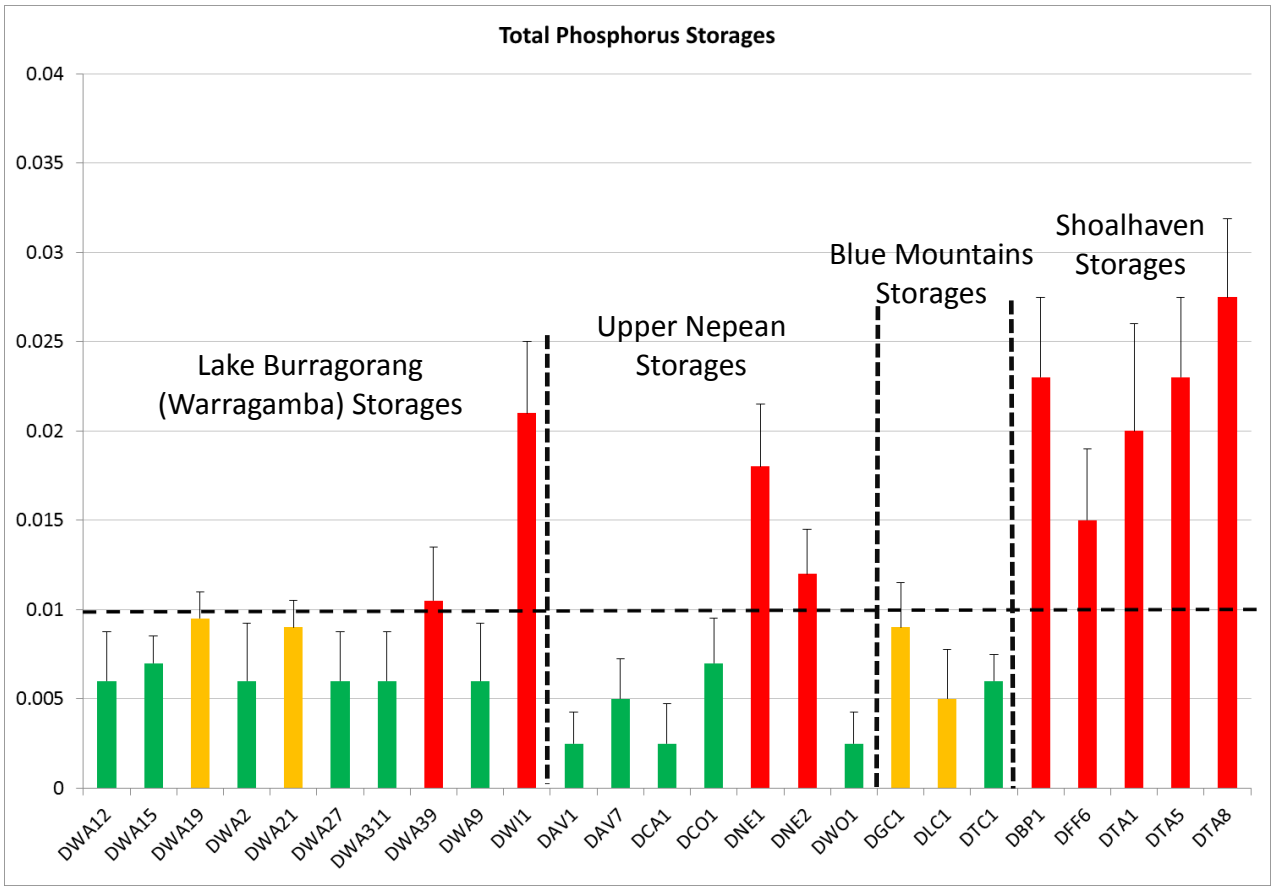

Oxidised Nitrogen Catchments
NOx (mg/L)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Warragamba Catchment
Upper Nepean Catchments
Woronora Catchment
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

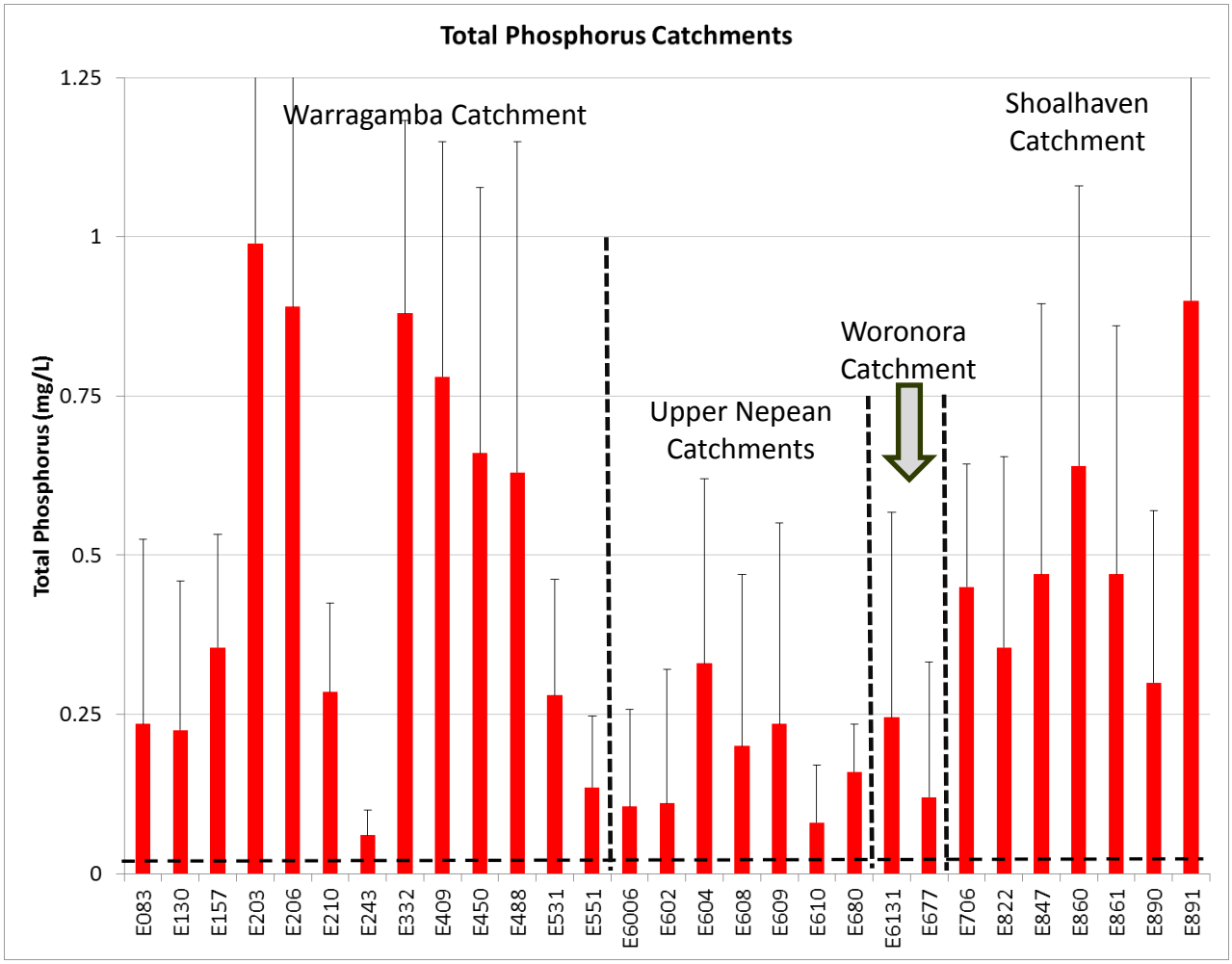

Total Nitogen Storages
Total Nitrogen mg/L
0.6
0.5
0.4
0.3
0.2
0.1
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA311
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8

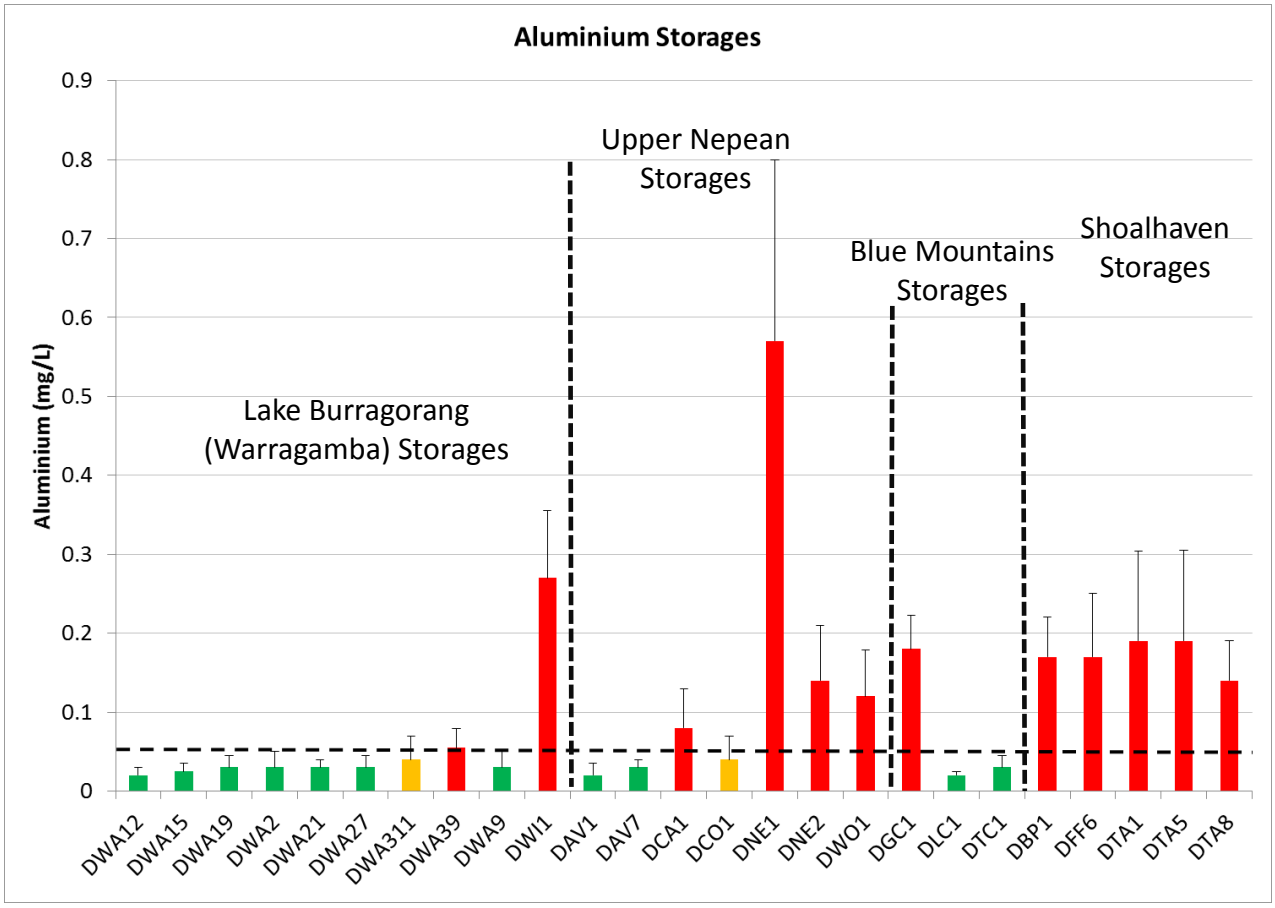

Total Nitrogen Catchments
Total Nitrogen (mg/L)
1.5
1.25
1
0.75
0.5
0.25
0
Warragamba Catchment
Upper Nepean Catchments
Woronora Catchment
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

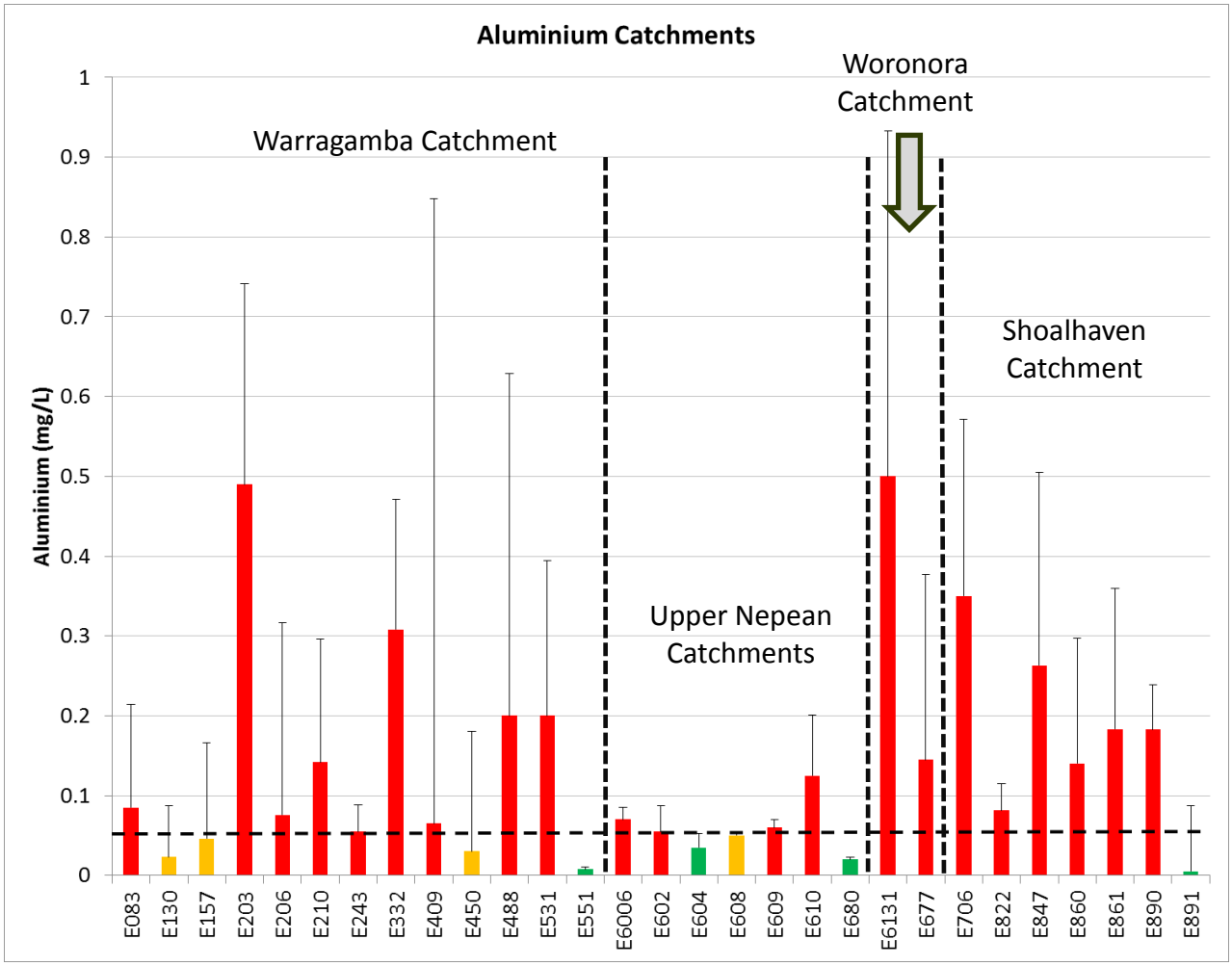

Soluble Reactive Phosphorus Storages
Soluble Reactive Phosphorus (mg/L)
0.01
0.008
0.006
0.004
0.002
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA...
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8

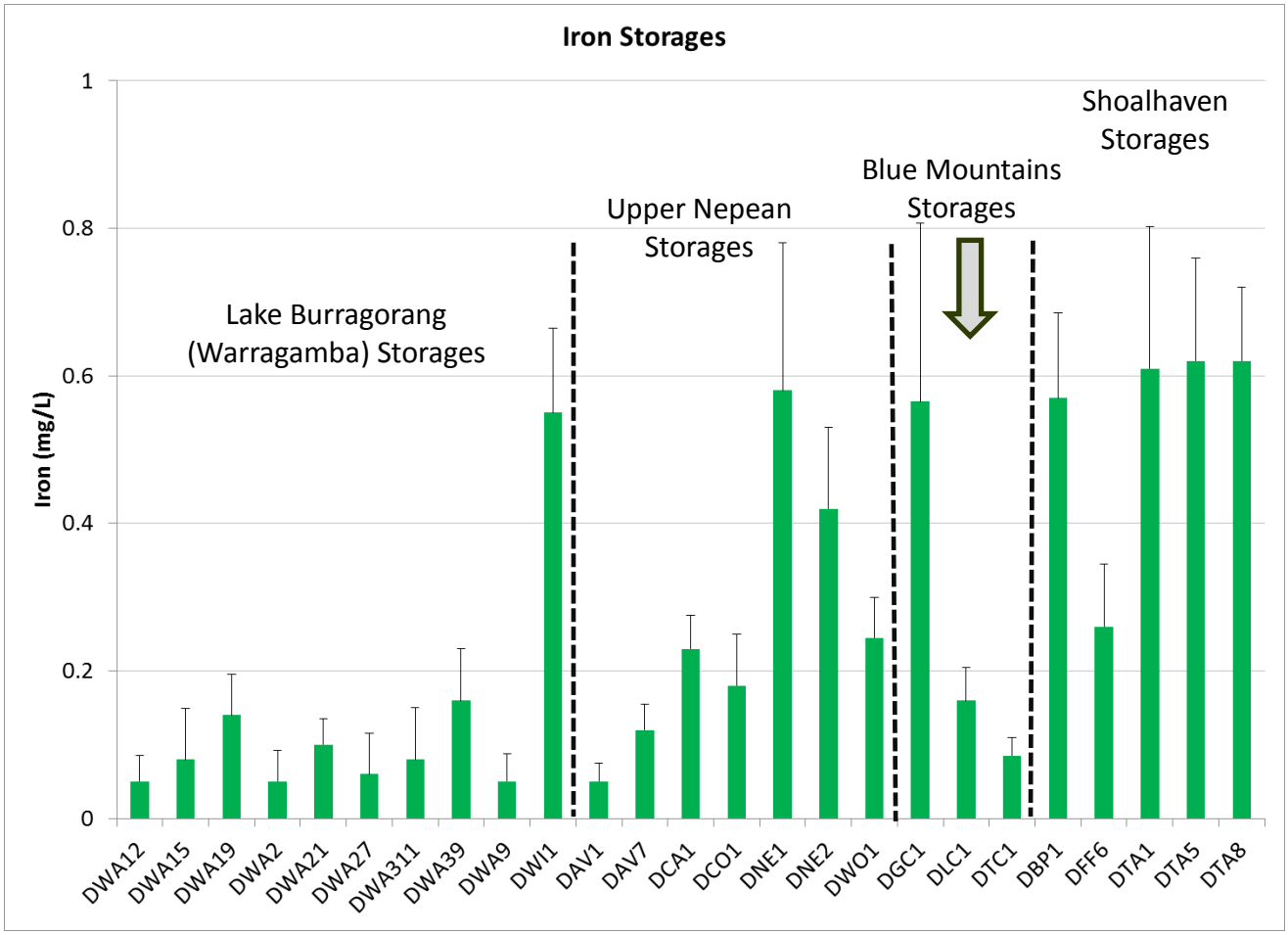

Soluble Reactive Phosphorus Catchment
Soluble Reactive Phosphorus(mg/L)
0.02
0.015
0.01
0.005
0
Warragamba Catchment
Upper Nepean Catchments
Woronora Catchment
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

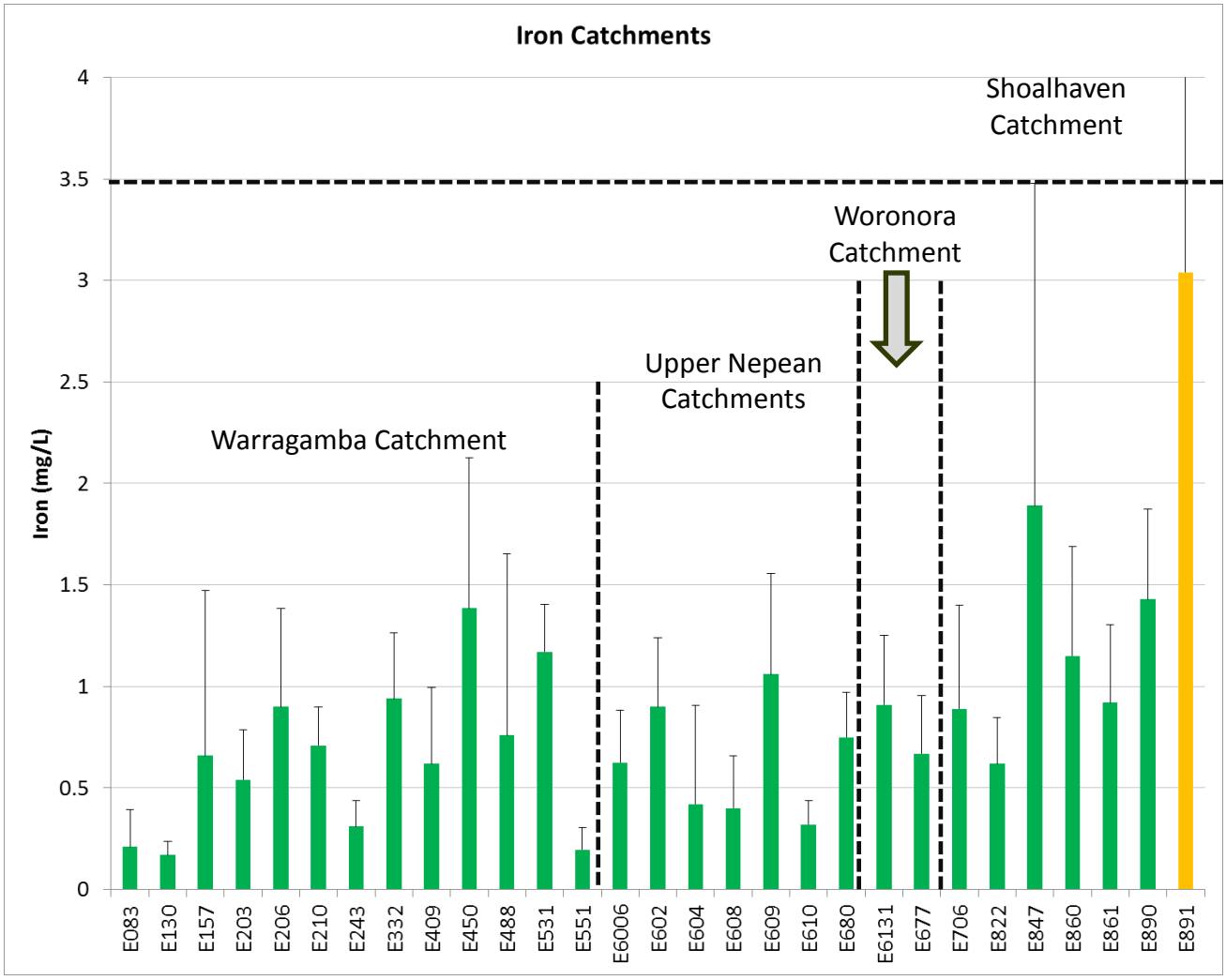

Total Phosphorus Storages
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA311
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8


Total Phosphorus Catchments
Total Phosphorus (mg/L)
1.25
1
0.75
0.5
0.25
0
Warragamba Catchment
Upper Nepean Catchments
Woronora Catchment
Shoalhaven Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

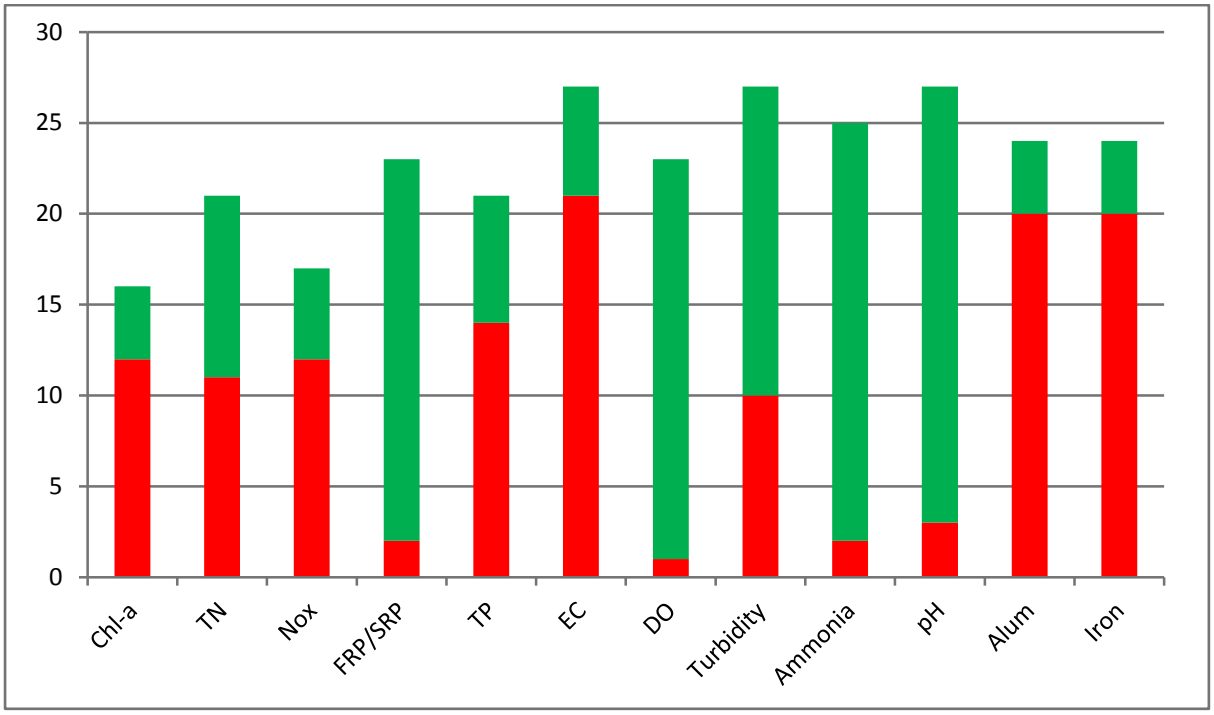

Aluminium Storages
Aluminium (mg/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA311
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8


Aluminium Catchments
Woronora Catchment
Warragamba Catchment
Shoalhaven Catchment
Upper Nepean Catchments
Aluminium (mg/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

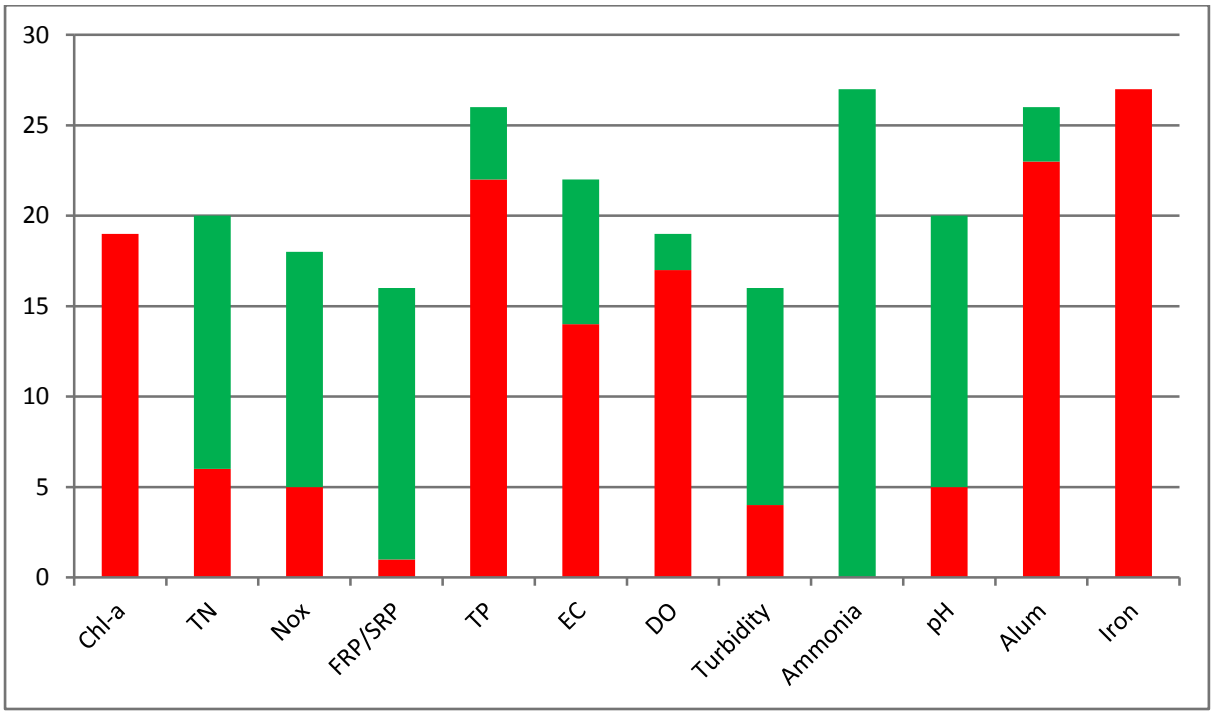

Iron Storages
Iron (mg/L)
1
0.8
0.6
0.4
0.2
0
Lake Burragorang (Warragamba) Storages
Upper Nepean Storages
Blue Mountains Storages
Shoalhaven Storages
DWA12
DWA15
DWA19
DWA2
DWA21
DWA27
DWA311
DWA39
DWA9
DWI1
DAV1
DAV7
DCA1
DCO1
DNE1
DNE2
DWO1
DGC1
DLC1
DTC1
DBP1
DFF6
DTA1
DTA5
DTA8


Iron Catchments
Iron (mg/L)
4
3.5
3
2.5
2
1.5
1
0.5
0
Shoalhaven Catchment
Woronora Catchment
Upper Nepean Catchments
Warragamba Catchment
E083
E130
E157
E203
E206
E210
E243
E332
E409
E450
E488
E531
E551
E6006
E602
E604
E608
E609
E610
E680
E6131
E677
E706
E822
E847
E860
E861
E890
E891

7.2 Station trends



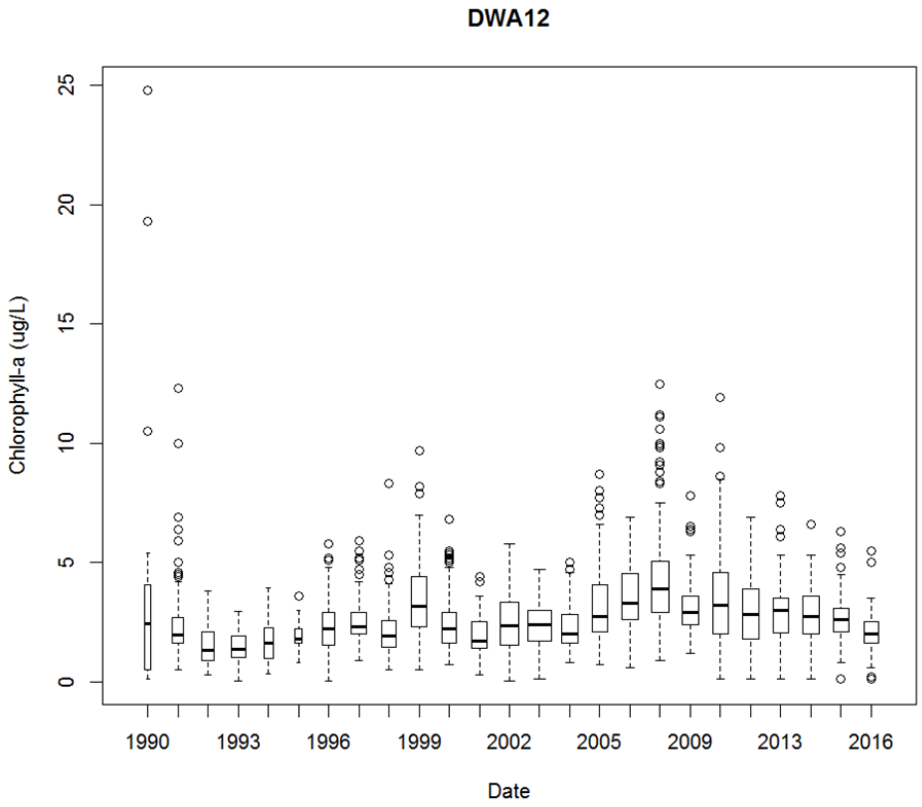
20 year trends (number of stations improving or worsening) for core WQ indicators in WNSW Storages

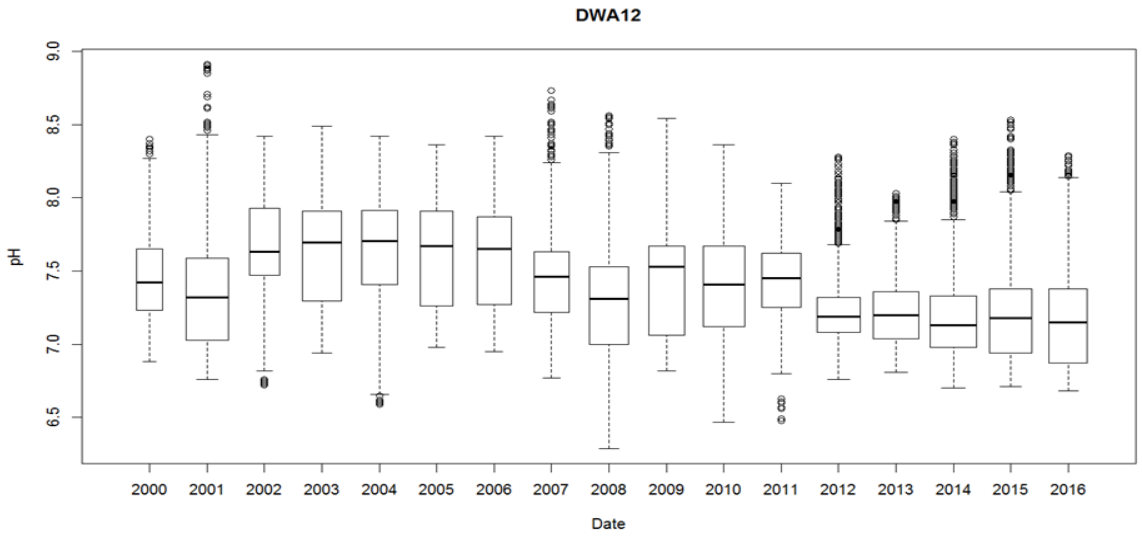


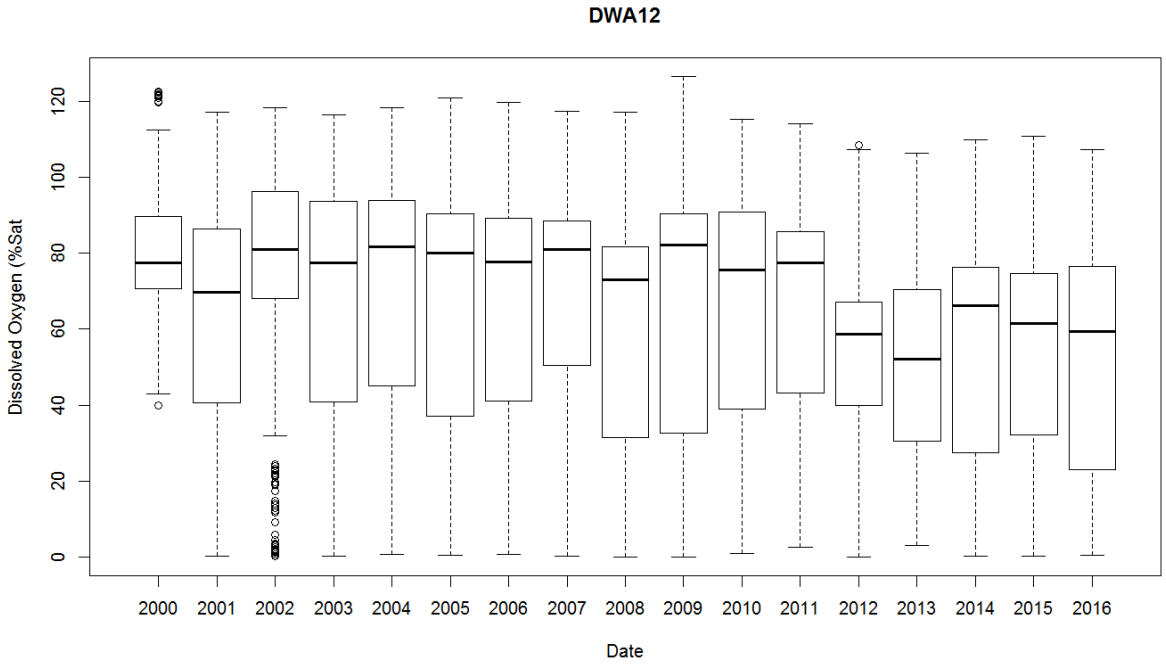
20 year trends (number of stations improving or worsening) for core WQ indicators in catchment waterways

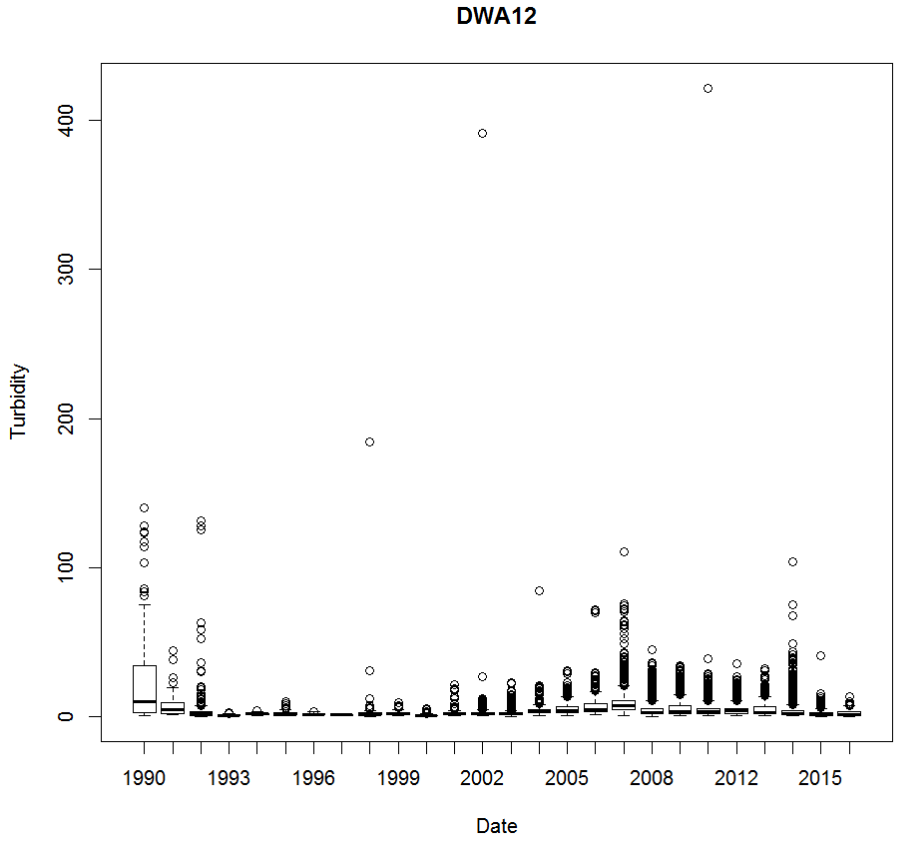
8 Water quality analyte statistical plots

8.1 Warragamba storage stations

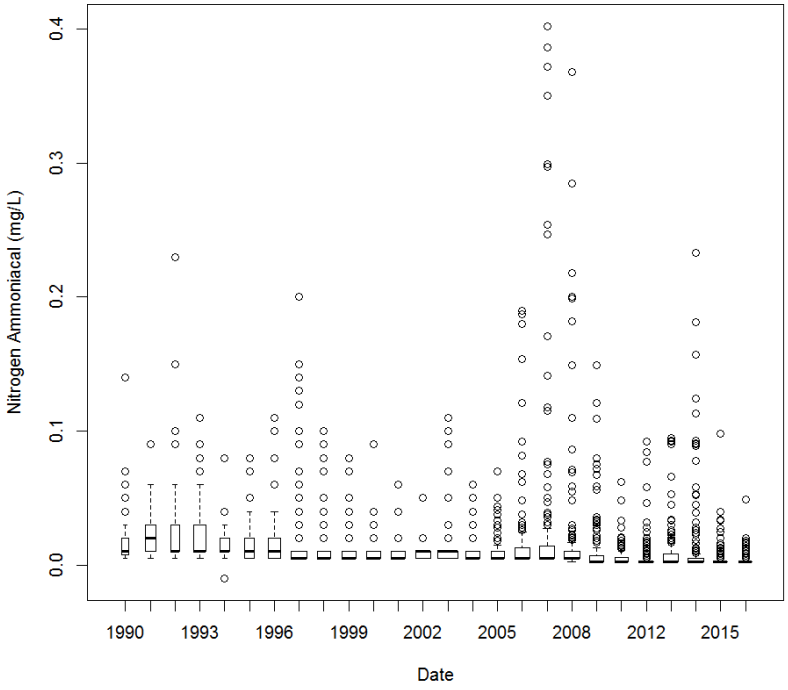




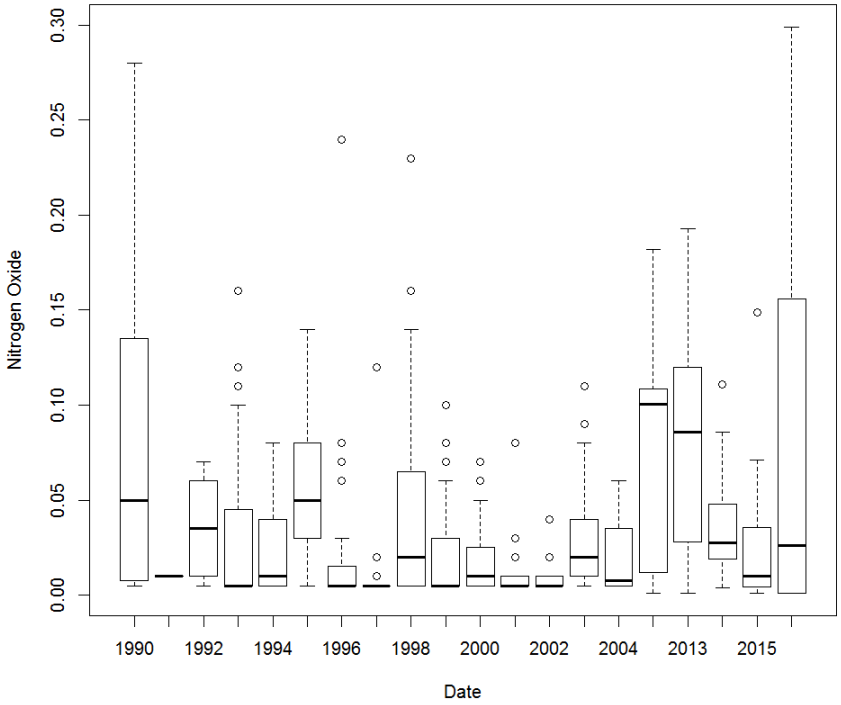

DWA12
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

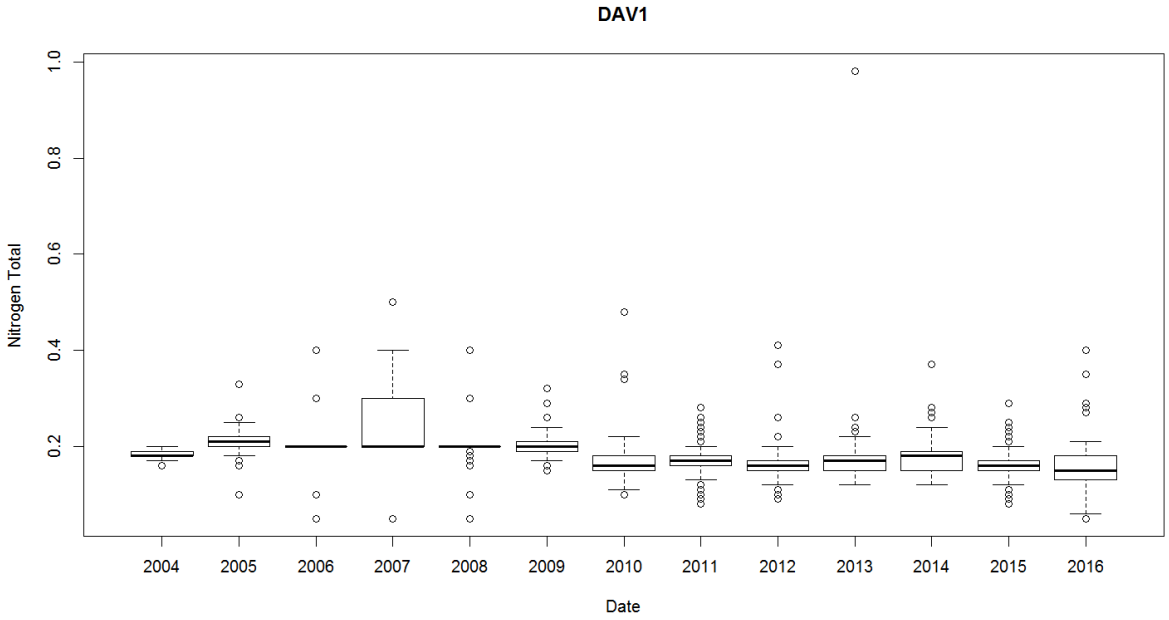

DWA12
Turbidity
0
100
200
300
400
1990
1993
1996
1999
2002
2005
2008
2012
2015
Date

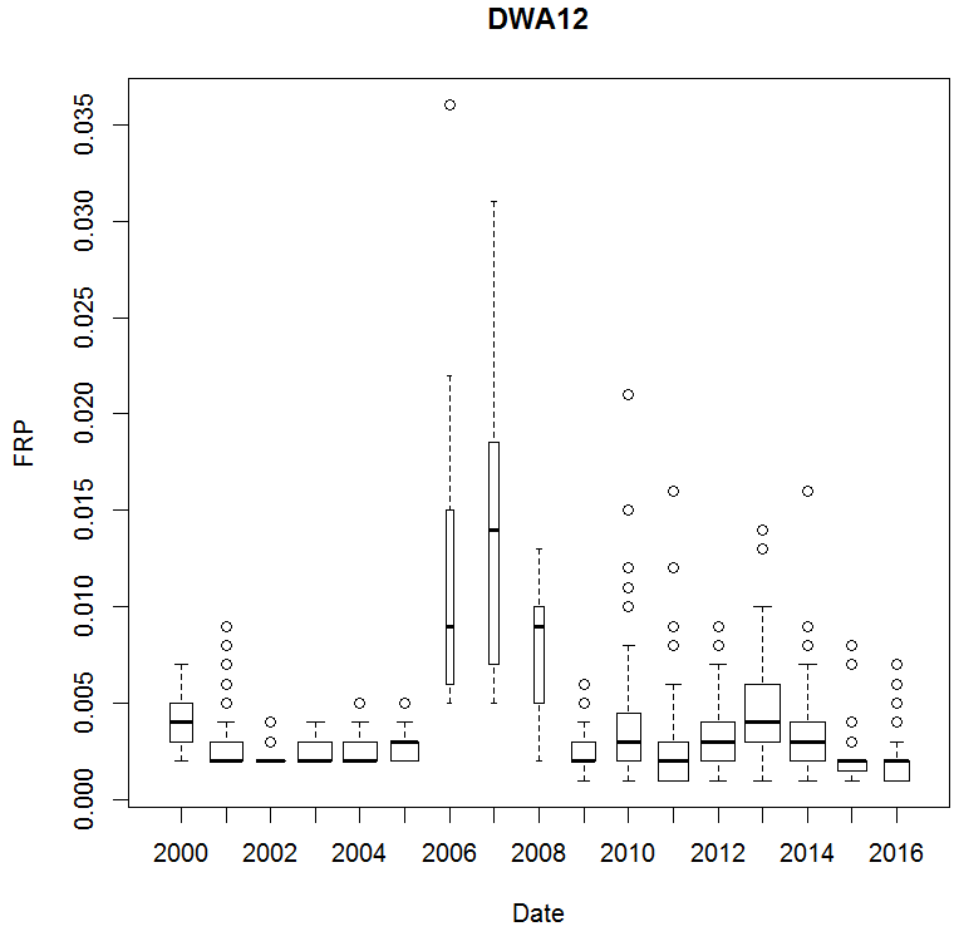
DWA12

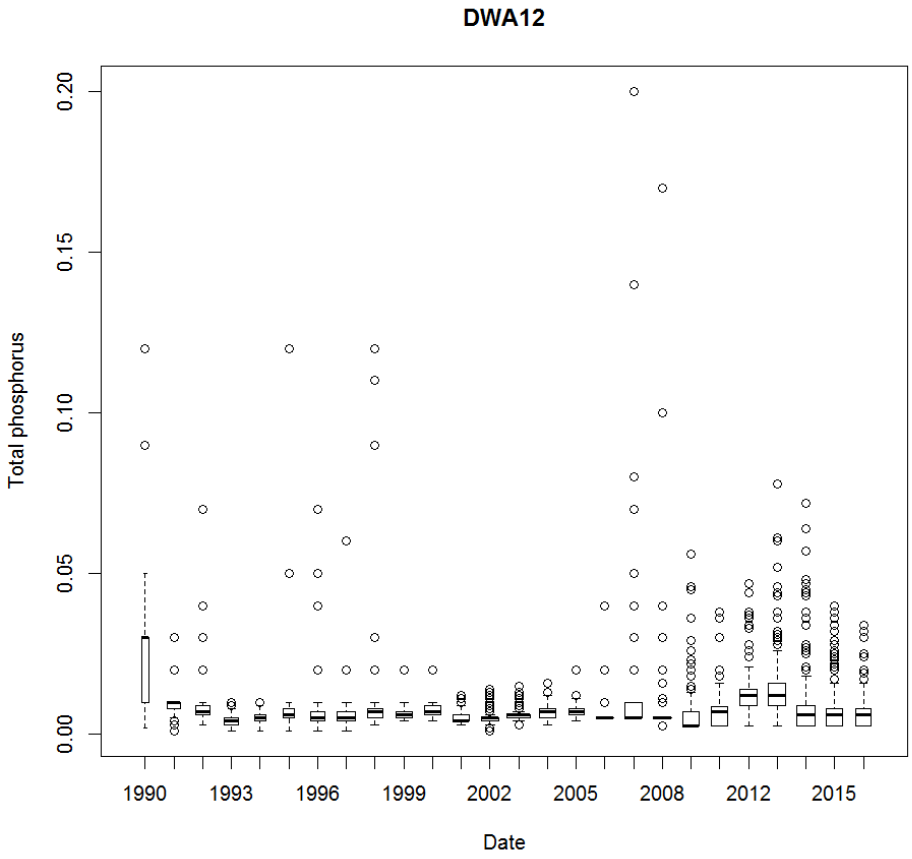

Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
1990
1993
1996
1999
2002
2005
2008
2012
2015
Date

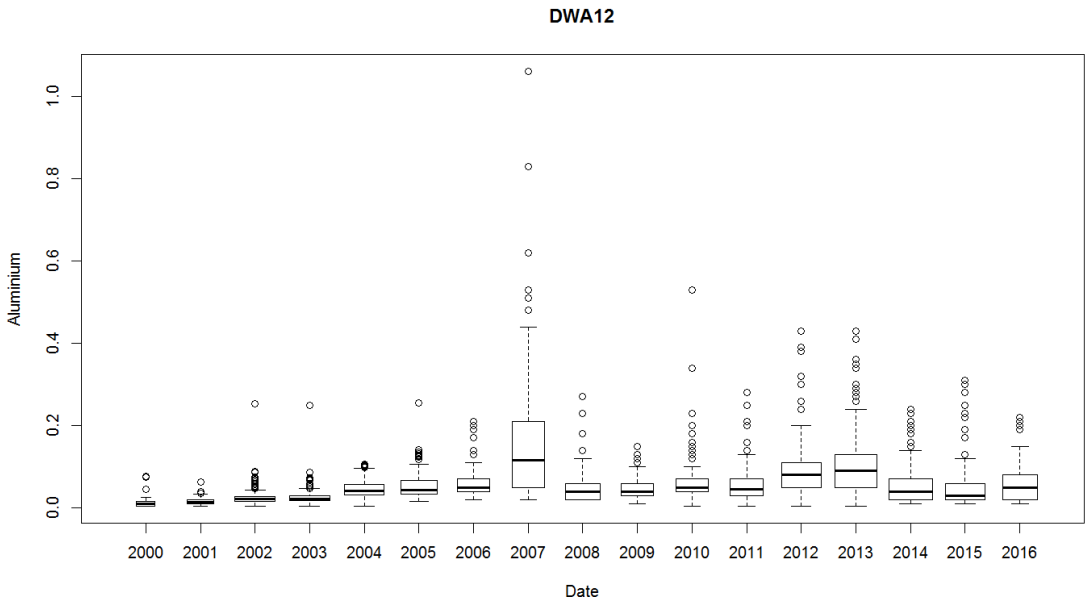
DWA21

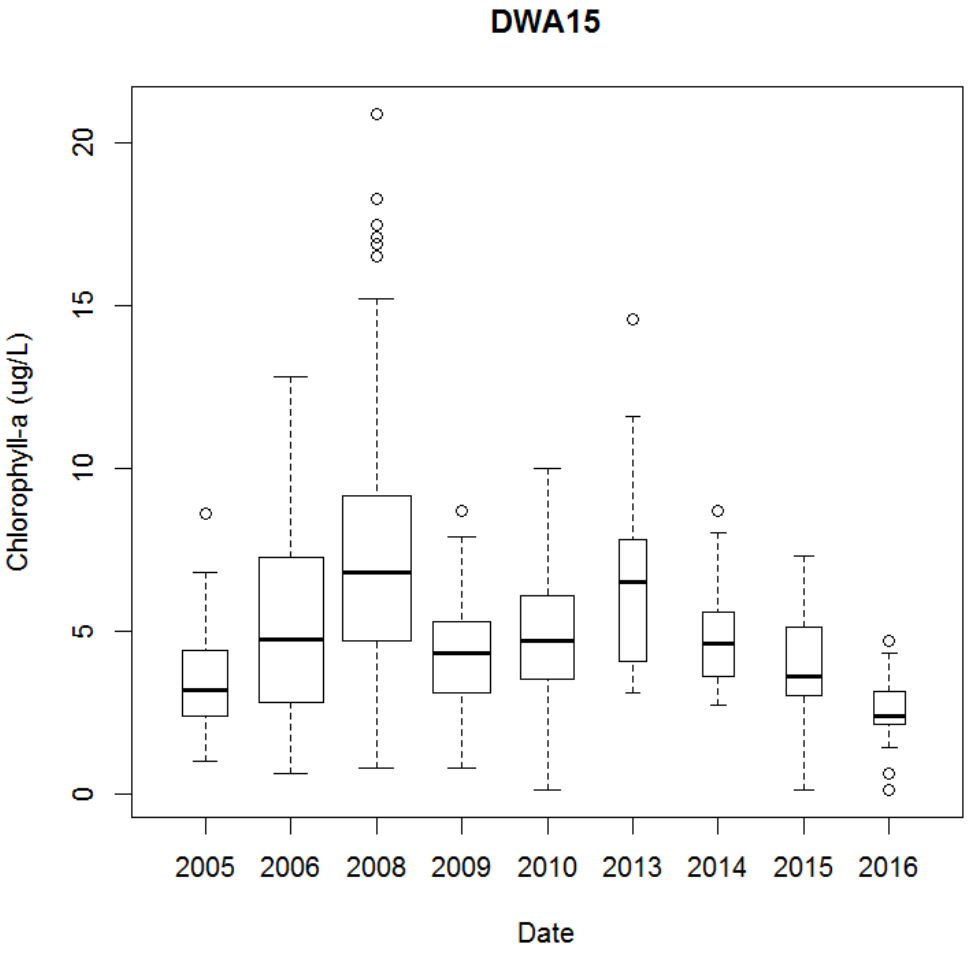

Nitrogen Oxide
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

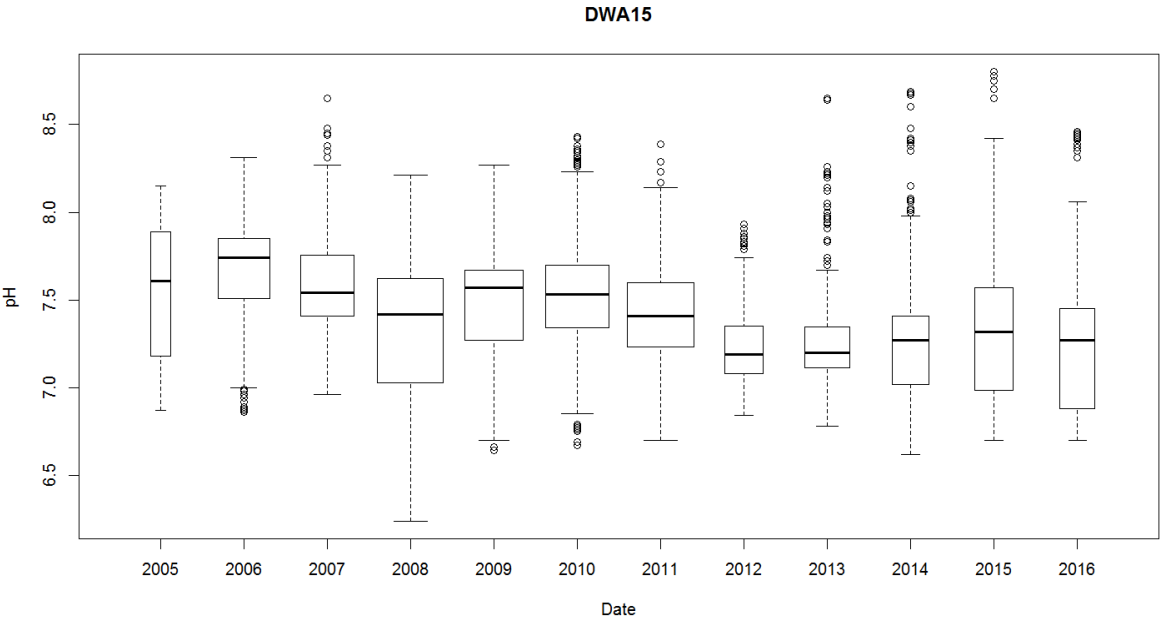

DAV1
Nitrogen Total
0.2
0.4
0.6
0.8
1.0
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

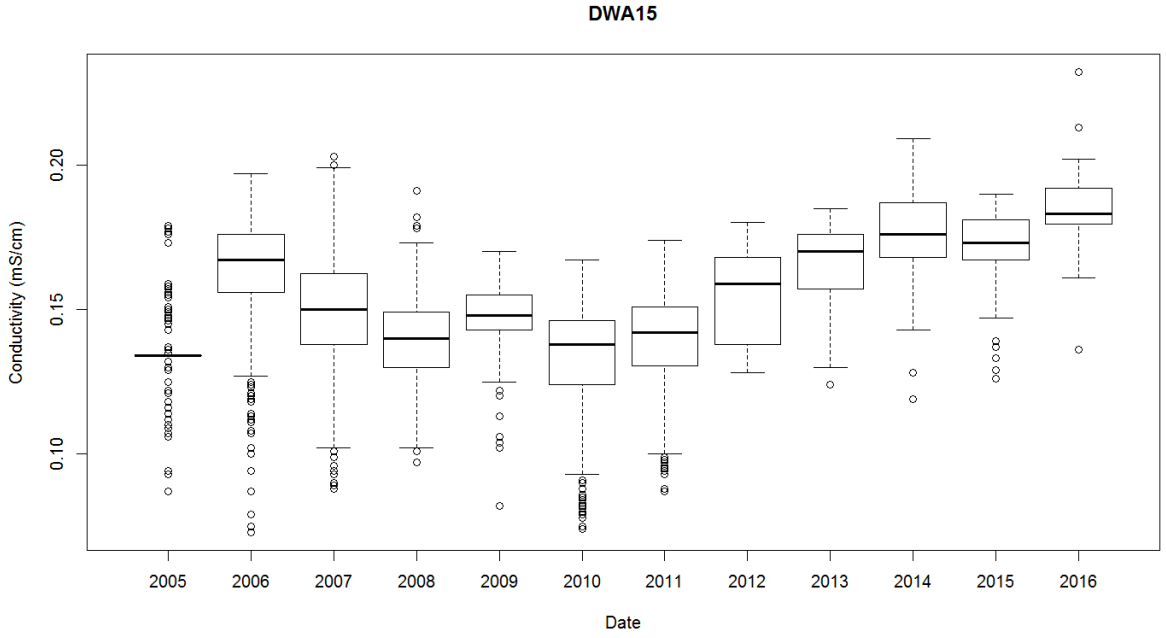

DWA12
FRP
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

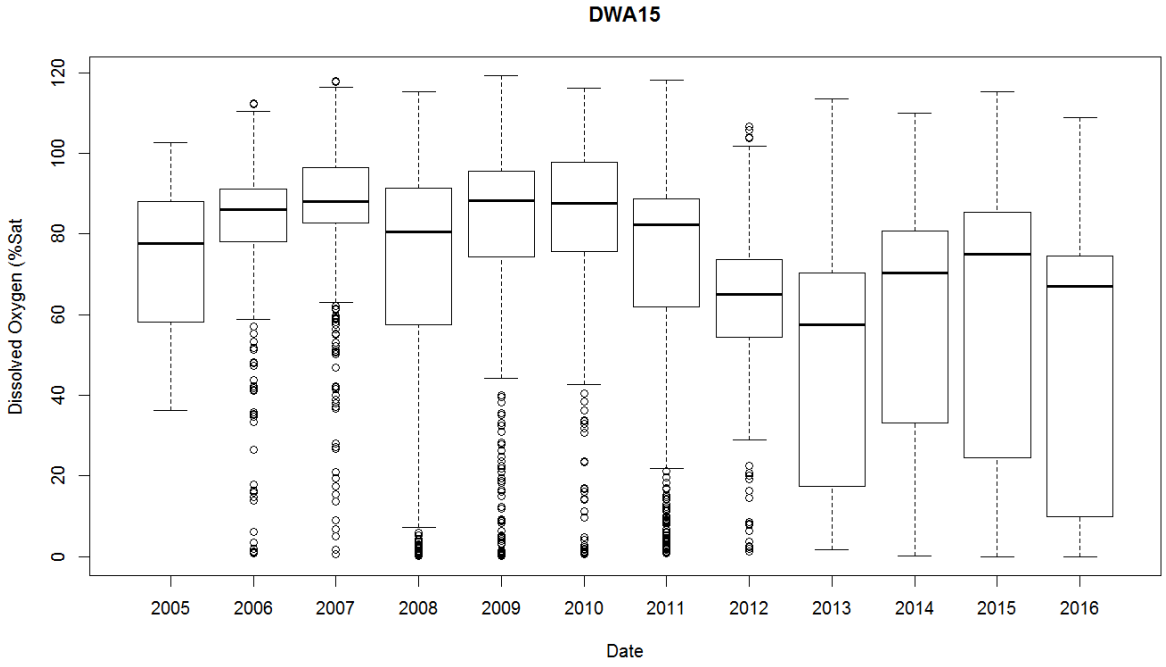

DWA12
Total phosphorus
0.00
0.05
0.10
0.15
0.20
1990
1993
1996
1999
2002
2005
2008
2012
2015
Date

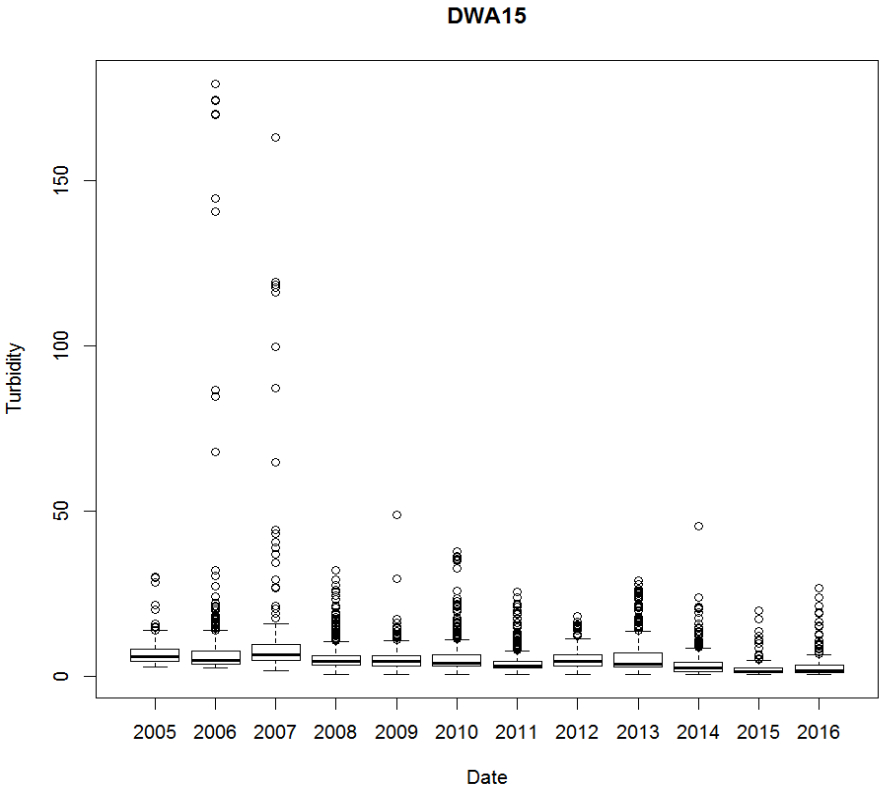

DWA12
Aluminium
0.0
0.2
0.4
0.6
0.8
1.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

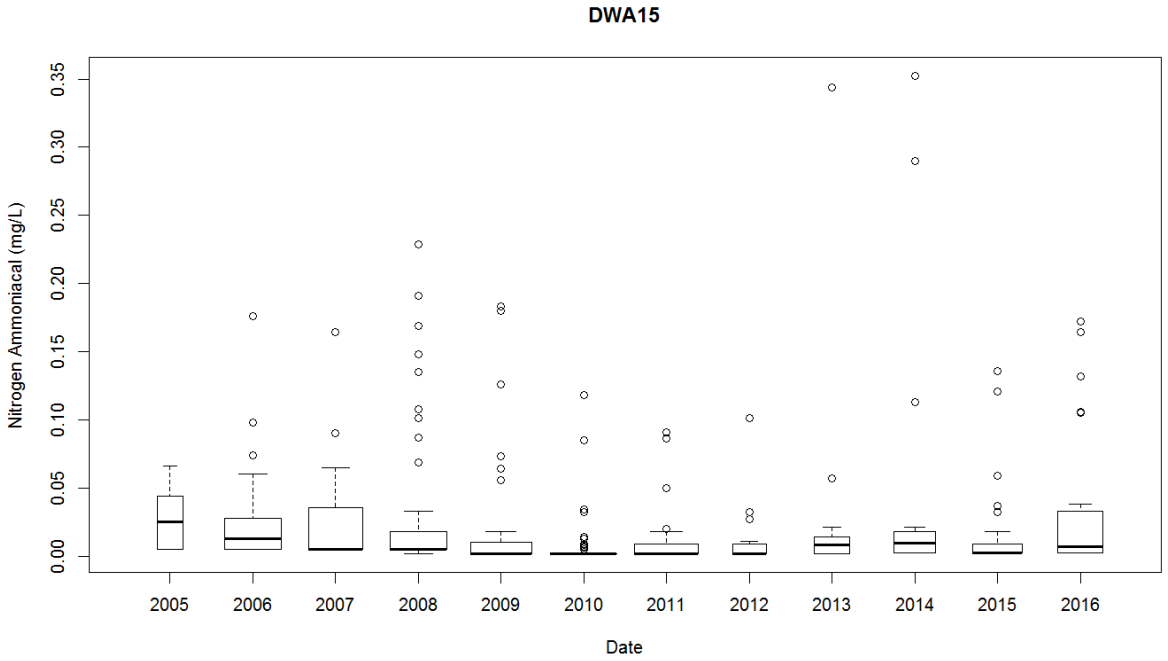

DWA15
Chlorophyll-a (ug/L)
0
5
10
15
20
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

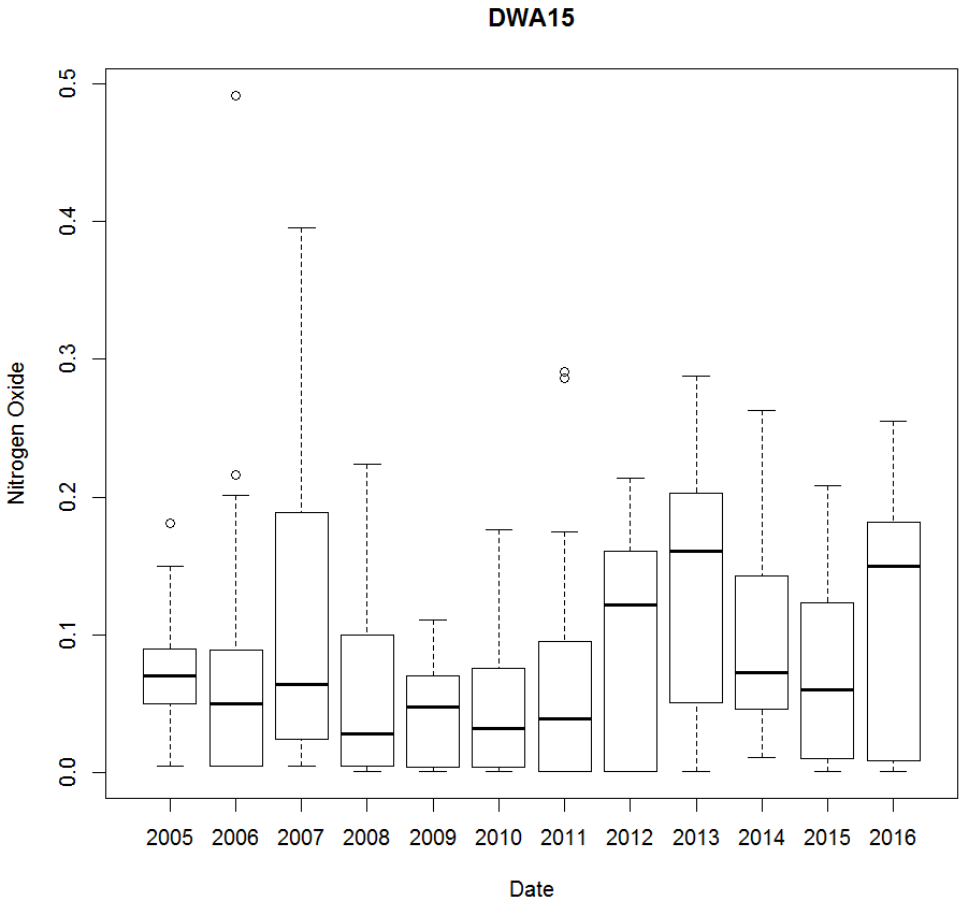

DWA15
pH
6.5
7.0
7.5
8.0
8.5
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

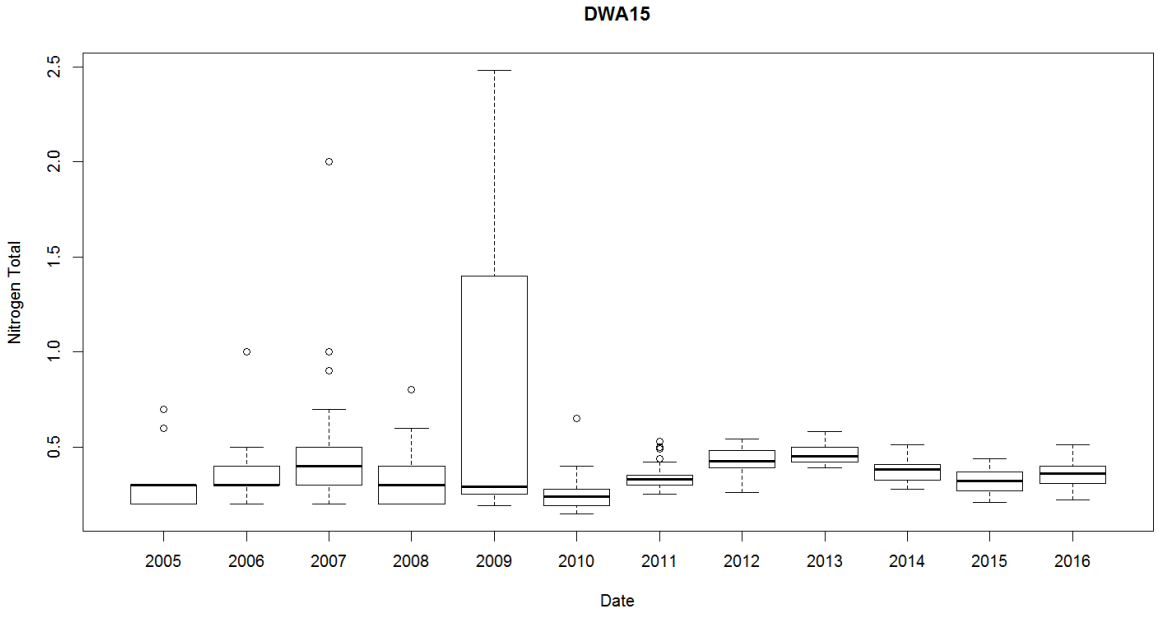

DWA15
Conductivity (mS/cm)
0.10
0.15
0.20
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

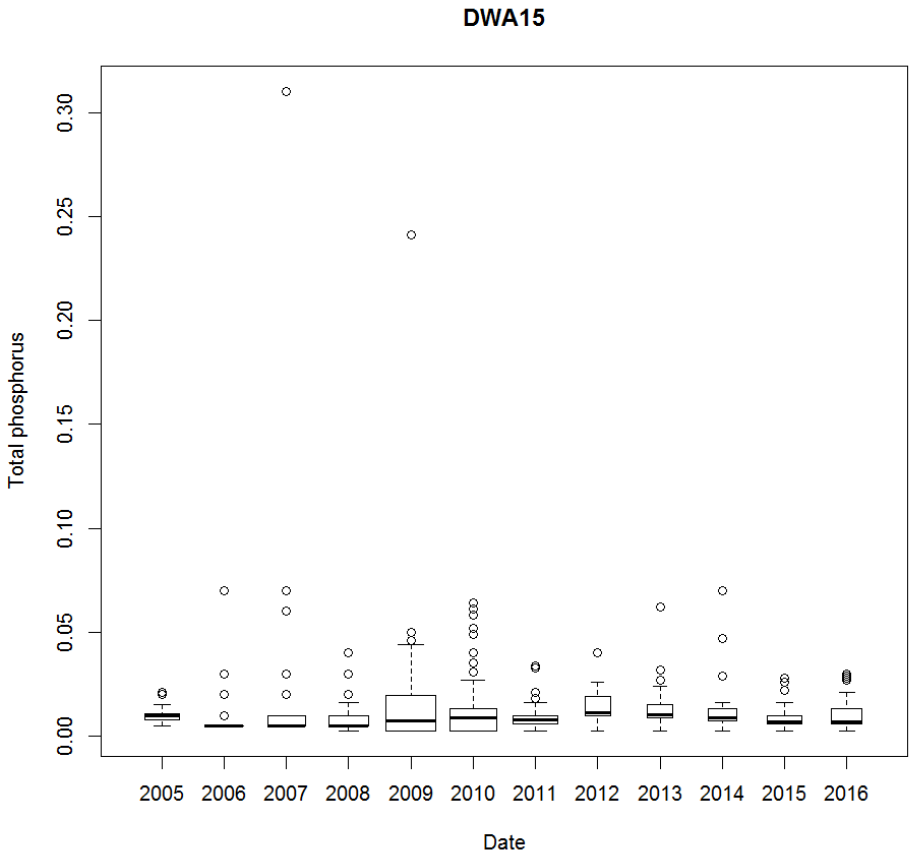

DWA15
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

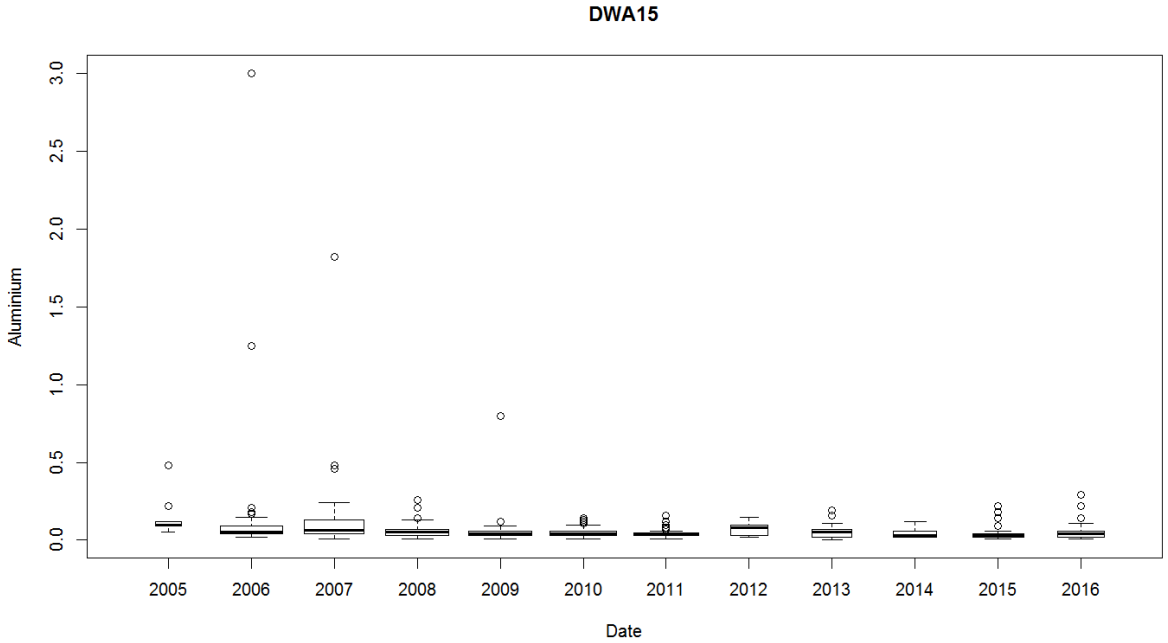

DWA15
Turbidity
0
50
100
150
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

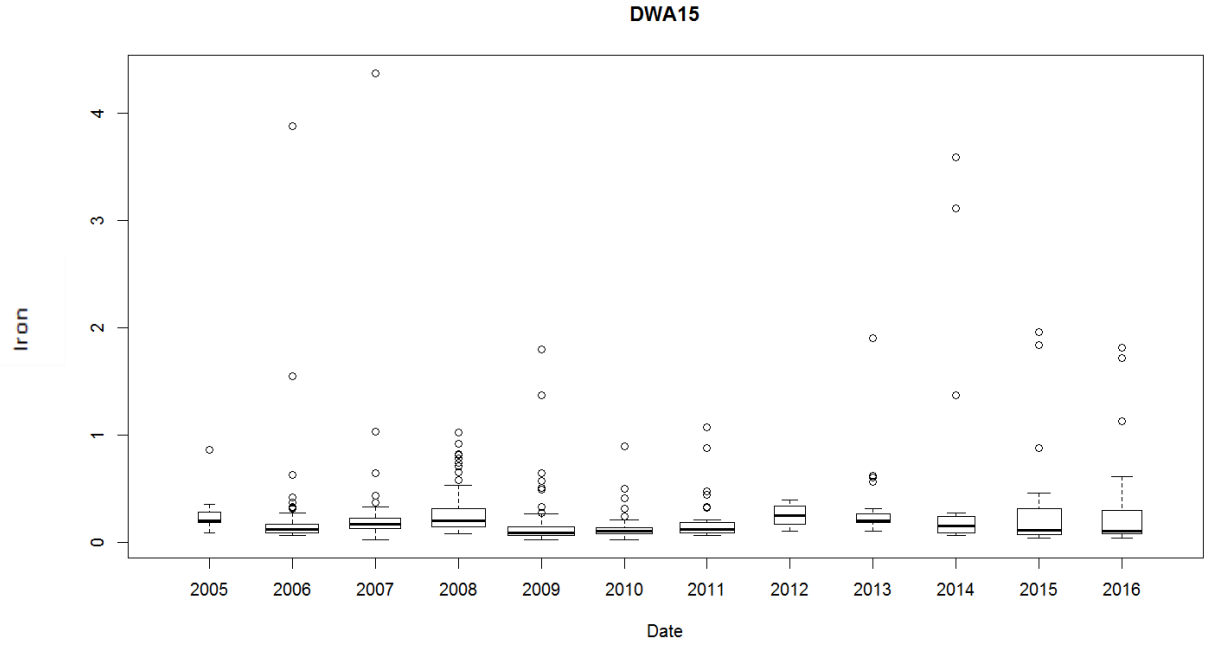

DWA15
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

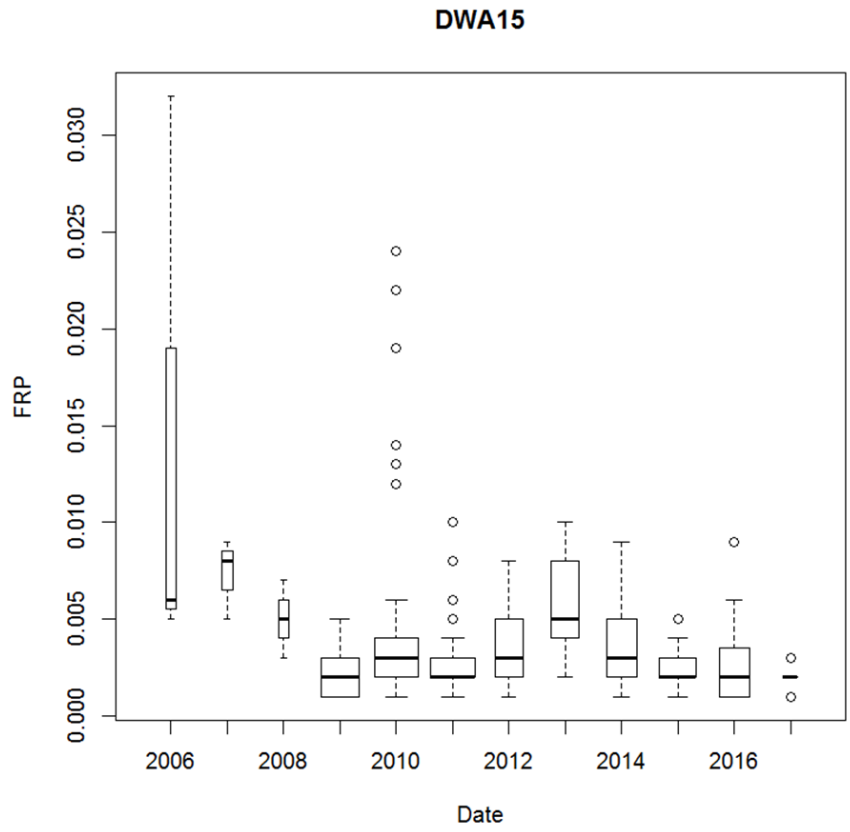

DWA15
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
0.5
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

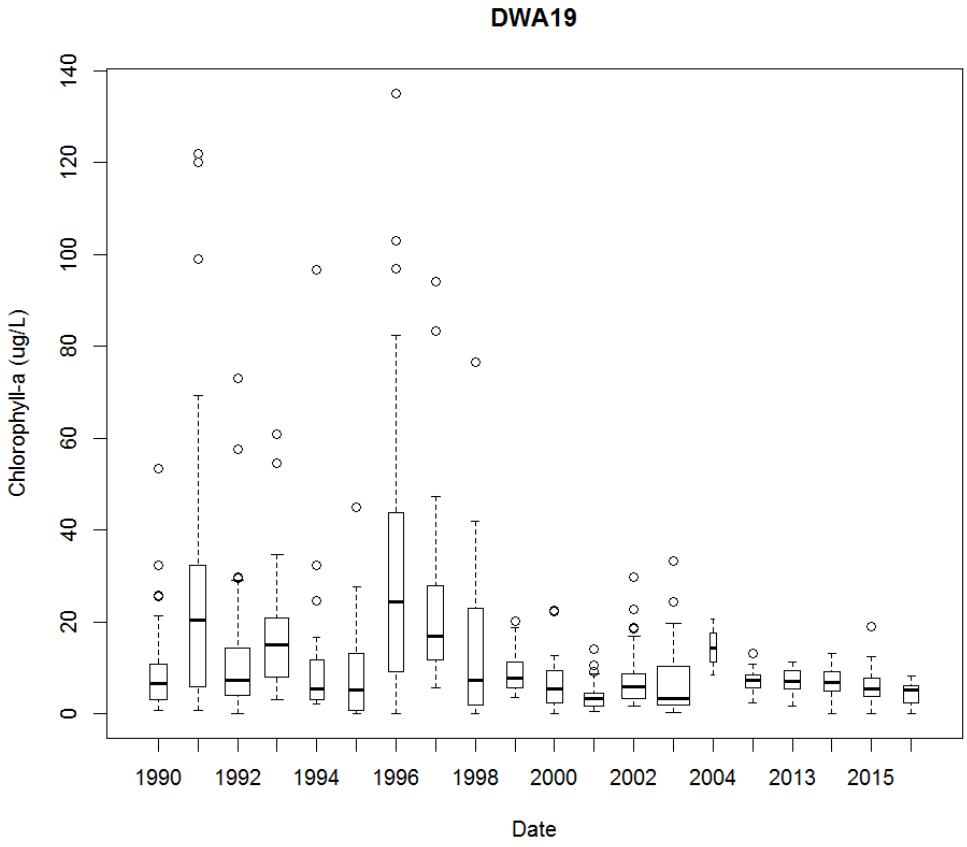

DWA15
Nitrogen Total
0.5
1.0
1.5
2.0
2.5
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

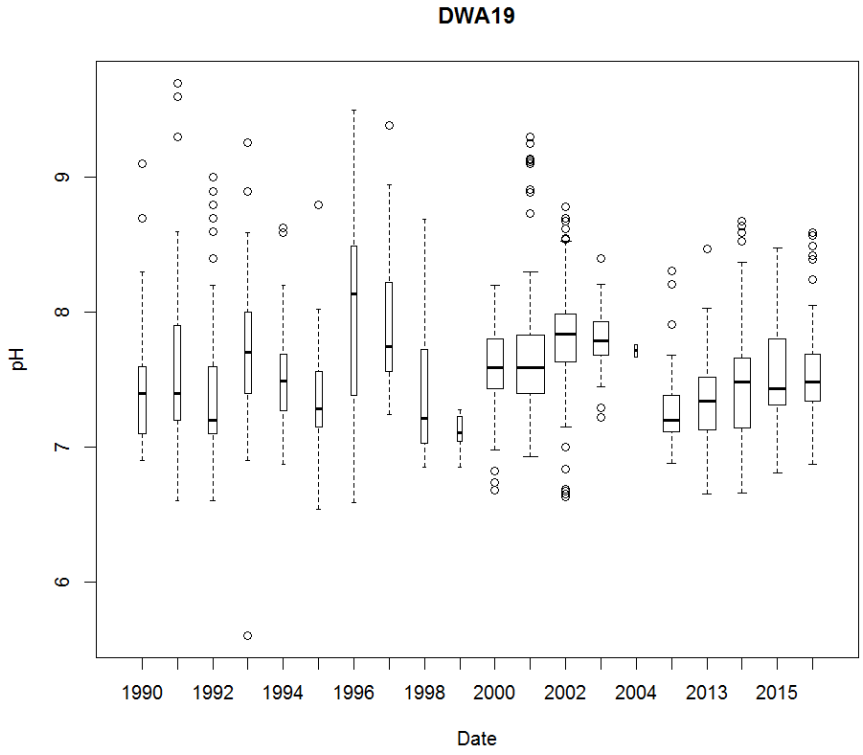

DWA15
Total phosphorus
0.00
0.05
0.10
0.15
0.20
0.25
0.30
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

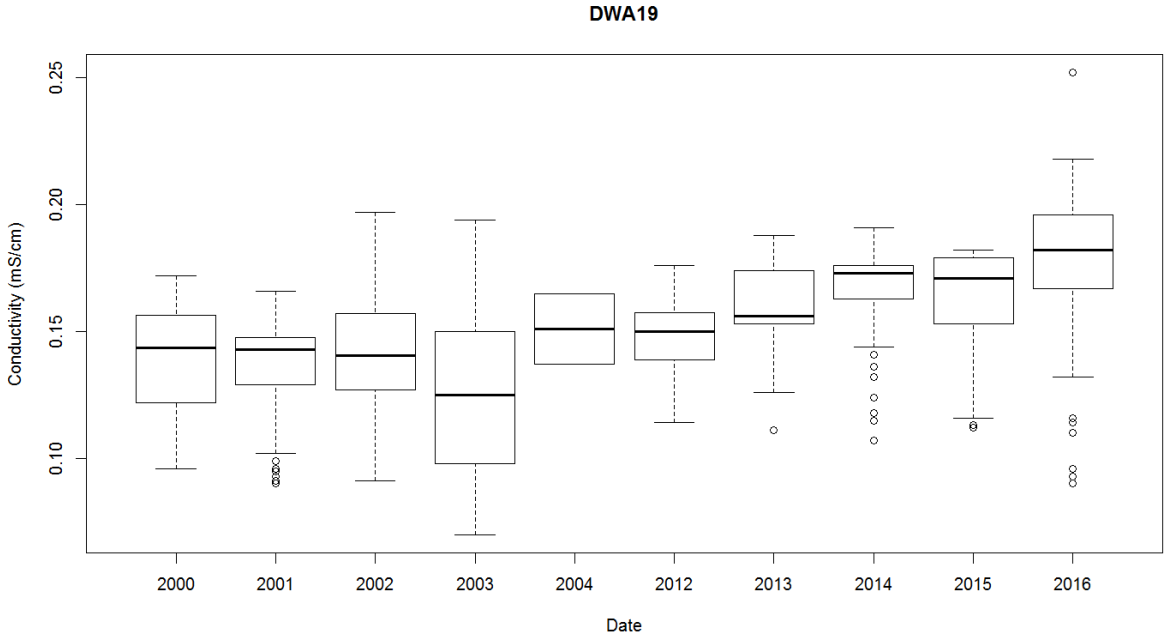

DWA15
Aluminium
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

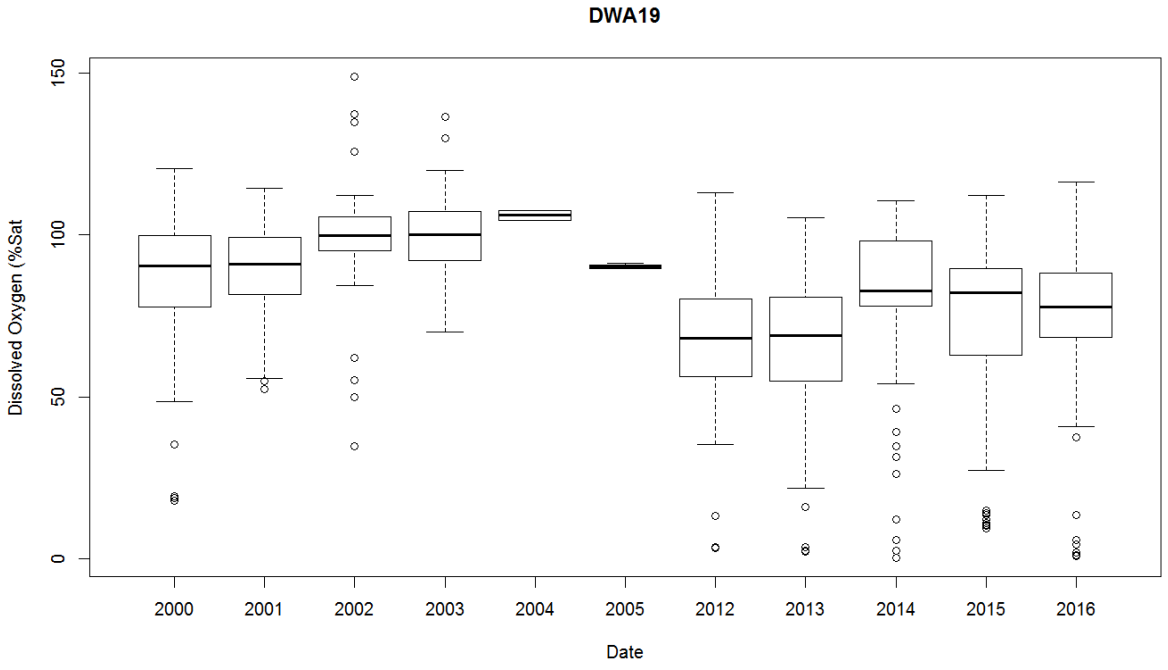

DWA15
Iron
0
1
2
3
4
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

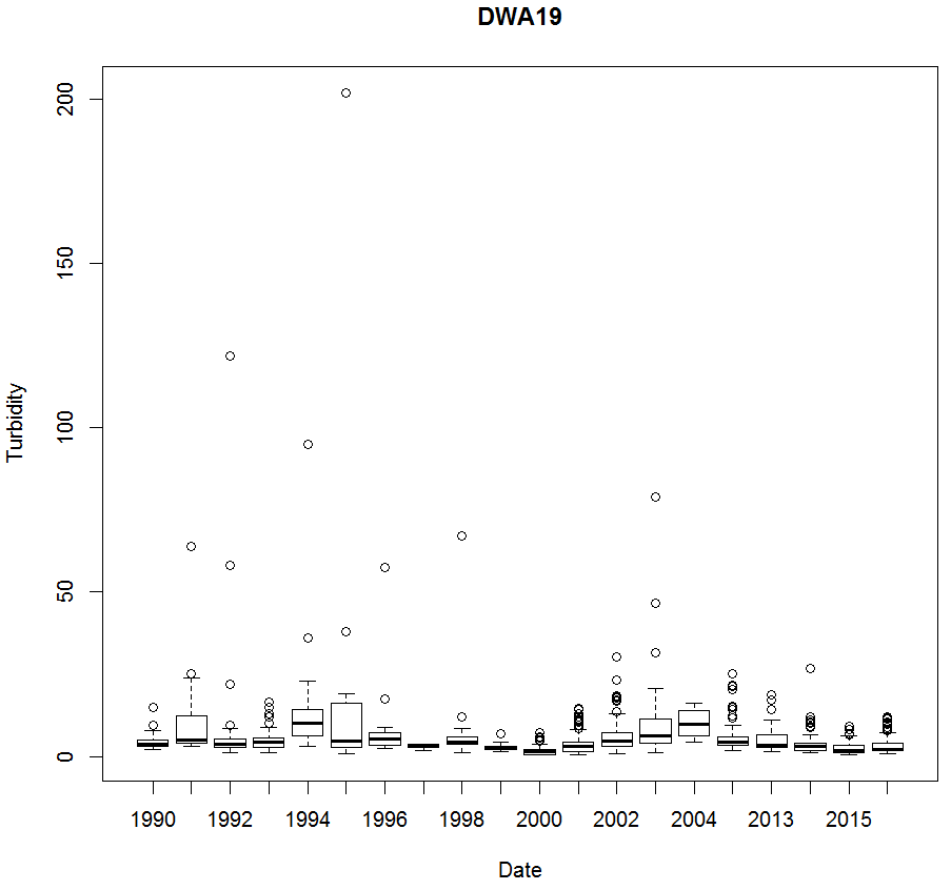

DWA15
FRP
0.000
0.005
0.010
0.015
0.020
0.025
0.030
2006
2008
2010
2012
2014
2016
Date

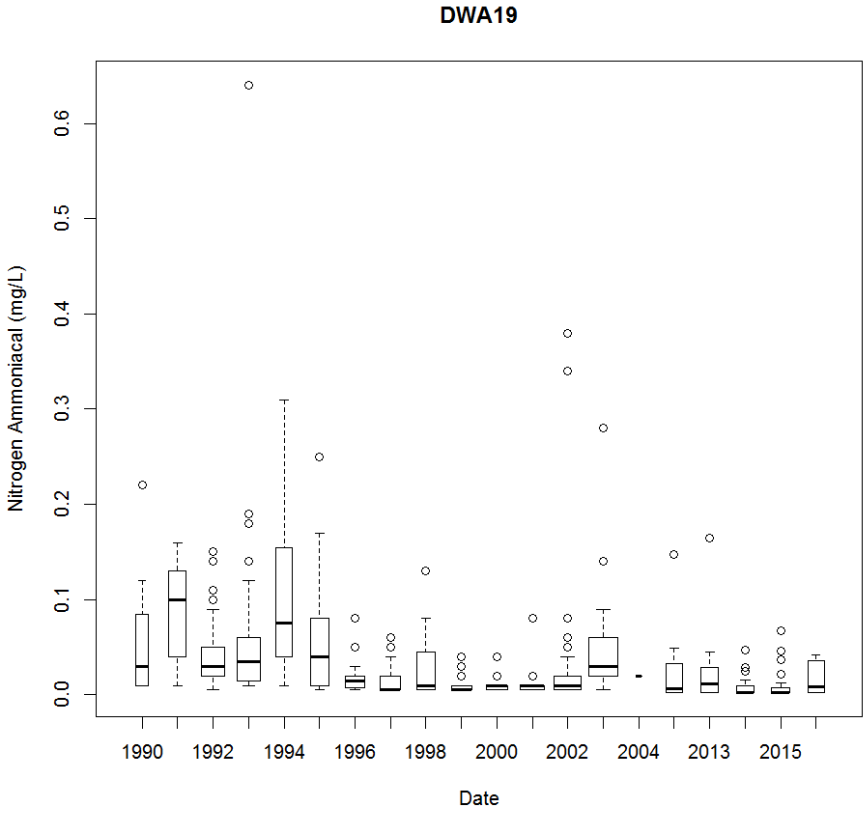

DWA19
Chlorophyll-a (ug/L)
0
20
40
60
80
100
120
140
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

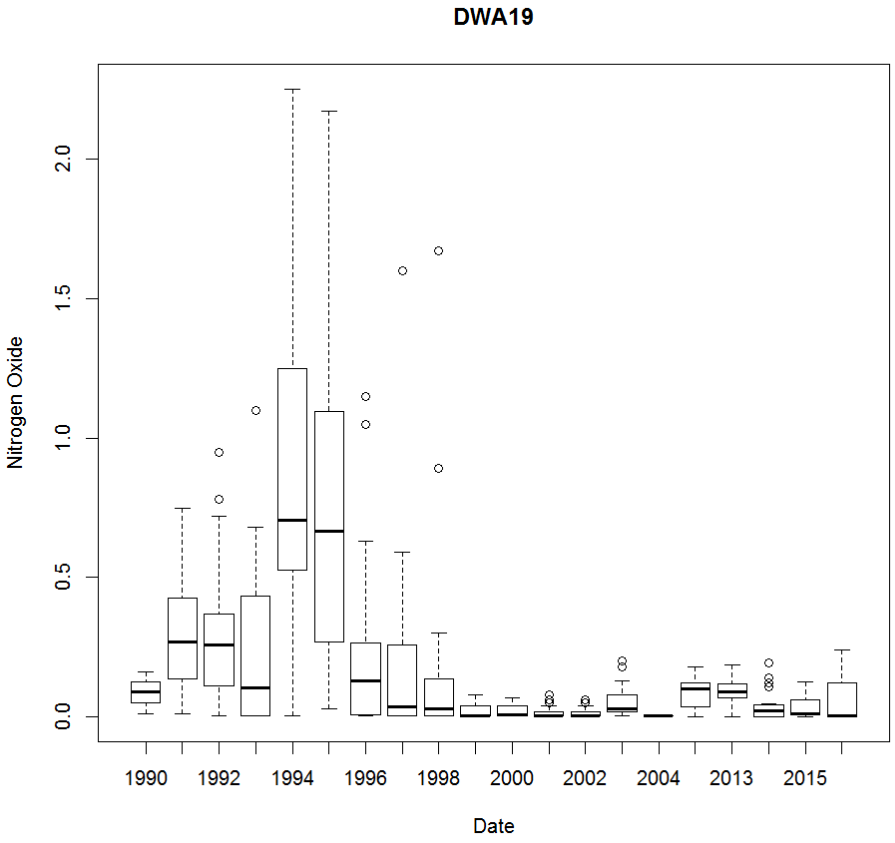

DWA19
pH
6
7
8
9
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

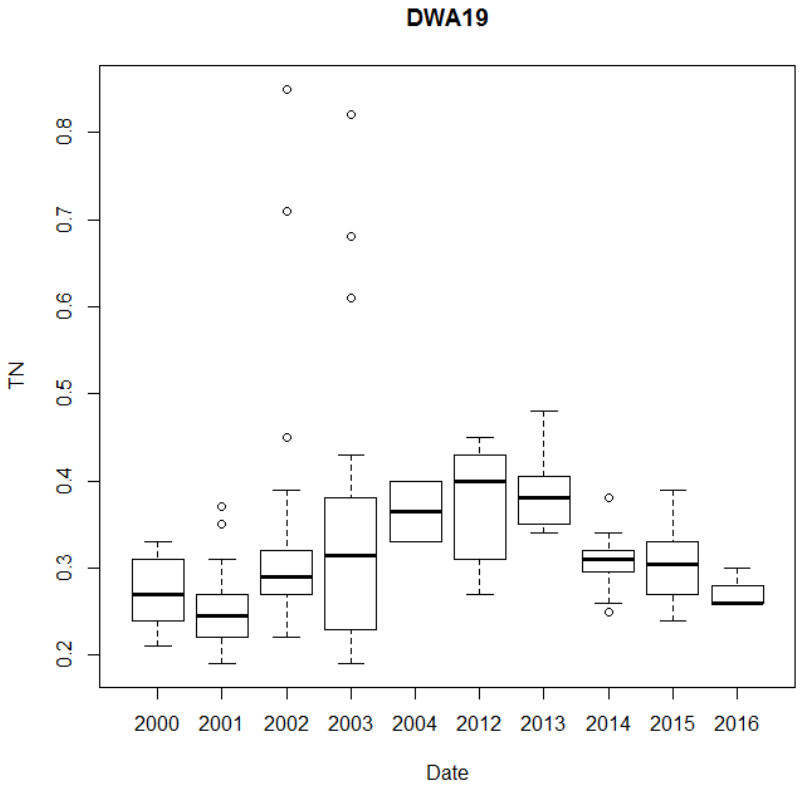

DWA19
Conductivity (mS/cm)
0.10
0.15
0.20
0.25
2000
2001
2002
2003
2004
2012
2013
2014
2015
2016
Date

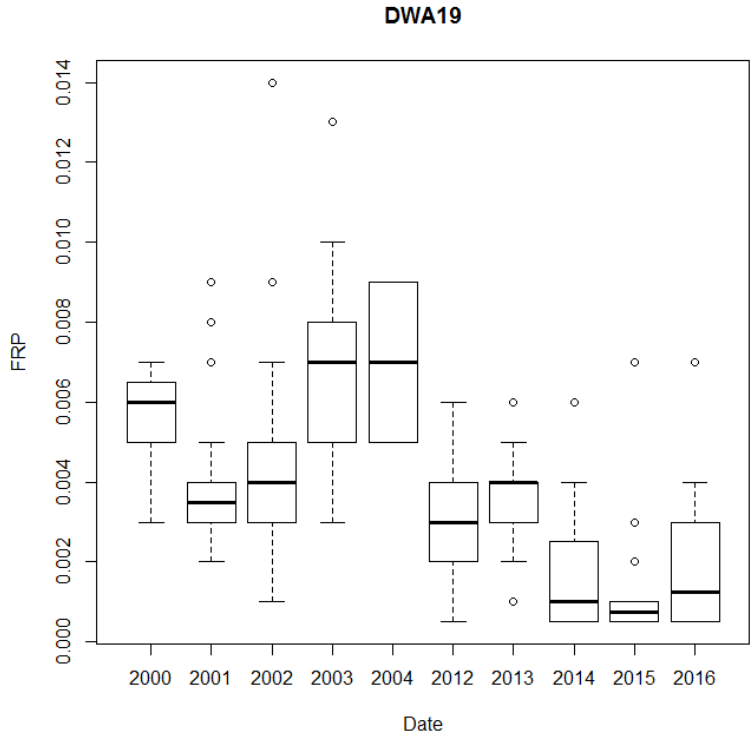

DWA19
Dissolved Oxygen (%Sat
0
50
100
150
2000
2001
2002
2003
2004
2005
2012
2013
2014
2015
2016
Date

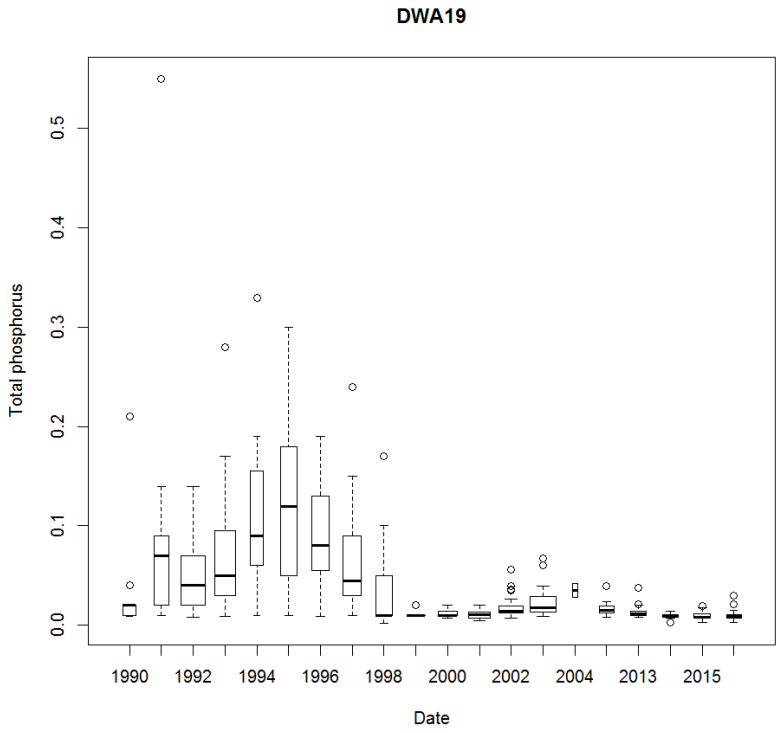

DWA19
Turbidity
0
50
100
150
200
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

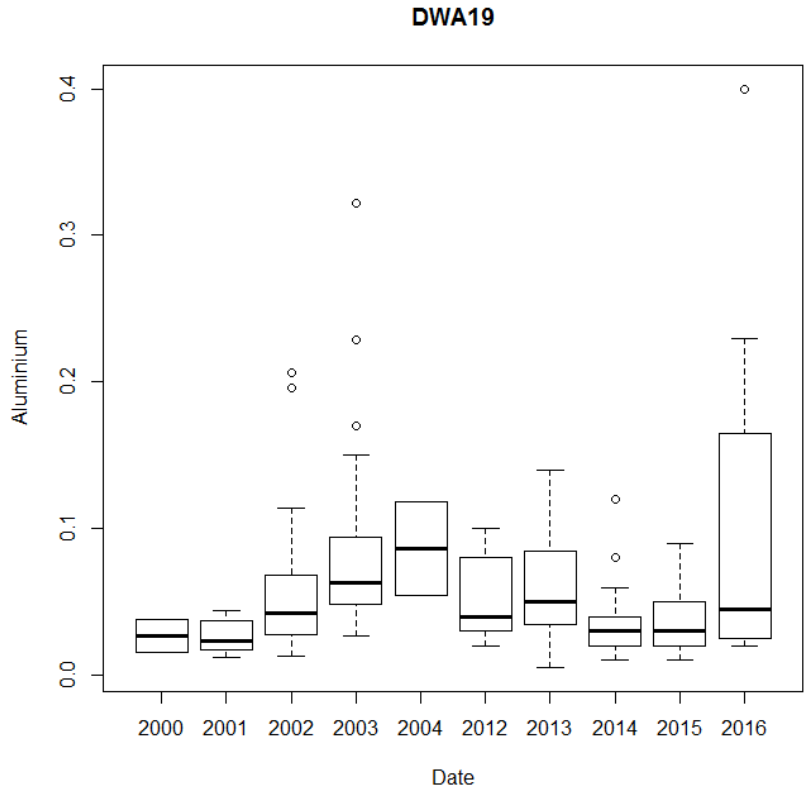

DWA19
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

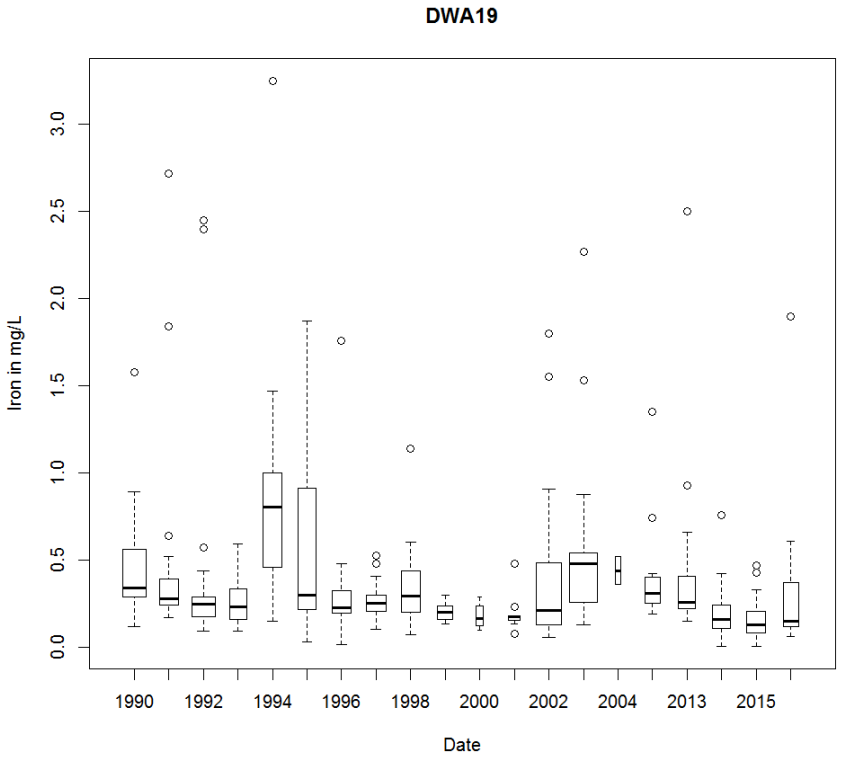

DWA19
Nitrogen Oxide
0.0
0.5
1.0
1.5
2.0
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

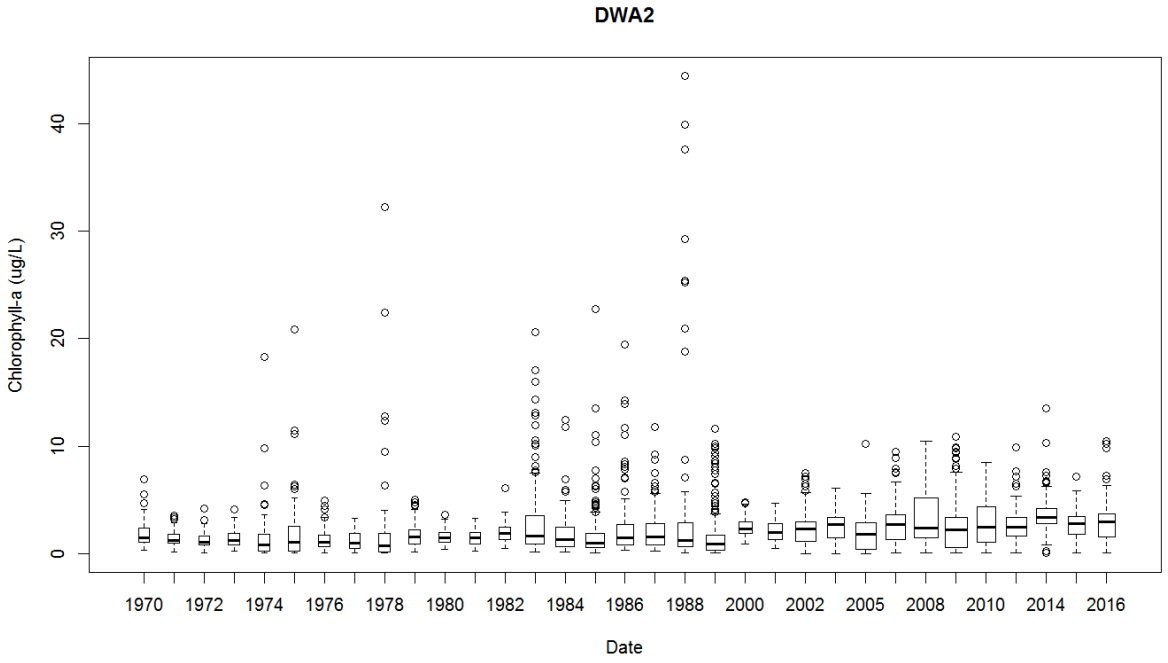

DWA19
TN
0.2
0.3
0.4
0.5
0.6
0.7
0.8
2000
2001
2002
2003
2004
2012
2013
2014
2015
2016
Date

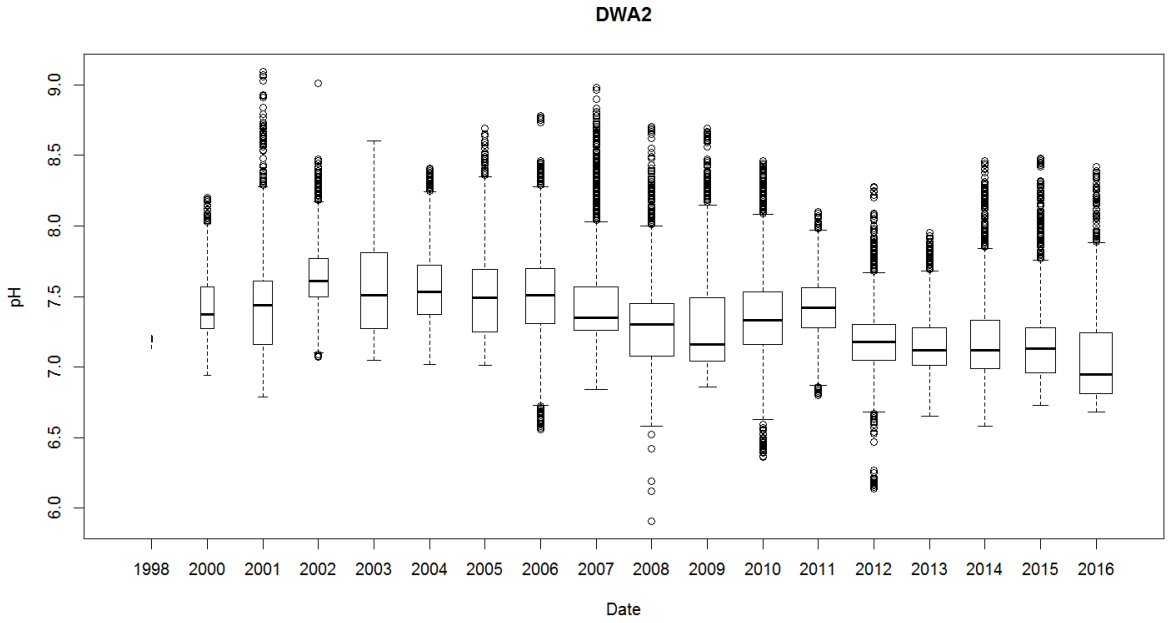

DWA19
FRP
0.000
0.002
0.004
0.006
0.008
0.010
0.012
0.014
2000
2001
2002
2003
2004
2012
2013
2014
2015
2016
Date

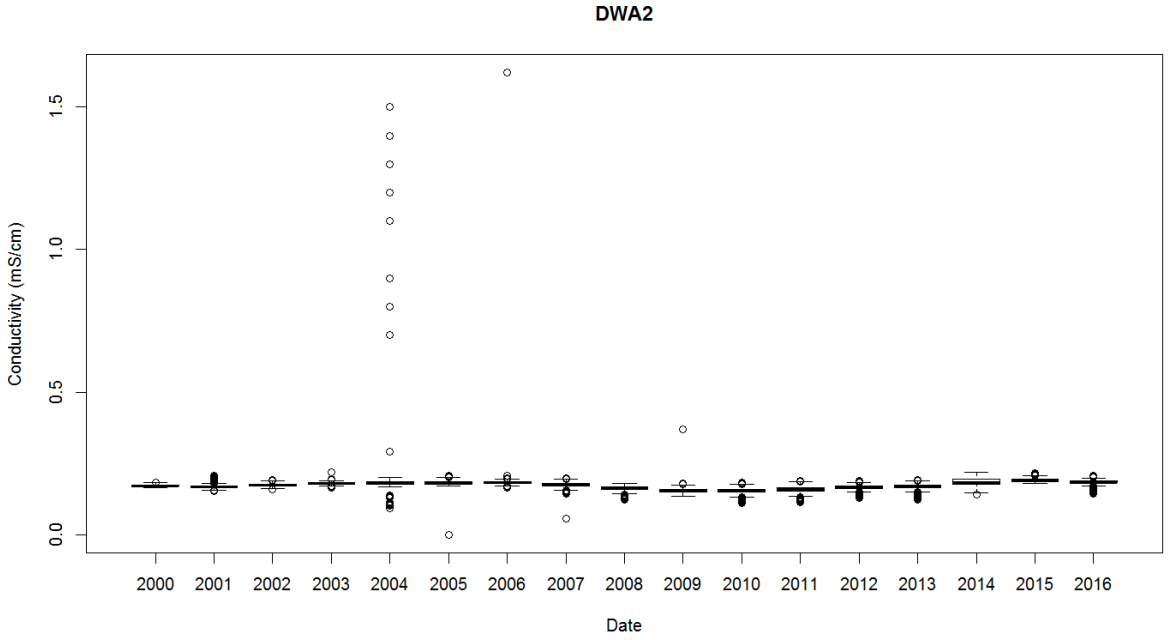

DWA19
Total phosphorus
0.0
0.1
0.2
0.3
0.4
0.5
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

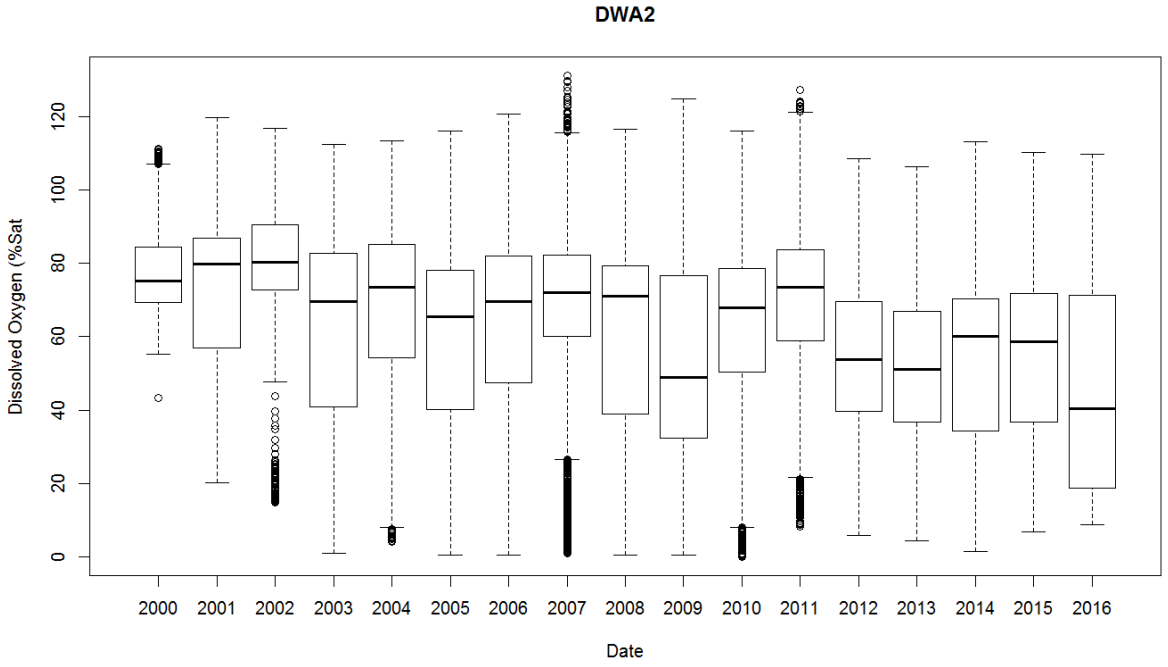

DWA19
Aluminium
0.0
0.1
0.2
0.3
0.4
2000
2001
2002
2003
2004
2012
2013
2014
2015
2016
Date

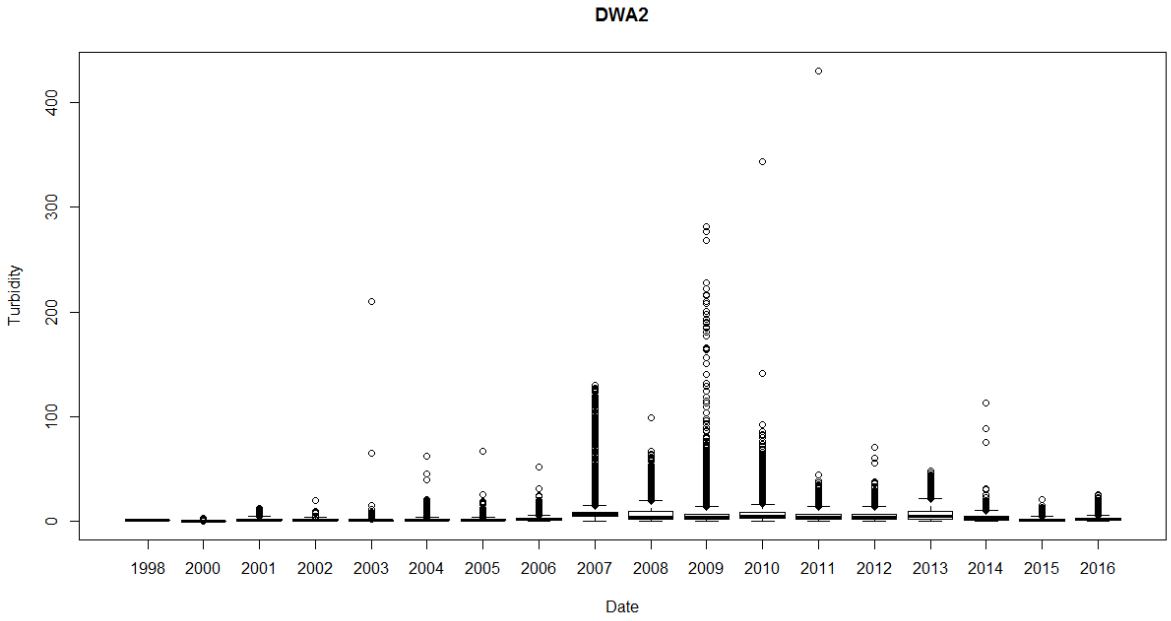

DWA19
Iron in mg/L
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

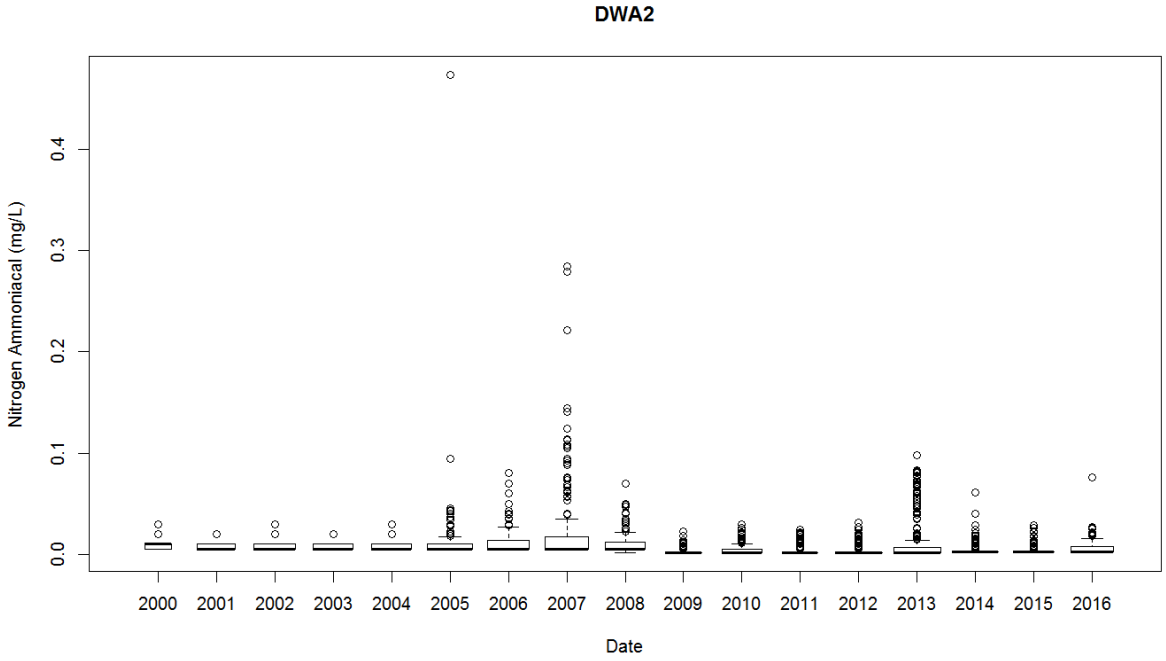

DWA2
Chlorophyll-a (ug/L)
0
10
20
30
40
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
2000
2002
2005
2008
2010
2014
2016
Date

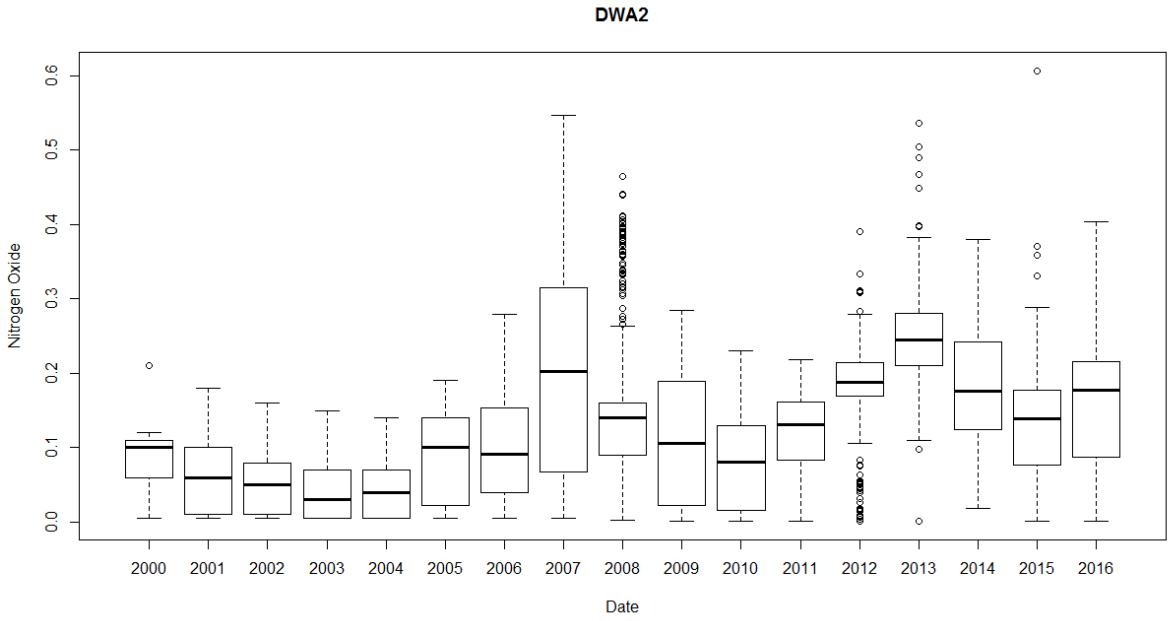

DWA2
pH
6.0
6.5
7.0
7.5
8.0
8.5
9.0
1998
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

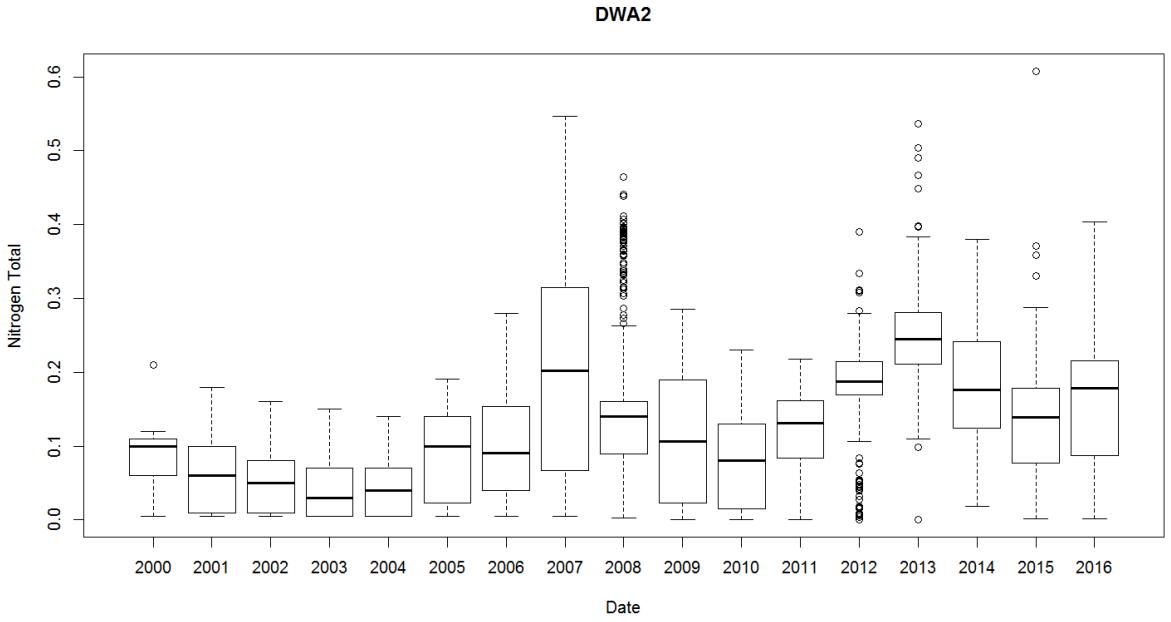

DWA2
Conductivity (mS/cm)
0.0
0.5
1.0
1.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

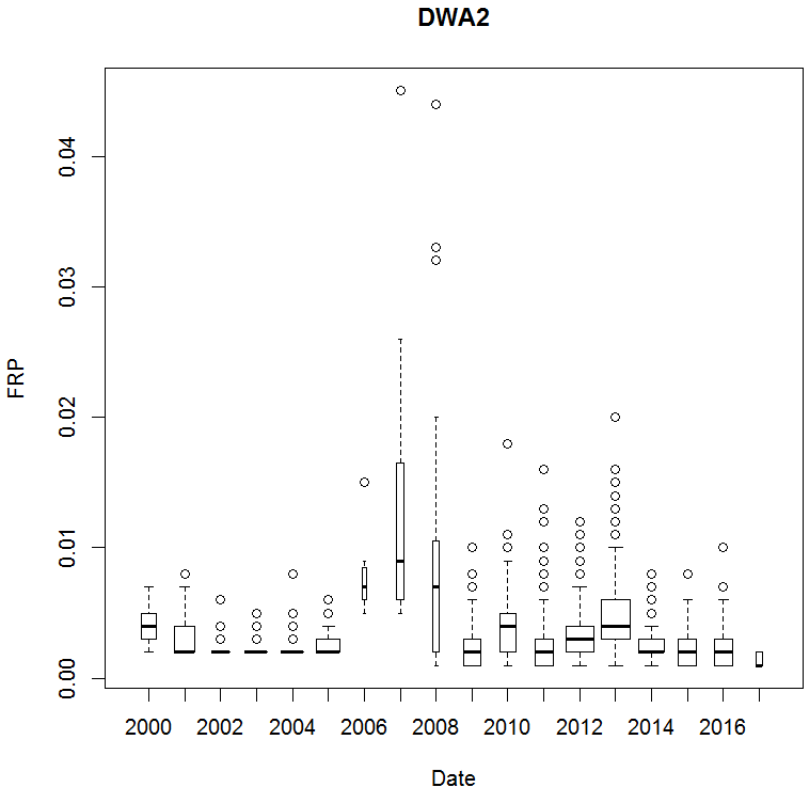

DWA2
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

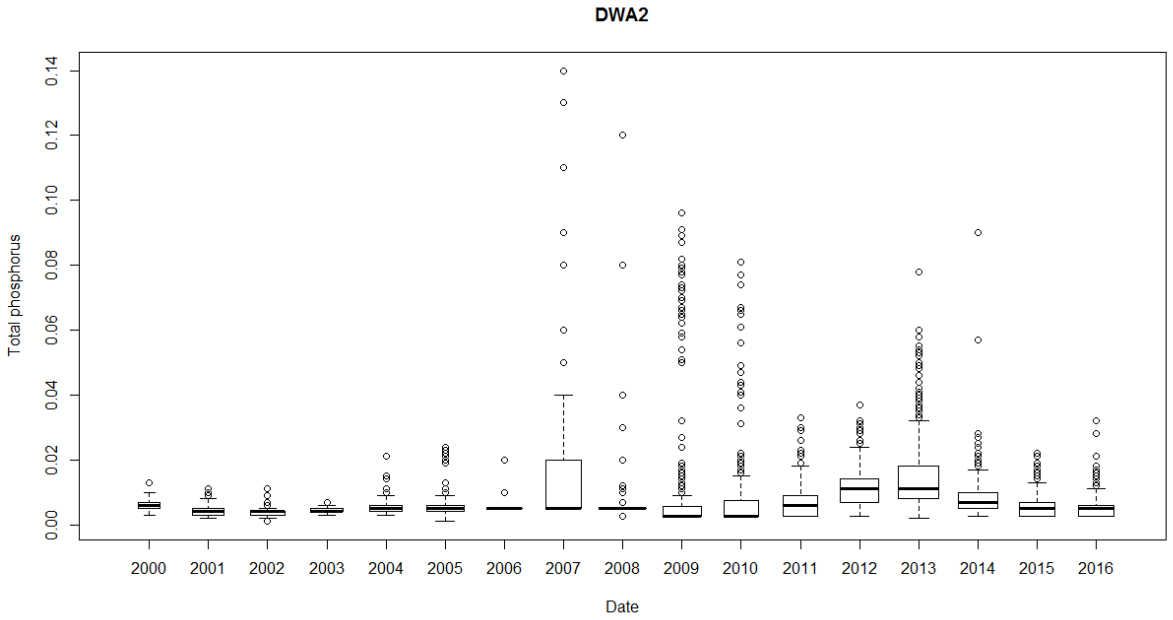

DWA2
Turbidity
0
100
200
300
400
1998
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

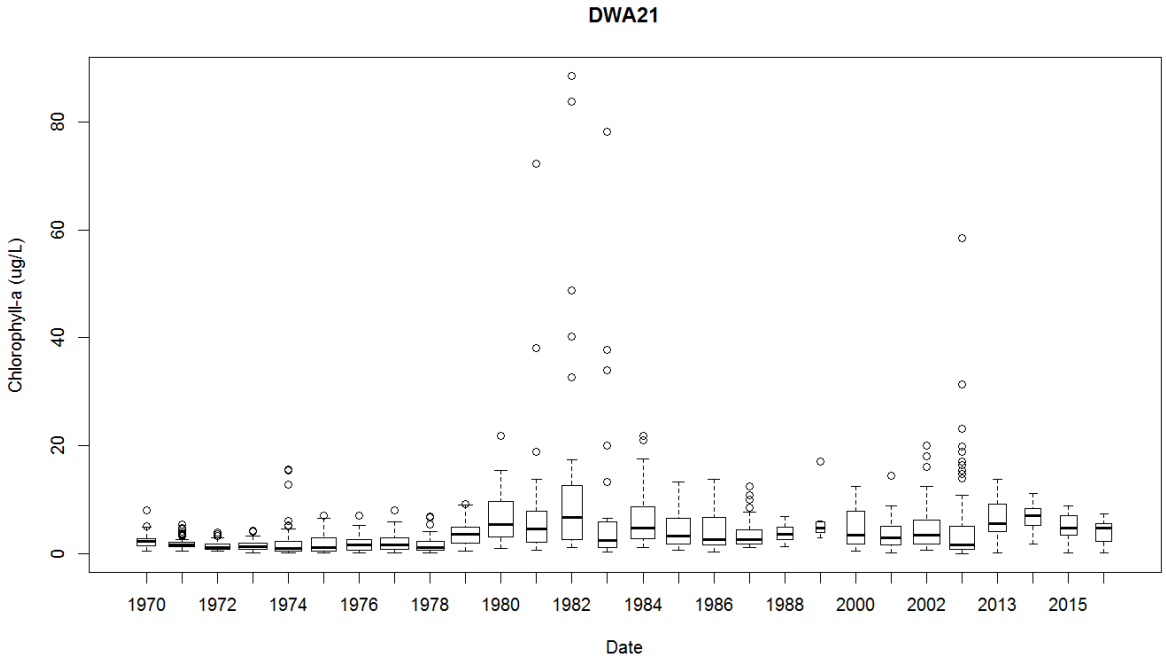

DWA2
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

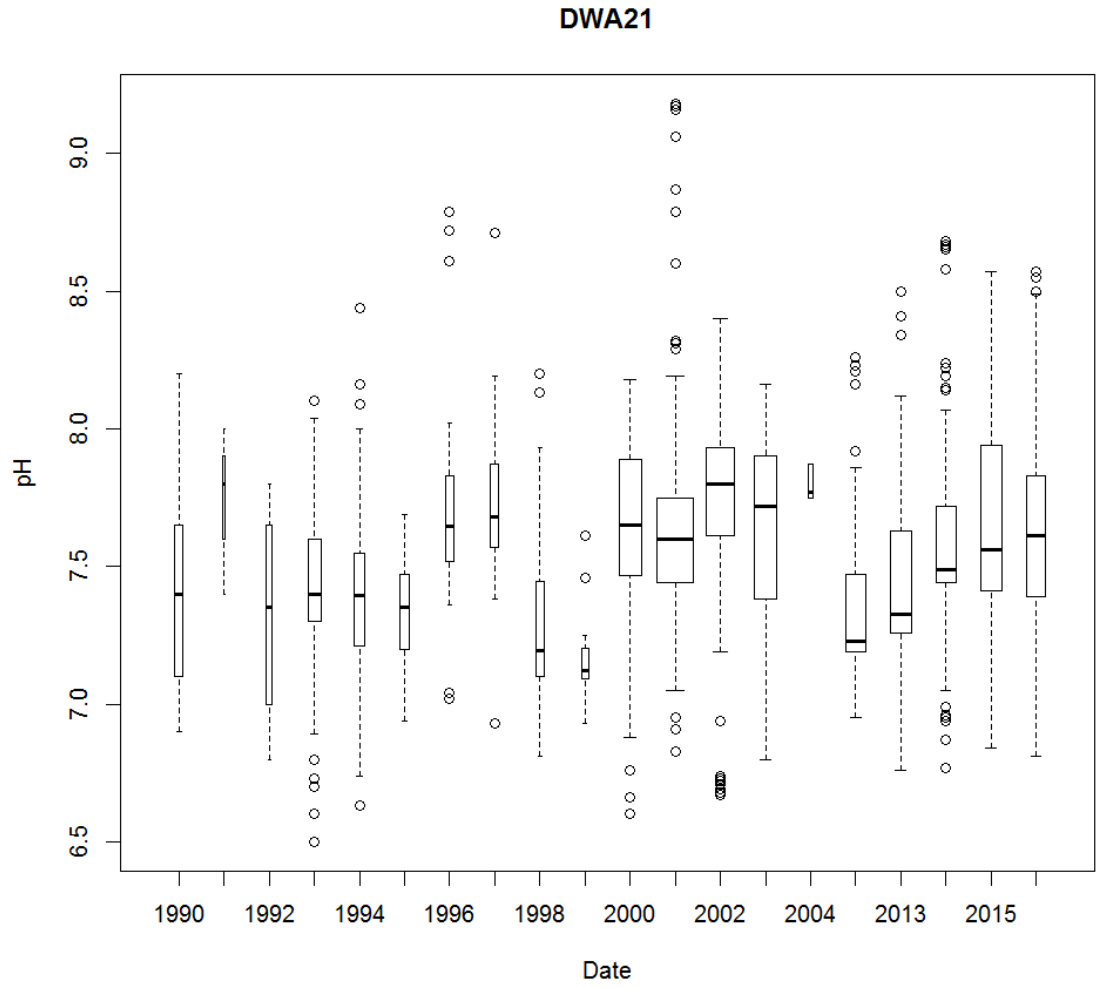

DWA2
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
0.5
0.6
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

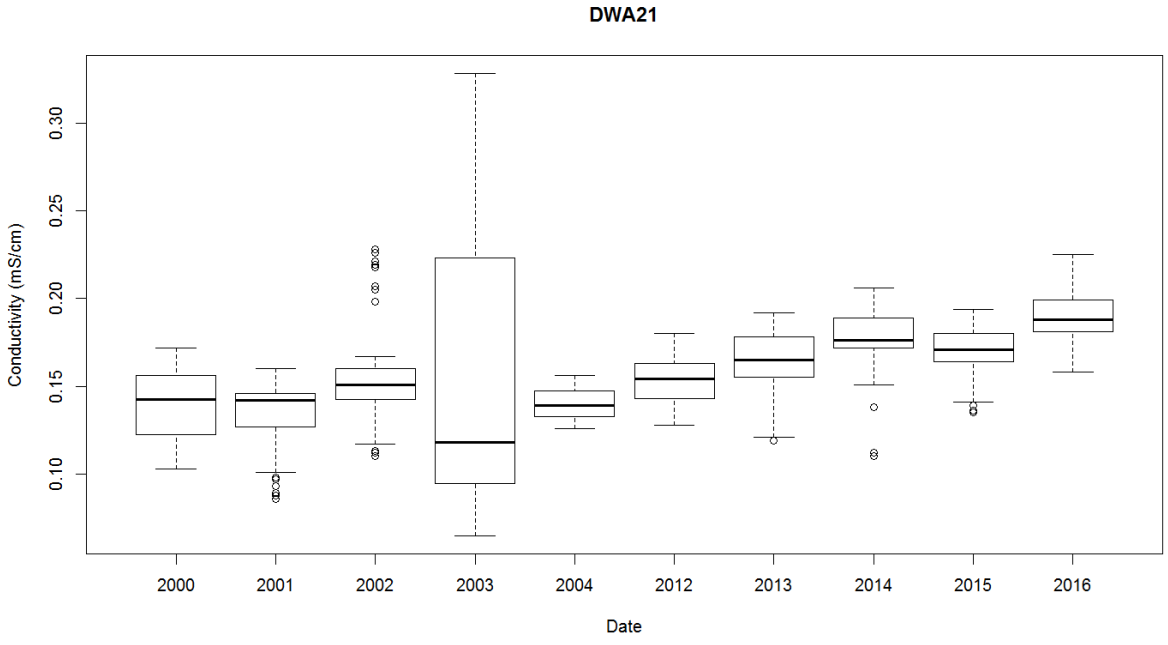

DWA2
Nitrogen Total
0.0
0.1
0.2
0.3
0.4
0.5
0.6
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

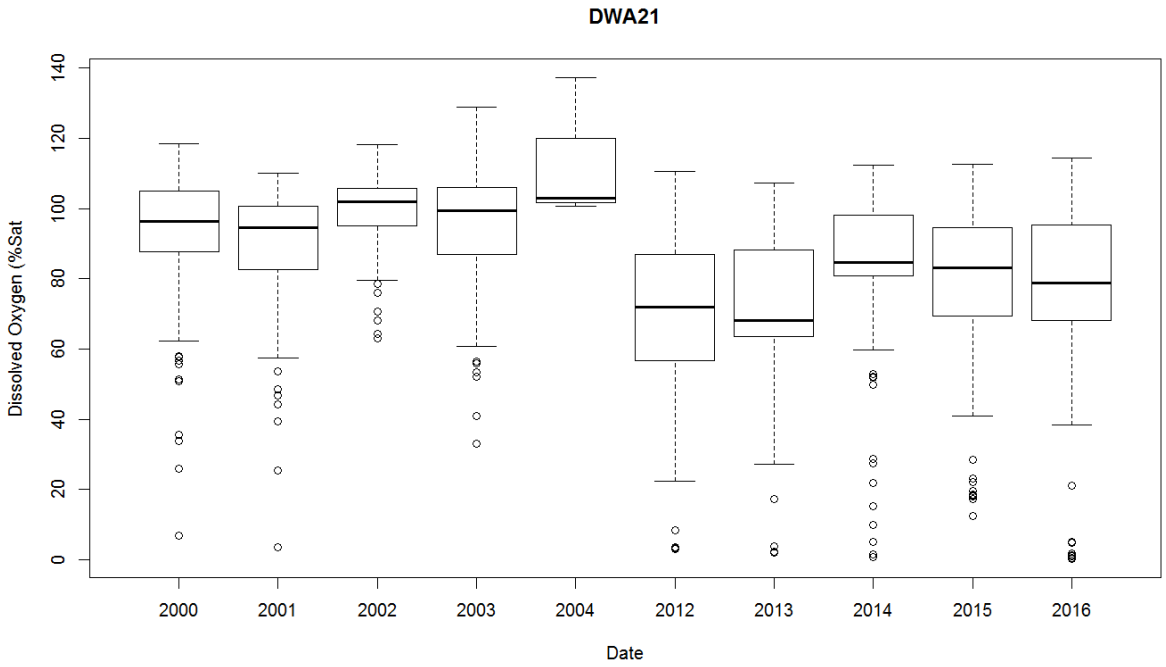

DWA2
FRP
0.00
0.01
0.02
0.03
0.04
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

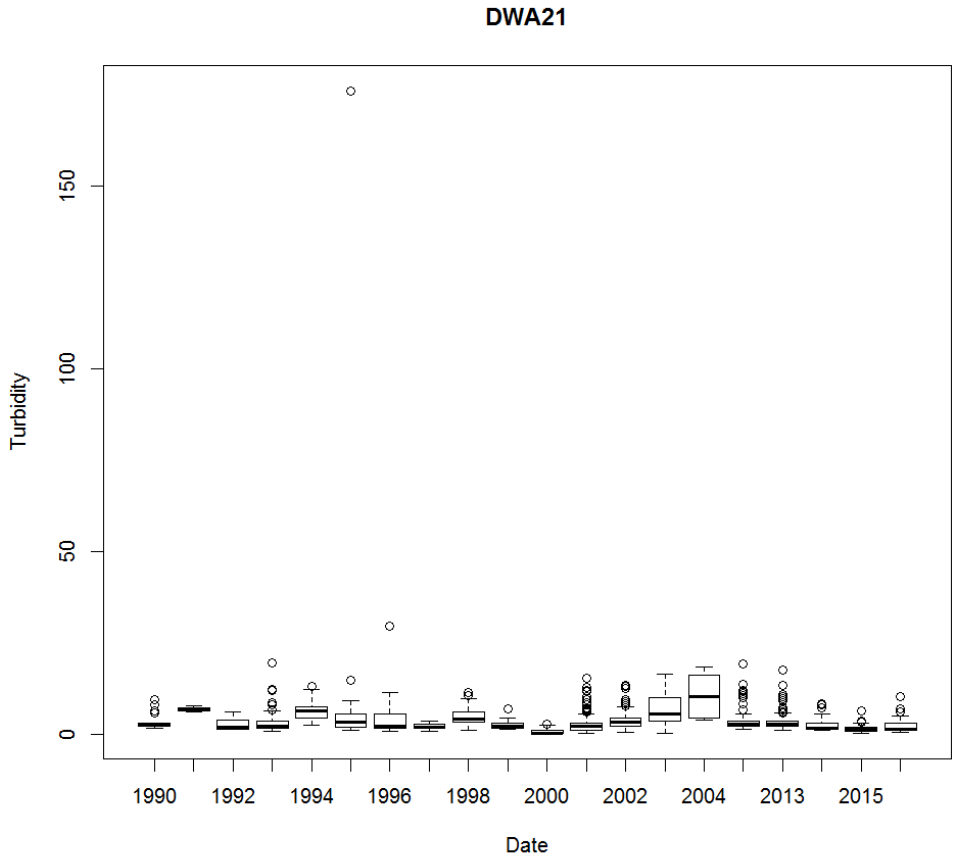

DWA2
Total phosphorus
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

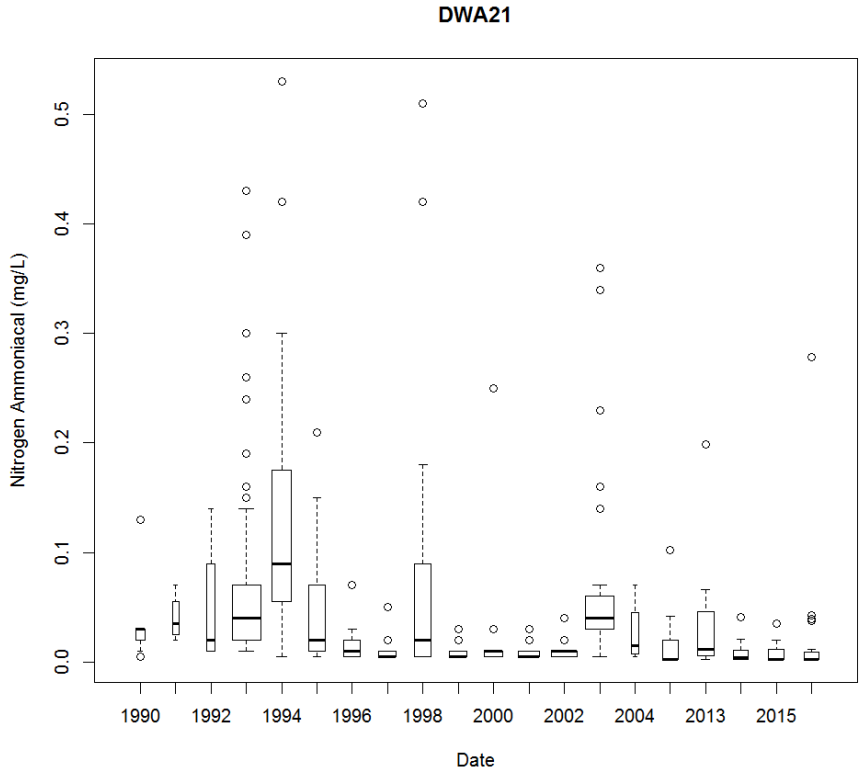

DWA21
Chlorophyll-a (ug/L)
0
20
40
60
80
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
2000
2002
2013
2015
Date

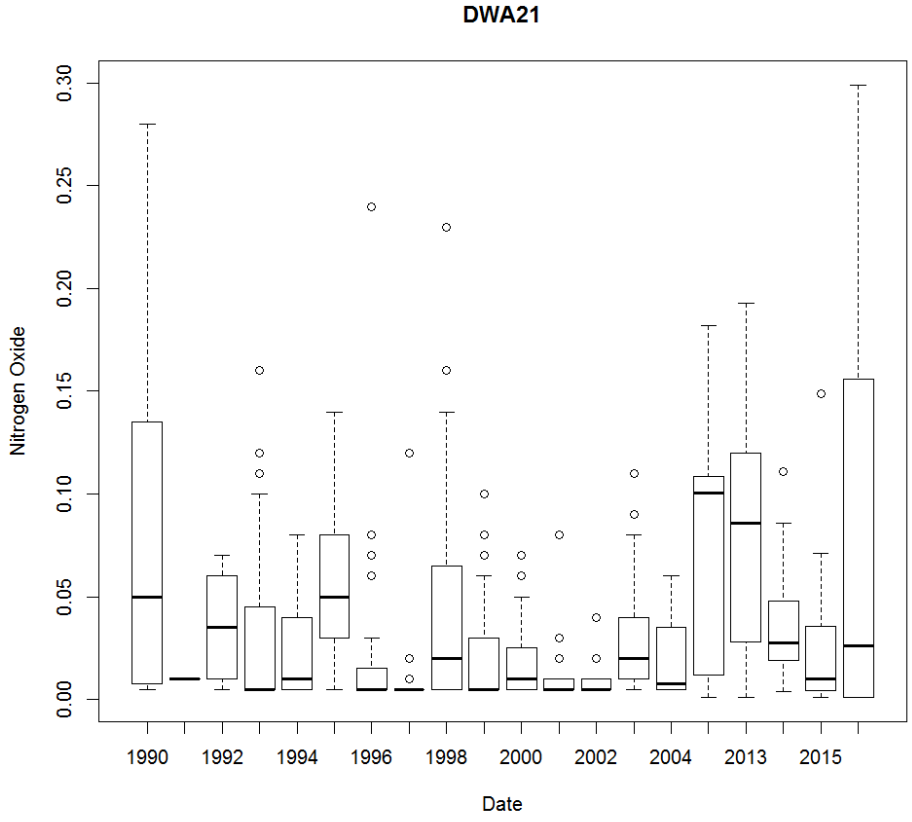

DWA21
pH
6.5
7.0
7.5
8.0
8.5
9.0
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

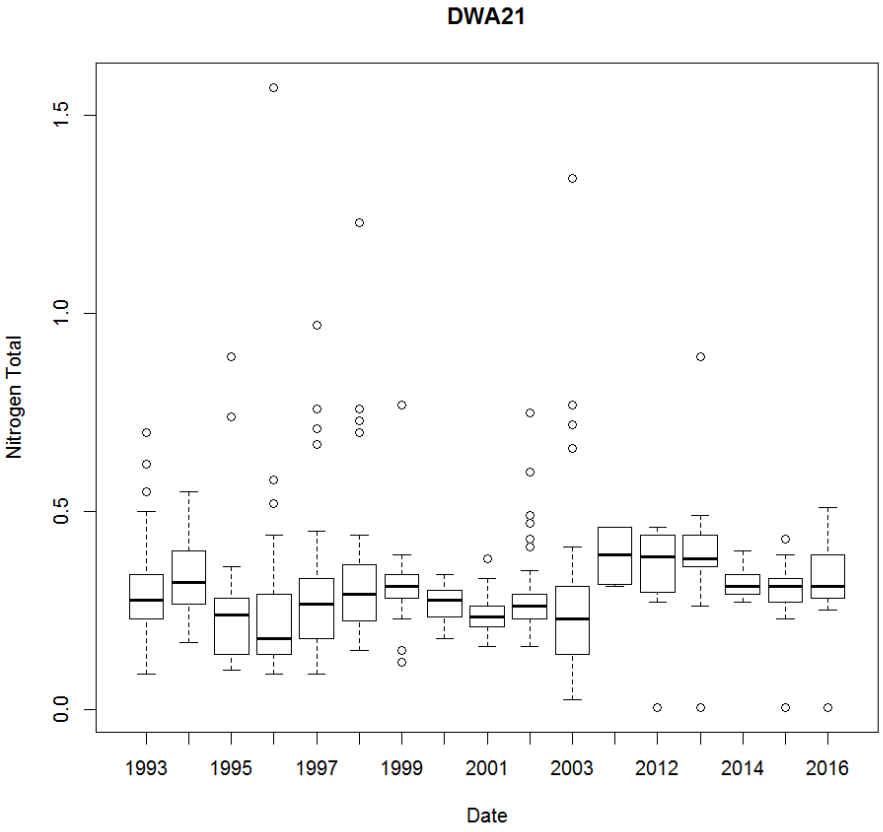

DWA21
Conductivity (mS/cm)
0.10
0.15
0.20
0.25
0.30
2000
2001
2002
2003
2004
2012
2013
2014
2015
2016
Date

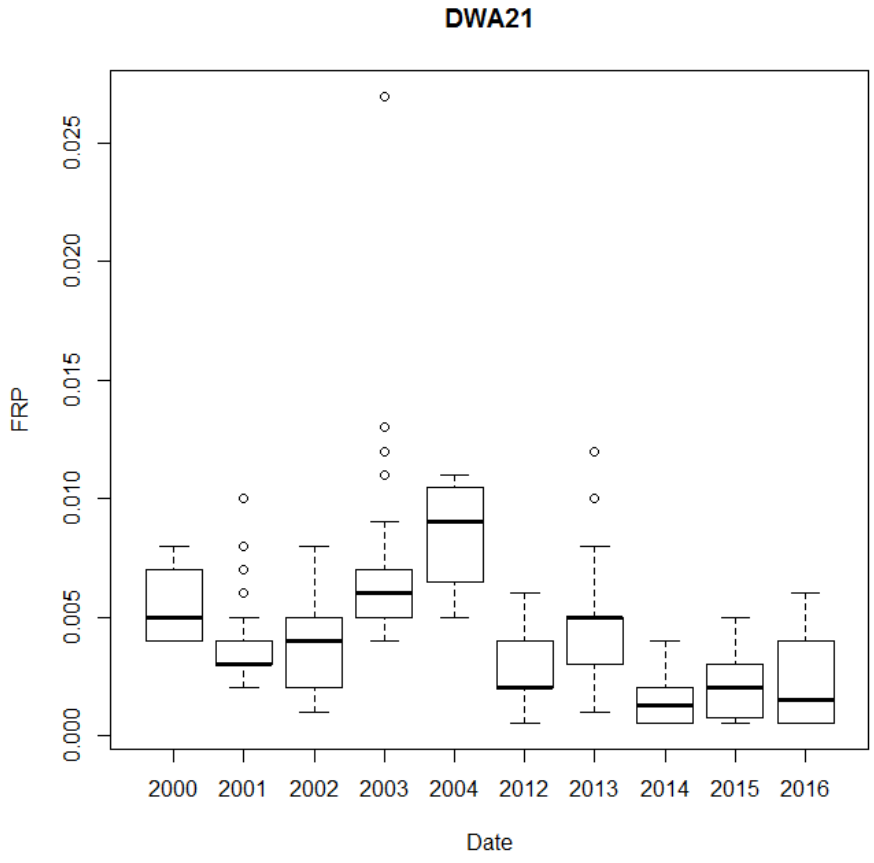

DWA21
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
140
2000
2001
2002
2003
2004
2012
2013
2014
2015
2016
Date

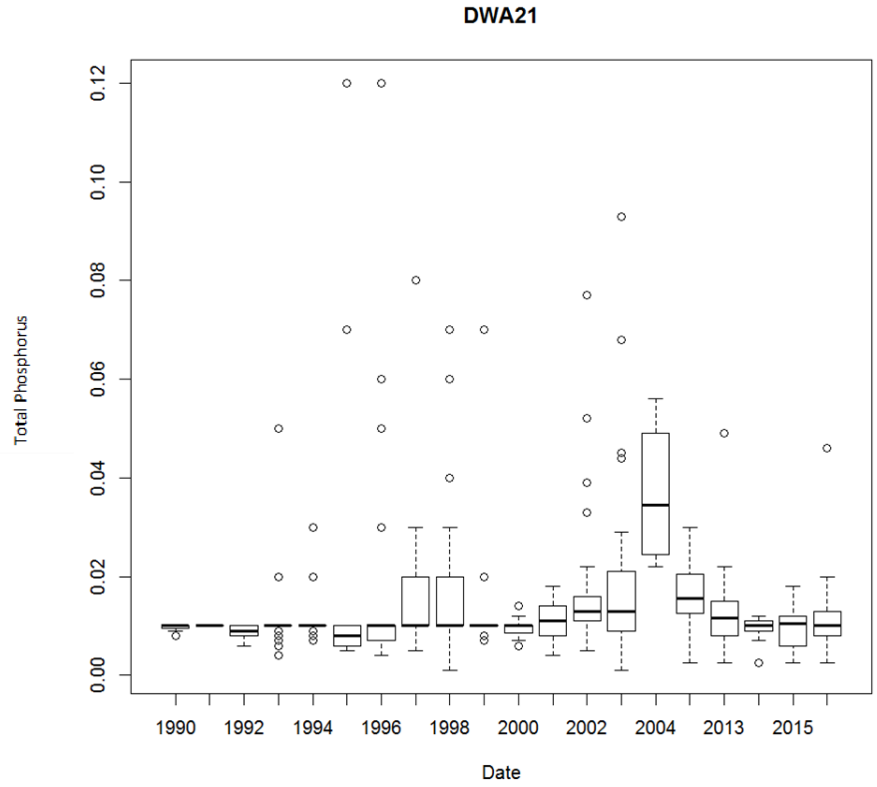

DWA21
Turbidity
0
50
100
150
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

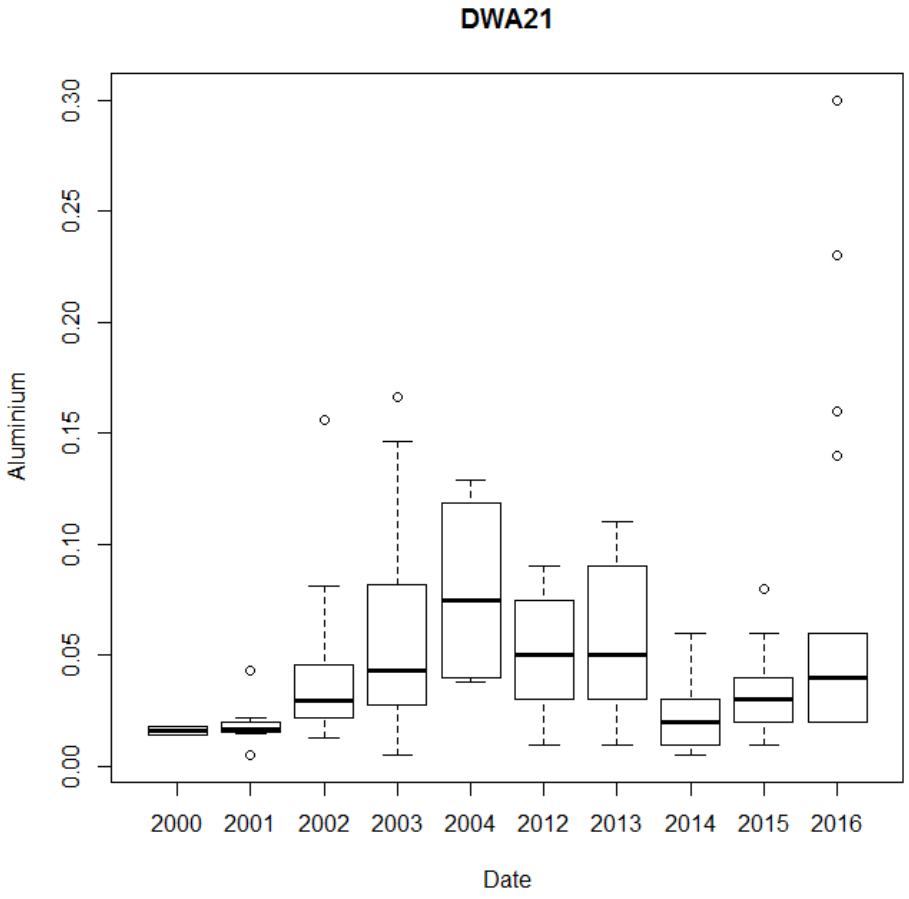

DWA21
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

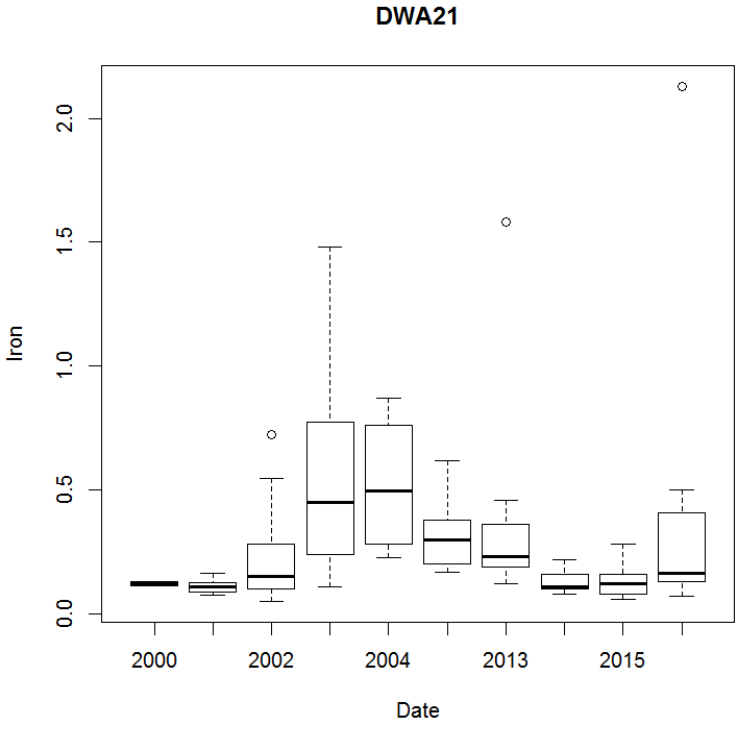

DWA21
Nitrogen Oxide
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

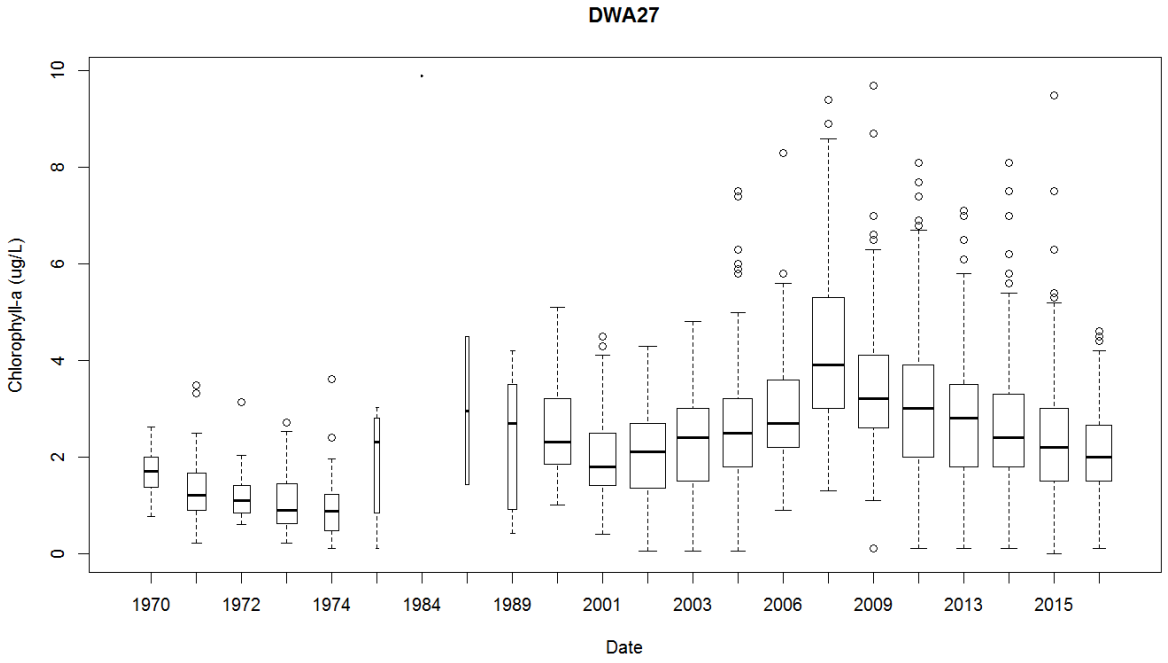

DWA21
Nitrogen Total
0.0
0.5
1.0
1.5
1993
1995
1997
1999
2001
2003
2012
2014
2016
Date

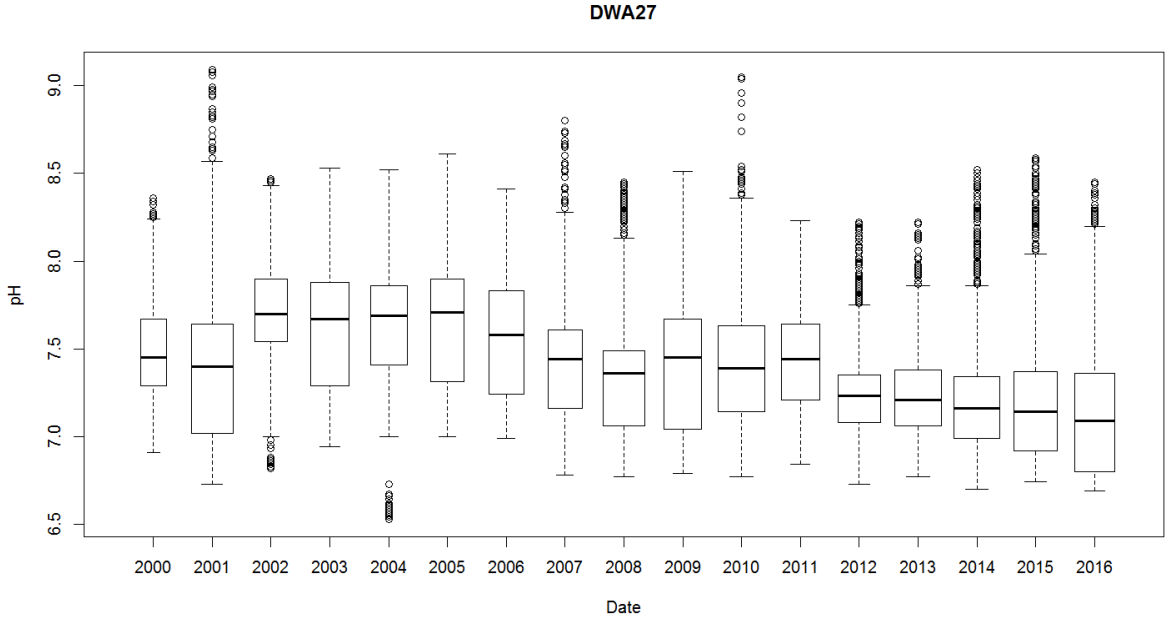

DWA21
FRP
0.000
0.005
0.010
0.015
0.020
0.025
2000
2001
2002
2003
2004
2012
2013
2014
2015
2016
Date

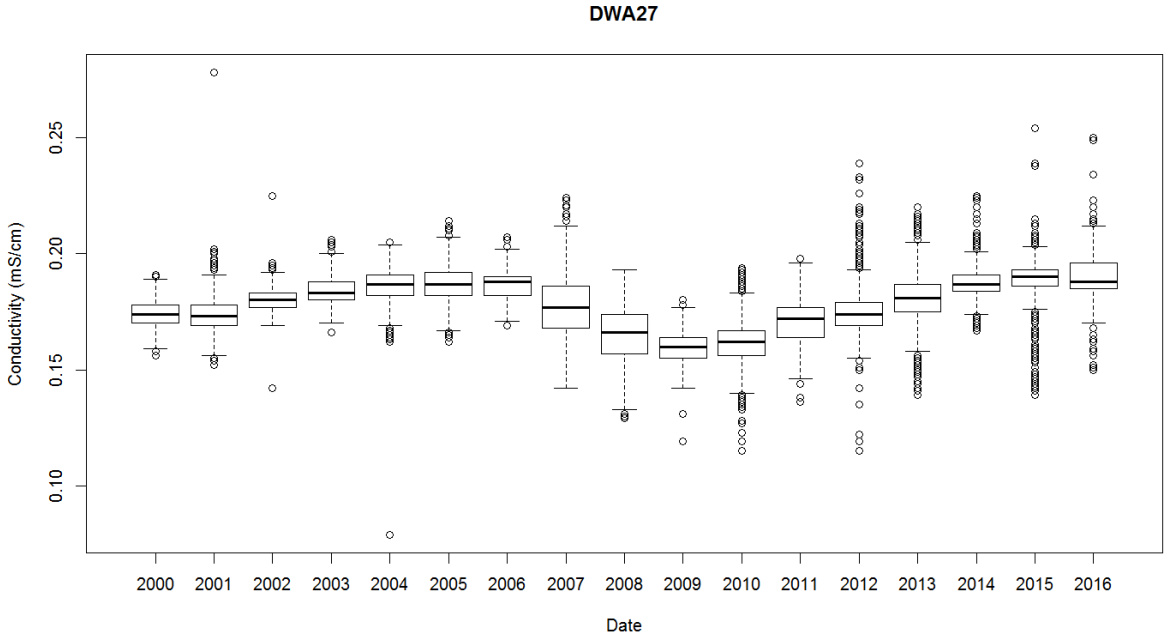

DWA21
Total Phosphorus
0.00
0.02
0.04
0.06
0.08
0.10
0.12
1990
1992
1994
1996
1998
2000
2002
2004
2013
2015
Date

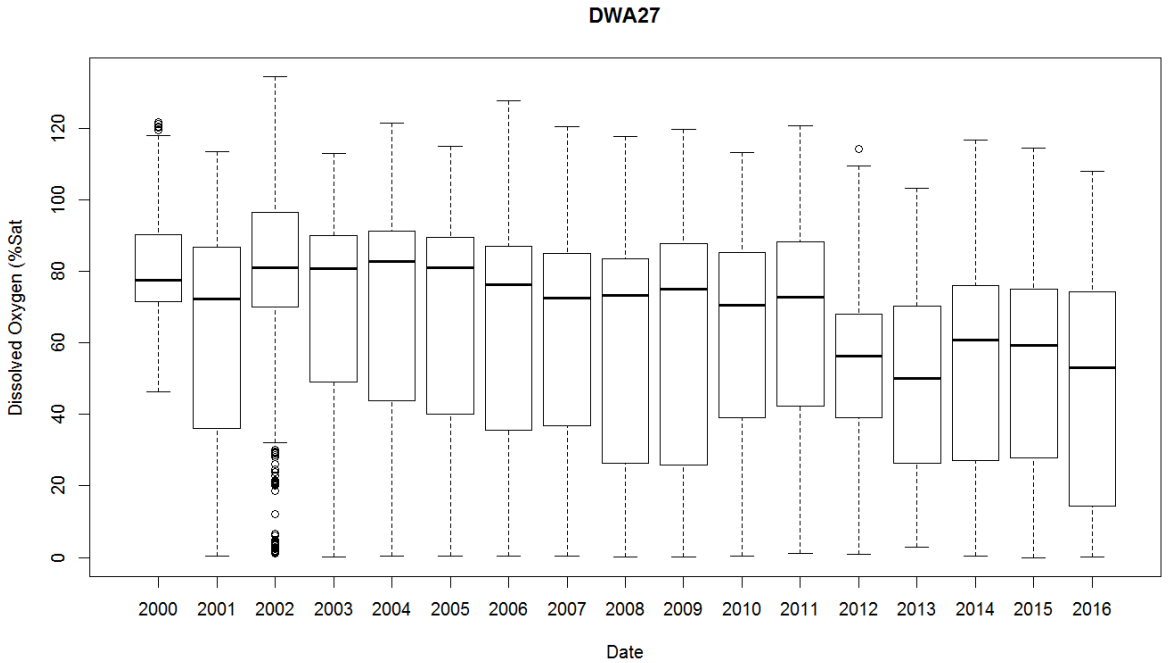

DWA21
Aluminium
0.00
0.05
0.10
0.15
0.20
0.25
0.30
2000
2001
2002
2003
2004
2012
2013
2014
2015
2016
Date

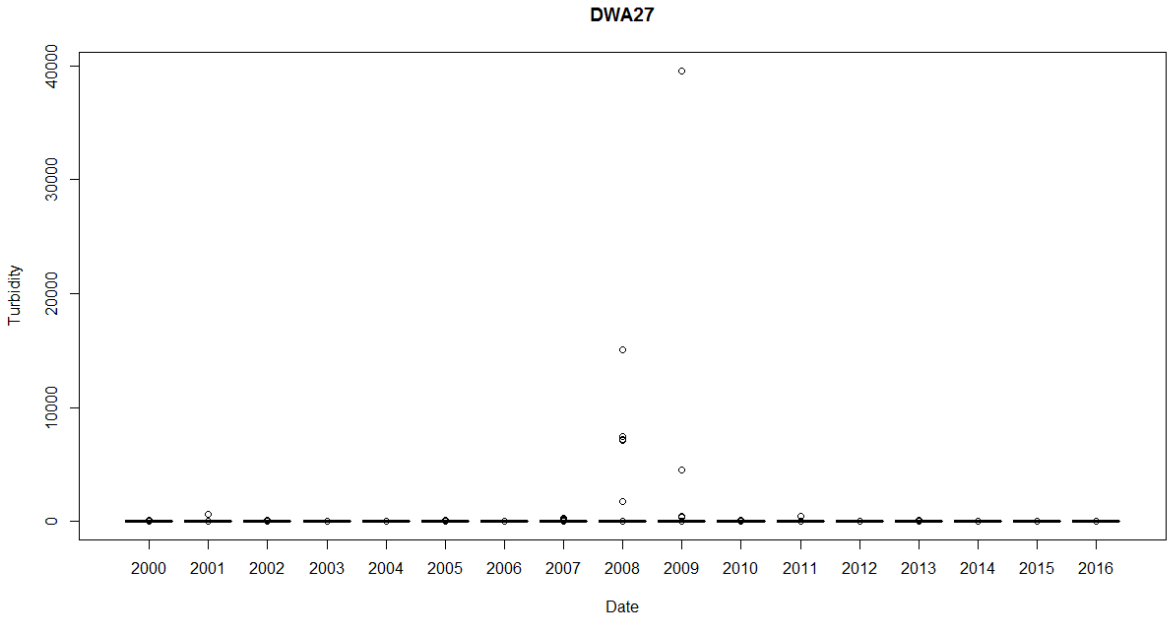

DWA21
Iron
0.0
0.5
1.0
1.5
2.0
2000
2002
2004
2013
2015
Date

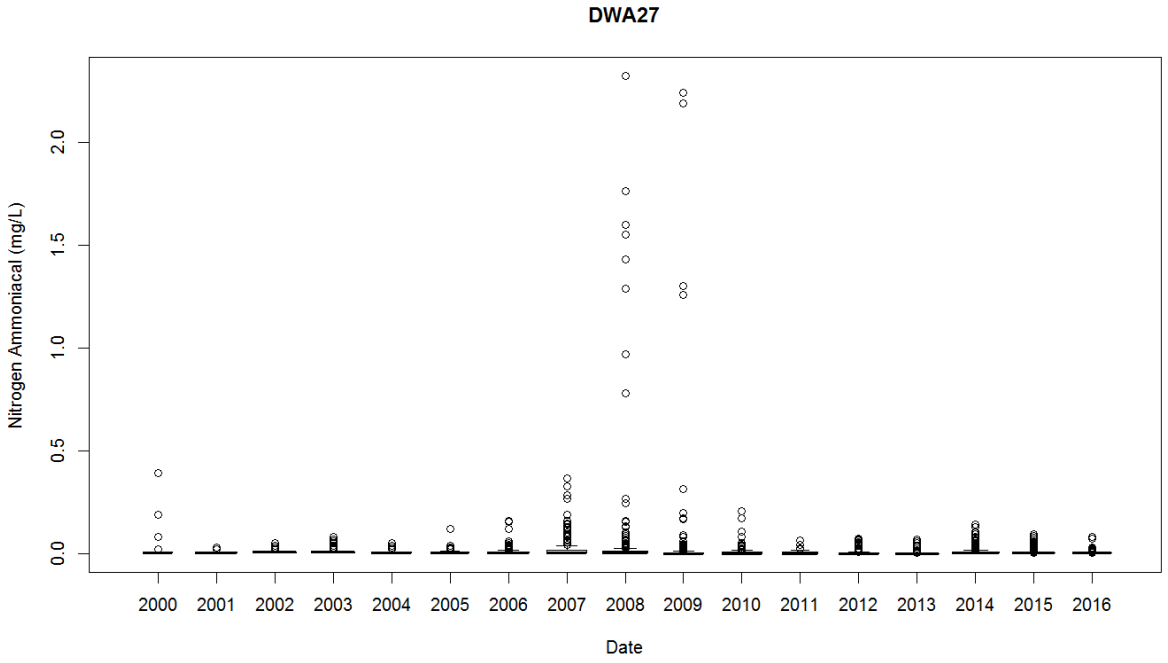

DWA27
Chlorophyll-a (ug/L)
0
2
4
6
8
10
1970
1972
1974
1984
1989
2001
2003
2006
2009
2013
2015
Date

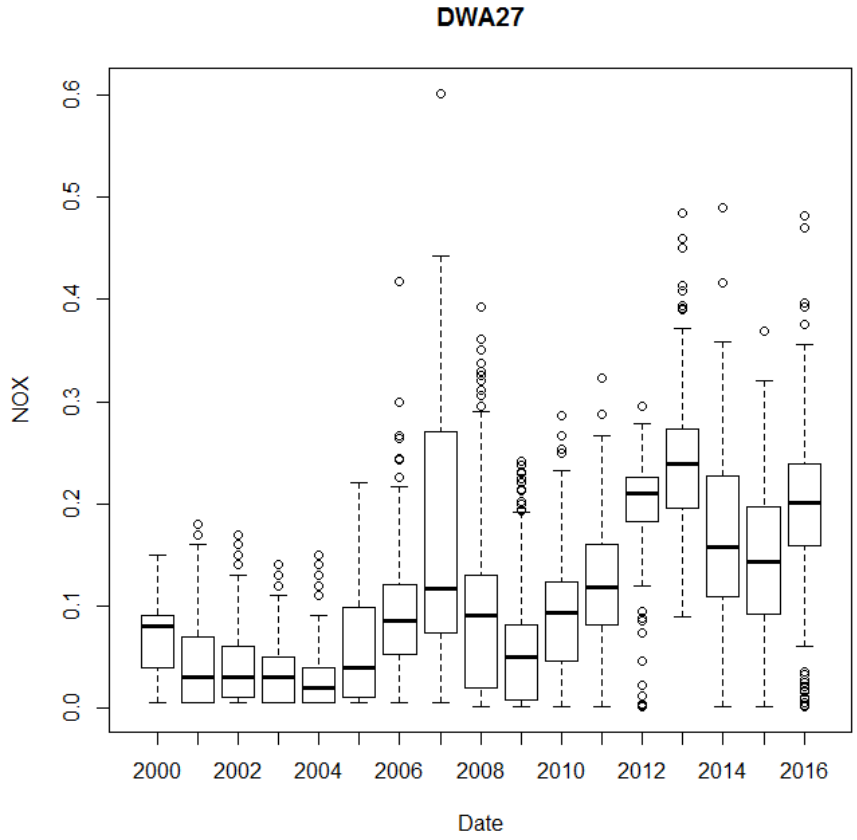

DWA27
pH
6.5
7.0
7.5
8.0
8.5
9.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

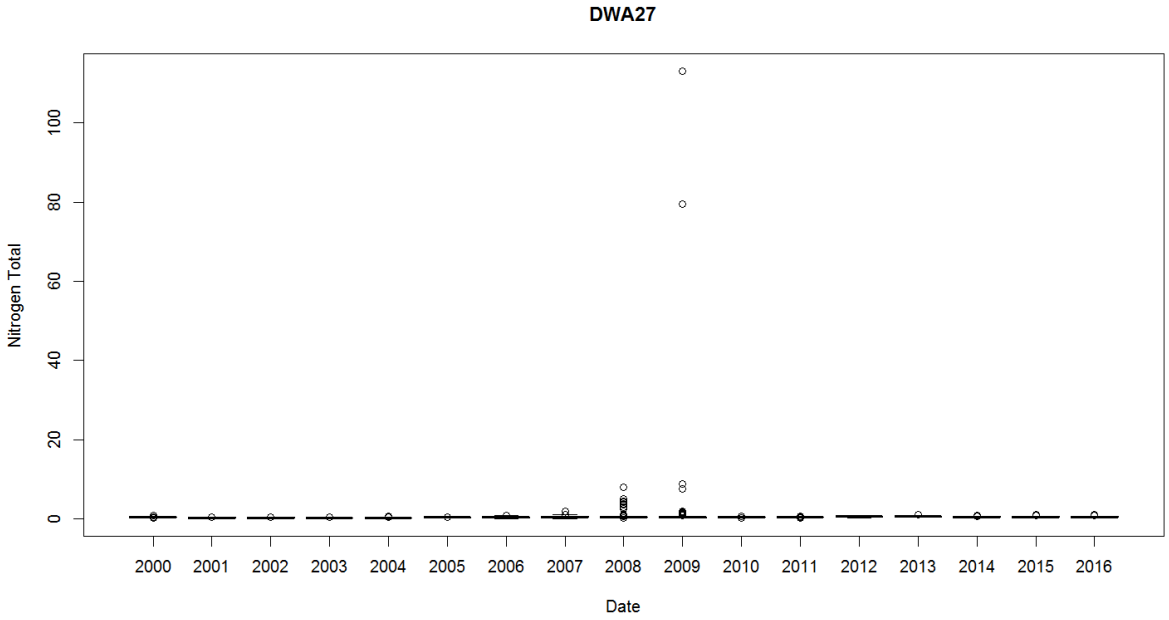

DWA27
Conductivity (mS/cm)
0.10
0.15
0.20
0.25
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

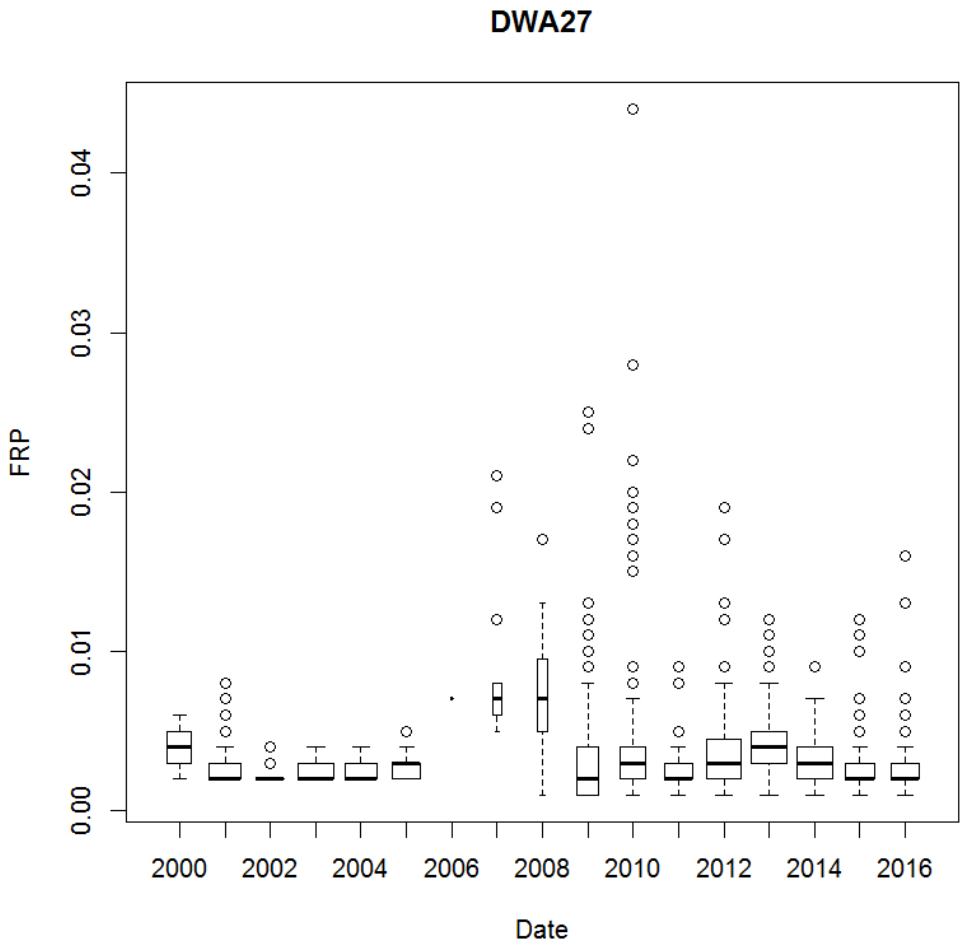

DWA27
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

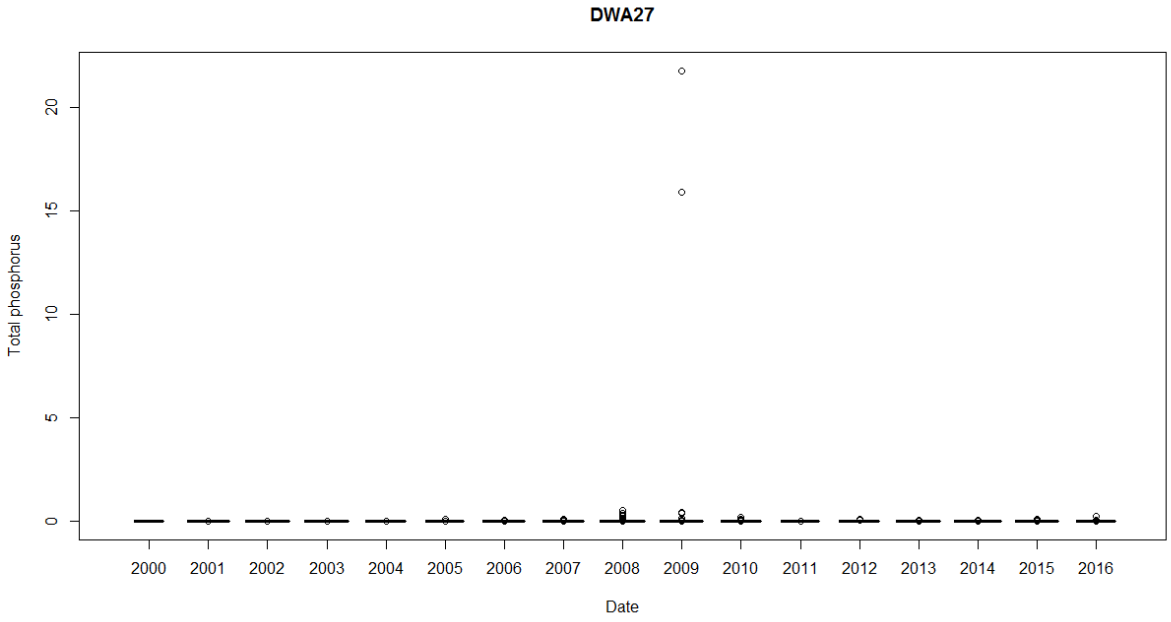

DWA27
Turbidity
0
10000
20000
30000
40000
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

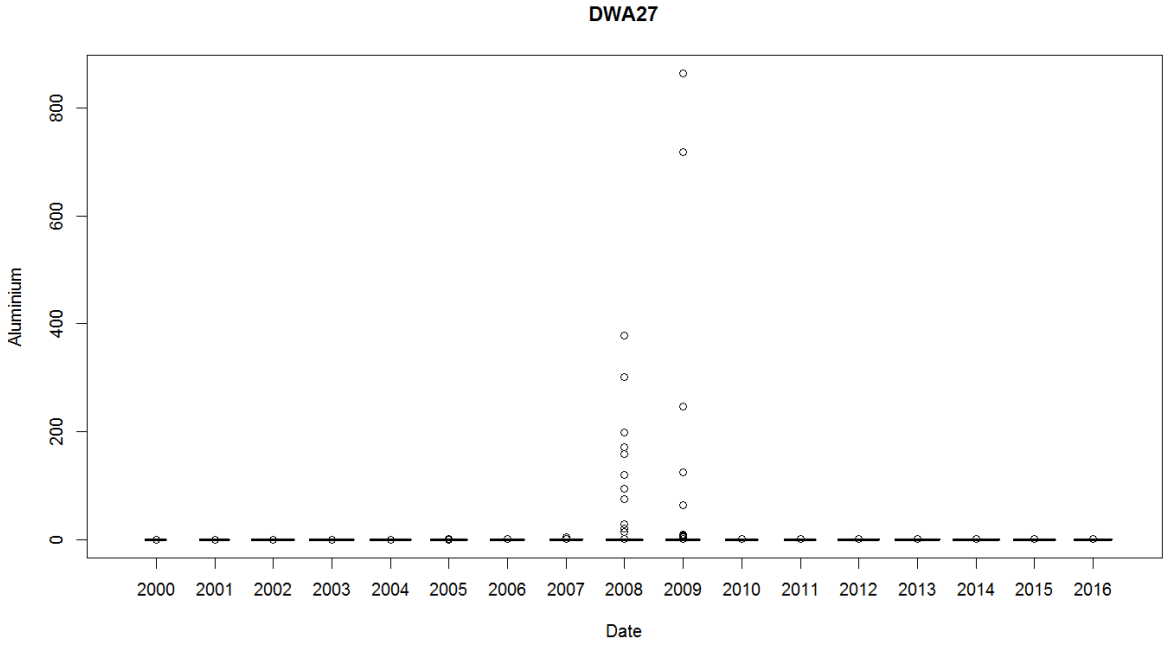

DWA27
Nitrogen Ammoniacal (mg/L)
0.0
0.5
1.0
1.5
2.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

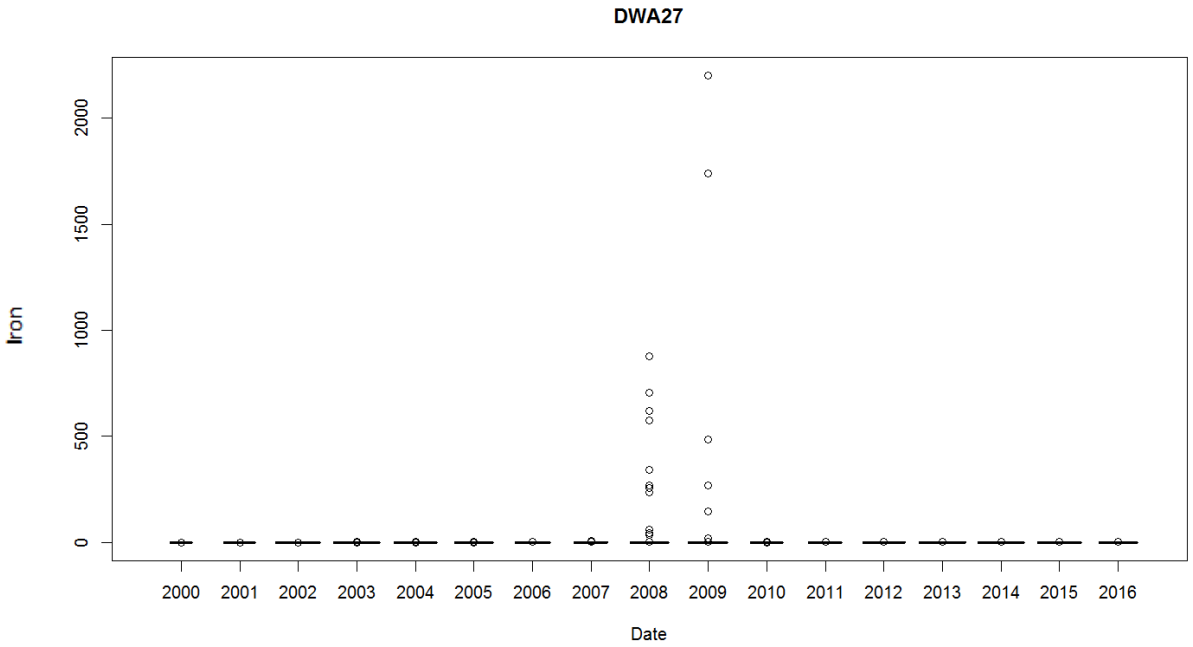

DWA27
NOX
0.0
0.1
0.2
0.3
0.4
0.5
0.6
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

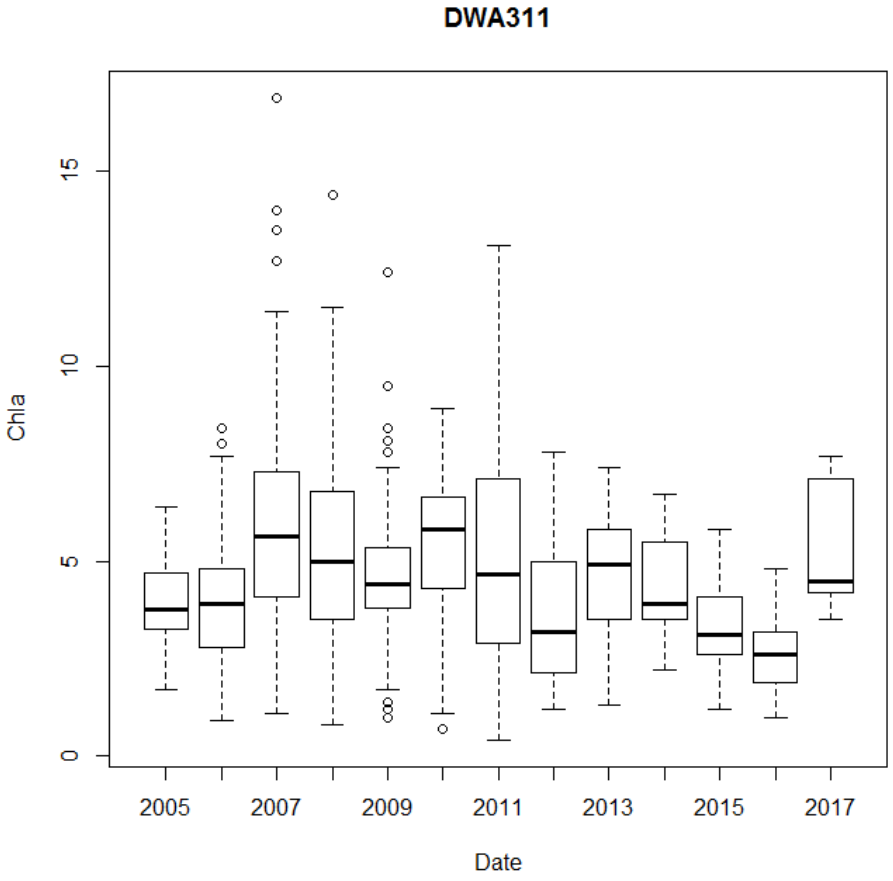

DWA27
Nitrogen Total
0
20
40
60
80
100
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

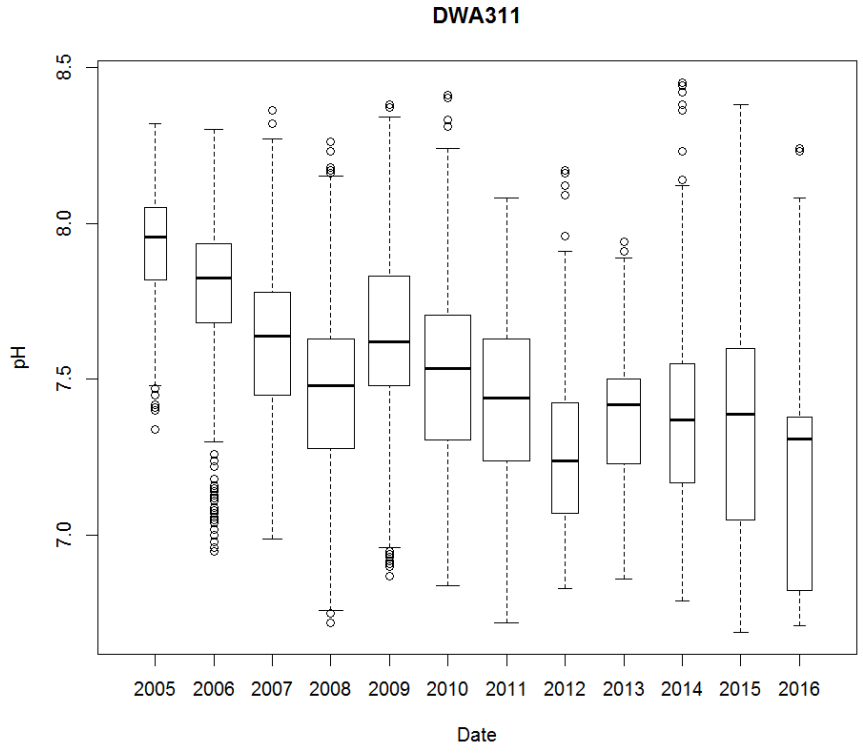

DWA27
FRP
0.00
0.01
0.02
0.03
0.04
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

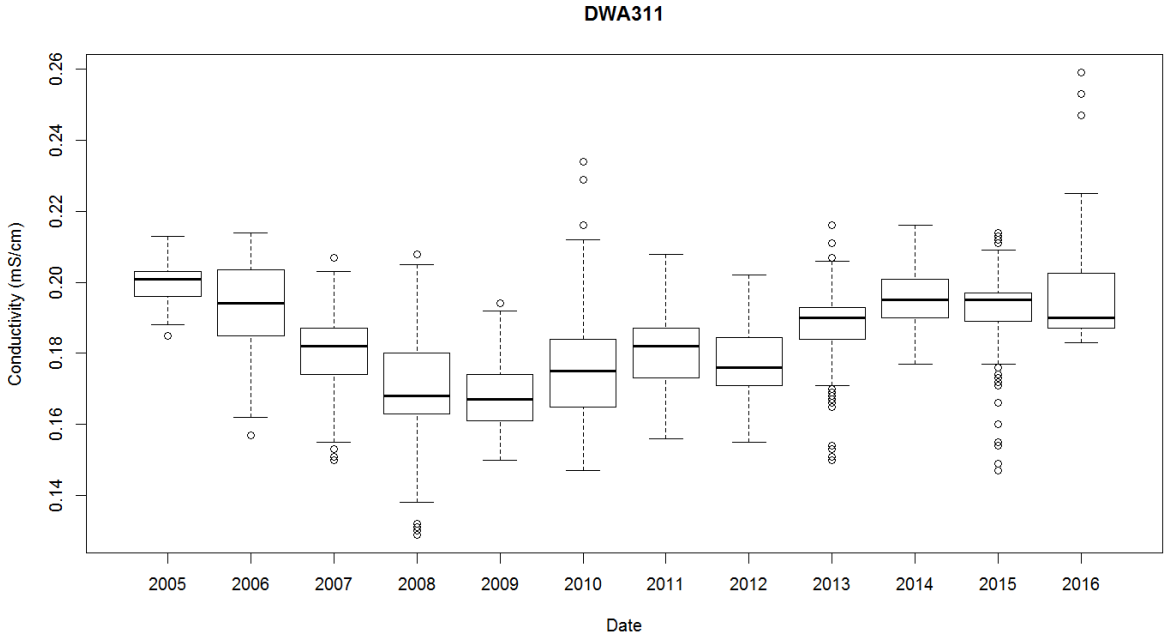

DWA27
Total phosphorus
0
5
10
15
20
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

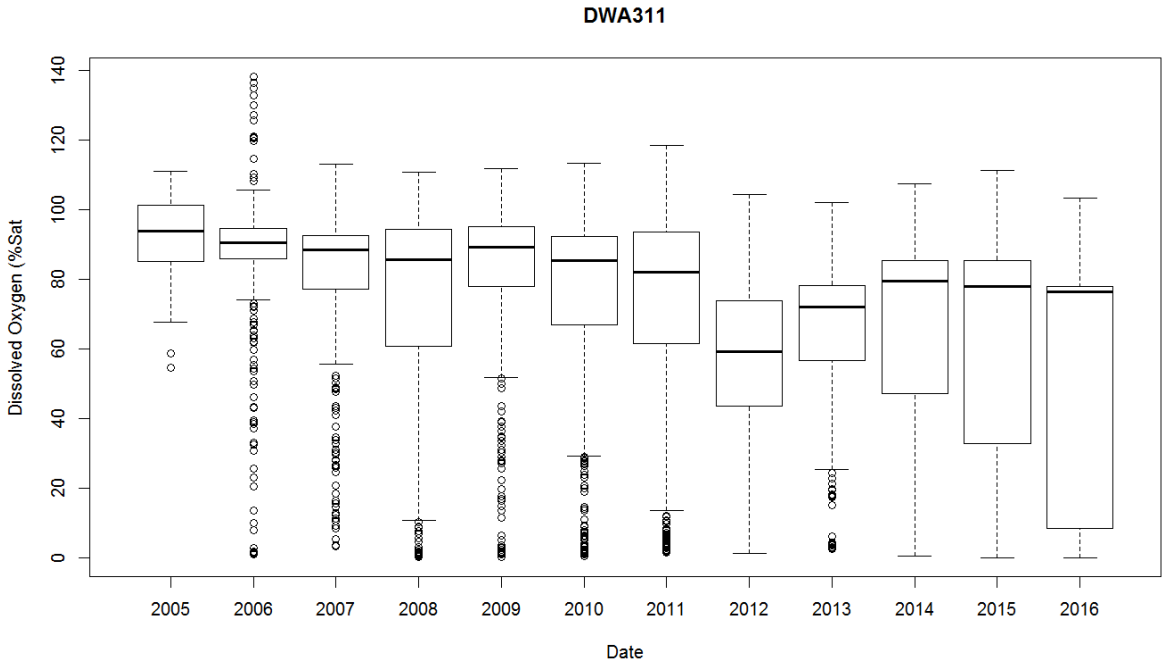

DWA27
Aluminium
0
200
400
600
800
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

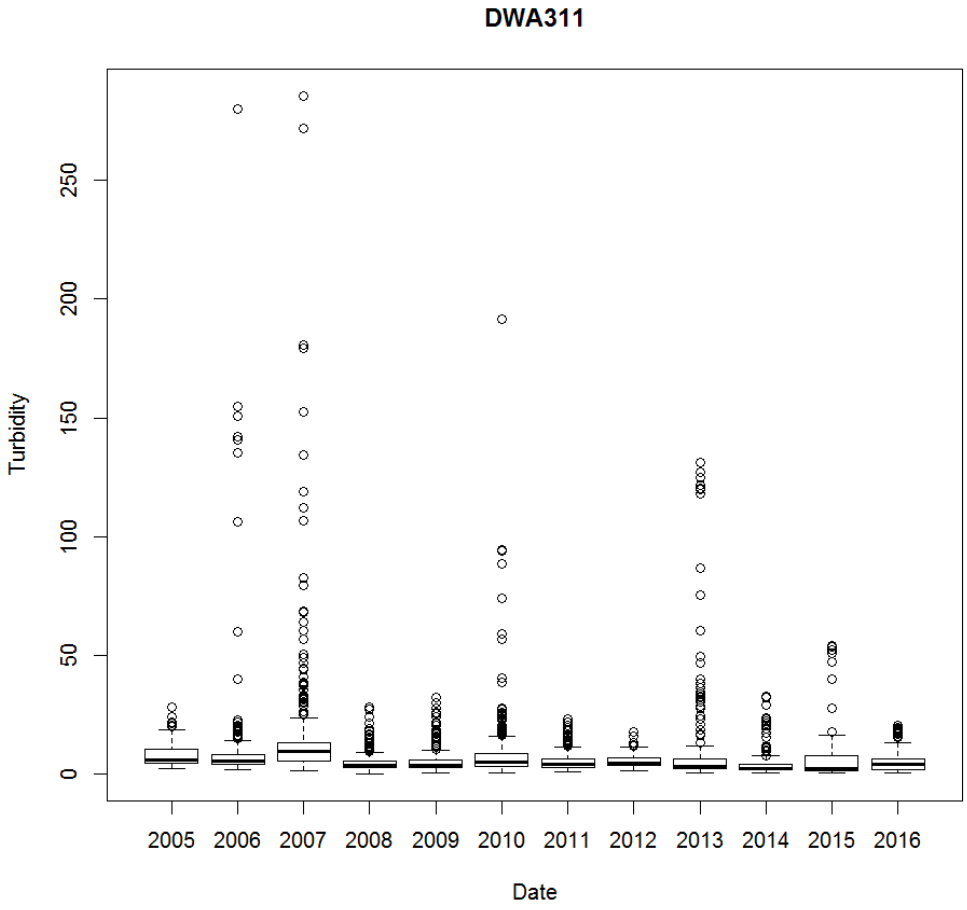

DWA27
Iron
0
500
1000
1500
2000
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

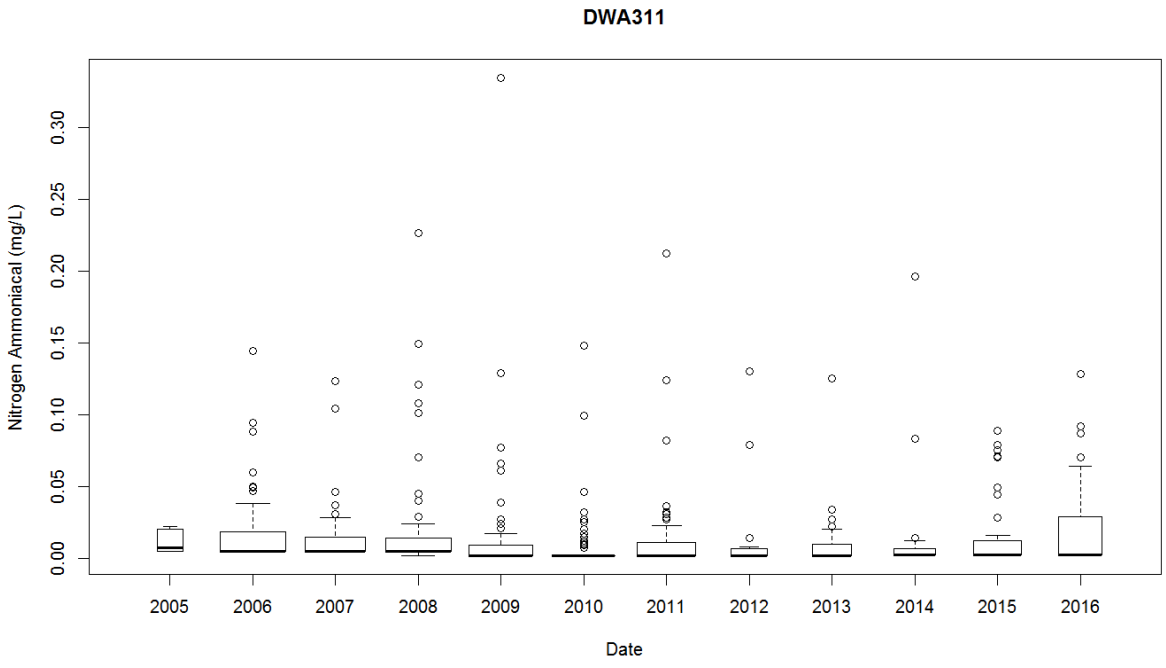

DWA311
Chla
0
5
10
15
2005
2007
2009
2011
2013
2015
2017
Date

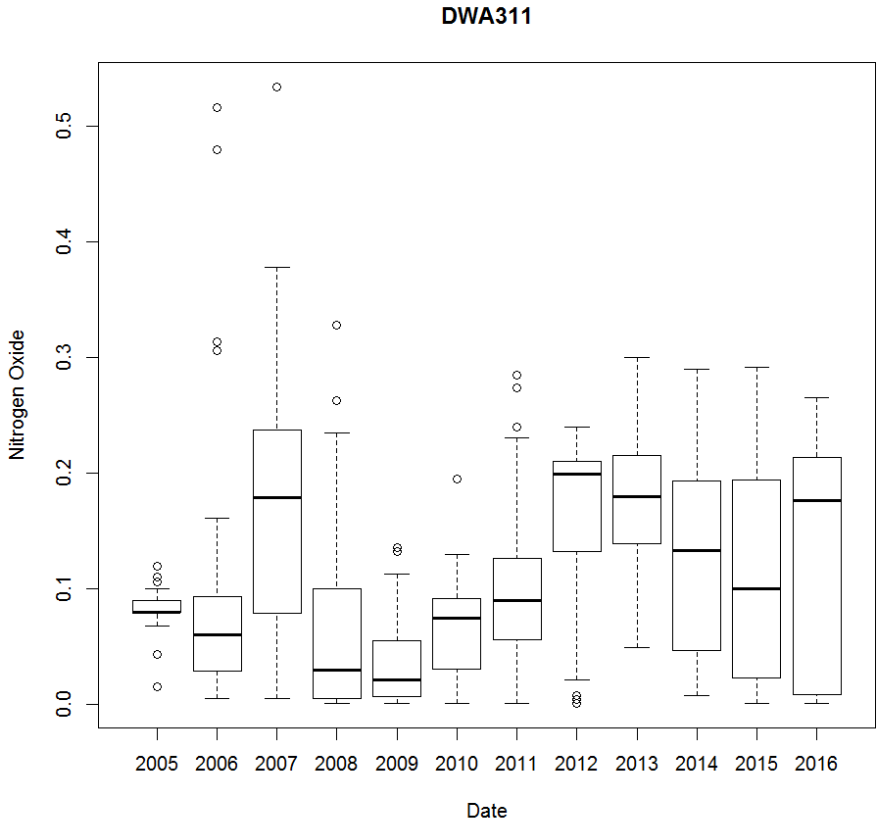

DWA311
pH
7.0
7.5
8.0
8.5
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

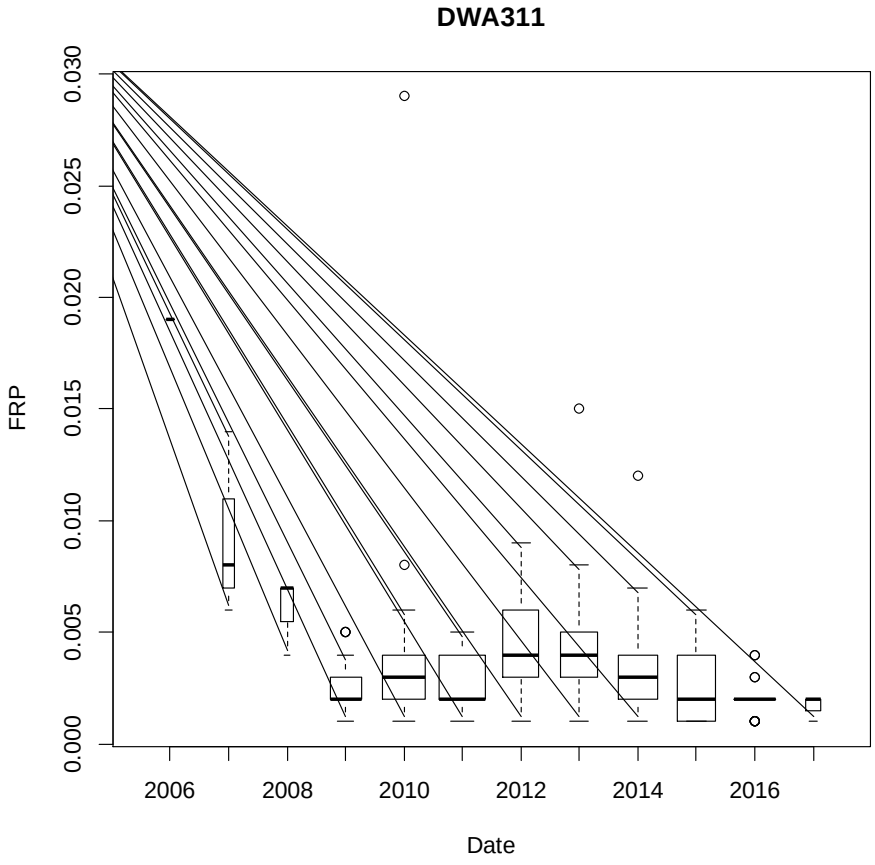

DWA311
Conductivity (mS/cm)
0.14
0.16
0.18
0.20
0.22
0.24
0.26
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

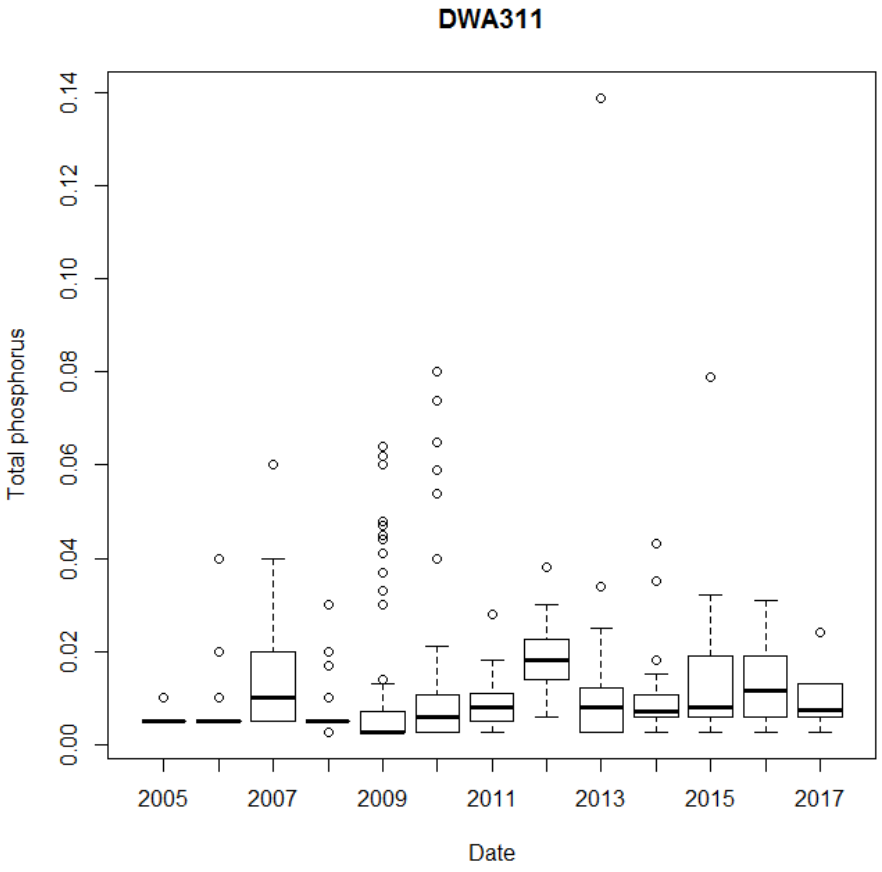

DWA311
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
140
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

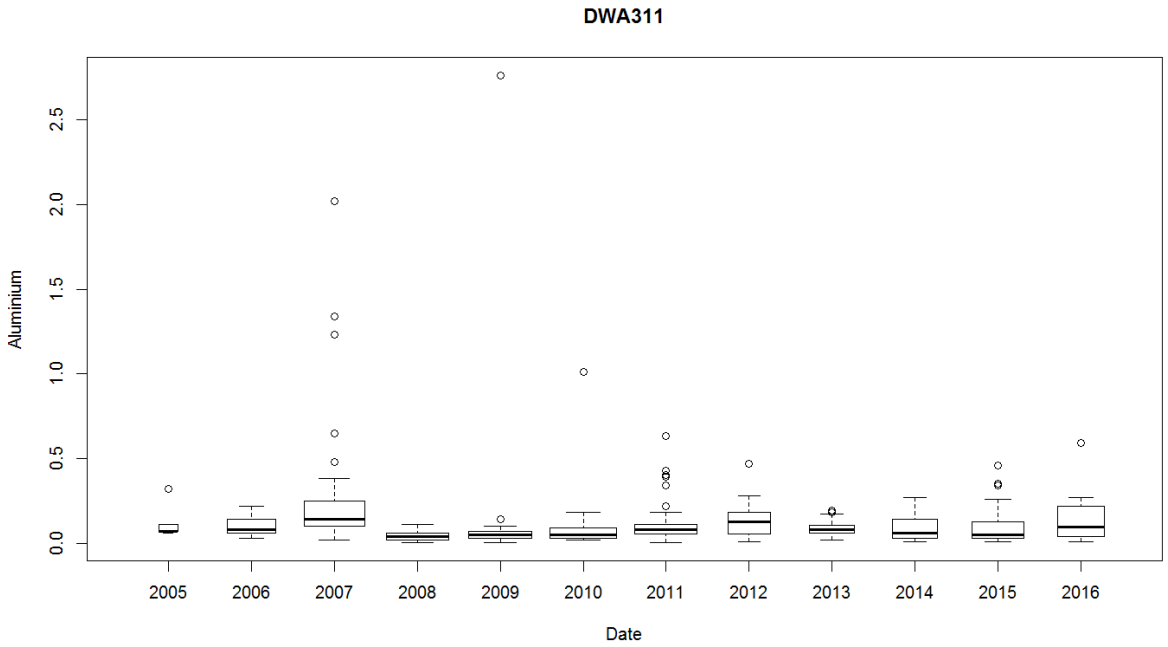

DWA311
Turbidity
0
50
100
150
200
250
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

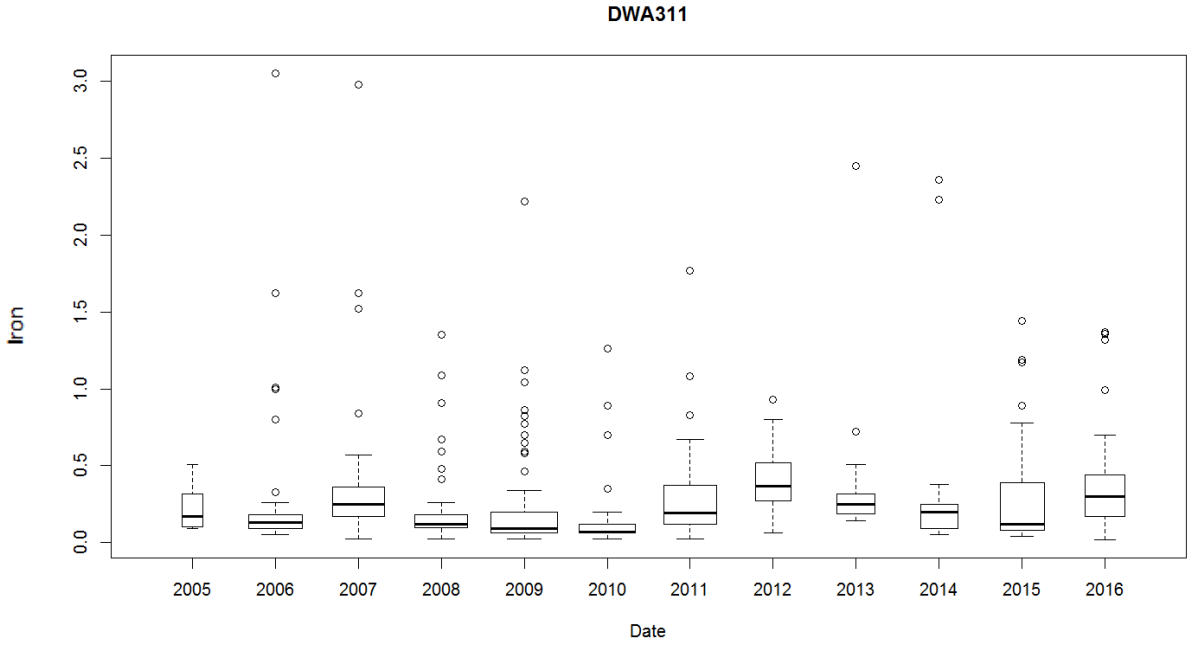

DWA311
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

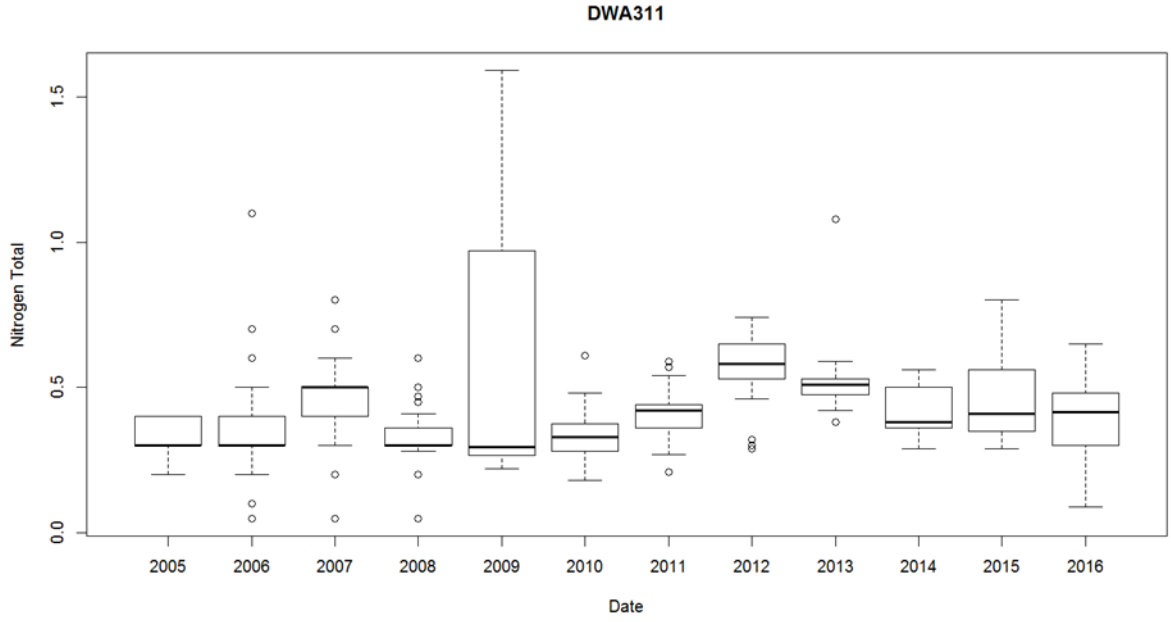

DWA311
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
0.5
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

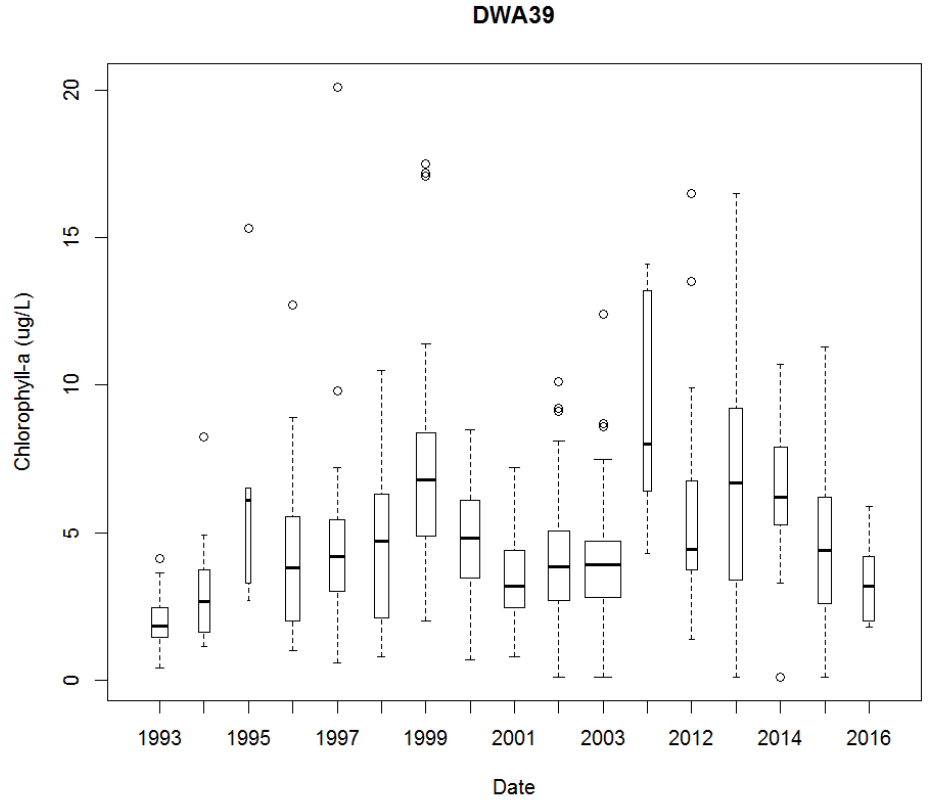

DWA311
FRP
0.000
0.005
0.010
0.015
0.020
0.025
0.030
2006
2008
2010
2012
2014
2016
Date

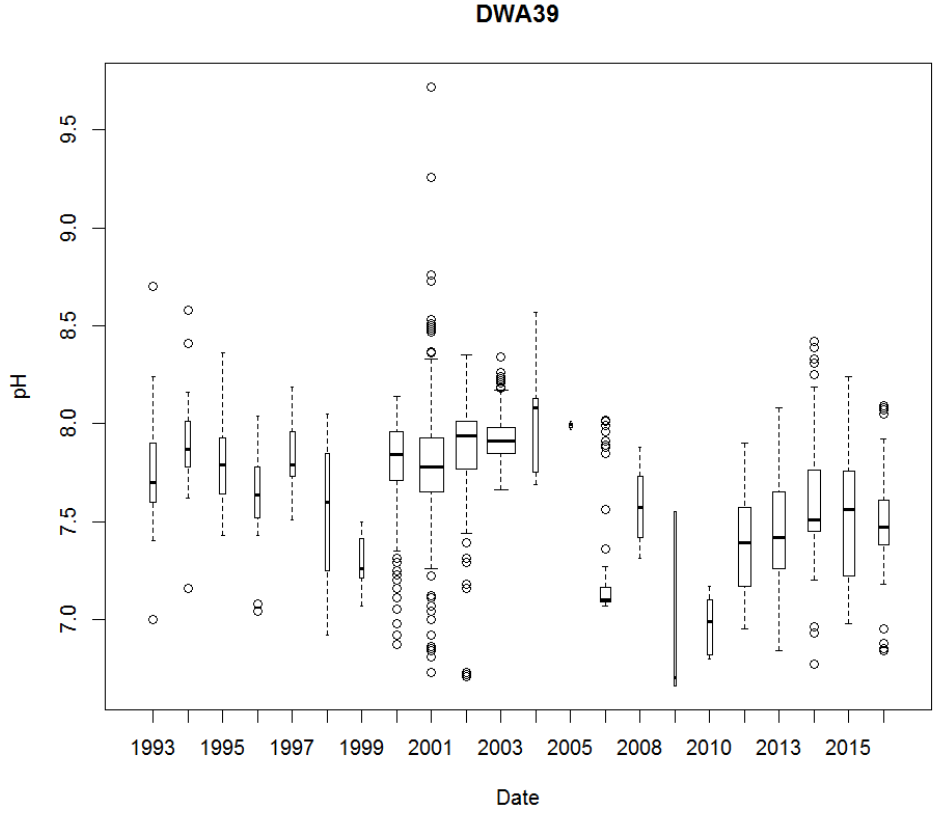

DWA311
Total phosphorus
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
2005
2007
2009
2011
2013
2015
2017
Date

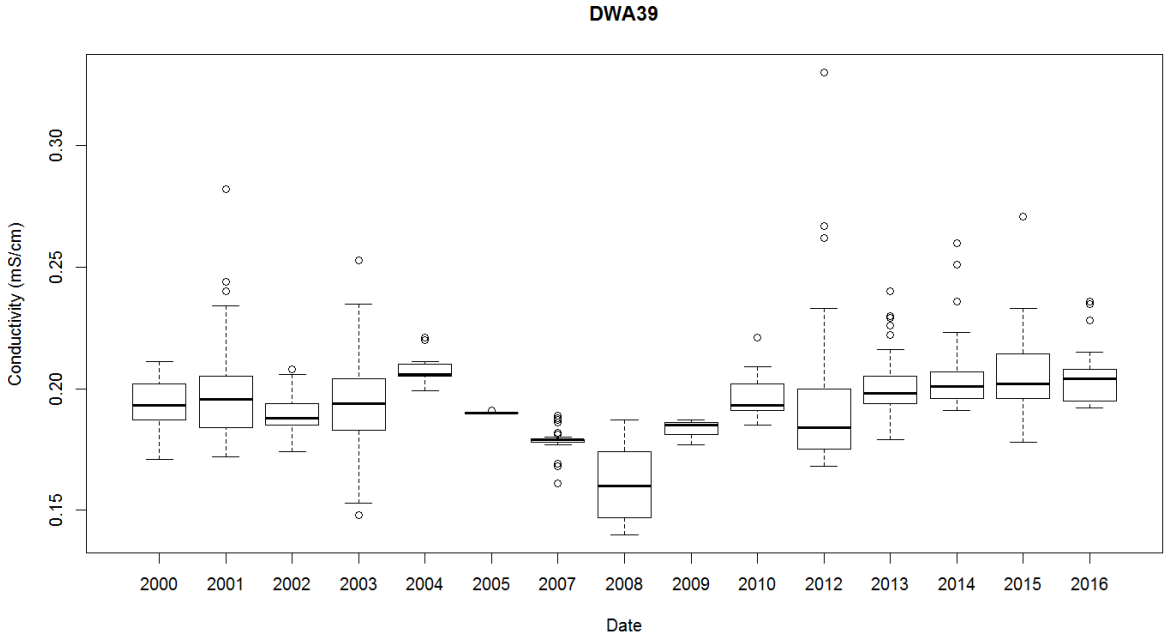

DWA311
Aluminium
0.0
0.5
1.0
1.5
2.0
2.5
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

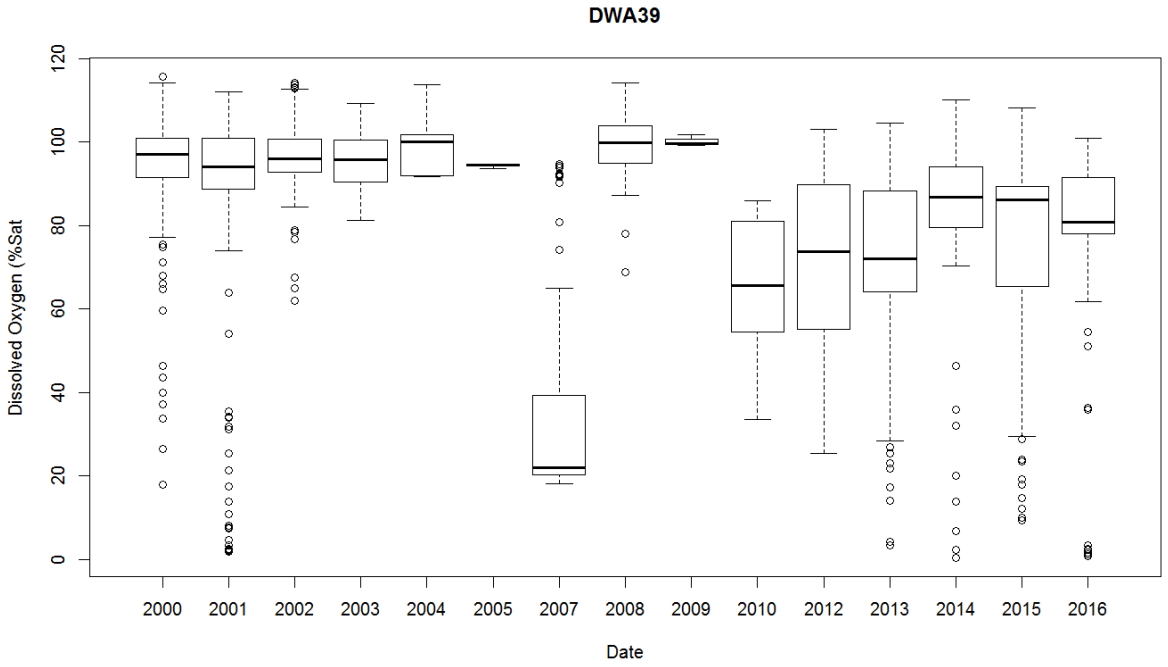

DWA311
Iron
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

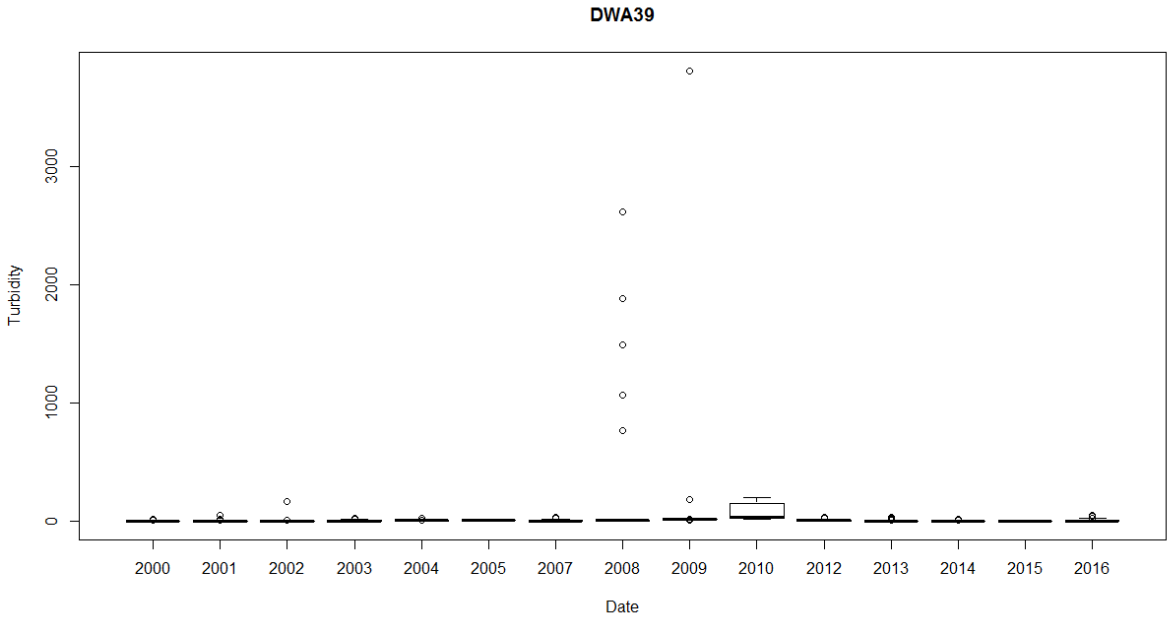

DWA311
Nitrogen Total
0.0
0.5
1.0
1.5
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

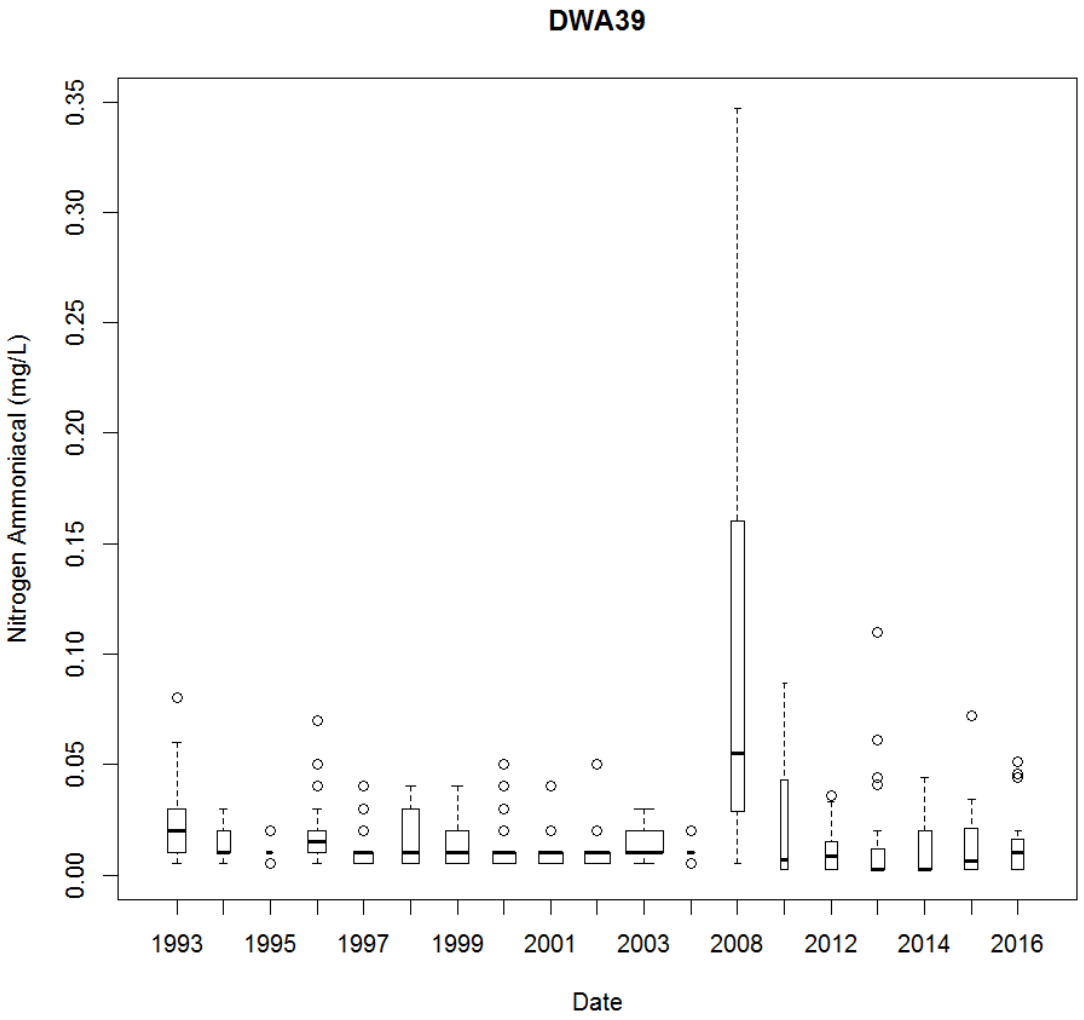

DWA39
Chlorophyll-a (ug/L)
0
5
10
15
20
1993
1995
1997
1999
2001
2003
2012
2014
2016
Date

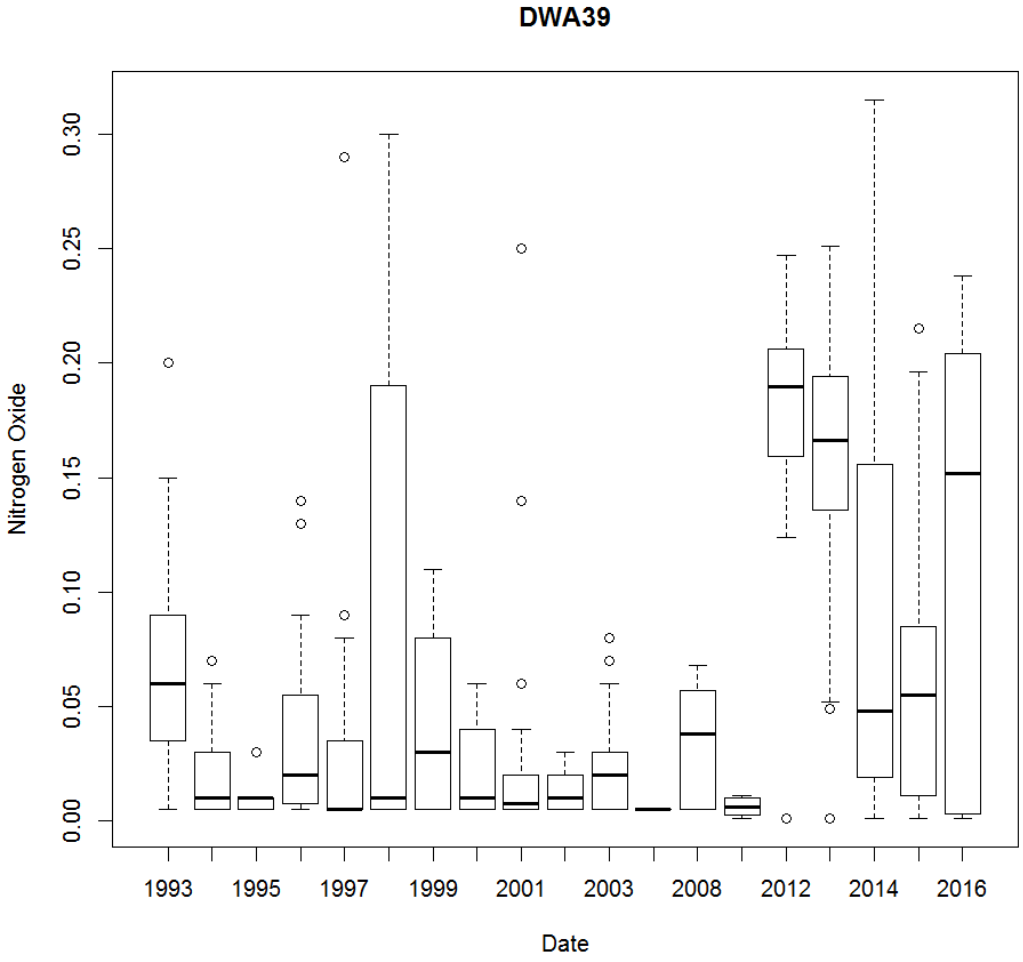

DWA39
pH
7.0
7.5
8.0
8.5
9.0
9.5
1993
1995
1997
1999
2001
2003
2005
2008
2010
2013
2015
Date

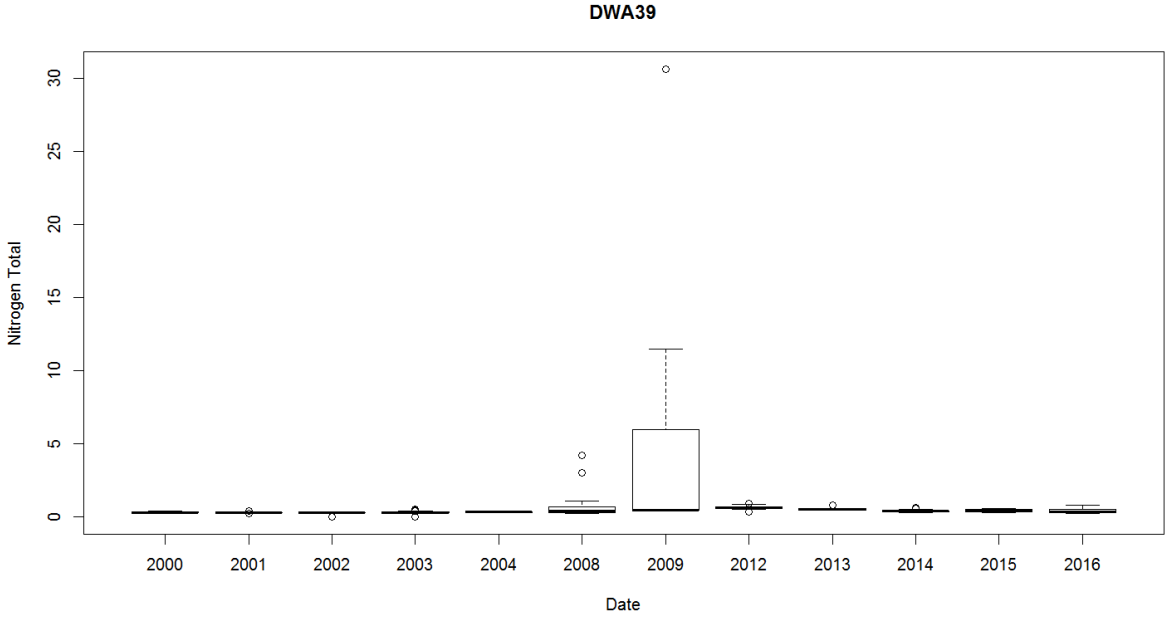

DWA39
Conductivity (mS/cm)
0.15
0.20
0.25
0.30
2000
2001
2002
2003
2004
2005
2007
2008
2009
2010
2012
2013
2014
2015
2016
Date

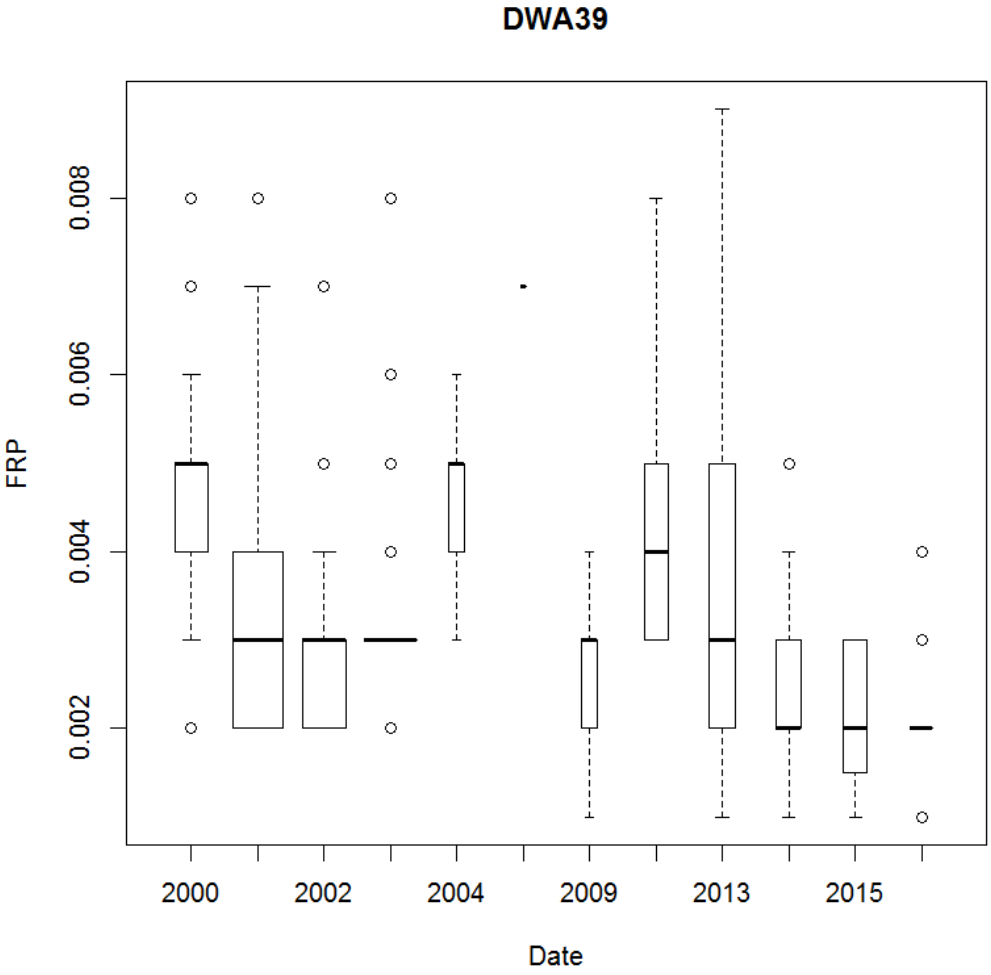

DWA39
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2007
2008
2009
2010
2012
2013
2014
2015
2016
Date

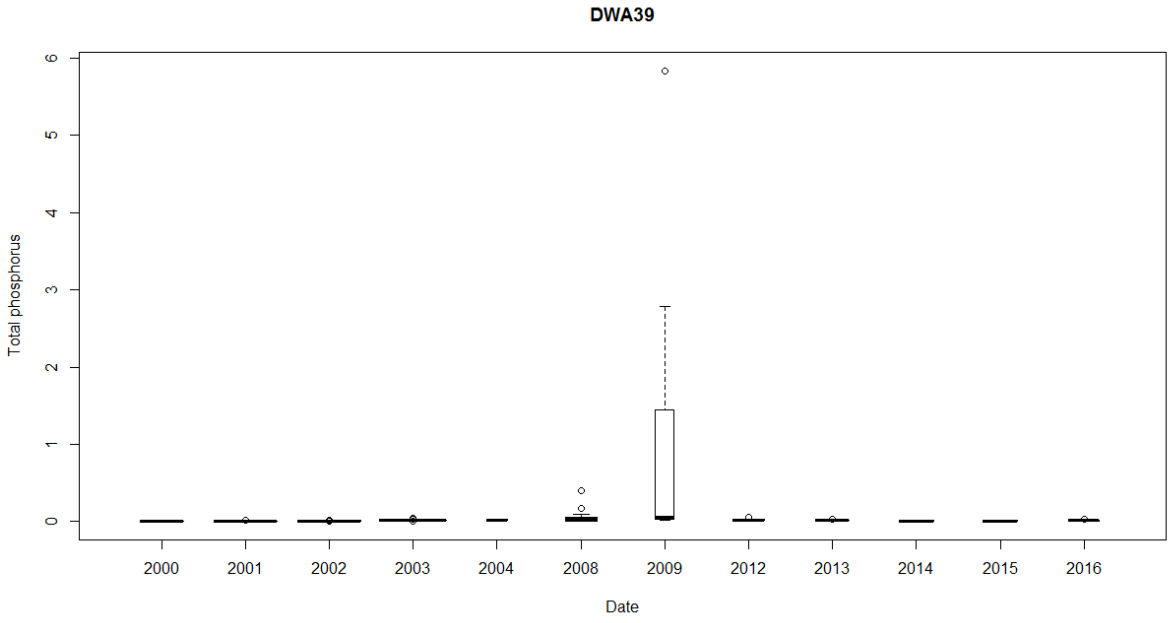

DWA39
Turbidity
0
1000
2000
3000
2000
2001
2002
2003
2004
2005
2007
2008
2009
2010
2012
2013
2014
2015
2016
Date

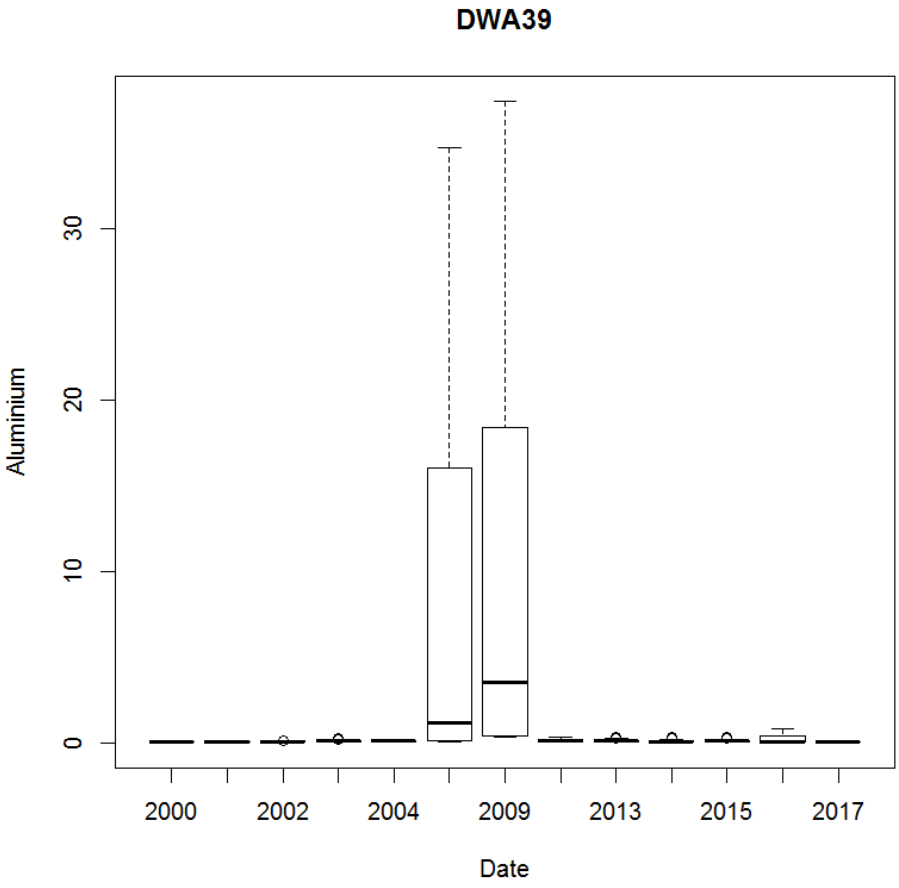

DWA39
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1993
1995
1997
1999
2001
2003
2008
2012
2014
2016
Date

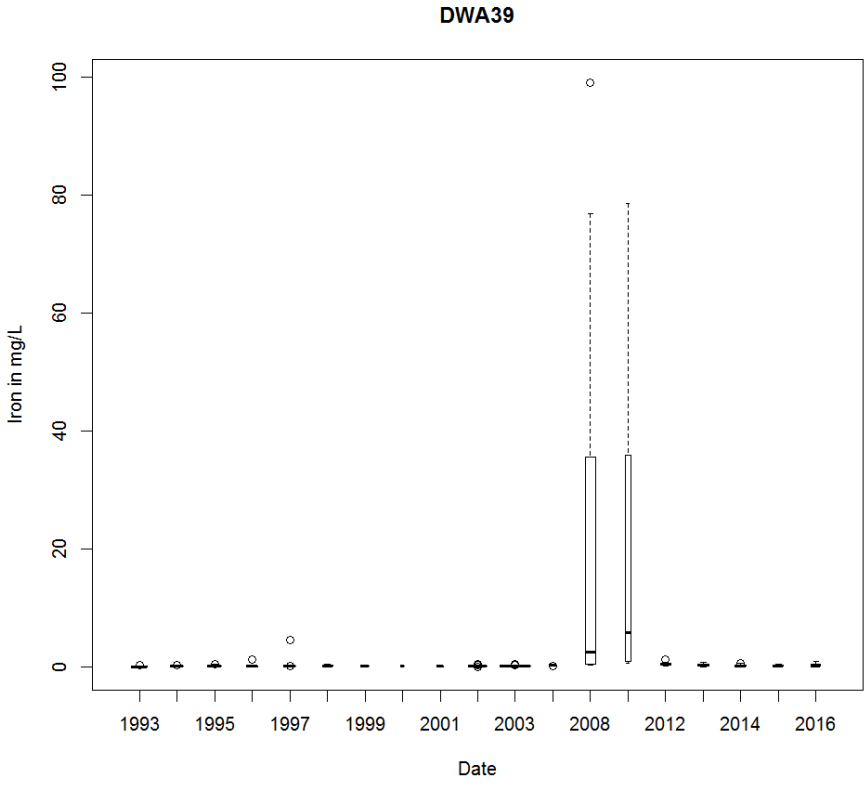

DWA39
Nitrogen Oxide
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1993
1995
1997
1999
2001
2003
2008
2012
2014
2016
Date

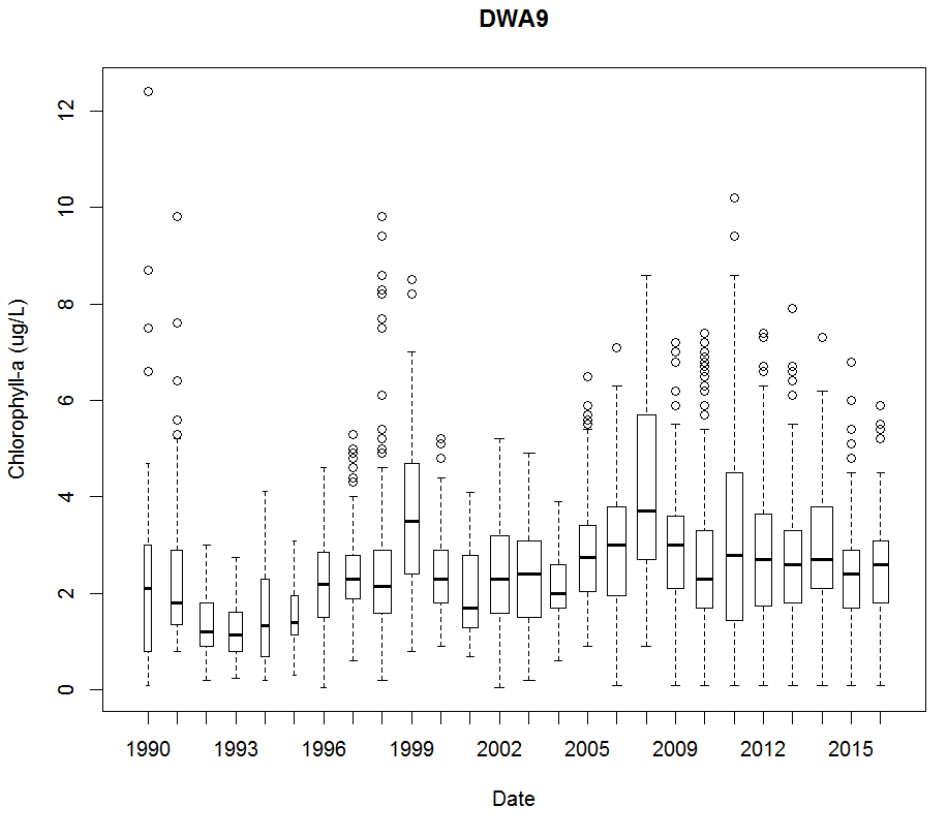

DWA39
Nitrogen Total
0
5
10
15
20
25
30
2000
2001
2002
2003
2004
2008
2009
2012
2013
2014
2015
2016
Date

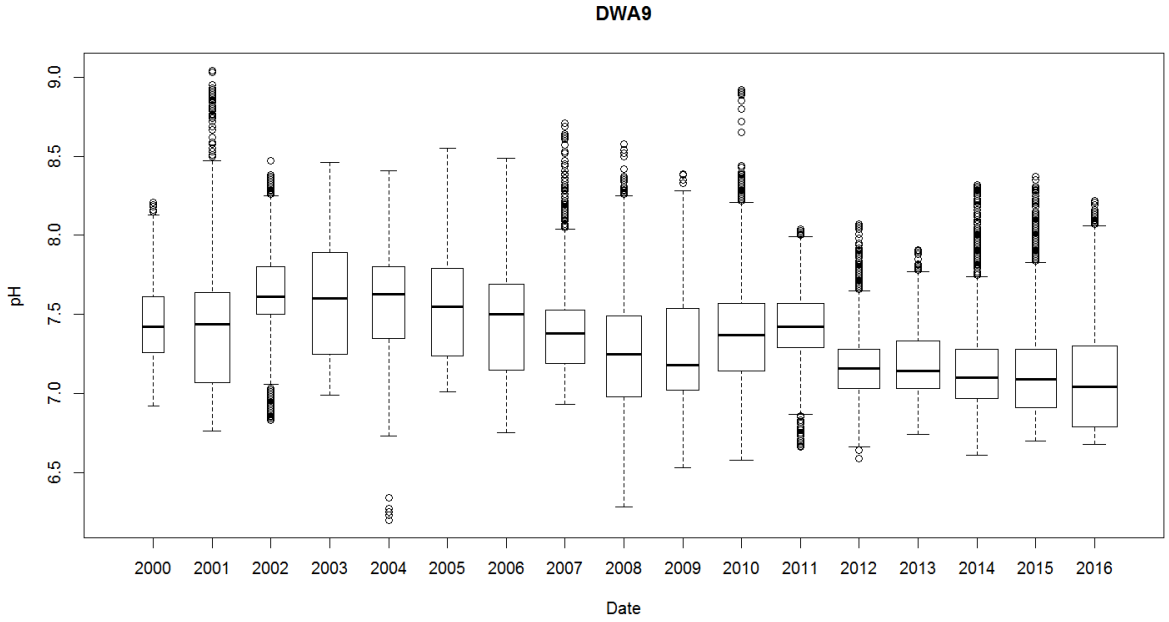

DWA39
FRP
0.002
0.004
0.006
0.008
2000
2002
2004
2009
2013
2015
Date

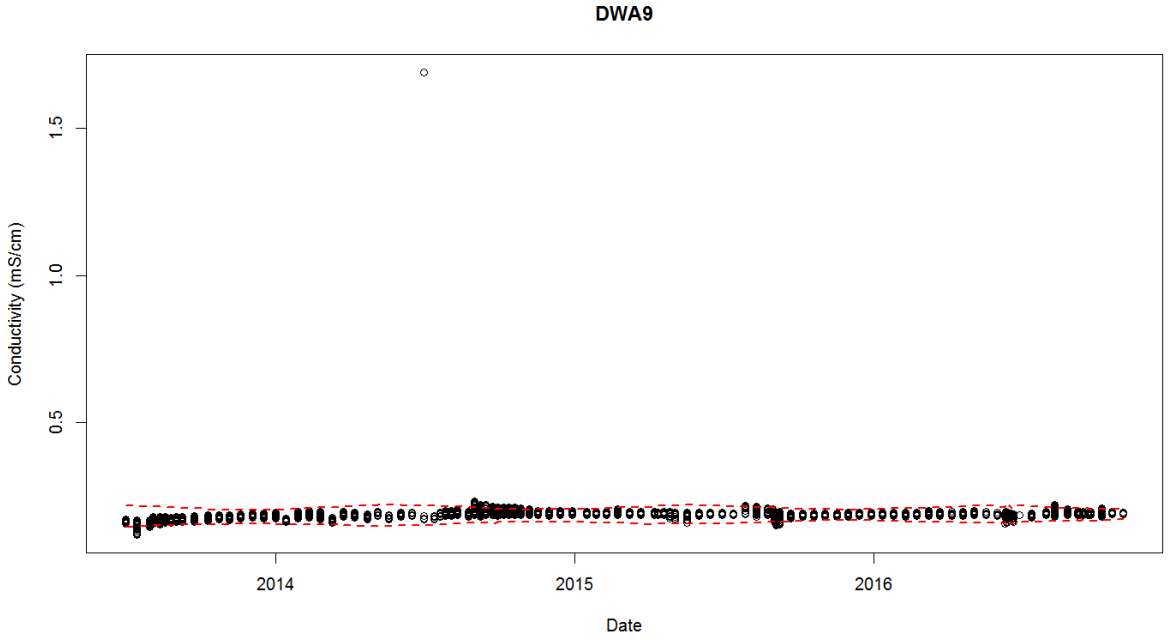

DWA39
Total phosphorus
0
1
2
3
4
5
6
2000
2001
2002
2003
2004
2008
2009
2012
2013
2014
2015
2016
Date

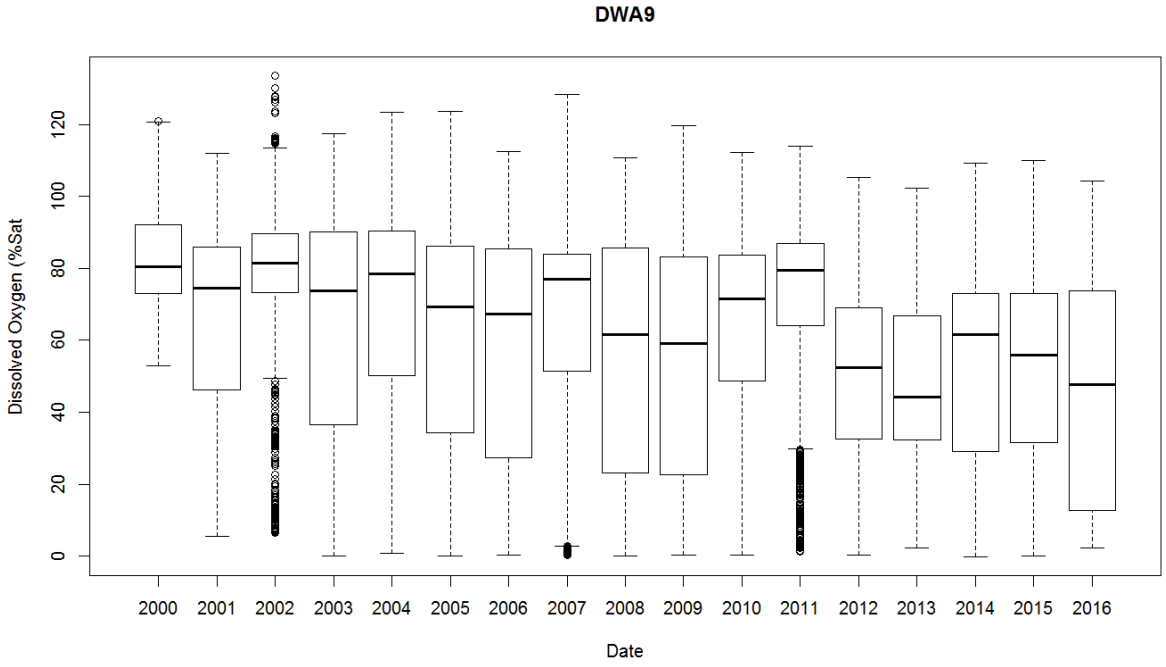

DWA39
Aluminium
0
10
20
30
2000
2002
2004
2009
2013
2015
2017
Date

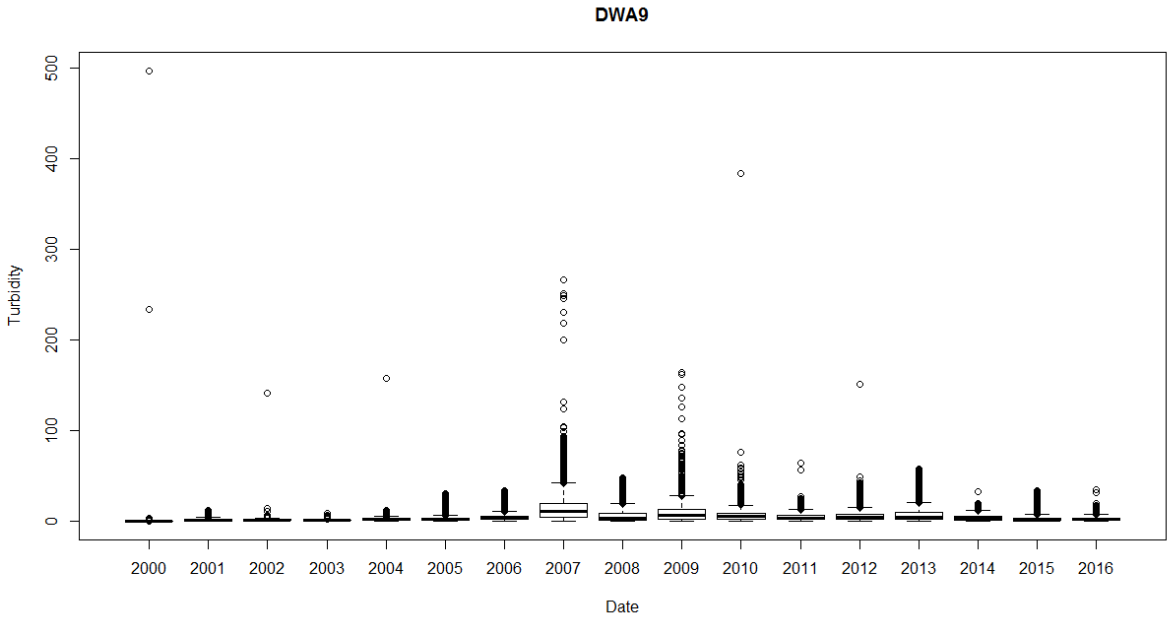

DWA39
Iron in mg/L
0
20
40
60
80
100
1993
1995
1997
1999
2001
2003
2008
2012
2014
2016
Date

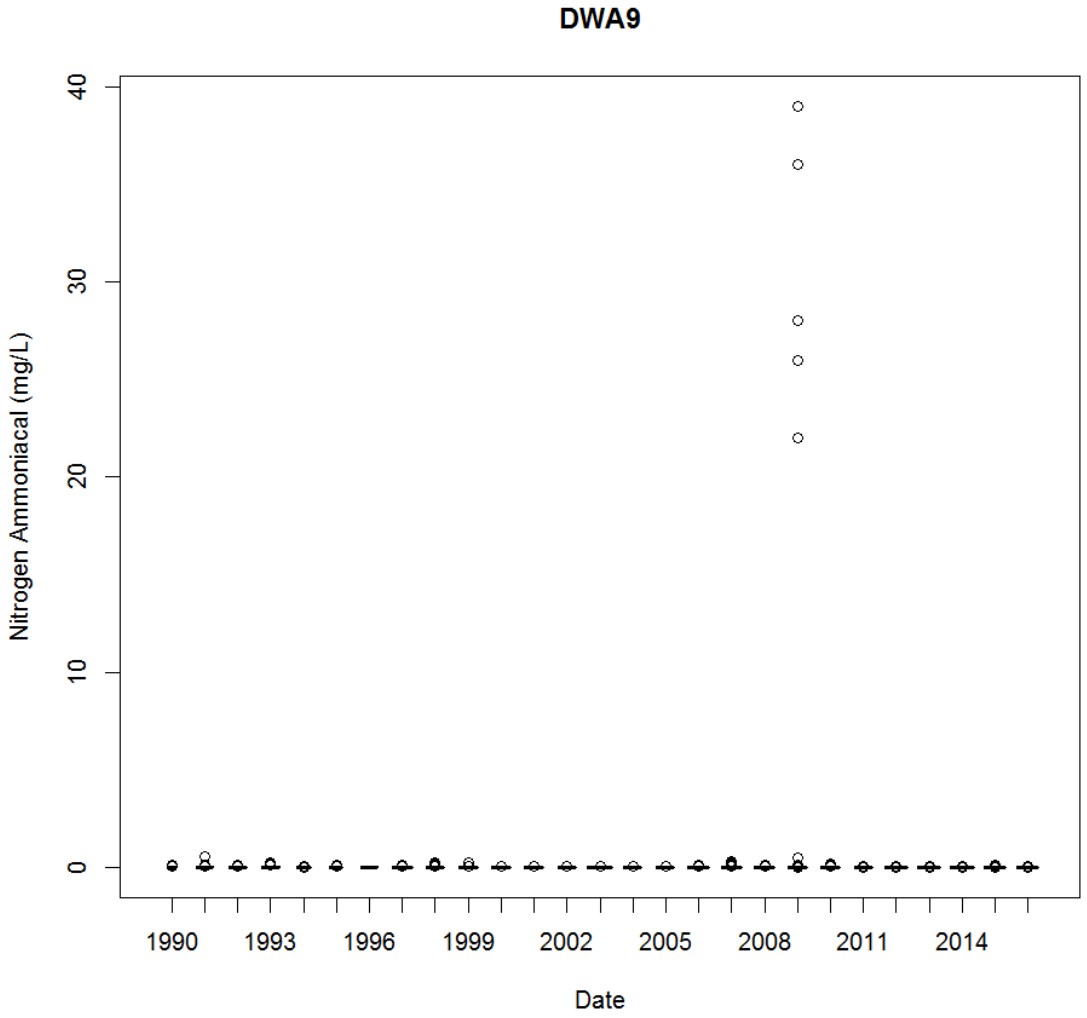

DWA9
Chlorophyll-a (ug/L)
0
2
4
6
8
10
12
1990
1993
1996
1999
2002
2005
2009
2012
2015
Date

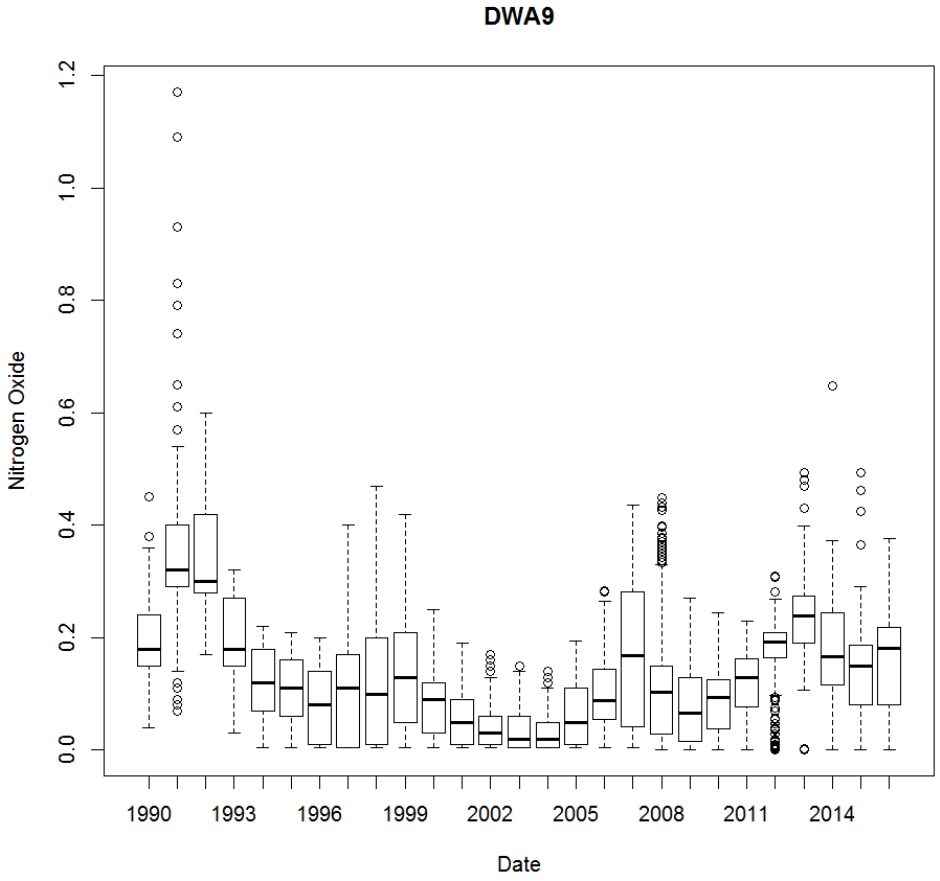

DWA9
pH
6.5
7.0
7.5
8.0
8.5
9.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

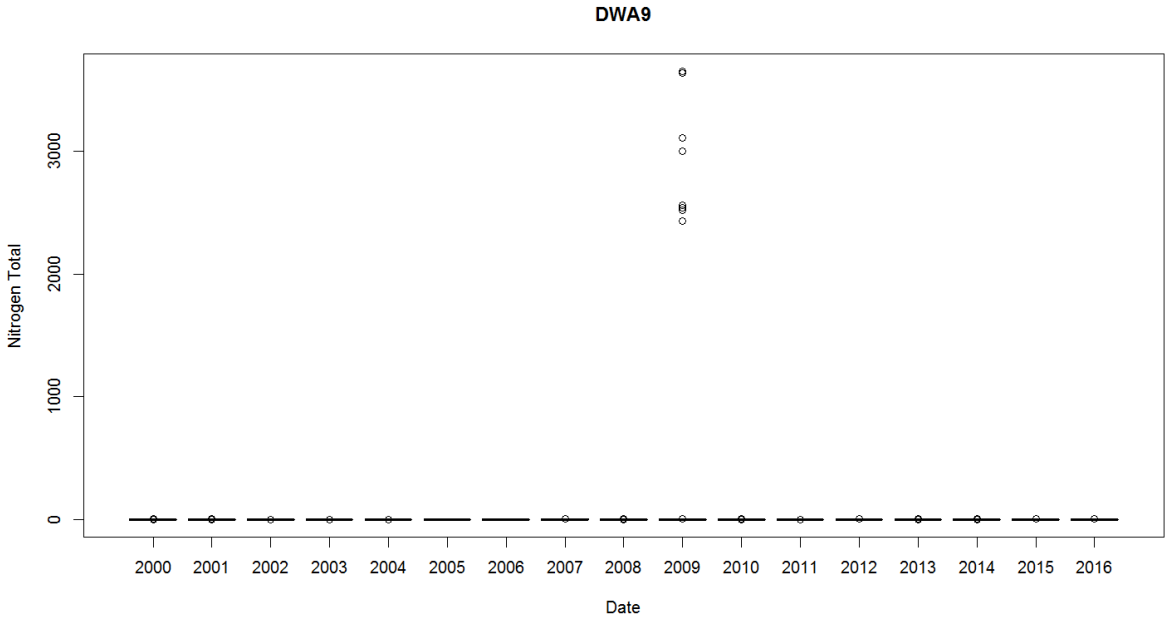

DWA9
Conductivity (mS/cm)
0.5
1.0
1.5
2014
2015
2016
Date

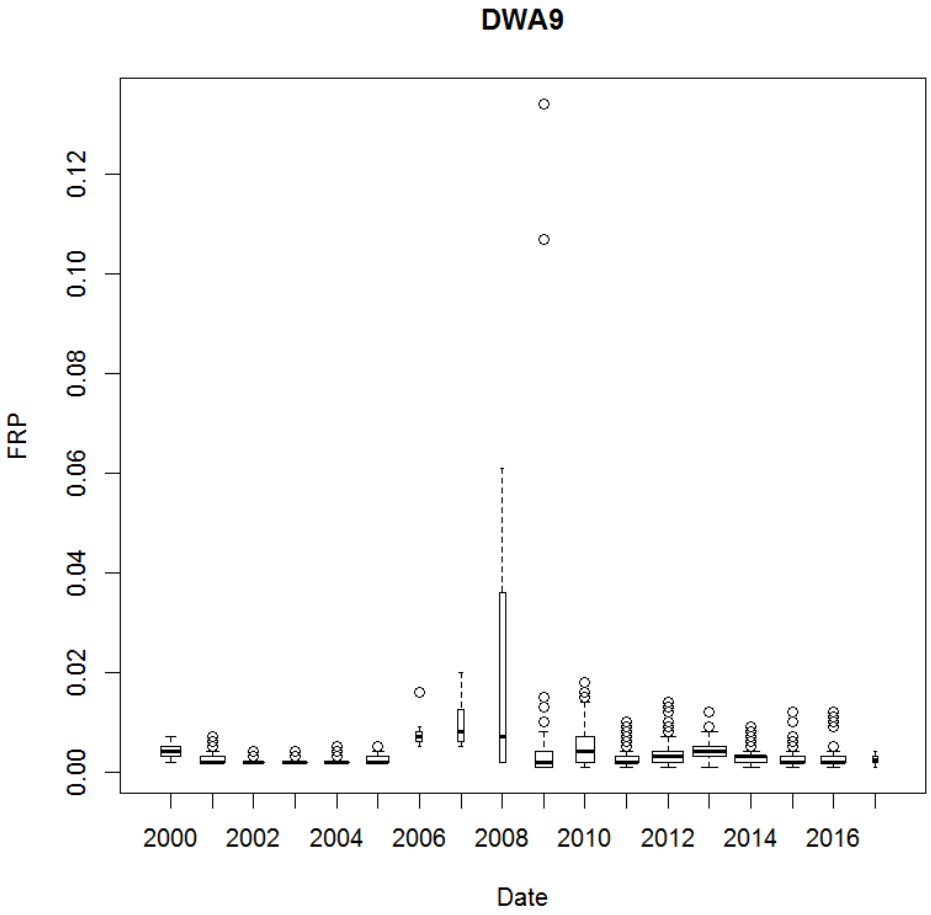

DWA9
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

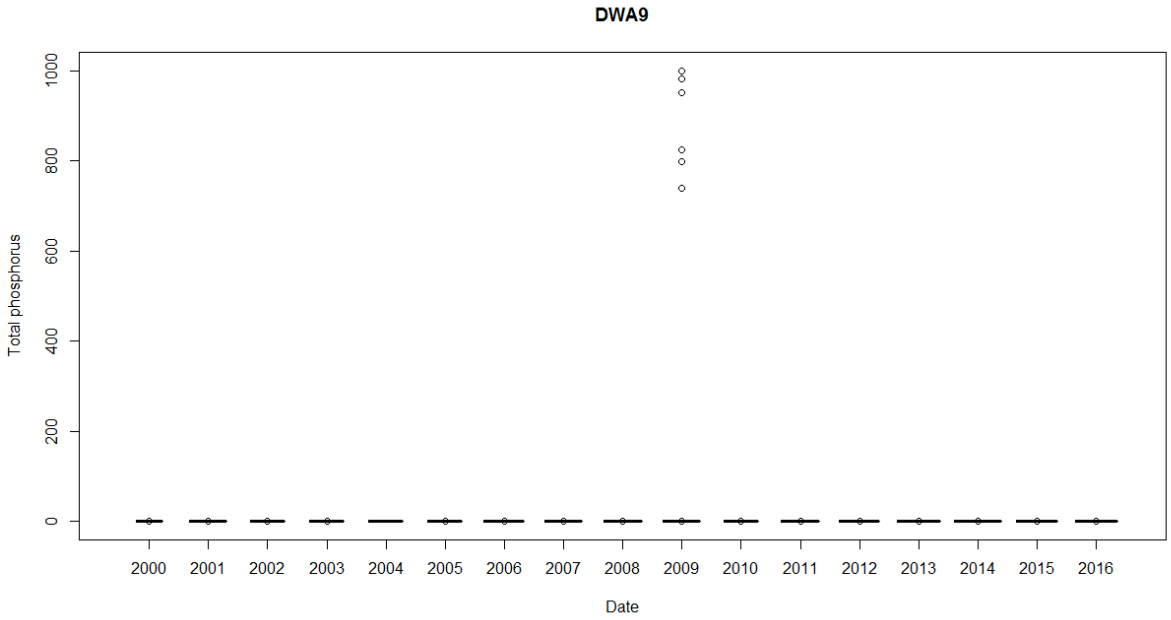

DWA9
Turbidity
0
100
200
300
400
500
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

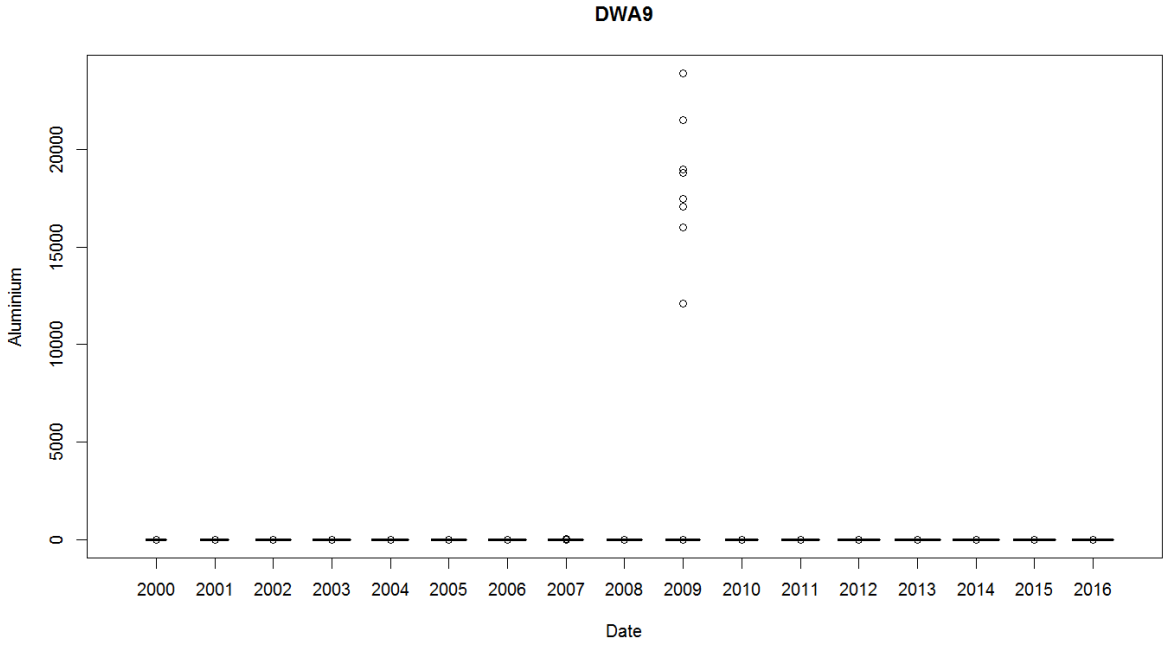

DWA9
Nitrogen Ammoniacal (mg/L)
0
10
20
30
40
1990
1993
1996
1999
2002
2005
2008
2011
2014
Date

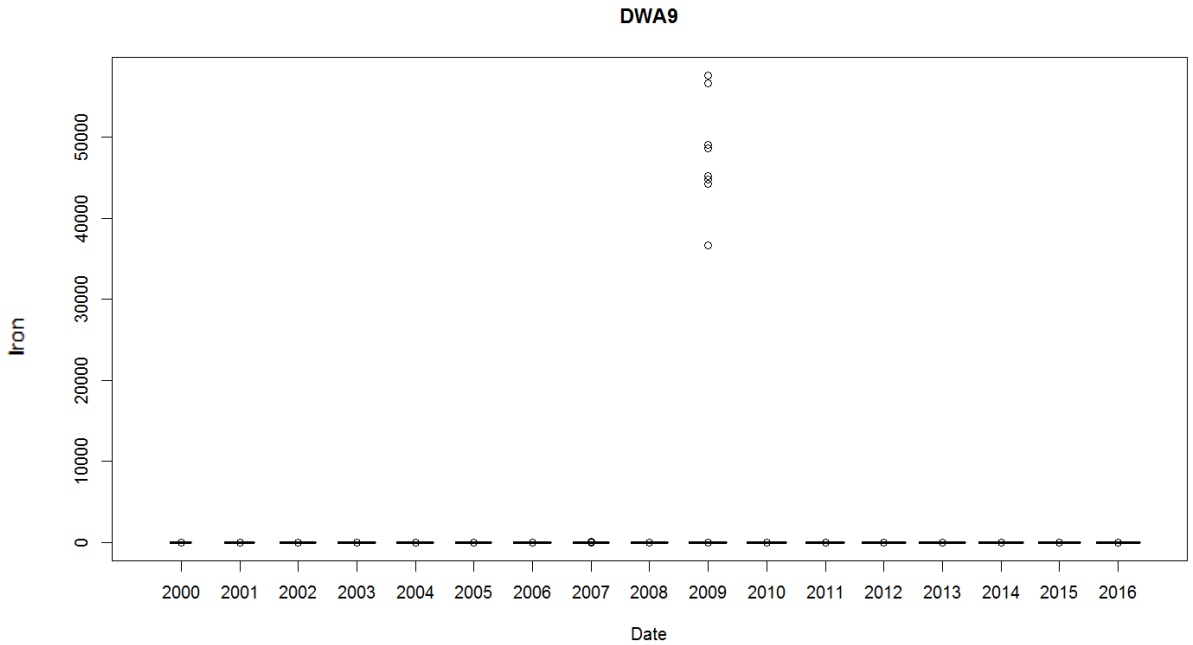

DWA9
Nitrogen Oxide
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1990
1993
1996
1999
2002
2005
2008
2011
2014
Date

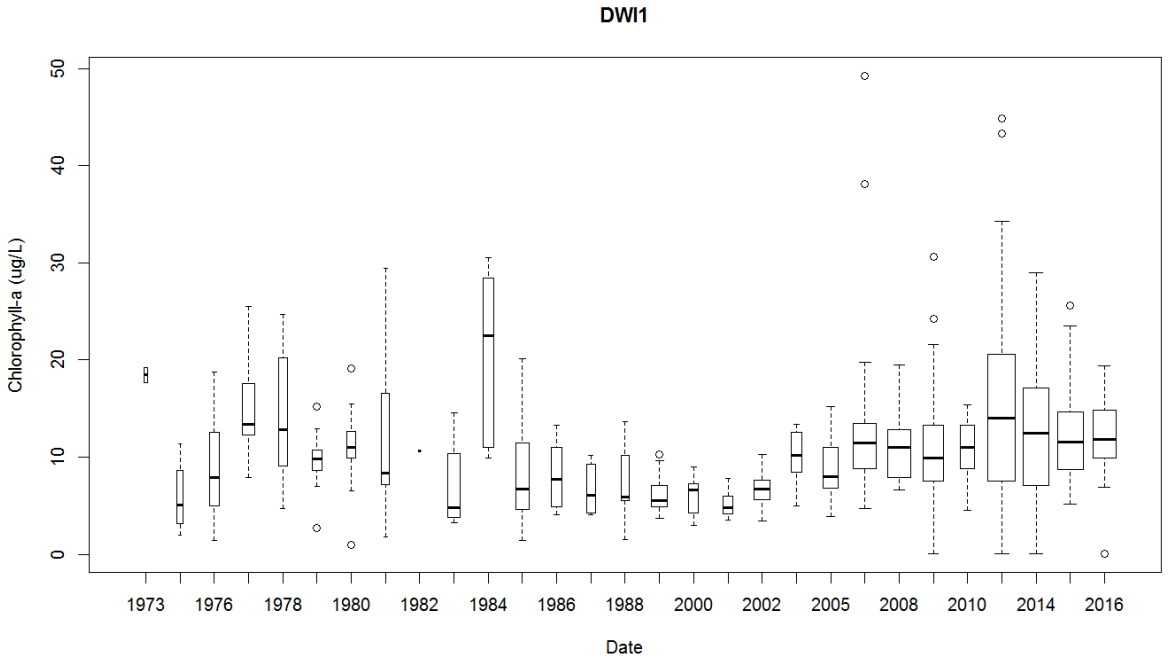

DWA9
Nitrogen Total
0
1000
2000
3000
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

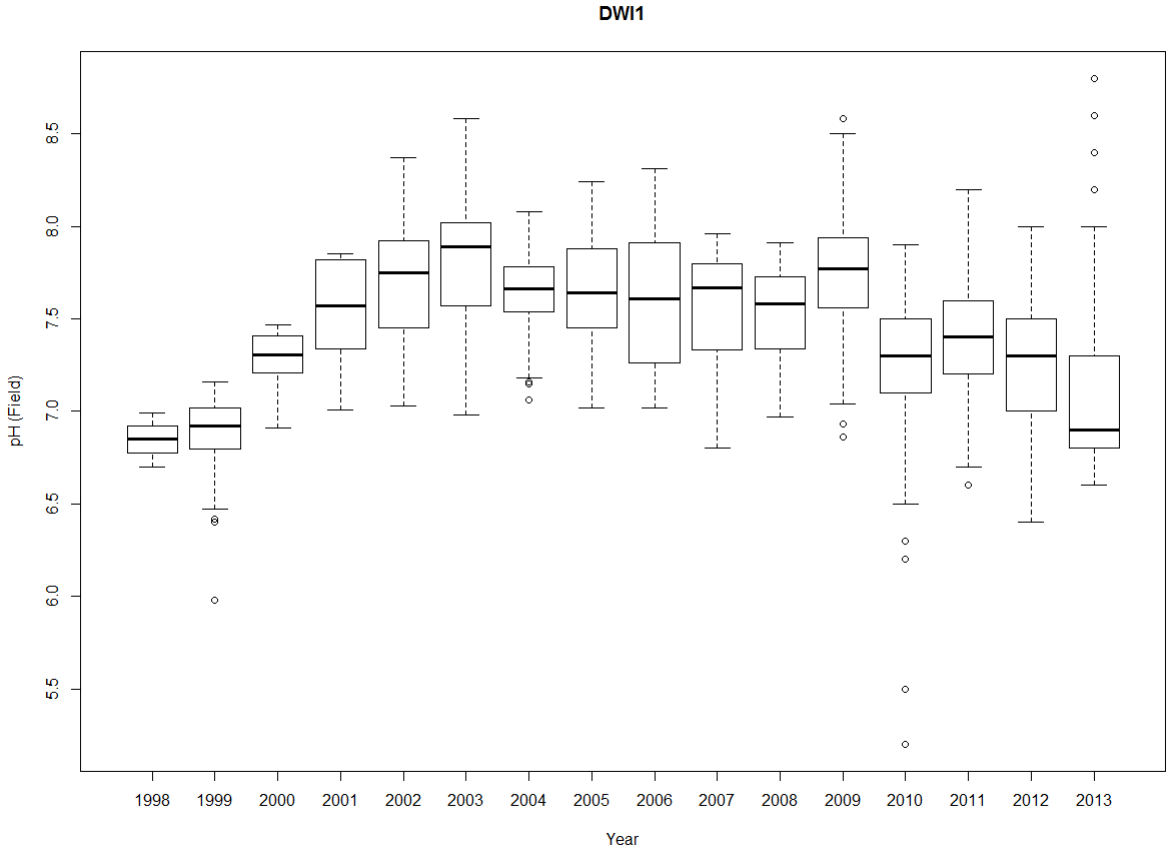

DWA9
FRP
0.00
0.02
0.04
0.06
0.08
0.10
0.12
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

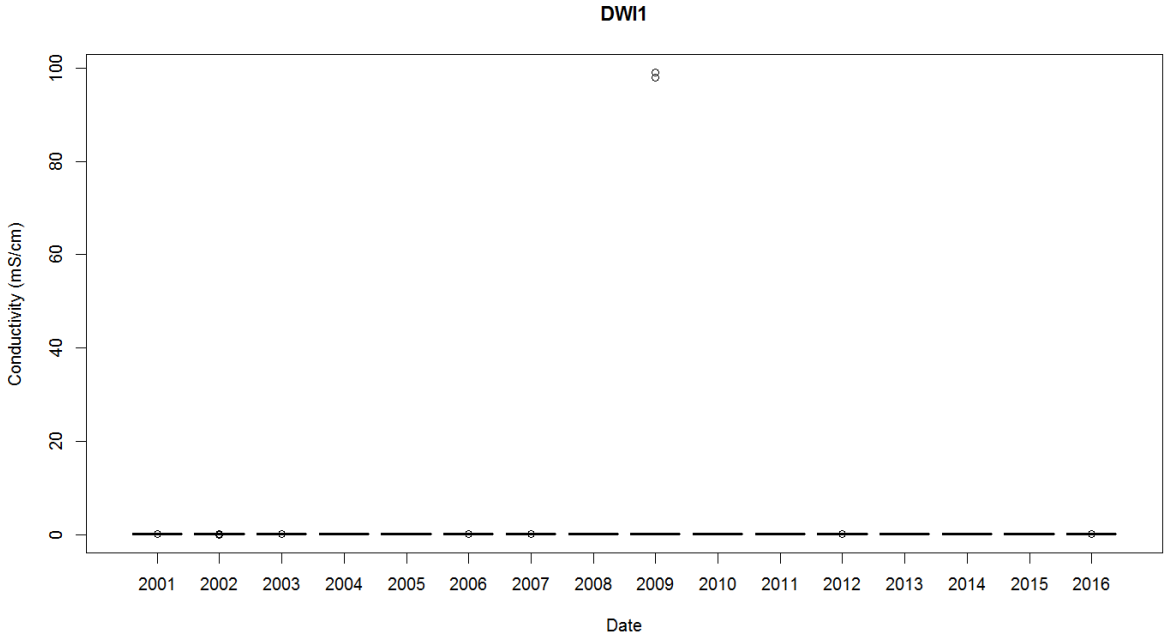

DWA9
Total phosphorus
0
200
400
600
800
1000
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

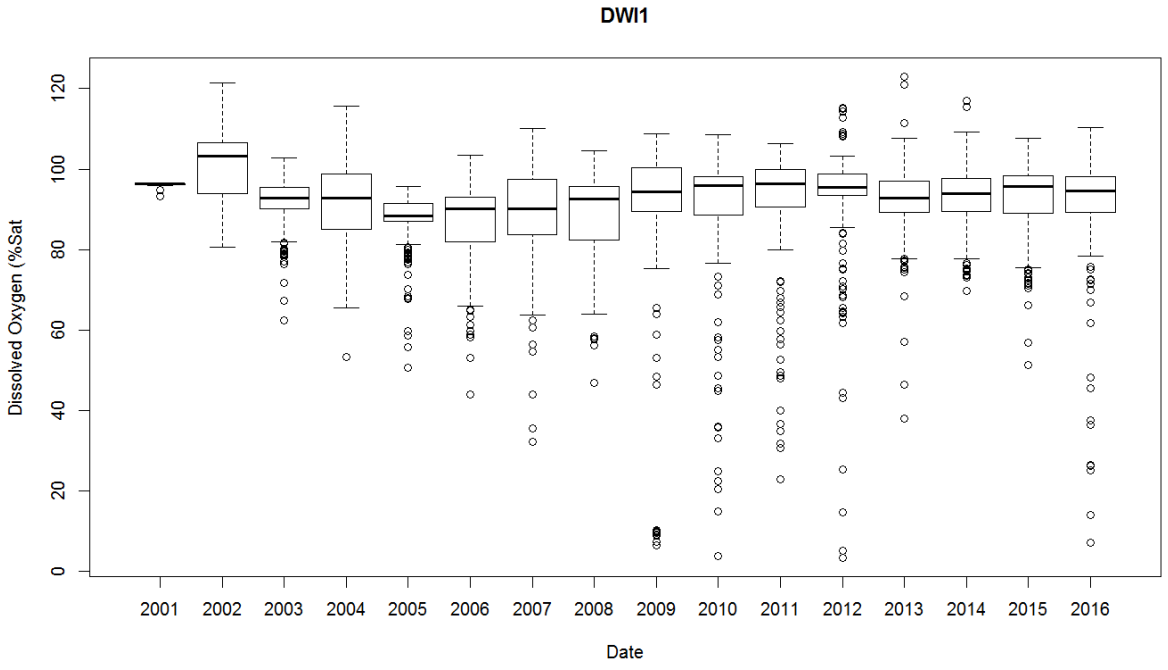

DWA9
Aluminium
0
5000
10000
15000
20000
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

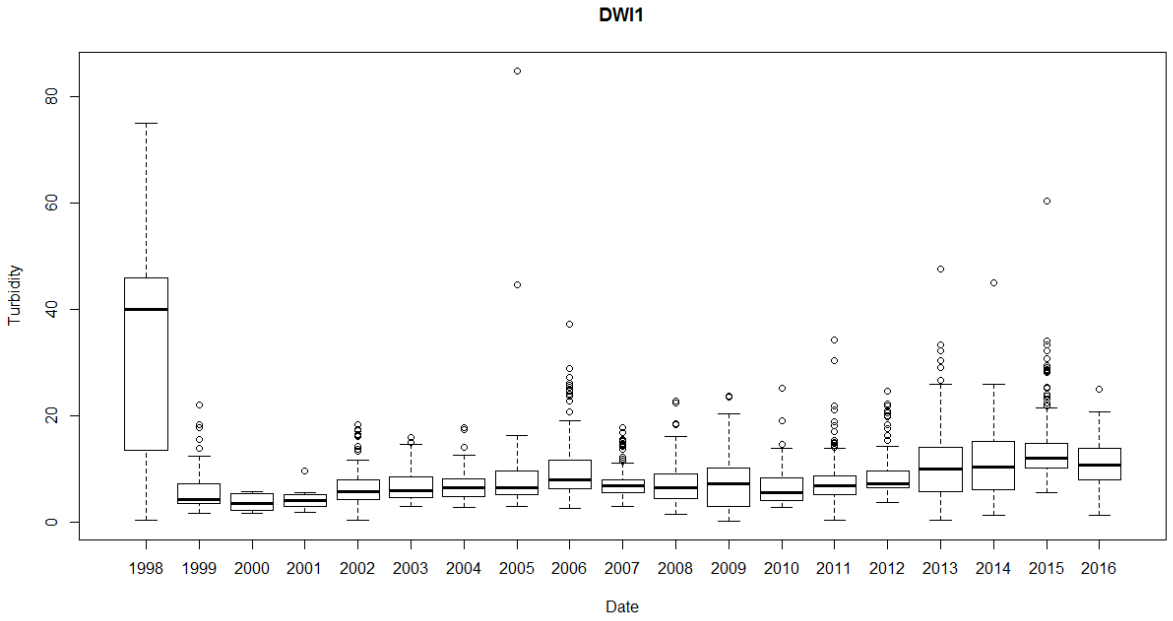

DWA9
Iron
0
10000
20000
30000
40000
50000
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

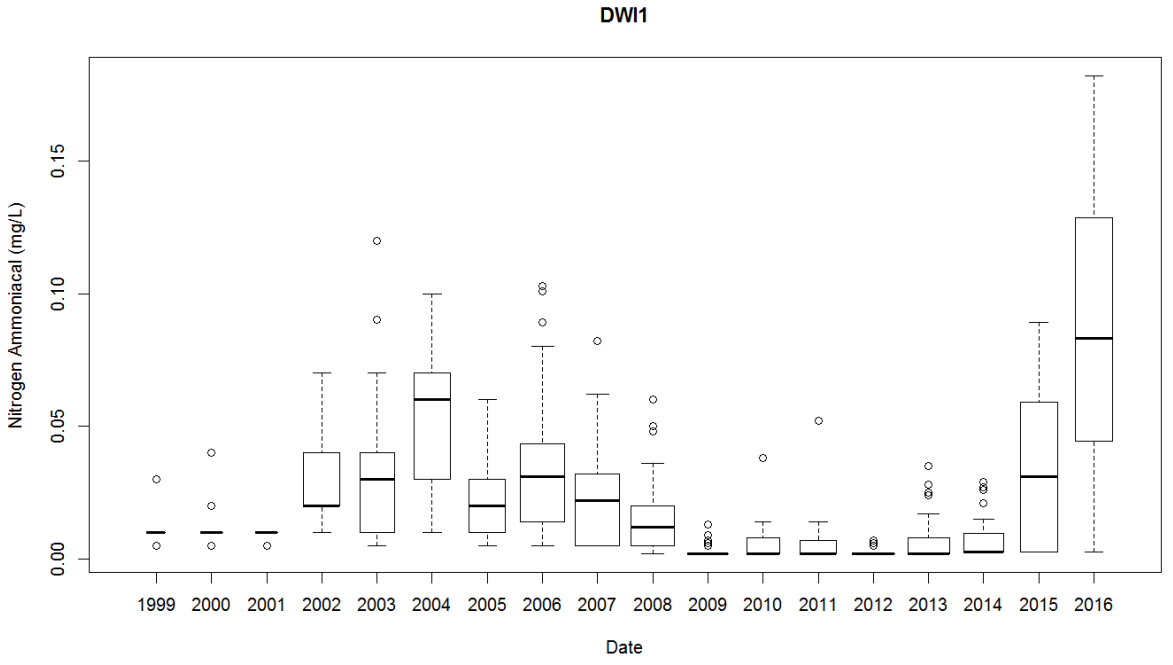

DWI1
Chlorophyll-a (ug/L)
0
10
20
30
40
50
1973
1976
1978
1980
1982
1984
1986
1988
2000
2002
2005
2008
2010
2014
2016
Date

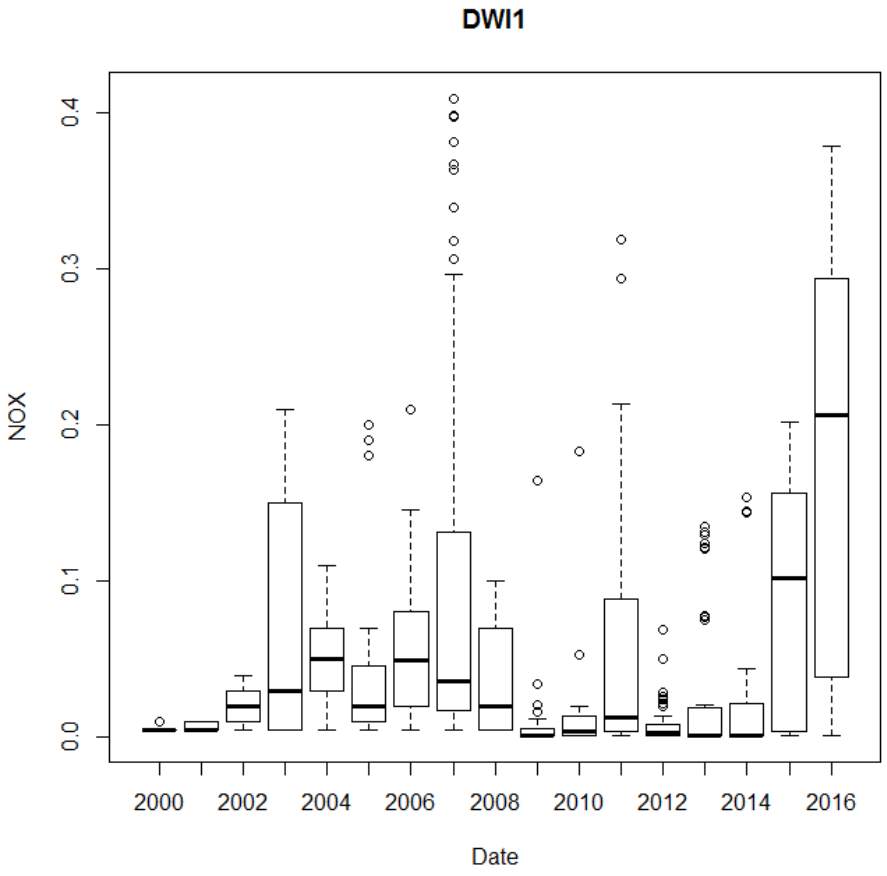

DWI1
pH (Field)
5.5
6.0
6.5
7.0
7.5
8.0
8.5
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Year

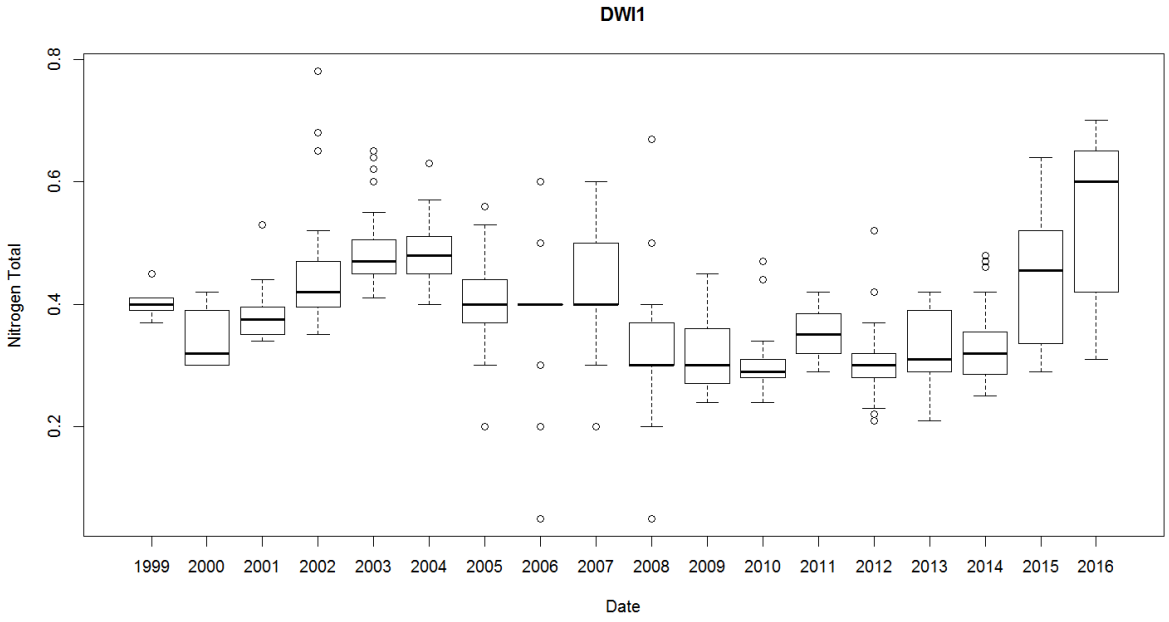

DWI1
Conductivity (mS/cm)
0
20
40
60
80
100
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

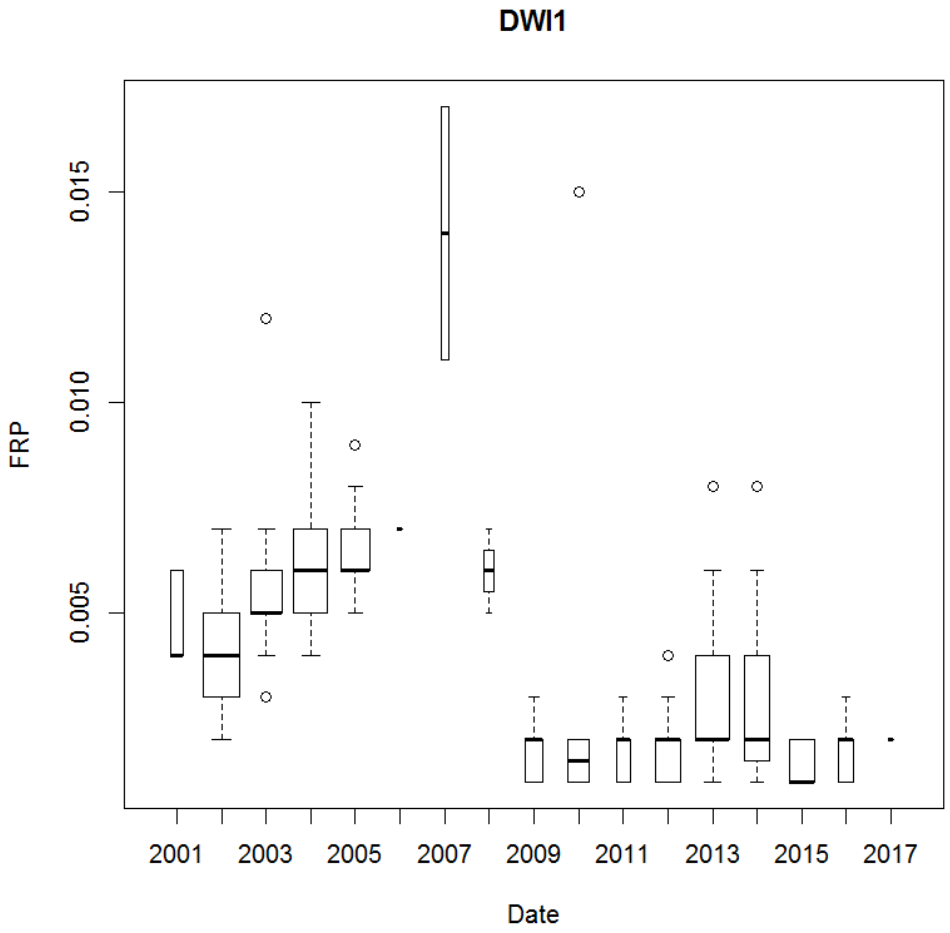

DWI1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

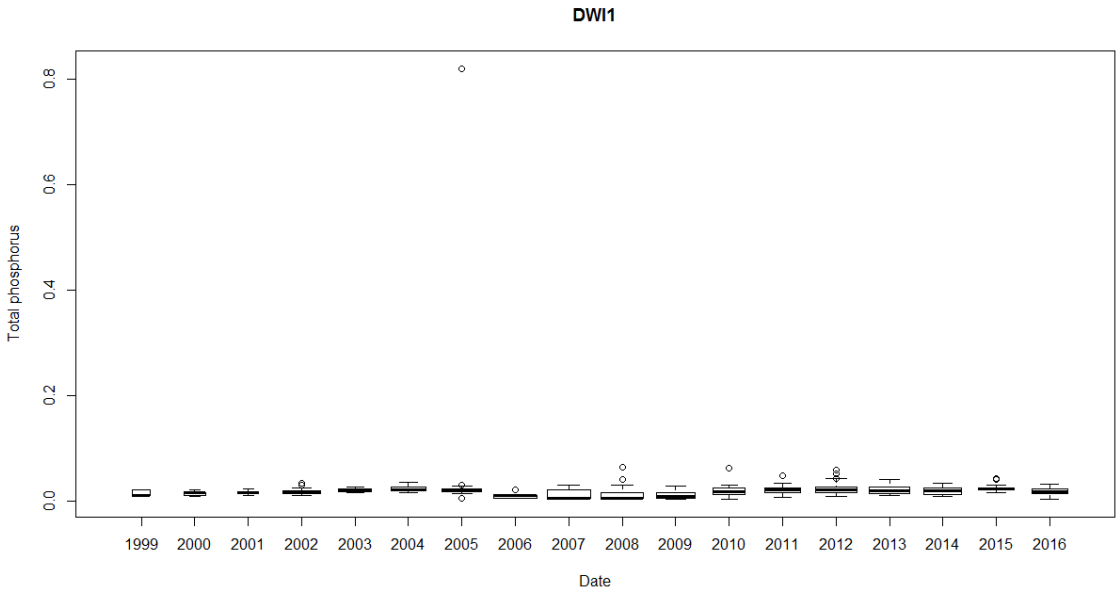

DWI1
Turbidity
0
20
40
60
80
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

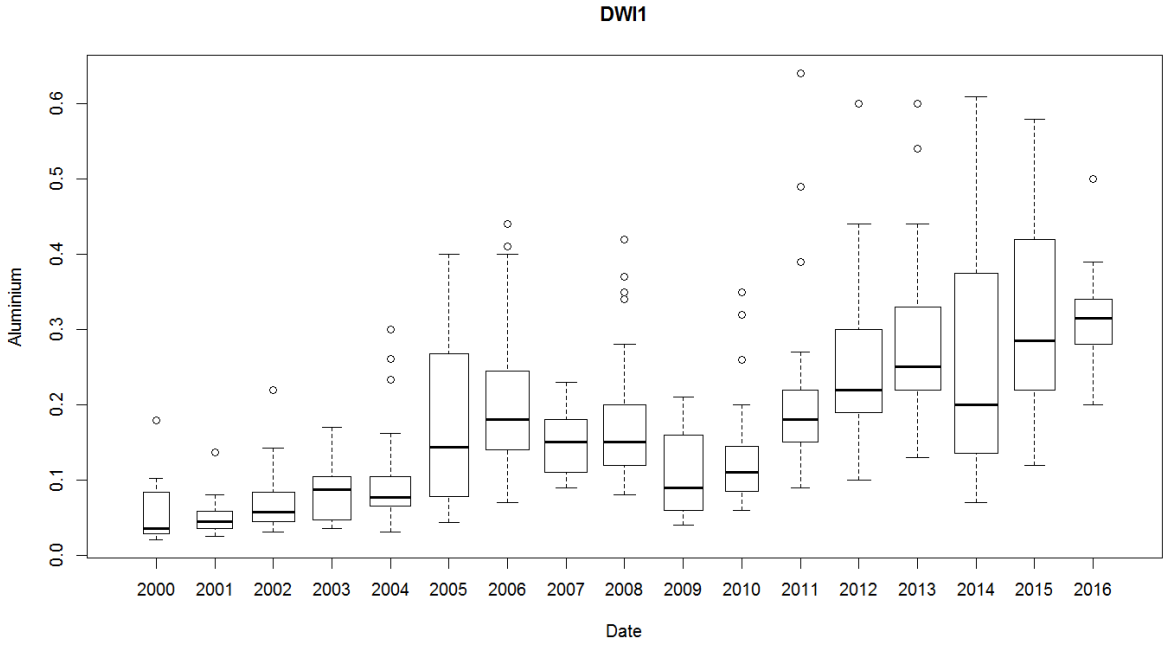

DWI1
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

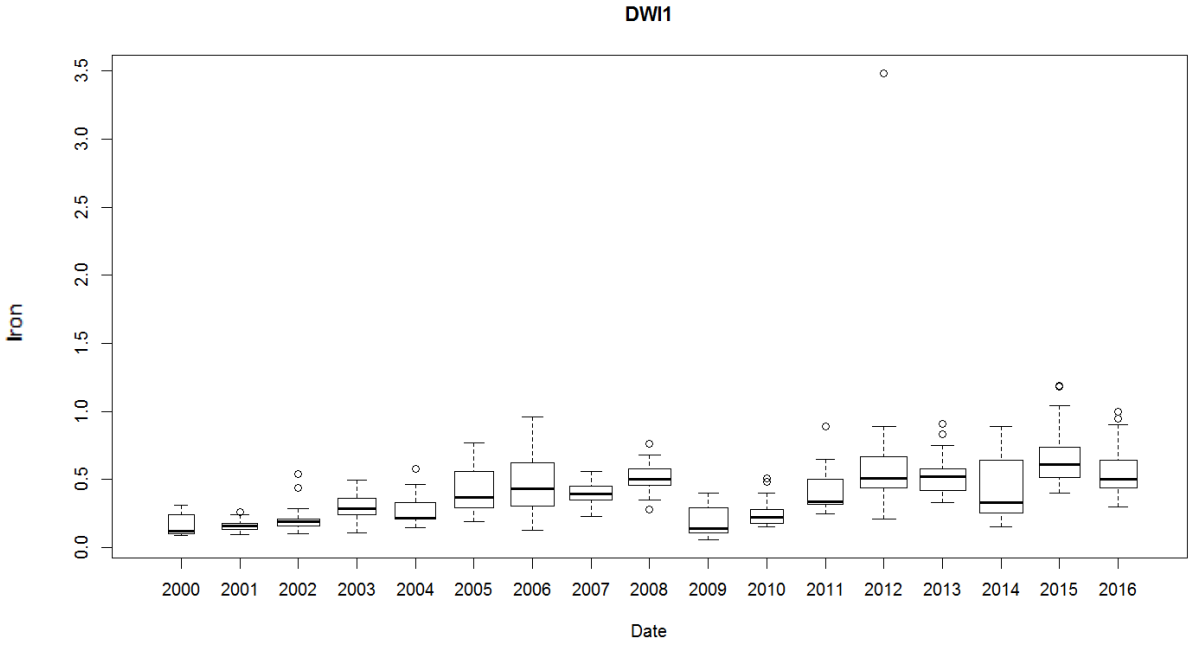

DWI1
NOX
0.0
0.1
0.2
0.3
0.4
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date


DWI1
Nitrogen Total
0.2
0.4
0.6
0.8
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

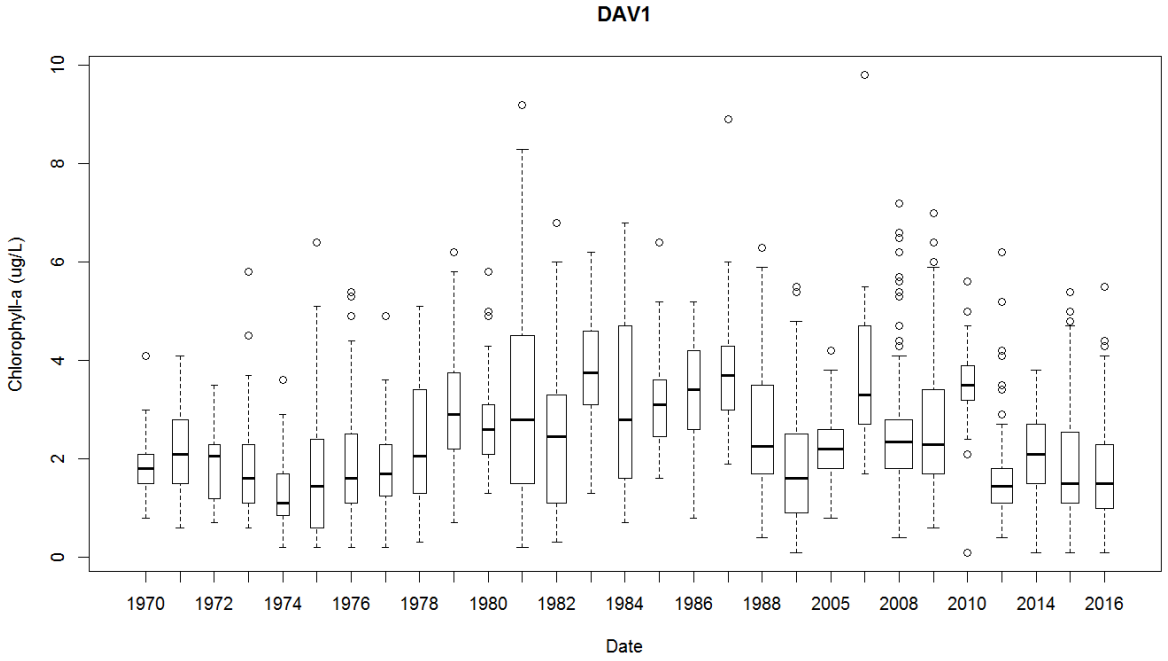

DWI1
FRP
0.005
0.010
0.015
2001
2003
2005
2007
2009
2011
2013
2015
2017
Date

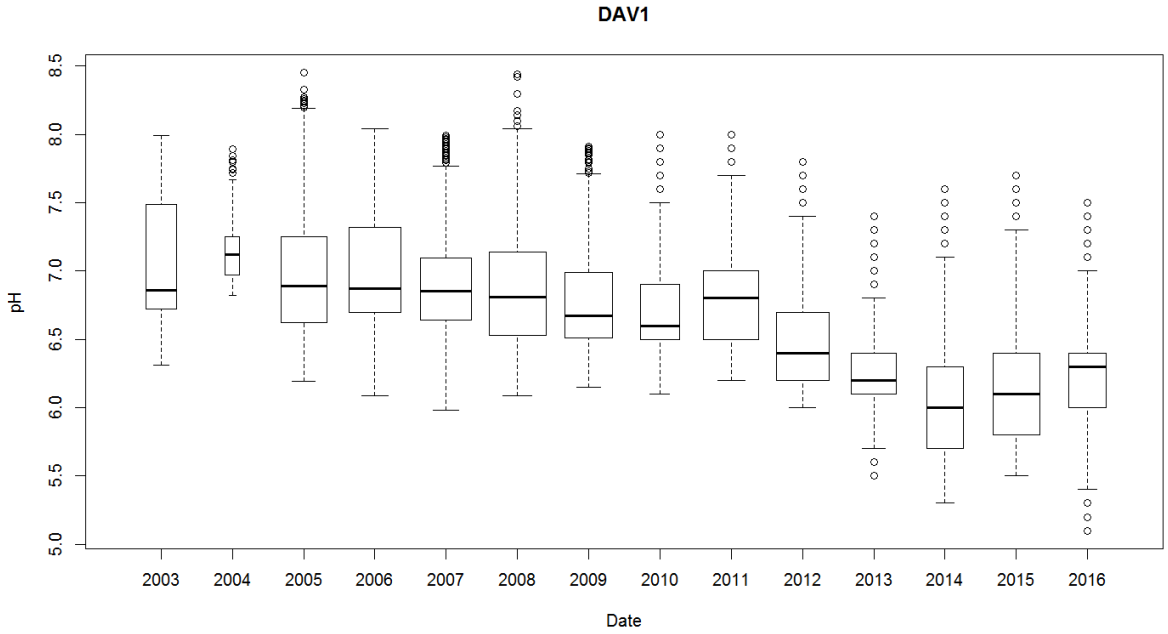

DWI1
Total phosphorus
0.0
0.2
0.4
0.6
0.8
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

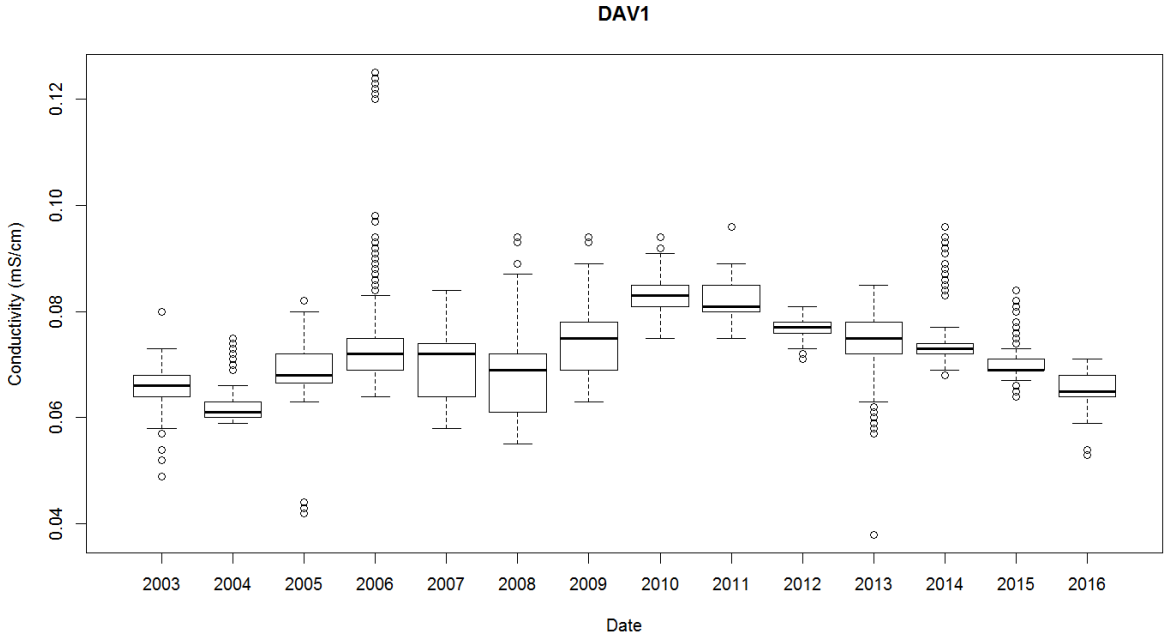

DWI1
Aluminium
0.0
0.1
0.2
0.3
0.4
0.5
0.6
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

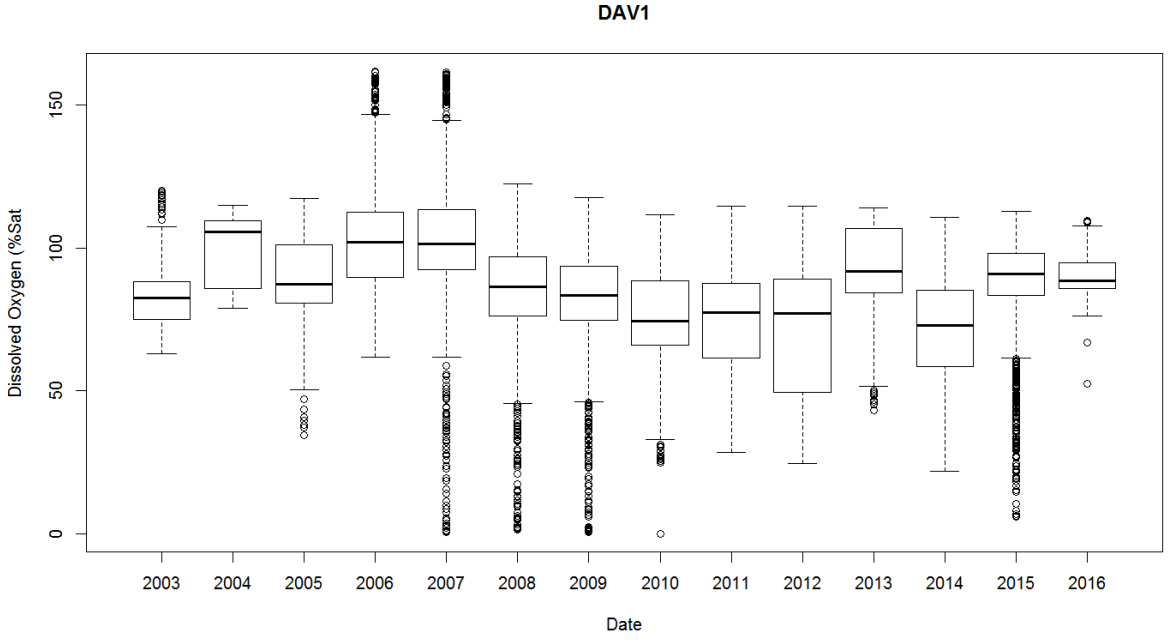

DWI1
Iron
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

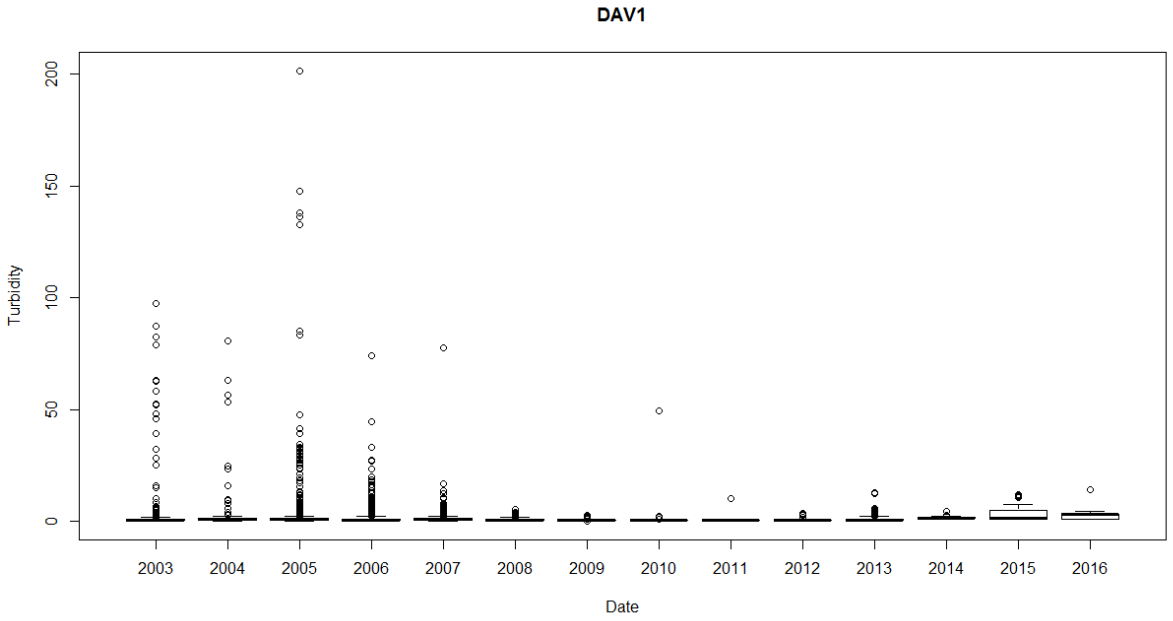
8.2 Upper Nepean storage stations

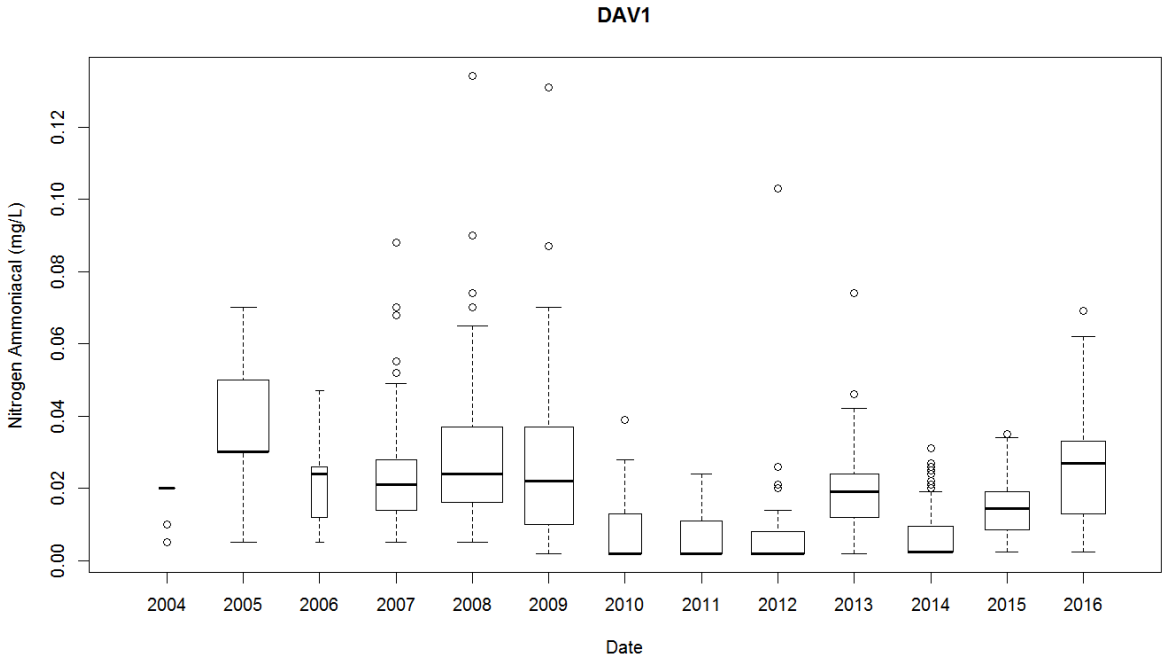


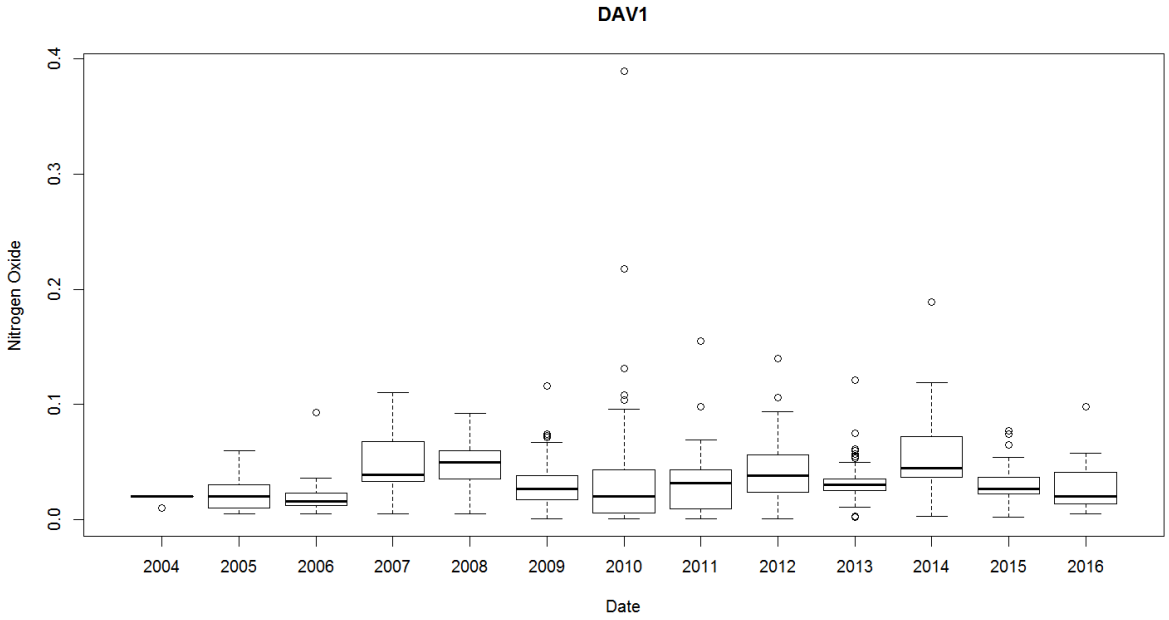


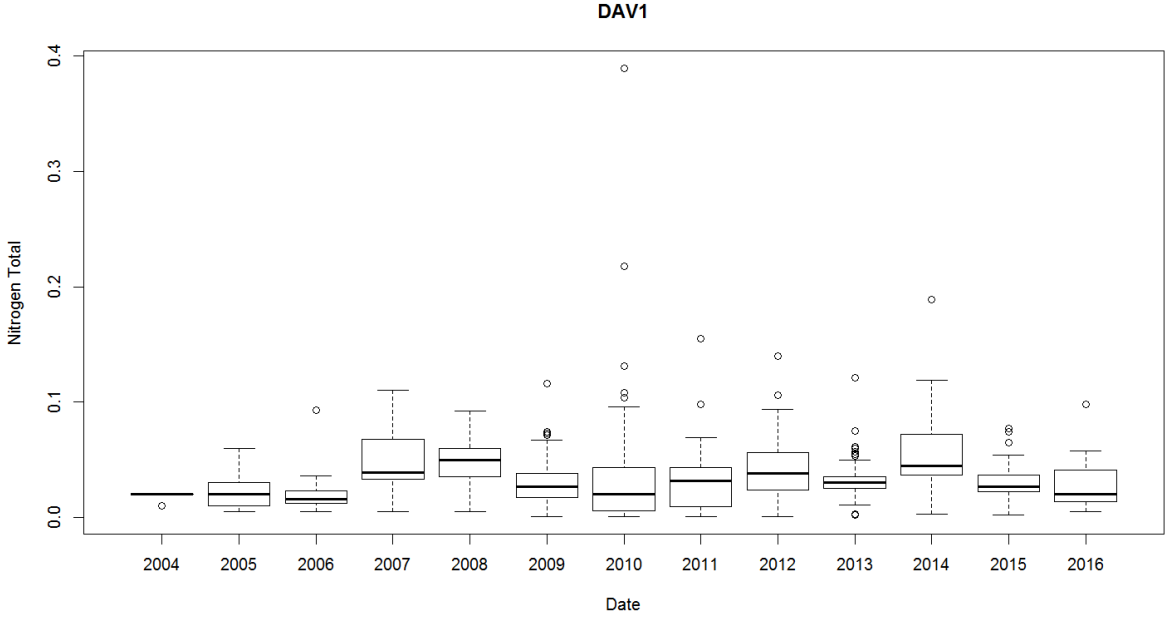

DAV1
Conductivity (mS/cm)
0.04
0.06
0.08
0.10
0.12
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

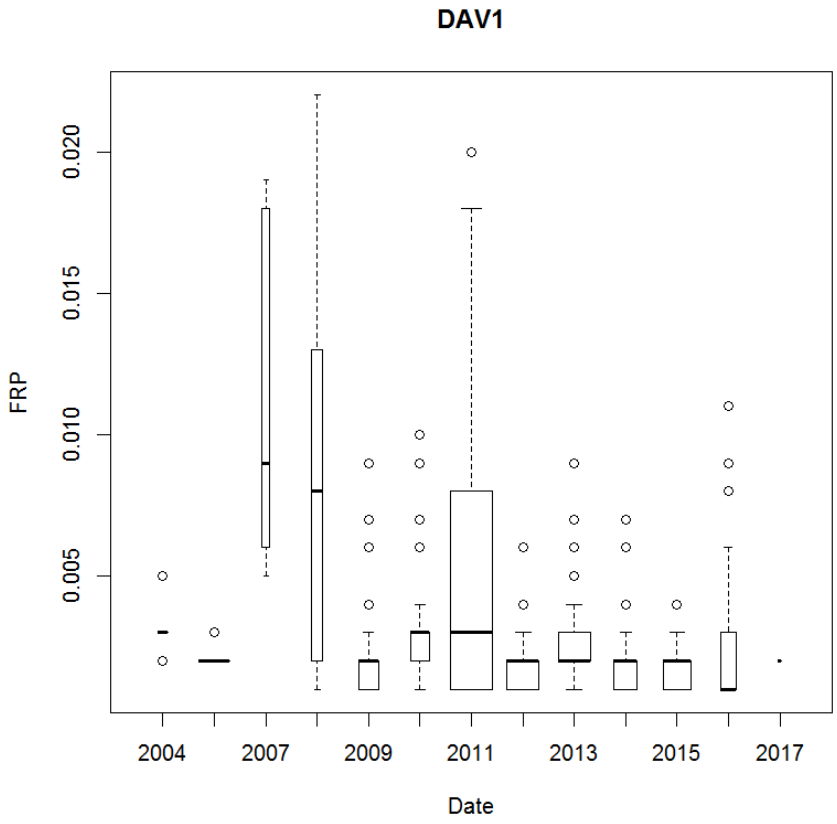

DAV1
Dissolved Oxygen (%Sat
0
50
100
150
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

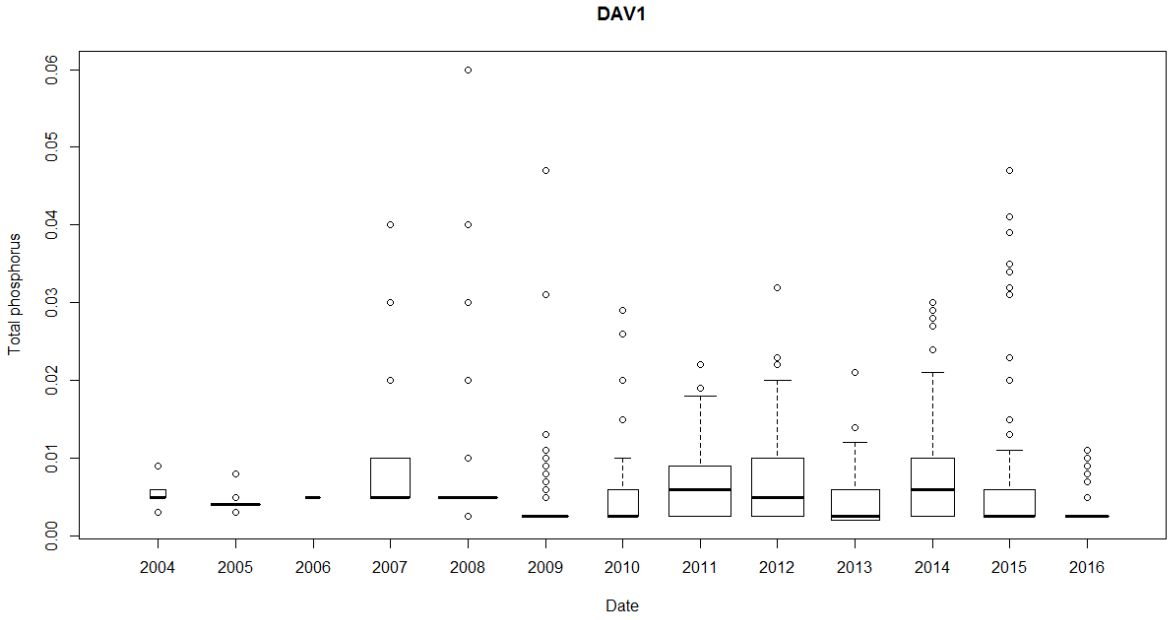

DAV1
Turbidity
0
50
100
150
200
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

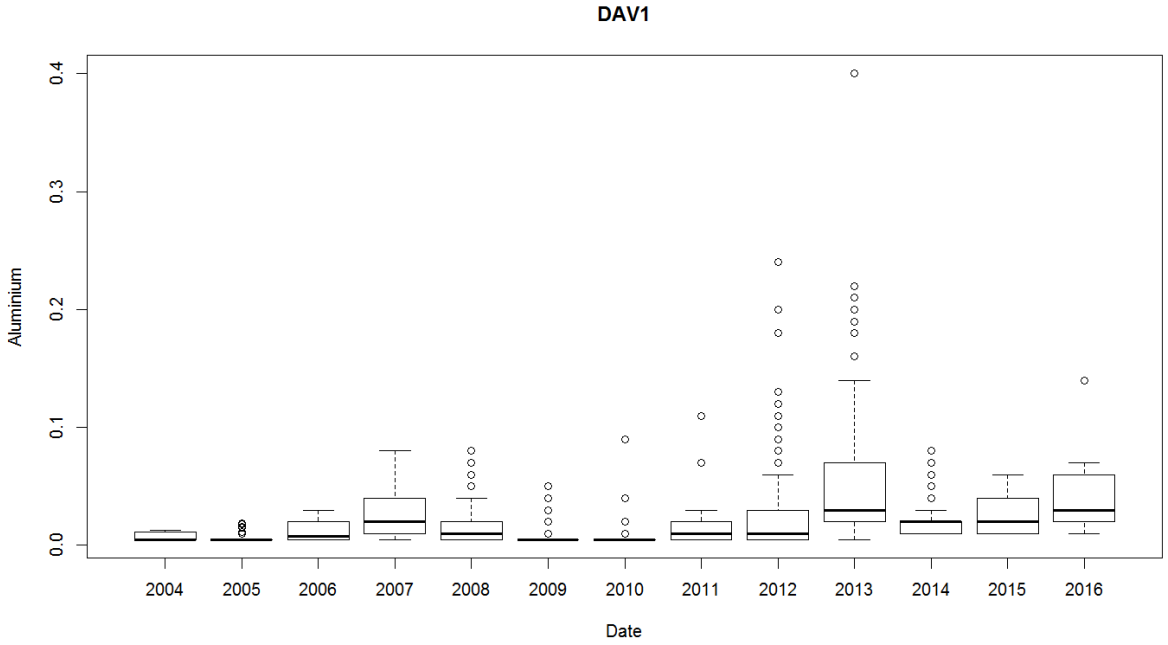

DAV1
Nitrogen Ammoniacal (mg/L)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

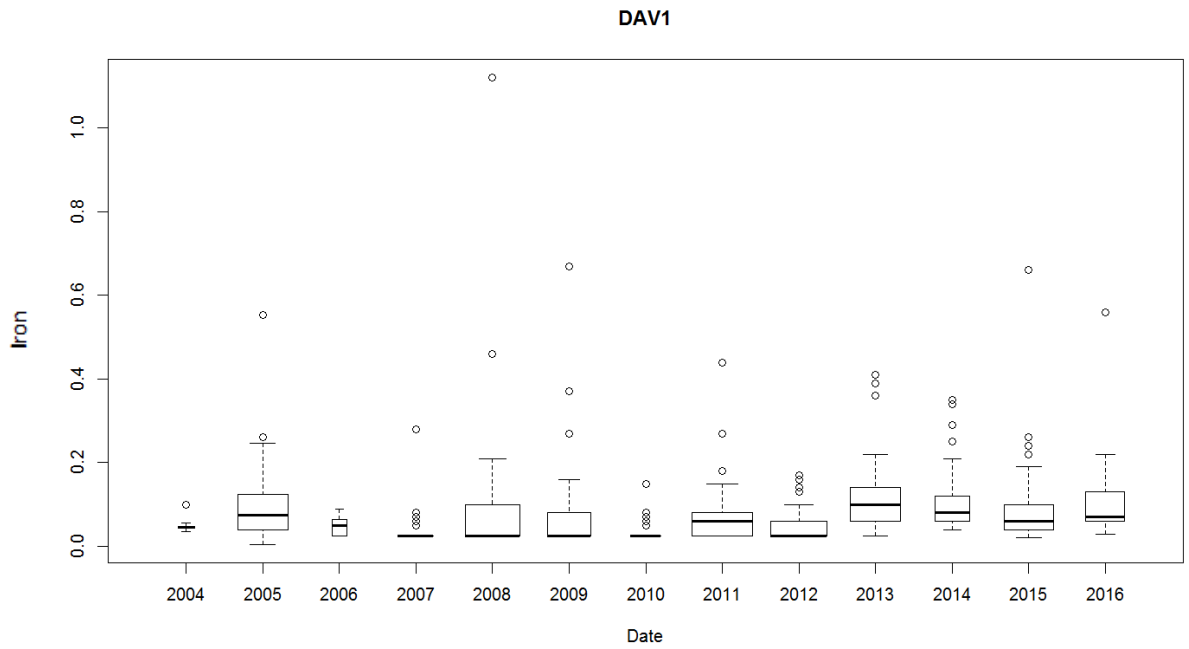

DAV1
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

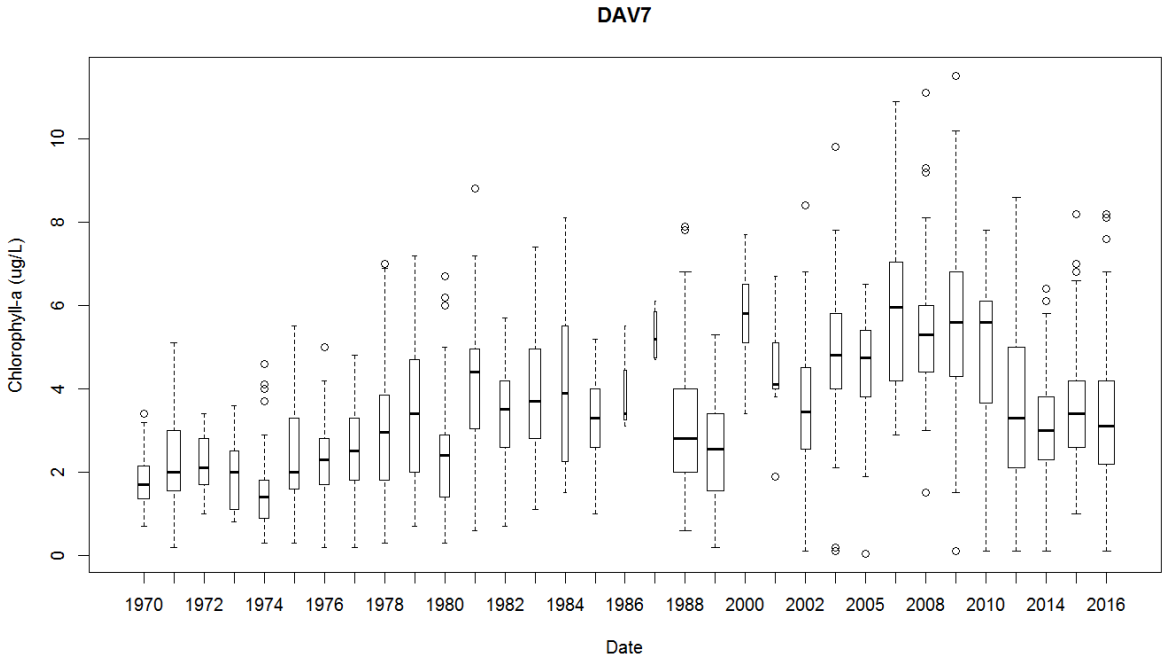

DAV1
Nitrogen Total
0.0
0.1
0.2
0.3
0.4
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

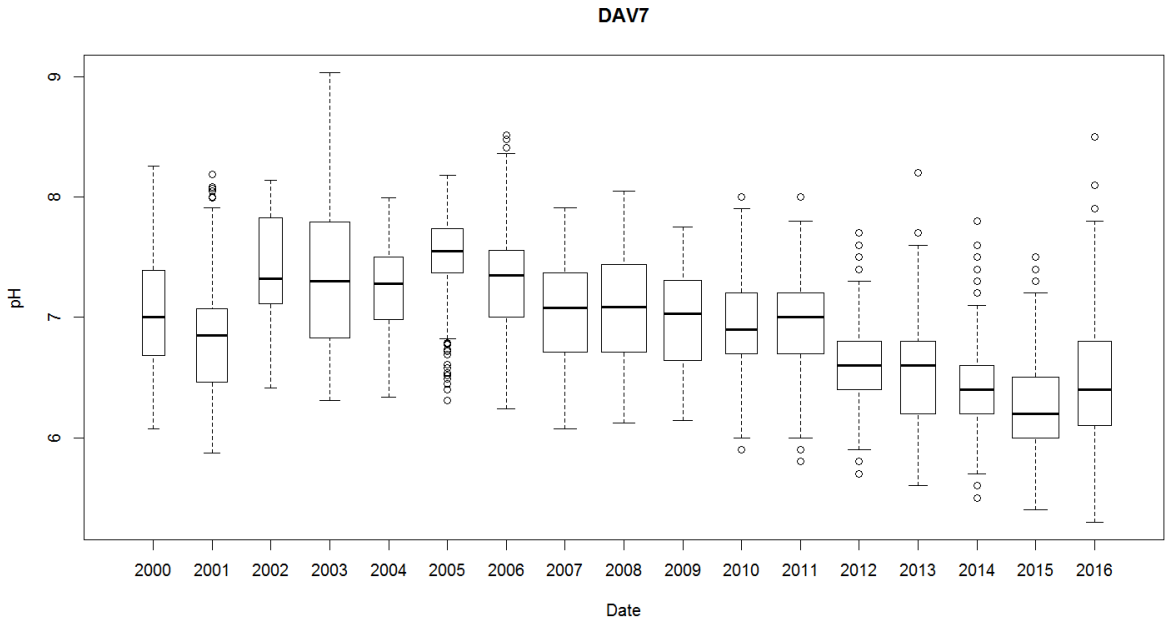

DAV1
FRP
0.005
0.010
0.015
0.020
2004
2007
2009
2011
2013
2015
2017
Date

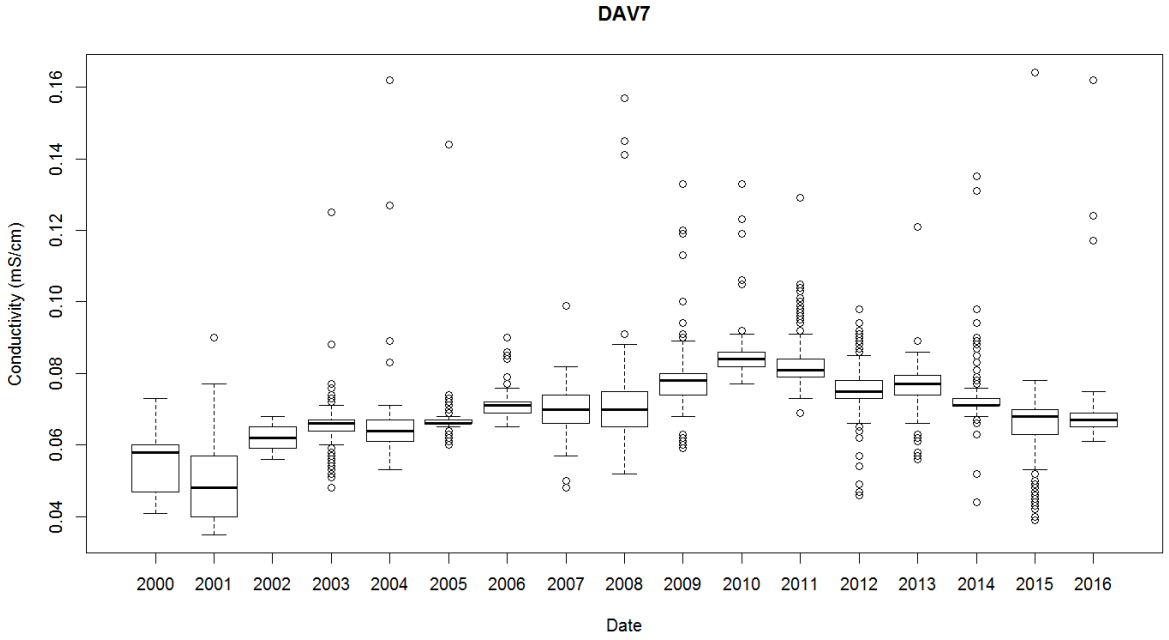

DAV1
Total phosphorus
0.00
0.01
0.02
0.03
0.04
0.05
0.06
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

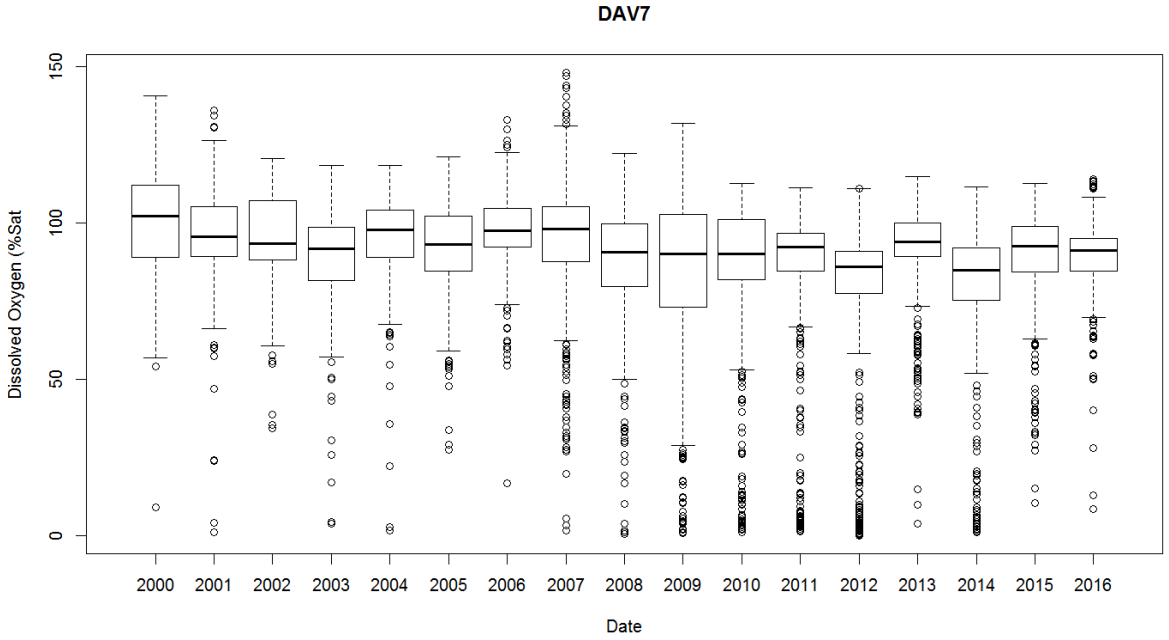

DAV1
Aluminium
0.0
0.1
0.2
0.3
0.4
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

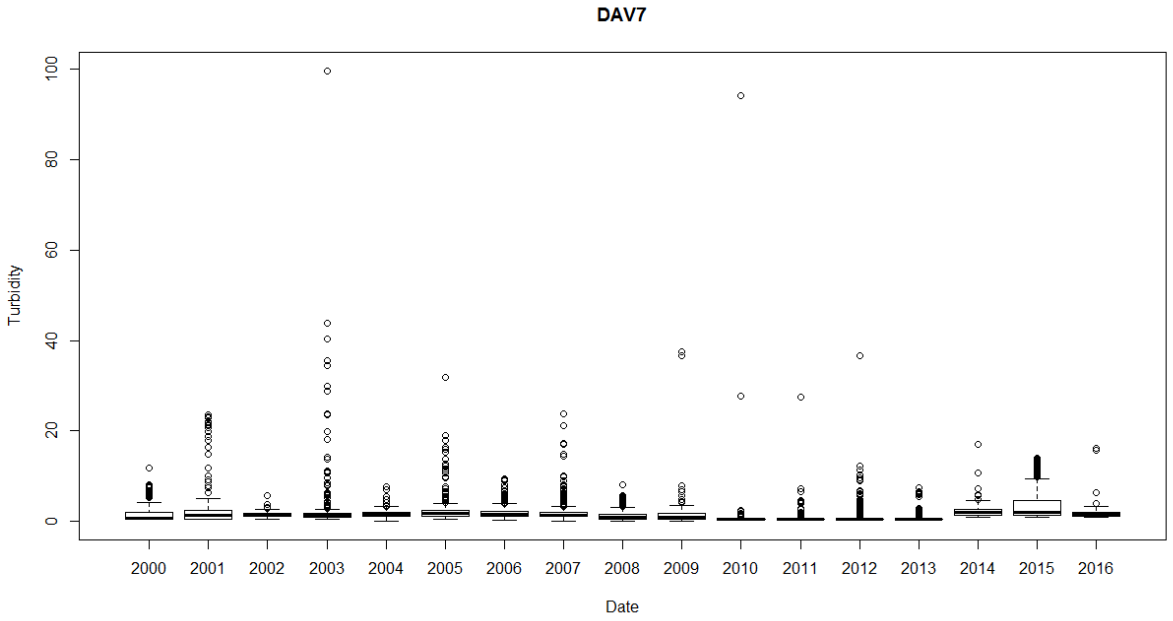

DAV1
Iron
0.0
0.2
0.4
0.6
0.8
1.0
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

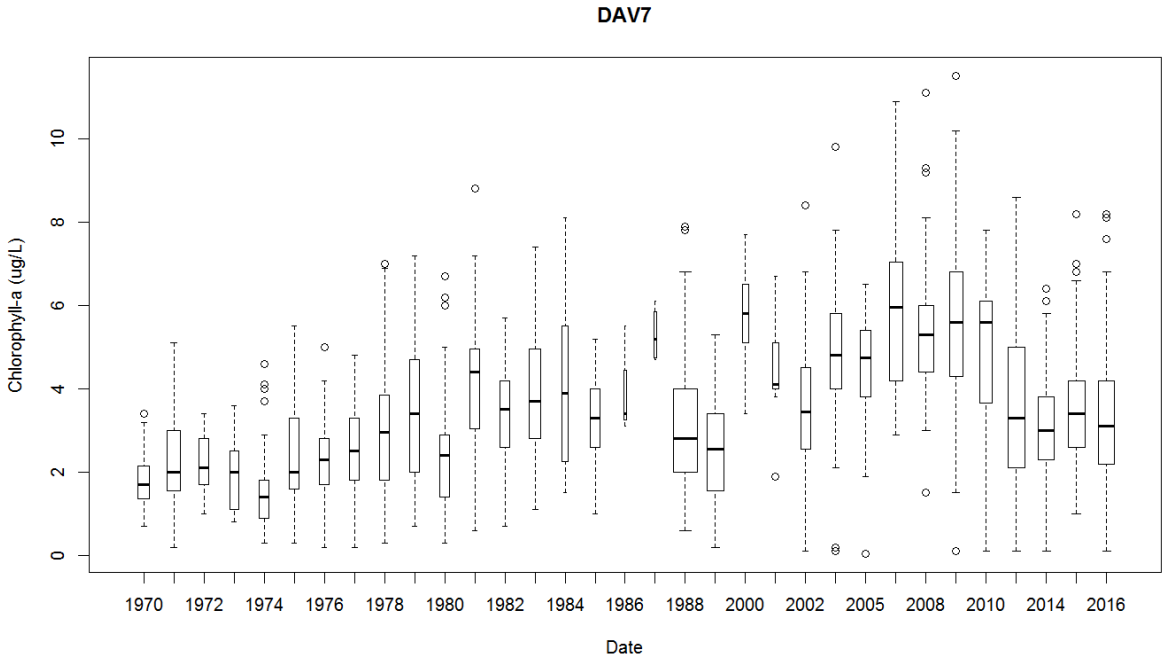

DAV7
Chlorophyll-a (ug/L)
0
2
4
6
8
10
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
2000
2002
2005
2008
2010
2014
2016
Date

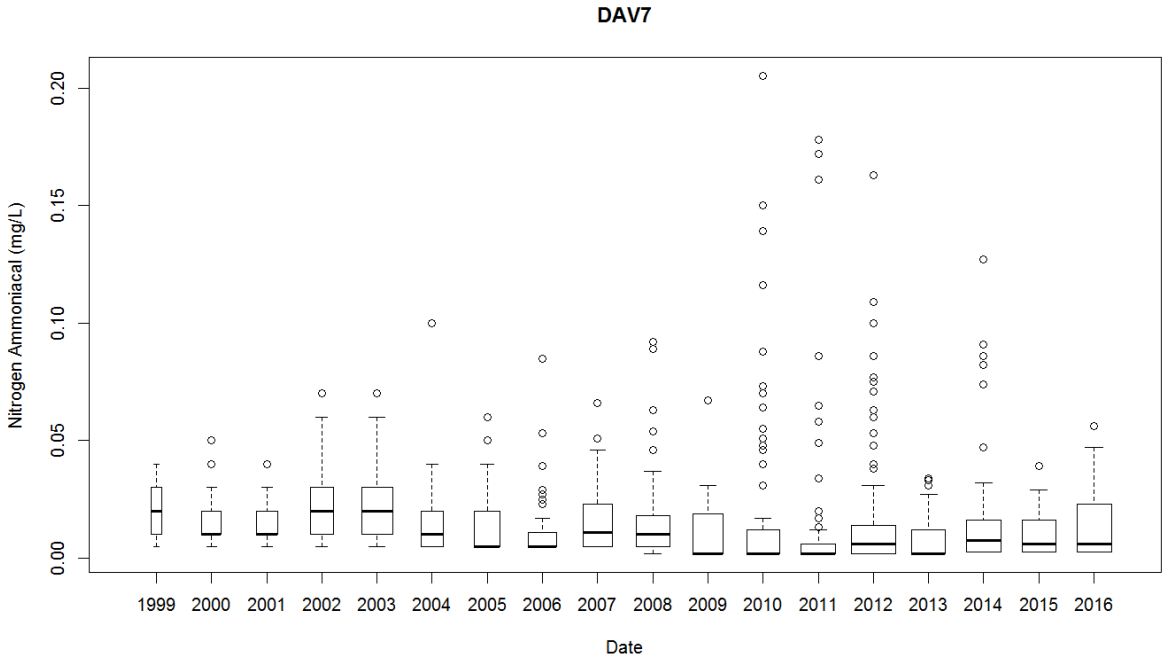

DAV7
pH
6
7
8
9
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

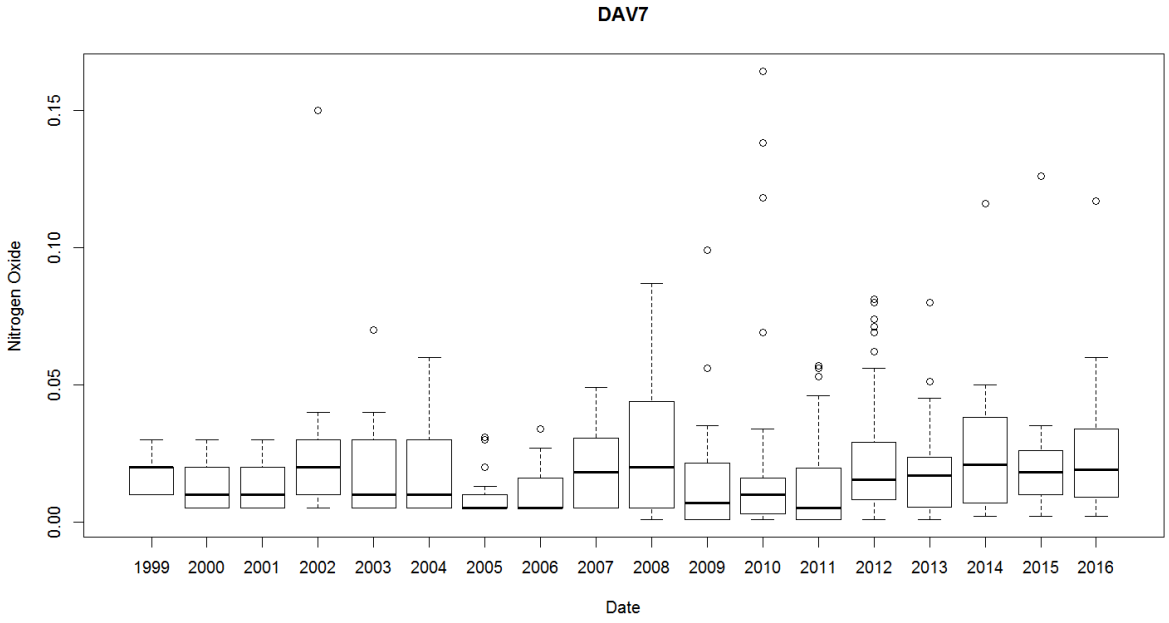

DAV7
Conductivity (mS/cm)
0.04
0.06
0.08
0.10
0.12
0.14
0.16
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

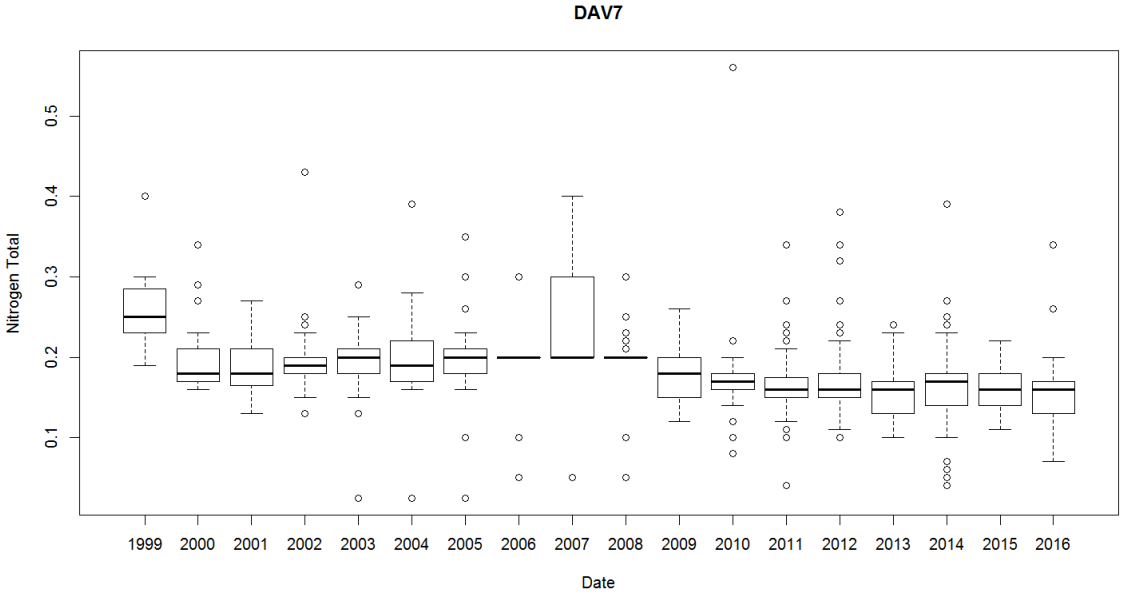

DAV7
Dissolved Oxygen (%Sat
0
50
100
150
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

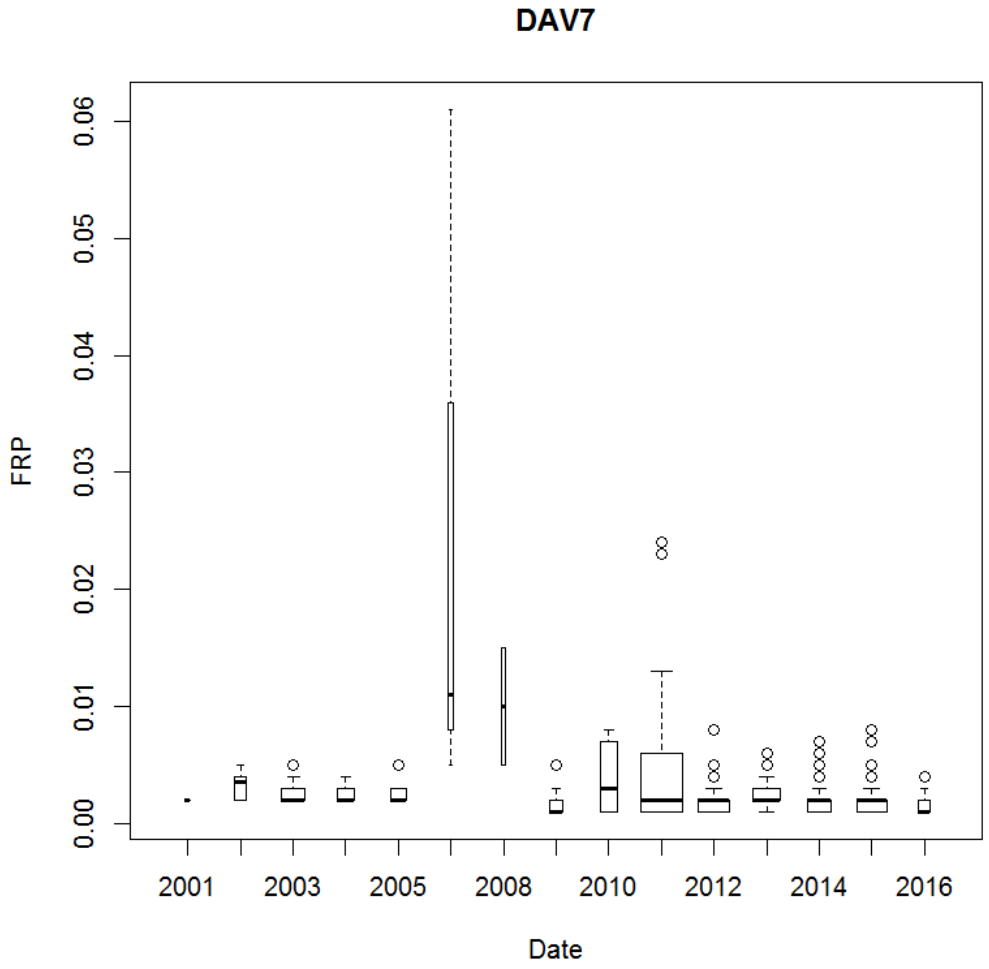

DAV7
Turbidity
0
20
40
60
80
100
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

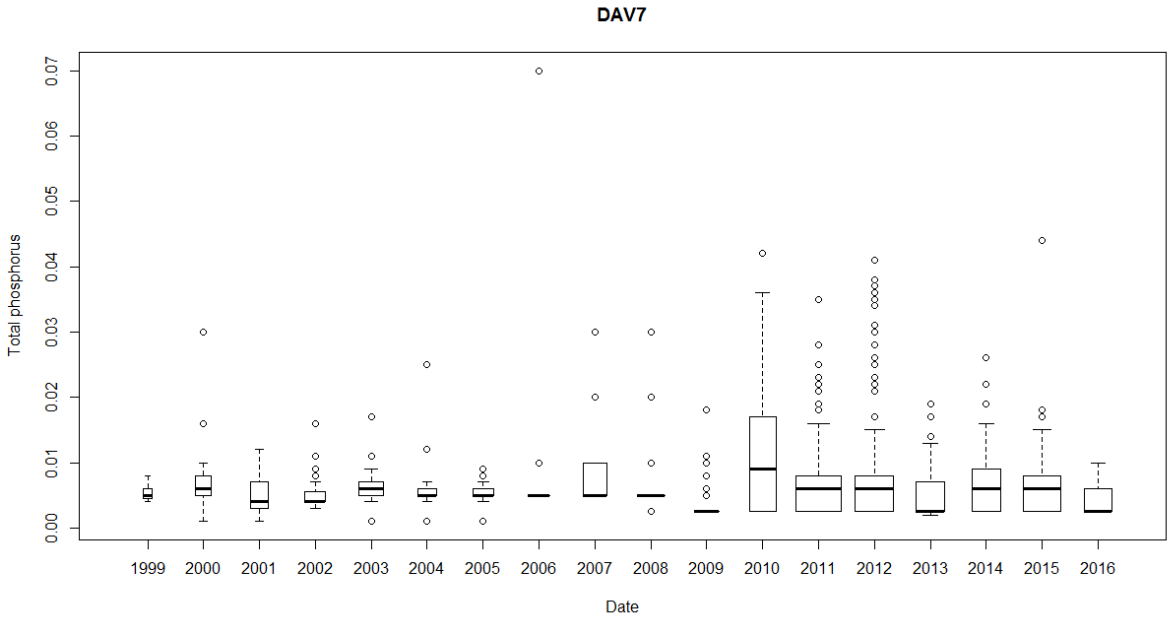

DAV7
Chlorophyll-a (ug/L)
0
2
4
6
8
10
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
2000
2002
2005
2008
2010
2014
2016
Date

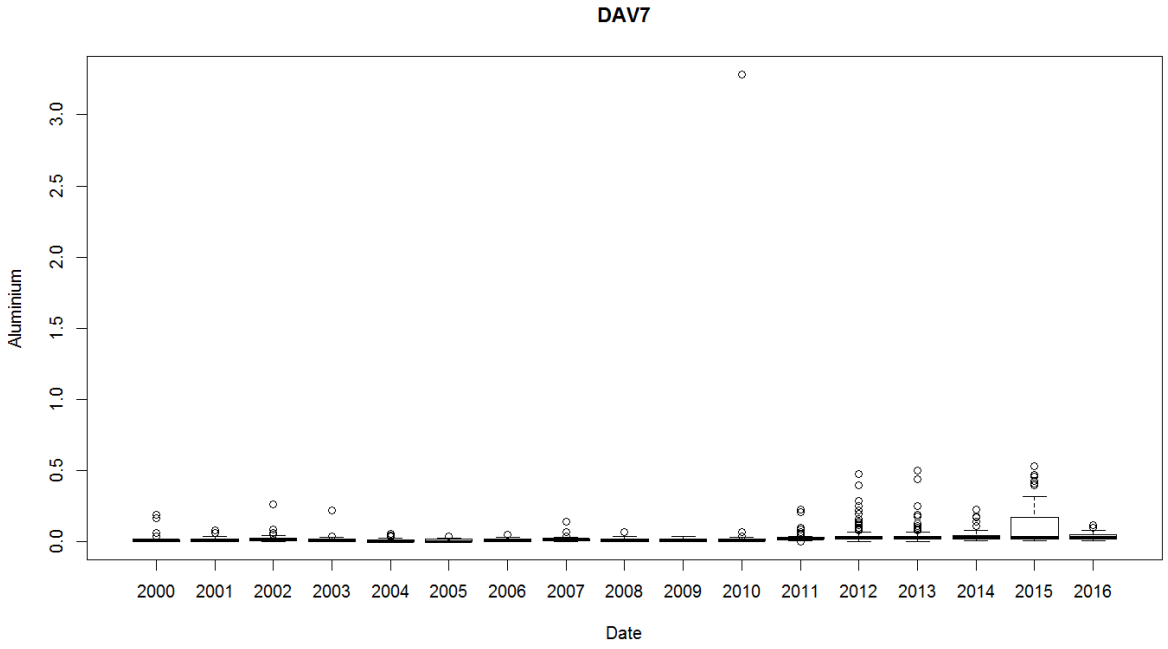

DAV7
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

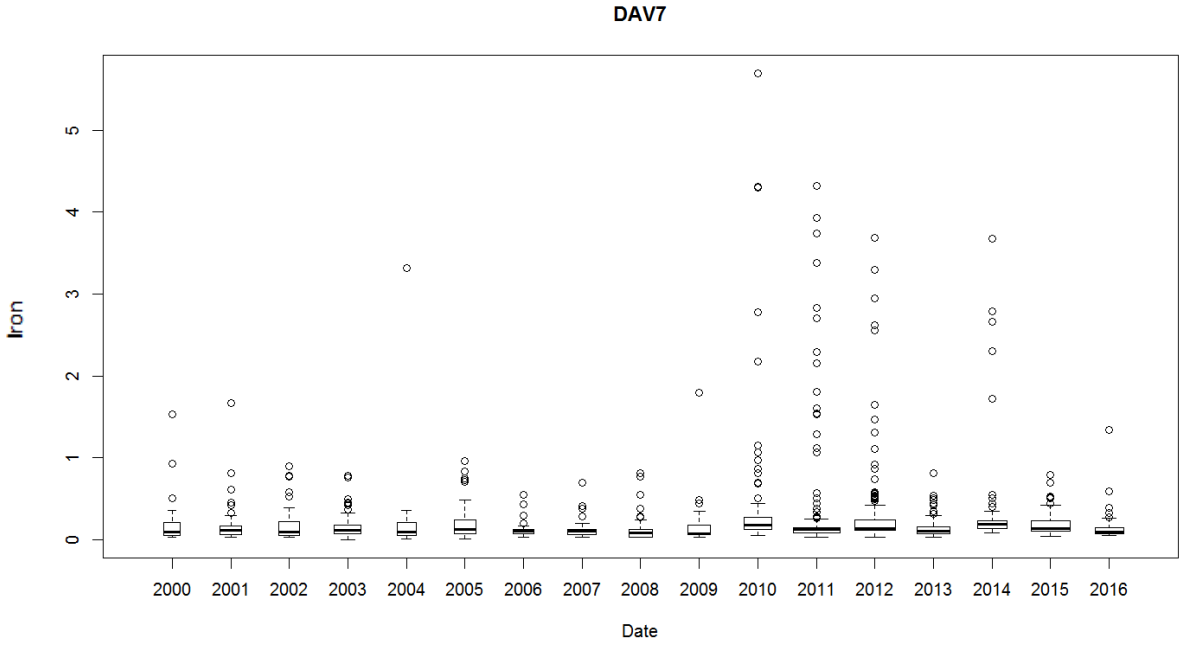

DAV7
Nitrogen Oxide
0.00
0.05
0.10
0.15
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

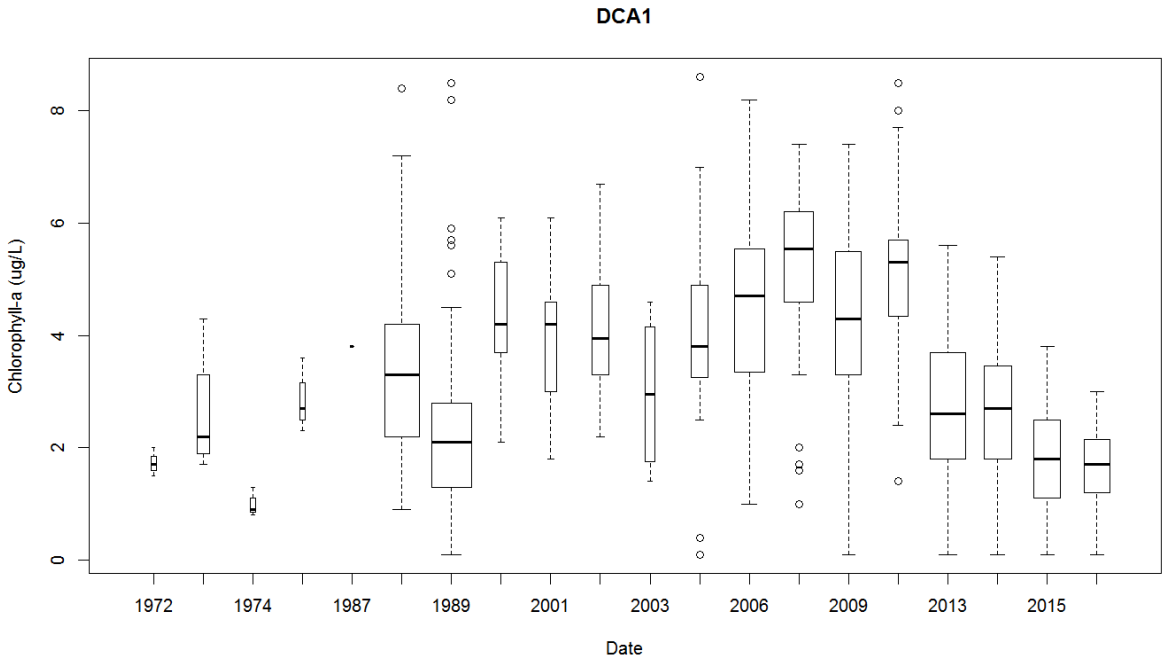

DAV7
Nitrogen Total
0.1
0.2
0.3
0.4
0.5
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

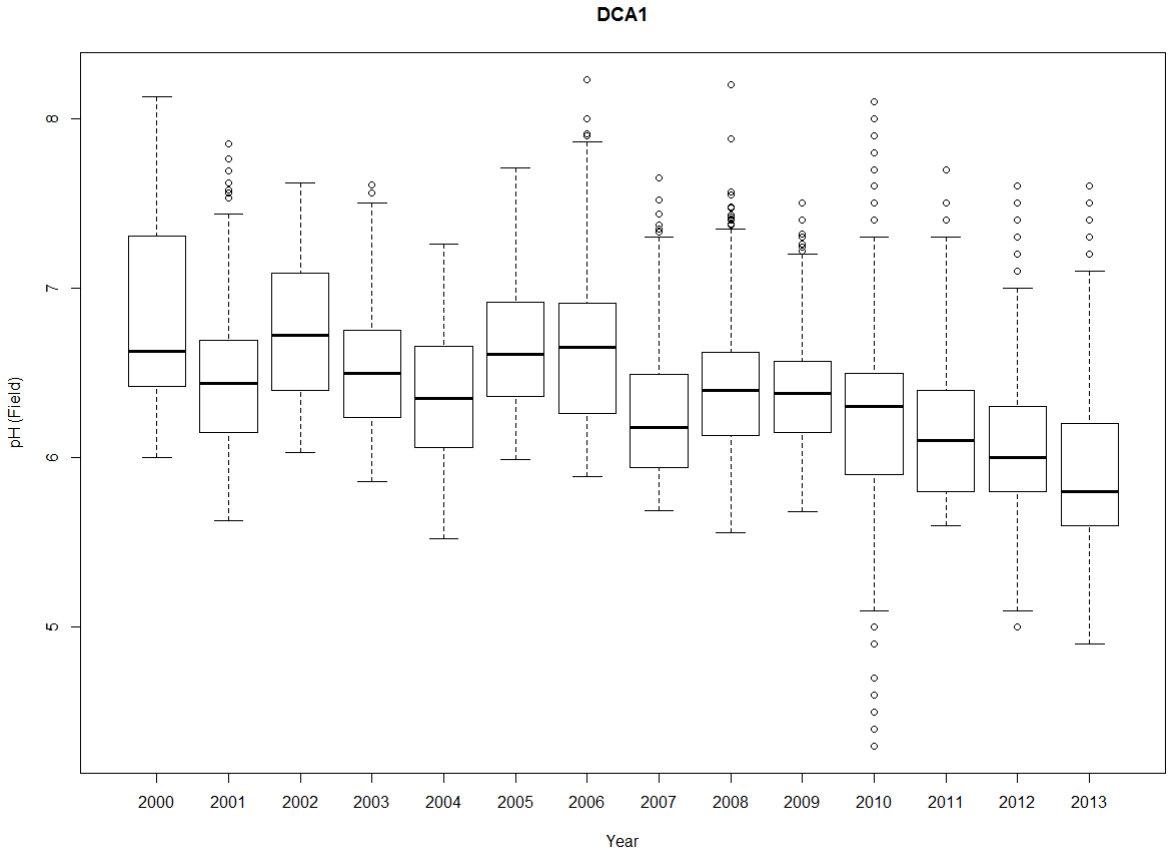

DAV7
FRP
0.00
0.01
0.02
0.03
0.04
0.05
0.06
2001
2003
2005
2008
2010
2012
2014
2016
Date

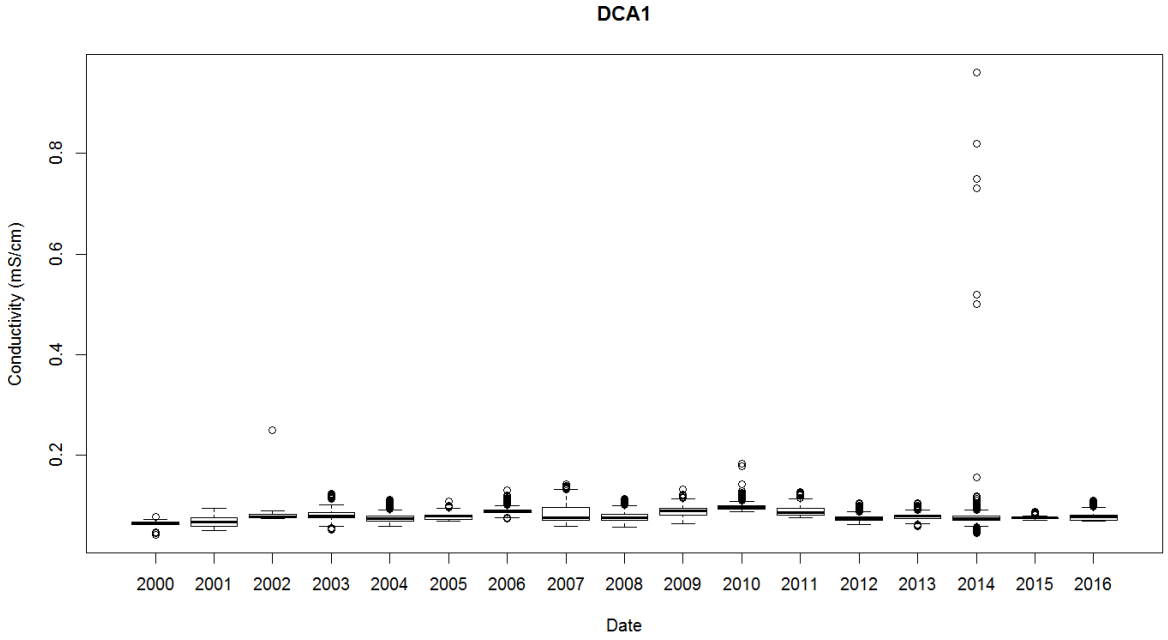

DAV7
Total phosphorus
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

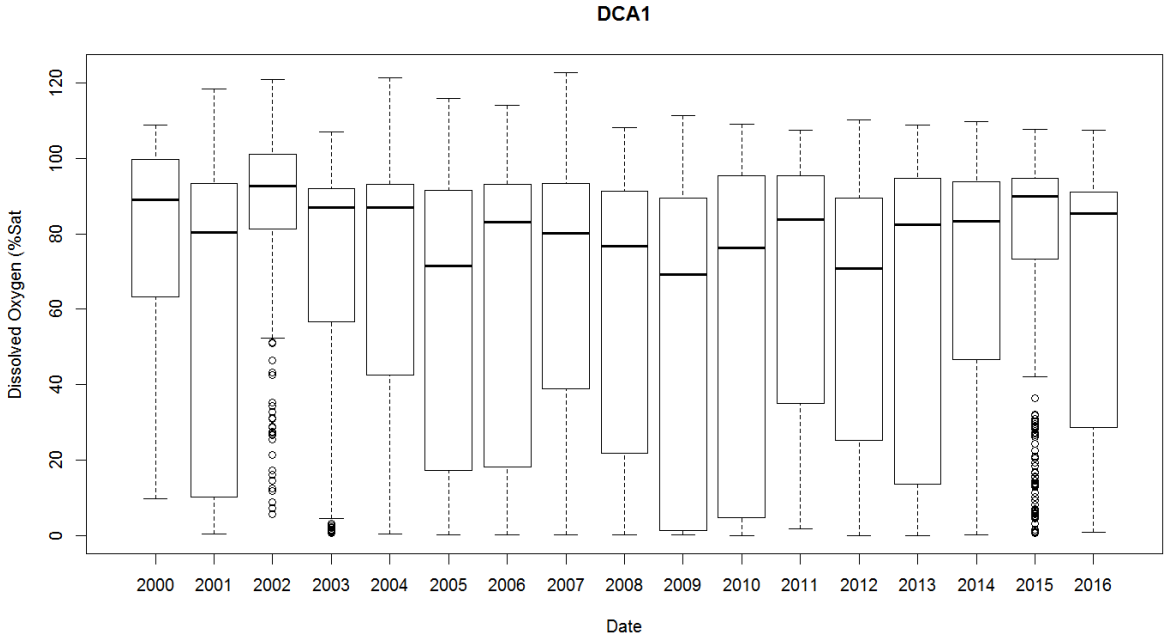

DAV7
Aluminium
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

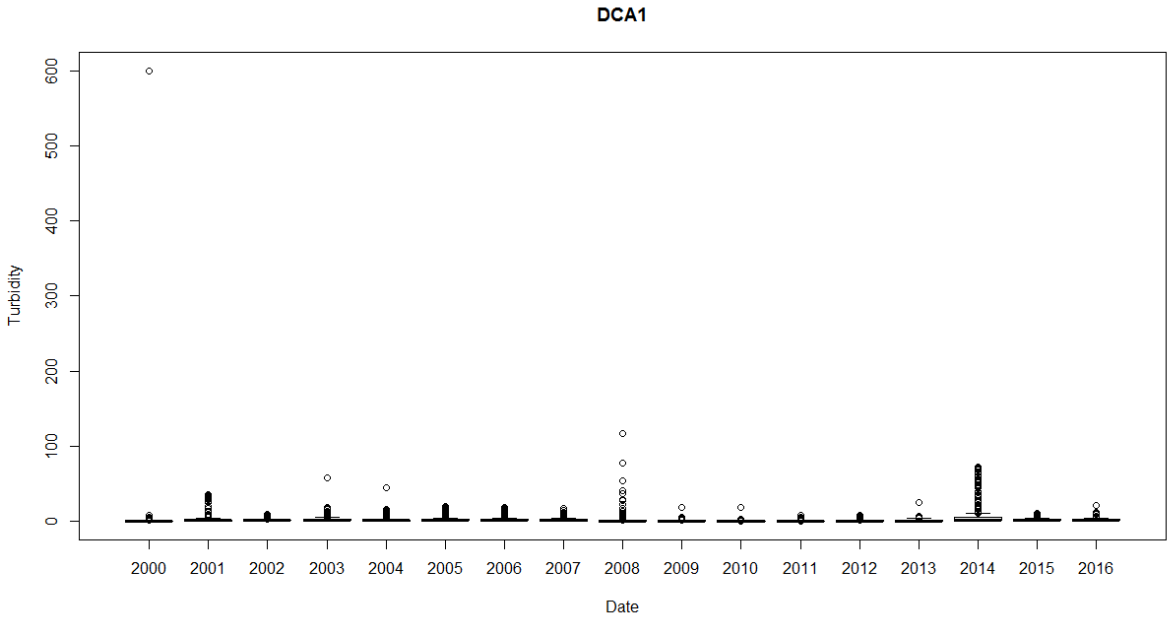

DAV7
Iron
0
1
2
3
4
5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

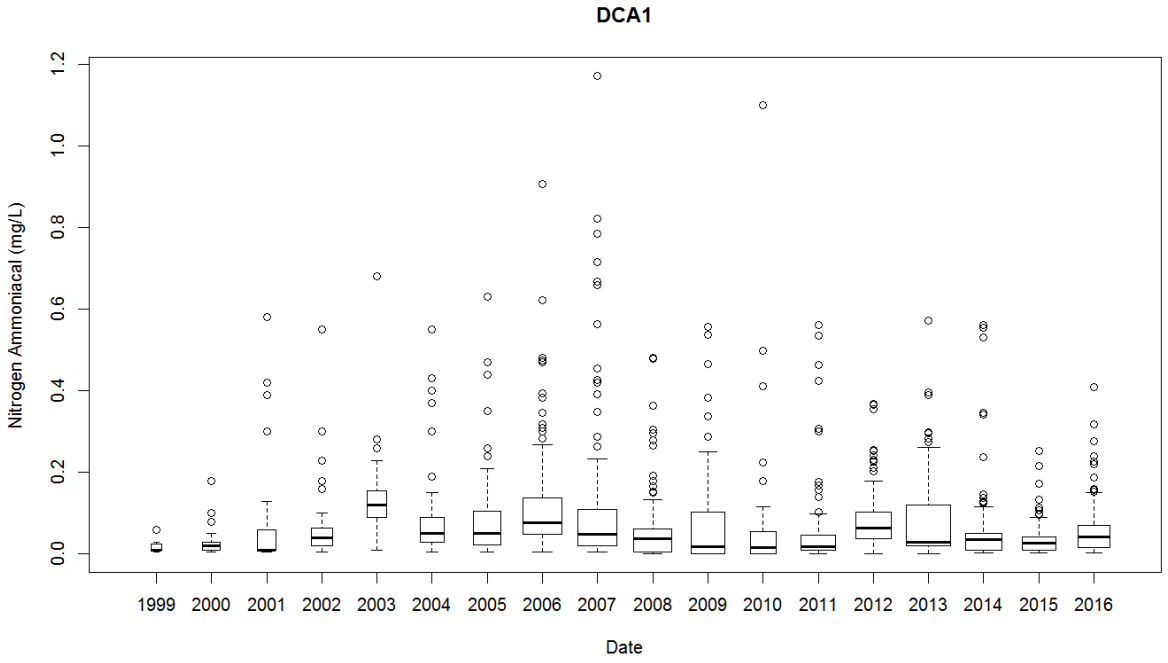

DCA1
Chlorophyll-a (ug/L)
0
2
4
6
8
1972
1974
1987
1989
2001
2003
2006
2009
2013
2015
Date

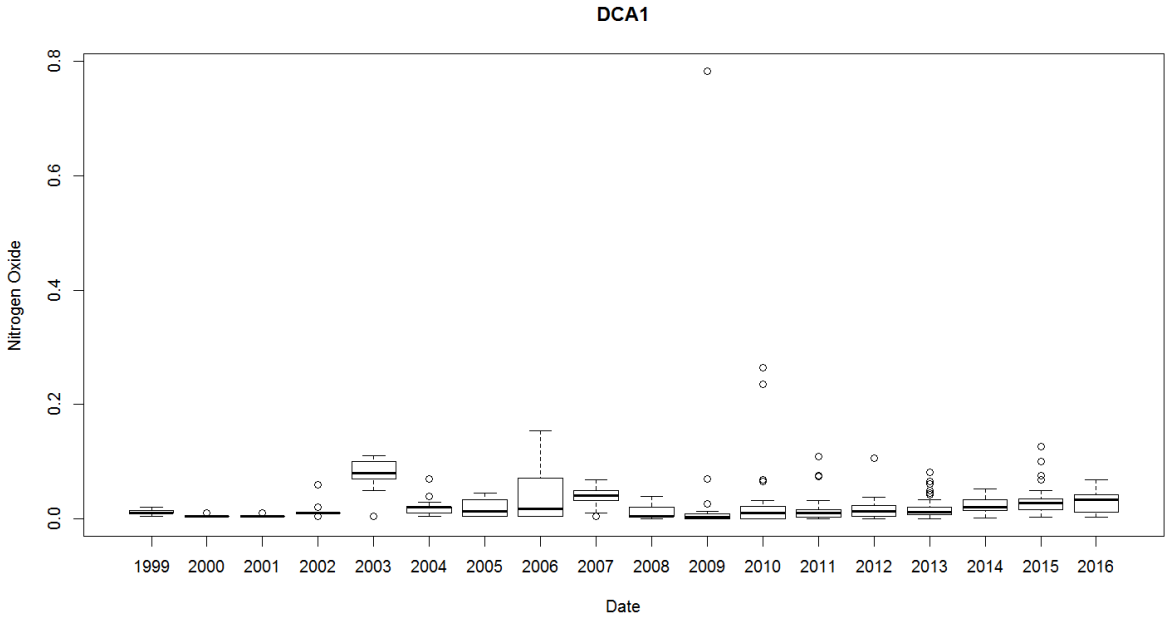

DCA1
pH (Field)
5
6
7
8
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Year

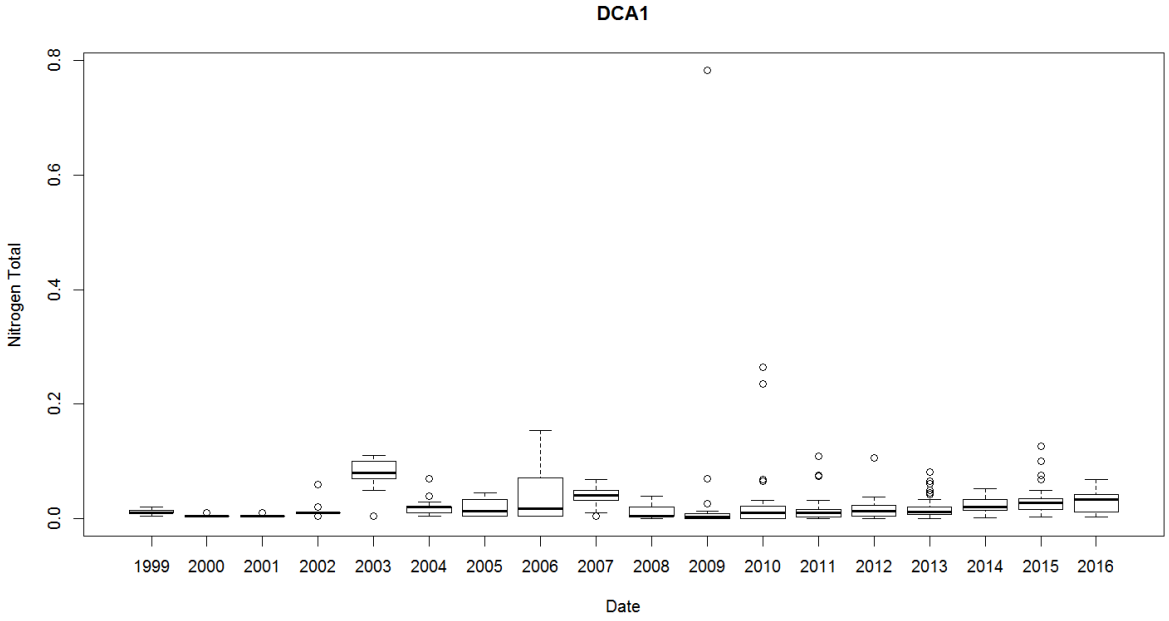

DCA1
Conductivity (mS/cm)
0.2
0.4
0.6
0.8
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

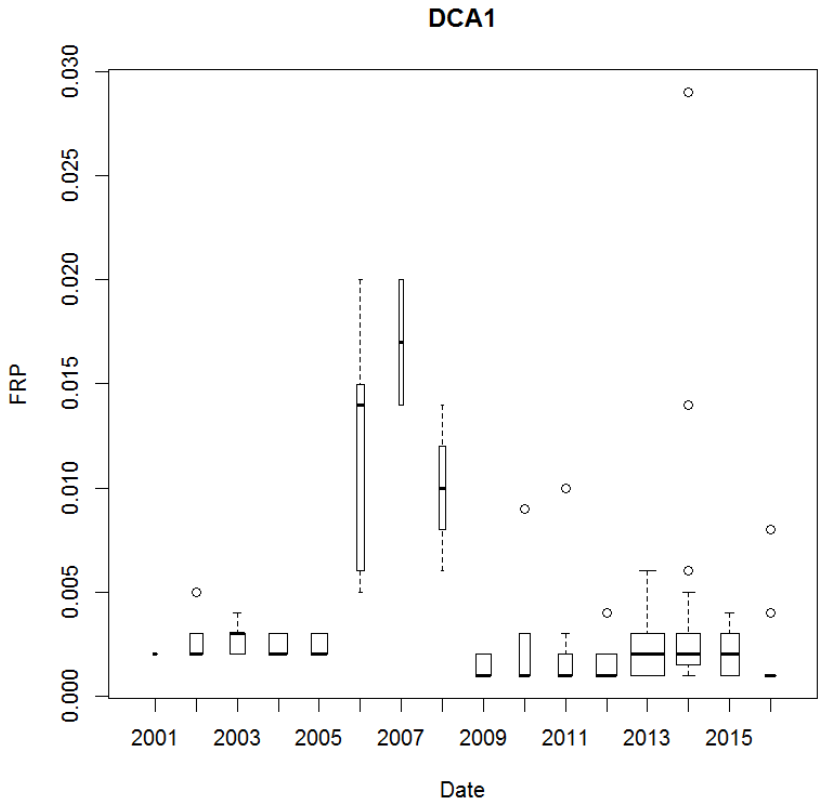

DCA1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

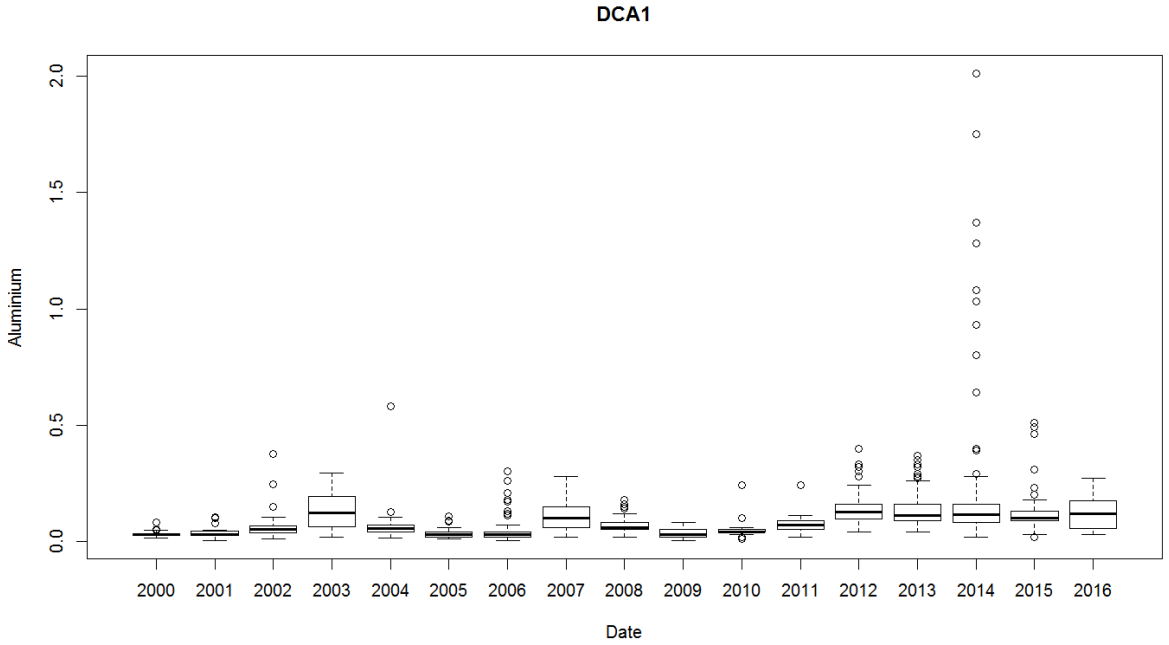

DCA1
Turbidity
0
100
200
300
400
500
600
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

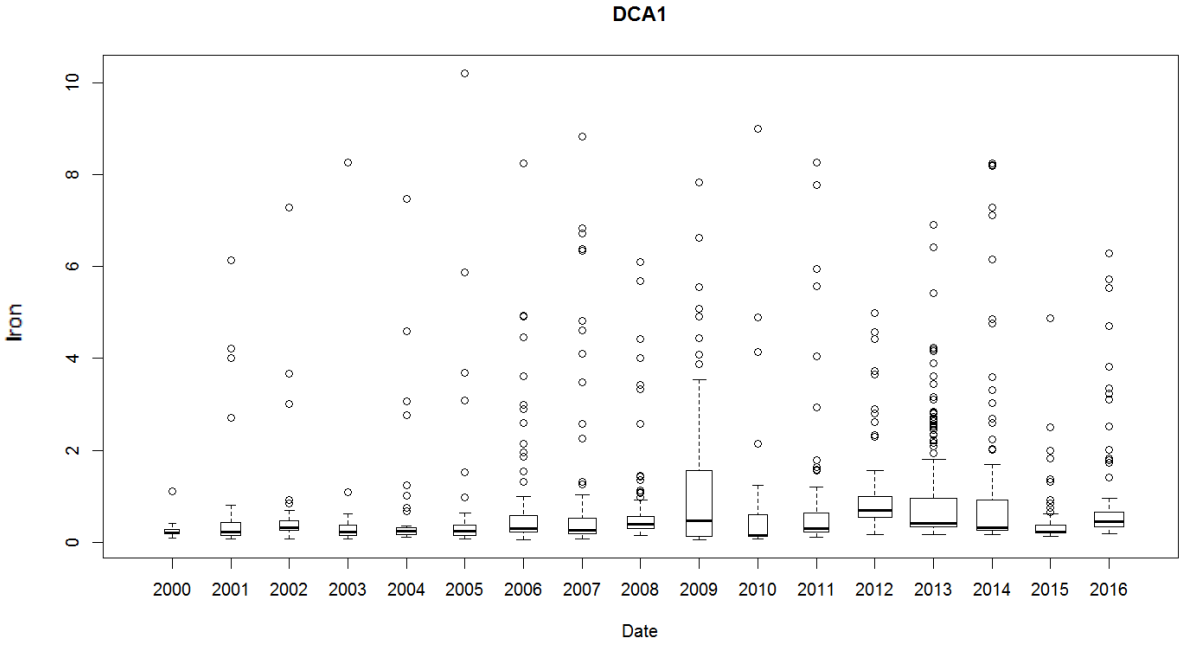

DCA1
Nitrogen Ammoniacal (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

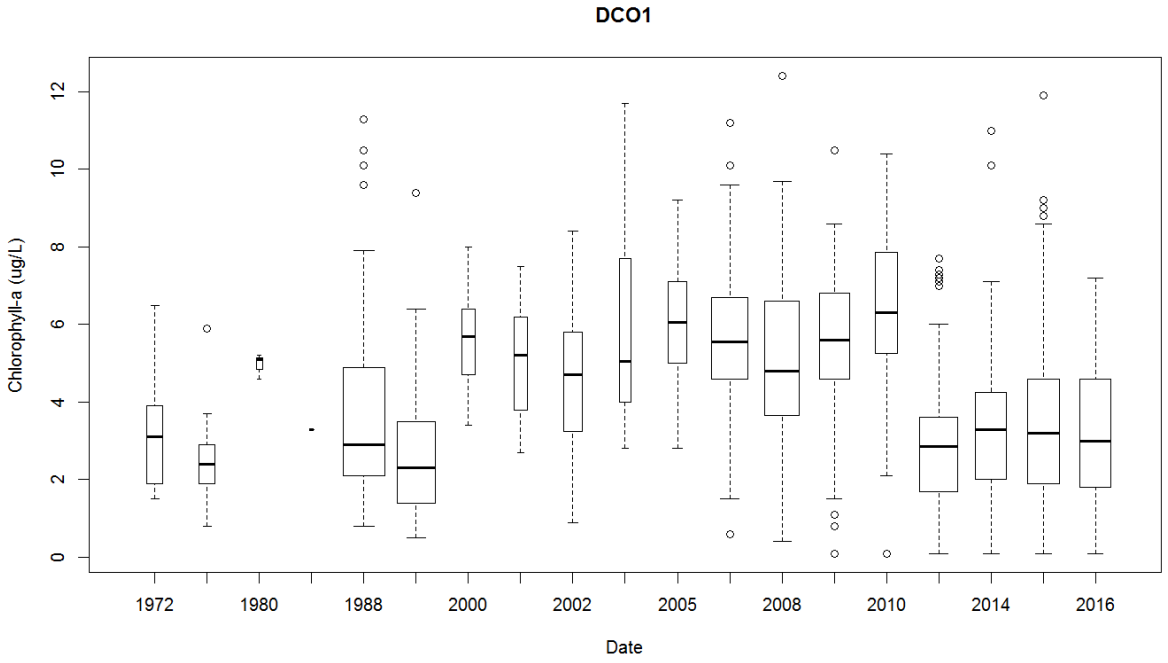

DCA1
Nitrogen Oxide
0.0
0.2
0.4
0.6
0.8
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

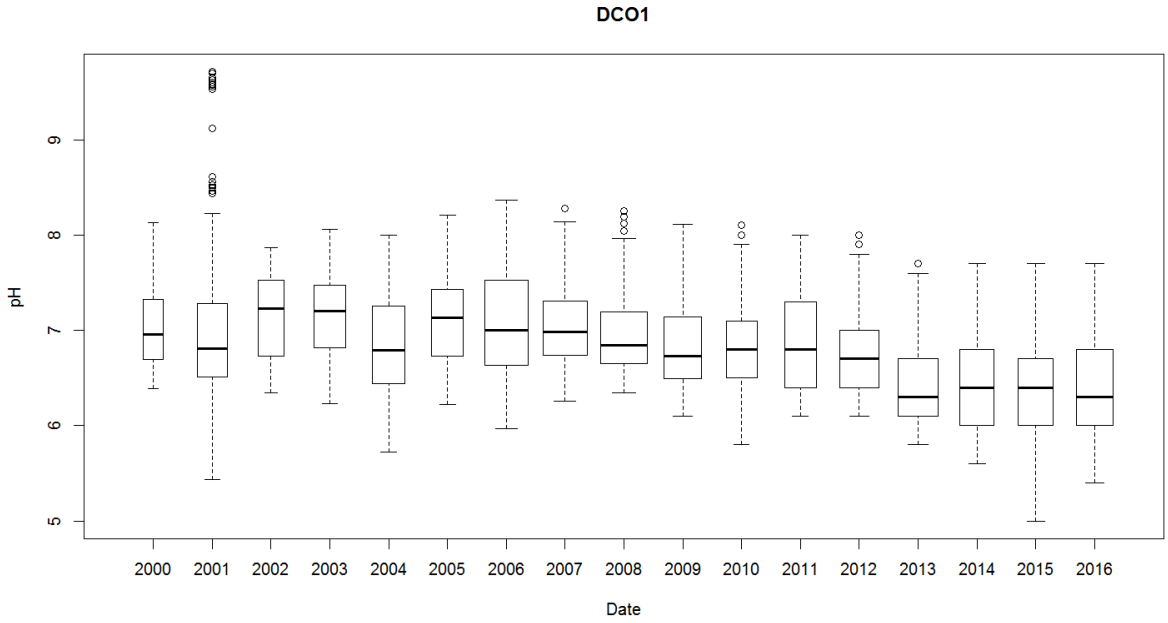

DCA1
Nitrogen Total
0.0
0.2
0.4
0.6
0.8
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

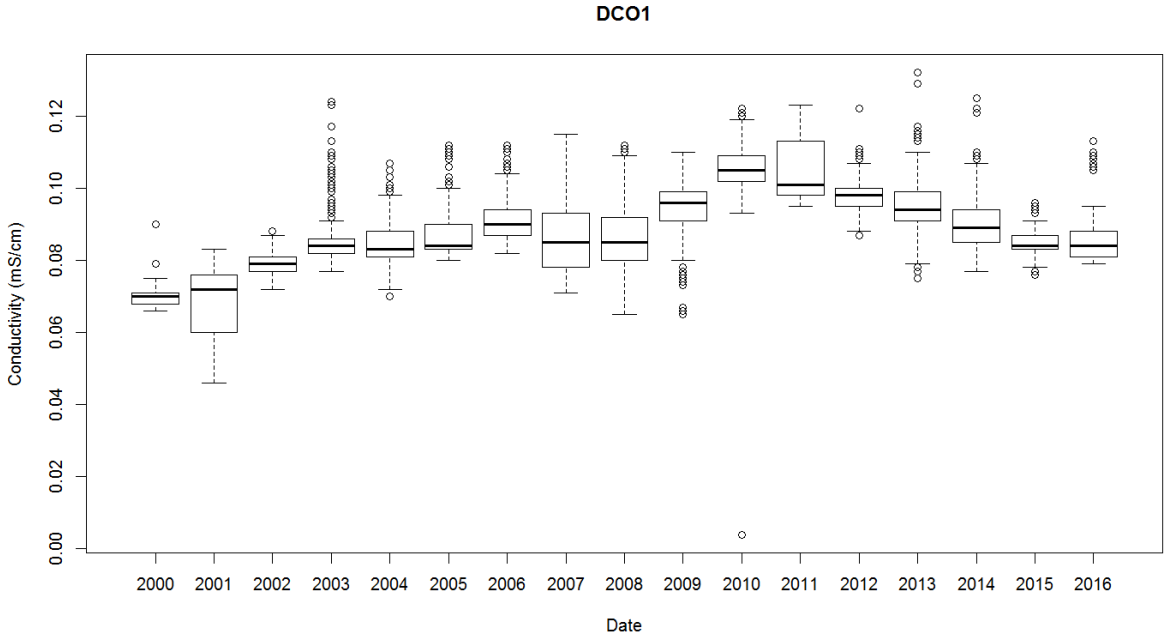

DCA1
FRP
0.000
0.005
0.010
0.015
0.020
0.025
0.030
2001
2003
2005
2007
2009
2011
2013
2015
Date

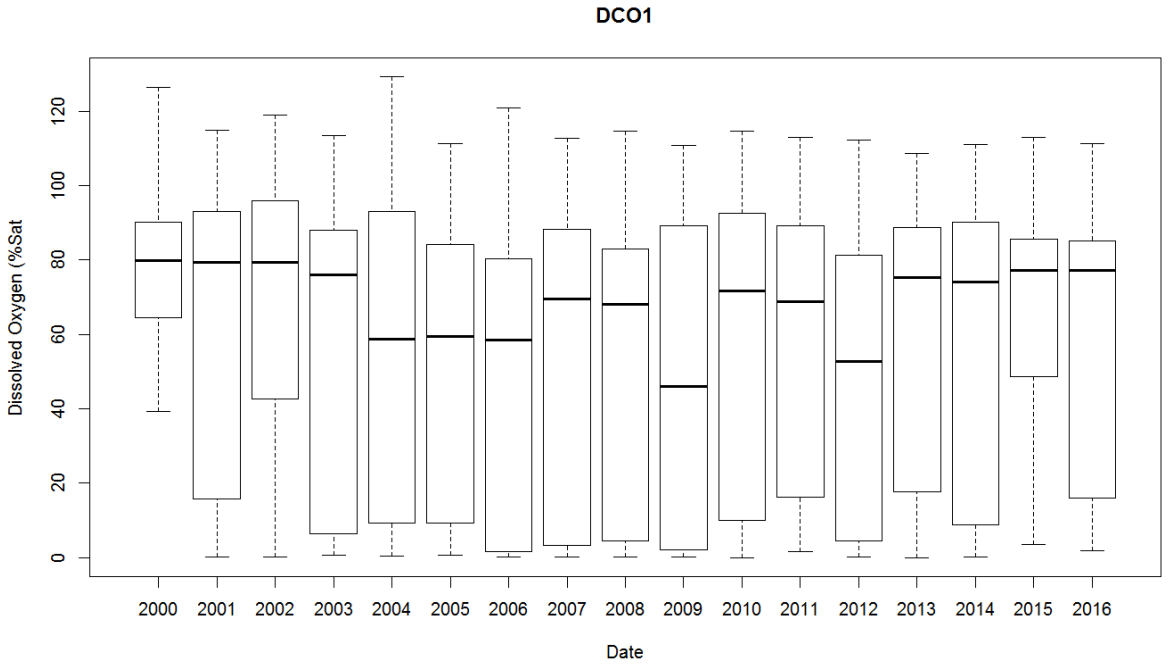

DCA1
Aluminium
0.0
0.5
1.0
1.5
2.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

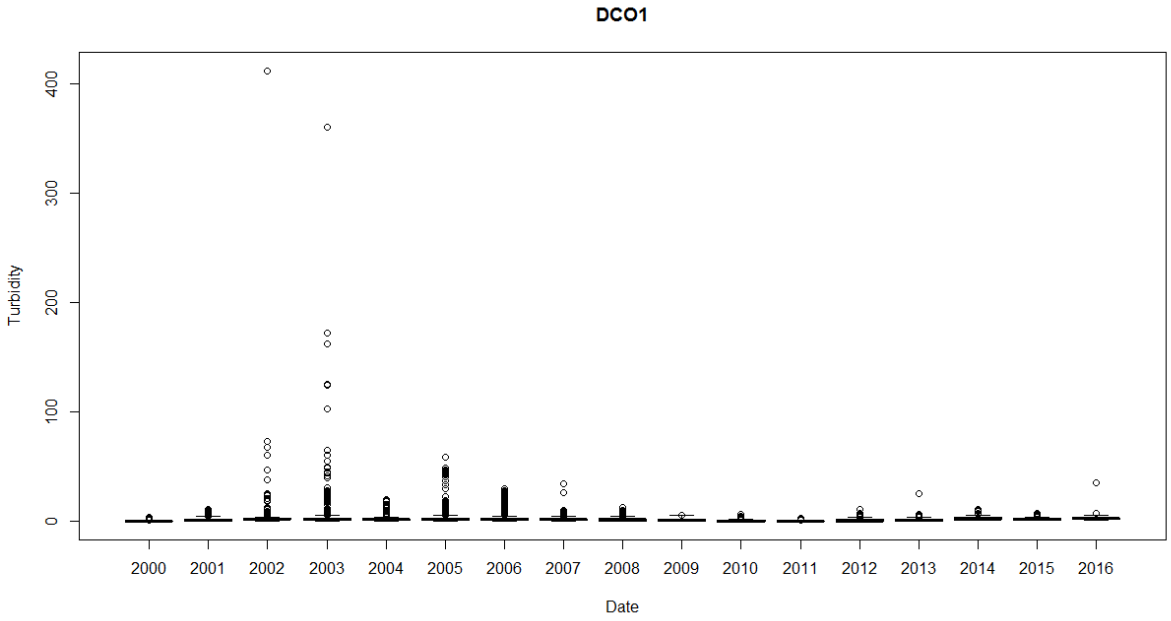

DCA1
Iron
0
2
4
6
8
10
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

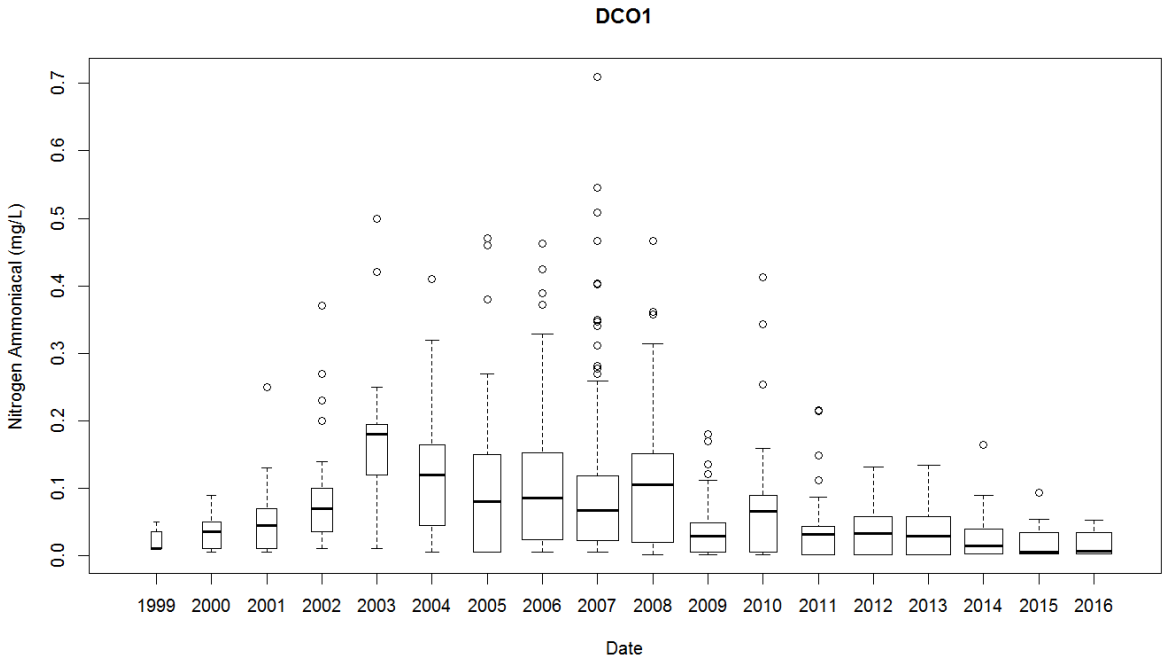

DCO1
Chlorophyll-a (ug/L)
0
2
4
6
8
10
12
1972
1980
1988
2000
2002
2005
2008
2010
2014
2016
Date

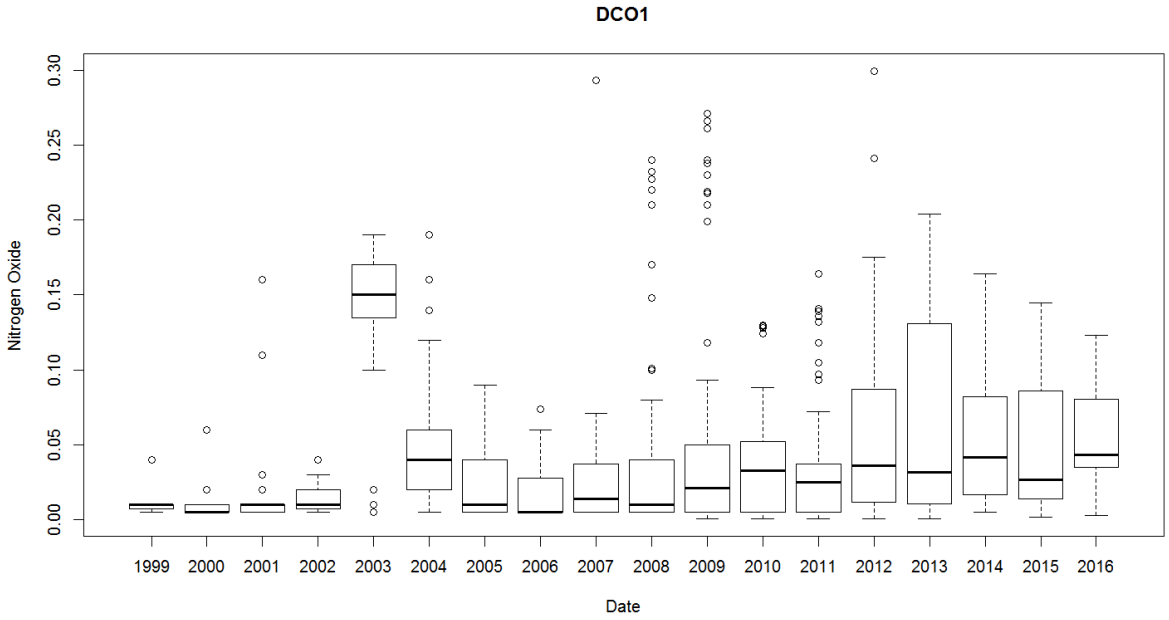

DCO1
pH
5
6
7
8
9
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

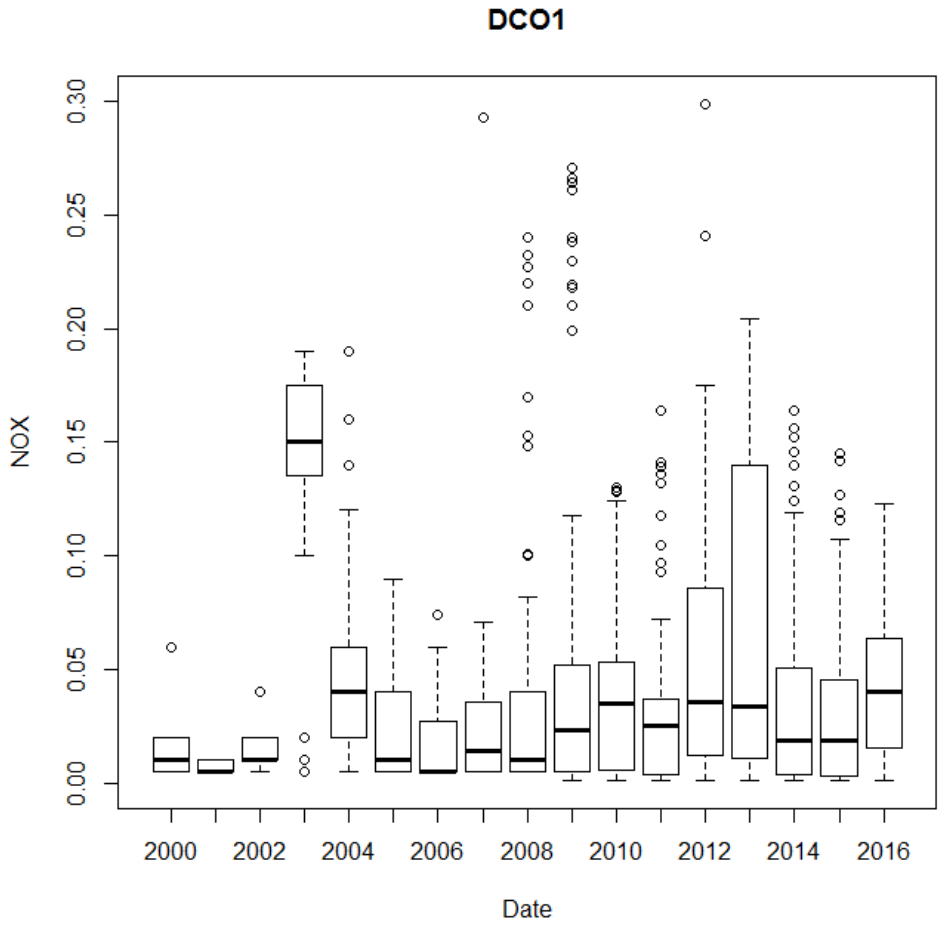

DCO1
Conductivity (mS/cm)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

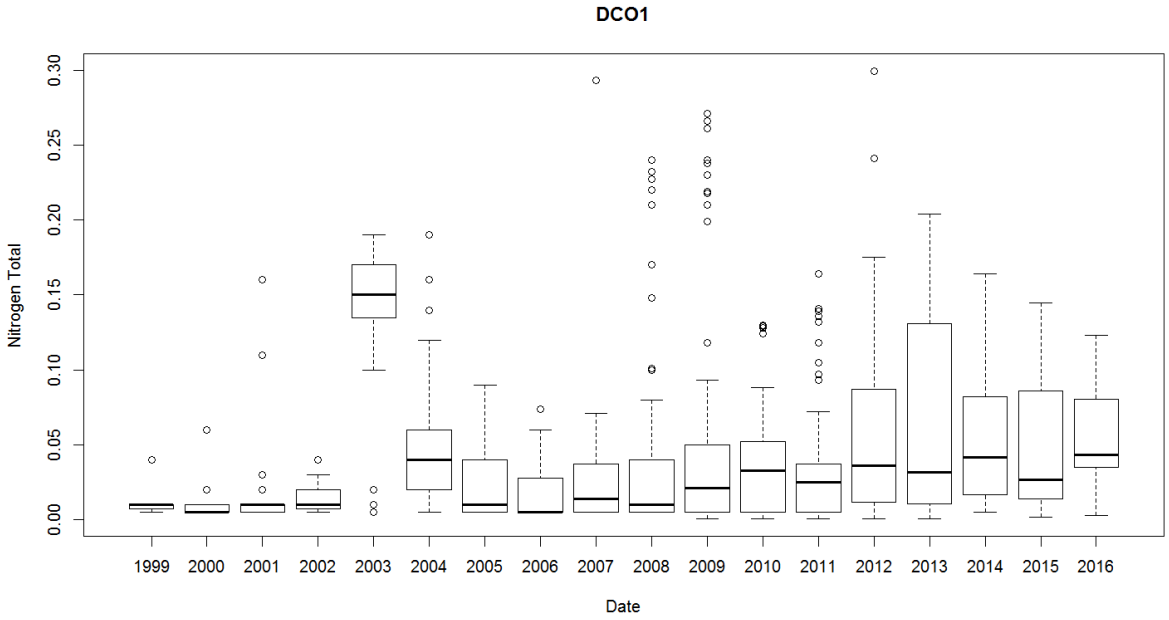

DCO1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

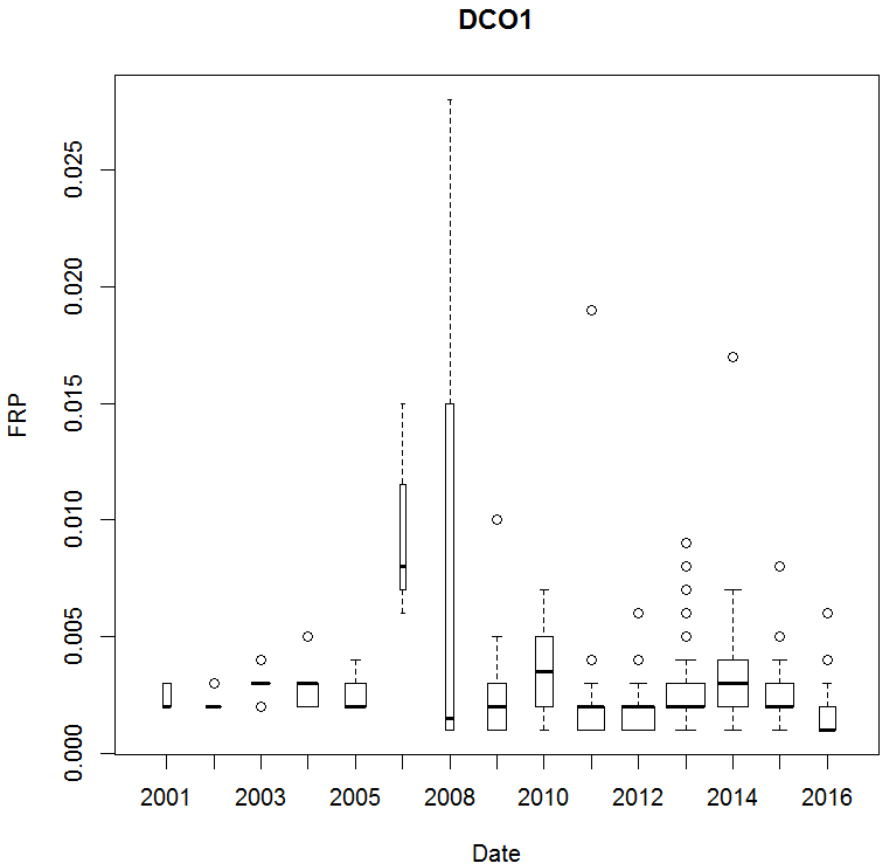

DCO1
Turbidity
0
100
200
300
400
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

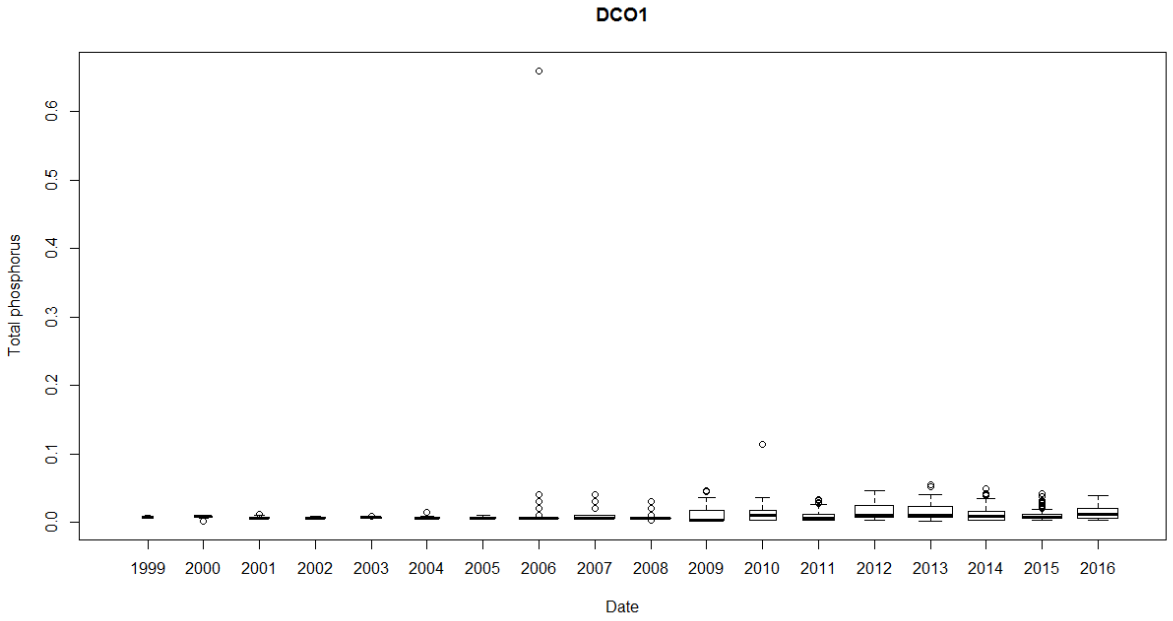

DCO1
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

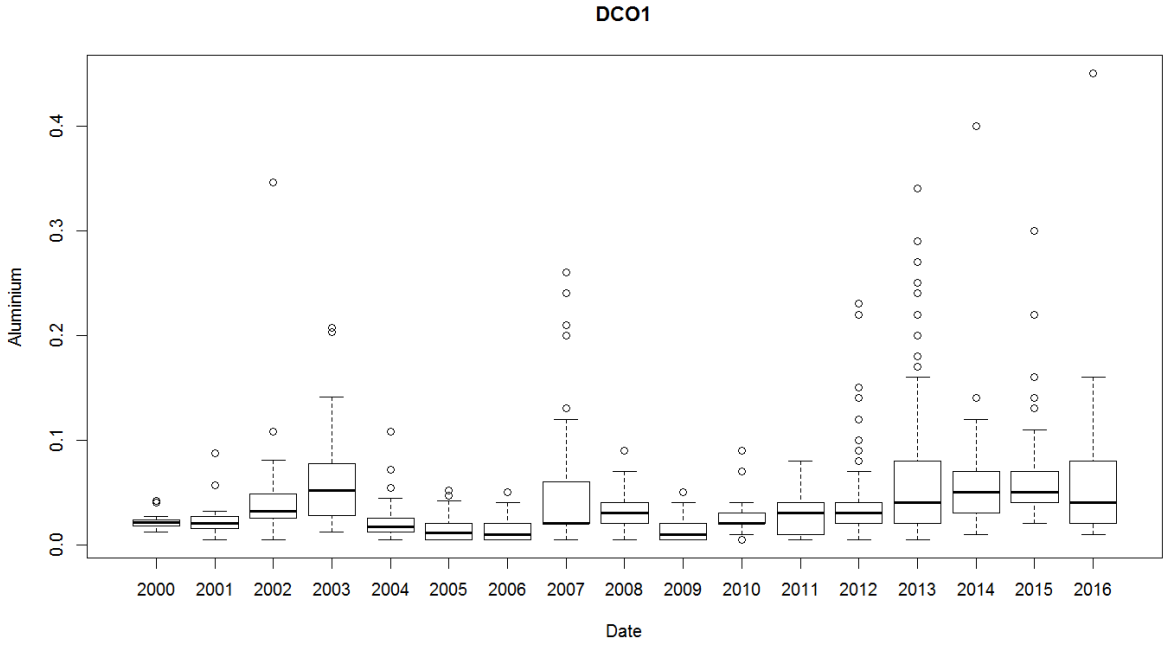

DCO1
Nitrogen Oxide
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

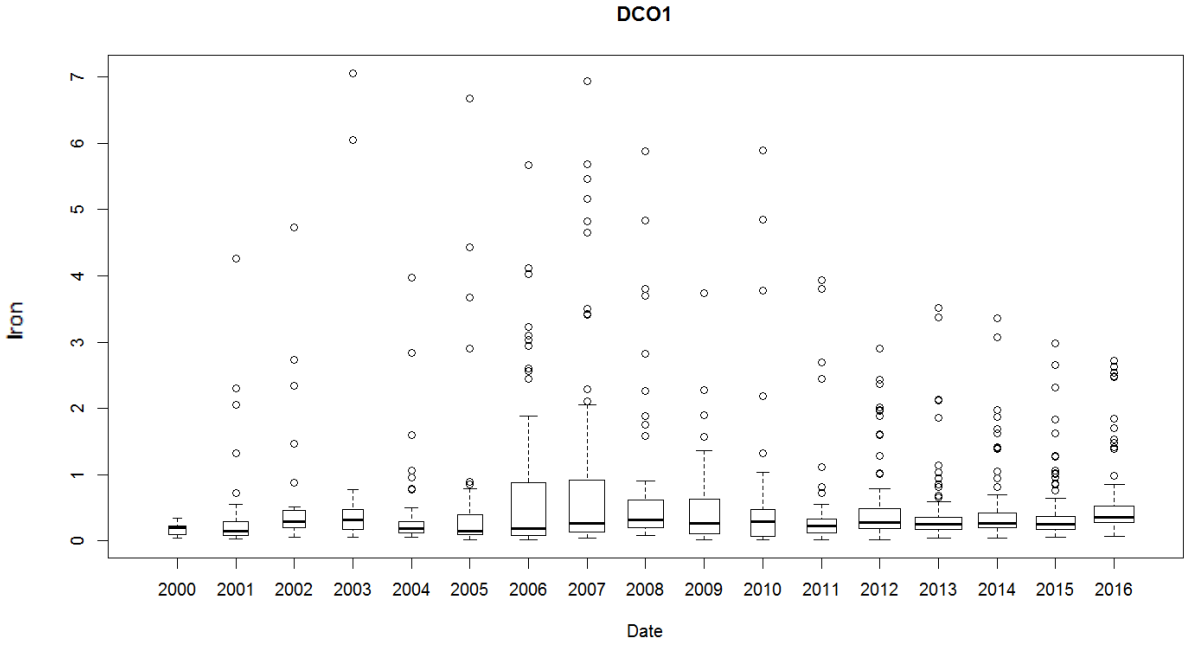

DCO1
NOX
0.00
0.05
0.10
0.15
0.20
0.25
0.30
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

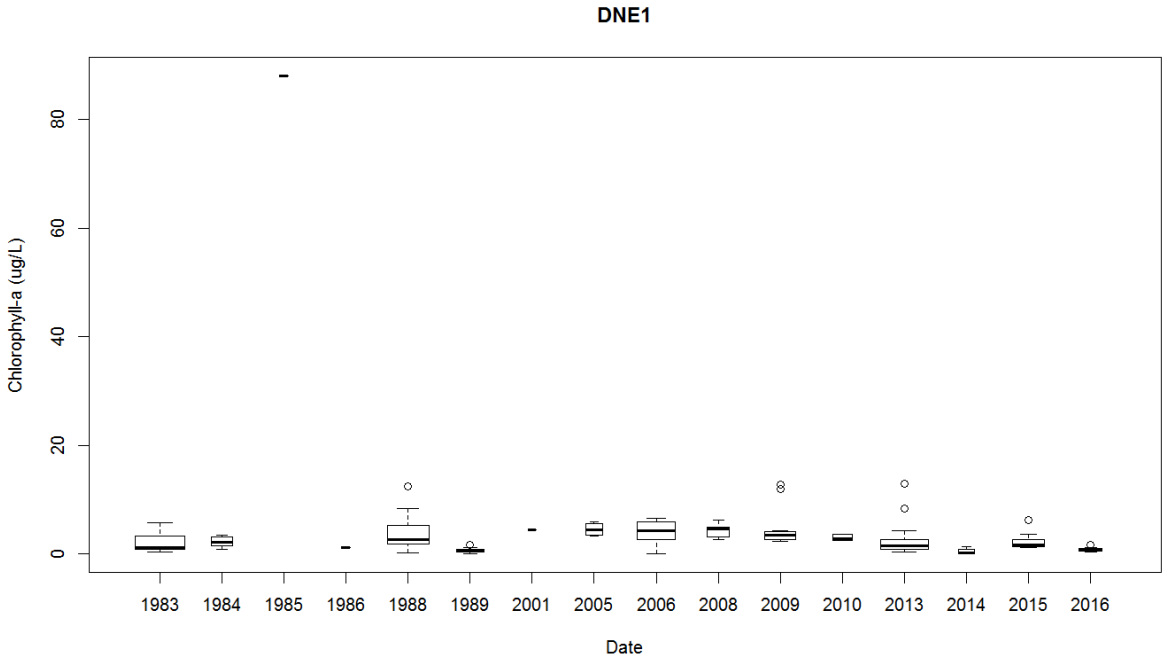

DCO1
Nitrogen Total
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

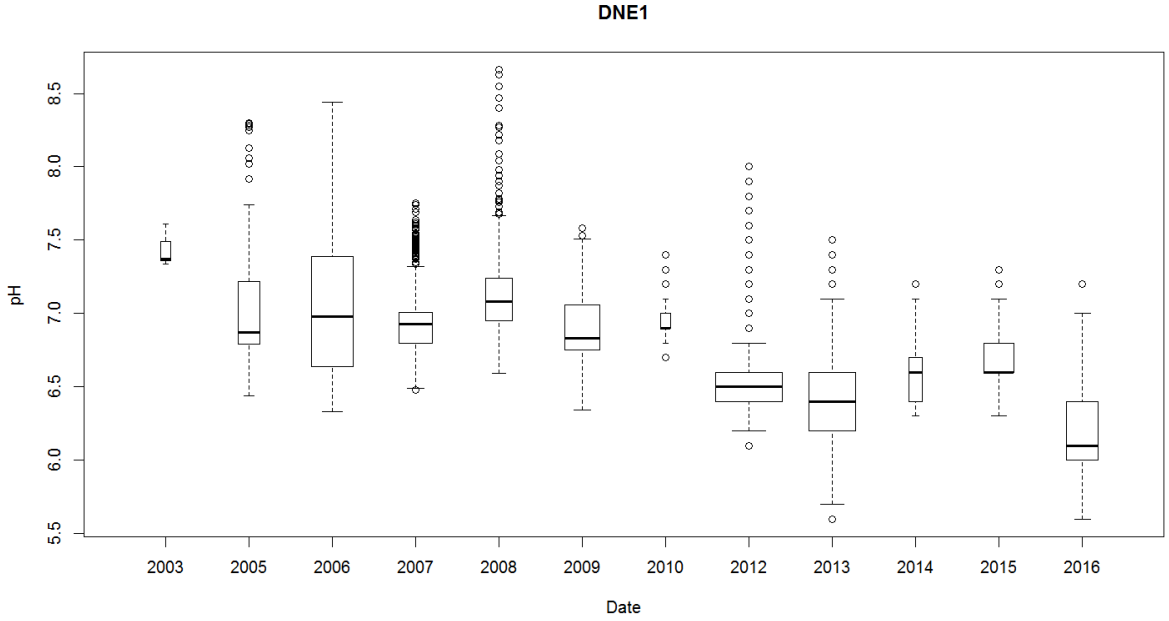

DCO1
FRP
0.000
0.005
0.010
0.015
0.020
0.025
2001
2003
2005
2008
2010
2012
2014
2016
Date

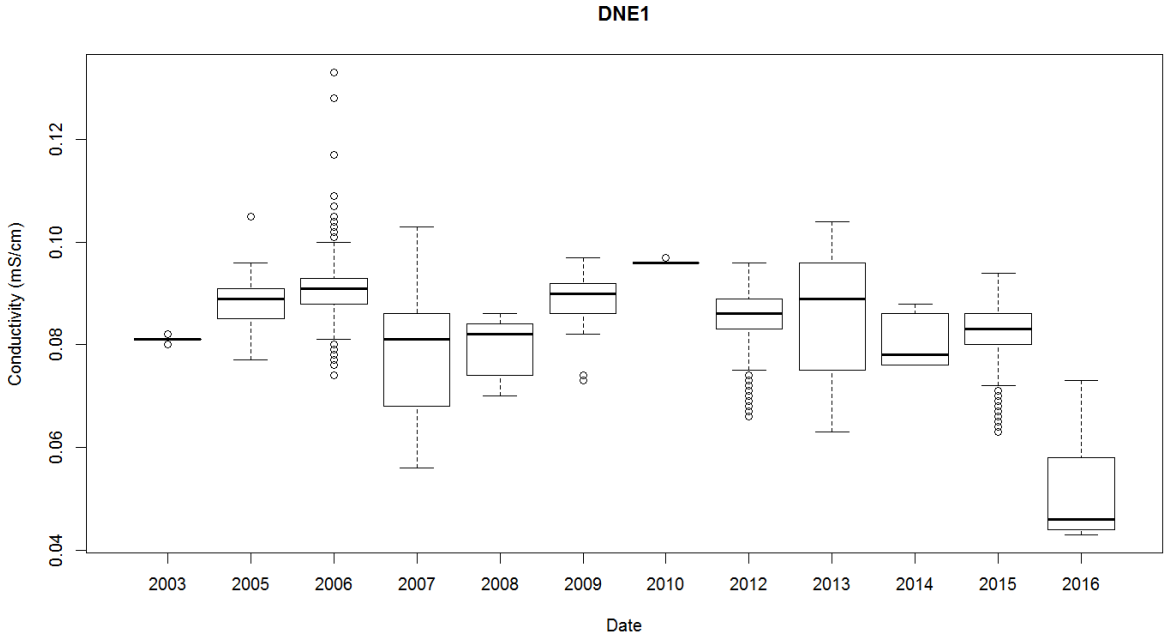

DCO1
Total phosphorus
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

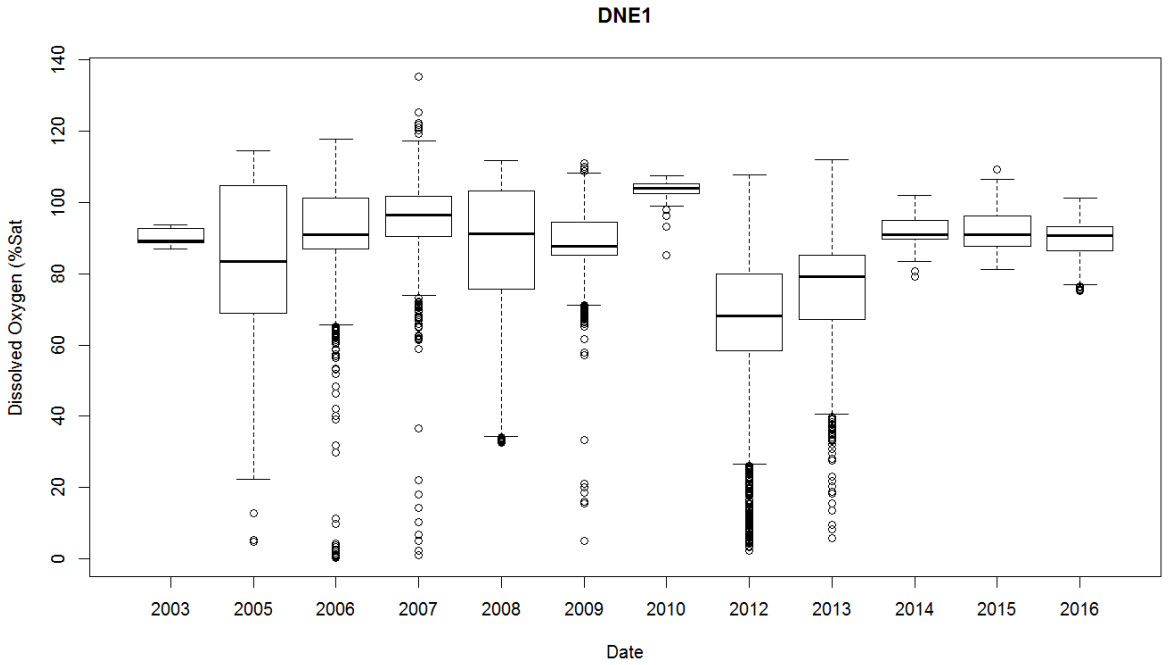

DCO1
Aluminium
0.0
0.1
0.2
0.3
0.4
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

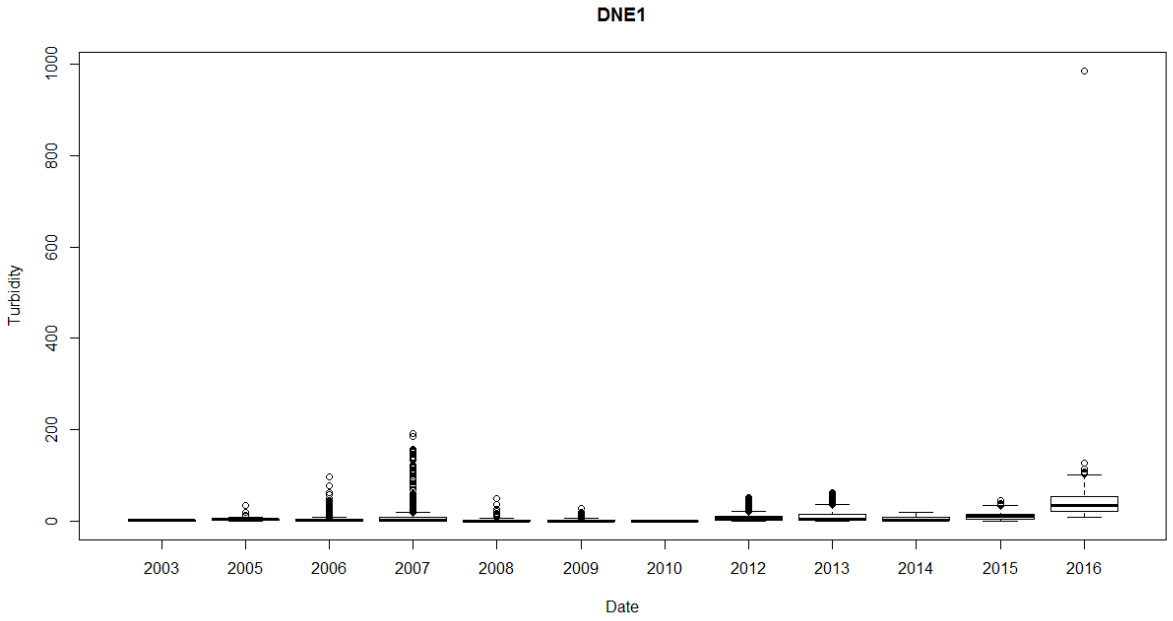

DCO1
Iron
0
1
2
3
4
5
6
7
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

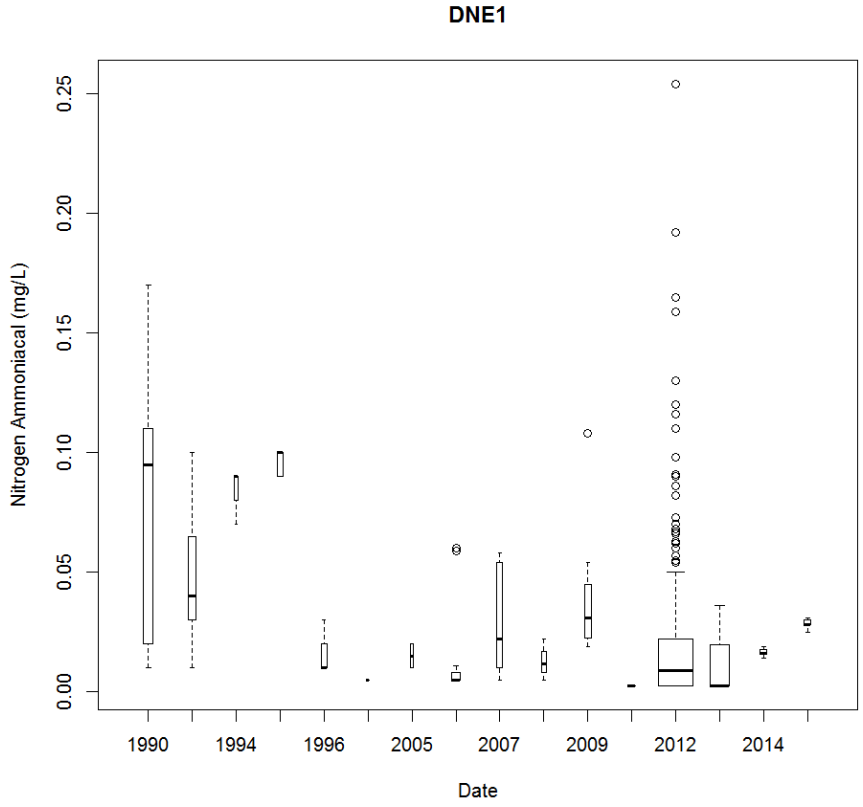

DNE1
Chlorophyll-a (ug/L)
0
20
40
60
80
1983
1984
1985
1986
1988
1989
2001
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

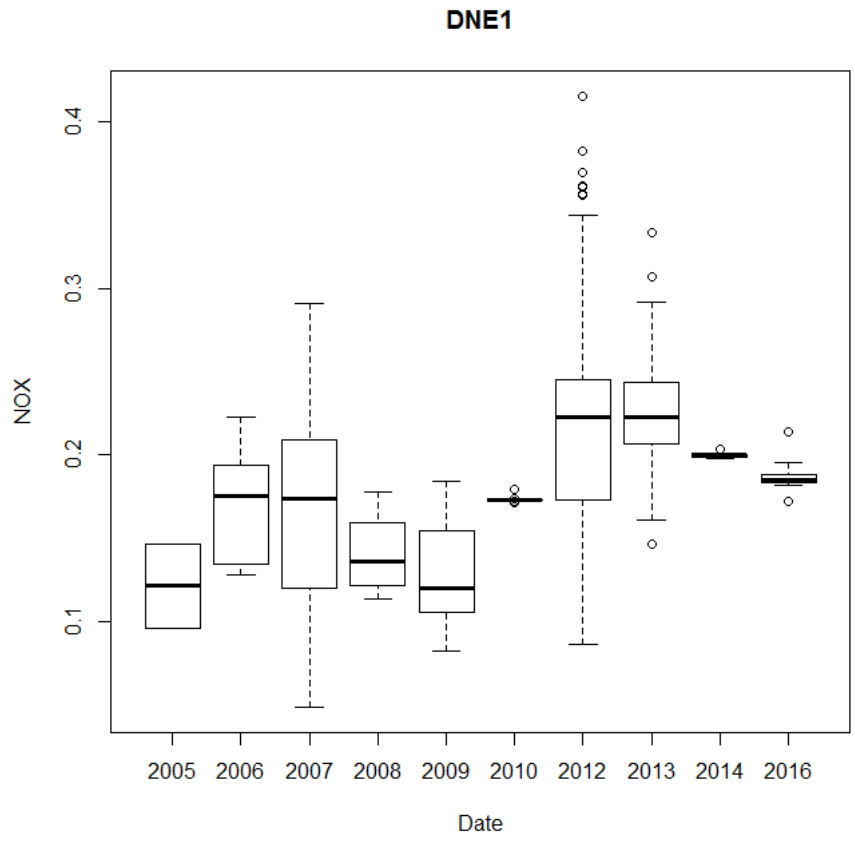

DNE1
pH
5.5
6.0
6.5
7.0
7.5
8.0
8.5
2003
2005
2006
2007
2008
2009
2010
2012
2013
2014
2015
2016
Date

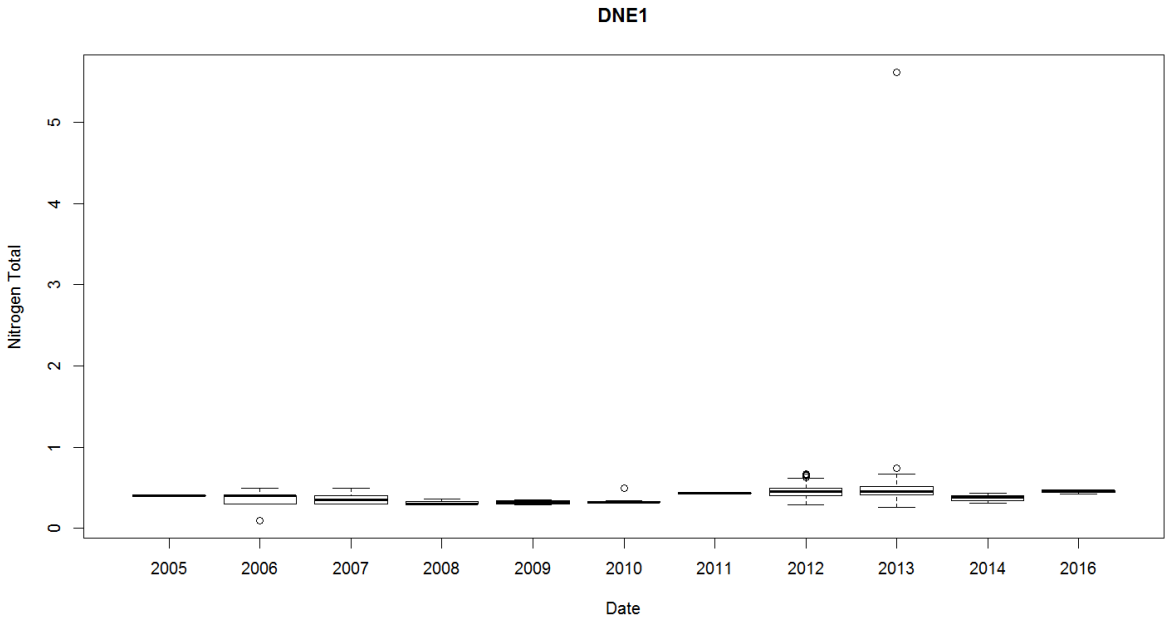

DNE1
Conductivity (mS/cm)
0.04
0.06
0.08
0.10
0.12
2003
2005
2006
2007
2008
2009
2010
2012
2013
2014
2015
2016
Date

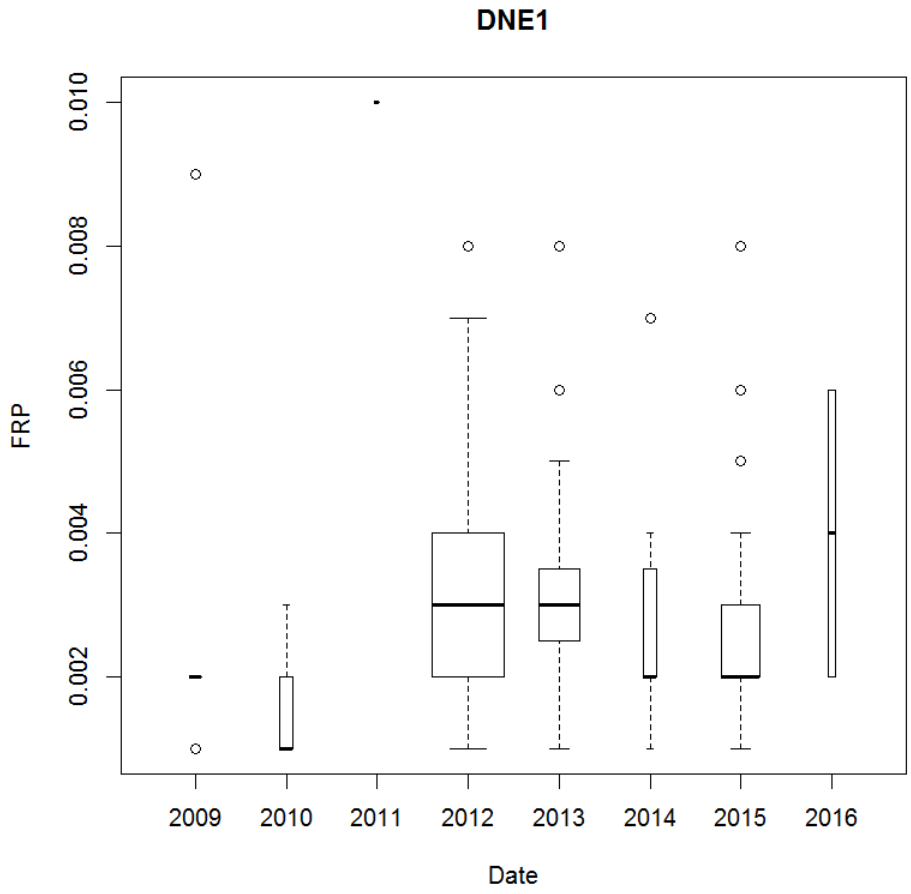

DNE1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
140
2003
2005
2006
2007
2008
2009
2010
2012
2013
2014
2015
2016
Date

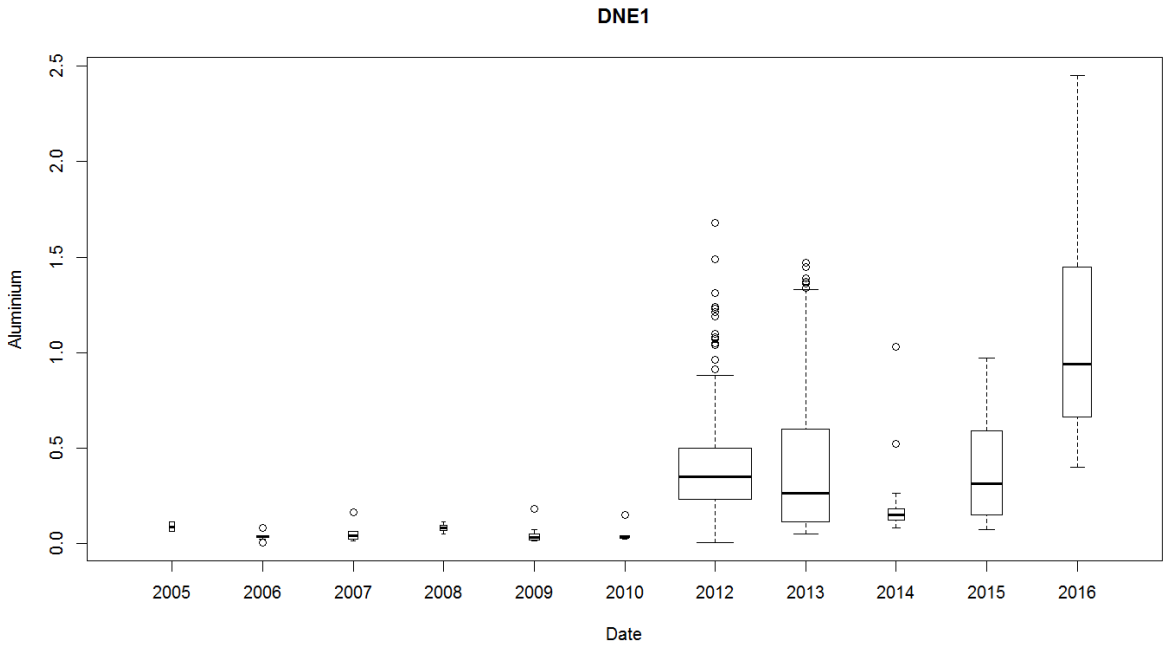

DNE1
Turbidity
0
200
400
600
800
1000
2003
2005
2006
2007
2008
2009
2010
2012
2013
2014
2015
2016
Date

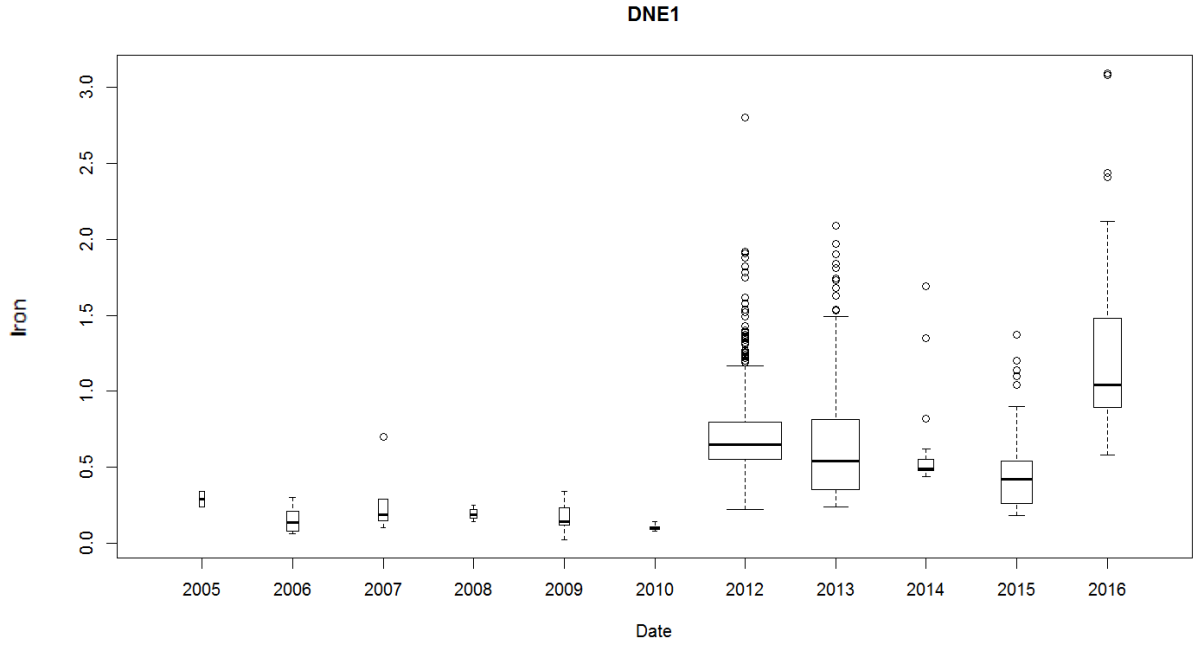

DNE1
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
1990
1994
1996
2005
2007
2009
2012
2014
Date

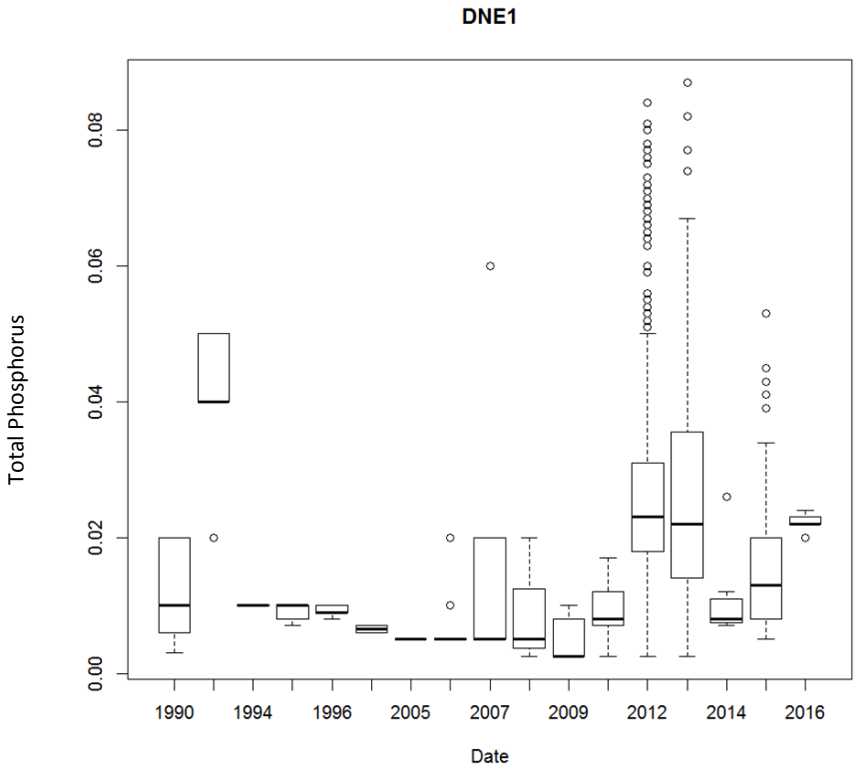

DNE1
NOX
0.1
0.2
0.3
0.4
2005
2006
2007
2008
2009
2010
2012
2013
2014
2016
Date

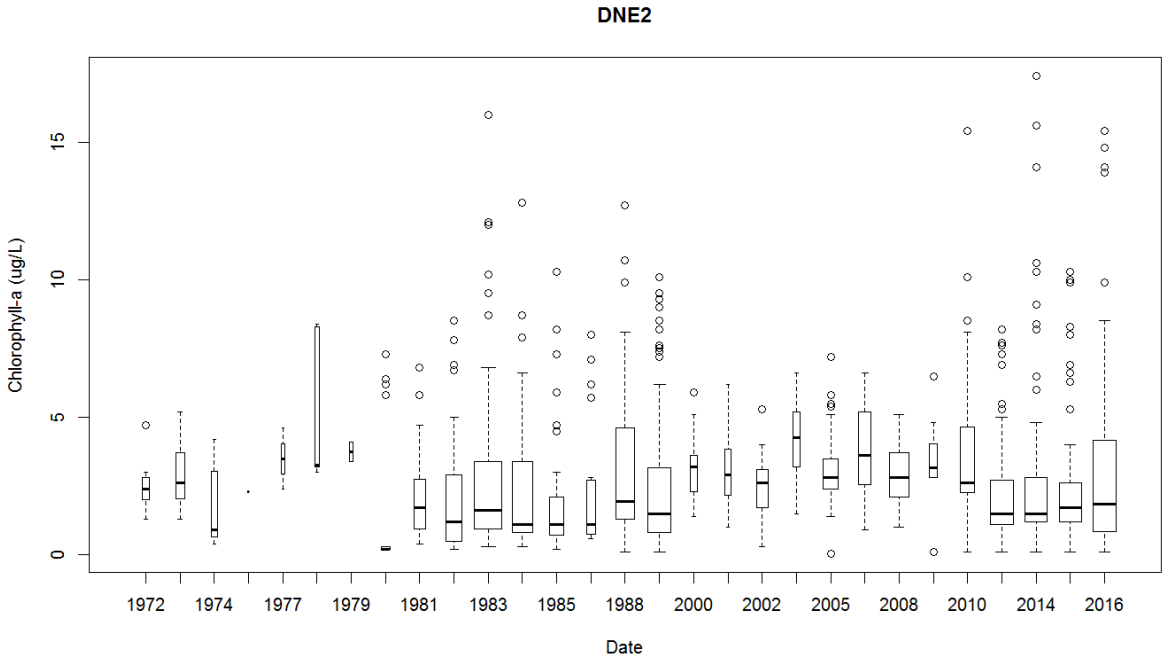

DNE1
Nitrogen Total
0
1
2
3
4
5
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2016
Date

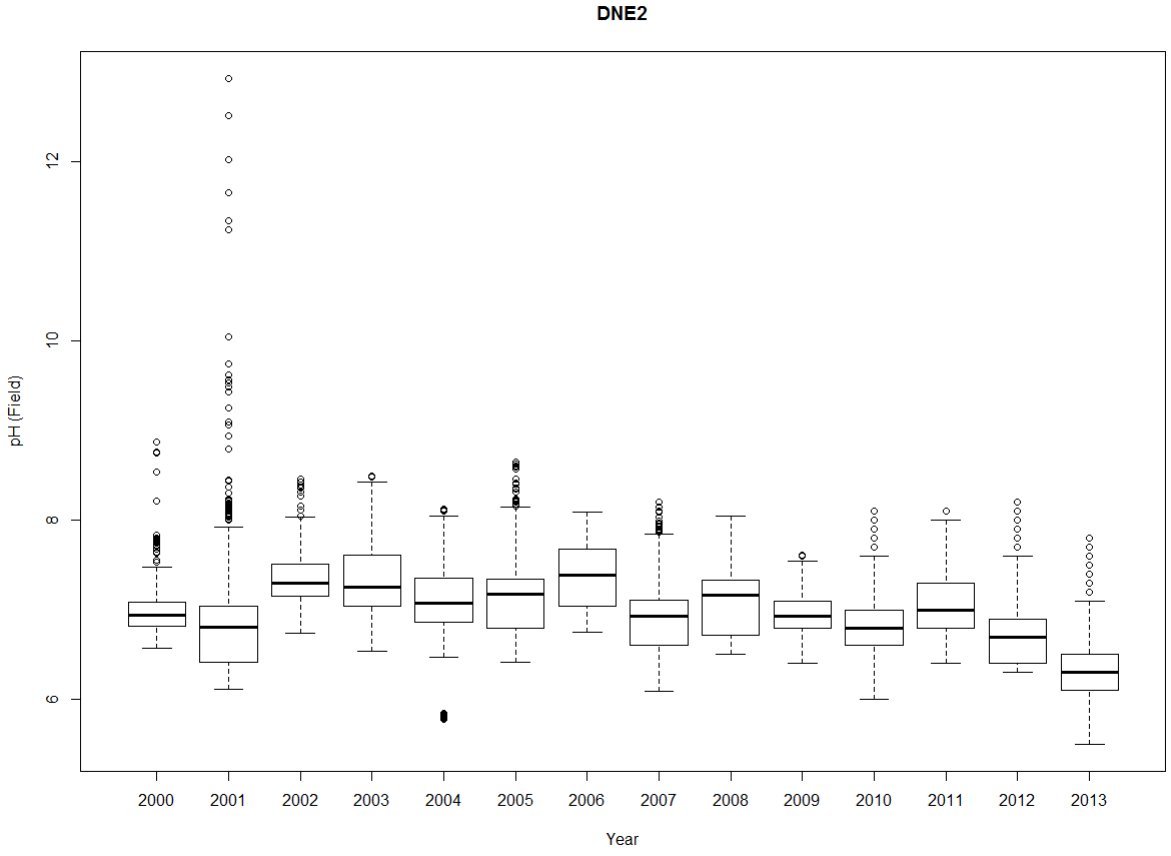

DNE1
FRP
0.002
0.004
0.006
0.008
0.010
2009
2010
2011
2012
2013
2014
2015
2016
Date

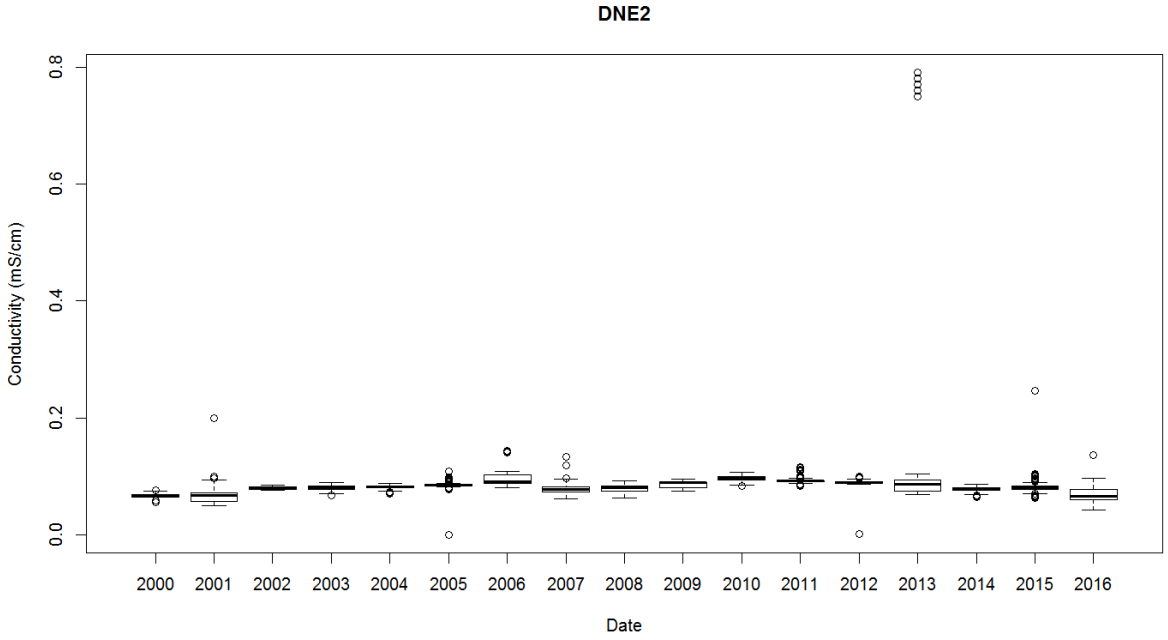

DNE1
Aluminium
0.0
0.5
1.0
1.5
2.0
2.5
2005
2006
2007
2008
2009
2010
2012
2013
2014
2015
2016
Date

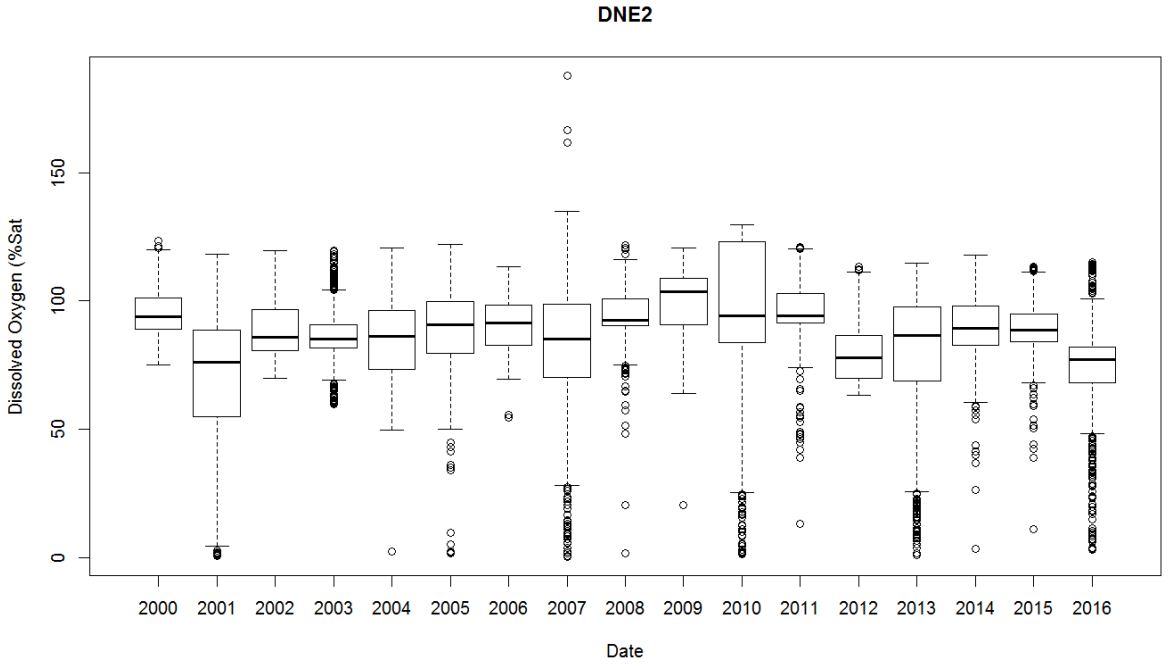

DNE1
Iron
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2005
2006
2007
2008
2009
2010
2012
2013
2014
2015
2016
Date

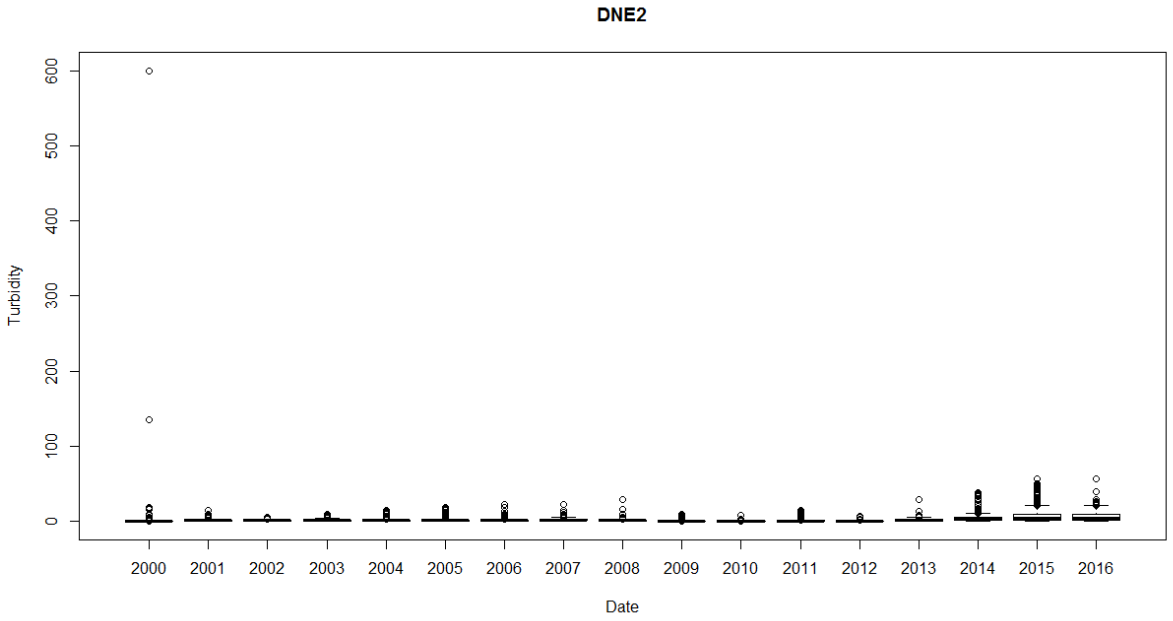

DNE1
Total Phosphorus
0.00
0.02
0.04
0.06
0.08
1990
1994
1996
2005
2007
2009
2012
2014
2016
Date

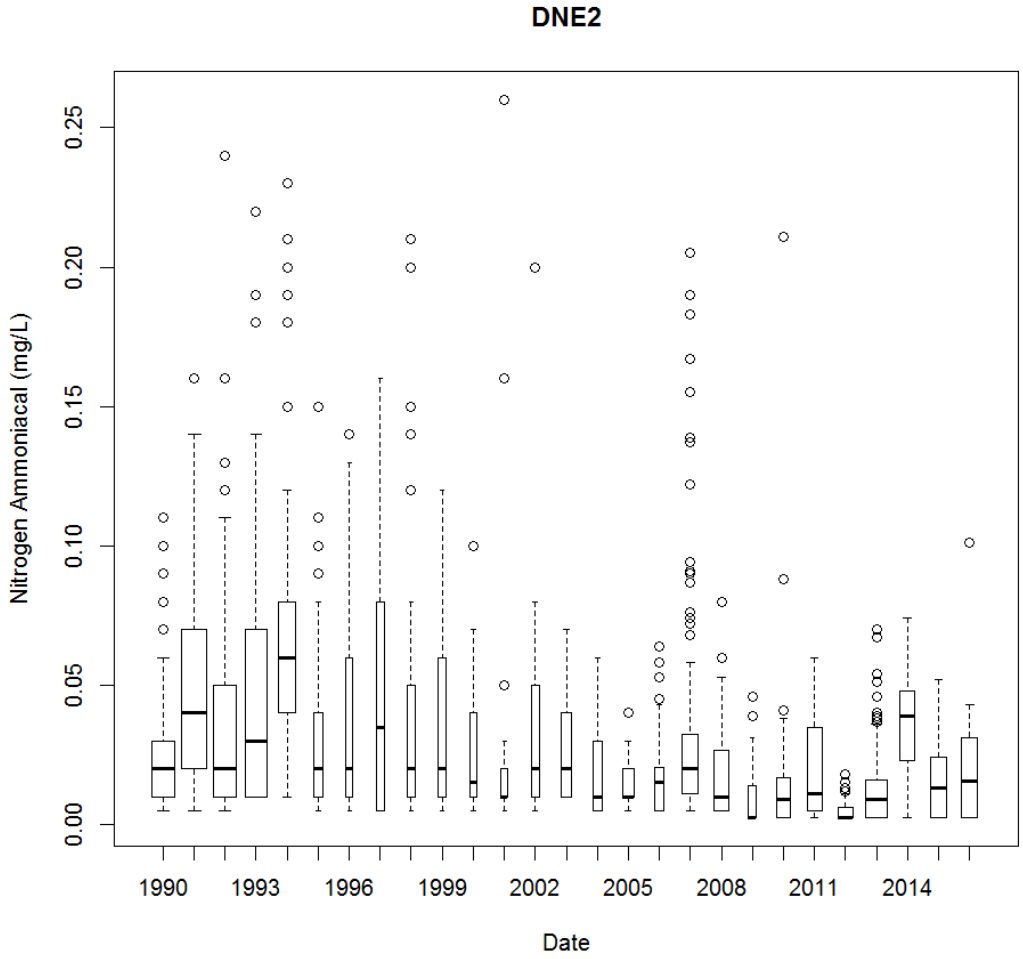

DNE2
Chlorophyll-a (ug/L)
0
5
10
15
1972
1974
1977
1979
1981
1983
1985
1988
2000
2002
2005
2008
2010
2014
2016
Date

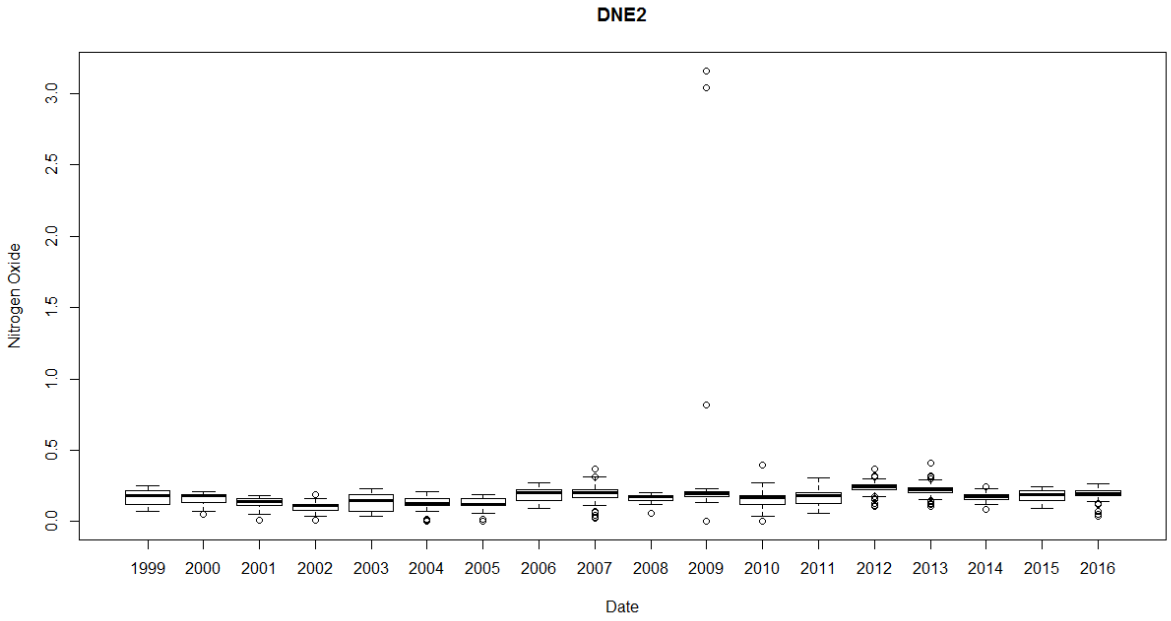

DNE2
pH (Field)
6
8
10
12
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Year

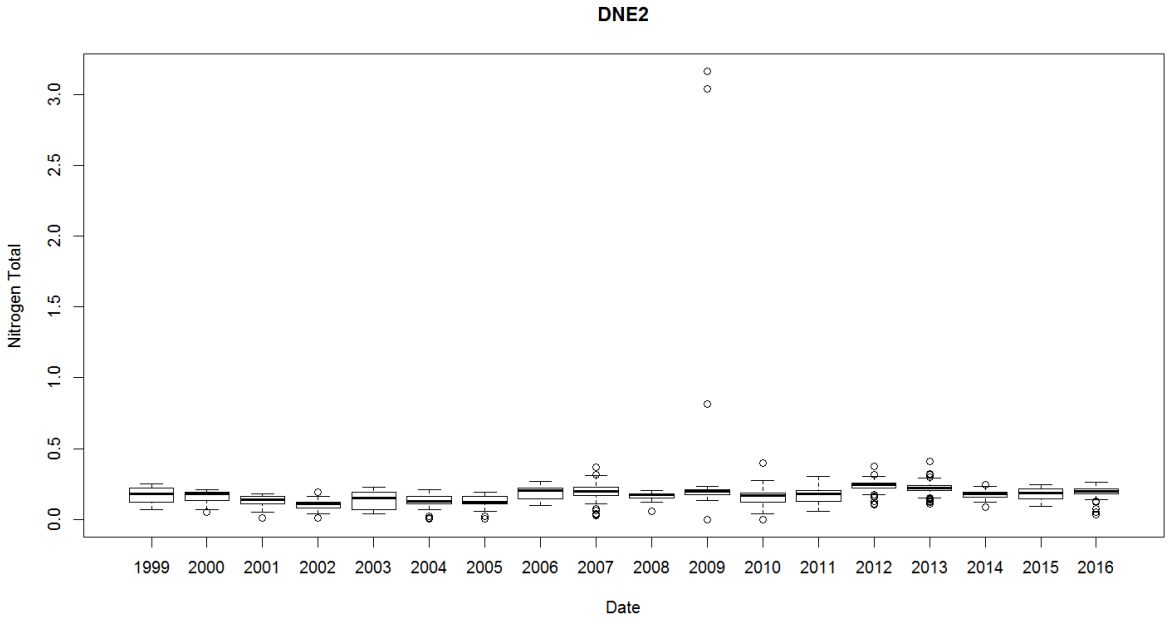

DNE2
Conductivity (mS/cm)
0.0
0.2
0.4
0.6
0.8
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

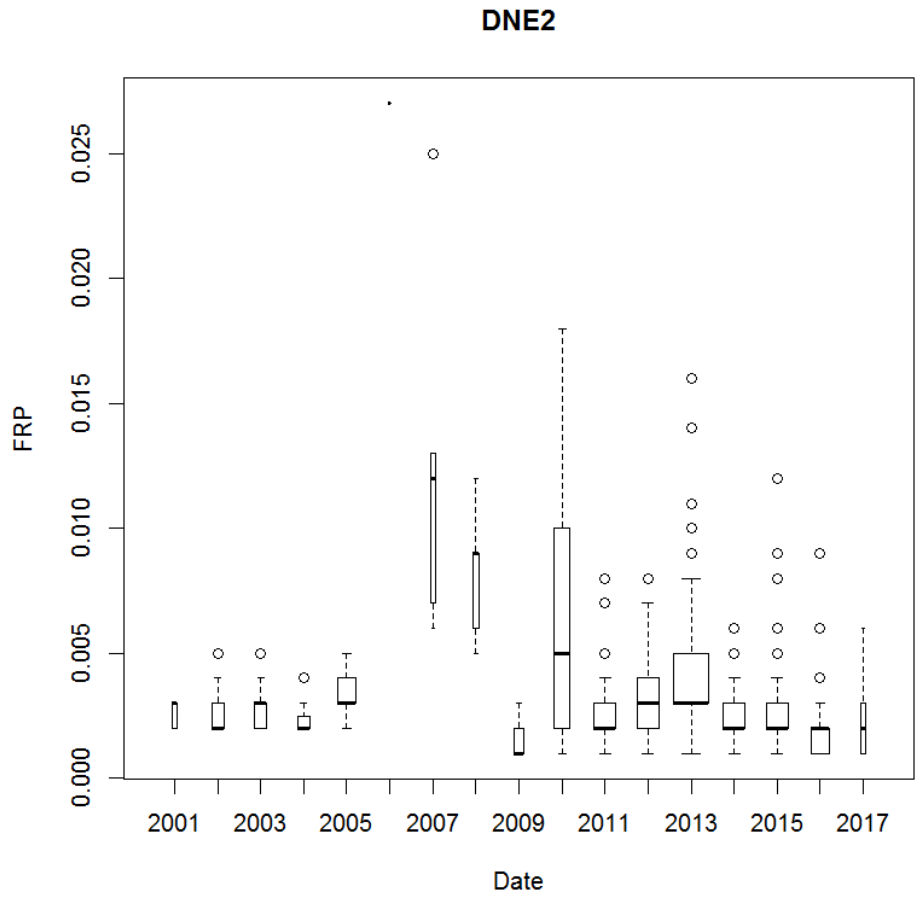

DNE2
Dissolved Oxygen (%Sat
0
50
100
150
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

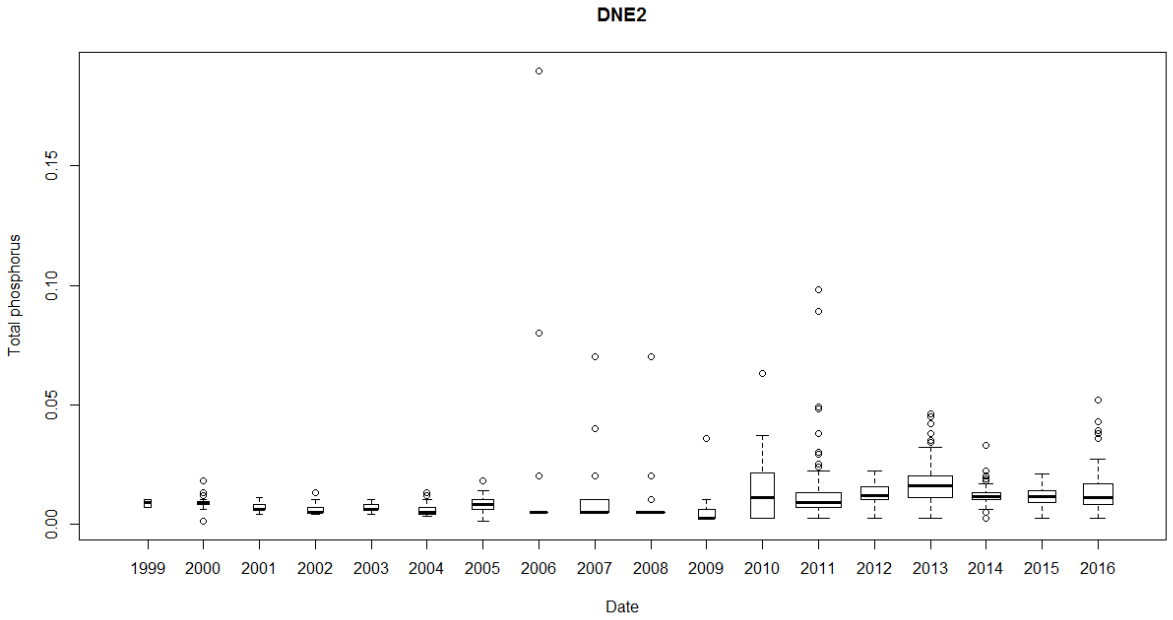

DNE2
Turbidity
0
100
200
300
400
500
600
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

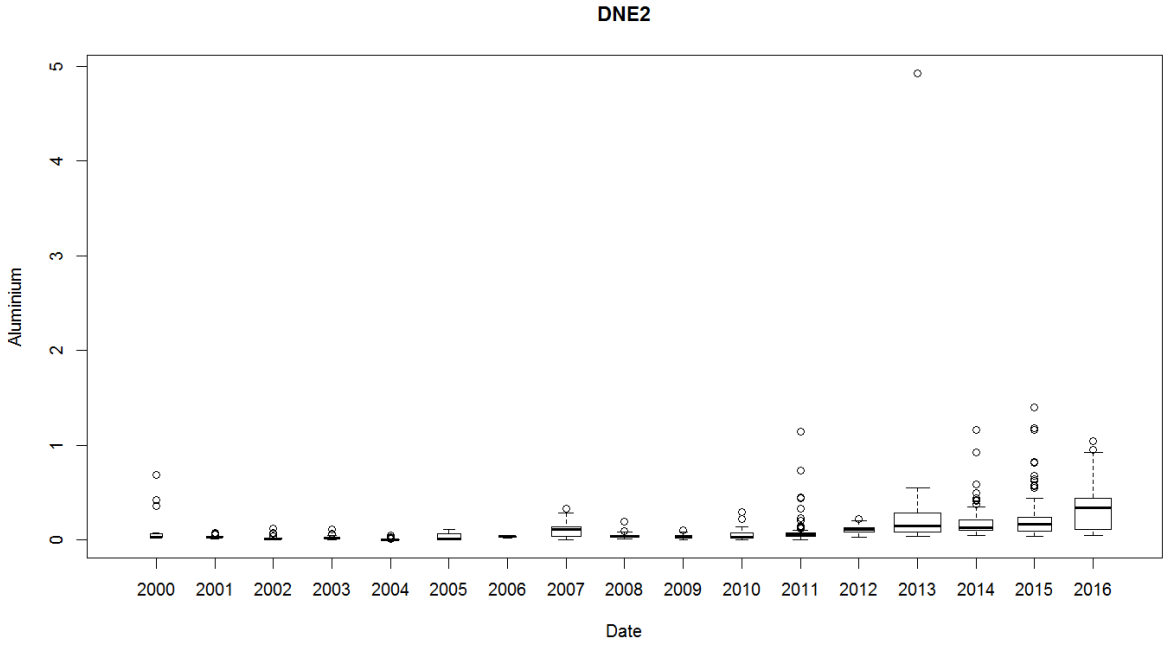

DNE2
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
1990
1993
1996
1999
2002
2005
2008
2011
2014
Date

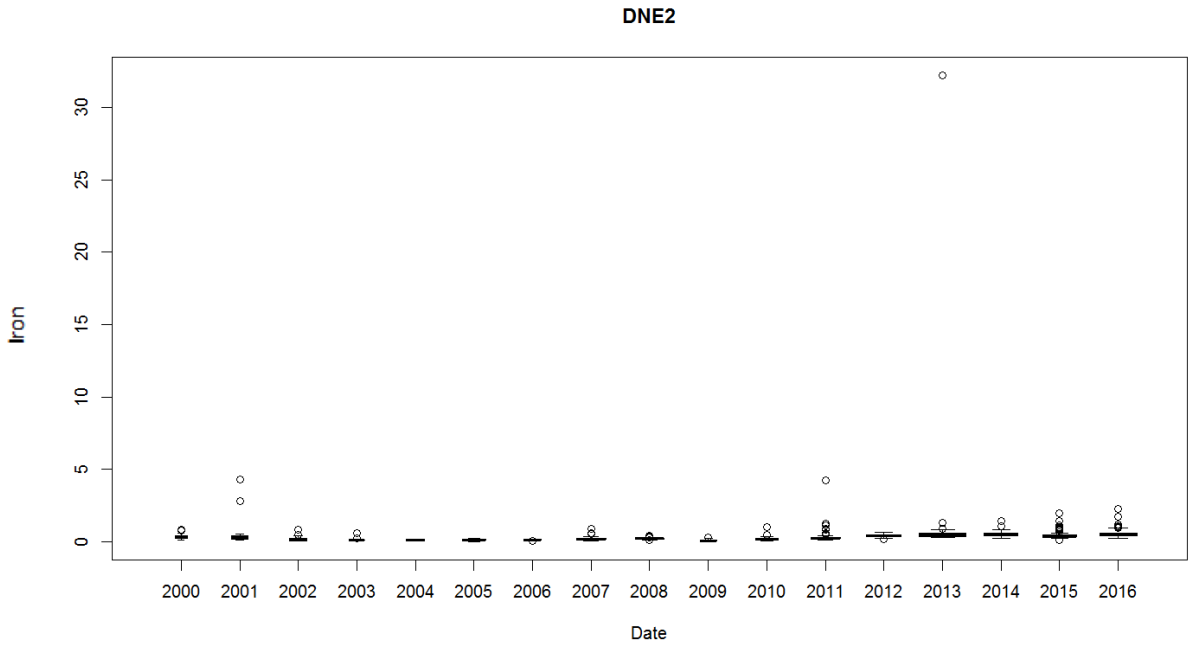

DNE2
Nitrogen Oxide
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date


DNE2
Nitrogen Total
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

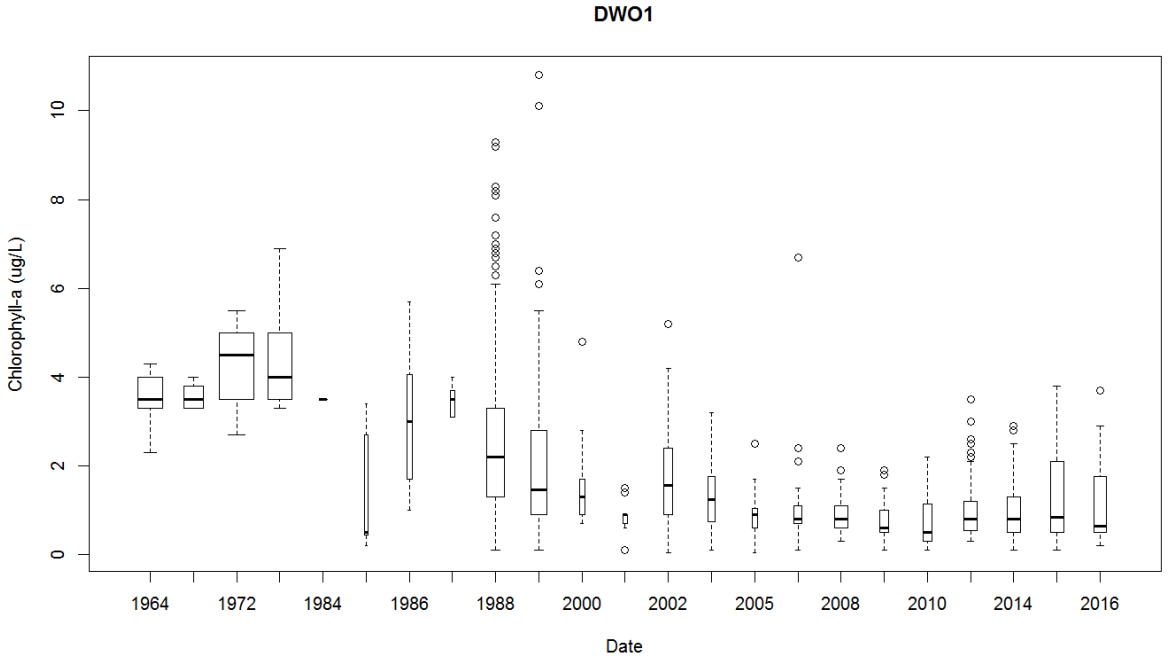

DNE2
FRP
0.000
0.005
0.010
0.015
0.020
0.025
2001
2003
2005
2007
2009
2011
2013
2015
2017
Date

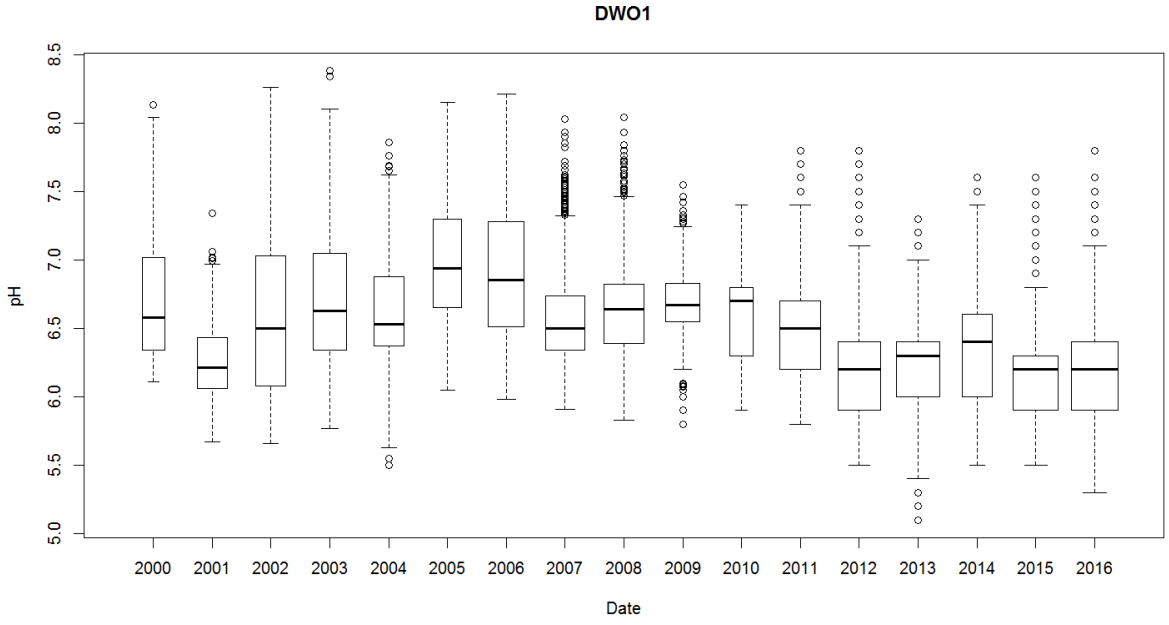

DNE2
Total phosphorus
0.00
0.05
0.10
0.15
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

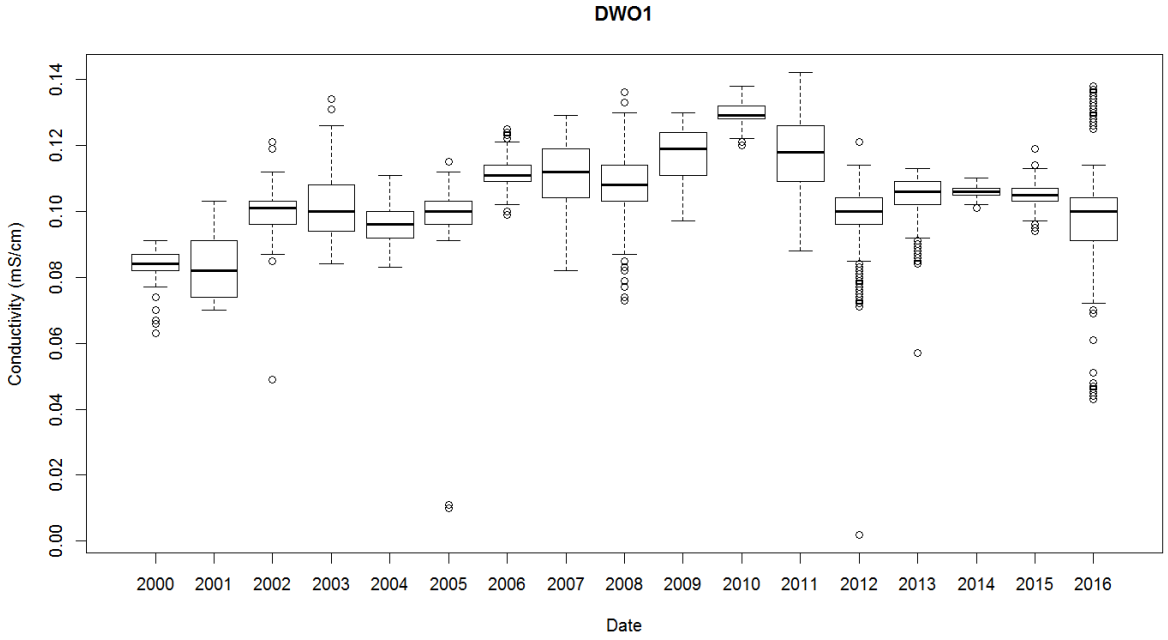

DNE2
Aluminium
0
1
2
3
4
5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

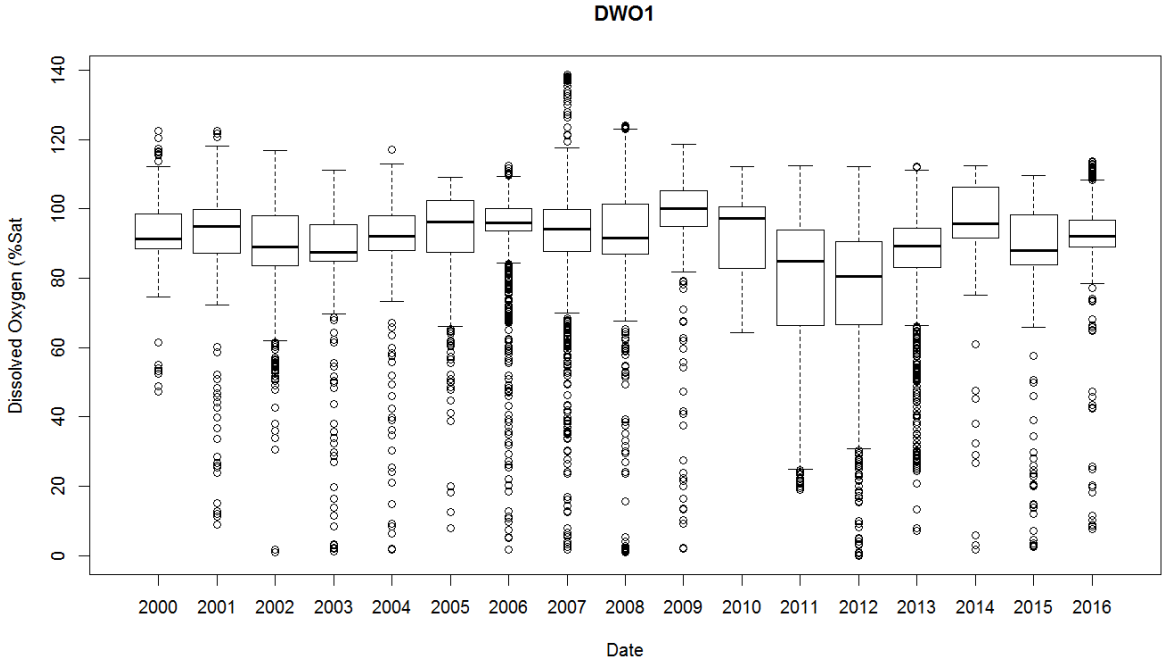

DNE2
Iron
0
5
10
15
20
25
30
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

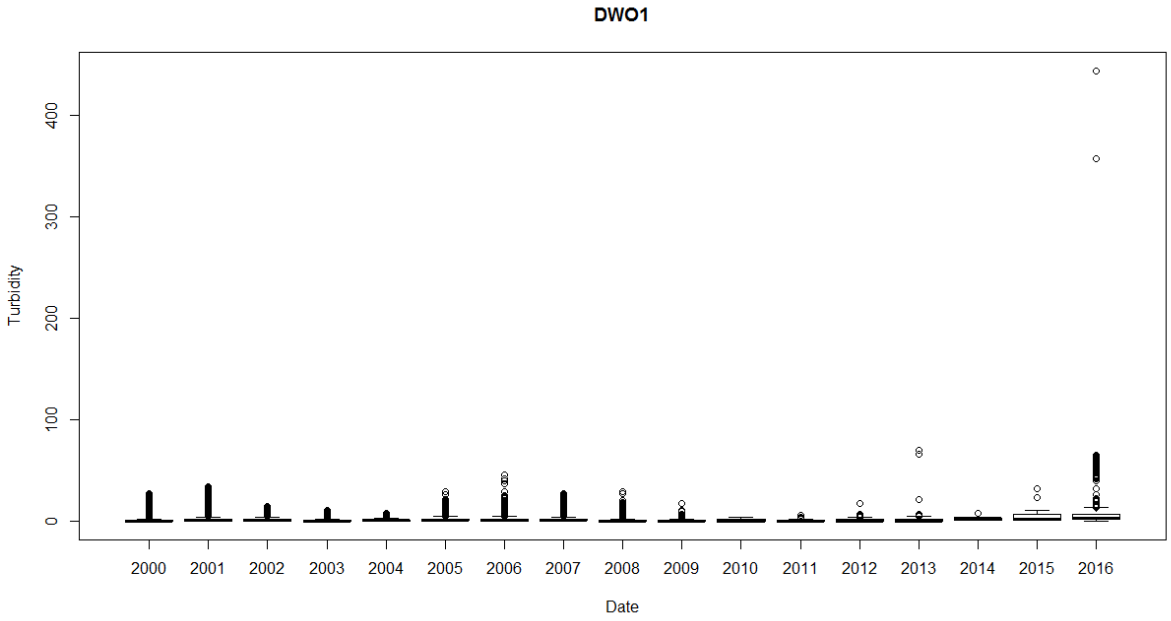
8.3 Woronora storage sites

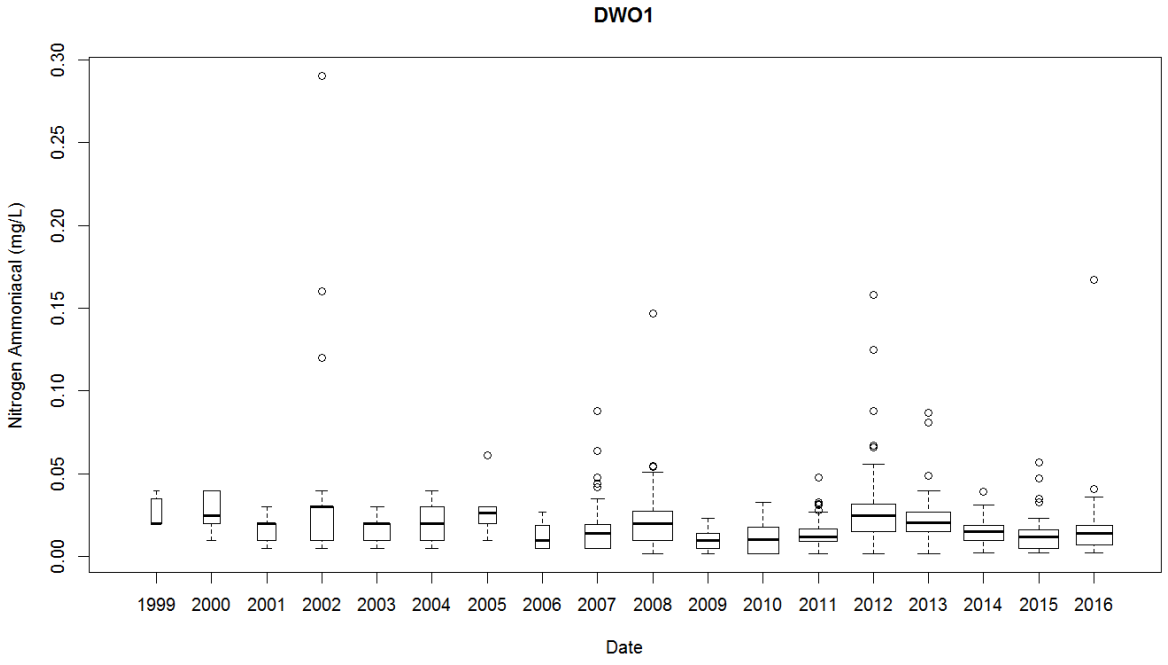


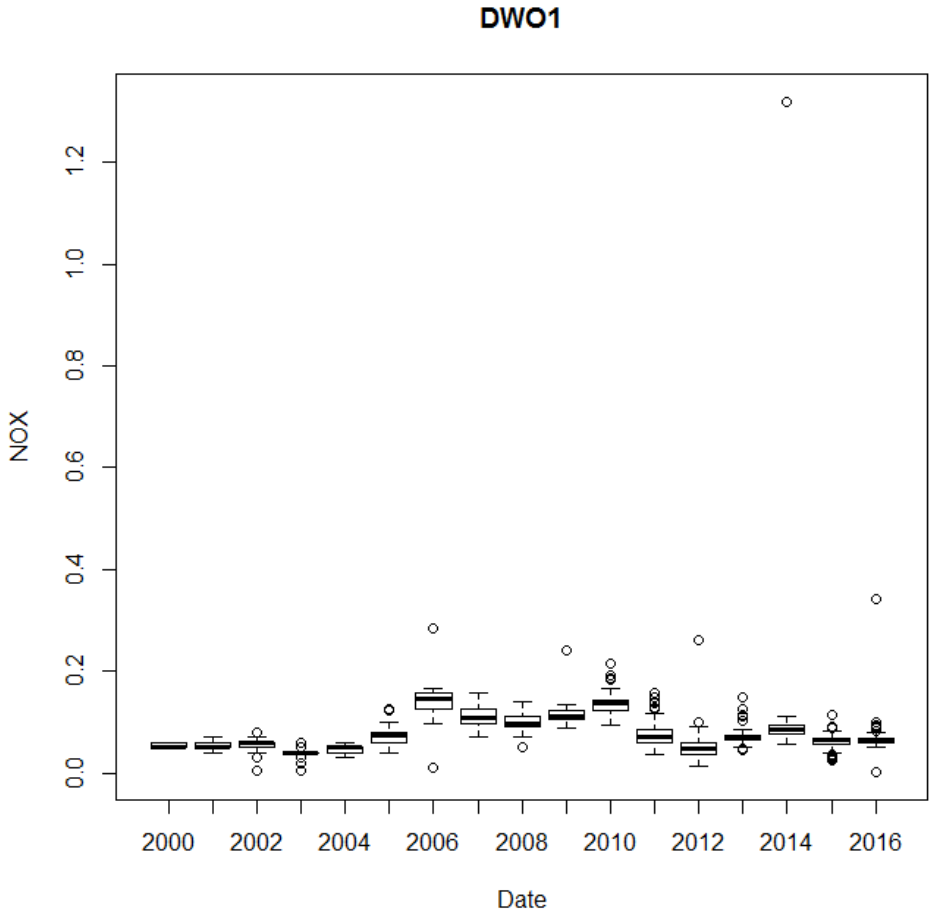


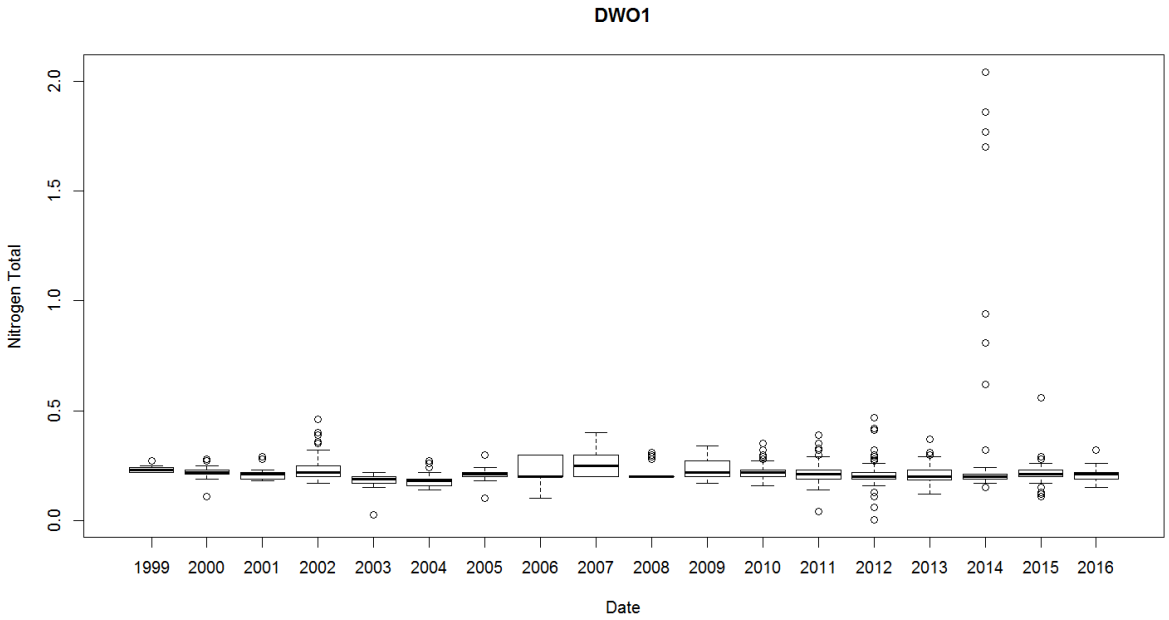

DWO1
Conductivity (mS/cm)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

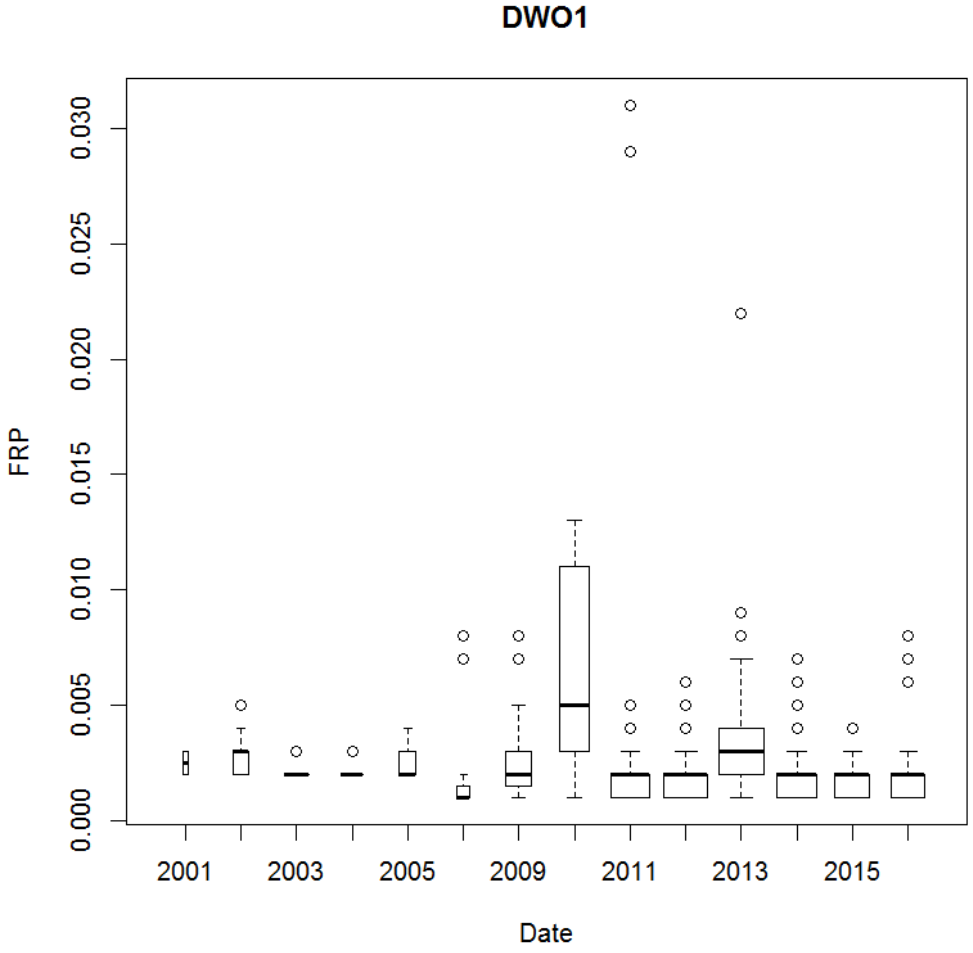

DWO1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
140
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

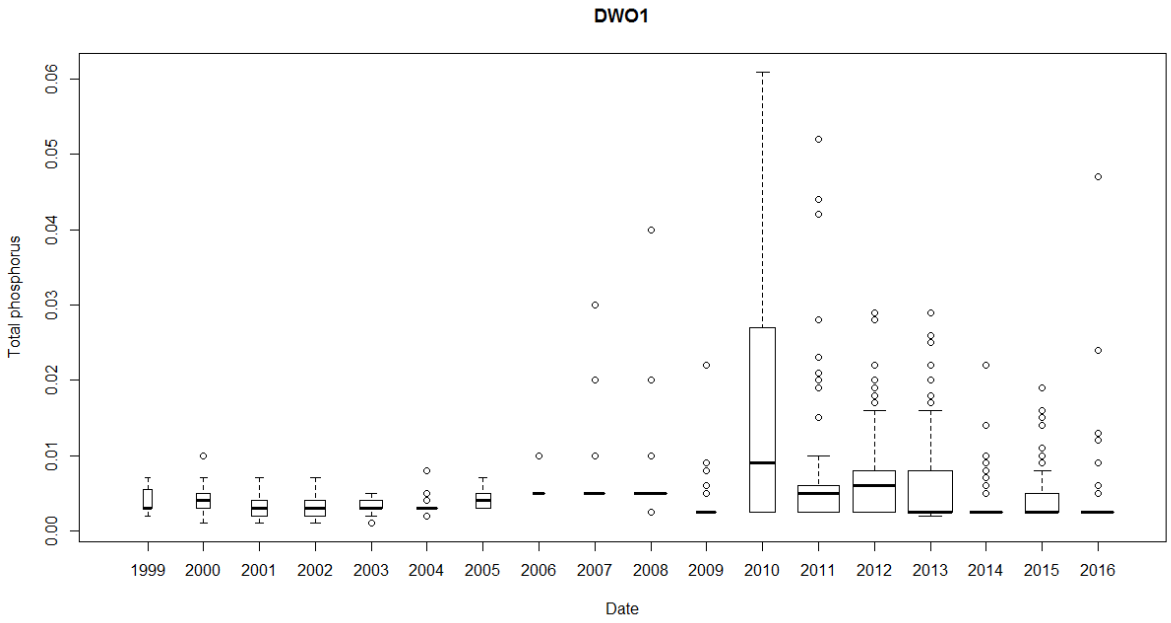

DWO1
Turbidity
0
100
200
300
400
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

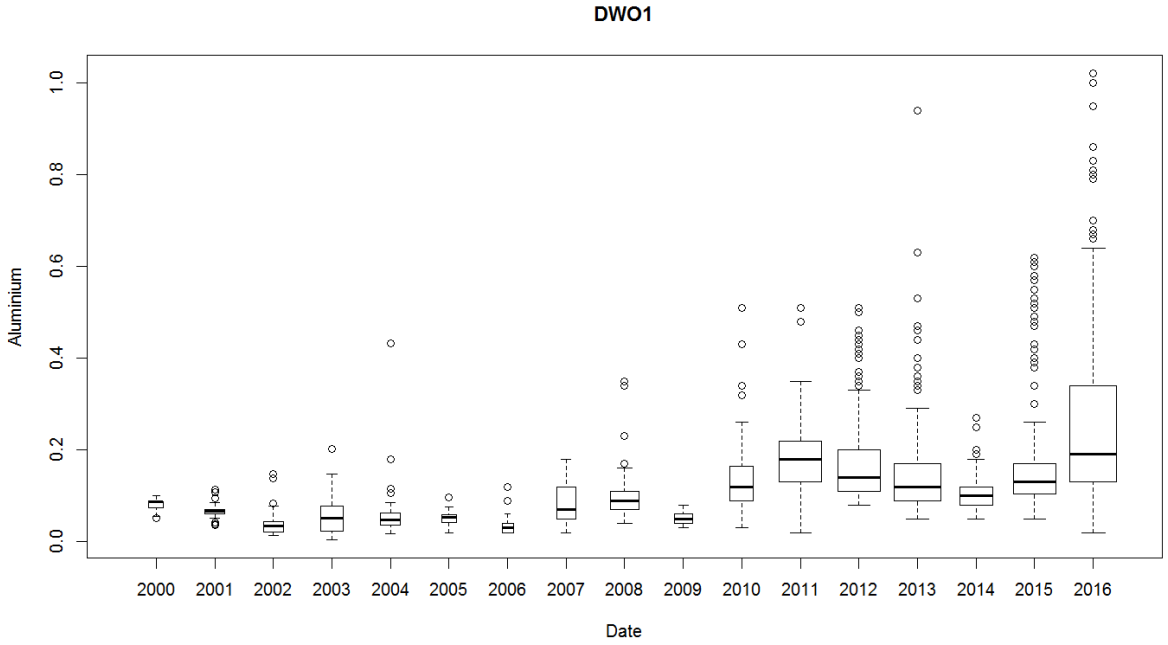

DWO1
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

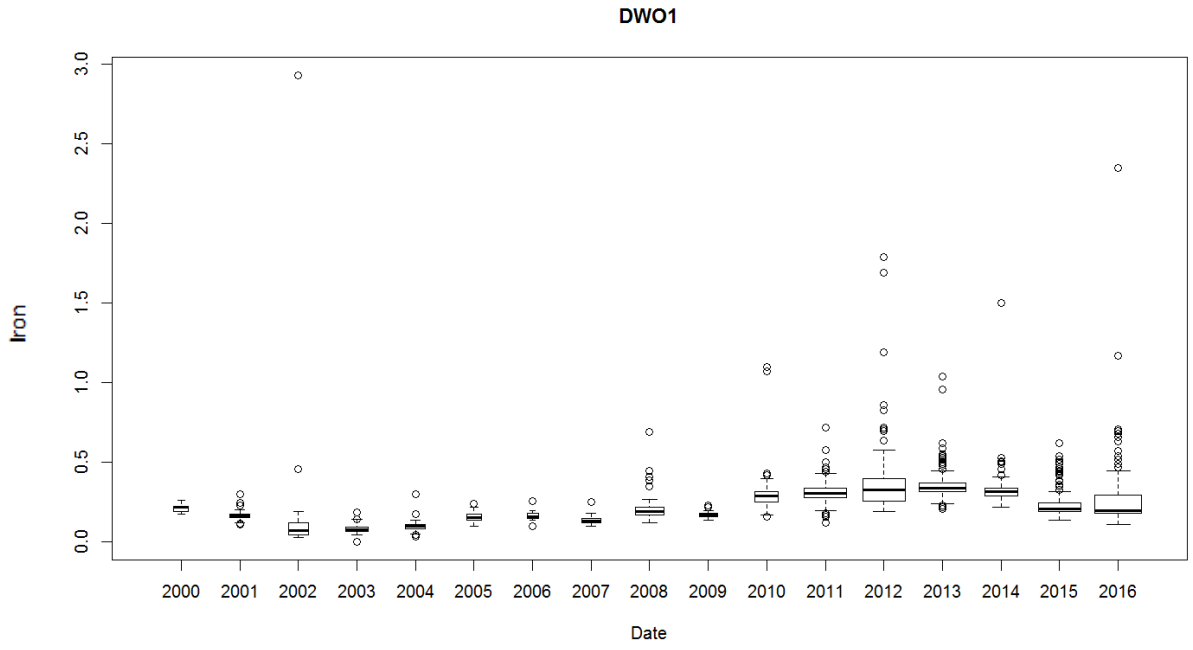

DWO1
NOX
0.0
0.2
0.4
0.6
0.8
1.0
1.2
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date


DWO1
Nitrogen Total
0.0
0.5
1.0
1.5
2.0
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

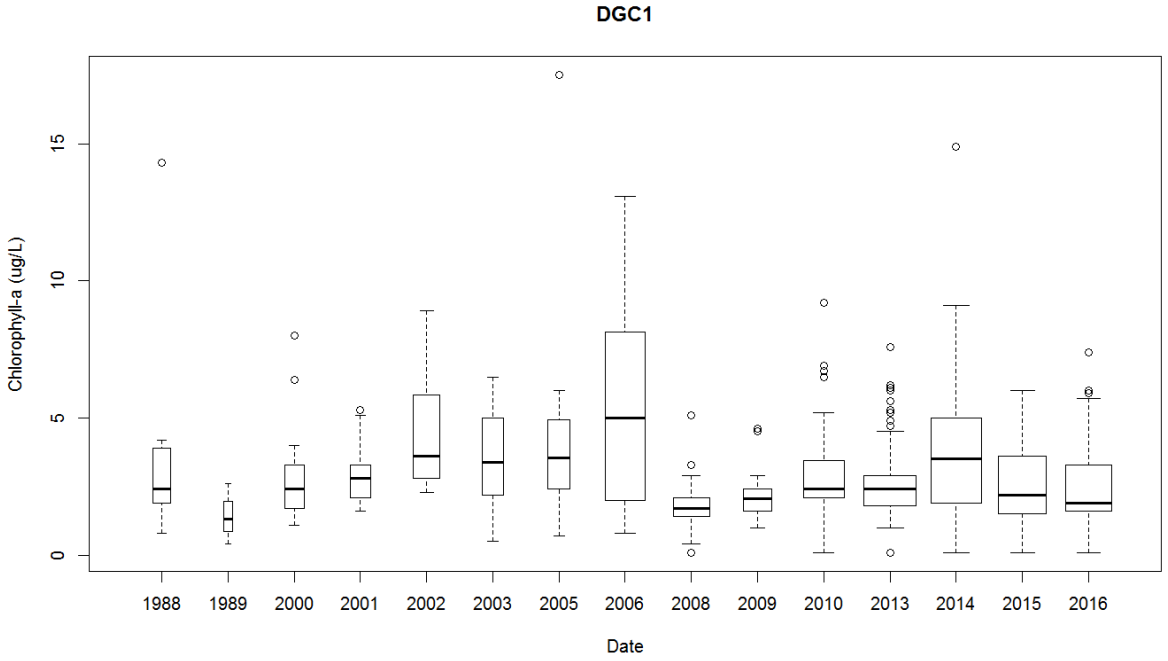

DWO1
FRP
0.000
0.005
0.010
0.015
0.020
0.025
0.030
2001
2003
2005
2009
2011
2013
2015
Date

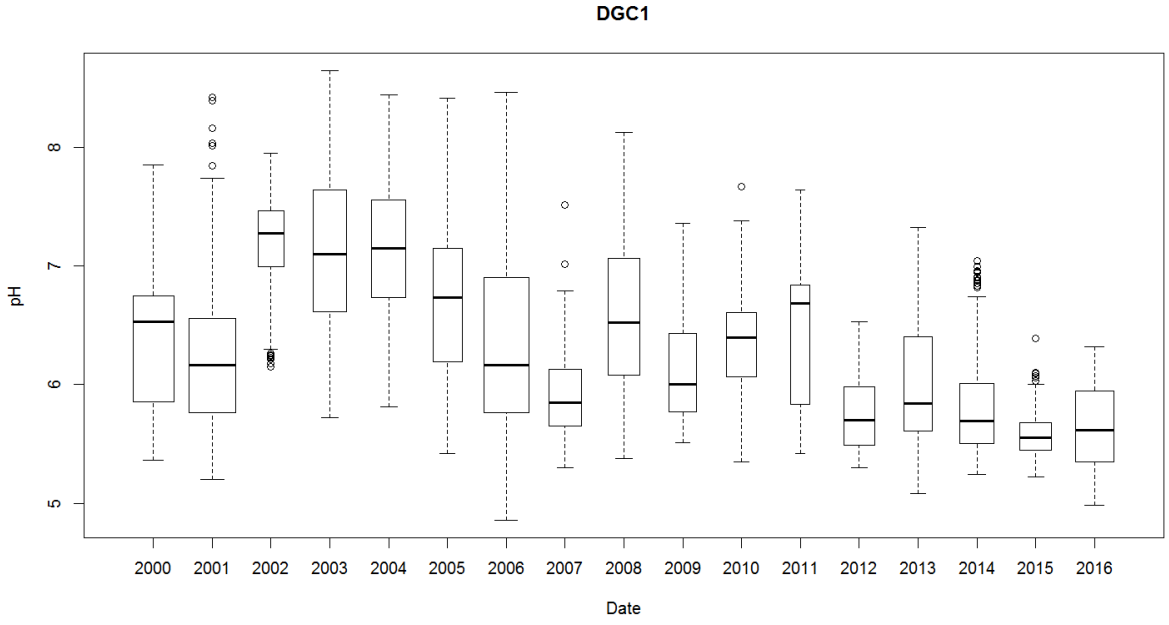

DWO1
Total phosphorus
0.00
0.01
0.02
0.03
0.04
0.05
0.06
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

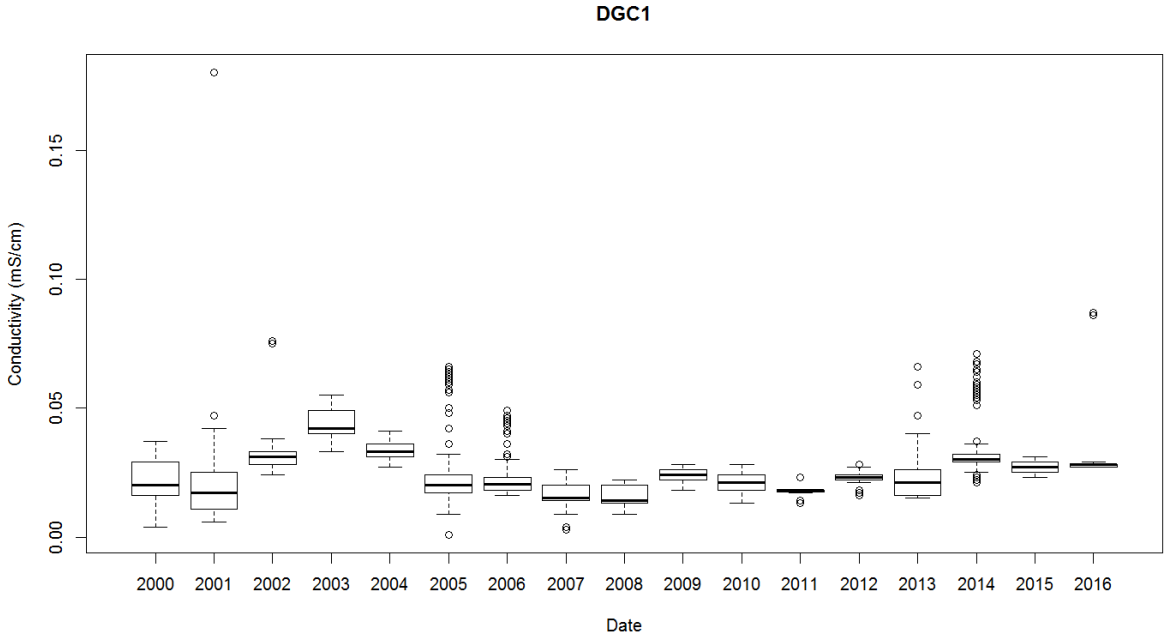

DWO1
Aluminium
0.0
0.2
0.4
0.6
0.8
1.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

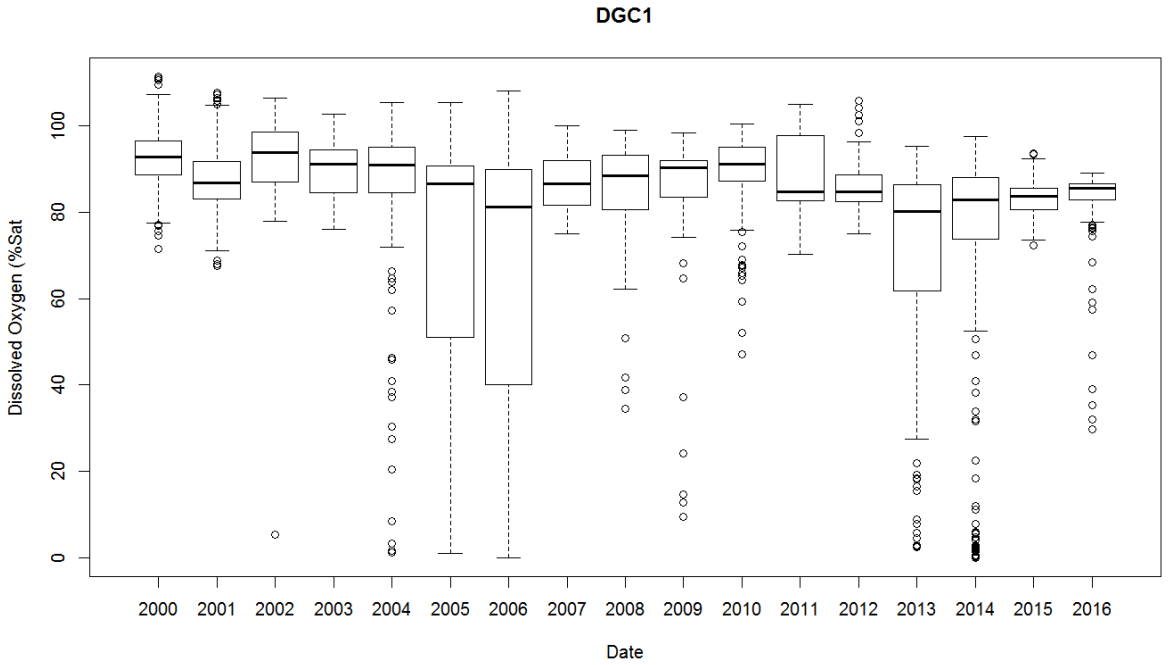

DWO1
Iron
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

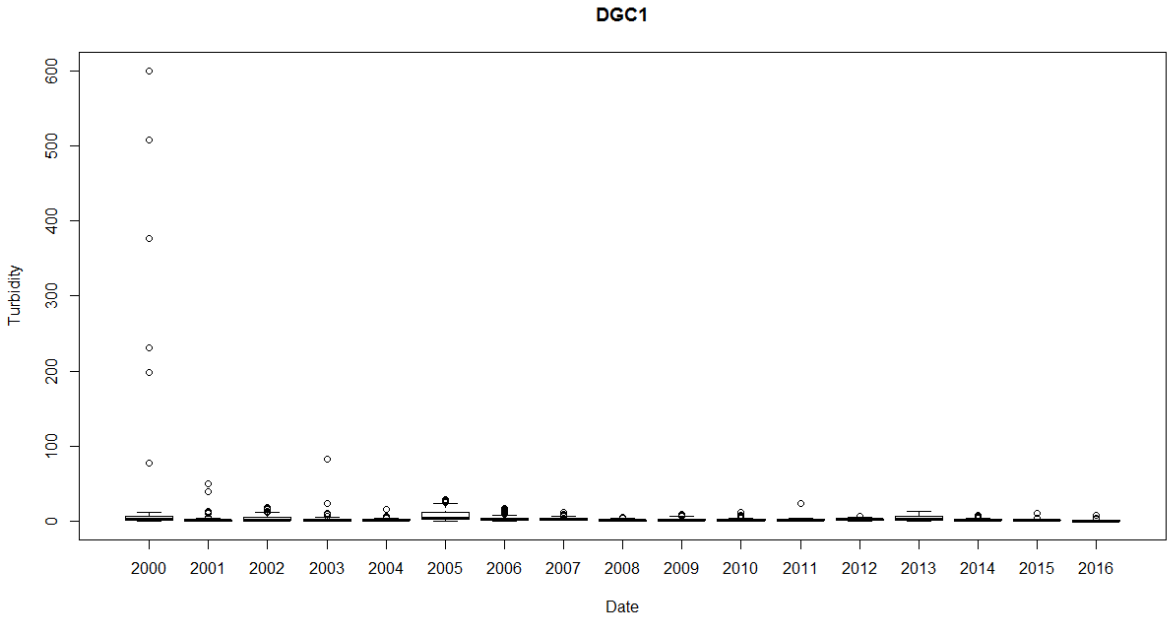
8.4 Blue Mountains storage sites

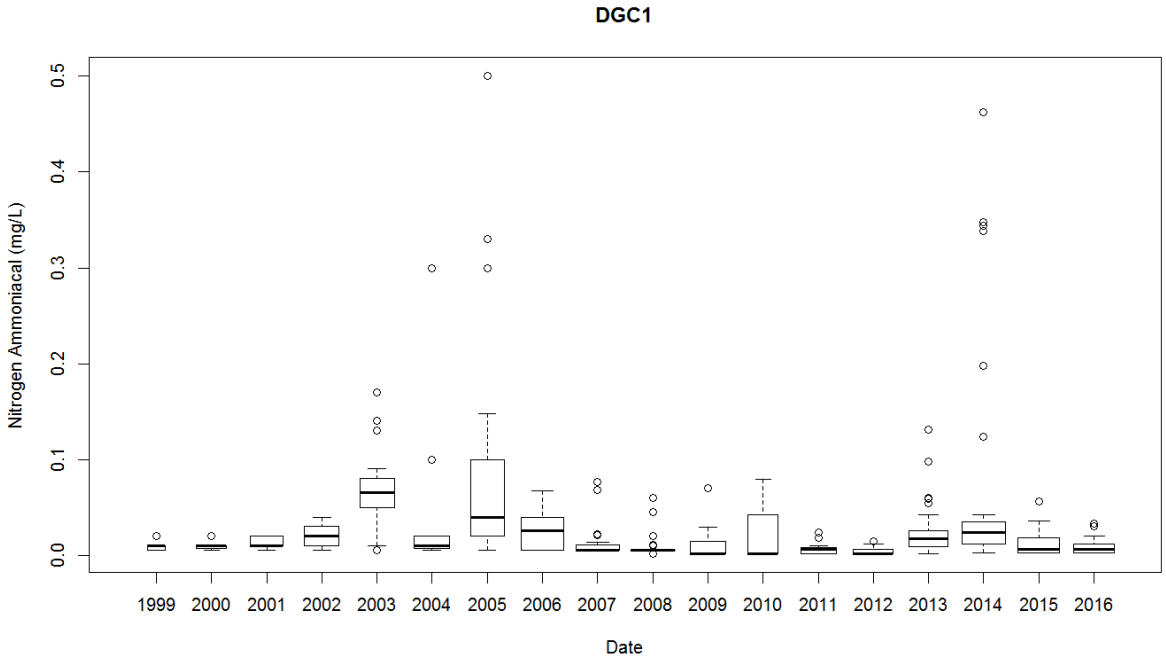


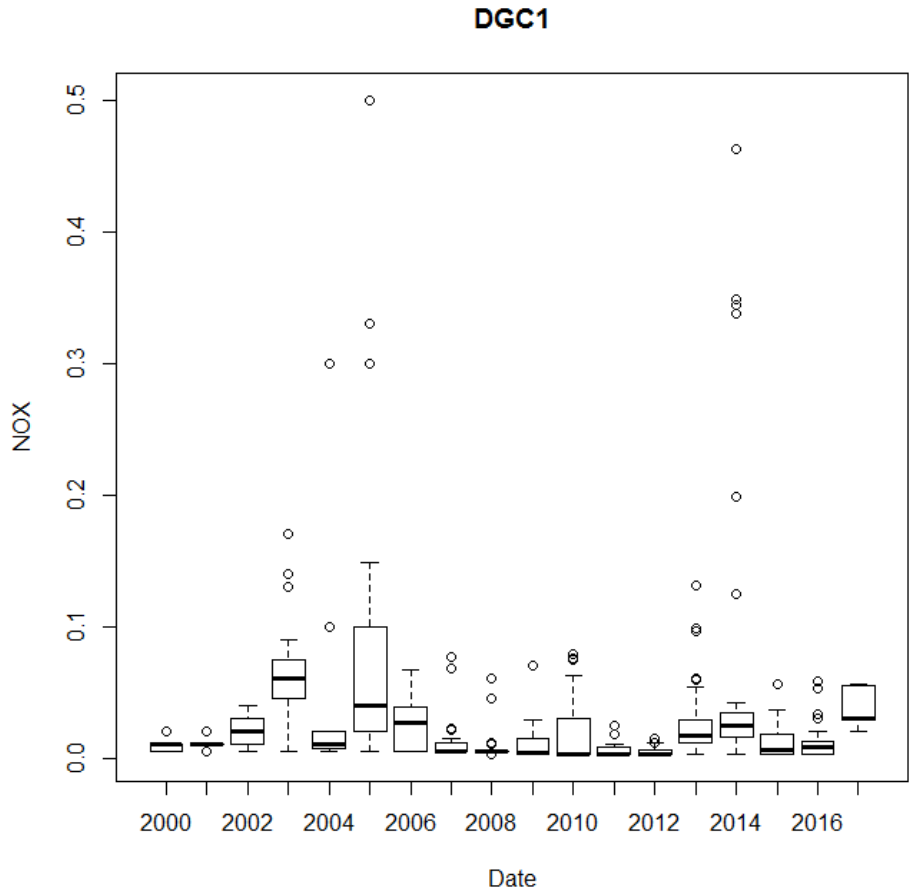


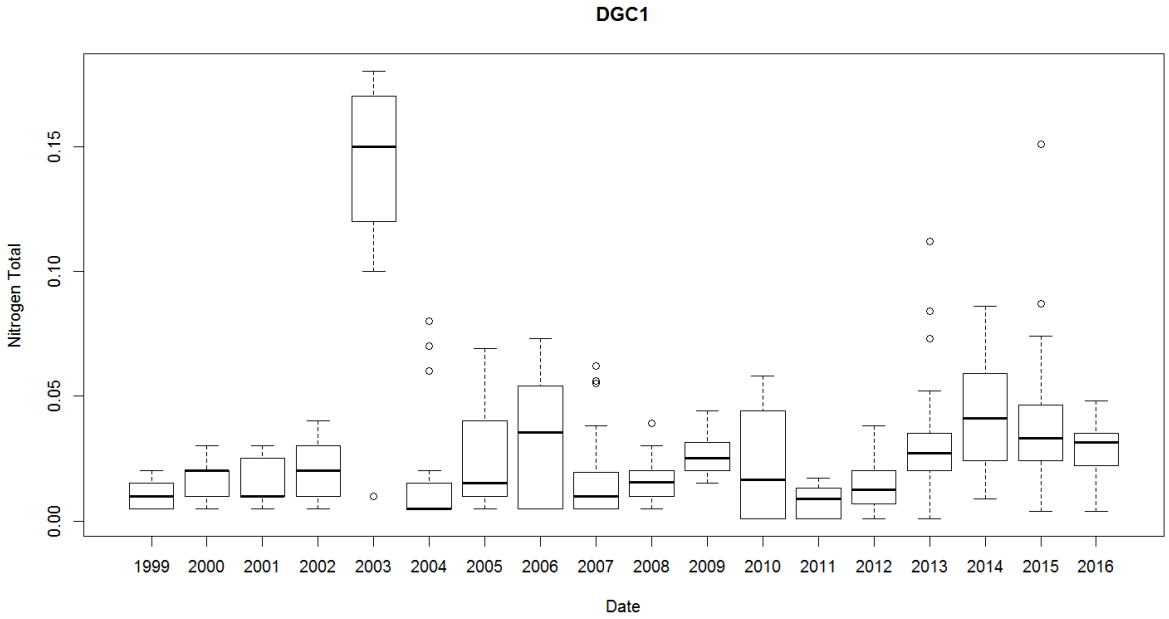

DGC1
Conductivity (mS/cm)
0.00
0.05
0.10
0.15
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

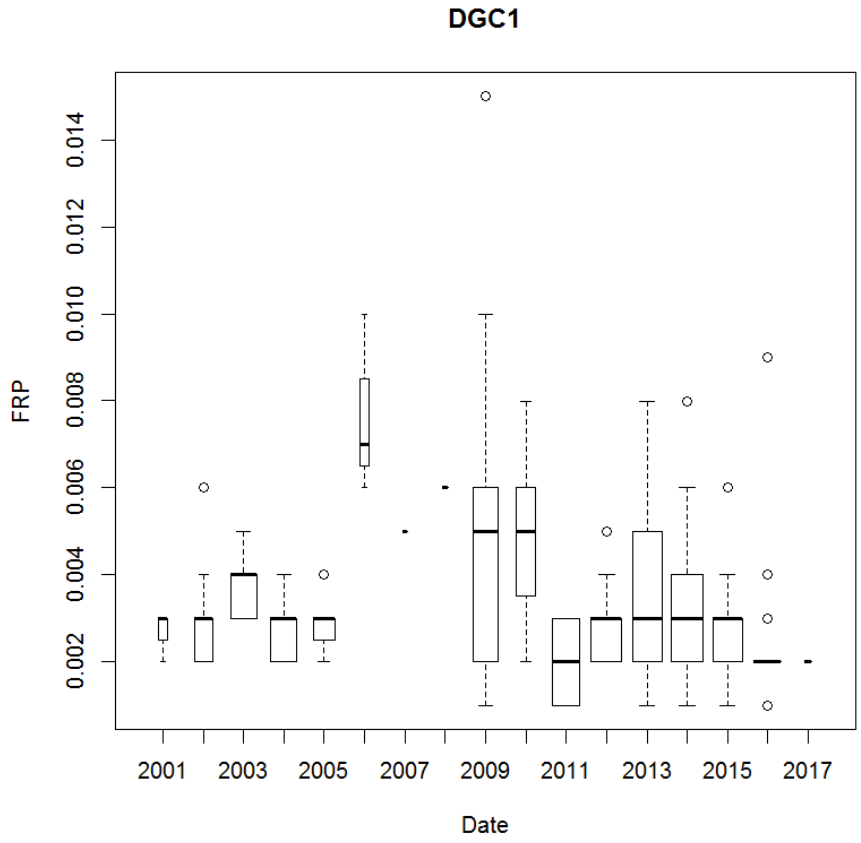

DGC1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

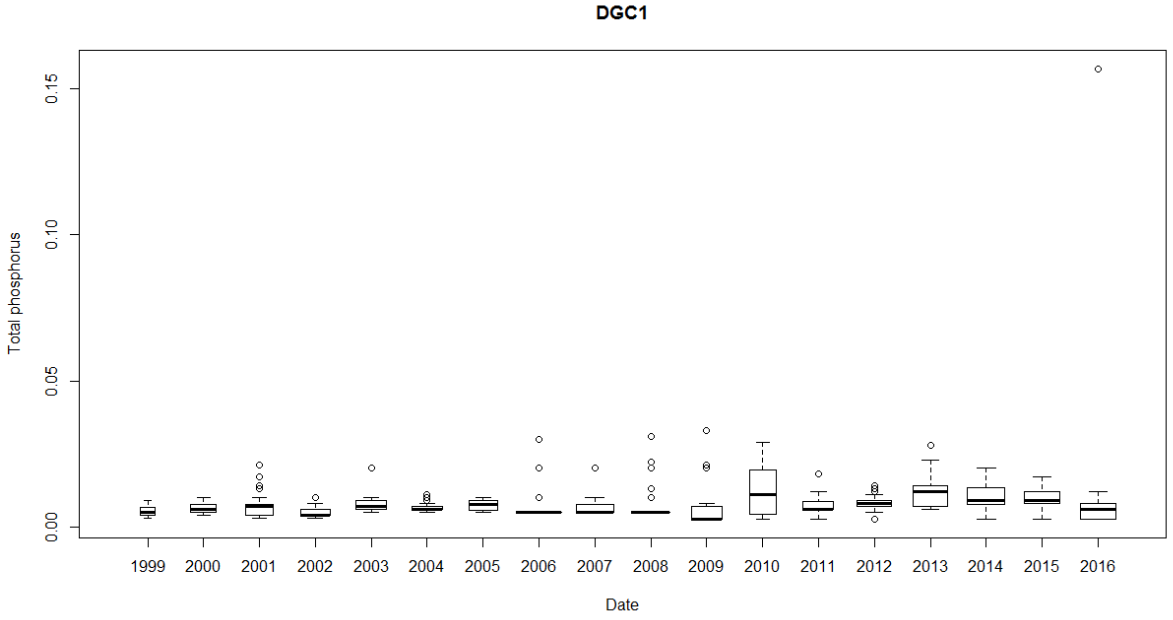

DGC1
Turbidity
0
100
200
300
400
500
600
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

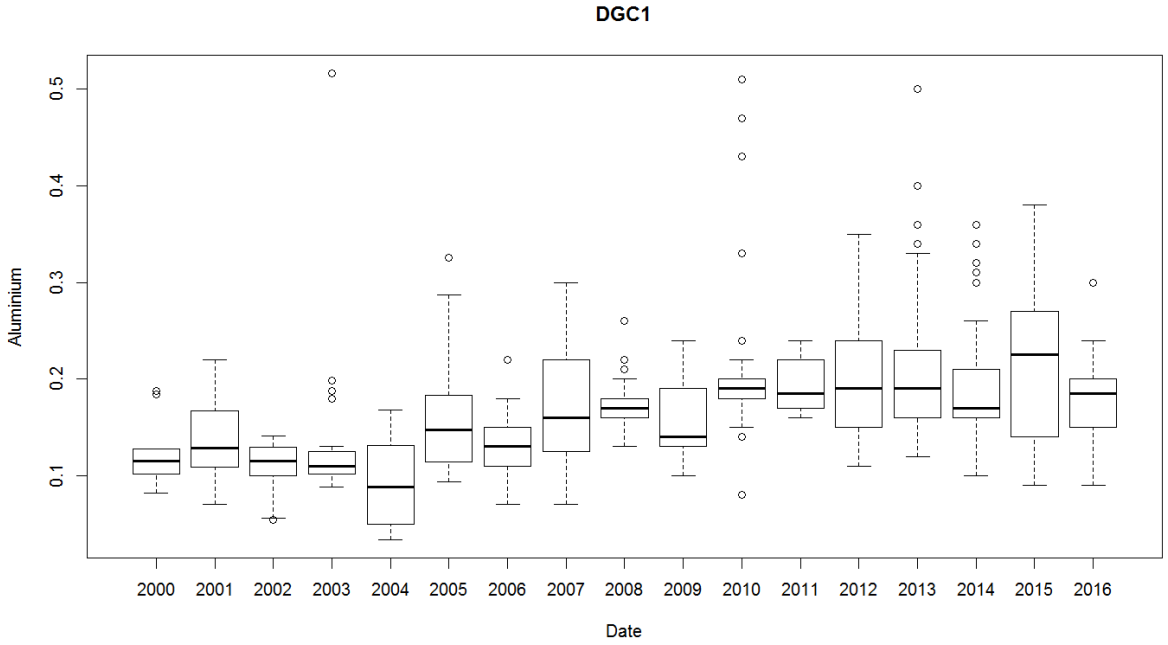

DGC1
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

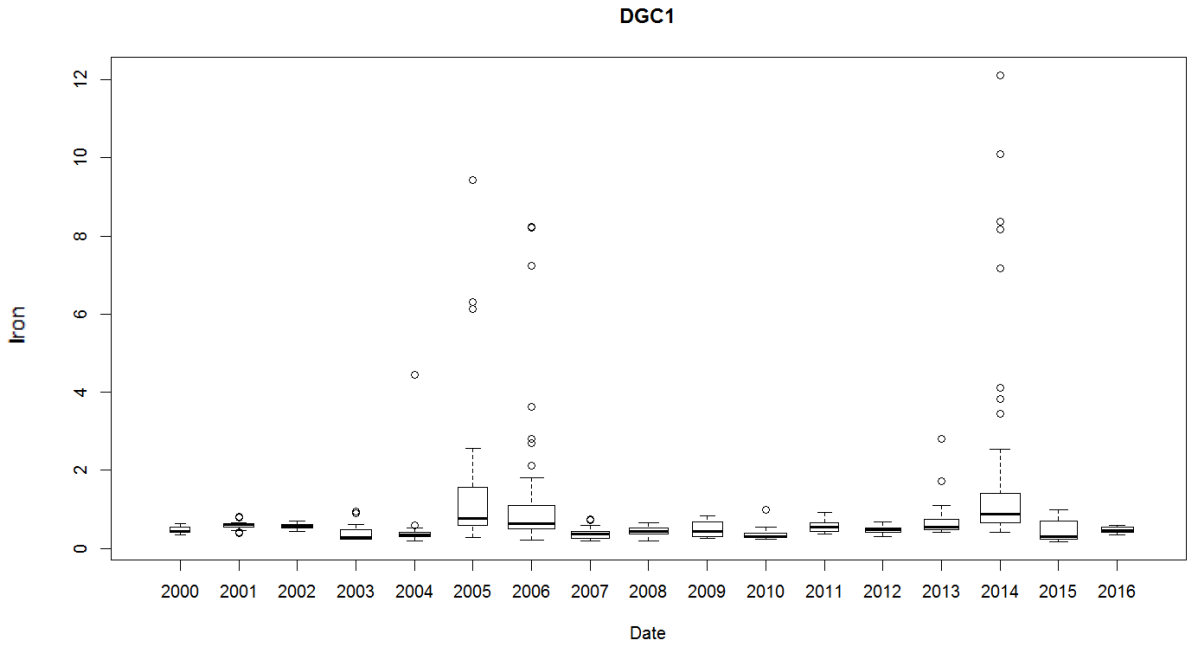

DGC1
NOX
0.0
0.1
0.2
0.3
0.4
0.5
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

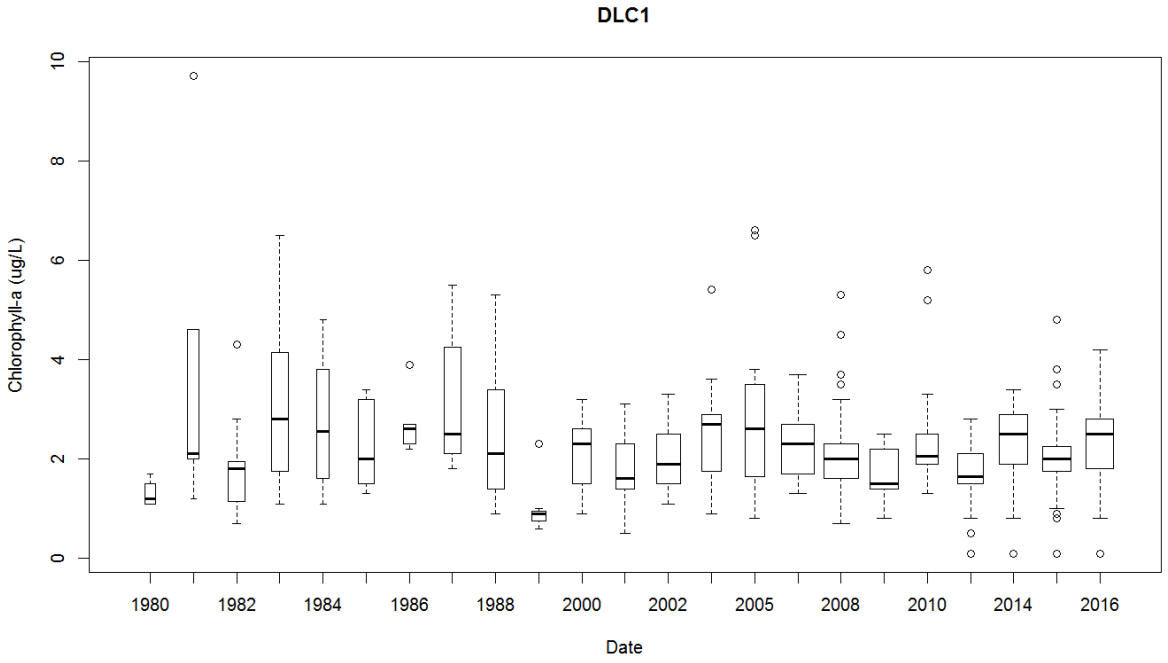

DGC1
Nitrogen Total
0.00
0.05
0.10
0.15
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

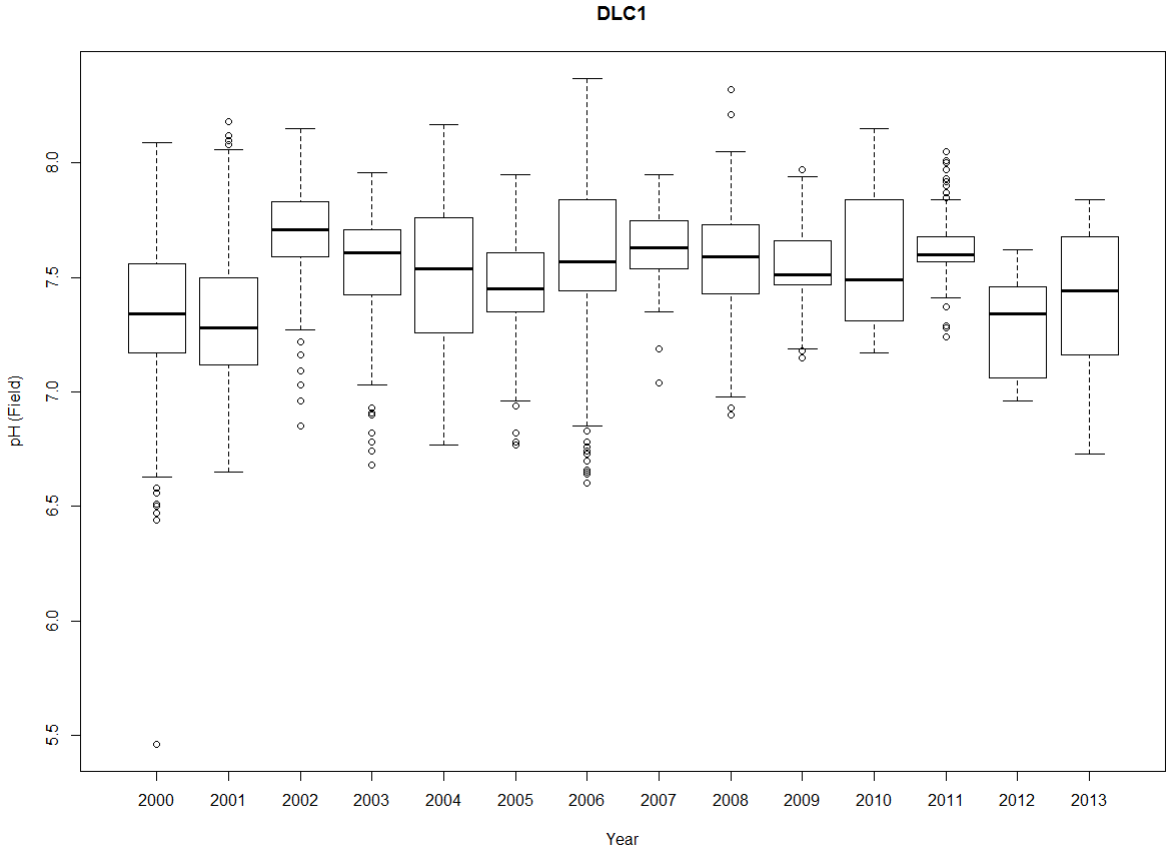

DGC1
FRP
0.002
0.004
0.006
0.008
0.010
0.012
0.014
2001
2003
2005
2007
2009
2011
2013
2015
2017
Date

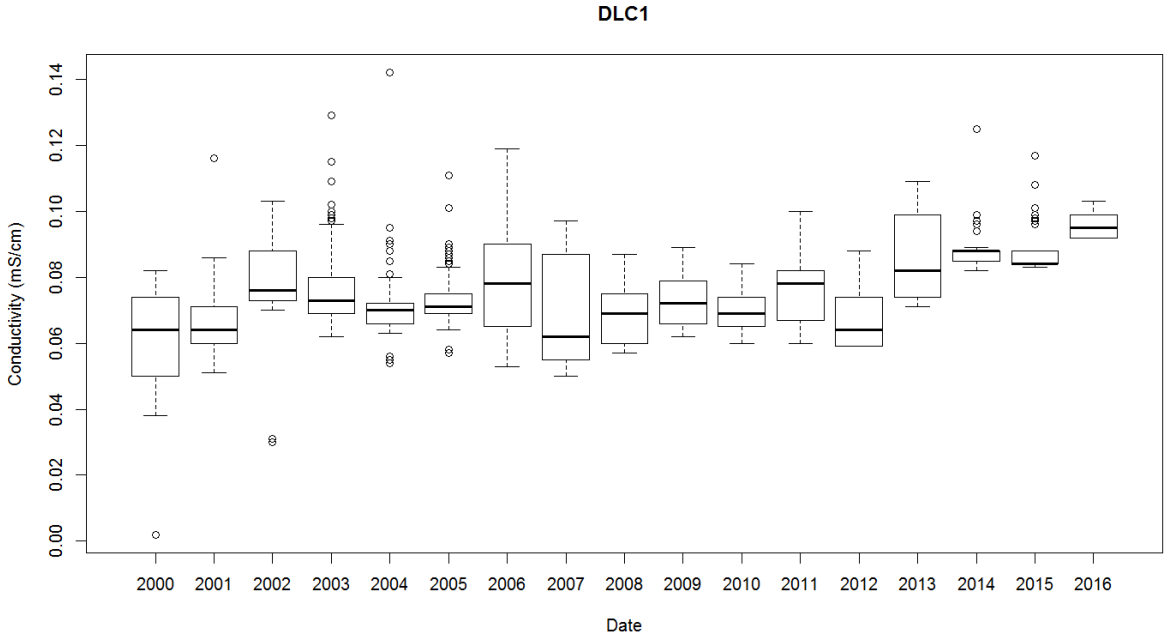

DGC1
Total phosphorus
0.00
0.05
0.10
0.15
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

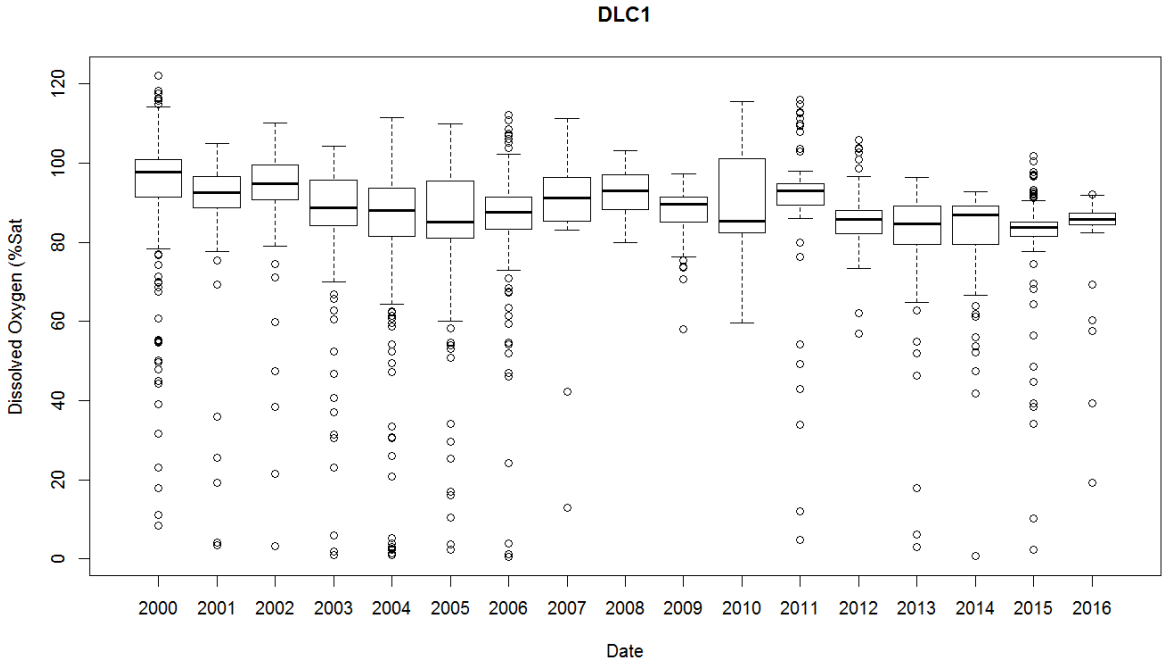

DGC1
Aluminium
0.1
0.2
0.3
0.4
0.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

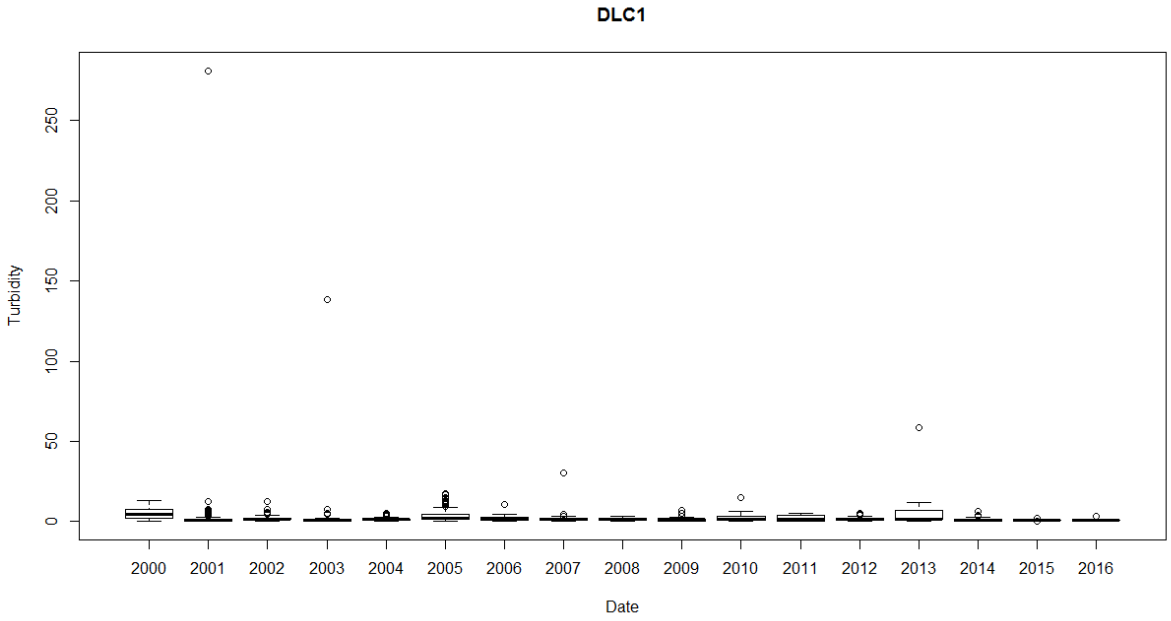

DGC1
Iron
0
2
4
6
8
10
12
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

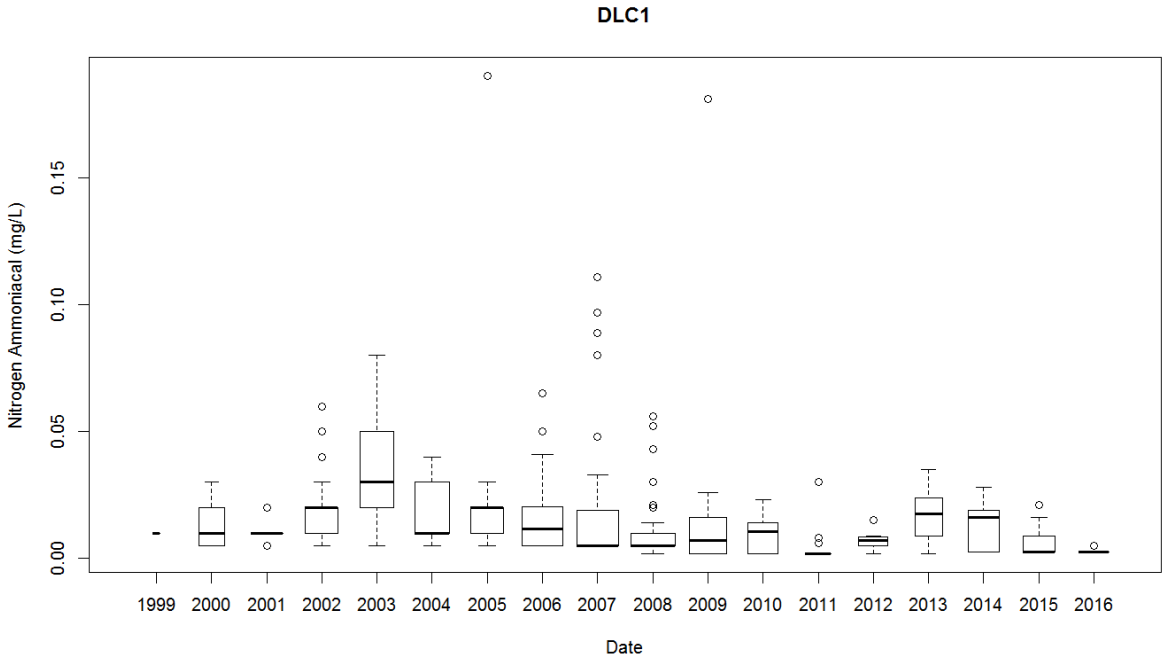

DLC1
Chlorophyll-a (ug/L)
0
2
4
6
8
10
1980
1982
1984
1986
1988
2000
2002
2005
2008
2010
2014
2016
Date

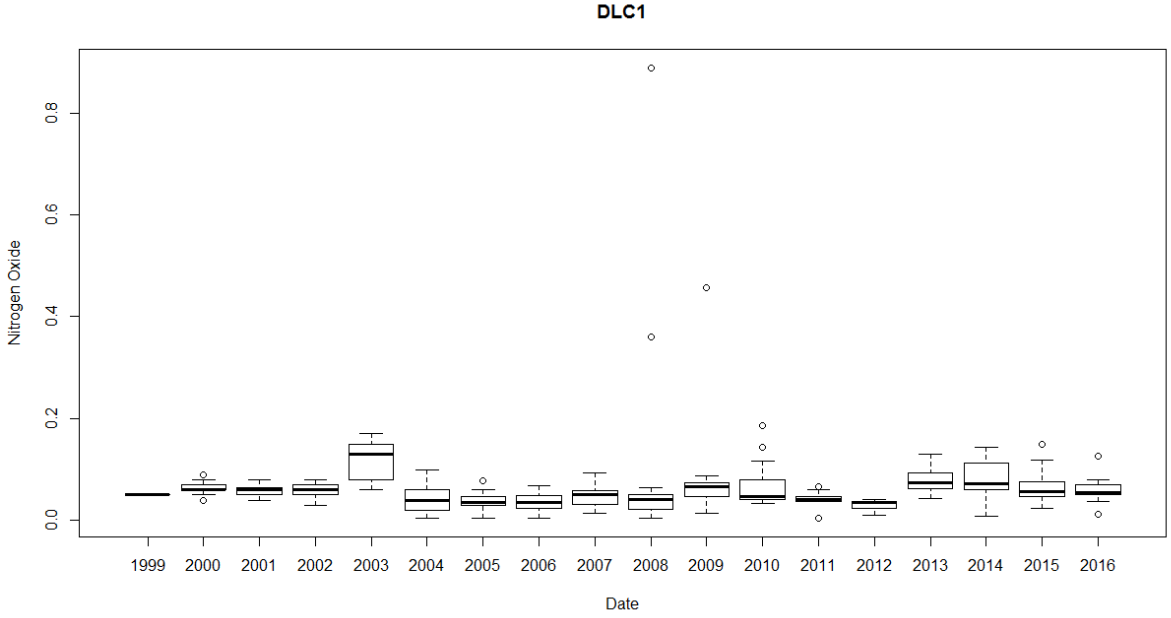

DLC1
pH (Field)
5.5
6.0
6.5
7.0
7.5
8.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Year

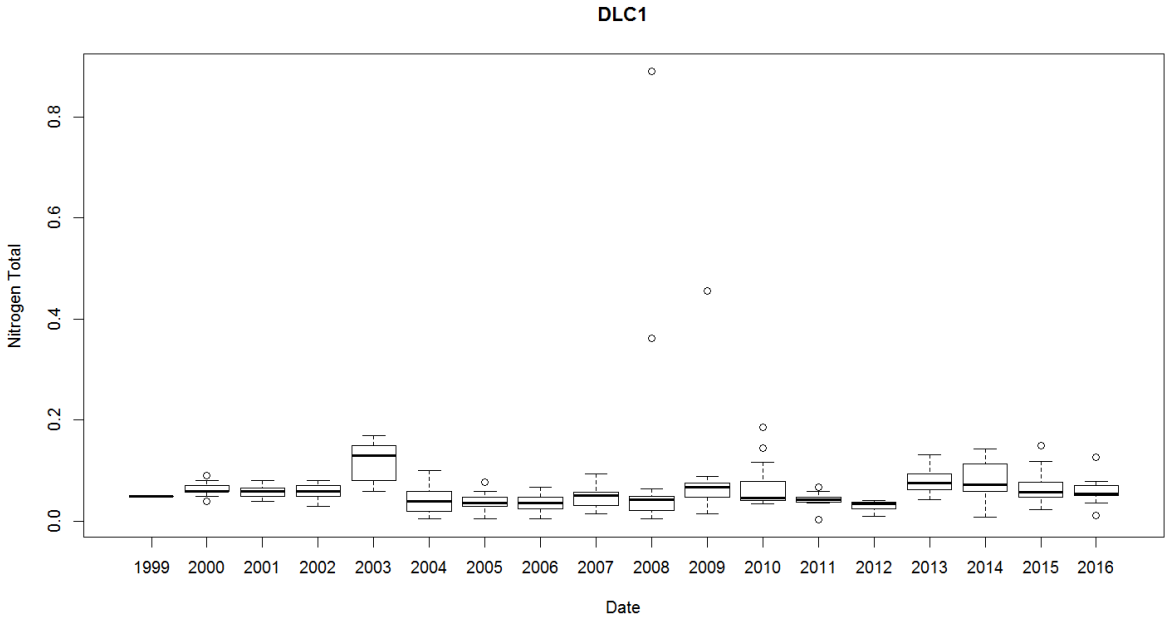

DLC1
Conductivity (mS/cm)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

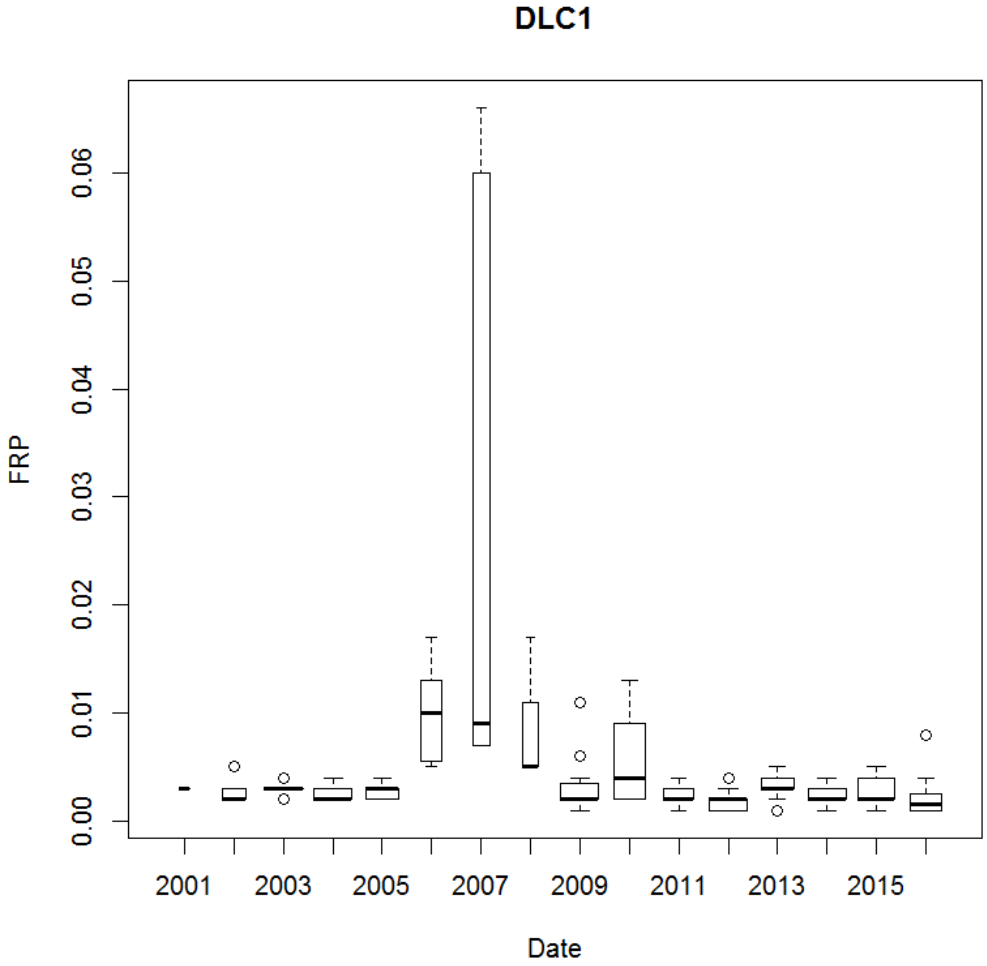

DLC1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

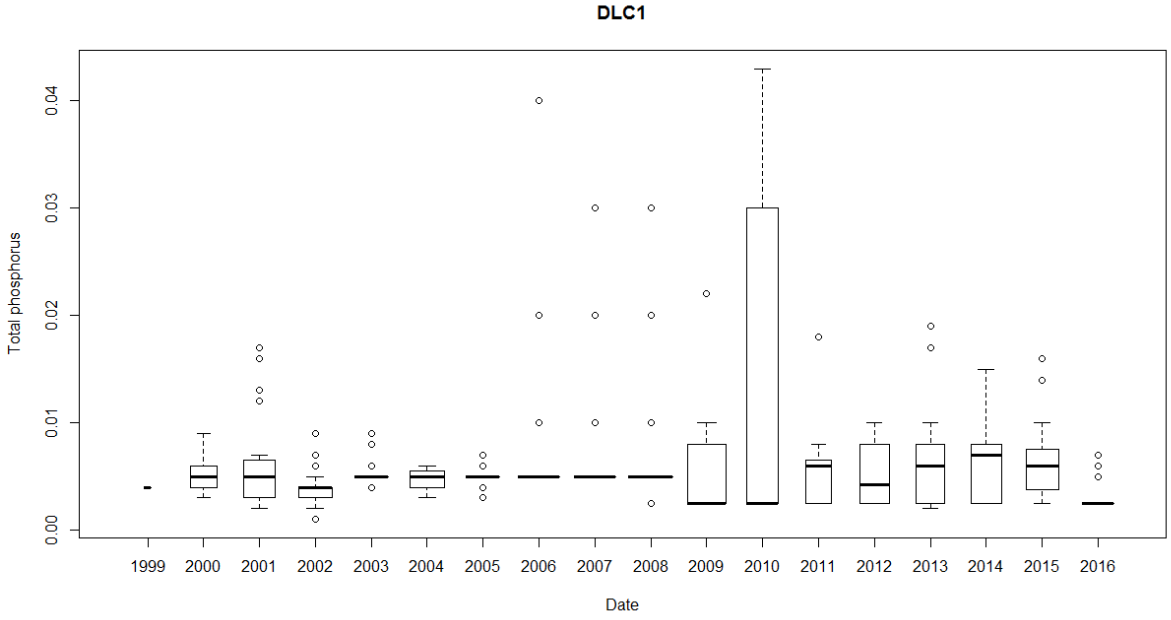

DLC1
Turbidity
0
50
100
150
200
250
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

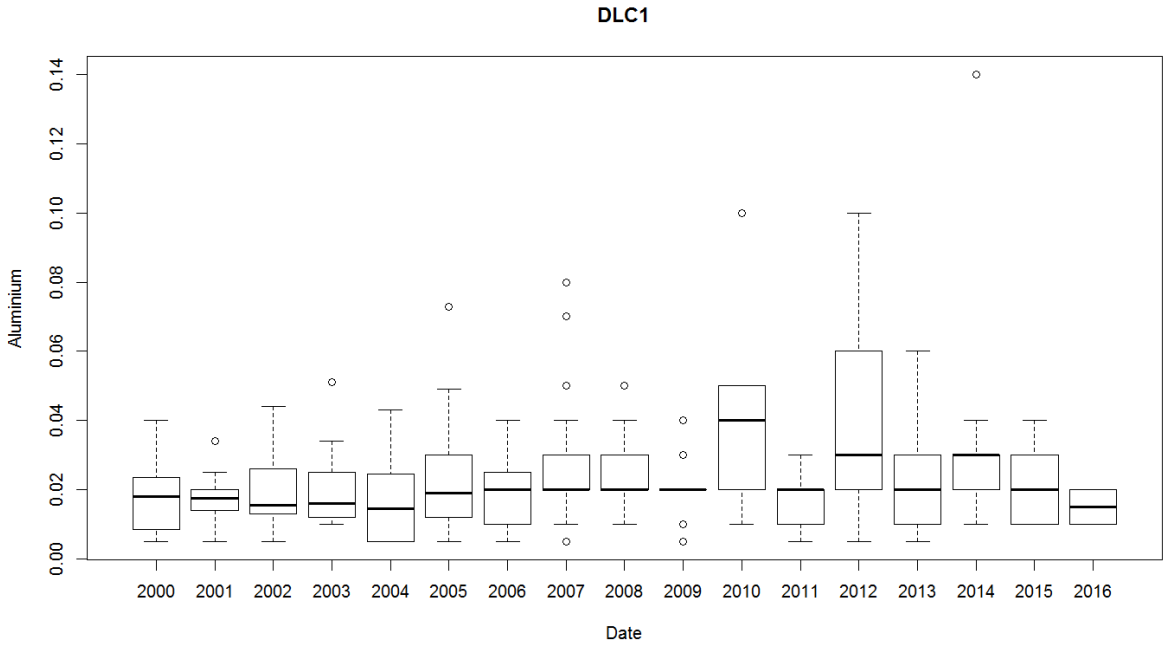

DLC1
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

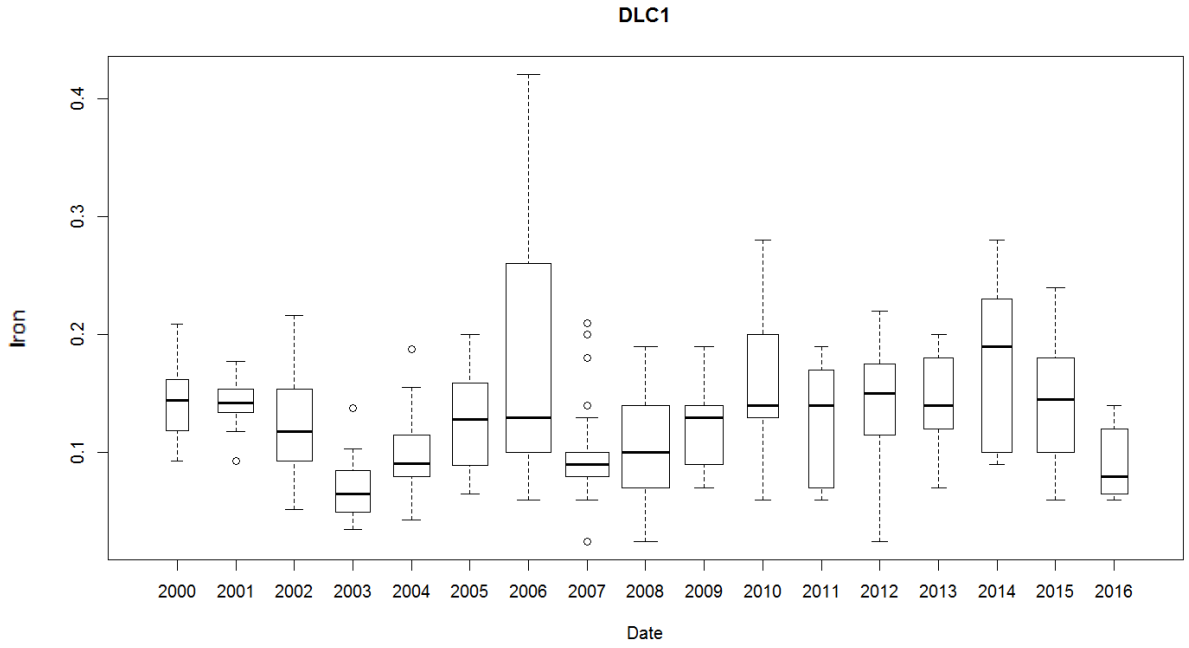

DLC1
Nitrogen Oxide
0.0
0.2
0.4
0.6
0.8
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

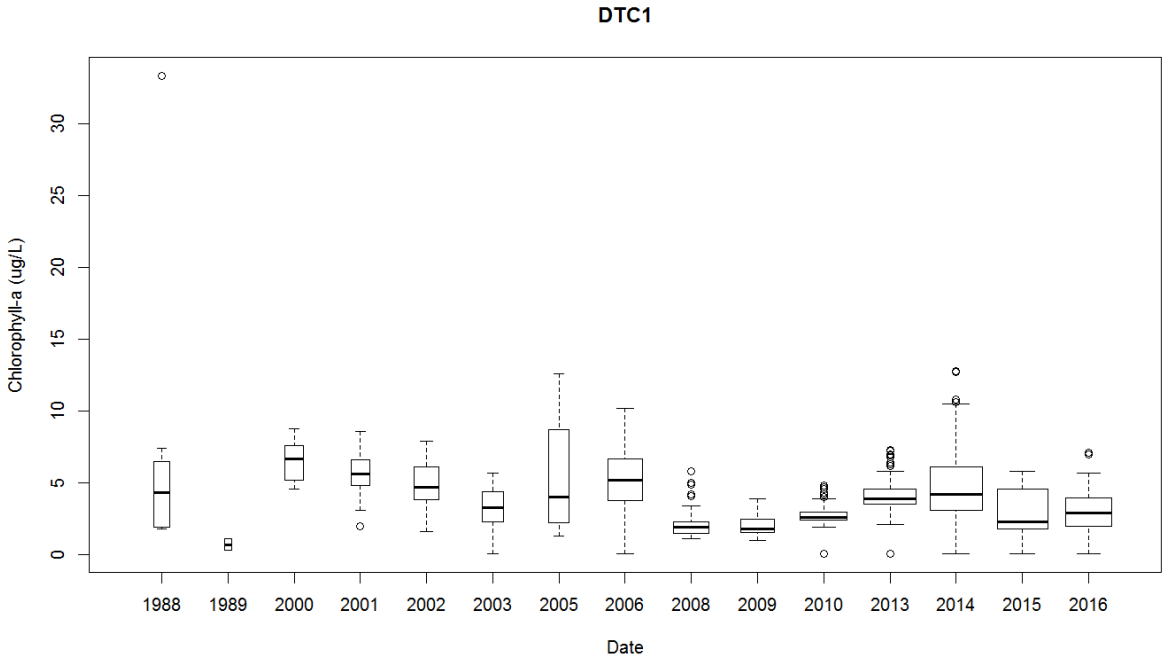

DLC1
Nitrogen Total
0.0
0.2
0.4
0.6
0.8
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

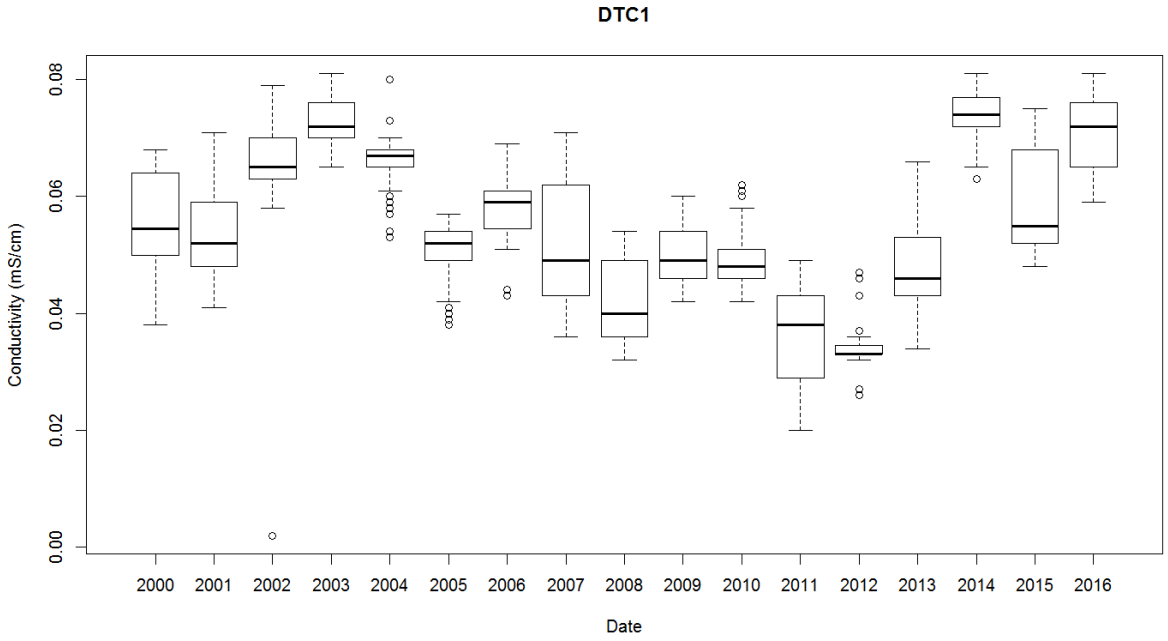

DLC1
FRP
0.00
0.01
0.02
0.03
0.04
0.05
0.06
2001
2003
2005
2007
2009
2011
2013
2015
Date

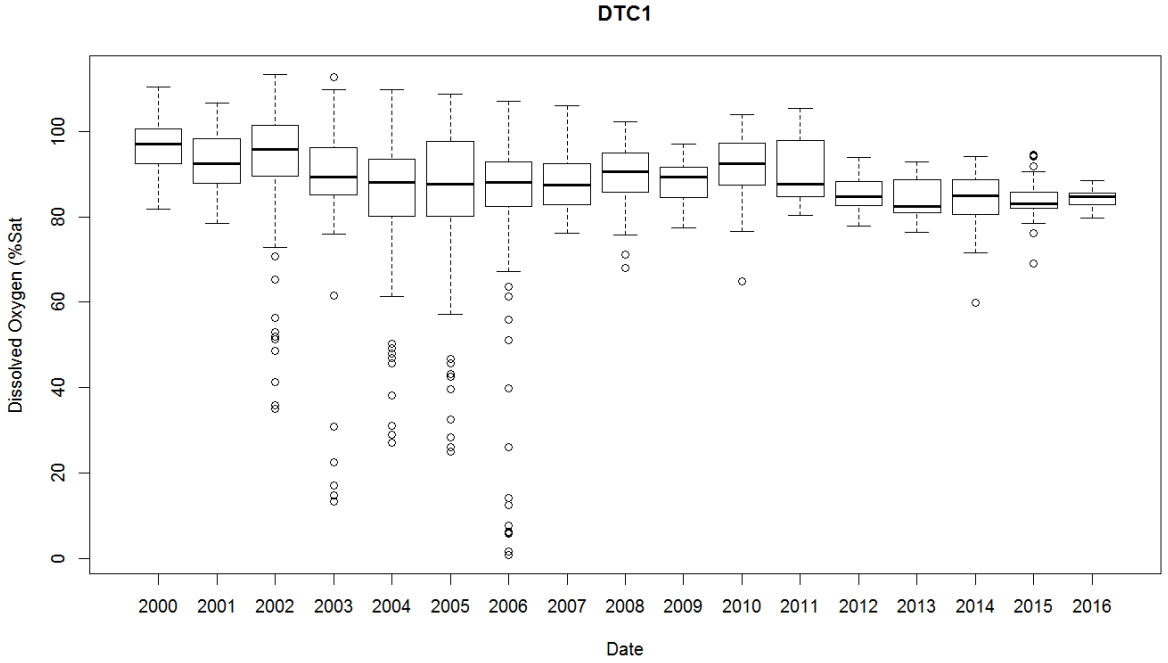

DLC1
Total phosphorus
0.00
0.01
0.02
0.03
0.04
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

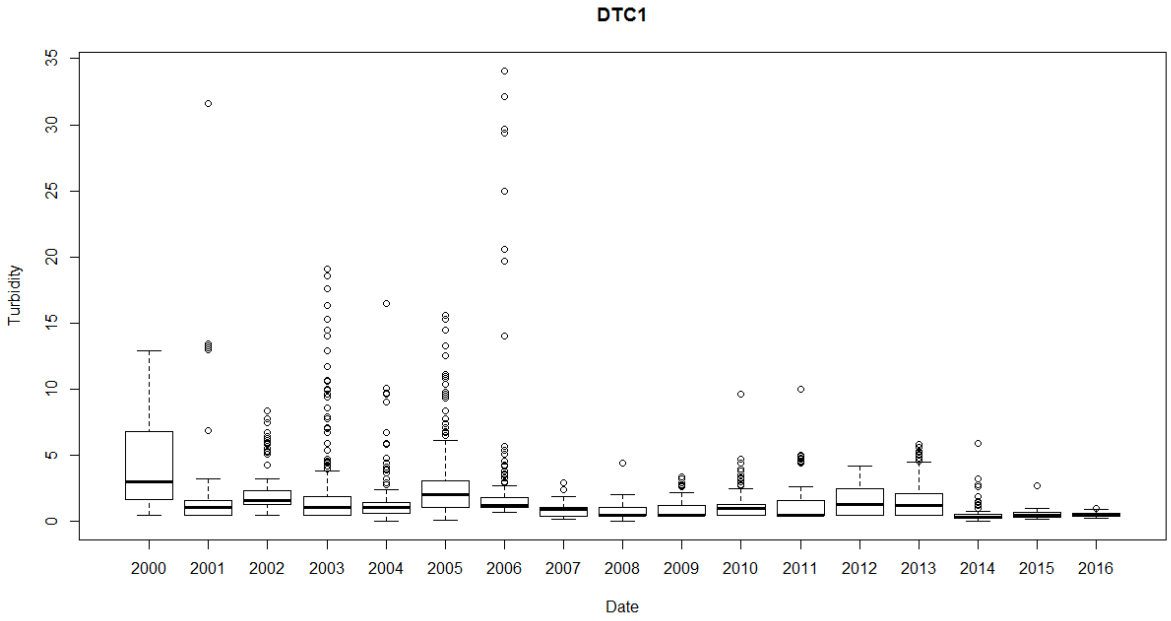

DLC1
Aluminium
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

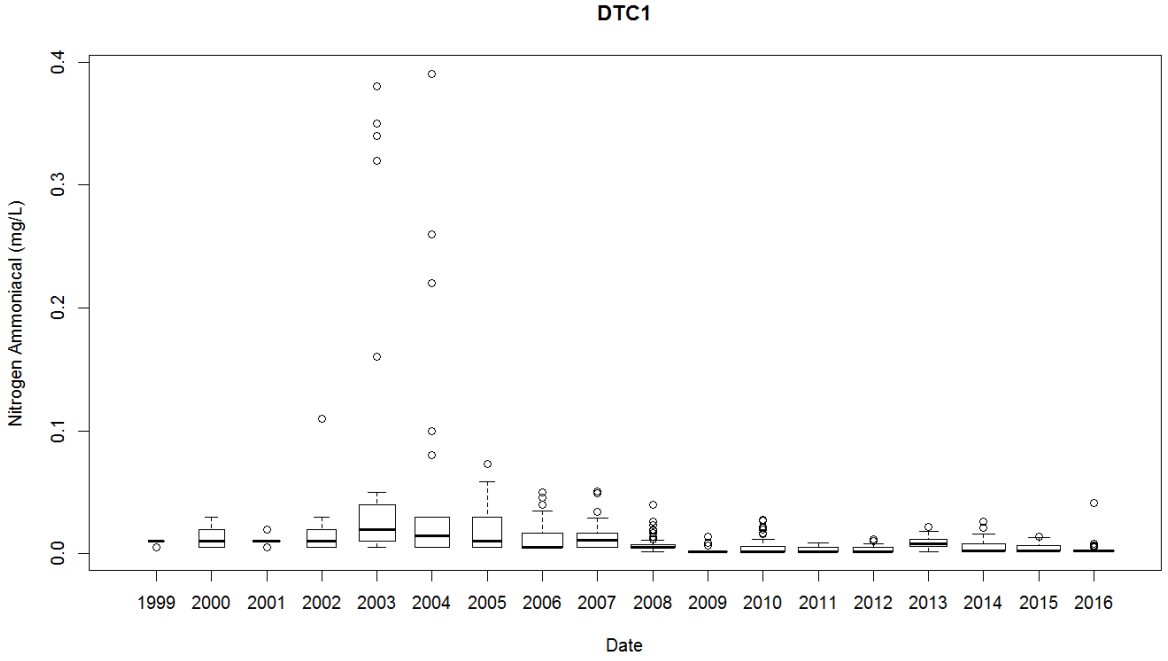

DLC1
Iron
0.1
0.2
0.3
0.4
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

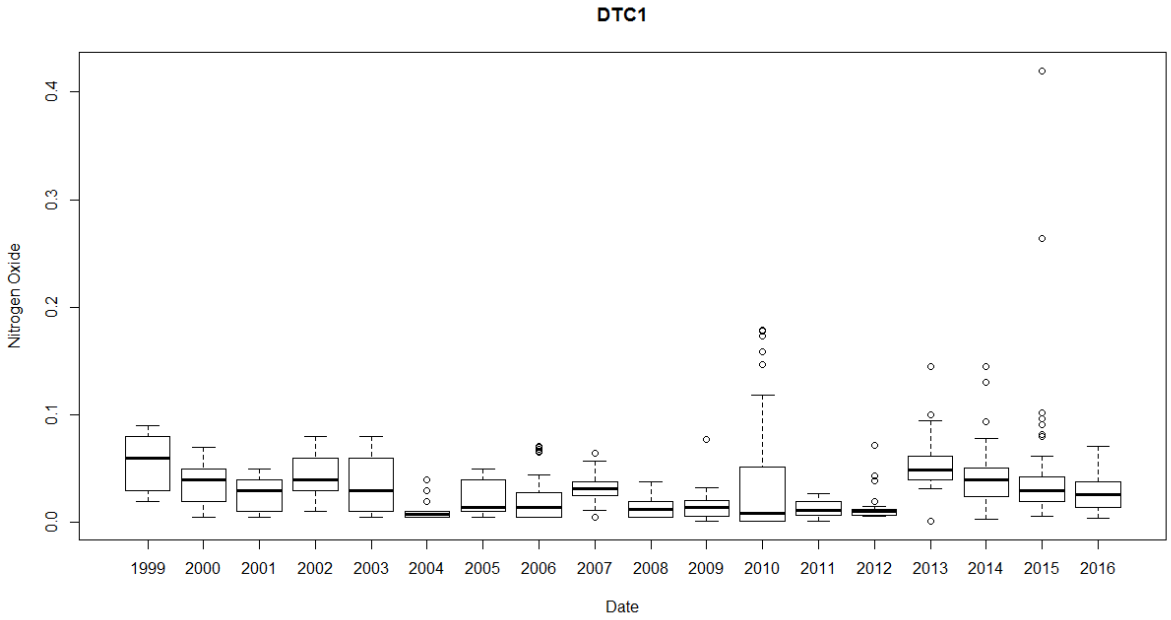

DTC1
Chlorophyll-a (ug/L)
0
5
10
15
20
25
30
1988
1989
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

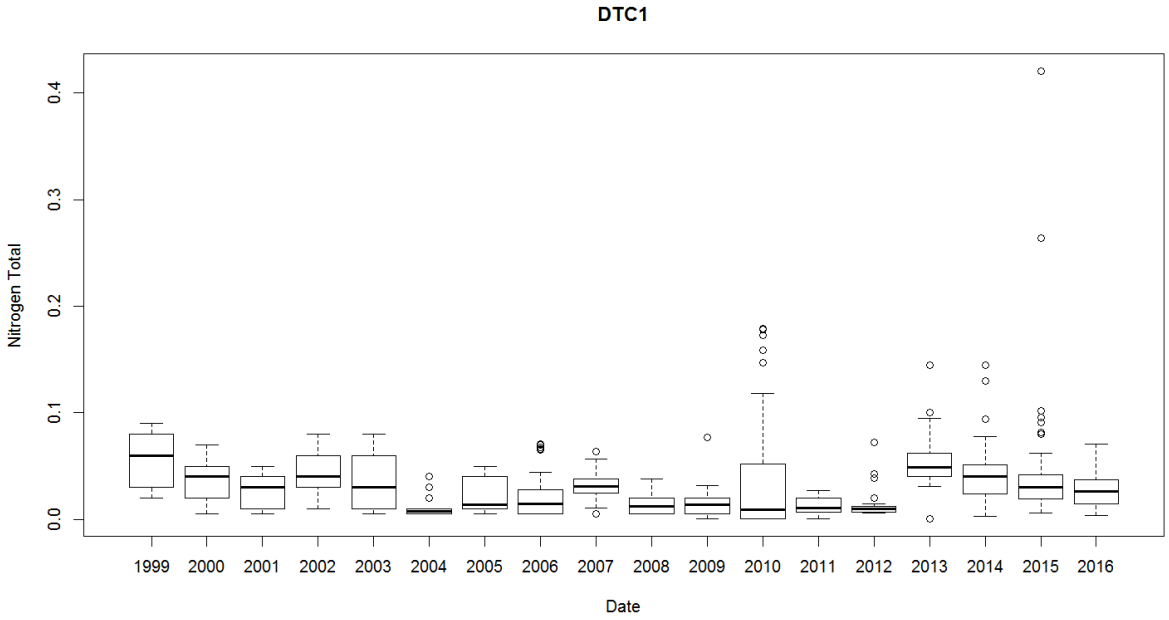

DTC1
Conductivity (mS/cm)
0.00
0.02
0.04
0.06
0.08
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

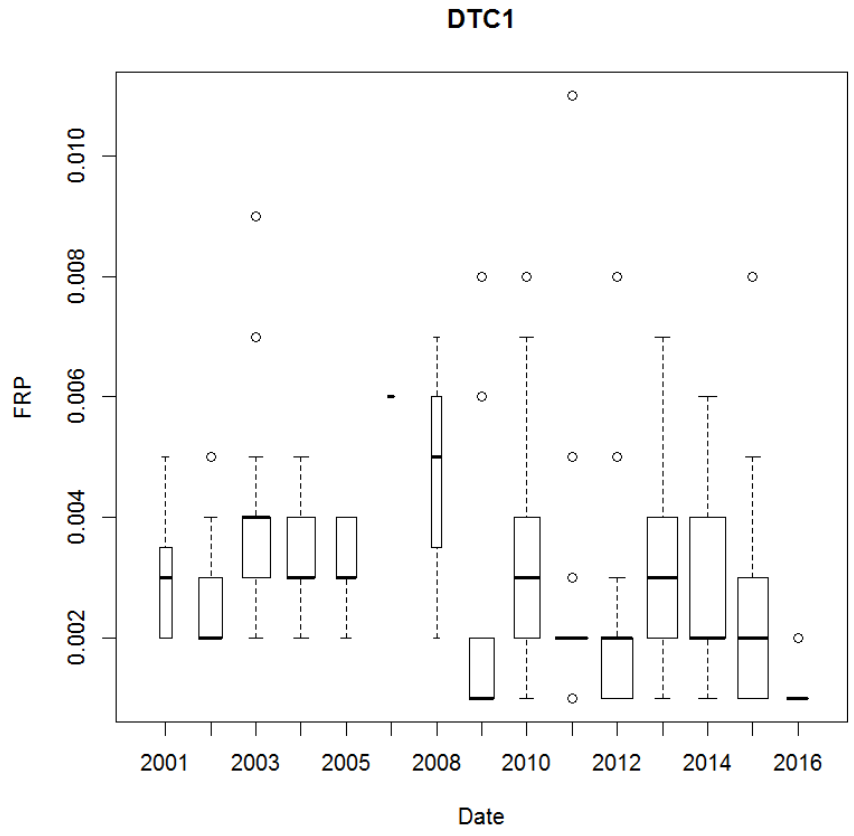

DTC1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

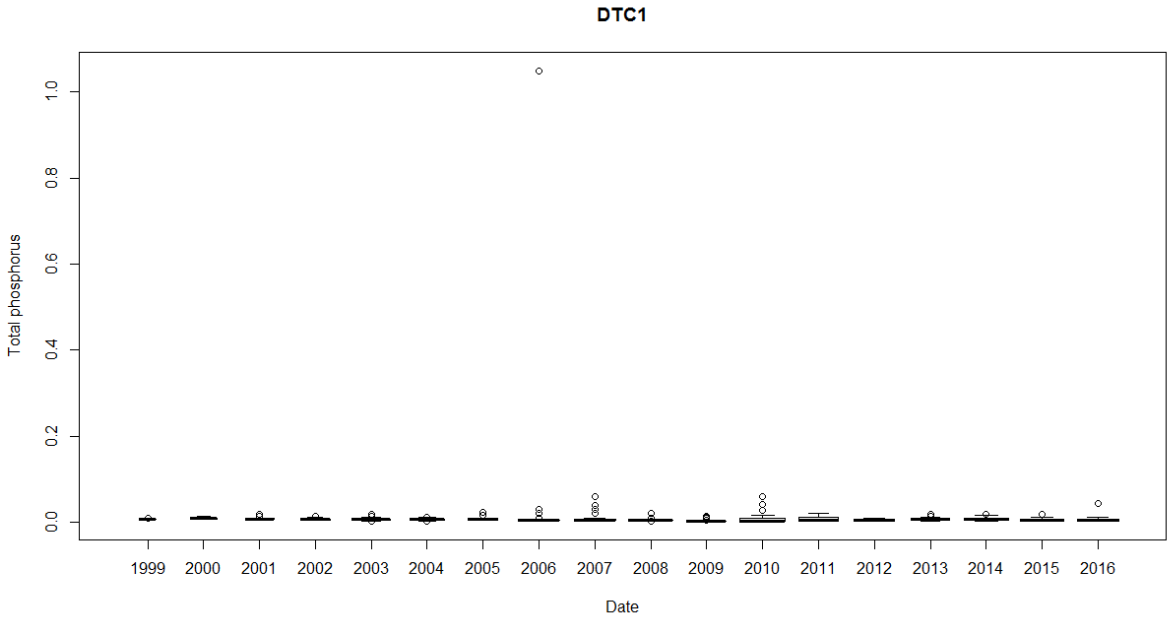

DTC1
Turbidity
0
5
10
15
20
25
30
35
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

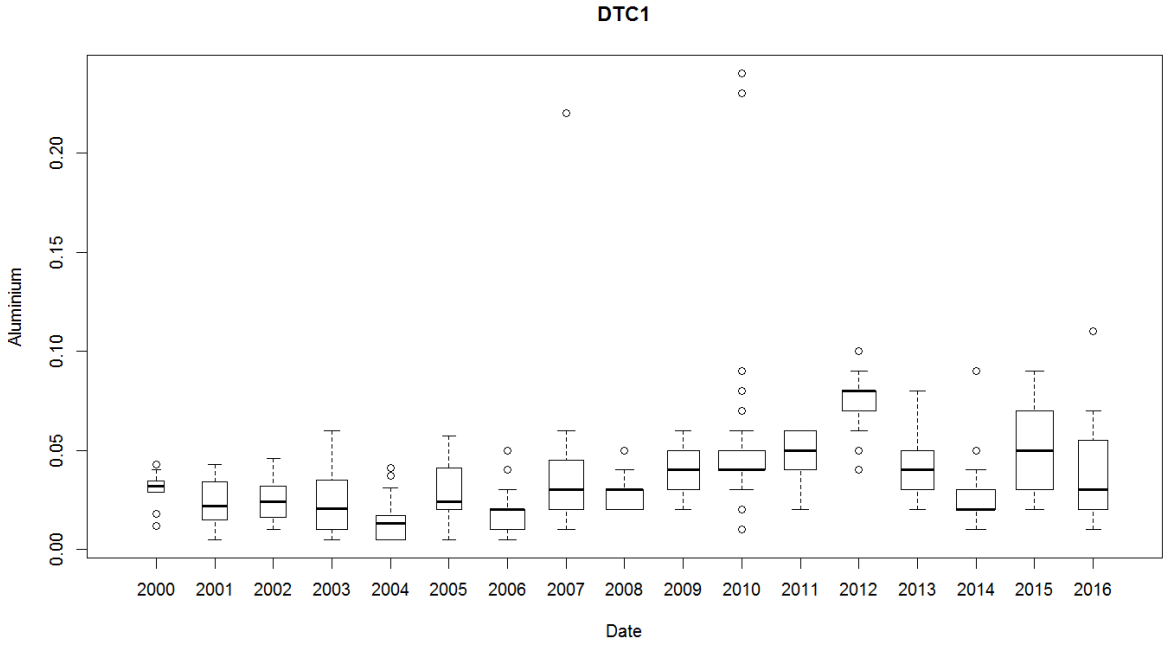

DTC1
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

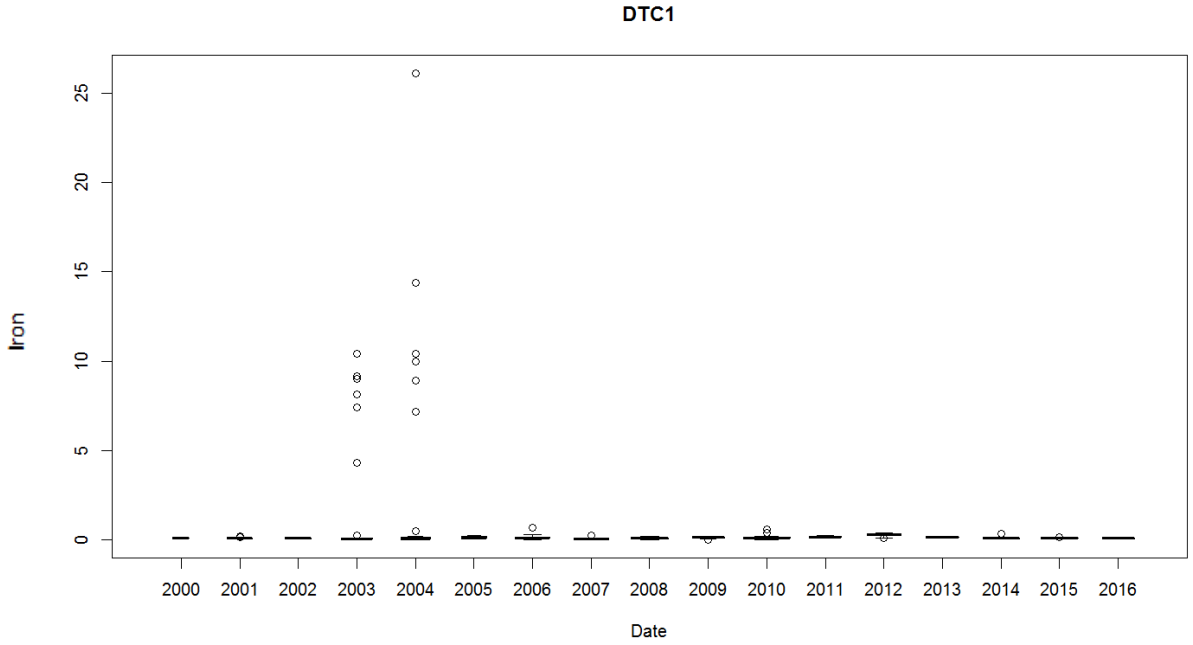

DTC1
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date


DTC1
Nitrogen Total
0.0
0.1
0.2
0.3
0.4
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

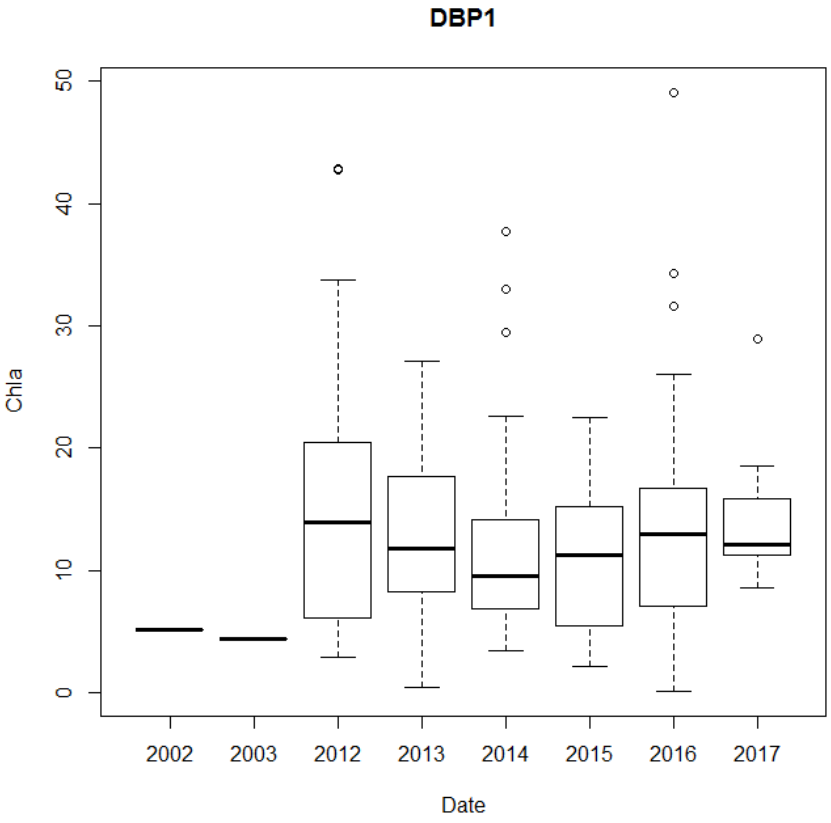

DTC1
FRP
0.002
0.004
0.006
0.008
0.010
2001
2003
2005
2008
2010
2012
2014
2016
Date

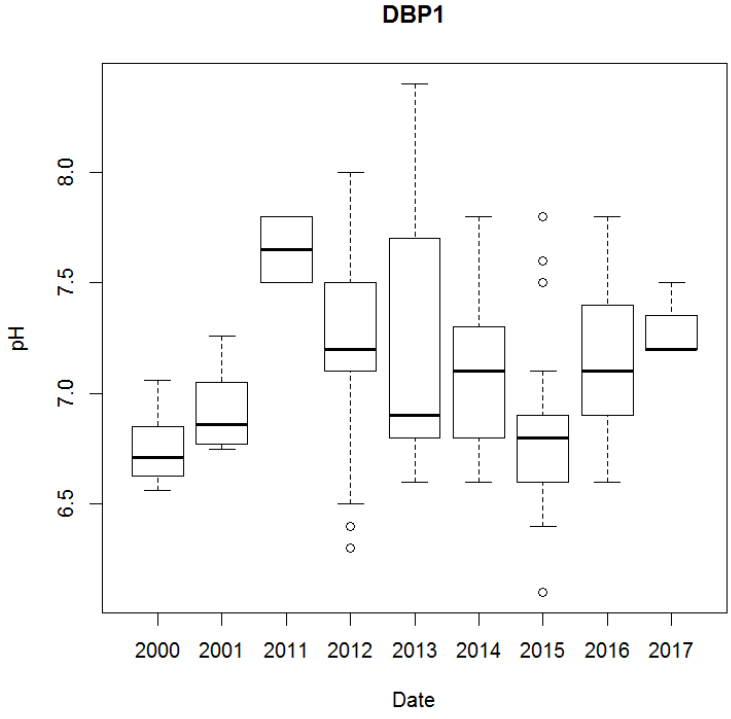

DTC1
Total phosphorus
0.0
0.2
0.4
0.6
0.8
1.0
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

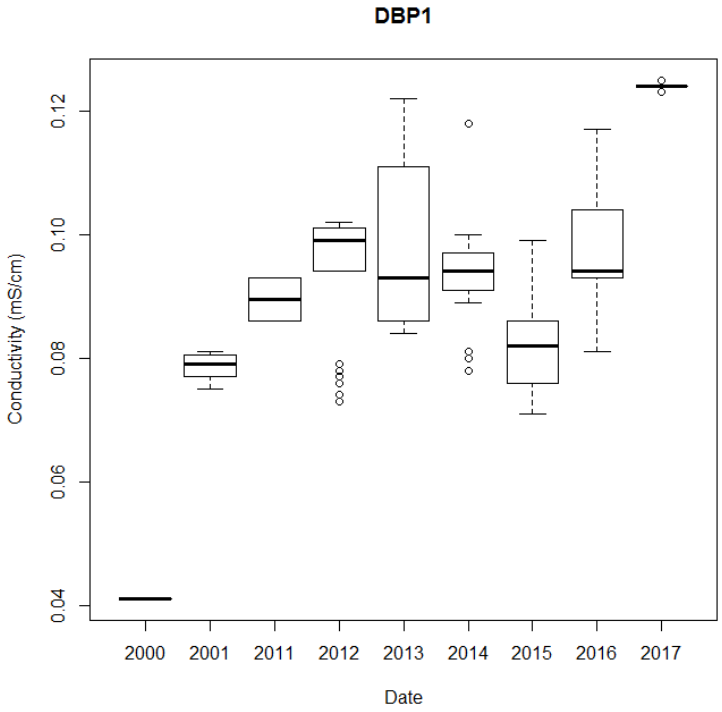

DTC1
Aluminium
0.00
0.05
0.10
0.15
0.20
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

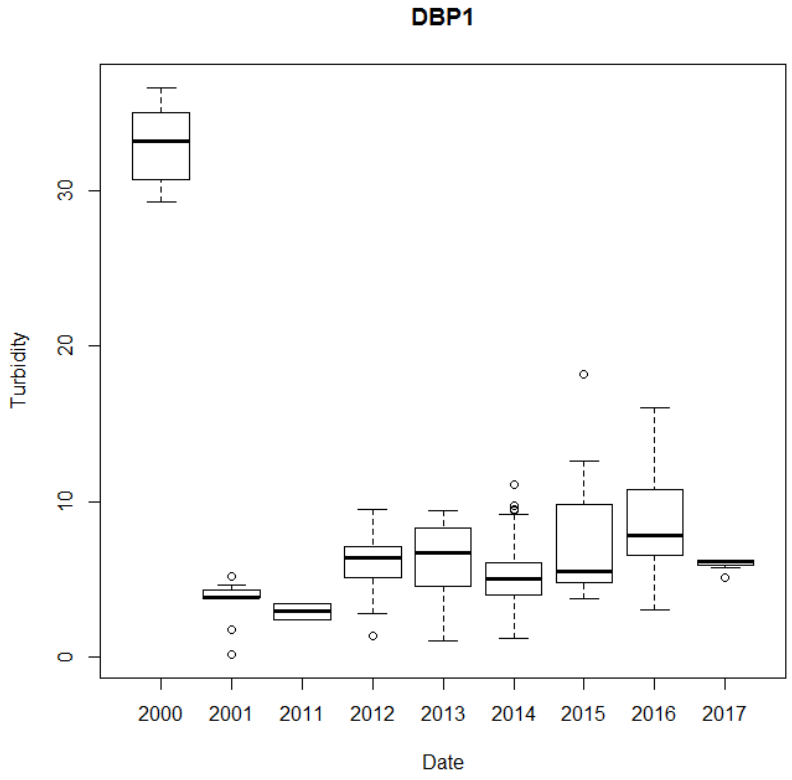

DTC1
Iron
0
5
10
15
20
25
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

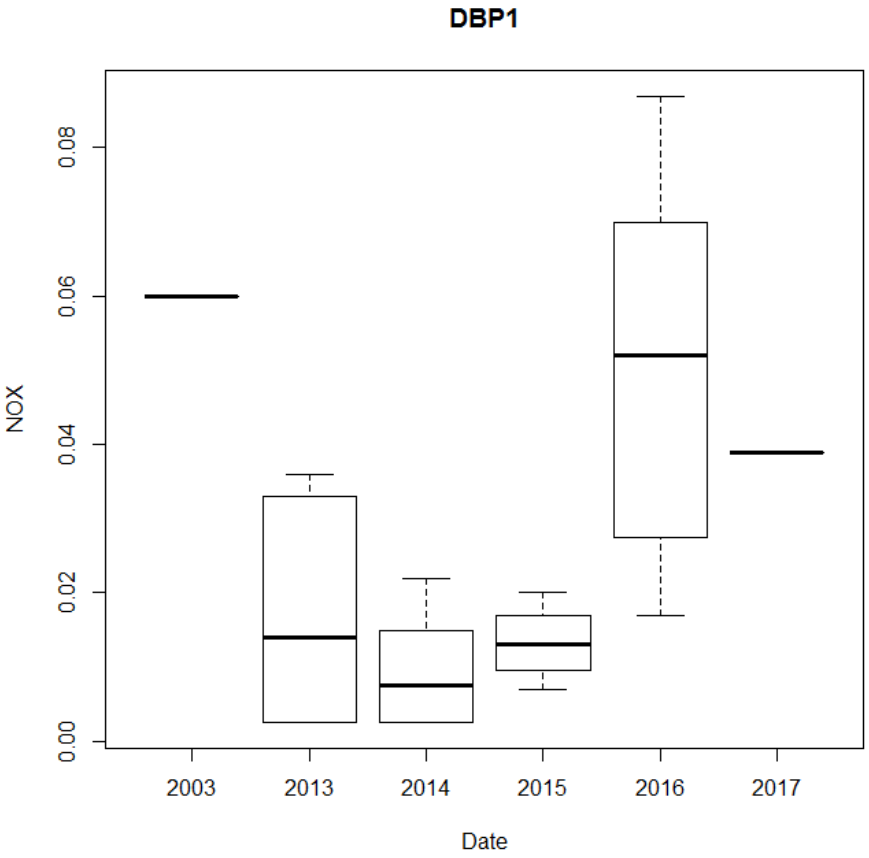
8.5 Shoalhaven storage sites

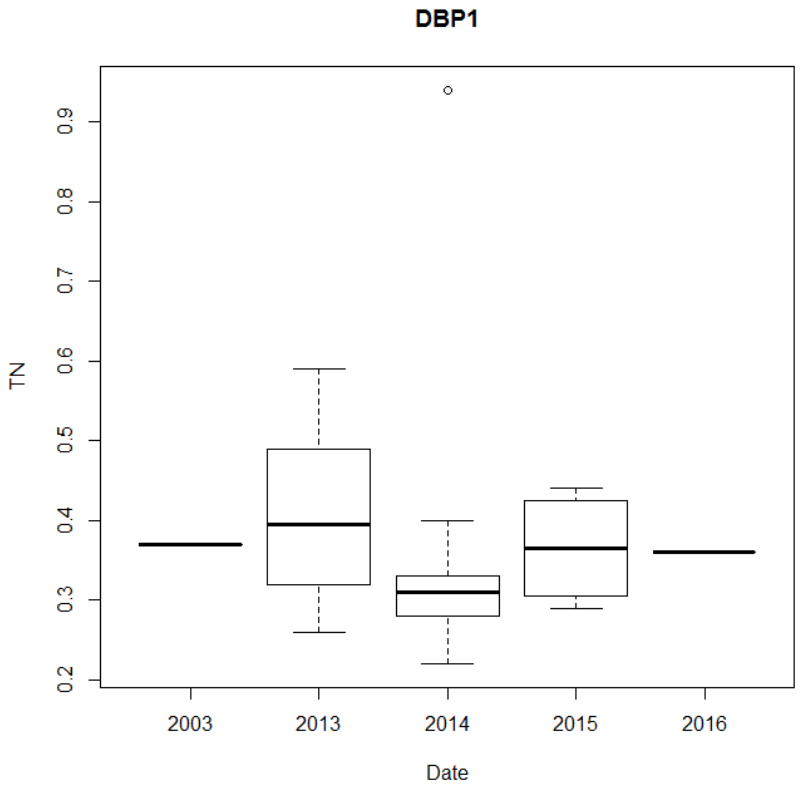


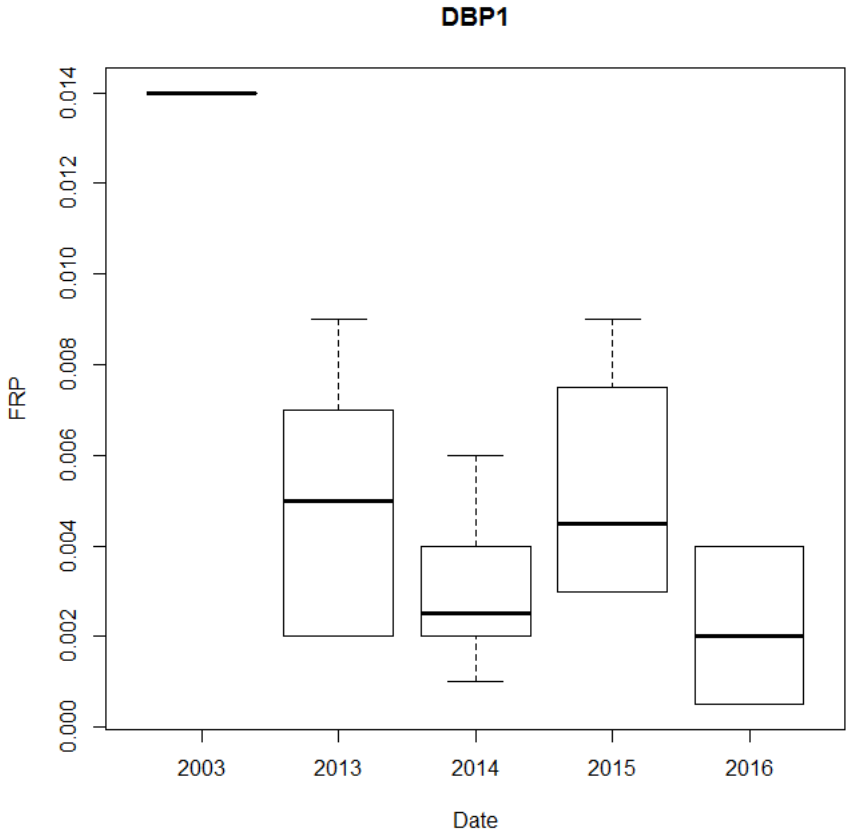


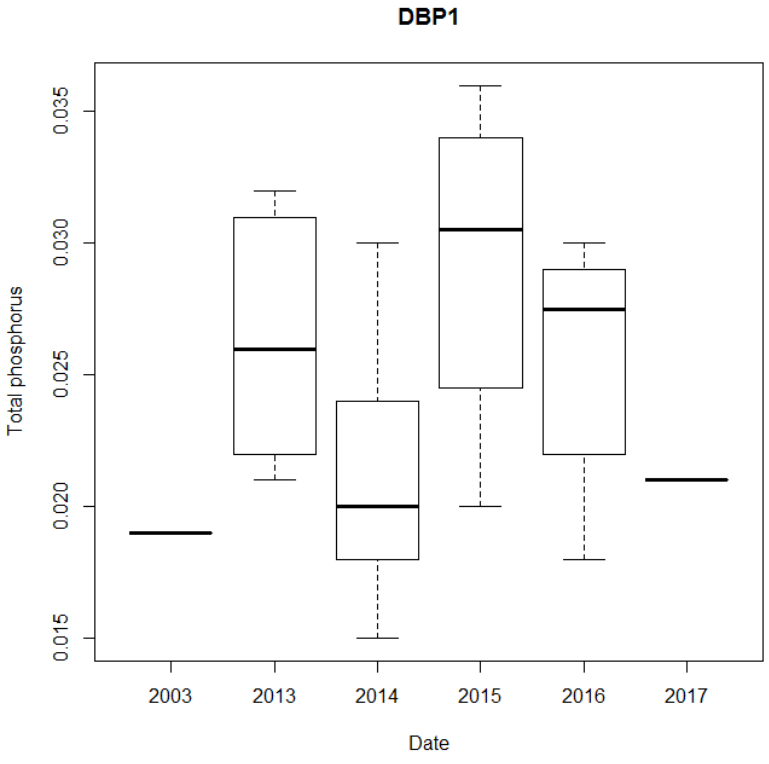

DBP1
Conductivity (mS/cm)
0.04
0.06
0.08
0.10
0.12
2000
2001
2011
2012
2013
2014
2015
2016
2017
Date

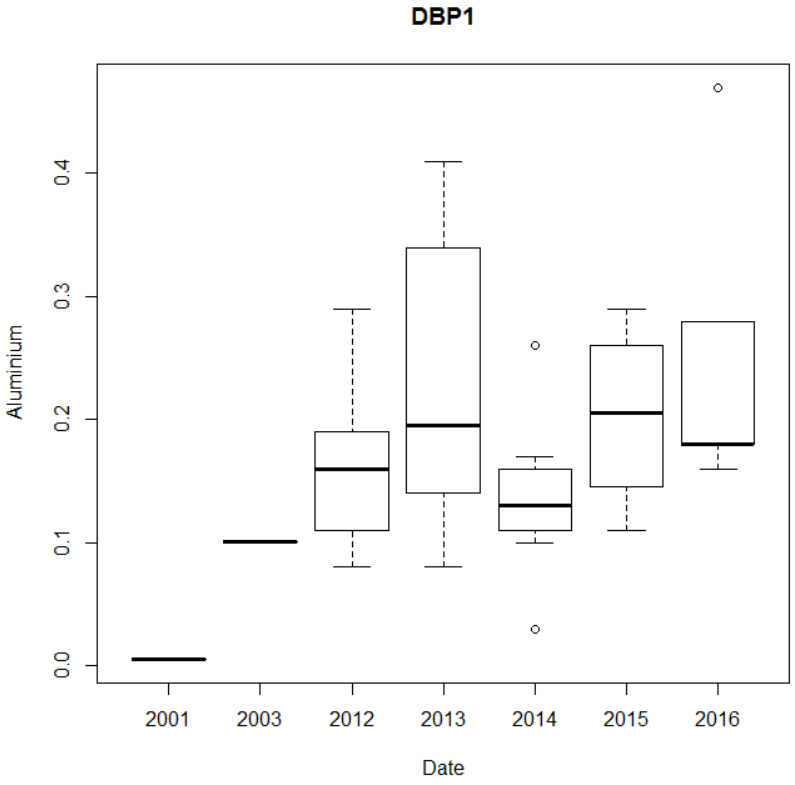

DBP1
Turbidity
0
10
20
30
2000
2001
2011
2012
2013
2014
2015
2016
2017
Date

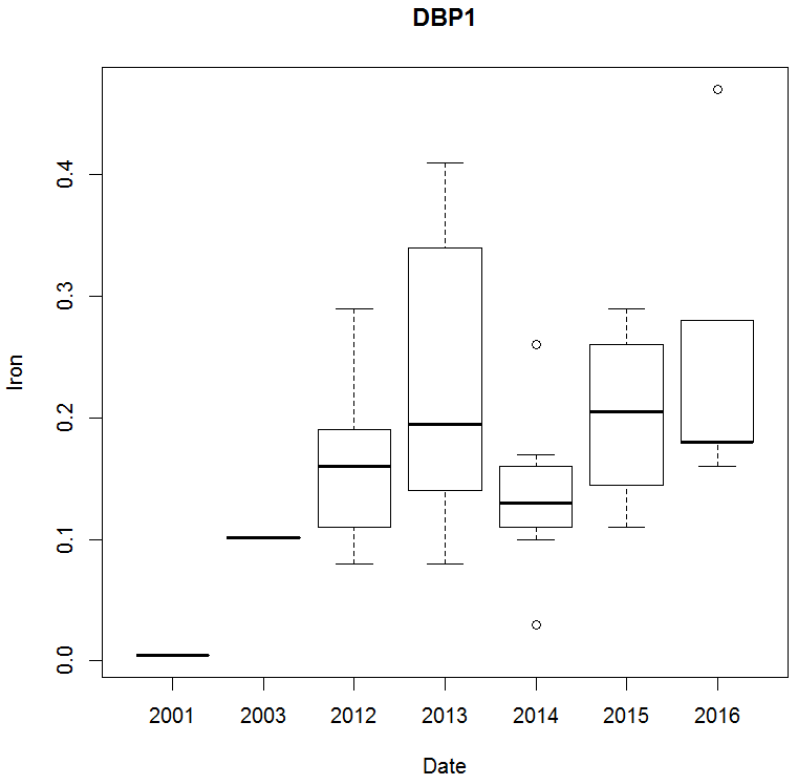

DBP1
NOX
0.00
0.02
0.04
0.06
0.08
2003
2013
2014
2015
2016
2017
Date

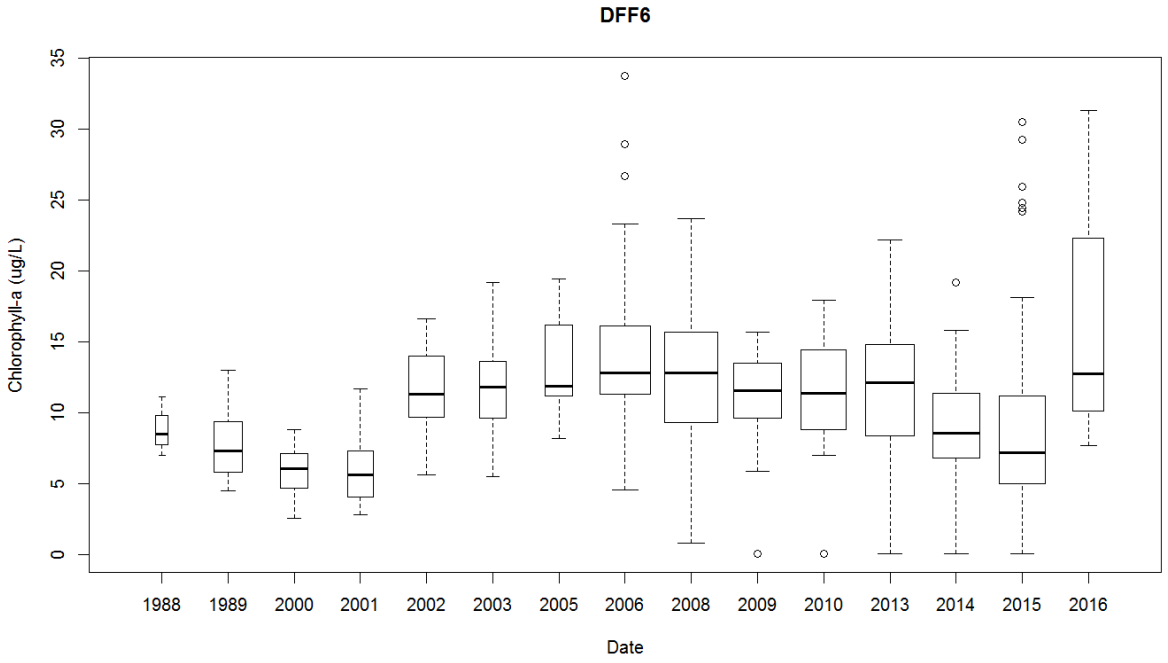

DBP1
TN
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
2003
2013
2014
2015
2016
Date

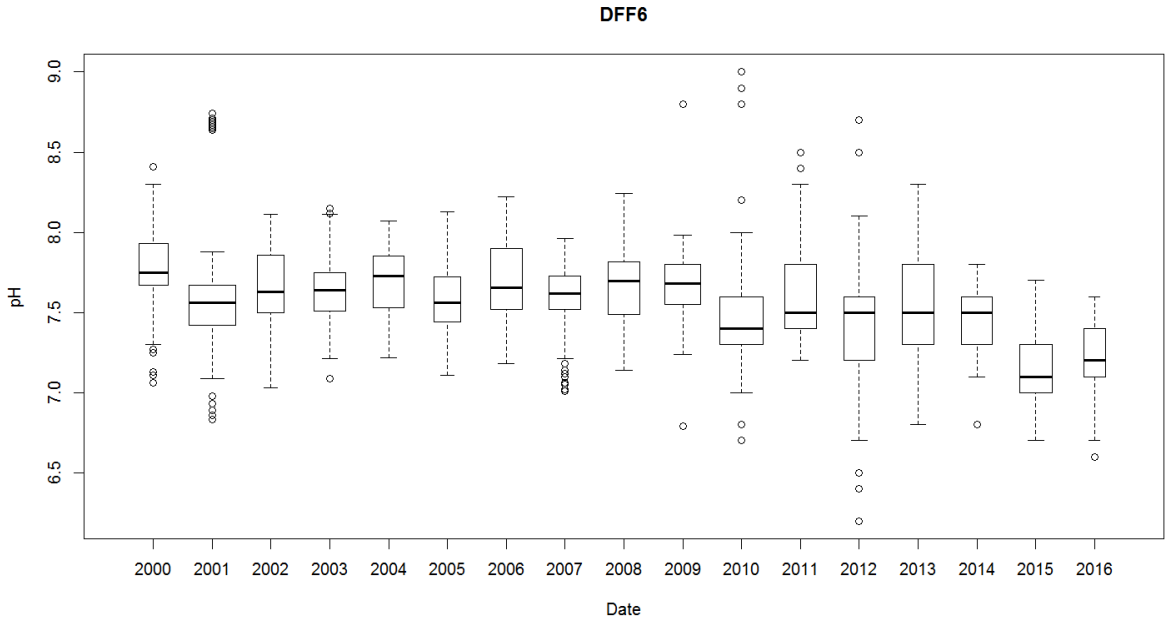

DBP1
FRP
0.000
0.002
0.004
0.006
0.008
0.010
0.012
0.014
2003
2013
2014
2015
2016
Date

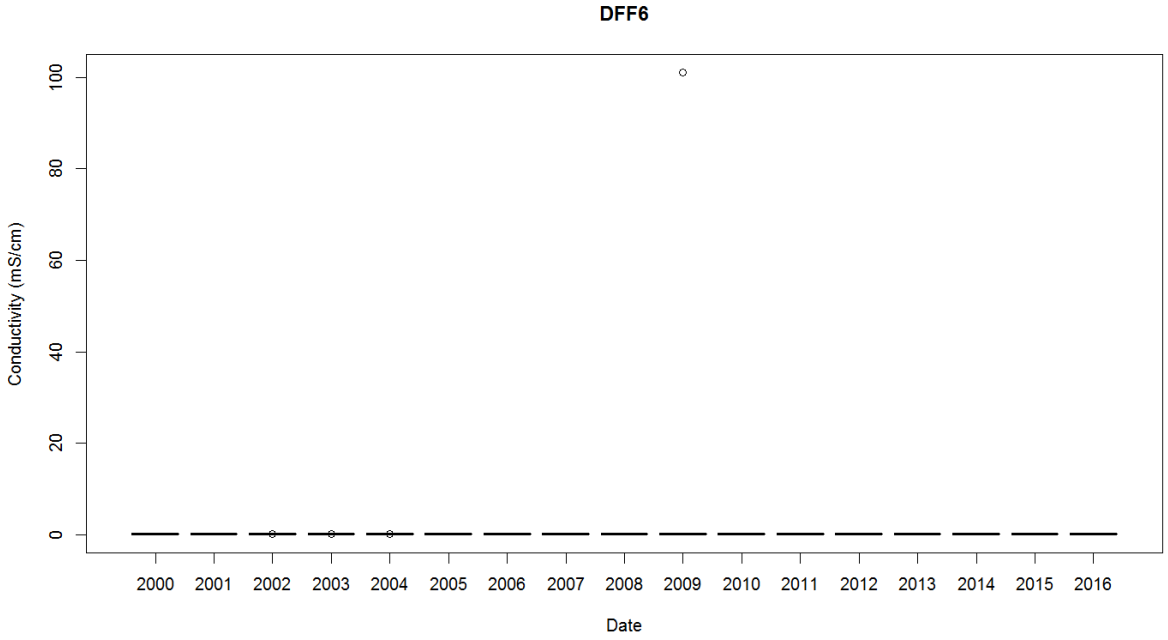

DBP1
Total phosphorus
0.015
0.020
0.025
0.030
0.035
2003
2013
2014
2015
2016
2017
Date

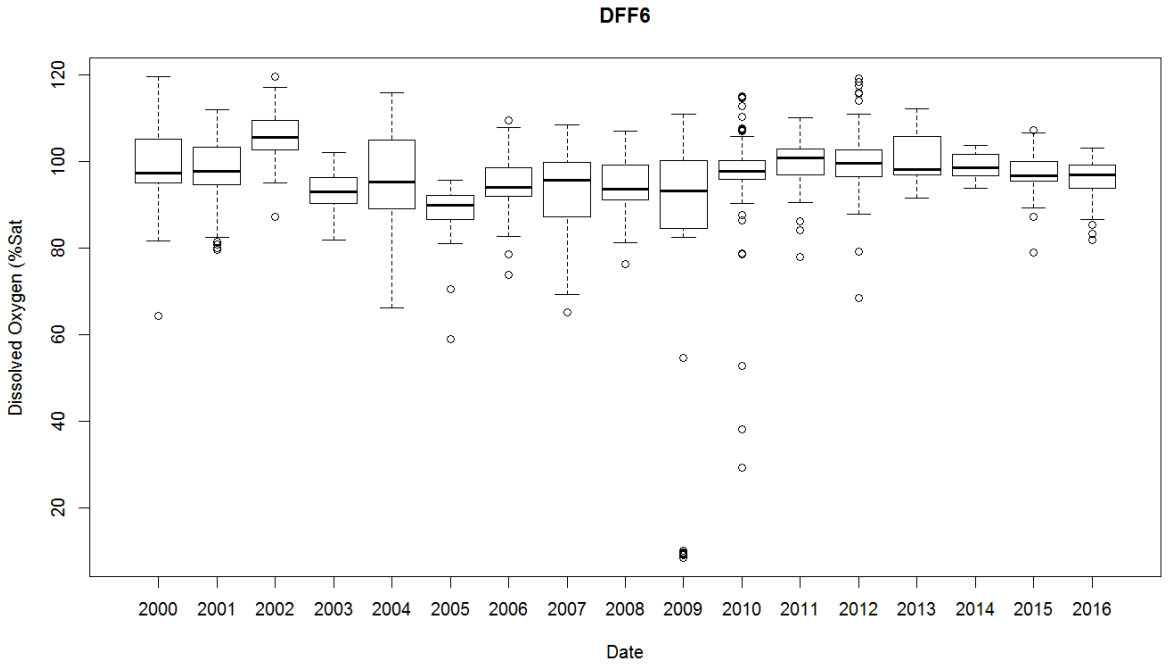

DBP1
Aluminium
0.0
0.1
0.2
0.3
0.4
2001
2003
2012
2013
2014
2015
2016
Date

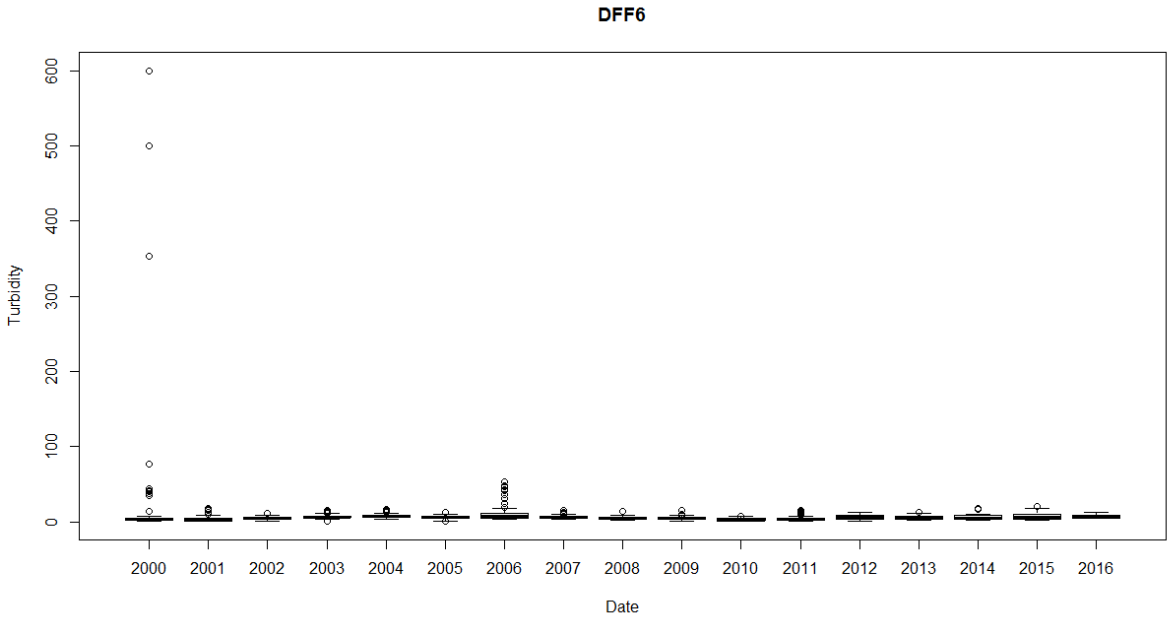

DBP1
Iron
0.0
0.1
0.2
0.3
0.4
2001
2003
2012
2013
2014
2015
2016
Date

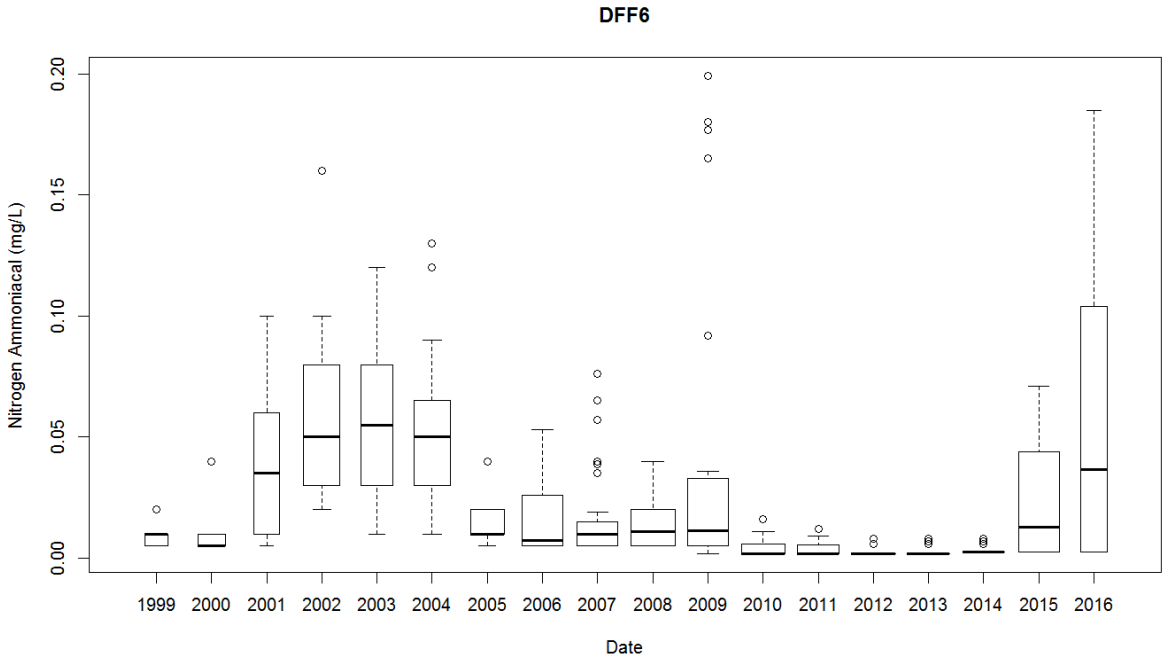

DFF6
Chlorophyll-a (ug/L)
0
5
10
15
20
25
30
35
1988
1989
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

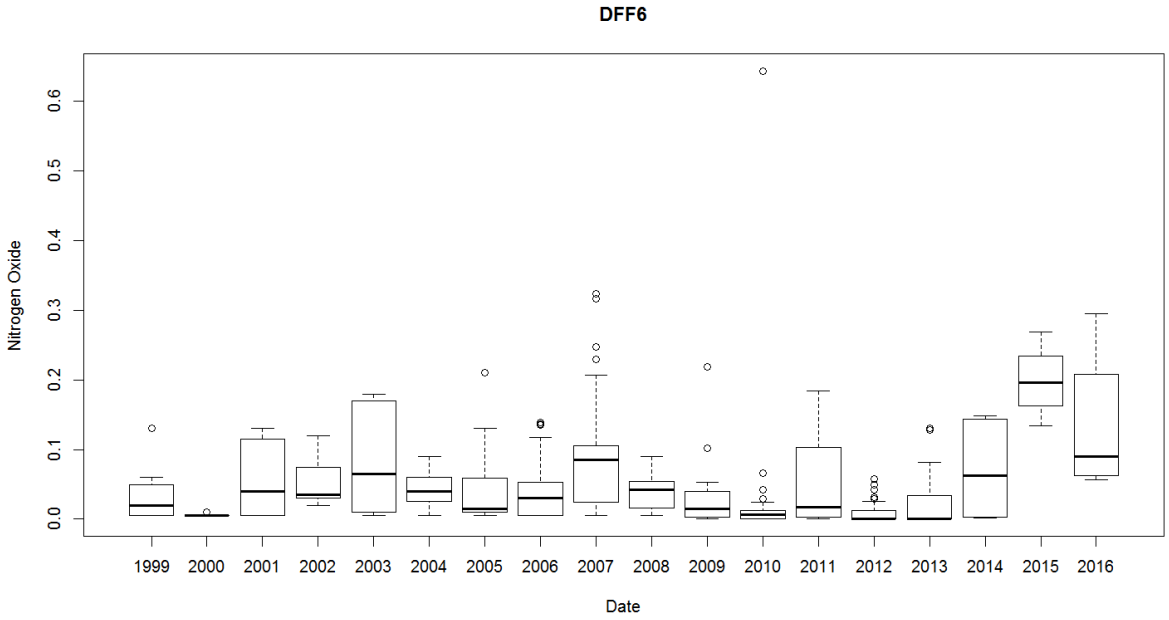

DFF6
pH
6.5
7.0
7.5
8.0
8.5
9.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

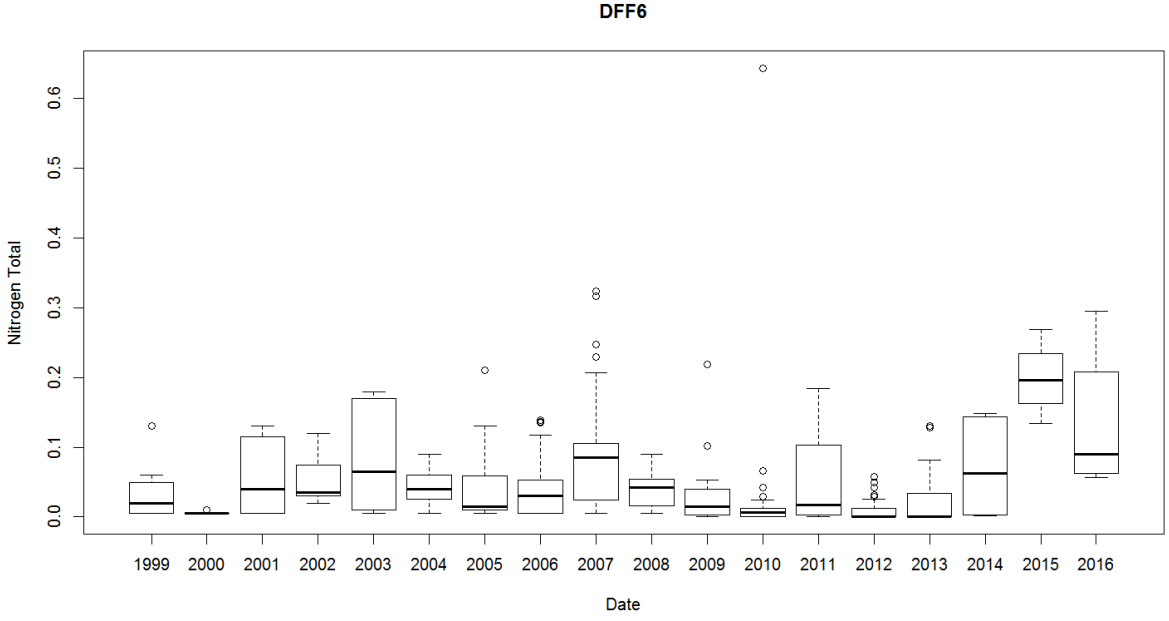

DFF6
Conductivity (mS/cm)
0
20
40
60
80
100
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

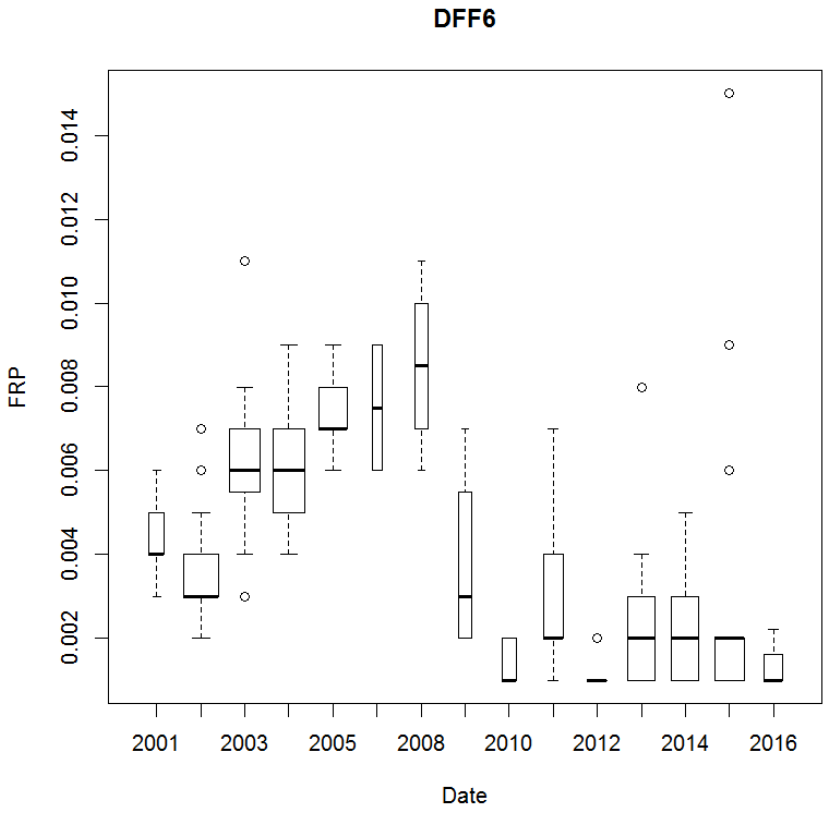

DFF6
Dissolved Oxygen (%Sat
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

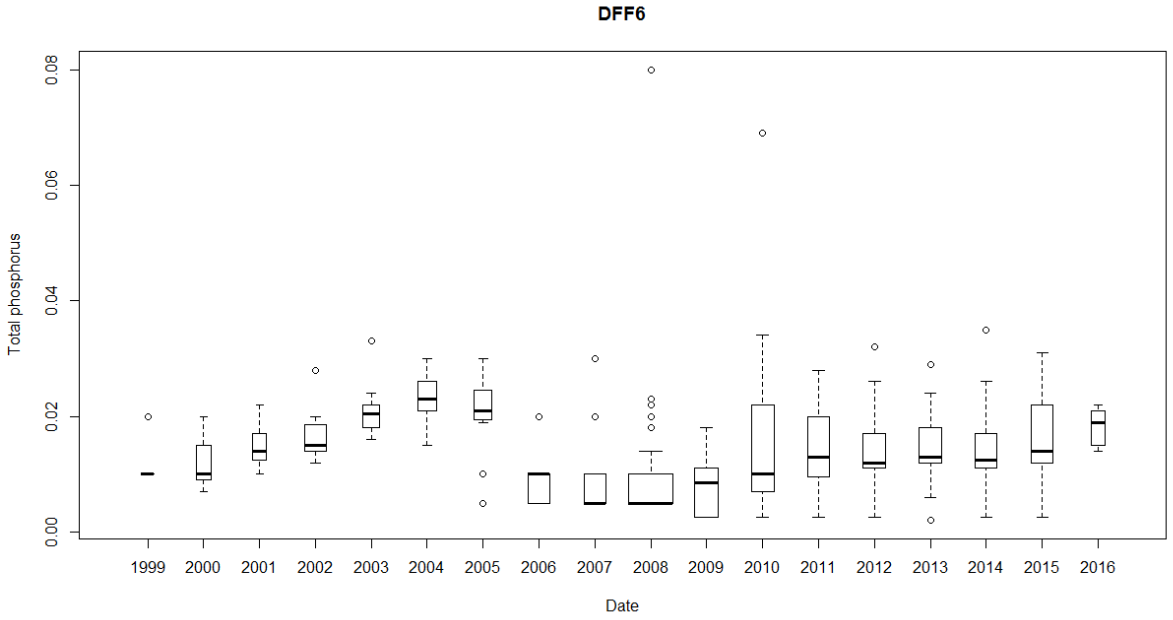

DFF6
Turbidity
0
100
200
300
400
500
600
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

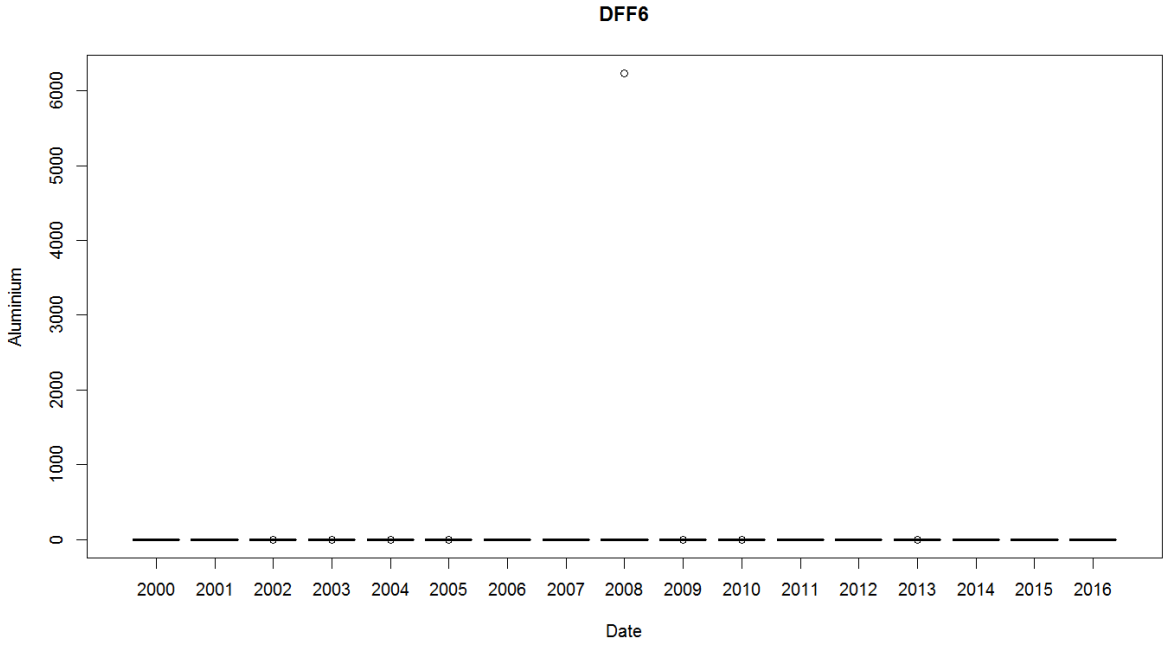

DFF6
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

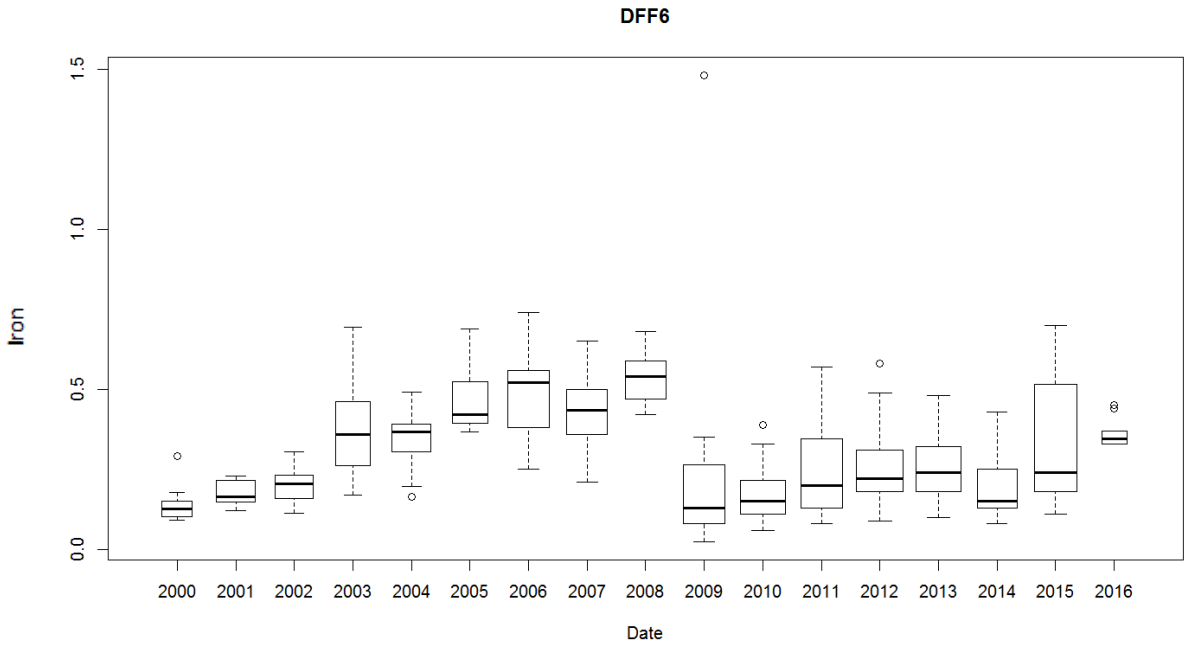

DFF6
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

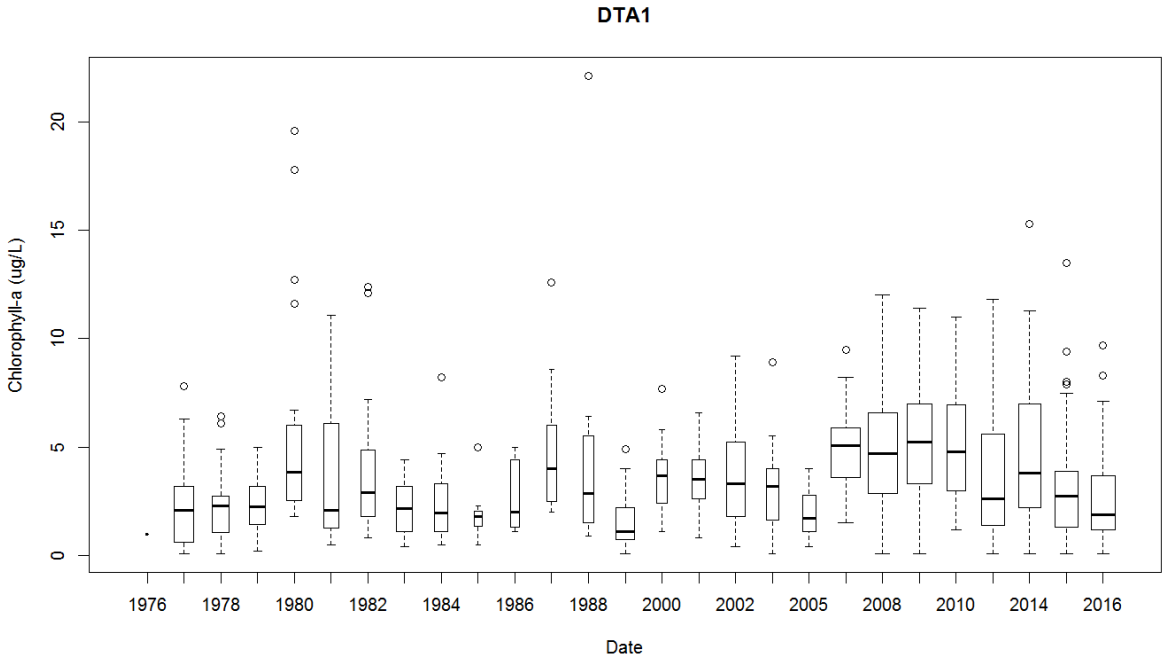

DFF6
Nitrogen Total
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

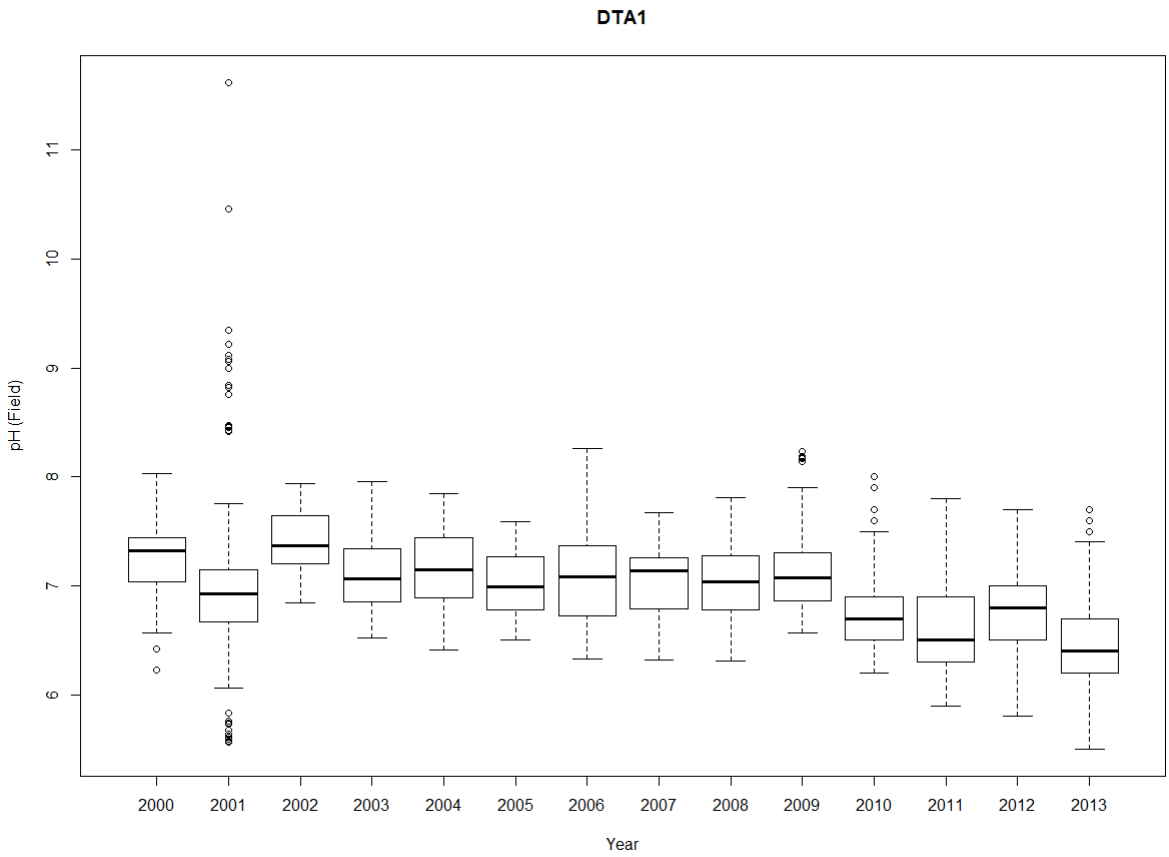

DFF6
FRP
0.002
0.004
0.006
0.008
0.010
0.012
0.014
2001
2003
2005
2008
2010
2012
2014
2016
Date

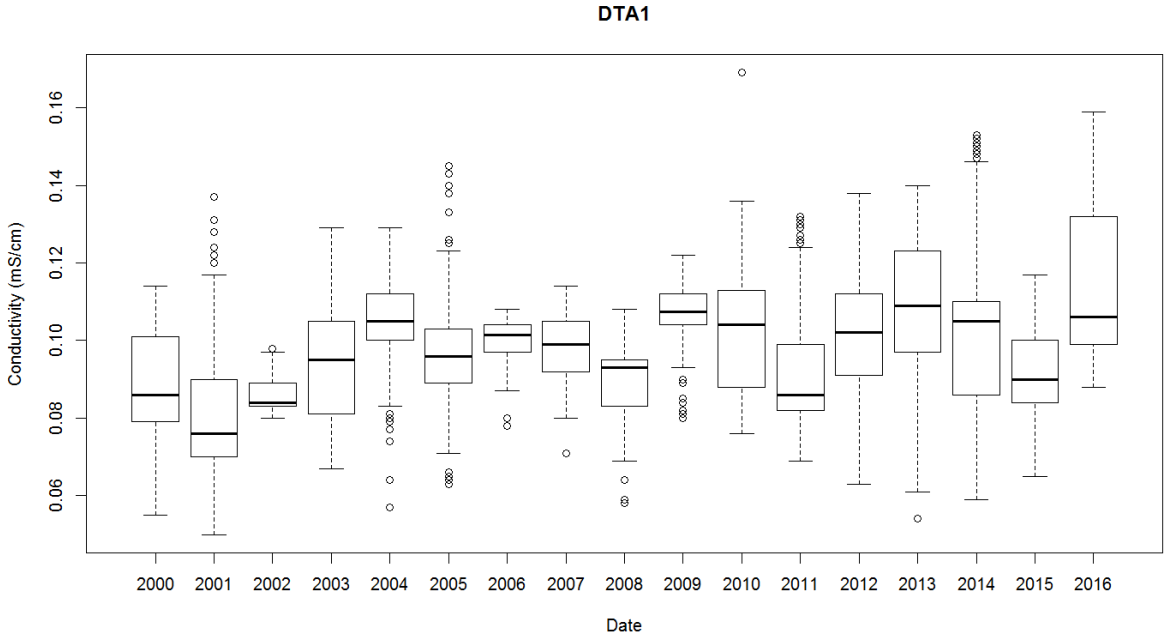

DFF6
Total phosphorus
0.00
0.02
0.04
0.06
0.08
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

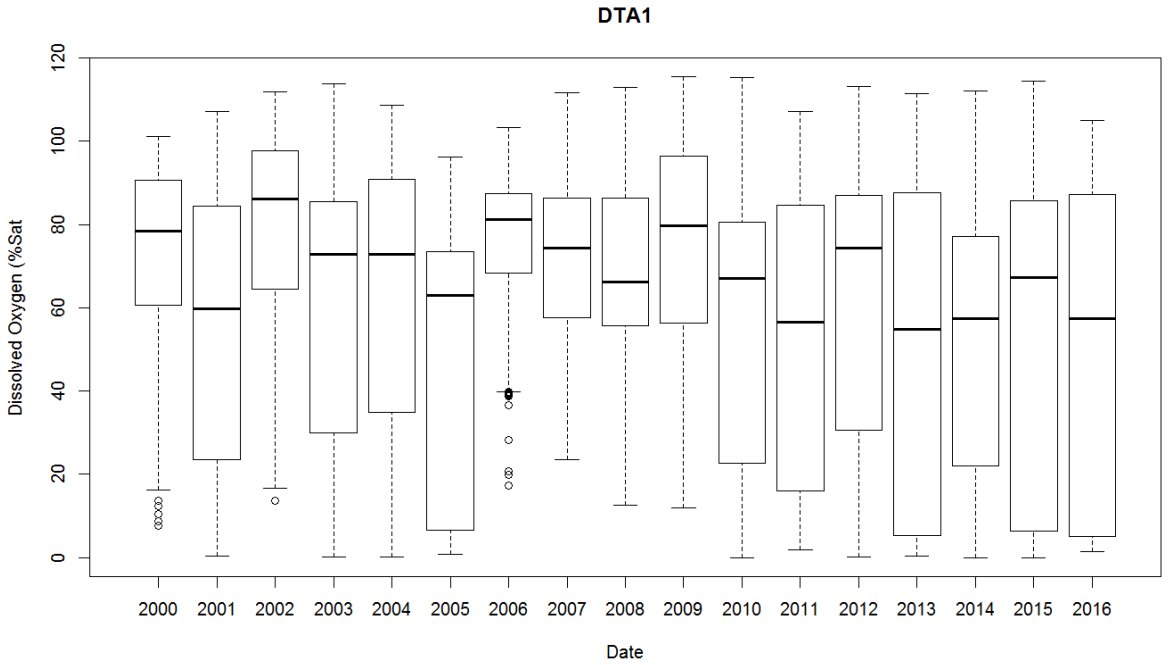

DFF6
Aluminium
0
1000
2000
3000
4000
5000
6000
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

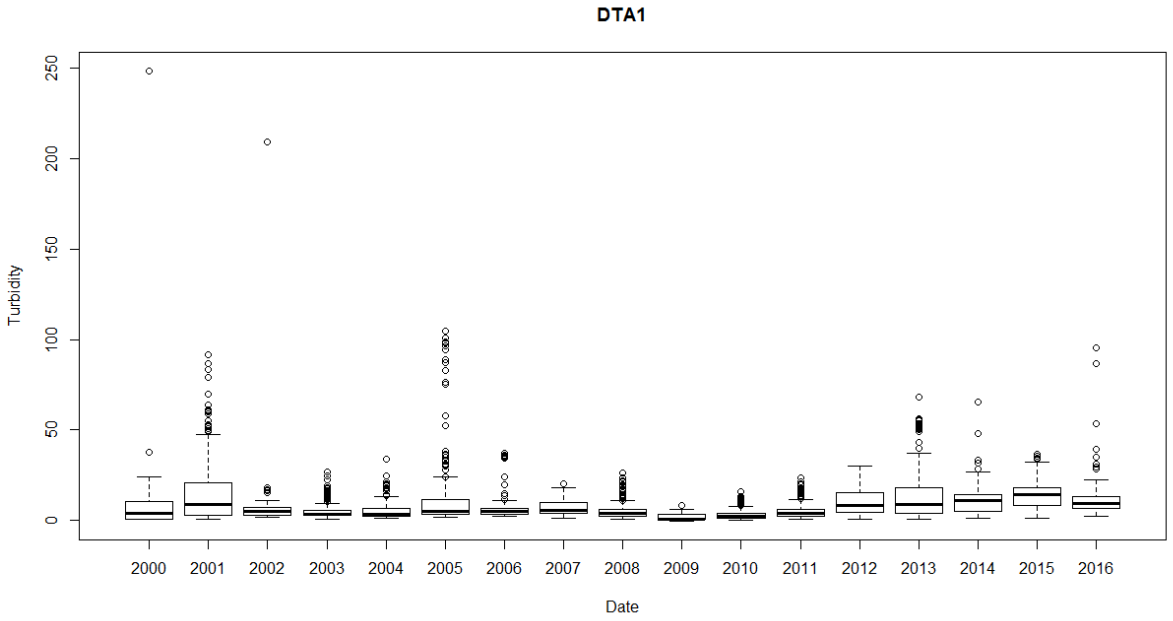

DFF6
Iron
0.0
0.5
1.0
1.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

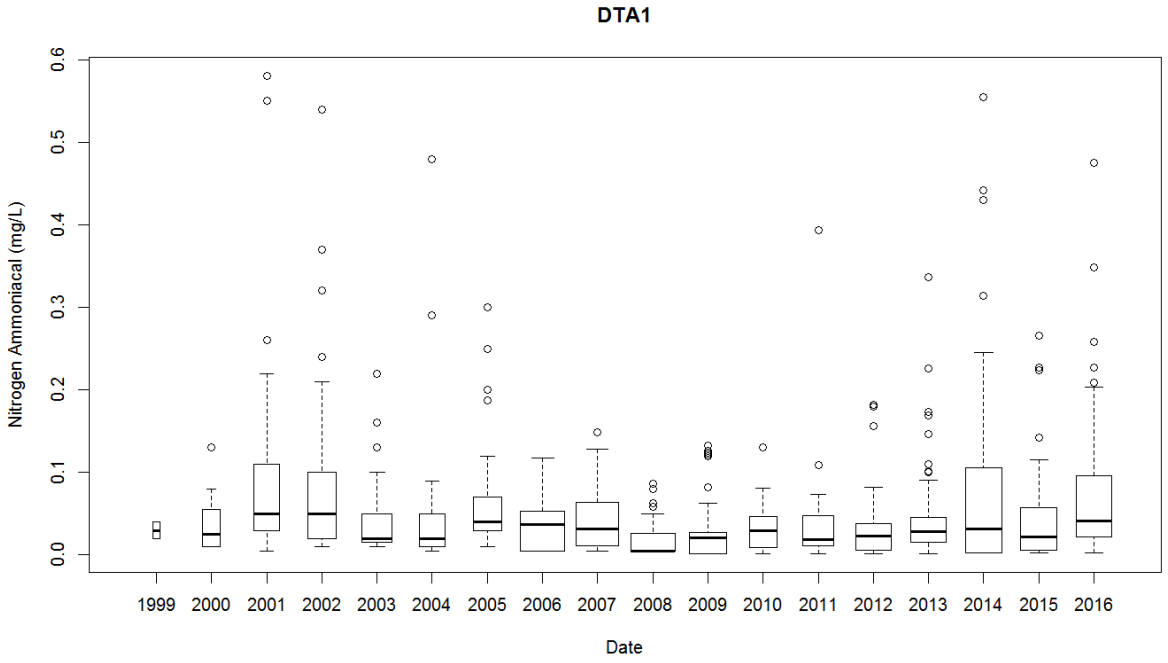

DTA1
Chlorophyll-a (ug/L)
0
5
10
15
20
1976
1978
1980
1982
1984
1986
1988
2000
2002
2005
2008
2010
2014
2016
Date

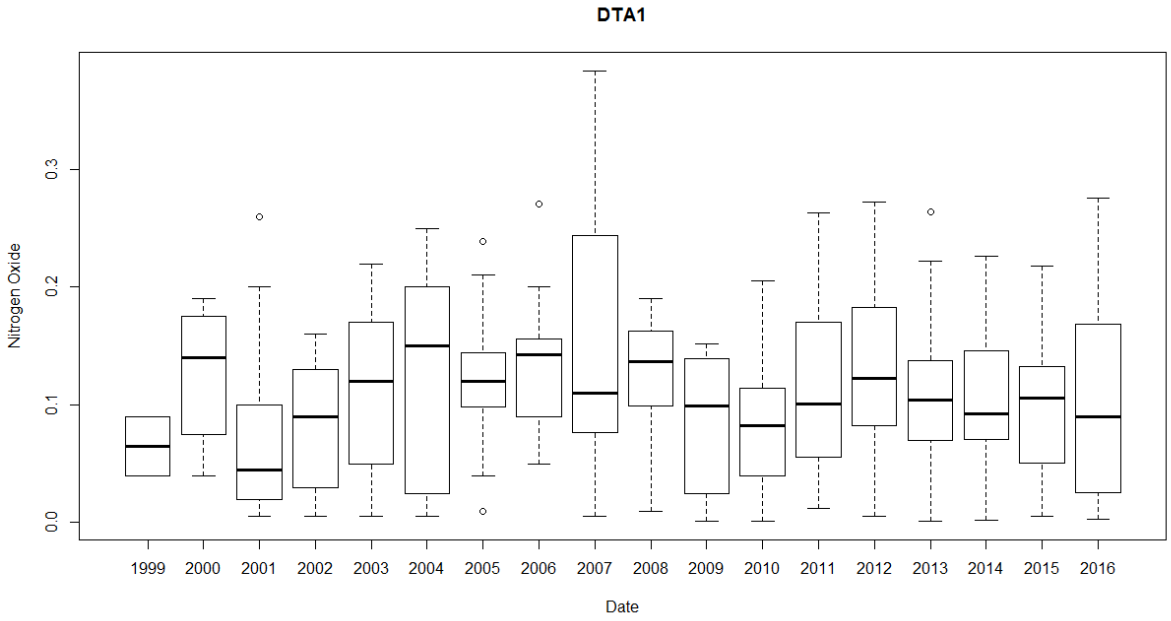

DTA1
pH (Field)
6
7
8
9
10
11
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Year

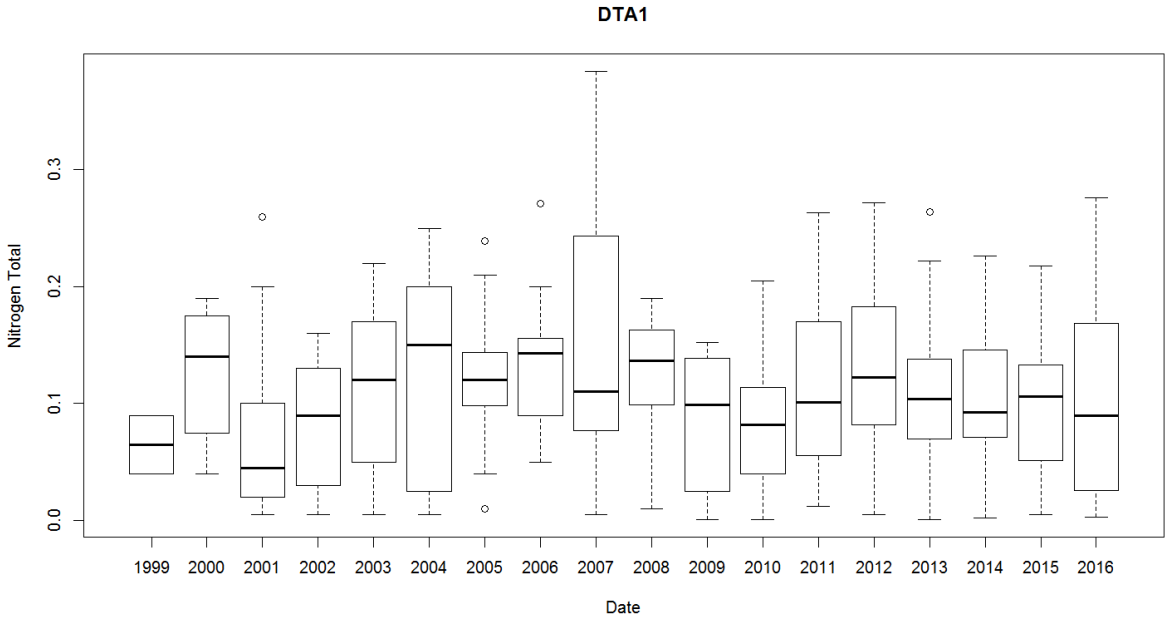

DTA1
Conductivity (mS/cm)
0.06
0.08
0.10
0.12
0.14
0.16
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

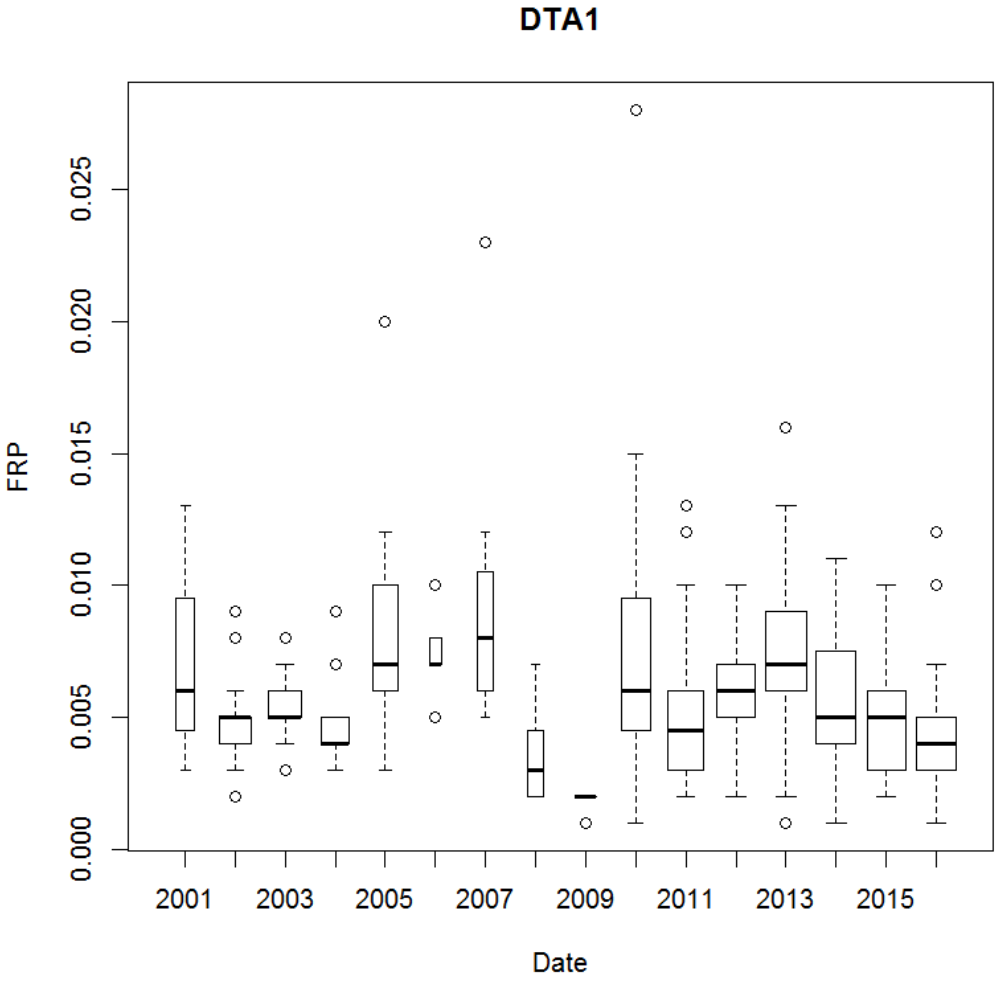

DTA1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

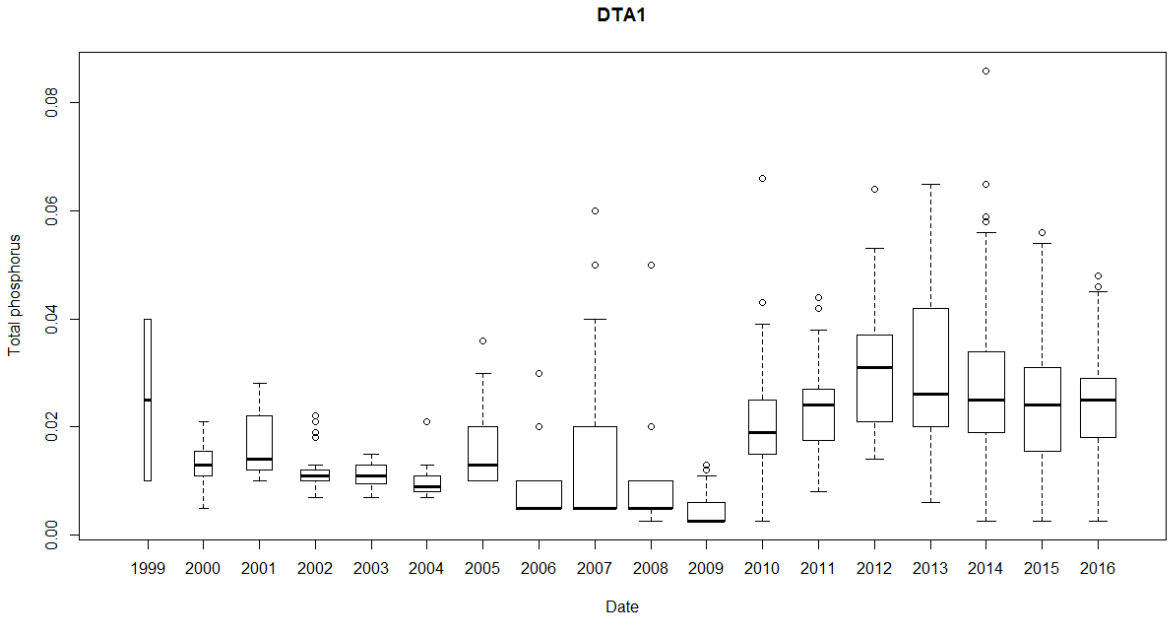

DTA1
Turbidity
0
50
100
150
200
250
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

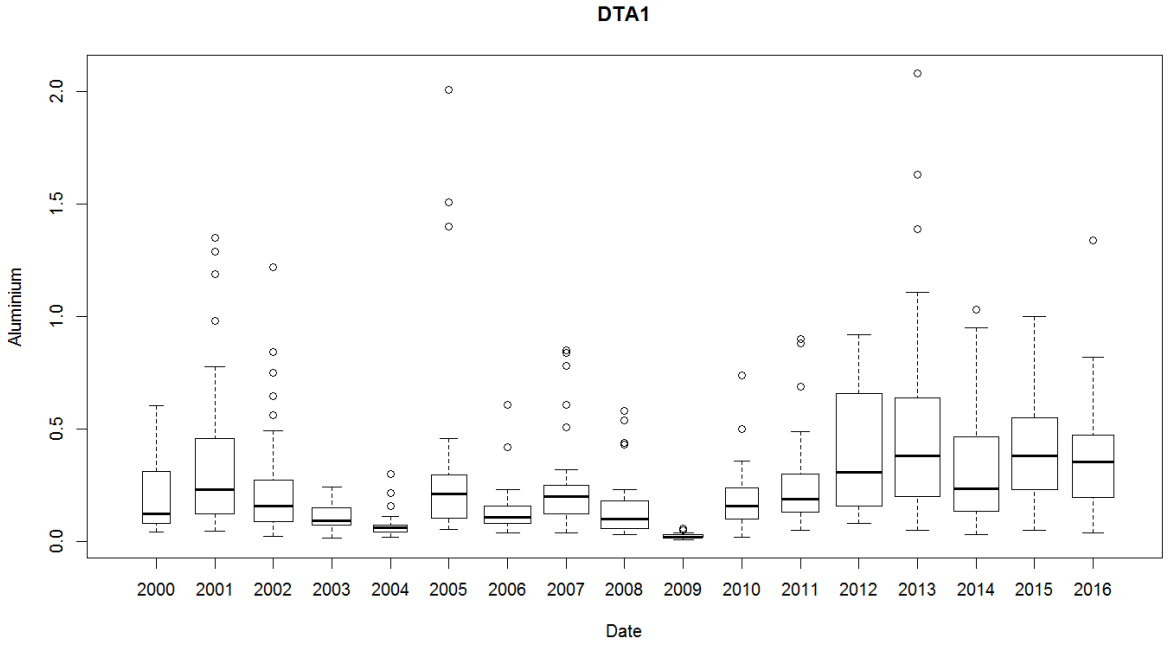

DTA1
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

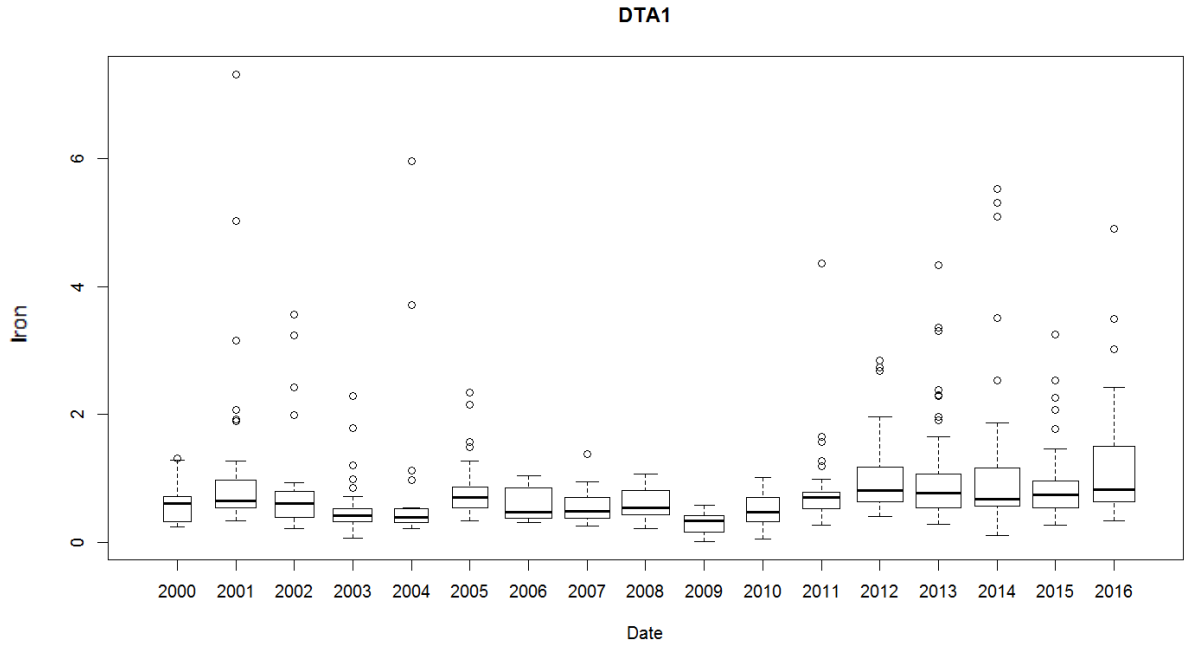

DTA1
Nitrogen Oxide
0.0
0.1
0.2
0.3
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

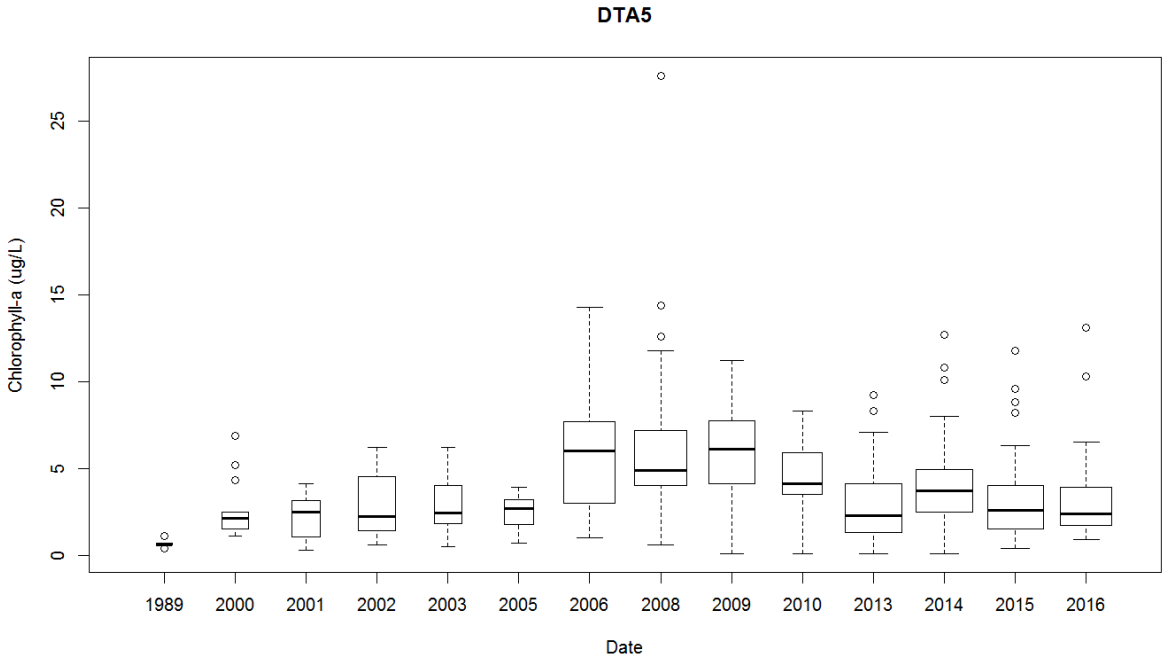

DTA1
Nitrogen Total
0.0
0.1
0.2
0.3
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

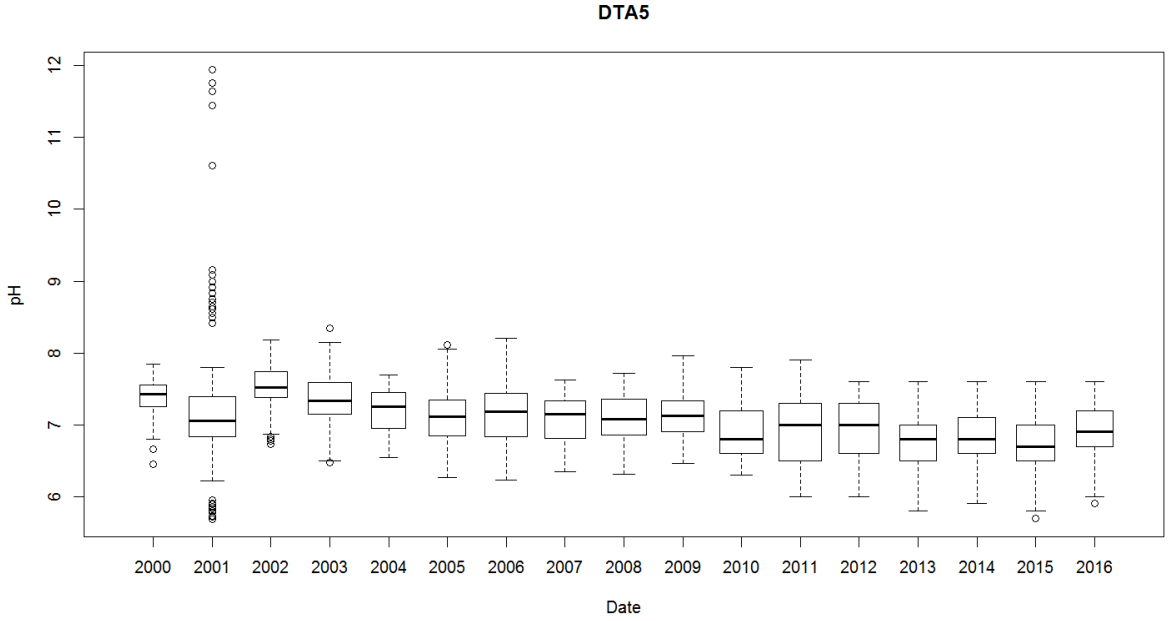

DTA1
FRP
0.000
0.005
0.010
0.015
0.020
0.025
2001
2003
2005
2007
2009
2011
2013
2015
Date

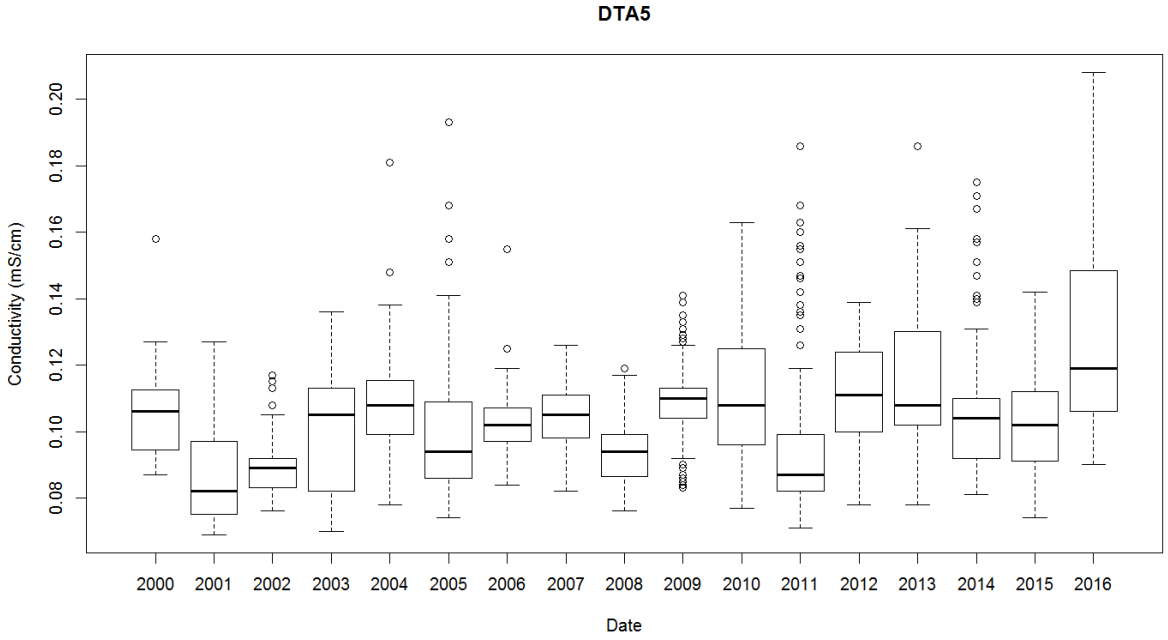

DTA1
Total phosphorus
0.00
0.02
0.04
0.06
0.08
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

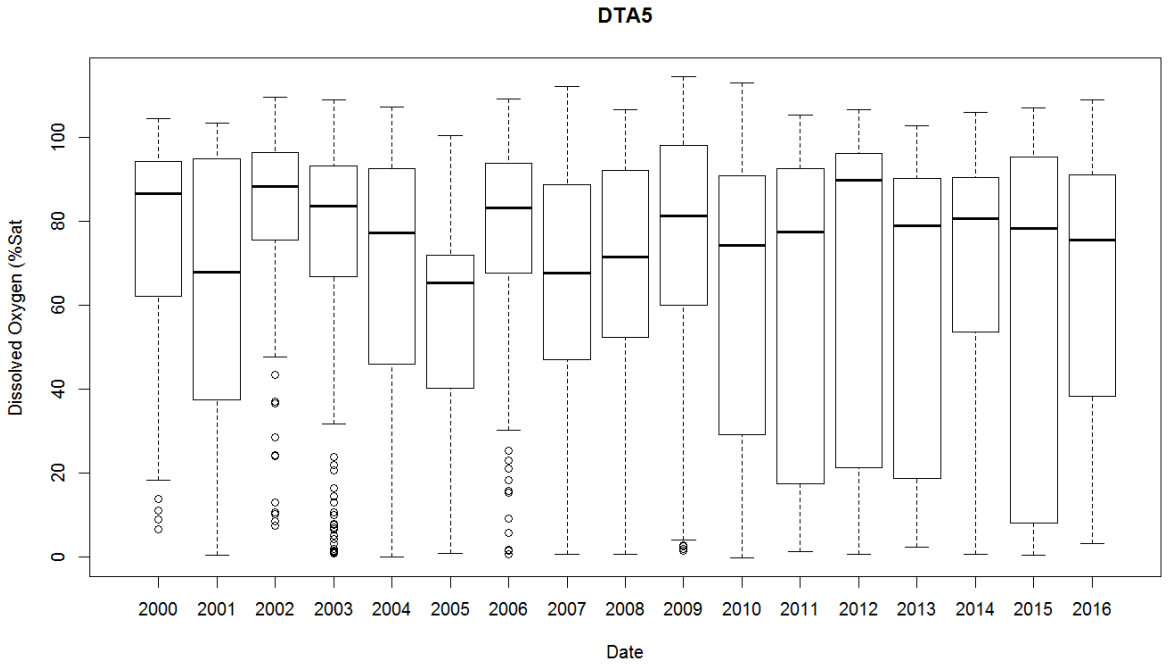

DTA1
Aluminium
0.0
0.5
1.0
1.5
2.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

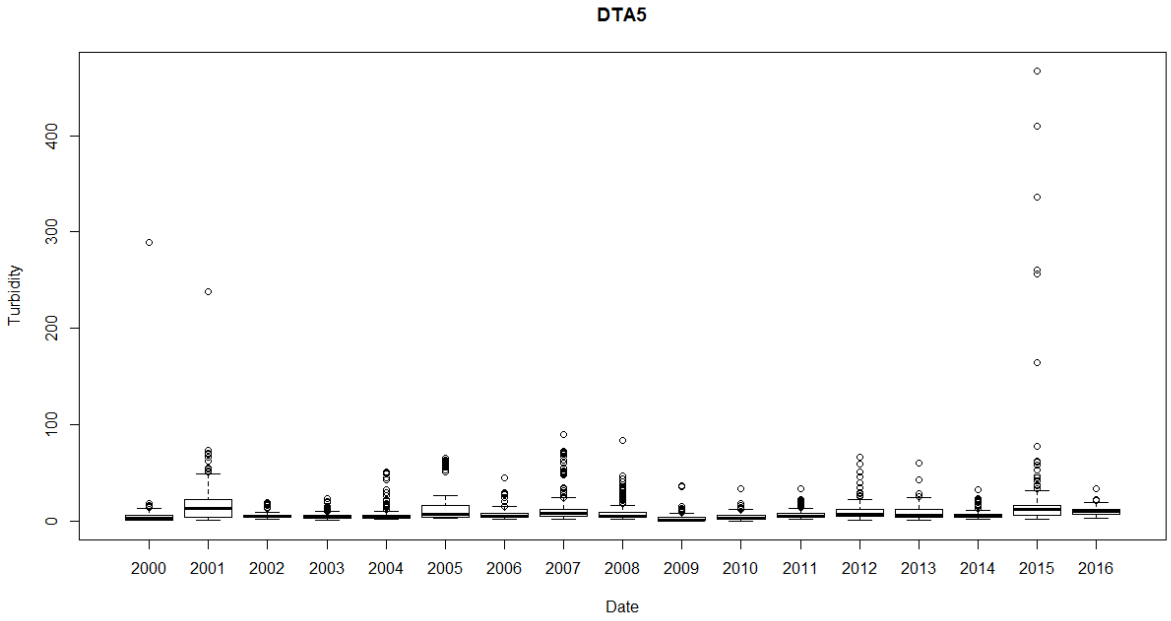

DTA1
Iron
0
2
4
6
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

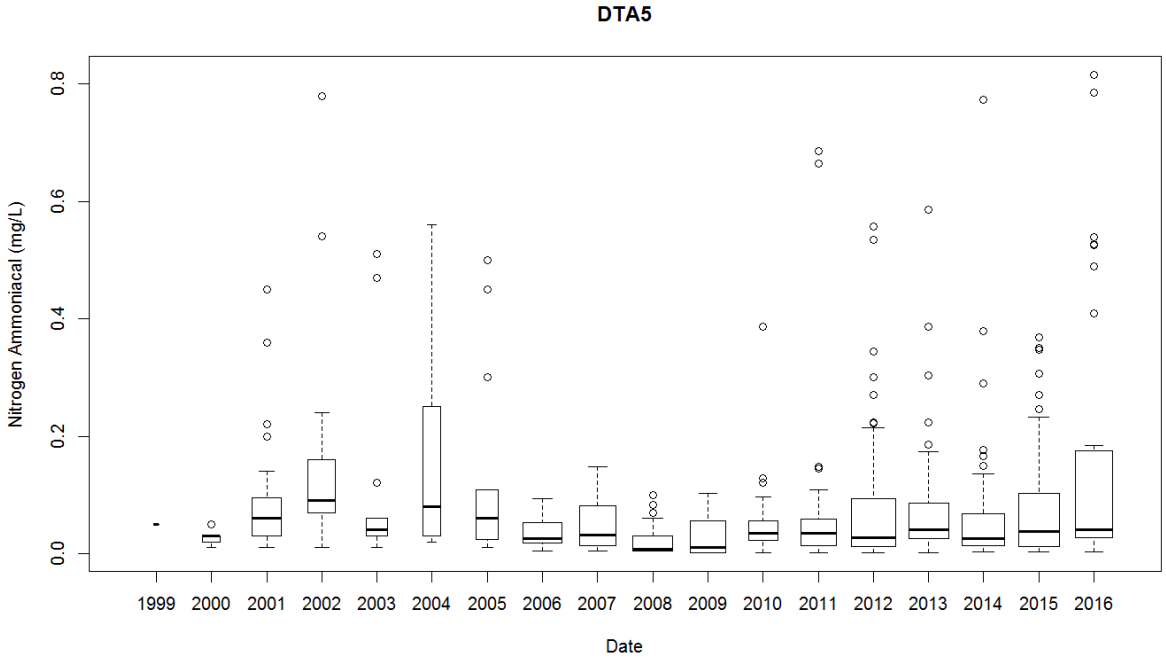

DTA5
Chlorophyll-a (ug/L)
0
5
10
15
20
25
1989
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

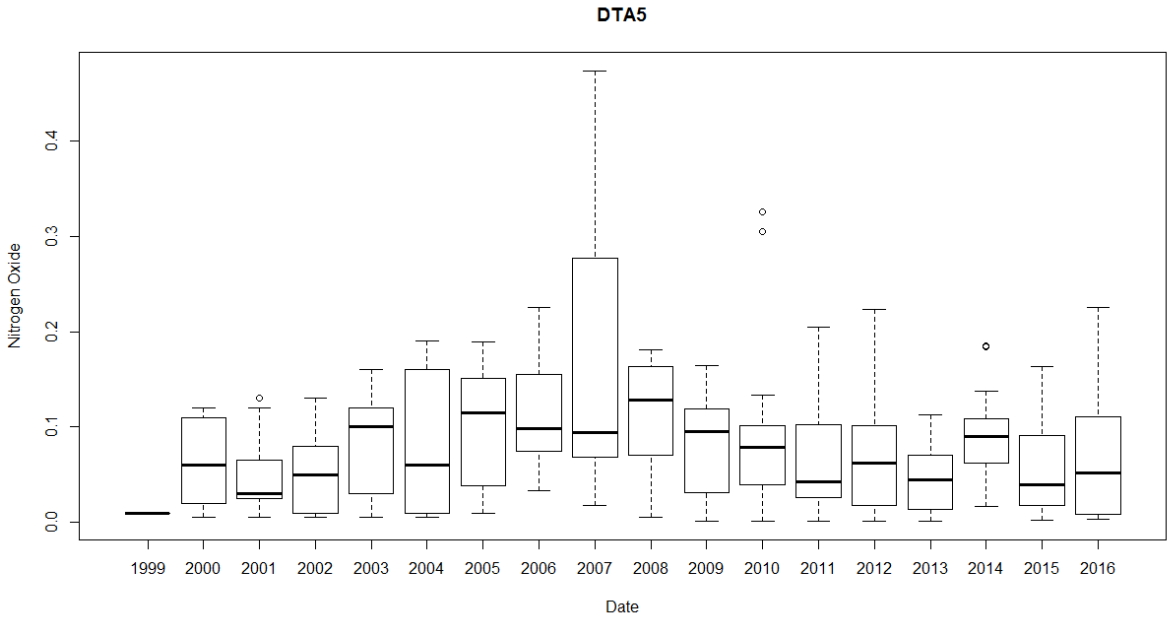

DTA5
pH
6
7
8
9
10
11
12
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

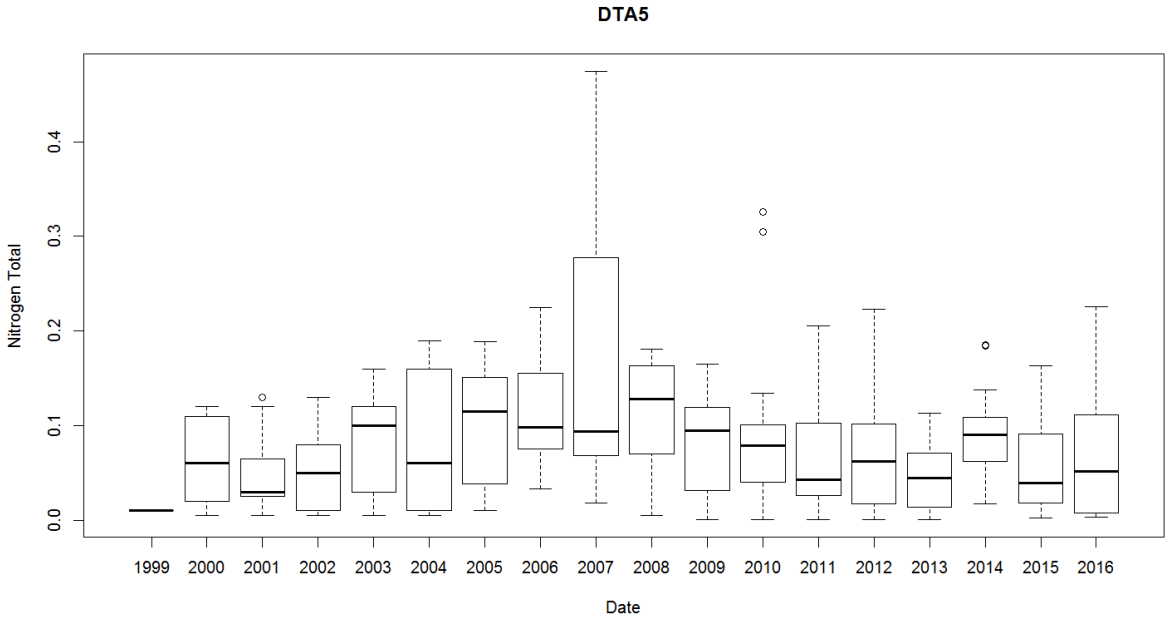

DTA5
Conductivity (mS/cm)
0.08
0.10
0.12
0.14
0.16
0.18
0.20
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

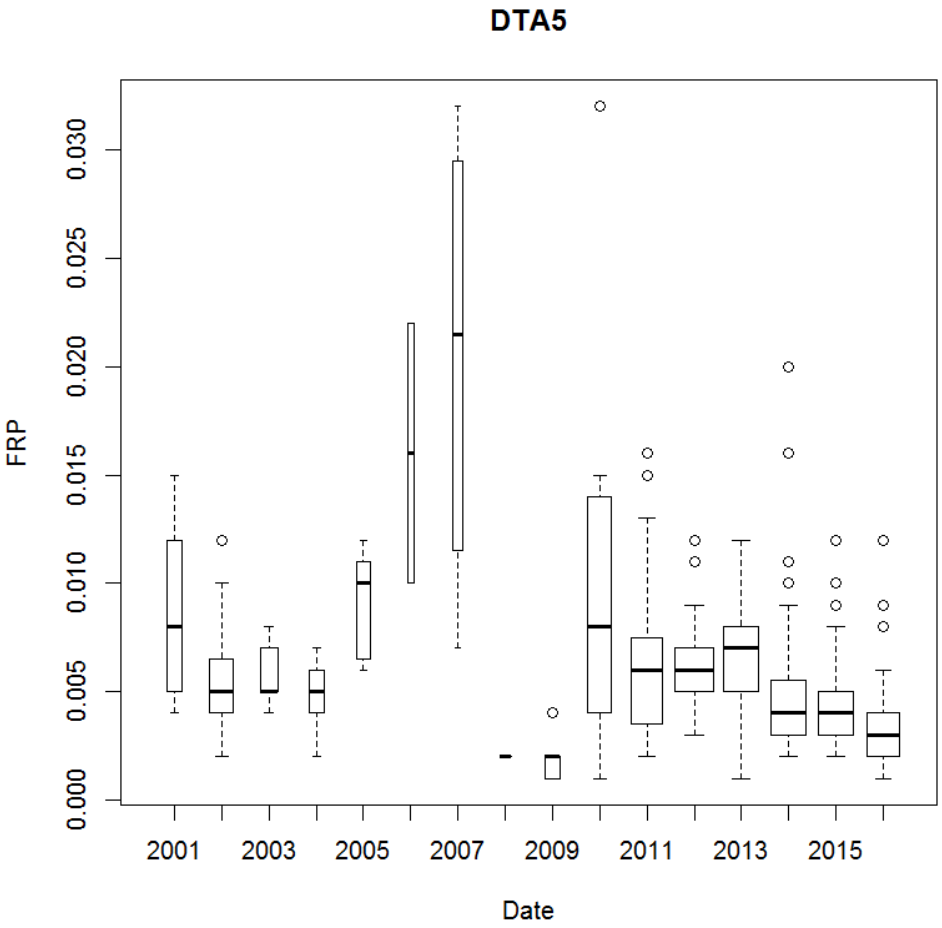

DTA5
Dissolved Oxygen (%Sat
0
20
40
60
80
100
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

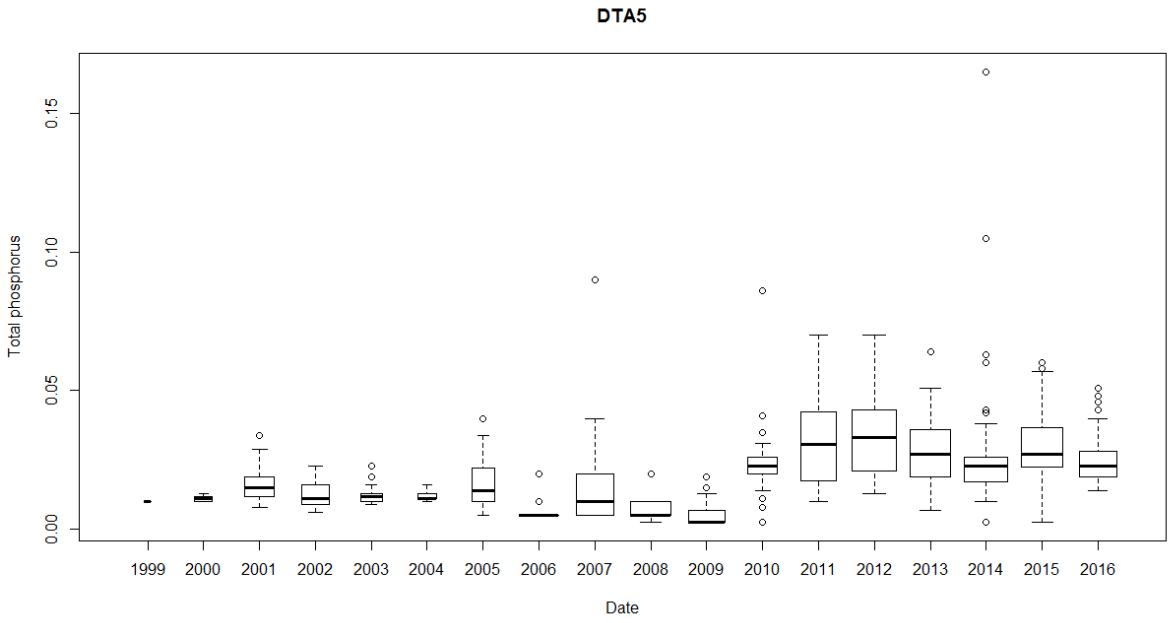

DTA5
Turbidity
0
100
200
300
400
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

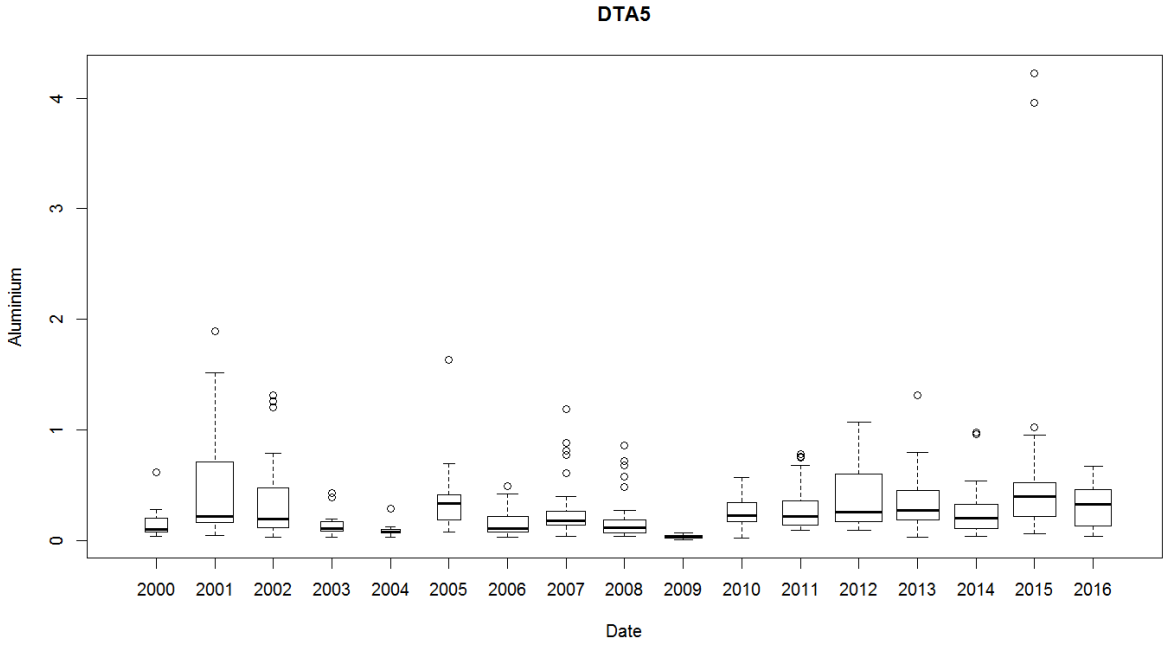

DTA5
Nitrogen Ammoniacal (mg/L)
0.0
0.2
0.4
0.6
0.8
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

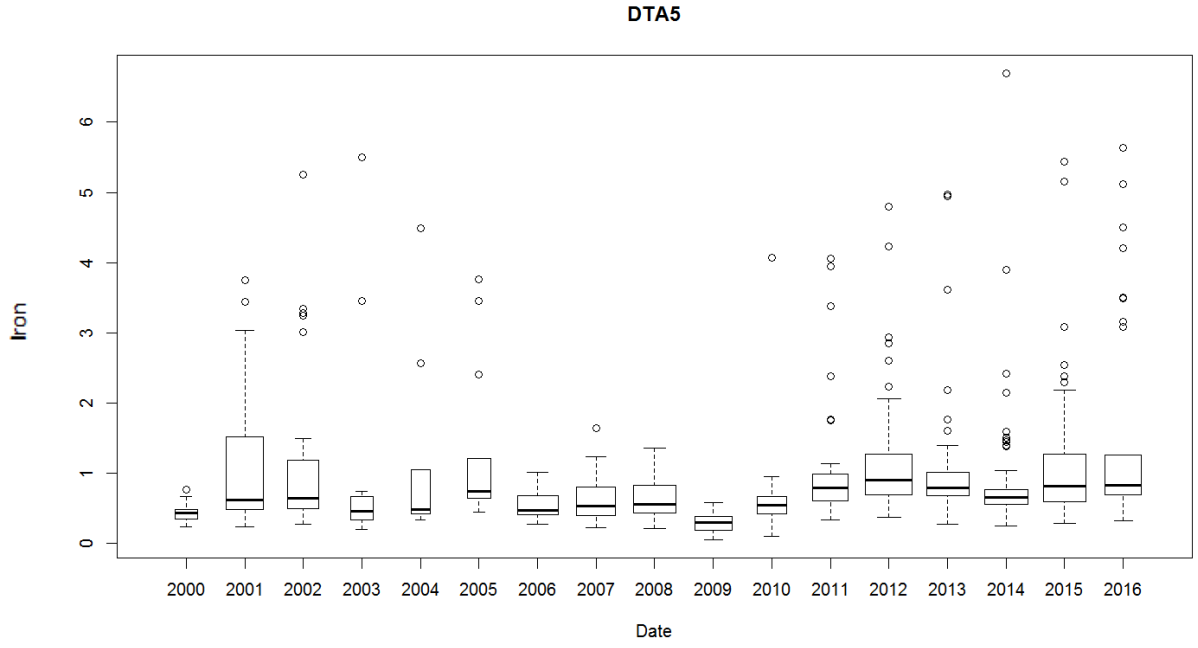

DTA5
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

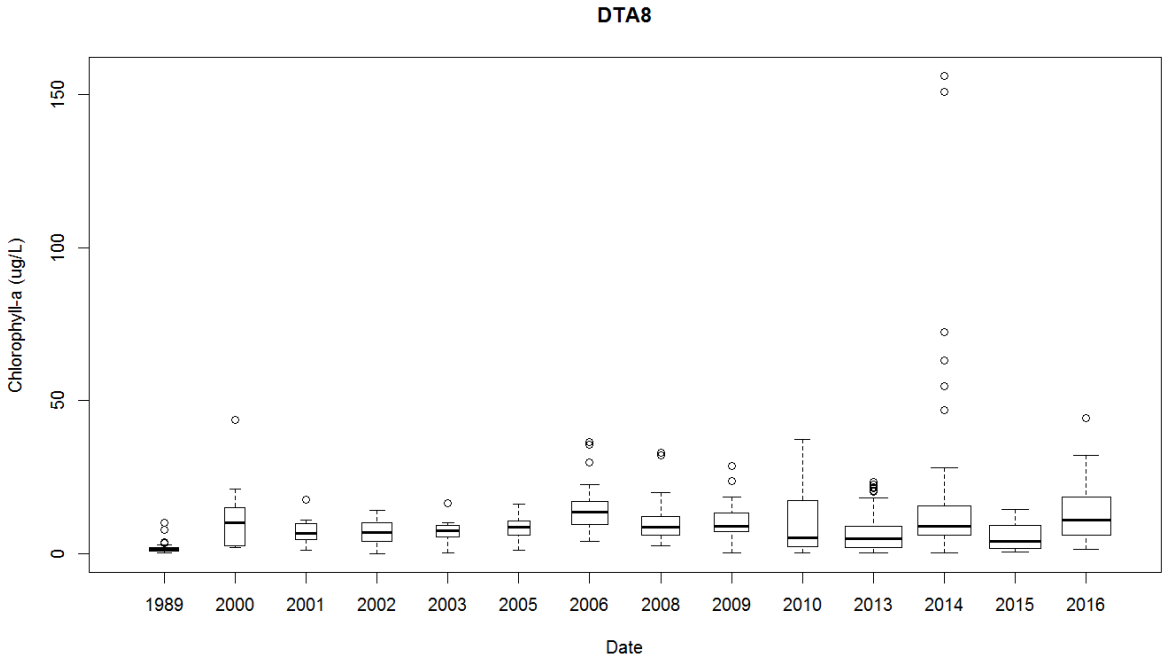

DTA5
Nitrogen Total
0.0
0.1
0.2
0.3
0.4
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

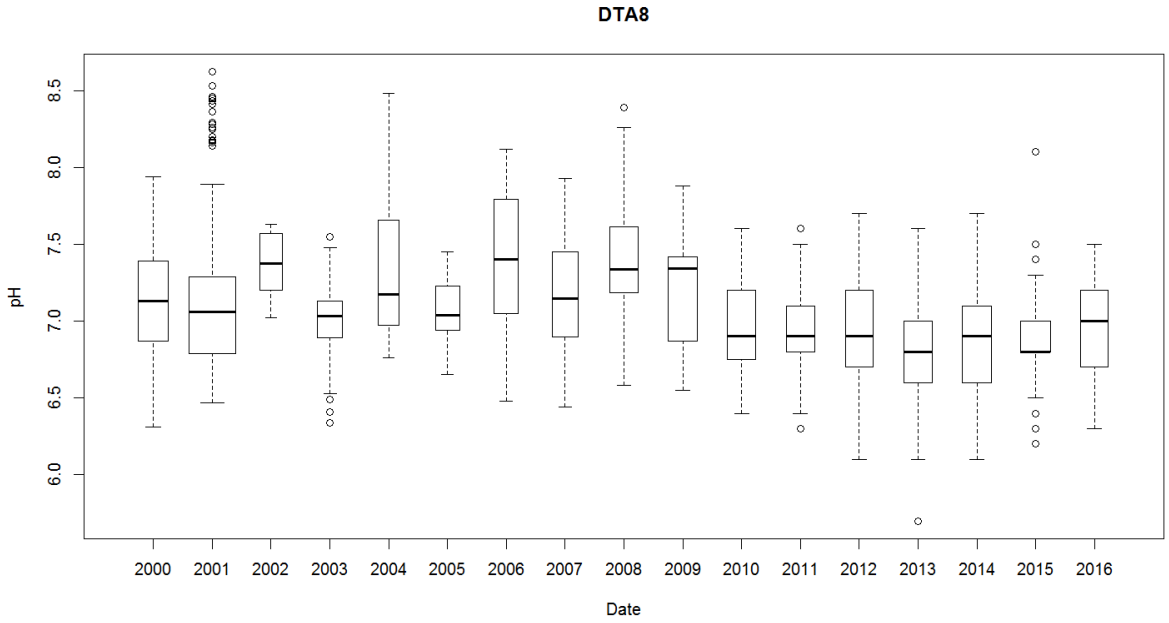

DTA5
FRP
0.000
0.005
0.010
0.015
0.020
0.025
0.030
2001
2003
2005
2007
2009
2011
2013
2015
Date

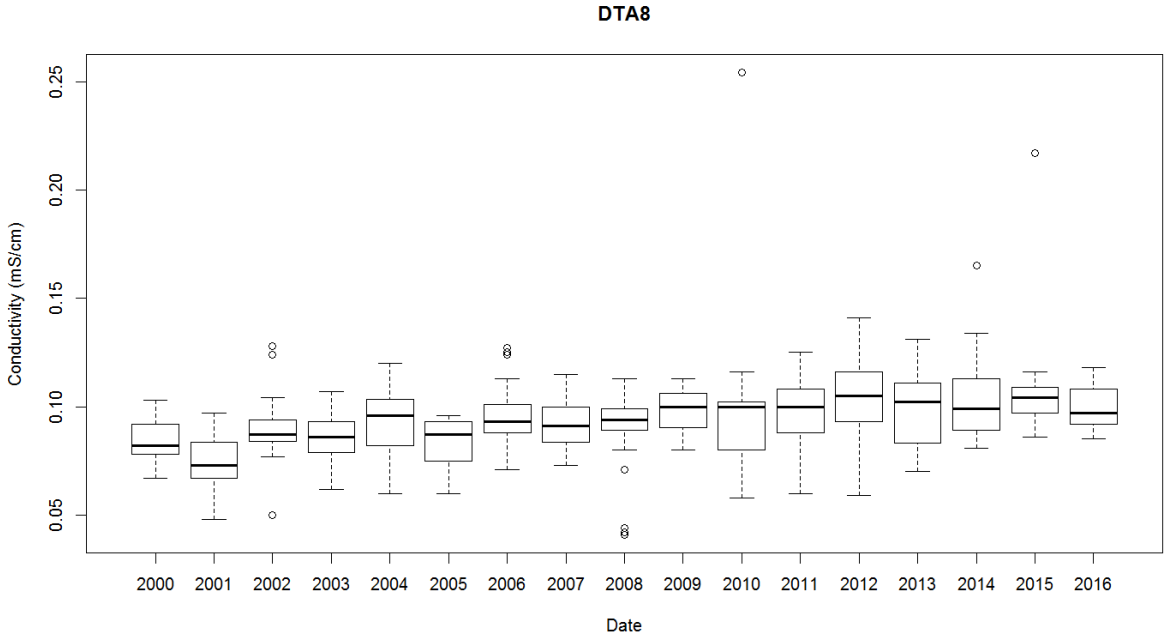

DTA5
Total phosphorus
0.00
0.05
0.10
0.15
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

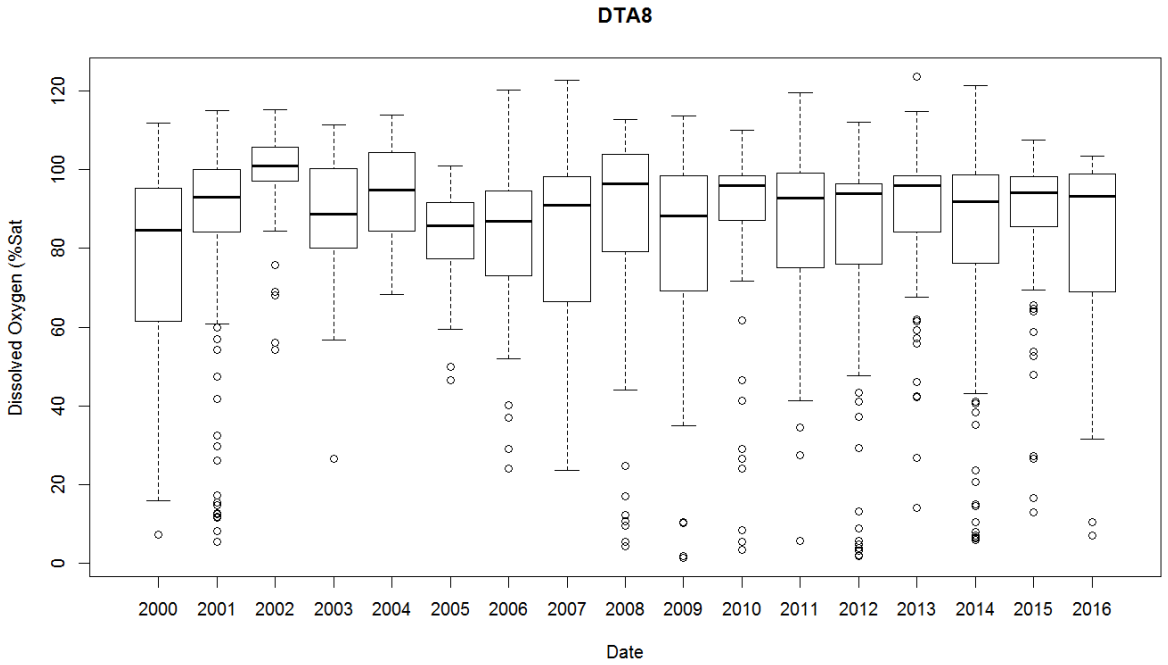

DTA5
Aluminium
0
1
2
3
4
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

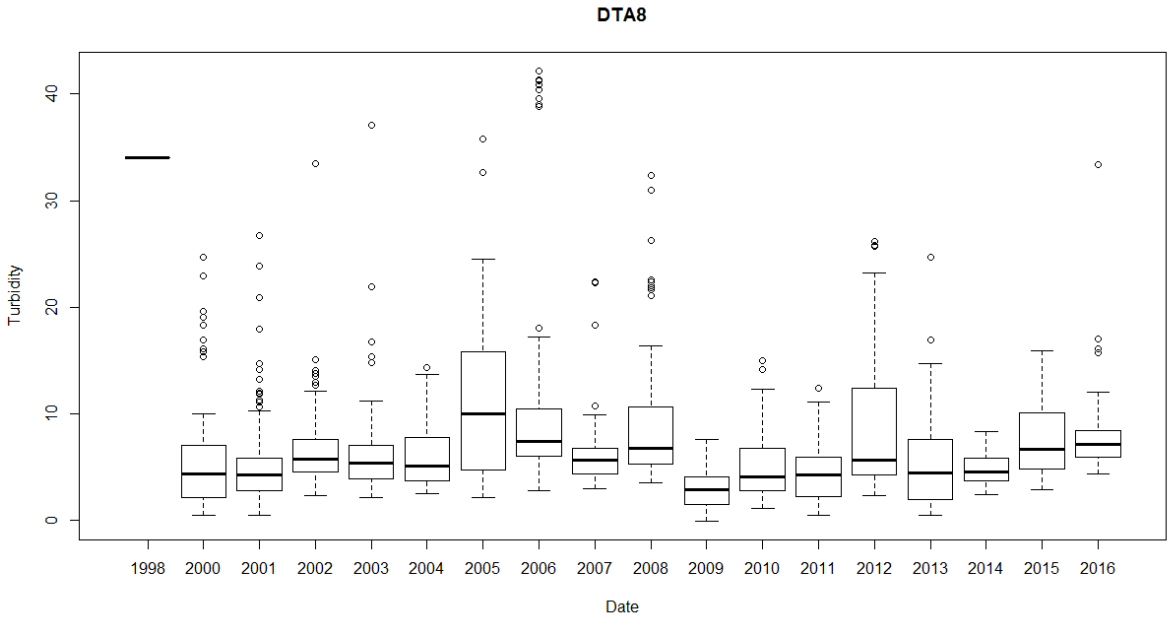

DTA5
Iron
0
1
2
3
4
5
6
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

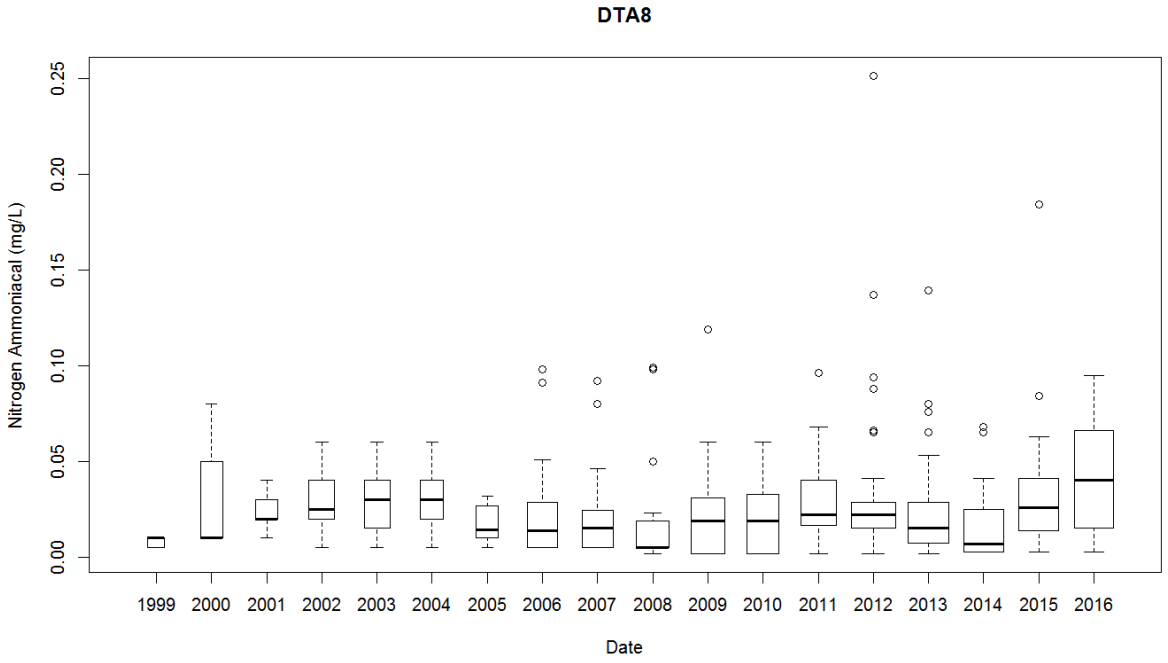

DTA8
Chlorophyll-a (ug/L)
0
50
100
150
1989
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

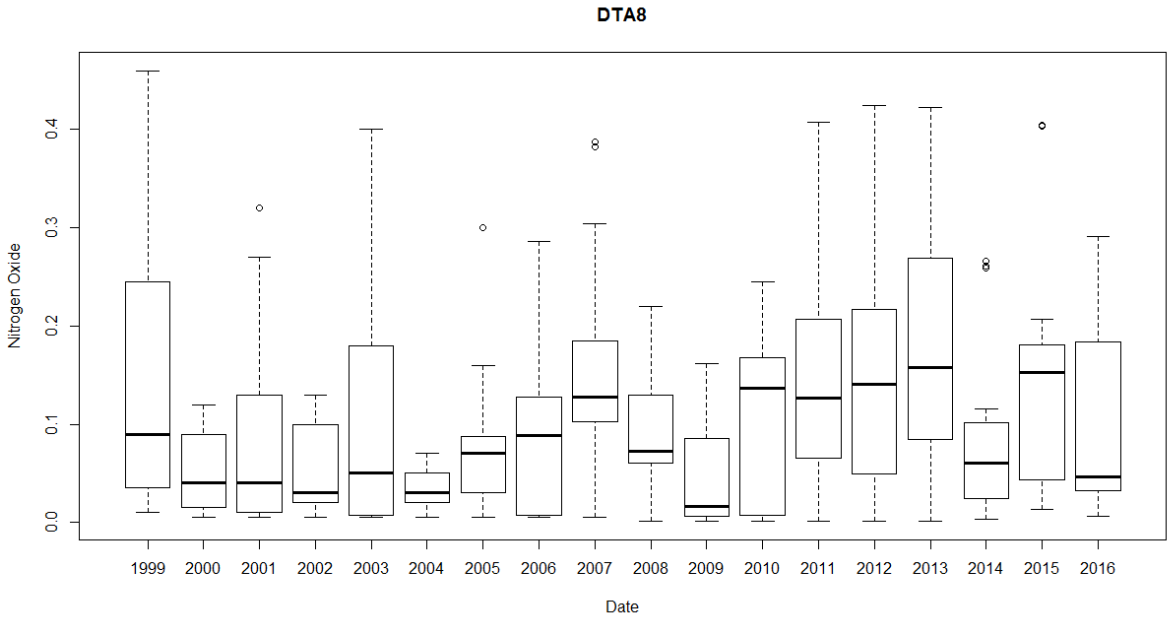

DTA8
pH
6.0
6.5
7.0
7.5
8.0
8.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

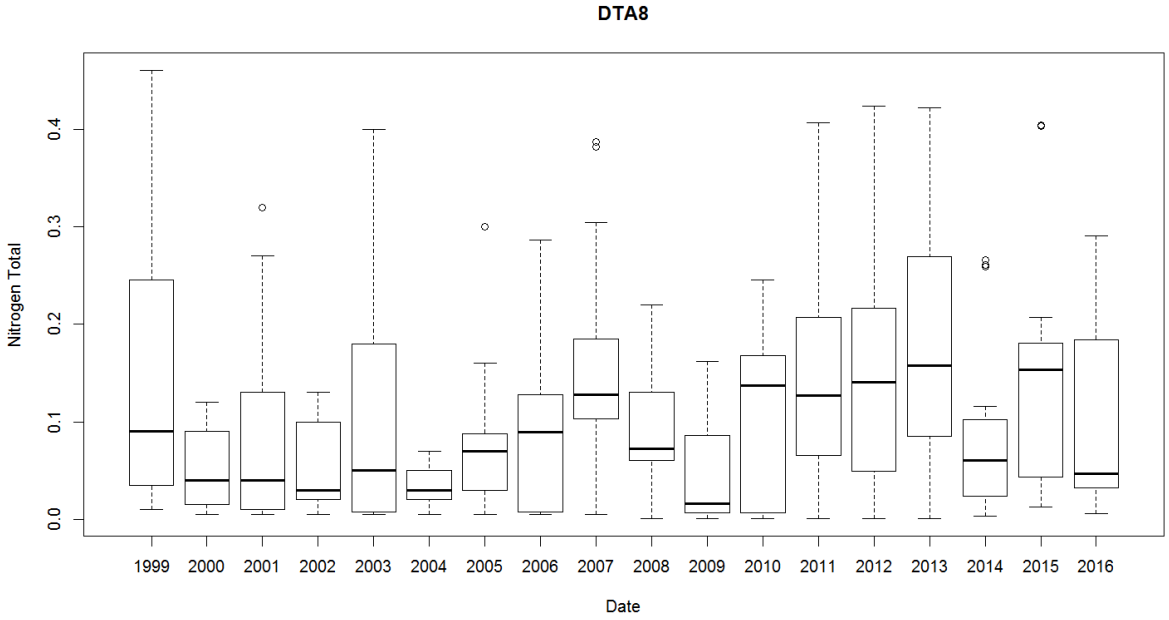

DTA8
Conductivity (mS/cm)
0.05
0.10
0.15
0.20
0.25
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

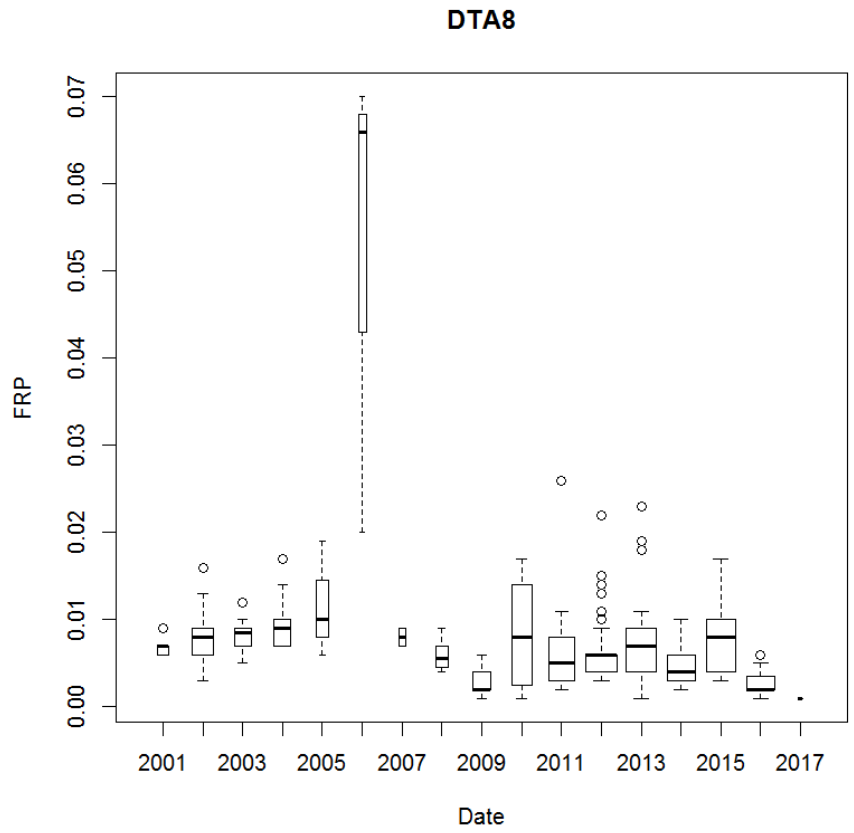

DTA8
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

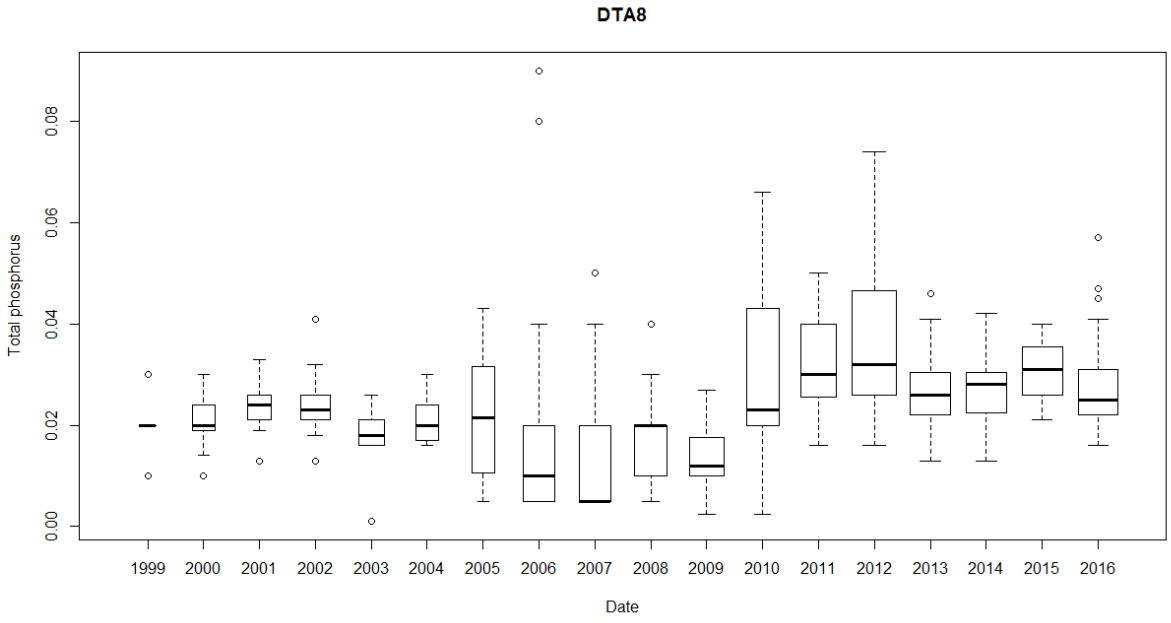

DTA8
Turbidity
0
10
20
30
40
1998
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

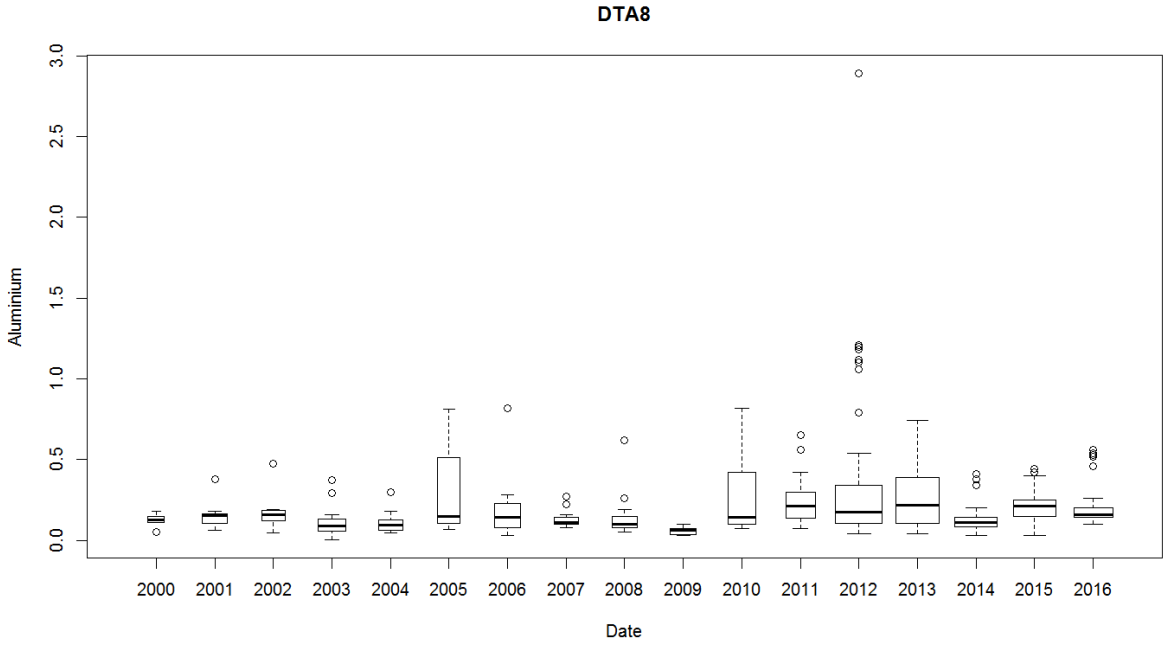

DTA8
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

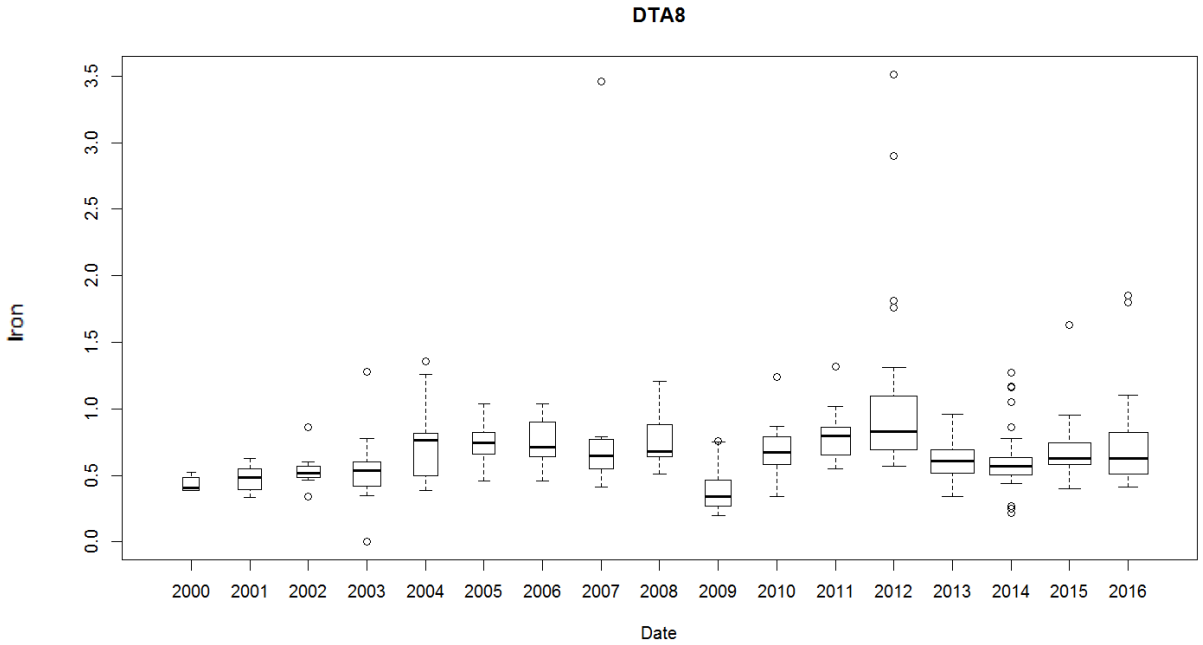

DTA8
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date


DTA8
Nitrogen Total
0.0
0.1
0.2
0.3
0.4
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

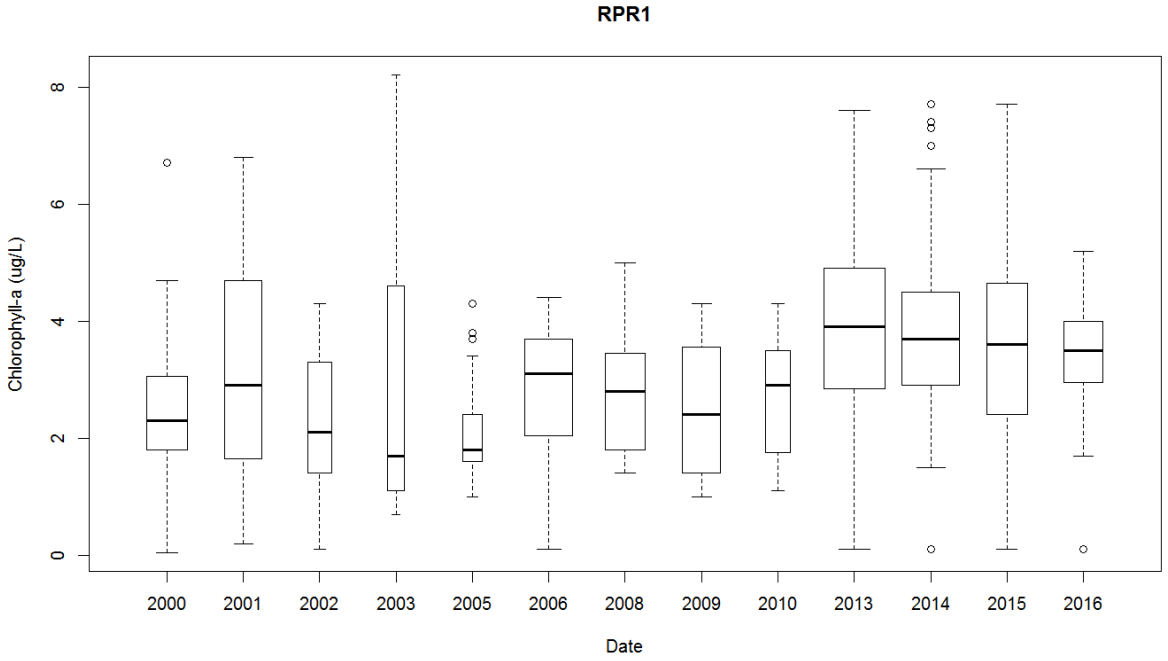

DTA8
FRP
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
2001
2003
2005
2007
2009
2011
2013
2015
2017
Date

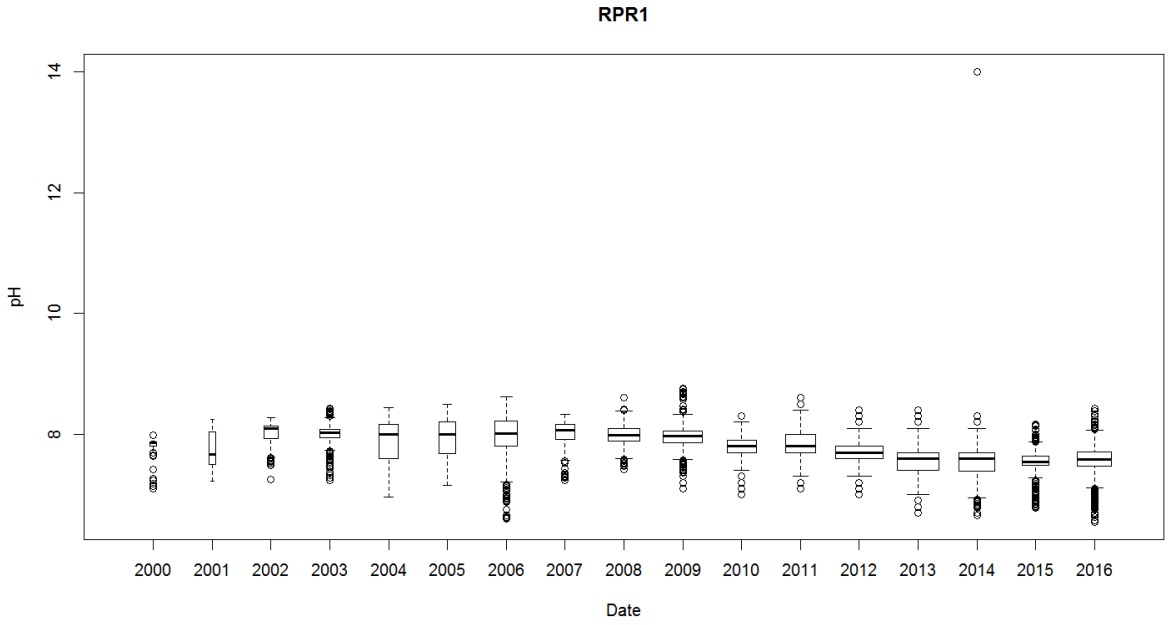

DTA8
Total phosphorus
0.00
0.02
0.04
0.06
0.08
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

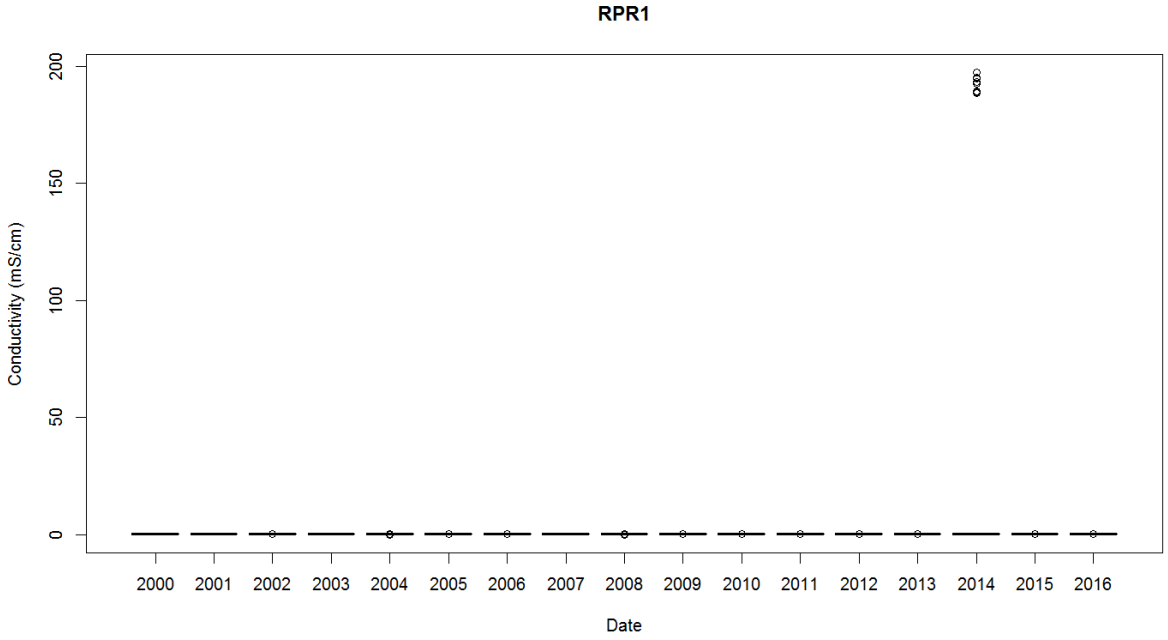

DTA8
Aluminium
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

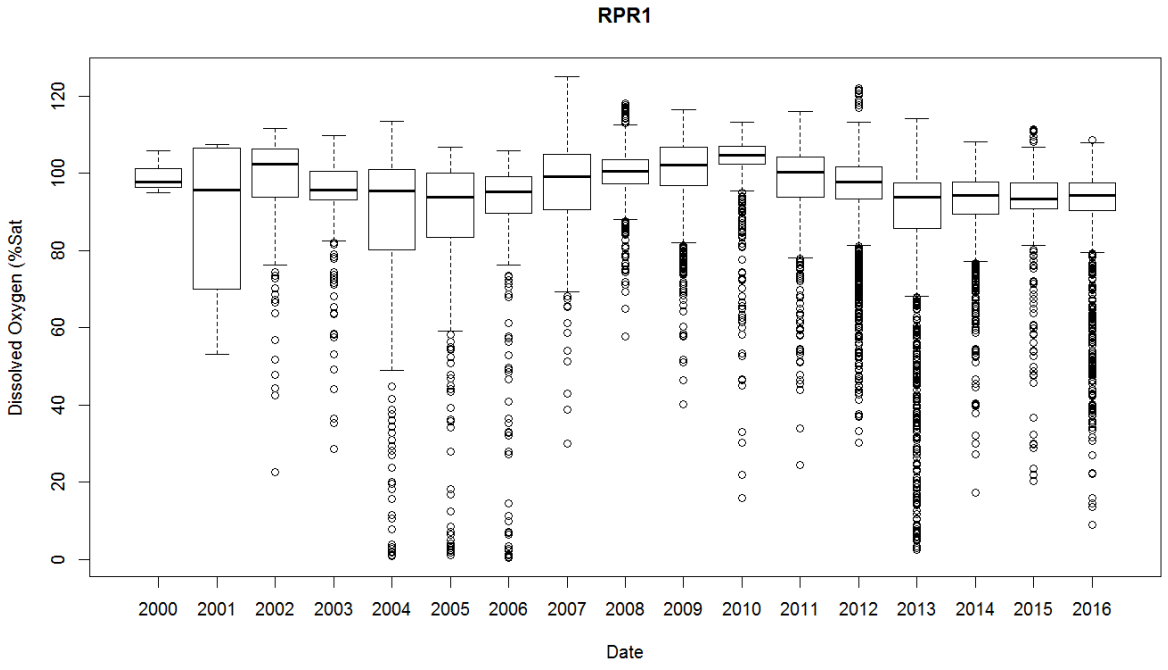

DTA8
Iron
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

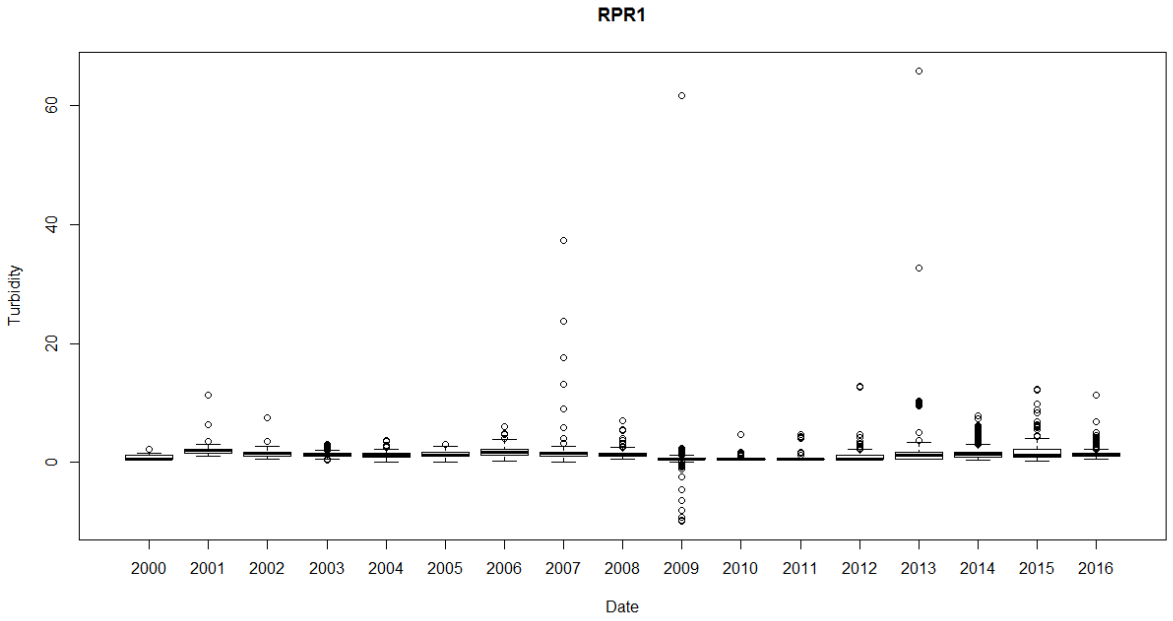
8.6 Prospect storage sites

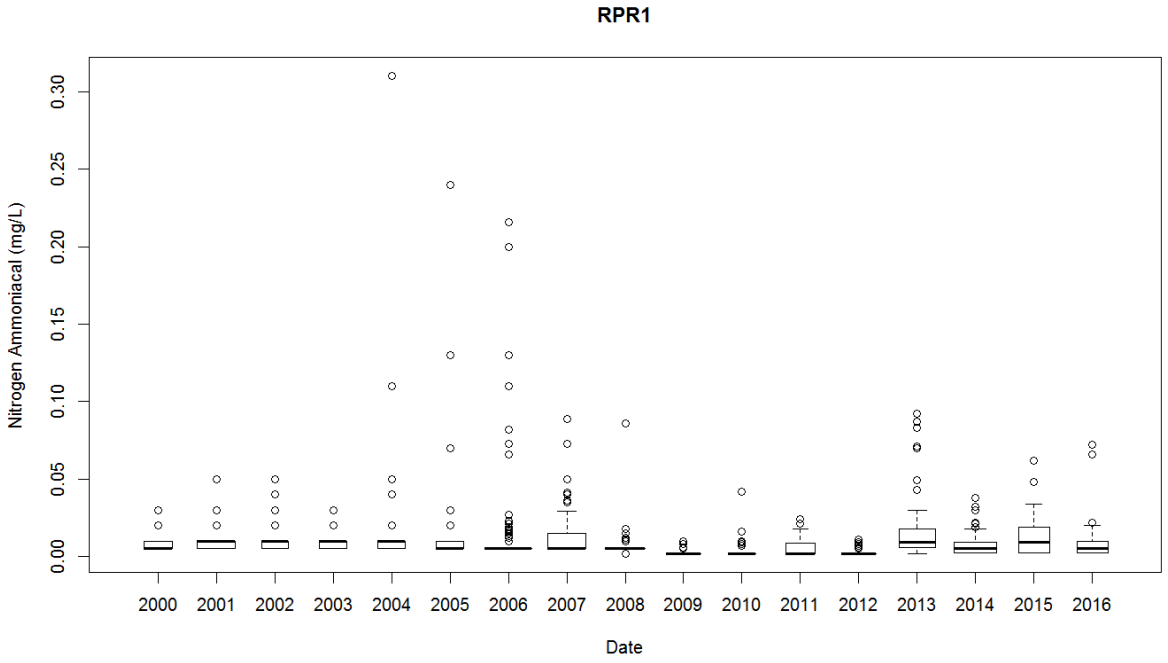


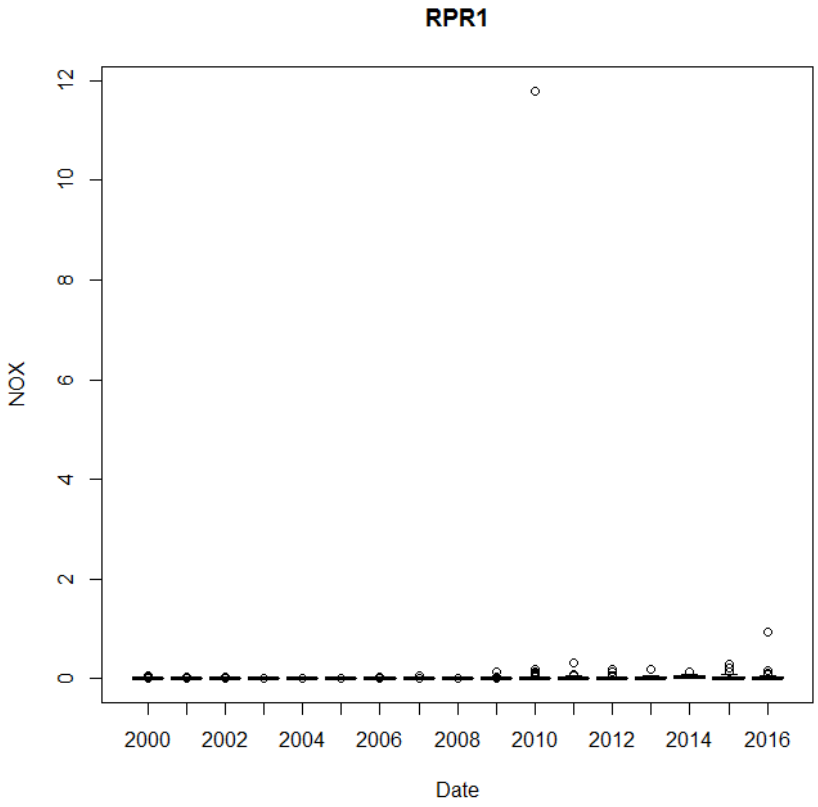


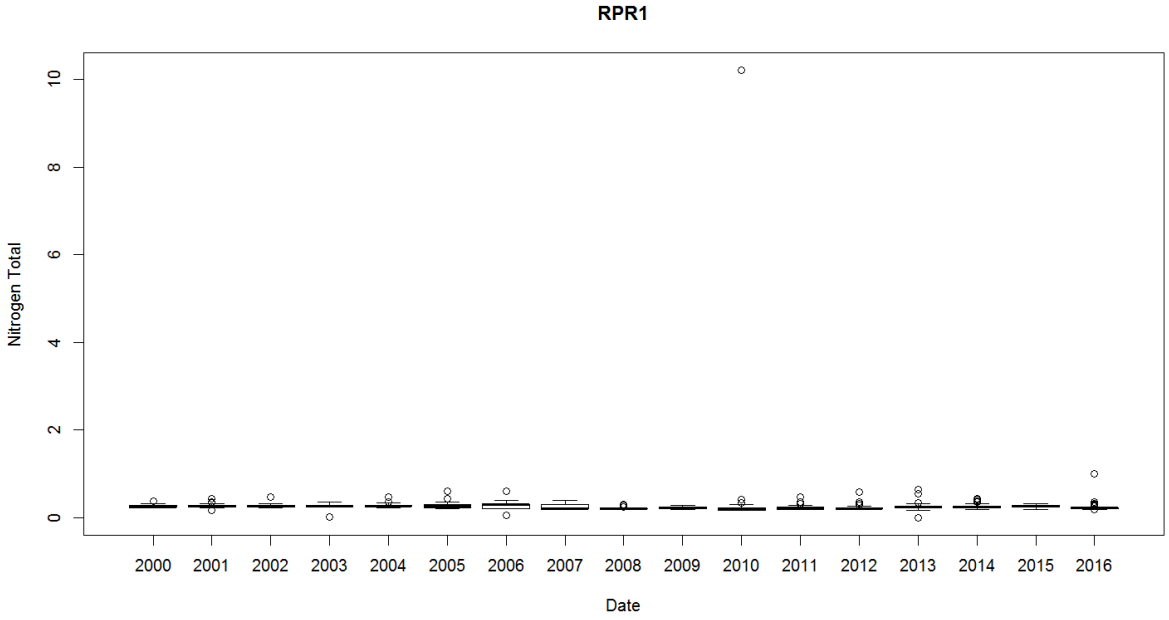

RPR1
Conductivity (mS/cm)
0
50
100
150
200
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

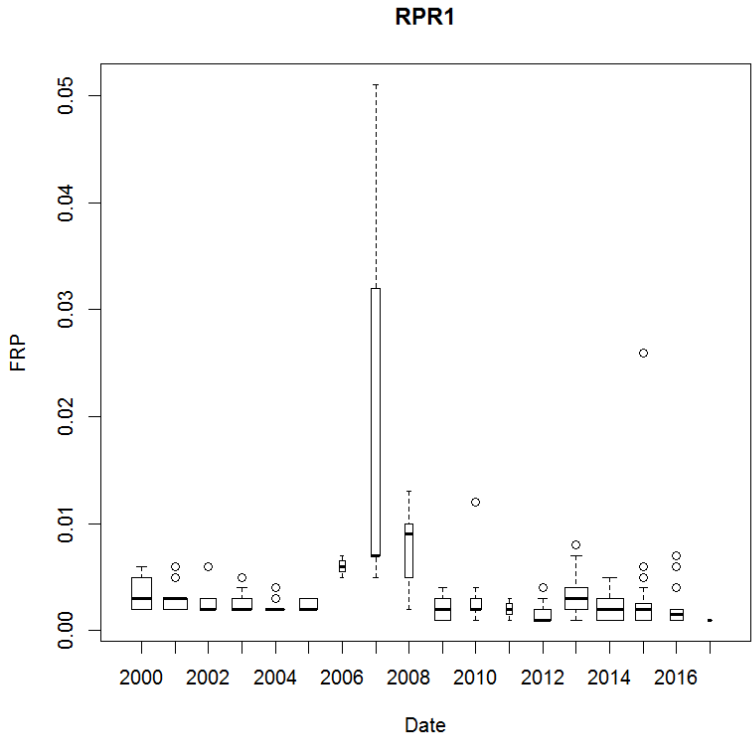

RPR1
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

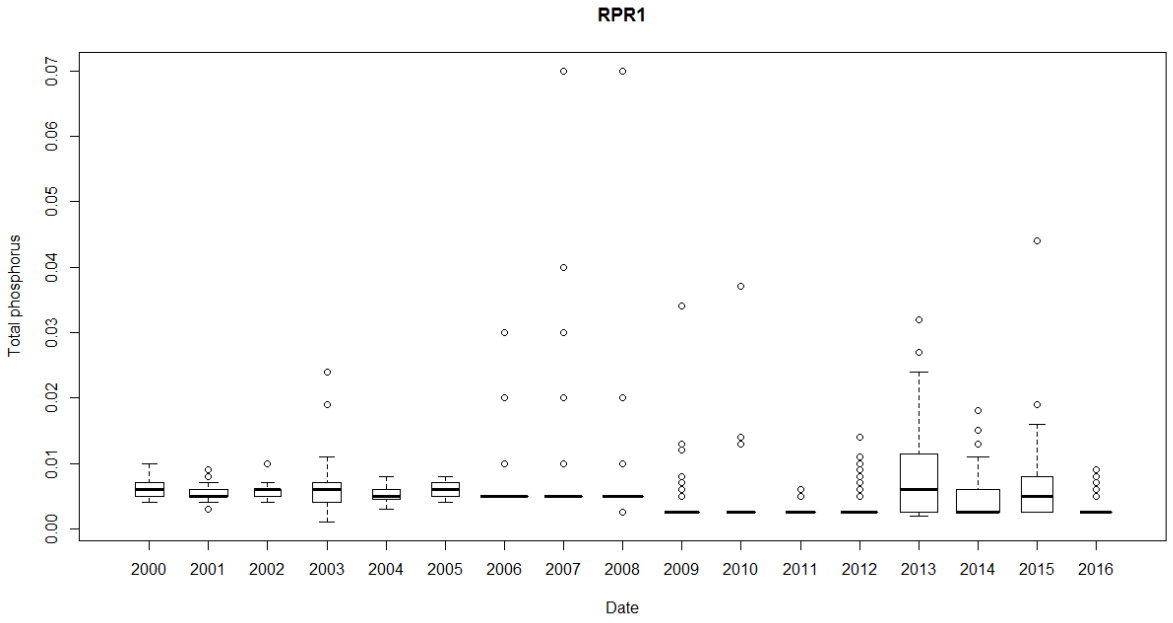

RPR1
Turbidity
0
20
40
60
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

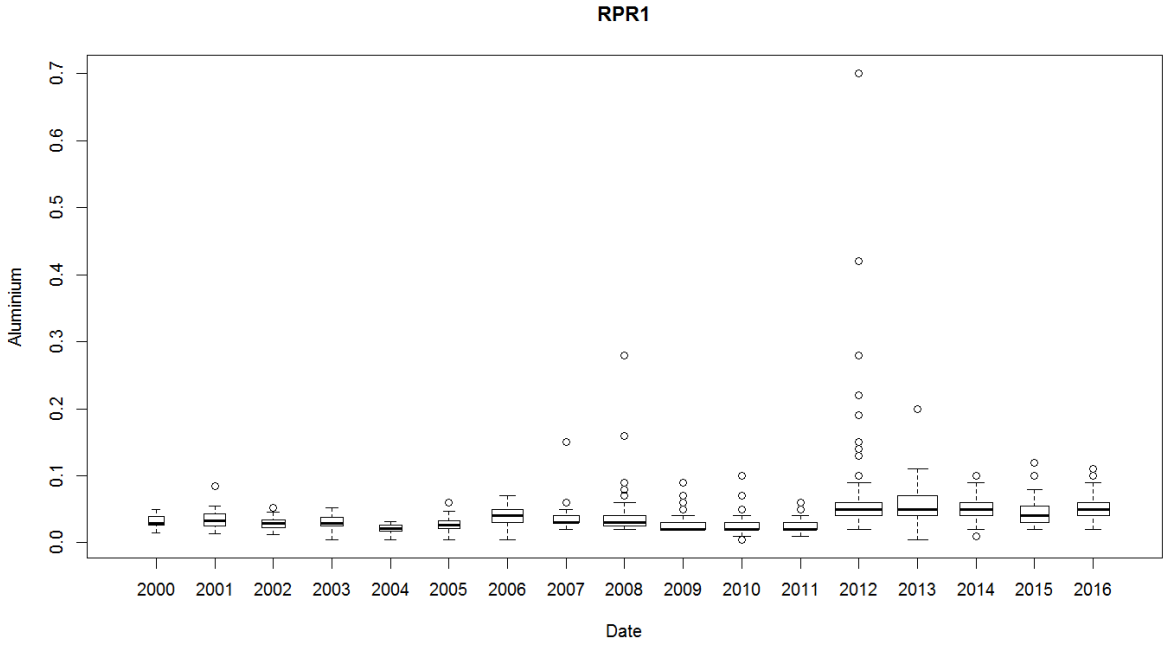

RPR1
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

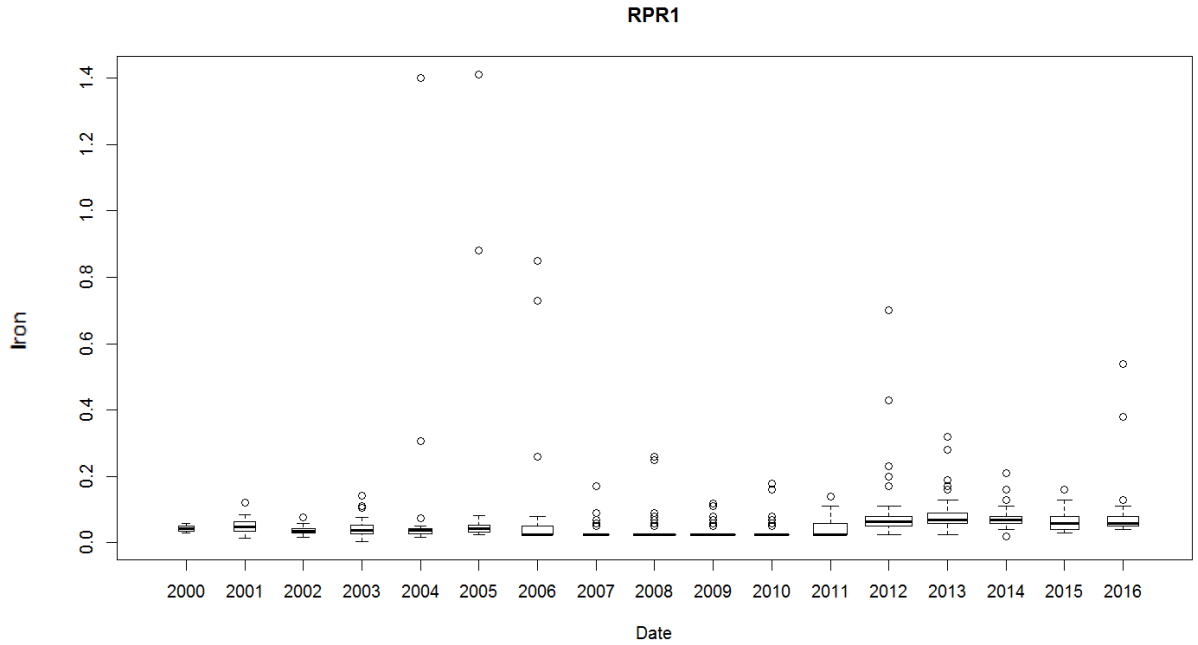

RPR1
NOX
0
2
4
6
8
10
12
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

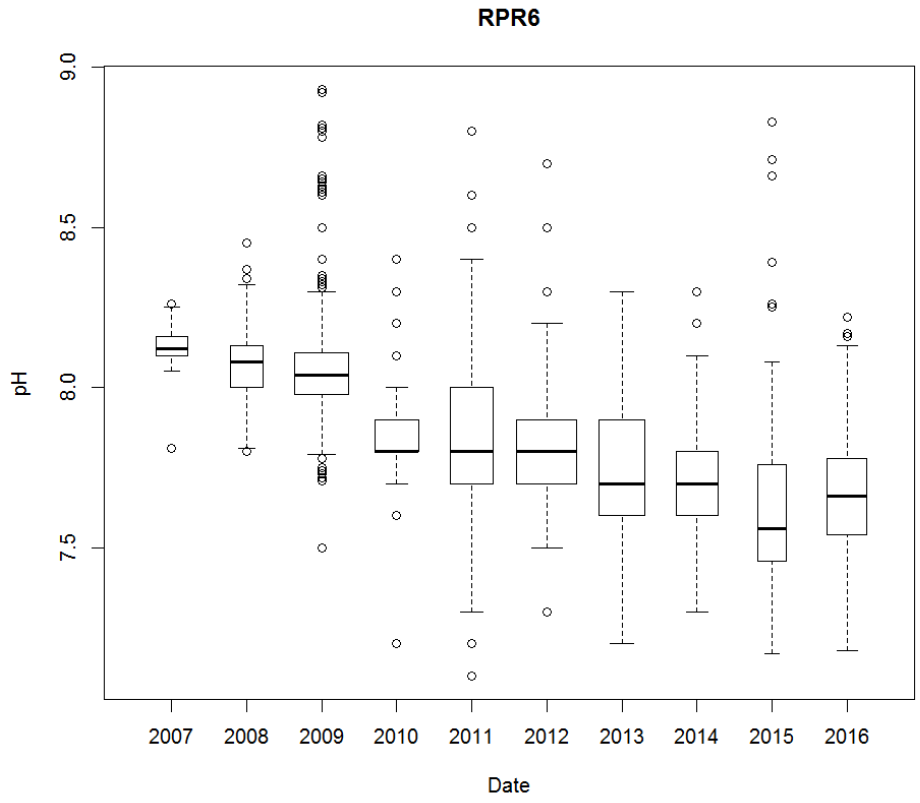

RPR1
Nitrogen Total
0
2
4
6
8
10
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

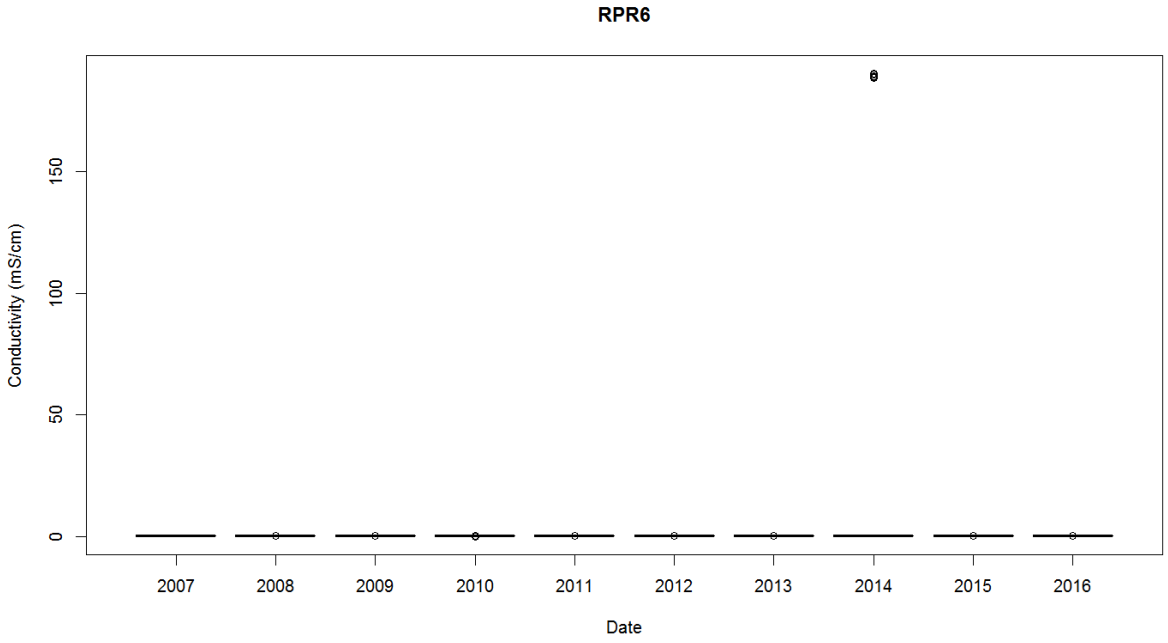

RPR1
FRP
0.00
0.01
0.02
0.03
0.04
0.05
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

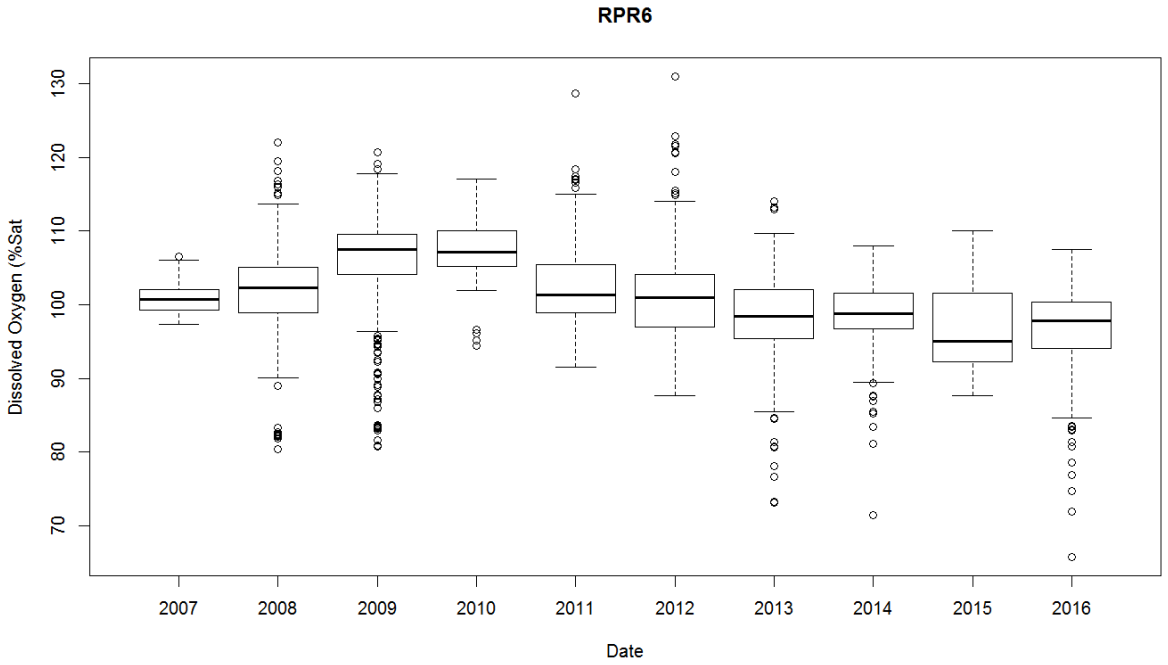

RPR1
Total phosphorus
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

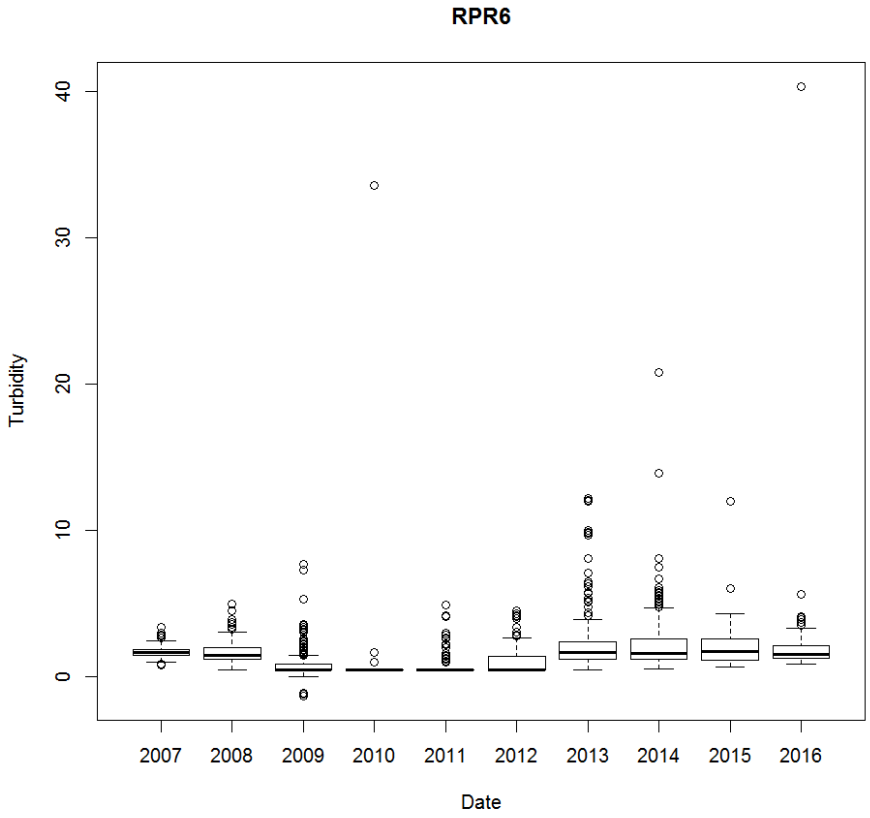

RPR1
Aluminium
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

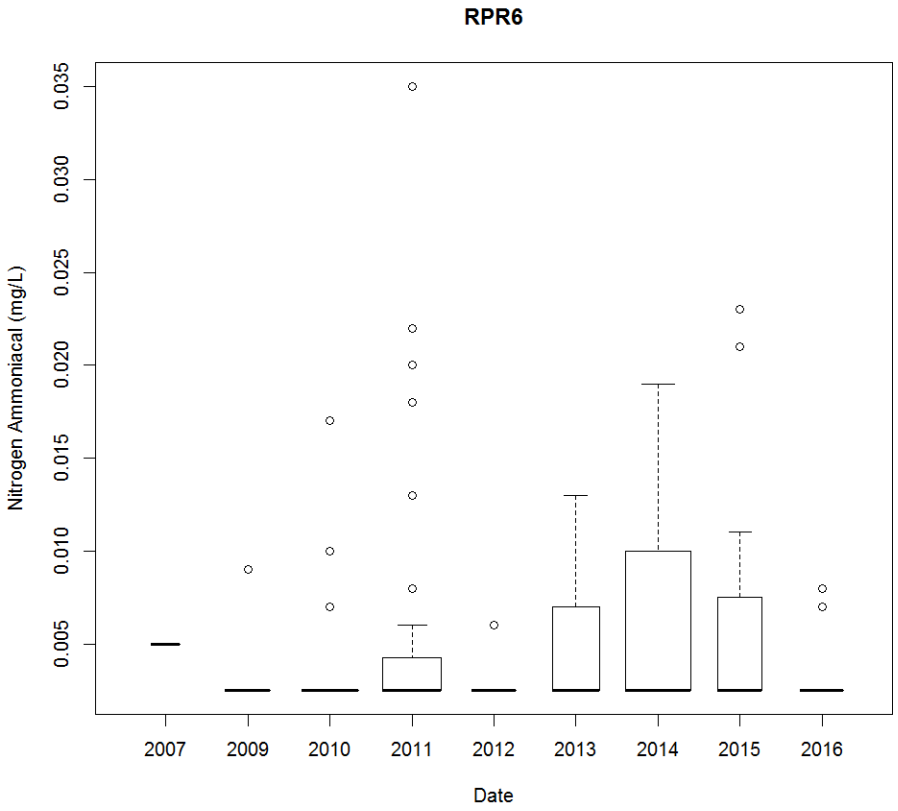

RPR1
Iron
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

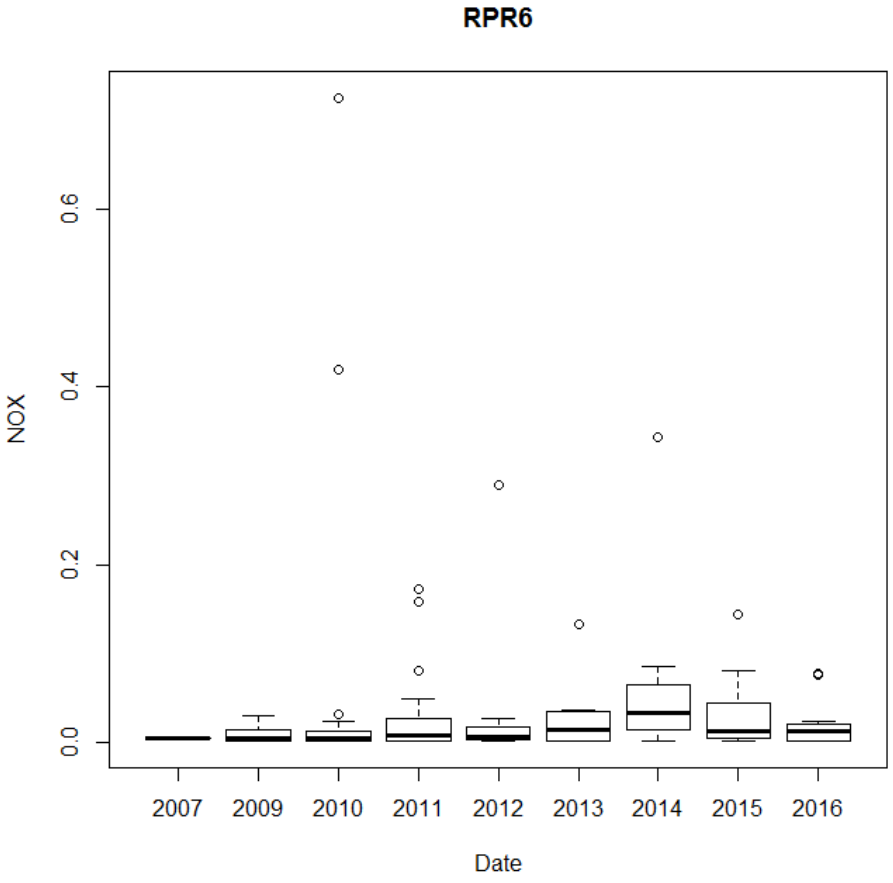

RPR6
pH
9.0
8.5
8.0
7.5
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

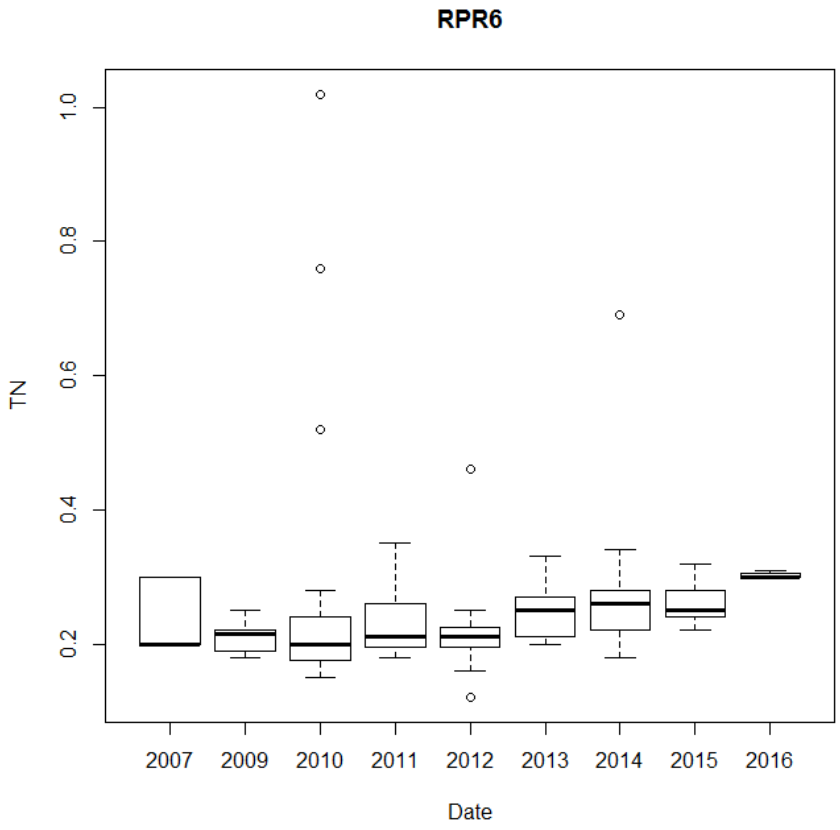

RPR6
Conductivity (mS/cm)
150
100
50
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

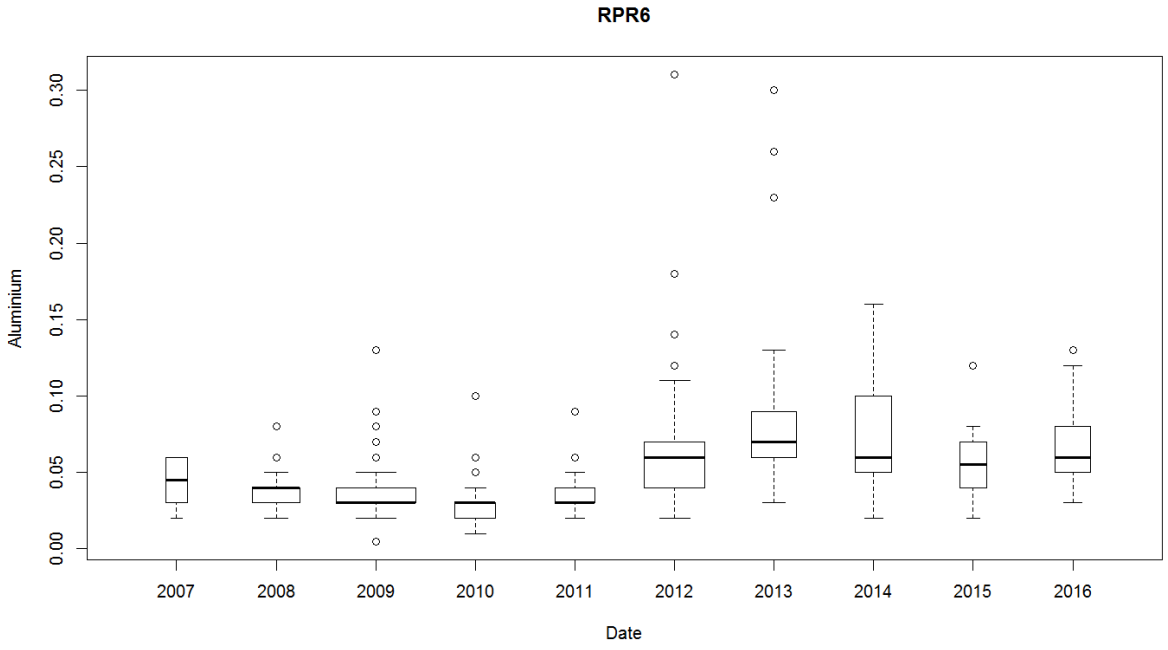

RPR6
Dissolved Oxygen (%Sat
70
80
90
100
110
120
130
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

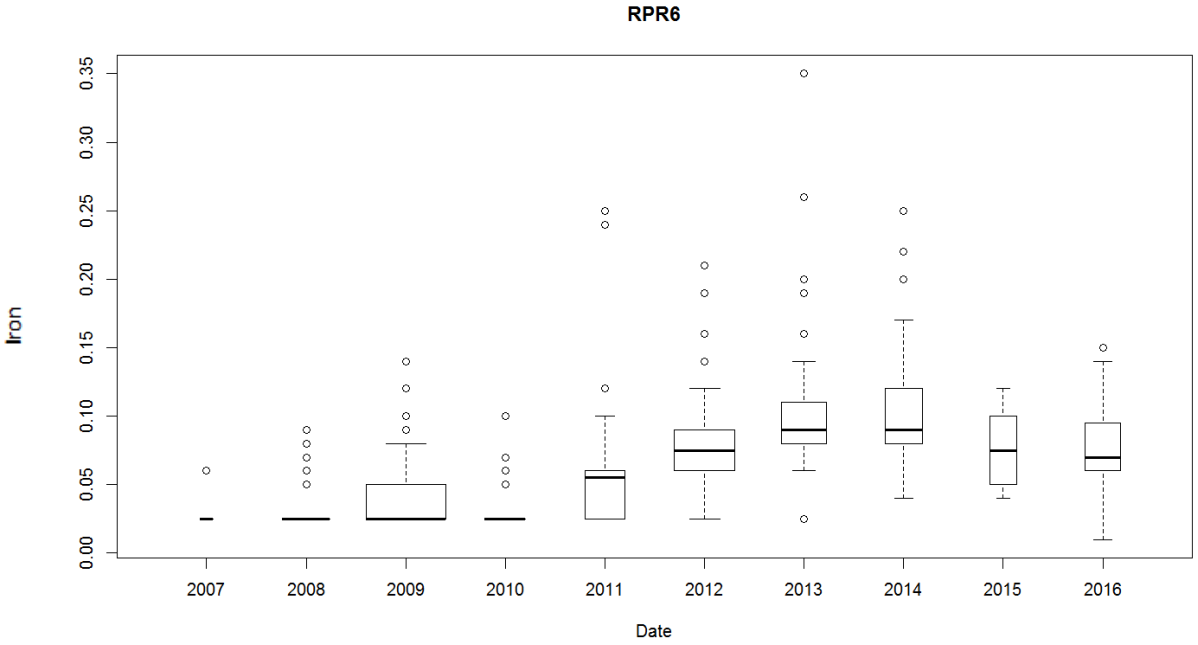

RPR6
Turbidity
0
10
20
30
40
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

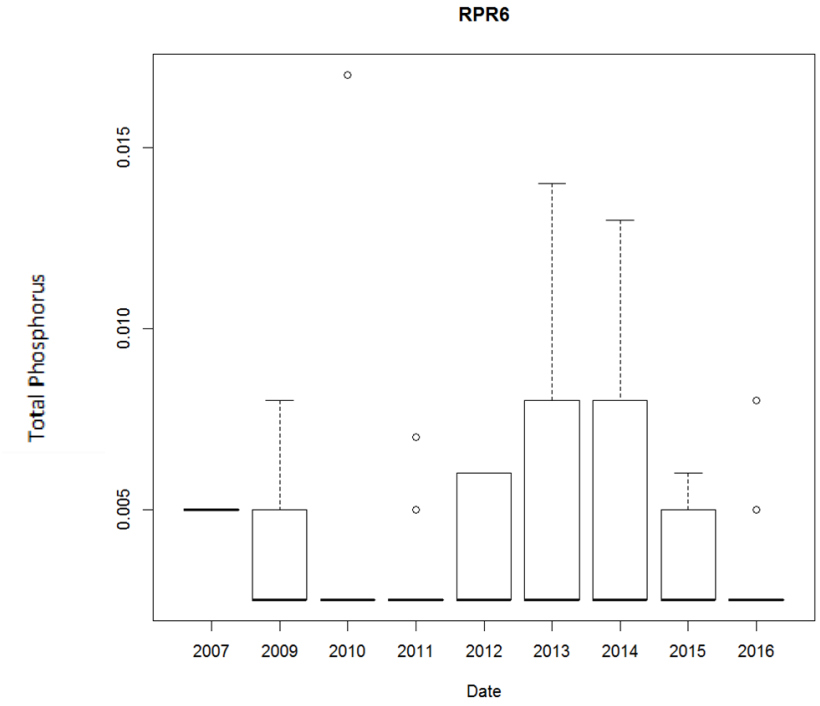

RPR6
Nitrogen Ammoniacal (mg/L)
0.005
0.010
0.015
0.020
0.025
0.030
0.035
2007
2009
2010
2011
2012
2013
2014
2015
2016
Date


RPR6
NOX
0.0
0.2
0.4
0.6
2007
2009
2010
2011
2012
2013
2014
2015
2016
Date

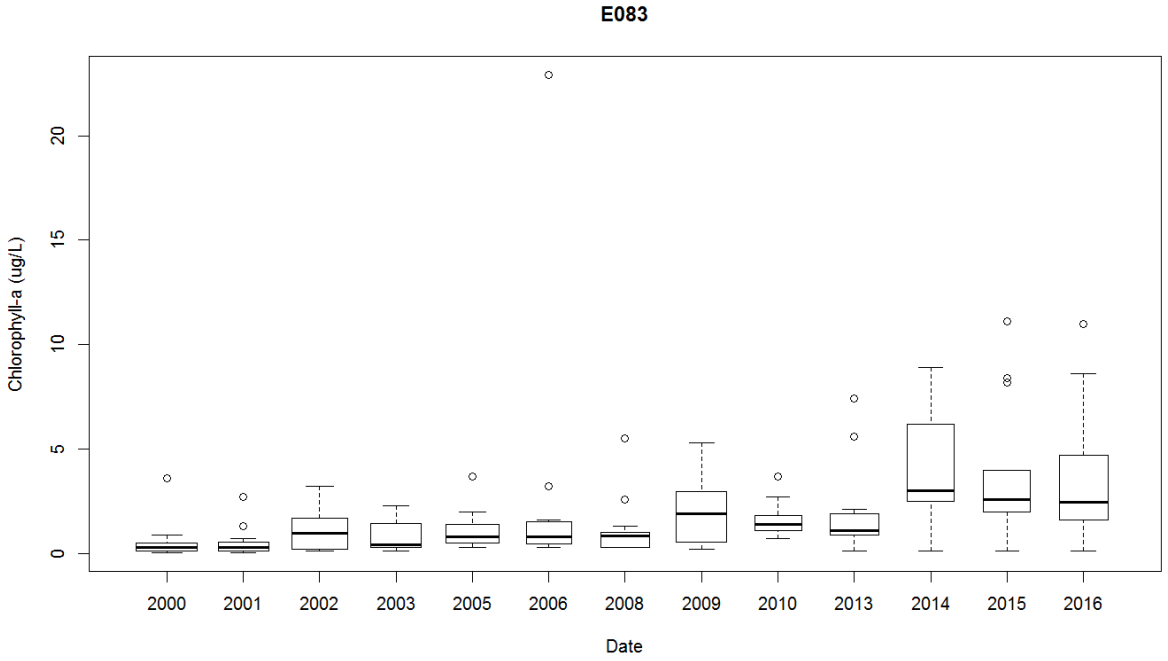

RPR6
TN
0.2
0.4
0.6
0.8
1.0
2007
2009
2010
2011
2012
2013
2014
2015
2016
Date

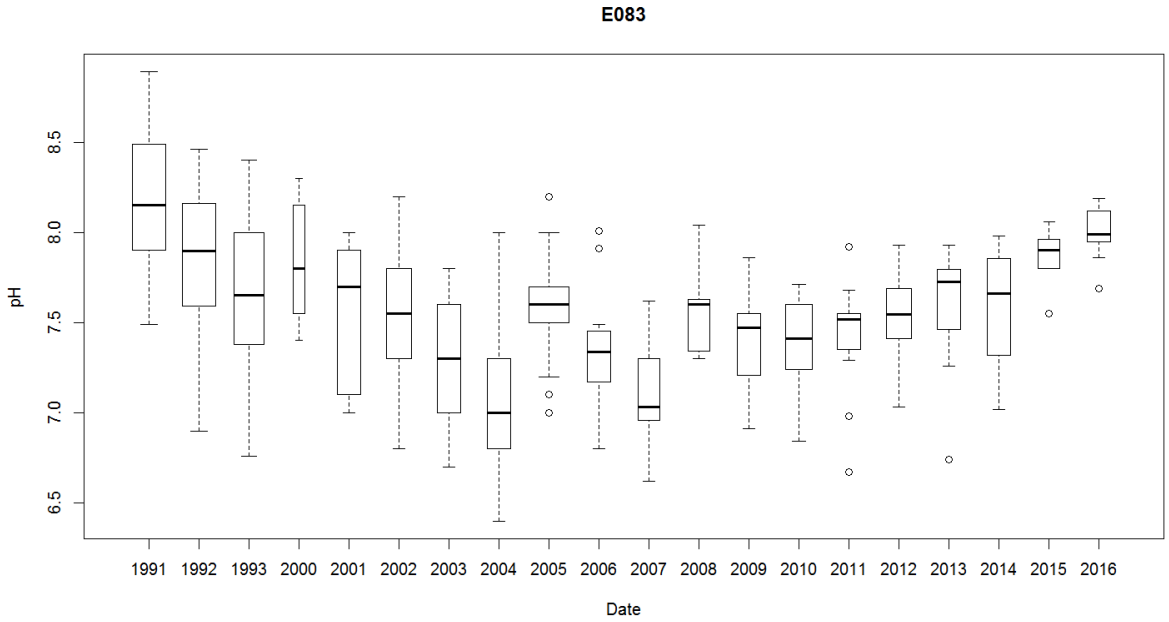

RPR6
Aluminium
0.00
0.05
0.10
0.15
0.20
0.25
0.30
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

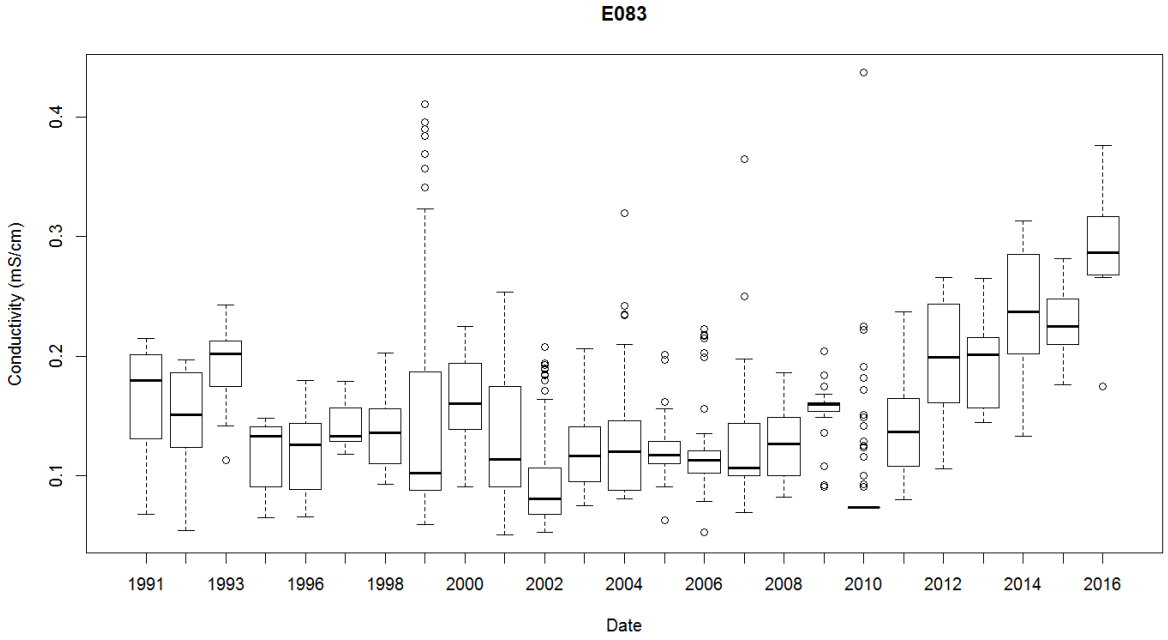

RPR6
Iron
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

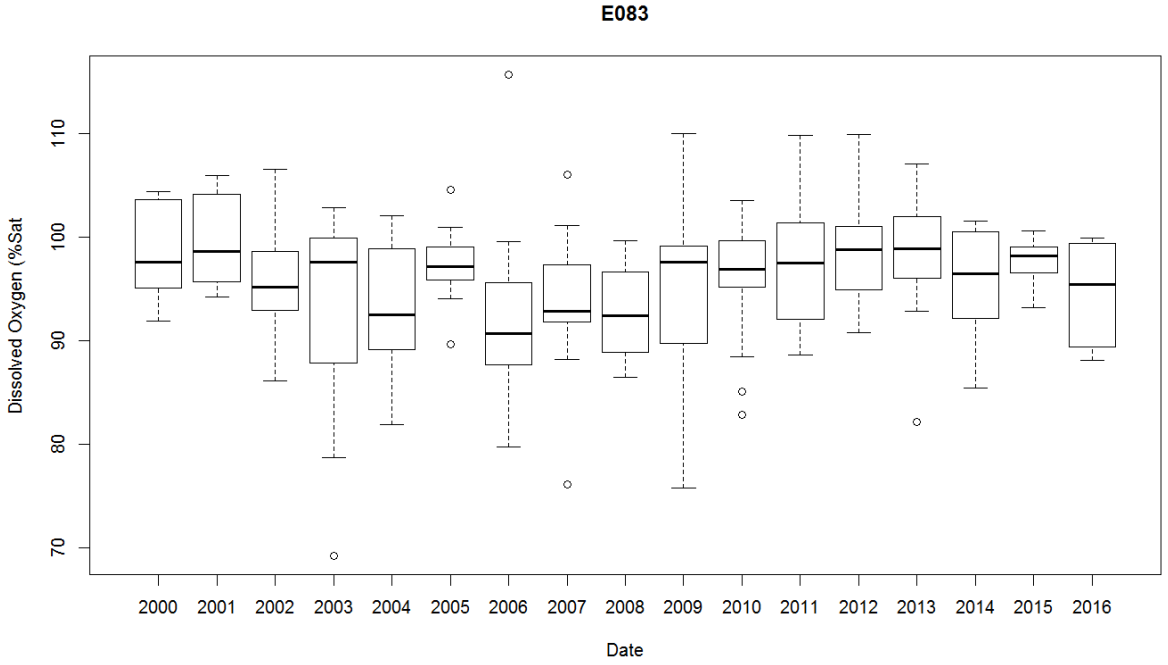

RPR6
Total Phosphorus
0.005
0.010
0.015
2007
2009
2010
2011
2012
2013
2014
2015
2016
Date

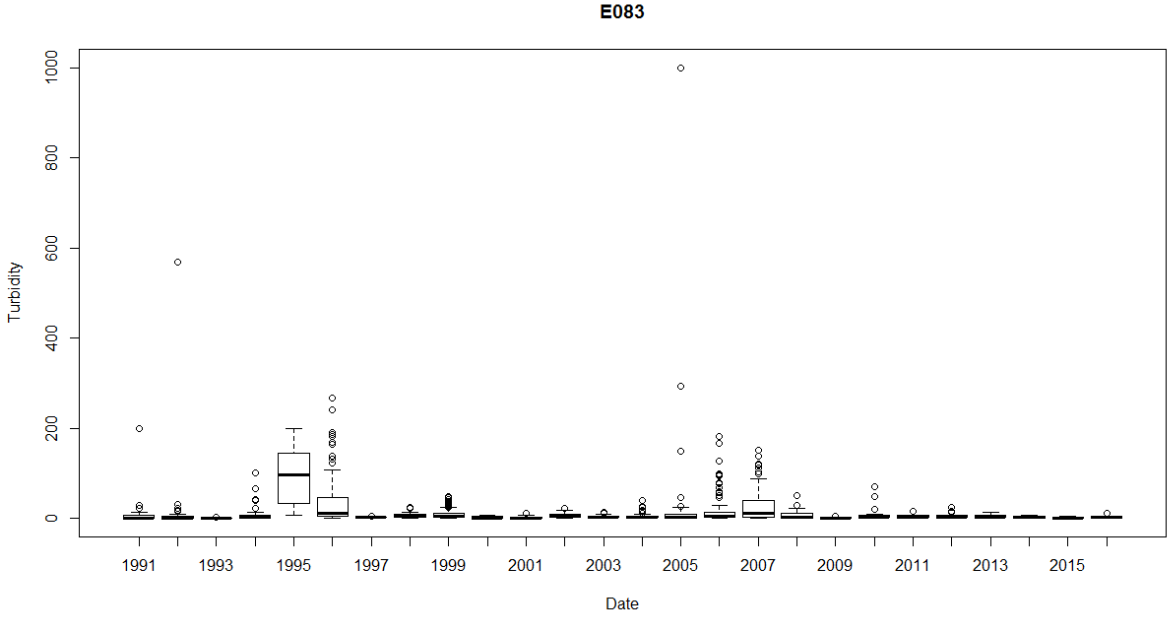
8.7 Warragamba catchment sites

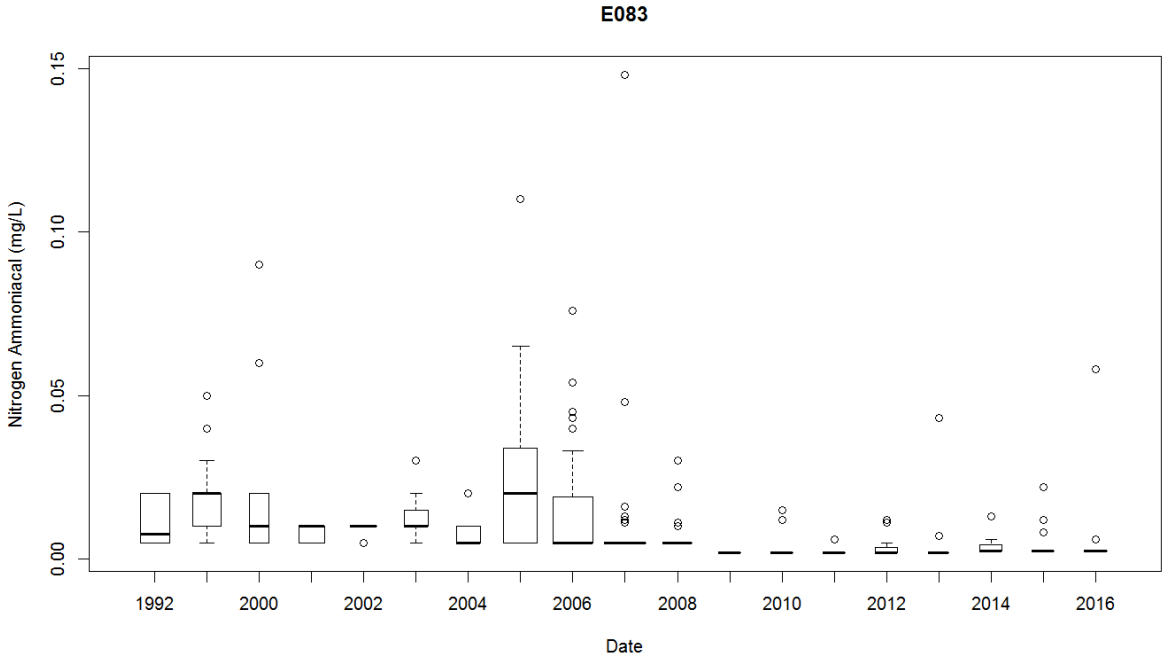


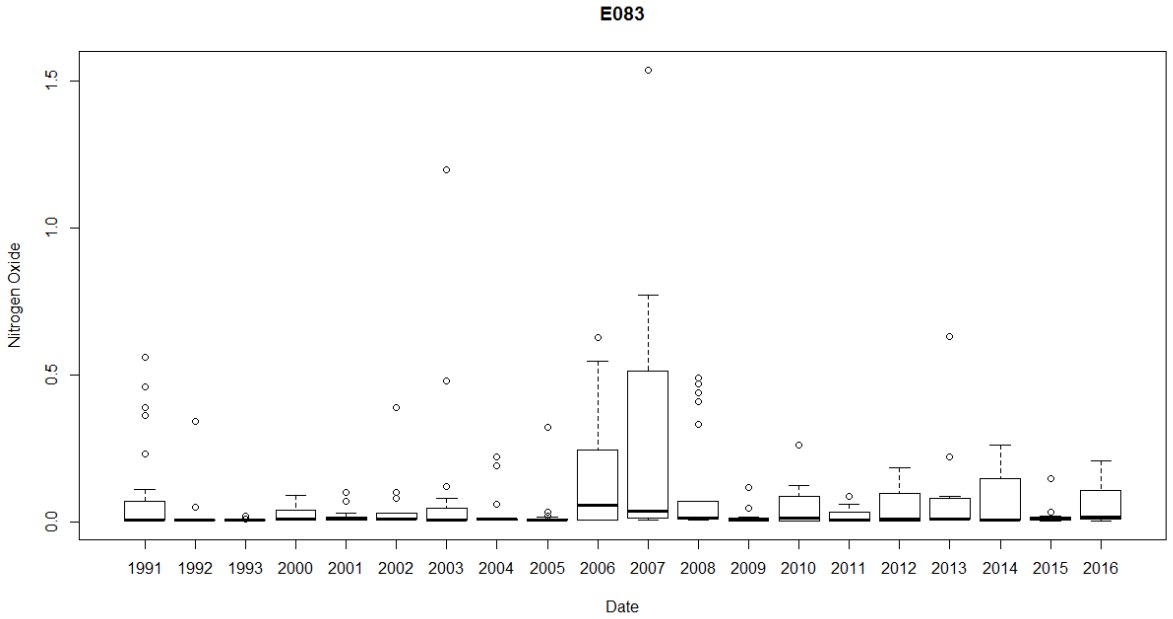


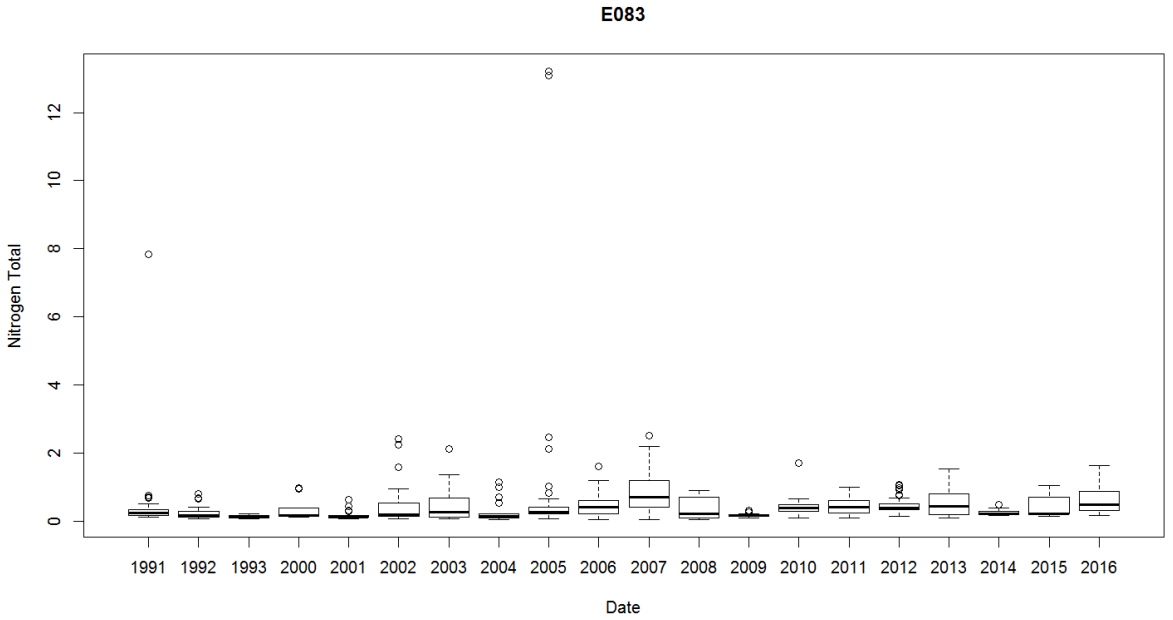

E083
Conductivity (mS/cm)
0.1
0.2
0.3
0.4
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

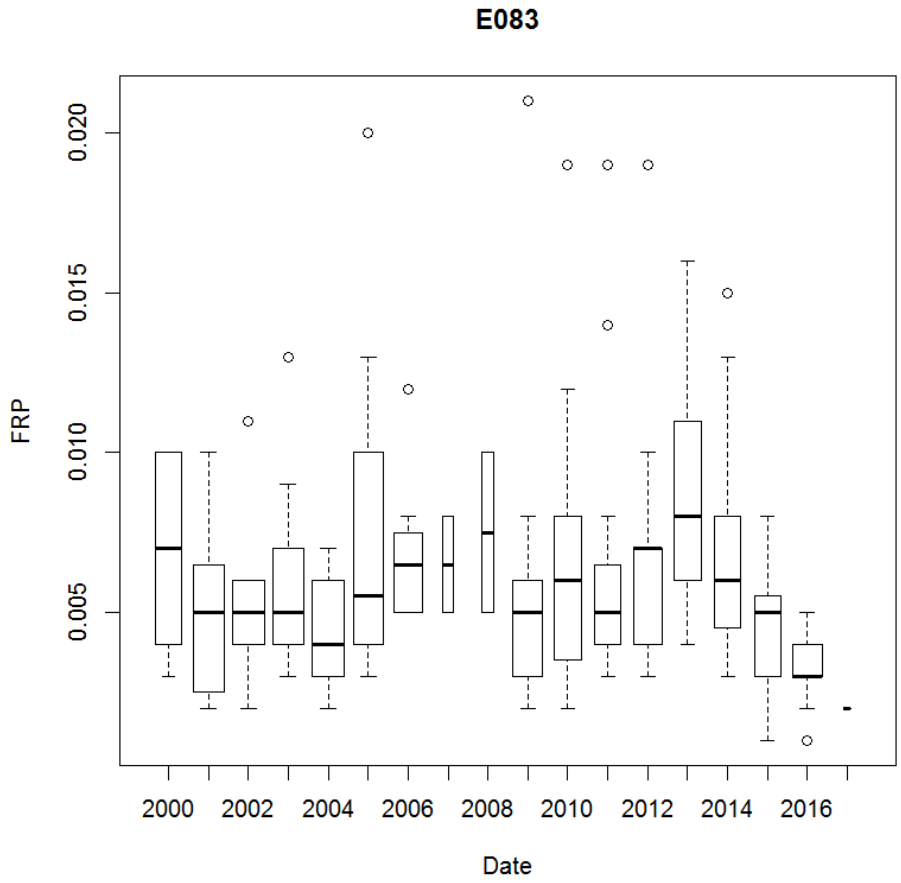

E083
Dissolved Oxygen (%Sat
70
80
90
100
110
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

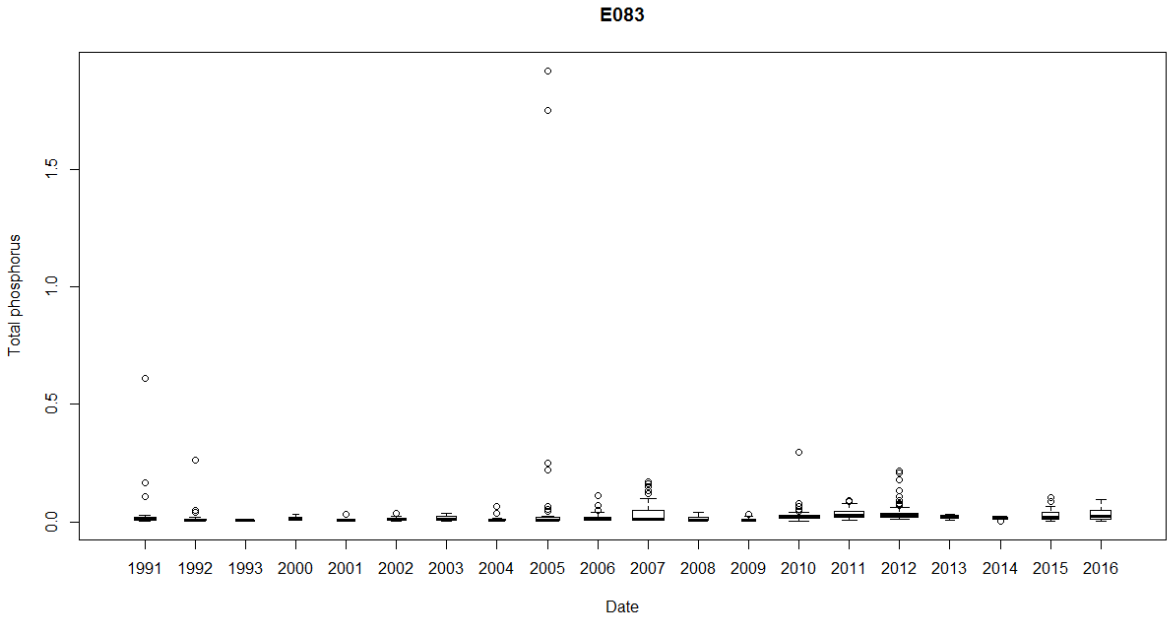

E083
Turbidity
0
200
400
600
800
1000
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

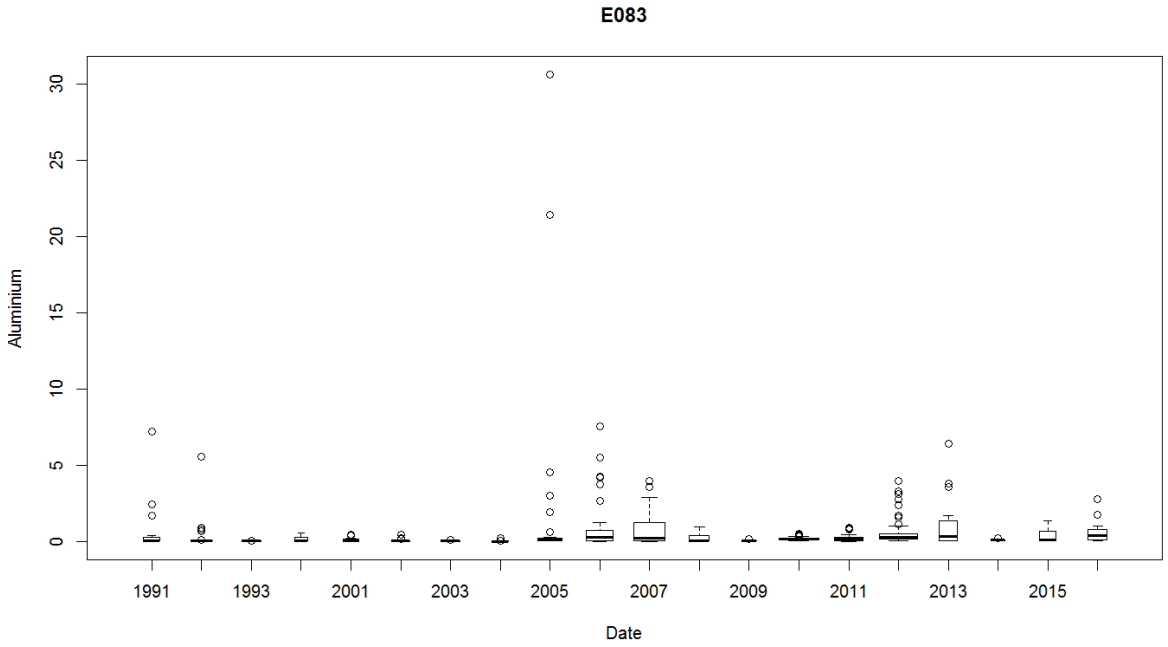

E083
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
1992
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

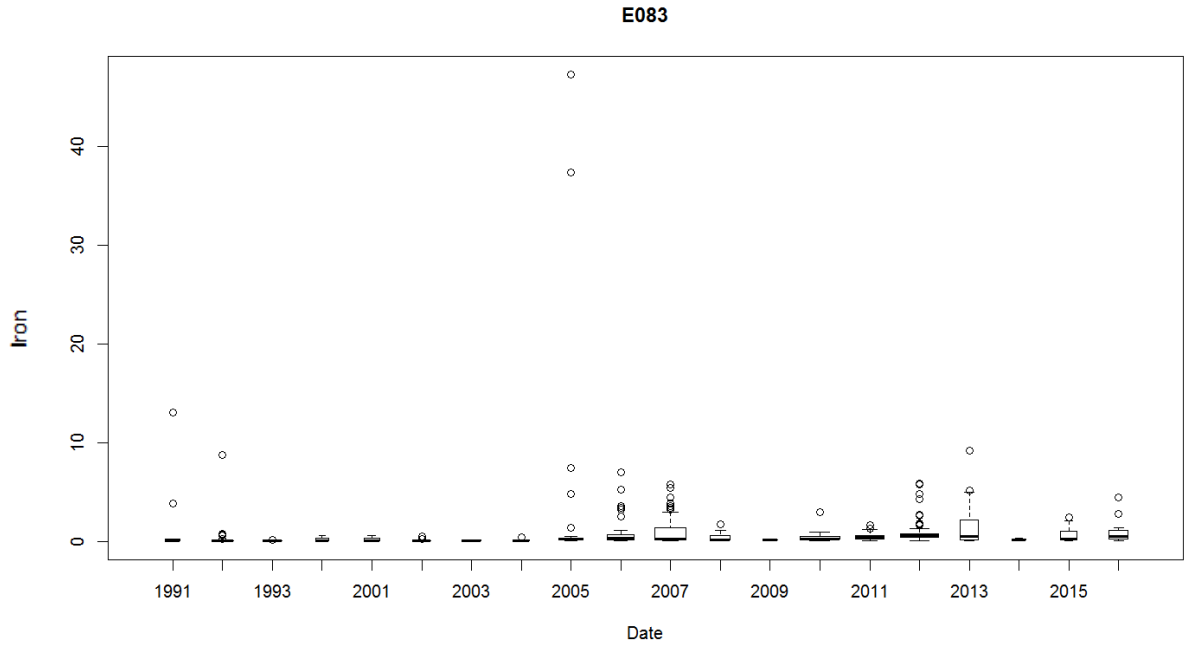

E083
Nitrogen Oxide
0.0
0.5
1.0
1.5
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

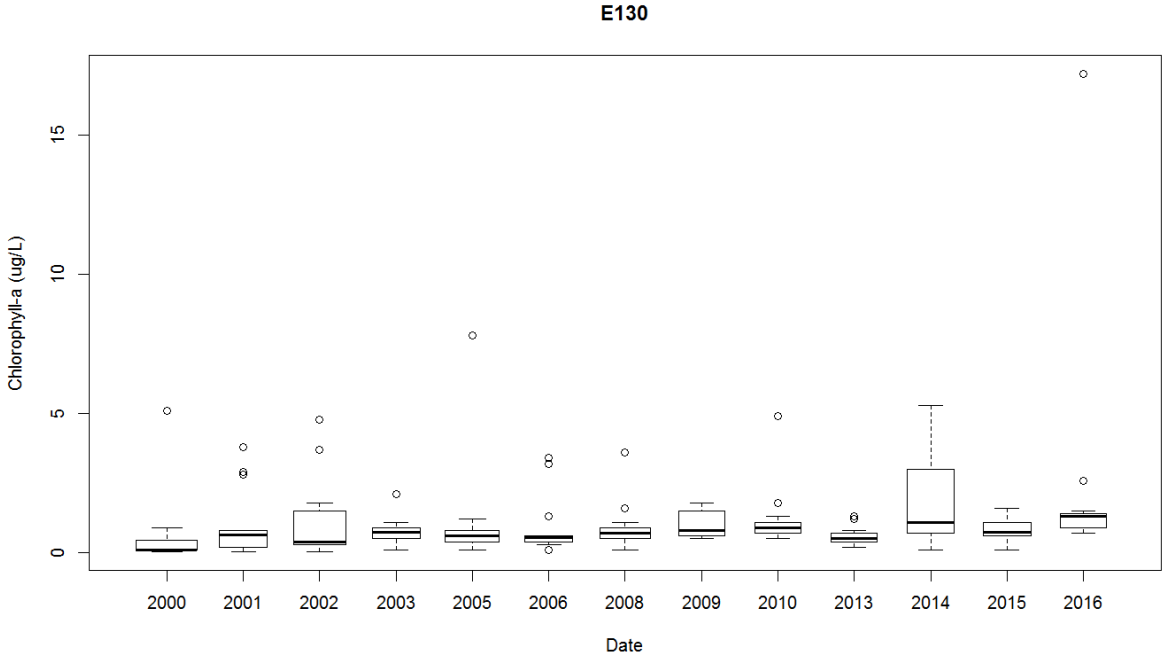

E083
Nitrogen Total
0
2
4
6
8
10
12
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

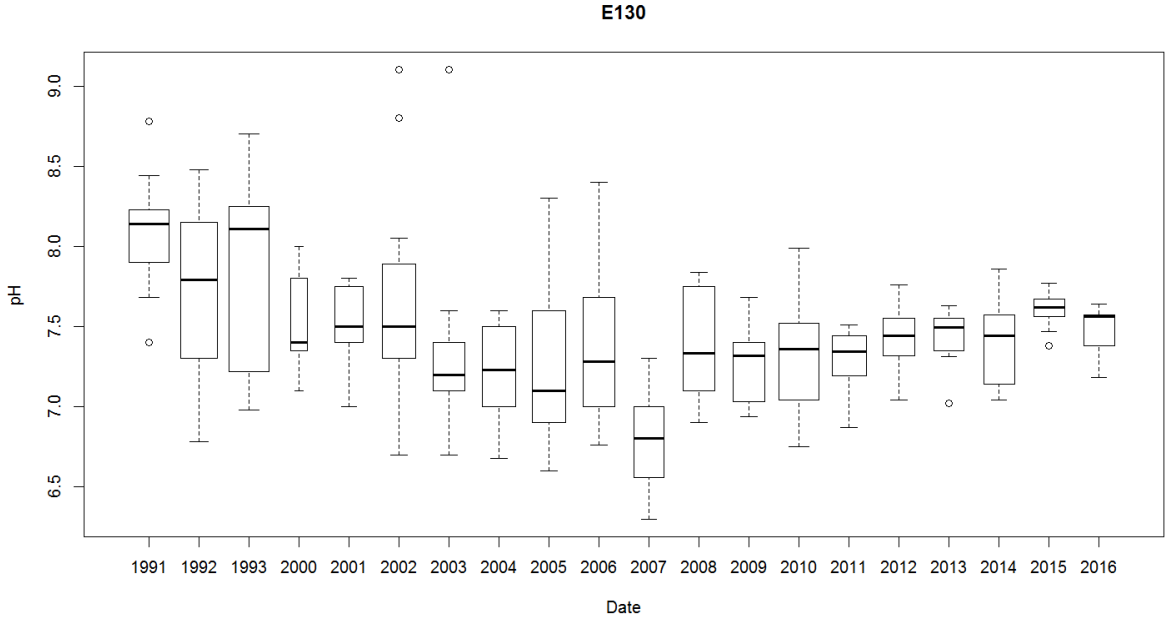

E083
FRP
0.005
0.010
0.015
0.020
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

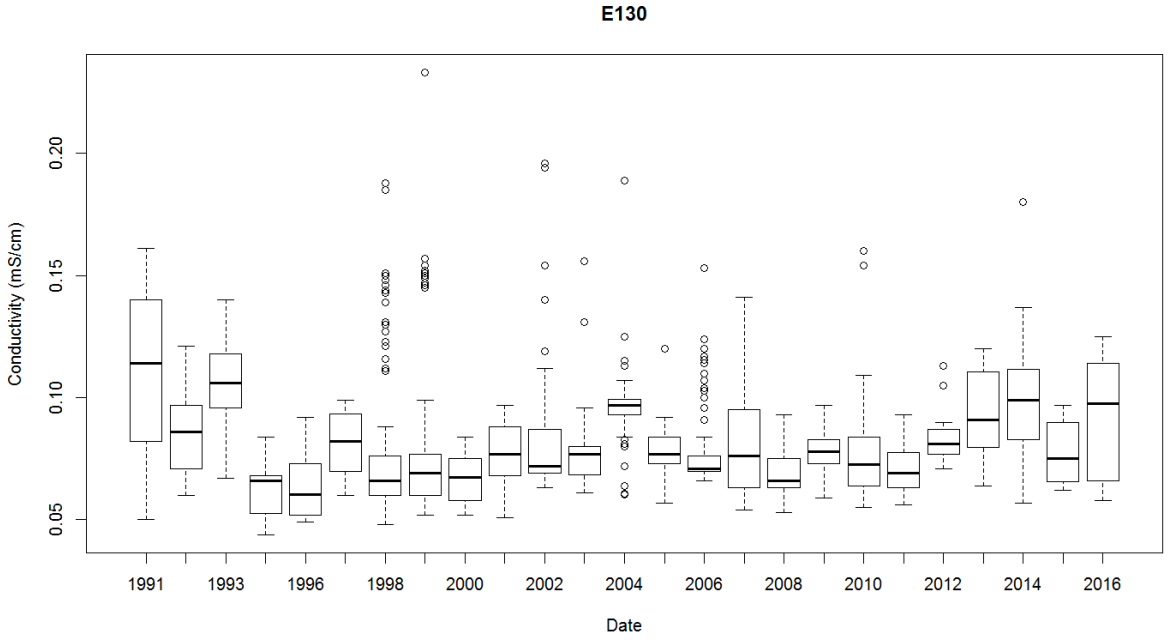

E083
Total phosphorus
0.0
0.5
1.0
1.5
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

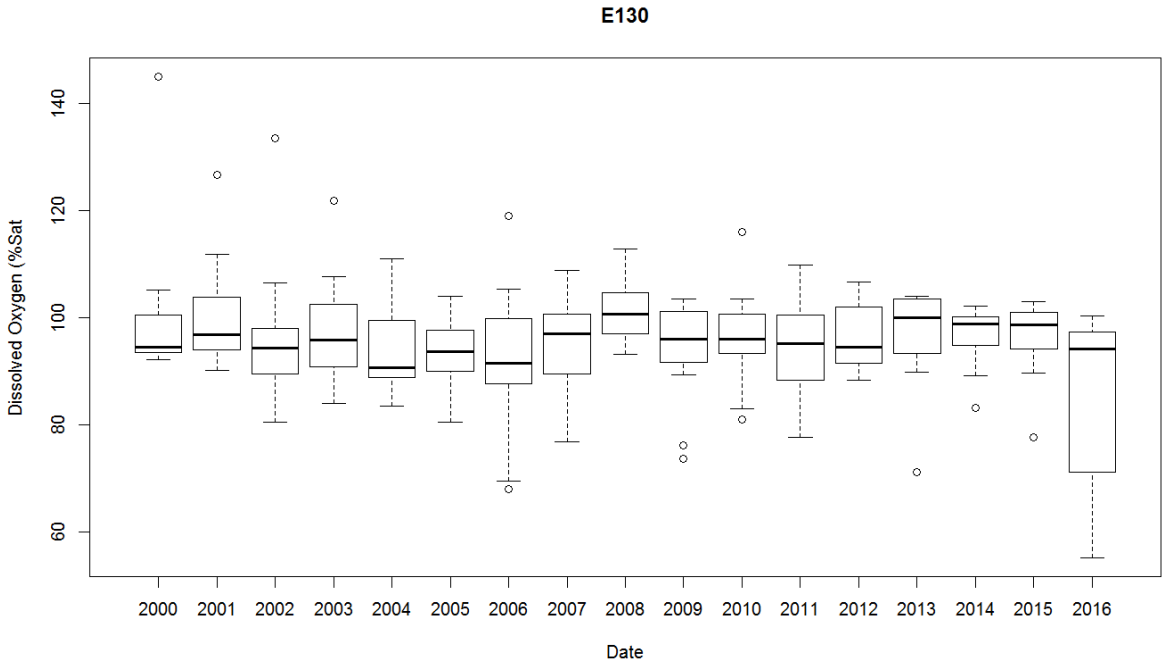

E083
Aluminium
0
5
10
15
20
25
30
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

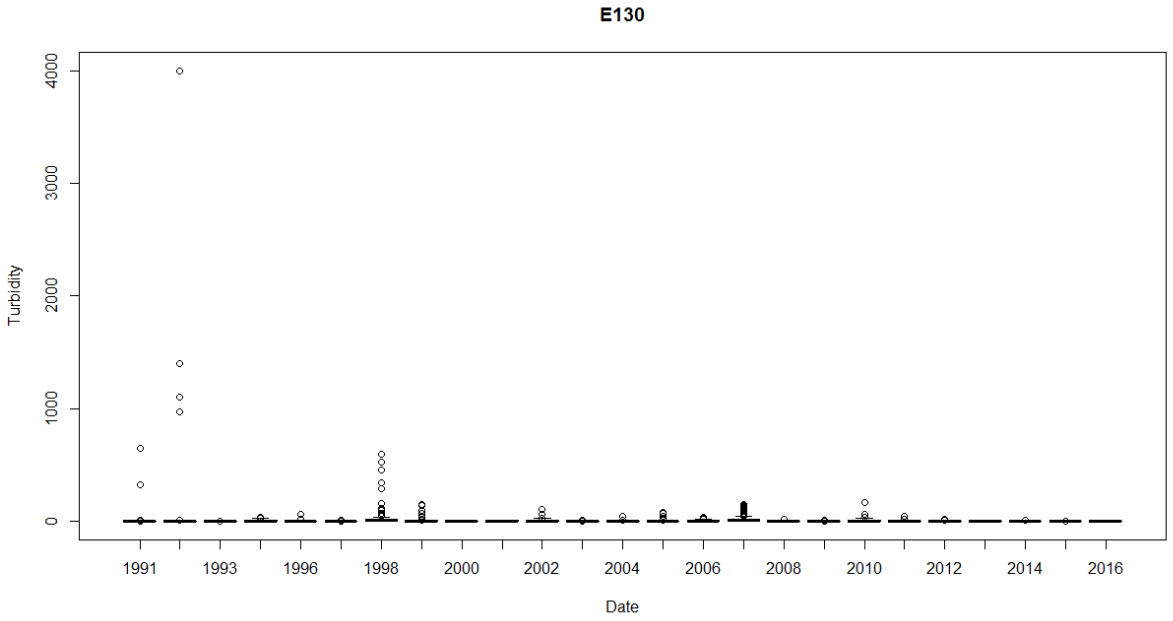

E083
Iron
0
10
20
30
40
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

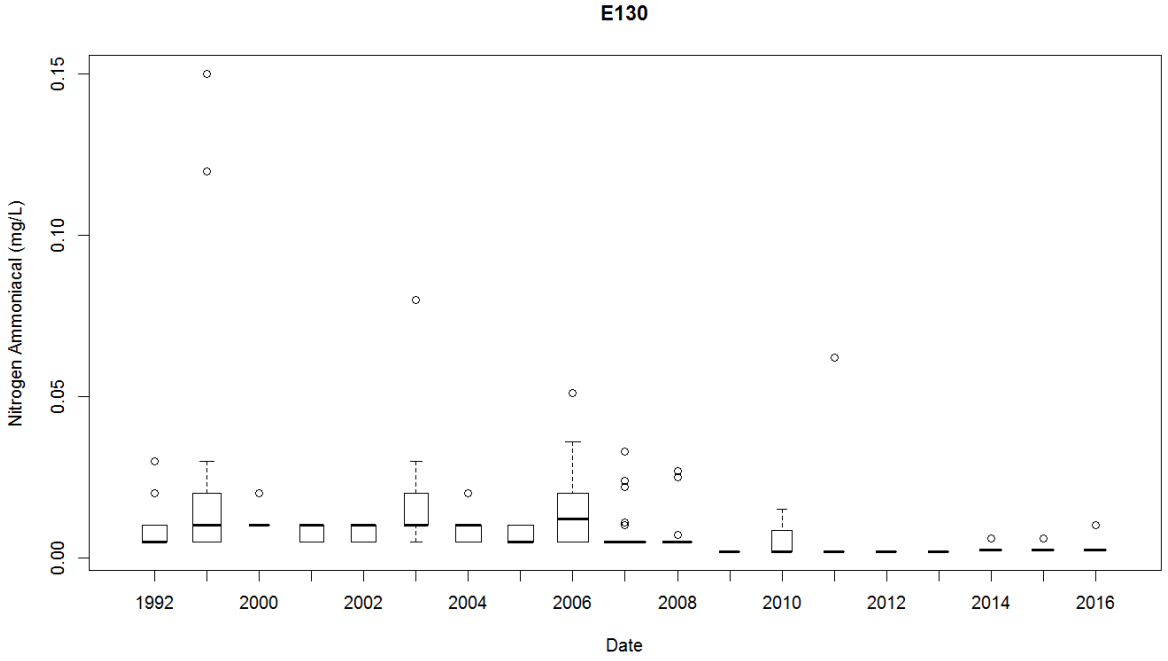

E130
Chlorophyll-a (ug/L)
0
5
10
15
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

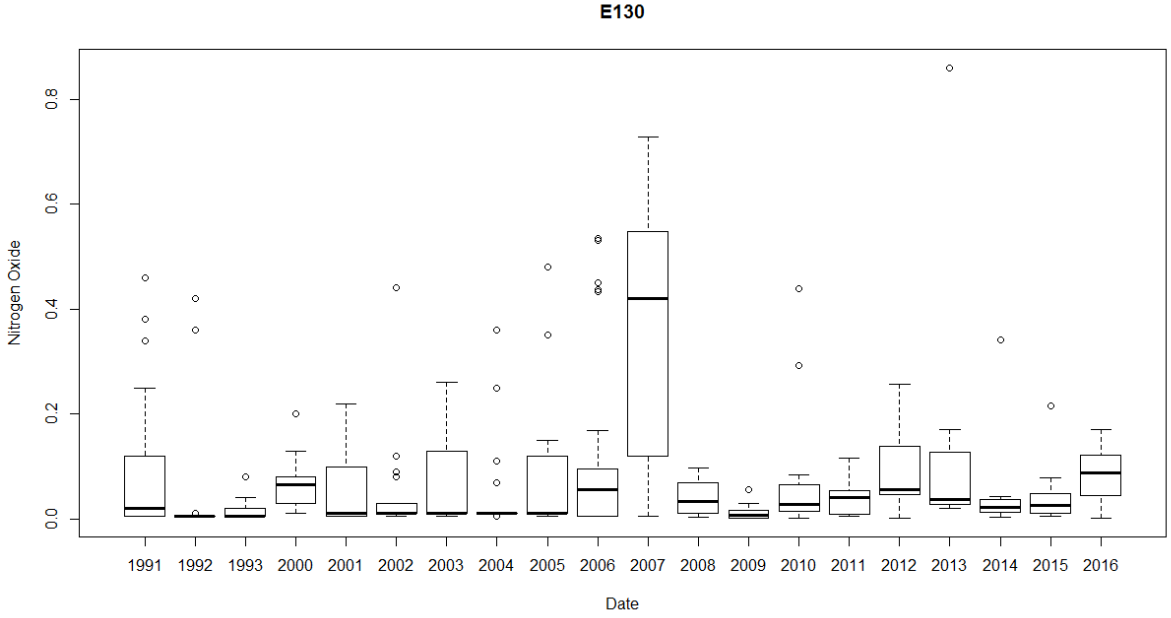

E130
pH
6.5
7.0
7.5
8.0
8.5
9.0
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

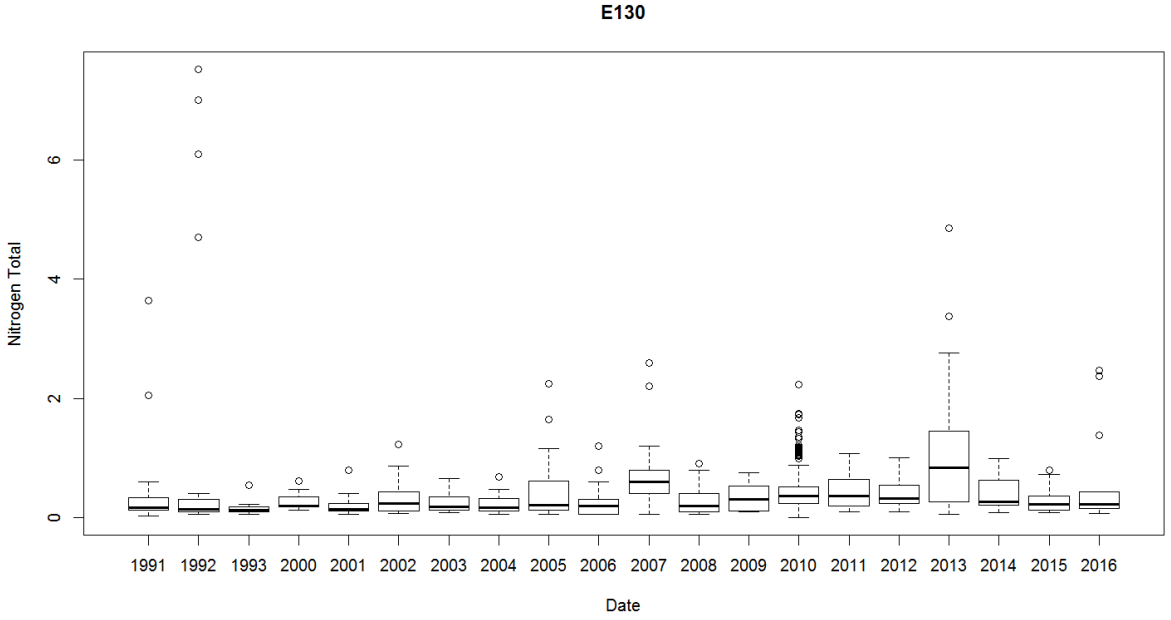

E130
Conductivity (mS/cm)
0.05
0.10
0.15
0.20
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

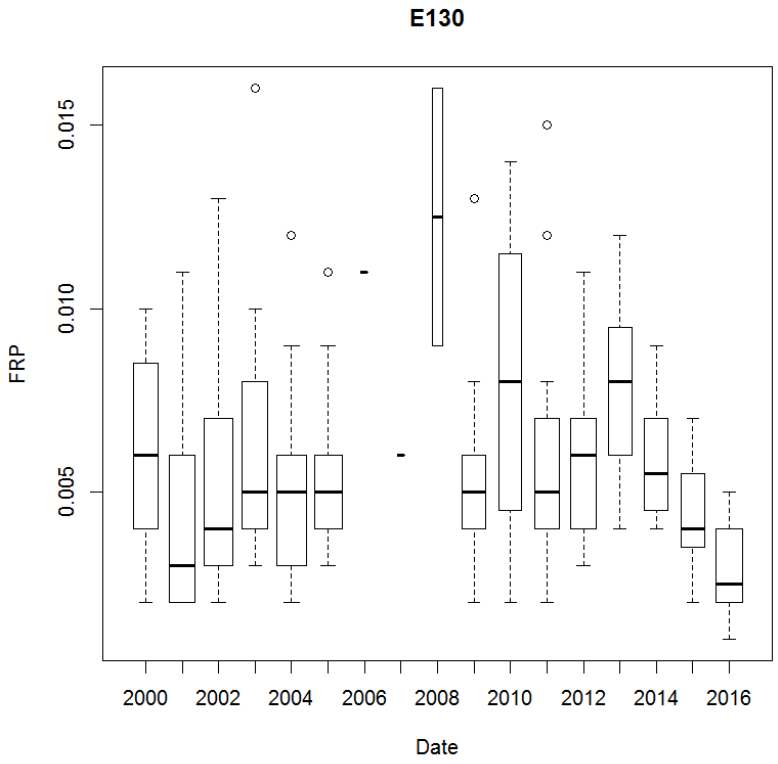

E130
Dissolved Oxygen (%Sat
60
80
100
120
140
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

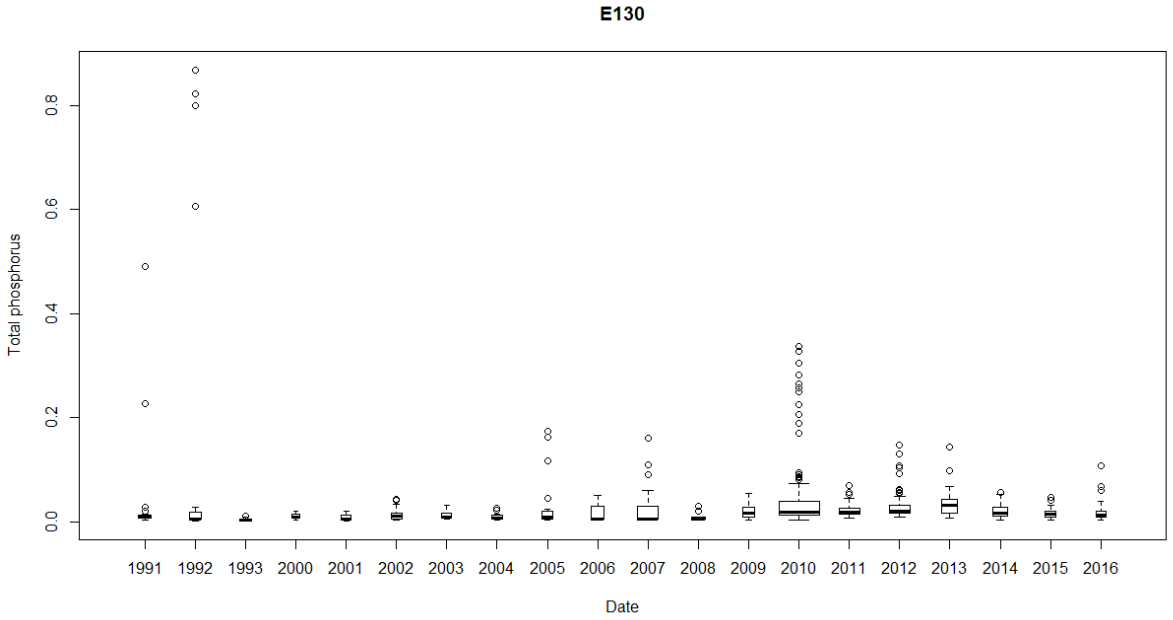

E130
Turbidity
0
1000
2000
3000
4000
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

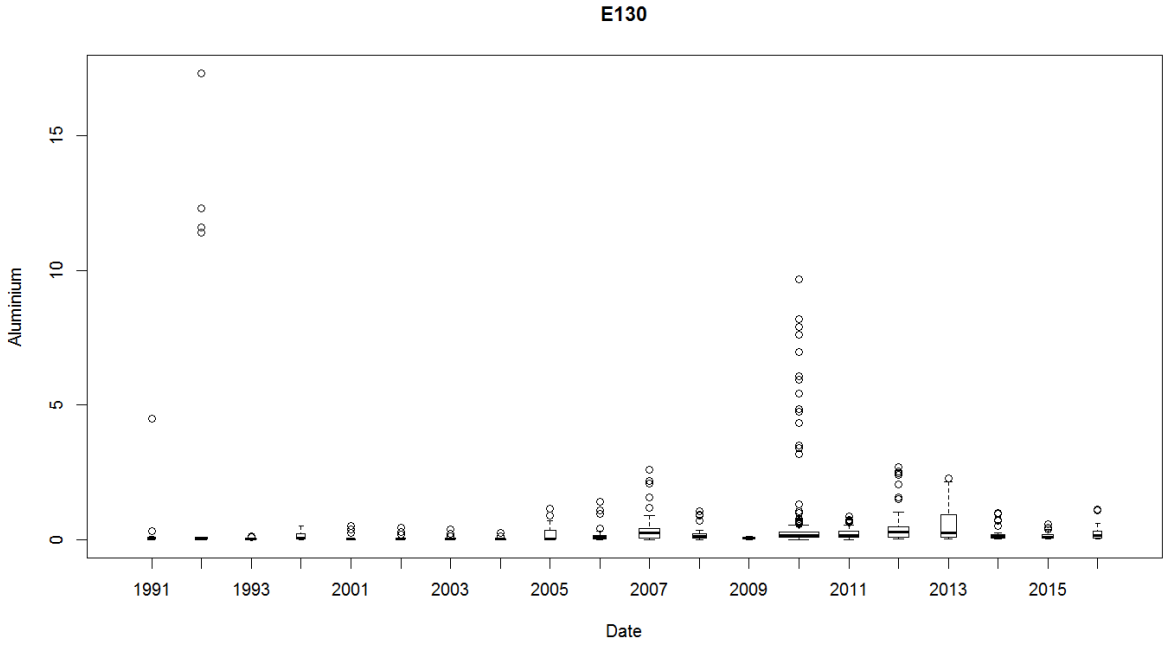

E130
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
1992
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

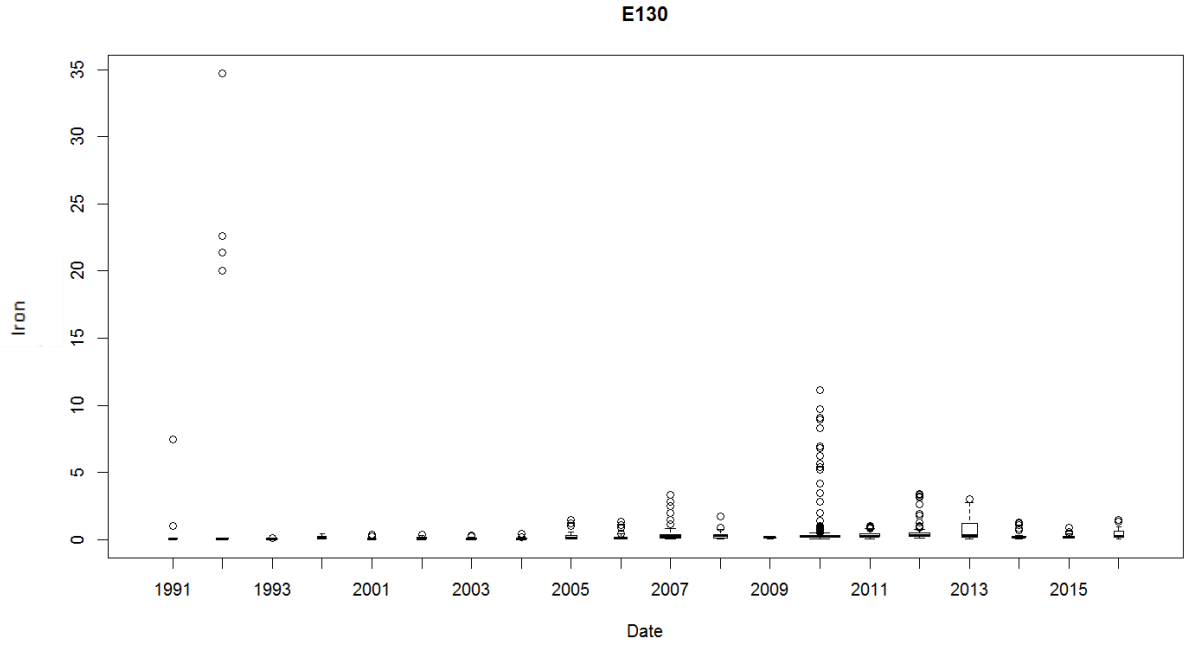

E130
Nitrogen Oxide
0.0
0.2
0.4
0.6
0.8
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

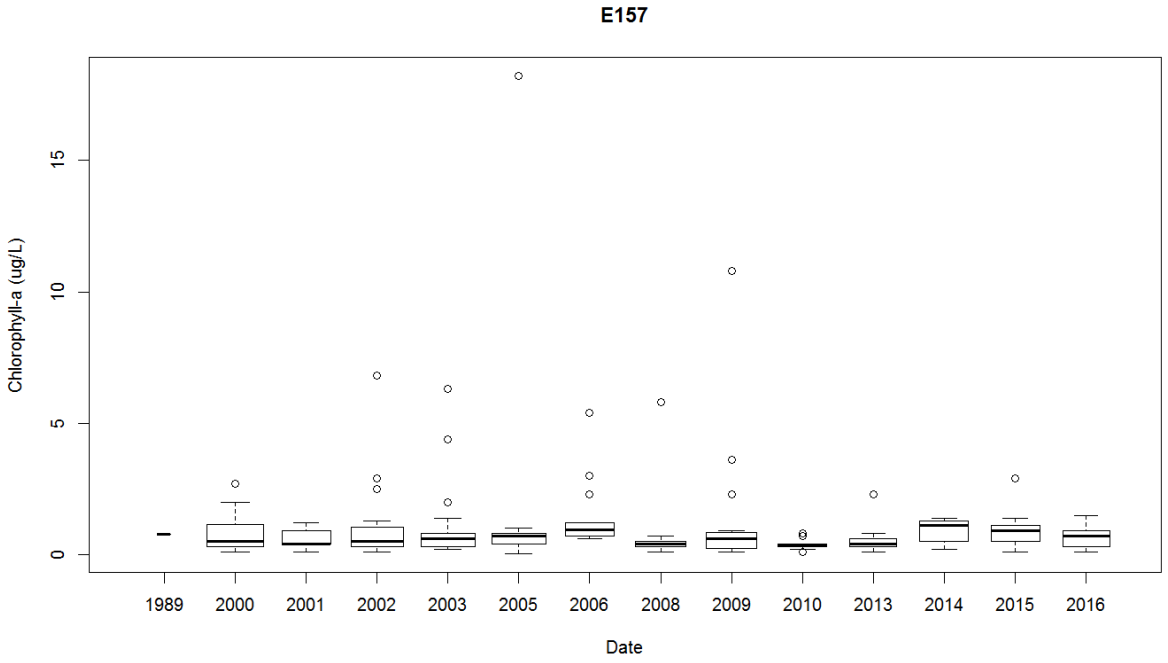

E130
Nitrogen Total
0
2
4
6
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

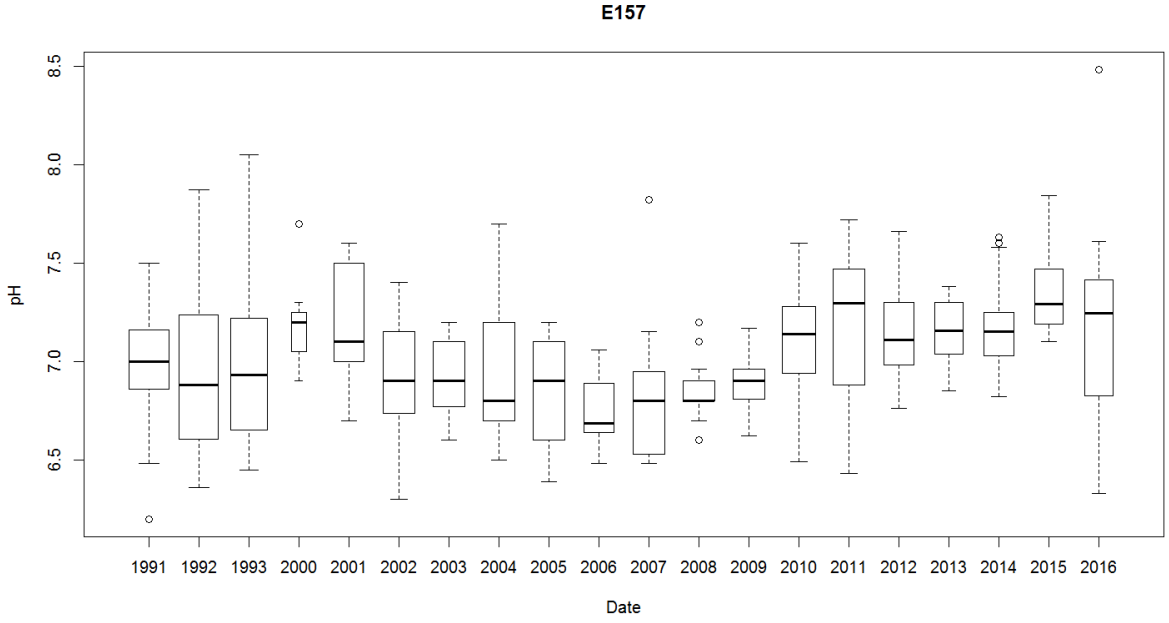

E130
FRP
0.005
0.010
0.015
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

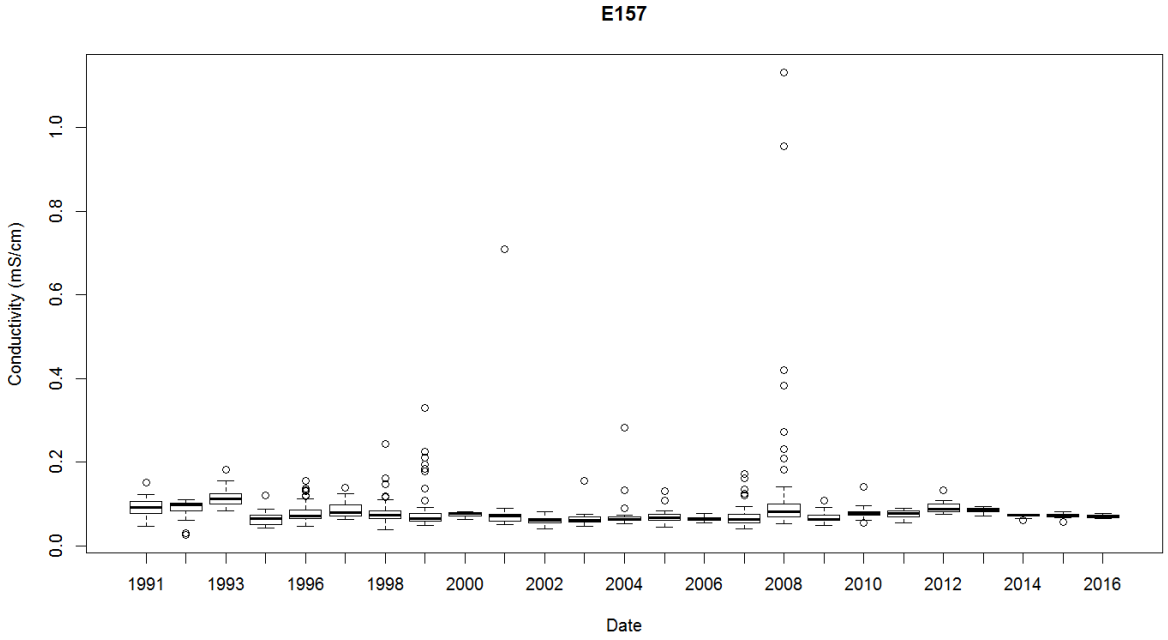

E130
Total phosphorus
0.0
0.2
0.4
0.6
0.8
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

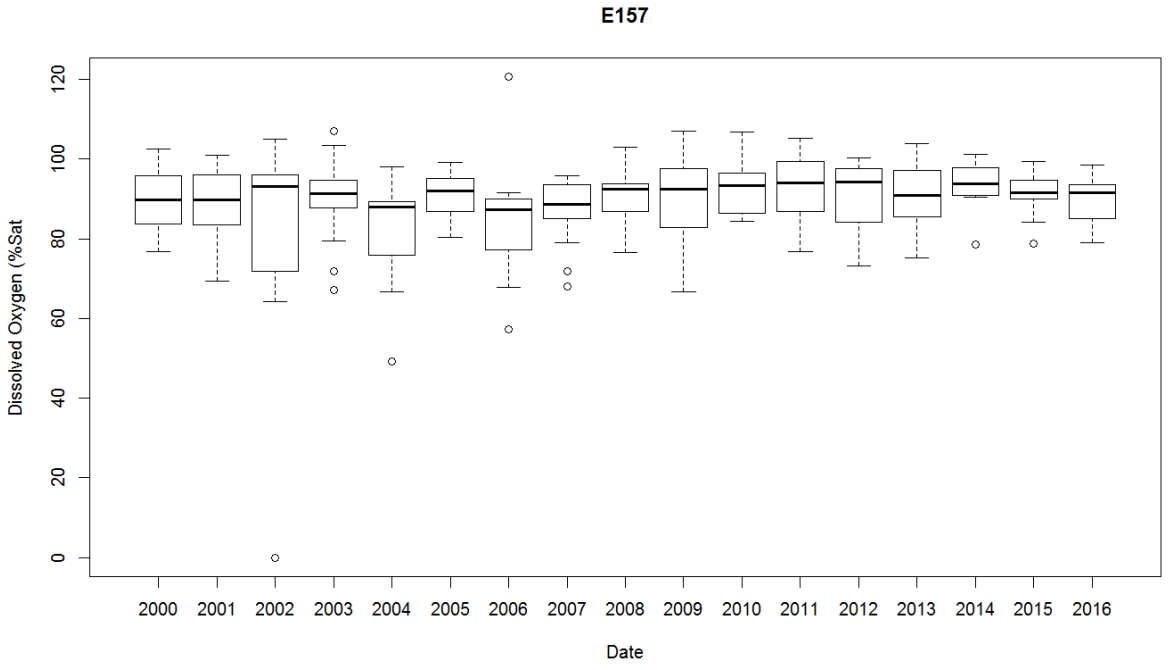

E130
Aluminium
0
5
10
15
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

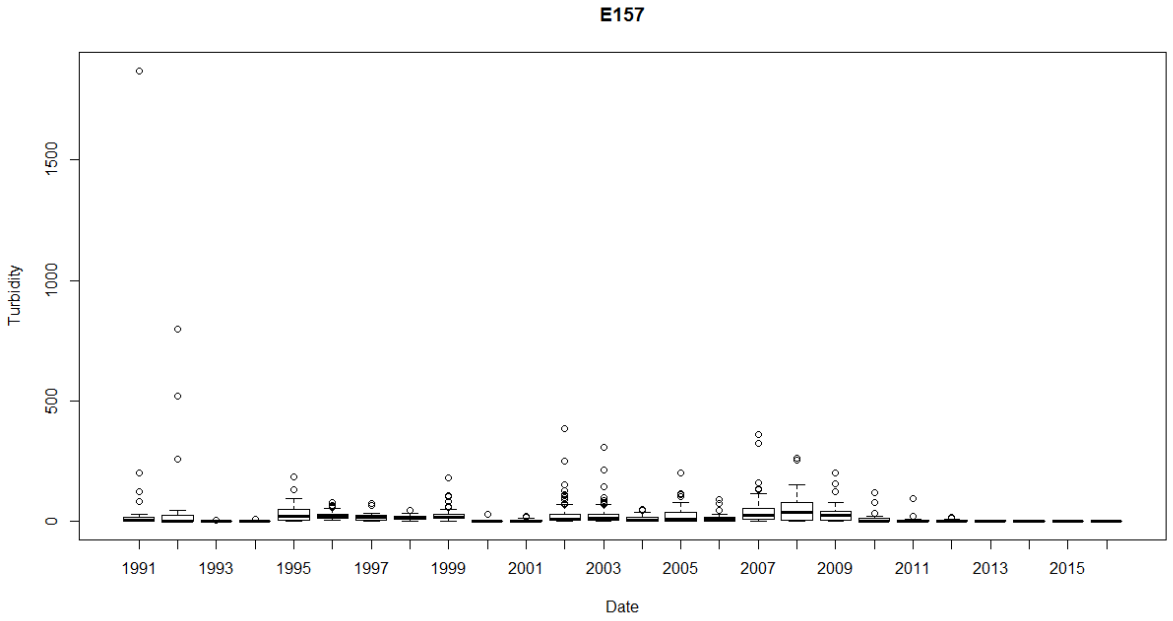

E130
Iron
0
5
10
15
20
25
30
35
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

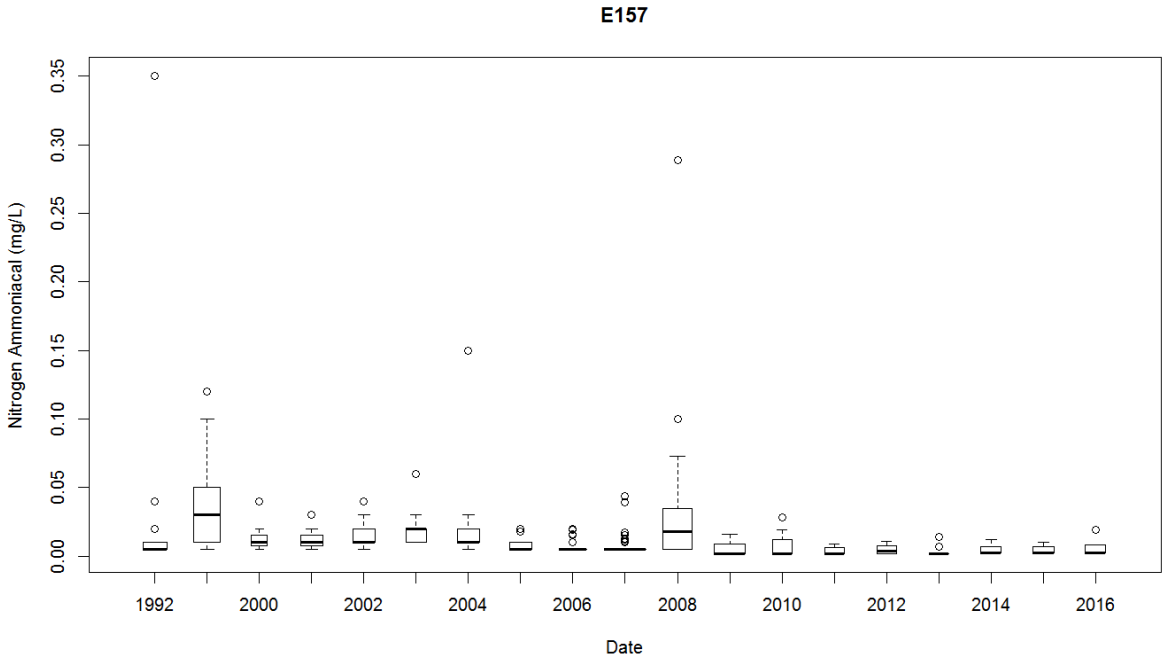

E157
Chlorophyll-a (ug/L)
0
5
10
15
1989
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

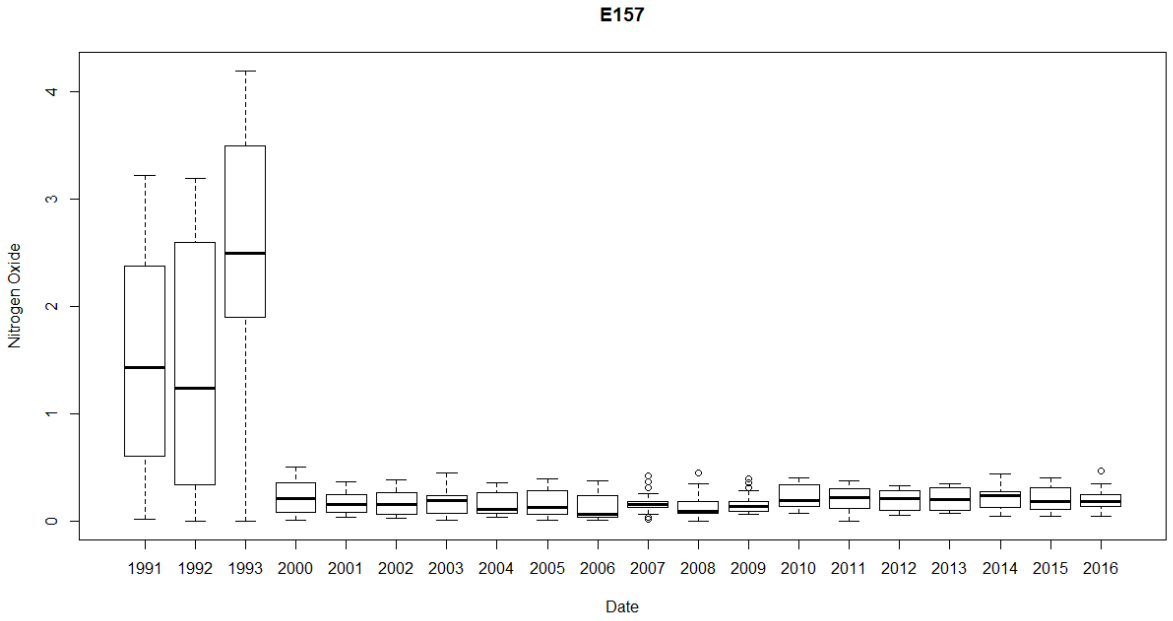

E157
pH
6.5
7.0
7.5
8.0
8.5
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

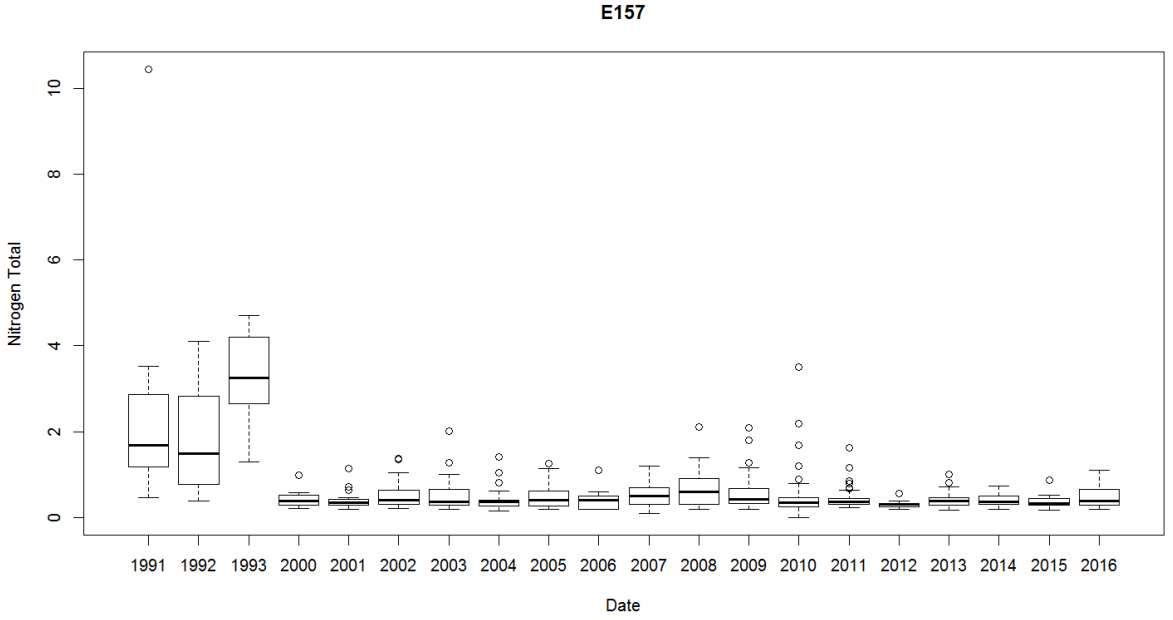

E157
Conductivity (mS/cm)
0.0
0.2
0.4
0.6
0.8
1.0
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

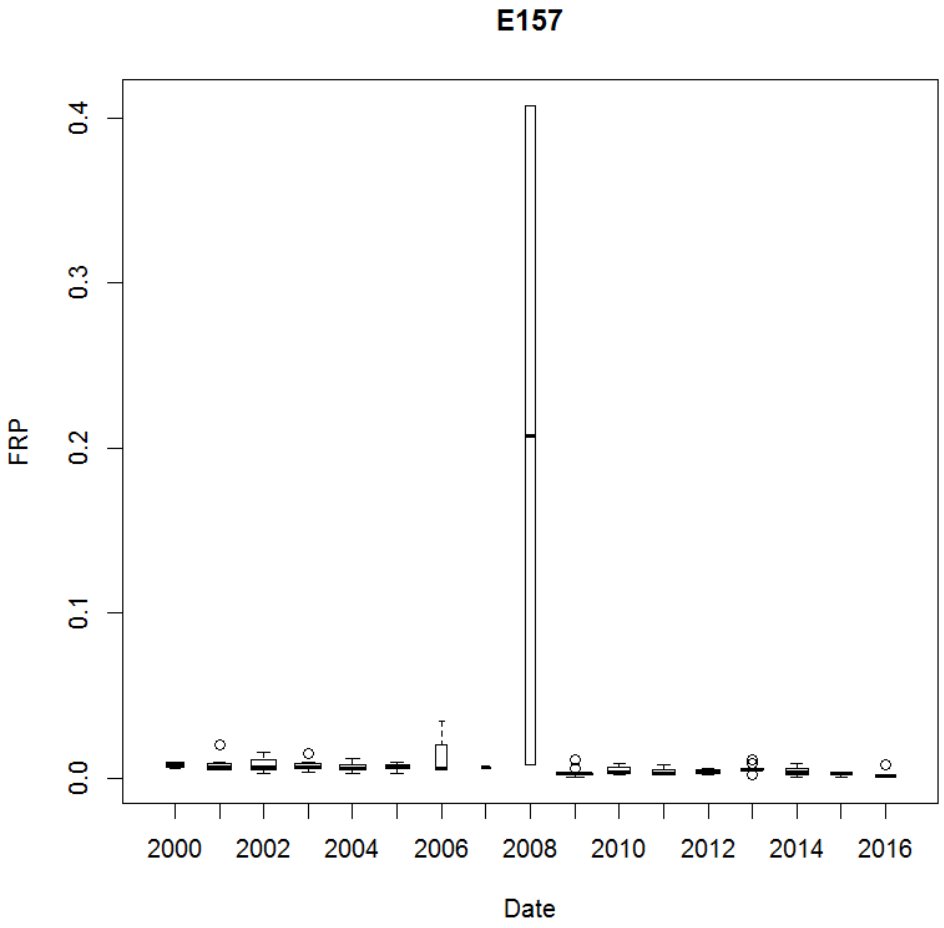

E157
Dissolved Oxygen (%Sat
0
20
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

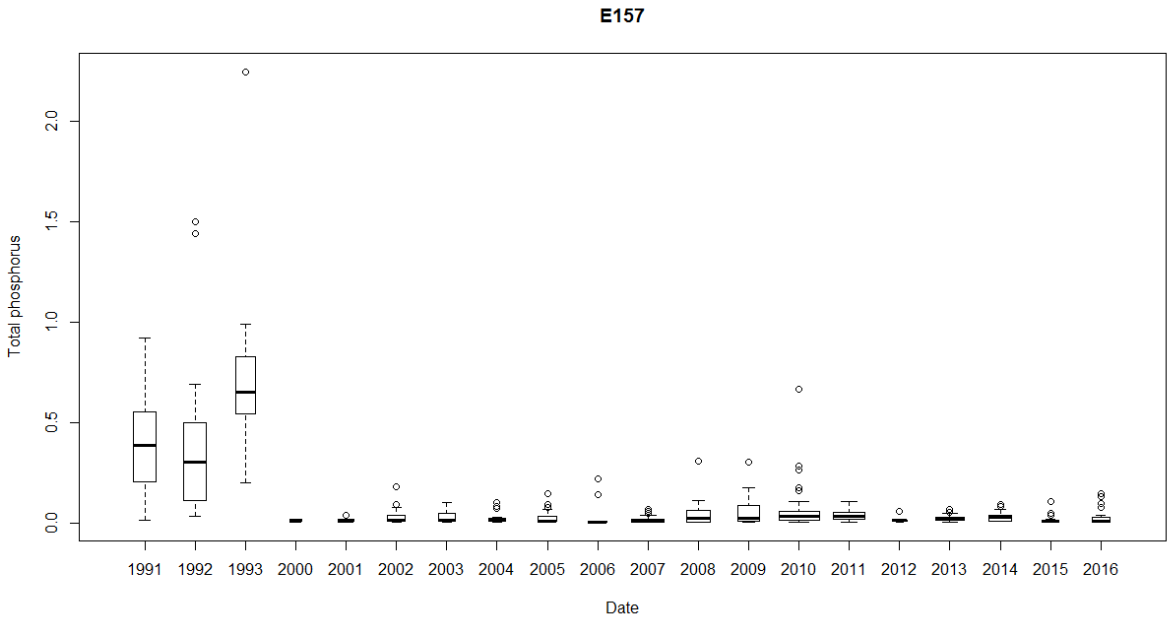

E157
Turbidity
0
500
1000
1500
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

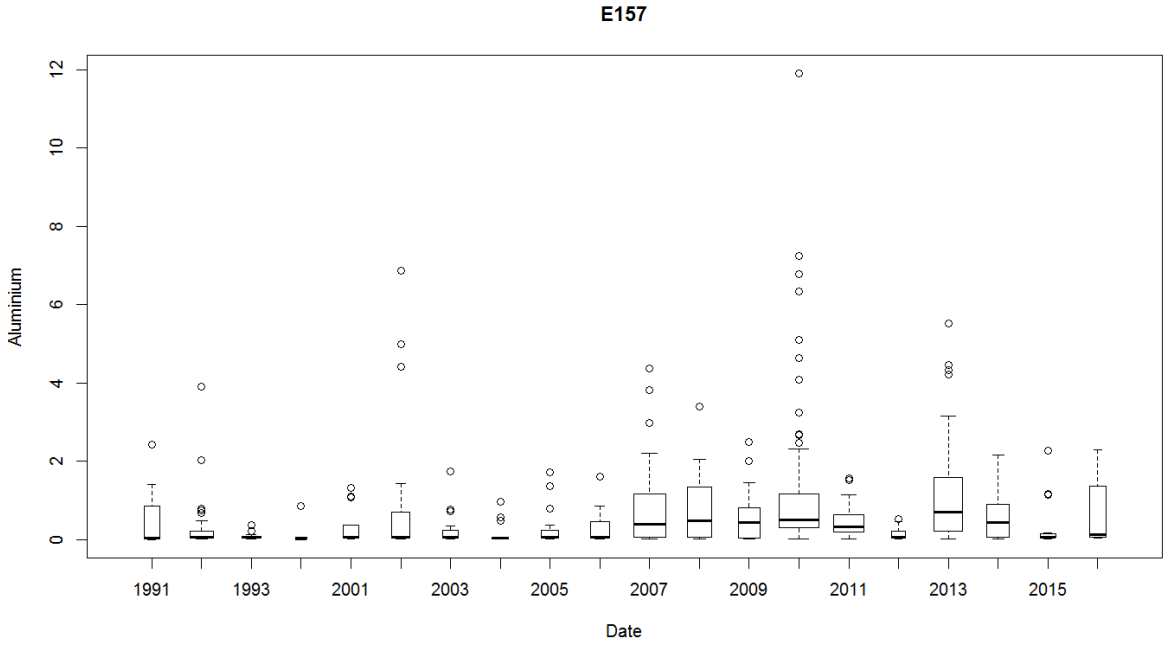

E157
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1992
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

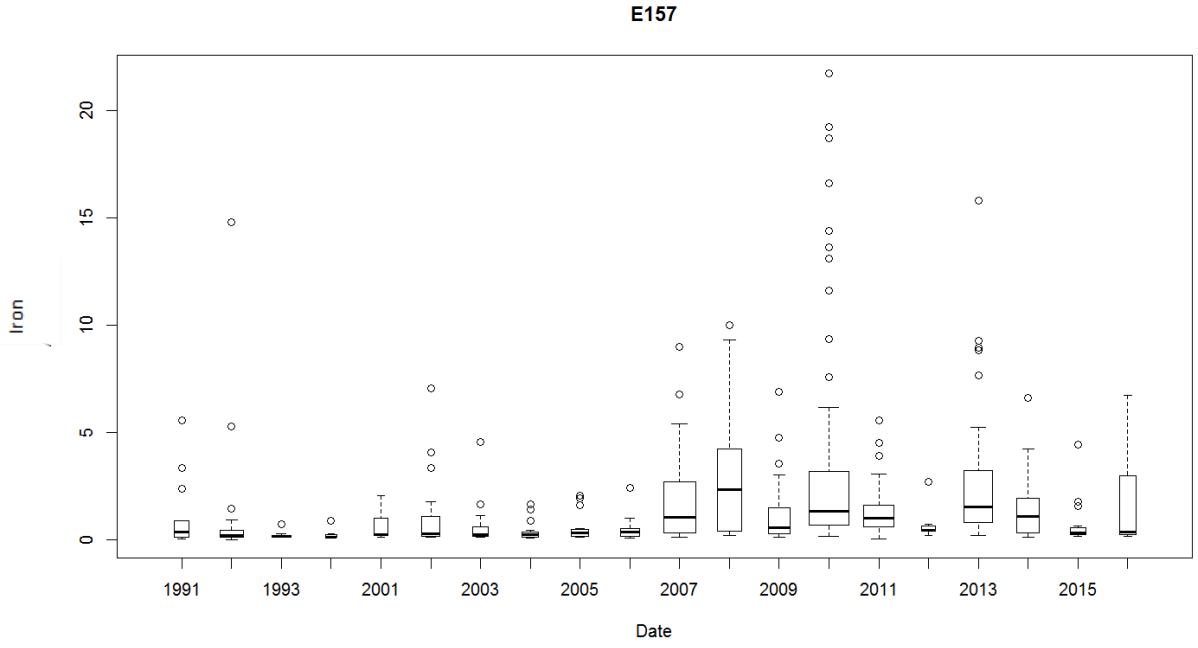

E157
Nitrogen Oxide
0
1
2
3
4
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

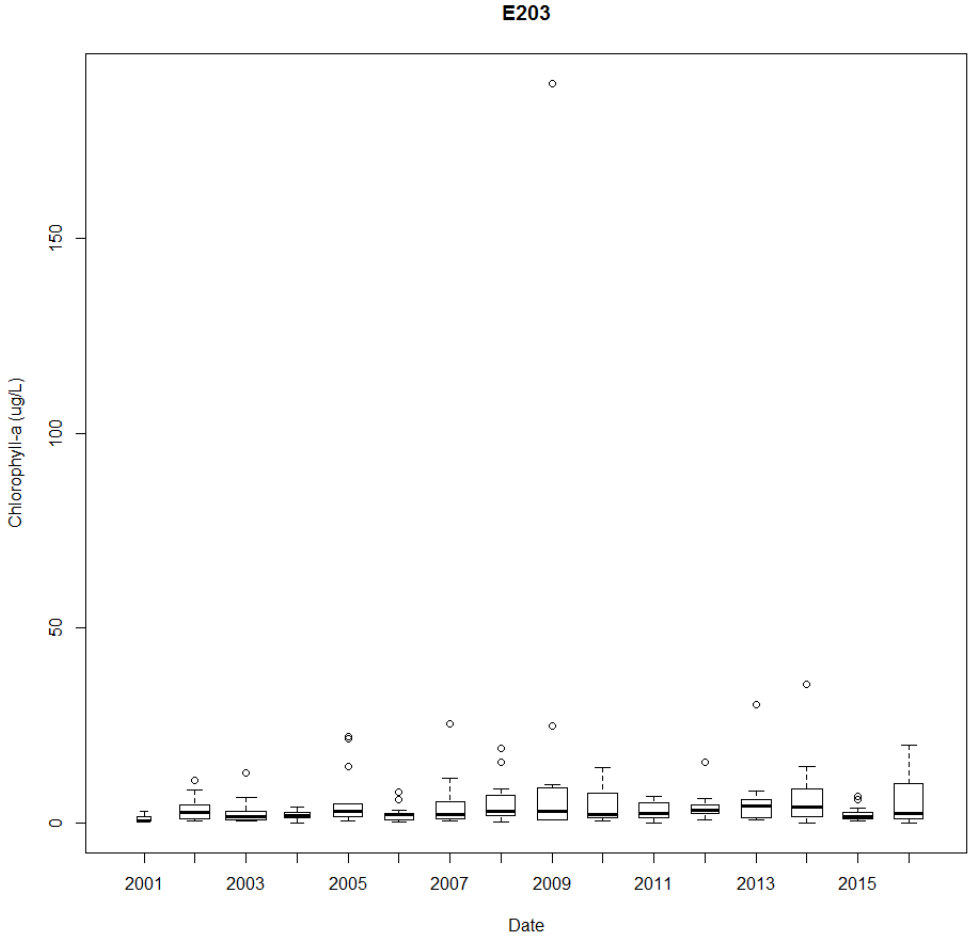

E157
Nitrogen Total
0
2
4
6
8
10
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

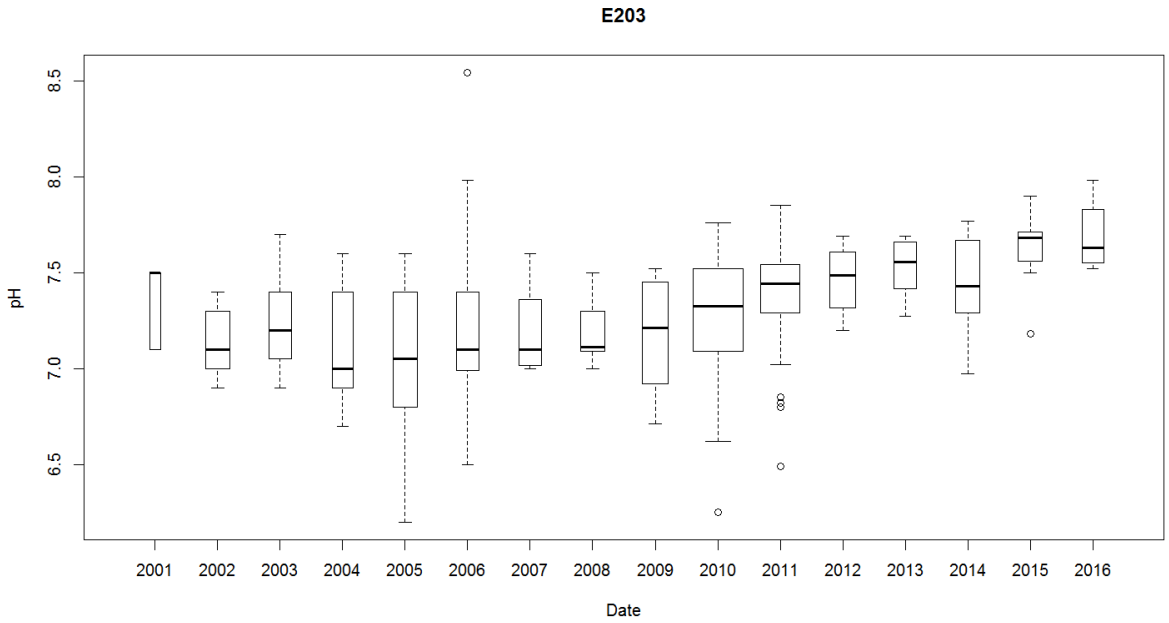

E157
FRP
0.0
0.1
0.2
0.3
0.4
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

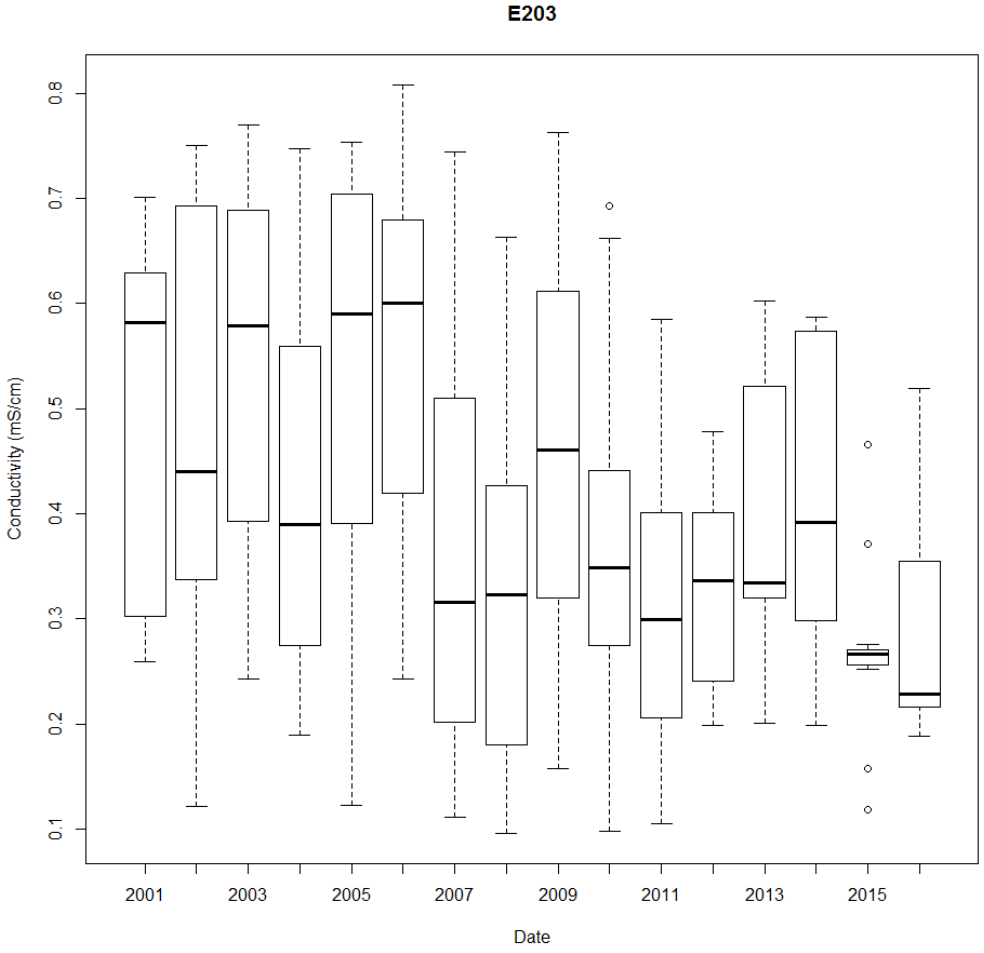

E157
Total phosphorus
0.0
0.5
1.0
1.5
2.0
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

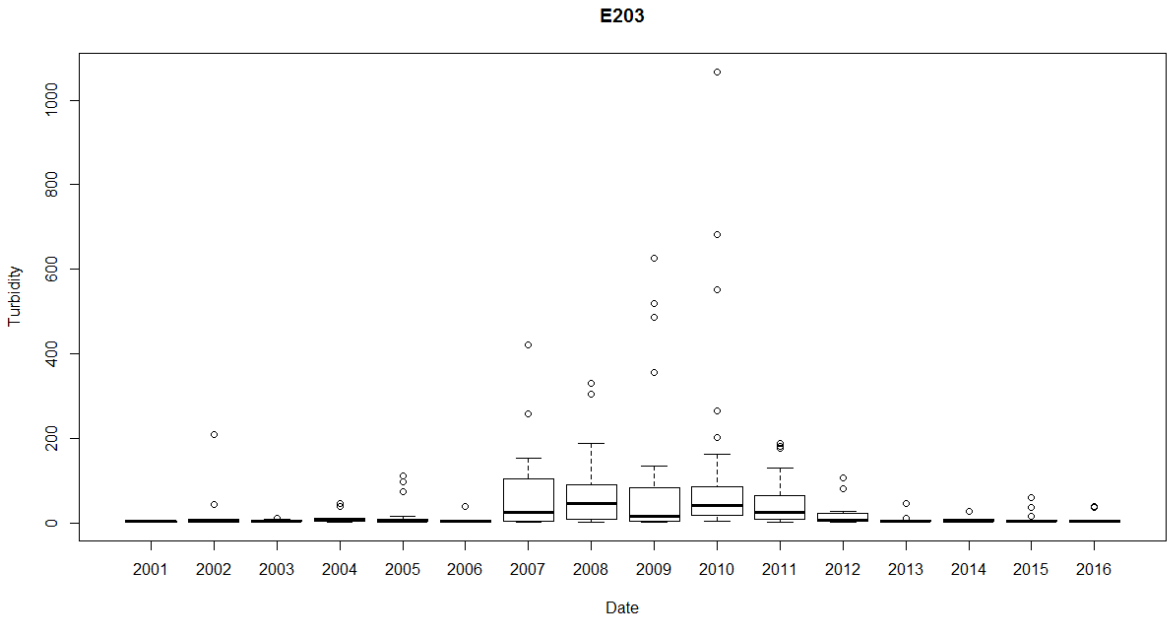

E157
Aluminium
0
2
4
6
8
10
12
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

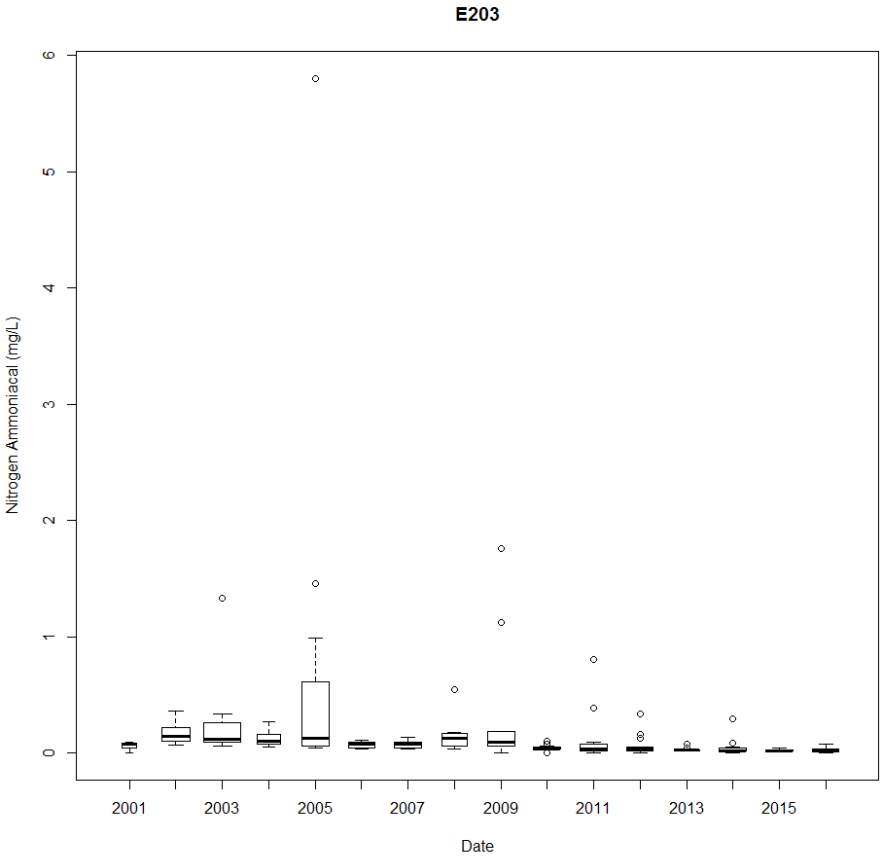

E157
Iron
0
5
10
15
20
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

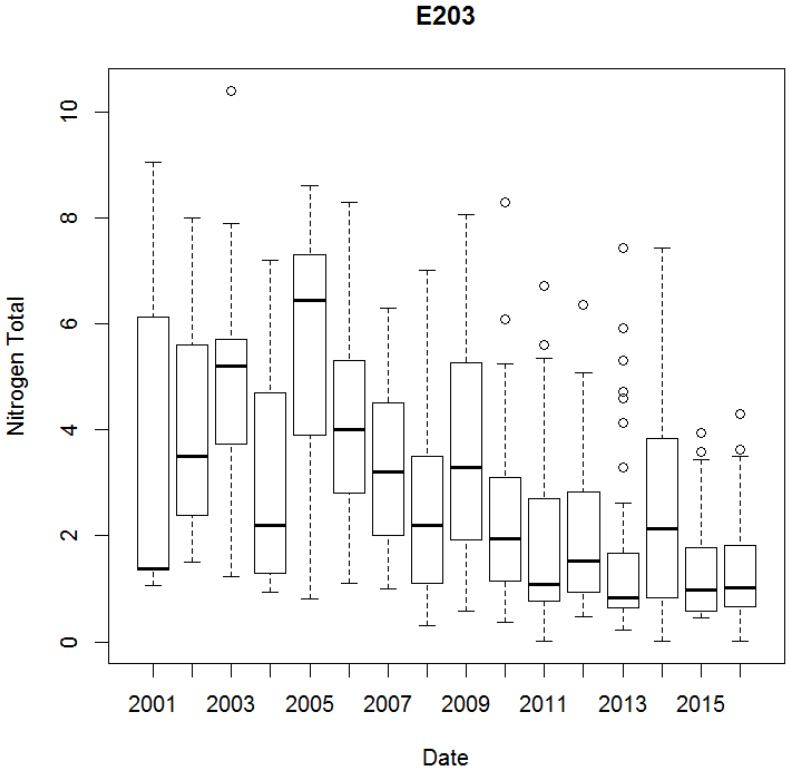

E203
Chlorophyll-a (ug/L)
0
50
100
150
2001
2003
2005
2007
2009
2011
2013
2015
Date

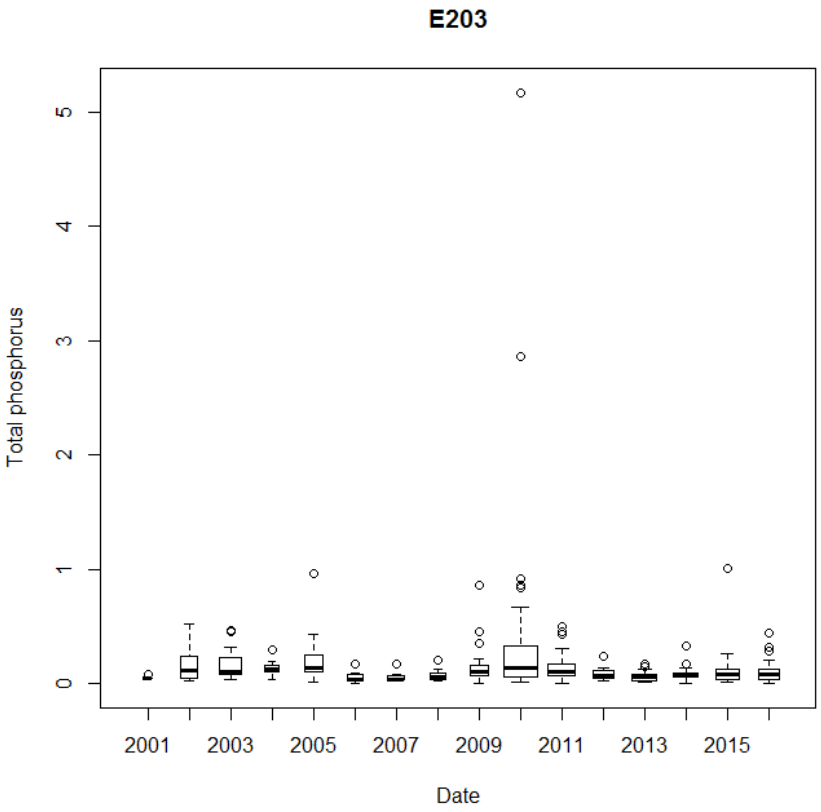

E203
pH
6.5
7.0
7.5
8.0
8.5
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

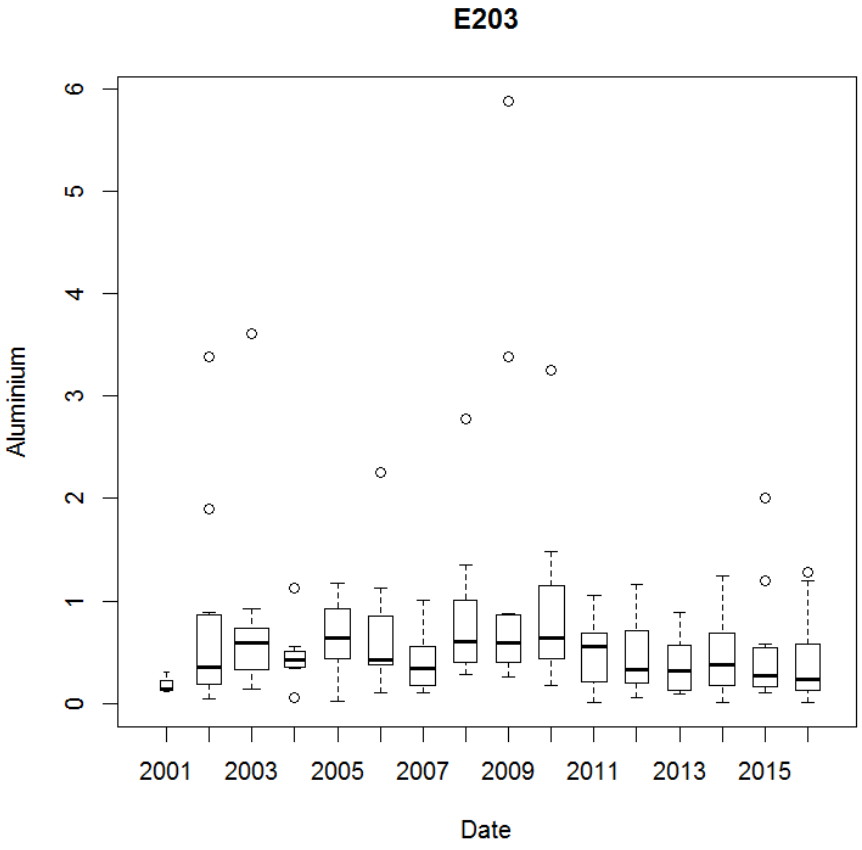

E203
Conductivity (mS/cm)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
2001
2003
2005
2007
2009
2011
2013
2015
Date

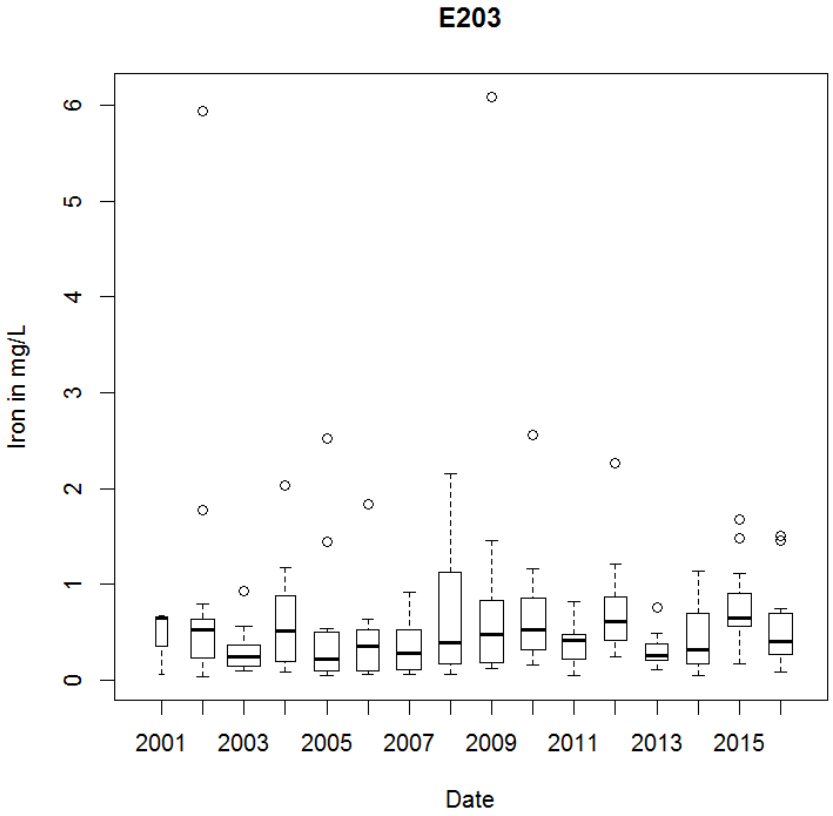

E203
Turbidity
0
200
400
600
800
1000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

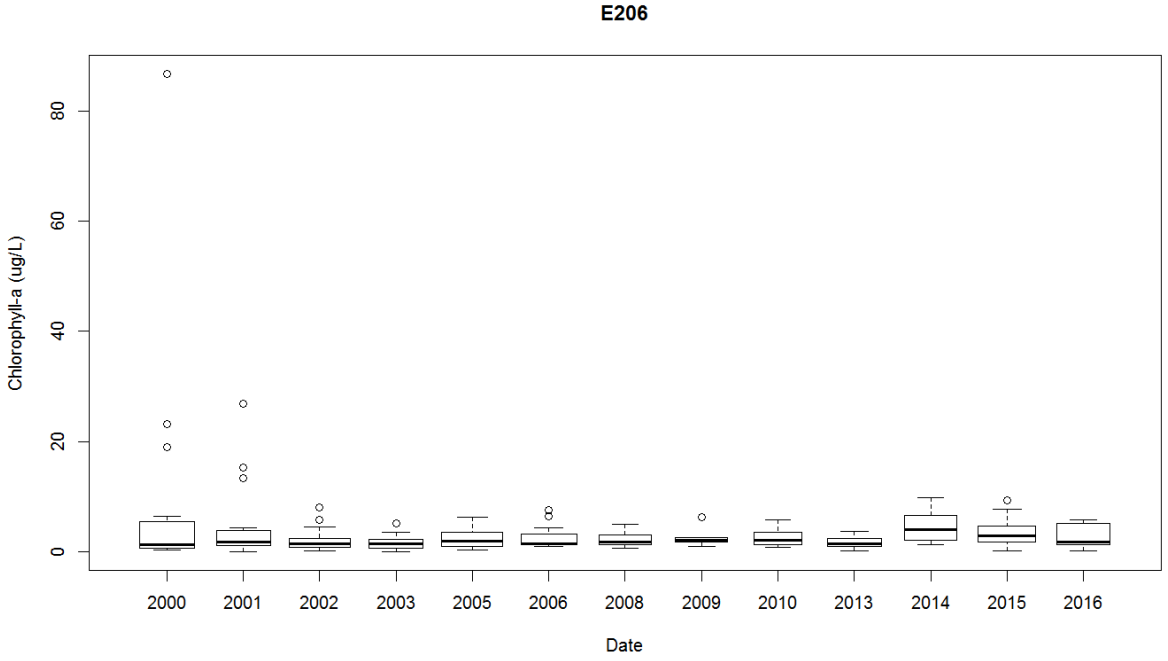

E203
Nitrogen Ammoniacal (mg/L)
0
1
2
3
4
5
6
2001
2003
2005
2007
2009
2011
2013
2015
Date

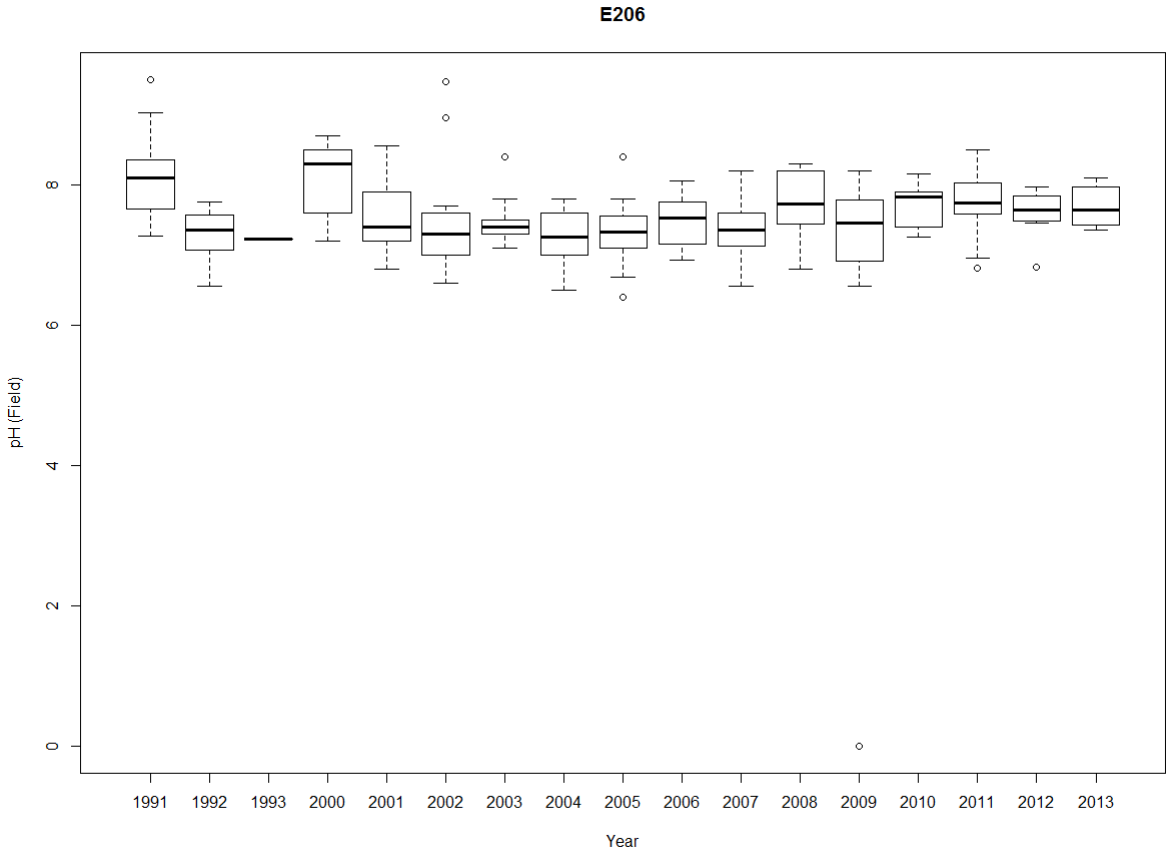

E203
Nitrogen Total
0
2
4
6
8
10
2001
2003
2005
2007
2009
2011
2013
2015
Date

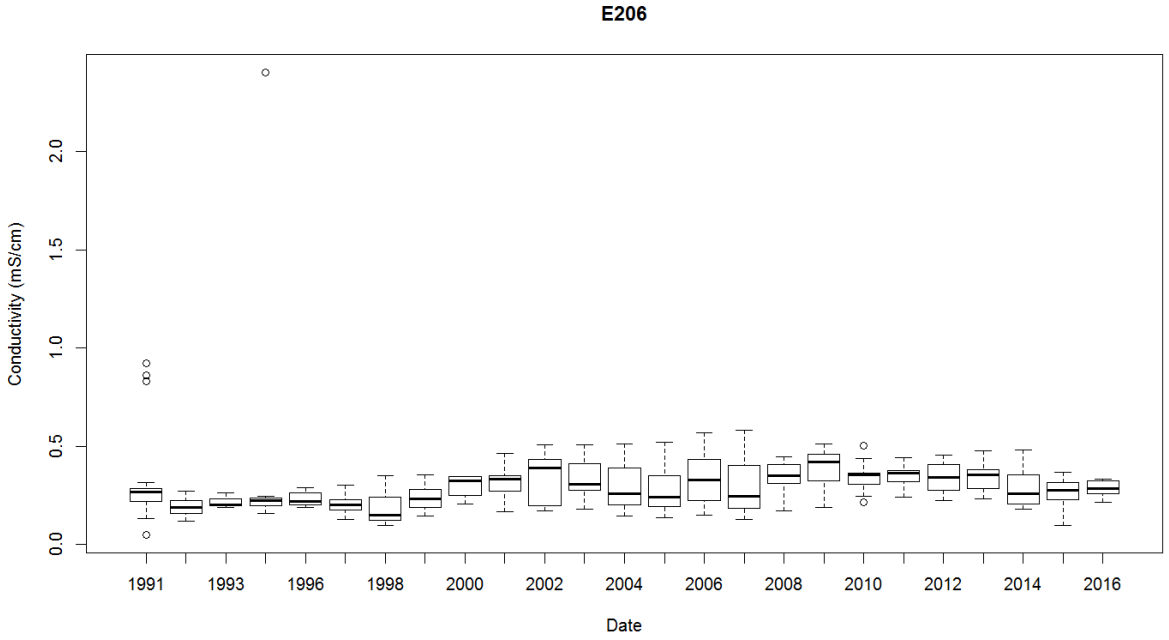

E203
Total phosphorus
0
1
2
3
4
5
2001
2003
2005
2007
2009
2011
2013
2015
Date


E203
Aluminium
0
1
2
3
4
5
6
2001
2003
2005
2007
2009
2011
2013
2015
Date

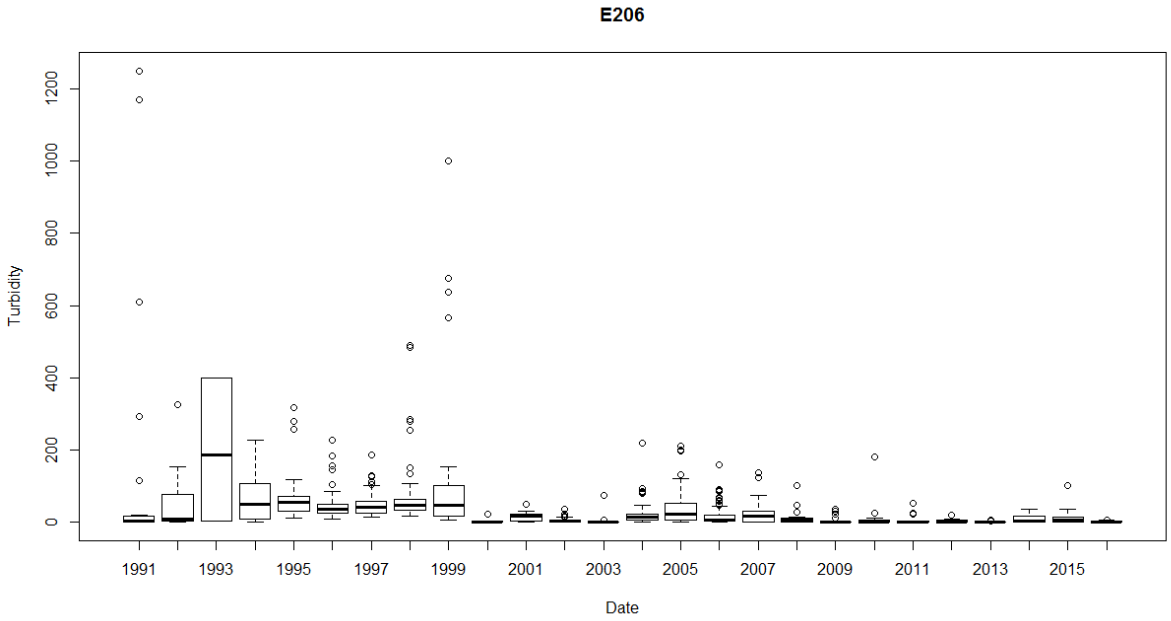

E203
Iron in mg/L
0
1
2
3
4
5
6
2001
2003
2005
2007
2009
2011
2013
2015
Date

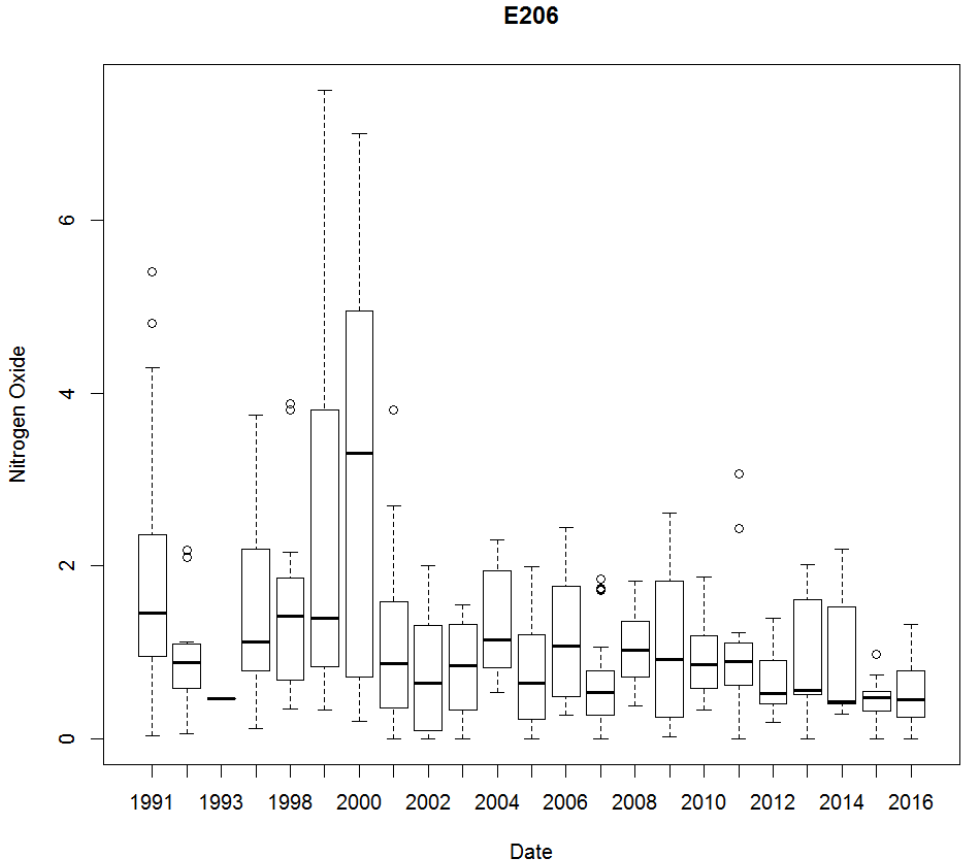

E206
Chlorophyll-a (ug/L)
0
20
40
60
80
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

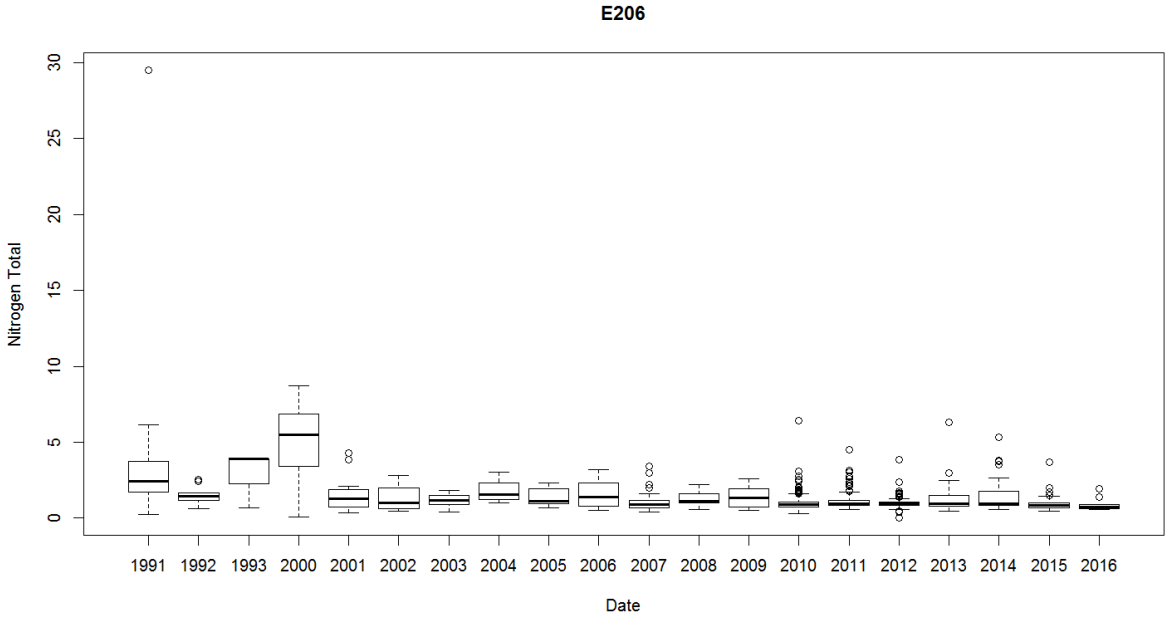

E206
pH (Field)
0
2
4
6
8
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Year

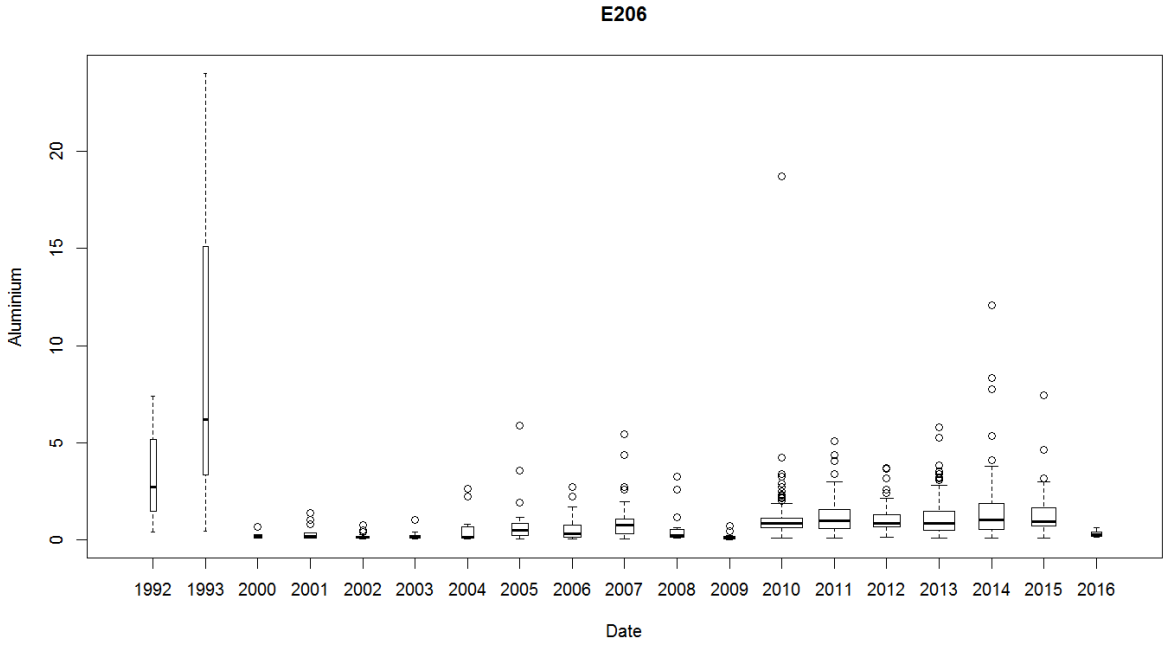

E206
Conductivity (mS/cm)
0.0
0.5
1.0
1.5
2.0
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

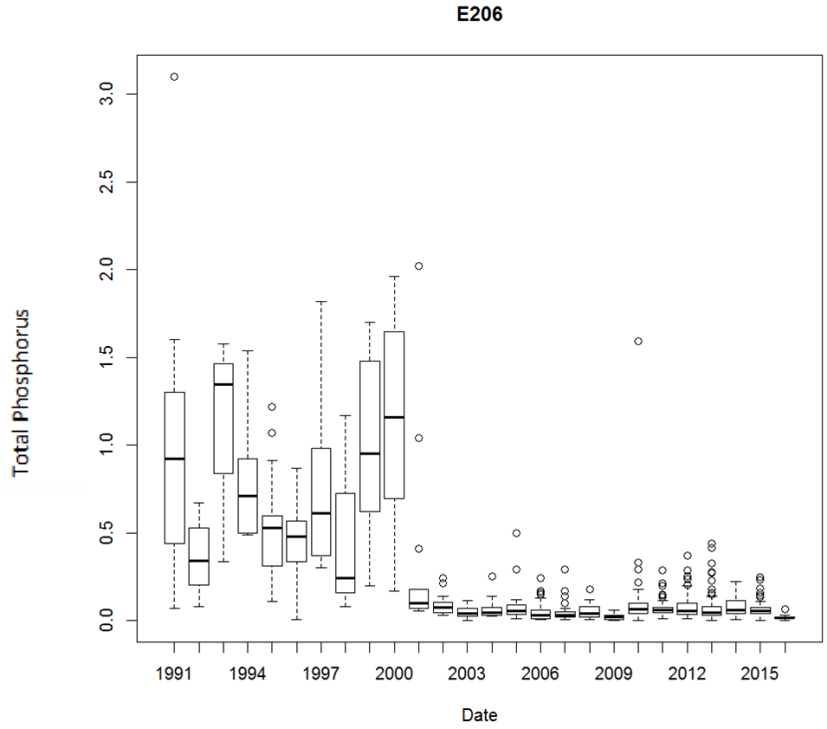
r

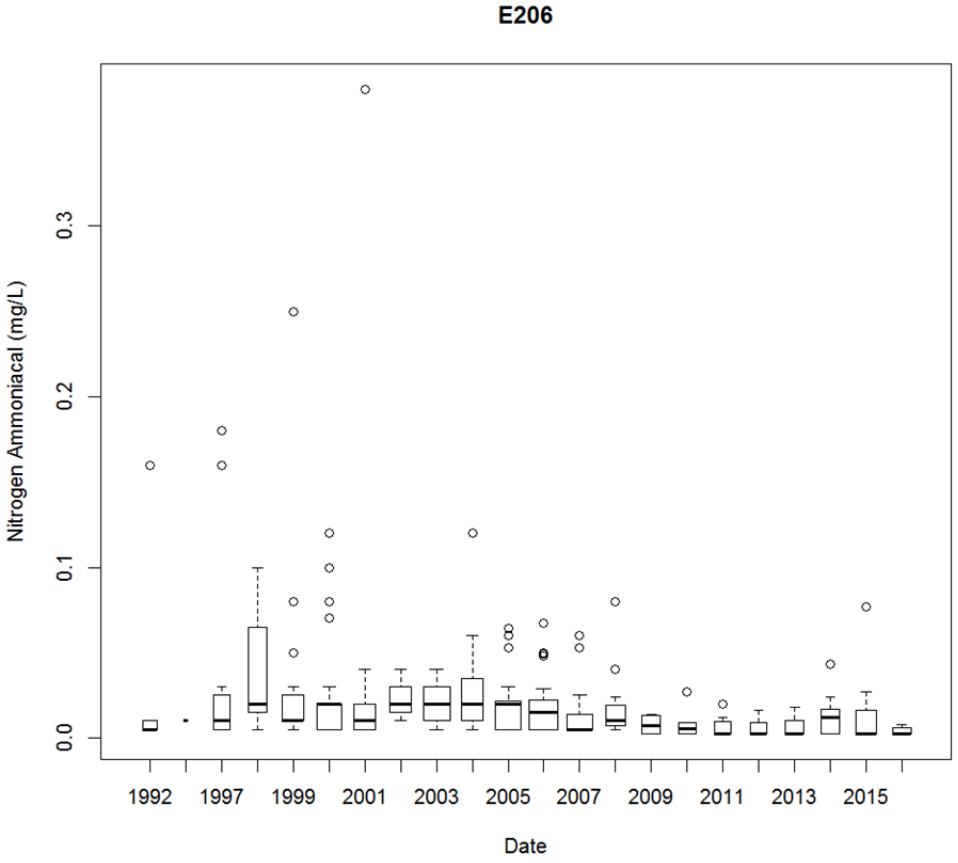

E206
Turbidity
0
200
400
600
800
1000
1200
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

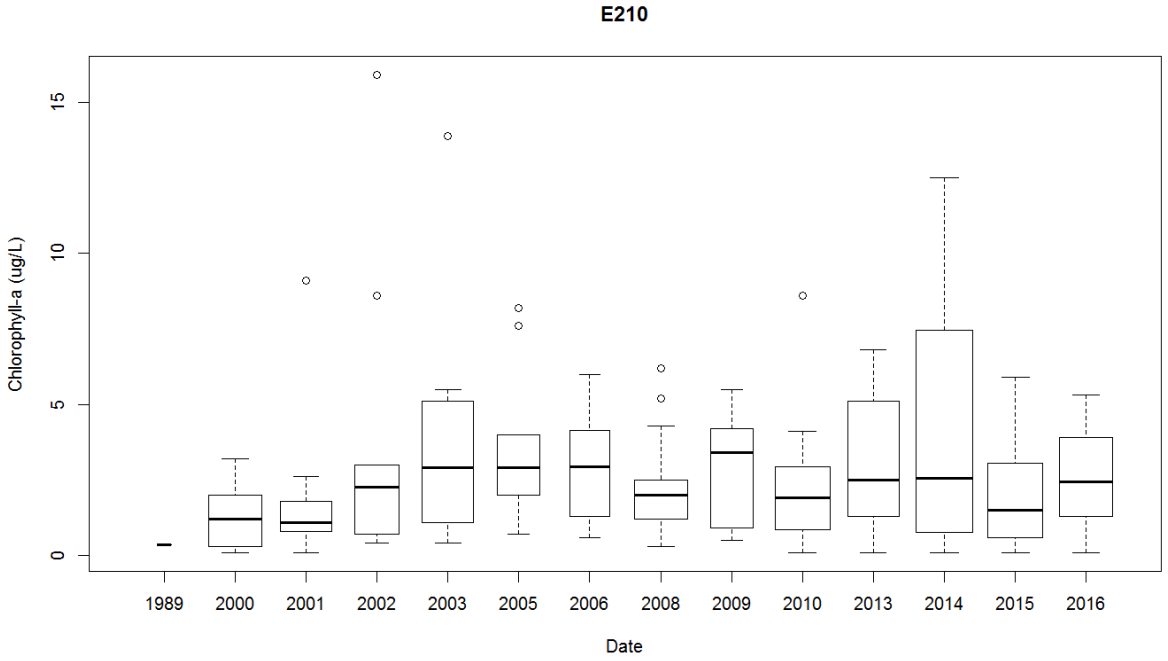

E206
Nitrogen Oxide
0
2
4
6
1991
1993
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

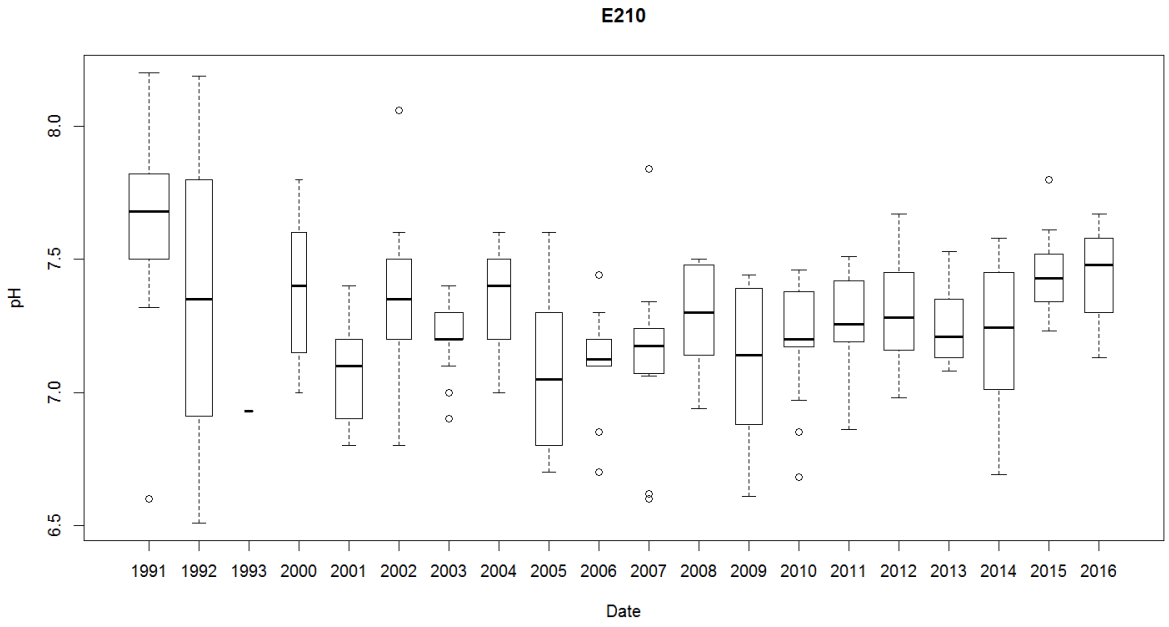

E206
Nitrogen Total
0
5
10
15
20
25
30
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

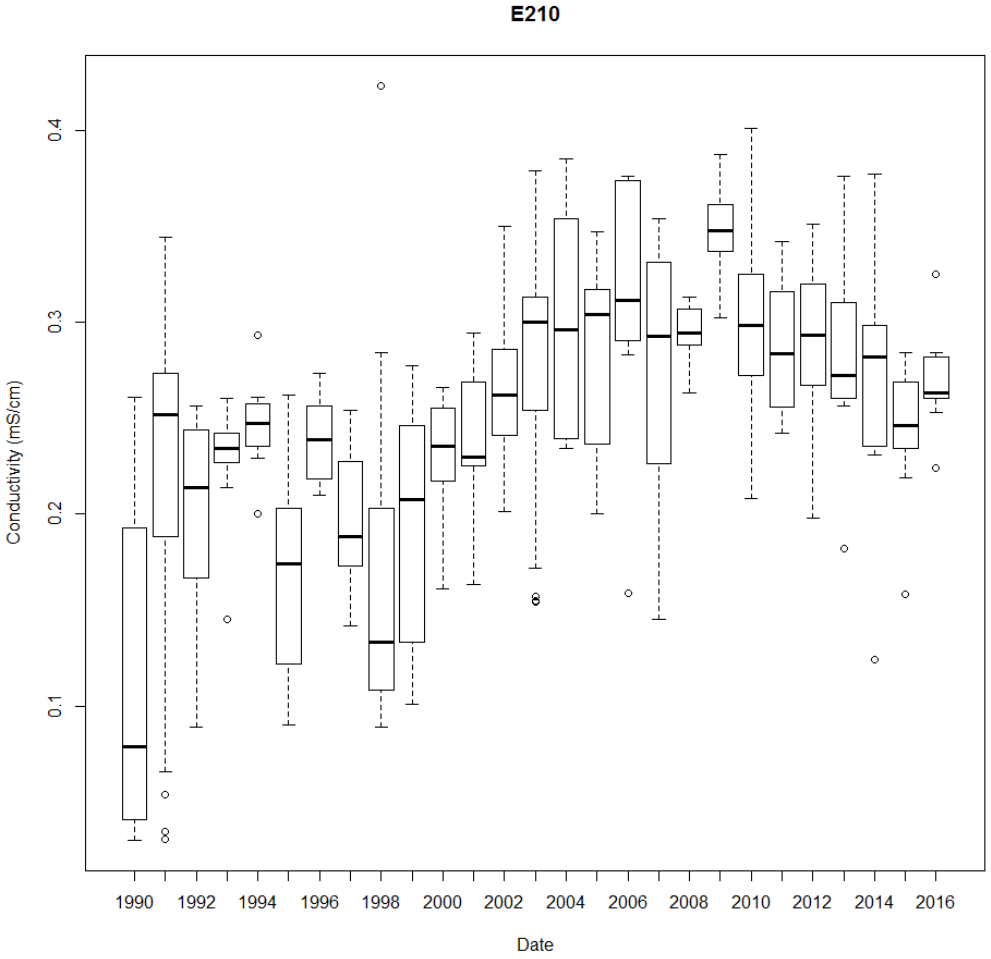

E206
Aluminium
0
5
10
15
20
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

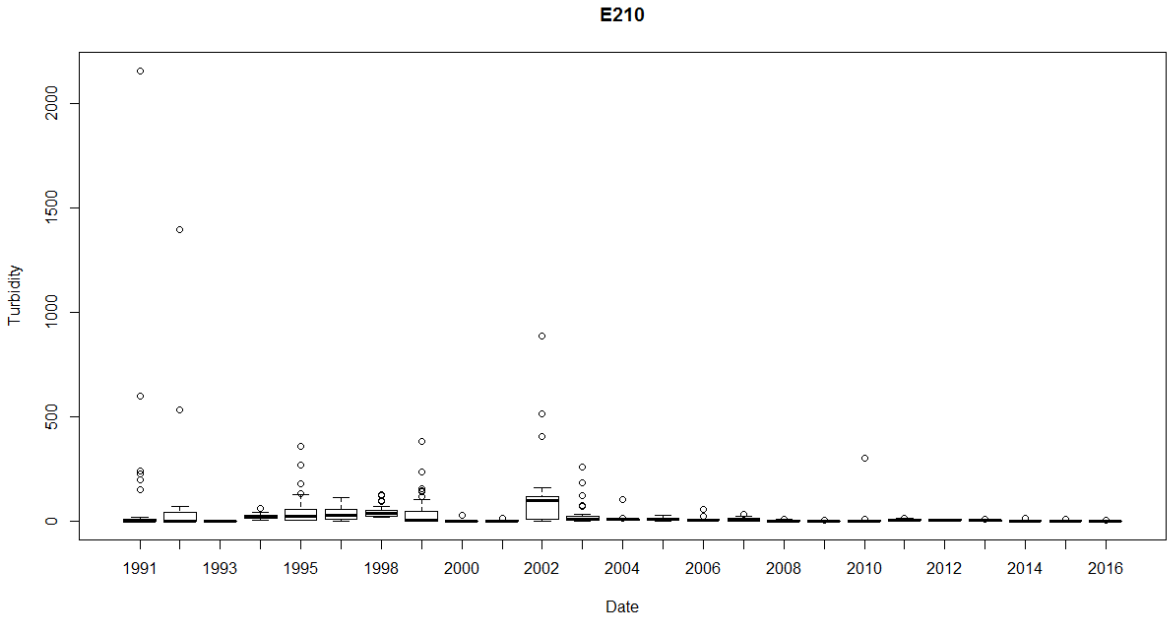

E206
Total Phosphorus
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

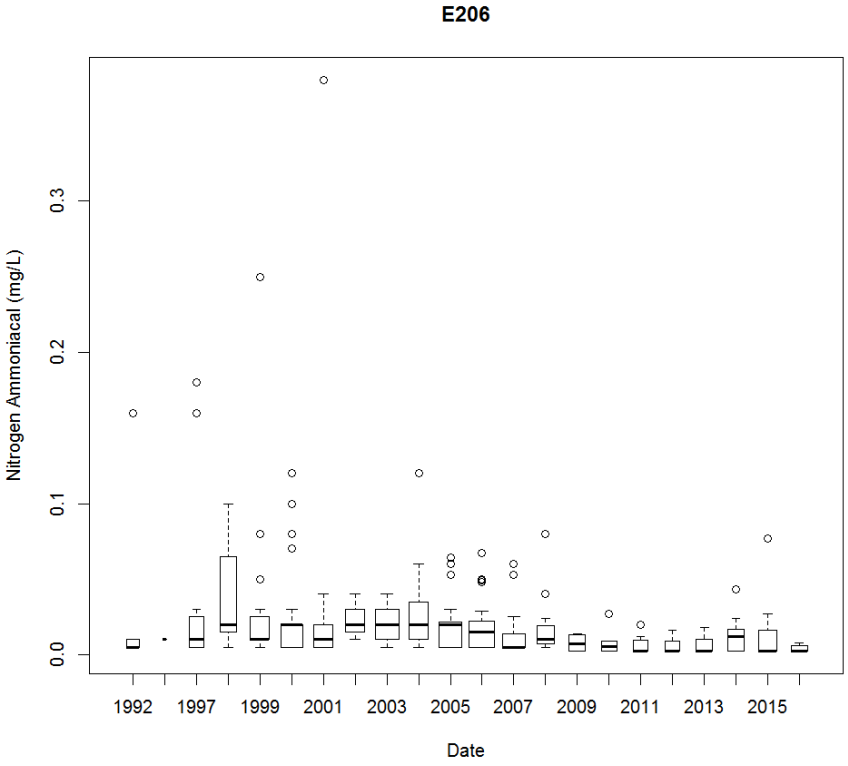

E206
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
1992
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

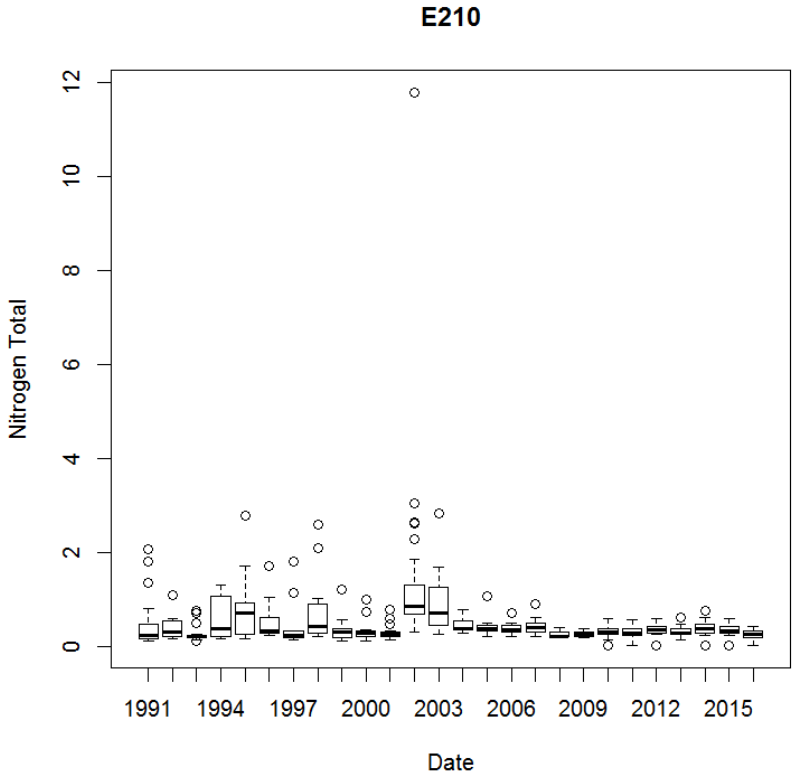

E210
Chlorophyll-a (ug/L)
0
5
10
15
1989
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

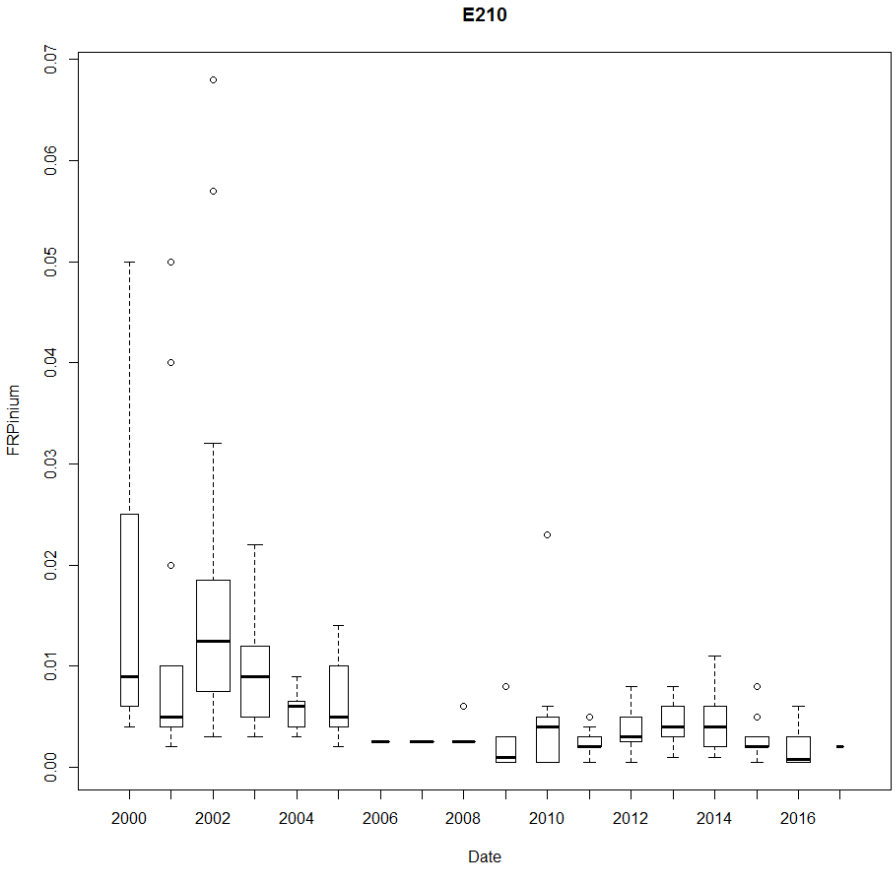

E210
pH
6.5
7.0
7.5
8.0
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

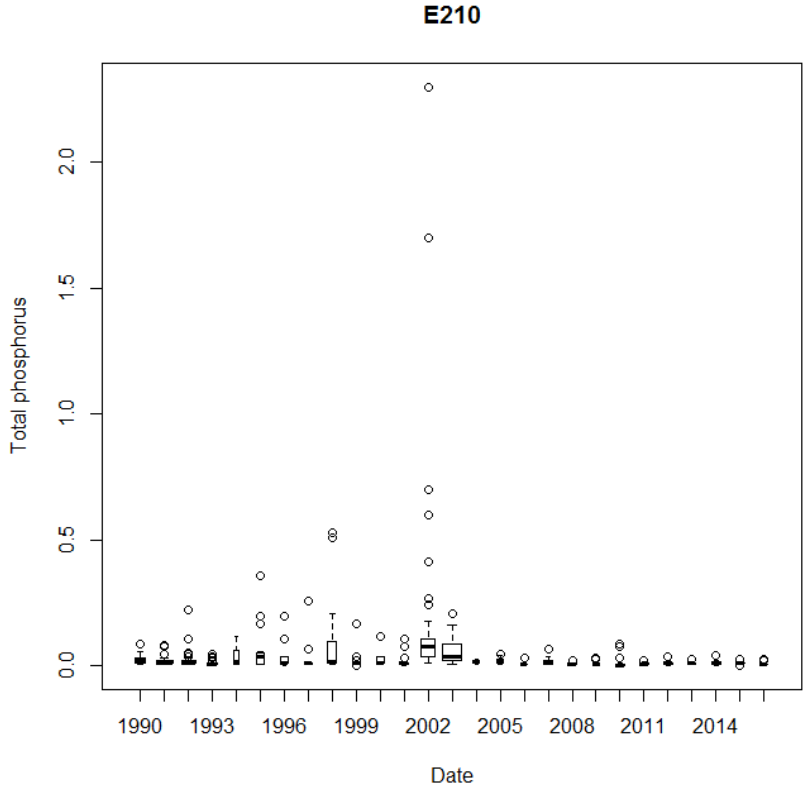

E210
Conductivity (mS/cm)
0.1
0.2
0.3
0.4
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

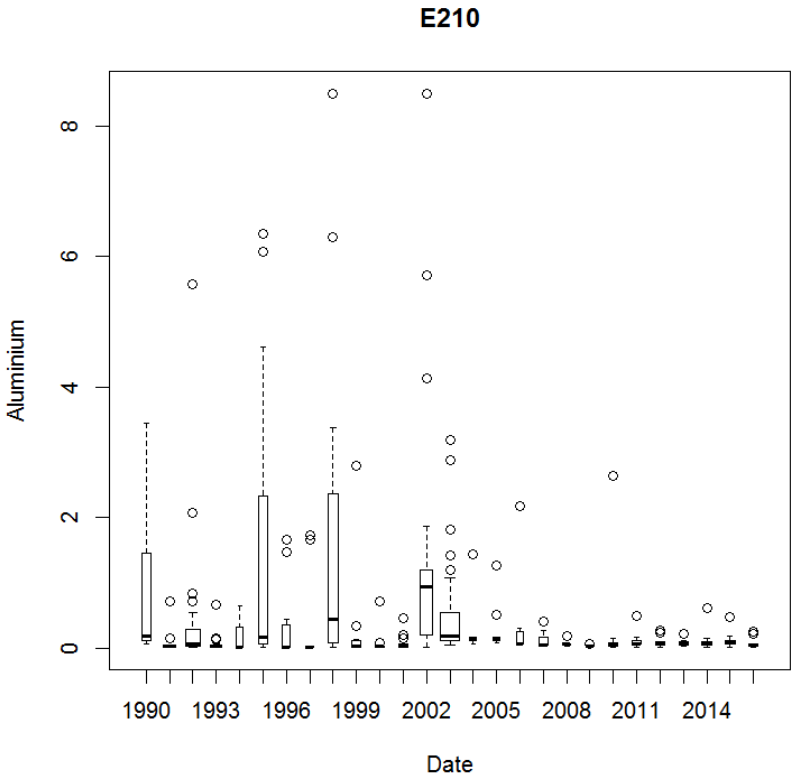

E210
Turbidity
0
500
1000
1500
2000
1991
1993
1995
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

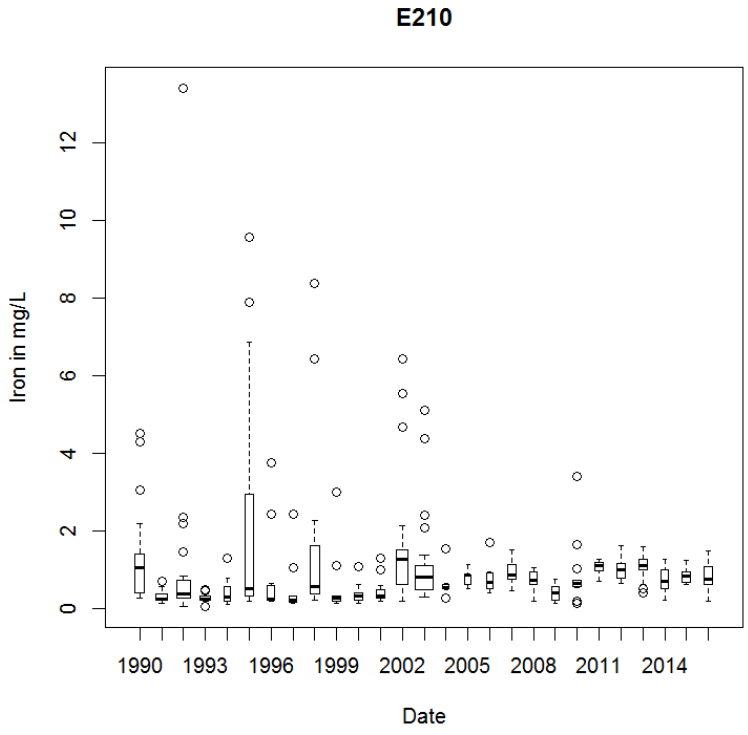

E206
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
1992
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

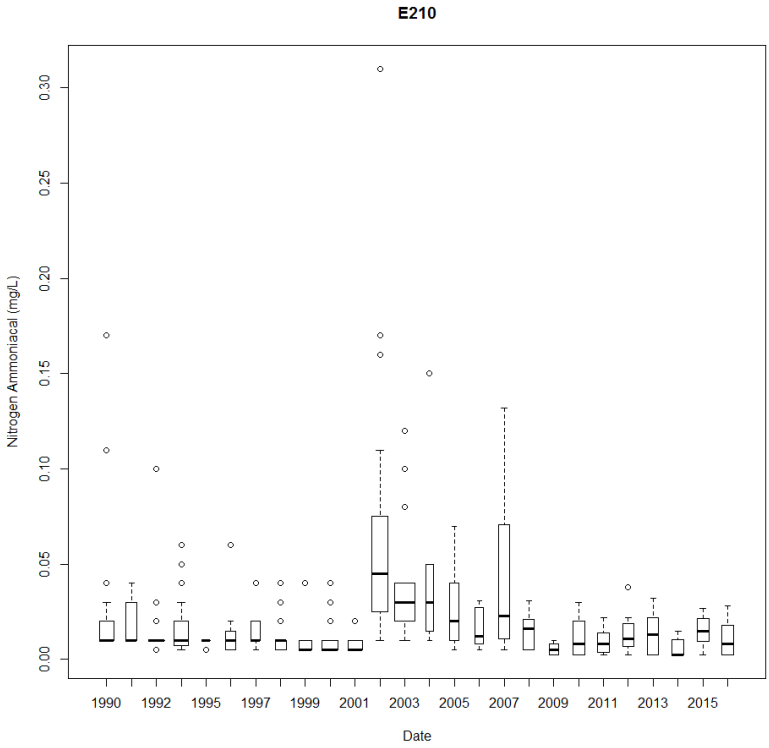

E210
Nitrogen Total
0
2
4
6
8
10
12
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

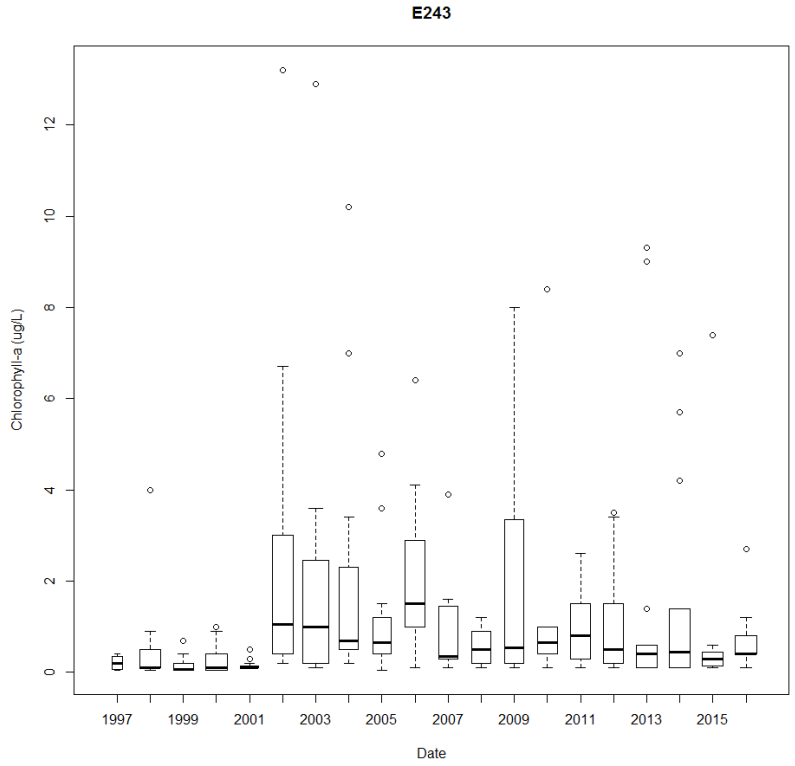

E210
FRPinium
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

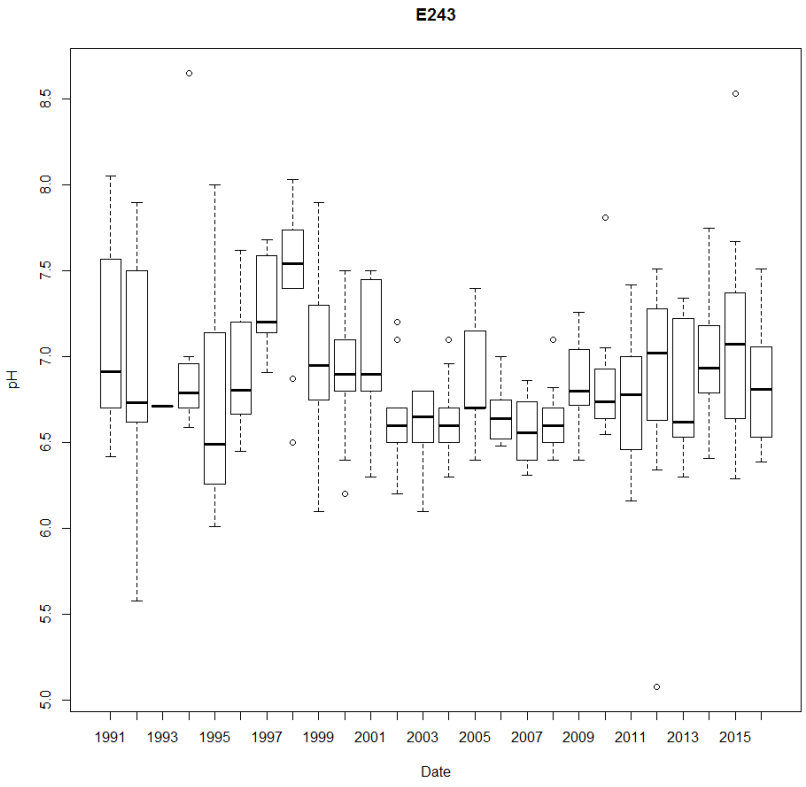

E210
Total phosphorus
0.0
0.5
1.0
1.5
2.0
1990
1993
1996
1999
2002
2005
2008
2011
2014
Date

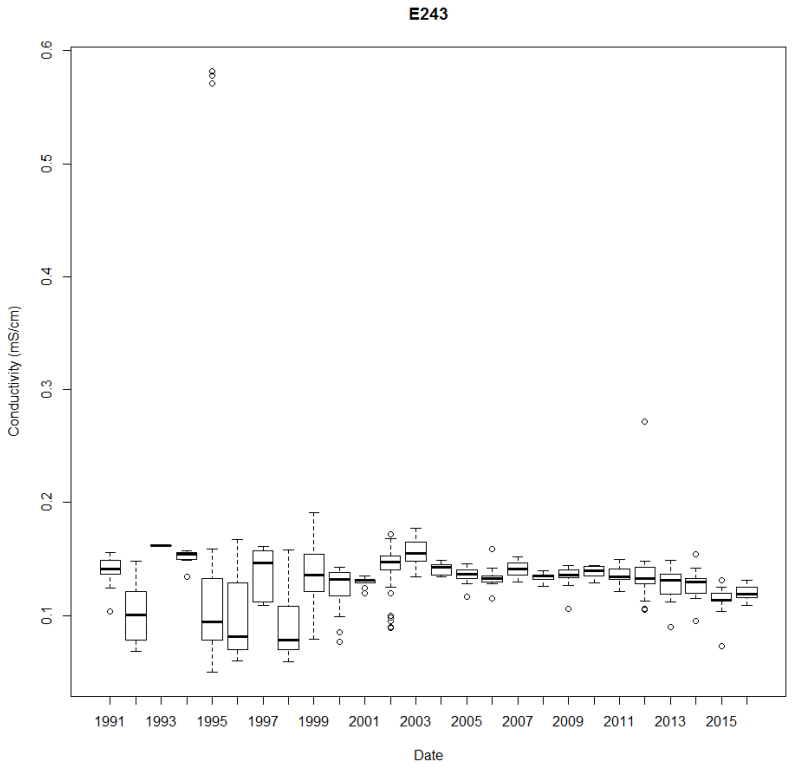

E210
Aluminium
0
2
4
6
8
1990
1993
1996
1999
2002
2005
2008
2011
2014
Date

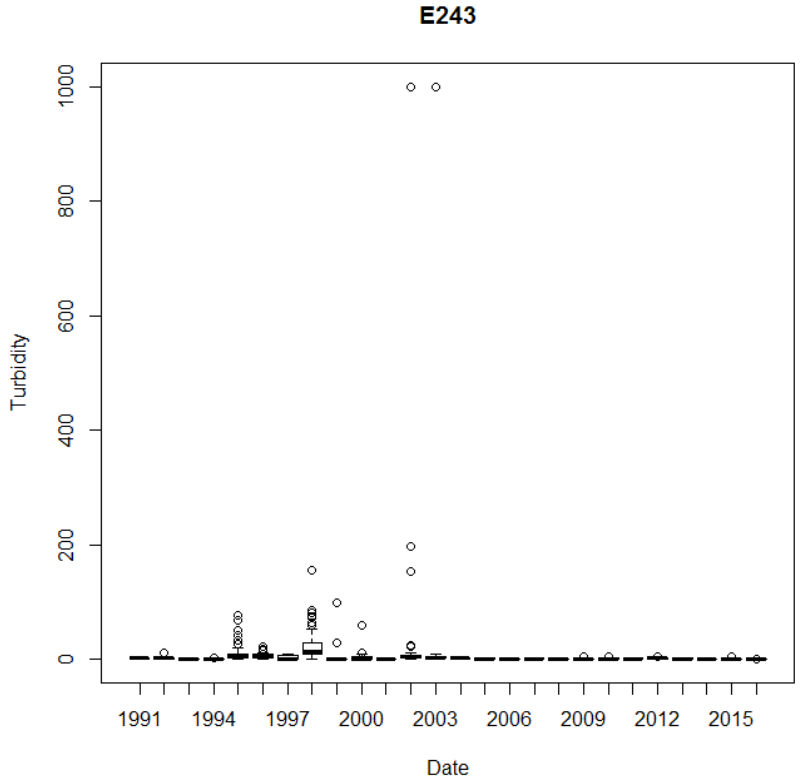

E210
Iron in mg/L
0
2
4
6
8
10
12
1990
1993
1996
1999
2002
2005
2008
2011
2014
Date

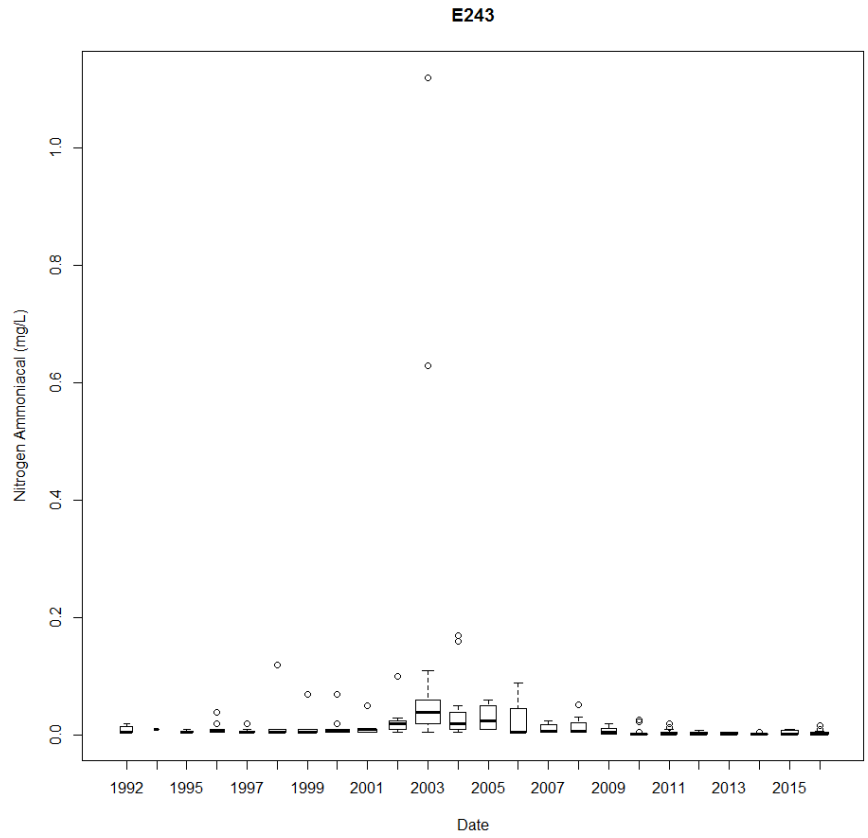

E210
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1990
1992
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

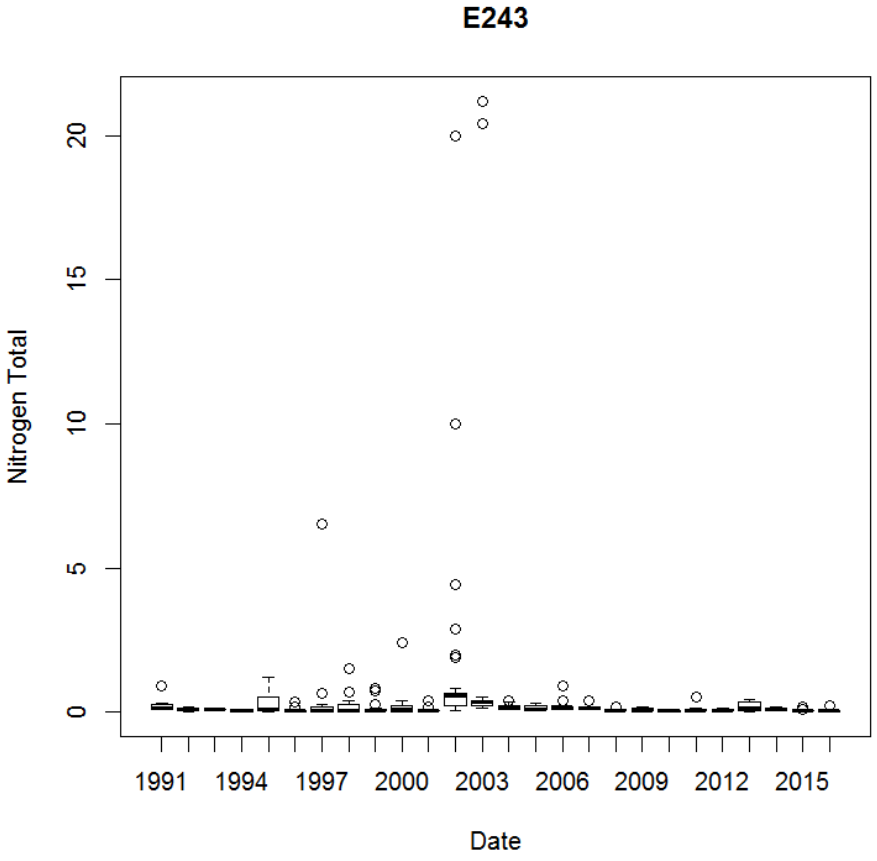

E243
Chlorophyll-a (ug/L)
0
2
4
6
8
10
12
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

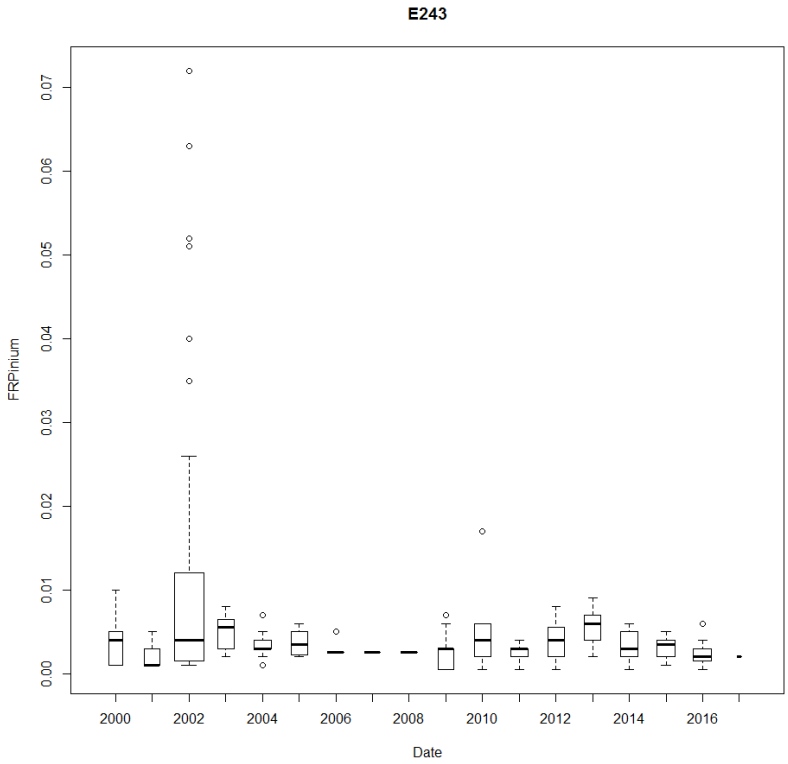

E243
pH
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

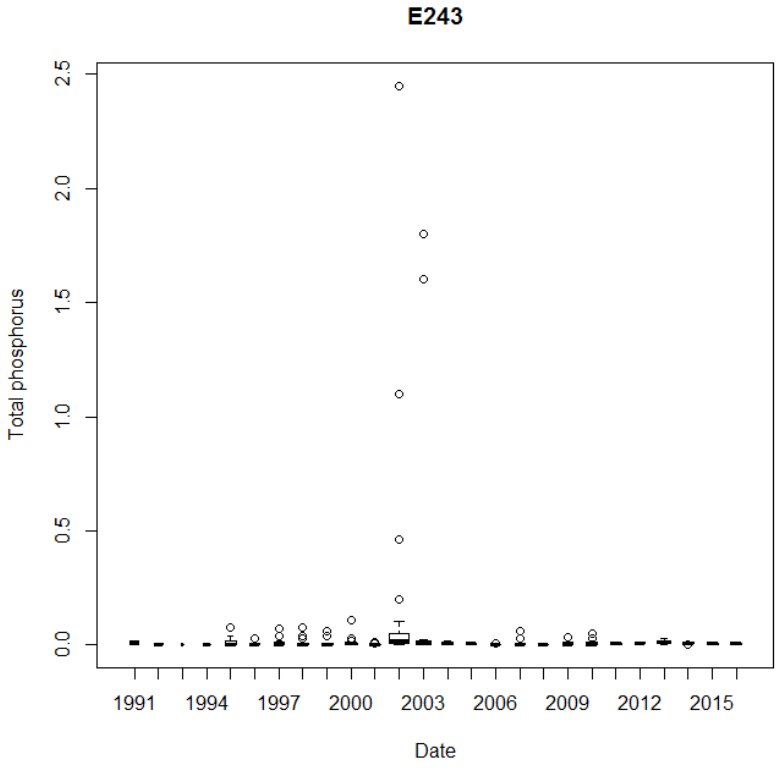

E243
Conductivity (mS/cm)
0.1
0.2
0.3
0.4
0.5
0.6
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

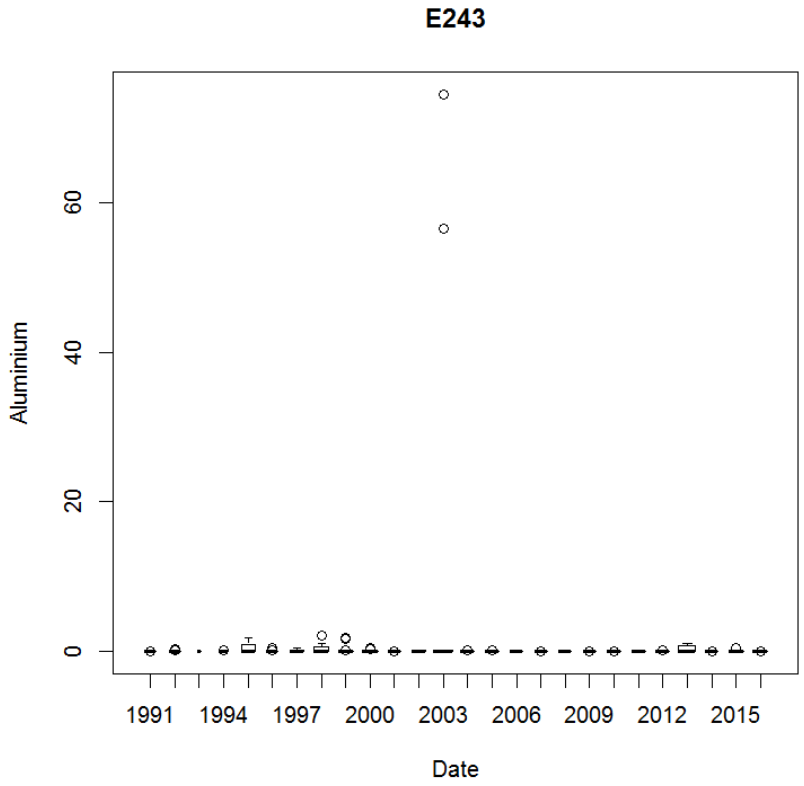

E243
Turbidity
0
200
400
600
800
1000
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

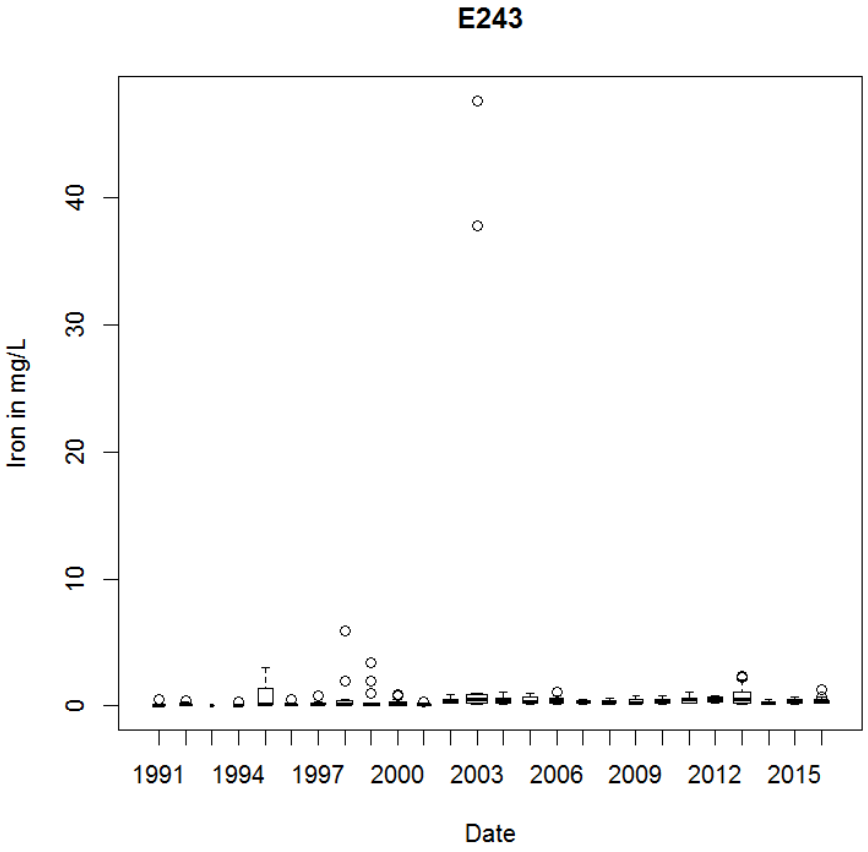

E243
Nitrogen Ammoniacal (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
1992
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

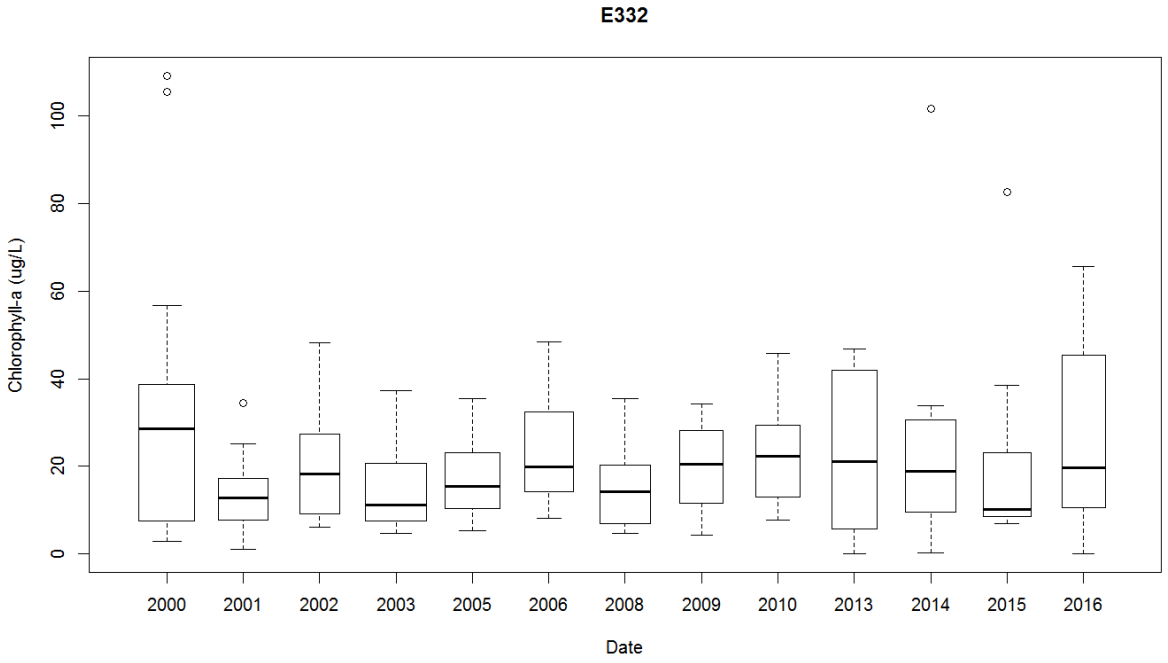

E243
Nitrogen Total
0
5
10
15
20
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

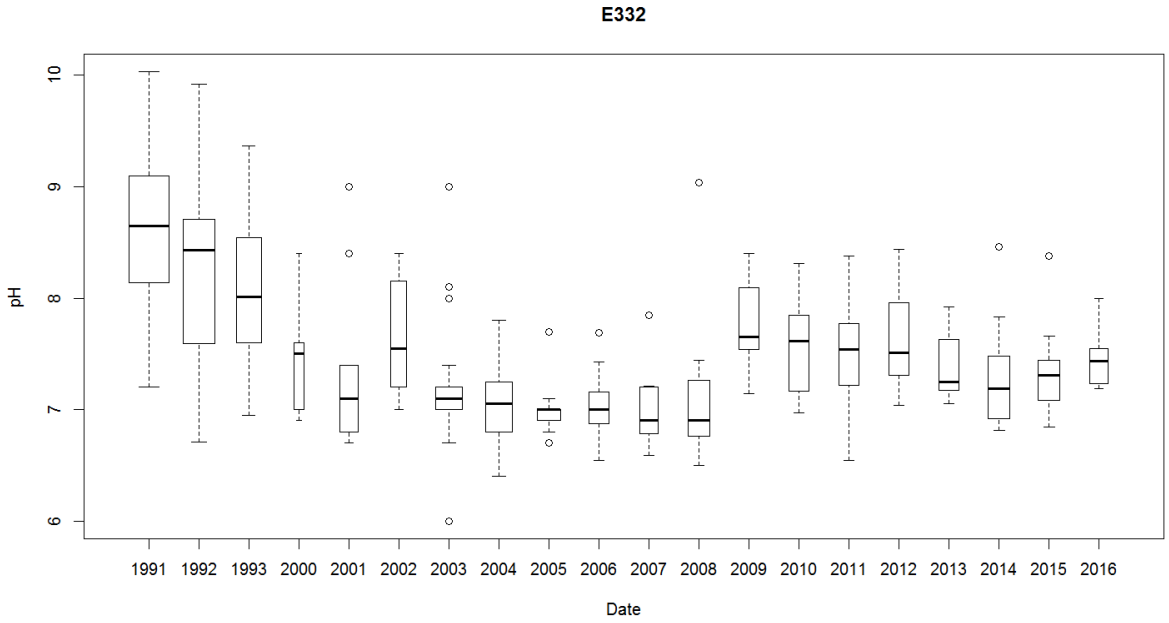

E243
FRPinium
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

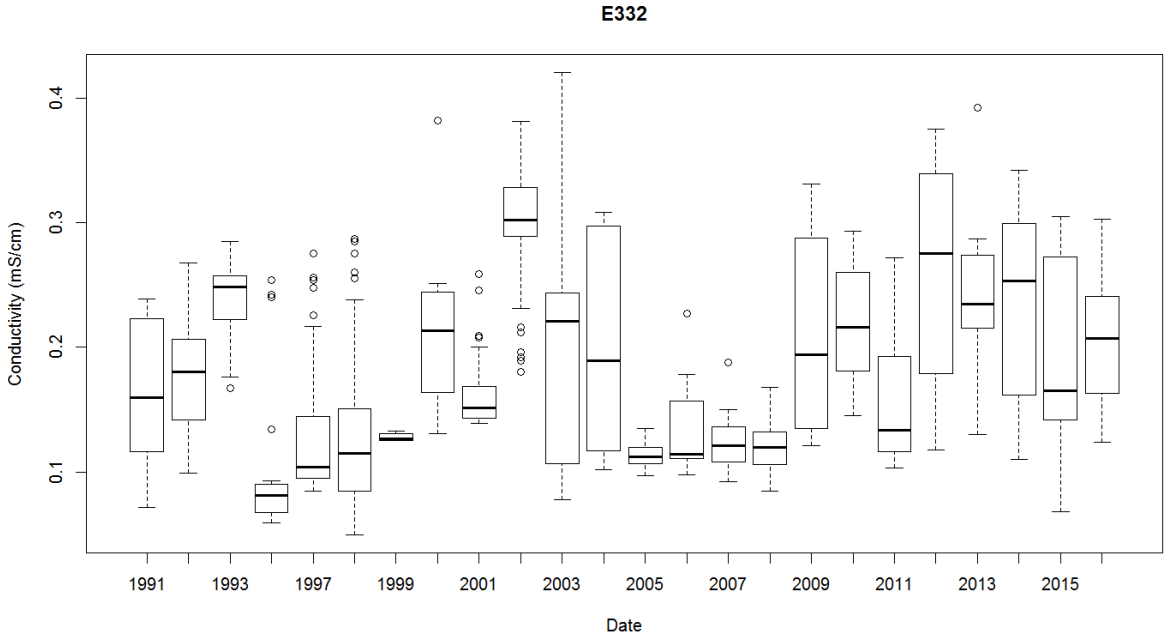

E243
Total phosphorus
0.0
0.5
1.0
1.5
2.0
2.5
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

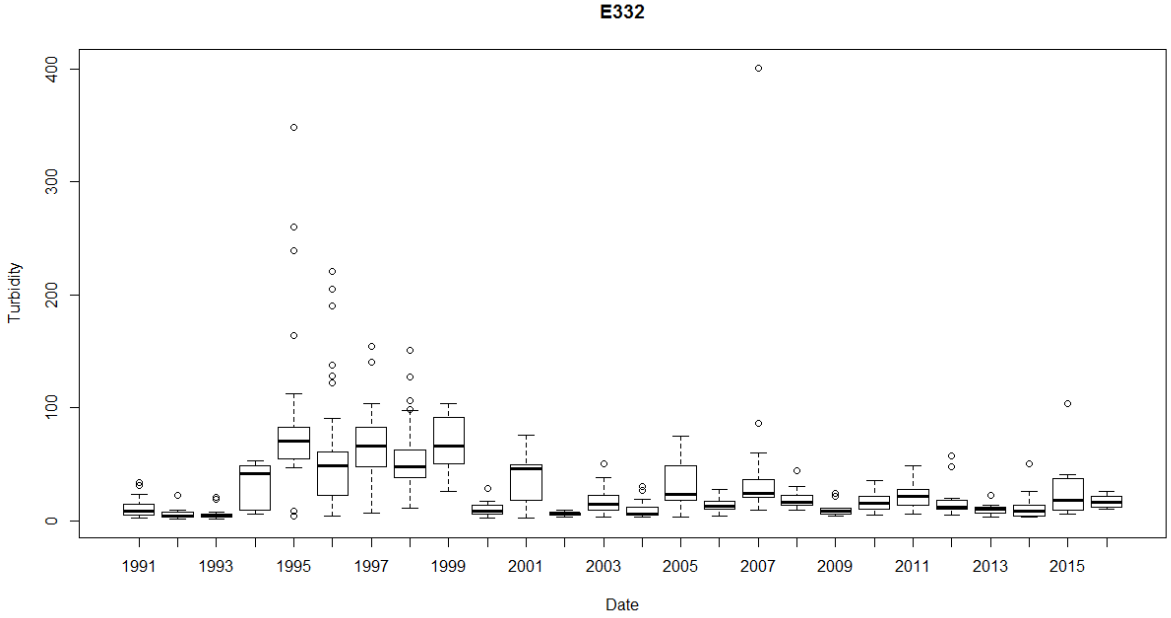

E243
Aluminium
0
20
40
60
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

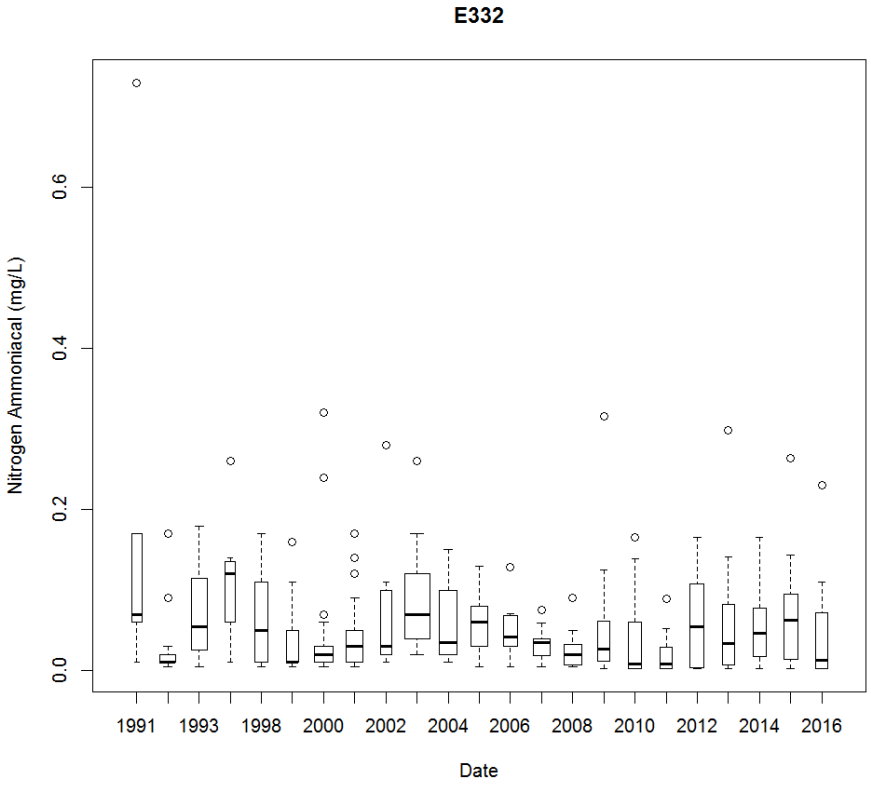

E243
Iron in mg/L
0
10
20
30
40
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

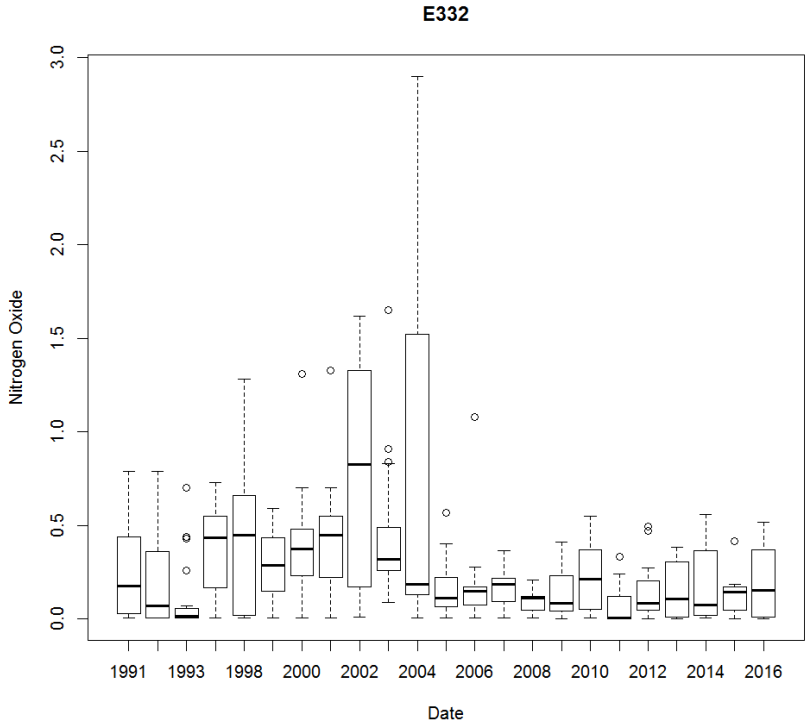

E332
Chlorophyll-a (ug/L)
0
20
40
60
80
100
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

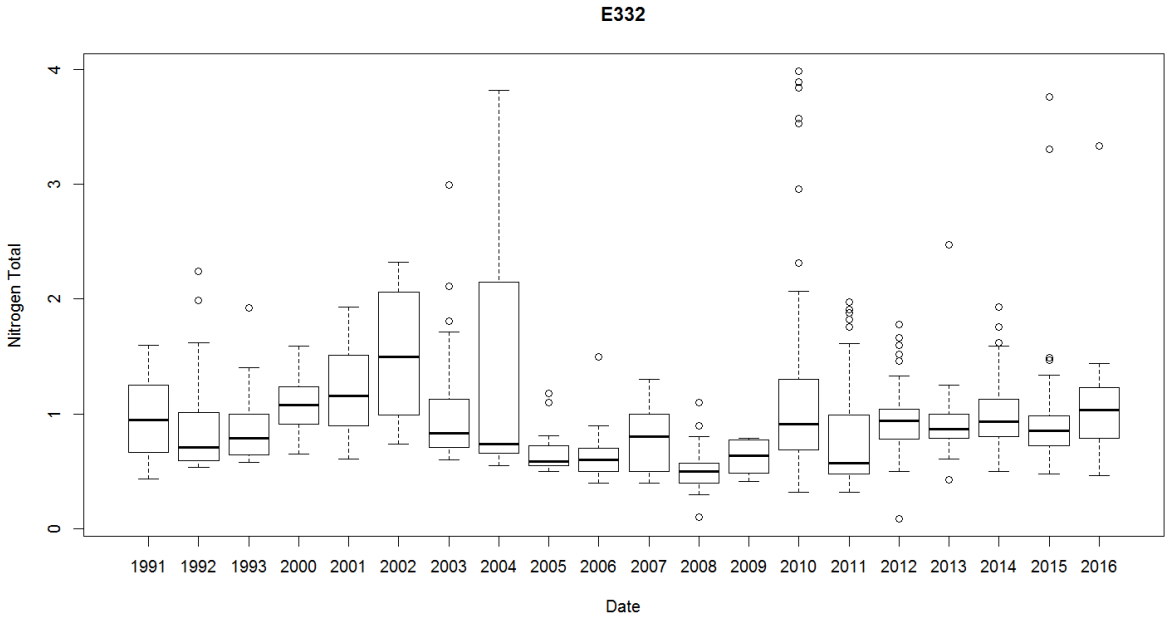

E332
pH
6
7
8
9
10
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

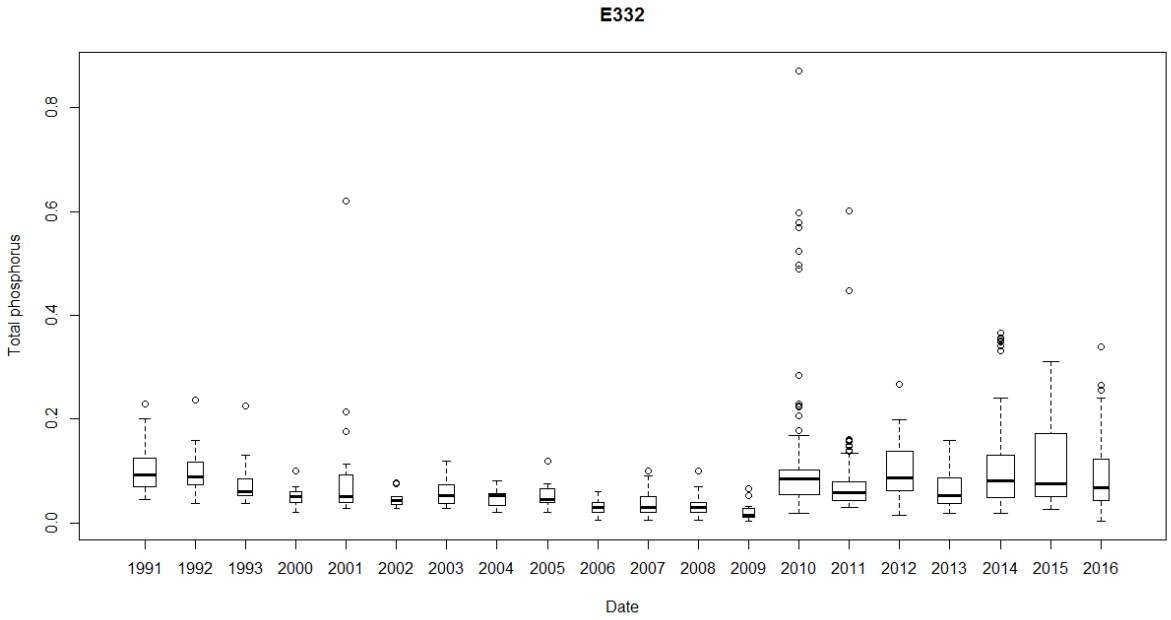

E332
Conductivity (mS/cm)
0.1
0.2
0.3
0.4
1991
1993
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

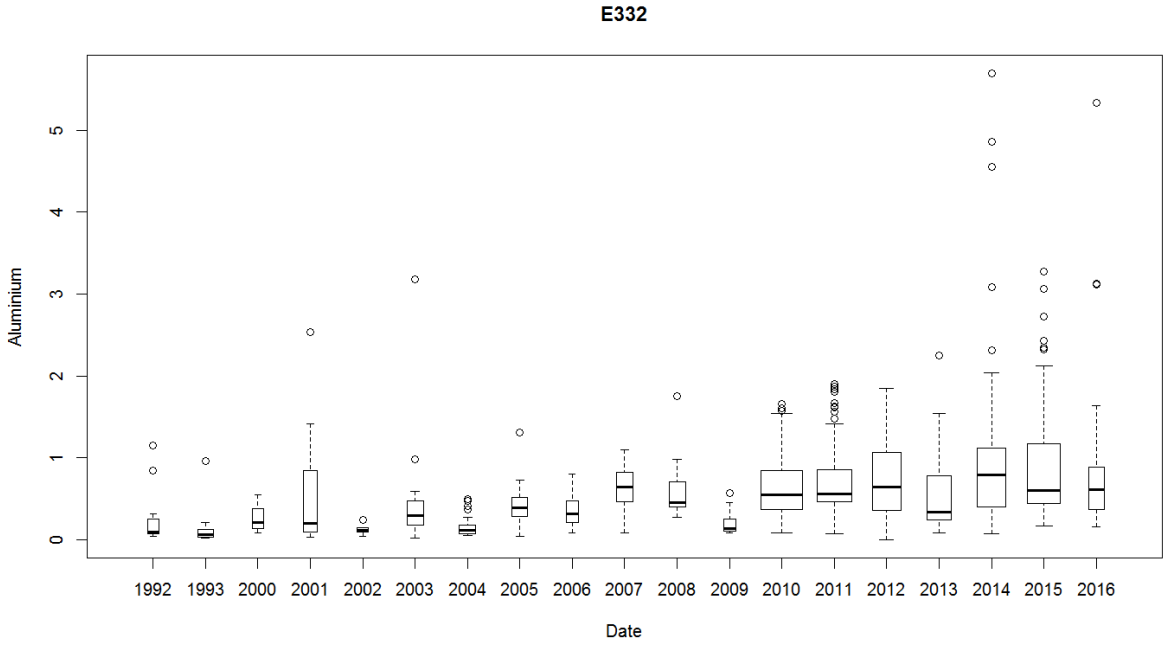

E332
Turbidity
0
100
200
300
400
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

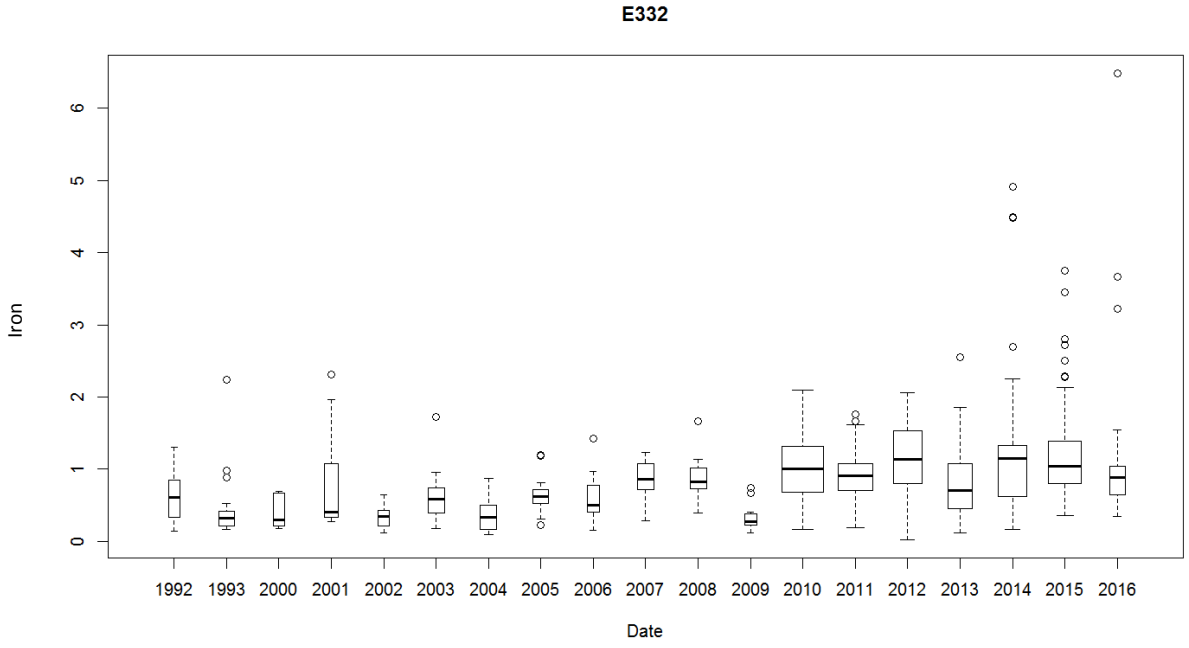

E332
Nitrogen Ammoniacal (mg/L)
0.0
0.2
0.4
0.6
1991
1993
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

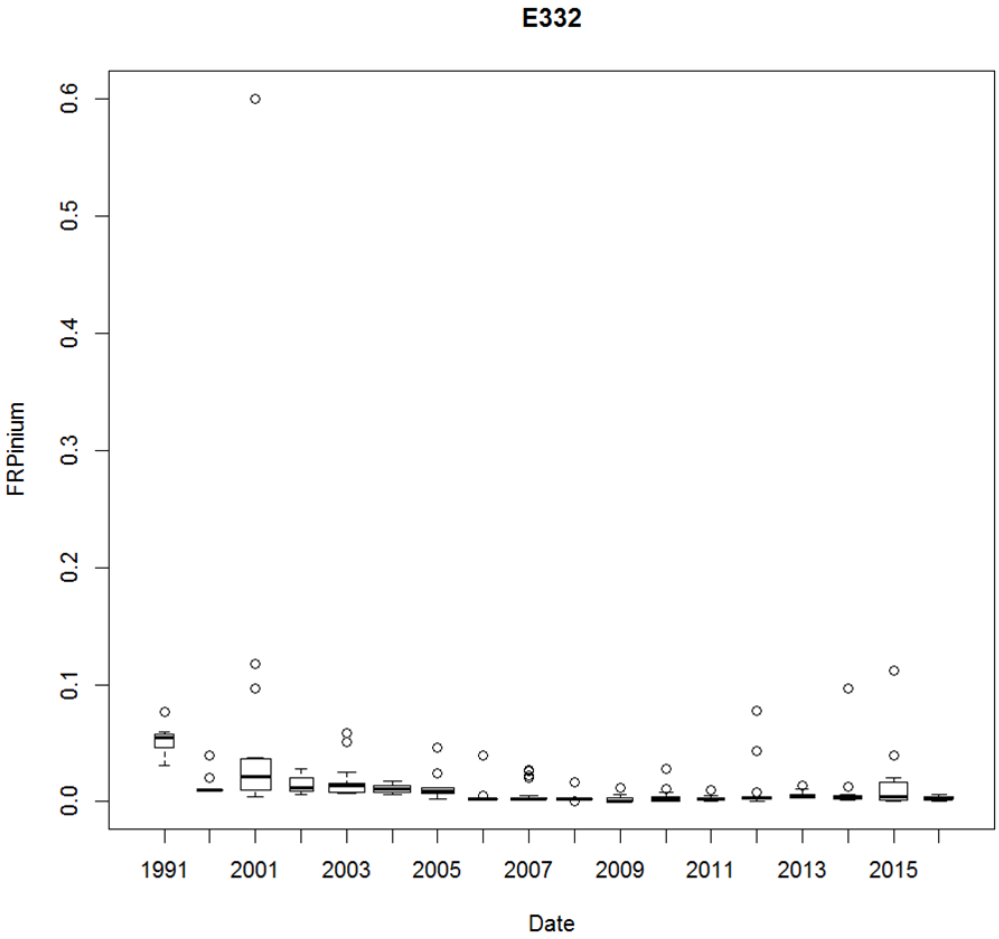

E332
Nitrogen Oxide
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1991
1993
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

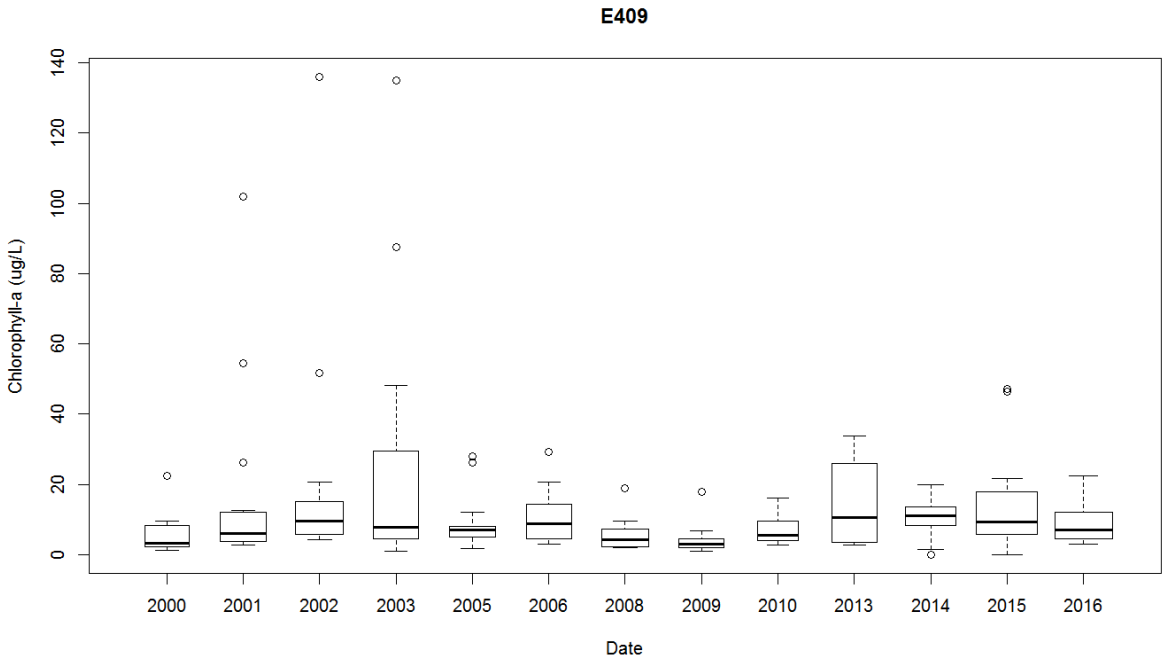

E332
Nitrogen Total
0
1
2
3
4
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

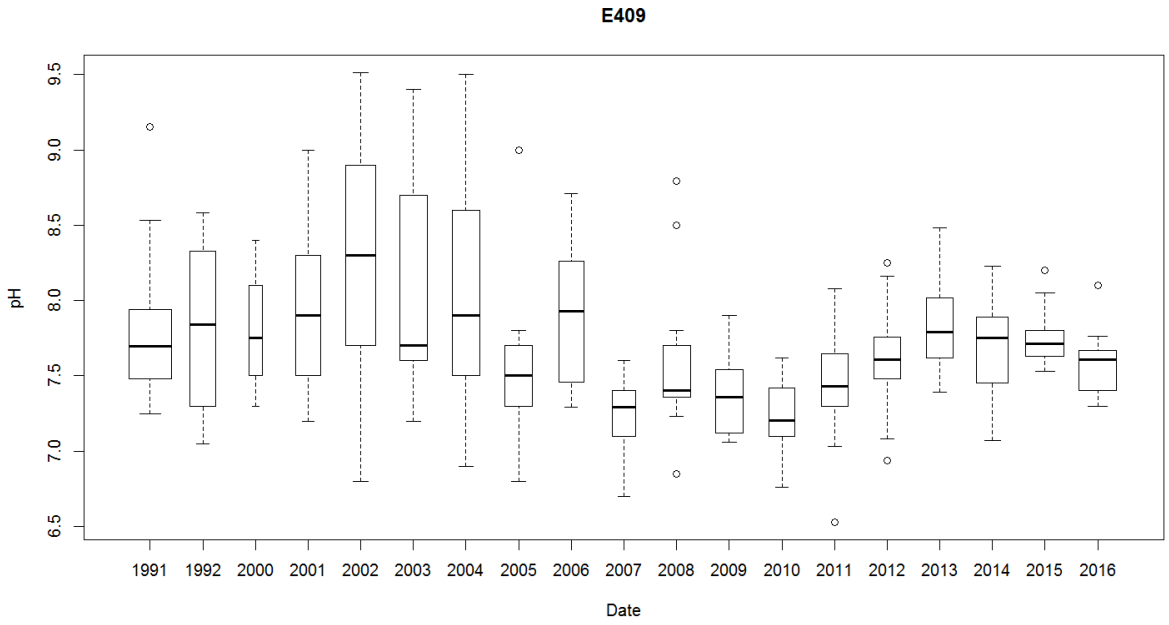

E332
Total phosphorus
0.0
0.2
0.4
0.6
0.8
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

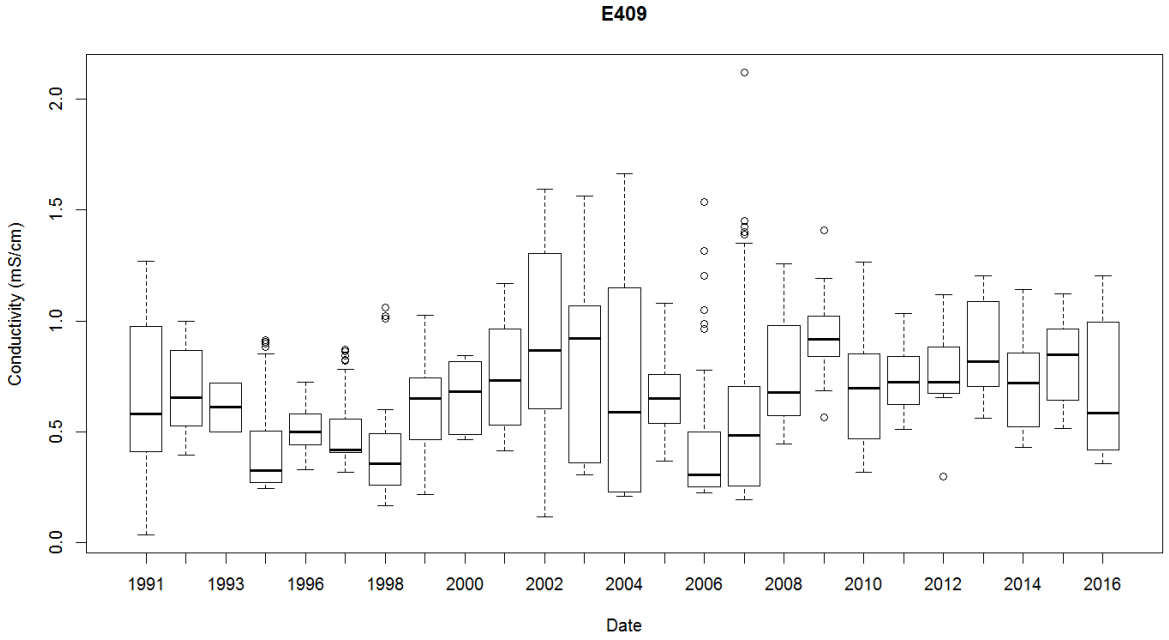

E332
Aluminium
0
1
2
3
4
5
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

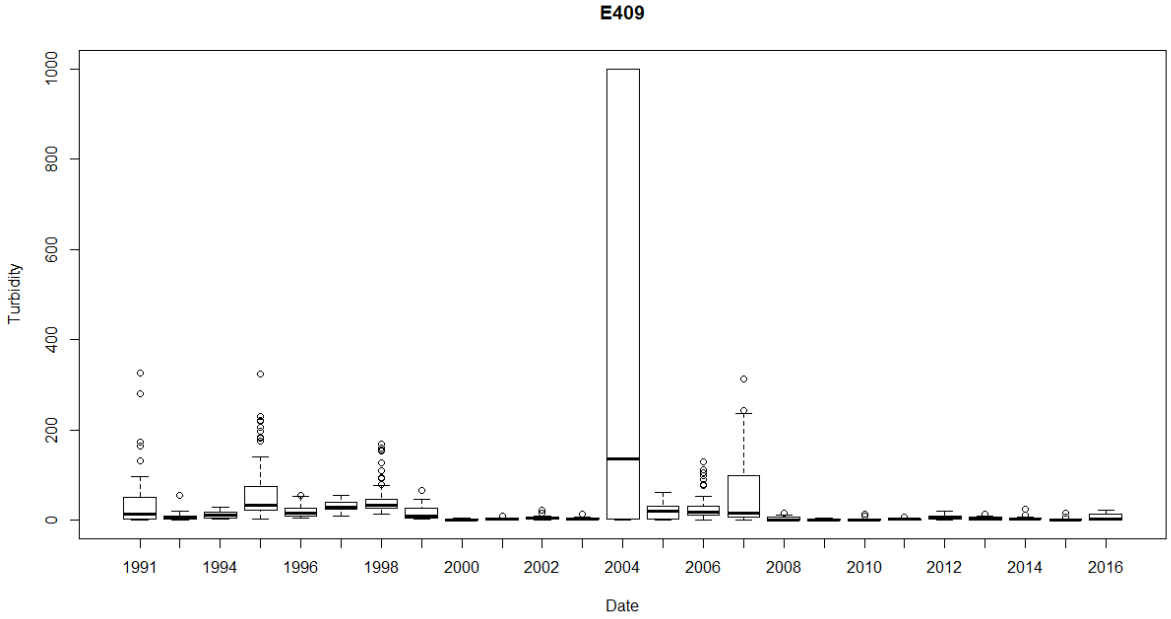

E332
Iron
0
1
2
3
4
5
6
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

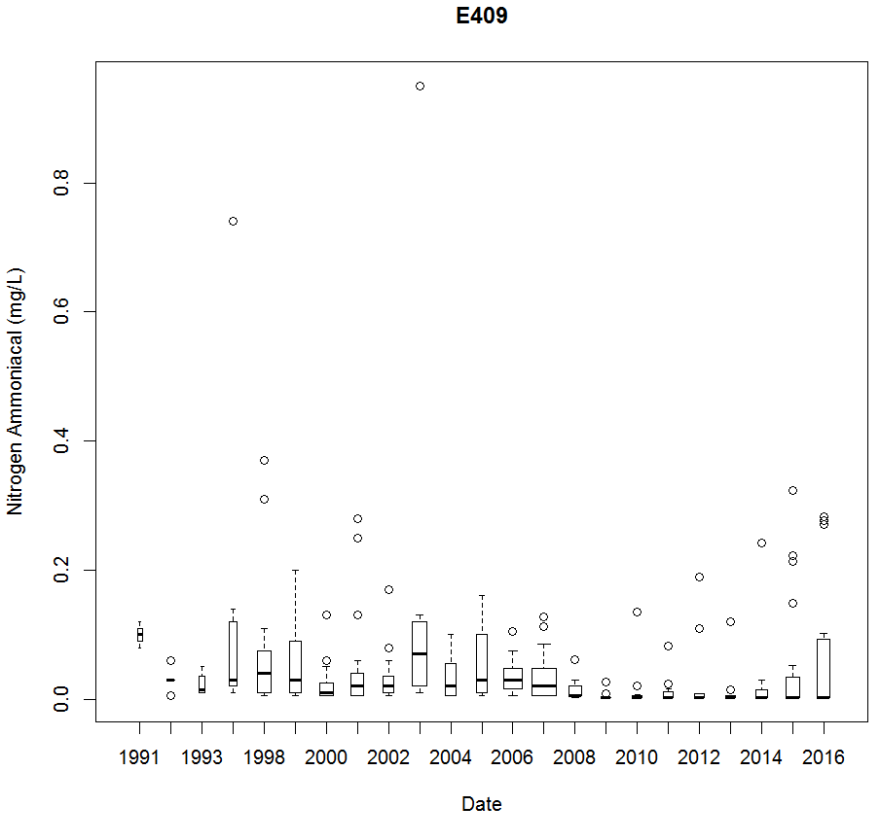

E332
FRPinium
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1991
2001
2003
2005
2007
2009
2011
2013
2015
Date

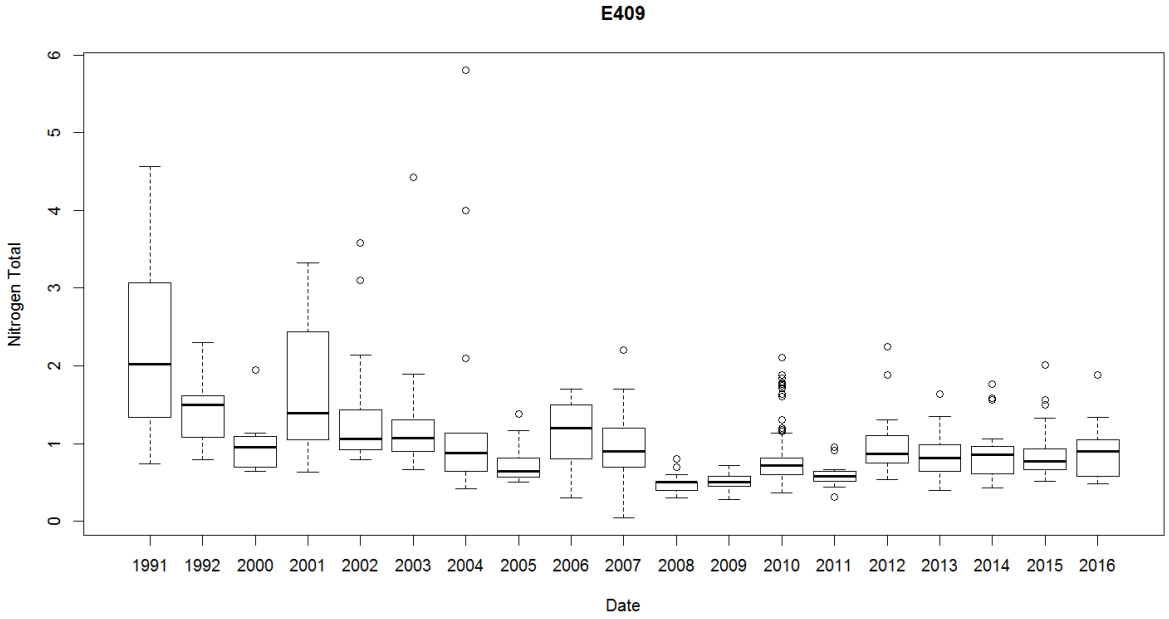

E409
Chlorophyll-a (ug/L)
0
20
40
60
80
100
120
140
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

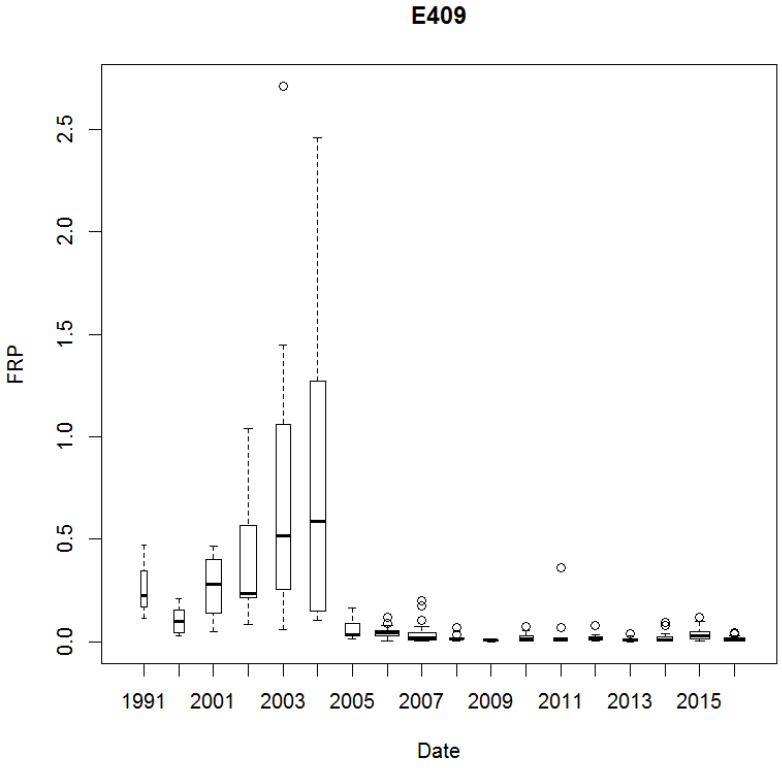

E409
pH
6.5
7.0
7.5
8.0
8.5
9.0
9.5
1991
1992
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

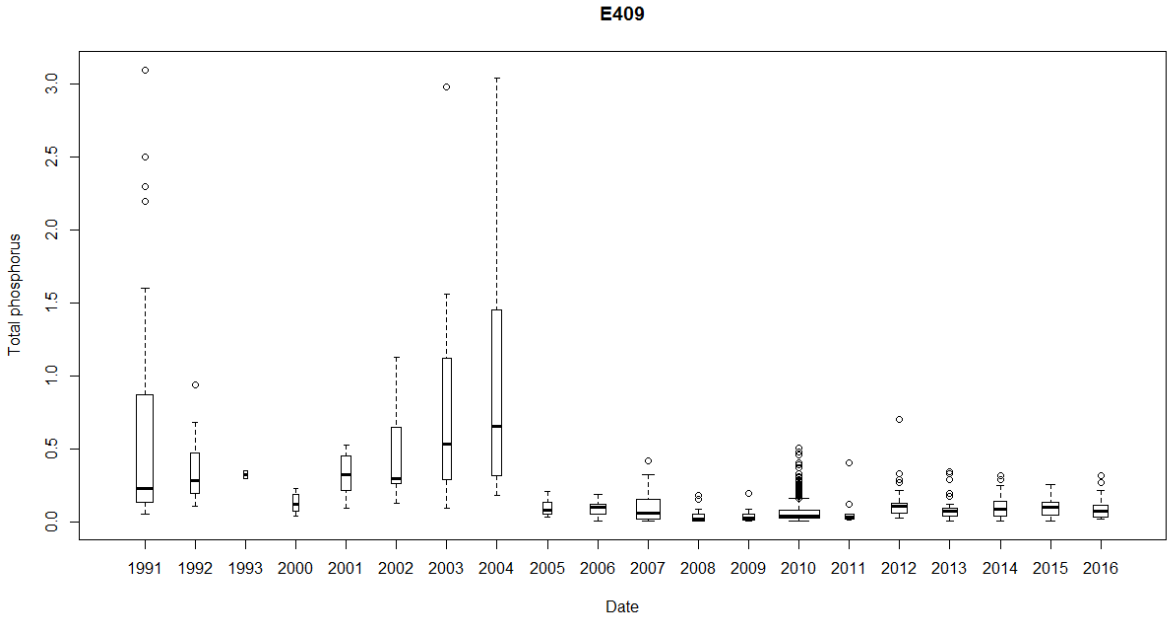

E409
Conductivity (mS/cm)
0.0
0.5
1.0
1.5
2.0
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

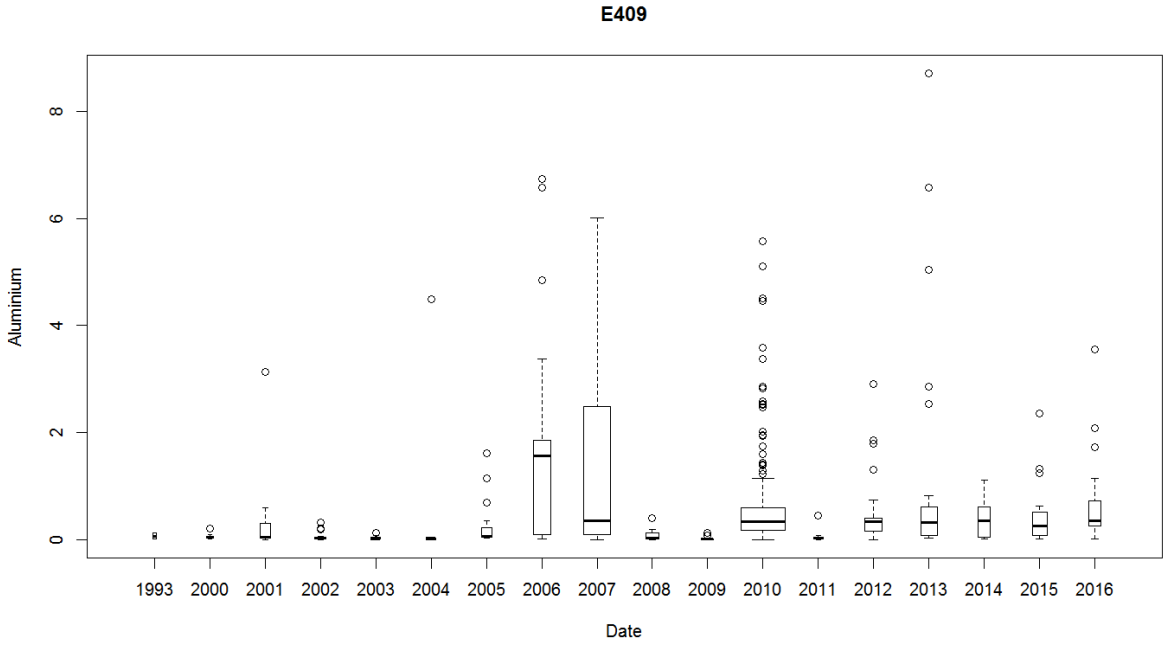

E409
Turbidity
0
200
400
600
800
1000
1991
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

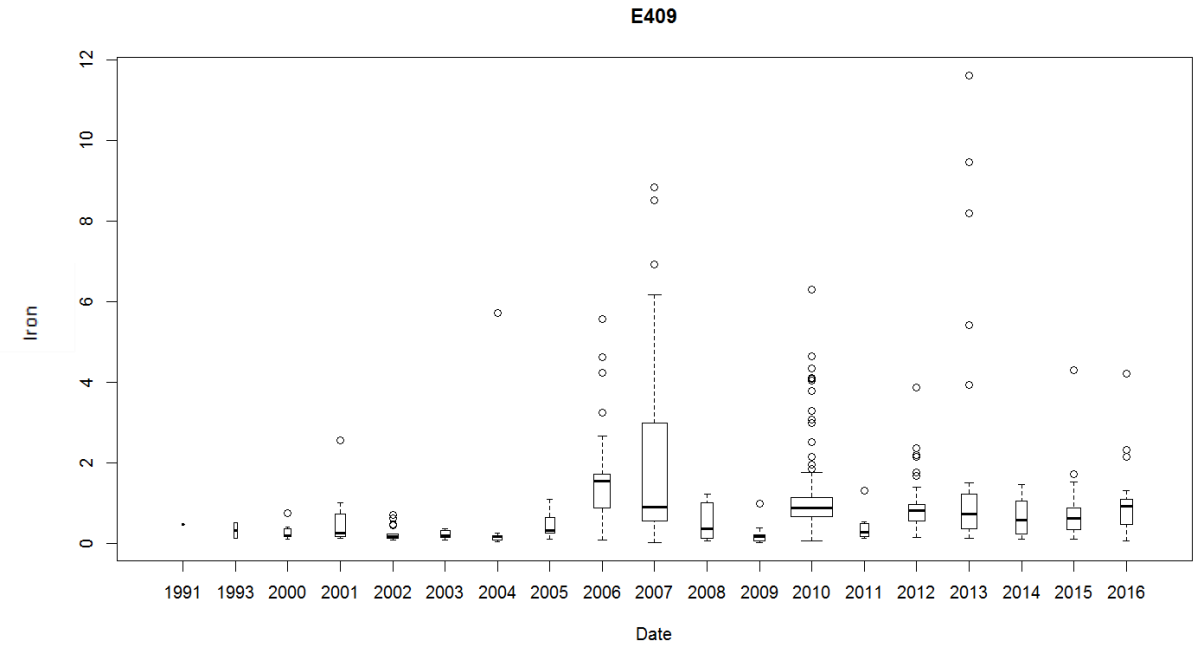

E409
Nitrogen Ammoniacal (mg/L)
0.0
0.2
0.4
0.6
0.8
1991
1993
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

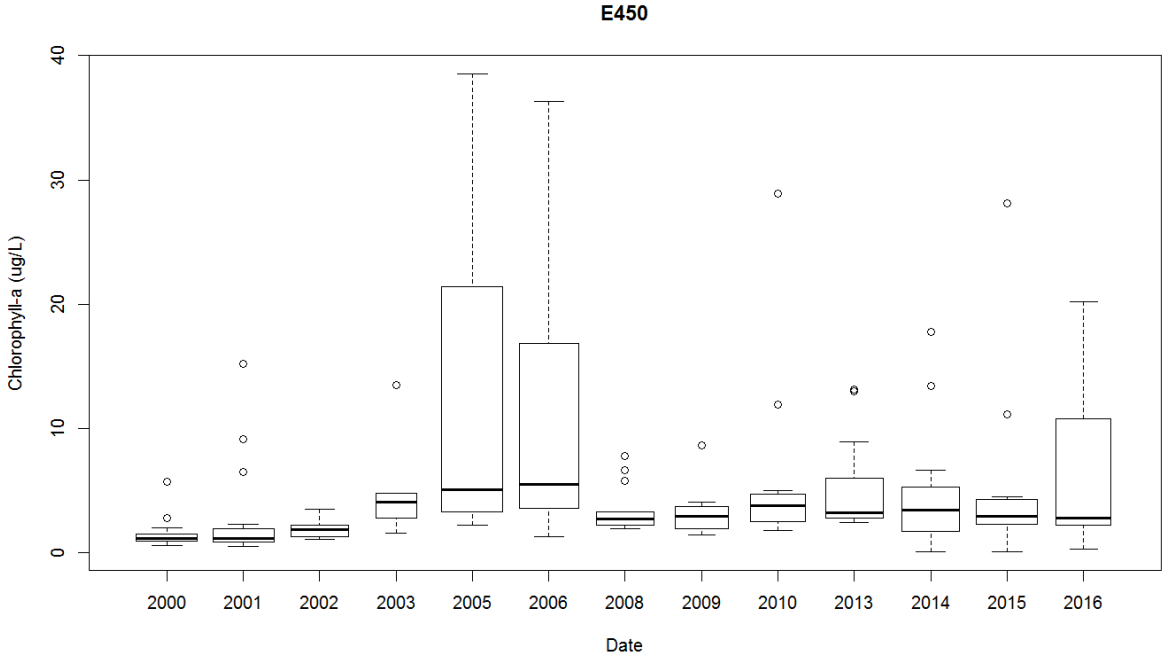

E409
Nitrogen Total
0
1
2
3
4
5
6
1991
1992
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

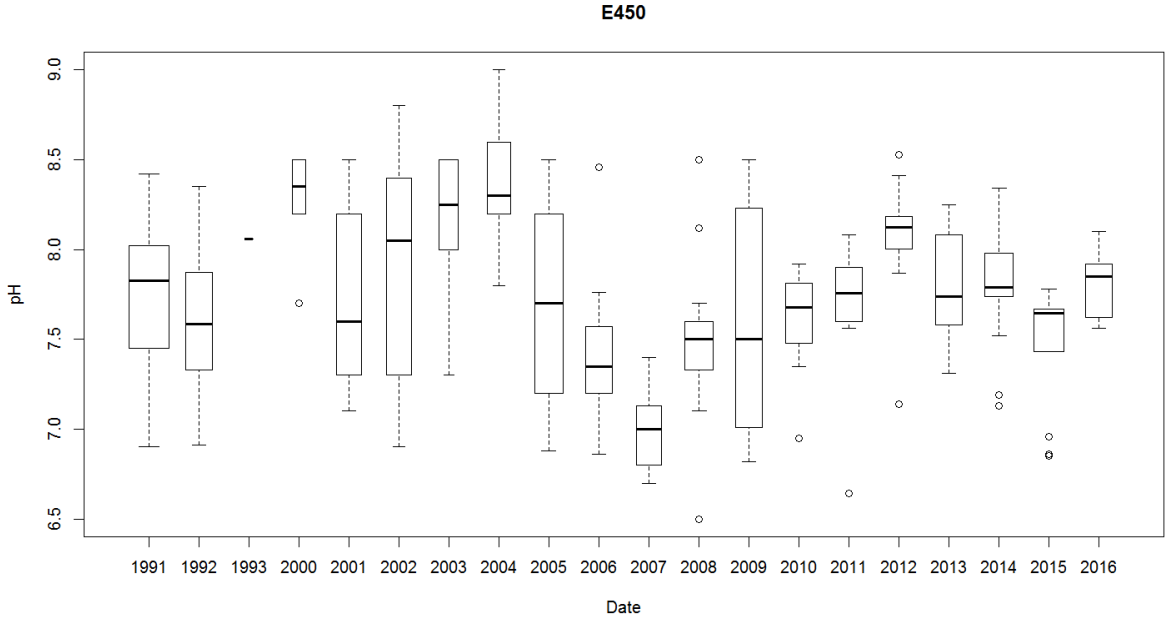

E409
FRP
0.0
0.5
1.0
1.5
2.0
2.5
1991
2001
2003
2005
2007
2009
2011
2013
2015
Date

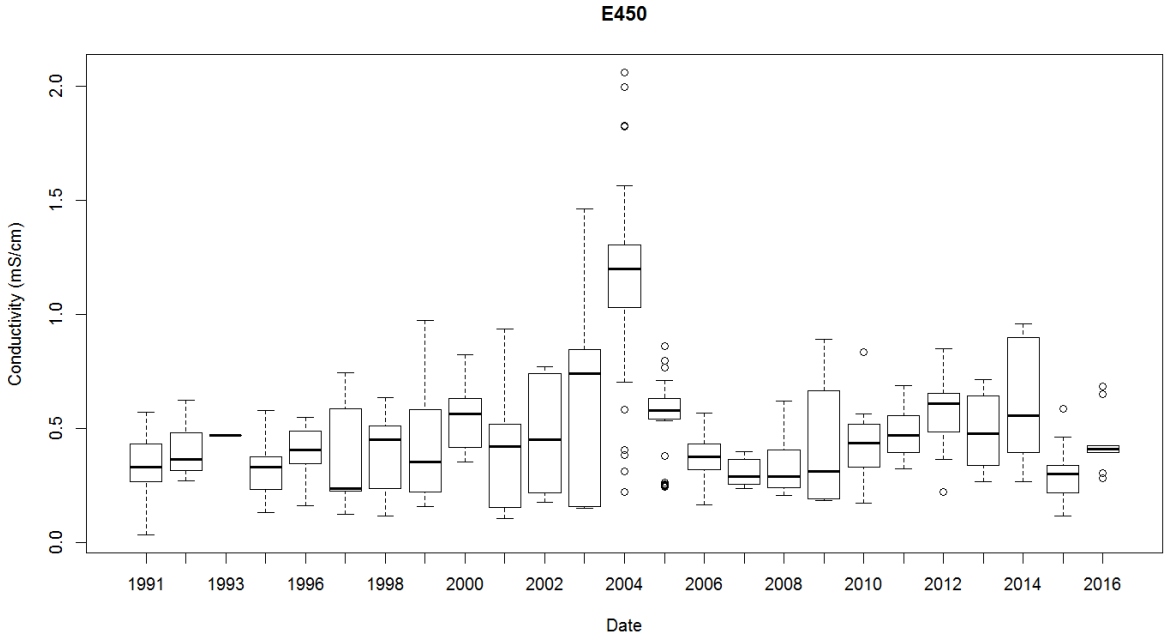

E409
Total phosphorus
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

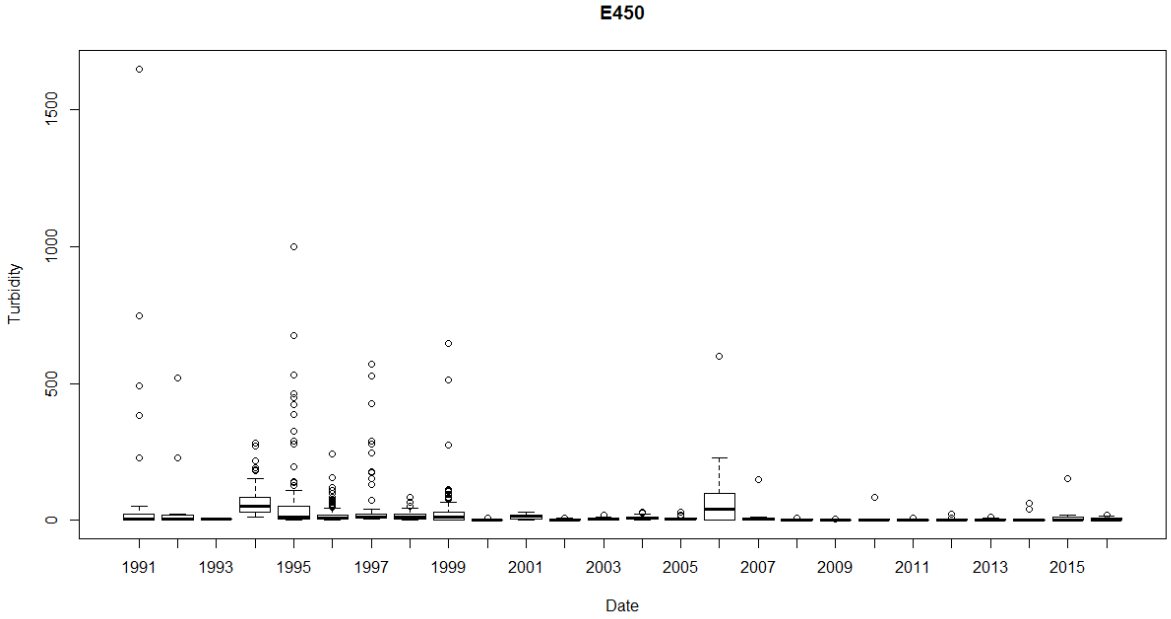

E409
Aluminium
0
2
4
6
8
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

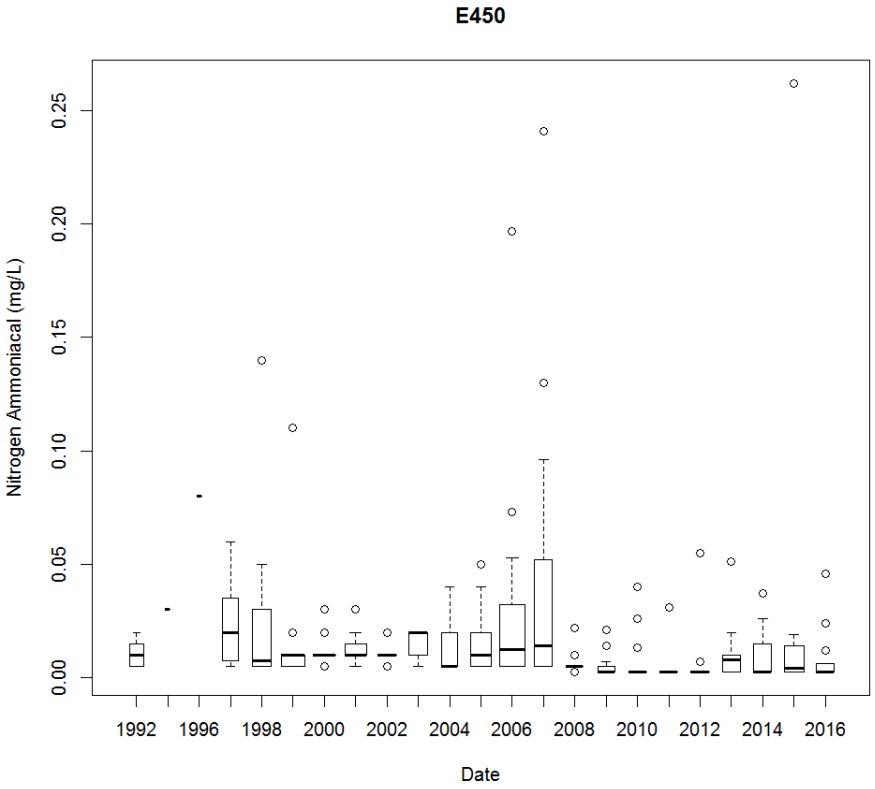

E409
Iron
0
2
4
6
8
10
12
1991
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

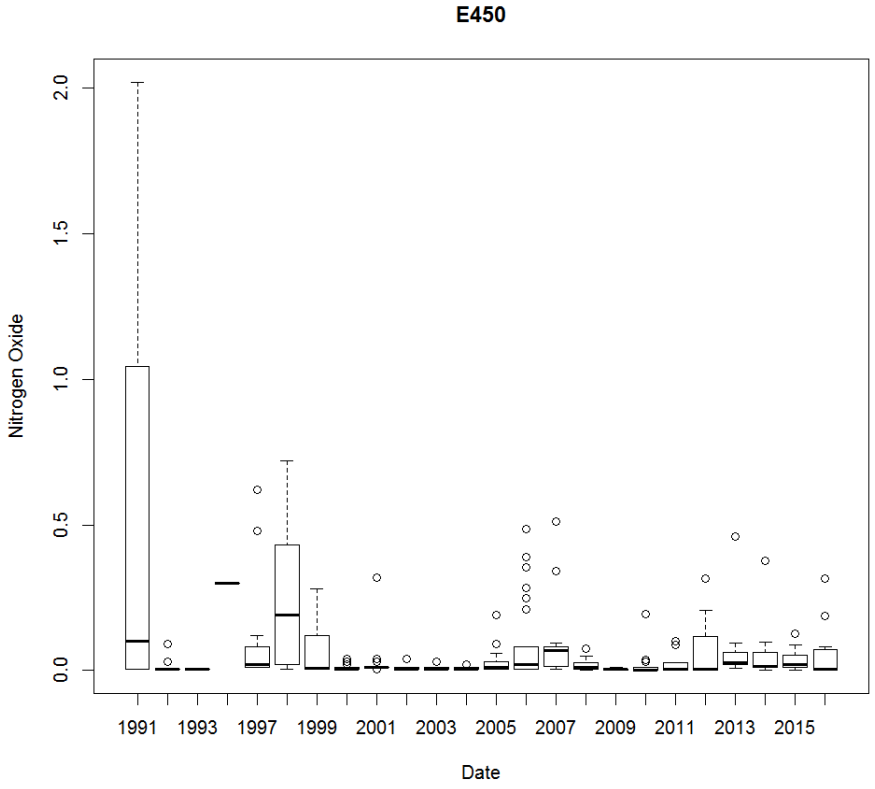

E450
Chlorophyll-a (ug/L)
0
10
20
30
40
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

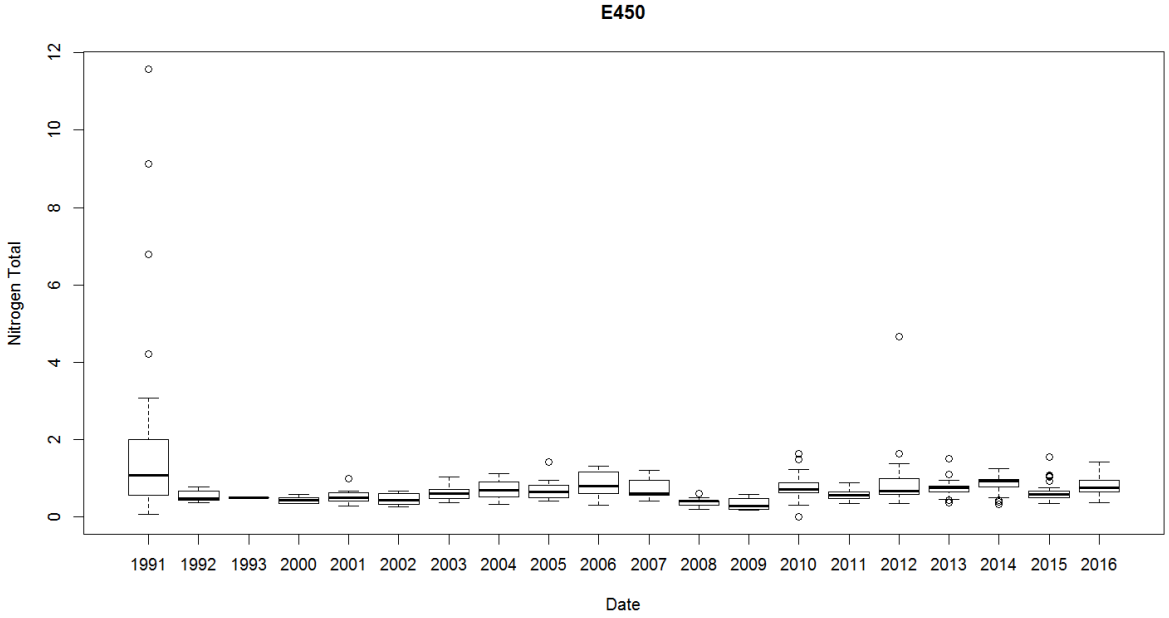

E450
pH
6.5
7.0
7.5
8.0
8.5
9.0
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

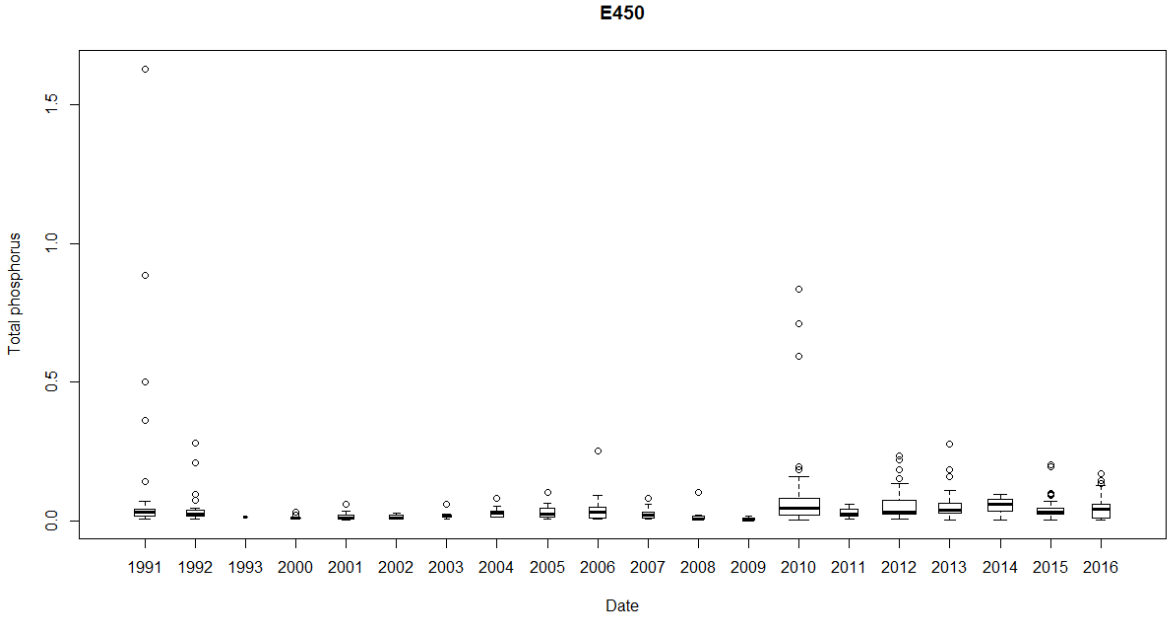

E450
Conductivity (mS/cm)
0.0
0.5
1.0
1.5
2.0
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

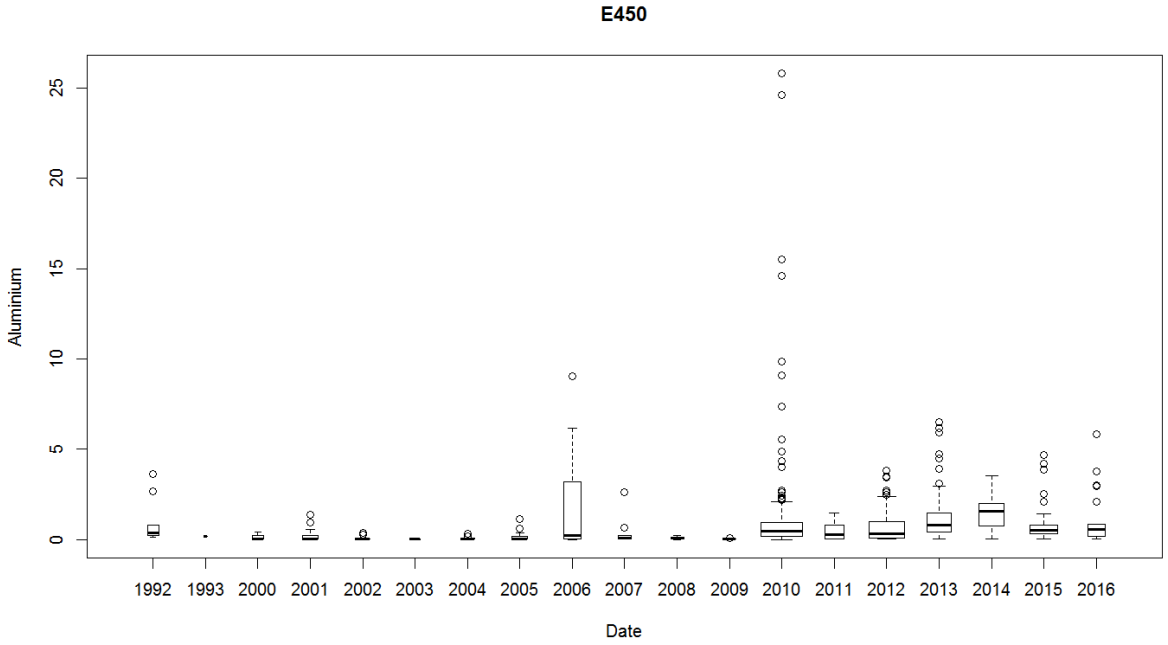

E450
Turbidity
0
500
1000
1500
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

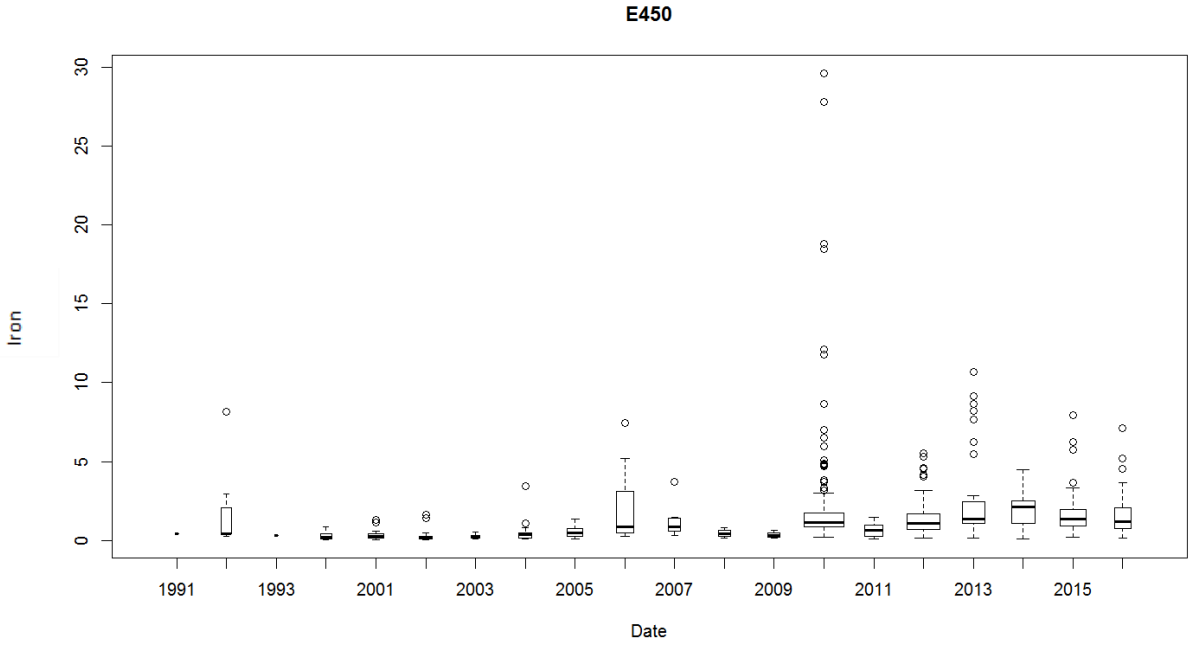

E450
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
1992
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

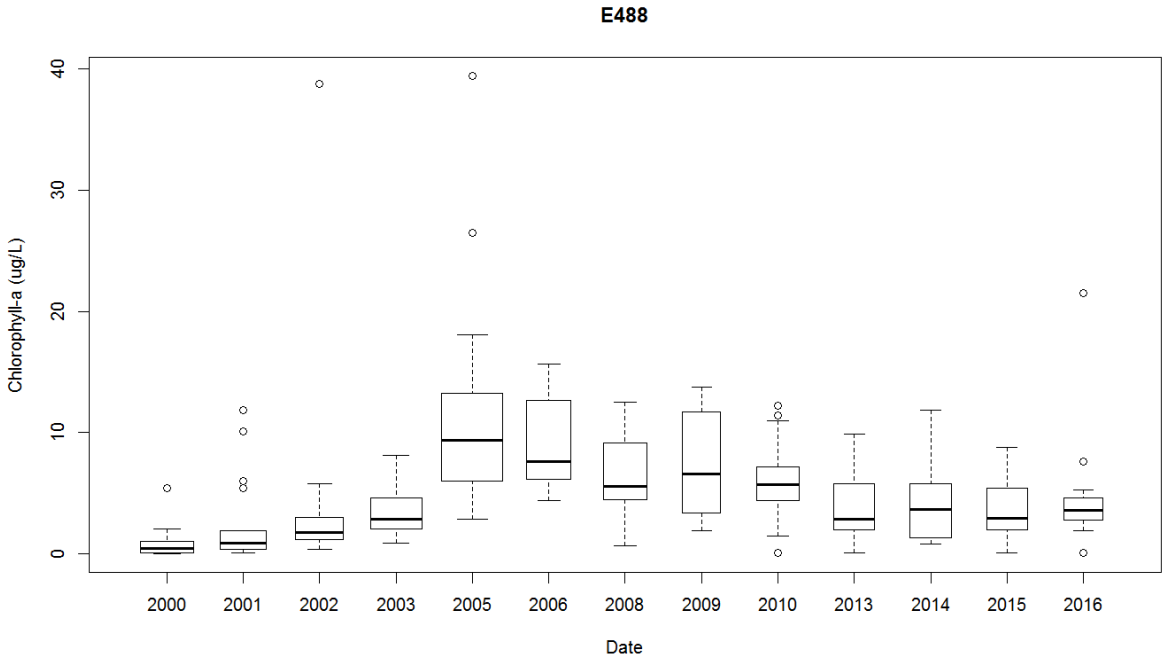

E450
Nitrogen Oxide
0.0
0.5
1.0
1.5
2.0
1991
1993
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

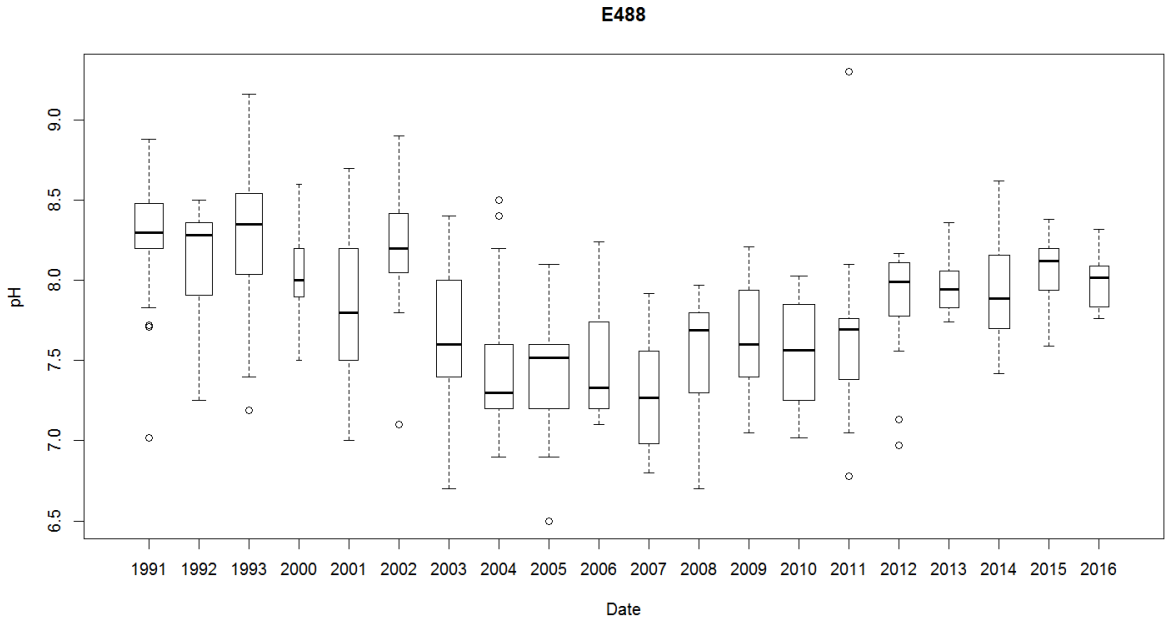

E450
Nitrogen Total
0
2
4
6
8
10
12
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

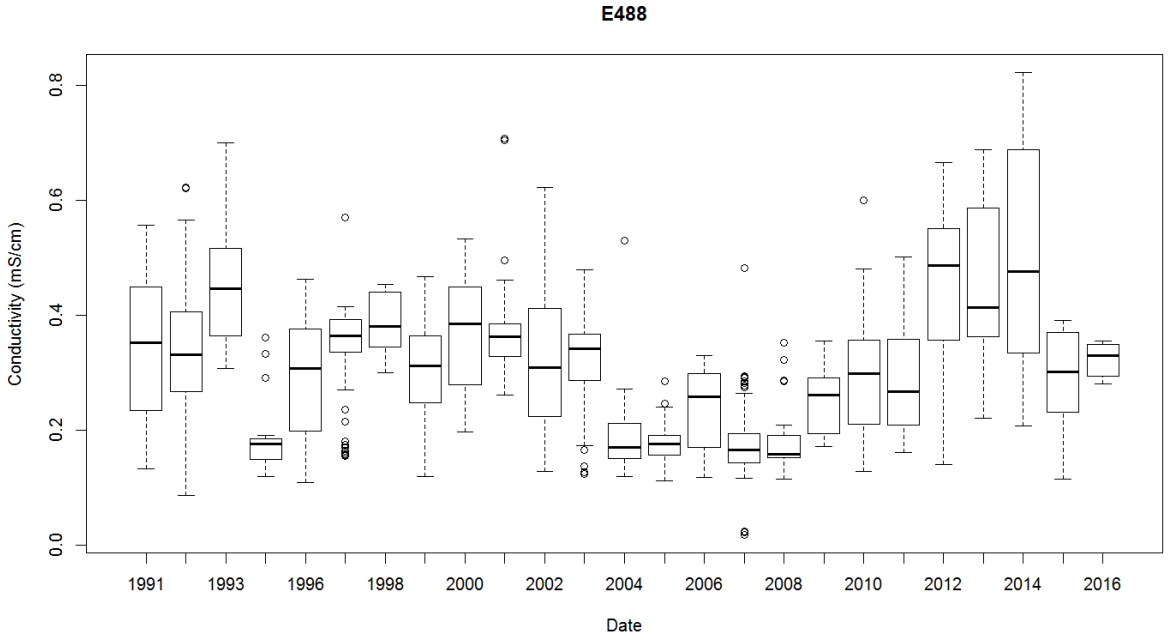

E450
Total phosphorus
0.0
0.5
1.0
1.5
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

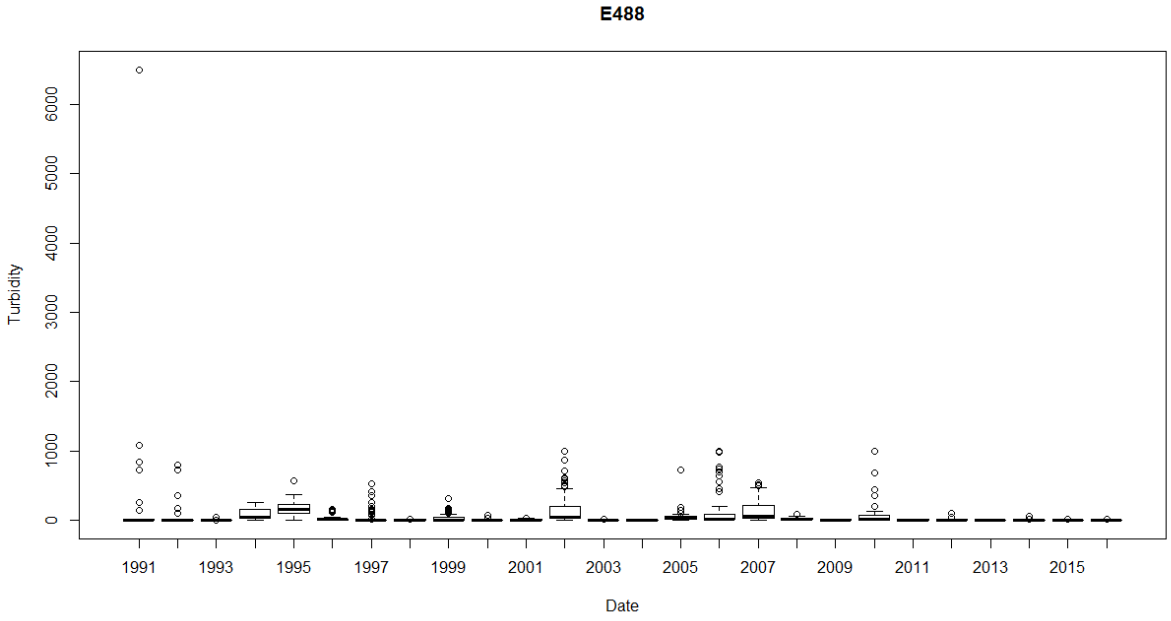

E450
Aluminium
0
5
10
15
20
25
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

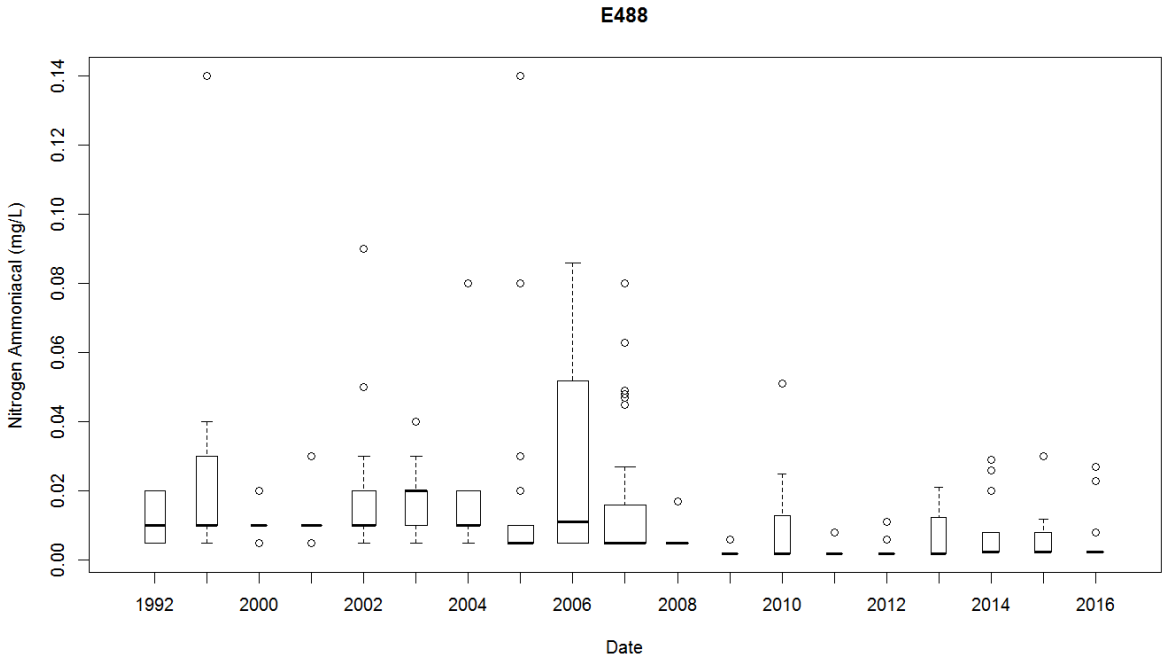

E450
Iron
0
5
10
15
20
25
30
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

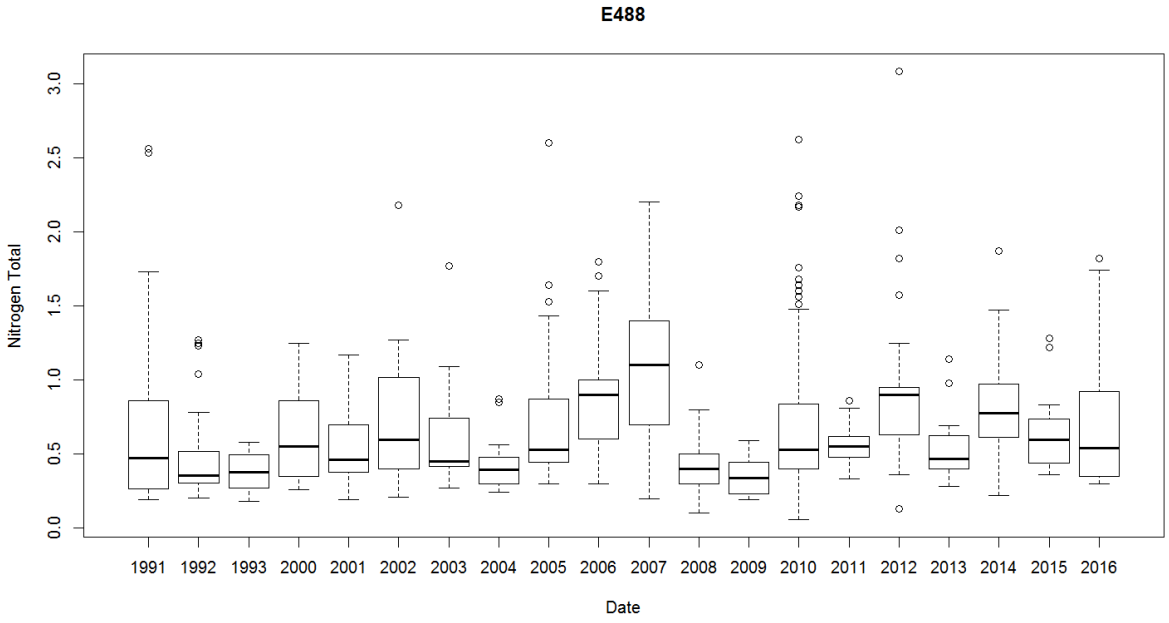

E488
Chlorophyll-a (ug/L)
0
10
20
30
40
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

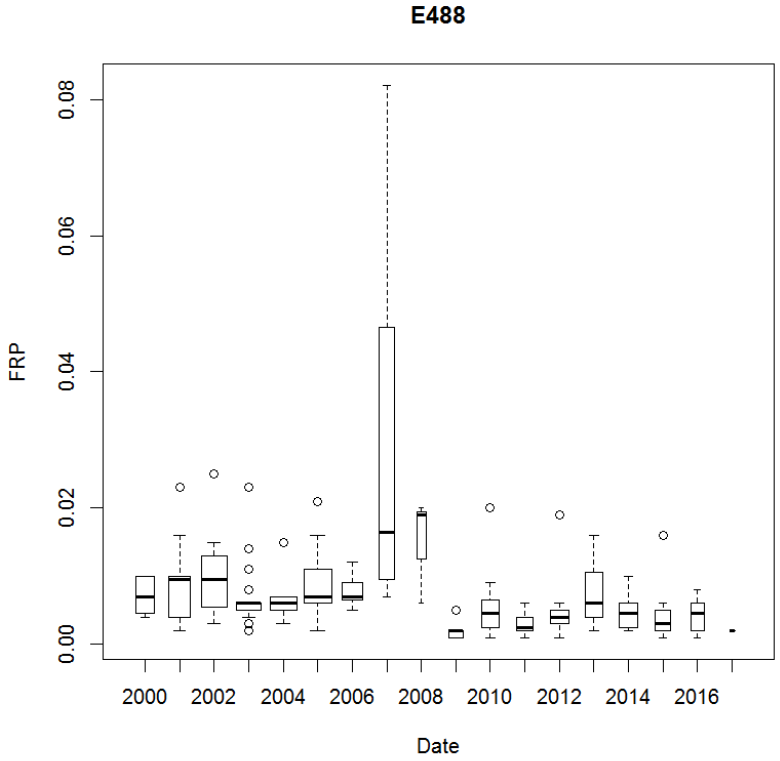

E488
pH
6.5
7.0
7.5
8.0
8.5
9.0
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

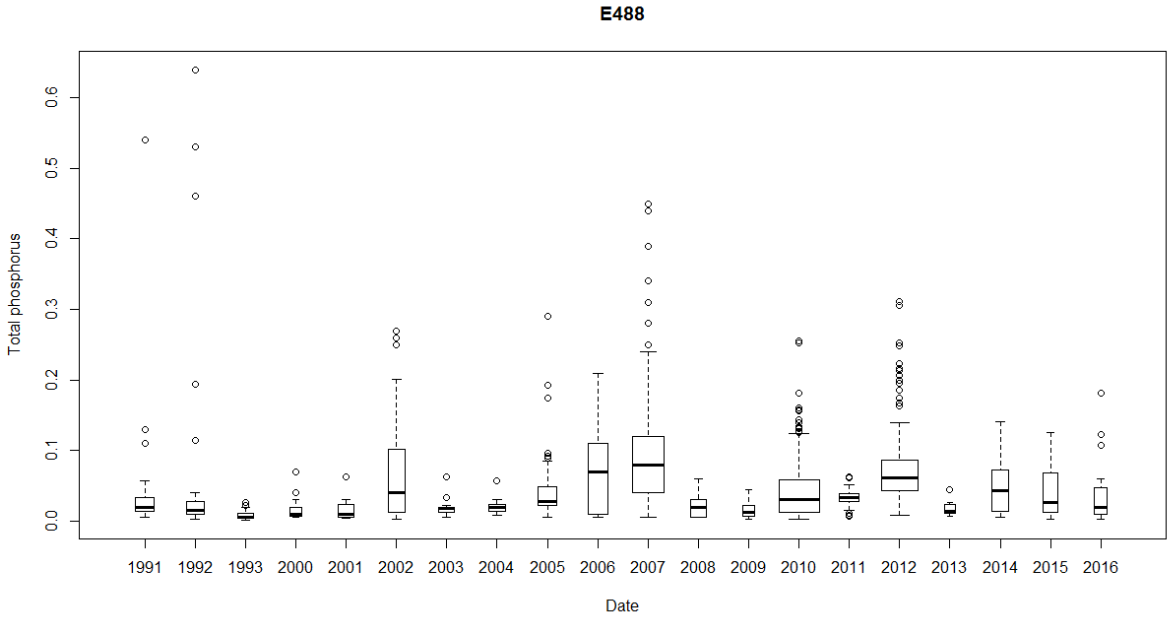

E488
Conductivity (mS/cm)
0.0
0.2
0.4
0.6
0.8
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

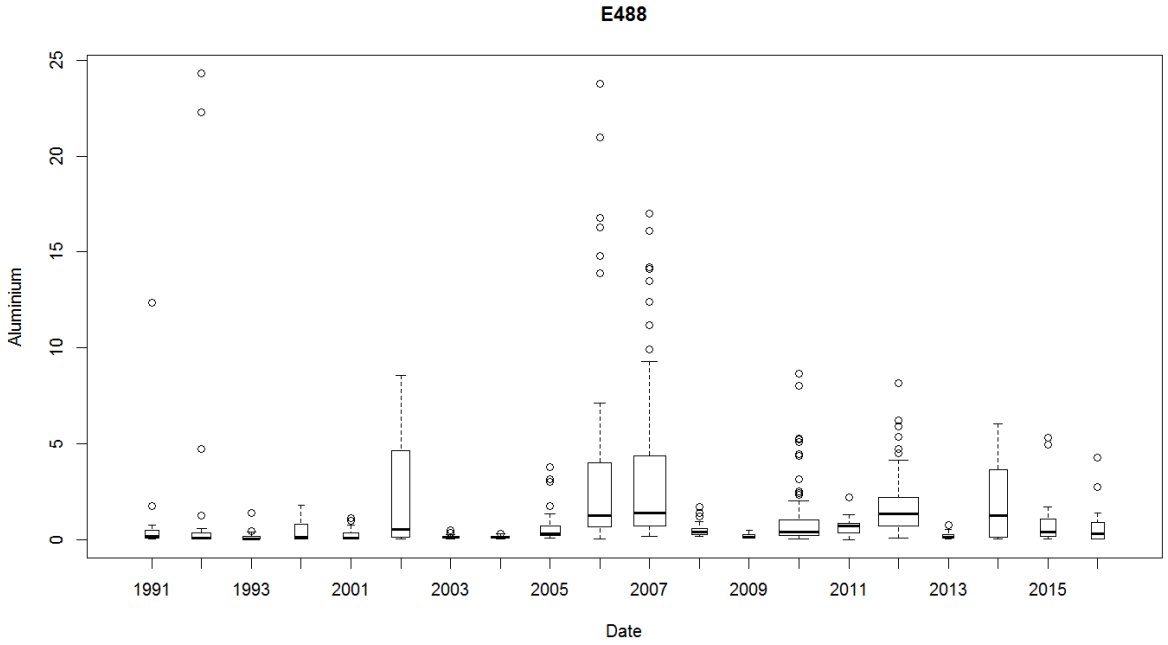

E488
Turbidity
0
1000
2000
3000
4000
5000
6000
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

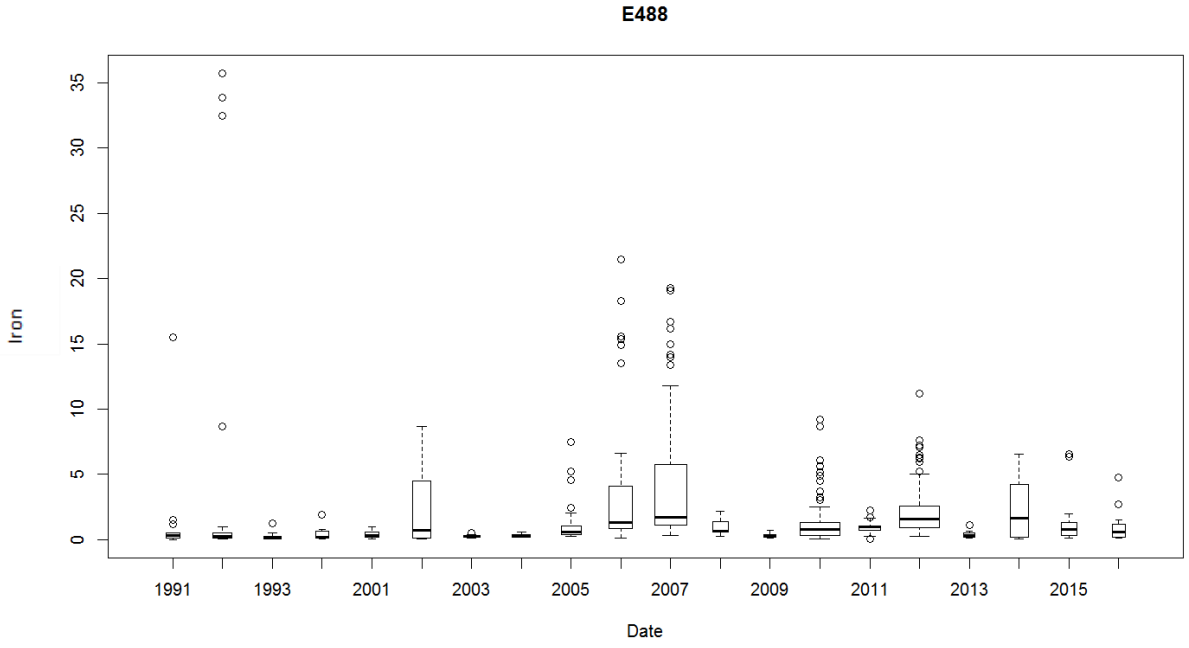

E488
Nitrogen Ammoniacal (mg/L)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
1992
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

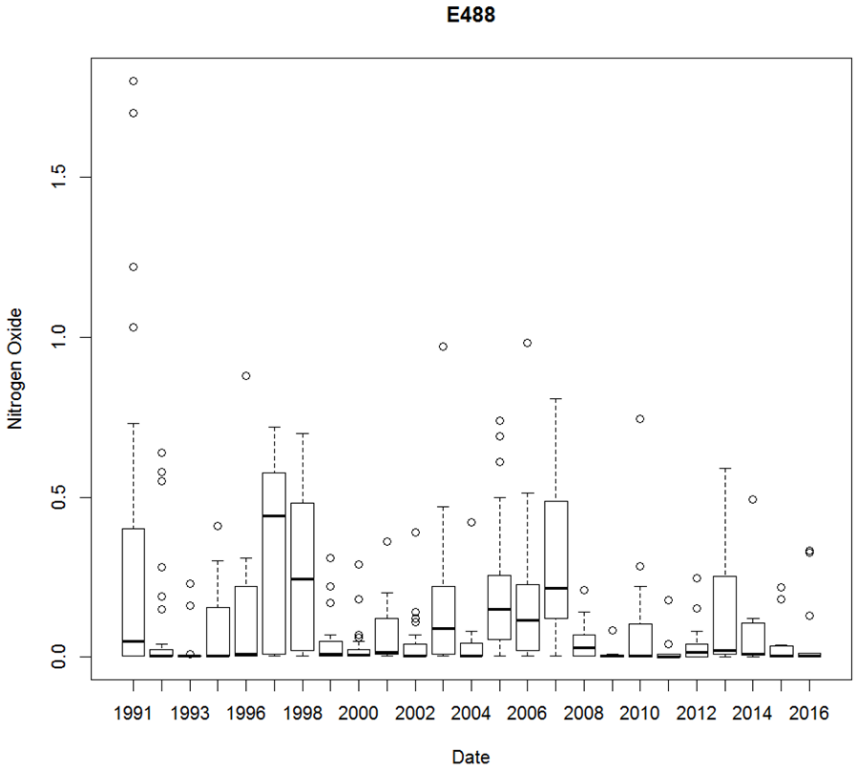

E488
Nitrogen Total
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

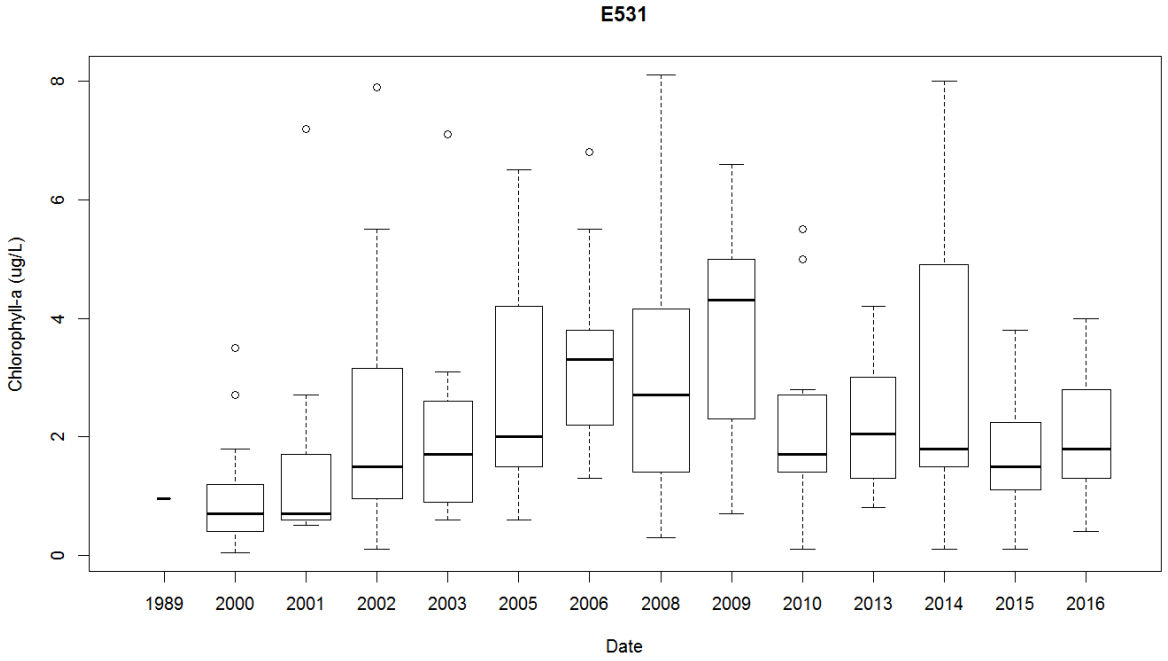

E488
FRP
0.00
0.02
0.04
0.06
0.08
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

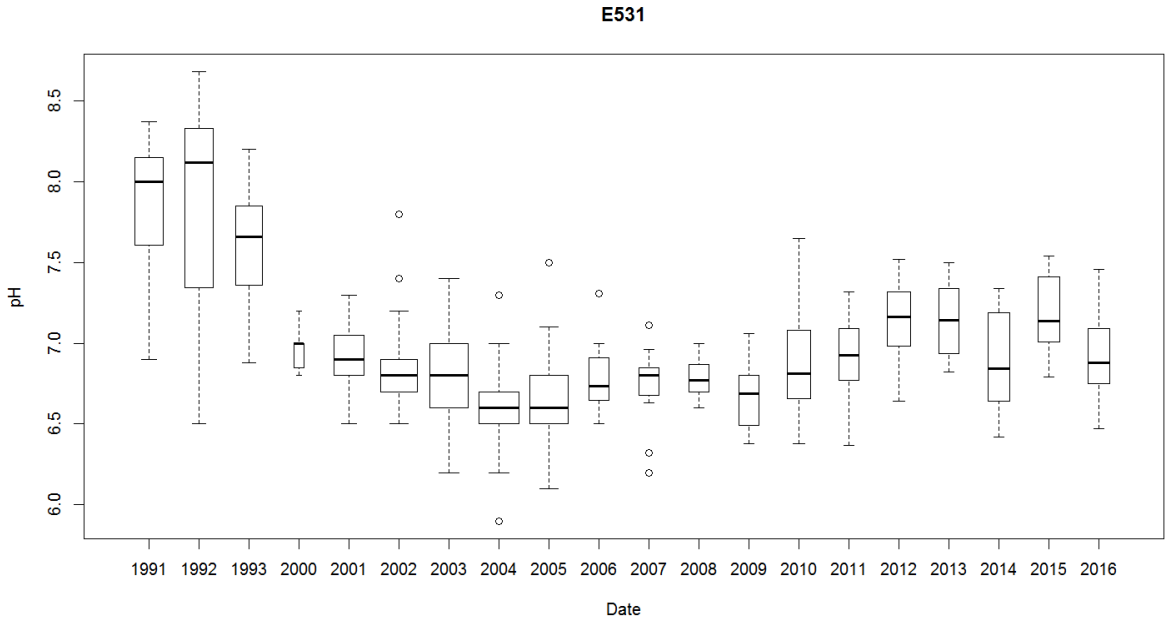

E488
Total phosphorus
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

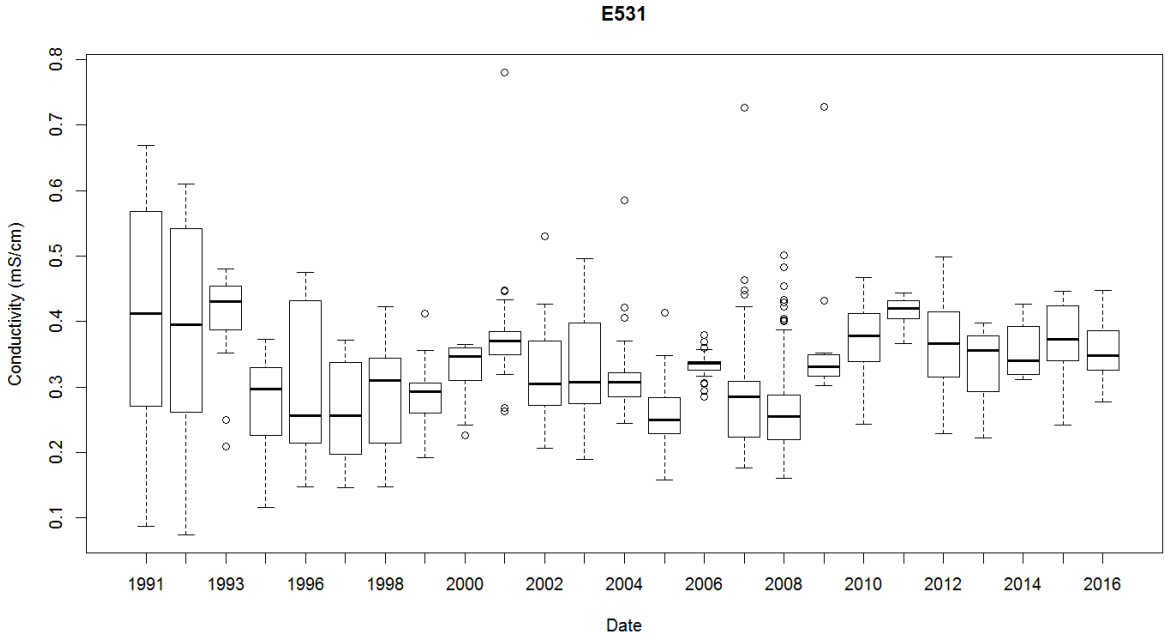

E488
Aluminium
0
5
10
15
20
25
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

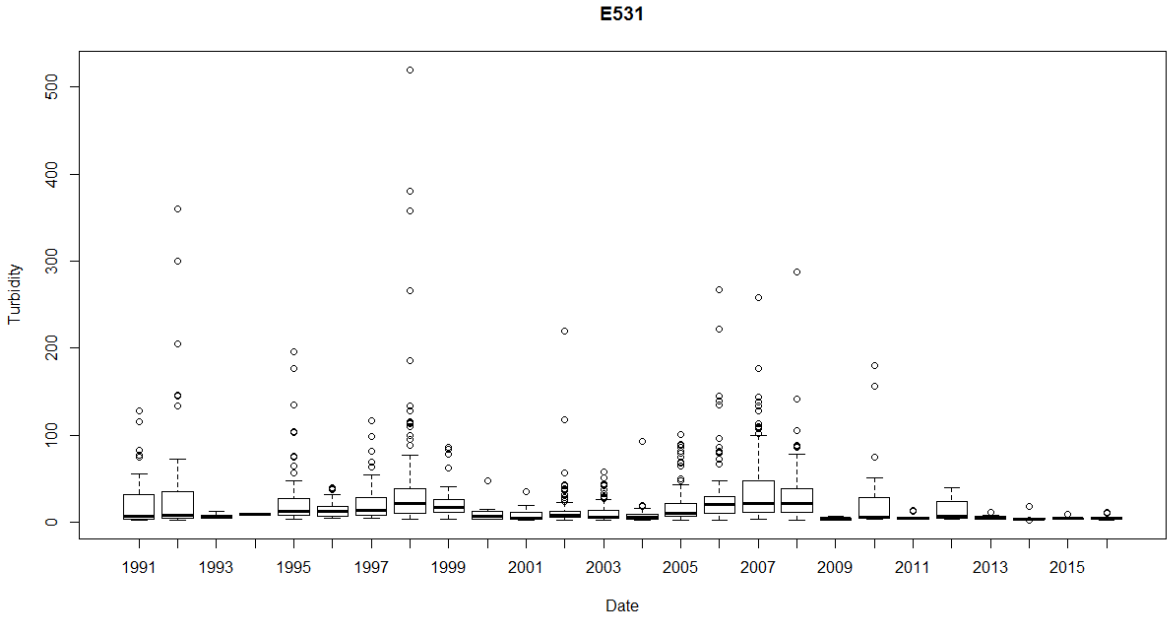

E488
Iron
0
5
10
15
20
25
30
35
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

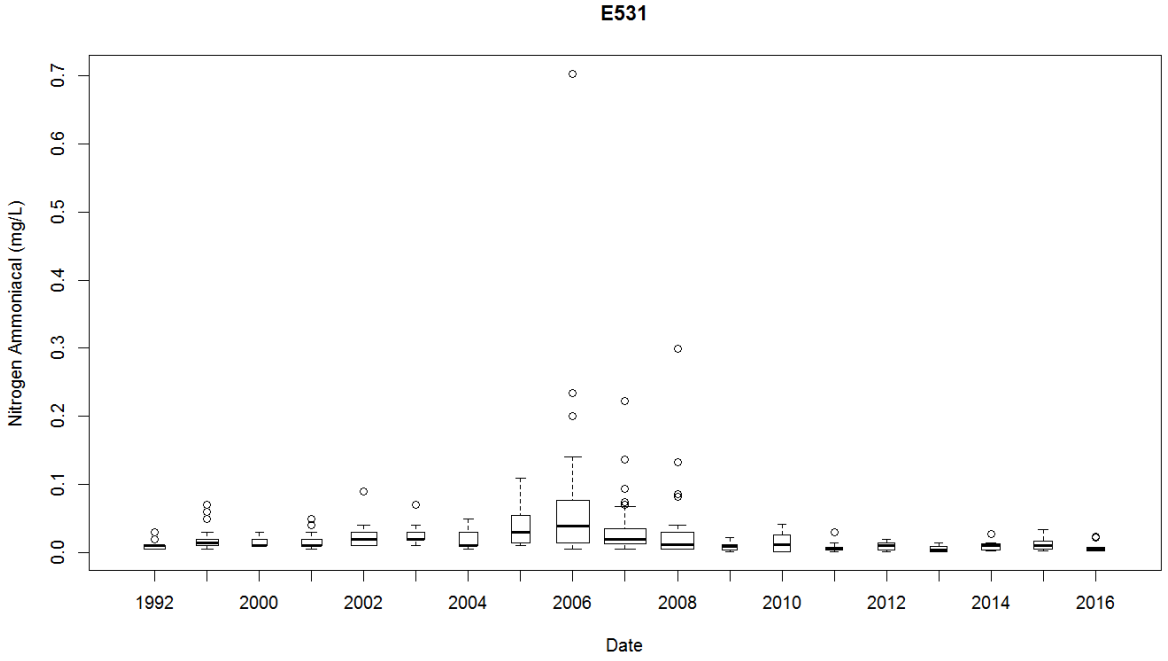

E488
Nitrogen Oxide
0.0
0.5
1.0
1.5
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

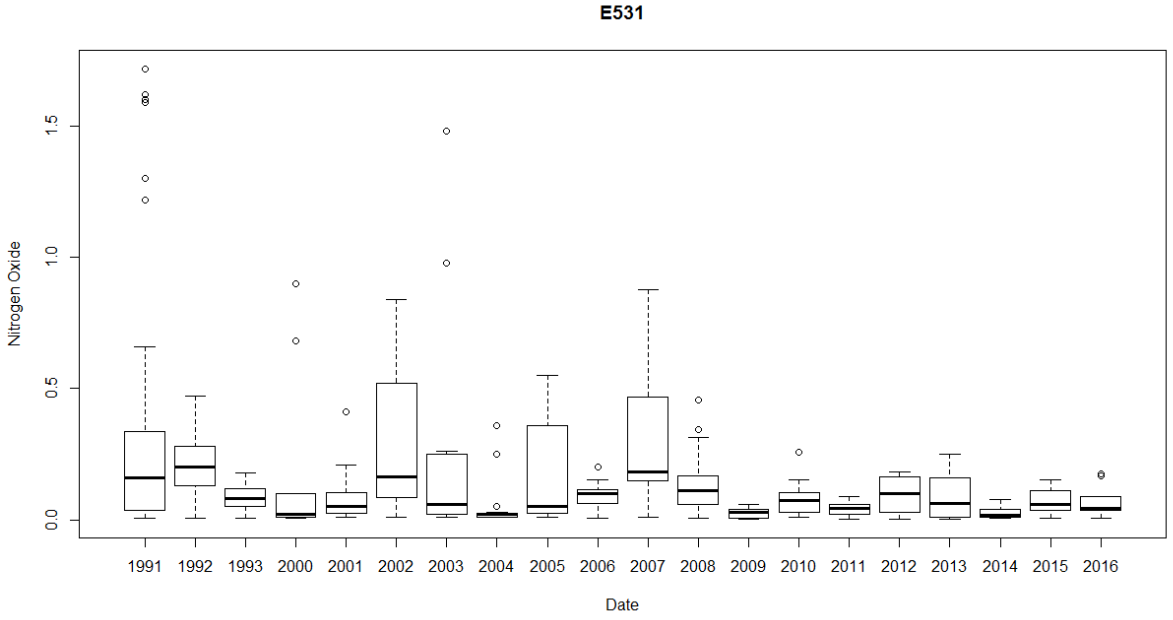

E531
Chlorophyll-a (ug/L)
0
2
4
6
8
1989
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

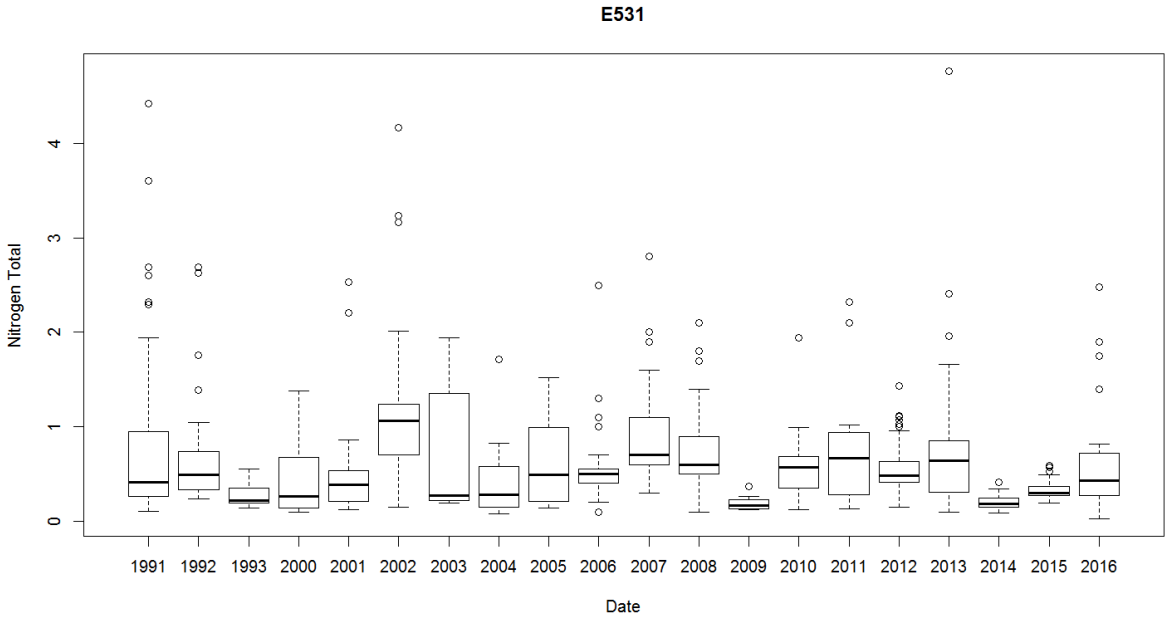

E531
pH
6.0
6.5
7.0
7.5
8.0
8.5
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

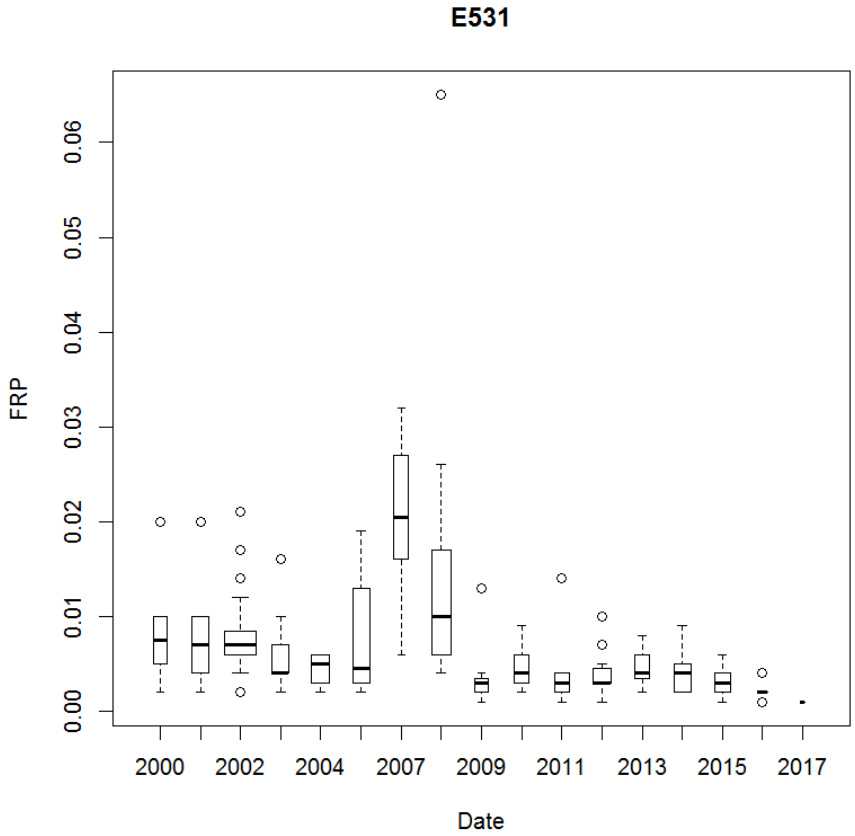

E531
Conductivity (mS/cm)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
1991
1993
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

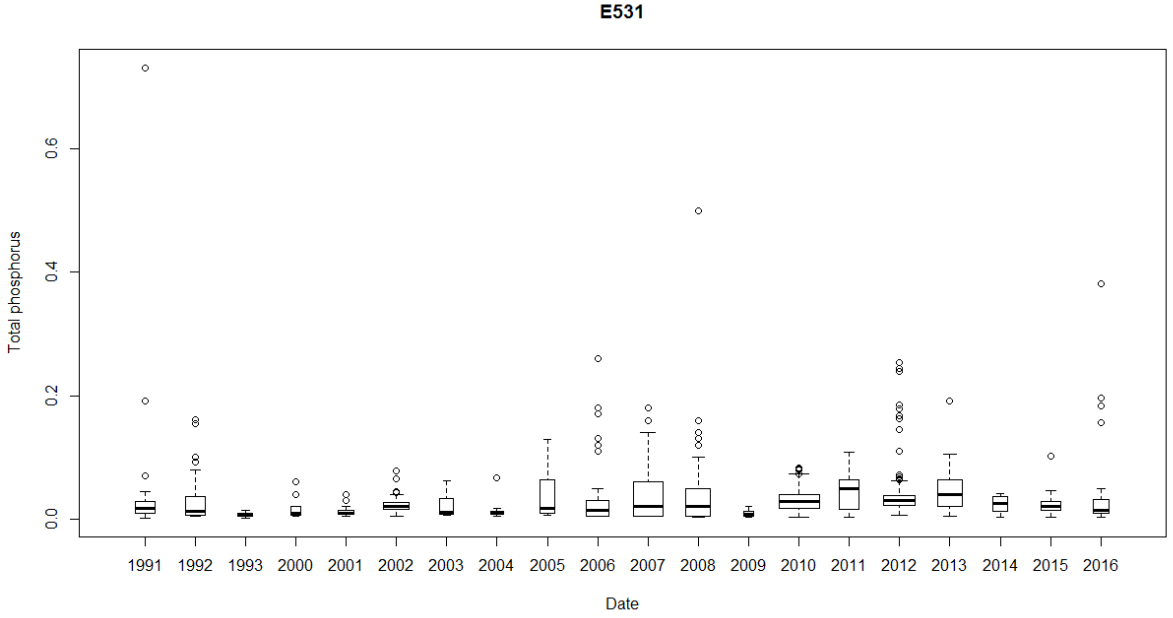

E531
Turbidity
0
100
200
300
400
500
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

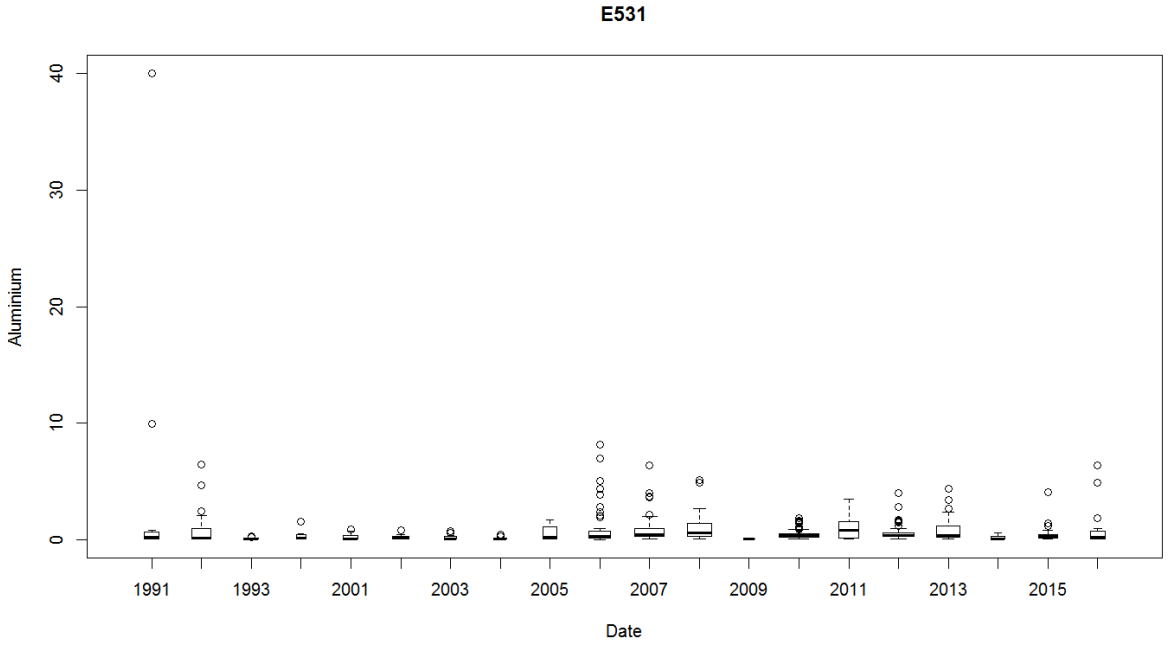

E531
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
1992
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

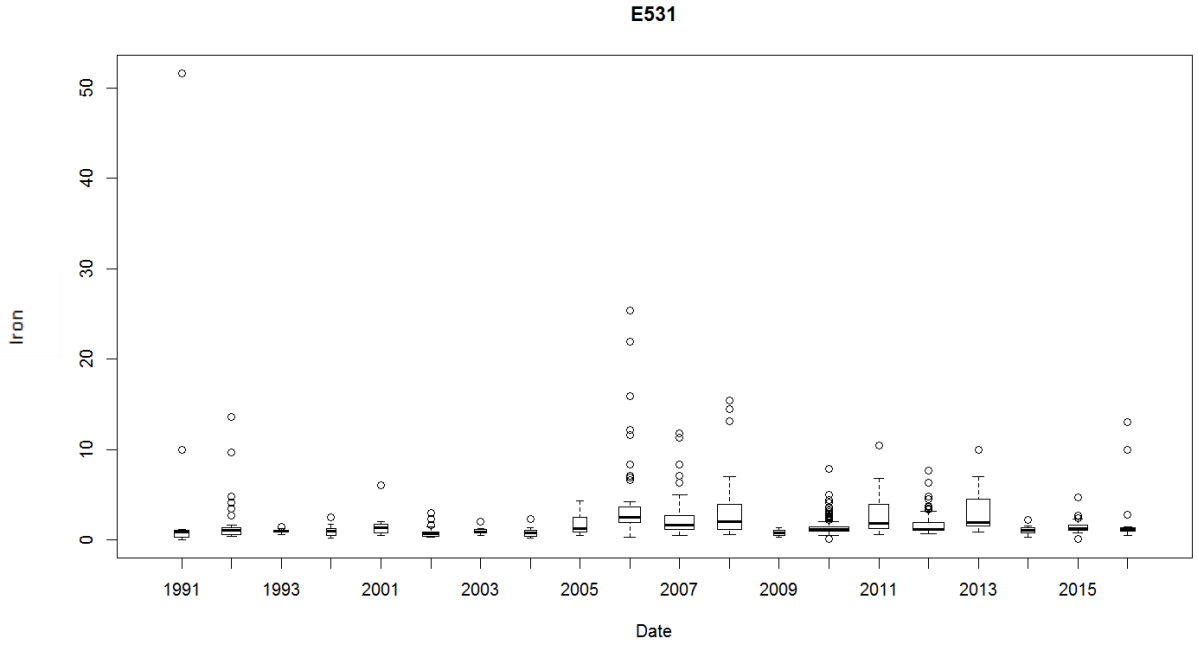

E531
Nitrogen Oxide
0.0
0.5
1.0
1.5
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

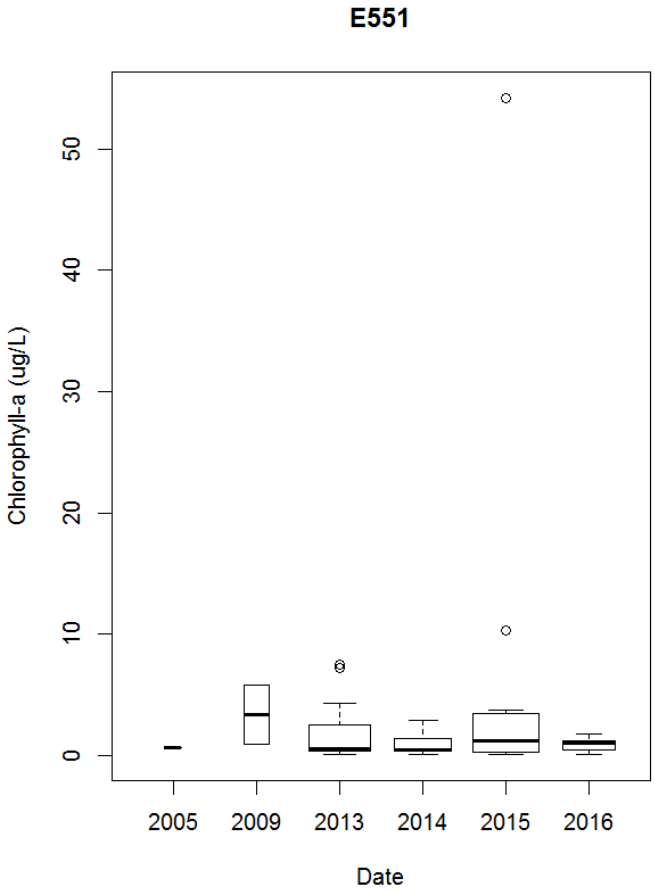

E531
Nitrogen Total
0
1
2
3
4
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

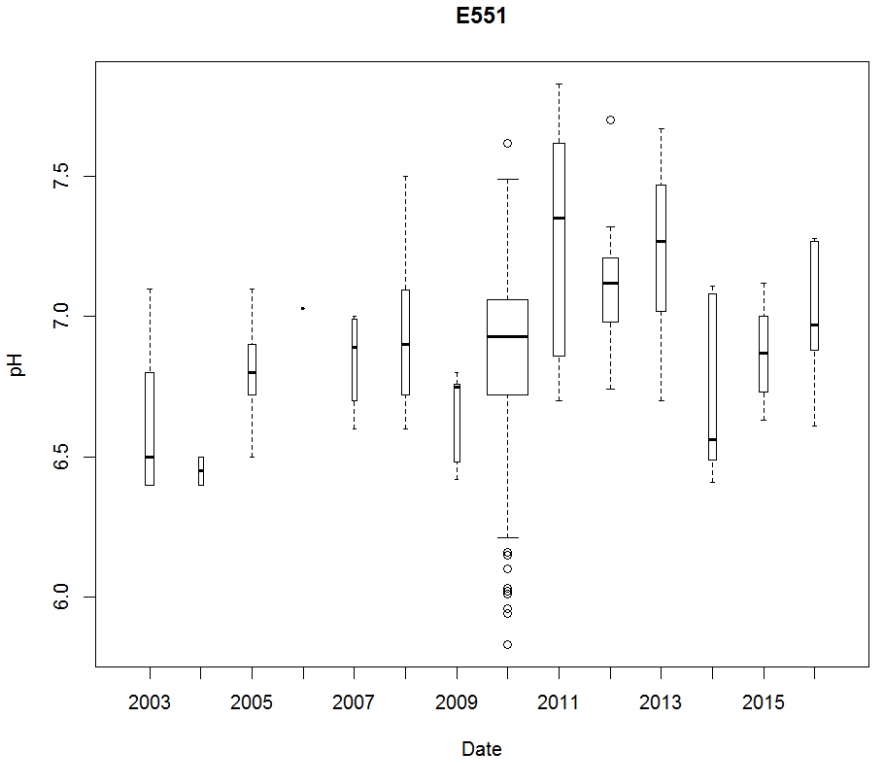

E531
FRP
0.00
0.01
0.02
0.03
0.04
0.05
0.06
2000
2002
2004
2007
2009
2011
2013
2015
2017
Date

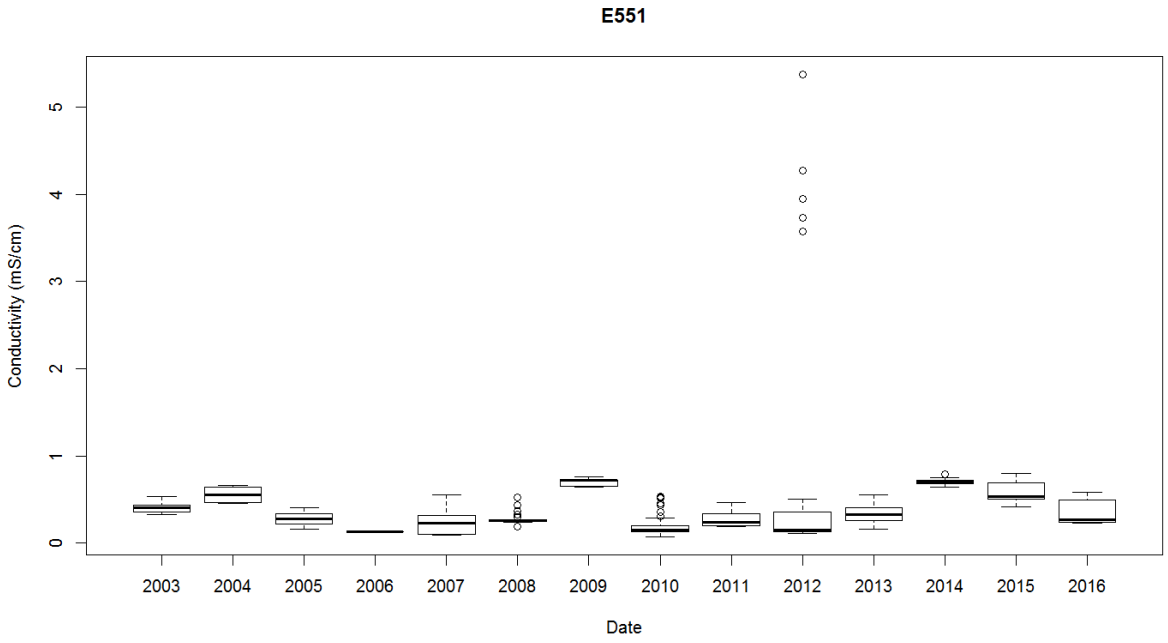

E531
Total phosphorus
0.0
0.2
0.4
0.6
1991
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

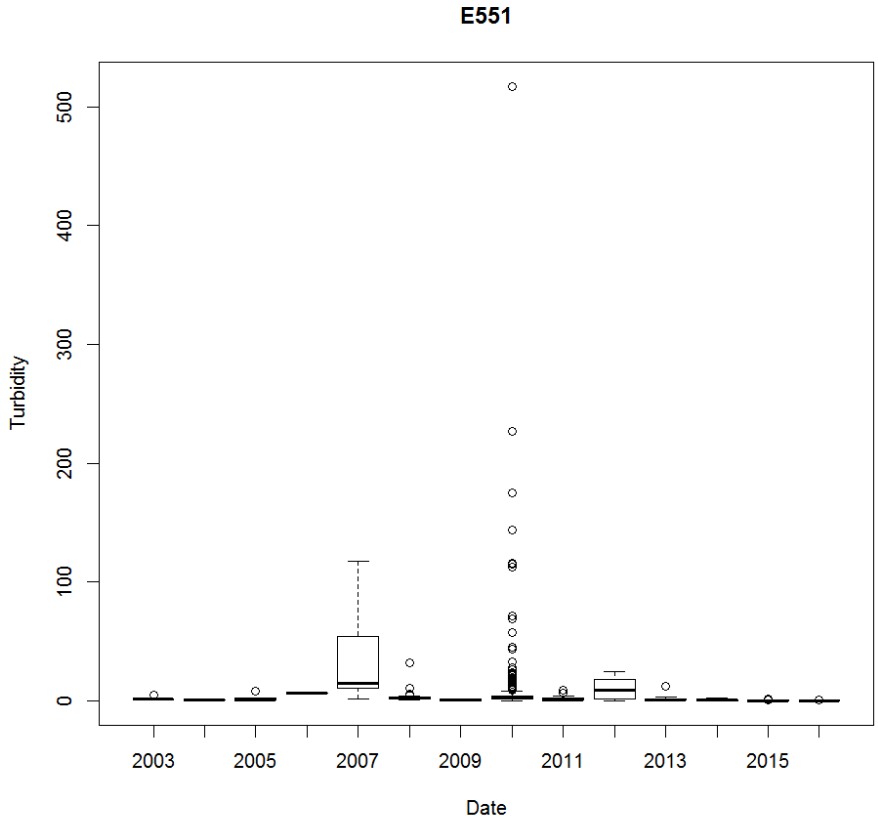

E531
Aluminium
0
10
20
30
40
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

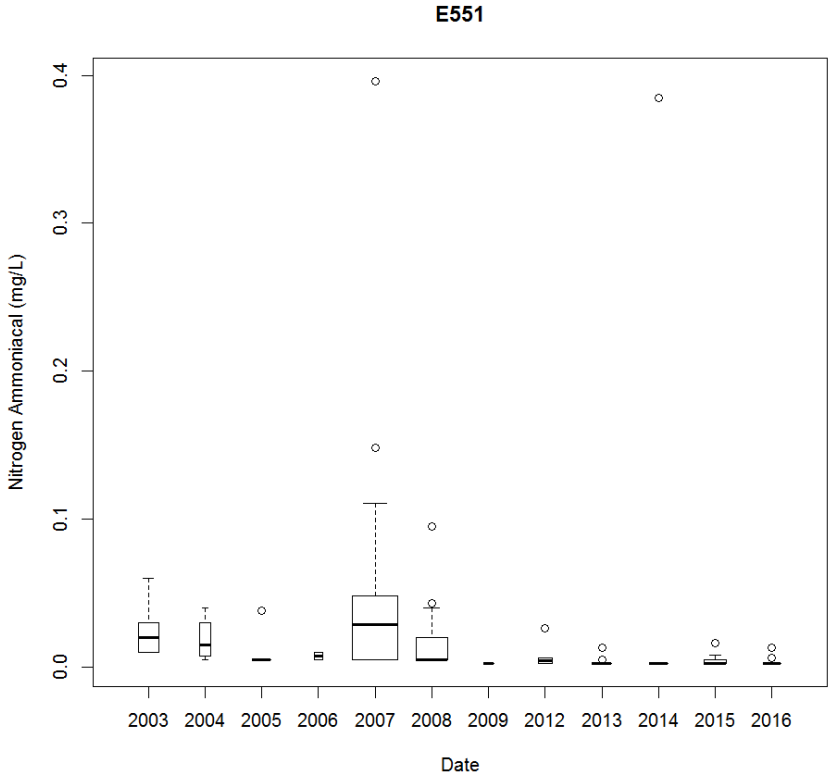

E531
Iron
0
10
20
30
40
50
1991
1993
2001
2003
2005
2007
2009
2011
2013
2015
Date

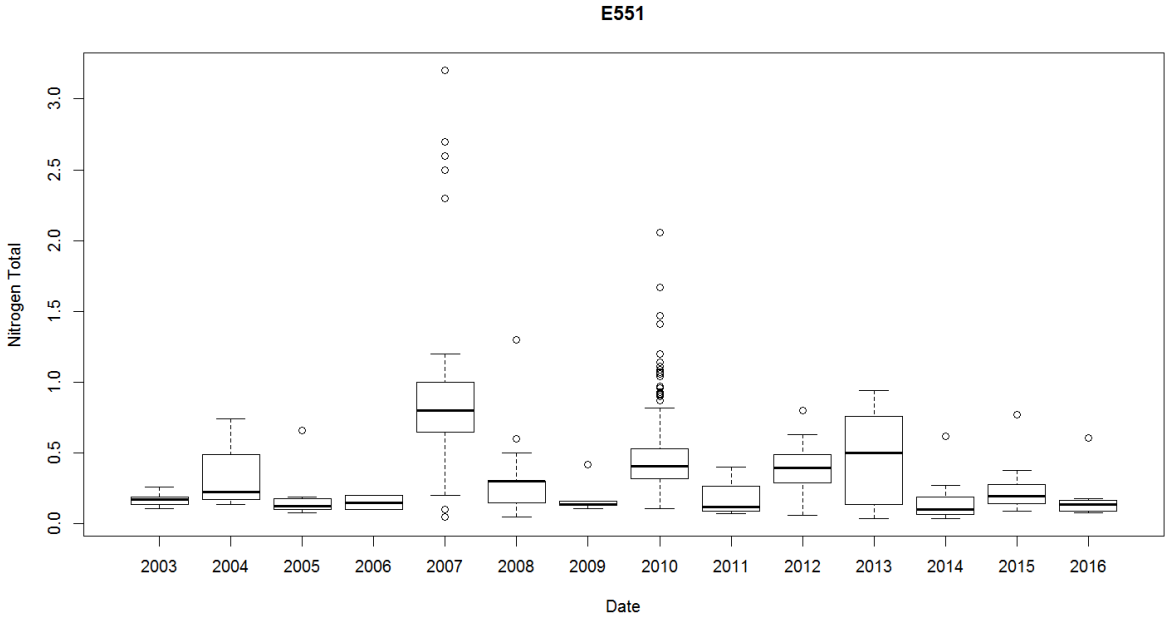

E551
Chlorophyll-a (ug/L)
0
10
20
30
40
50
2005
2009
2013
2014
2015
2016
Date

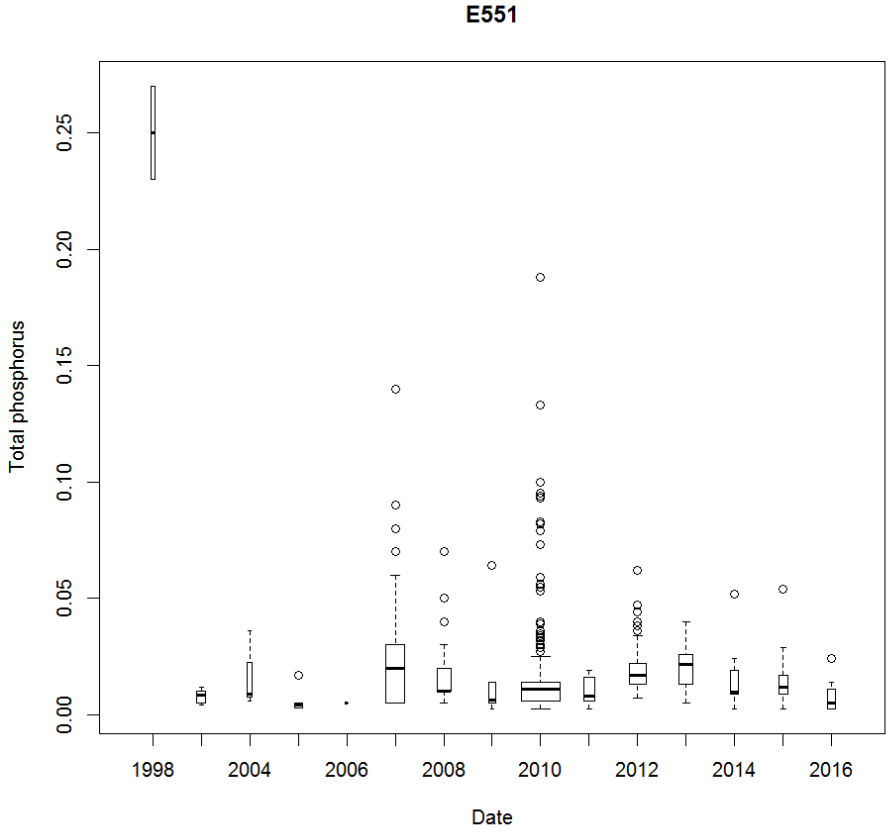

E551
pH
6.0
6.5
7.0
7.5
2003
2005
2007
2009
2011
2013
2015
Date

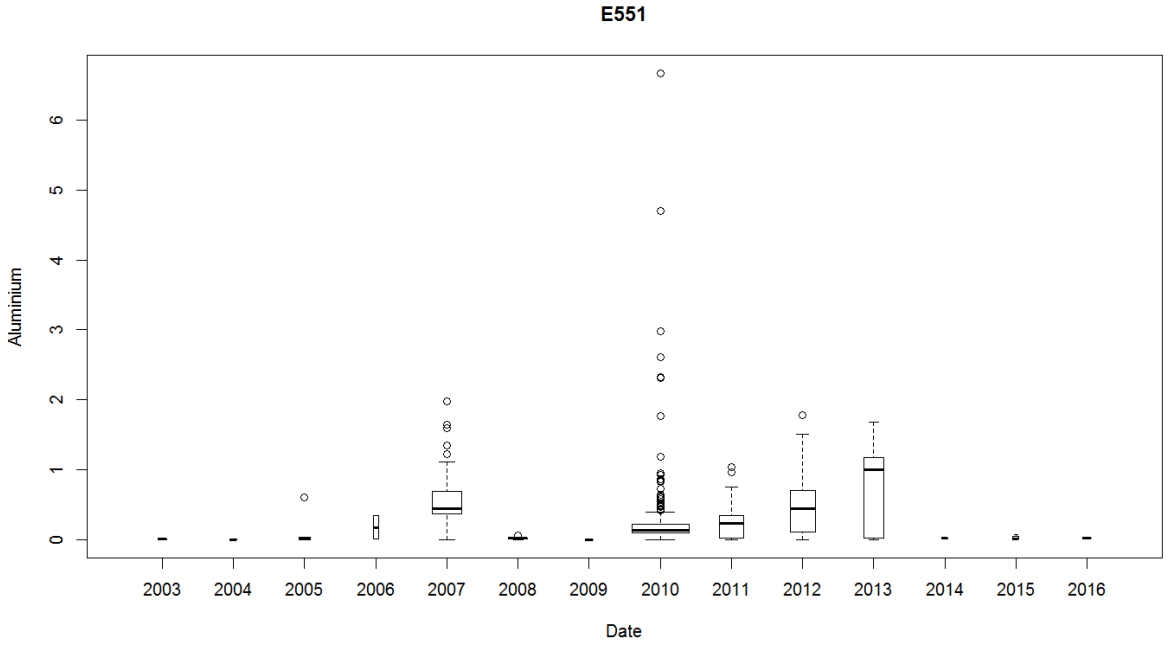

E551
Conductivity (mS/cm)
0
1
2
3
4
5
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

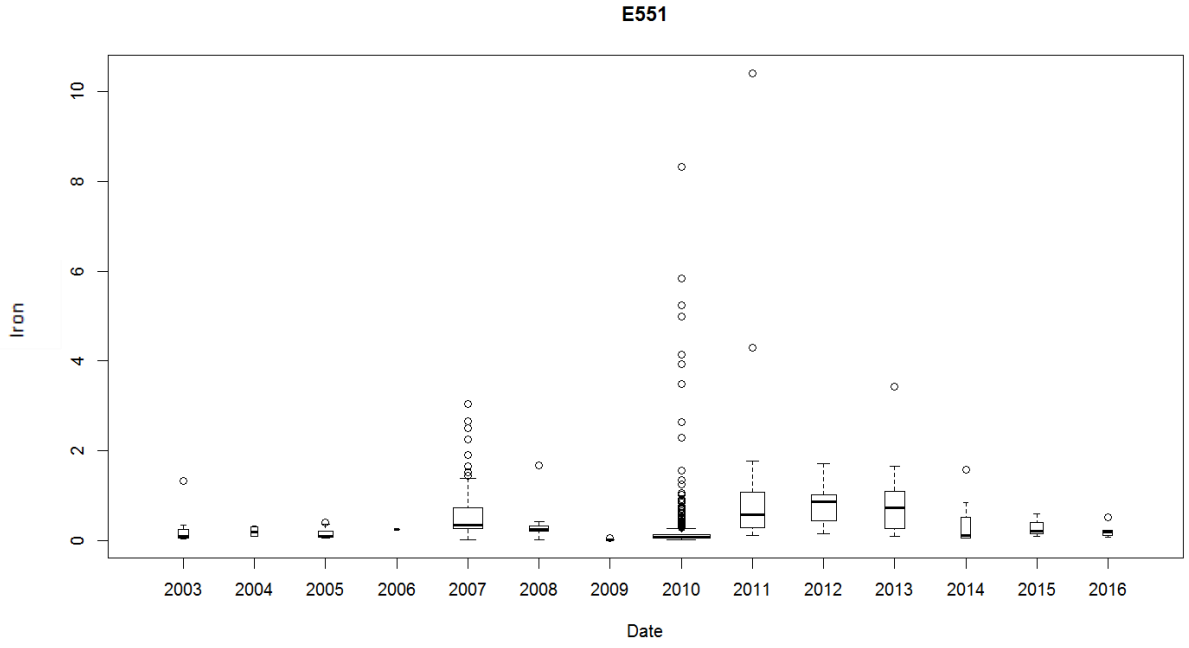

E551
Turbidity
0
100
200
300
400
500
2003
2005
2007
2009
2011
2013
2015
Date

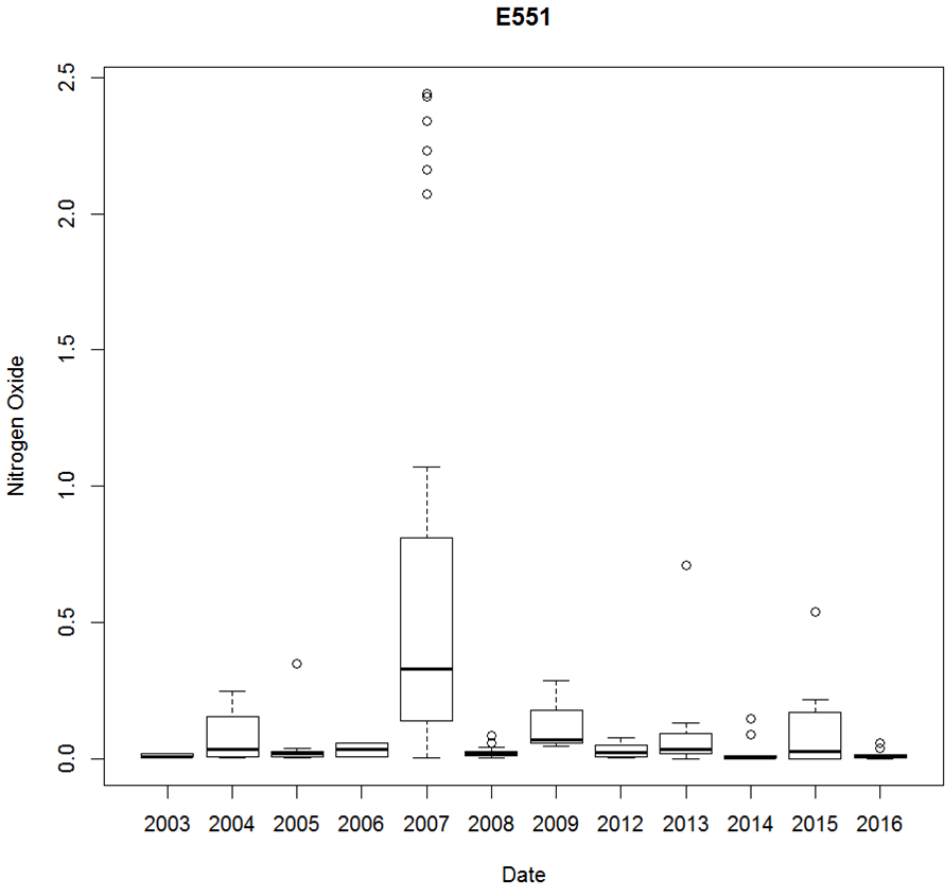

E551
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
2003
2004
2005
2006
2007
2008
2009
2012
2013
2014
2015
2016
Date


E551
Nitrogen Total
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

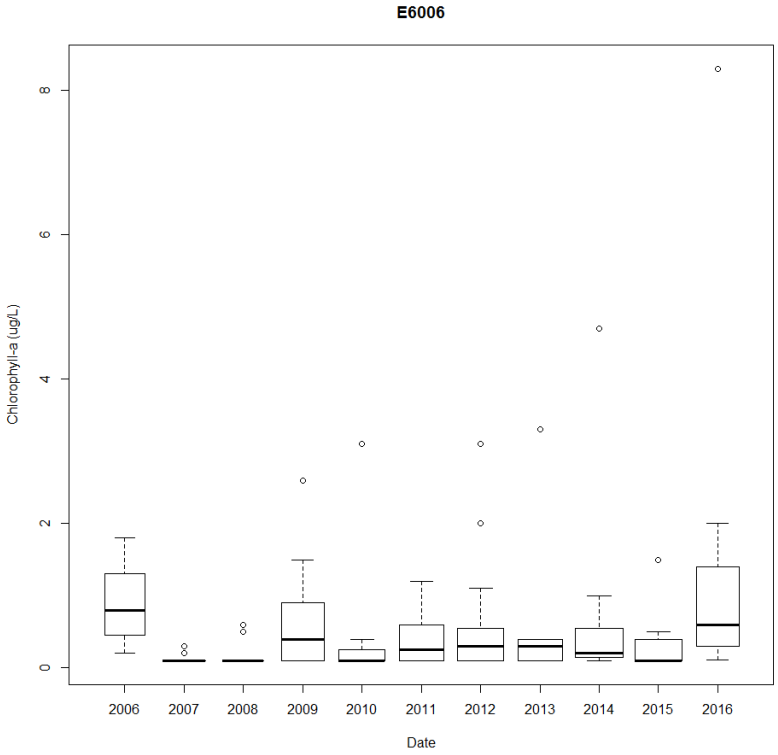

E551
Total phosphorus
0.00
0.05
0.10
0.15
0.20
0.25
1998
2004
2006
2008
2010
2012
2014
2016
Date

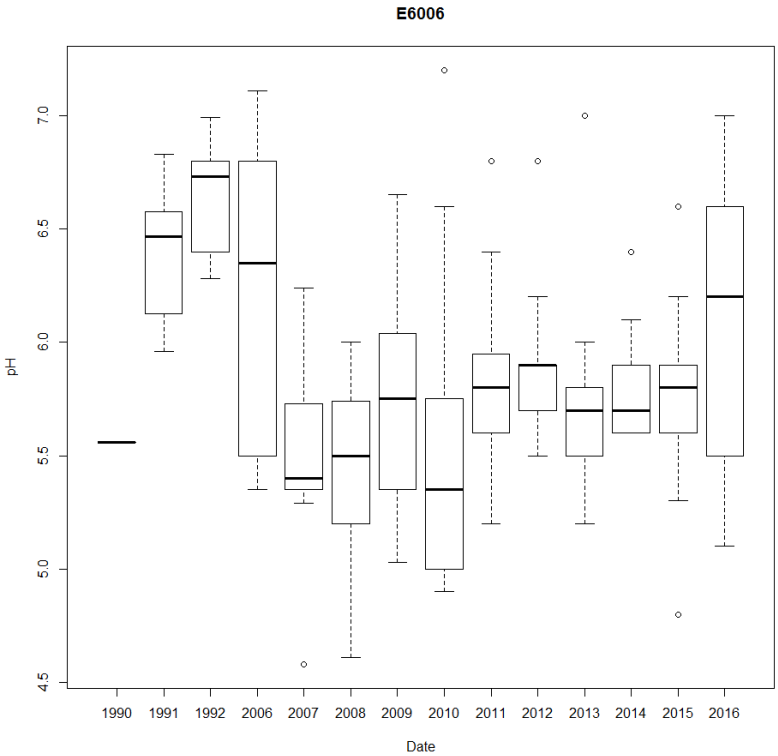

E551
Aluminium
0
1
2
3
4
5
6
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

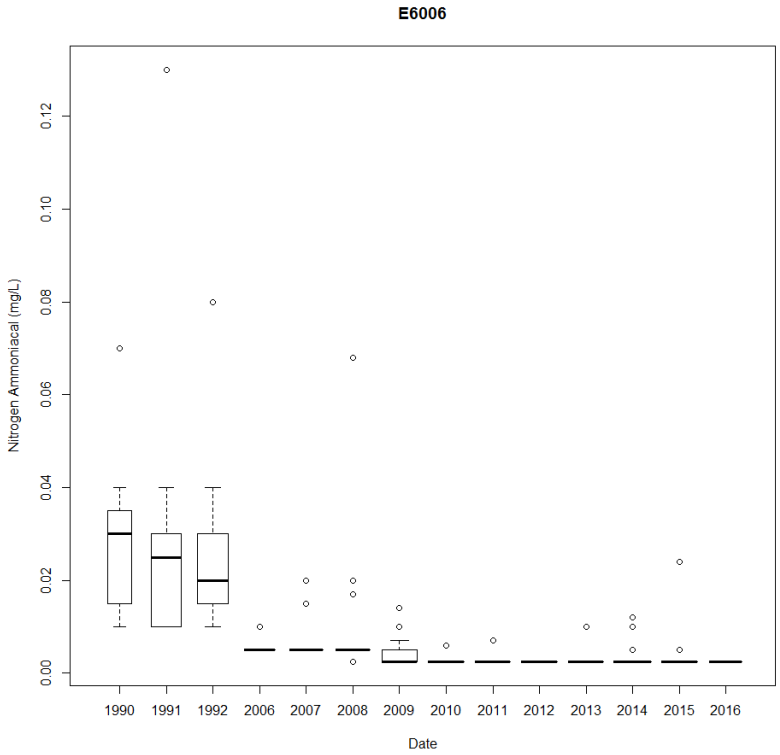

E551
Iron
0
2
4
6
8
10
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

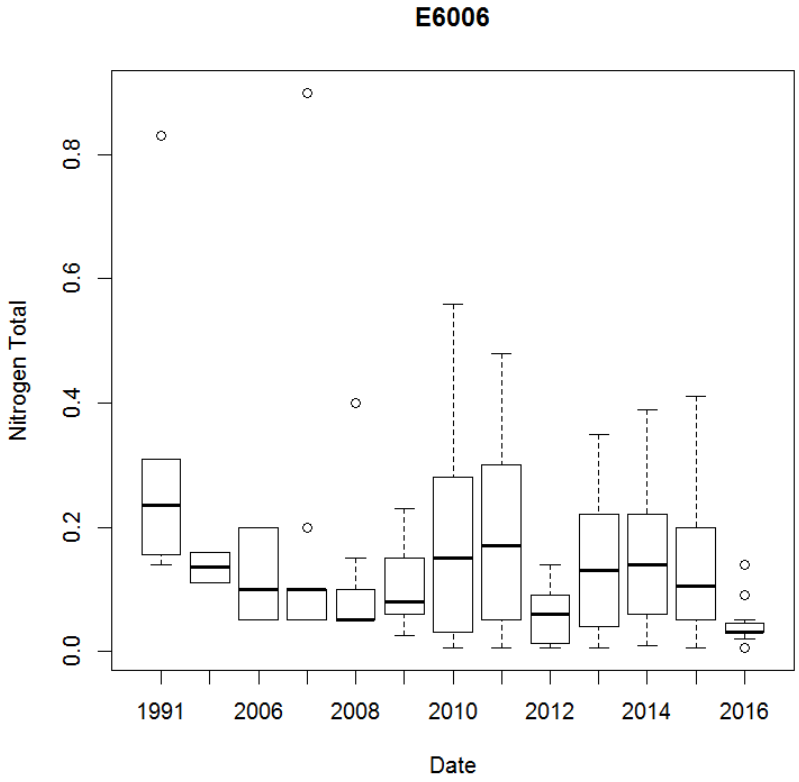

E551
Nitrogen Oxide
0.0
0.5
1.0
1.5
2.0
2.5
2003
2004
2005
2006
2007
2008
2009
2012
2013
2014
2015
2016
Date

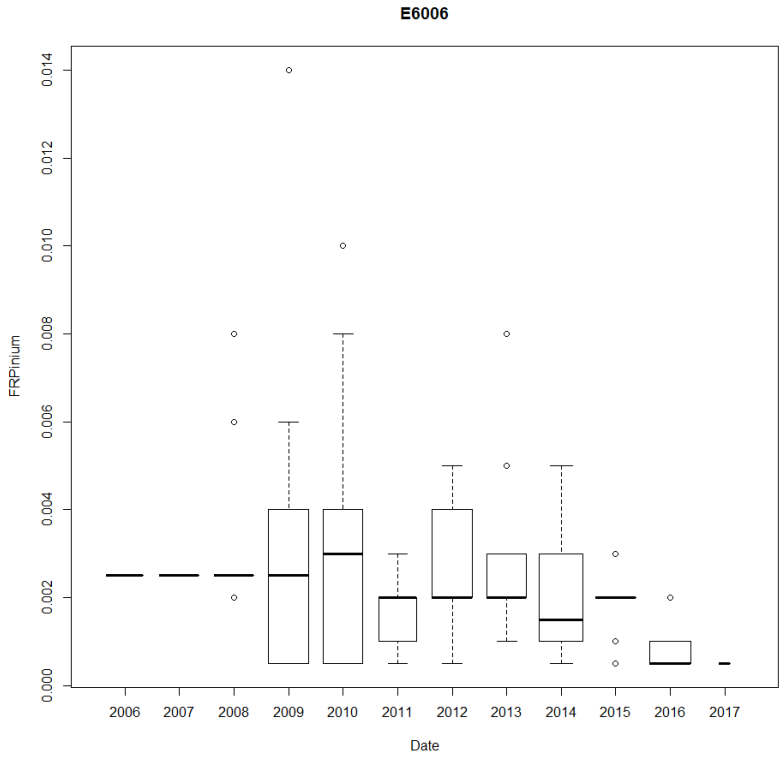
8.8 Upper Nepean catchment stations

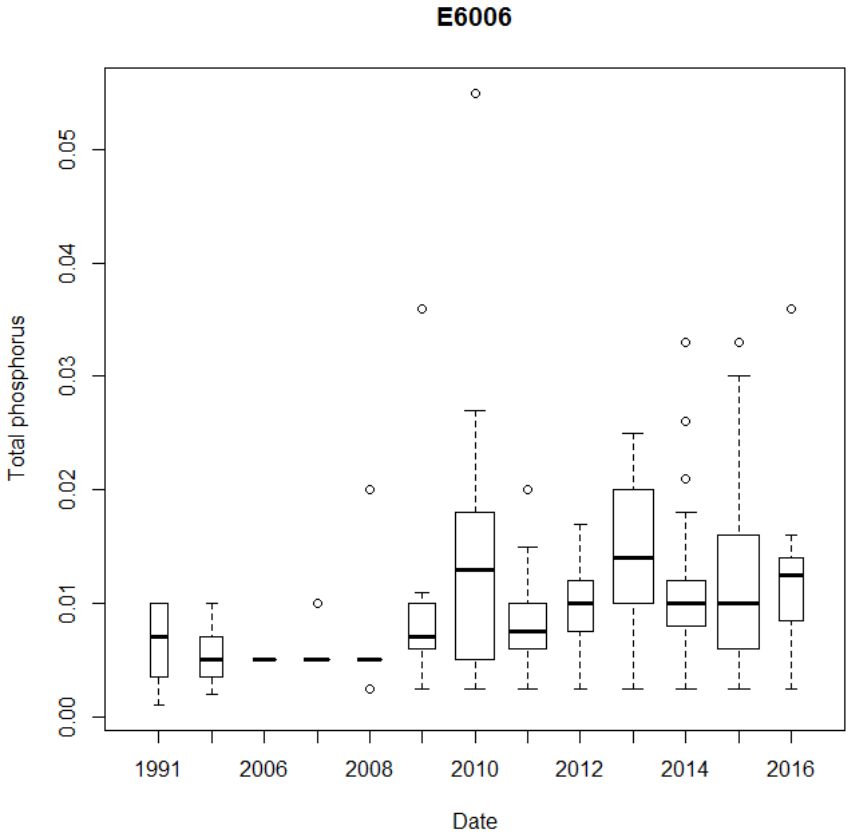


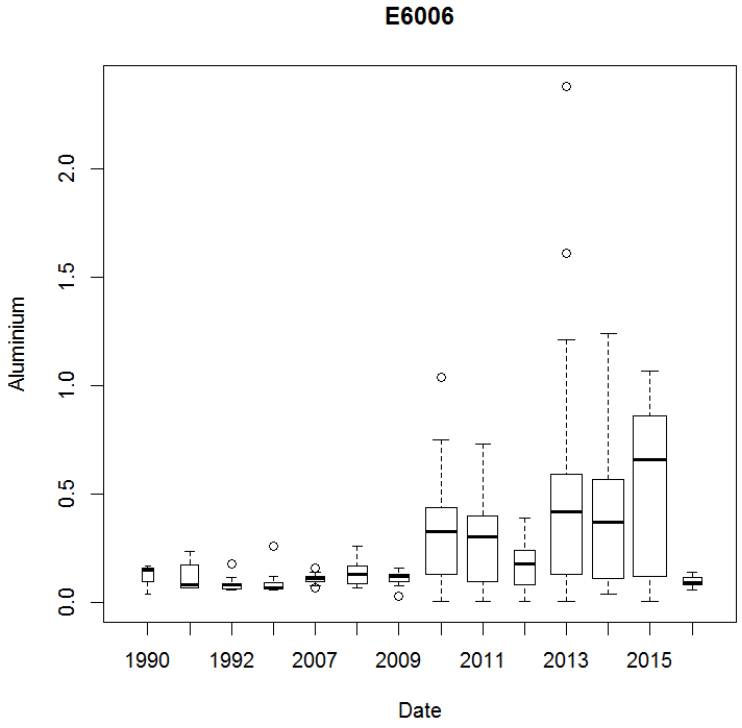


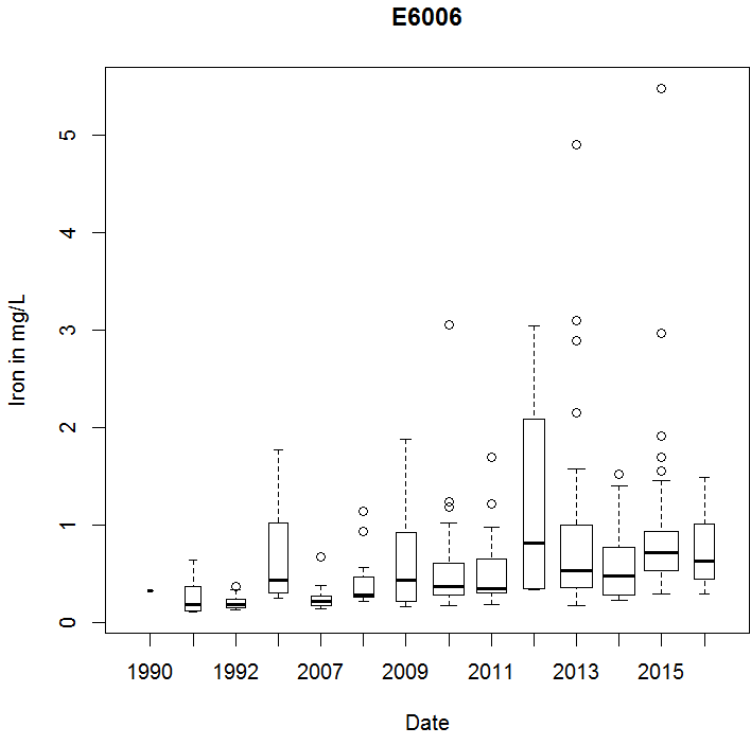

E6006
Nitrogen Ammoniacal (mg/L)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
1990
1991
1992
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

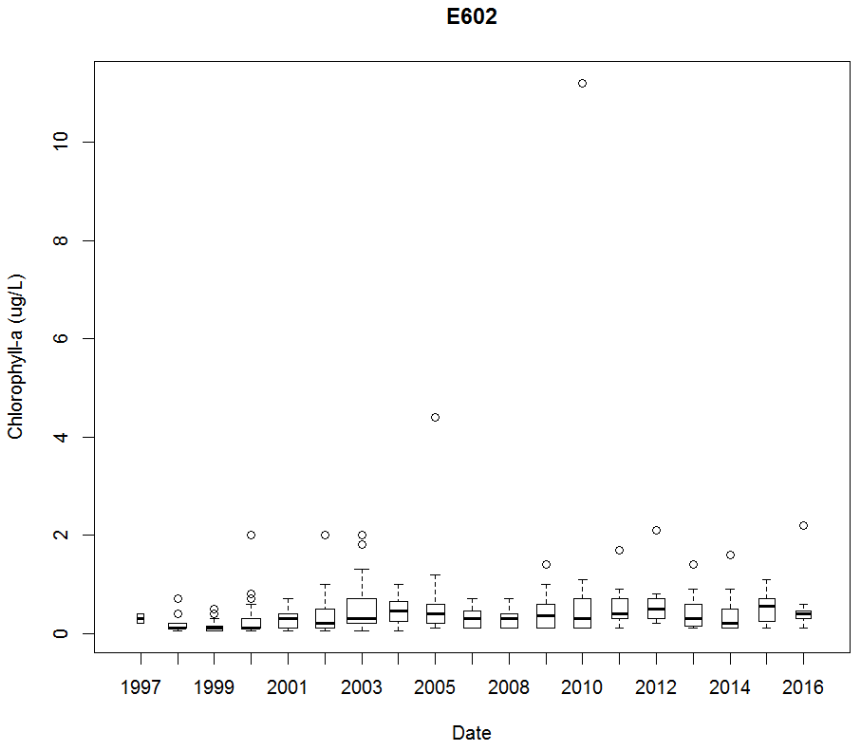

E6006
Nitrogen Total
0.0
0.2
0.4
0.6
0.8
1991
2006
2008
2010
2012
2014
2016
Date

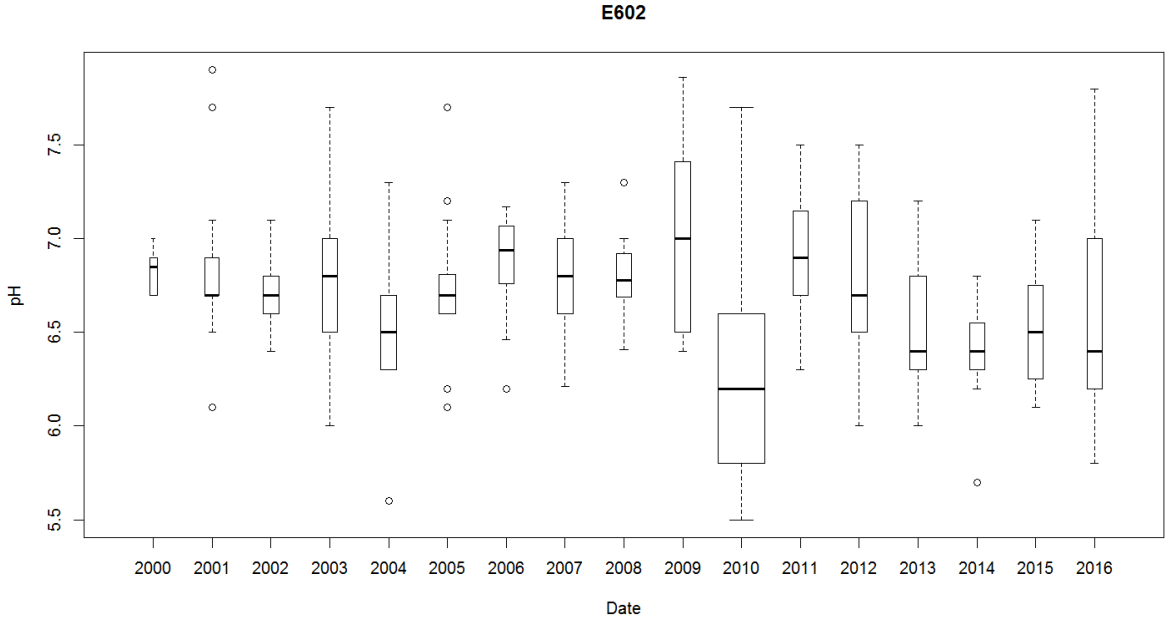

E6006
FRPinium
0.000
0.002
0.004
0.006
0.008
0.010
0.012
0.014
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Date

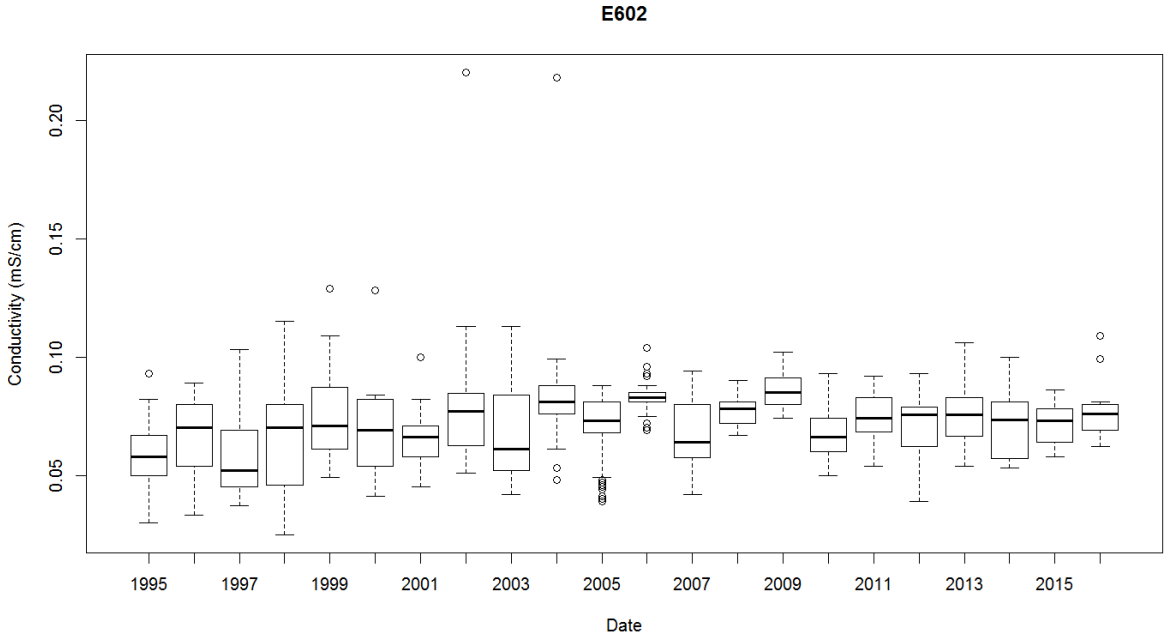

E6006
Total phosphorus
0.00
0.01
0.02
0.03
0.04
0.05
1991
2006
2008
2010
2012
2014
2016
Date

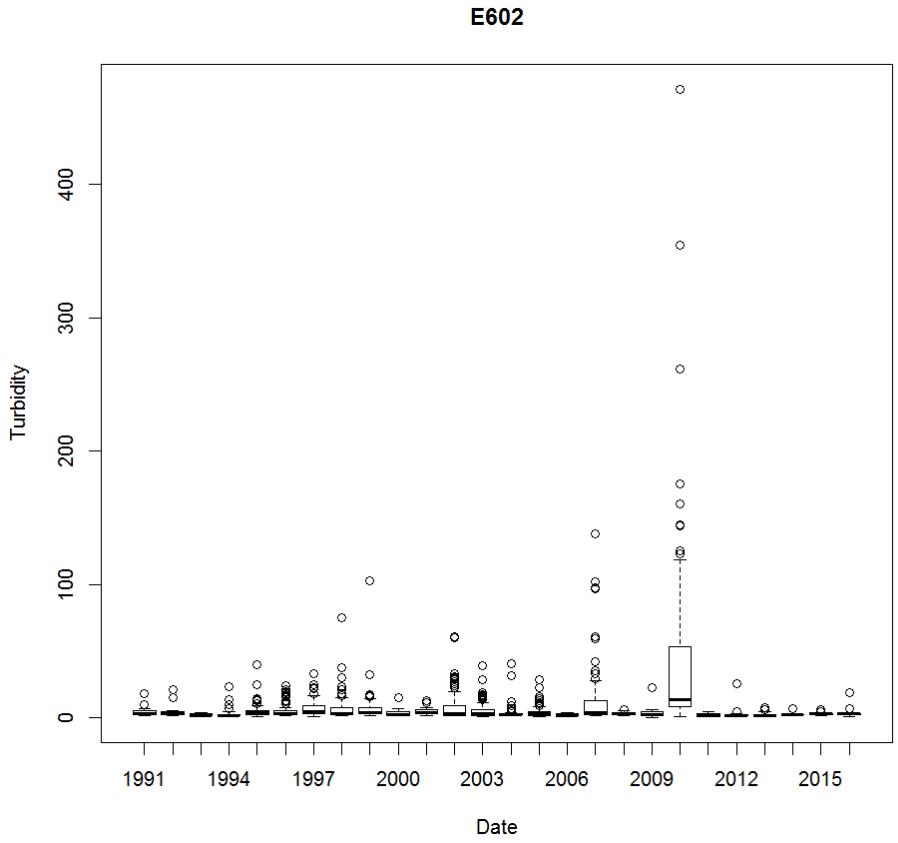

E6006
Aluminium
0.0
0.5
1.0
1.5
2.0
1990
1992
2007
2009
2011
2013
2015
Date

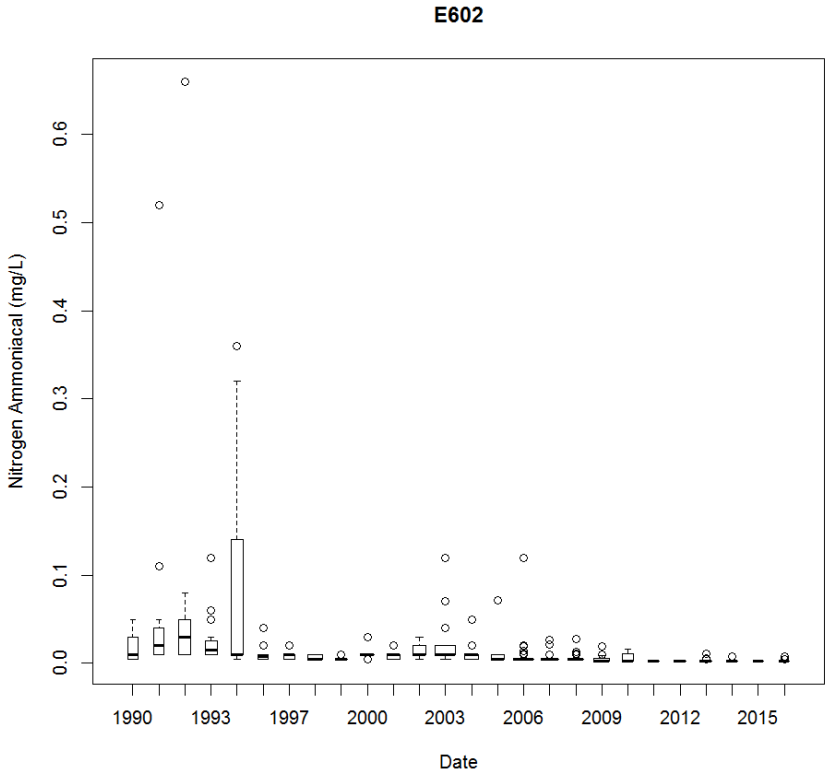

E6006
Iron in mg/L
0
1
2
3
4
5
1990
1992
2007
2009
2011
2013
2015
Date

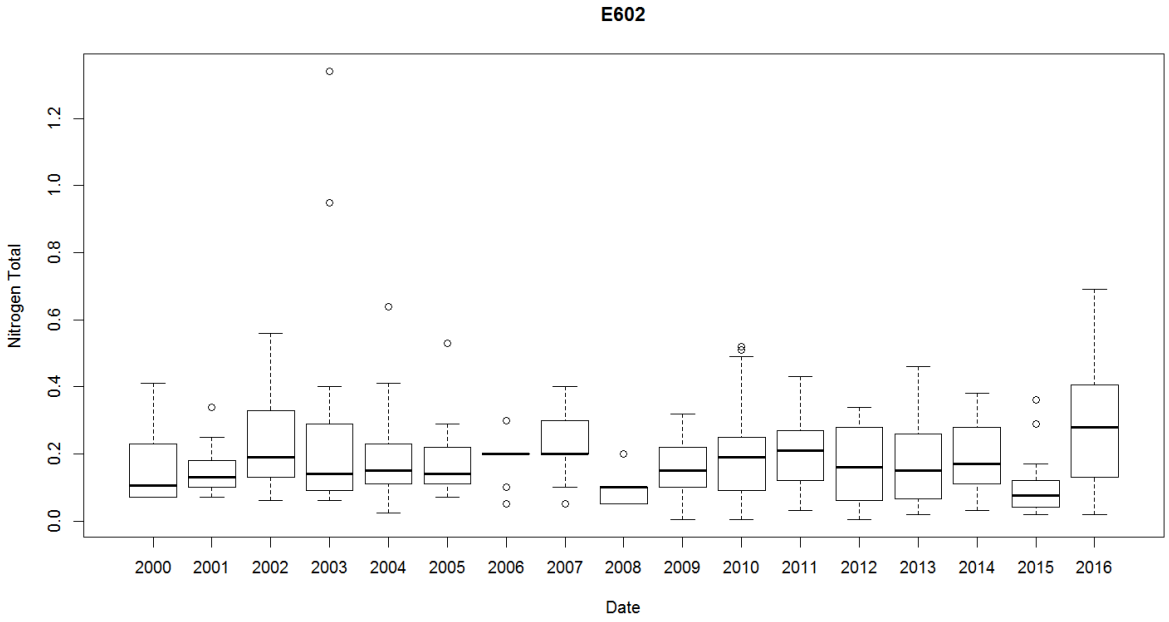

E602
Chlorophyll-a (ug/L)
0
2
4
6
8
10
1997
1999
2001
2003
2005
2008
2010
2012
2014
2016
Date

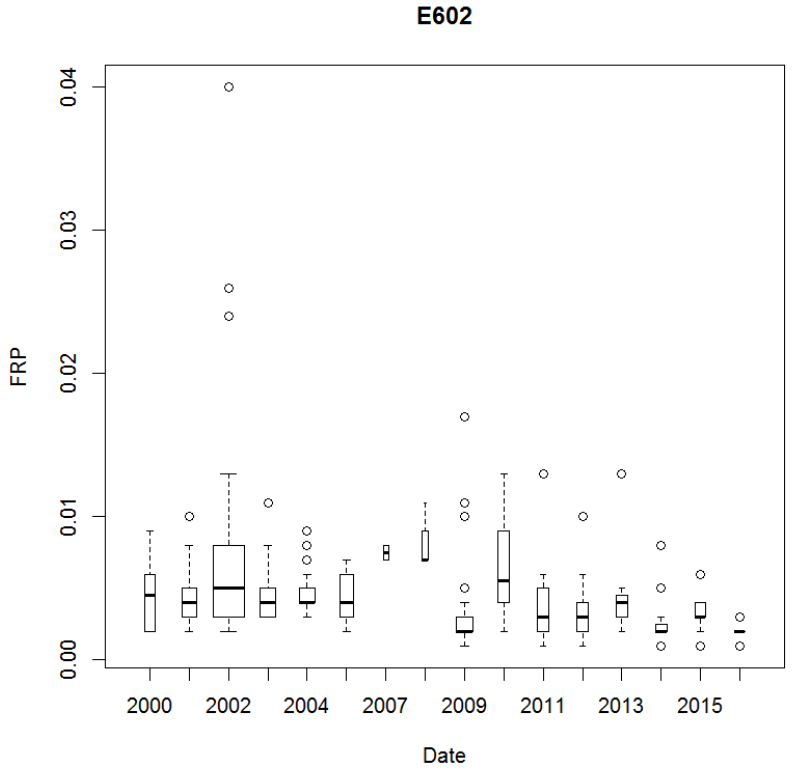

E602
pH
5.5
6.0
6.5
7.0
7.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

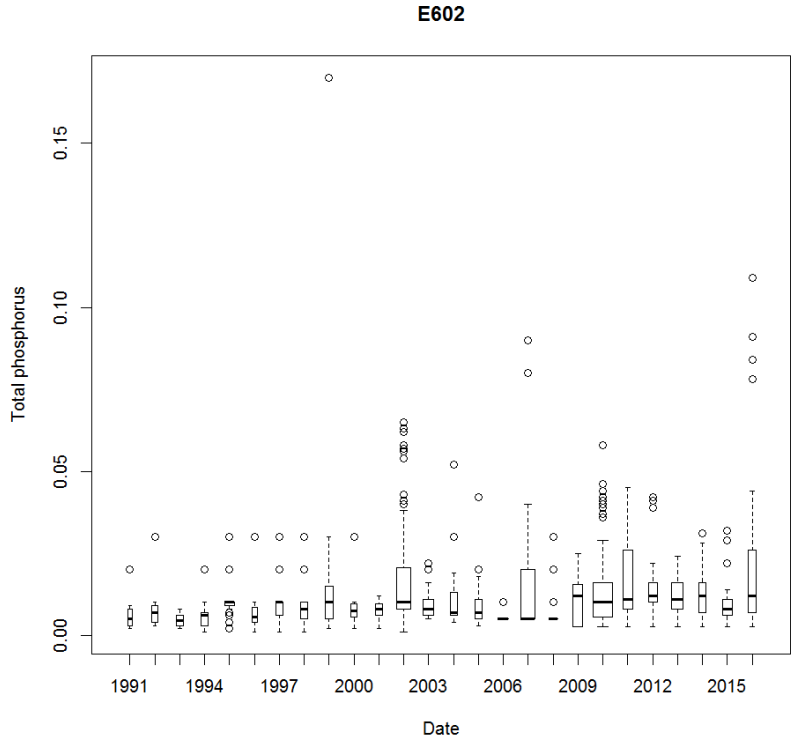

E602
Conductivity (mS/cm)
0.05
0.10
0.15
0.20
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

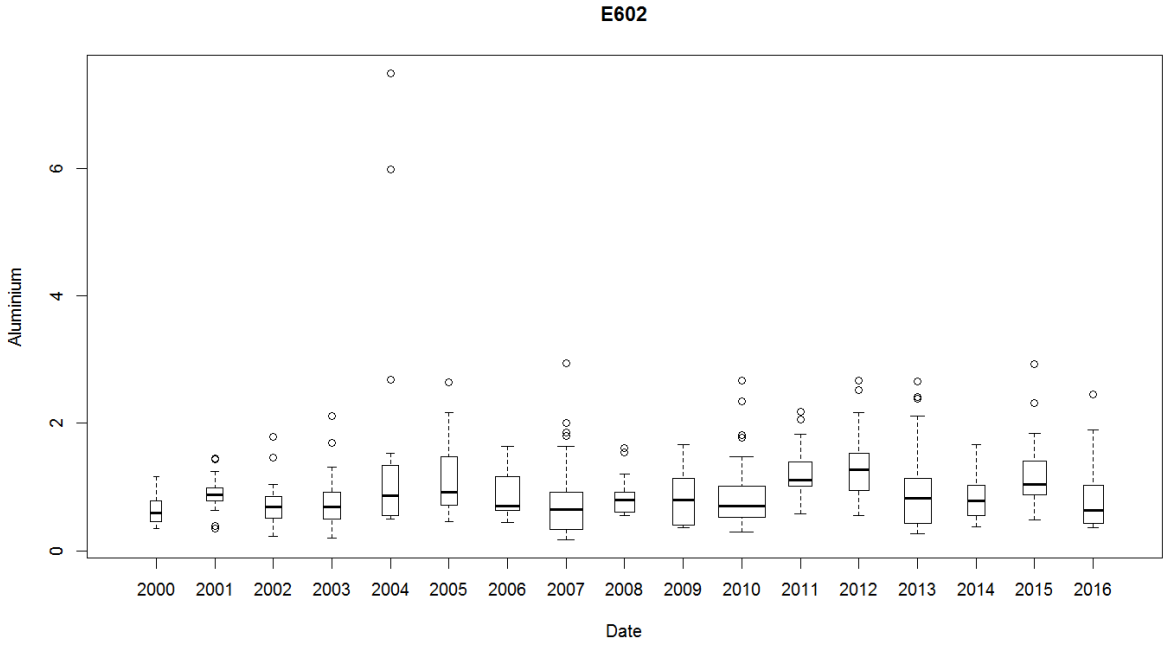

E602
Turbidity
0
100
200
300
400
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

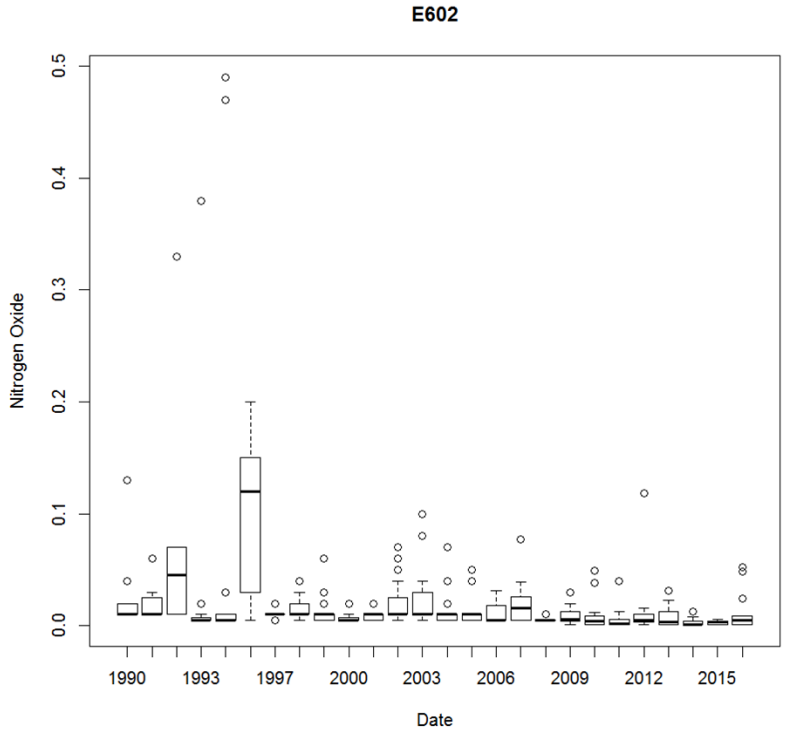

E602
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1990
1993
1997
2000
2003
2006
2009
2012
2015
Date

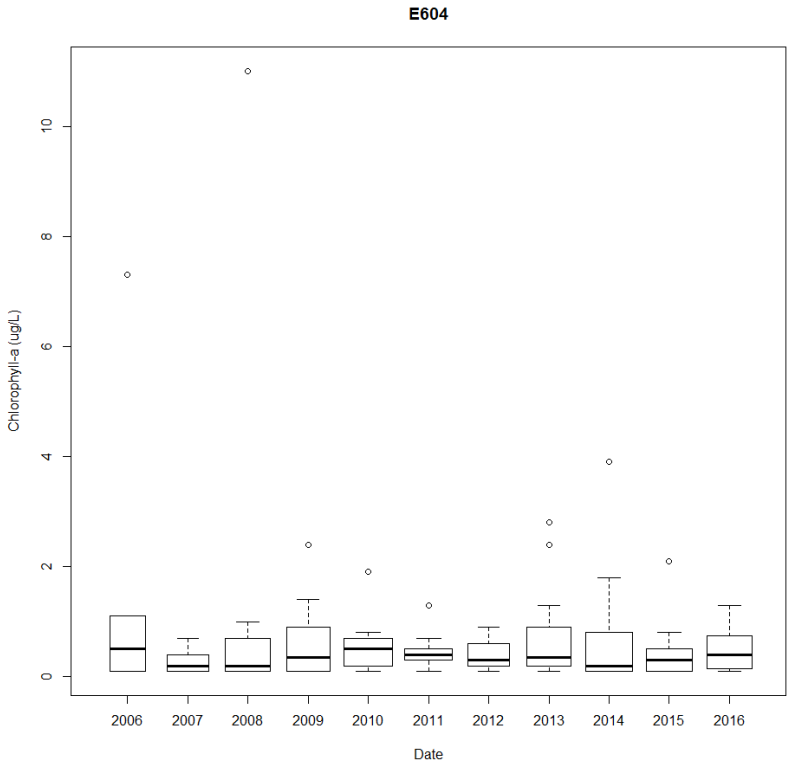

E602
Nitrogen Total
0.0
0.2
0.4
0.6
0.8
1.0
1.2
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

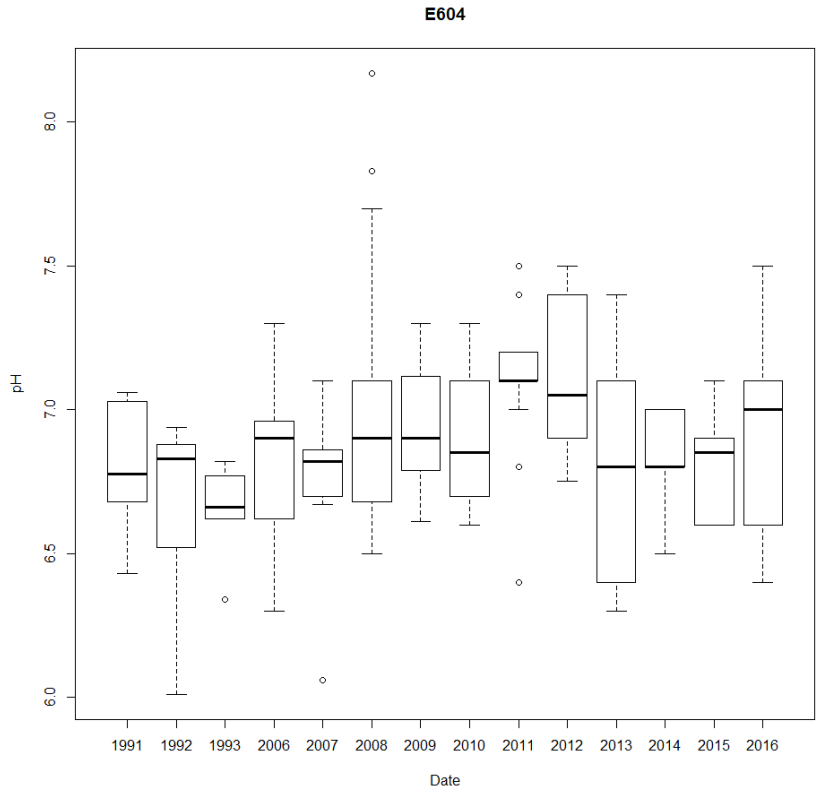

E602
FRP
0.00
0.01
0.02
0.03
0.04
2000
2002
2004
2007
2009
2011
2013
2015
Date

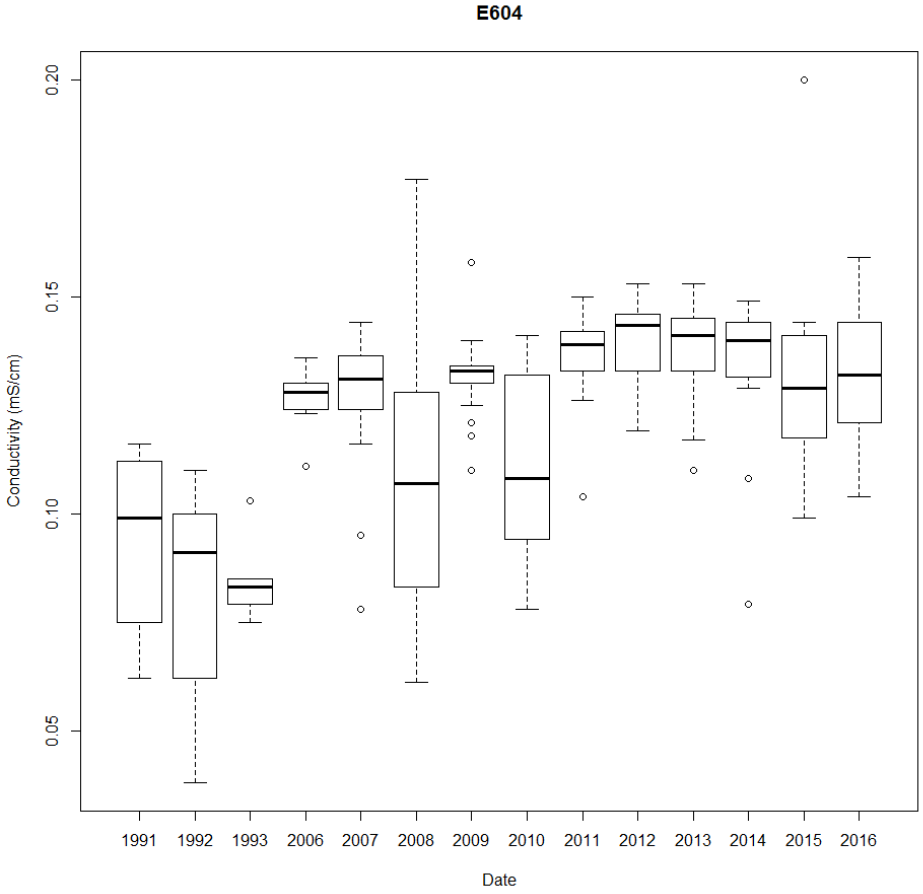

E602
Total phosphorus
0.00
0.05
0.10
0.15
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

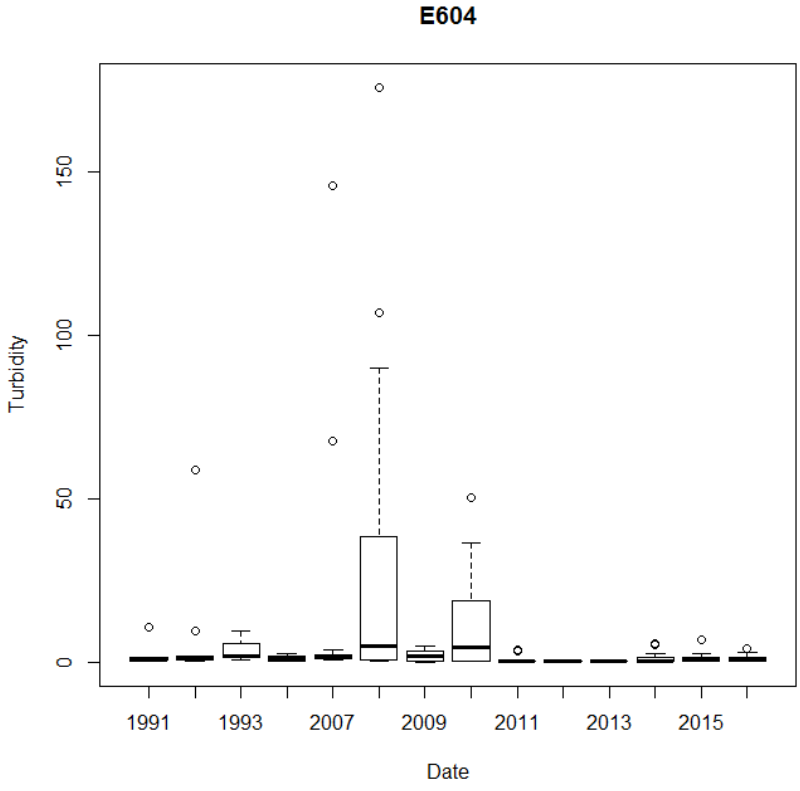

E602
Aluminium
0
2
4
6
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

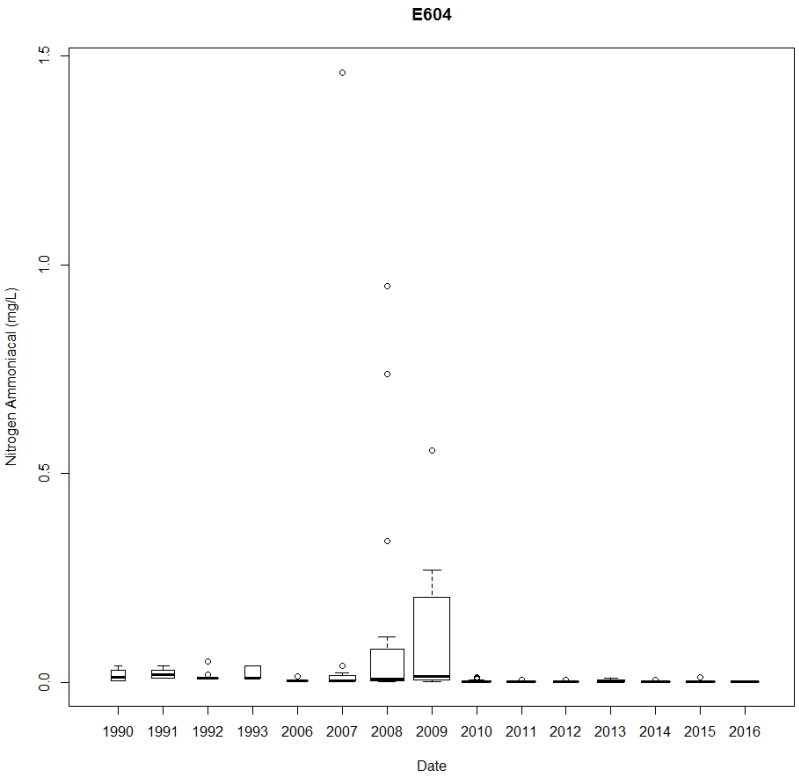

E602
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
0.5
1990
1993
1997
2000
2003
2006
2009
2012
2015
Date

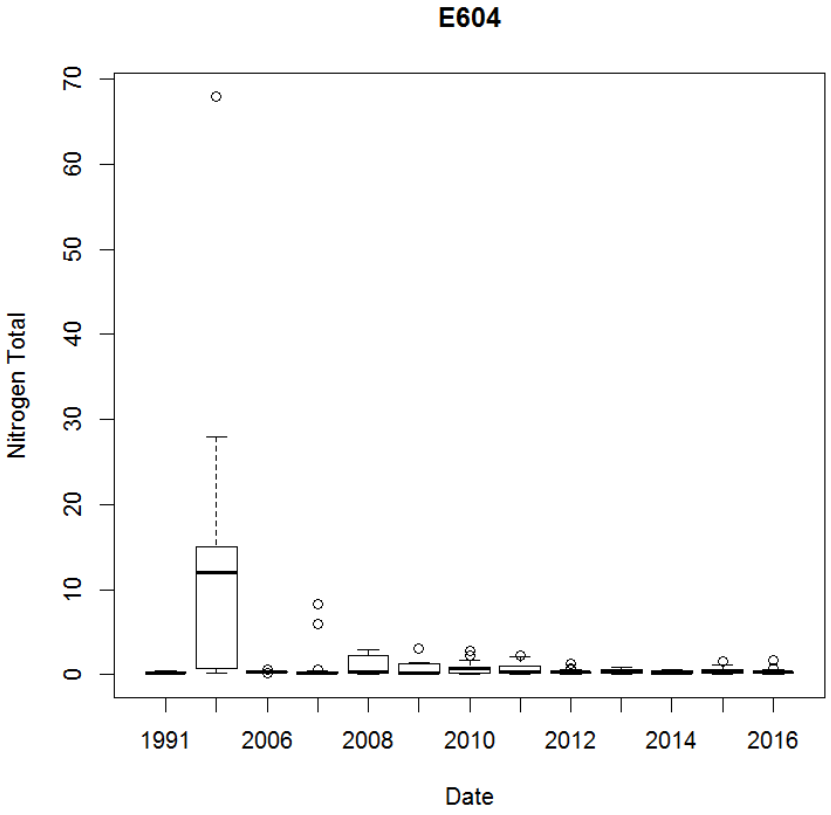

E604
Chlorophyll-a (ug/L)
0
2
4
6
8
10
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

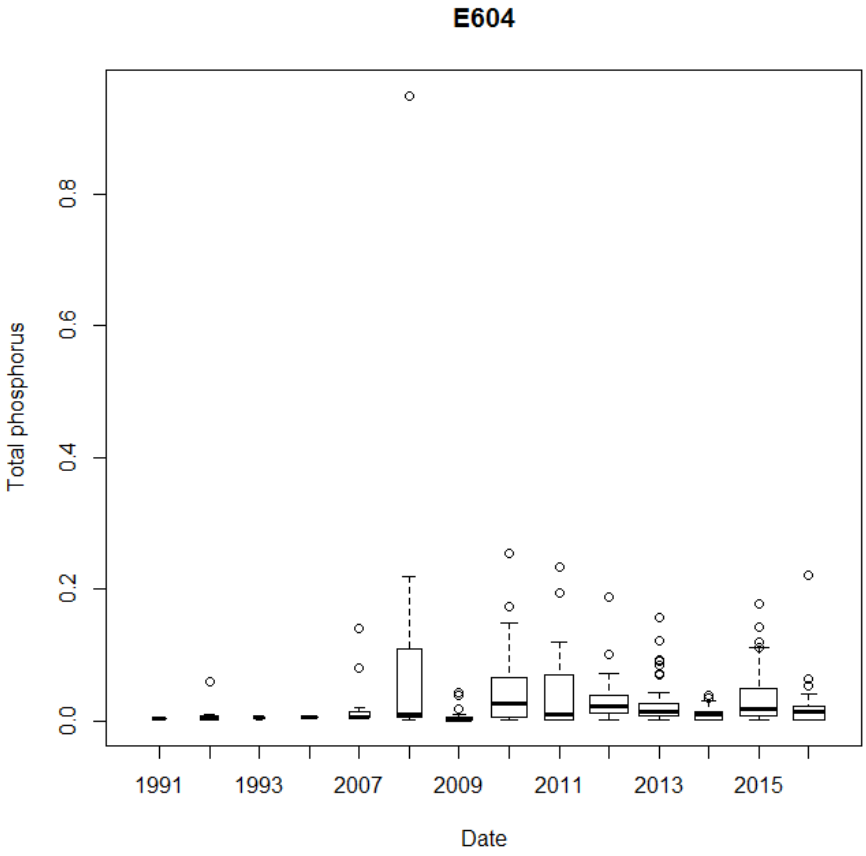

E604
pH
6.0
6.5
7.0
7.5
8.0
1991
1992
1993
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

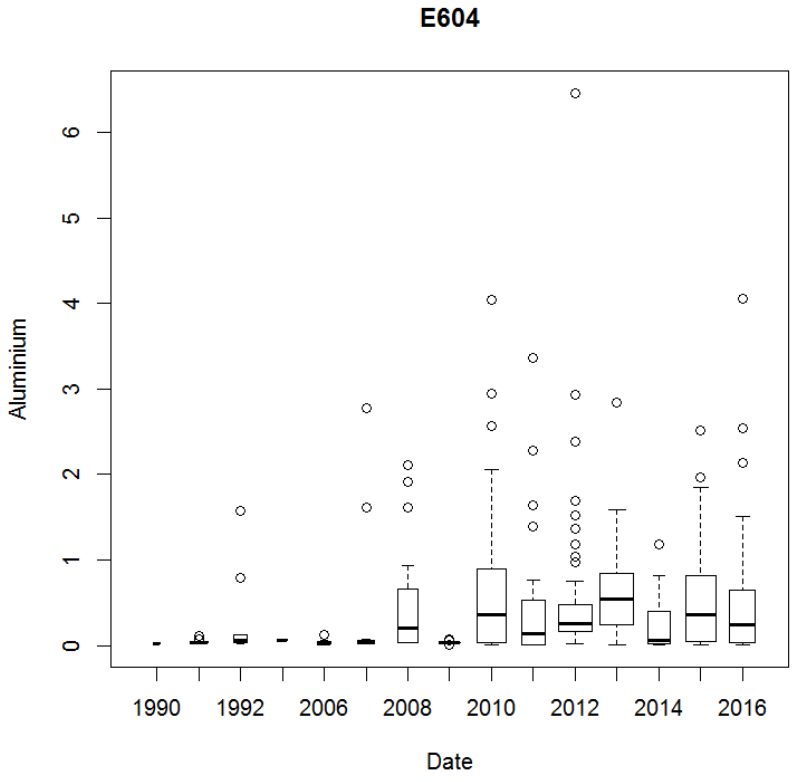

E604
Conductivity (mS/cm)
0.05
0.10
0.15
0.20
1991
1992
1993
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

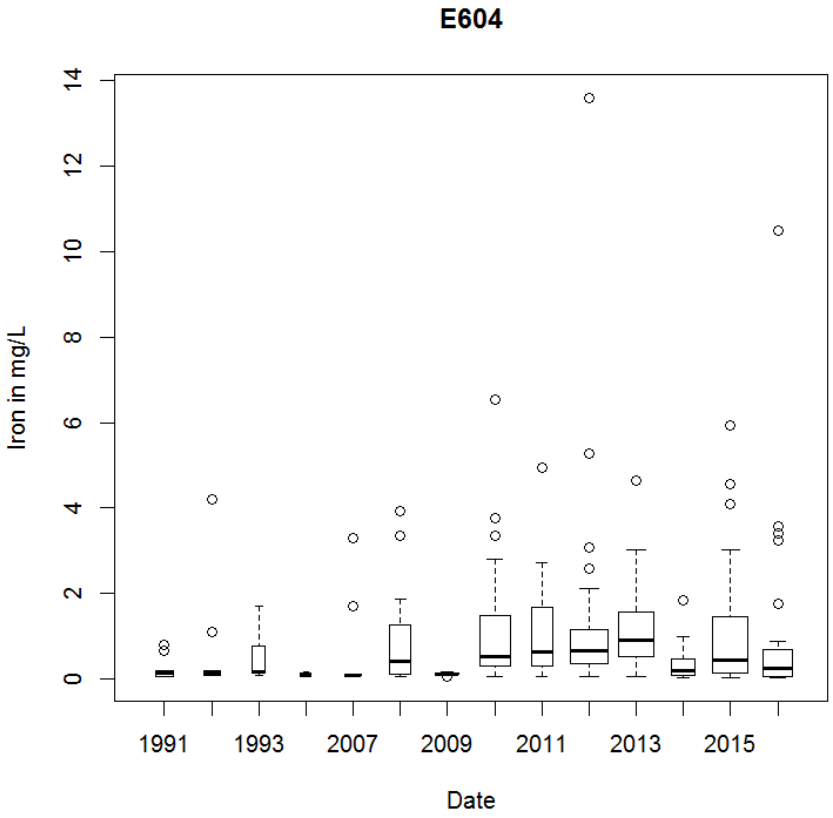

E604
Turbidity
0
50
100
150
1991
1993
2007
2009
2011
2013
2015
Date

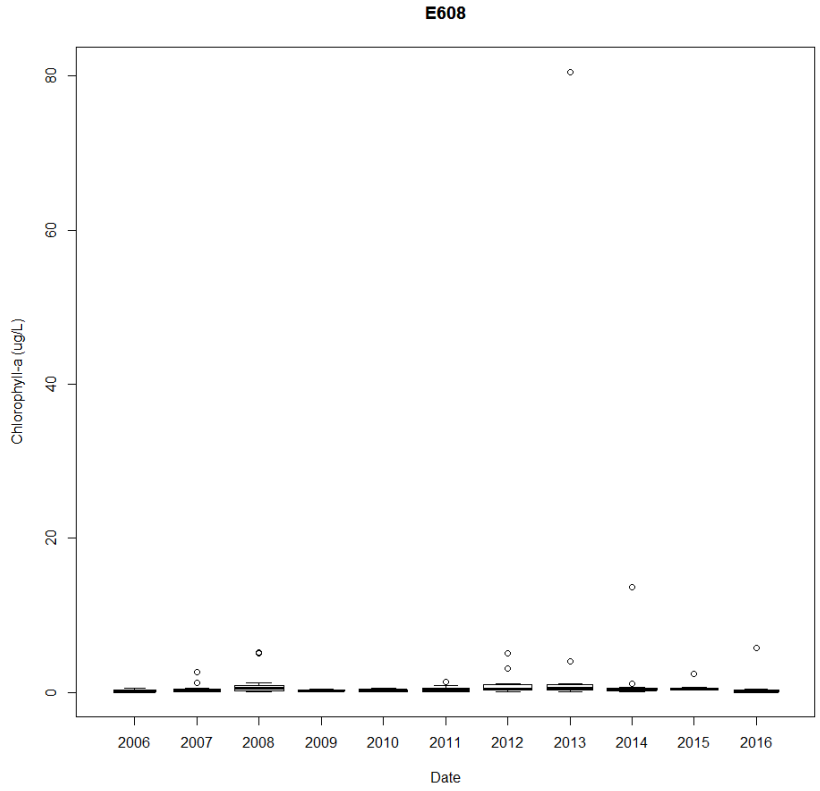

E604
Nitrogen Ammoniacal (mg/L)
0.0
0.5
1.0
1.5
1990
1991
1992
1993
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

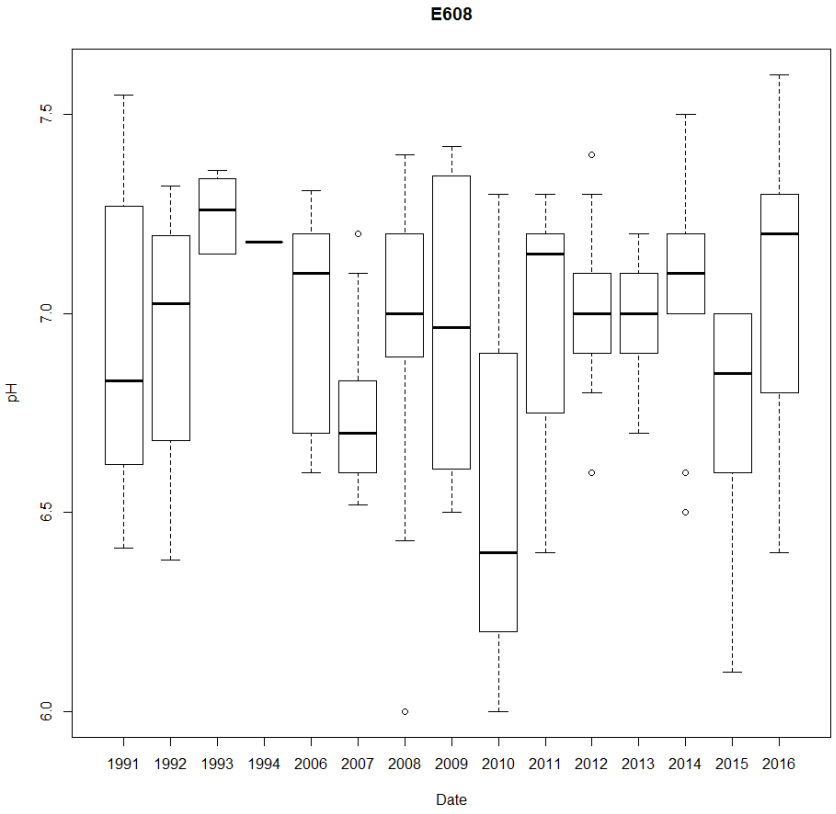

E604
Nitrogen Total
0
10
20
30
40
50
60
70
1991
2006
2008
2010
2012
2014
2016
Date

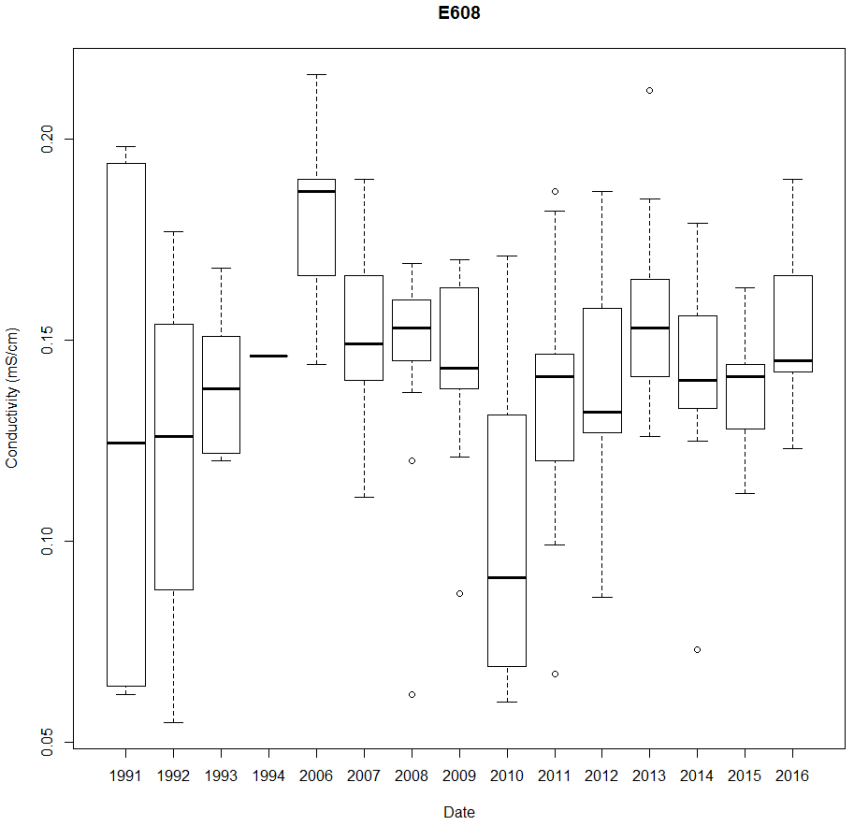

E604
Total phosphorus
0.0
0.2
0.4
0.6
0.8
1991
1993
2007
2009
2011
2013
2015
Date

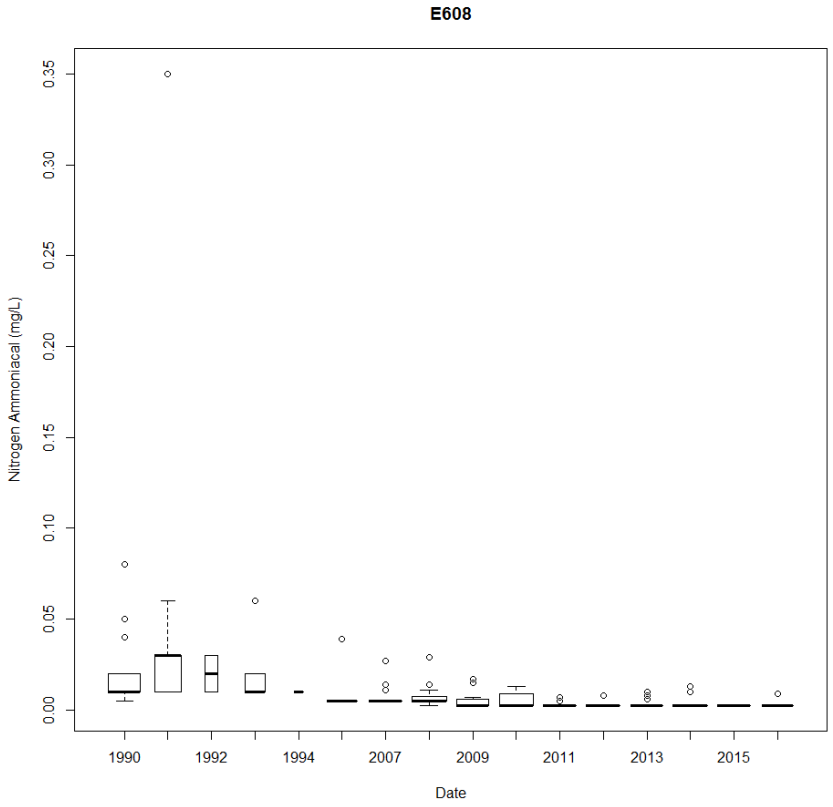

E604
Aluminium
0
1
2
3
4
5
6
1990
1992
2006
2008
2010
2012
2014
2016
Date

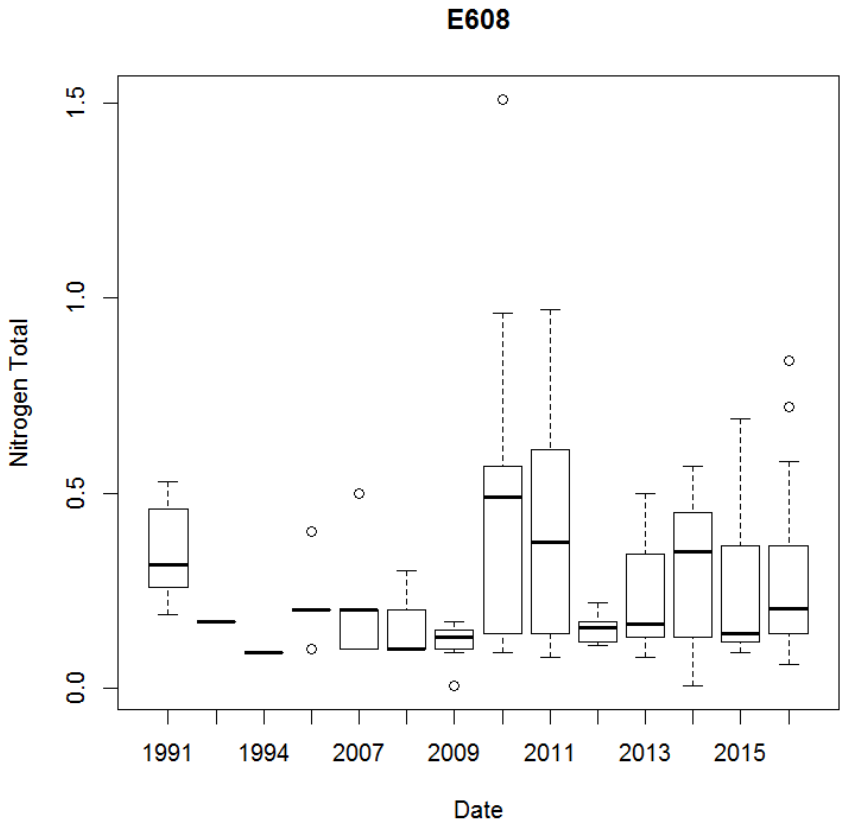

E604
Iron in mg/L
0
2
4
6
8
10
12
14
1991
1993
2007
2009
2011
2013
2015
Date

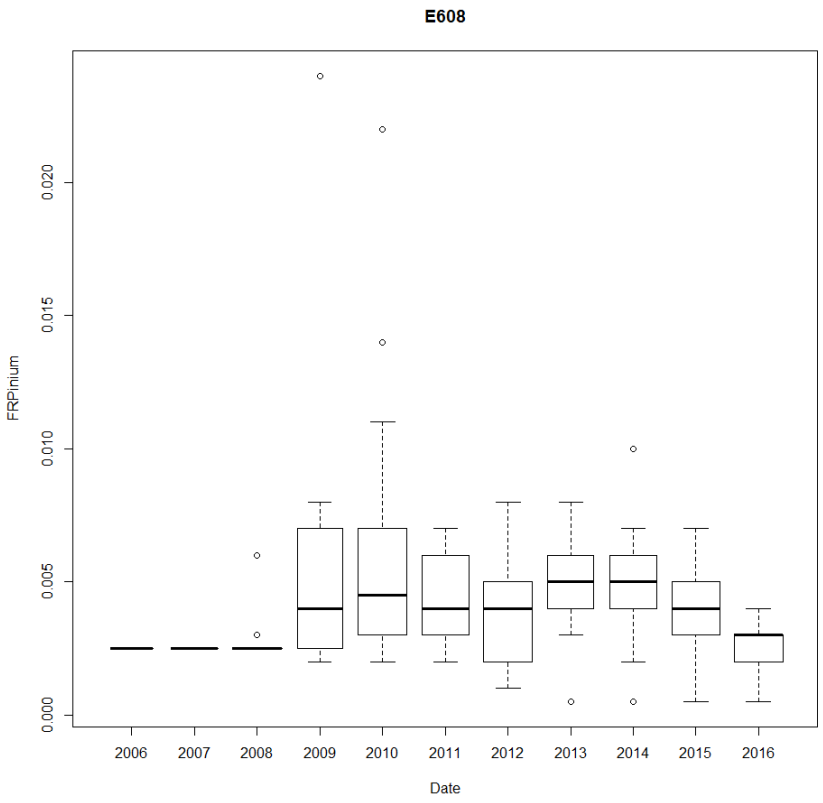

E608
Chlorophyll-a (ug/L)
0
20
40
60
80
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

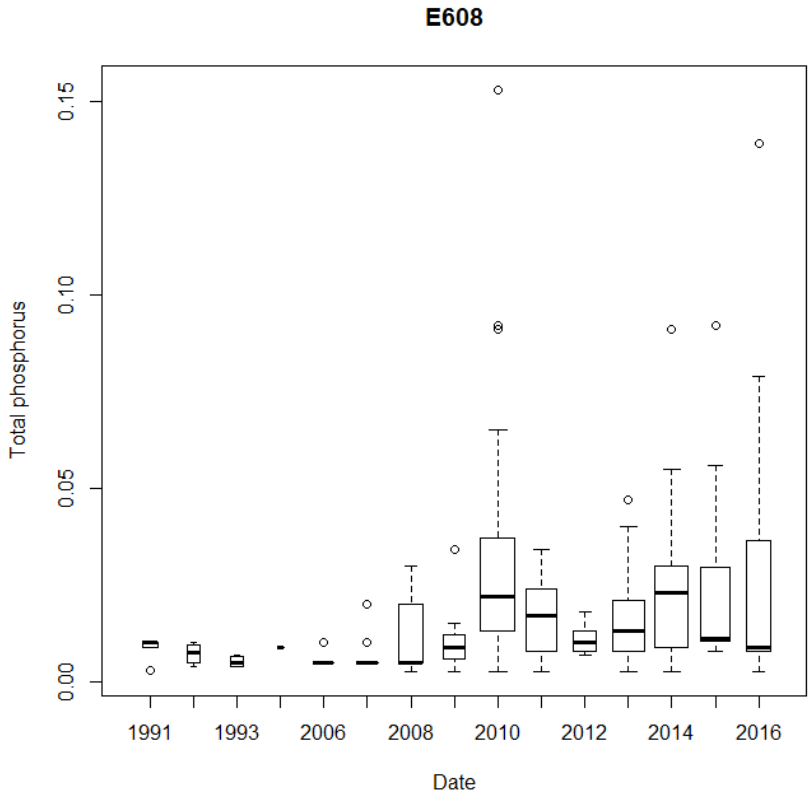

E608
pH
6.0
6.5
7.0
7.5
1991
1992
1993
1994
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

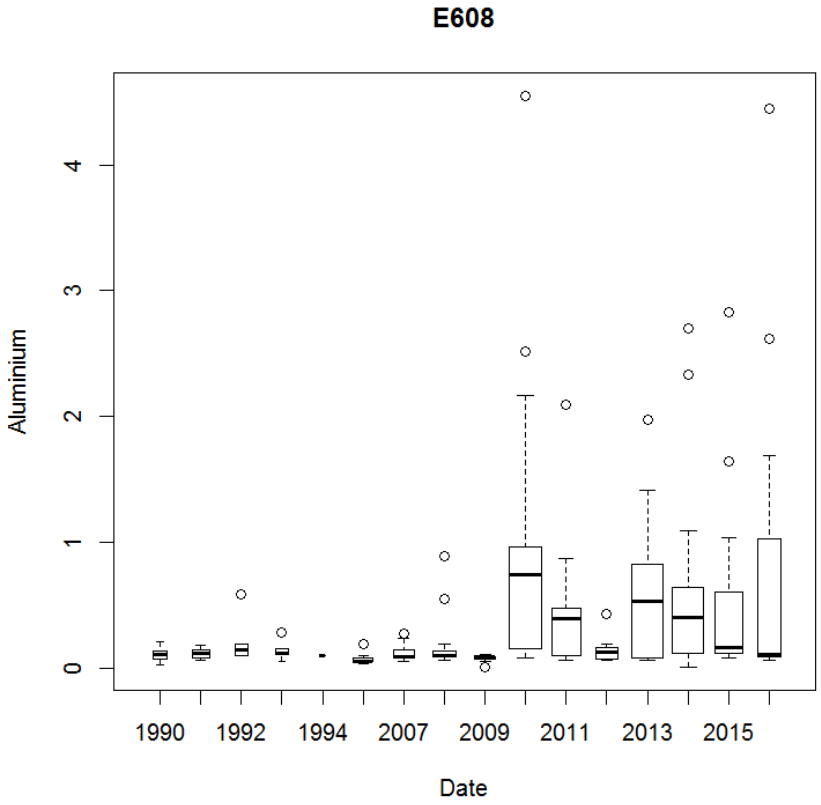

E608
Conductivity (mS/cm)
0.05
0.10
0.15
0.20
1991
1992
1993
1994
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

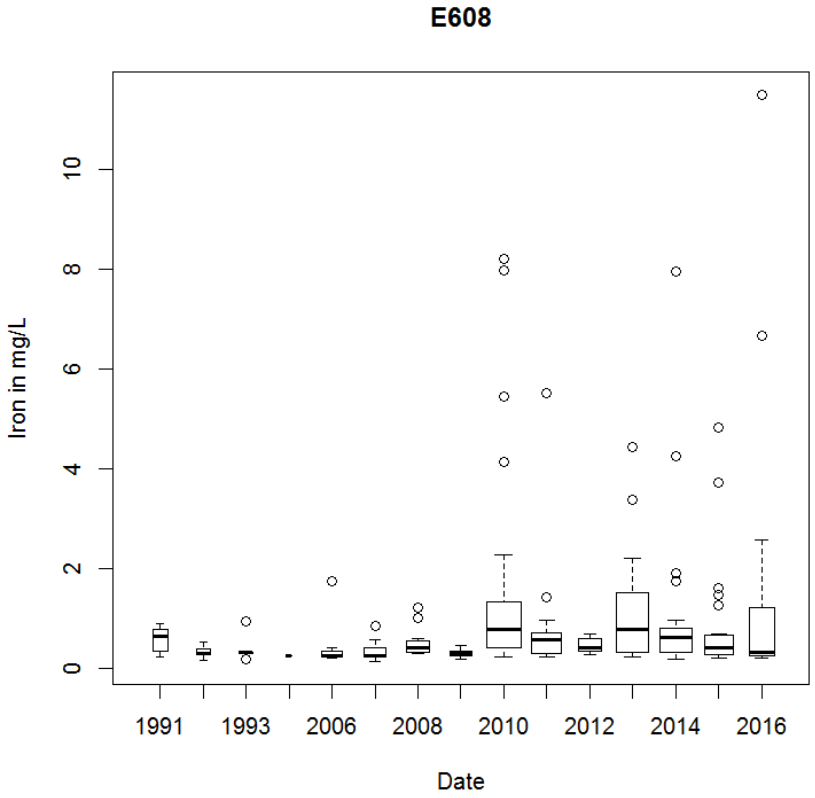

E608
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1990
1992
1994
2007
2009
2011
2013
2015
Date

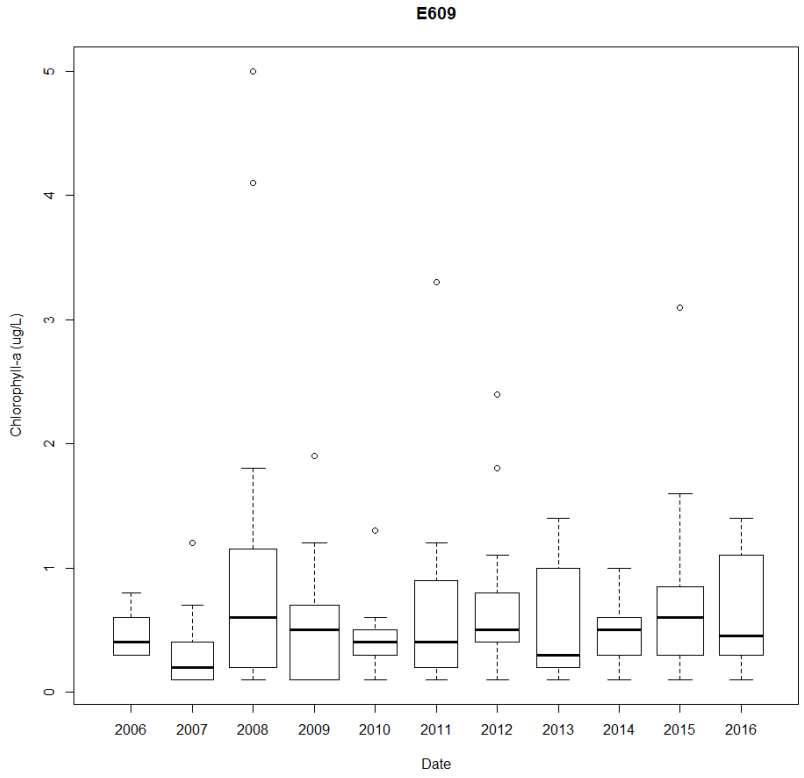

E608
Nitrogen Total
0.0
0.5
1.0
1.5
1991
1994
2007
2009
2011
2013
2015
Date

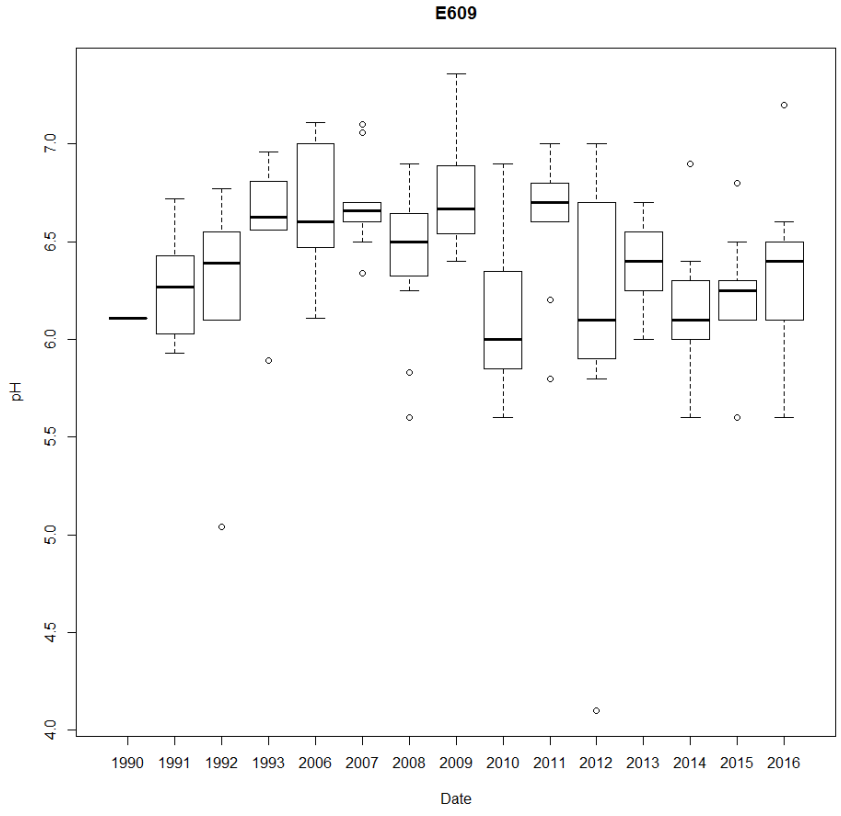

E608
FRPinium
0.000
0.005
0.010
0.015
0.020
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

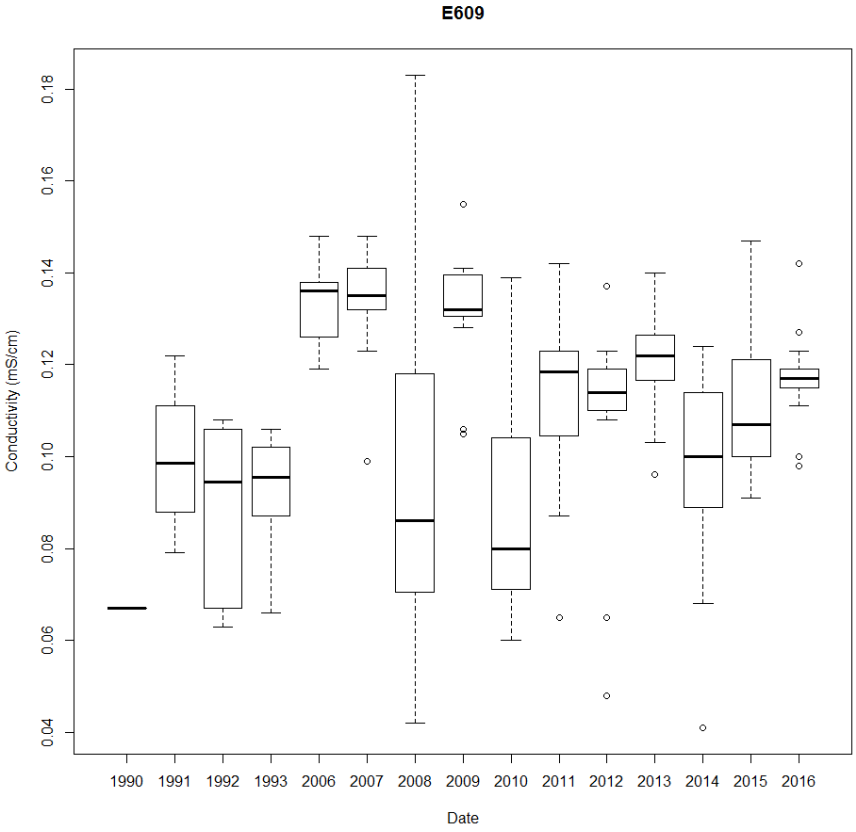

E608
Total phosphorus
0.00
0.05
0.10
0.15
1991
1993
2006
2008
2010
2012
2014
2016
Date

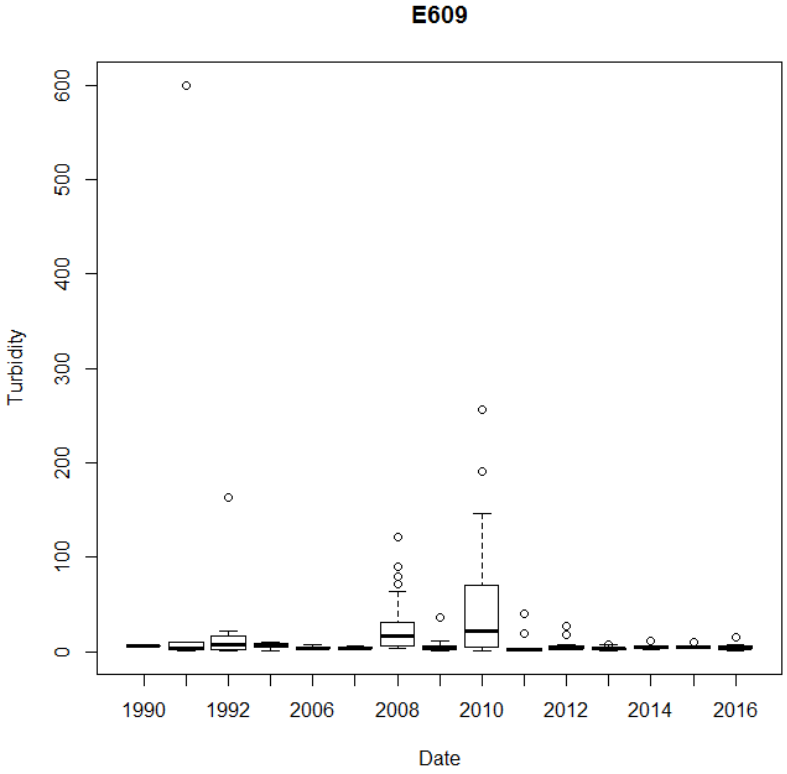

E608
Aluminium
0
1
2
3
4
1990
1992
1994
2007
2009
2011
2013
2015
Date

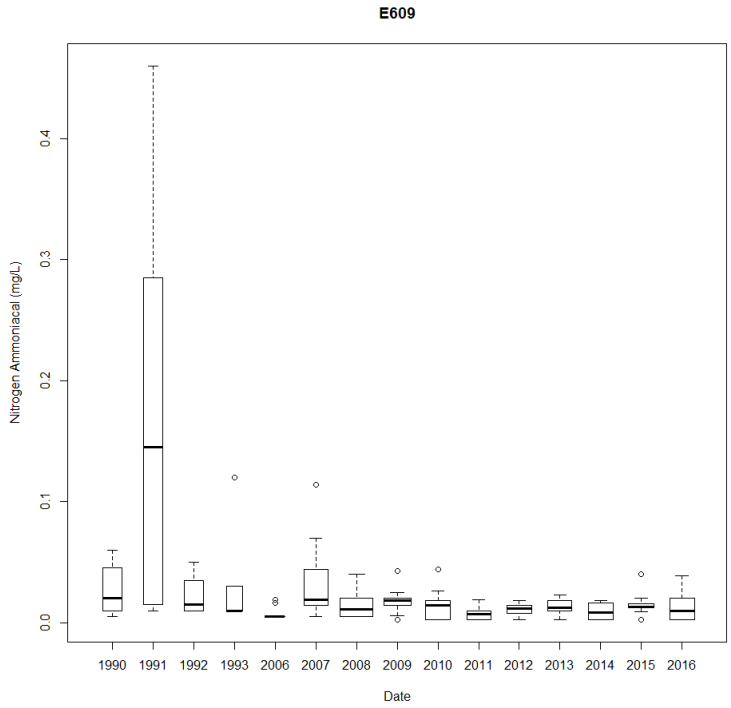

E608
Iron in mg/L
0
2
4
6
8
10
1991
1993
2006
2008
2010
2012
2014
2016
Date

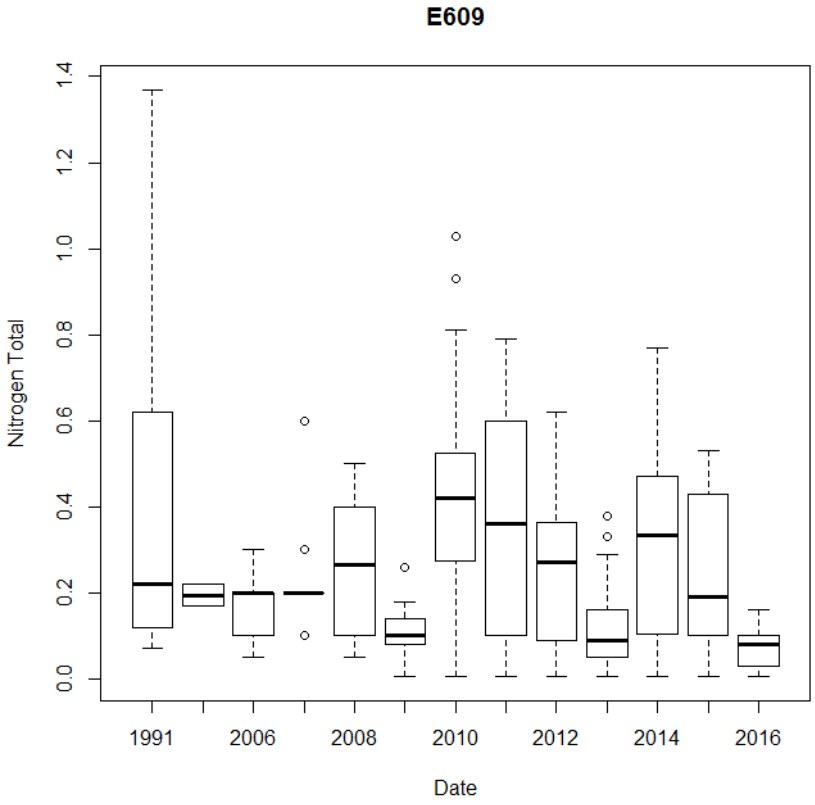

E609
Chlorophyll-a (ug/L)
0
1
2
3
4
5
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

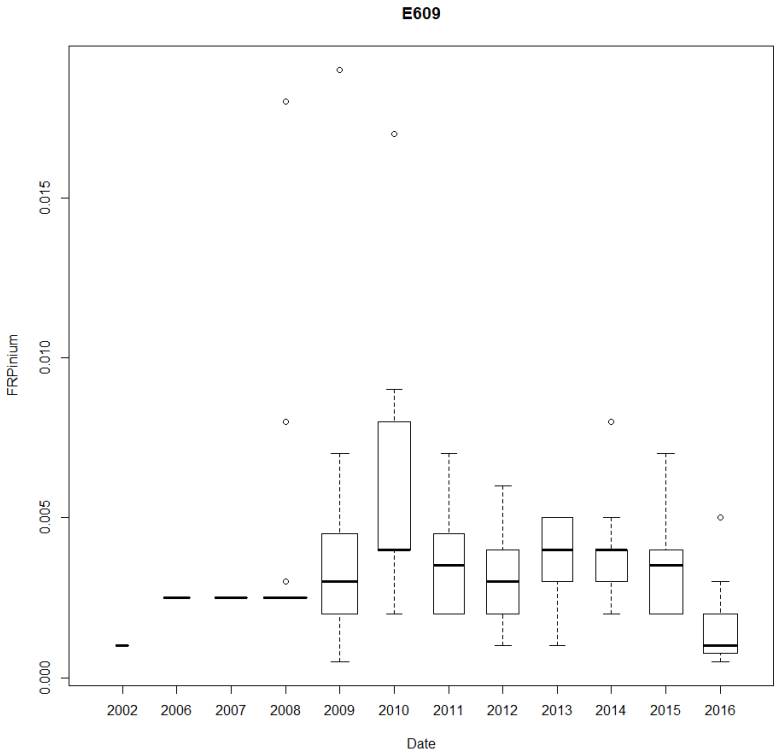

E609
pH
4.0
4.5
5.0
5.5
6.0
6.5
7.0
1990
1991
1992
1993
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

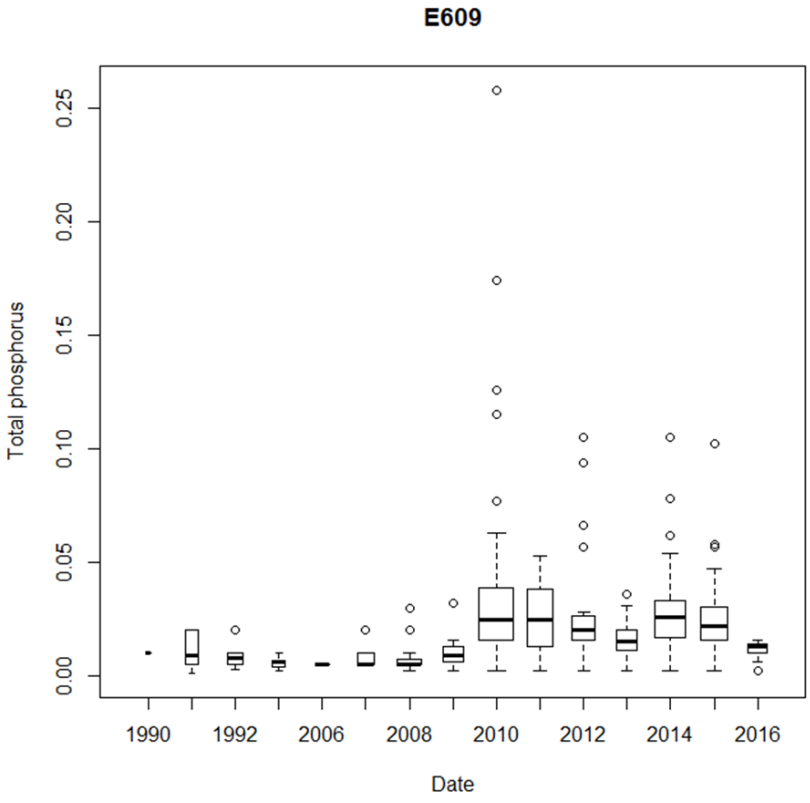

E609
Conductivity (mS/cm)
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.18
1990
1991
1992
1993
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

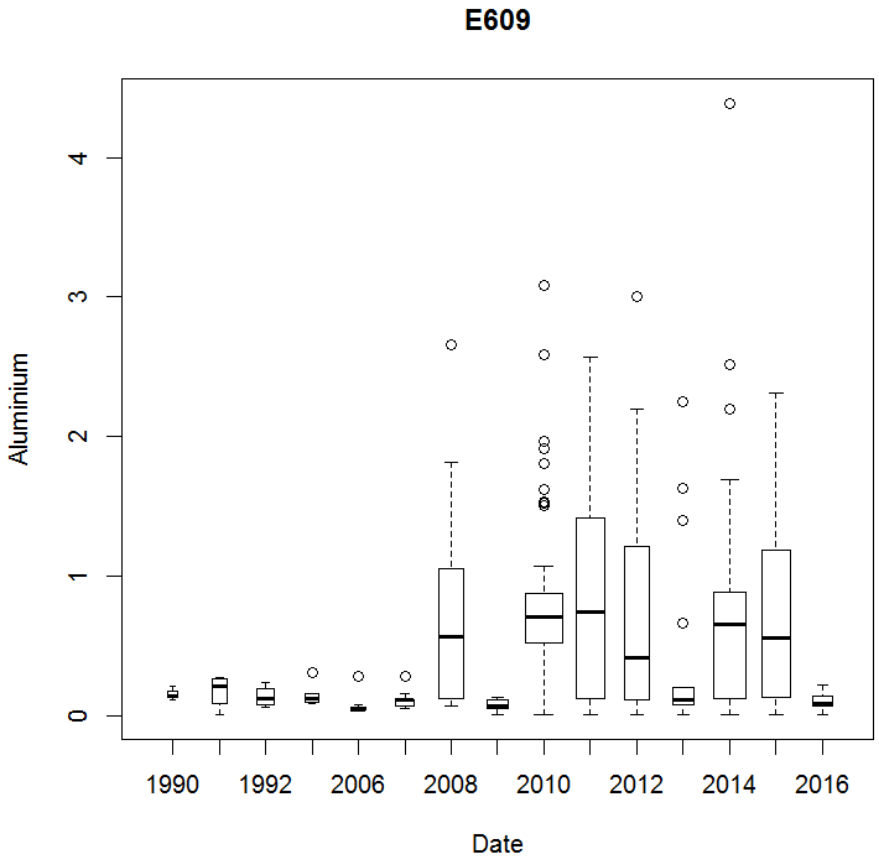

E609
Turbidity
0
100
200
300
400
500
600
1990
1992
2006
2008
2010
2012
2014
2016
Date

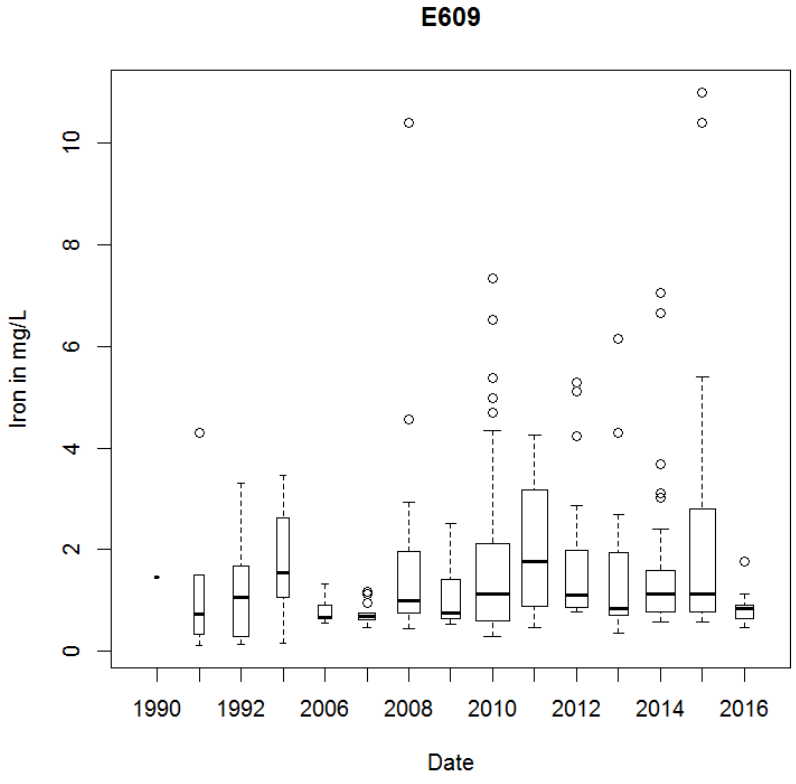

E609
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
1990
1991
1992
1993
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

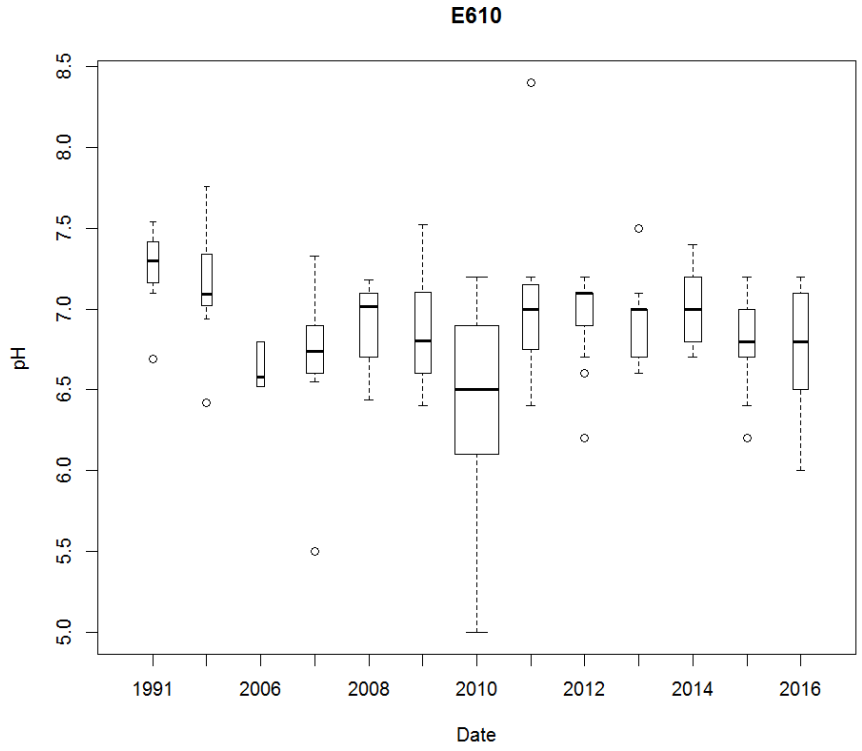

E609
Nitrogen Total
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1991
2006
2008
2010
2012
2014
2016
Date

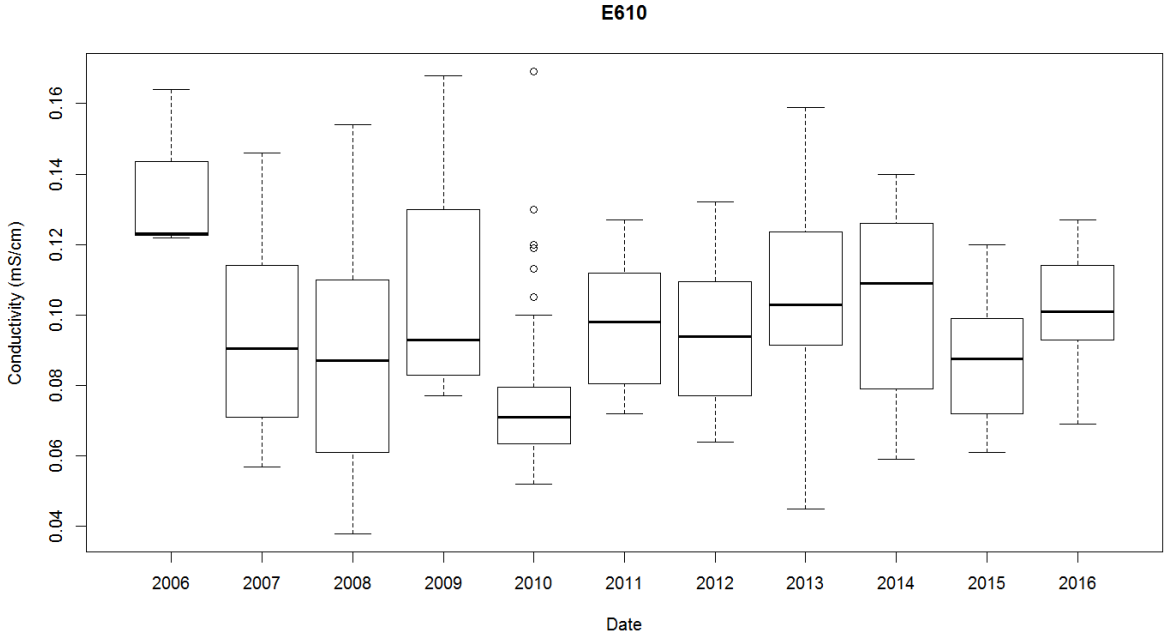

E609
FRPinium
0.000
0.005
0.010
0.015
2002
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

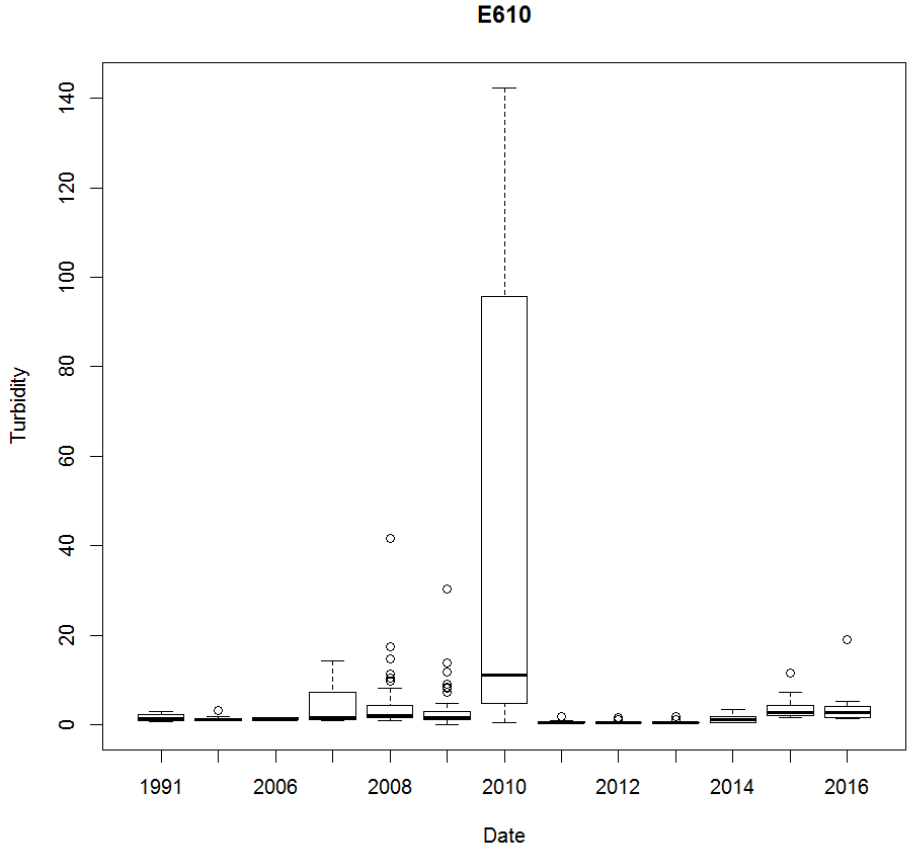

E609
Total phosphorus
0.00
0.05
0.10
0.15
0.20
0.25
1990
1992
2006
2008
2010
2012
2014
2016
Date

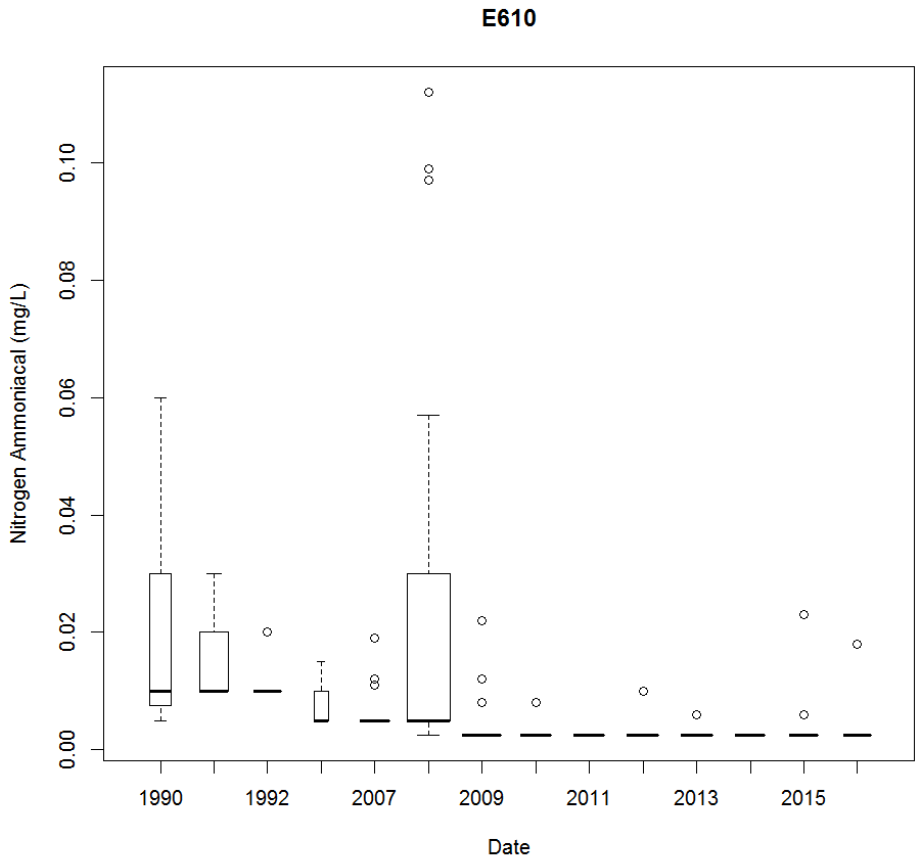

E609
Aluminium
0
1
2
3
4
1990
1992
2006
2008
2010
2012
2014
2016
Date

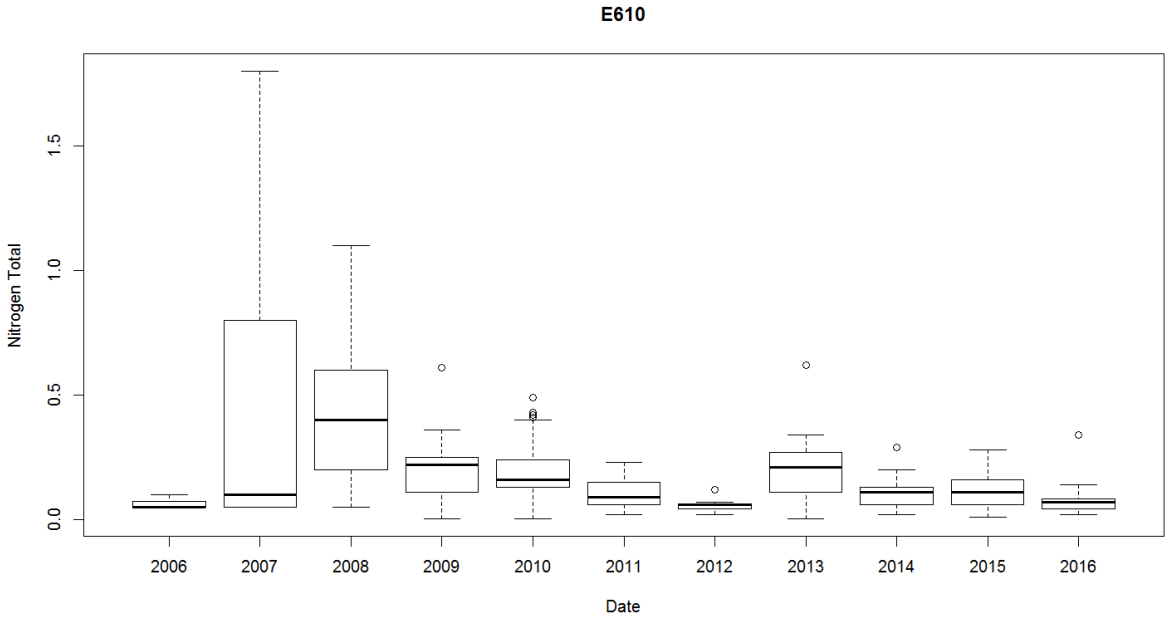

E609
Iron in mg/L
0
2
4
6
8
10
1990
1992
2006
2008
2010
2012
2014
2016
Date

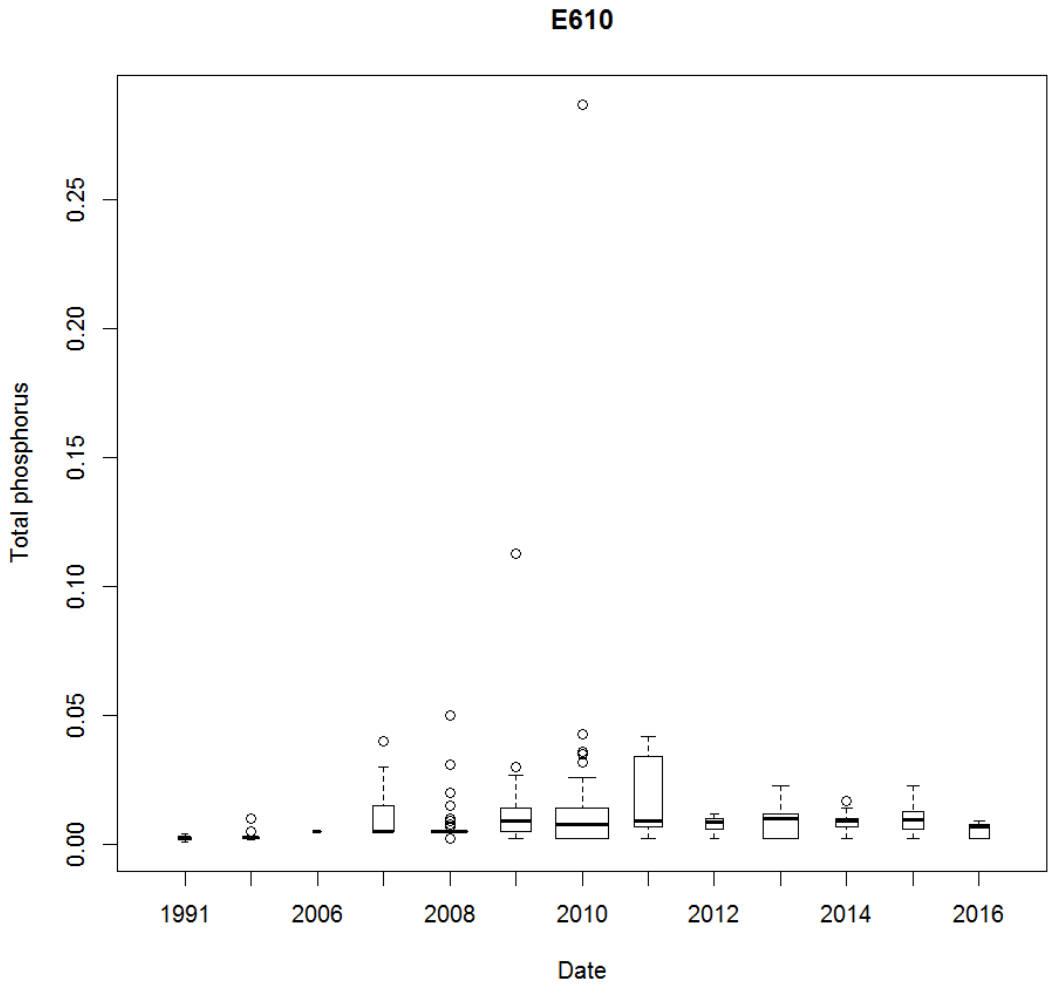

E610
pH
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
1991
2006
2008
2010
2012
2014
2016
Date

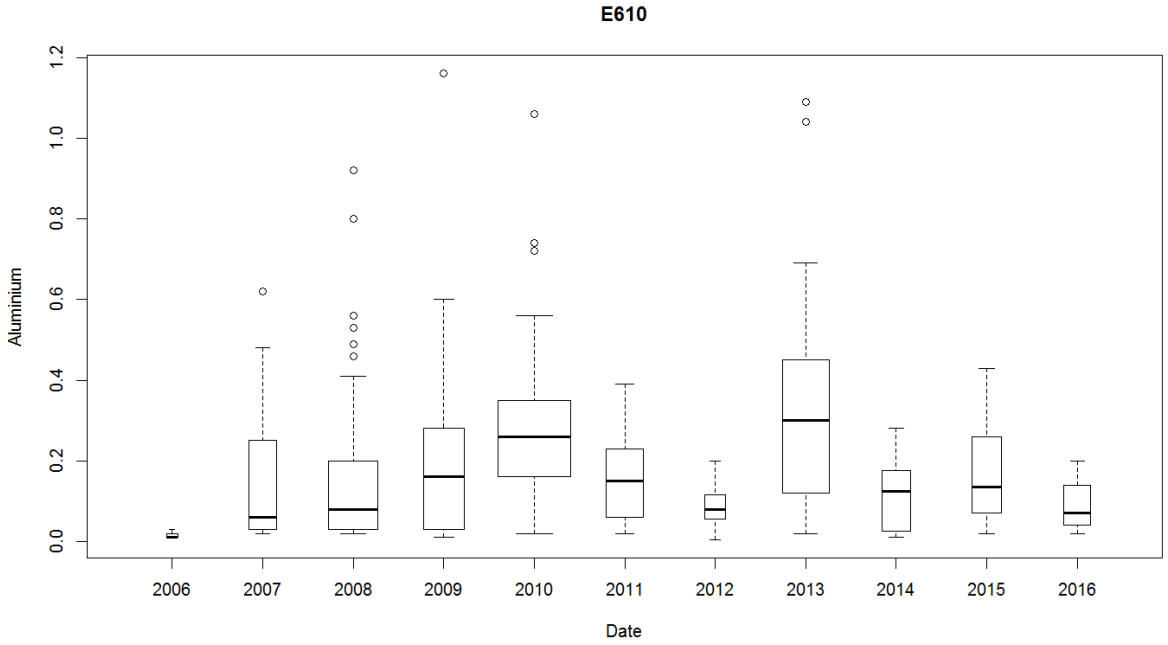

E610
Conductivity (mS/cm)
0.16
0.14
0.12
0.10
0.08
0.06
0.04
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

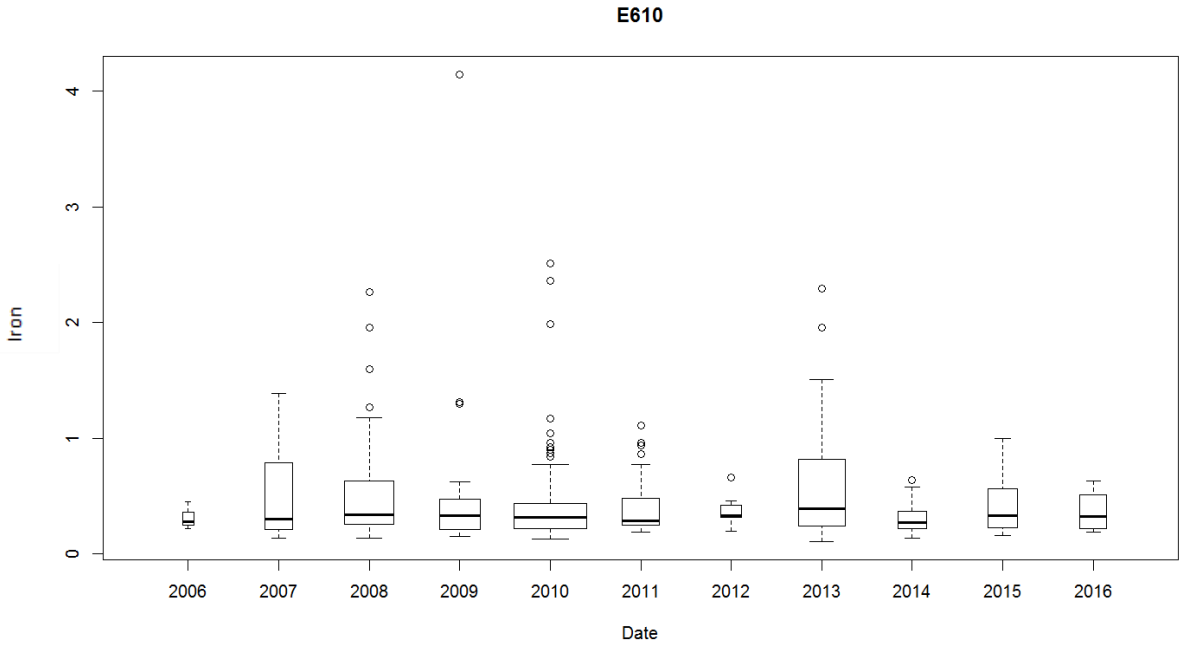

E610
Turbidity
0
20
40
60
80
100
120
140
1991
2006
2008
2010
2012
2014
2016
Date

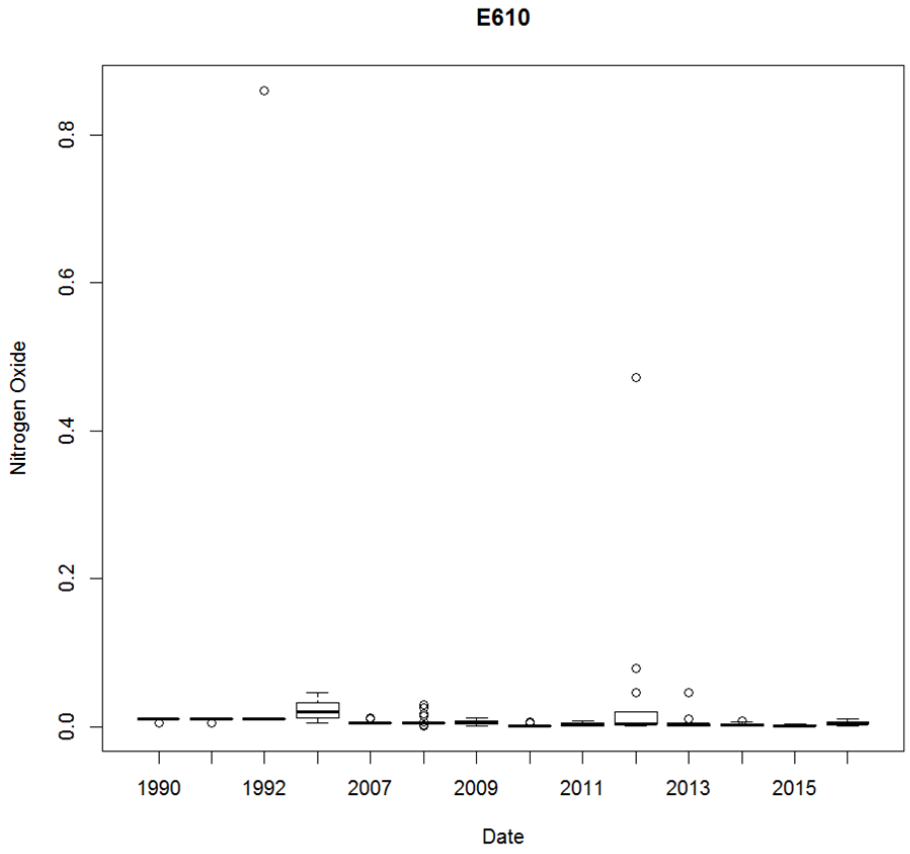

E610
Nitrogen Ammoniacal (mg/L)
0.00
0.02
0.04
0.06
0.08
0.10
1990
1992
2007
2009
2011
2013
2015
Date

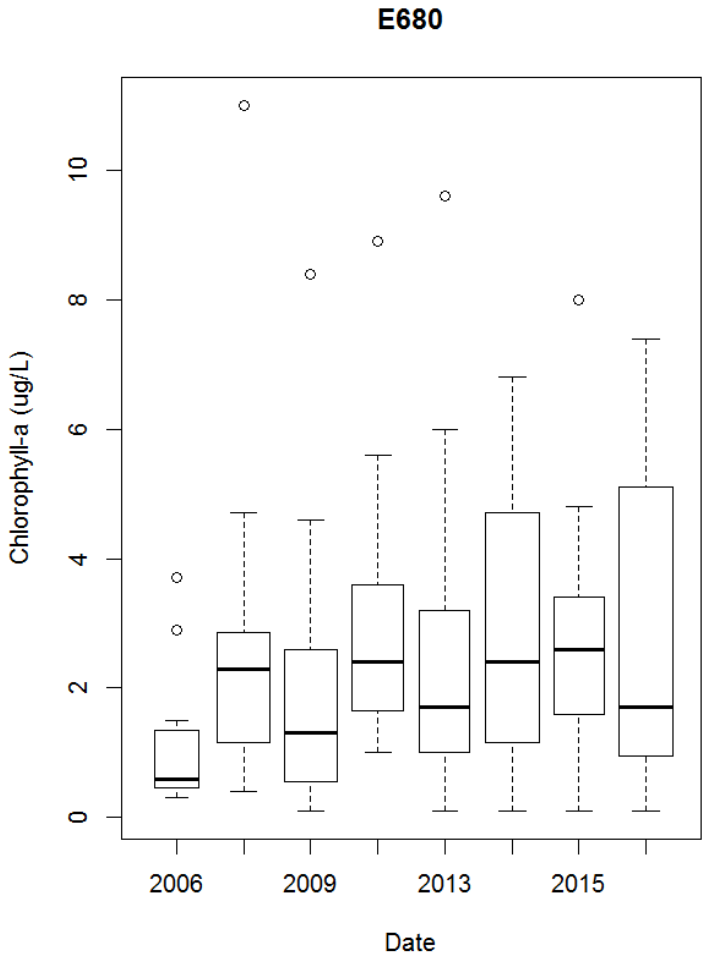

E610
Nitrogen Total
0.0
0.5
1.0
1.5
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

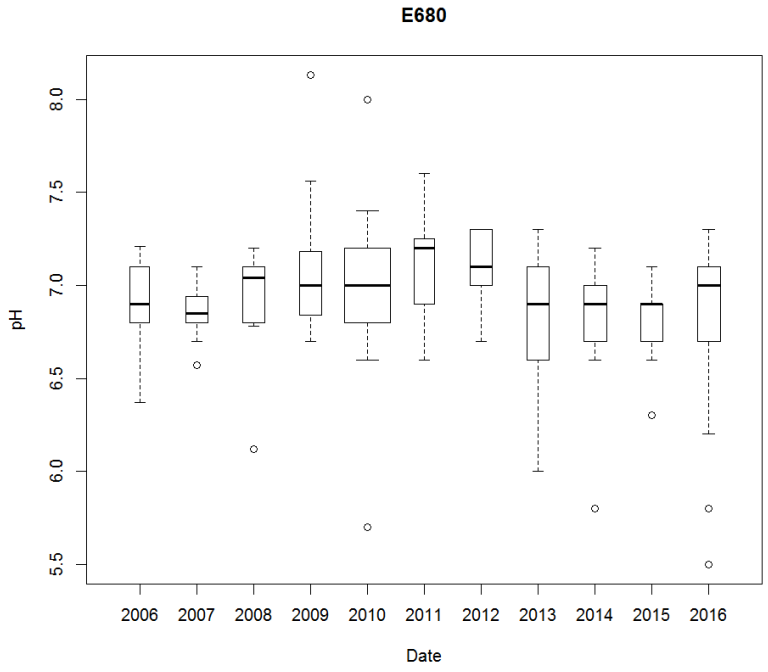

E610
Total phosphorus
0.00
0.05
0.10
0.15
0.20
0.25
1991
2006
2008
2010
2012
2014
2016
Date

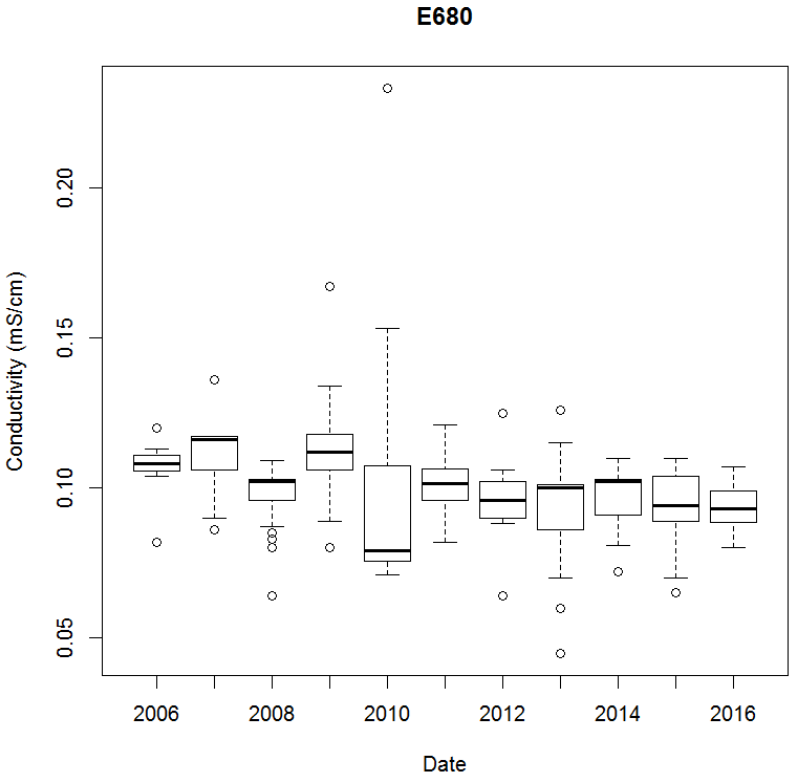

E610
Aluminium
0.0
0.2
0.4
0.6
0.8
1.0
1.2
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

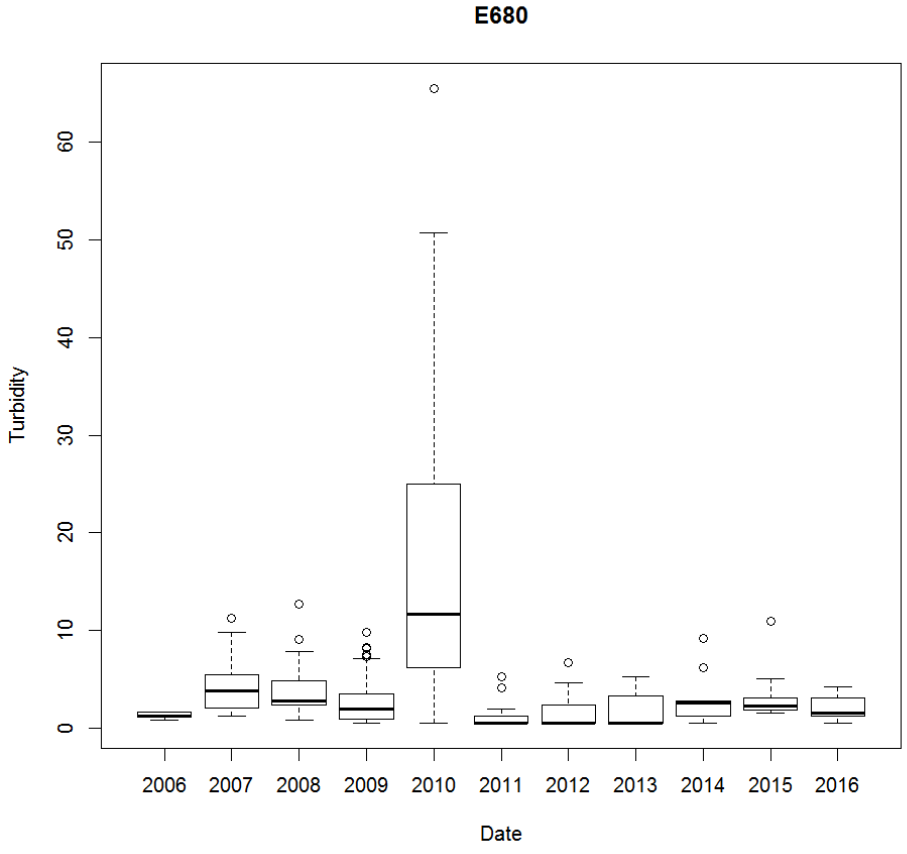

E610
Iron
0
1
2
3
4
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

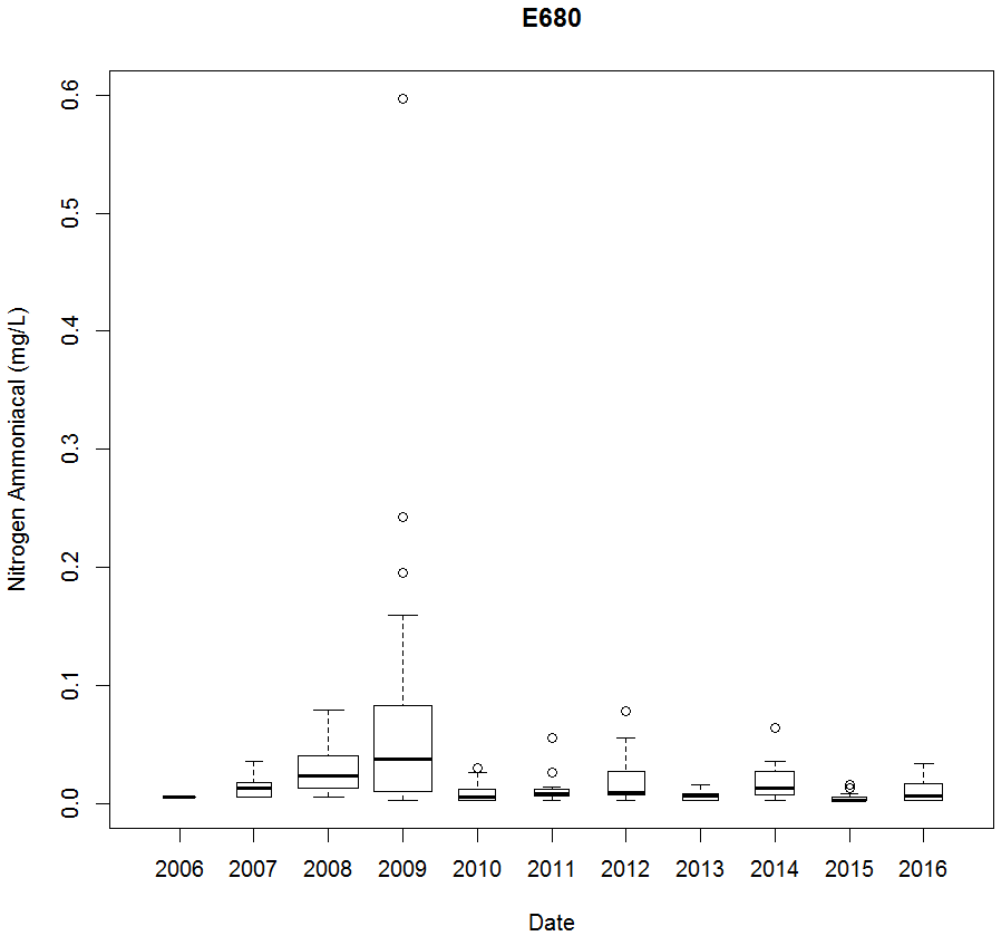

E610
Nitrogen Oxide
0.0
0.2
0.4
0.6
0.8
1990
1992
2007
2009
2011
2013
2015
Date

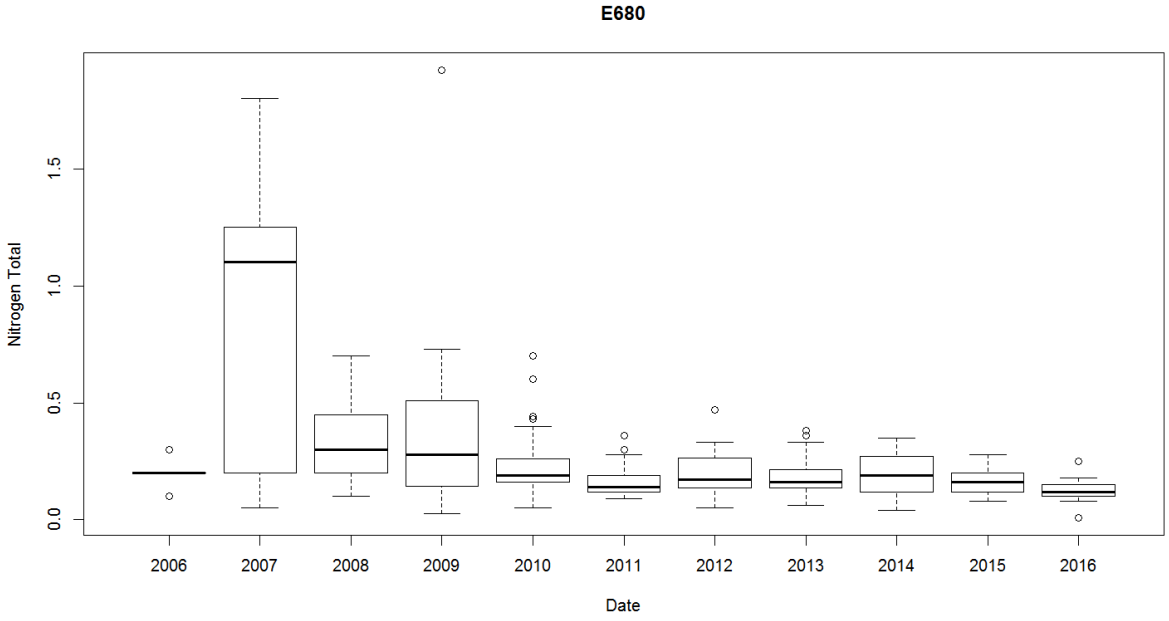

E680
Chlorophyll-a (ug/L)
0
2
4
6
8
10
2006
2009
2013
2015
Date

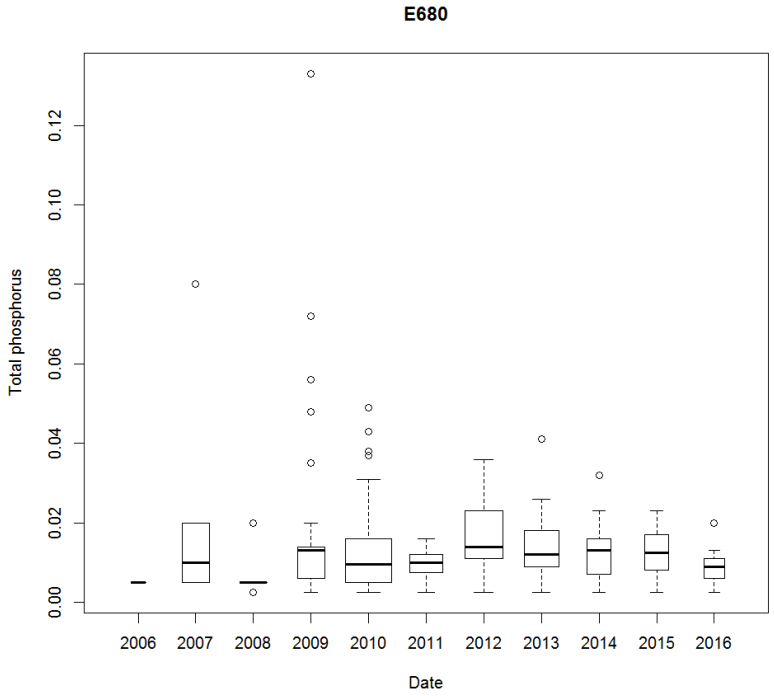

E680
pH
5.5
6.0
6.5
7.0
7.5
8.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

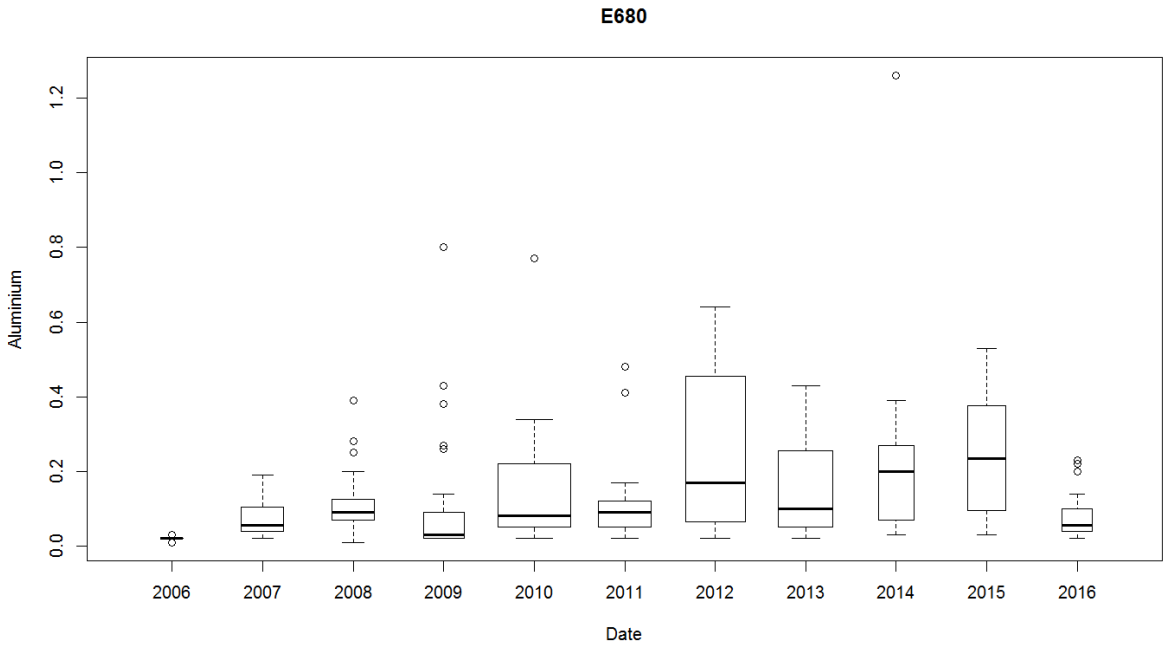

E680
Conductivity (mS/cm)
0.05
0.10
0.15
0.20
2006
2008
2010
2012
2014
2016
Date

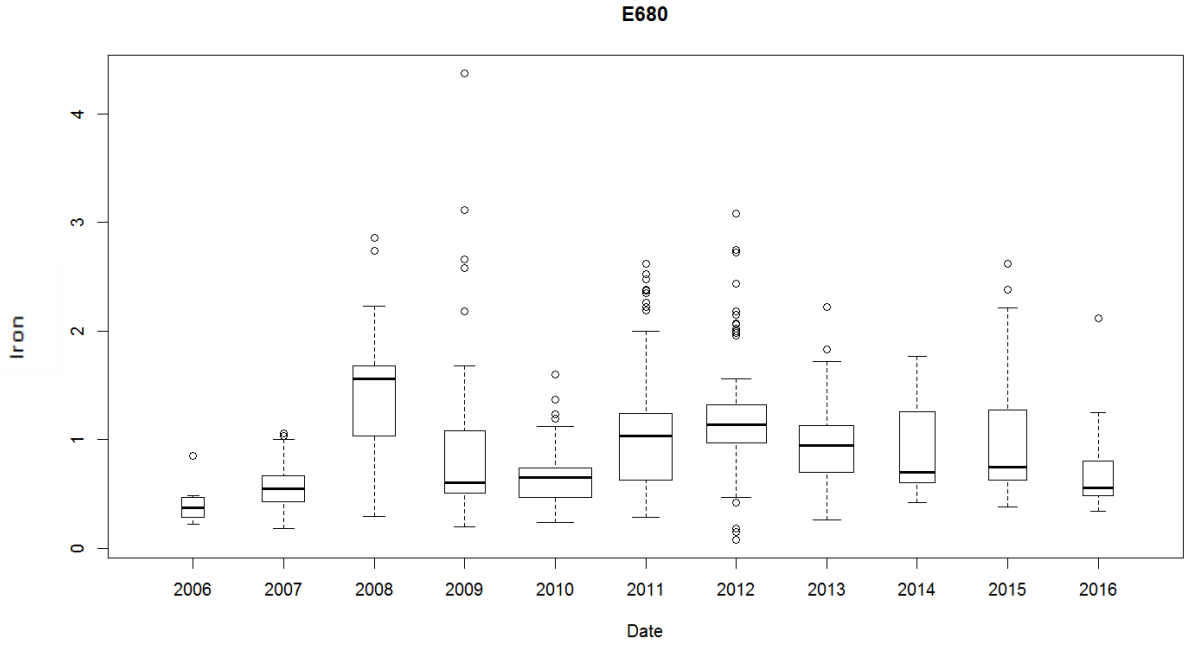

E680
Turbidity
0
10
20
30
40
50
60
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

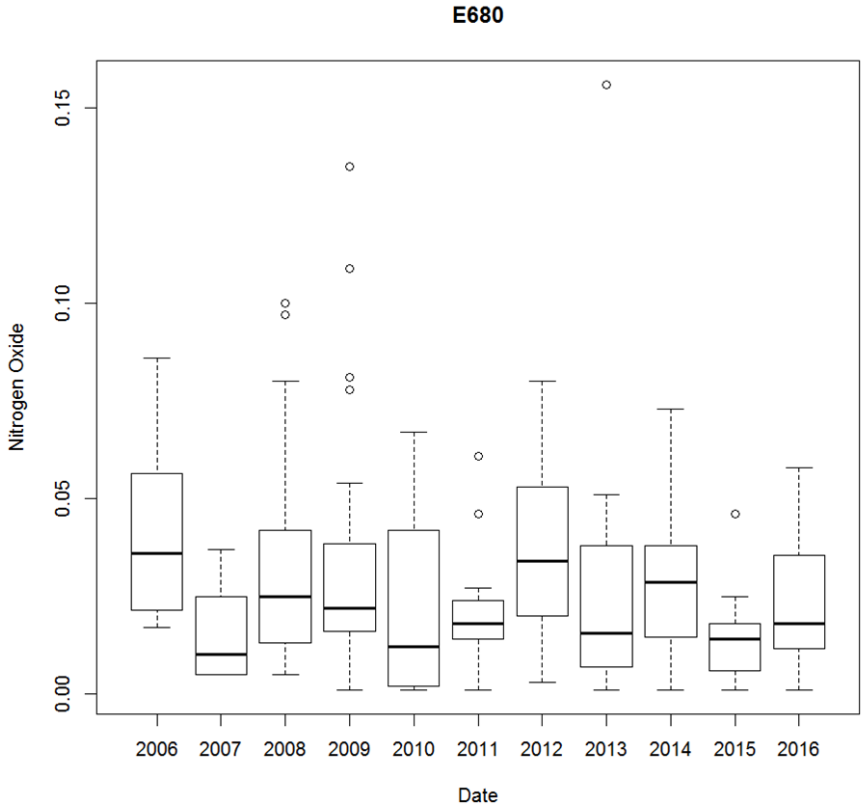

E680
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

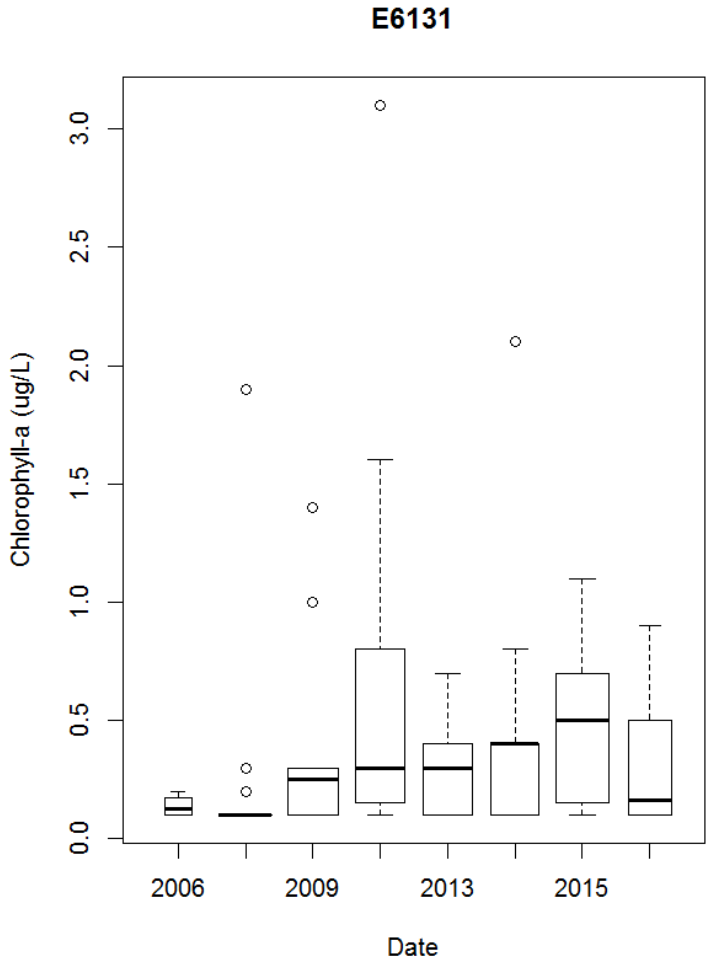

E680
Nitrogen Total
0.0
0.5
1.0
1.5
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

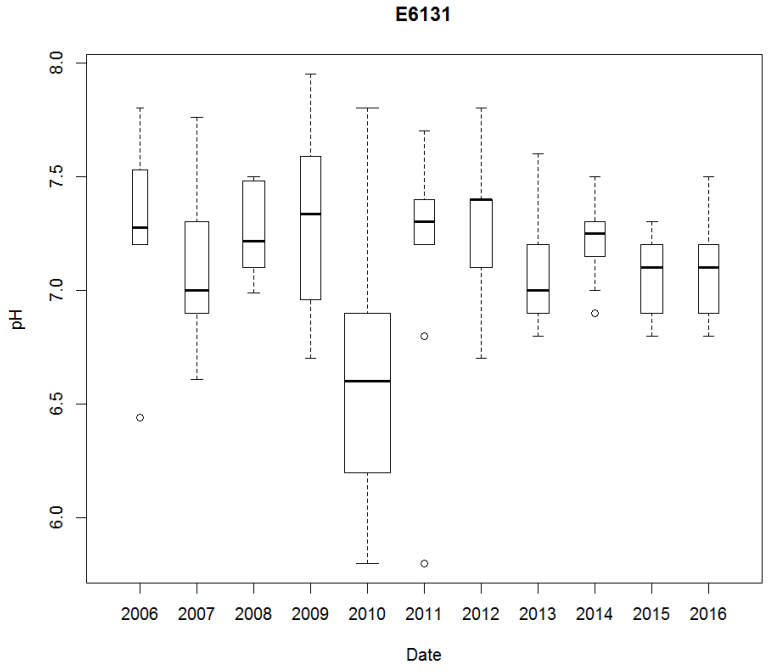

E680
Total phosphorus
0.00
0.02
0.04
0.06
0.08
0.10
0.12
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

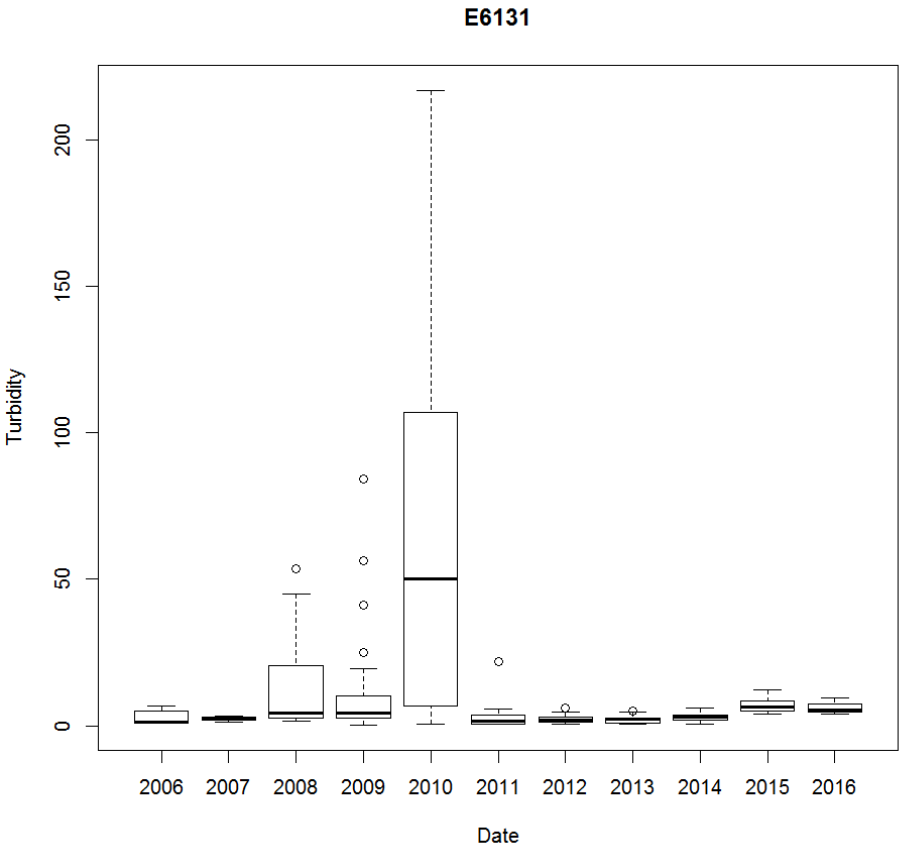

E680
Aluminium
0.0
0.2
0.4
0.6
0.8
1.0
1.2
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

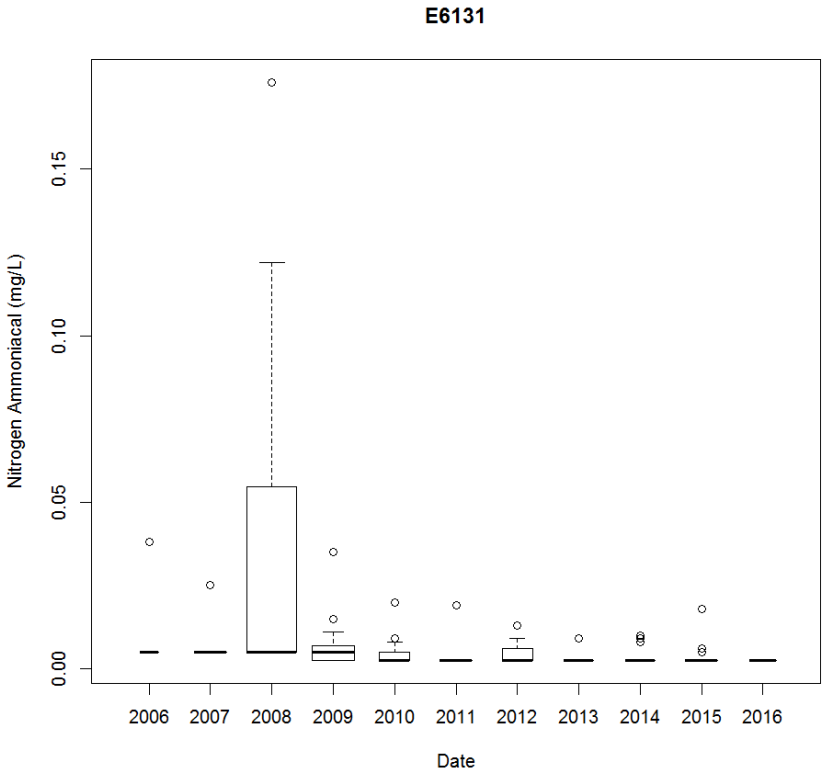

E680
Iron
0
1
2
3
4
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

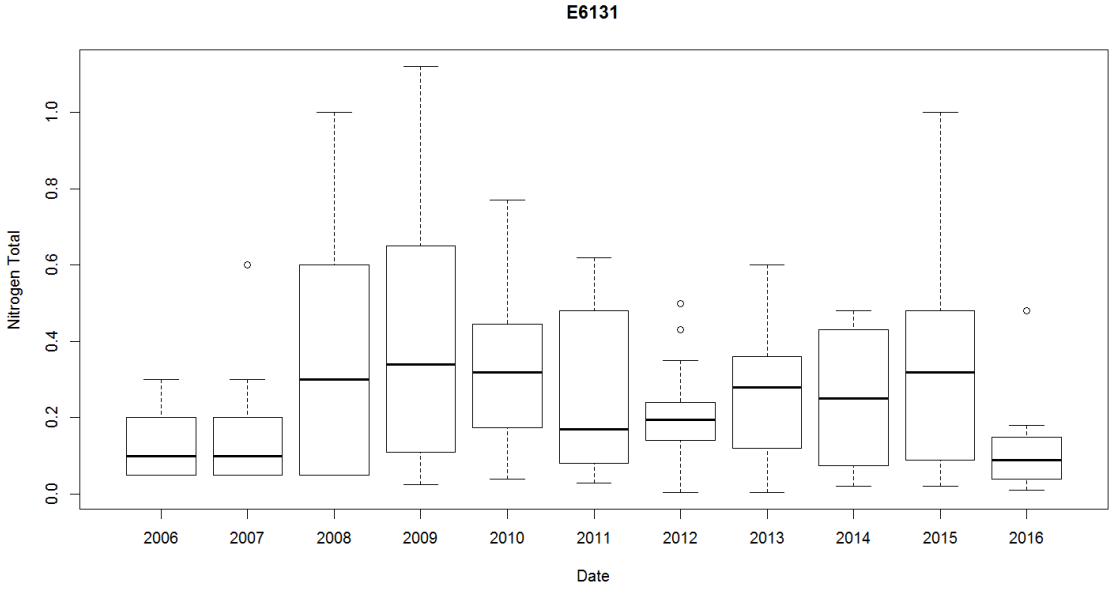

E680
Nitrogen Oxide
0.00
0.05
0.10
0.15
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

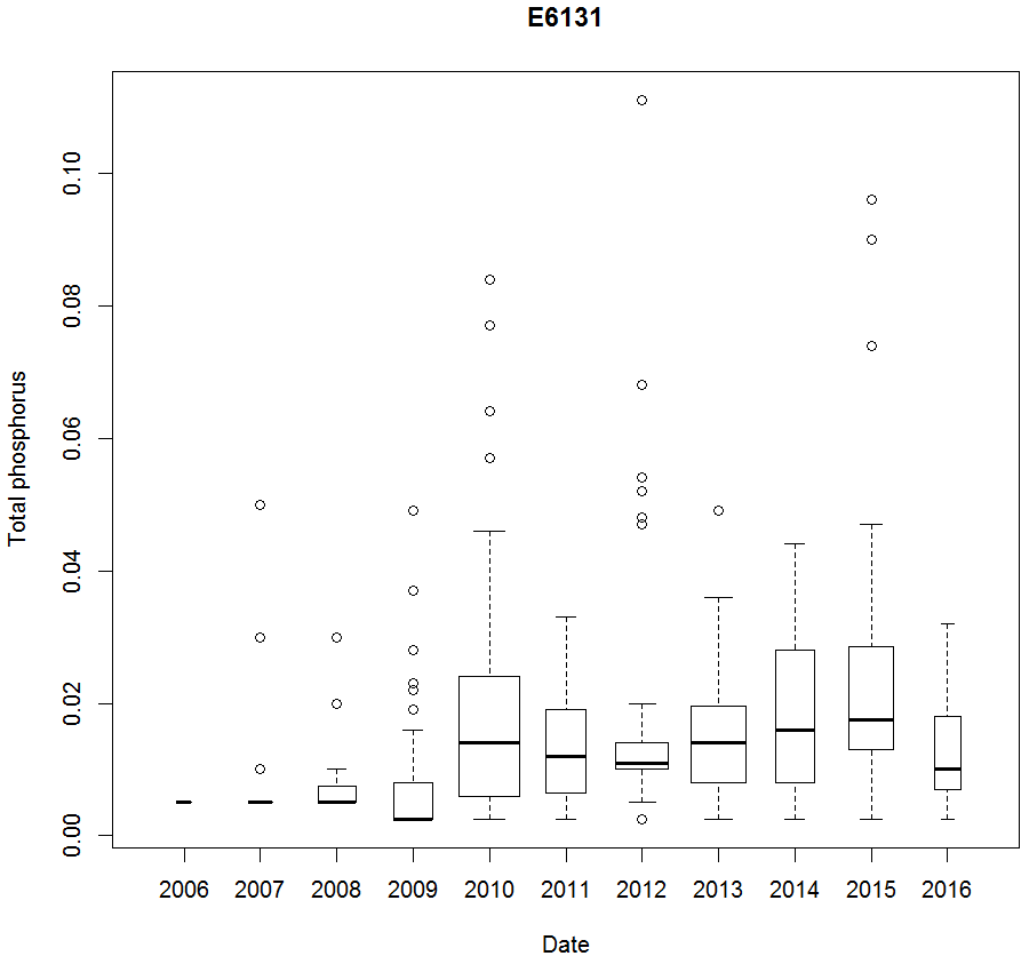

E6131
Chlorophyll-a (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2006
2009
2013
2015
Date

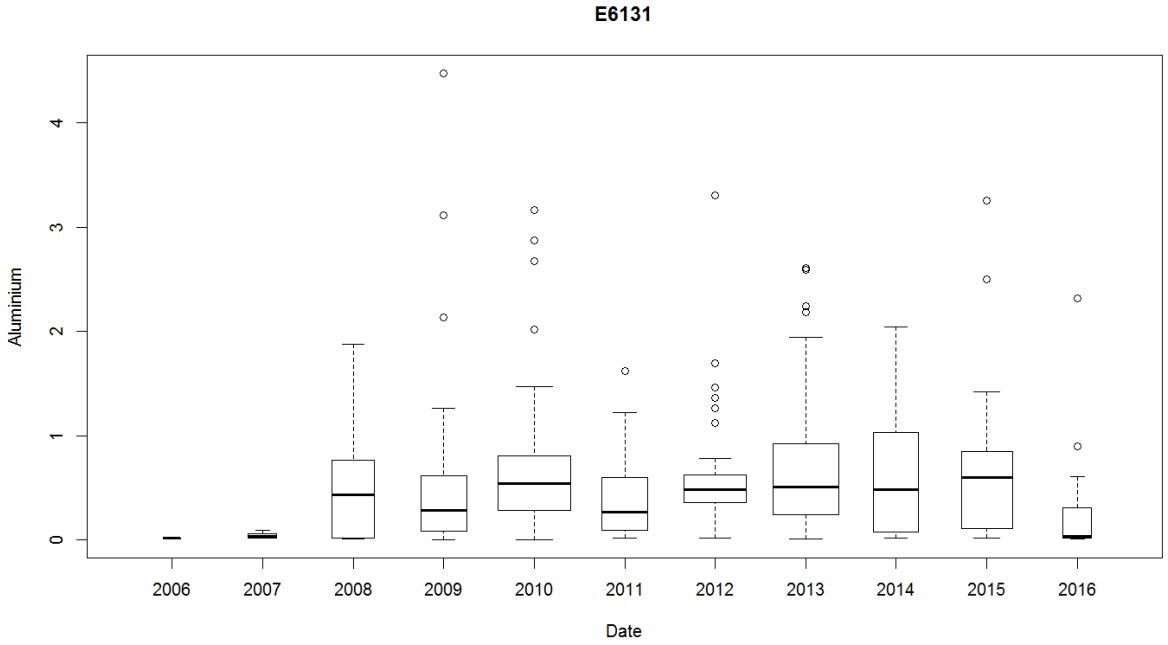

E6131
pH
6.0
6.5
7.0
7.5
8.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

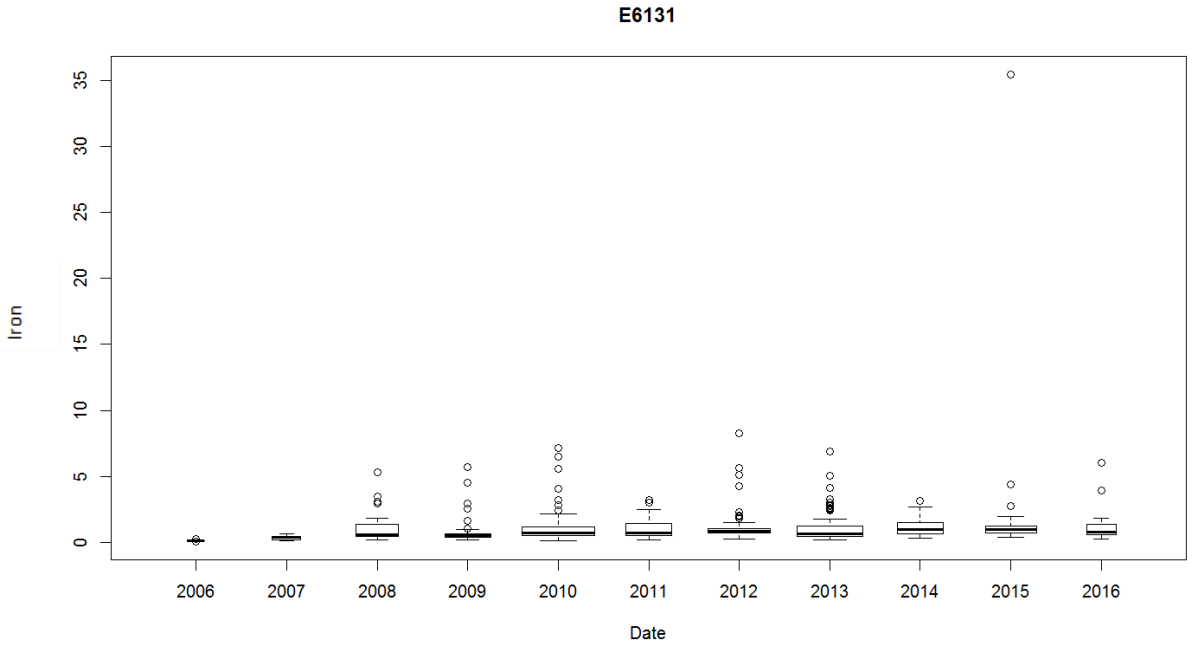

E6131
Turbidity
0
50
100
150
200
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date


E6131
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

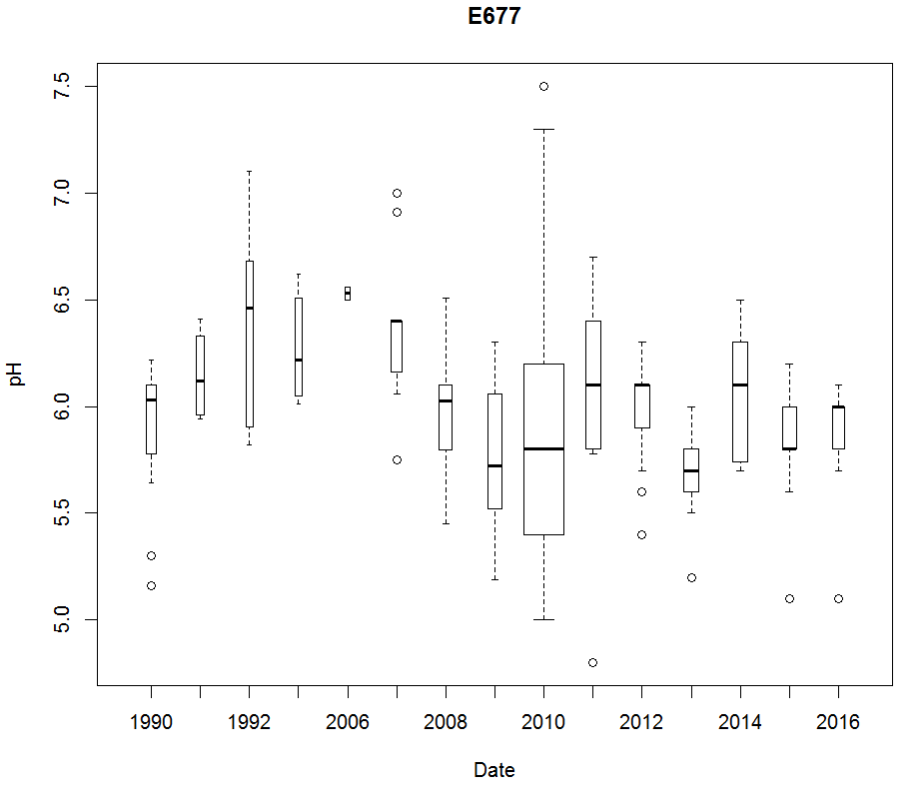

E6131
Nitrogen Total
0.0
0.2
0.4
0.6
0.8
1.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

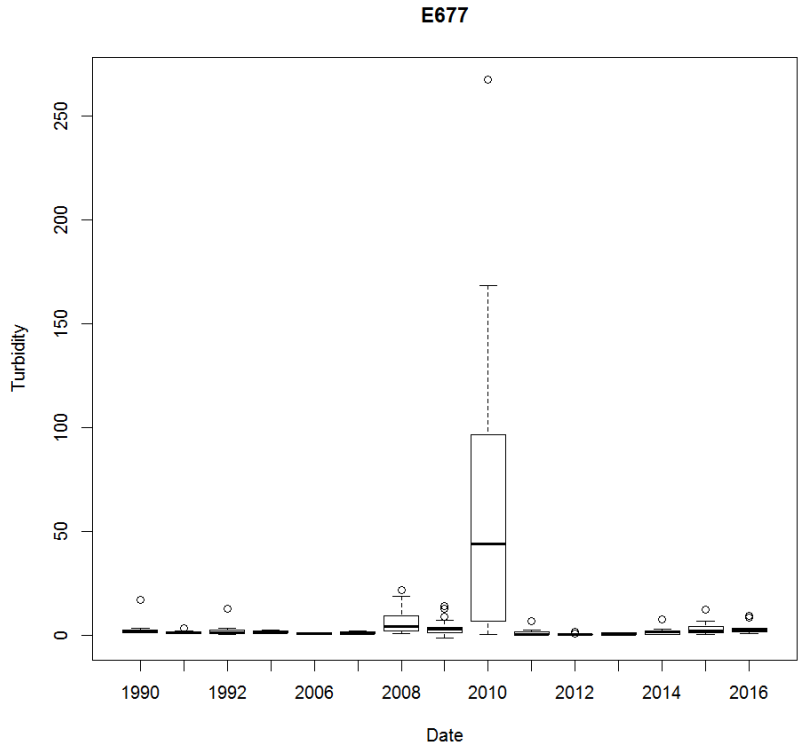

E6131
Total phosphorus
0.00
0.02
0.04
0.06
0.08
0.10
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

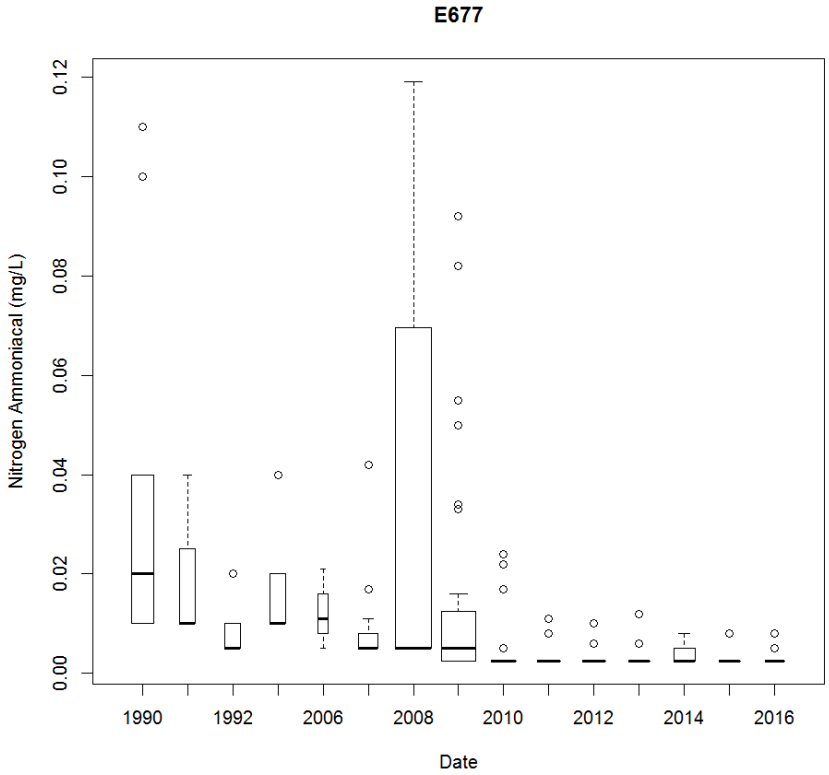

E6131
Aluminium
0
1
2
3
4
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

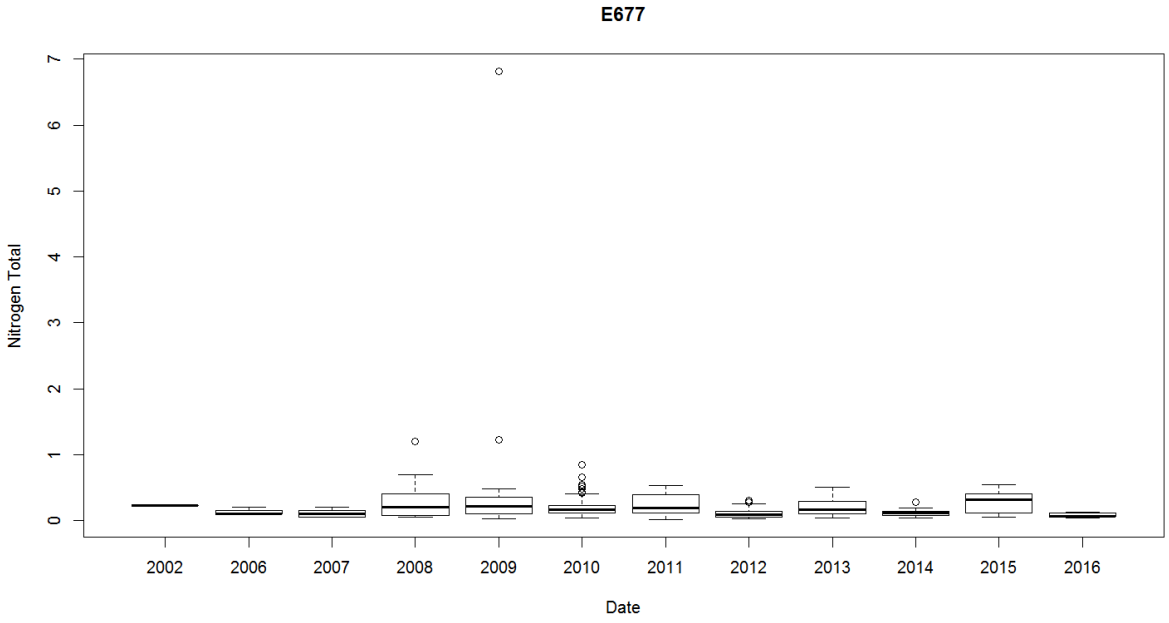

E6131
Iron
0
5
10
15
20
25
30
35
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

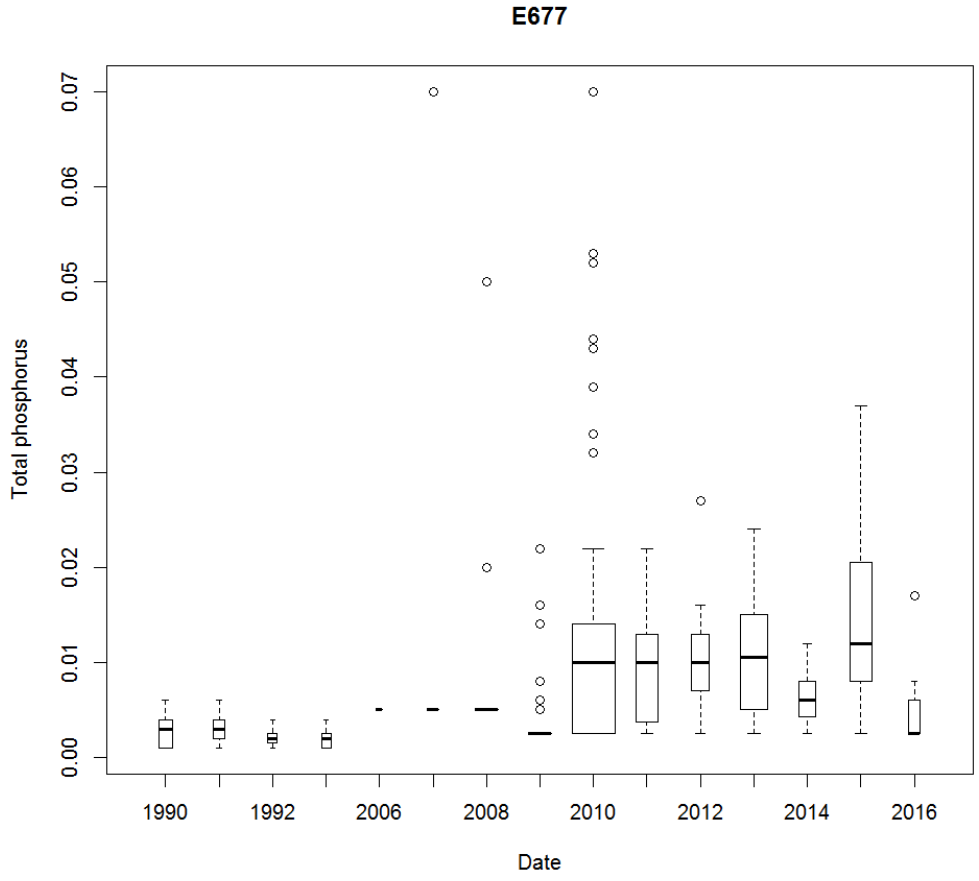
8.9 Woronora catchment stations

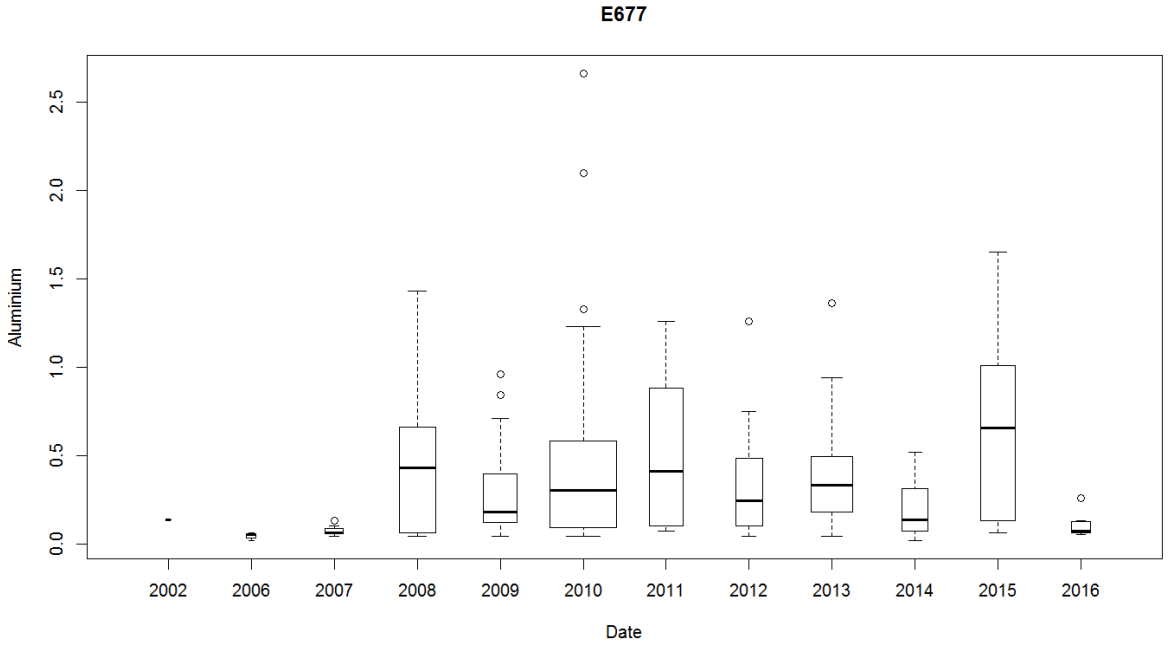


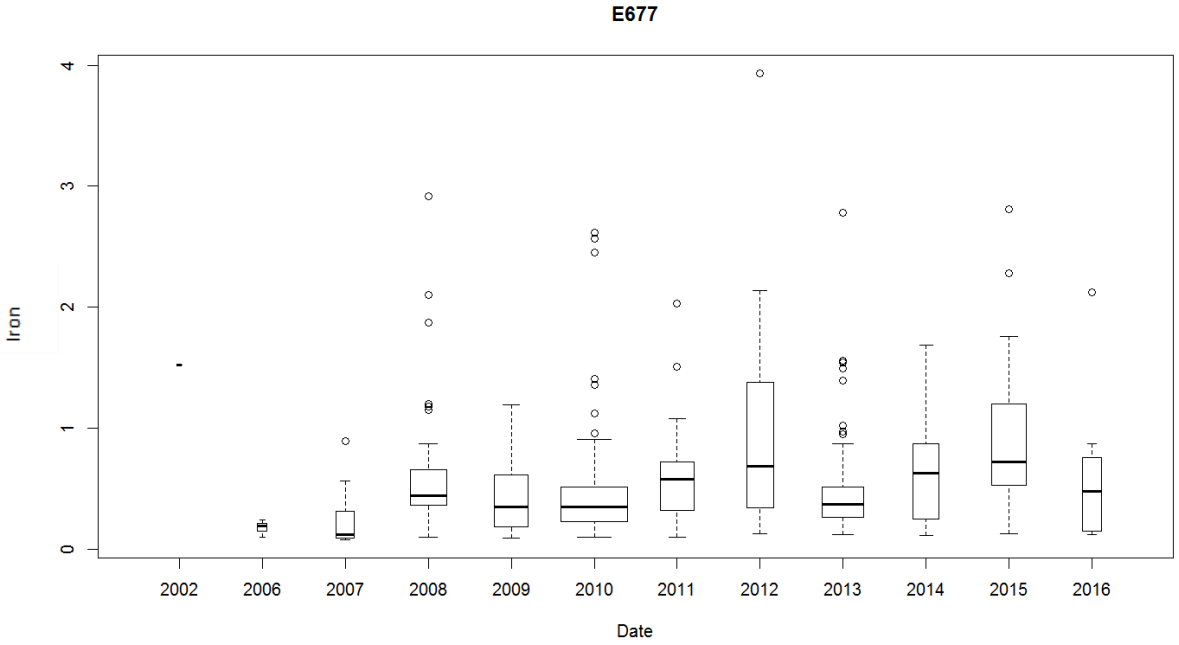


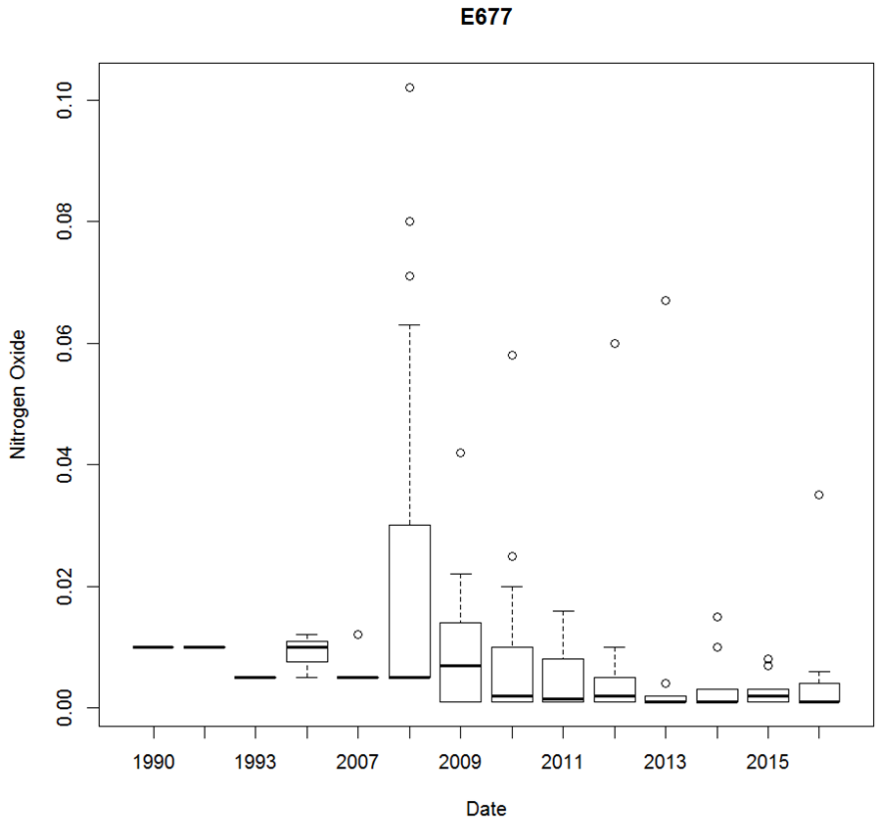

E677
Nitrogen Ammoniacal (mg/L)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
1990
1992
2006
2008
2010
2012
2014
2016
Date


E677
Nitrogen Total
0
1
2
3
4
5
6
7
2002
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

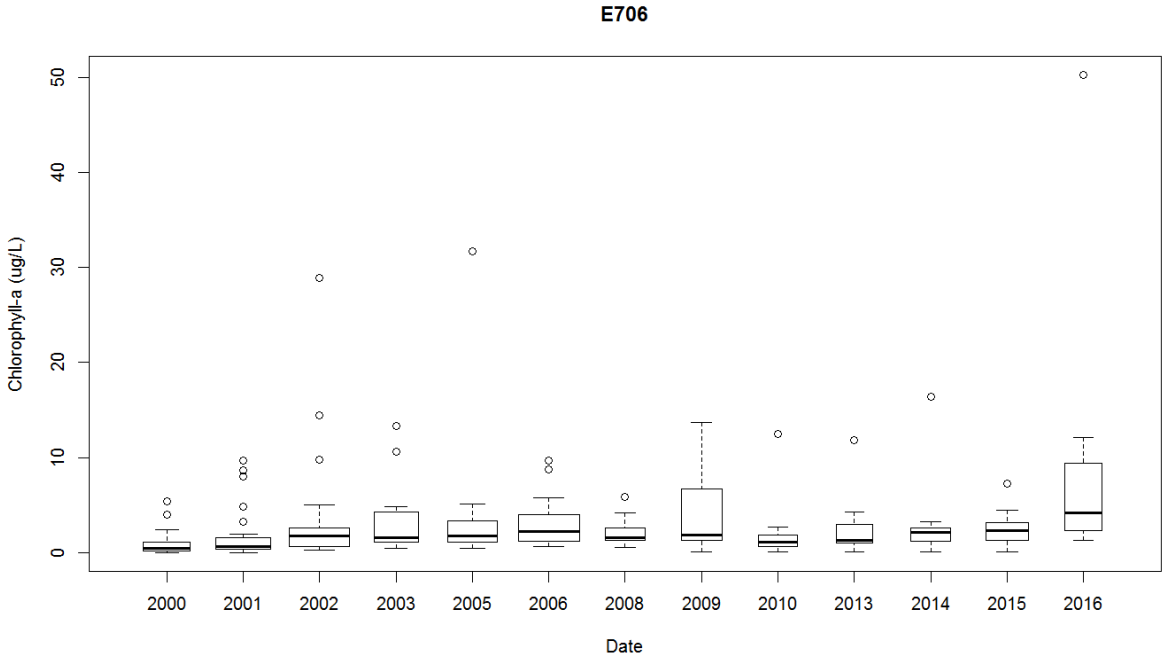

E677
Total phosphorus
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
1990
1992
2006
2008
2010
2012
2014
2016
Date

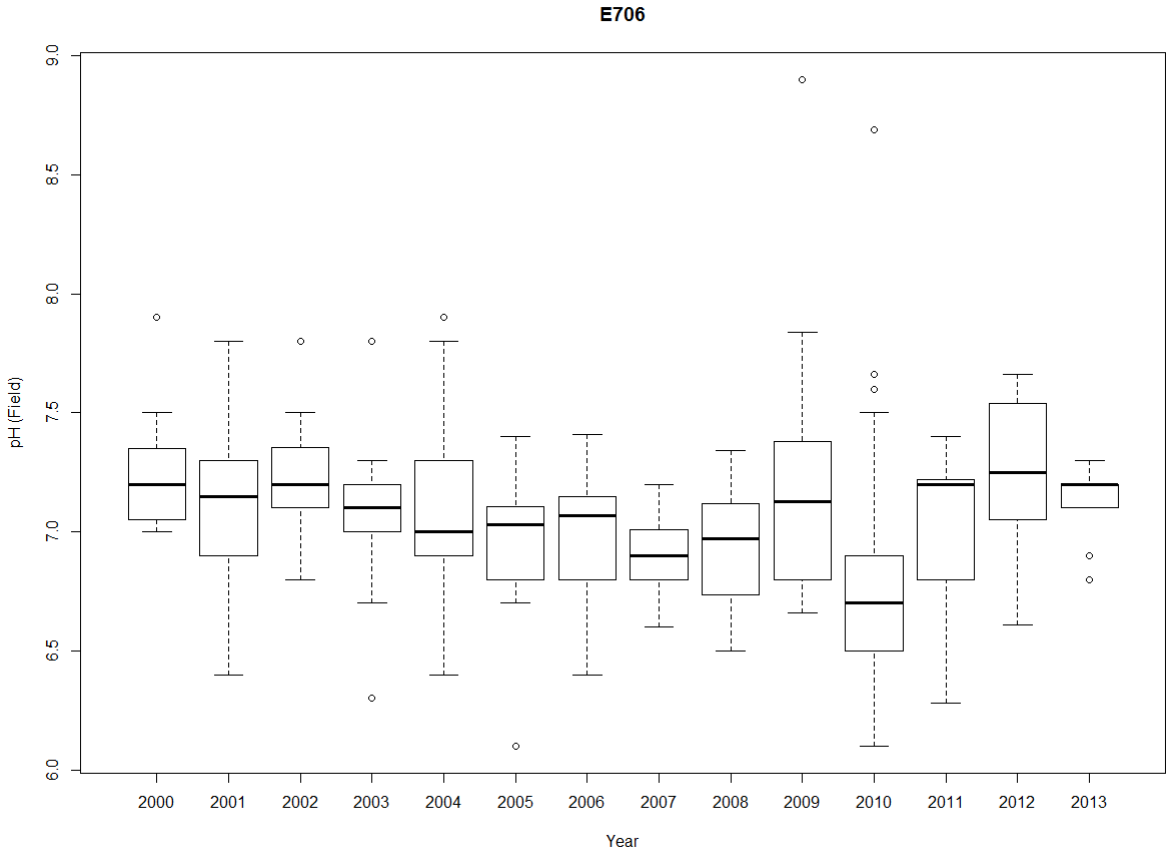

E677
Aluminium
0.0
0.5
1.0
1.5
2.0
2.5
2002
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

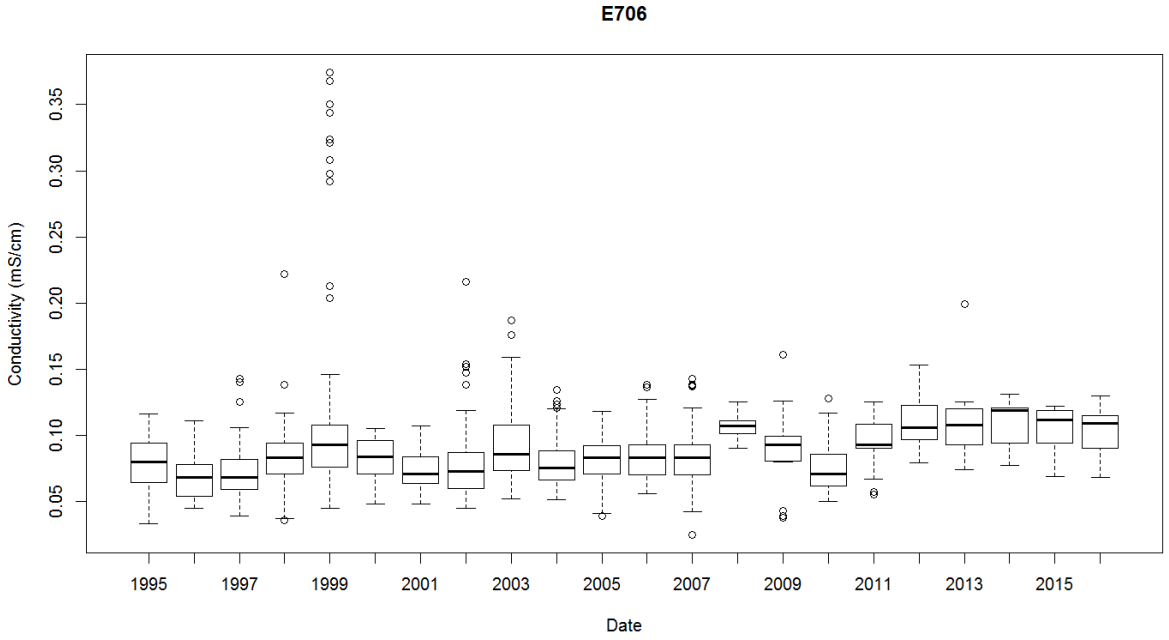

E677
Iron
0
1
2
3
4
2002
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

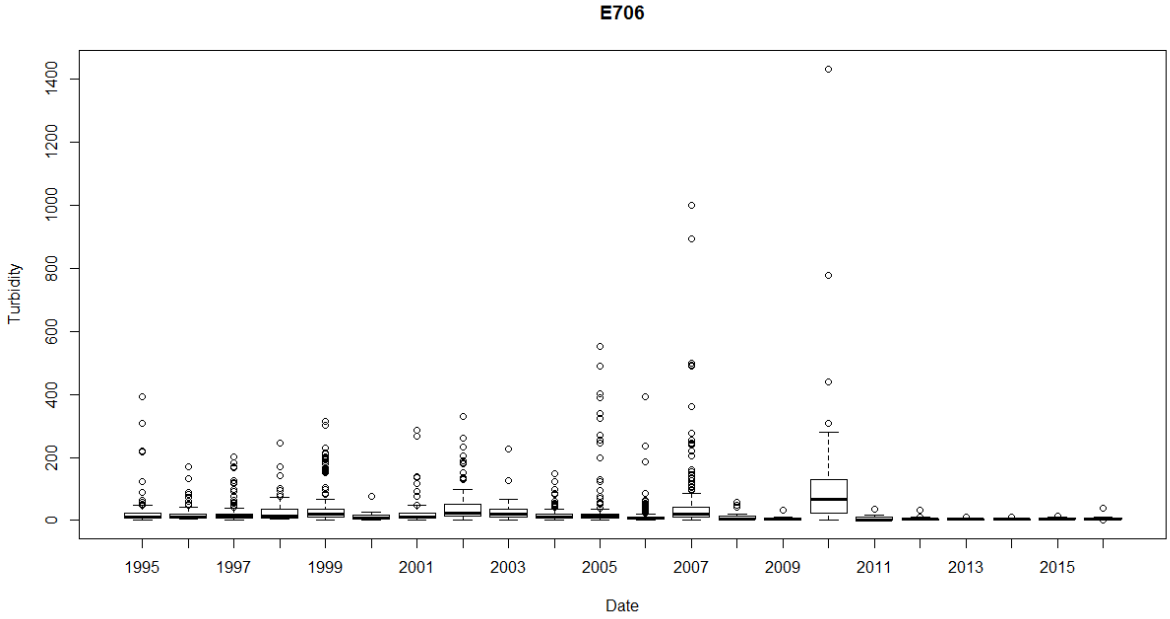

E677
Nitrogen Oxide
0.00
0.02
0.04
0.06
0.08
0.10
1990
1993
2007
2009
2011
2013
2015
Date

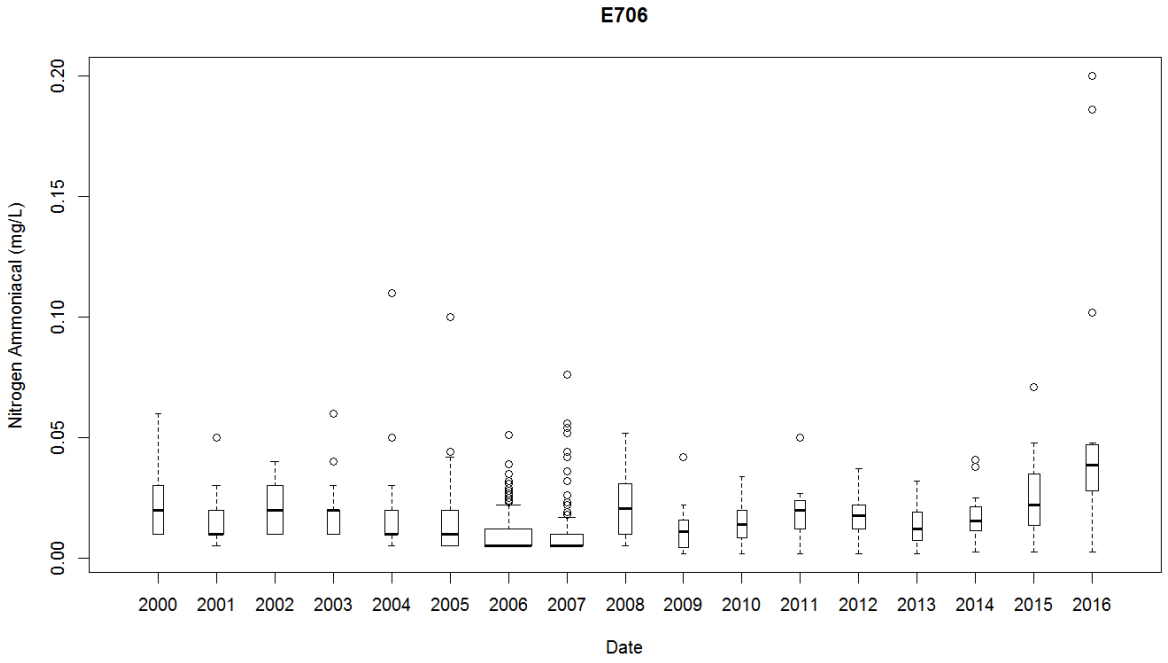
8.10 Shoalhaven catchment stations

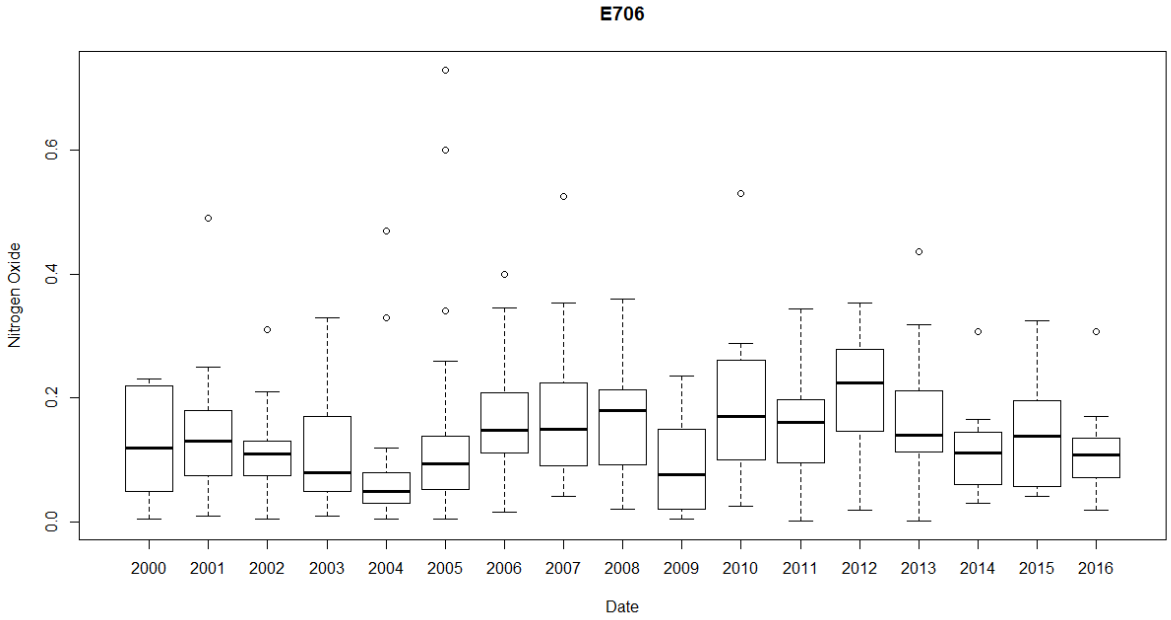


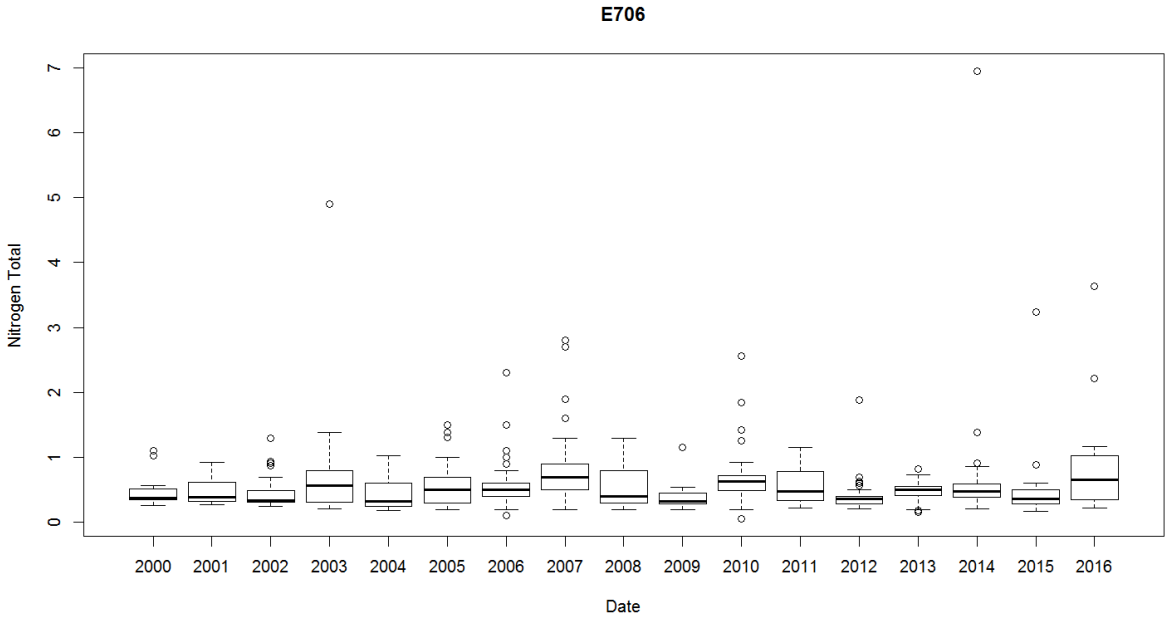


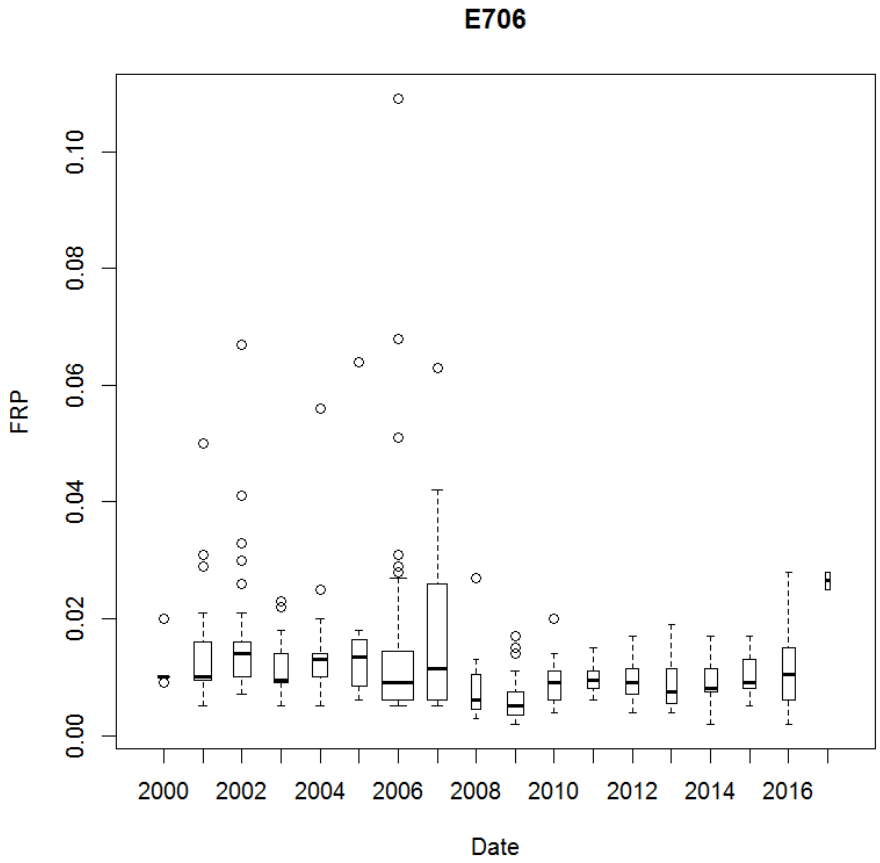

E706
Conductivity (mS/cm)
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

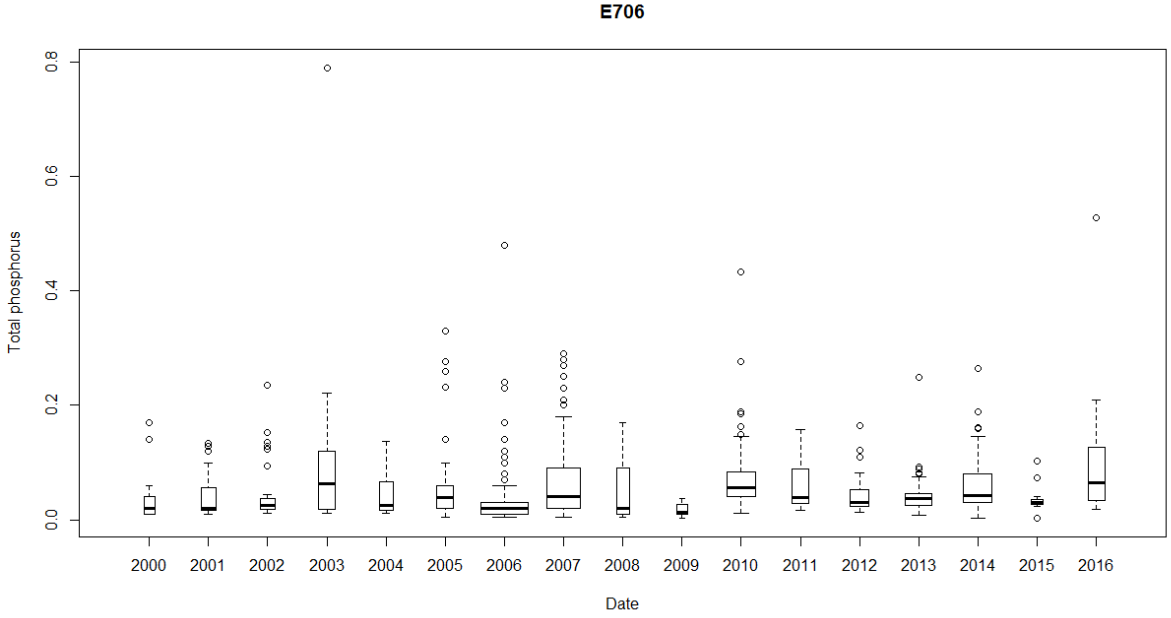

E706
Turbidity
0
200
400
600
800
1000
1200
1400
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

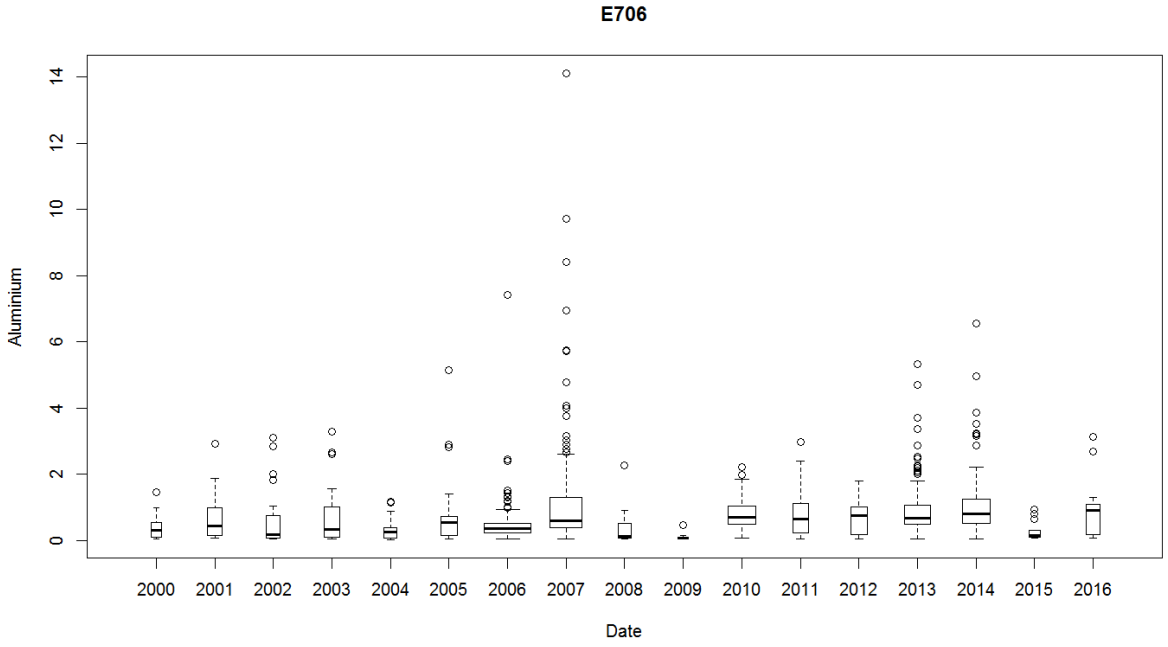

E706
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

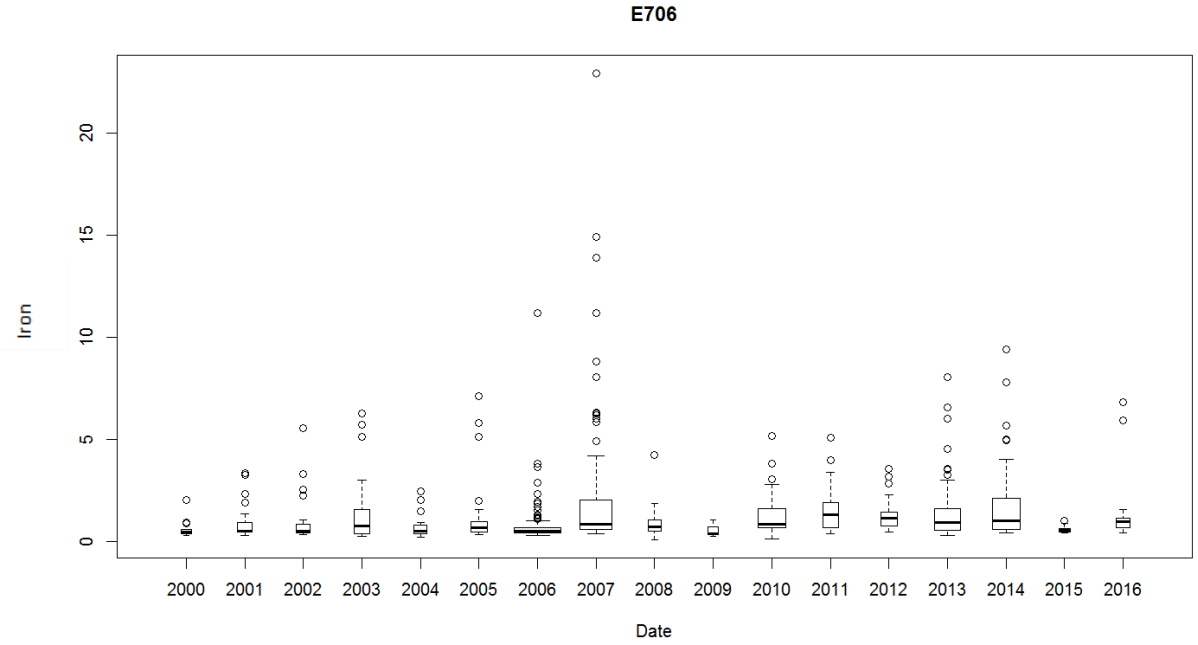

E706
Nitrogen Oxide
0.0
0.2
0.4
0.6
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

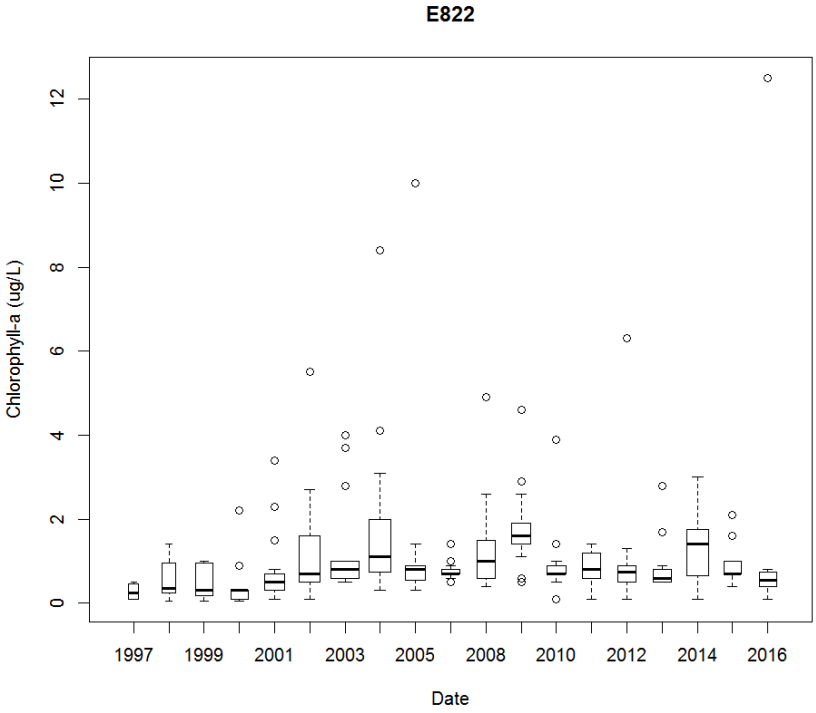

E706
Nitrogen Total
0
1
2
3
4
5
6
7
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

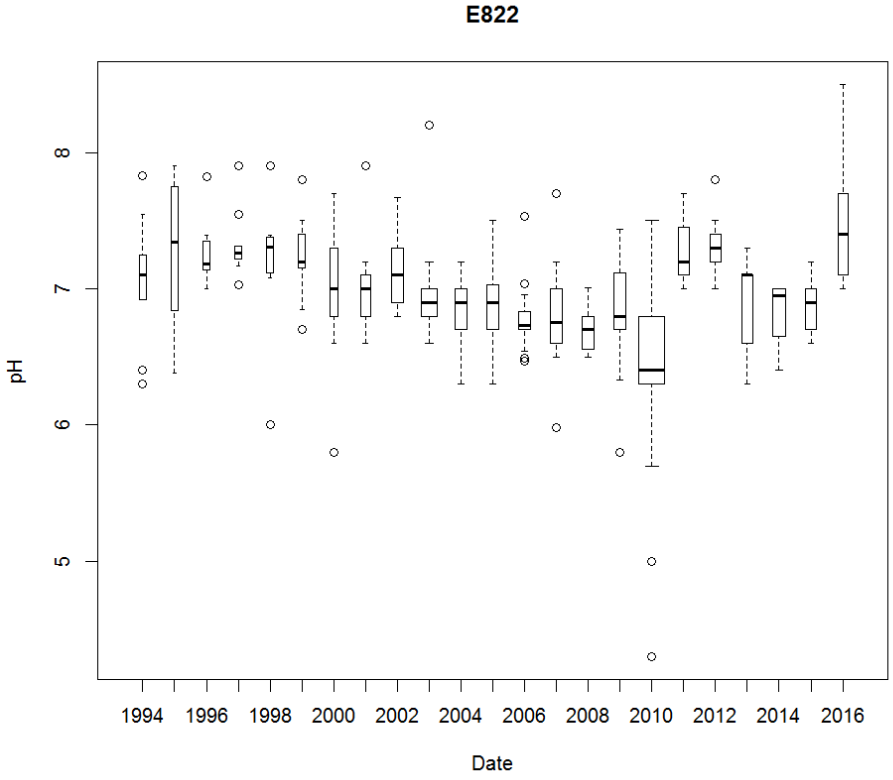

E706
FRP
0.00
0.02
0.04
0.06
0.08
0.10
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

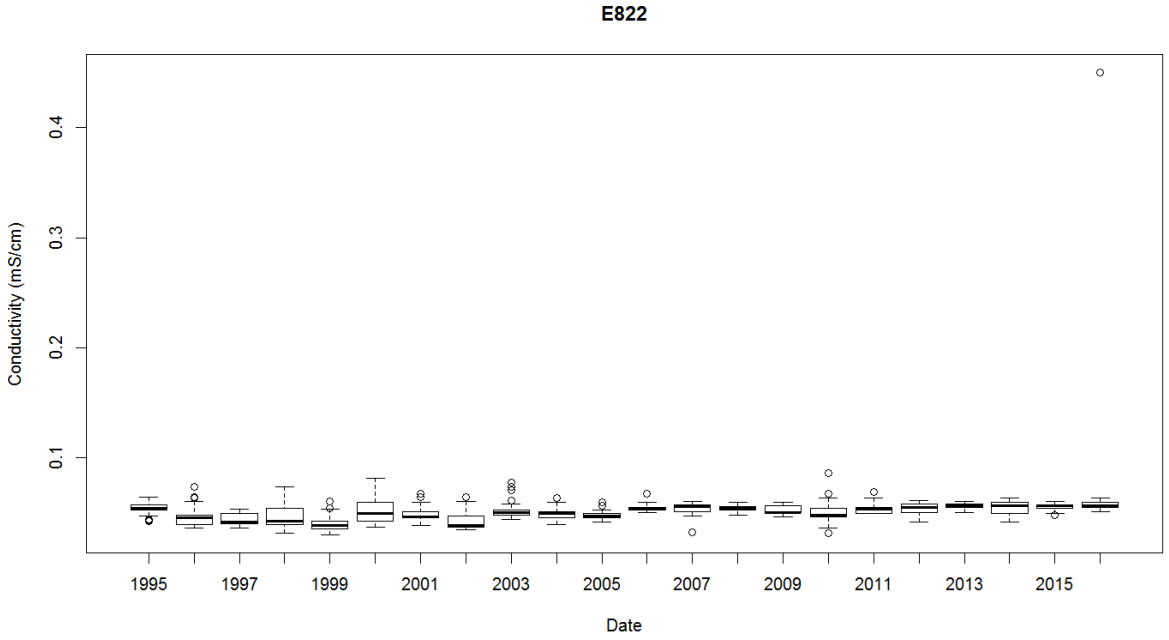

E706
Total phosphorus
0.0
0.2
0.4
0.6
0.8
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

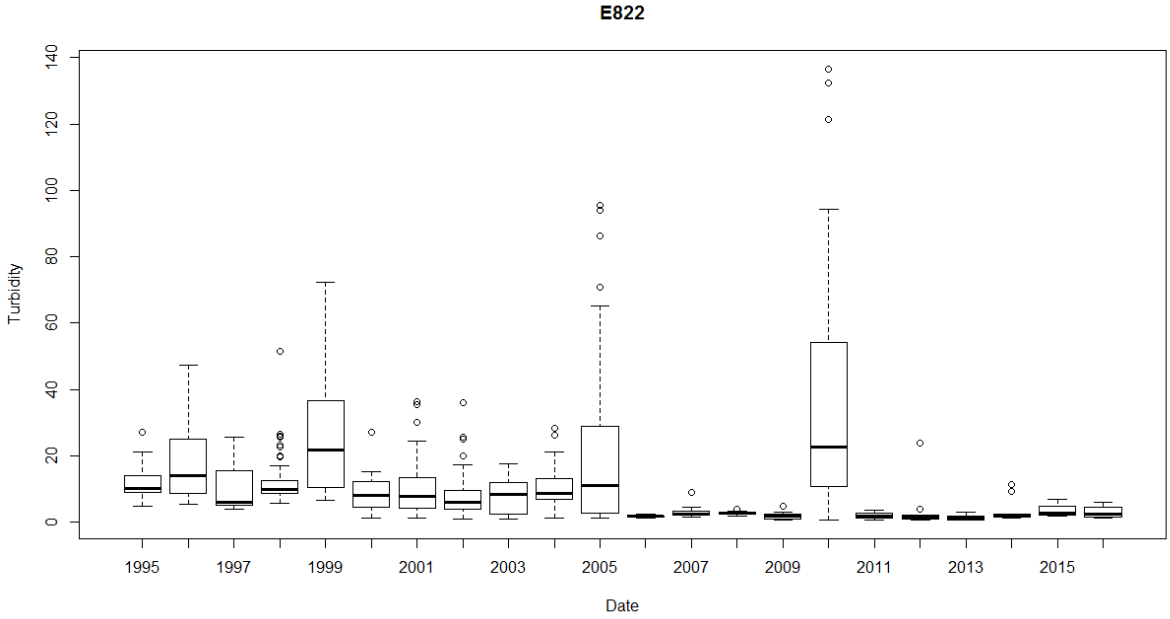

E706
Aluminium
0
2
4
6
8
10
12
14
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

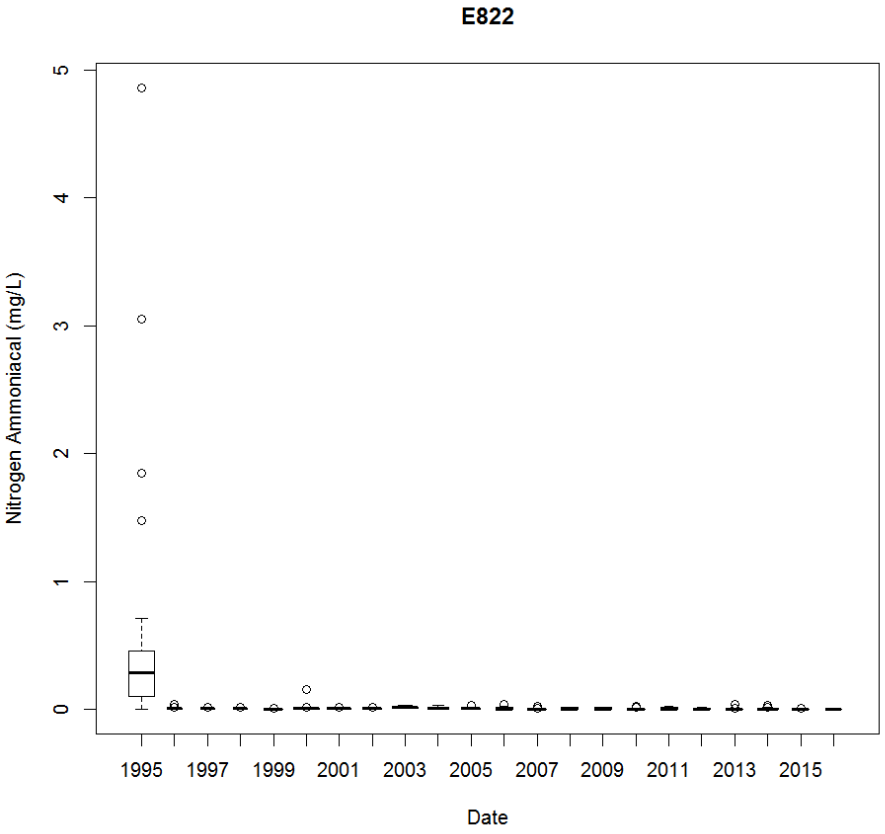

E706
Iron
0
5
10
15
20
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

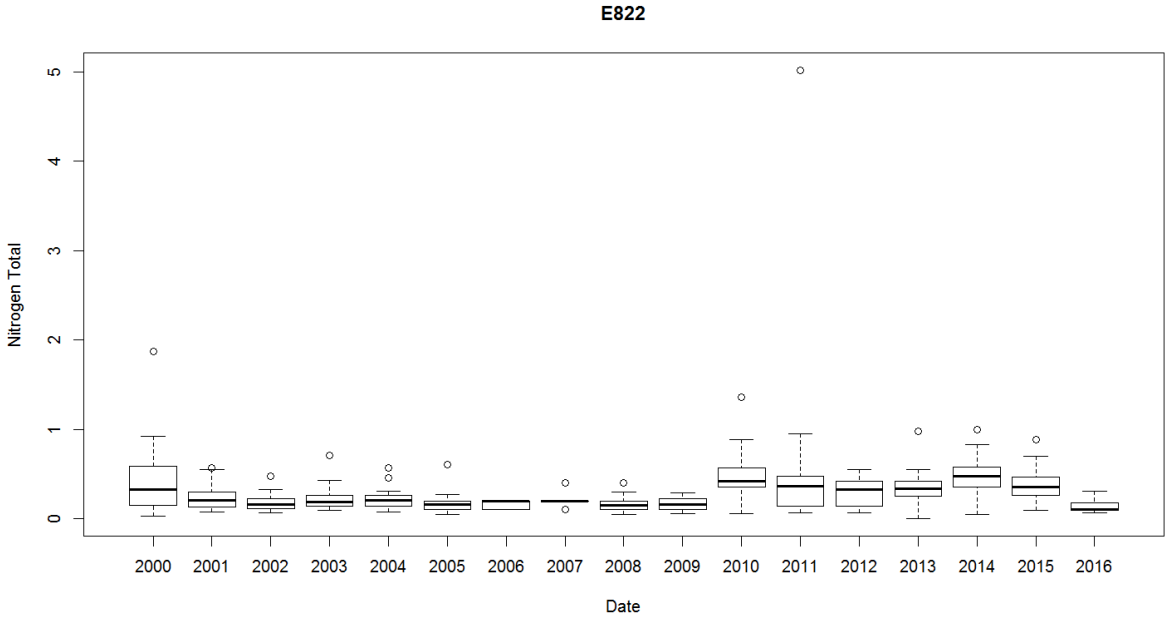

E822
Chlorophyll-a (ug/L)
0
2
4
6
8
10
12
1997
1999
2001
2003
2005
2008
2010
2012
2014
2016
Date

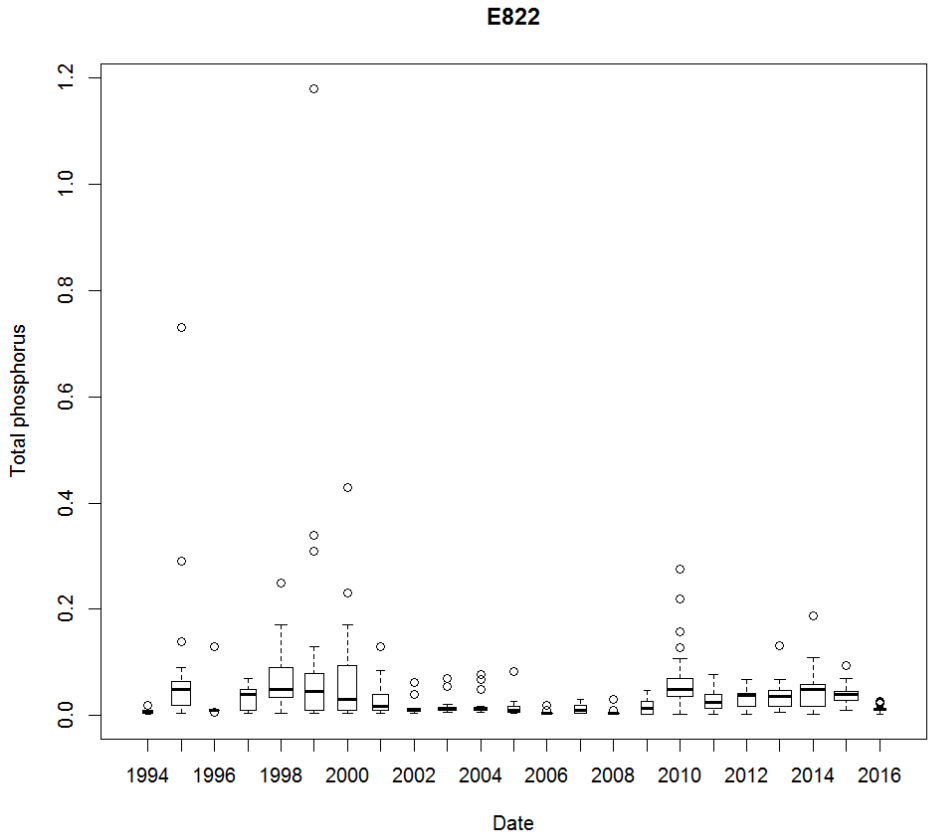

E822
pH
5
6
7
8
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

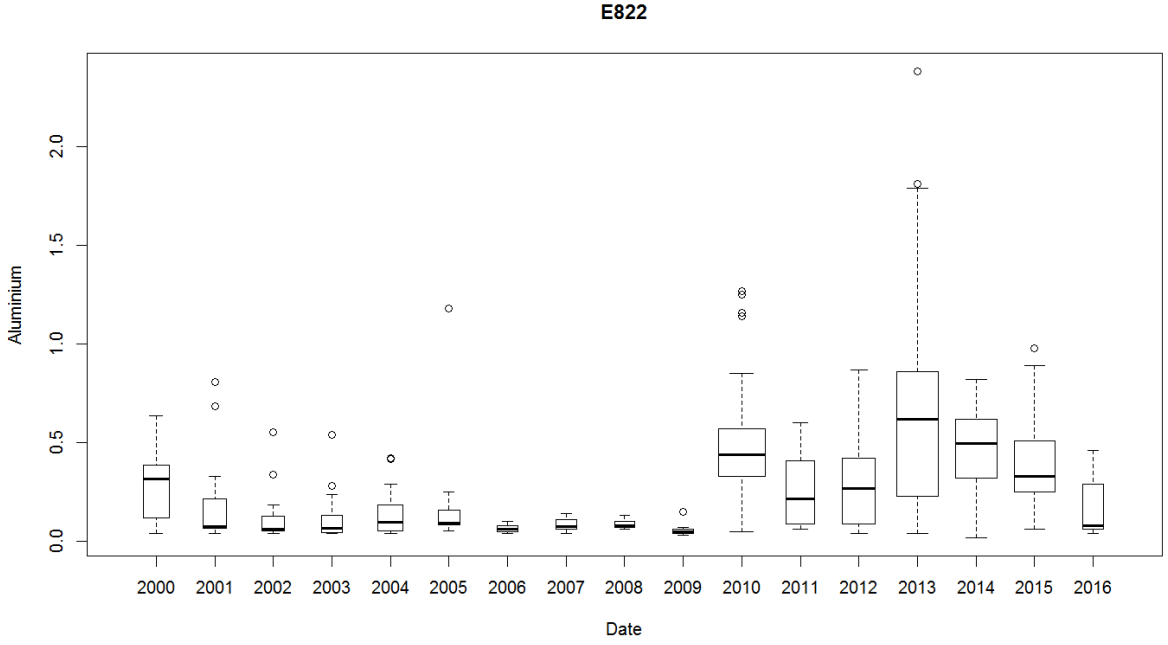

E822
Conductivity (mS/cm)
0.1
0.2
0.3
0.4
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

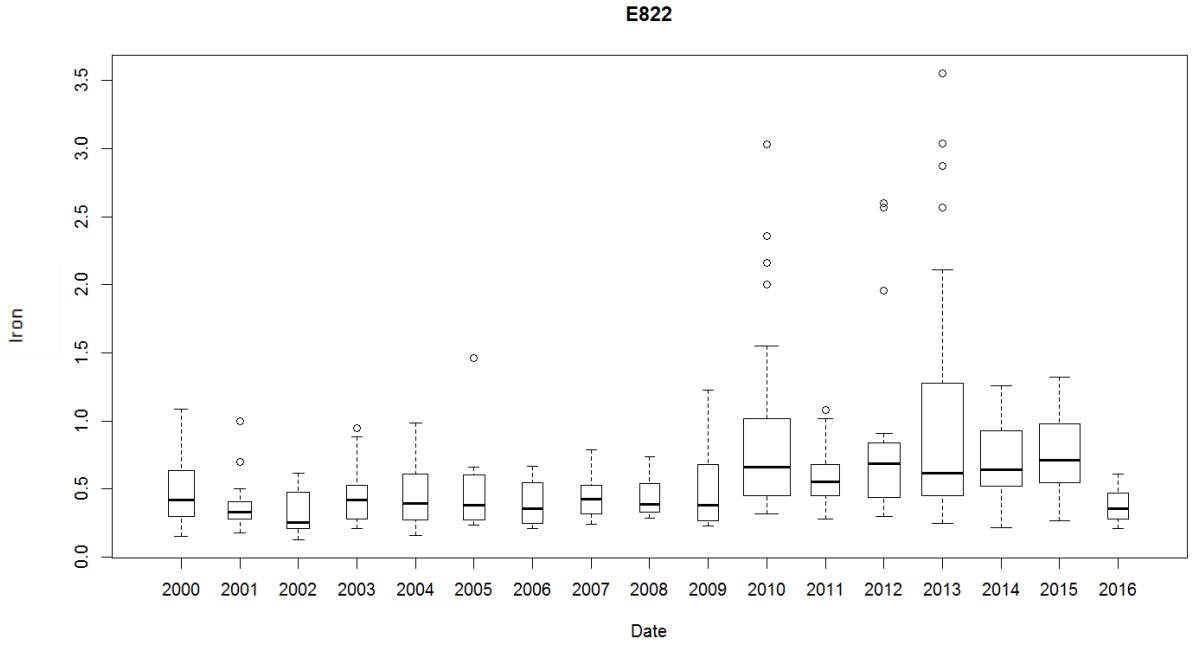

E822
Turbidity
0
20
40
60
80
100
120
140
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

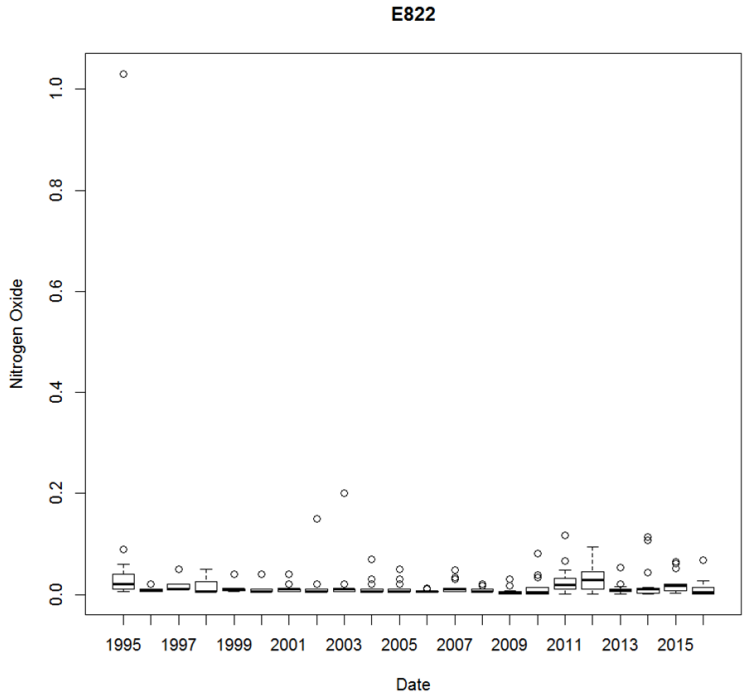

E822
Nitrogen Ammoniacal (mg/L)
0
1
2
3
4
5
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

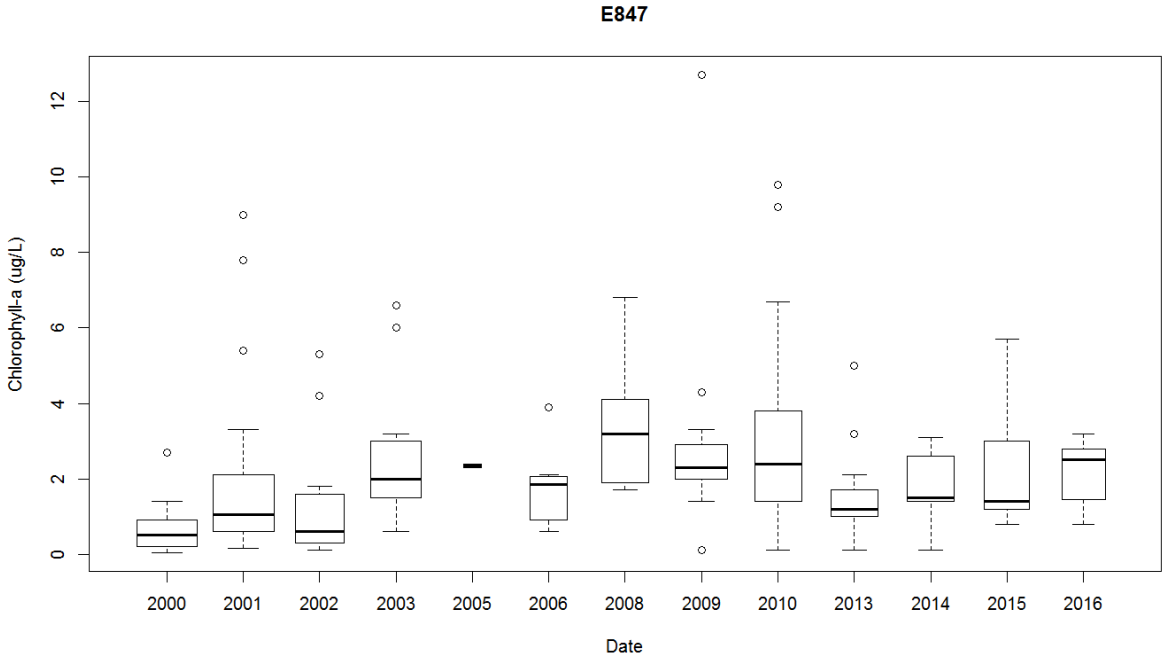

E822
Nitrogen Total
0
1
2
3
4
5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

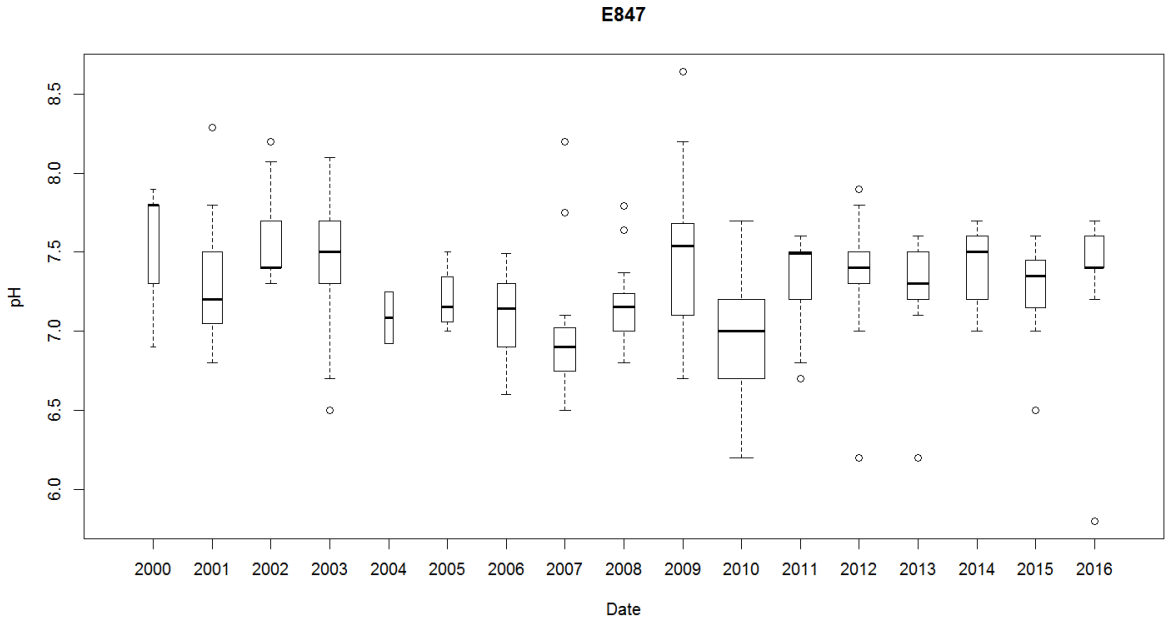

E822
Total phosphorus
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

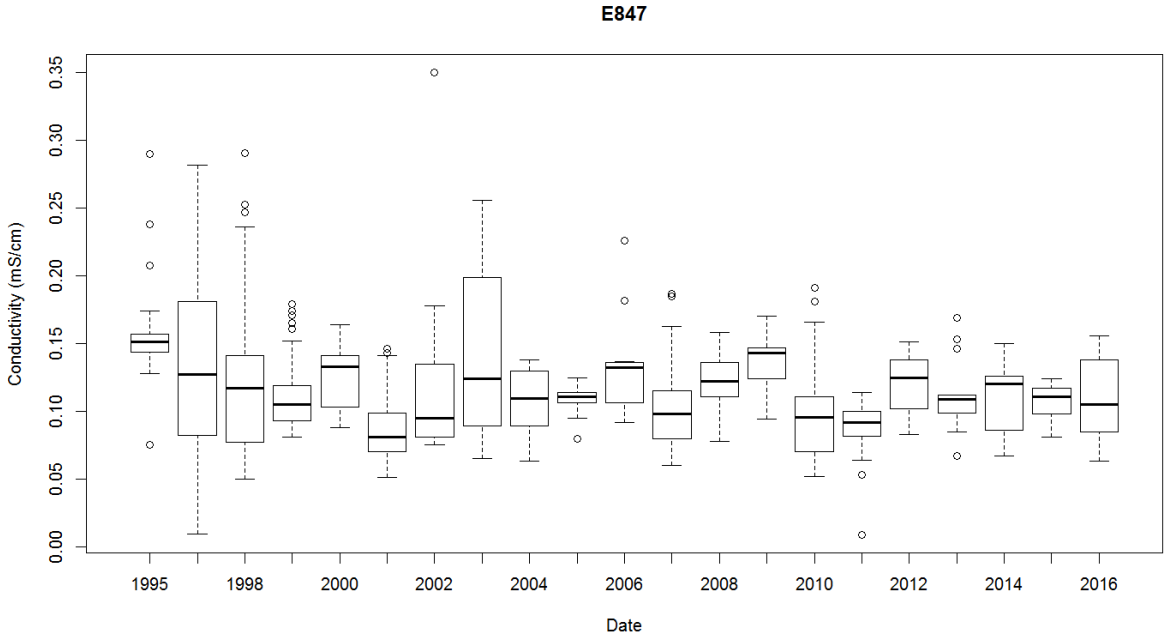

E822
Aluminium
0.0
0.5
1.0
1.5
2.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

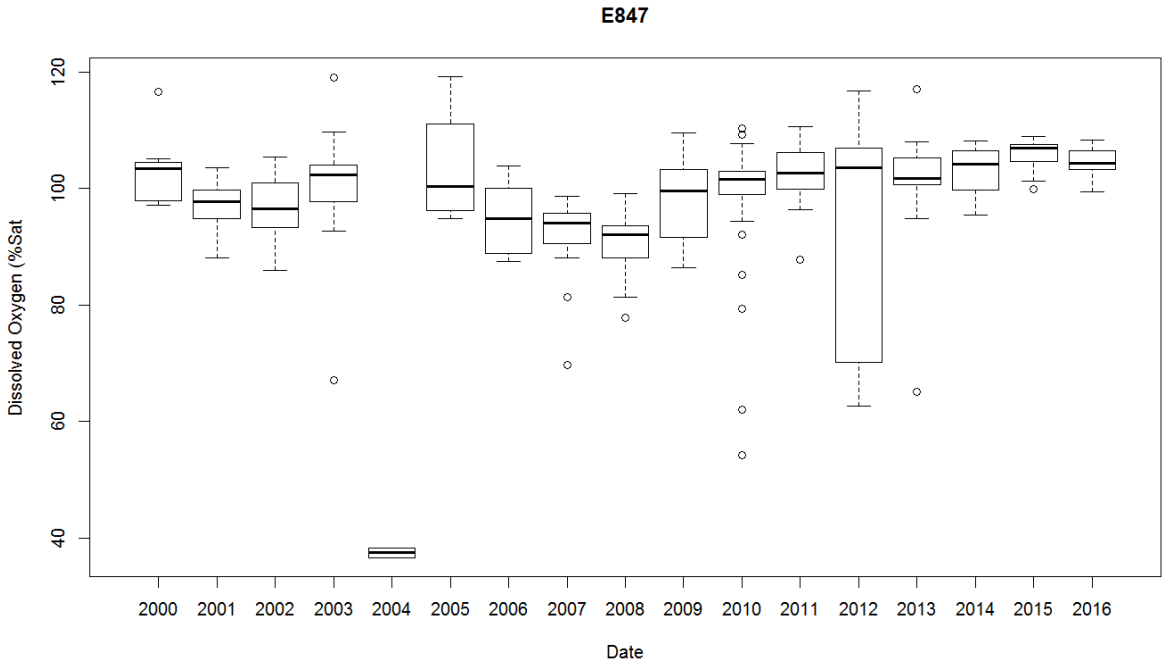

E822
Iron
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

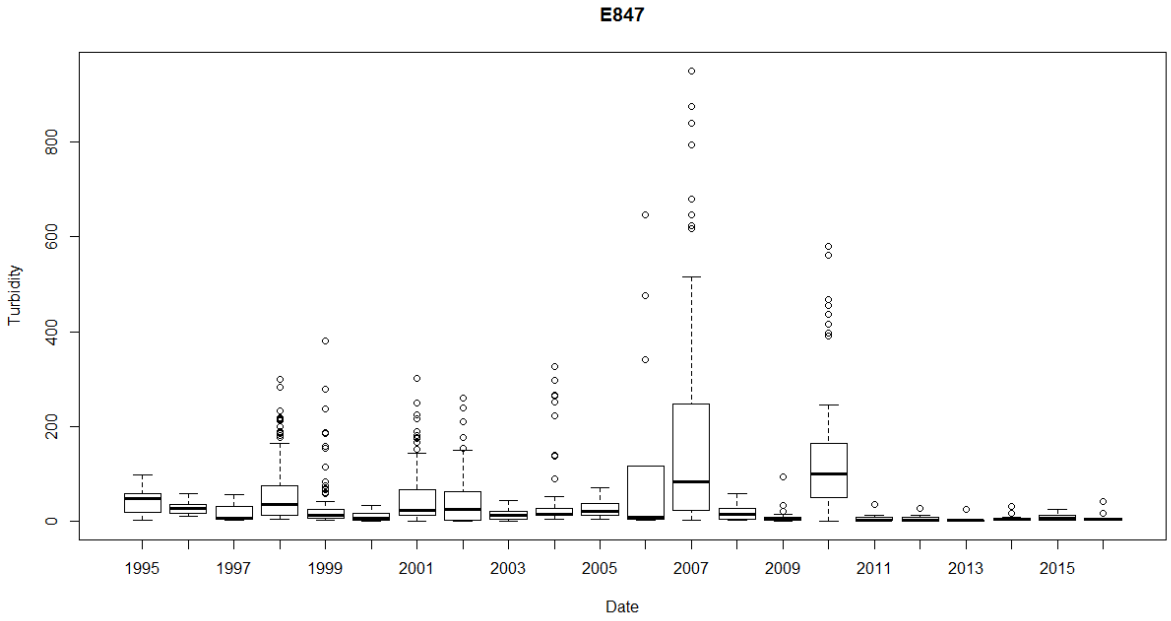

E822
Nitrogen Oxide
0.0
0.2
0.4
0.6
0.8
1.0
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

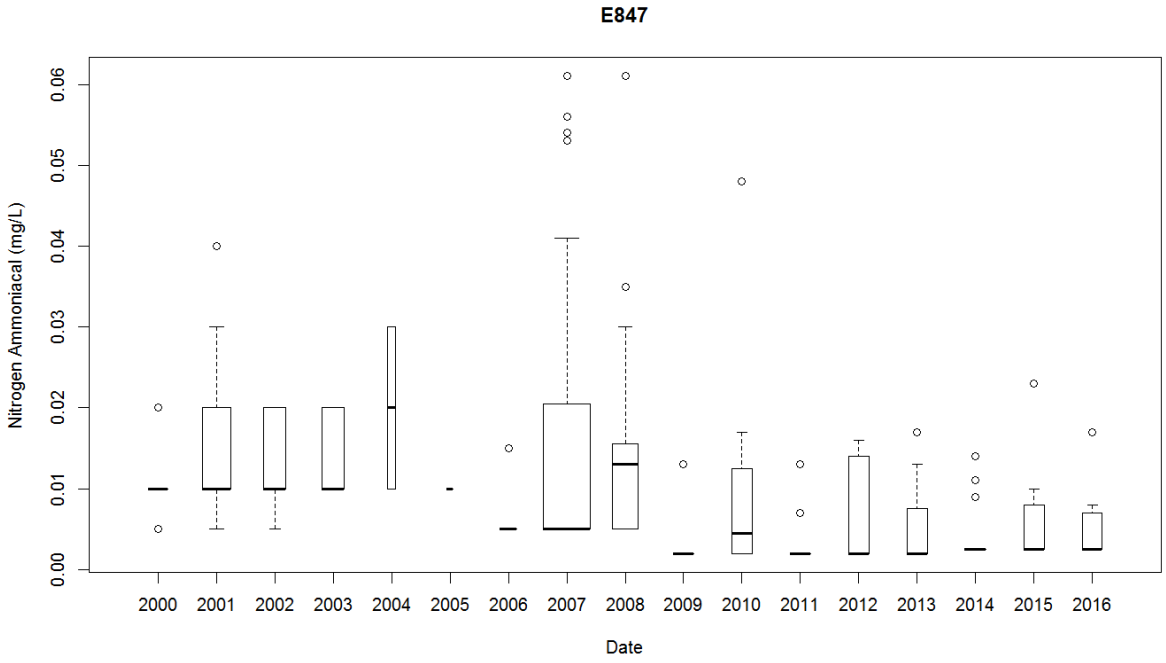

E847
Chlorophyll-a (ug/L)
0
2
4
6
8
10
12
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

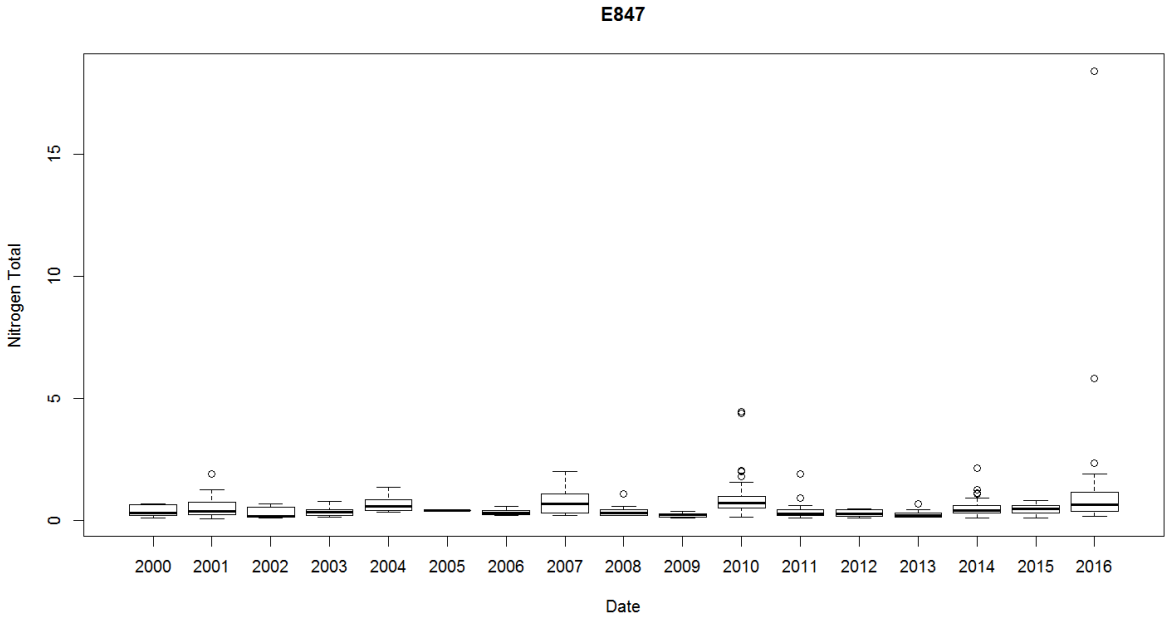

E847
pH
6.0
6.5
7.0
7.5
8.0
8.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

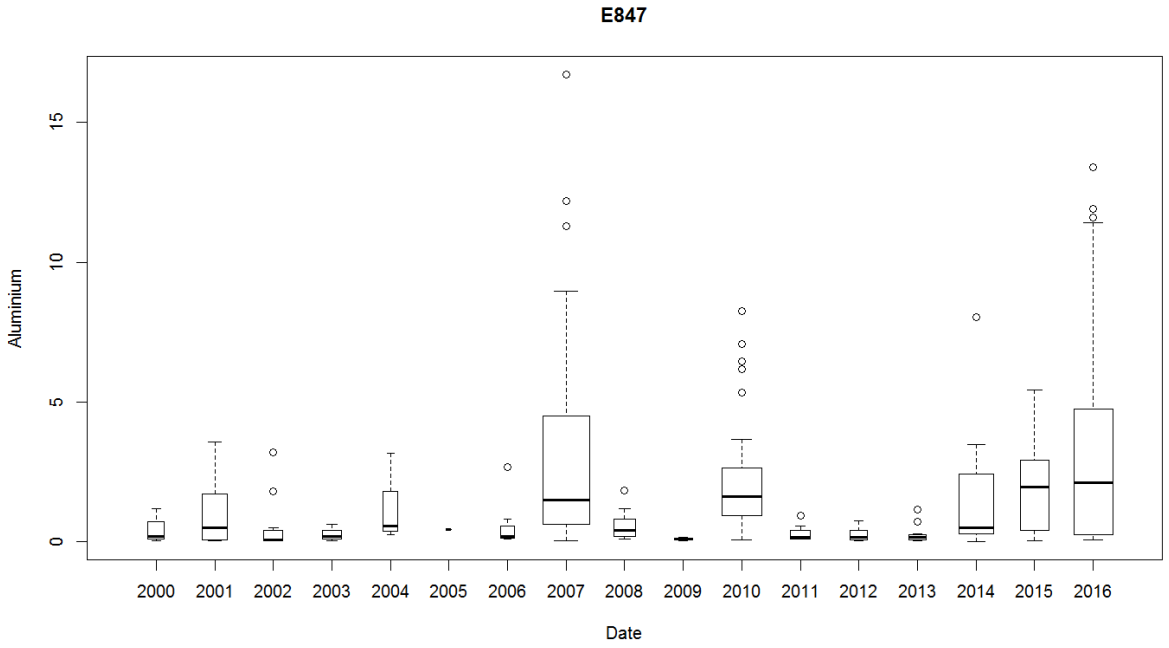

E847
Conductivity (mS/cm)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
1995
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

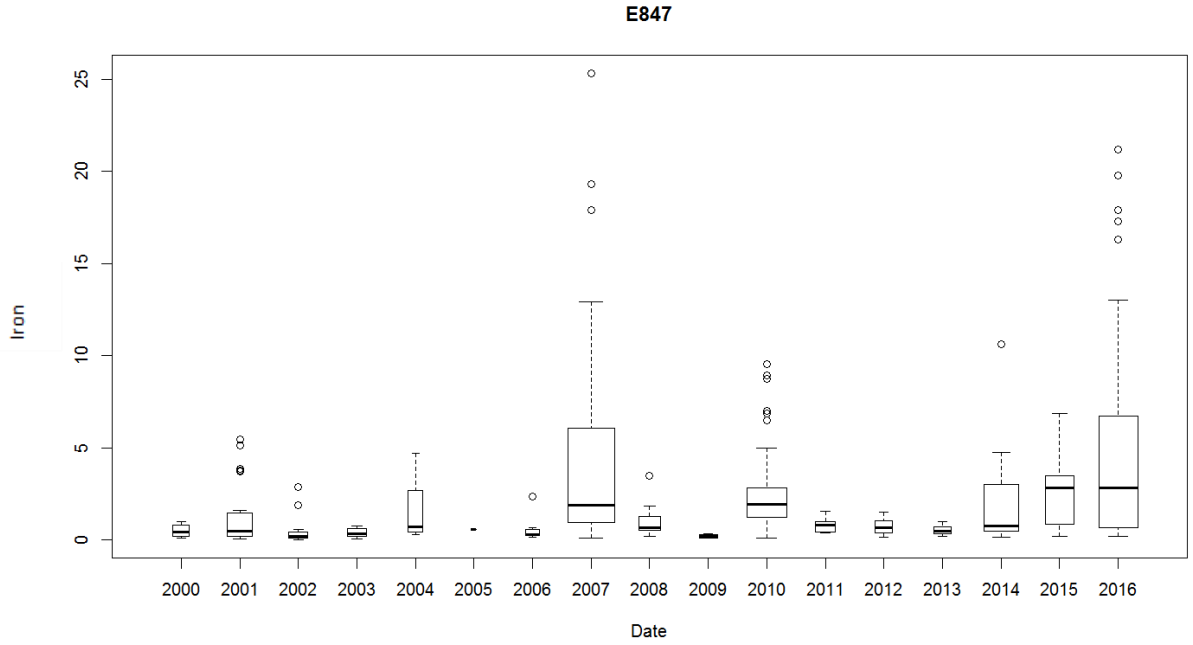

E847
Dissolved Oxygen (%Sat
40
60
80
100
120
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

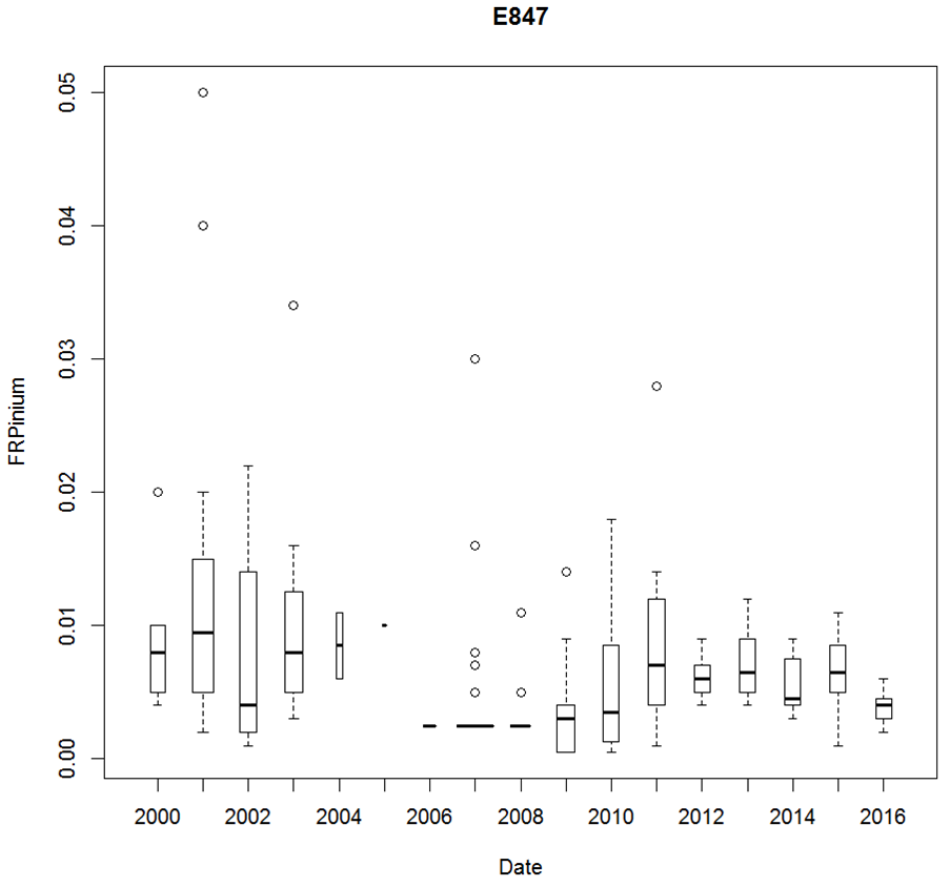

E847
Turbidity
0
200
400
600
800
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

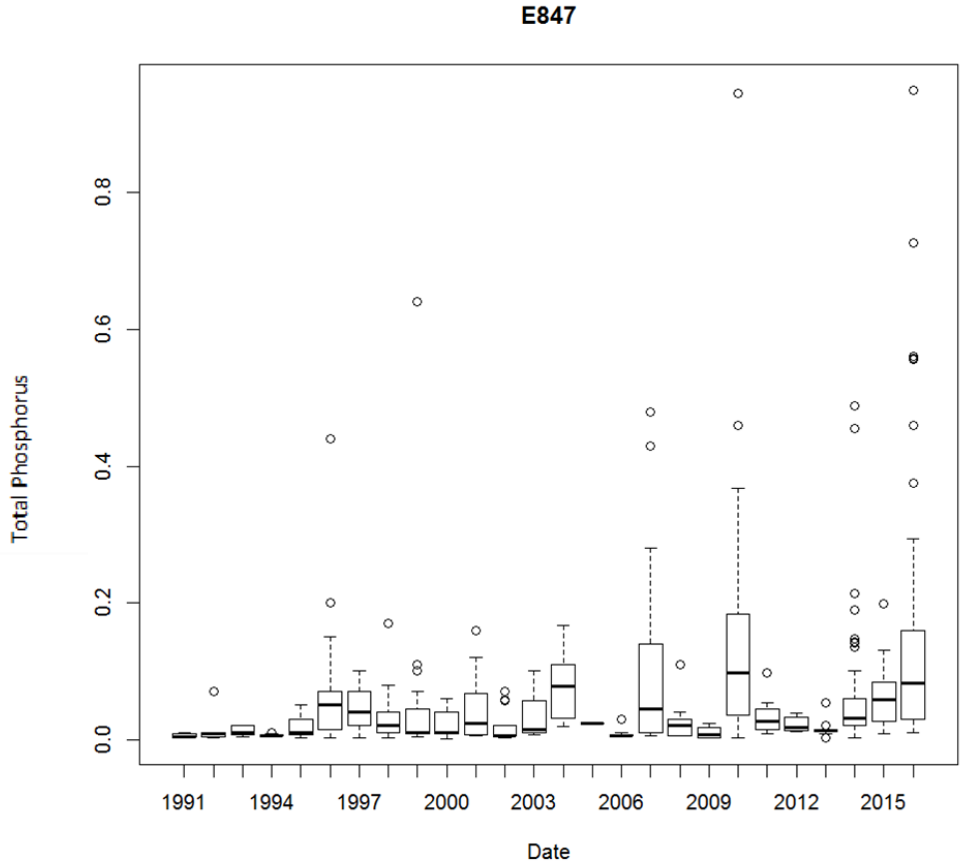

E847
Nitrogen Ammoniacal (mg/L)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

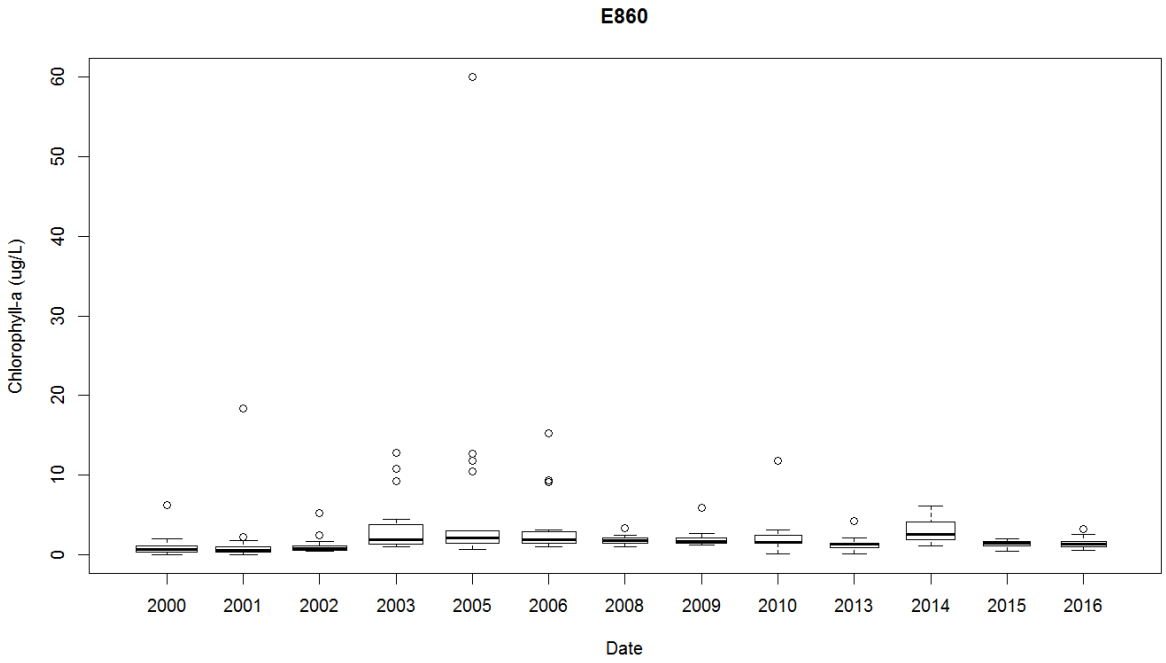

E847
Nitrogen Total
0
5
10
15
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

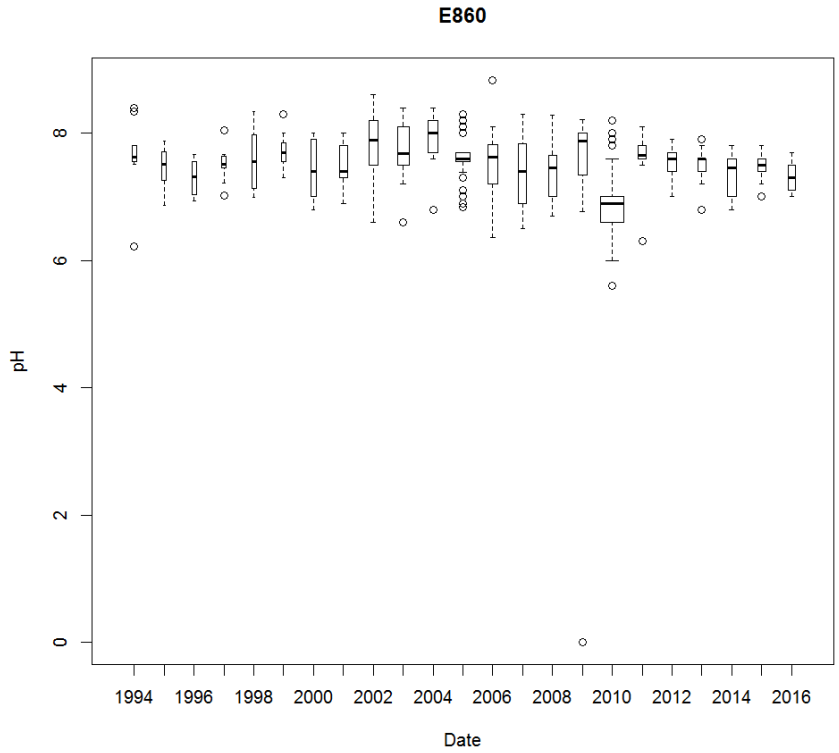

E847
Aluminium
0
5
10
15
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

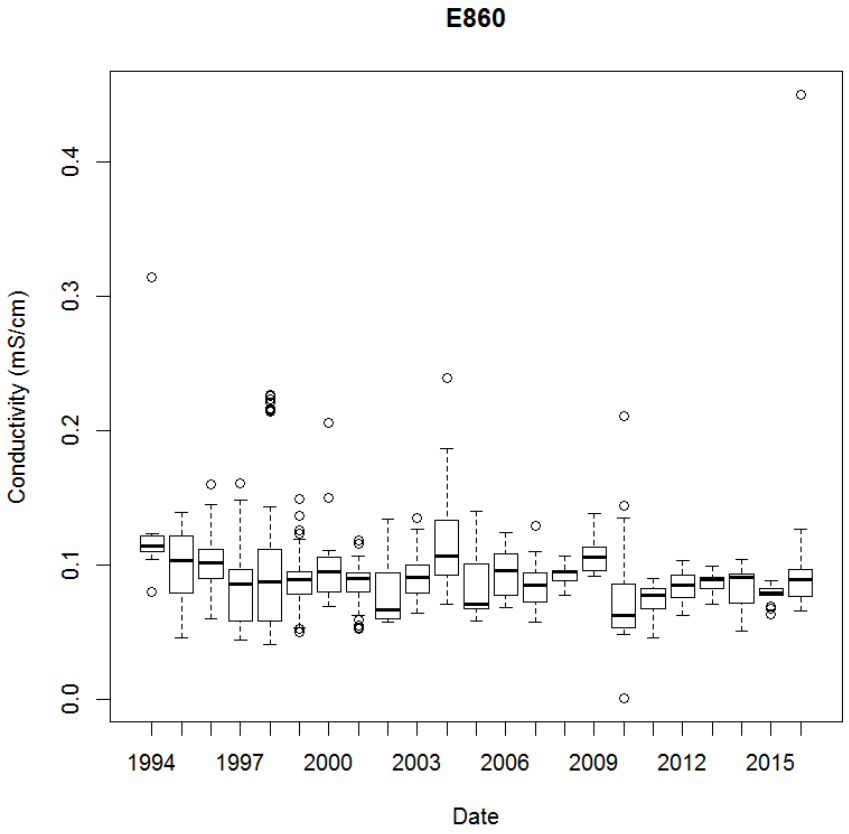

E847
Iron
0
5
10
15
20
25
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

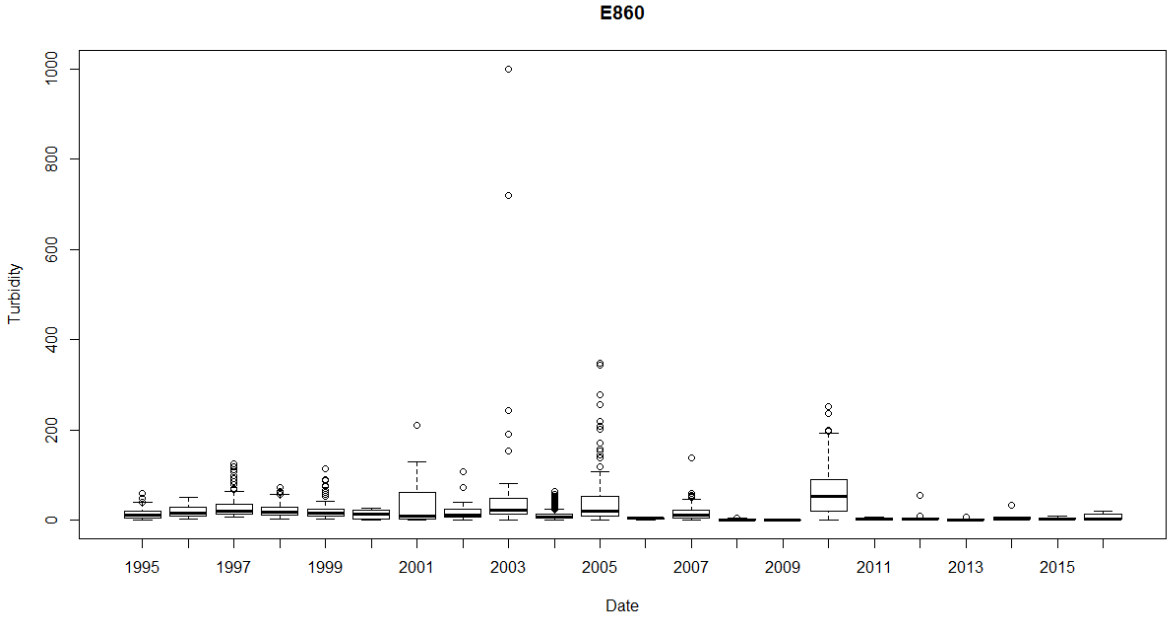

E847
FRPinium
0.00
0.01
0.02
0.03
0.04
0.05
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

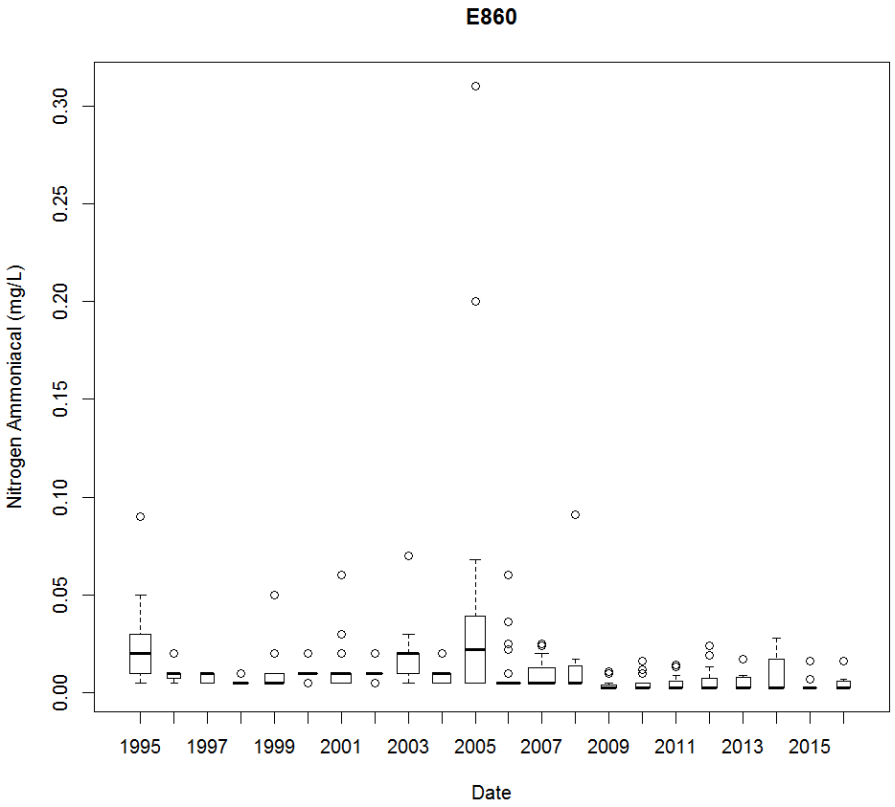

E847
Total Phosphorus
0.0
0.2
0.4
0.6
0.8
1991
1994
1997
2000
2003
2006
2009
2012
2015
Date

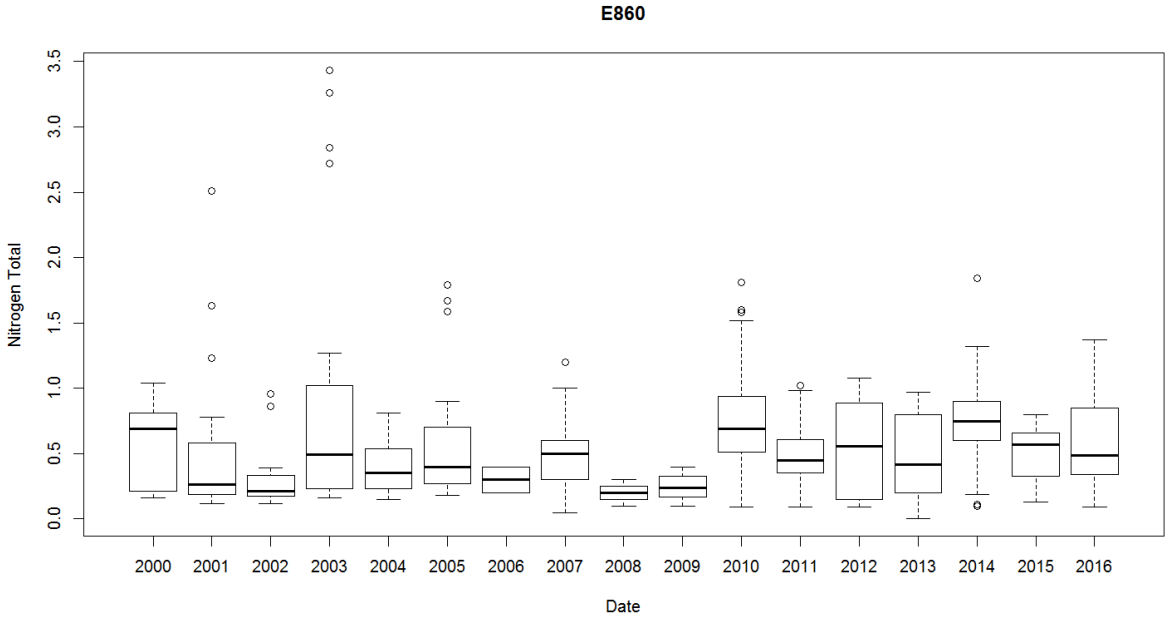

E860
Chlorophyll-a (ug/L)
0
10
20
30
40
50
60
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

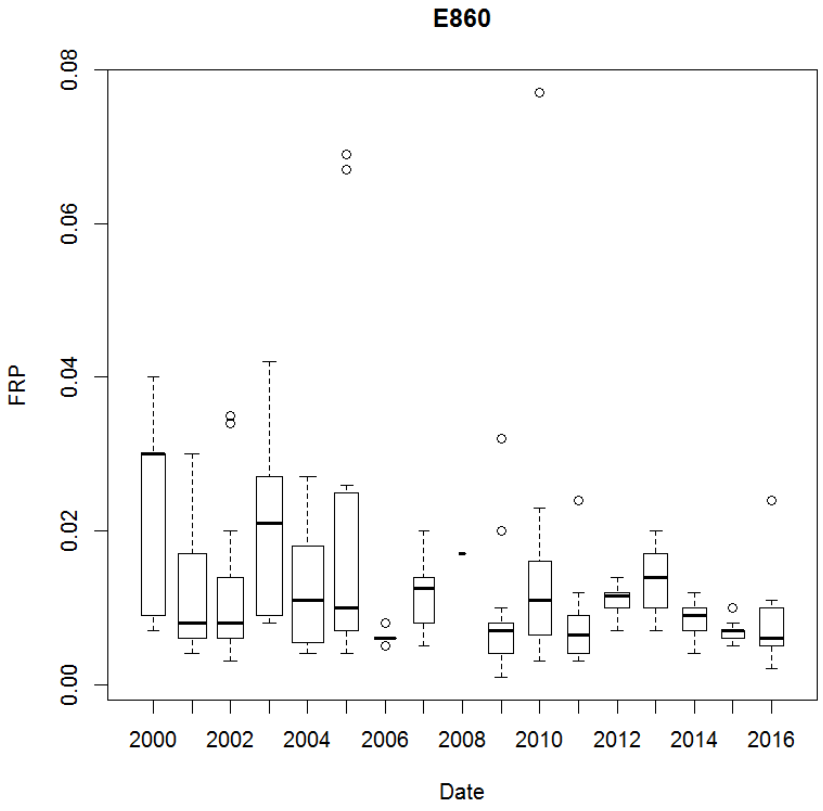

E860
pH
0
2
4
6
8
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

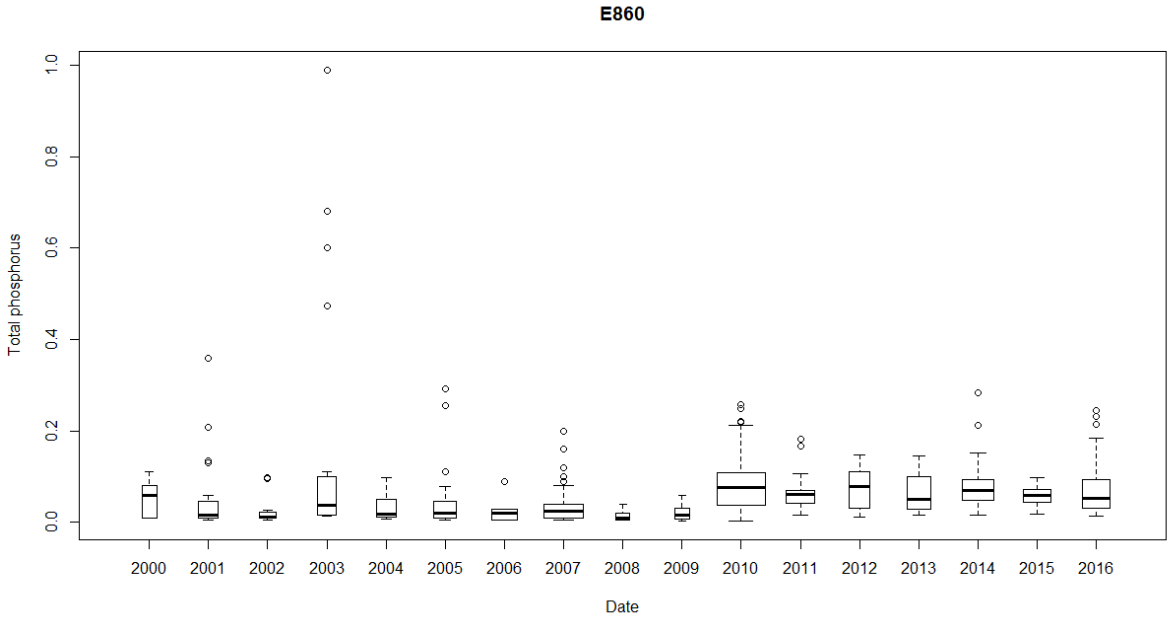

E860
Conductivity (mS/cm)
0.0
0.1
0.2
0.3
0.4
1994
1997
2000
2003
2006
2009
2012
2015
Date

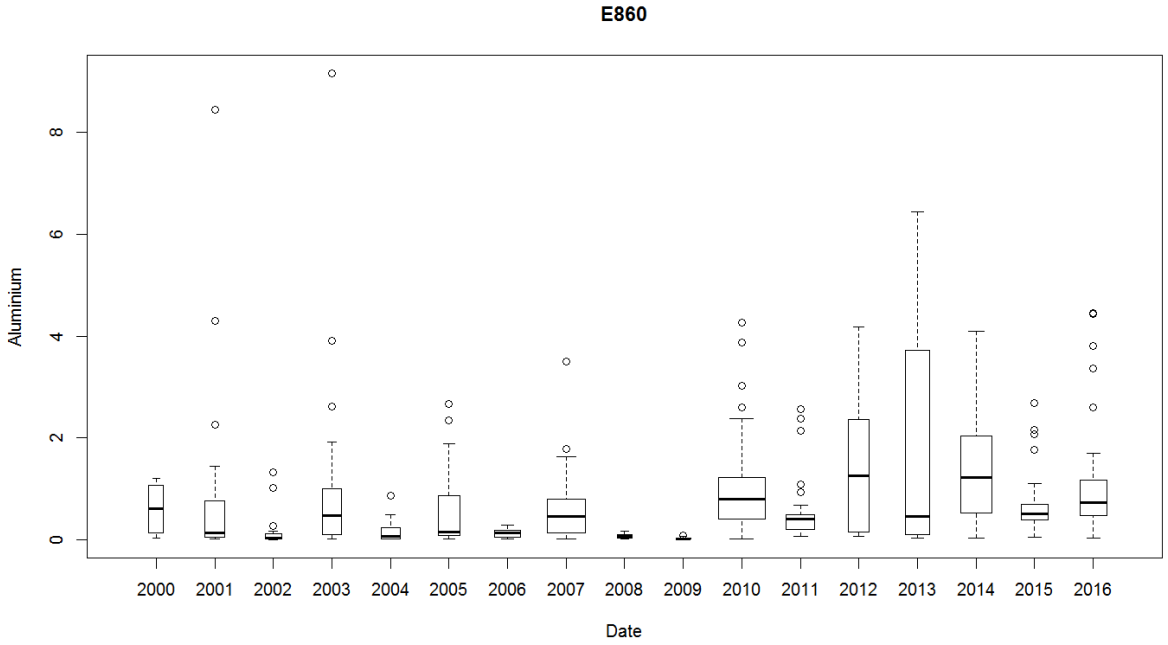

E860
Turbidity
0
200
400
600
800
1000
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

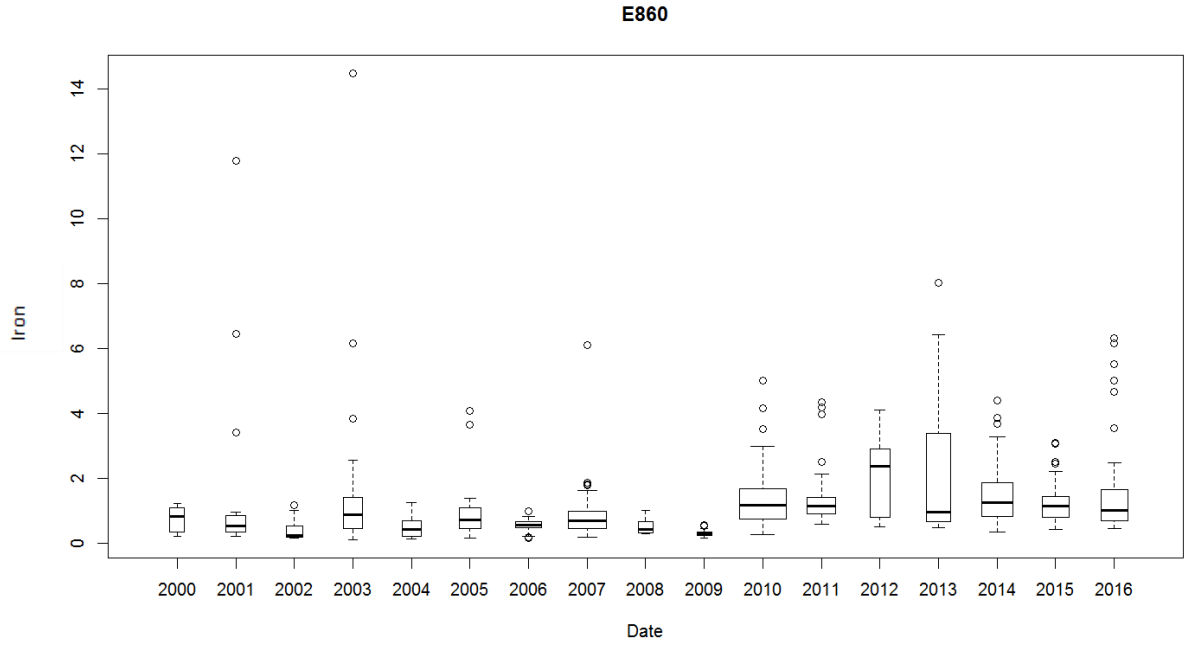

E860
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

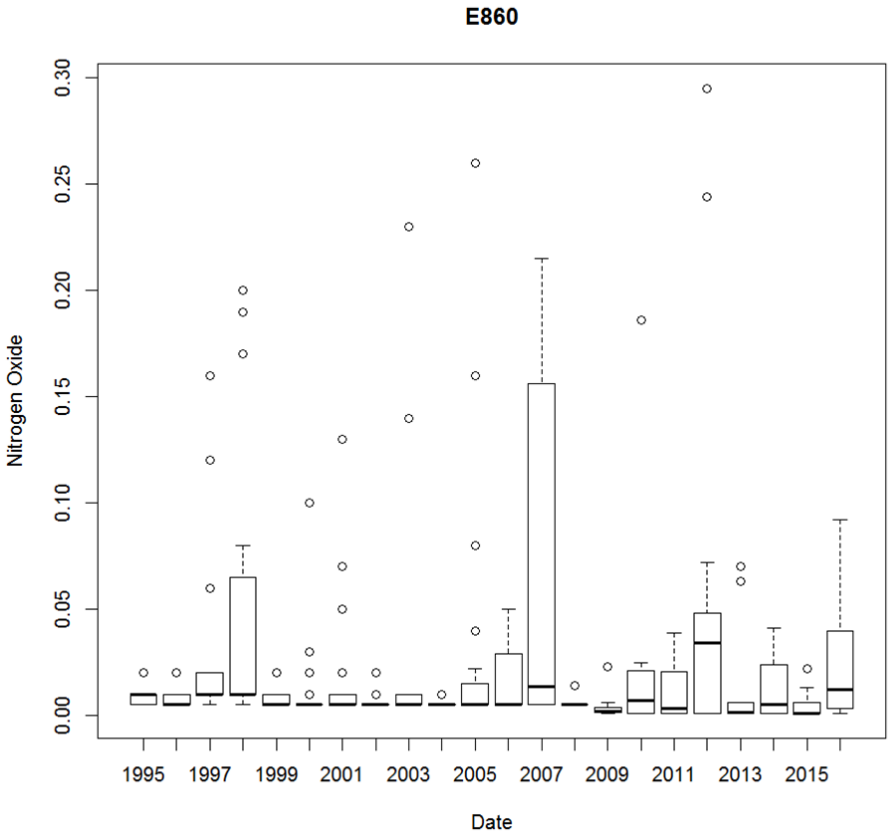

E860
Nitrogen Total
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

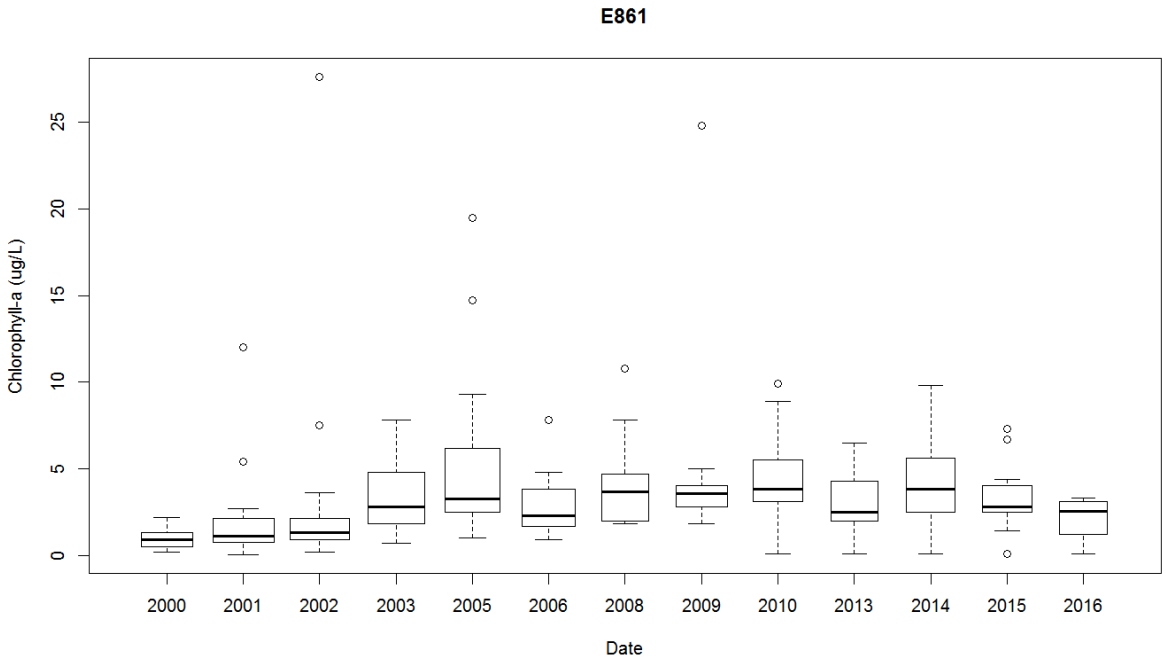

E860
FRP
0.00
0.02
0.04
0.06
0.08
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

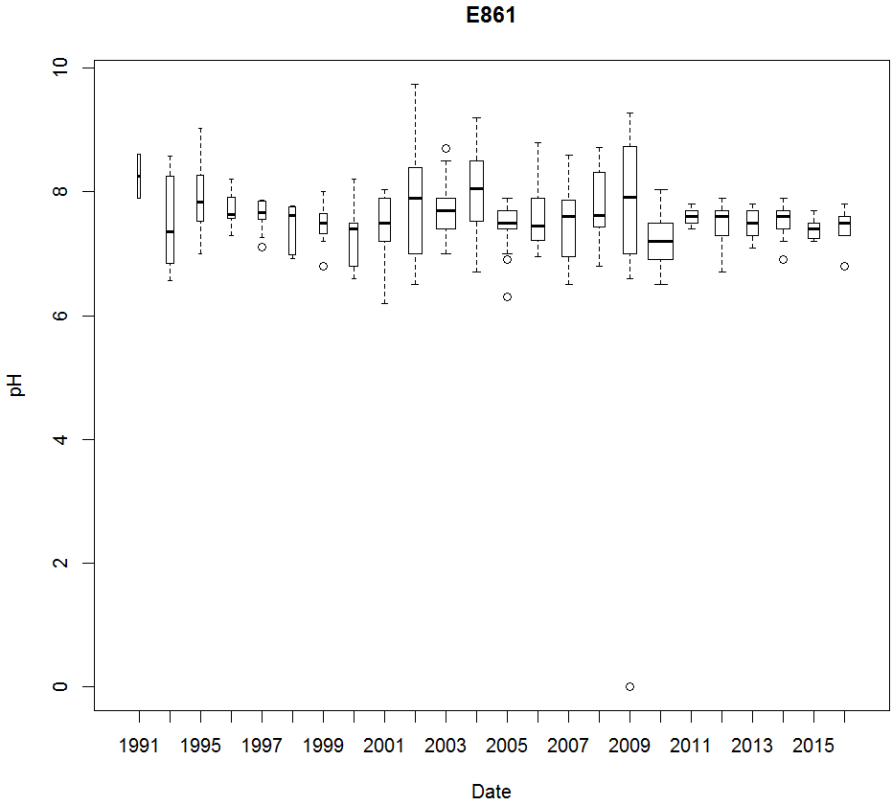

E860
Total phosphorus
0.0
0.2
0.4
0.6
0.8
1.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

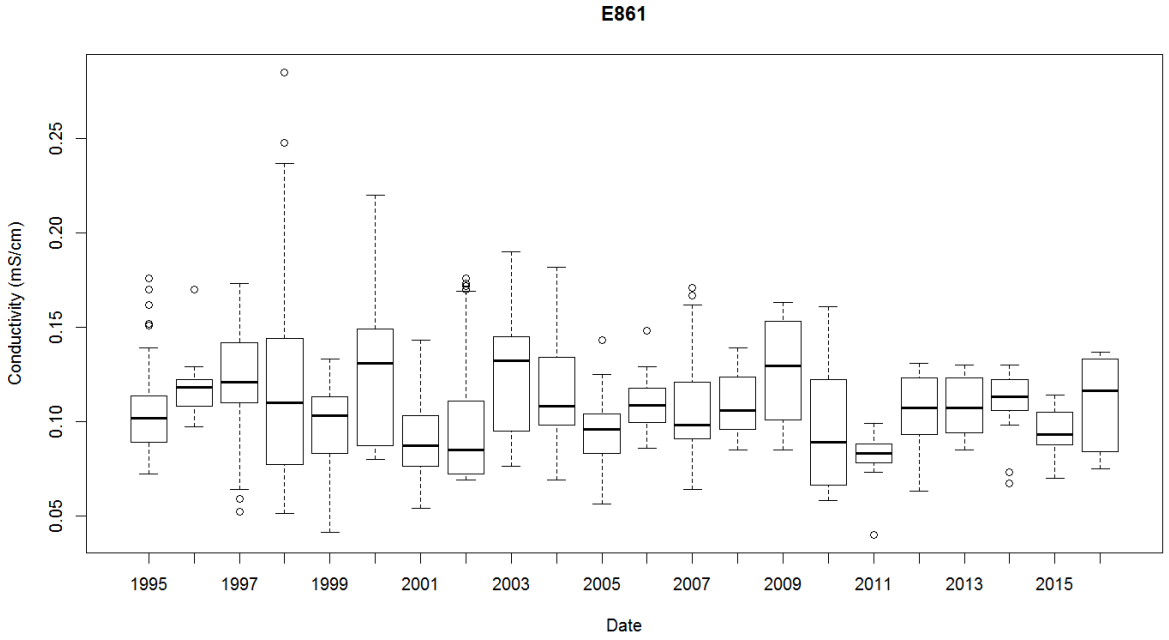

E860
Aluminium
0
2
4
6
8
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

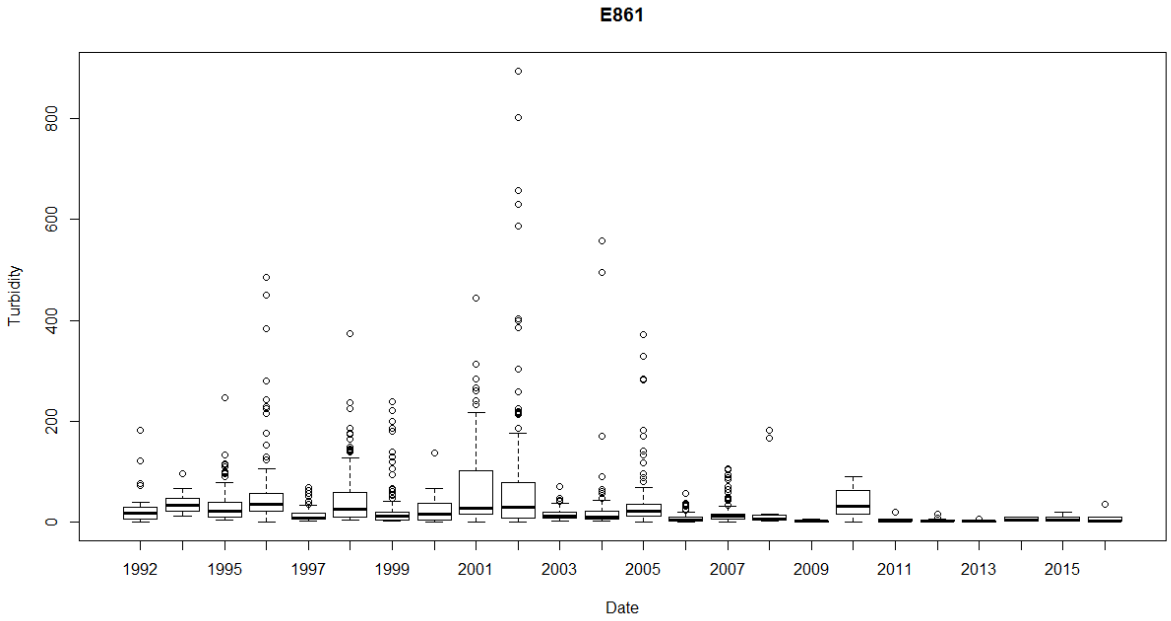

E860
Iron
0
2
4
6
8
10
12
14
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

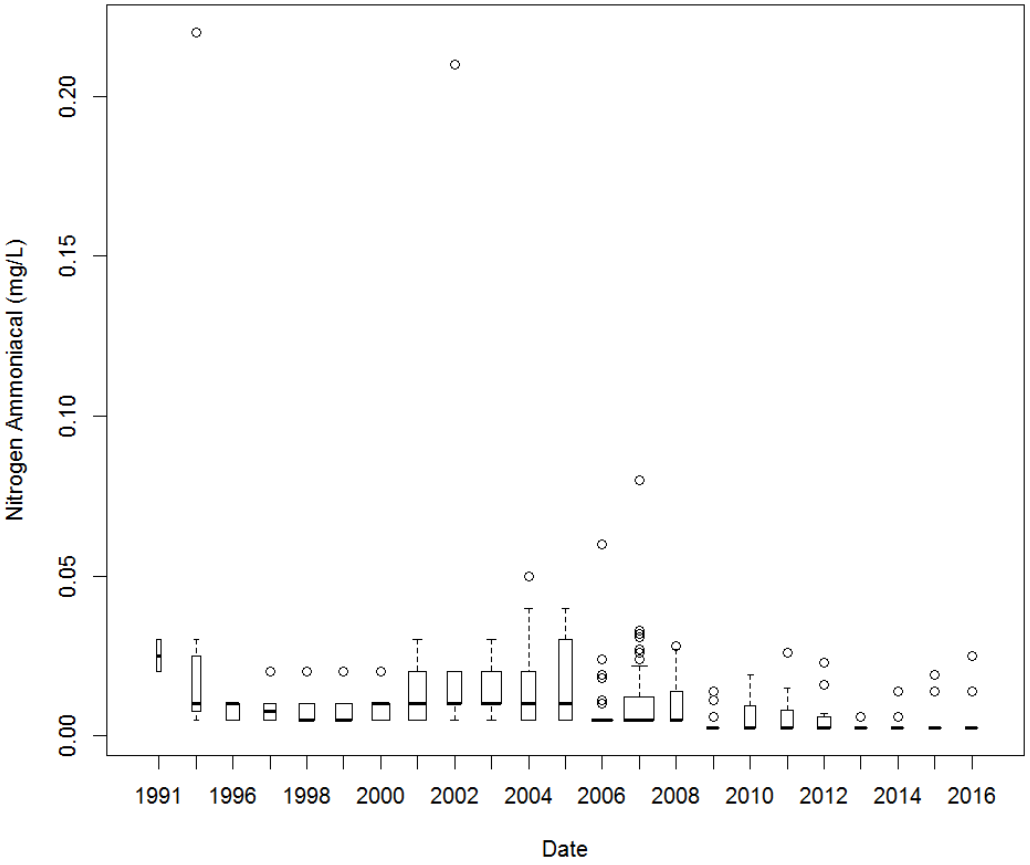

E860
Nitrogen Oxide
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

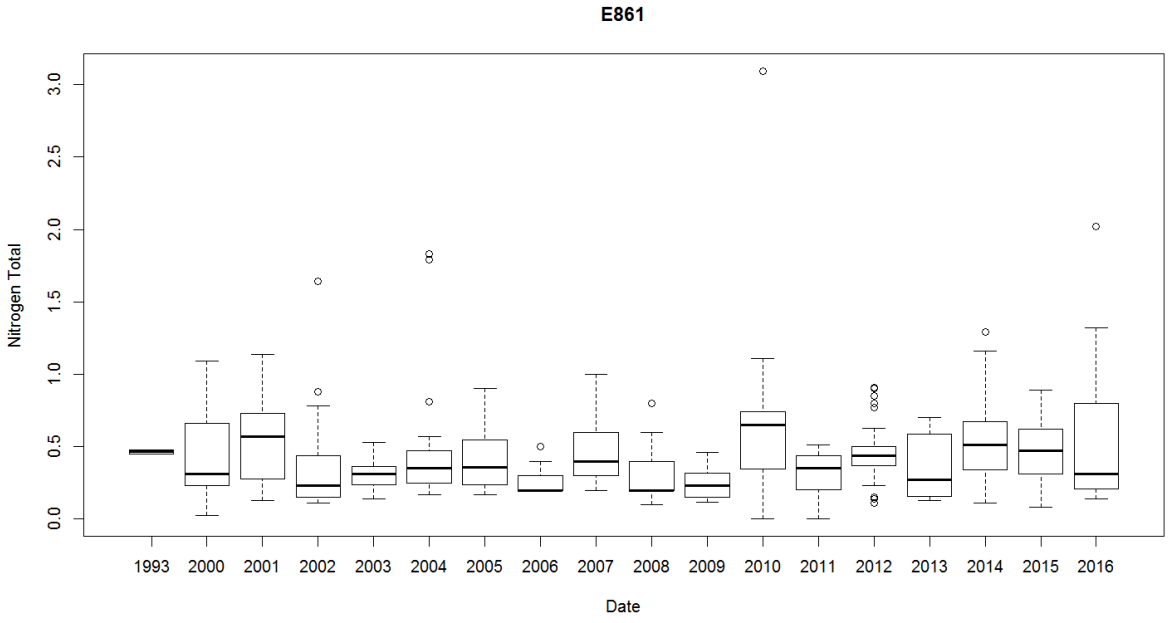

E861
Chlorophyll-a (ug/L)
0
5
10
15
20
25
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

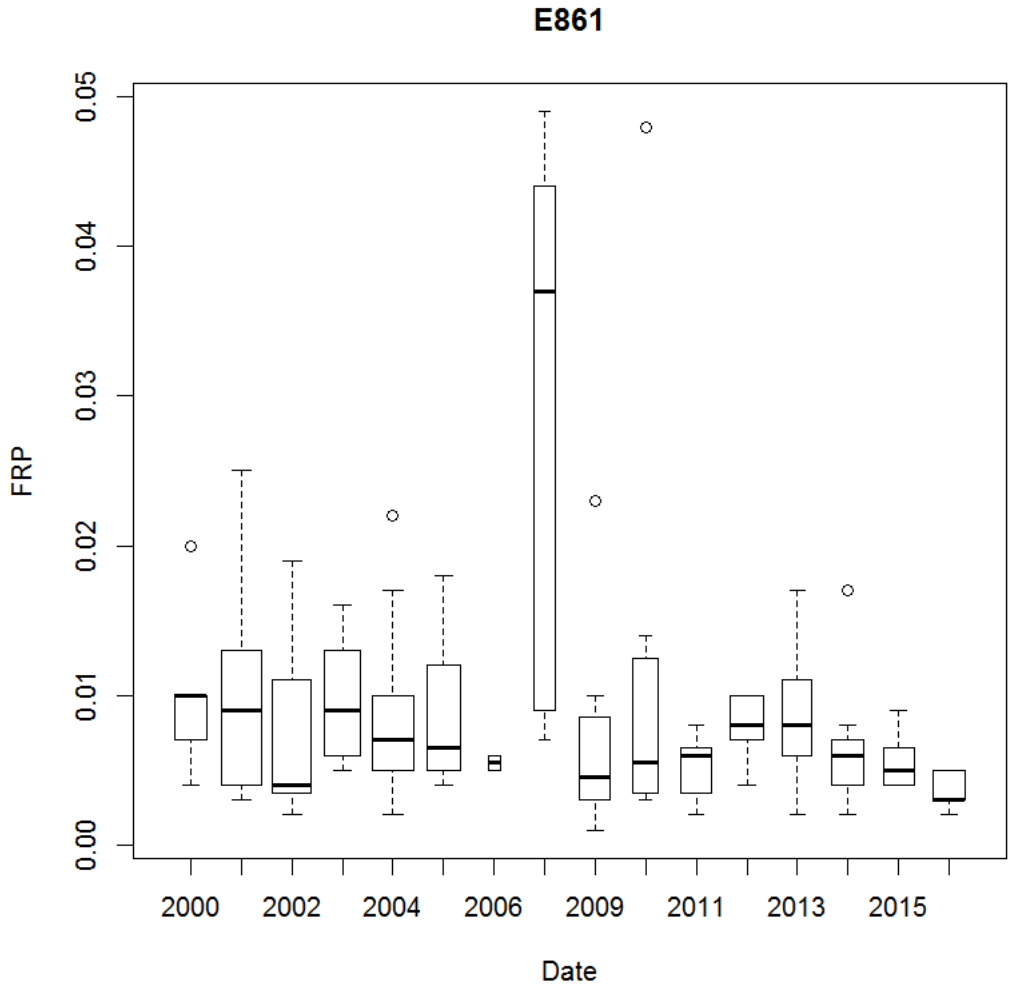

E861
pH
0
2
4
6
8
10
1991
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

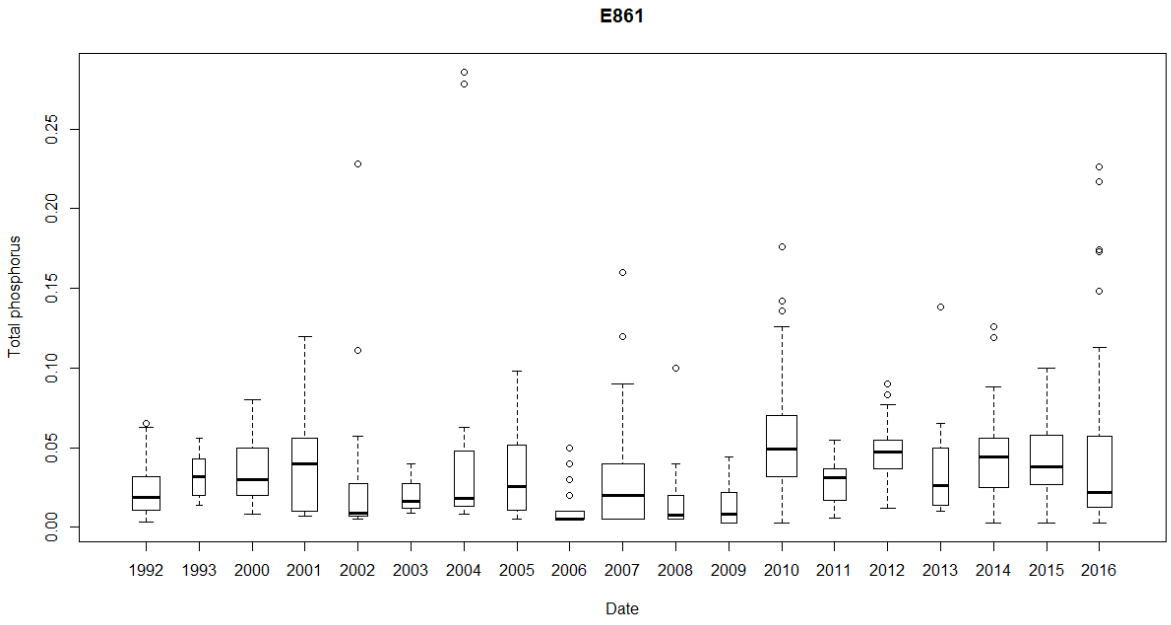

E861
Conductivity (mS/cm)
0.05
0.10
0.15
0.20
0.25
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

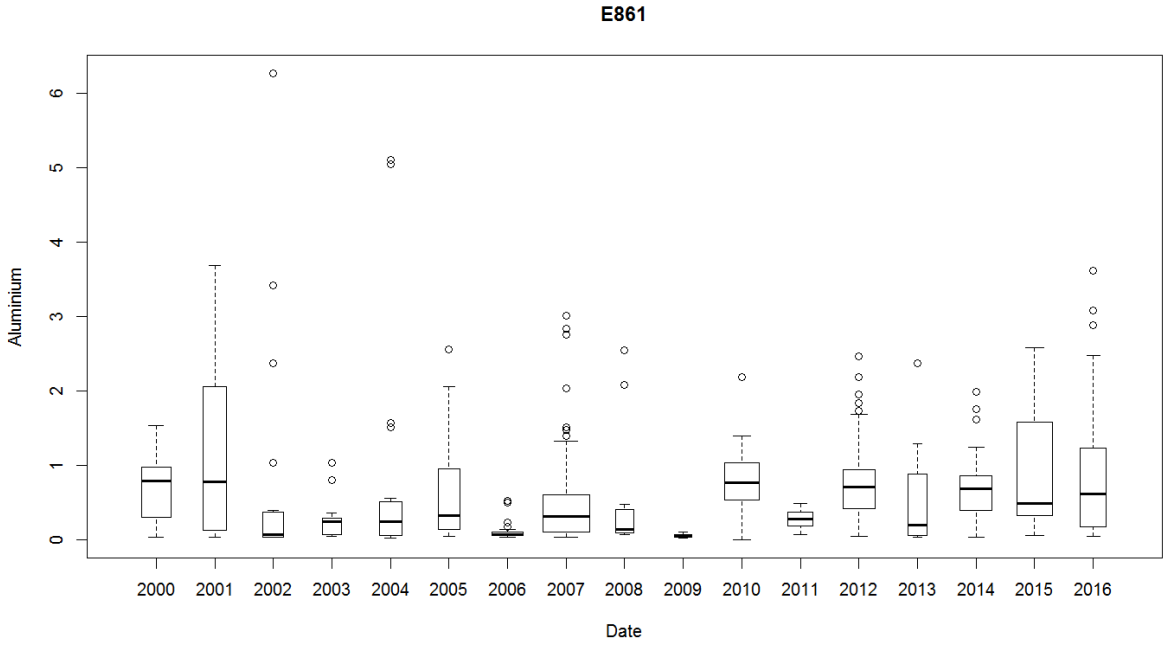

E861
Turbidity
0
200
400
600
800
1992
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

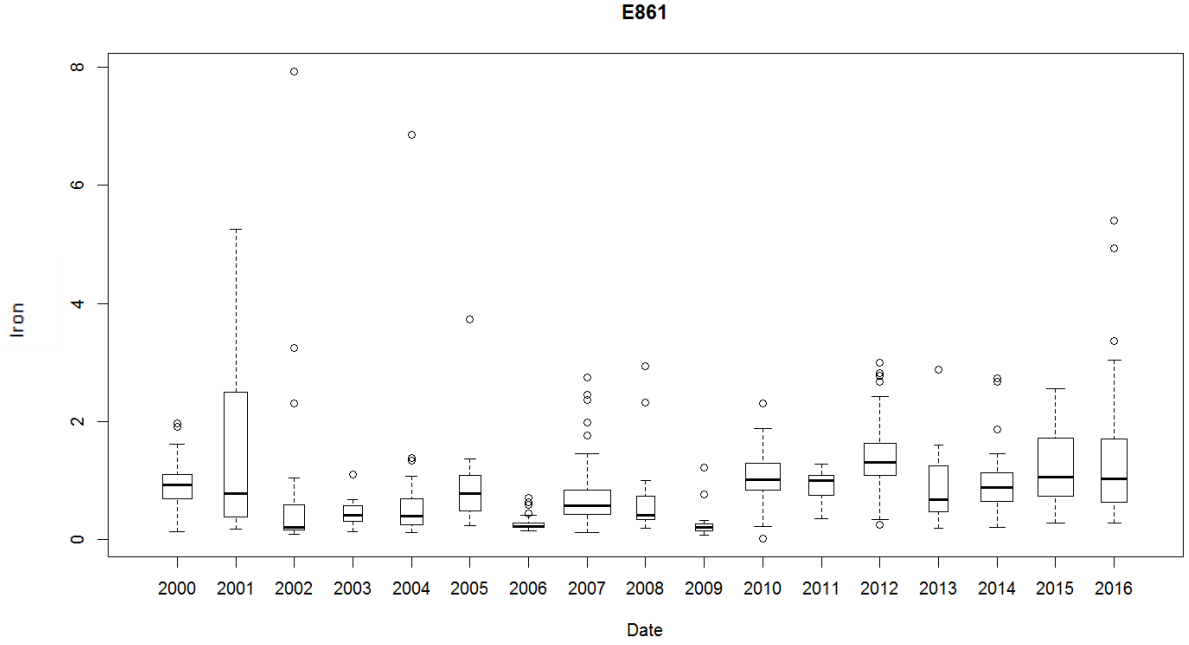

Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
0.20
1991
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Date

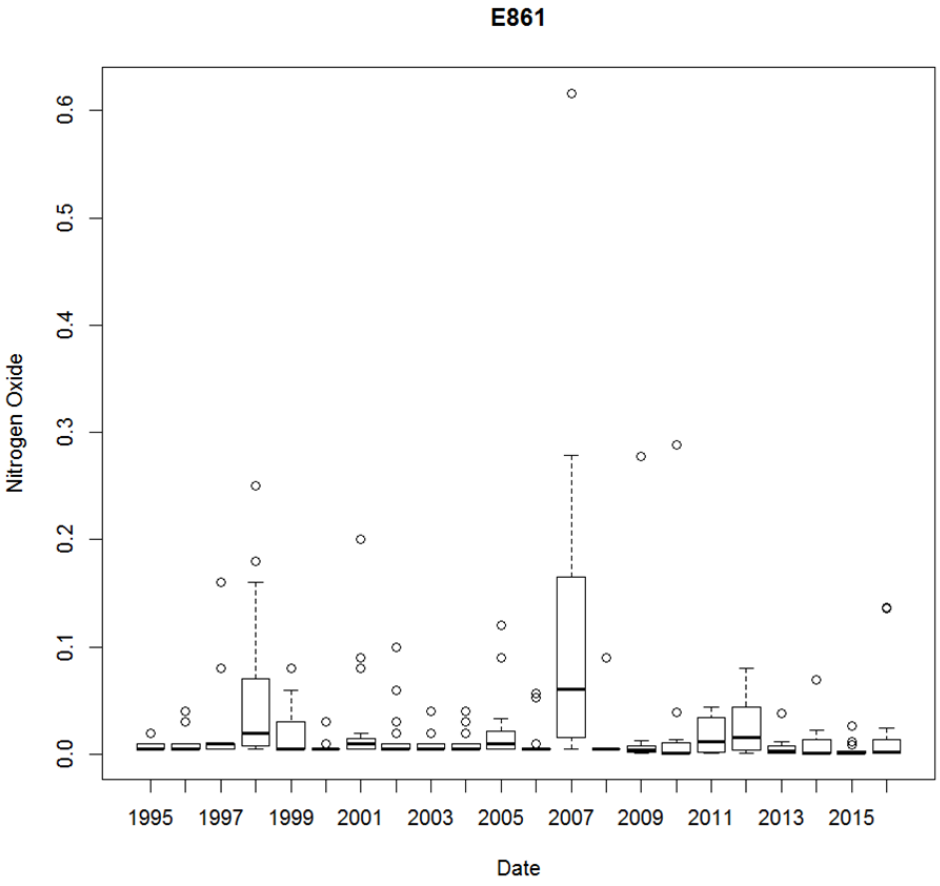

E861
Nitrogen Total
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

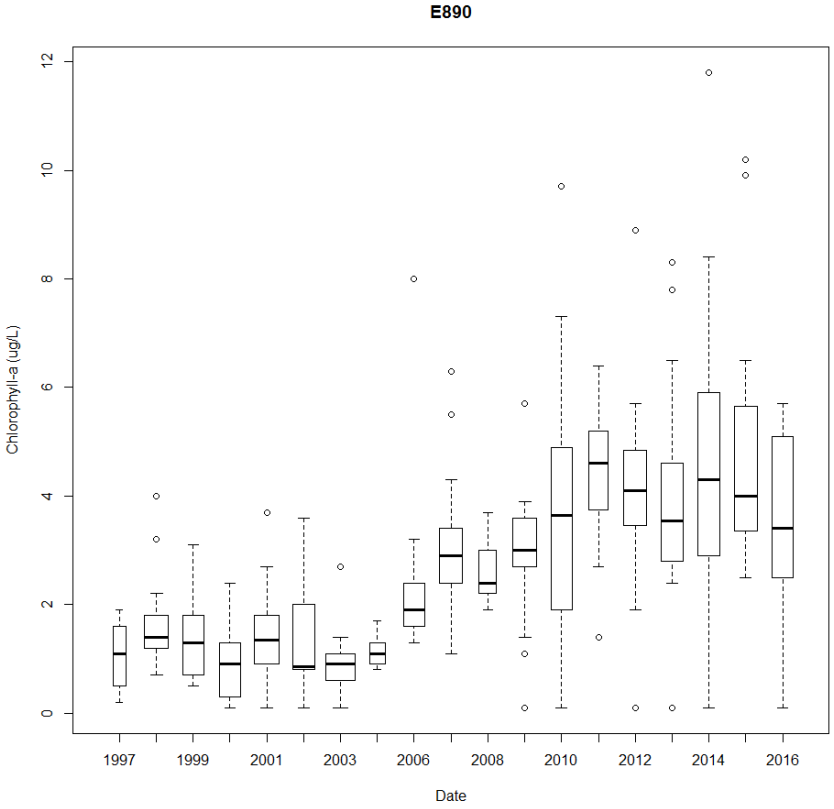

E861
FRP
0.00
0.01
0.02
0.03
0.04
0.05
2000
2002
2004
2006
2009
2011
2013
2015
Date

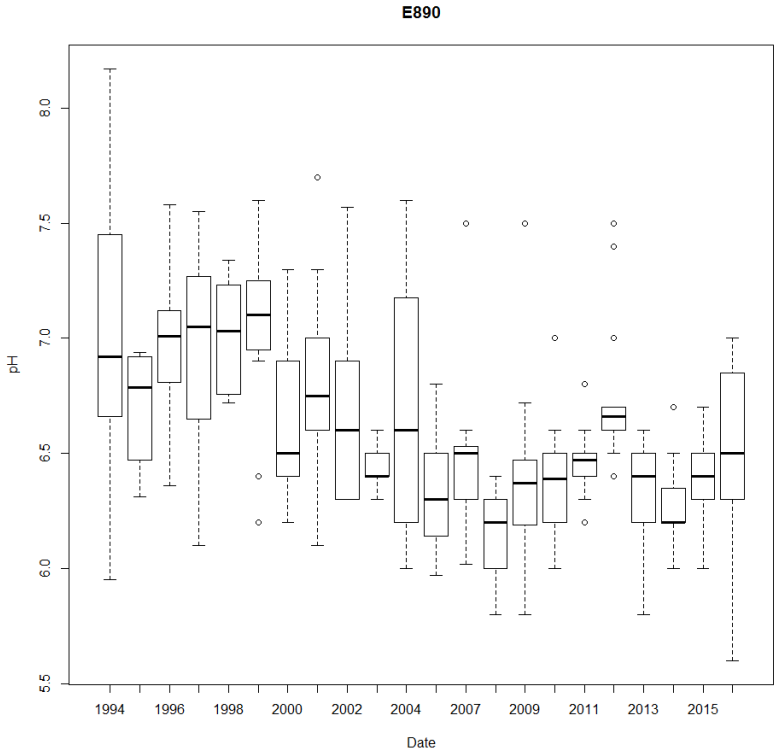

E861
Total phosphorus
0.00
0.05
0.10
0.15
0.20
0.25
1992
1993
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

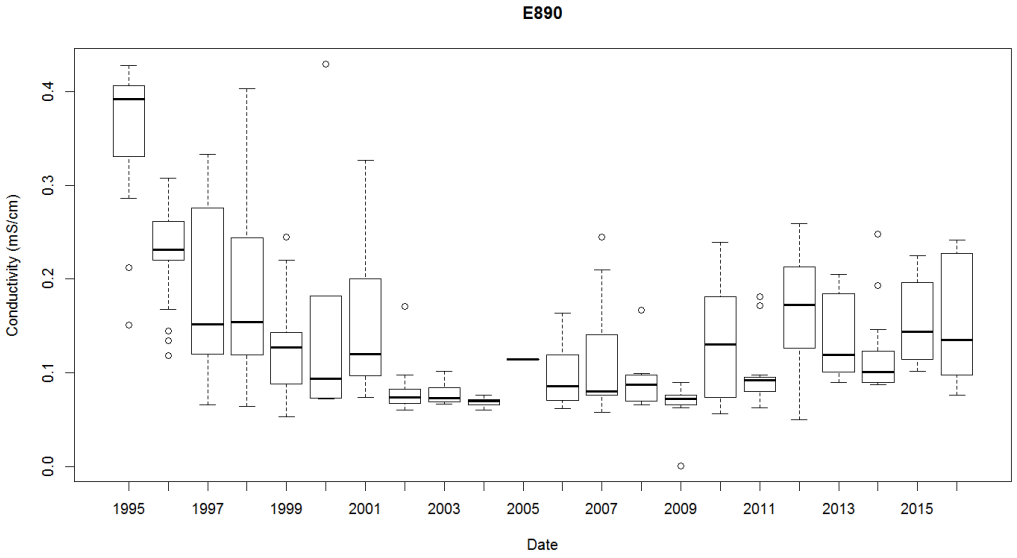

E861
Aluminium
0
1
2
3
4
5
6
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

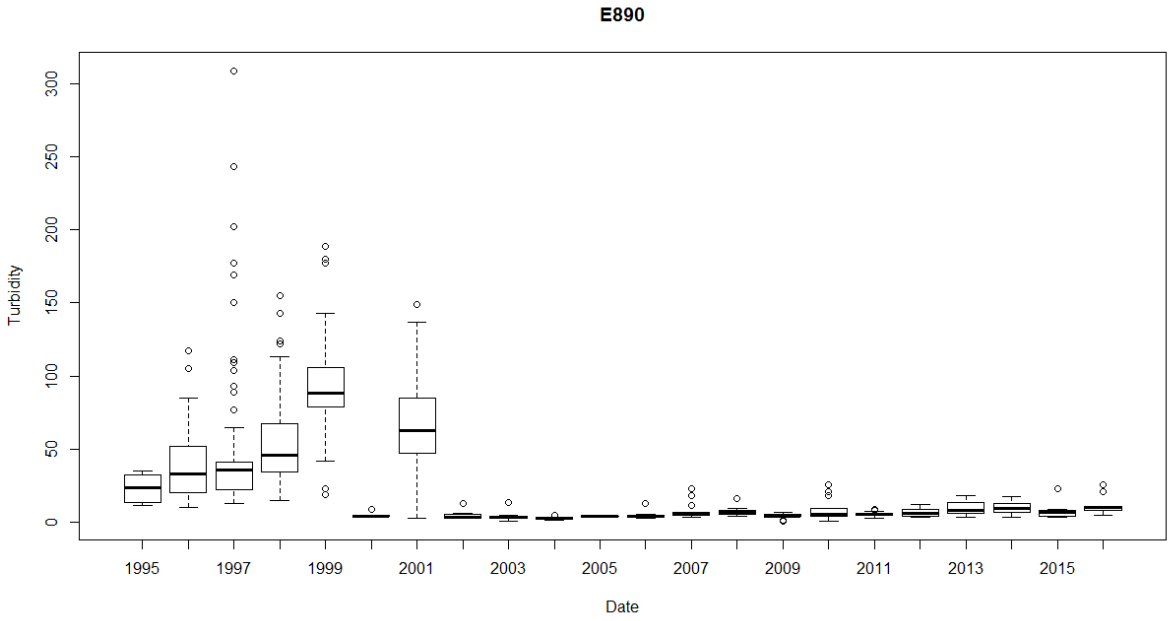

E861
Iron
0
2
4
6
8
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Date

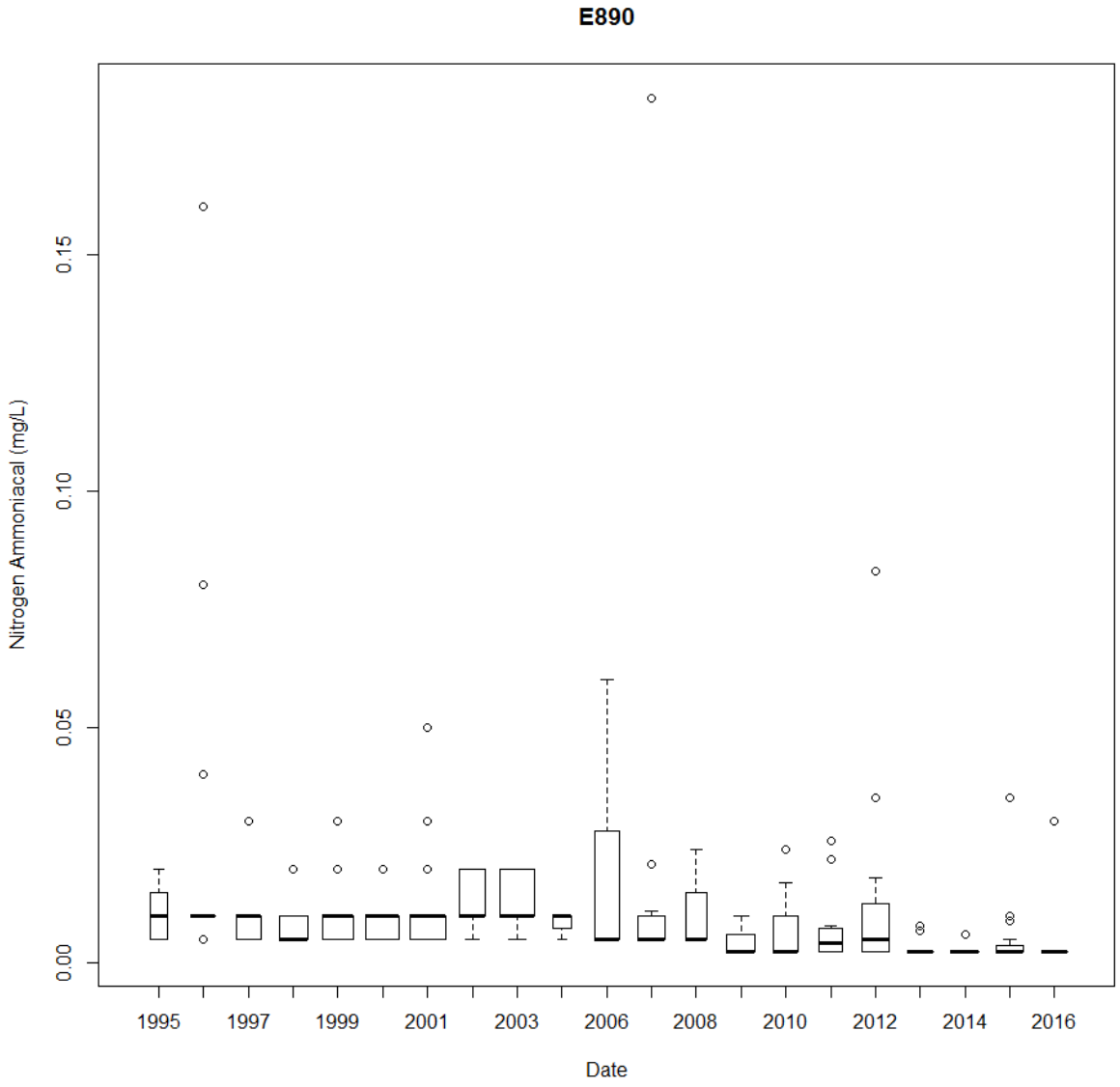

E861
Nitrogen Oxide
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

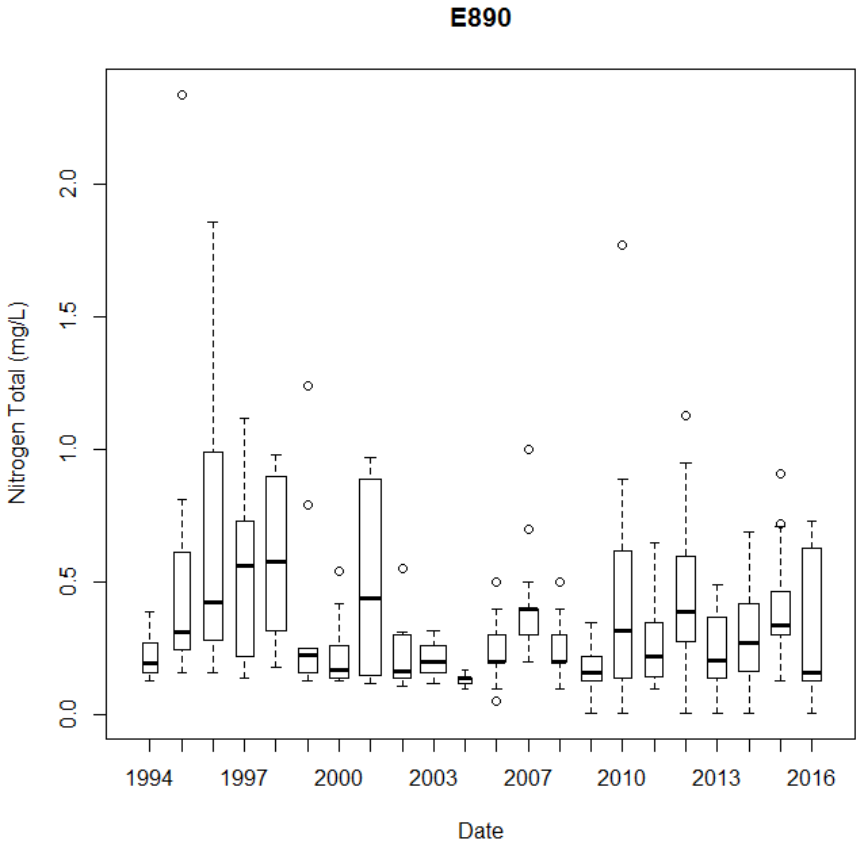

E890
Chlorophyll-a (ug/L)
0
2
4
6
8
10
12
1997
1999
2001
2003
2006
2008
2010
2012
2014
2016
Date

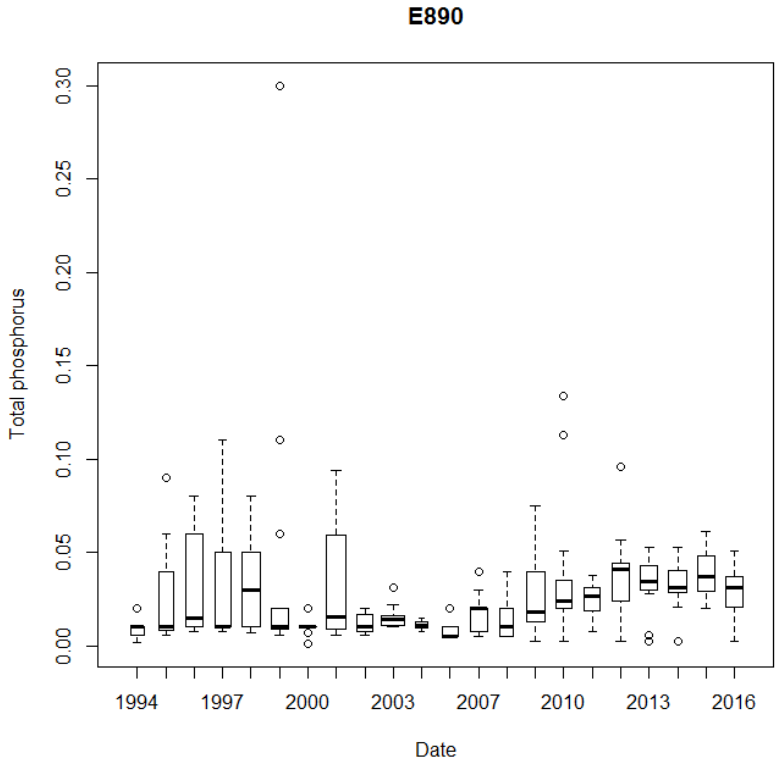

E890
pH
5.5
6.0
6.5
7.0
7.5
8.0
1994
1996
1998
2000
2002
2004
2007
2009
2011
2013
2015
Date

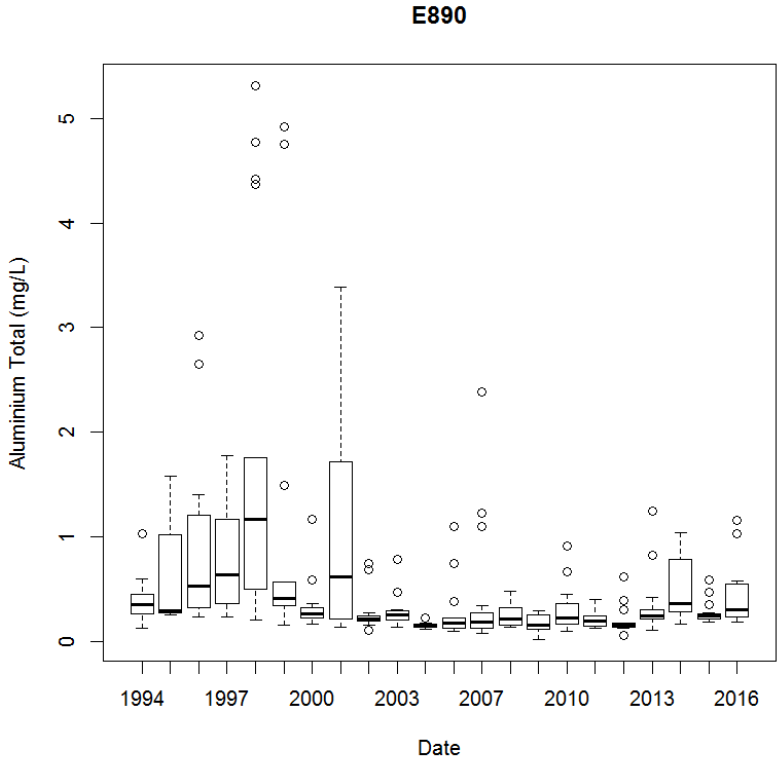

E890
Conductivity (mS/cm)
0.0
0.1
0.2
0.3
0.4
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

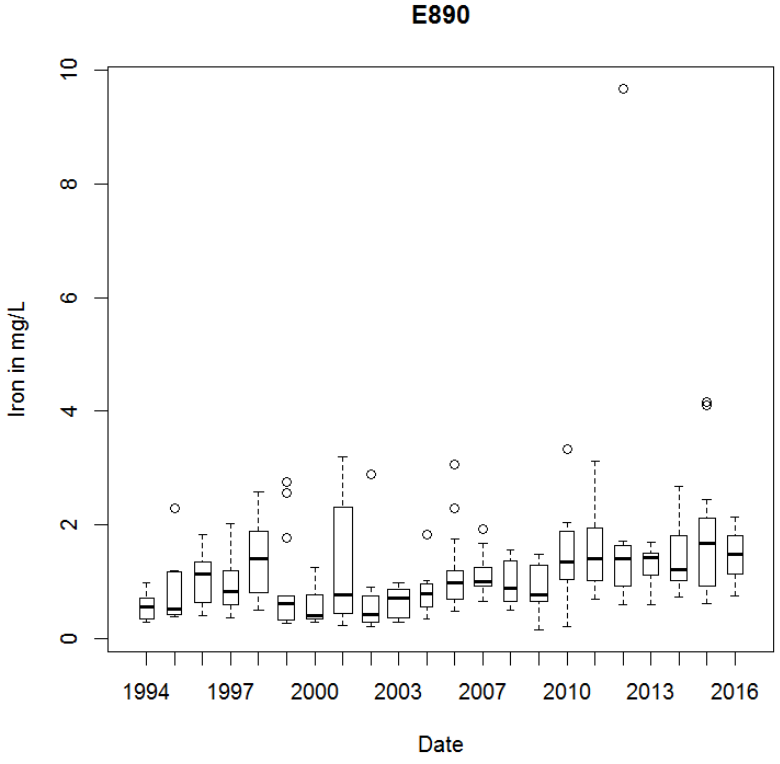

E890
Turbidity
0
50
100
150
200
250
300
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Date

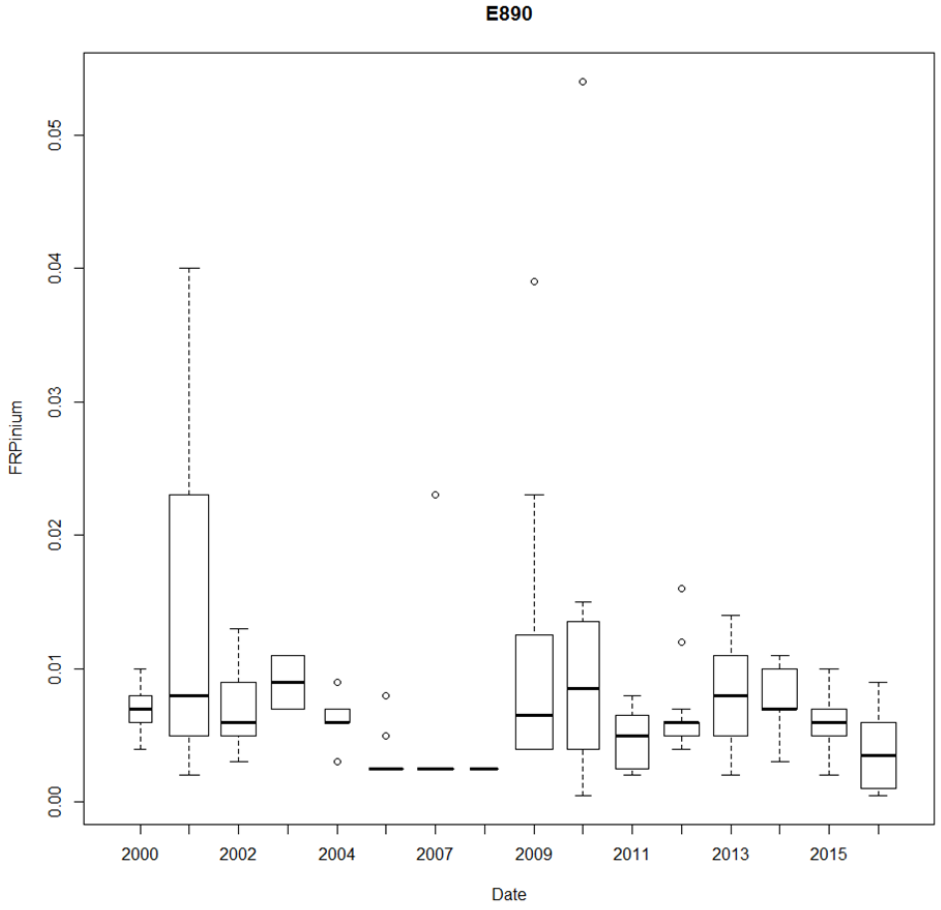

E890
Nitrogen Ammoniacal (mg/L)
0.00
0.05
0.10
0.15
1995
1997
1999
2001
2003
2006
2008
2010
2012
2014
2016
Date

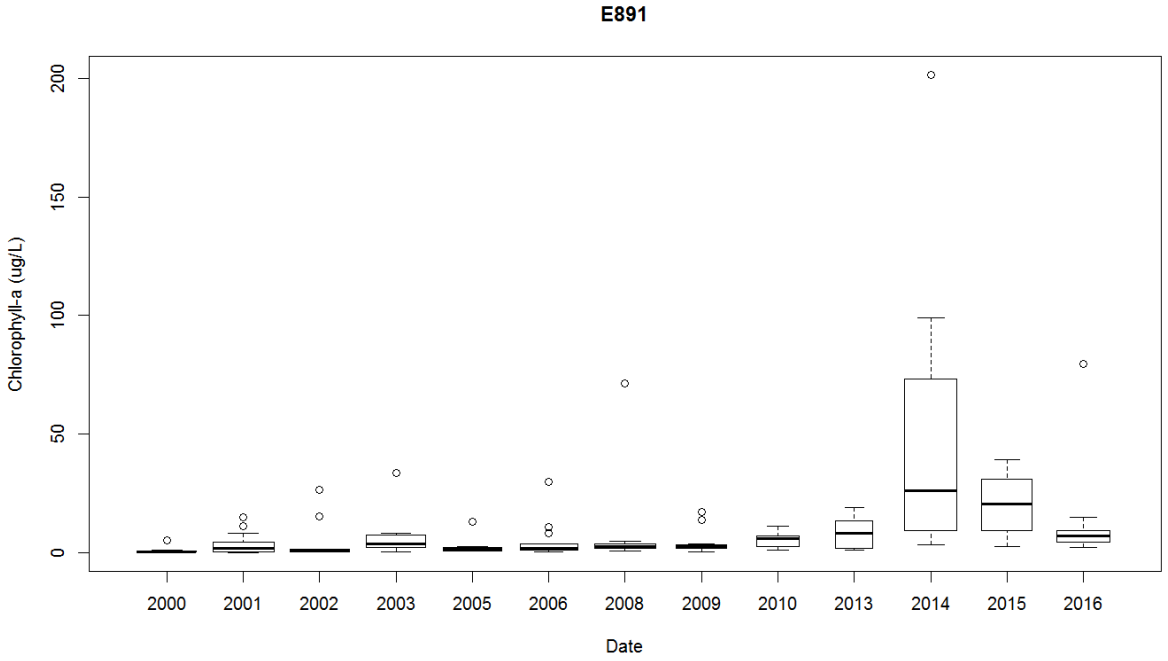

E890
Nitrogen Total (mg/L)
0.0
0.5
1.0
1.5
2.0
1994
1997
2000
2003
2007
2010
2013
2016
Date

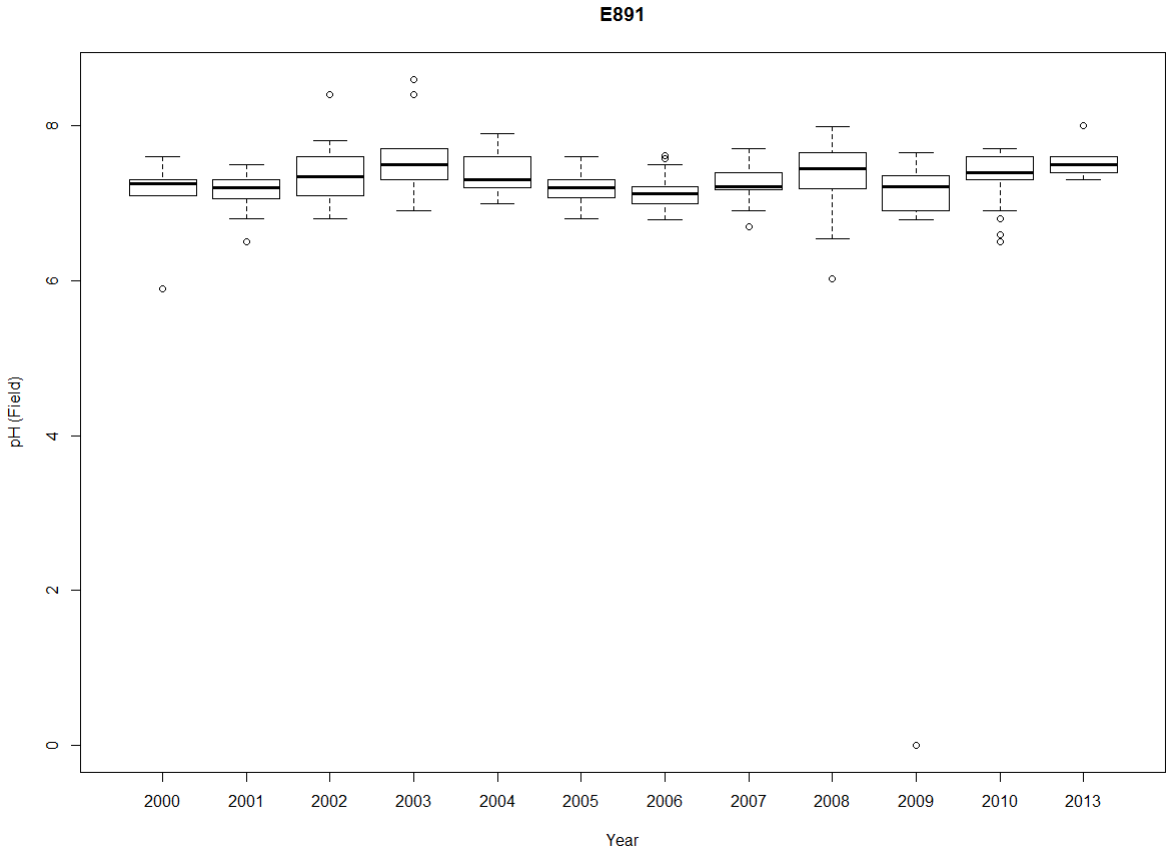

E890
Total phosphorus
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1994
1997
2000
2003
2007
2010
2013
2016
Date

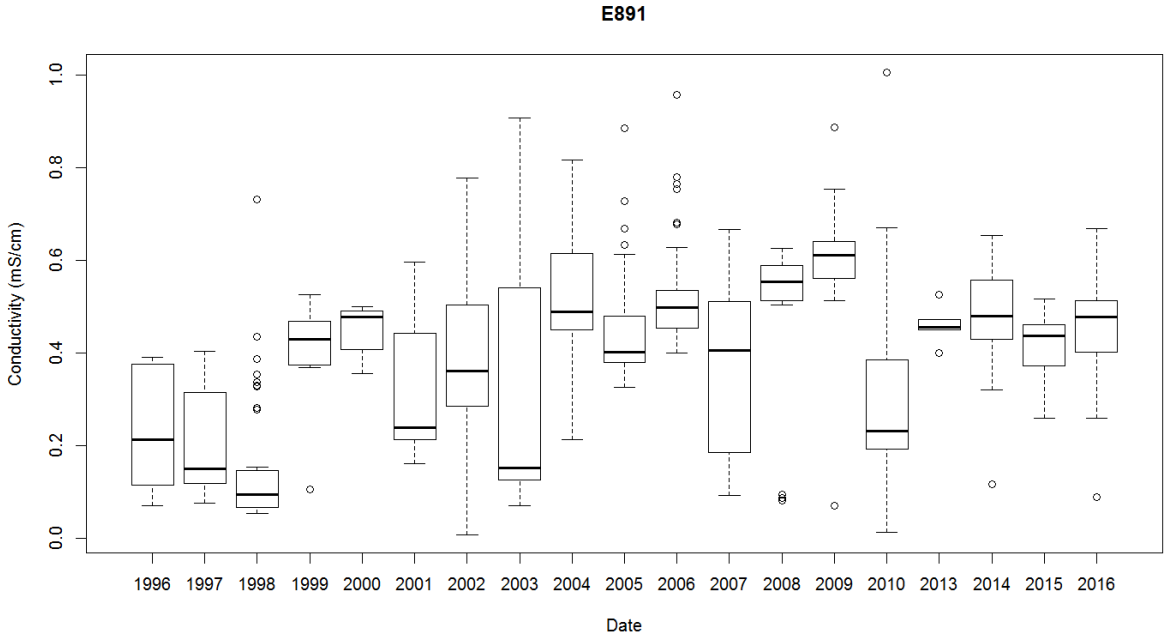

E890
Aluminium Total (mg/L)
0
1
2
3
4
5
1994
1997
2000
2003
2007
2010
2013
2016
Date

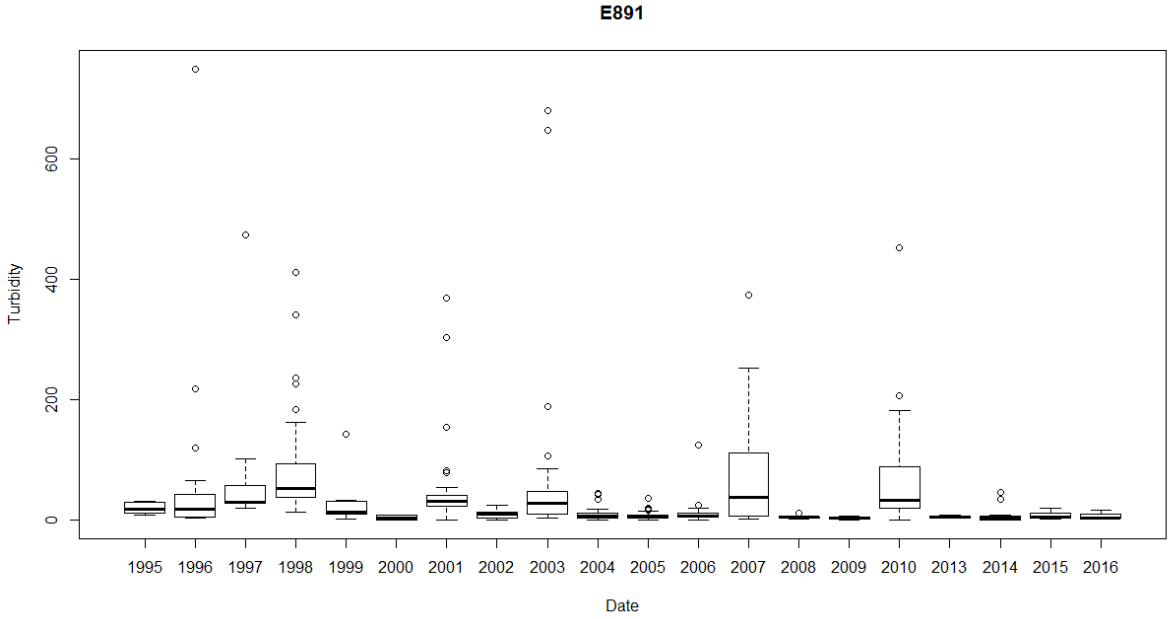

E890
Iron in mg/L
0
2
4
6
8
10
1994
1997
2000
2003
2007
2010
2013
2016
Date

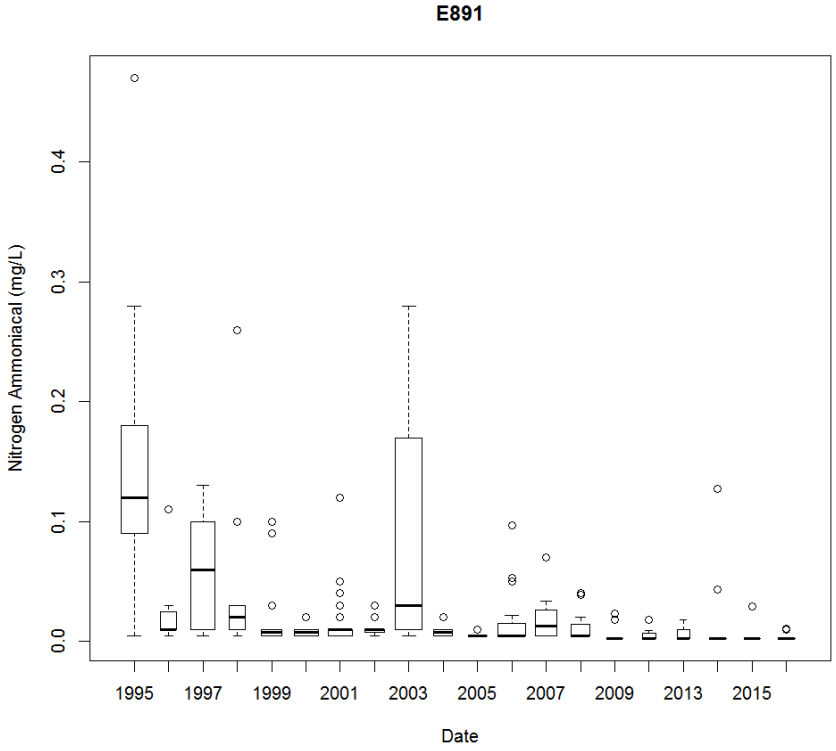

E890
FRPinium
0.00
0.01
0.02
0.03
0.04
0.05
2000
2002
2004
2007
2009
2011
2013
2015
Date

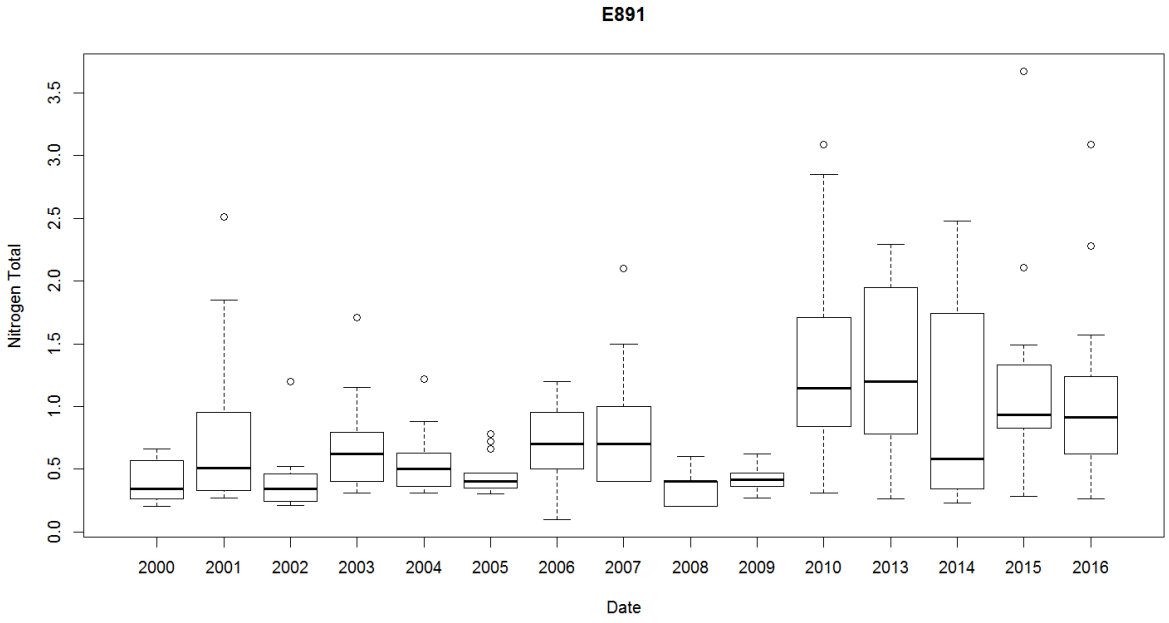

E891
Chlorophyll-a (ug/L)
0
50
100
150
200
2000
2001
2002
2003
2005
2006
2008
2009
2010
2013
2014
2015
2016
Date

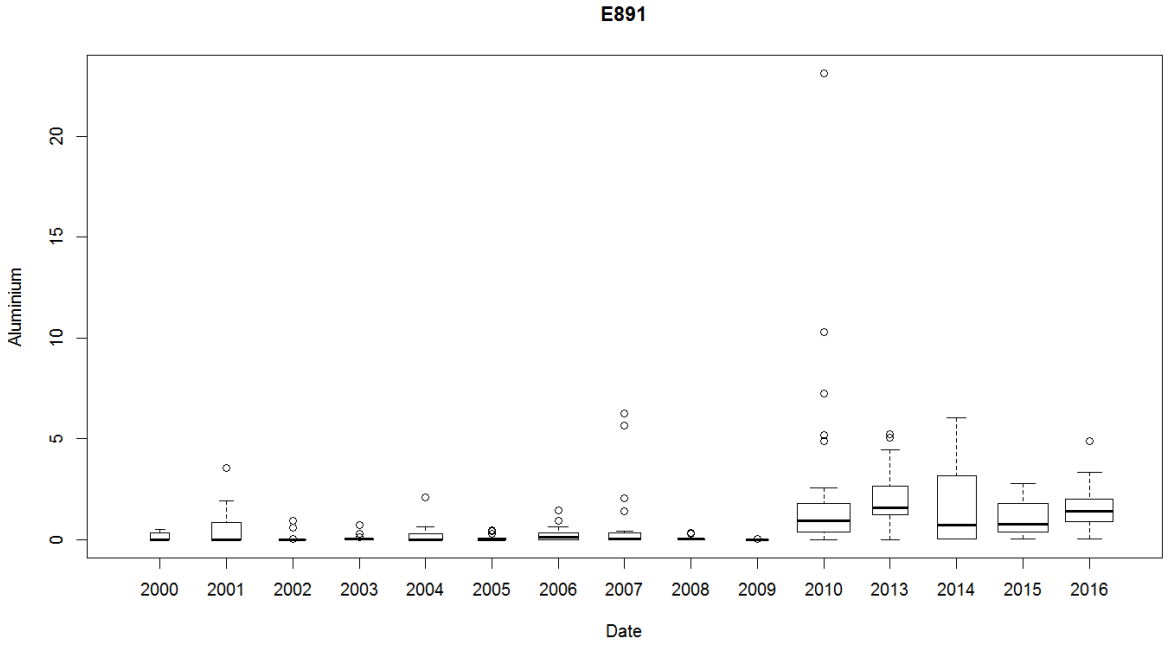

E891
pH (Field)
0
2
4
6
8
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2013
Year

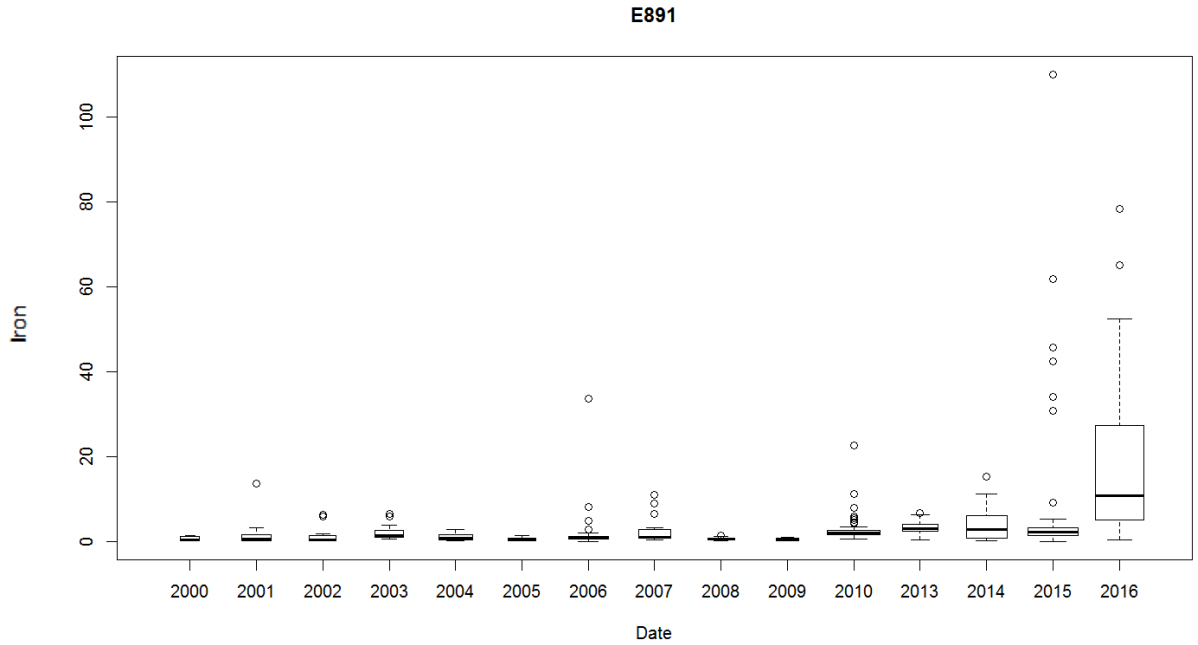

E891
Conductivity (mS/cm)
0.0
0.2
0.4
0.6
0.8
1.0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2013
2014
2015
2016
Date

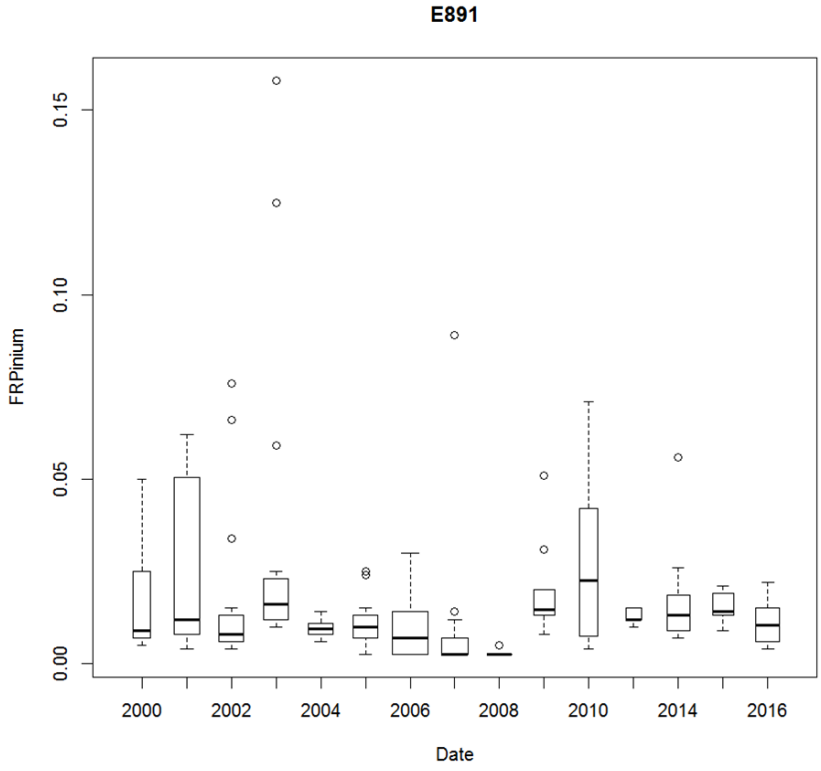

E891
Turbidity
0
200
400
600
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2013
2014
2015
2016
Date

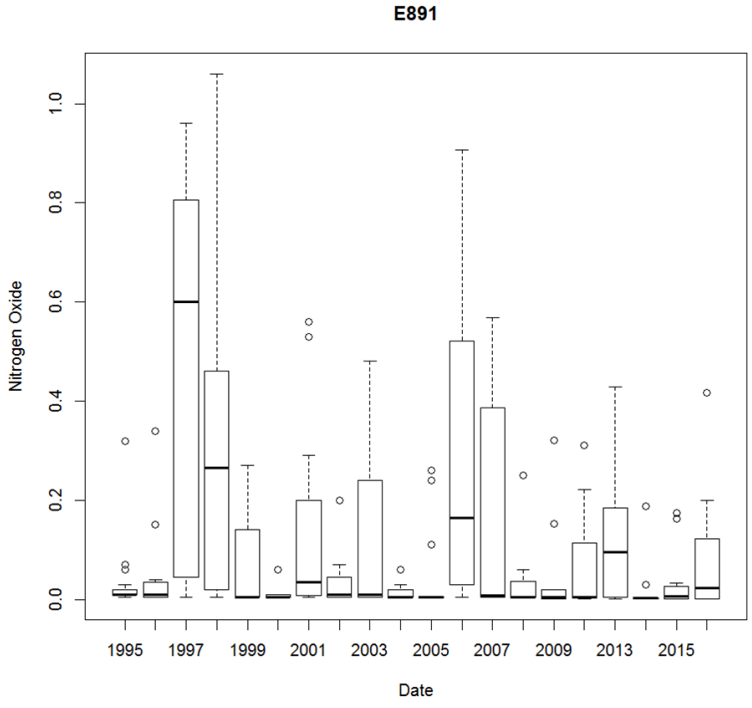

E891
Nitrogen Ammoniacal (mg/L)
0.0
0.1
0.2
0.3
0.4
1995
1997
1999
2001
2003
2005
2007
2009
2013
2015
Date

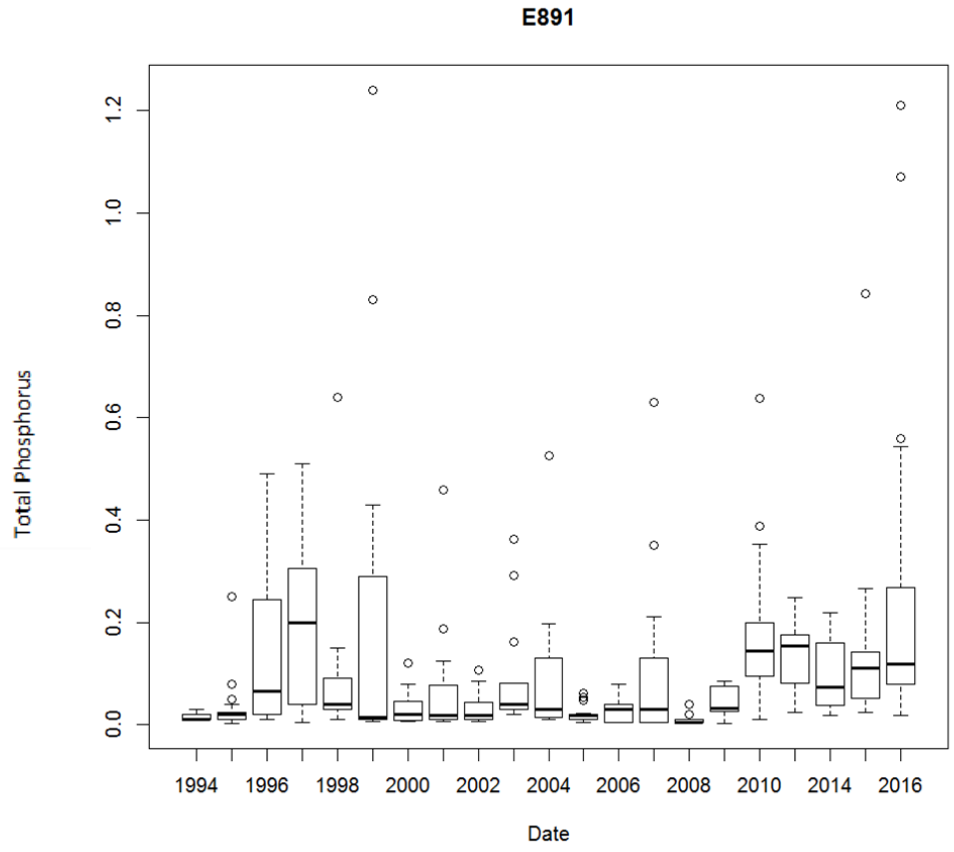

E891
Nitrogen Total
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2013
2014
2015
2016
Date


E891
Aluminium
0
5
10
15
20
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2013
2014
2015
2016
Date


E891
Iron
0
20
40
60
80
100
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2013
2014
2015
2016
Date


E891
FRPinium
0.00
0.05
0.10
0.15
2000
2002
2004
2006
2008
2010
2014
2016
Date


E891
Nitrogen Oxide
0.0
0.2
0.4
0.6
0.8
1.0
1995
1997
1999
2001
2003
2005
2007
2009
2013
2015
Date


E891
Total Phosphorus
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1994
1996
1998
2000
2002
2004
2006
2008
2010
2014
2016
Date

9 Surface water flow tables

Analysis of flow exceedance curves

Station Number	Site name	Exceedance curve comparison Are exceedance curves similar? 2016 versus long-term	2016 versus 2013	Comment
Boro Creek Sub-catchment				
215239	Boro Creek at Marlowe	Y	Y	Source constantly flowing, viable. Uniform flow period suggests potential upstream release.
Braidwood Creek Sub-catchment				
215241	Shoalhaven River at Bendoura	Y	Y	Source constantly flowing, viable.
215209	Shoalhaven River at Mountview	Y	Y	Source constantly flowing, viable.
215237	Gillamatong Creek	N/A	N/A	No data for this audit period
Bungonia Creek Sub-catchment				
215014	Bungonia Creek at Bungonia	Y	Y	Source constantly flowing, viable.
215207	Shoalhaven River at Fossickers Flat	Y	Y	Source constantly flowing, viable. Uniform flow period suggests potential upstream release.
Grose River Sub-catchment				
212291	Grose River at Burralow	Y	Y	Source constantly flowing, viable. Uniform flow period suggests potential upstream release.
Jerrabattgulla Sub-catchment				
215008	Shoalhaven River at Kadona	N	Y	Source constantly flowing. Viable source, flows are slightly higher than the long-term flow
Kangaroo River Sub-catchment				
215215	Shoalhaven River at D/S Tallowa Dam	Y	Y	Source constantly flowing, viable. Uniform flow period suggests potential upstream release.
215220	Kangaroo River at Hampden Bridge	Y	Y	Source constantly flowing, viable. Uniform flow period suggests potential upstream release.
215233	Yarrunga Creek at Wildes Meadow	Y	Y	Slightly drier than last audit period and long-term, flows 97% of the period. Potentially unreliable source.
215234	Yarrunga Creek at Fitzroy Falls	Y	Y	Slightly drier than the last audit period, flowing 98% of the period.
Kowmung River Sub-catchment				
212260	Kowmung River at Cedar Ford	Y	N	Source constantly flowing, viable. Uniform flow period suggests potential upstream release.

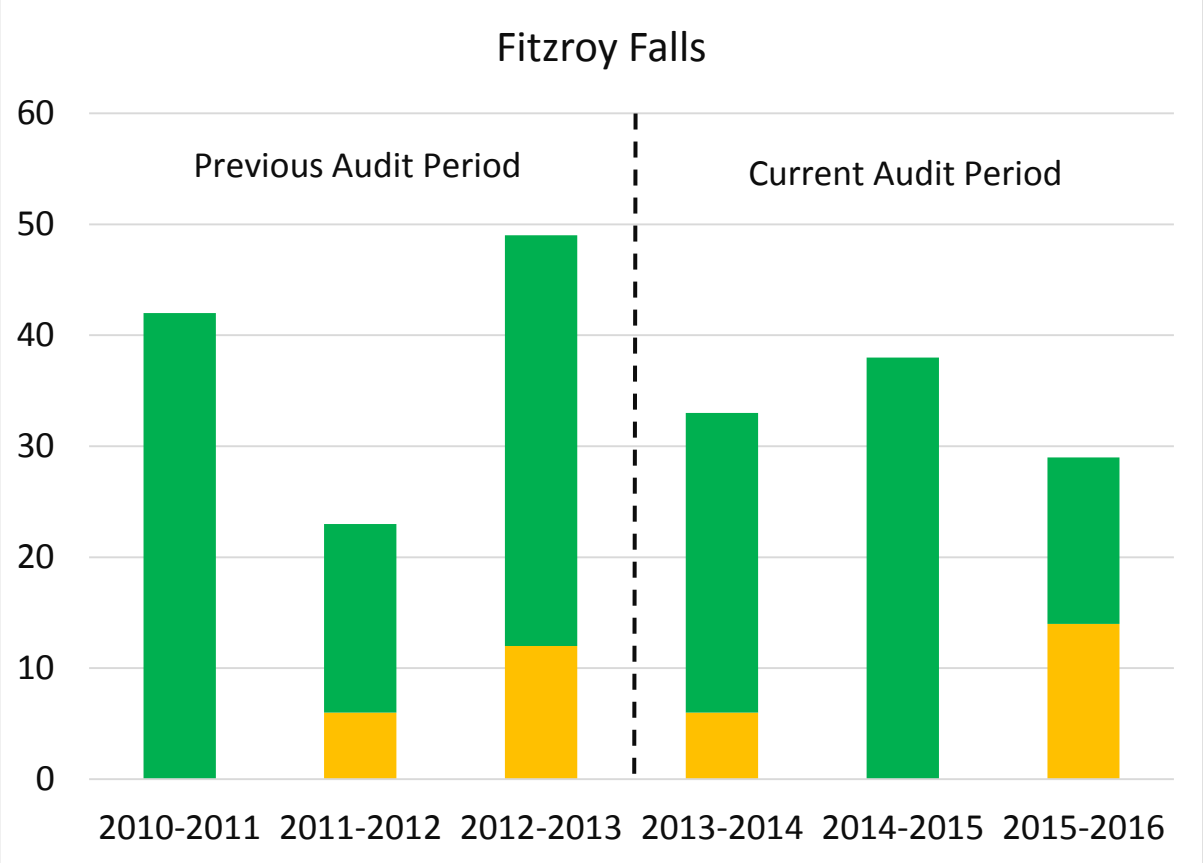
Station Number	Site name	Exceedance curve comparison Are exceedance curves similar? 2016 versus long-term	2016 versus 2013	Comment
Lake Burragorang Sub-catchment				
2122996	Tonalli River at Fire Road W2 (Site #2)	N	N	Audit period displays generally lower flows with a similar curve shape.
Little River Sub-catchment				
2122809	Little River at Fire Road W4I	Y	Y	Flows 95% of the time, may be an unreliable source
Lower Coxs River Sub-catchment				
212016	Kedumba River at Maxwells Crossing	Y	Y	Source constantly flowing, viable.
Mid Coxs River Sub-catchment				
212011	Coxs River at Lithgow	Y	Y	Similar curve to other periods but slightly higher flows which could be controlled by releases upstream (flat curve)
212013	Megalong Creek at Narrow Neck	Y	Y	Source constantly flowing, viable.
212045	Coxs River at Island Hill	Y	Y	Similar curve to other periods but slighly higher flows than the long-term and the source is more reliable (no dry periods)
212250	Coxs River at Kelpie Point	Y	Y	Source constantly flowing, viable. Uniform flow period suggests potential upstream release.
2122512	Coxs River at Glenroy Bridge	Y	Y	Source constantly flowing, viable.
Mid Shoalhaven River Sub-catchment				
215004	Corang River at Hockeys	Y	y	Constantly flowing, reliable source, slightly higher flows than last audit period
215208	Shoalhaven River at Hillview	Y	Y	Source constantly flowing, viable.
215242	Corang River at Meangora	Y	Y	Source constantly flowing, viable.
Mongarlowe River Sub-catchment				
215007	Mongarlowe River at Monga	Y	Y	Constantly flowing reliable source, may be controlled by upstream releases
215210	Mongarlowe River at Mongarlowe	Y	Y	Source constantly flowing, viable.
Mulwaree River Sub-catchment				
2122725	Mulwaree River at The Towers	Y	N	This stretch has become drier, flows 38% if the time versus a long-term of 45% and 69% for the last audit period
Nattai River Sub-catchment				
212280	Nattai River at The Causeway	Y	Y	Flowing 96% of the time versus 94% long-term. May be an unreliable source.

Station Number	Site name	Exceedance curve comparison Are exceedance curves similar?		Comment
		2016 versus long-term	2016 versus 2013	
2122801	Nattai River at The Crags	Y	Y	Source constantly flowing, viable. Uniform flow period suggests potential upstream release.
Nerrimunga River Sub-catchment				
215240	Nerrimunga Creek at Minshull Trig	Y	Y	Flows are lower than in the 2013 audit (flows 72% of the time versus 86% in the audit period). Unreliable source.
Reedy Creek Sub-catchment				
215002	Shoalhaven River at Warri	Y	Y	Constantly flowing reliable source, may be controlled by upstream releases
215238	Reedy Creek at Manar	Y	N	Viable constant flow, however flows are slightly lower than the last audit period
Upper Coxs River Sub-catchment				
212008	Coxs River at Bathurst Rd	Y	Y	Higher volumes of water available in the recent audit periods, potentially controlled by upstream releases
212042	Farmers Creek at Mt Walker	Y	Y	Source constantly flowing, viable but at lower volumes than in the past.
212055	Neubecks Creek at u/s Walwang	Y	Y	Flows 96% of the time in the recent audit period versus long-term frequency of 83%.
212058	Coxs River at u/s Lake Lyell	Y	Y	Very flat curves which suggest that the stretch is controlled by upstream releases
212054	Coxs River at Wallerawang	Y	Y	Flatness of the curve for 2016 audit period suggests a fixed release upstream
Upper Nepean River Sub-catchment				
212203	Nepean River at Pheasant's Nest	N	Y	Flatness of the curve for 2016 audit period suggests a fixed release upstream
212204	Nepean River at Avon Dam Road	Y	Y	Source constantly flowing, viable, higher recently levels than the last audit period and long-term
212209	Nepean River at McGuires Crossing	Y	Y	Source constantly flowing, viable.
212210	Avon River at Avon Weir	Y	Y	Source constantly flowing, viable.
212221	Cordeaux River at Cordeaux Weir	Y	Y	Source constantly flowing, viable.
212231	Cataract River at Jordans Crossing	Y	Y	Flatness of the curve for 2013 and 2016 audit periods suggests a fixed release upstream
212233	Cataract River at Broughtons Pass Weir	N	Y	Flows 95% of the time which is higher than the long-term frequency of 48% and 2013 audit period of 82%
2122051	Nepean River at Nepean Dam Inflow	Y	Y	Source constantly flowing, viable.
2122052	Burke River at Nepean Dam Inflow	No data	No data	No data

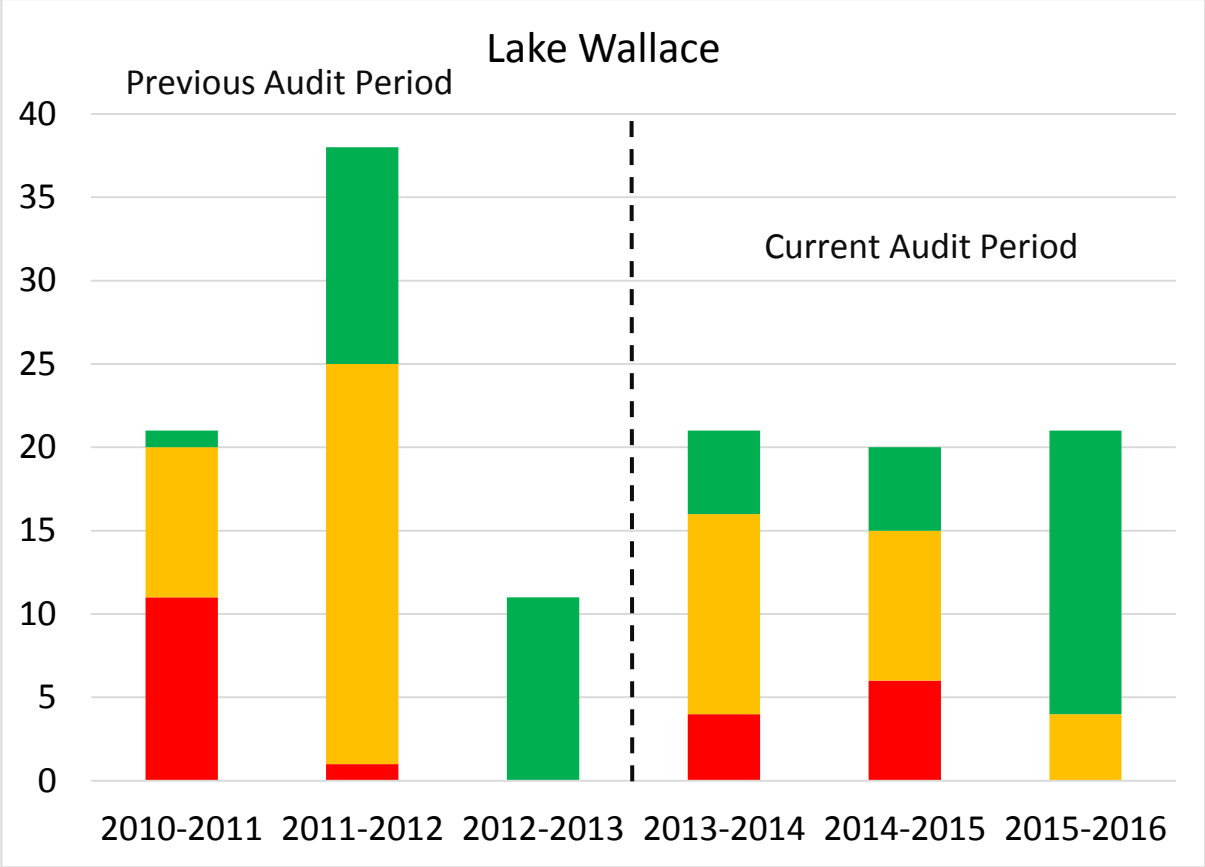
Station Number	Site name	Exceedance curve comparison Are exceedance curves similar?		Comment
		2016 versus long-term	2016 versus 2013	
2122111	Avon River at Summit Tank	Y	Y	Source constantly flowing, viable.
2122112	Flying Fox No3 Creek at Upper Avon	Y	Y	Source constantly flowing, viable.
2122201	Goondarrin Creek at Kemira D'Cast	Y	Y	Source constantly flowing, viable.
2122322	Loddon River at Bulli Appin Road	Y	Y	Source flowing 97% of the time, may be an unreliable source.
2122341	Glenquarry Creek at Alcorns	Y	Y	Source constantly flowing, viable.
Upper Wollondilly River Sub-catchment				
212040	Kialla Creek at Pomeroy	Y	Y	Viable source, more reliable in the last audit period than the long-term flow record
Werriberri Creek Sub-catchment				
212244	Werriberri Creek at Werombi	N	N	Source is constantly flowing versus only 70% flow frequency in the last audit period and 89% in the long-term
Wingecarribee Sub-catchment				
212009	Wingecarribee River at Greenstead	Y	Y	Source constantly flowing, viable.
212031	Wingecarribee River at Bong Bong Weir	N	Y	Source constantly flowing, viable but at lower volumes than in the past.
212272	Wingecarribee River at Berrima	Y	N	Source flowing 97% of the time, may be an unreliable source.
212274	Caalang Creek at Maguire Crossing	Y	Y	Source constantly flowing, viable.
212275	Wingecarribee River at Sheepwash Bridge	Y	Y	Source constantly flowing, viable.
Wollondilly River Sub-catchment				
212270	Wollondilly River at Jooriland	Y	N	Source flowing 92% of the time less than the long-term frequency, may be an unreliable source.
212271	Wollondilly River at Golden Valley	Y	N	Source constantly flowing and viable but is slightly drier than last audit period
2122711	Wollondilly River at Murray's Flat	Y	Y	Source constantly flowing, viable.
212060	Tarlo River at Willowbank	Y	Y	Very similar curves but the stretch as become drier and flowing only 72% of the time (versus long-term of 81%). Unreliable source.
Woronora River Sub-catchment				
213211	Woronora River at the Needles	Y	Y	Source constantly flowing, viable.
2132101	Woronora River Inflow	N	N	Source constantly flowing but at lower volumes than in the past
2132102	Waratah Rivulet Inflow	Y	Y	Source constantly flowing, viable but at lower volumes than in the past.

10 Cyanobacteria

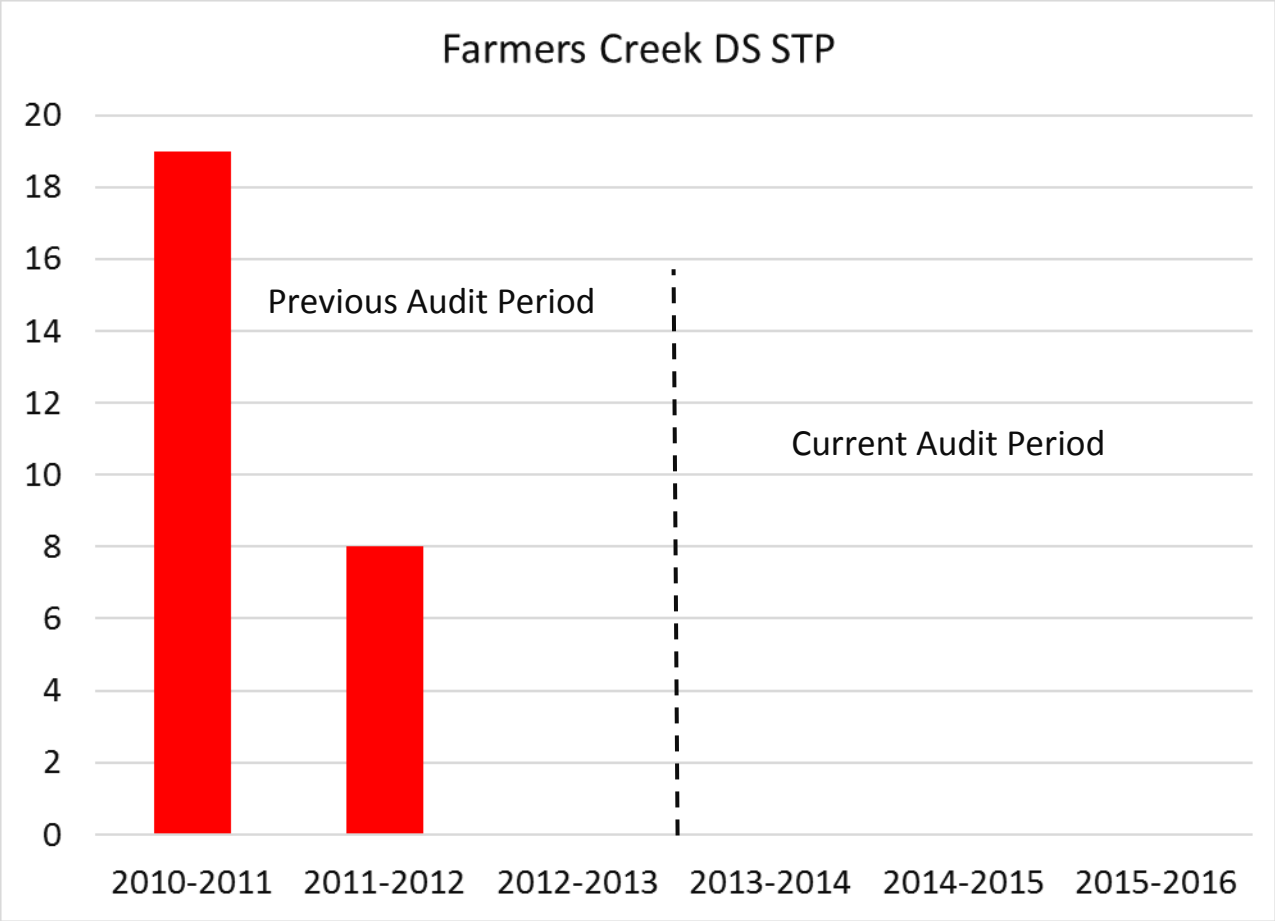
Figures C5, C6 and C7 display summary information, based on data provided by the Metropolitan & South Coast Regional Algal Coordinating Committee for cyanobacterial bloom alerts at waterbodies, per year, in the catchment for each year of the current audit period. The colours in the graphs (Figure C1 to C7 inclusive) represents the cumulative number of weeks per year that catchment sampling sites were placed under green, amber or red alert.



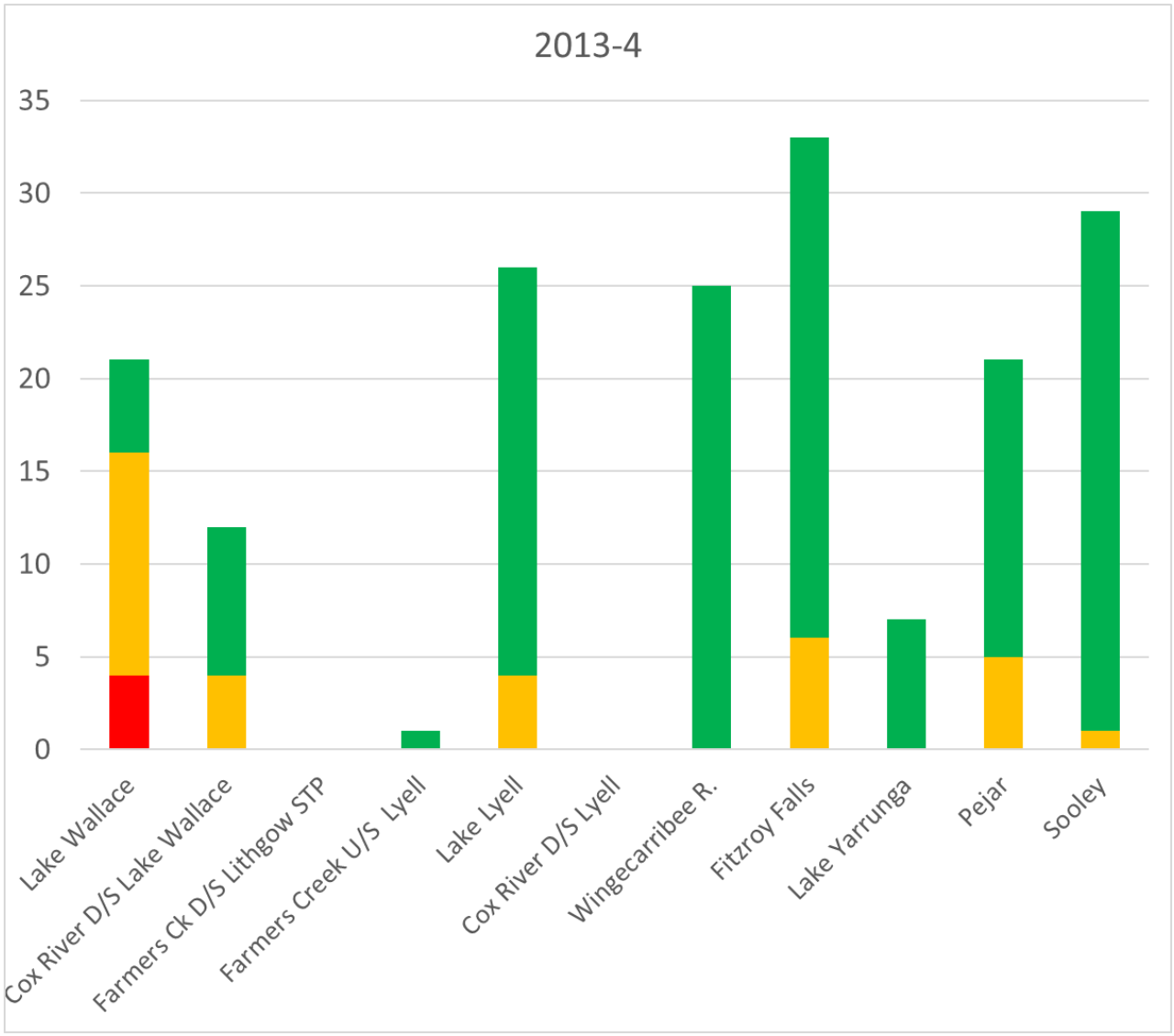
The number of weeks per year of Cyanobacteria bloom alerts (Red, Amber or Green) for the Fitzroy Falls storages, based on data provided by DPI (Water) for 2010 to 2016 representing the current and previous audit period.



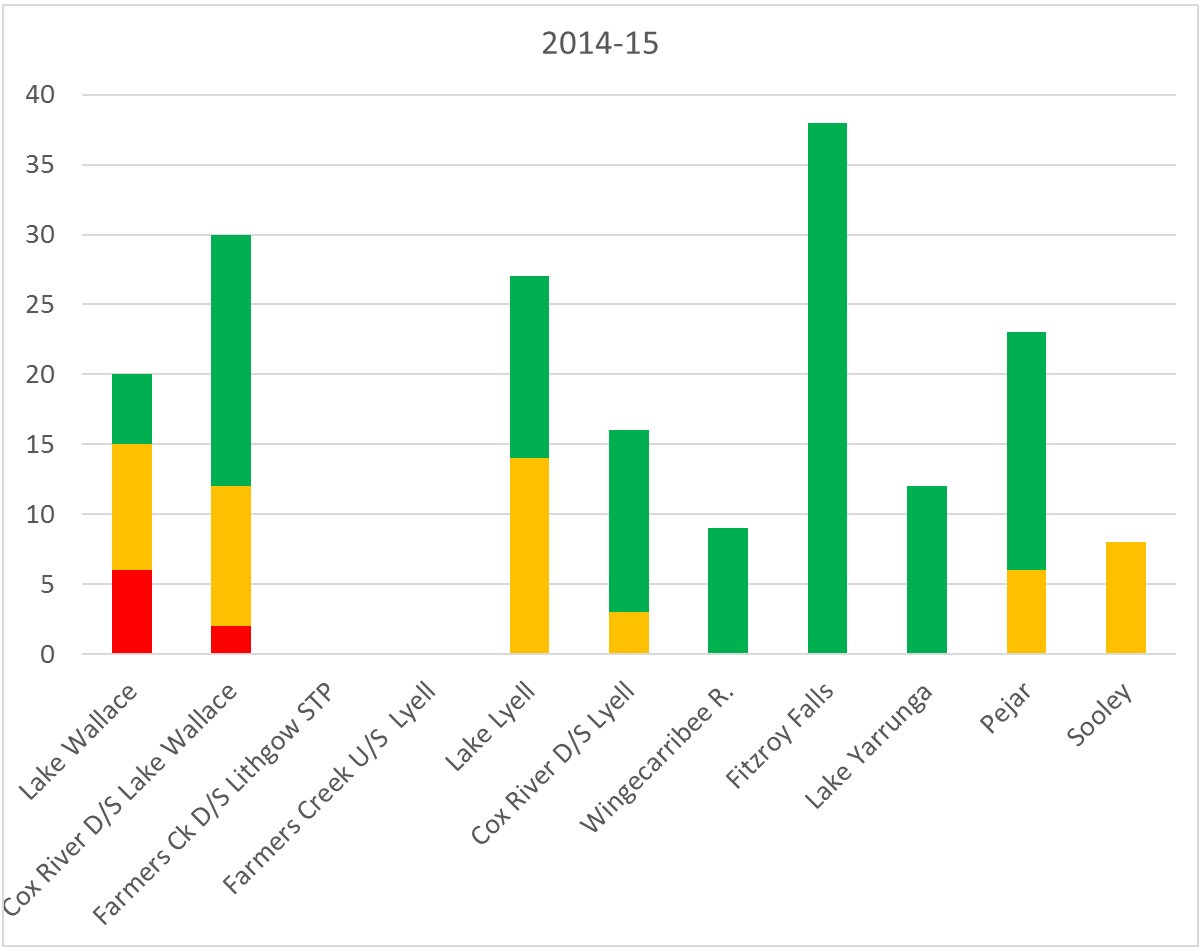
The number of weeks per year of Cyanobacteria bloom alerts (Red, Amber or Green) for the Lake Wallace (upper Coxs River) storage, based on data provided by DPI (Water) for 2010 to 2016 representing the current and previous audit period.



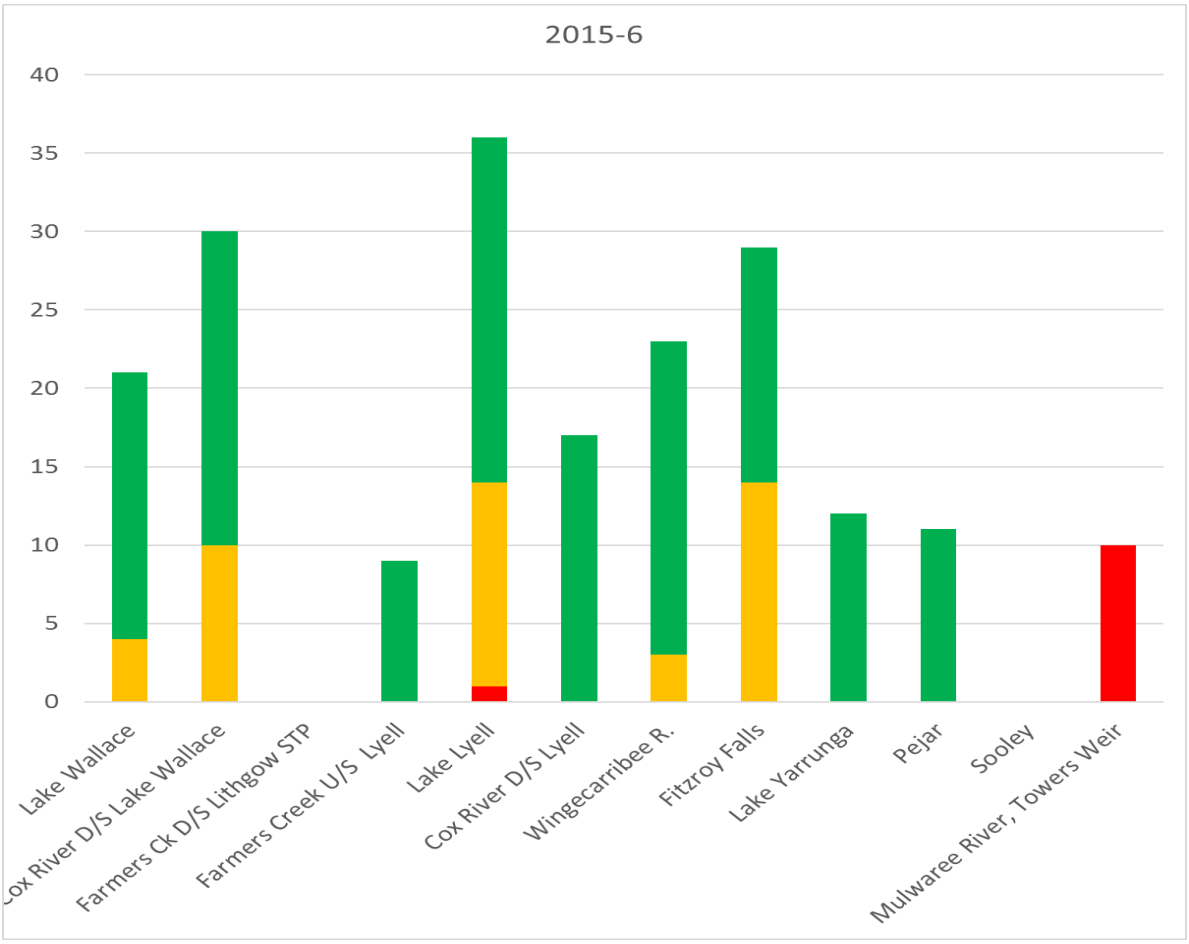
The number of weeks per year of Cyanobacteria bloom alerts (Red, Amber or Green) for Farmers Creek (Lithgow, below the STP) storage, based on data provided by DPI (Water) for 2010 to 2016 for the current and previous audit period (2010-1 to 2015-6). Note: there were no cyanobacteria blooms reported from 2012 to 2016.



The number of weeks of Cyanobacteria bloom alerts (Red, Amber or Green) for 11 catchment sampling sites, based on data provided by DPI (Water) for the first year of the current audit period (2013-4).



The number of weeks of Cyanobacteria bloom alerts (Red, Amber or Green) for 11 catchment sampling sites, based on data provided by DPI (Water) for the first year of the current audit period (2014-5).



The number of weeks of Cyanobacteria bloom alerts (Red, Amber or Green) for 12 catchment sampling sites, based on data provided by DPI (Water) for the first year of the current audit period (2015-6).

Summary statistics for cell counts, bio-volumes of total and toxic Cyanobacteria and alert codes (Red, Amber or Green) for samples collected from WNSW catchment sites over the audit period (2013-16)

	Total Cyanobacteria (Cells/mL)	Total Cyanobacteria Bio-volume (mm^3/L)	Toxic Cyanobacteria (Cells/mL)	Toxic Cyanobacteria Bio-volume (mm^3/L)
E046 Farmers Creek DS STP				
N	8	8	8	8
Median	0	0	0	0
Maximum	57	0	0	0
E083 Coxs River at Kelpie Point				
N	9	9	9	9
Median	69	0.001	0	0
Maximum	1560	0.104	111	0.012
E203 Gibbergunyah Creek DS STP				
N	15	15	15	15
Median	449	0.006	0	0
Maximum	19180	0.8	863	0.006
E206 Nattai River at the Crags				
N	9	9	9	9
Median	56	0	0	0
Maximum	2080	0.152	271	0.031
E210 Nattai River at Smallwoods Causeway				
N	13	13	13	13
Median	340	0	0	0
Maximum	4300	0.006	0	0
E243 Little River				
N	3	3	3	3
Median	0	0	0	0
Maximum	0	0	0	0
E332 Wingecarribee River Berrima (footnote 1)				

	Total Cyanobacteria (Cells/mL)	Total Cyanobacteria Bio-volume (mm^3/L)	Toxic Cyanobacteria (Cells/mL)	Toxic Cyanobacteria Bio-volume (mm^3/L)
N	41	41	41	41
Median	10350	0.039	0	0
Maximum	82050	0.973	33970	0.971
E409 Wollondilly River at Murrays Flat				
N	35	35	35	35
Median	1610	0.008	0	0
Maximum	74410	4.42	8990	4.41
E450 Wollondilly River at Golden Valley				
N	7	7	7	7
Median	242	0.003	0	0
Maximum	1340	0.034	14	0
E457 Mulwaree River at The Towers				
N	28	28	28	28
Median	1420	0.0185	92.5	0.0015
Maximum	858900	19.46	855700	19.46
E457 Wollondilly River at Jooriland				
N	11	11	11	11
Median	1420	0.002	0	0
Maximum	30560	0.085	346	0.002
E531 Werriberri Ck at Werombi				
N	6	6	6	6
Median	139.5	0	0	0
Maximum	562	0.002	0	0
E551 Tonalli River				
N	3	3	3	3
Median	0	0	0	0
Maximum	223	0.002	0	0

	Total Cyanobacteria (Cells/mL)	Total Cyanobacteria Bio-volume (mm^3/L)	Toxic Cyanobacteria (Cells/mL)	Toxic Cyanobacteria Bio-volume (mm^3/L)
E608 Goondarrin Ck				
N	1	1	1	1
Median	0	0	0	0
Maximum	0	0	0	0
E680 Cordeaux River				
N	4	4	4	4
Median	5055	0.0085	0	0
Maximum	9480	0.017	0	0
E601 Nepean River at dam inflow				
N	4	4	4	4
Median	14380	0.029	434.5	0
Maximum	19930	0.08	791	0
E706 Kangaroo River at Hampton Bridge				
N	4	4	4	4
Median	0	0	0	0
Maximum	210	0.016	0	0
E600				
N	10	10	10	10
Median	19160	0.029	255	0.011
Maximum	159200	0.345	6770	0.323
E697				
N	9	9	9	9
Median	16360	0.058	833	0.05
Maximum	59650	0.162	3720	0.136
E860 Shoalhaven River at Mountain View				
N	3	3	3	3
Median	87	0.006	0	0

	Total Cyanobacteria (Cells/mL)	Total Cyanobacteria Bio-volume (mm^3/L)	Toxic Cyanobacteria (Cells/mL)	Toxic Cyanobacteria Bio-volume (mm^3/L)
Maximum	1110	0.088	0	0
E861 Shoalhaven River at Hillview				
N	8	8	8	8
Median	248.5	0.009	0	0
Maximum	19600	0.071	348	0.071
E890 Gillamatong				
N	14	14	14	14
Median	777	0.0035	0	0
Maximum	4850	0.312	1730	0.204
E851 Shoalhaven River DS Tallowa Dam				
N	18	18	18	18
Median	9335	0.0185	0	0
Maximum	343200	1.812	1690	0.045

Footnote (1) E332 Wingecarribee River at Berrima. DPI (Water) advise that results for this site may have been on Green or Amber alert for almost half the samples collected.

Footnote (2) E457 Mulwaree River at Towers Weir. DPI (Water) advise that an algal bloom at this site may have been kept on a Red alert for more weeks that it possibly should have been.

Footnote (3) It is unclear if the maximum biovolume (4.41 mm^3/L) of toxic cyanobacteria E409 Wollondilly River at Golden Valley could be classed as an amber alert or red alert. Information was not available to determine whether the bloom was due to a toxin producing species of algae. Due to the uncertainty, the auditor regards this as an amber alert.

Cell counts, bio-volumes of total and toxic Cyanobacteria and alert codes (Red, Amber or Green) for samples collected from WNSW storage sites over the audit period (2013-16).

	Total Cyanobacteria (Cells/mL)	Total Cyanobacteria Bio-volume (mm^3/L)	Toxic Cyanobacteria (Cells/mL)	Toxic Cyanobacteria Bio-volume (mm^3/L)
DLC1 Lower Cascade				
N	1	1	1	1
Median		0	0	0
Maximum	1540	0	0	0
DTC1 Top Cascade				
N	144	144	144	144
Median	2615	0.003	0	0
Maximum	35430	0.054	462	0.015
DGC1 Greaves Ck				
N	125	124	125	125
Median	4210	0.0105	0	0
Maximum	69530	0.351	498	0.007
DW01 Woronora				
N	41	41	41	40
Median	1180	0	0	0
Maximum	23230	0.004	0	0
DNE2 Nepean				
N	68	68	68	68
Median	1095	0	0	0
Maximum	231600	0.099	650	0.013
DC01 Cordeaux				
N	7	7	7	7
Median	45390	0.024	0	0
Maximum	186100	0.11	147	0.002
DCA1 Cataract				
N	2	2	2	2
Median	980.5	0.0005	39	0.0005

	Total Cyanobacteria (Cells/mL)	Total Cyanobacteria Bio-volume (mm^3/L)	Toxic Cyanobacteria (Cells/mL)	Toxic Cyanobacteria Bio-volume (mm^3/L)
Maximum	1030	0.001	78	0.001
DAV7 Avon				
N	39	39	39	39
Median	6870	0.003	0	0
Maximum	135000	0.07	98	0.01
RPR1 Prospect				
N	246	246	246	246
Median	8535	0.005	0	0
Maximum	466800	0.488	2910	0.486
DWA 27 Burragorang Wollondilly Arm 23 km				
N	7	7	7	7
Median	35750	0.018	29	0
Maximum	156000	0.127	385	0.009
DWA 21 Burragorang Coxs Arm 37 km				
N	13	13	13	13
Median	35380	0.032	63	0
Maximum	343200	0.176	6230	0.131
DWA 12 Burragorang 9km us Coxs				
N	5	5	5	5
Median	19900	0.022	60	0.004
Maximum	168700	0.115	2290	0.038
DWA 9 Burragorang 14 km us wall				
N	97	97	97	97
Median	3950	0.01	14	0
Maximum	191000	0.107	3650	0.054
DWA 2 Burragorang 500 m us wall				
N	185	185	185	185

	Total Cyanobacteria (Cells/mL)	Total Cyanobacteria Bio-volume (mm^3/L)	Toxic Cyanobacteria (Cells/mL)	Toxic Cyanobacteria Bio-volume (mm^3/L)
Median	3950	0.01	0	0
Maximum	207700	0.216	8040	0.128
DWI1 Wingecarribee				
N	147	147	151	147
Median	34800	0.052	585	0.01
Maximum	307000	1.72	38000	1.67
DTA8 - Lake Yarrunga at Kangaroo River				
N	121	121	121	121
Median	13540	0.01	52.09	0
Maximum	1311000	0.588	6150	0.092
DFF – Fitzroy Falls				
N	103	103	103	103
Median	84410	0.068	0	0
Maximum	3542000	2.11	7920	0.118

11 Groundwater level observations

Station	Longitude	Latitude	Operated by	Relevant rainfall station	Water level observations
GW075005.1.1	-33.7003048	150.3588122	DPI Water	63227	Downward pressure gradient from shallow bore to deeper bore, shallow bore follows the CRDC and shows response to some individual rainfall events, total water level fluctuations during monitoring period are about 8m.
GW075005.2.2	-33.7003048	150.3588122	DPI Water	63227	Downward pressure gradient from shallow bore to deeper bore, deeper bore shows no clear response to rainfall, total water level fluctuations in monitoring period are about 4m.
GW075006.1.1	-33.7078465	150.3531874	DPI Water	63227	Downward pressure gradient from shallow bore to deeper bore, shallow bore behaves similar to the shallow bore at GW075005 and follows the CRDC and shows response to some individual rainfall events, total water level fluctuations during monitoring period are about 10m.
GW075006.2.2	-33.7078465	150.3531874	DPI Water	63227	Downward gradient from shallow bore to deeper bore, deeper bore shows damped signal of shallow bore and follows the CRDC, total water level fluctuations during monitoring period are about 4m.
GW075007.1.1	-33.7247106	150.3408017	DPI Water	63039	Downward pressure gradient from shallow bore to deeper bore, shallow bore shows weak and delayed response to CRDC, total water level fluctuations during monitoring period are about 6m.
GW075007.2.2	-33.7247106	150.3408017	DPI Water	63039	Downward pressure gradient from shallow bore to deeper bore, deeper bore shows no clear response to CRDC, total water level fluctuations during monitoring period are about 3m.

Station	Longitude	Latitude	Operated by	Relevant rainfall station	Water level observations
GW075032.1.1	-34.5017272	150.3247360	DPI Water	68186	Downward pressure gradient from shallow bore to deeper bore, shallow bore shows weak response to CRDC, total water level fluctuations during monitoring period are about 4m.
GW075032.2.2	-34.5017272	150.3247360	DPI Water	68186	Downward pressure gradient from shallow bore to deeper bore, deeper bore shows similar response to shallow bore, total water level fluctuations during monitoring period are about 4m.
GW075033.1.1	-34.5821485	150.5303416	DPI Water	68045	Pressure gradient between shallow and deep more and minimal and varies during monitoring period, no clear response to CRDC is shown, total water level fluctuations during monitoring period are about 5m.
GW075033.2.2	-34.5821485	150.5303416	DPI Water	68045	Pressure gradient between shallow and deep more and minimal and varies during monitoring period, no clear response to CRDC is shown, total water level fluctuations during monitoring period are about 5m.
GW075034	-34.5282305	150.3949499	DPI Water	68045	Water pressure shows no clear response to CRDC, additional driver for water level fluctuation appears to be present (potentially pumping), total water level fluctuations during monitoring period are about 20m.
GW075036	-34.5795166	150.3212749	DPI Water	68045	Water pressure is similar to GW075034 and shows no clear response to CRDC, additional driver for water level fluctuation appears to be present (potentially pumping), total water level fluctuations during monitoring period are about 20m.
GW075409.1.1	-34.2303783	150.5438675	DPI Water	68166	Downward pressure gradient from shallow bore to deeper bore, shallow bore shows weak response to CRDC, total water level fluctuations during monitoring

Station	Longitude	Latitude	Operated by	Relevant rainfall station	Water level observations
					period are about 2m.
GW075409.2.2	-34.2303783	150.5438675	DPI Water	68166	Downward pressure gradient from shallow bore to deeper bore, deeper bore shows no clear response to rainfall, additional driver for water level fluctuation appears to be present (potentially pumping), total water level fluctuations during monitoring period are about 1m.
GW075410	-34.2210731	150.5361715	DPI Water	68166	Water pressure shows some response to rainfall, likely a loading response rather than recharge, total water level fluctuations during monitoring period are about 6m.
GW075411	-34.2210731	150.5361715	DPI Water	68166	Water pressure shows similar response to GW075409.1.1 but is about 4 m lower.
GW075412	-34.6120847	150.4416818	DPI Water	68009	Water pressure shows response to rainfall events, total water level fluctuations during monitoring period are about 2m.
GW075413	-35.0510065	150.3322786	DPI Water	68033	Water pressure shows some response to rainfall events, additional driver for water level fluctuation appears to be present (potentially pumping), total water level fluctuations during monitoring period are about 6m.
GW40955	-34.5126544	150.5242193	Water NSW	68054	Relatively stable water pressure with total water level fluctuations in monitoring period about 1m.
GW409701	-34.5257967	150.5830174	Water NSW	68054	Water level shows response to CRDC, total water level fluctuations in monitoring period about 5m.
GW409702	-34.5257977	150.5830718	Water NSW	68054	Water level shows response to CRDC, total water level fluctuations in monitoring period about 3m.

Station	Longitude	Latitude	Operated by	Relevant rainfall station	Water level observations
GW40971	-34.5246796	150.5876137	Water NSW	68054	Water level shows response to CRDC, total water level fluctuations in monitoring period about 5m.
GW40972	-34.5288150	150.6219406	Water NSW	68054	Water level shows response to CRDC, total water level fluctuations in monitoring period about 3m.
GW40982	-34.5241893	150.5889000	Water NSW	68054	Water level shows response to CRDC, total water level fluctuations in monitoring period about 3m.
GW40983	-34.4740727	150.5281545	Water NSW	68054	Sight increase in water level of about 2m over monitoring period.
GW40986	-34.5125287	150.5468008	Water NSW	68054	Relatively stable water pressure with total water level fluctuations in monitoring period about 1m.
GW40994	-34.4838559	150.5667153	Water NSW	68054	Sight increase in water level of about 4m over monitoring period.
GW40996	-34.5117695	150.5233492	Water NSW	68054	Relatively stable water pressure with total water level fluctuations in monitoring period about 1m.
GW40997	-34.5266301	150.5646216	Water NSW	68054	Sight increase in water level of about 6m over monitoring period.
GW41040	-34.5241704	150.5739768	Water NSW	68054	Water level shows response to CRDC, total water level fluctuations in monitoring period about 3m.
GW41044	-34.5164274	150.5965006	Water NSW	68054	Water level shows response to CRDC, total water level fluctuations in monitoring period about 3m.
GW41045	-34.5420237	150.5819097	Water NSW	68054	Potential pumping or influence on water level, total level fluctuations in monitoring period about 10m.
GW41051	-34.5550887	150.5796889	Water NSW	68054	Relatively stable water pressure with total water level fluctuations in monitoring period about 1m.
GW41052	-34.5362180	150.5738701	Water NSW	68054	Water level shows response to CRDC, additional driver forwater level fluctuations than rainfall appears present,total water level fluctuations in monitoring period about 10m.

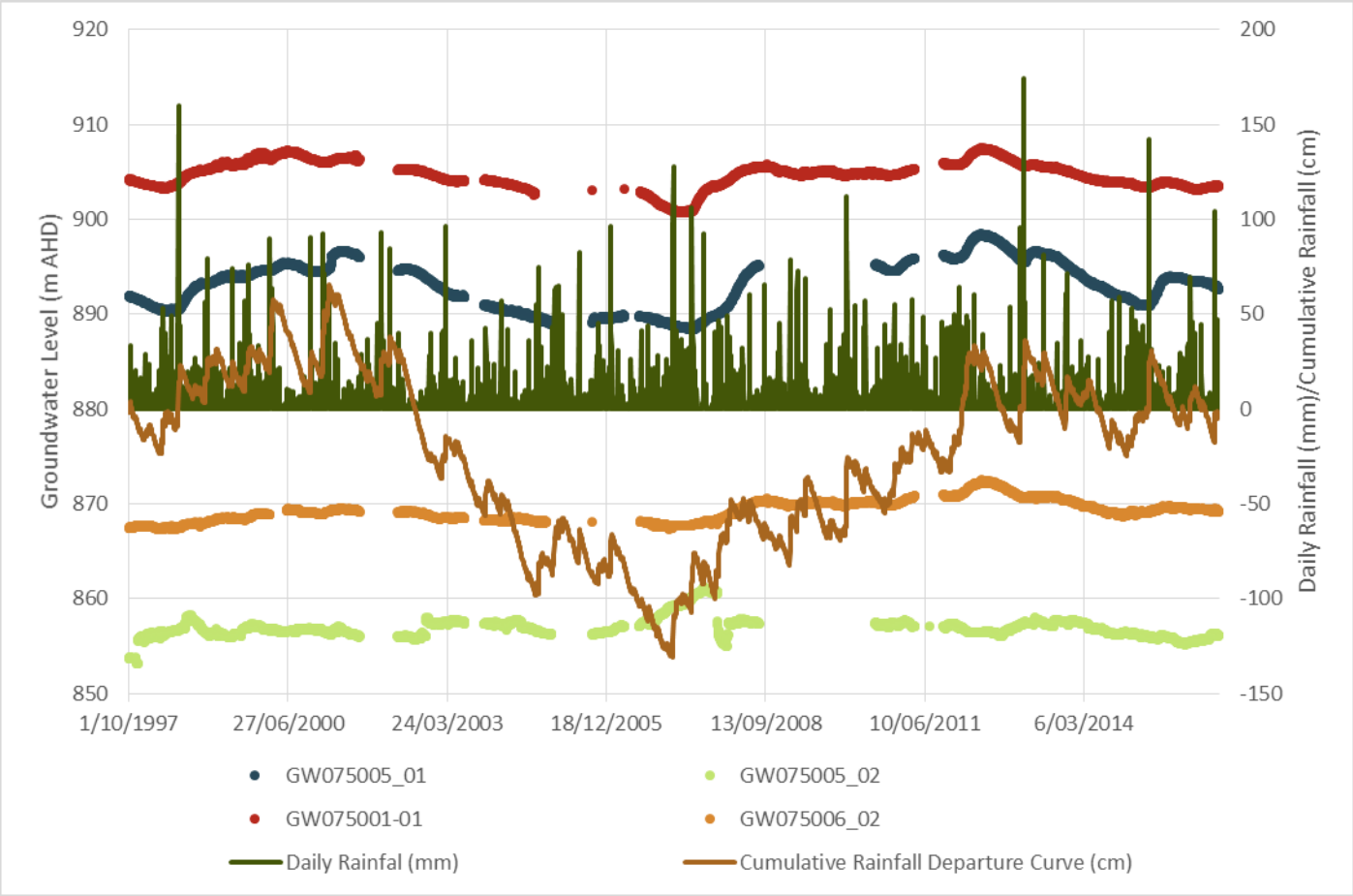
Station	Longitude	Latitude	Operated by	Relevant rainfall station	Water level observations
GW41057	-34.5249637	150.6091129	Water NSW	68054	Relatively stable water pressure with total water level fluctuations in monitoring period about 1m.
GW75100	-34.5235504	150.5902375	Water NSW	68054	Relatively stable water pressure with response to some rainfall events, total water level fluctuations in monitoring period about 2m.
GW75101	-34.5233547	150.5908292	Water NSW	68054	Relatively stable water pressure with response to some rainfall events, total water level fluctuations in monitoring period about 2m. Step and end of data series, potentially due to logger install issues.
GW75102	-34.5236225	150.5902355	Water NSW	68054	Relatively stable water pressure with response to some rainfall events, total water level fluctuations in monitoring period about 2m.
GW75110	-34.5112097	150.5481856	Water NSW	68054	Relatively stable water pressure with total water level fluctuations in monitoring period about 1m.
GW75171	-34.5228417	150.5949438	Water NSW	68054	Relatively stable water pressure with total water level fluctuations in monitoring period about 1m.
GW75175	-34.5172620	150.5239991	Water NSW	68054	Similar response to GW75176, relatively stable water level, total water level fluctuations in monitoring period about 1m.
GW75176	-34.5172537	150.5239863	Water NSW	68054	Similar response to GW75175, relatively stable water level, total water level fluctuations in monitoring period about 1m.
GW75181	-34.5247615	150.6087309	Water NSW	68054	Potential pumping or loading influence on water level,total level fluctuations in monitoring period about 6m.
GW752011	-34.5400484	150.5996716	Water NSW	68054	Similar response to GW752012, relatively stable water level with weak response to some rainfall events, total water level fluctuations in monitoring period about 4m.

Station	Longitude	Latitude	Operated by	Relevant rainfall station	Water level observations
GW752012	-34.5401457	150.5988430	Water NSW	68054	Similar response to GW752011, relatively stable water level with weak response to some rainfall events, total water level fluctuations in monitoring period about 4m.
GW75216	-34.5401145	150.5989529	Water NSW	68054	Water level shows fast response to rainfall events, which are likely due to loading rather than recharge events. Total water level fluctuations in monitoring period about 5m.
GW273003	-34.5250639	150.6468414	Water NSW	68224	All bores on this graph (GW273005, GW41063, GW273006, GW75112, GW40992, GW75114) respond to similar stresses and show influence by CRDC. Total water level fluctuations in monitoring period about 3m.
GW273005	-34.5319340	150.6554806	Water NSW	68224	All bores on this graph (GW273005, GW41063, GW273006, GW75112, GW40992, GW75114) respond to similar stresses and show influence by CRDC. Total water level fluctuations in monitoring period about 8m.
GW273006	-34.5315581	150.6502339	Water NSW	68224	All bores on this graph (GW273005, GW41063, GW273006, GW75112, GW40992, GW75114) respond to similar stresses and show influence by CRDC. Total water level fluctuation in monitoring period about 3m.
GW40992	-34.5311601	150.6389975	Water NSW	68224	All bores on this graph (GW273005, GW41063, GW273006,GW75112, GW40992, GW75114) respond to similar stressesand show influence by CRDC. Total water level fluctuation in monitoring period about 2m.
GW41063	-34.5365135	150.6340201	Water NSW	68224	All bores on this graph (GW273005, GW41063, GW273006, GW75112, GW40992, GW75114) respond to similar stresses and show influence by CRDC. Total water level fluctuations in monitoring period about 3m.

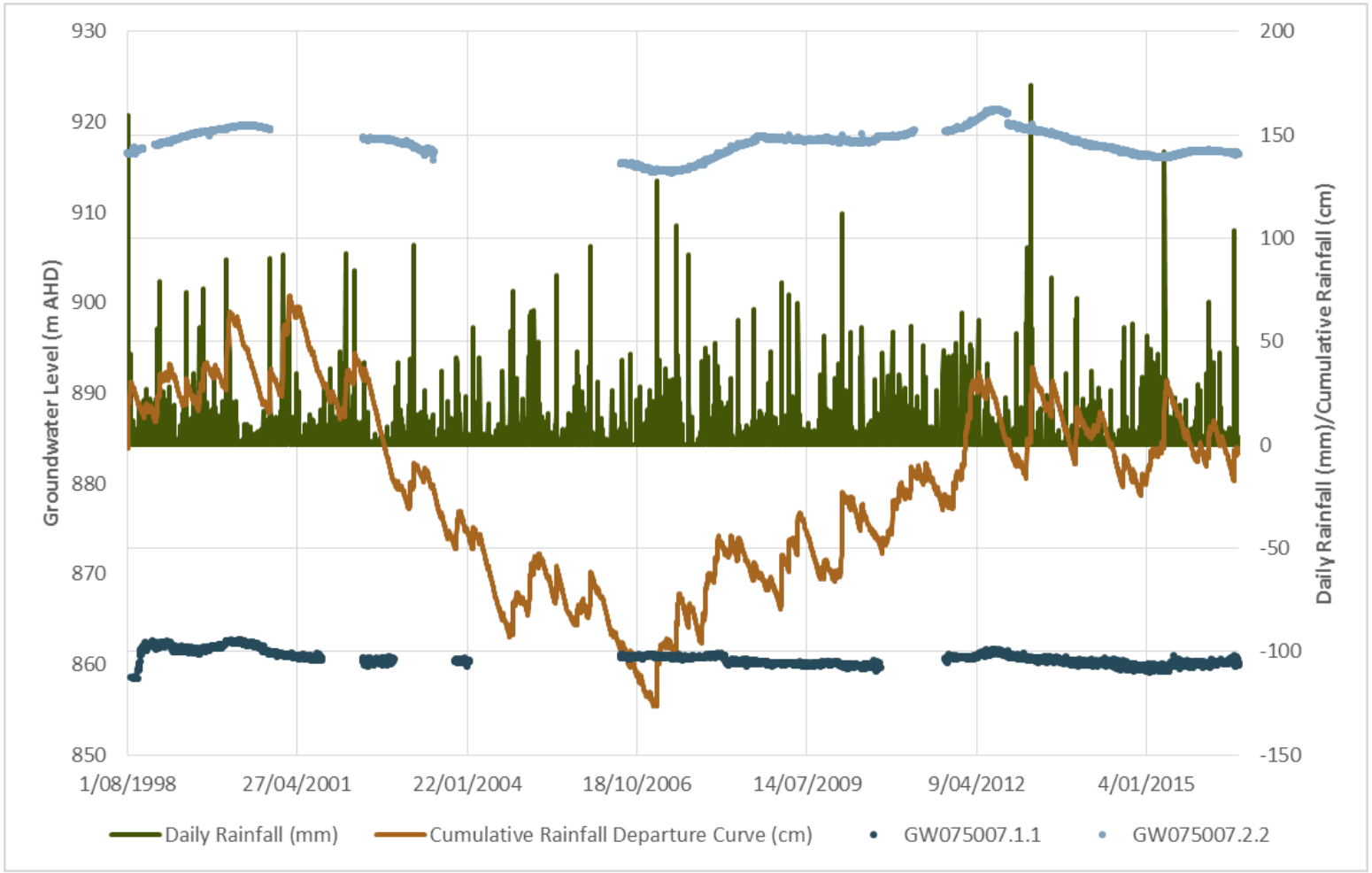
Station	Longitude	Latitude	Operated by	Relevant rainfall station	Water level observations
GW75112	-34.5309557	150.6410131	Water NSW	68224	All bores on this graph (GW273005, GW41063, GW273006, GW75112, GW40992, GW75114) respond to similar stresses and show influence by CRDC. Total water level fluctuations in monitoring period about 2m.
GW75113	-34.5308705	150.6414120	Water NSW	68224	Potential pumping influence on water level, total water level fluctuations in monitoring period about 2m.
GW75114	-34.5309657	150.6409714	Water NSW	68224	All bores on this graph (GW273005, GW41063, GW273006, GW75112, GW40992, GW75114) respond to similar stresses and show influence by CRDC. Total water level fluctuations in monitoring period about 2m.
GW75115	-34.5305406	150.6451970	Water NSW	68224	Water level shows response to rainfall events and shows slight increase of about 1m over monitoring period.
GW75182	-34.5378548	150.6323360	Water NSW	68224	Water level shows fast response to rainfall events, which are likely due to loading rather than recharge events. Total water level fluctuations in monitoring period about 2m.
GW75210	-34.5310796	150.6498236	Water NSW	68224	Water level shows slight increase of about 0.5 m overmonitoring period and some pumping influence.
GW75214	-34.5305570	150.6334120	Water NSW	68224	Potential pumping influence on water level, total water level fluctuations in monitoring period about 2m.
GW75215	-34.5315234	150.6351755	Water NSW	68224	Potential pumping influence on water level, total water level fluctuations in monitoring period about 2m.

12 Groundwater level trends

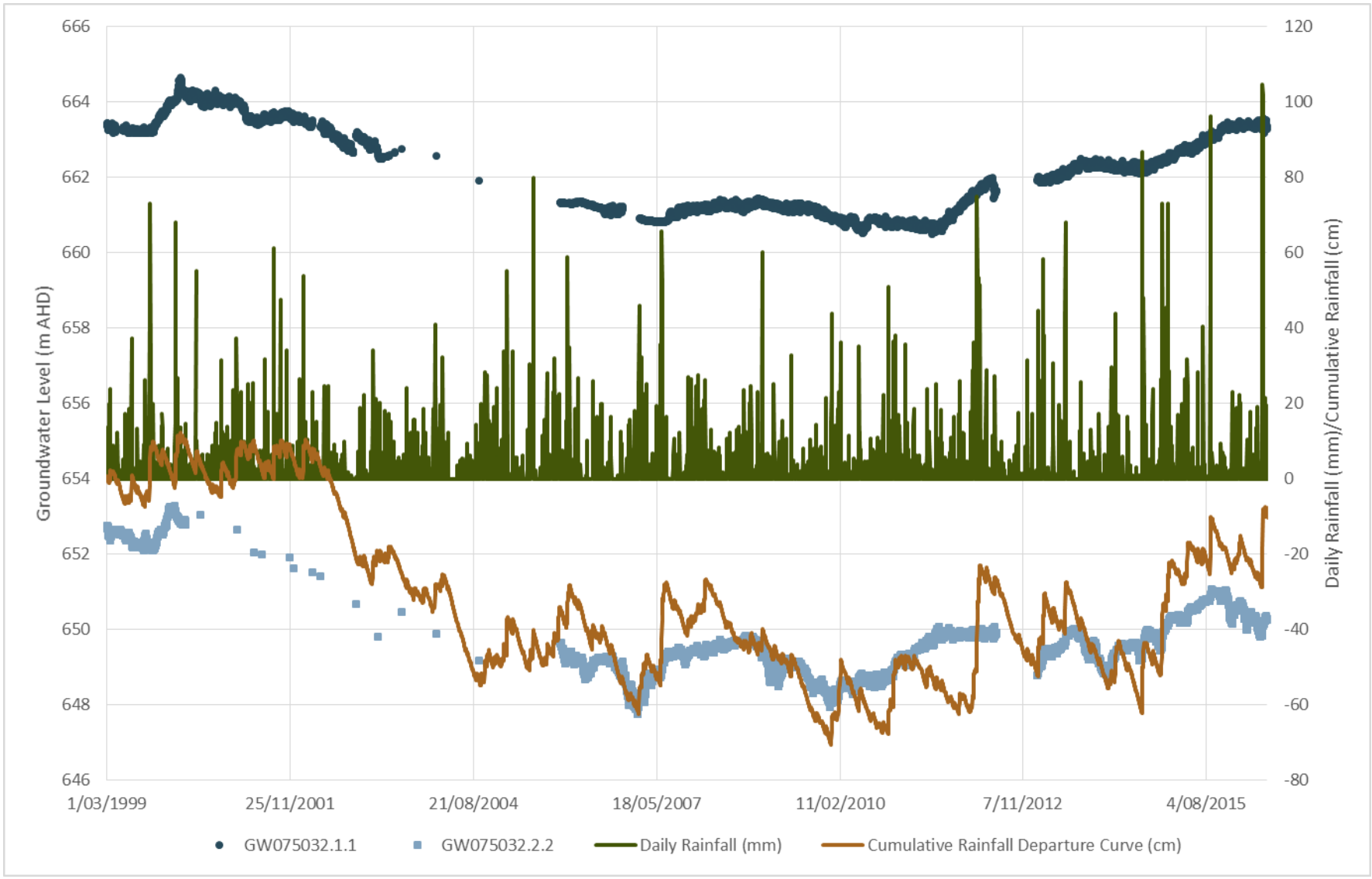
Groundwater elevation at GW075005 01 and 02, GW075006 01 and 02, as well as rainfall data for Station 63227



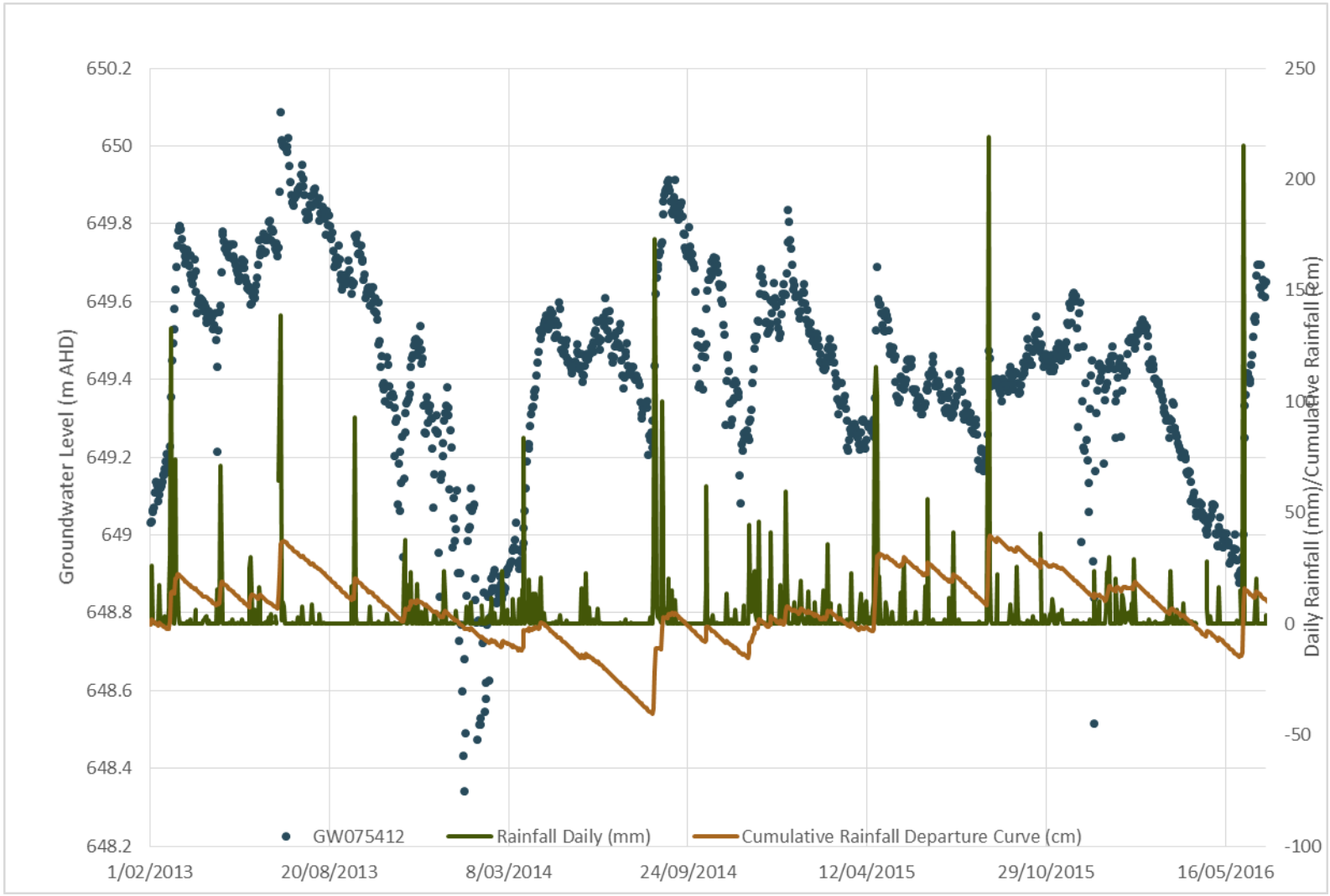
Groundwater elevation at GW075007 01 and 02 as well as rainfall data for Station 63039



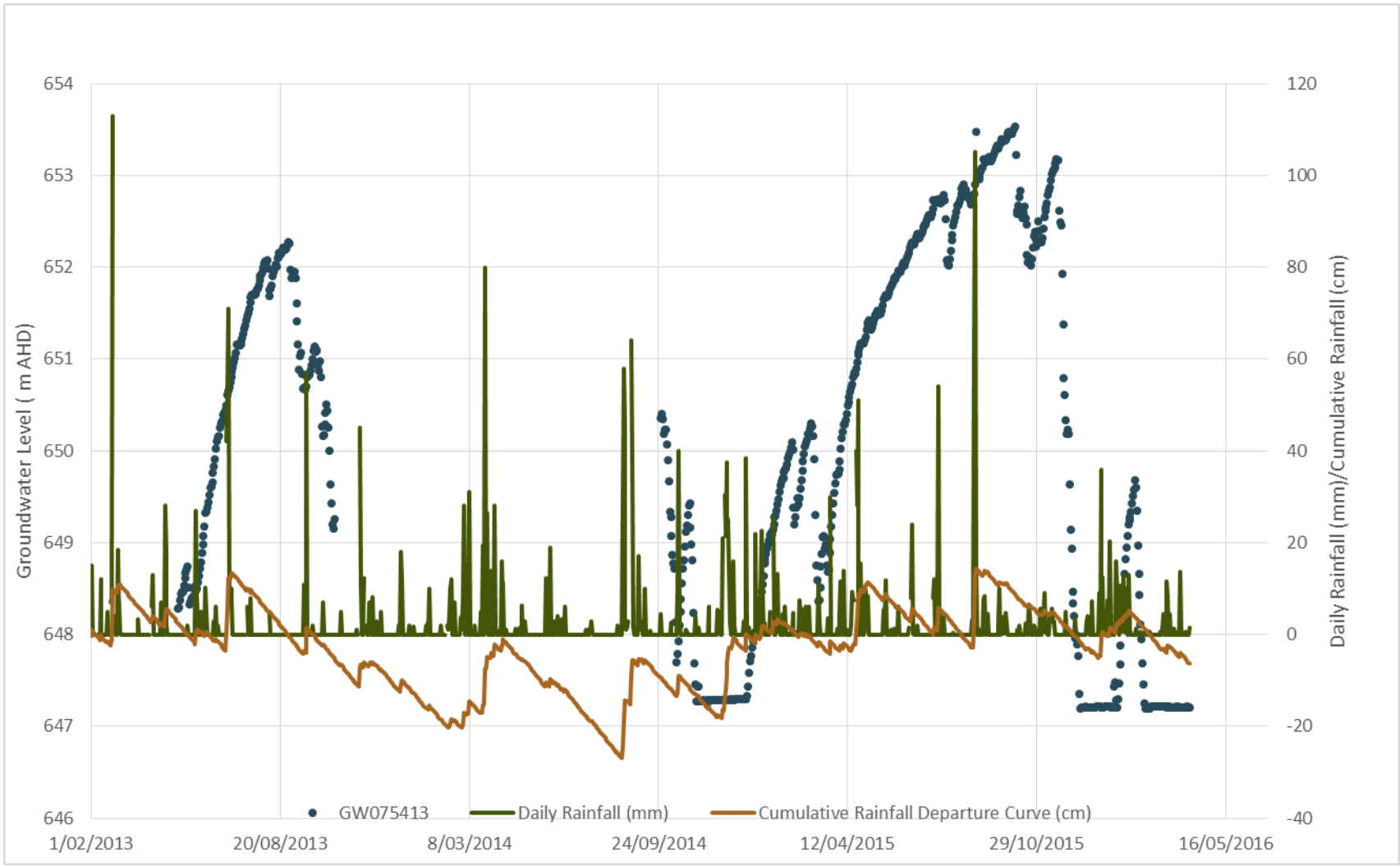
Groundwater elevation at GW075032 01 and 02 as well as rainfall data for Station 68186



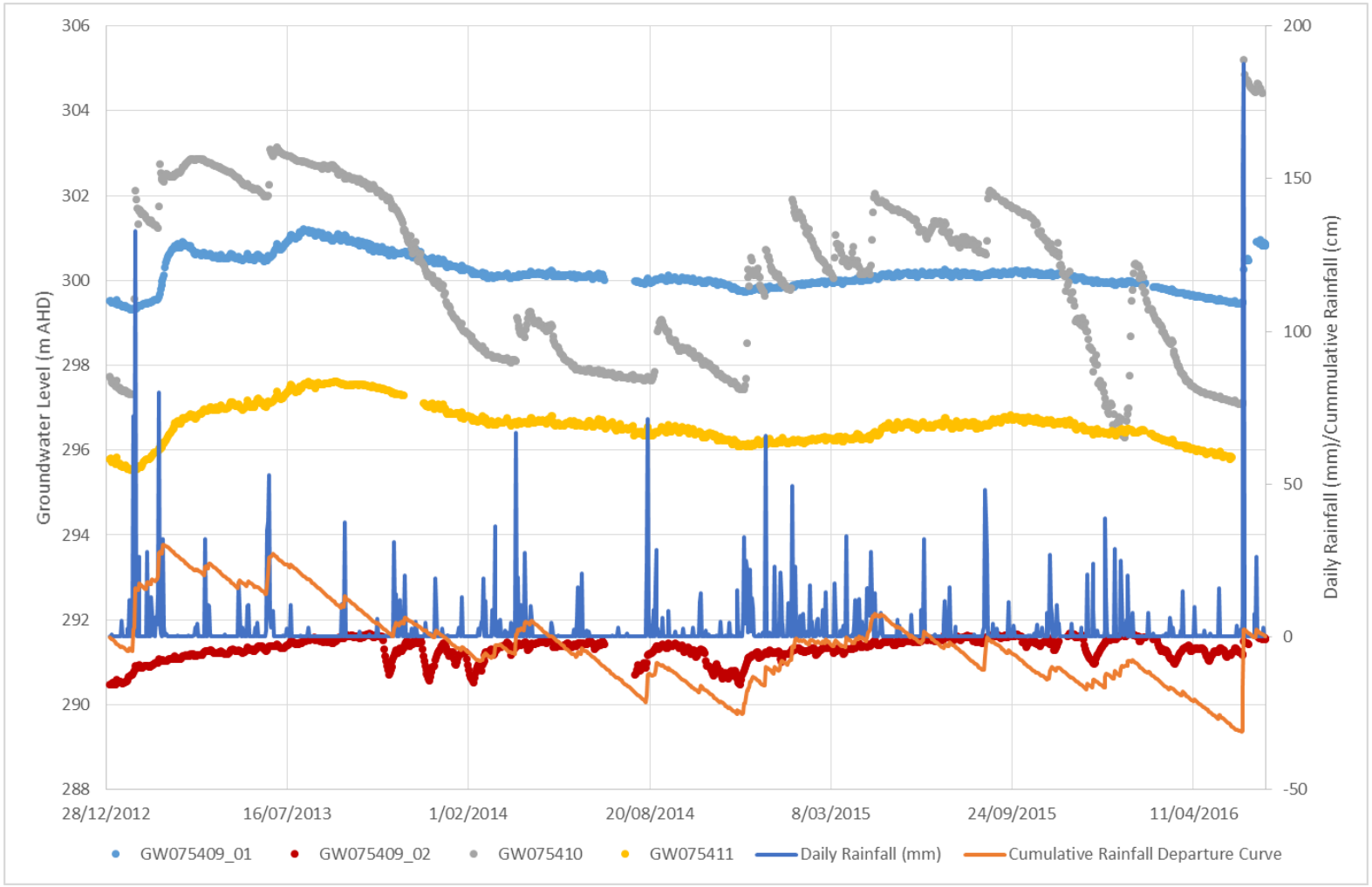
Groundwater elevation at GW075412 as well as rainfall data for Station 68009



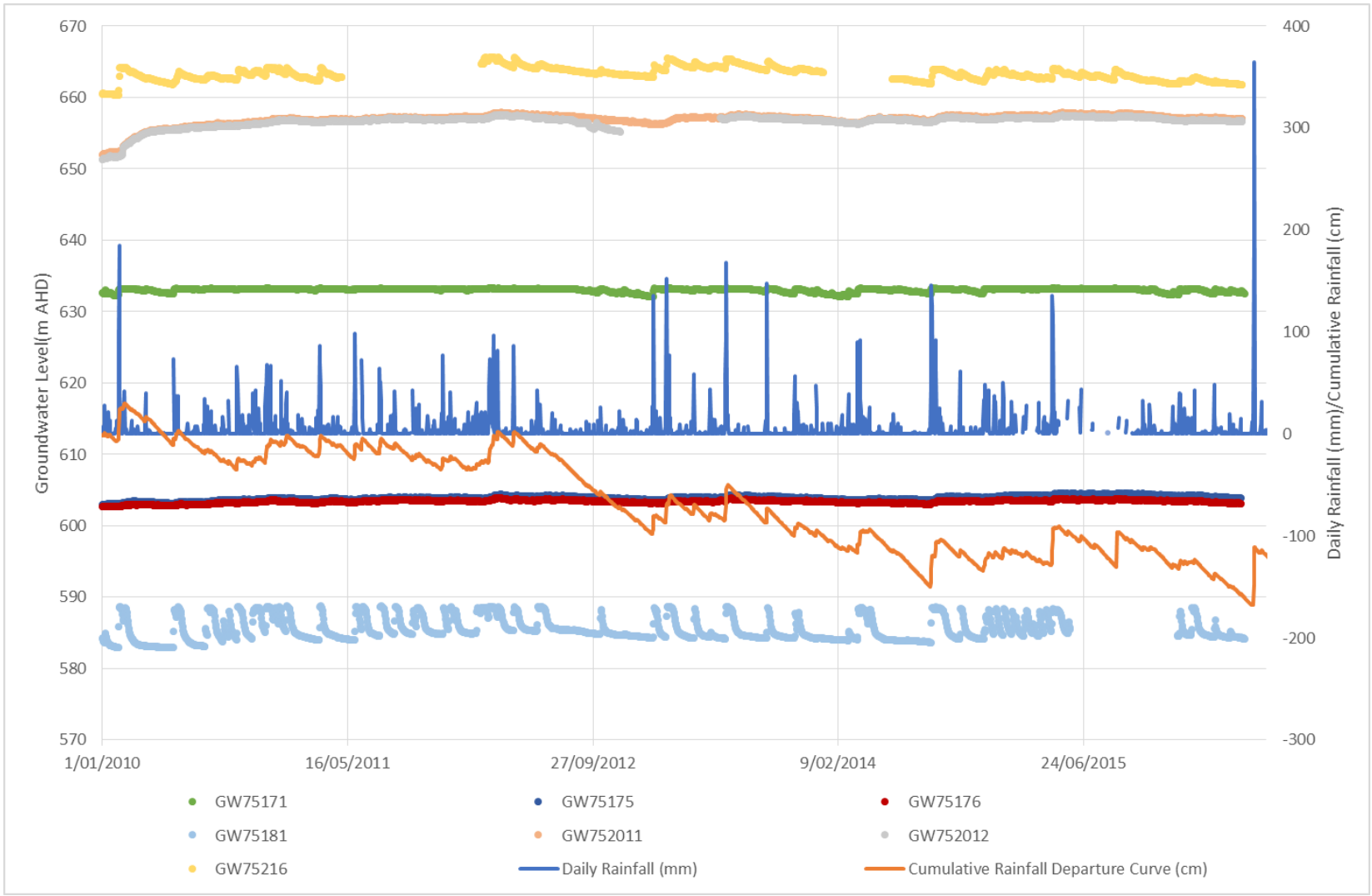
Groundwater elevation at GW075413 as well as rainfall data for Station 68033



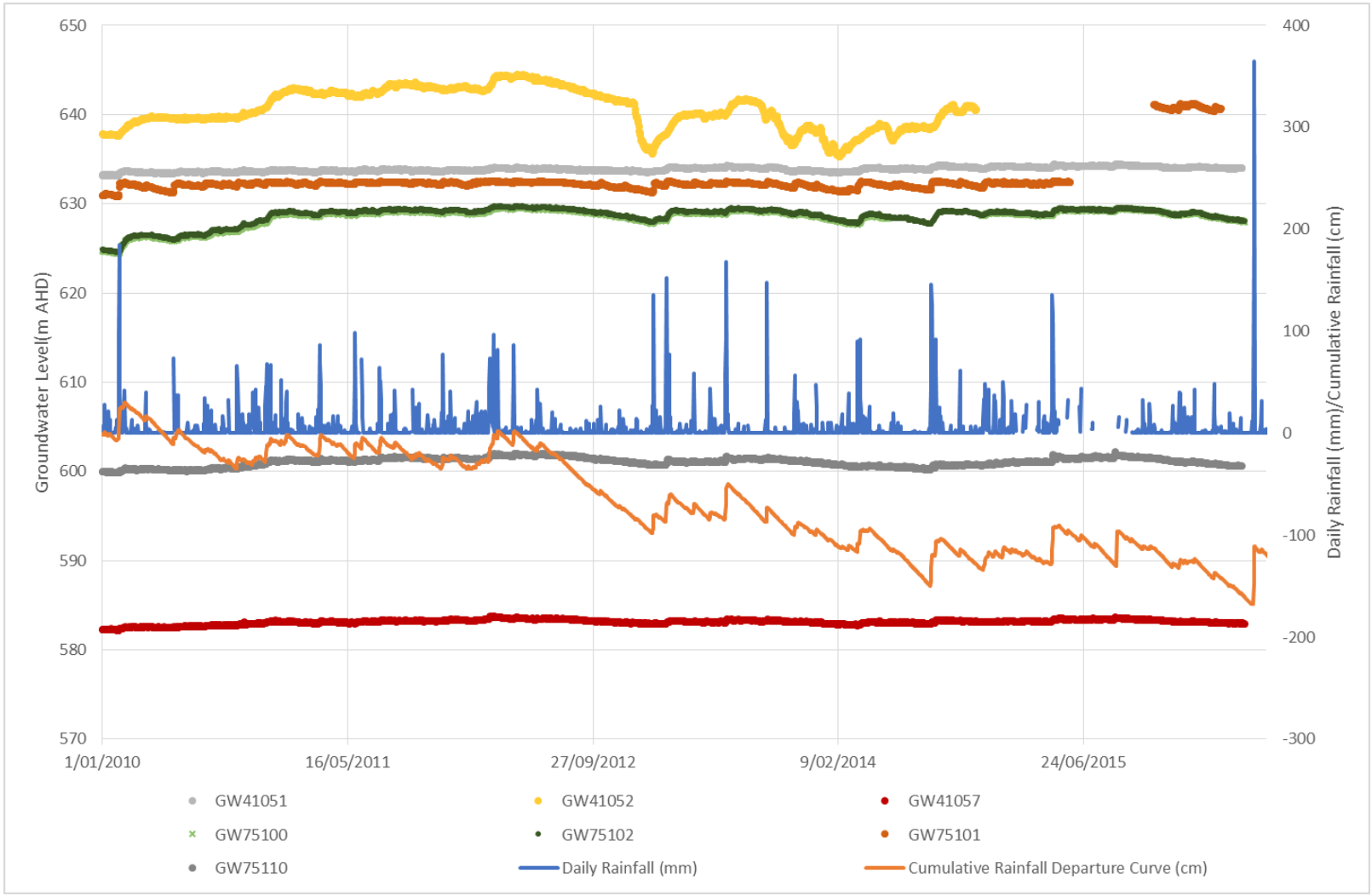
Groundwater elevation at GW075409, GW075410 and GW075411 as well as rainfall data for Station 68166



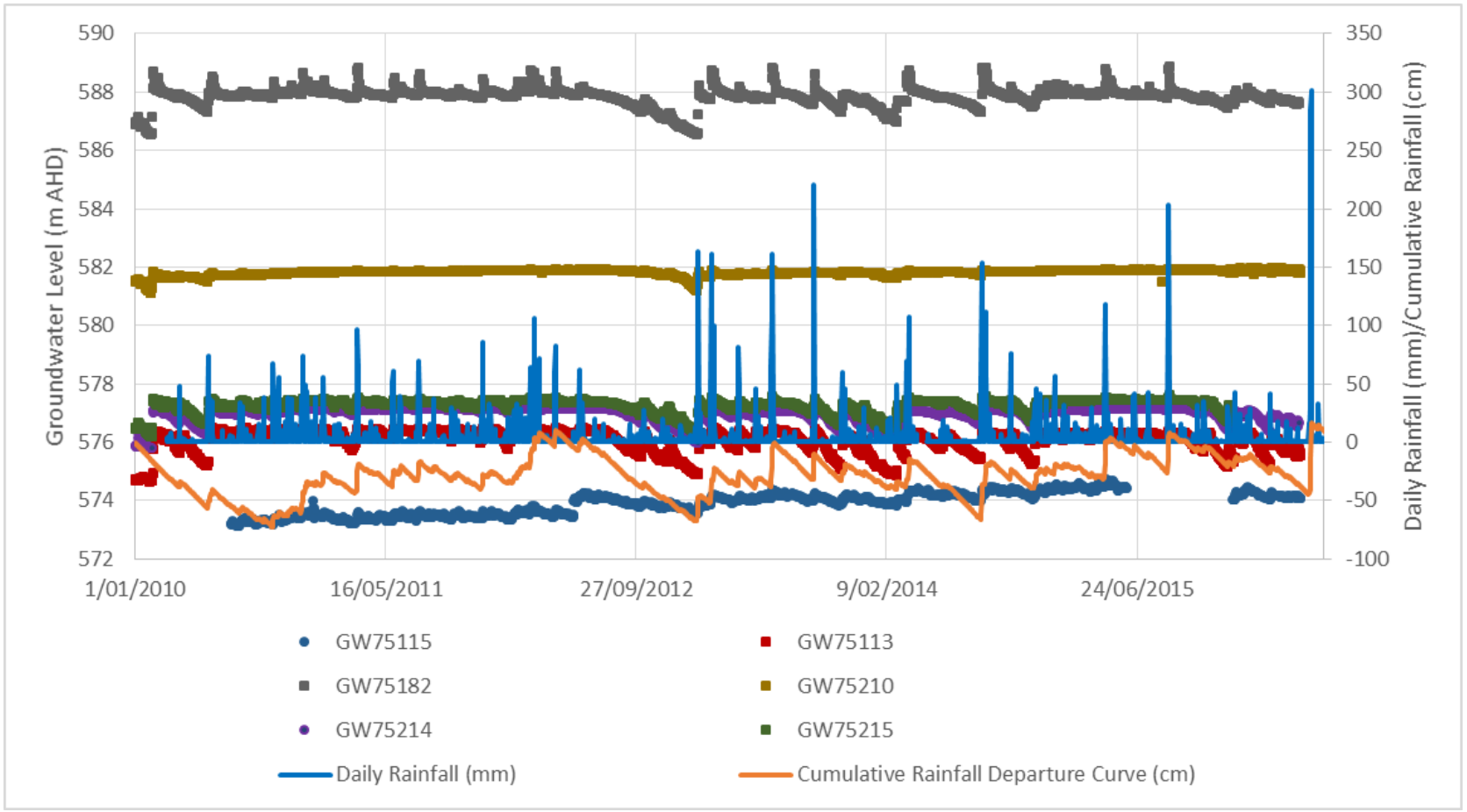
Groundwater elevation at GW75171, GW75181, GW75216, GW 75175, GW752011, GW75176, GW752012 and rainfall for station 68054



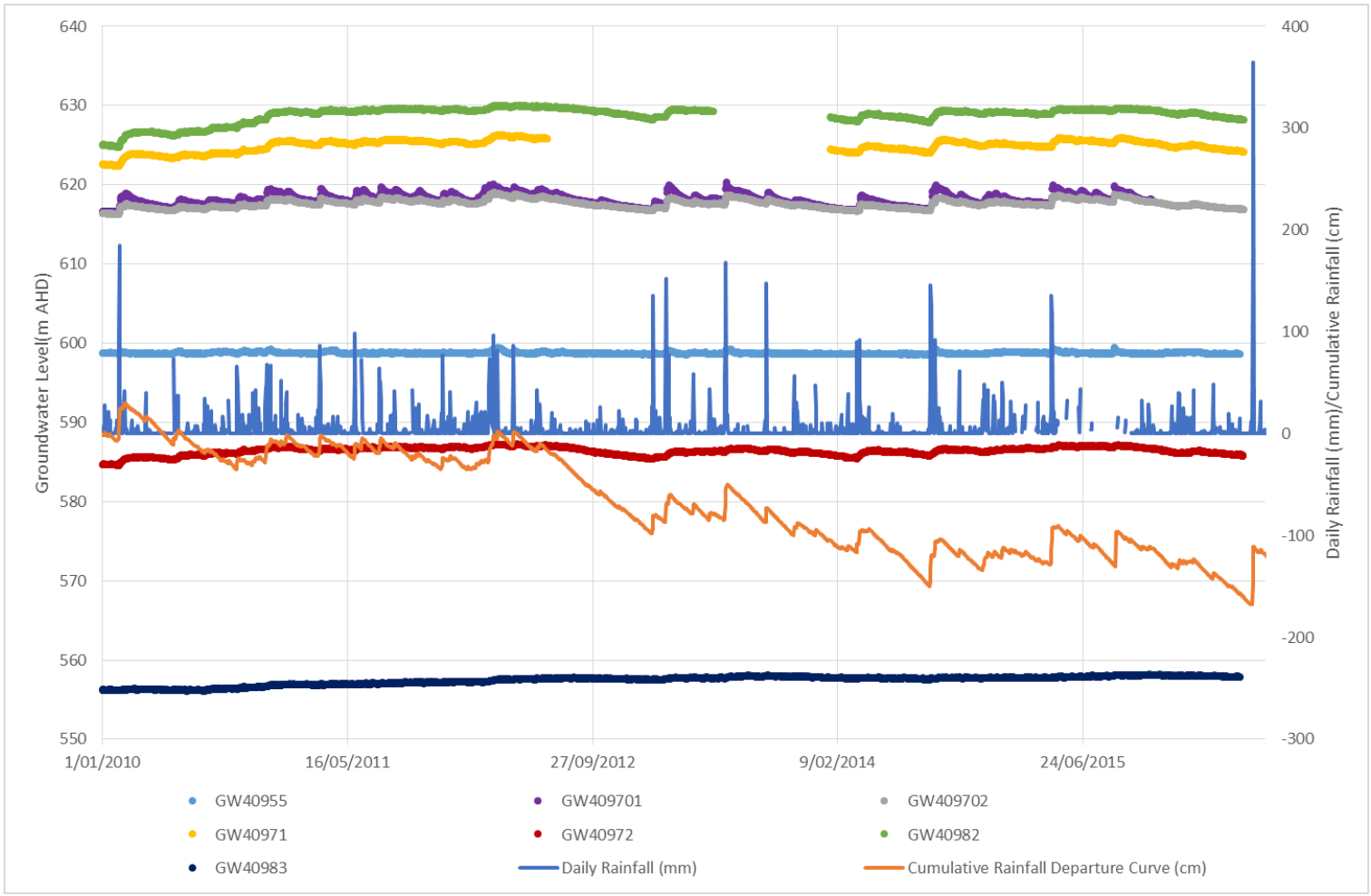
Groundwater elevation at GW41051, GW75100, GW75110, GW41052, GW75102, GW41057, GW75101 and rainfall for station 68054



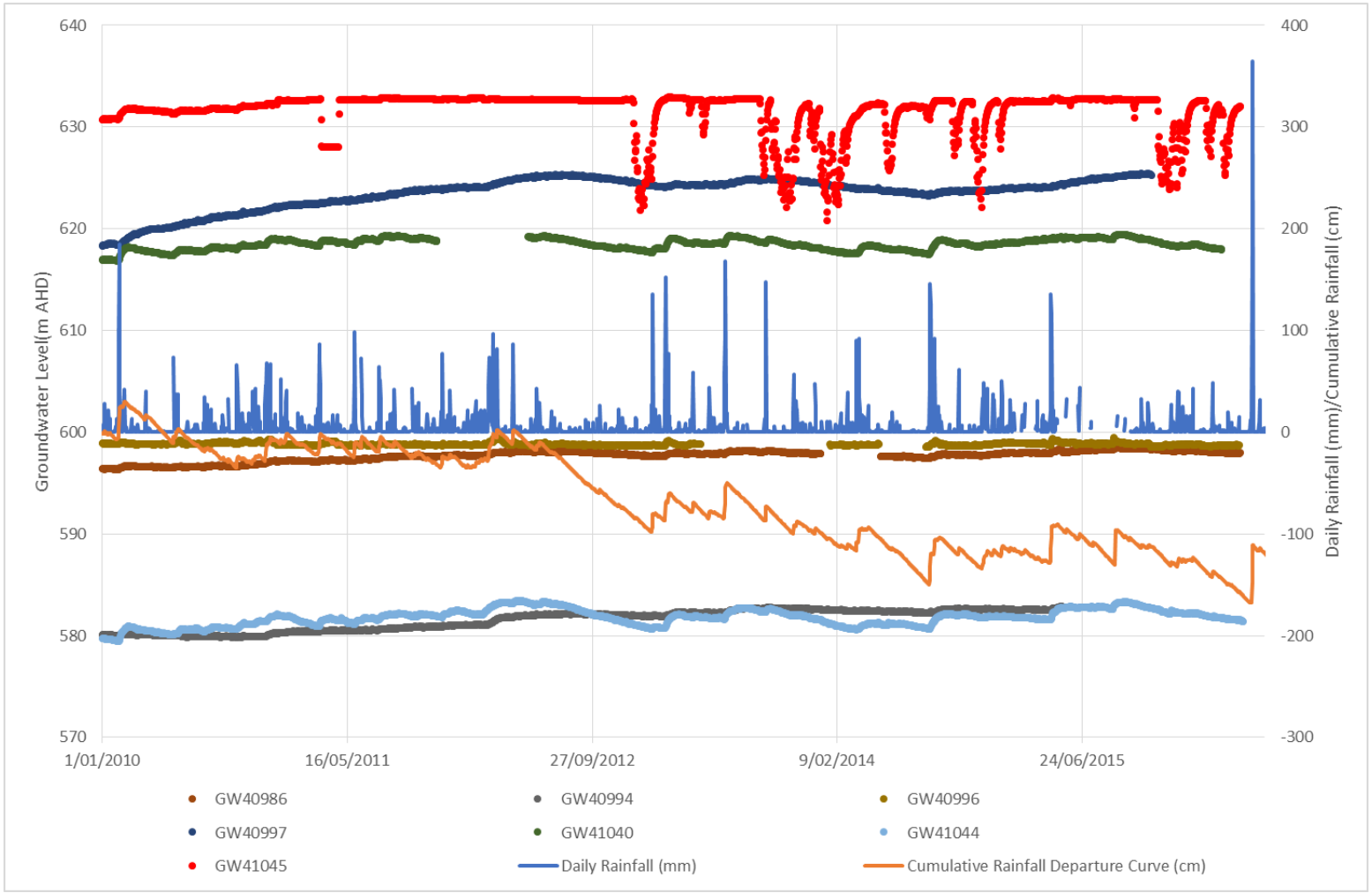
Groundwater elevation at GW75115, GW75210, GW75113, GW75214, GW75182, GW75215 and rainfall data for station 68224



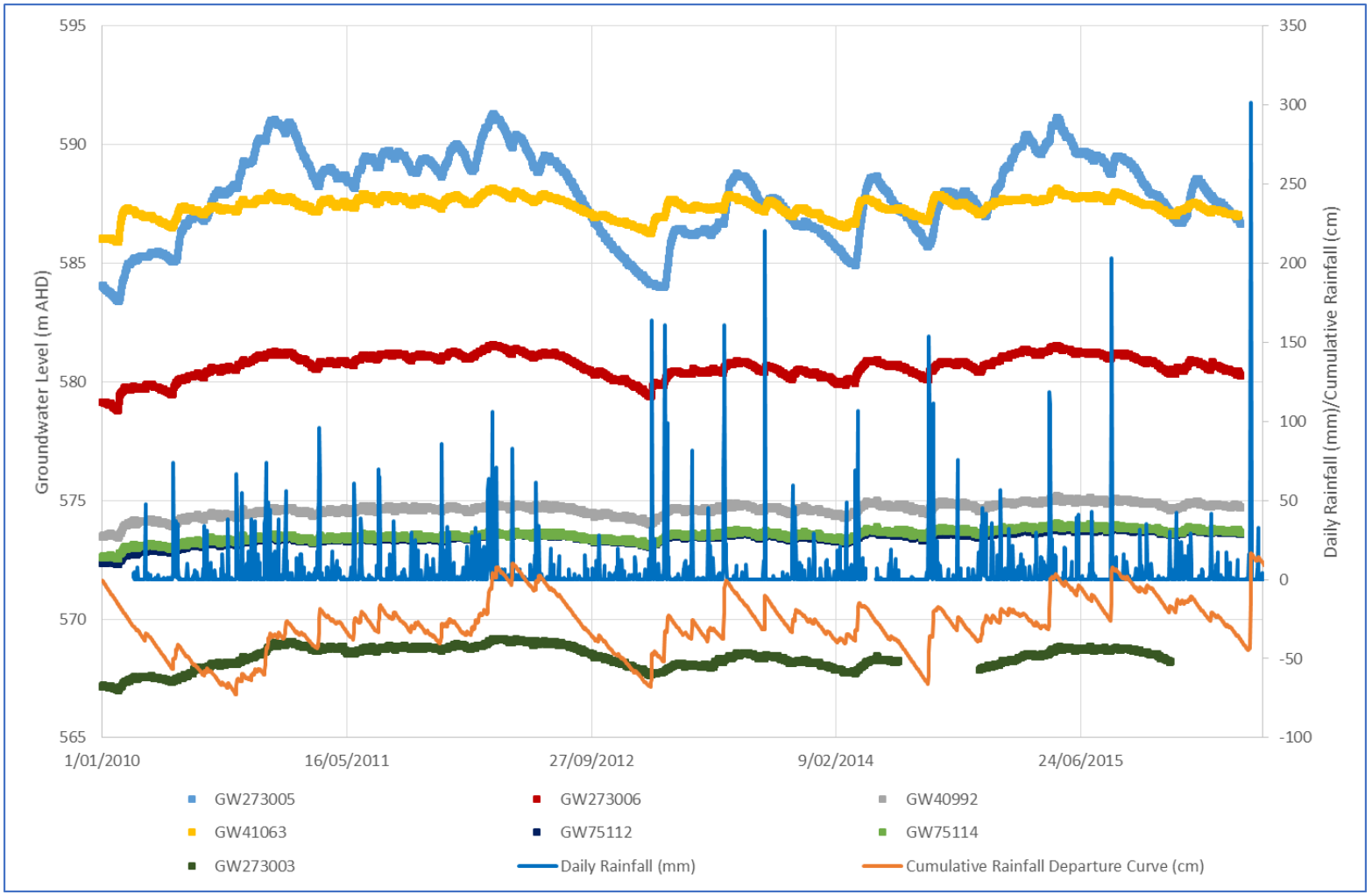
Groundwater elevation at GW40955, GW40971, GW40983, GW409701, GW40972, GW409702, GW40982 and rainfall for station 68054



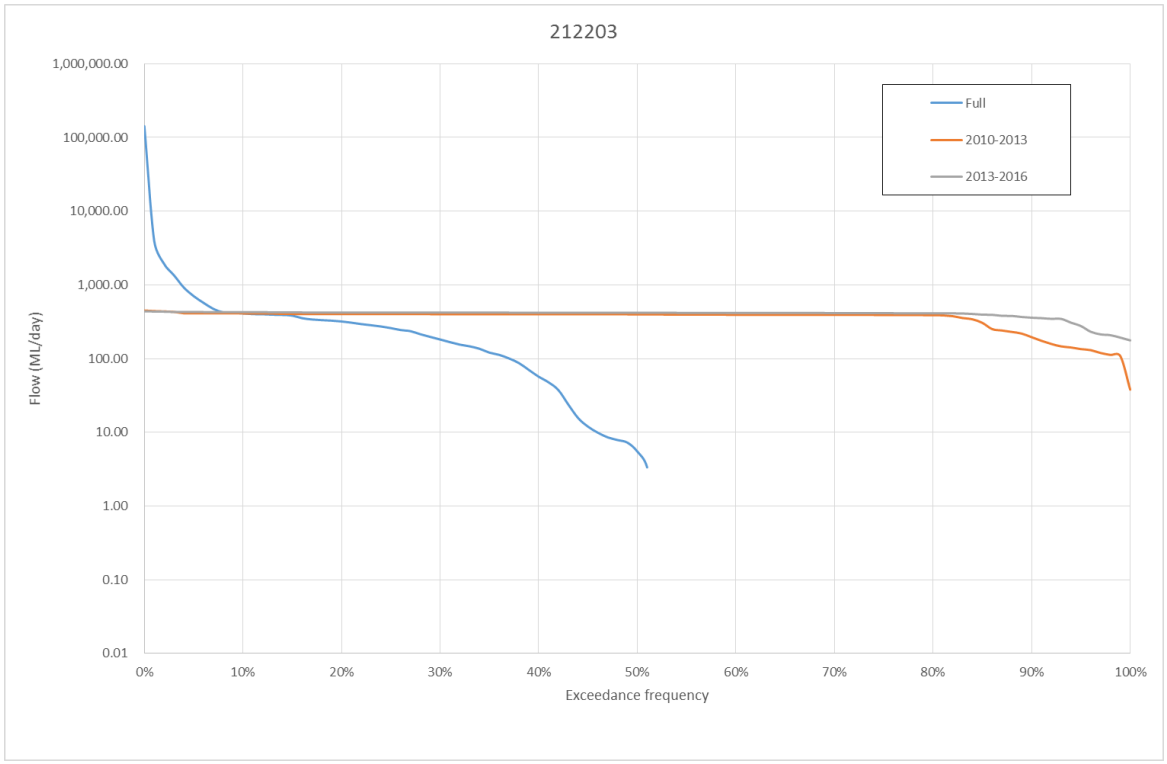
Groundwater elevation at GW40986, GW40997, GW41045, GW40994, GW41010, GW40996, GW41044 and rainfall for station 68054

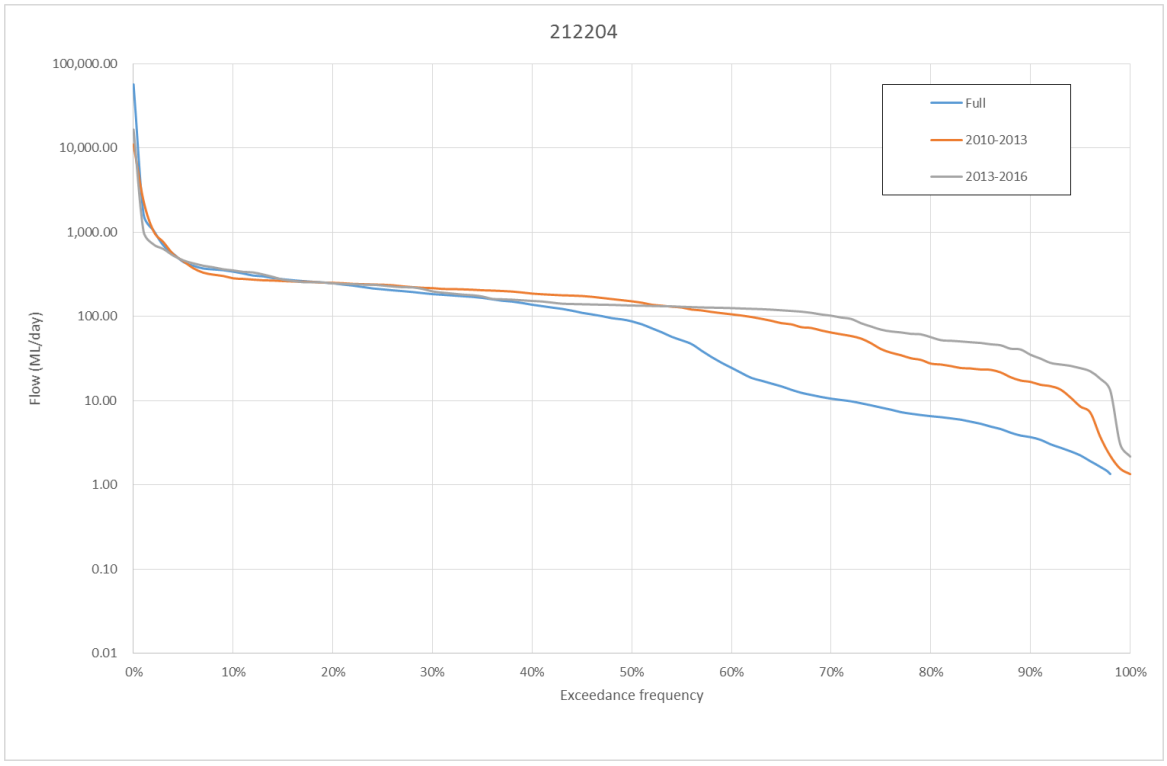


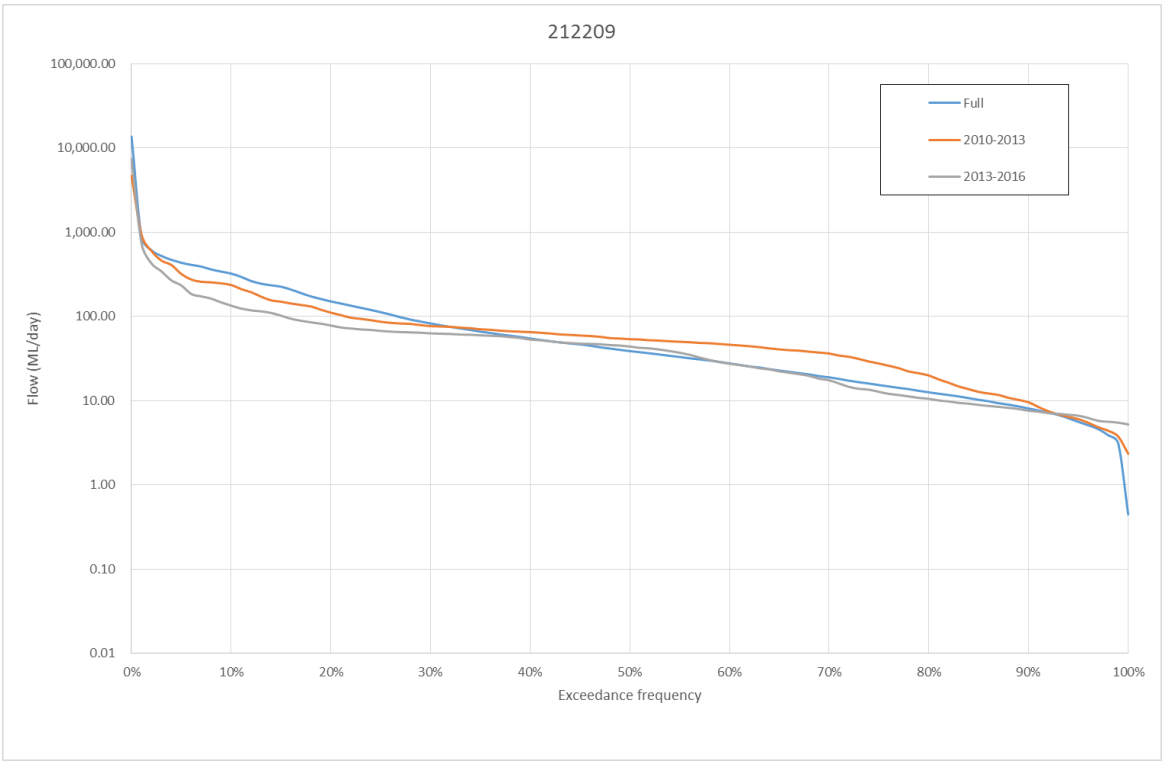
Groundwater level at GW273003, GW273005, GW41063, GW273006, GW75112, GW40992, GW75114 and rainfall for station 68224



13 Streamflow gauge exceedance curves



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Flow (ML/day)
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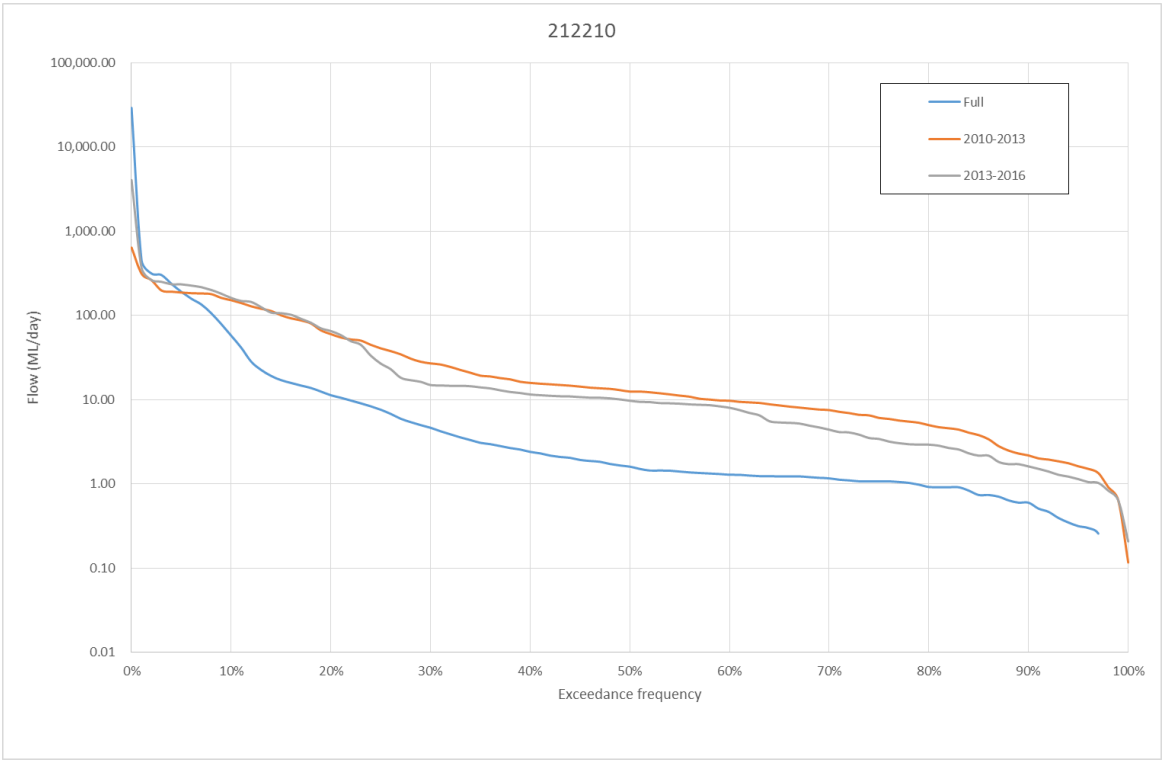
100%
Exceedance frequency
Full
2010-2013
2013-2016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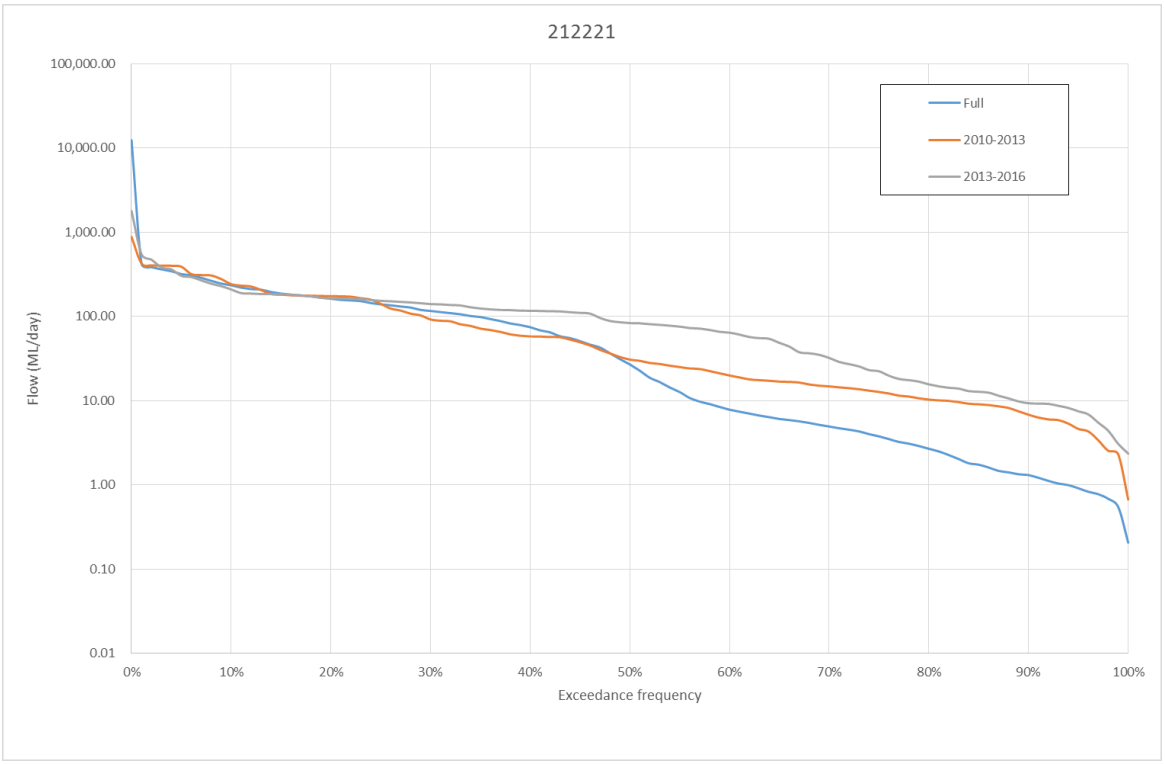
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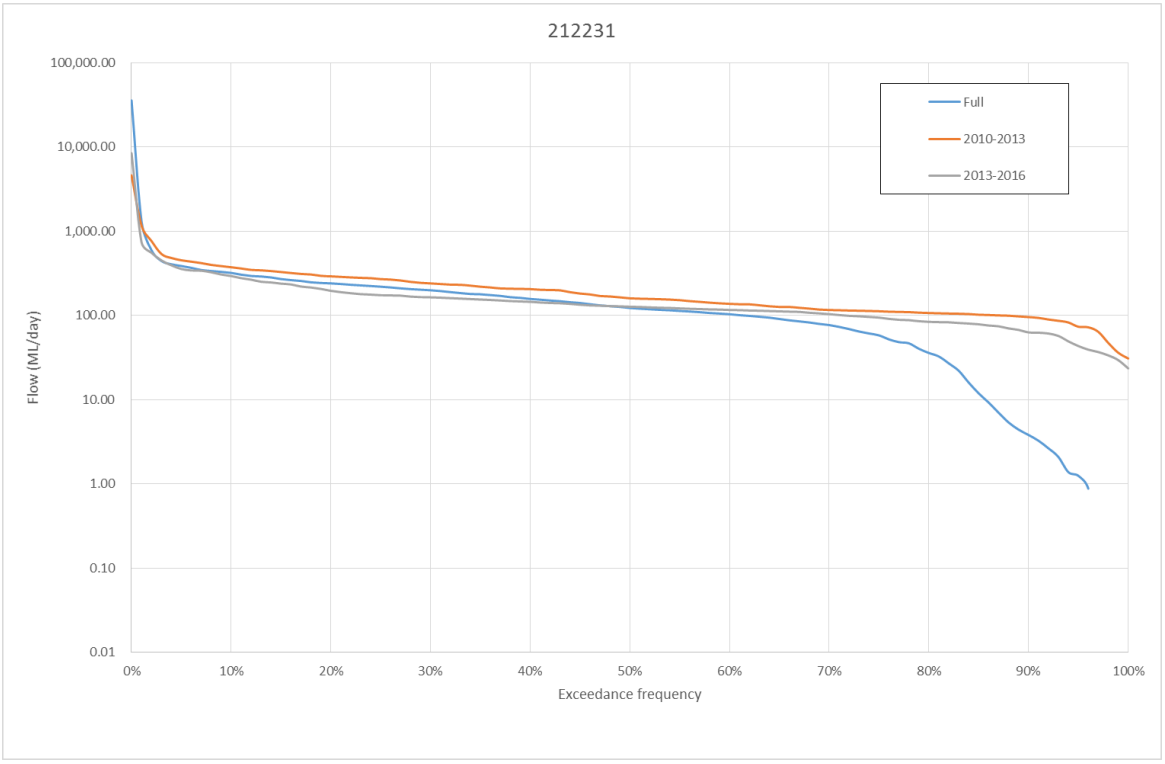
2013-2016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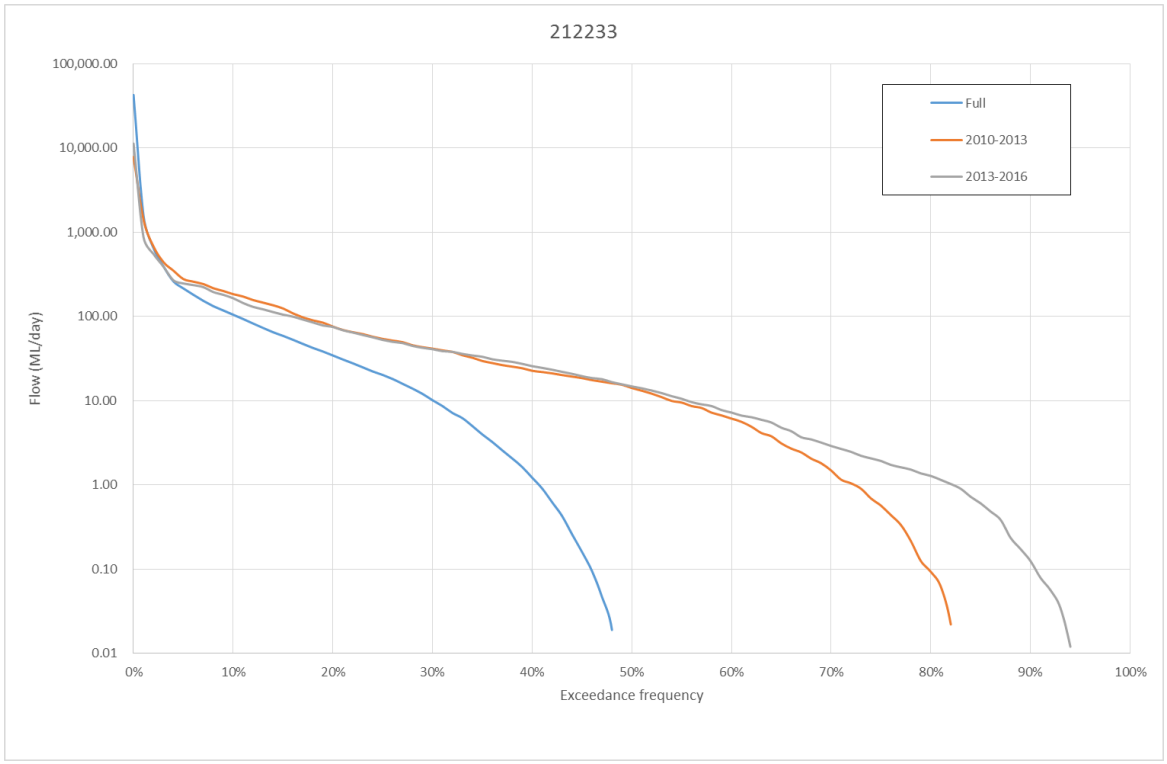
2013-2016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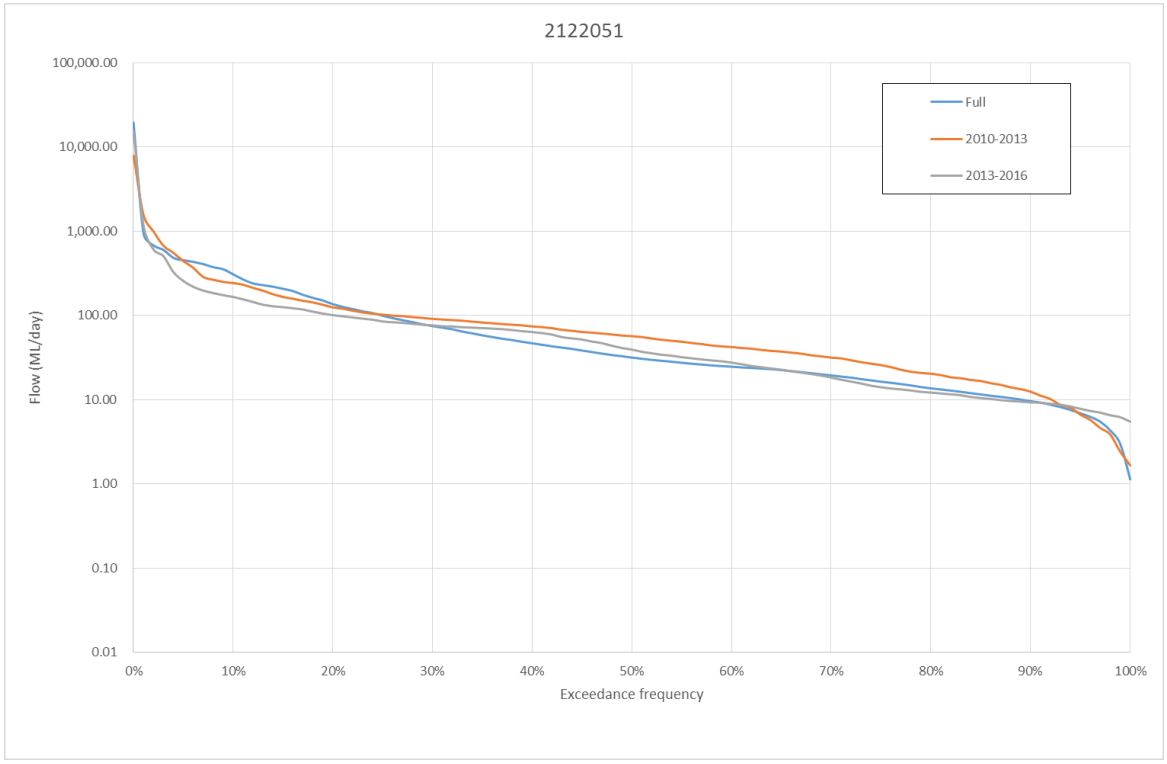
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Exceedance frequency
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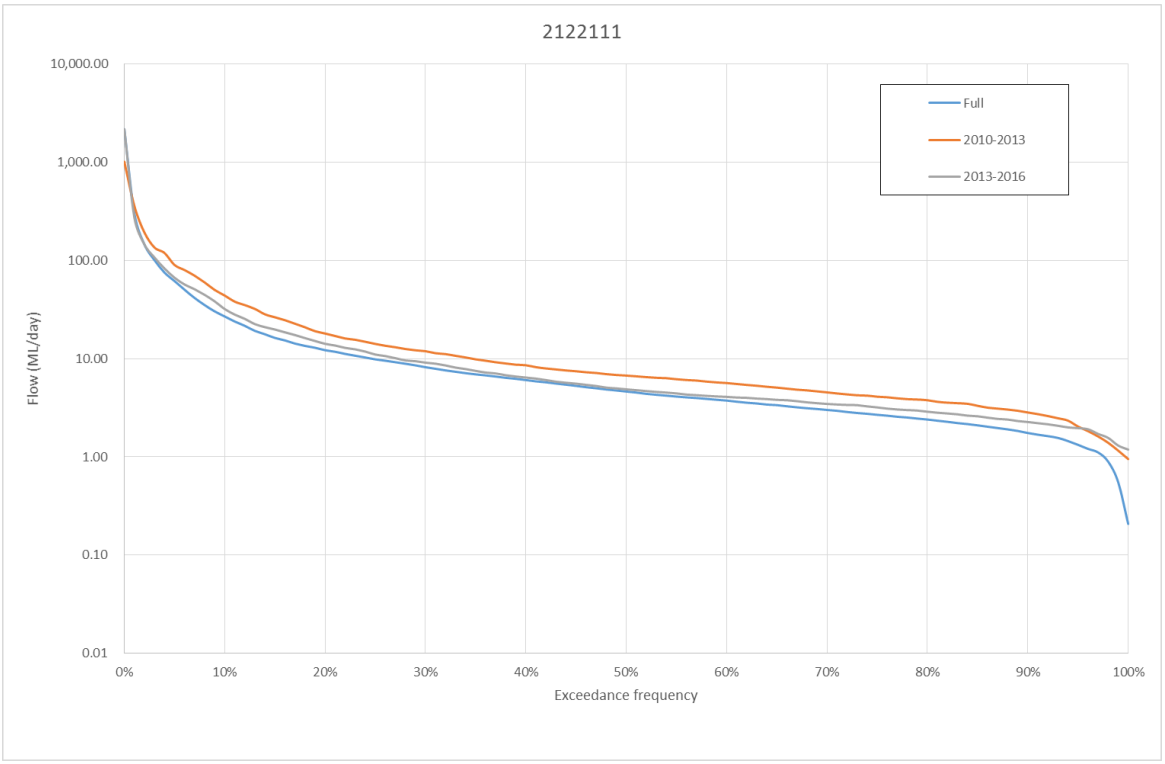
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Exceedance frequency
Full
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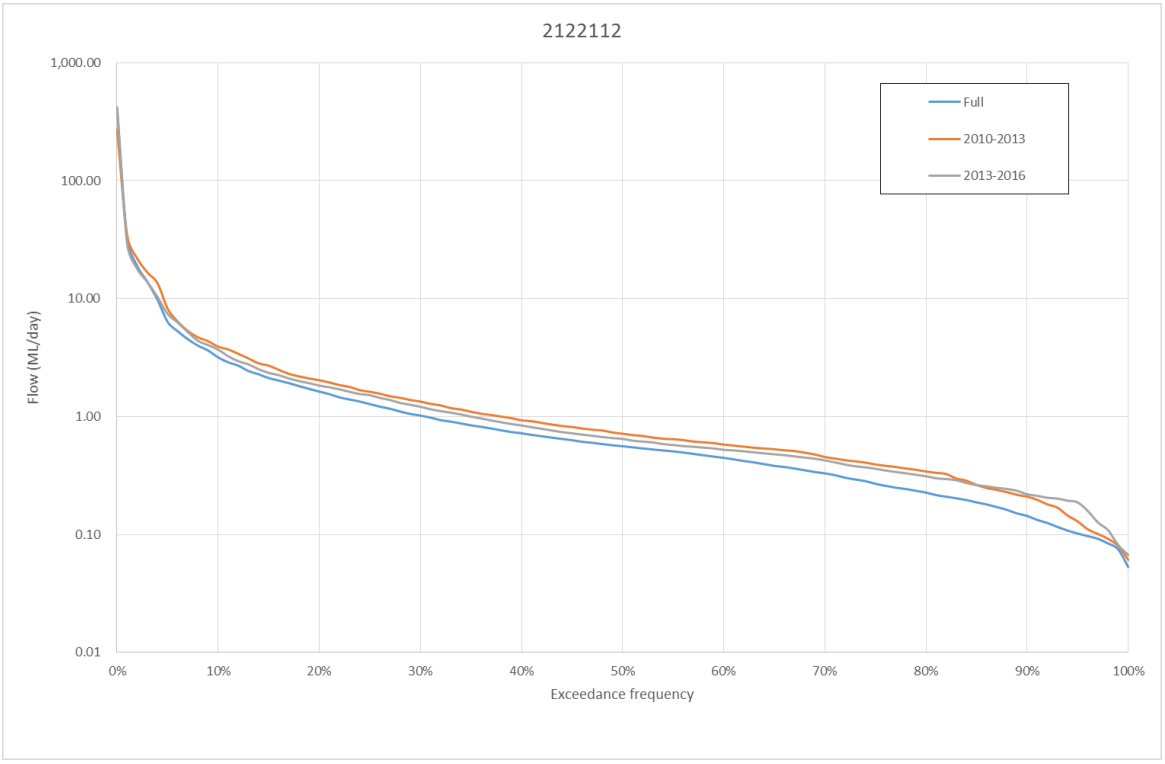
2013-2016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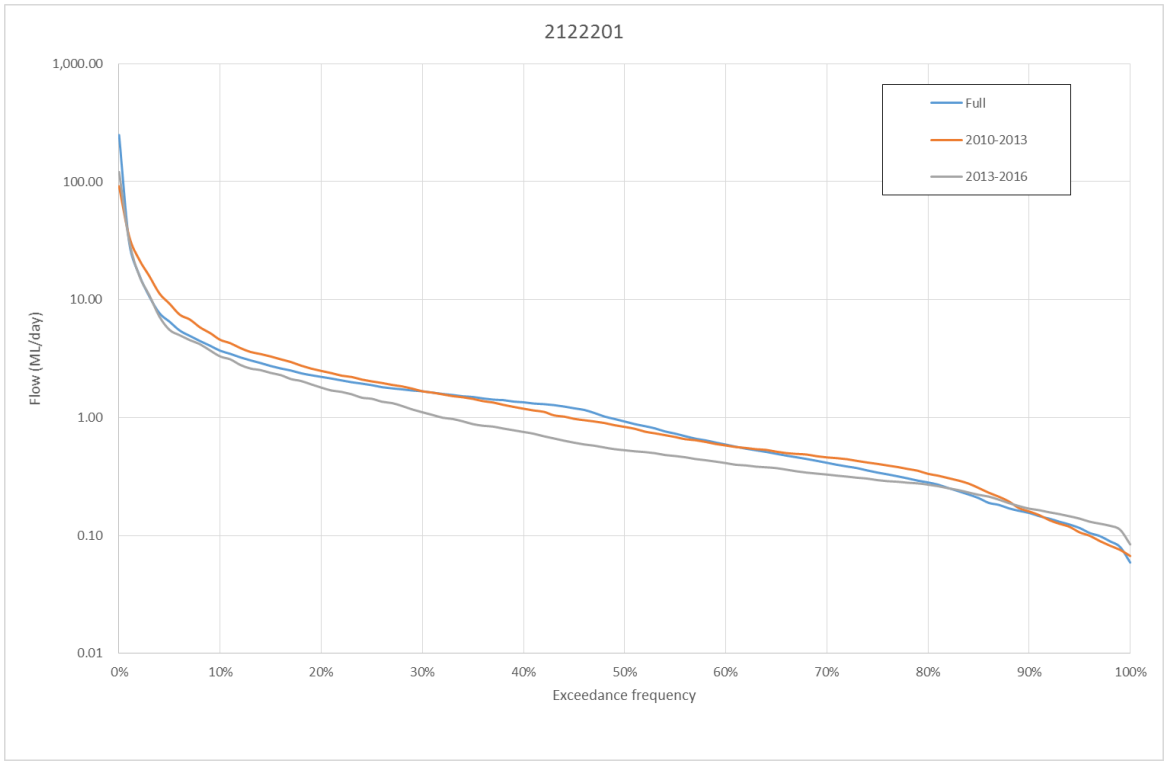
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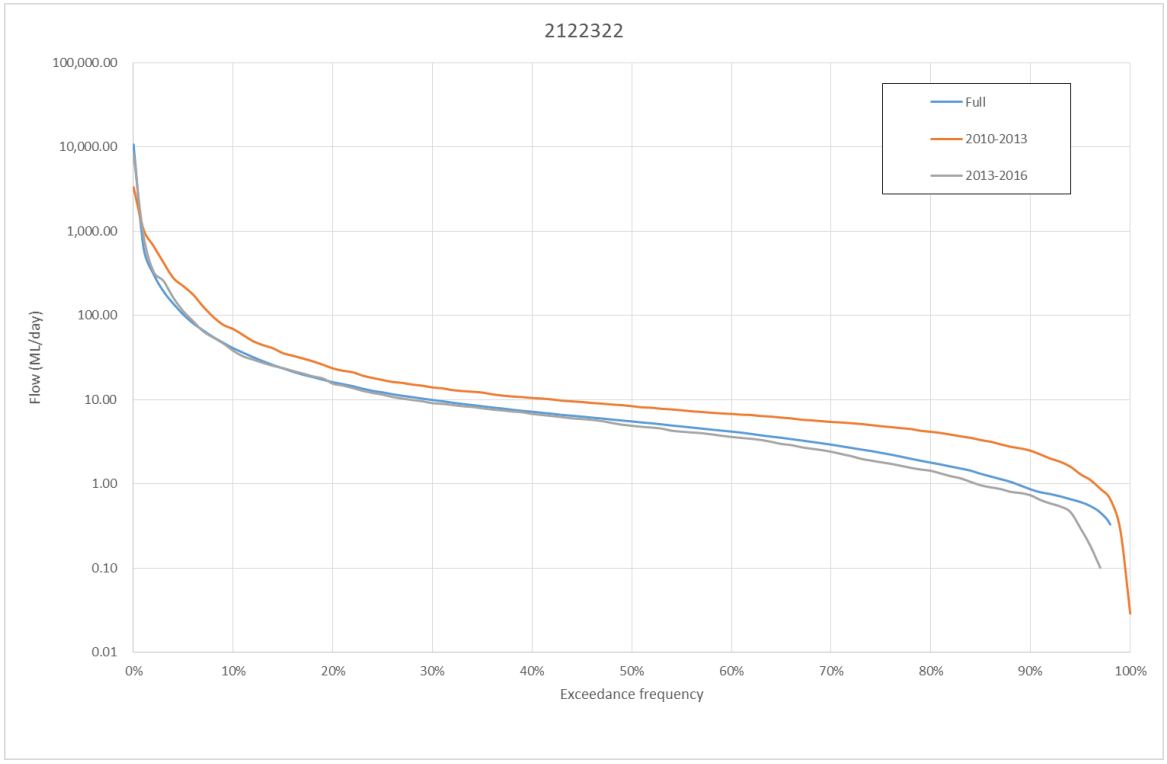
Exceedance frequency
Full
2010-2013
2013-2016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40%
50%
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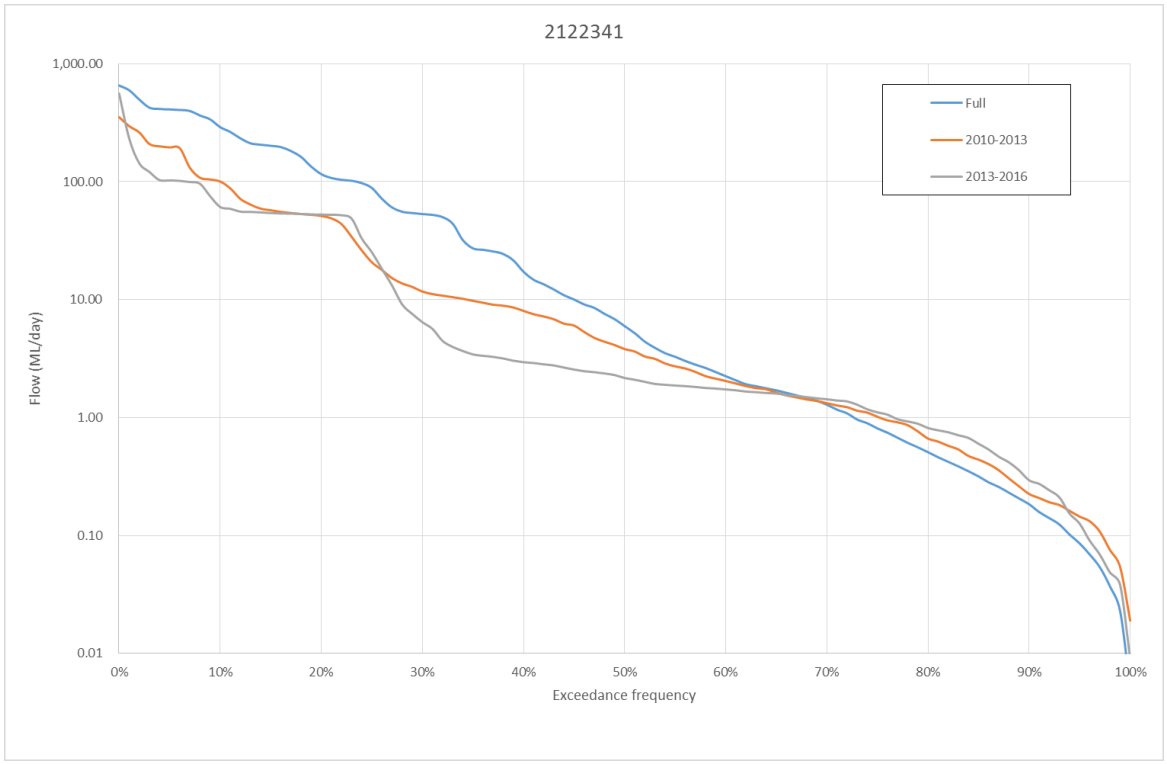
100%
Exceedance frequency
Full
2010-2013
2013-2016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Exceedance frequency
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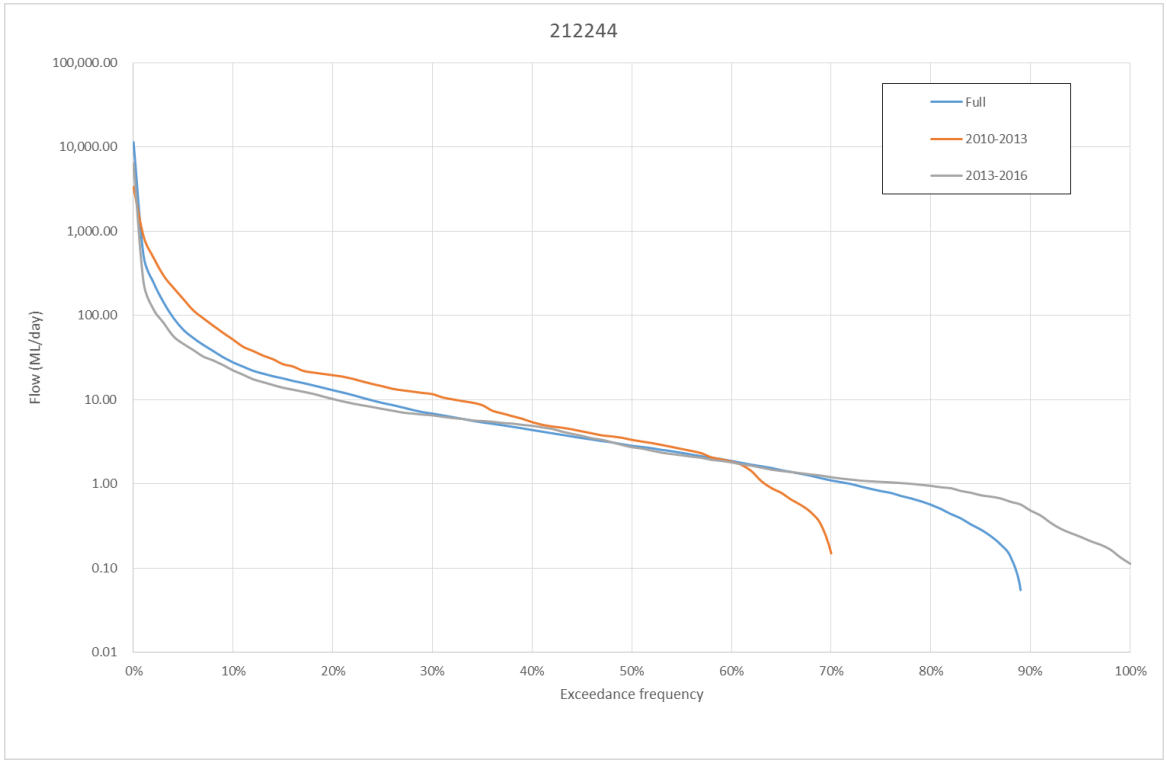
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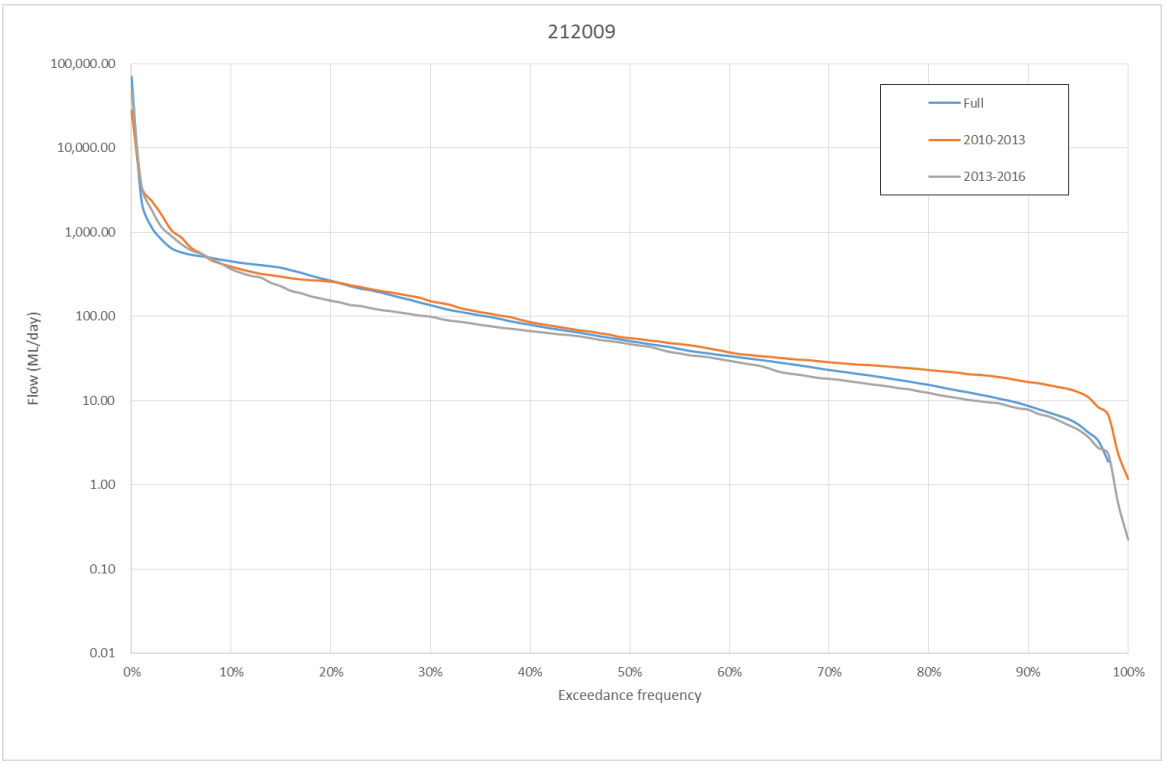
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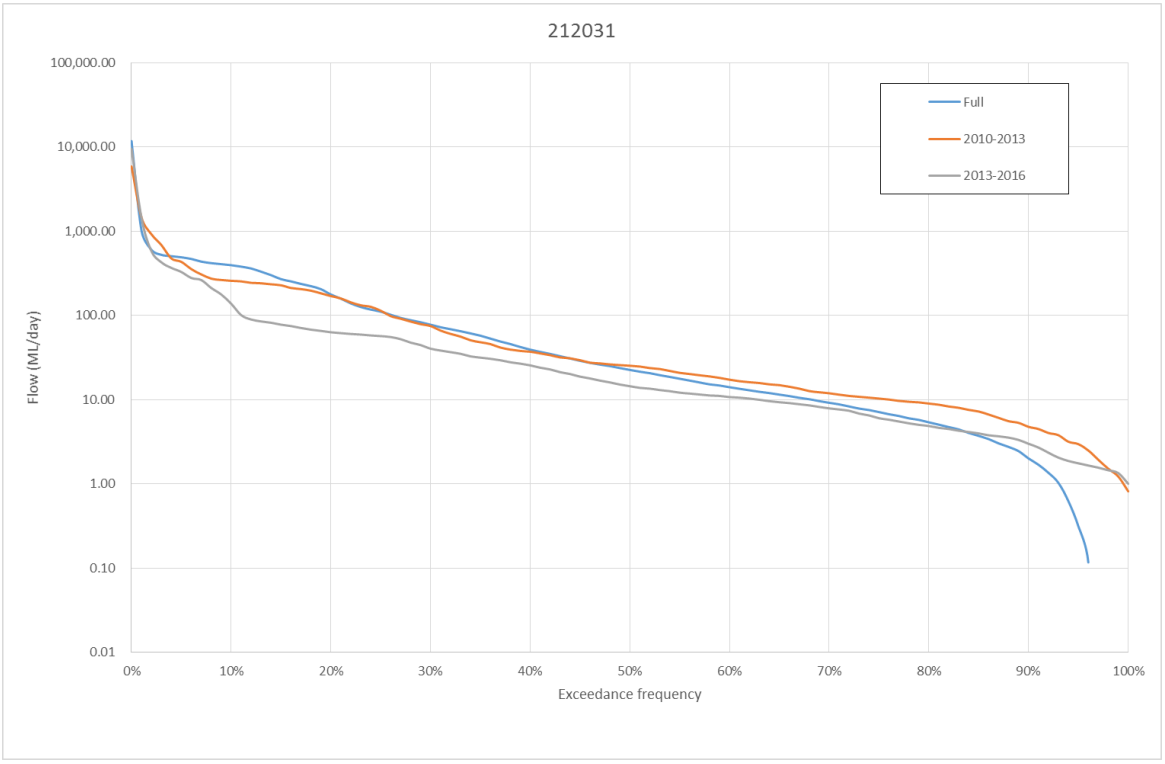
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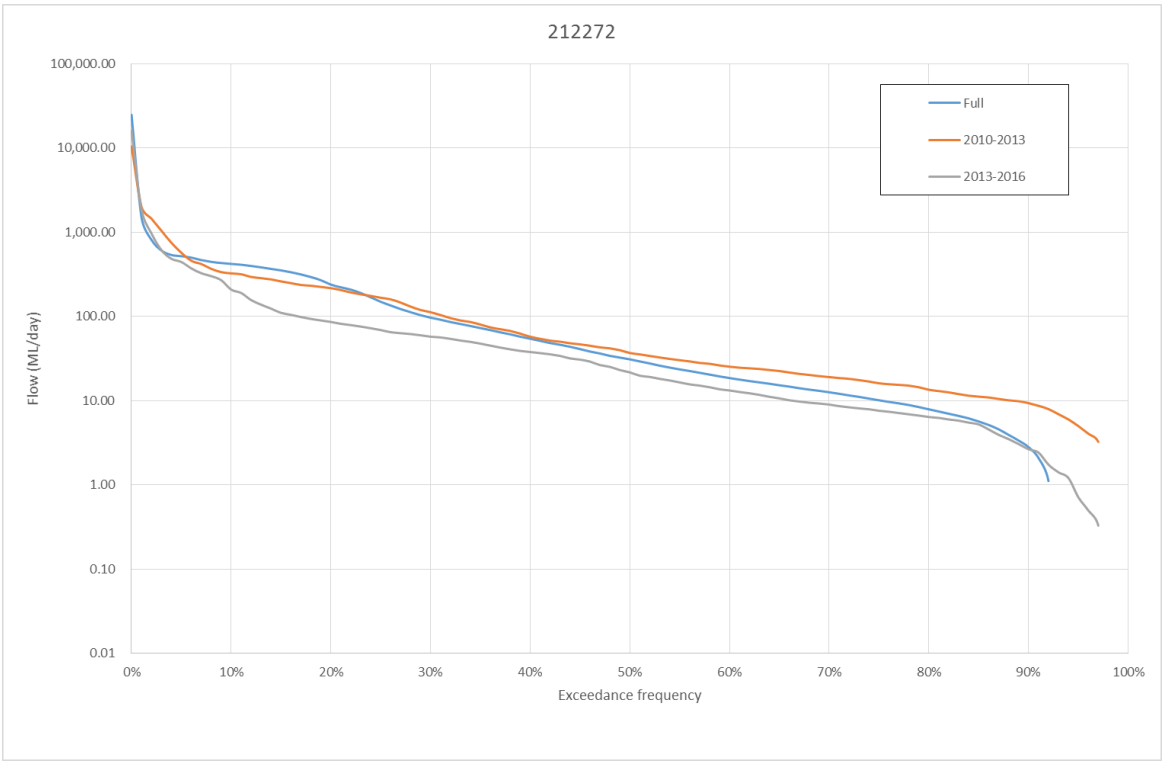
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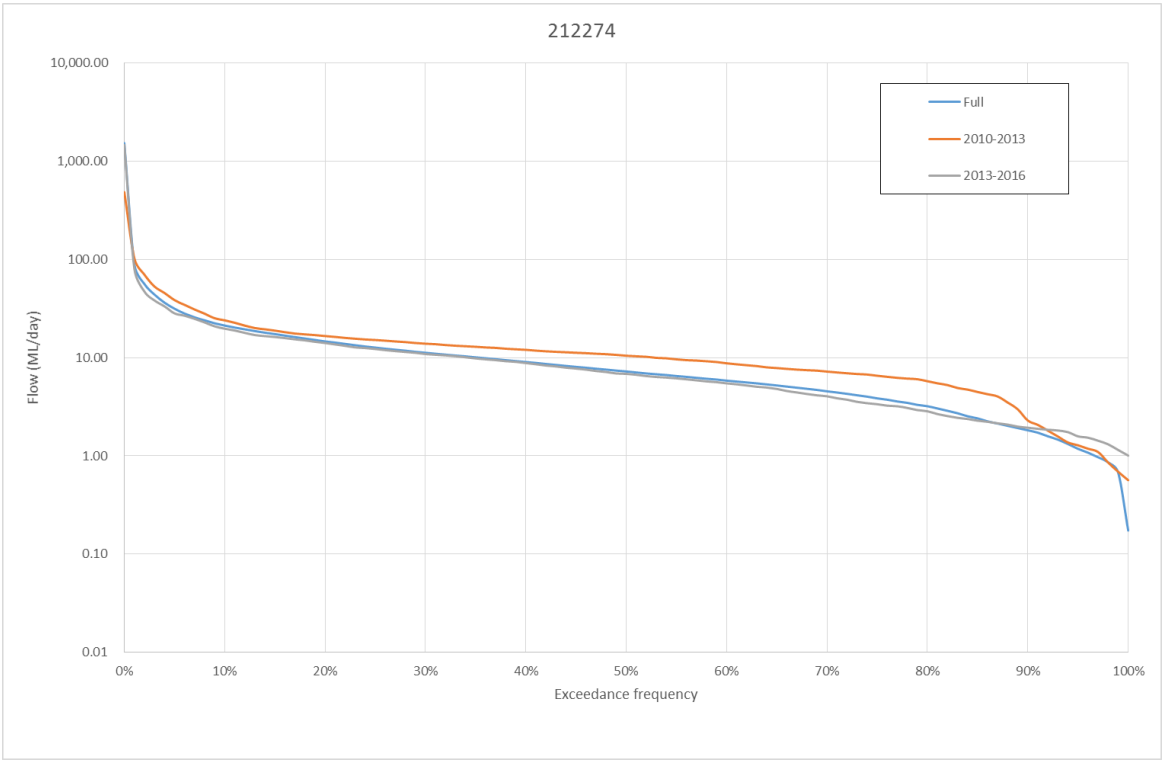
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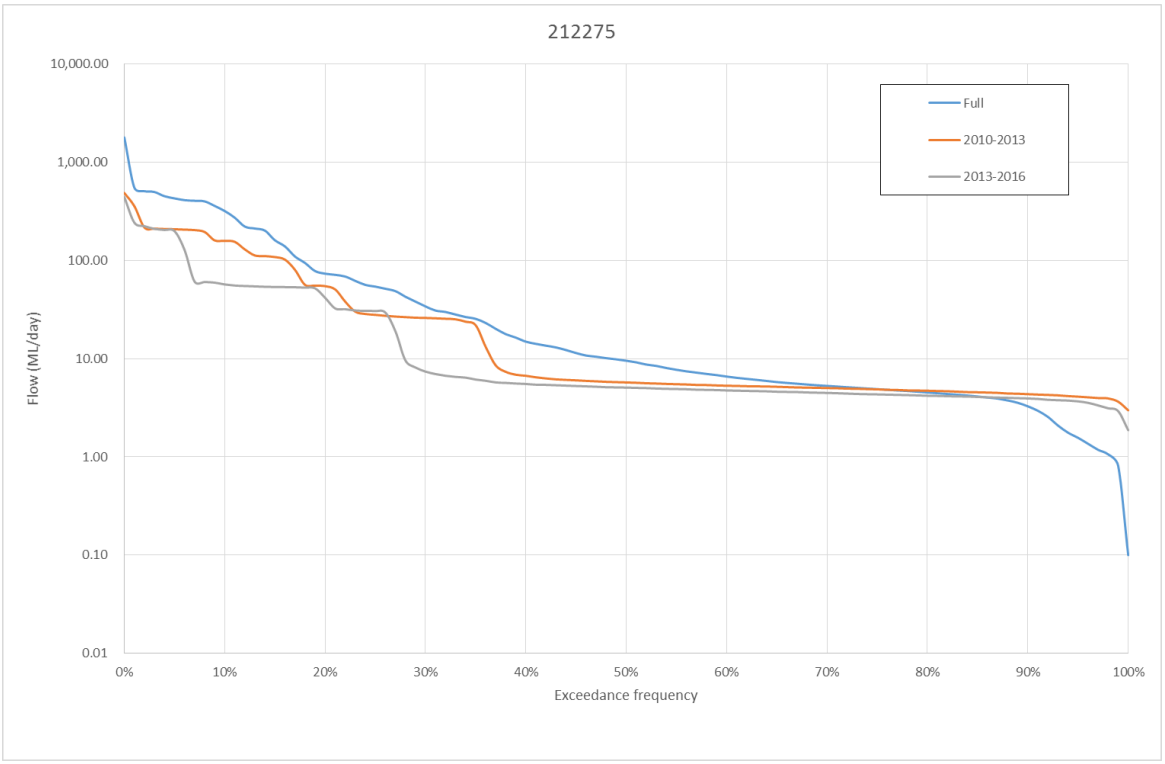
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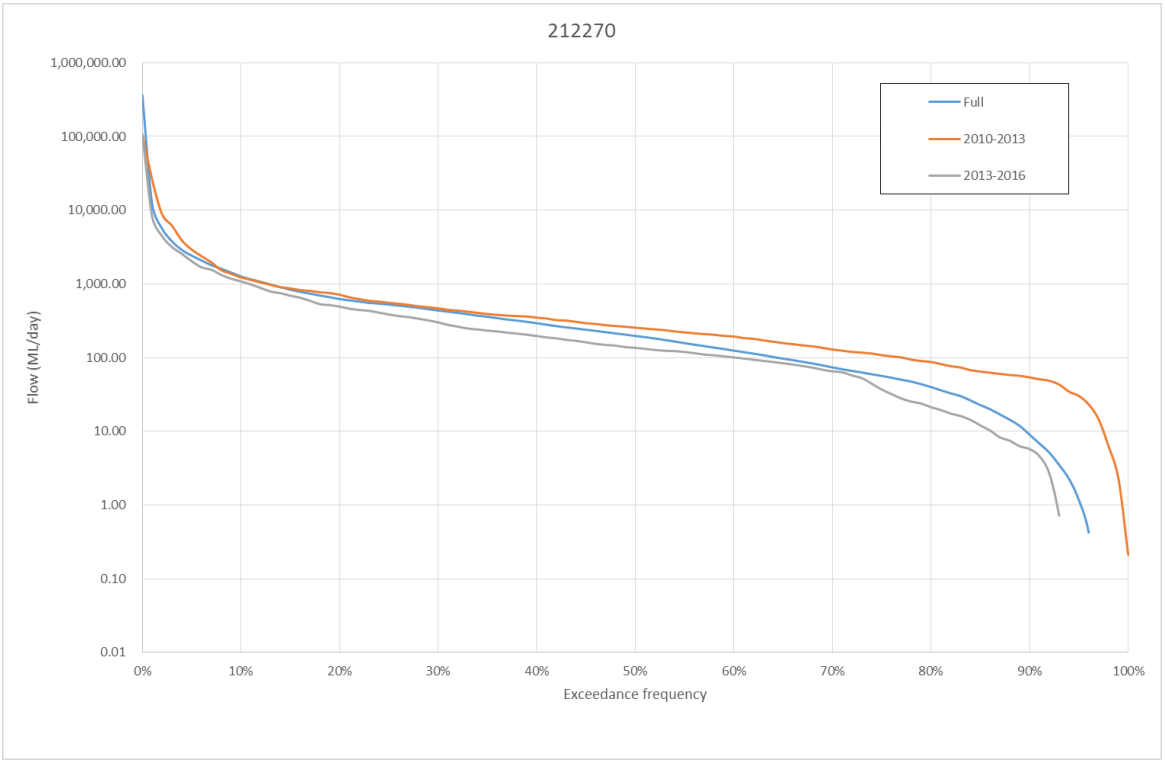
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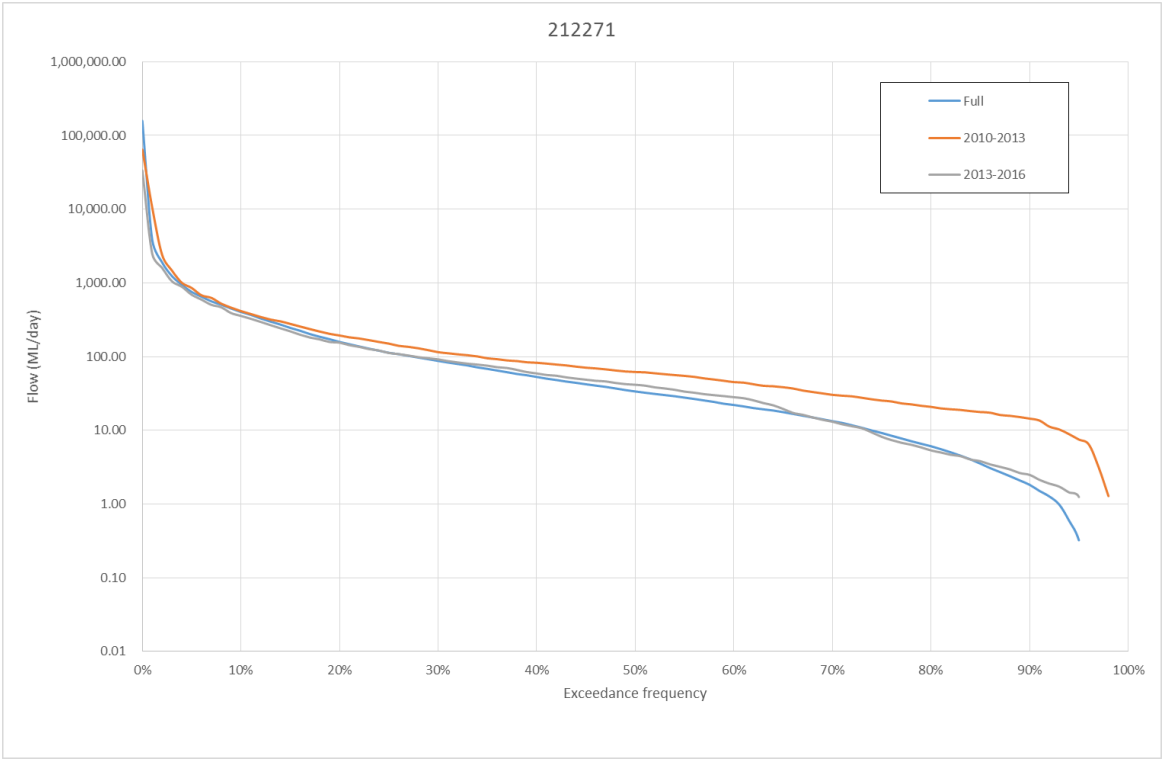
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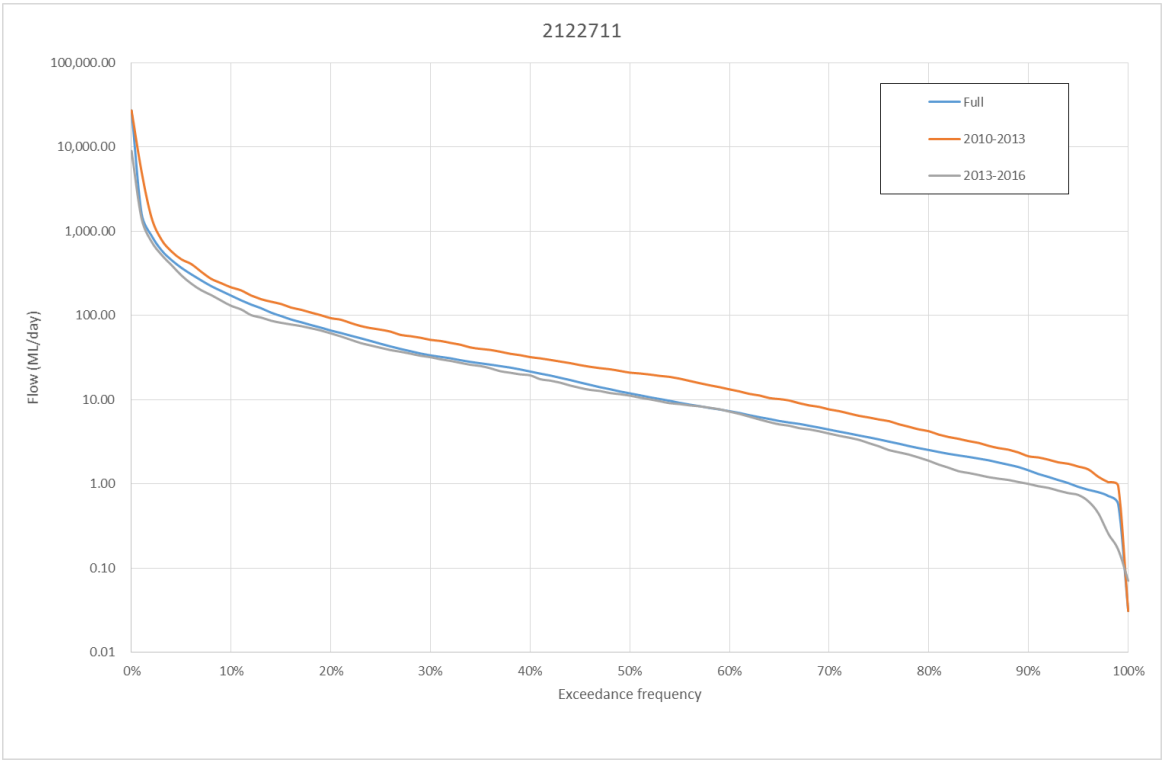
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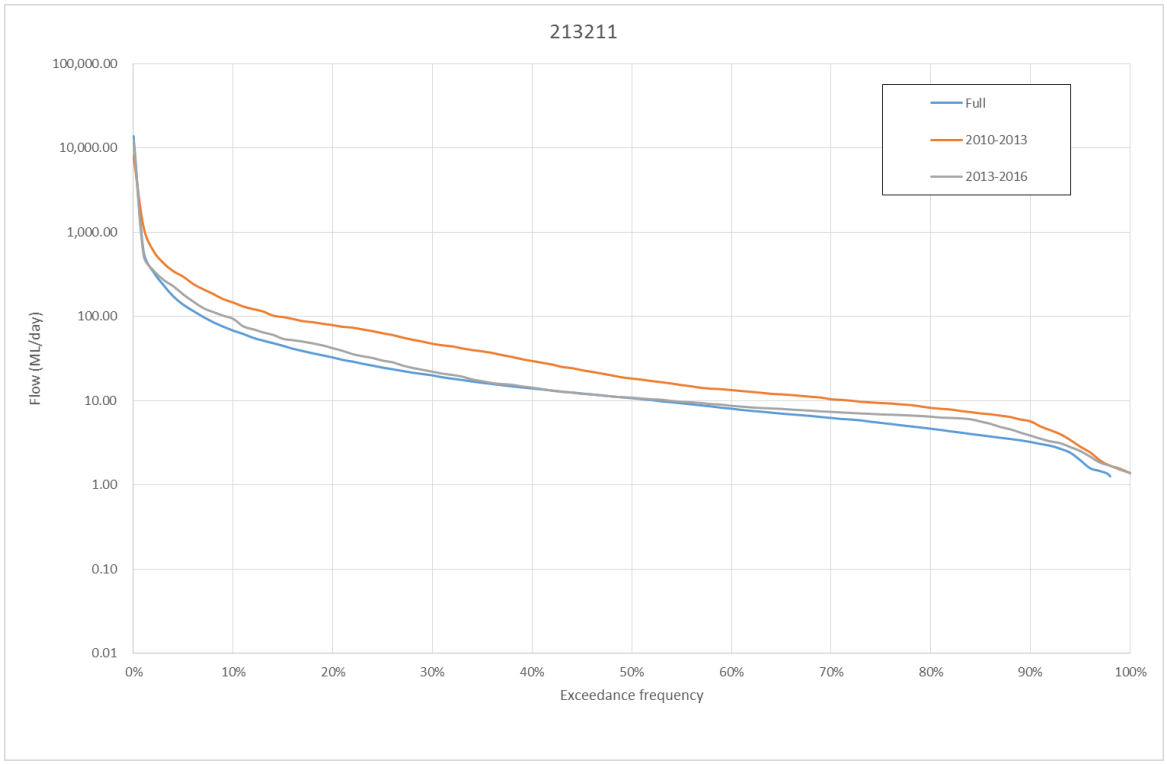
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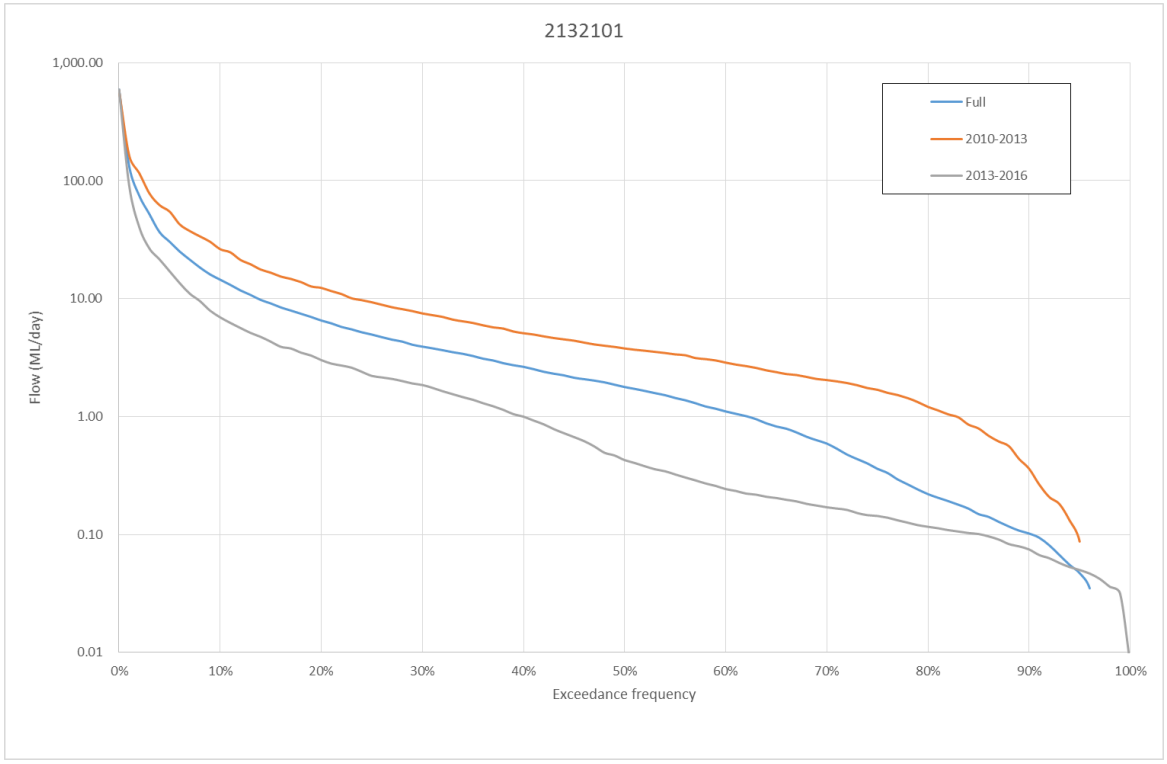
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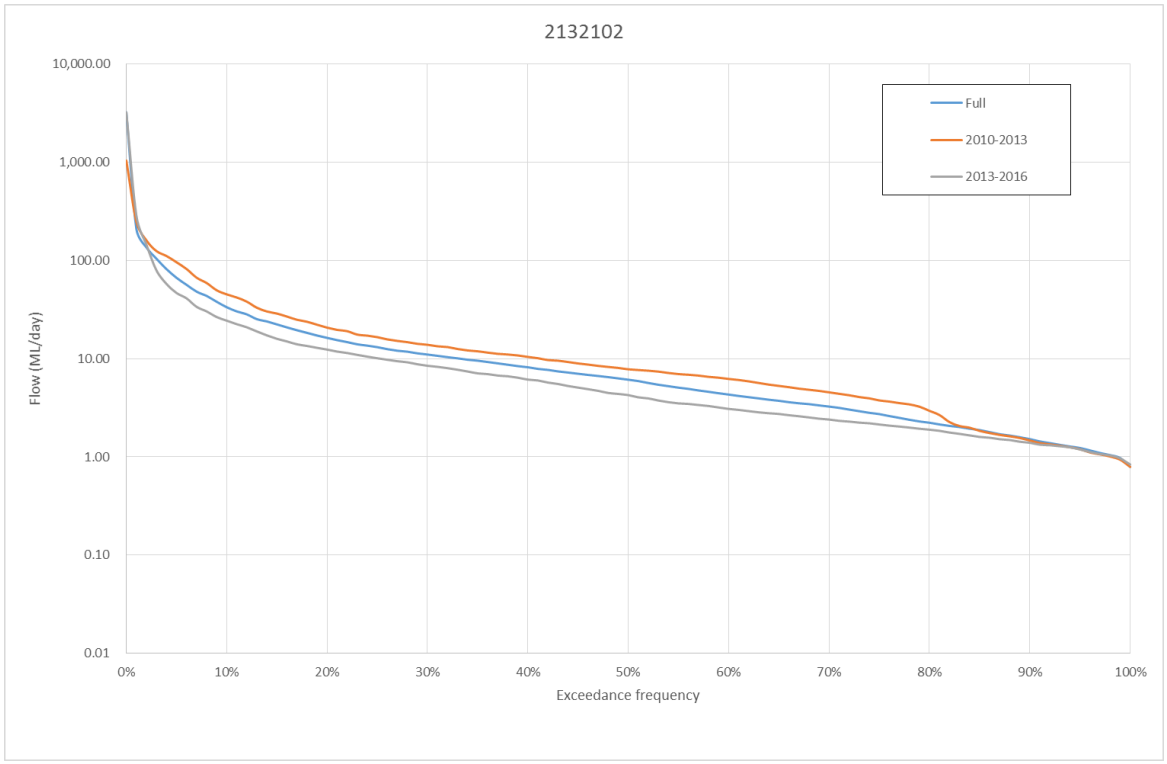
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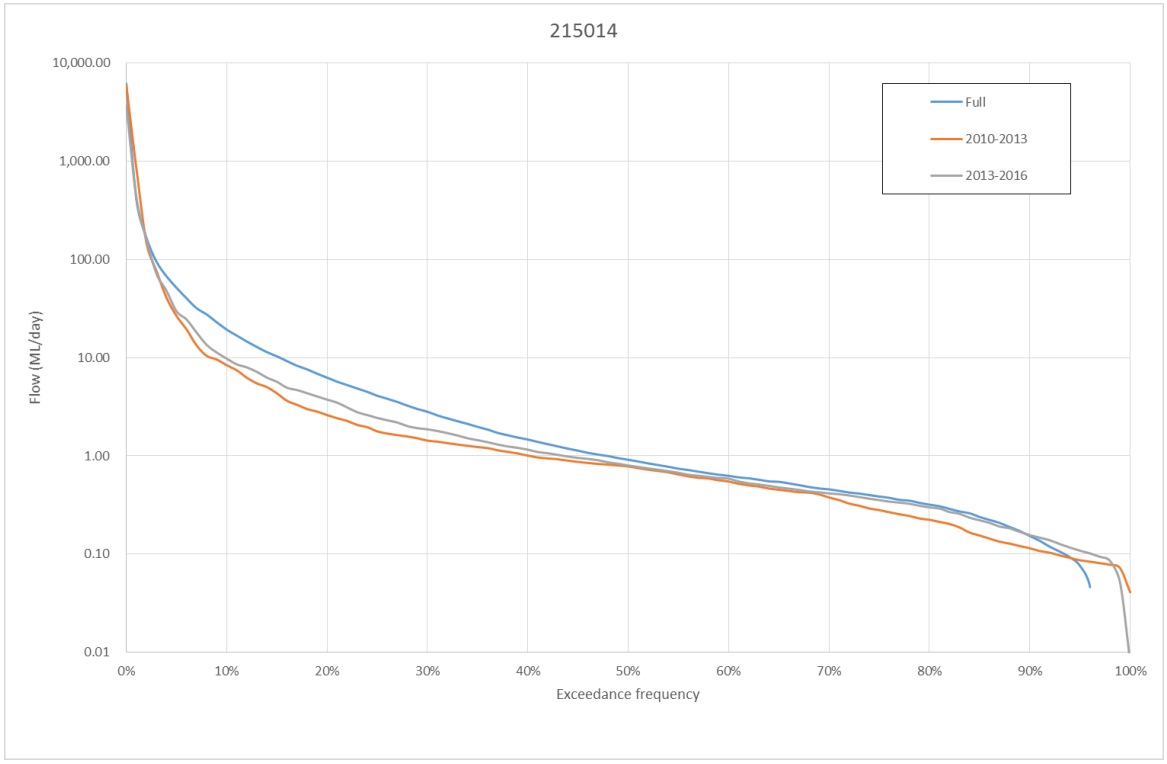
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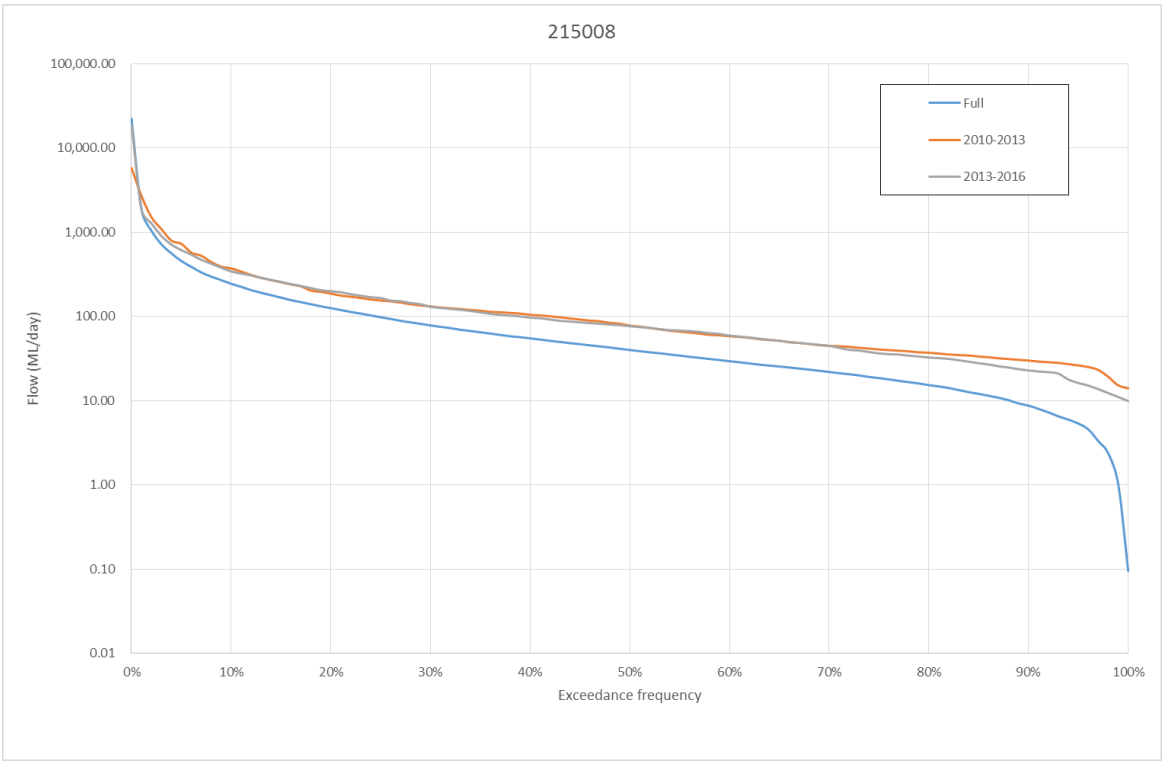
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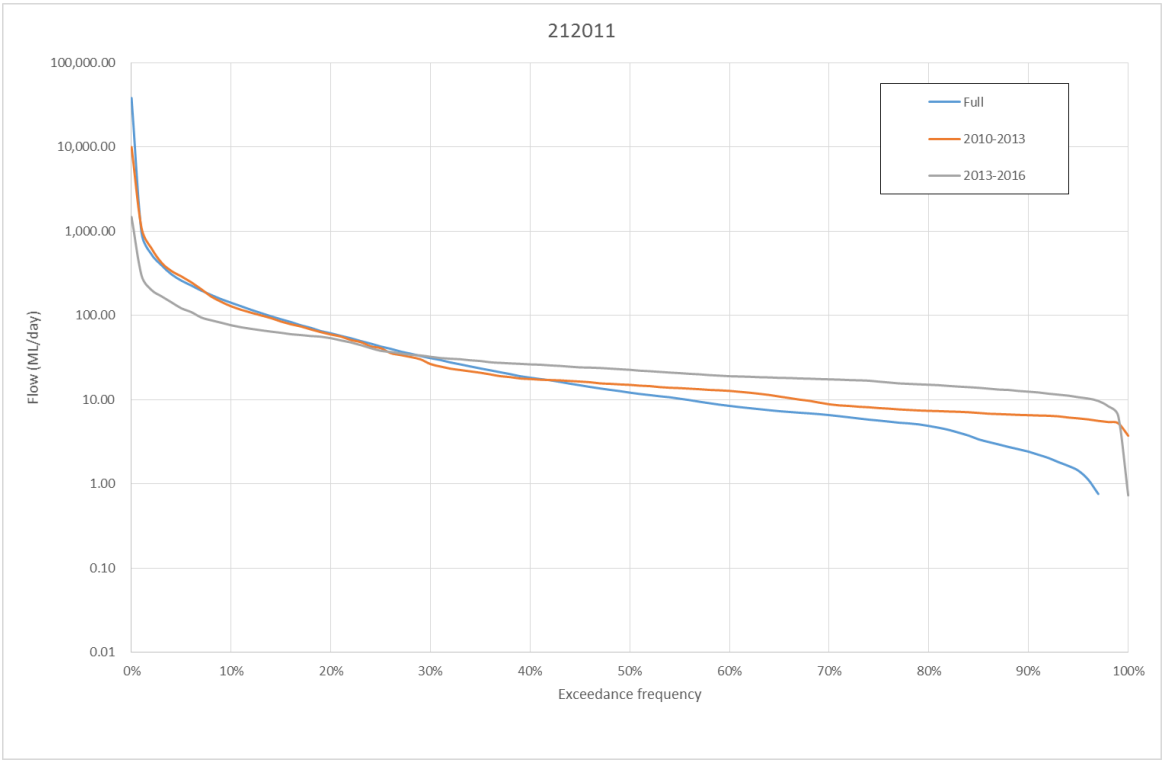
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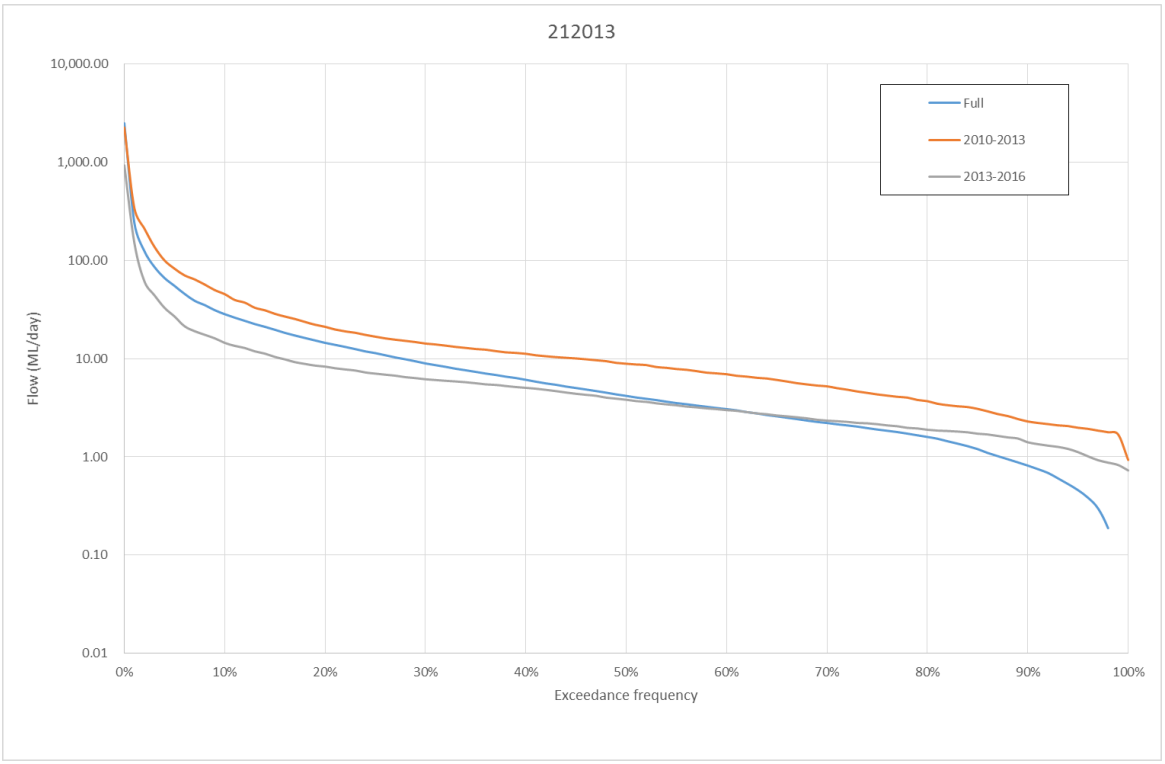
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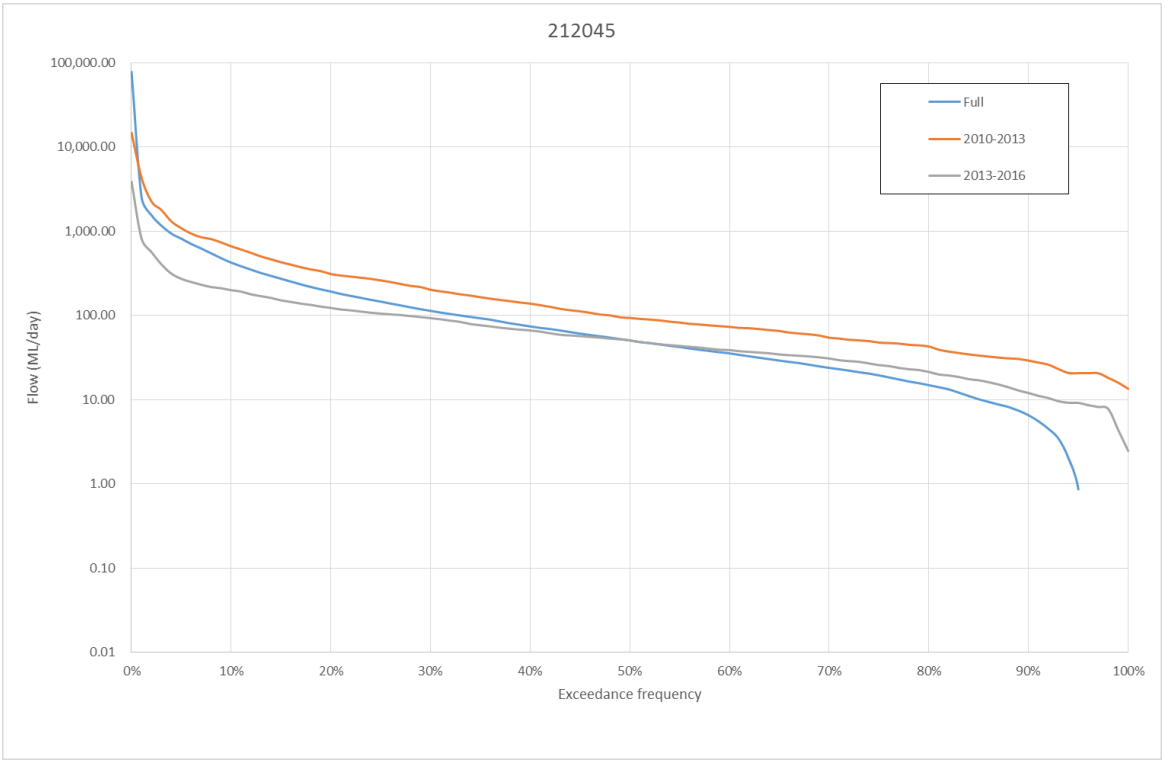
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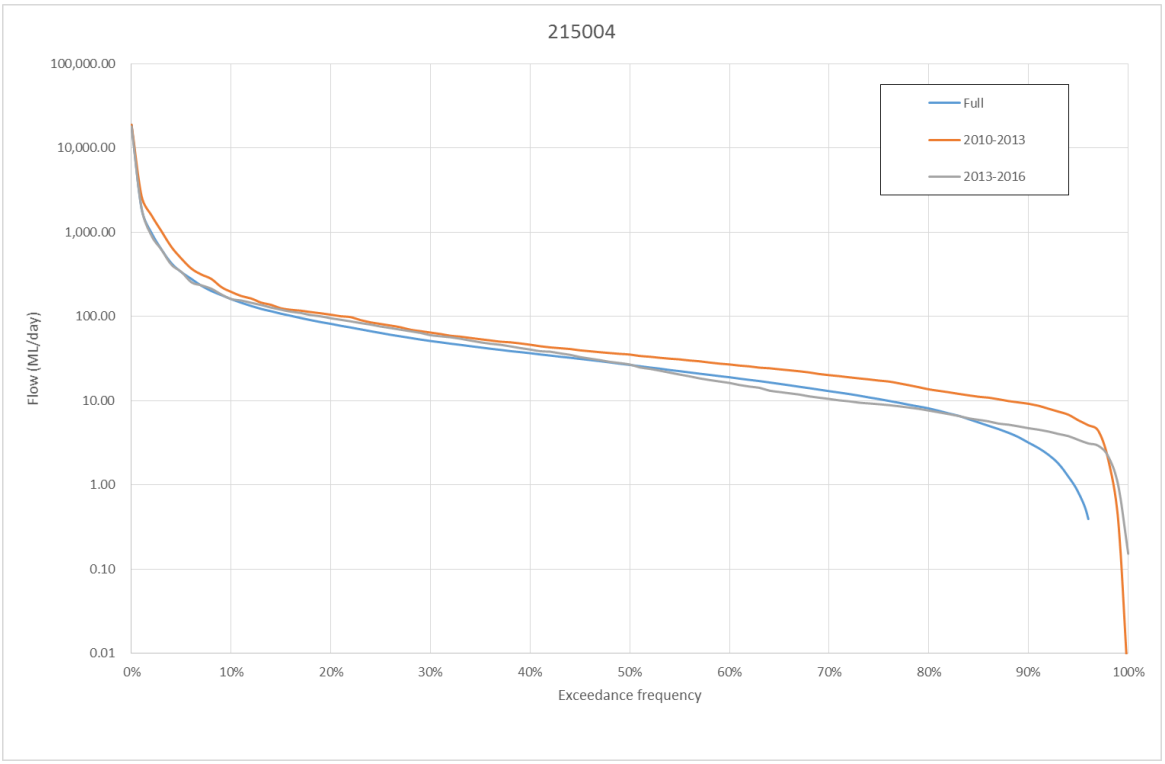
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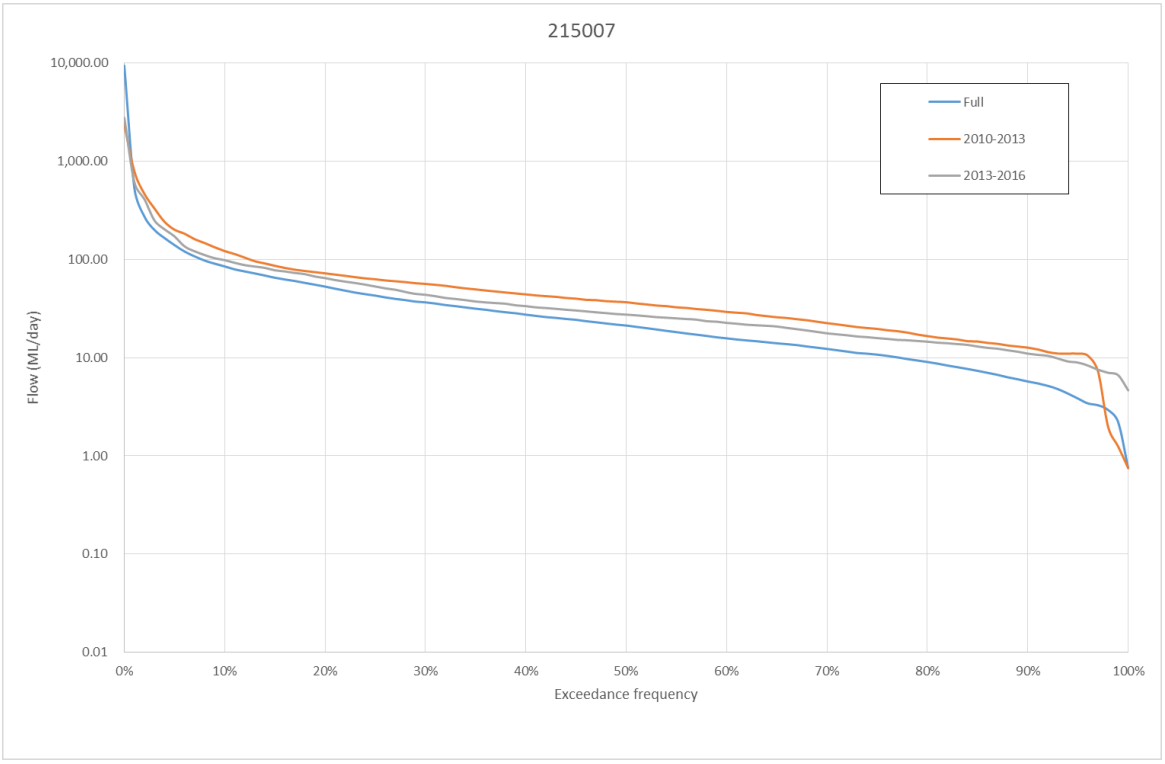
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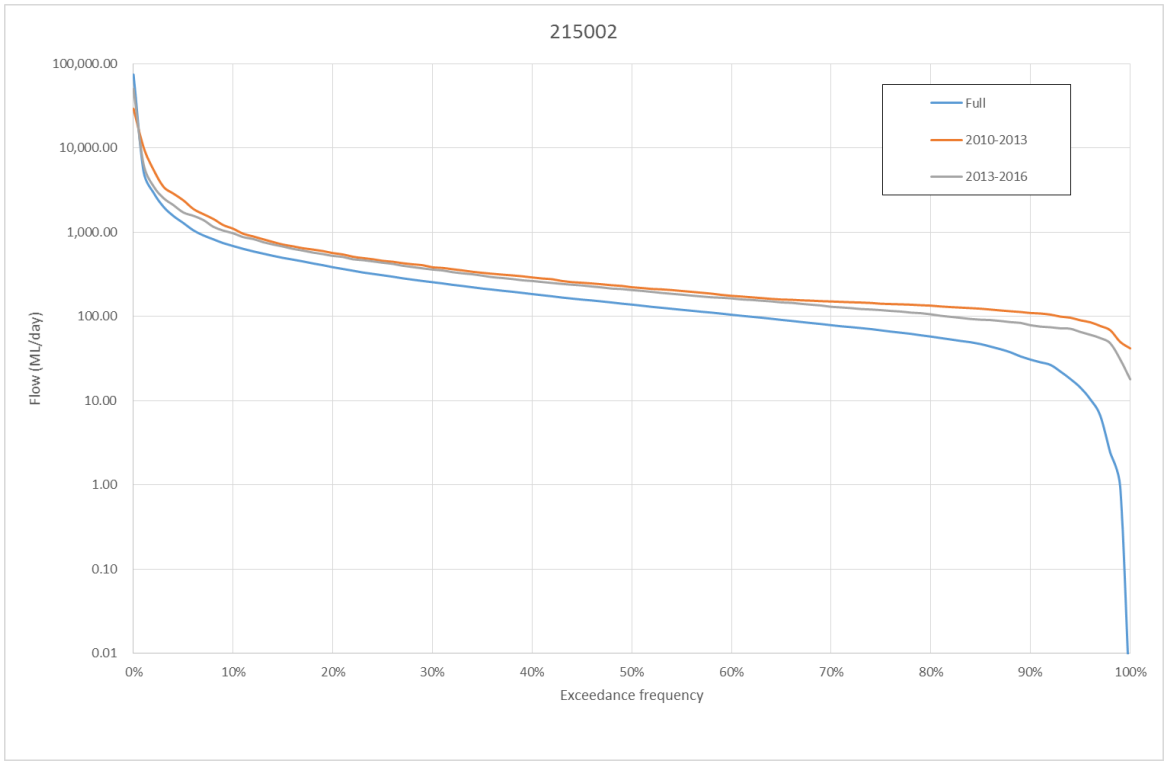
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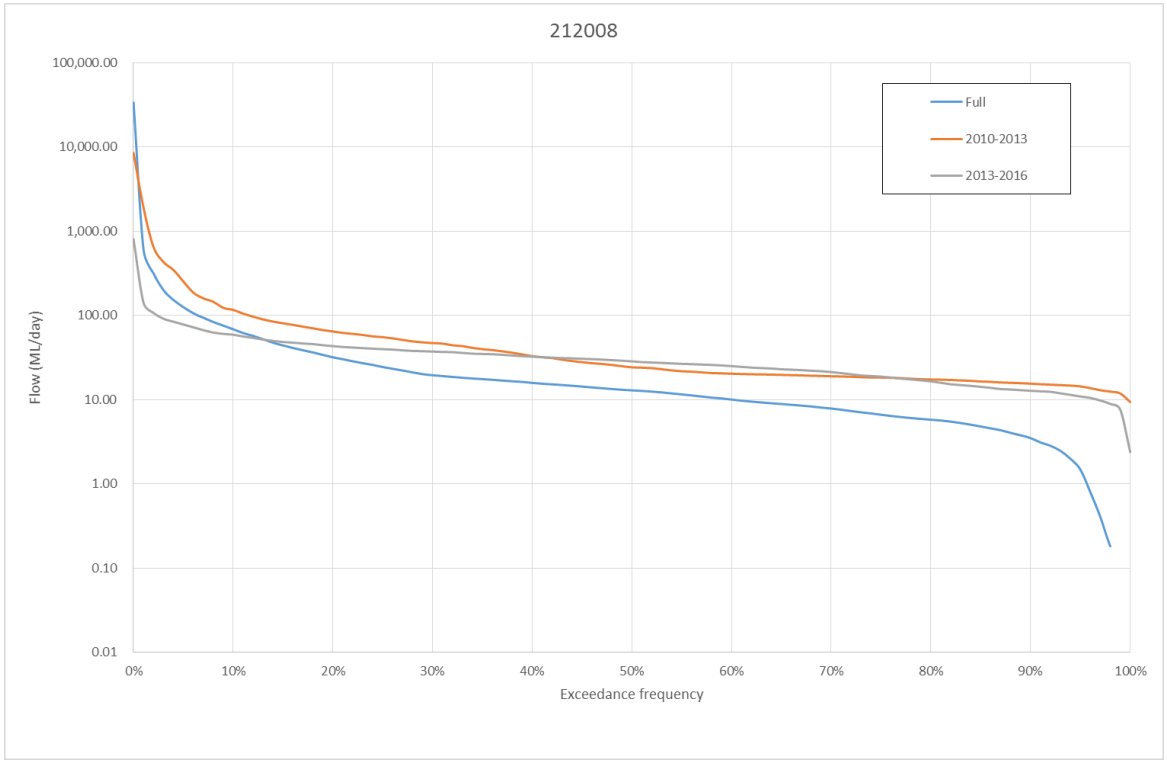
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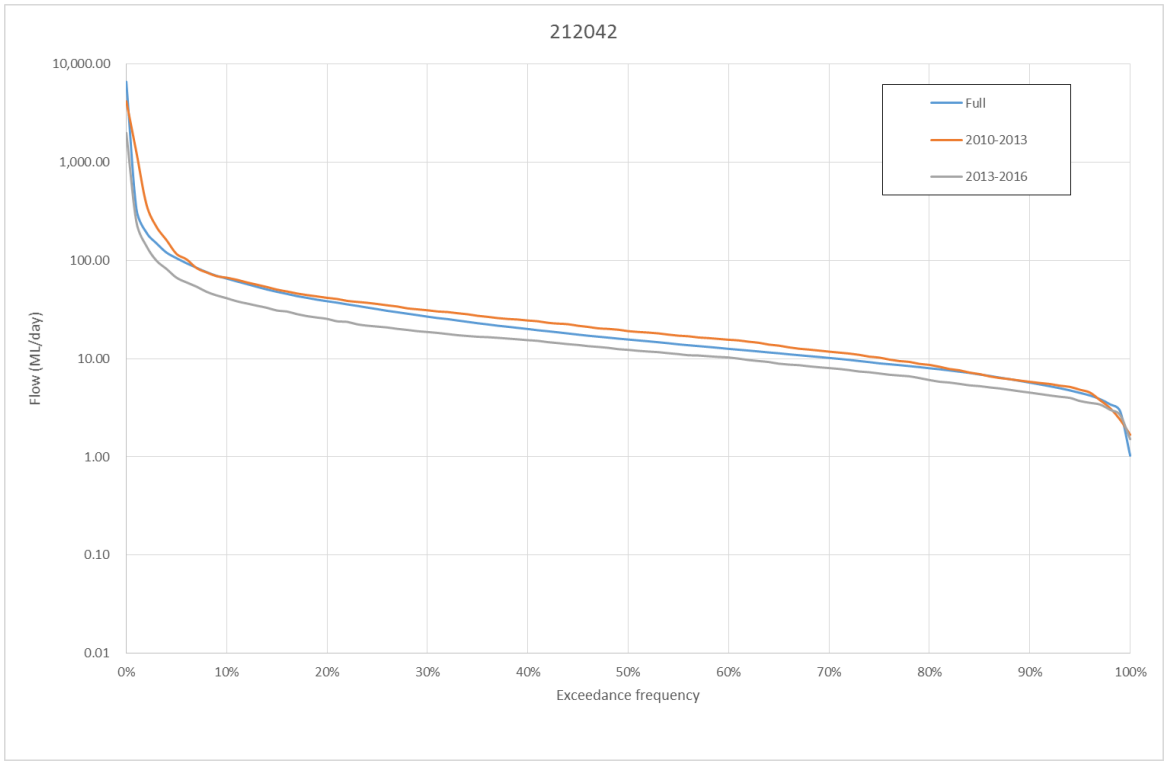
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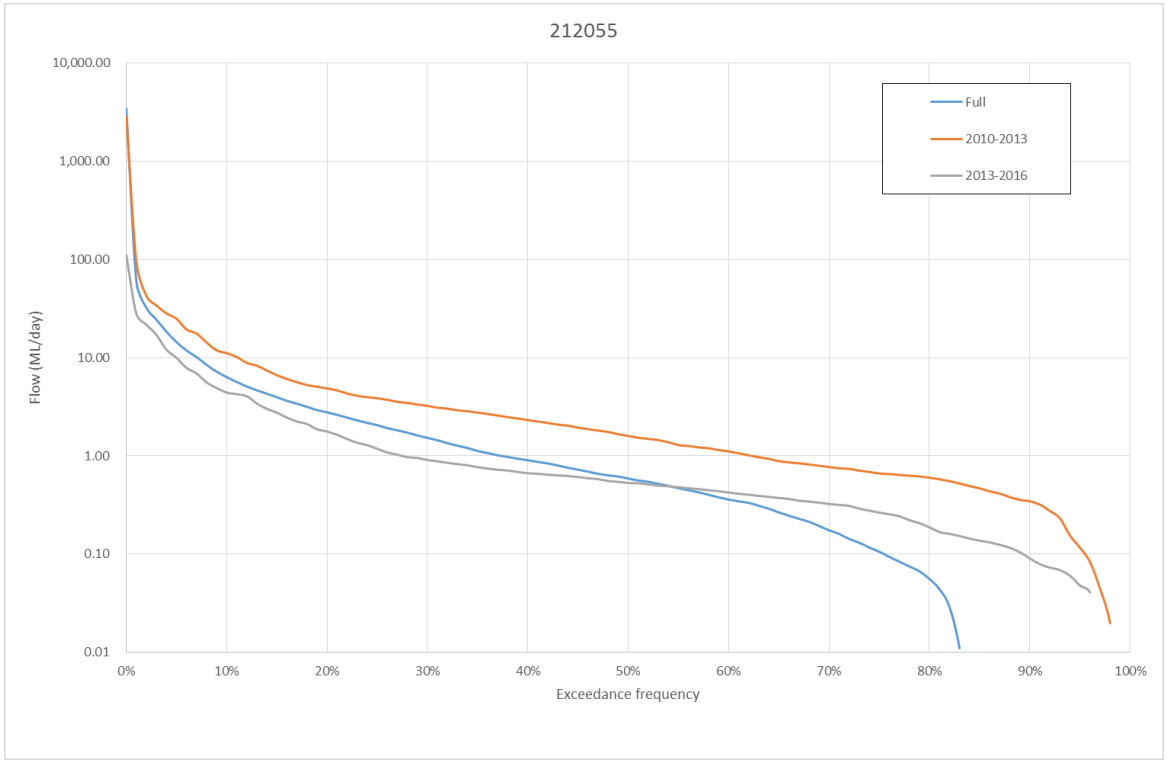
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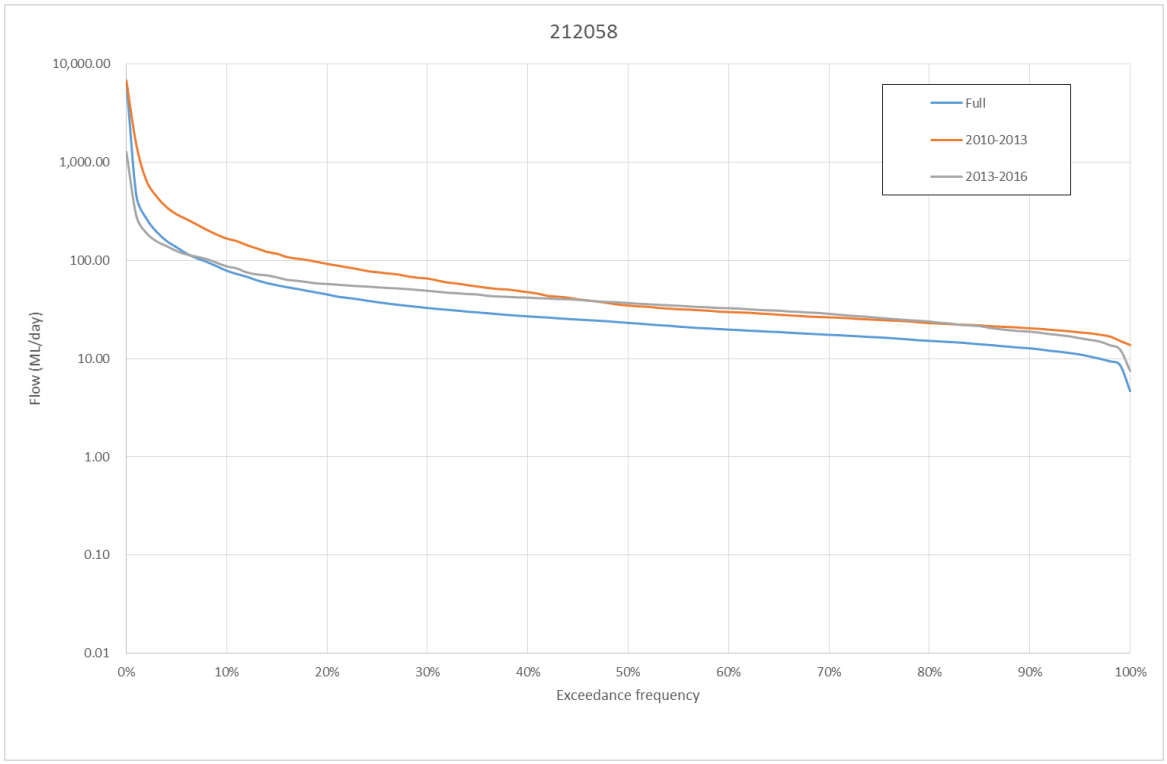
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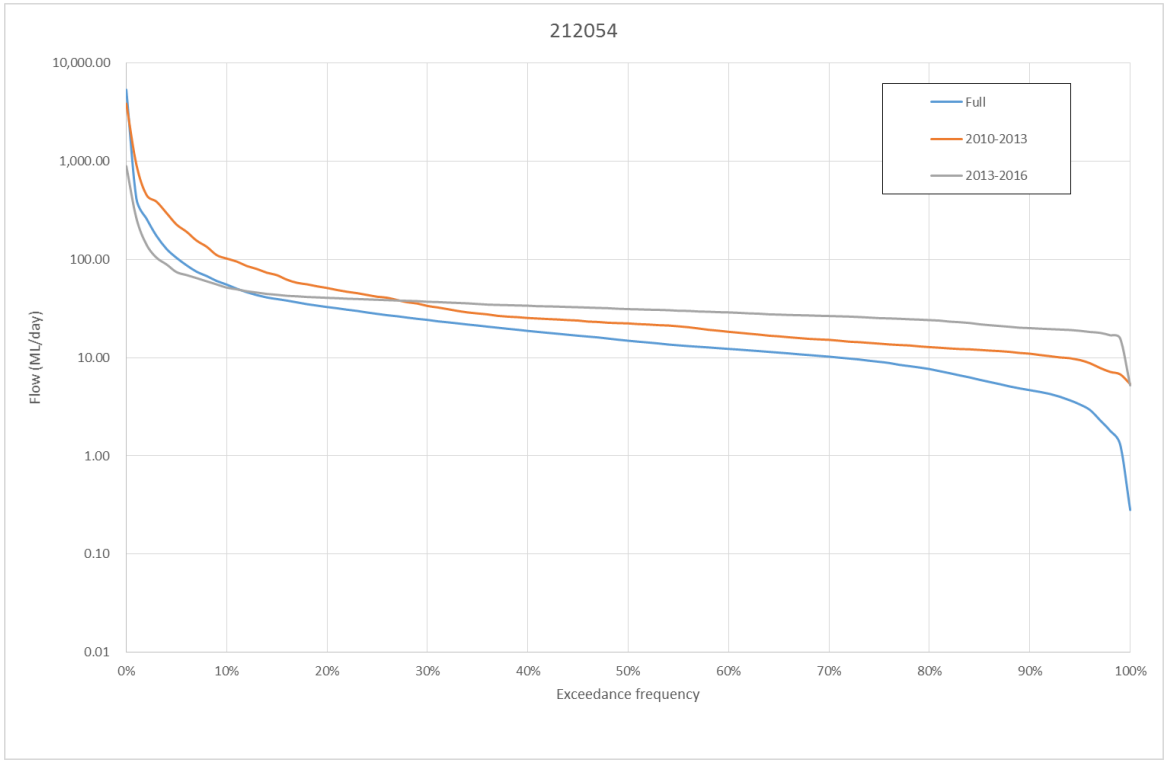
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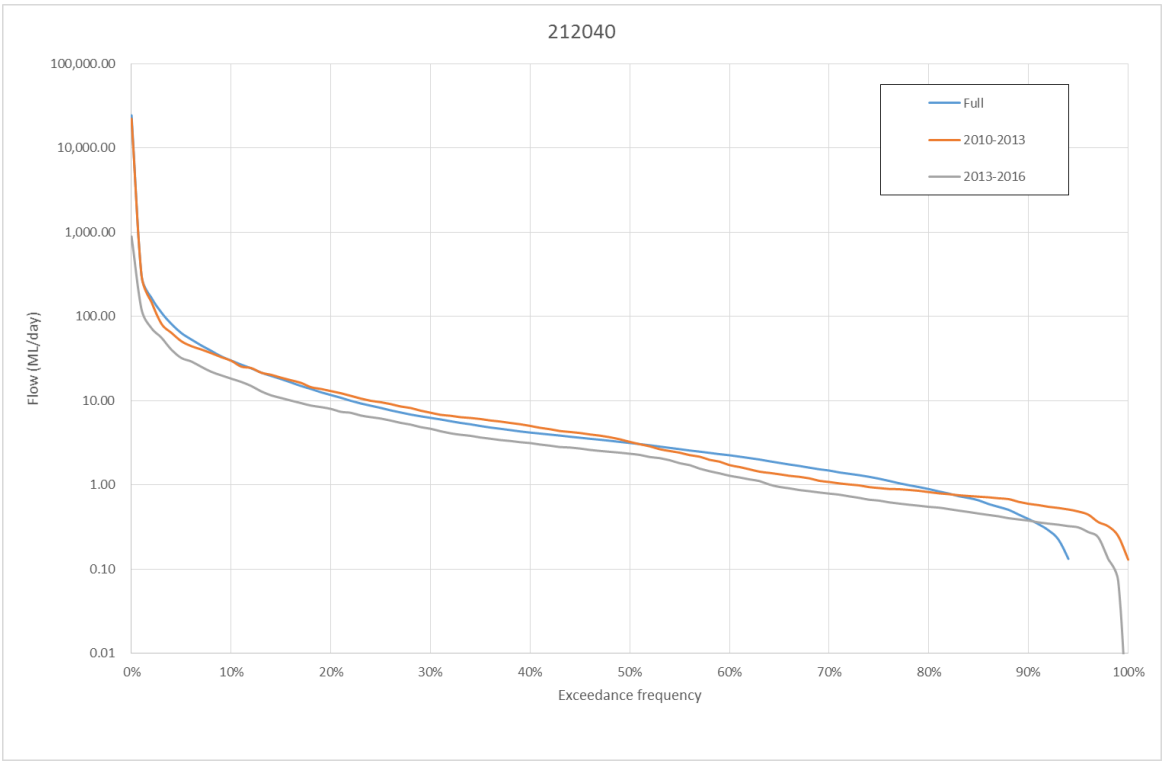
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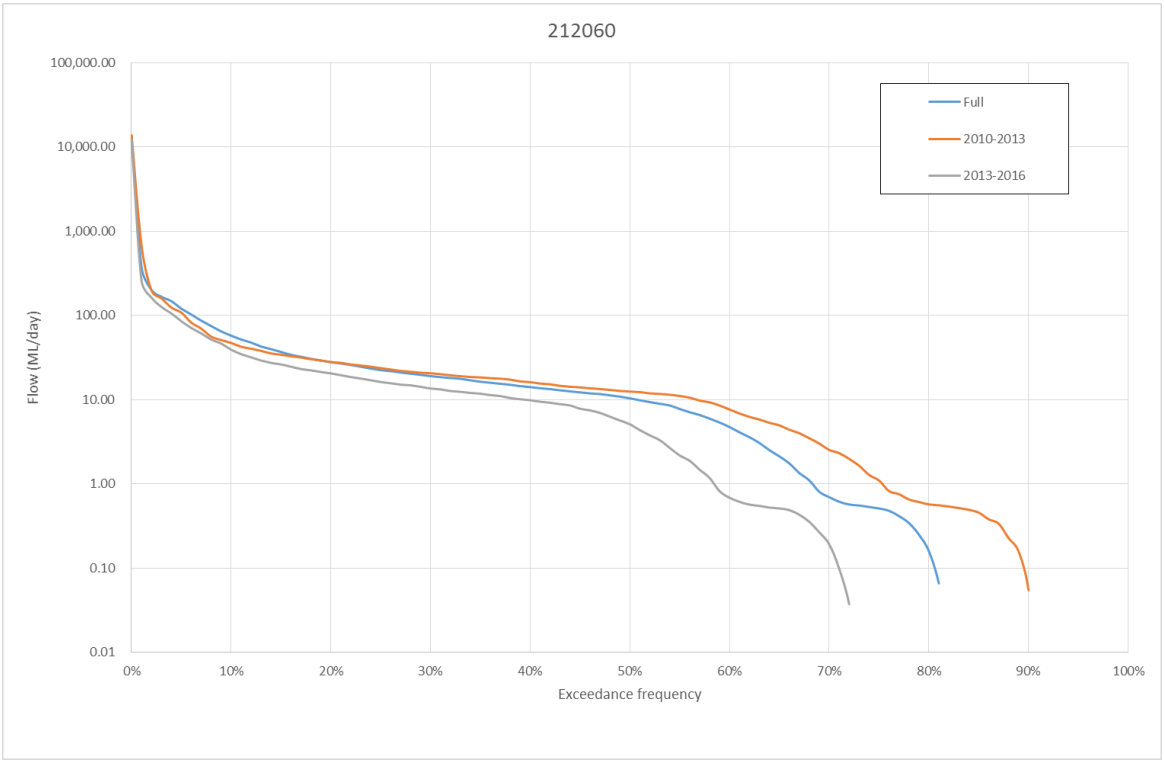
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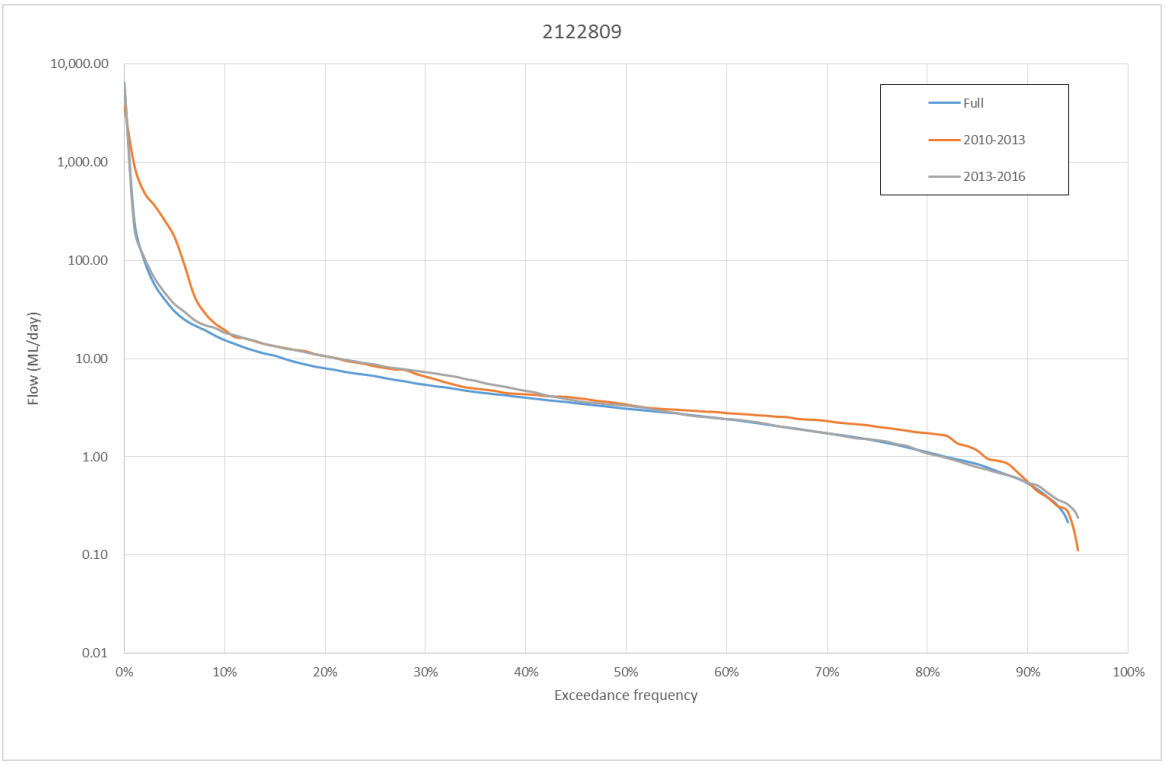
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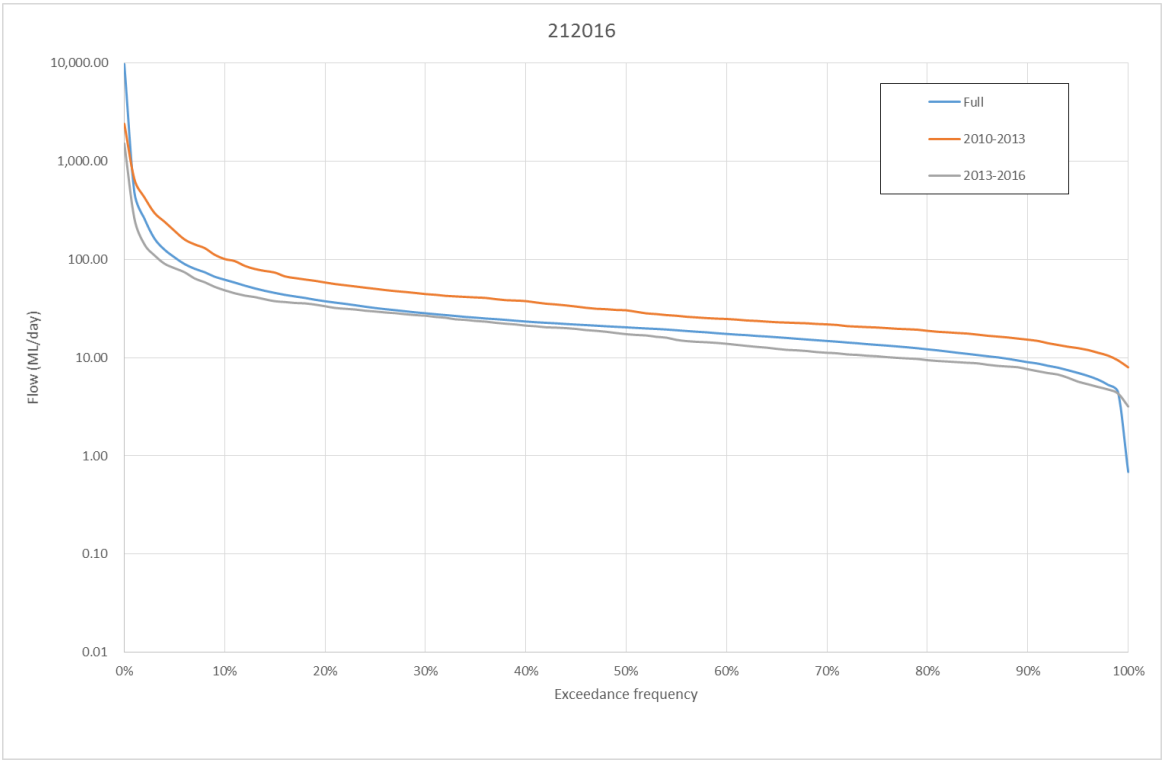
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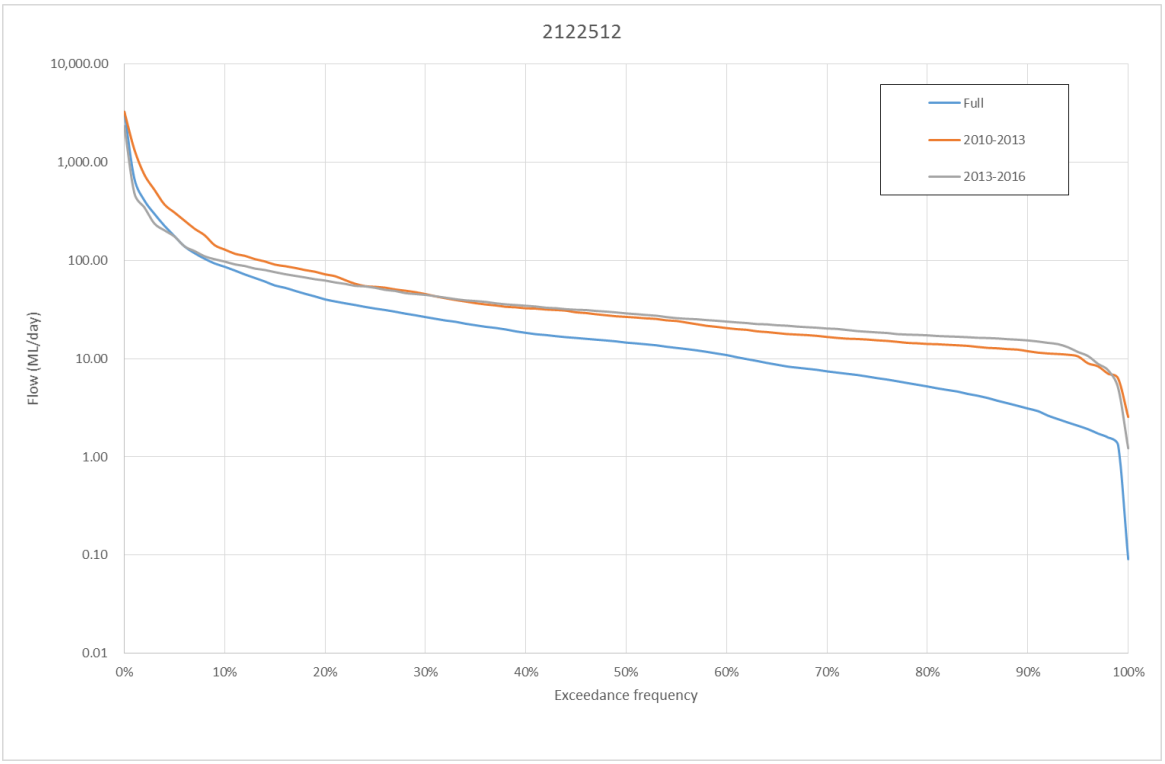
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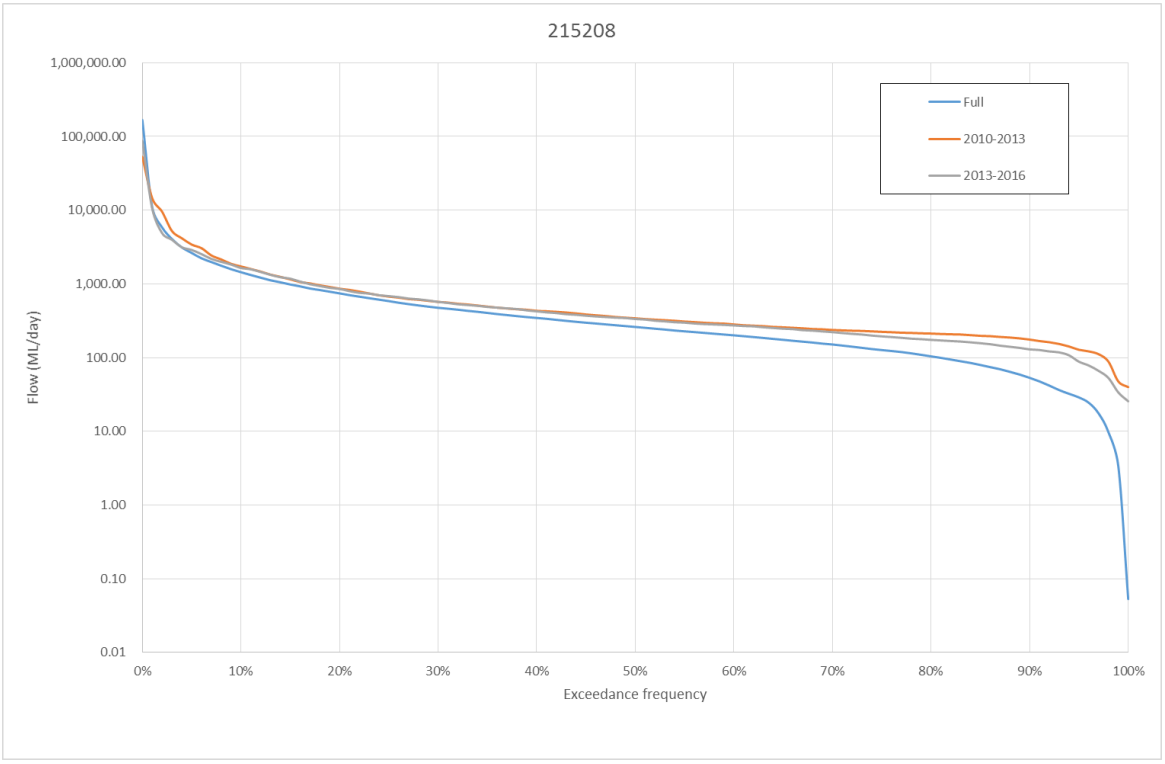
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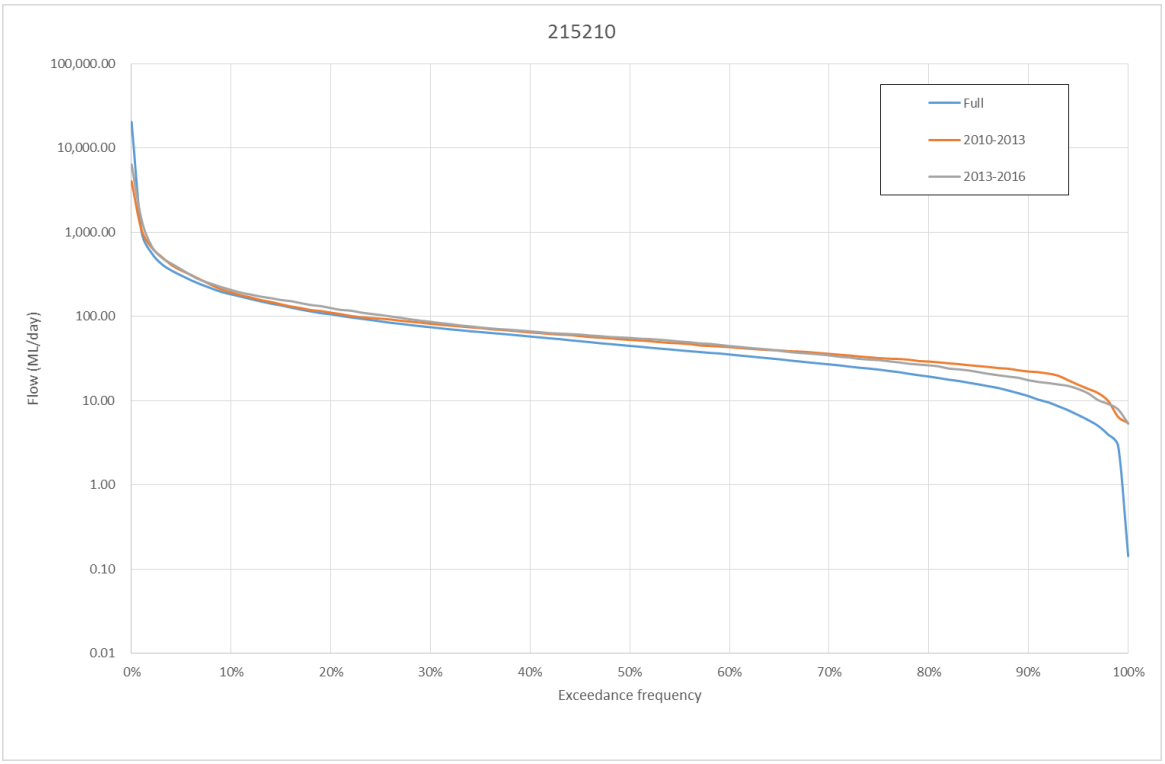
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Exceedance frequency
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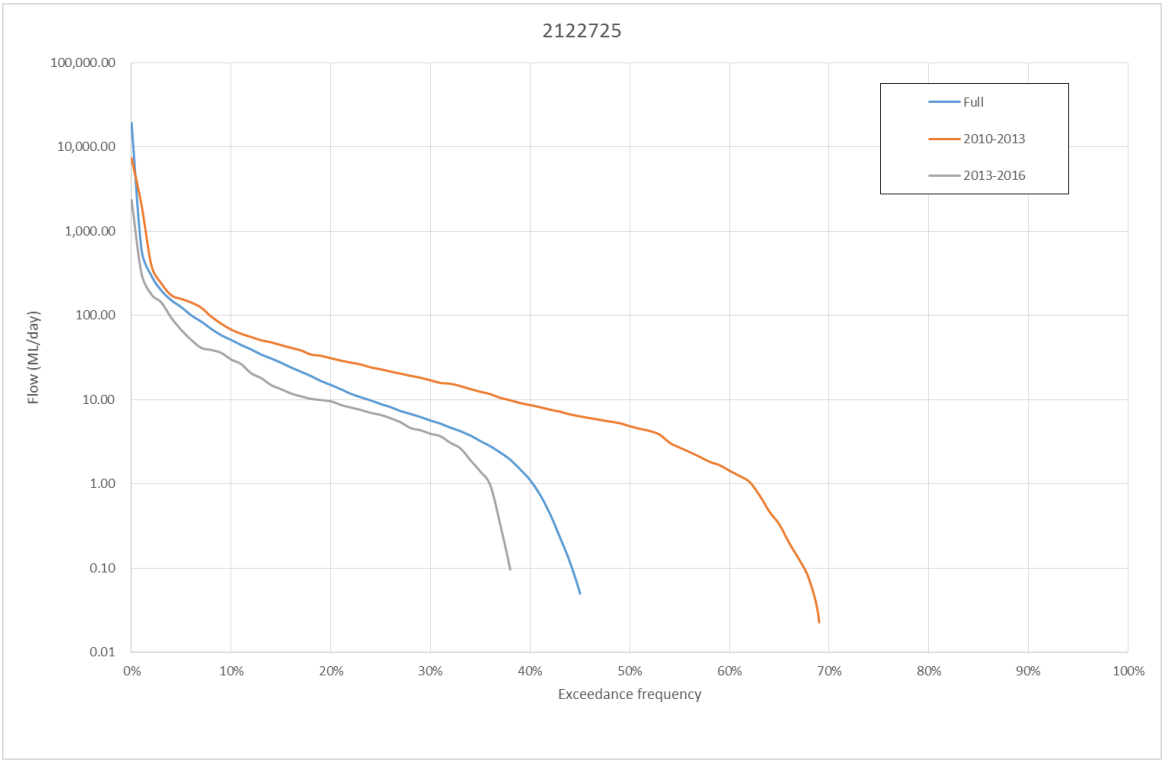
2013-2016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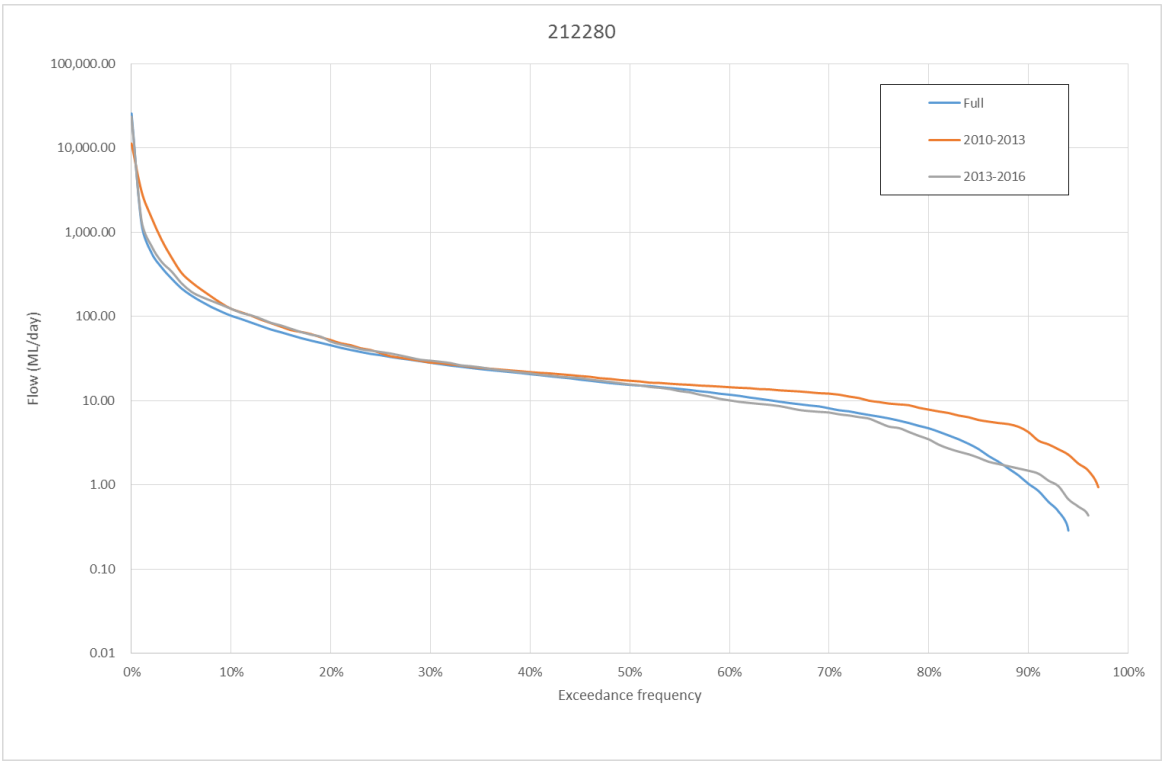
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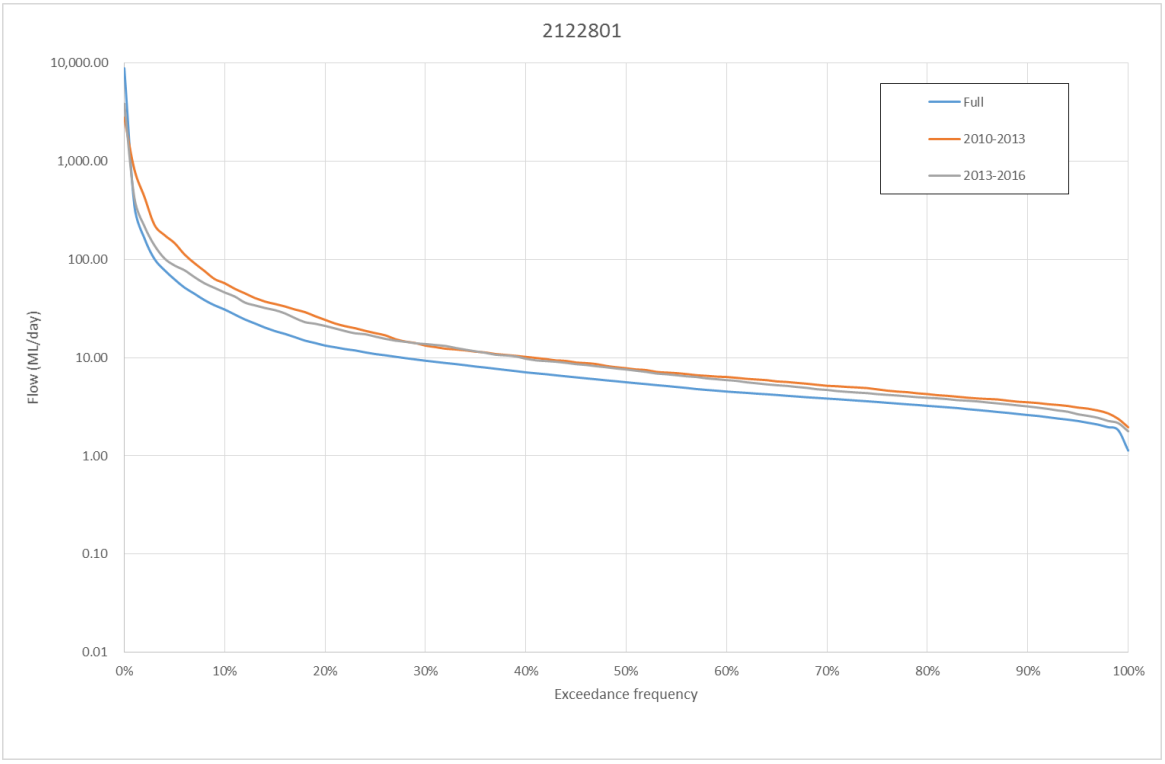
2013-2016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Exceedance frequency
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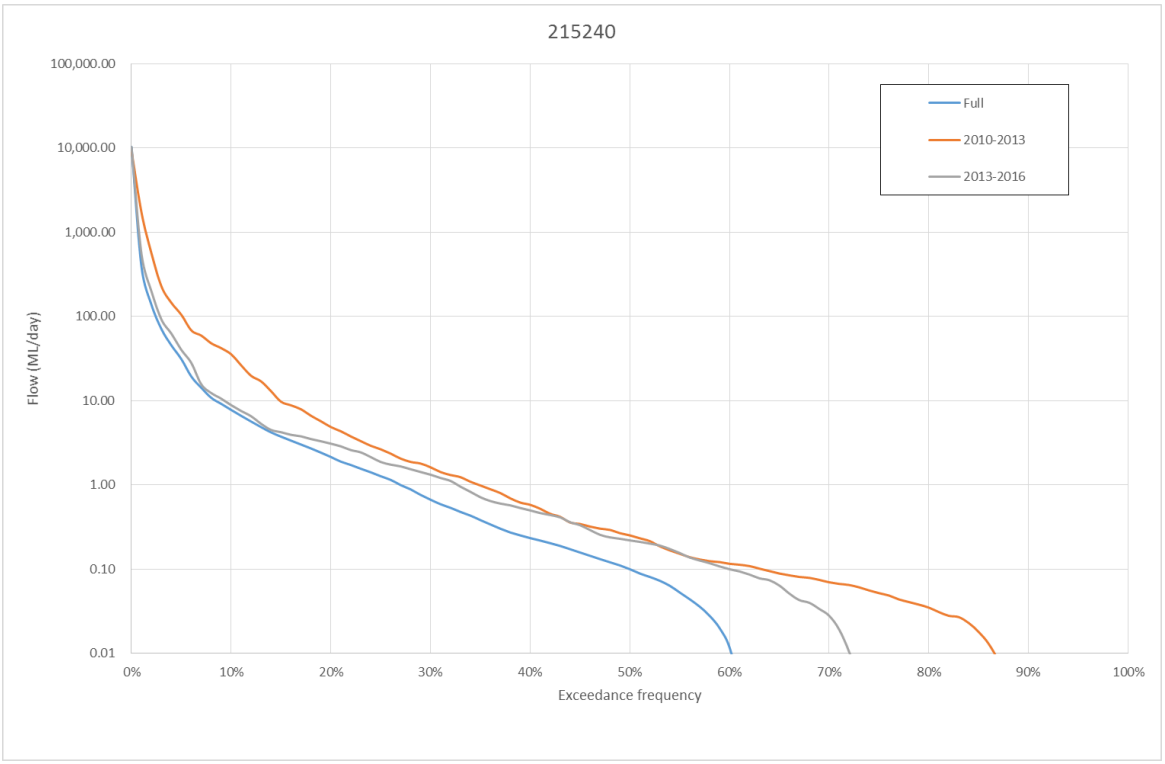
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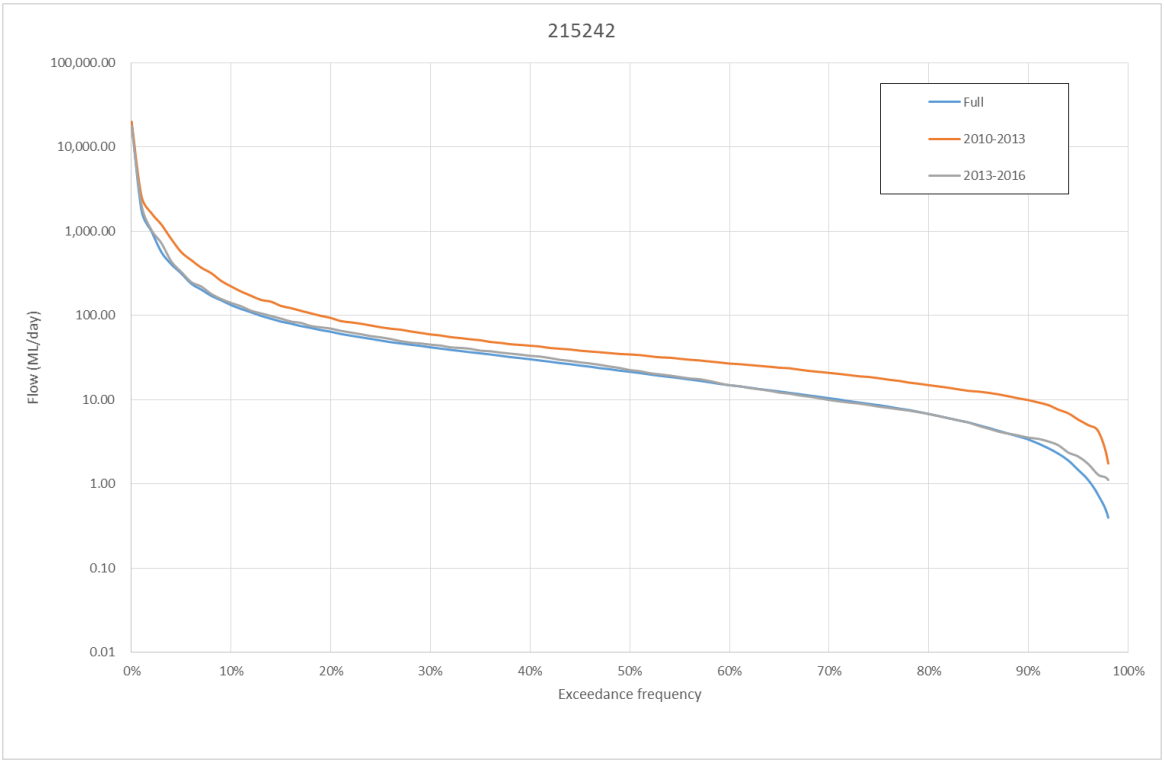
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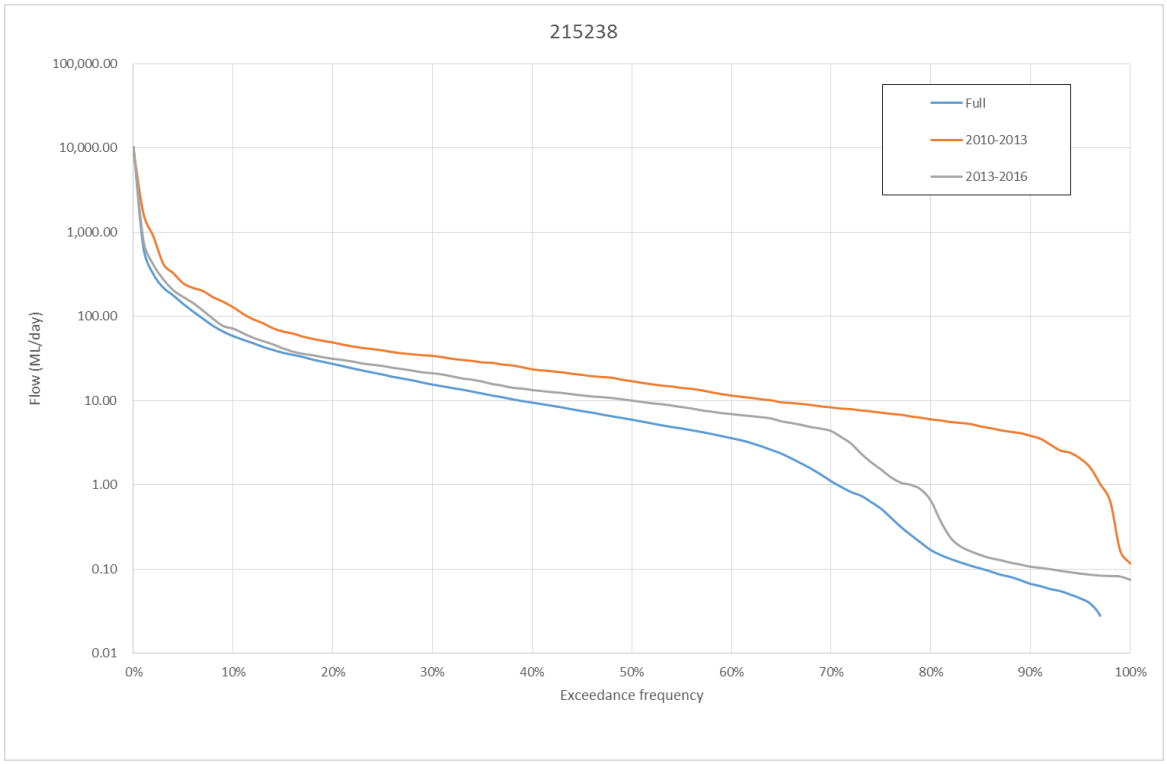
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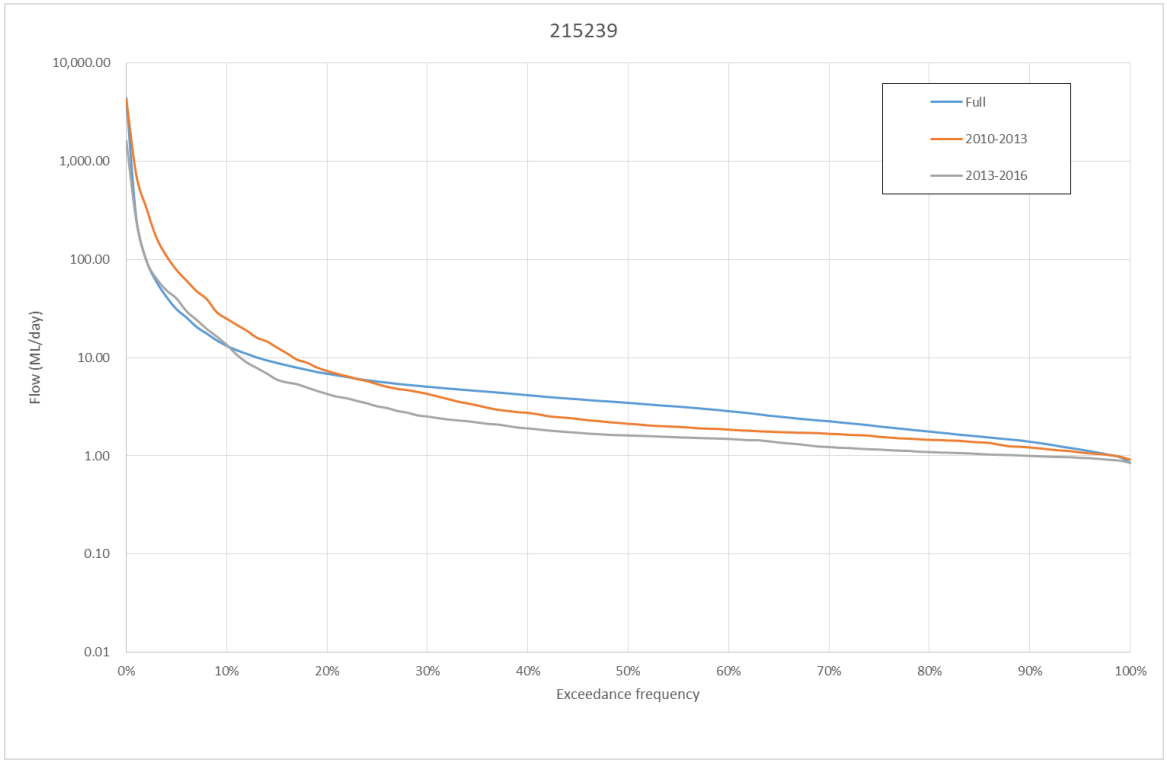
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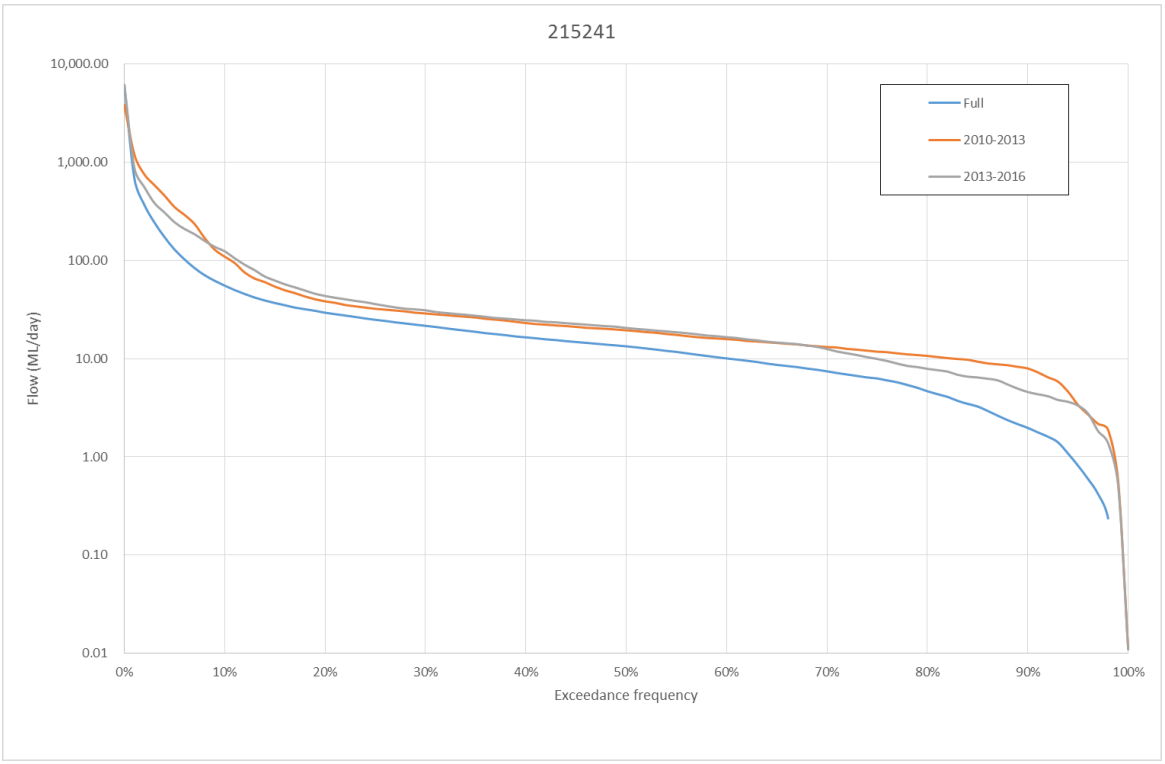
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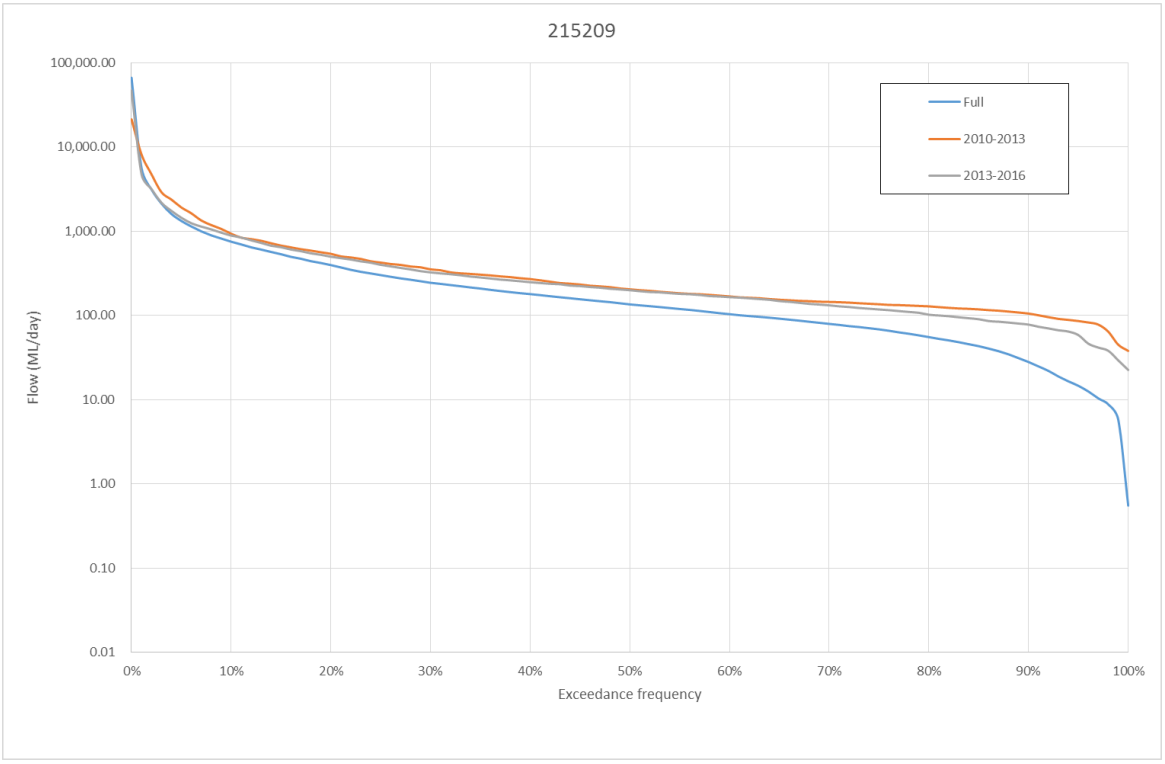
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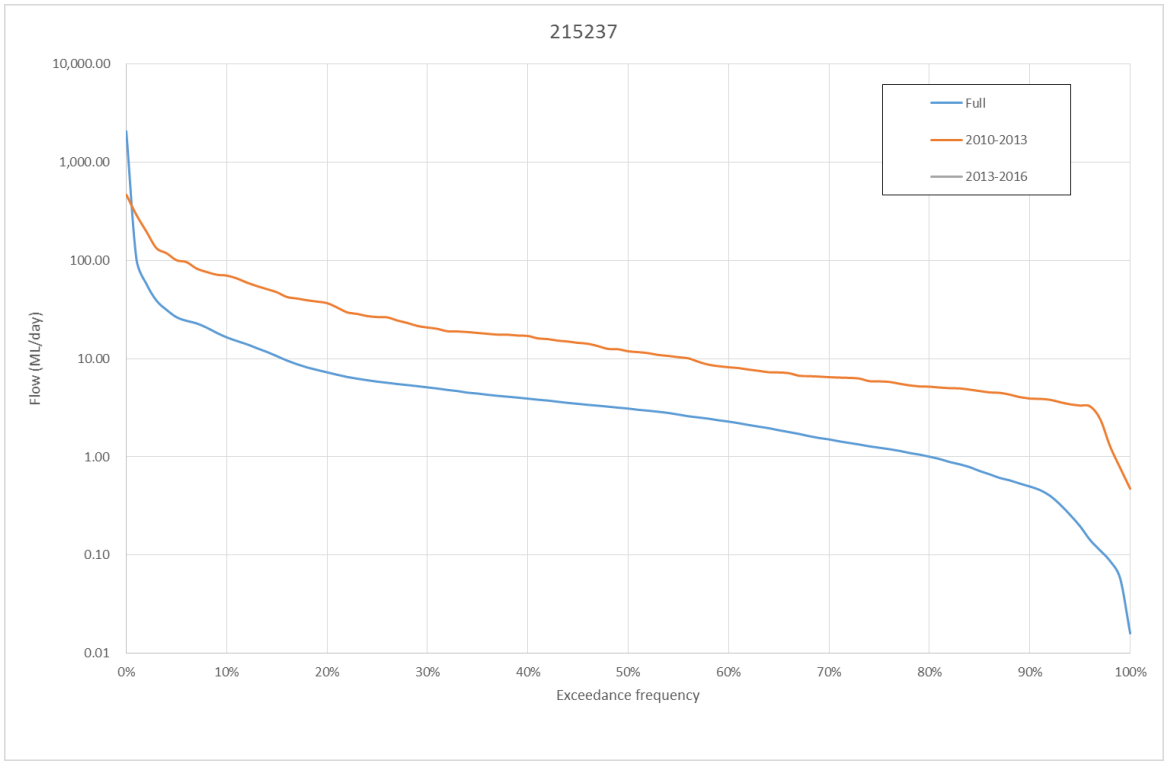
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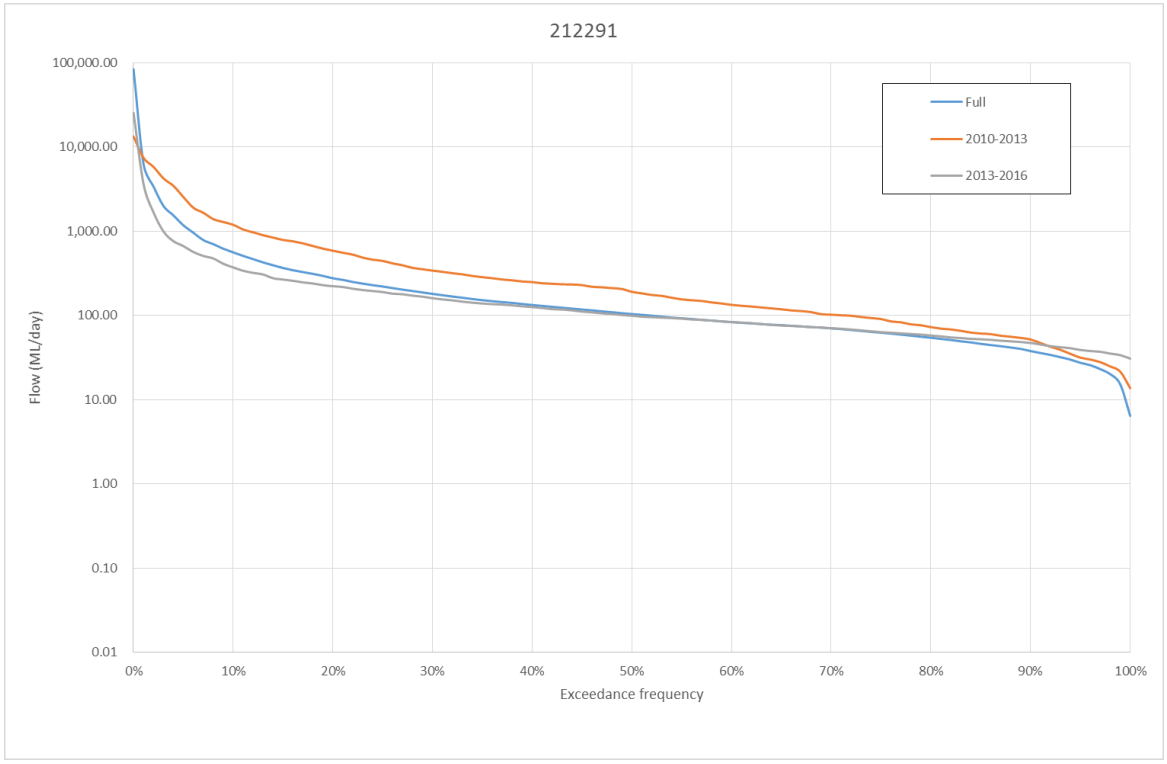
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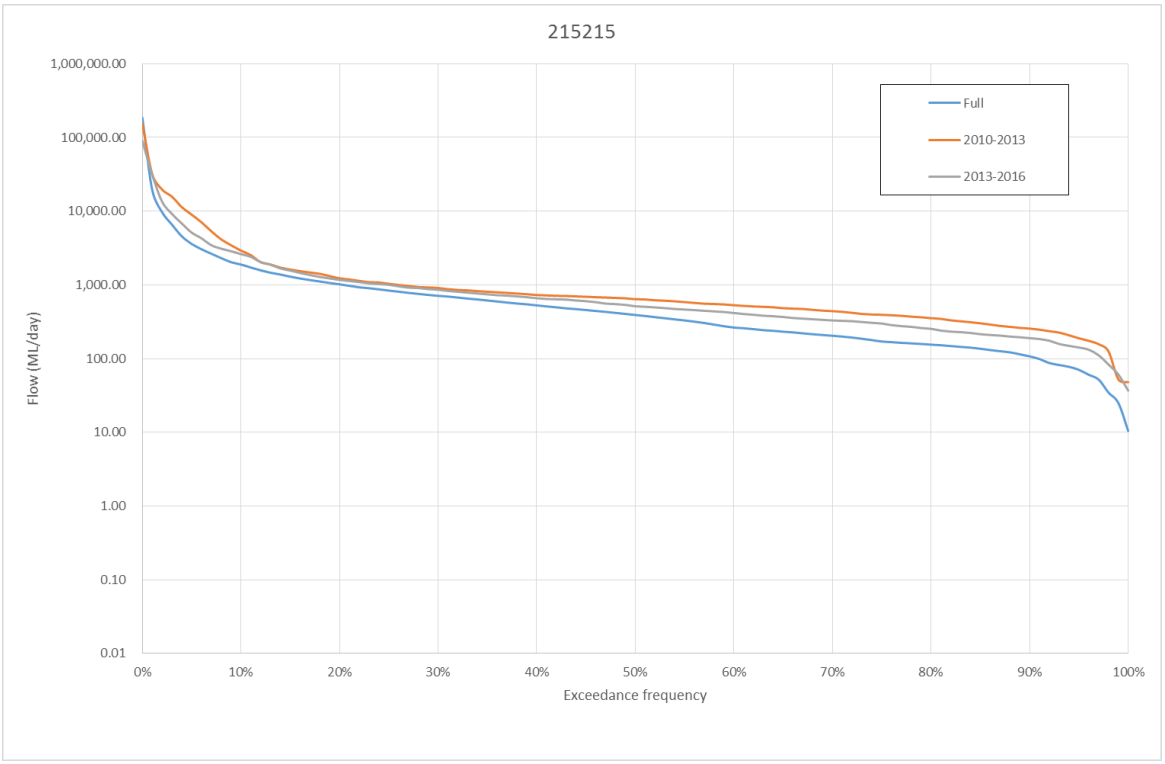
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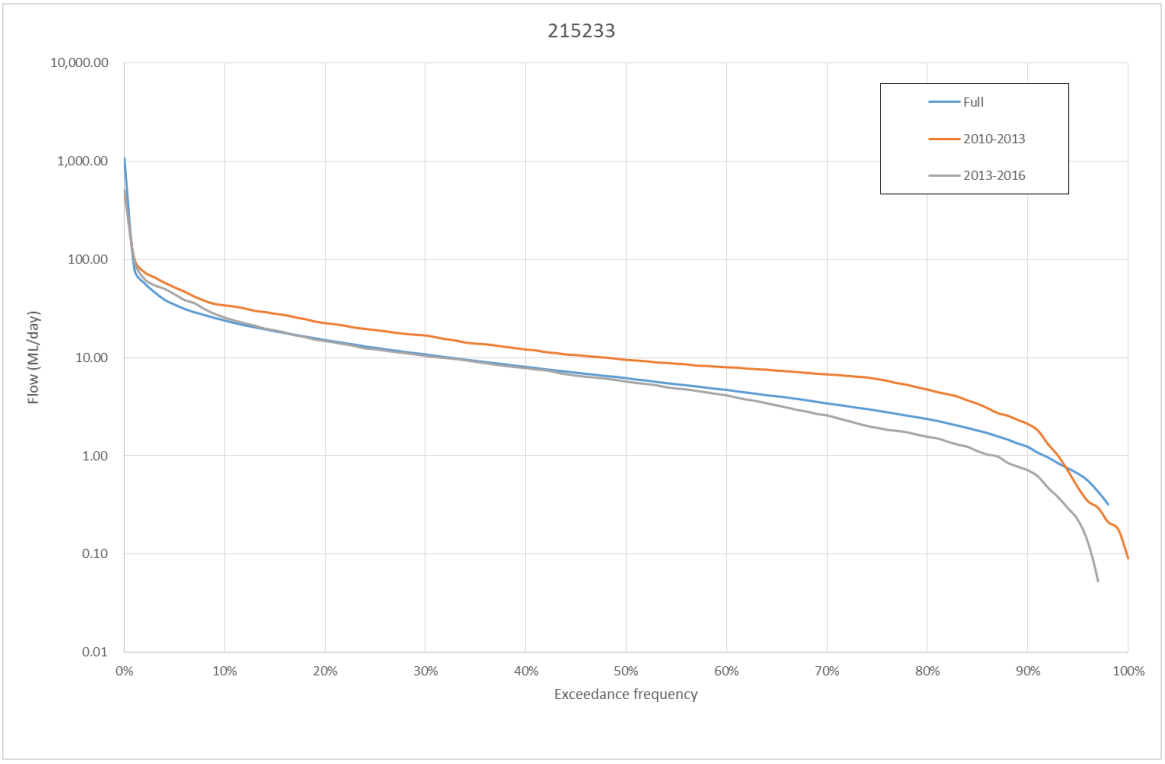
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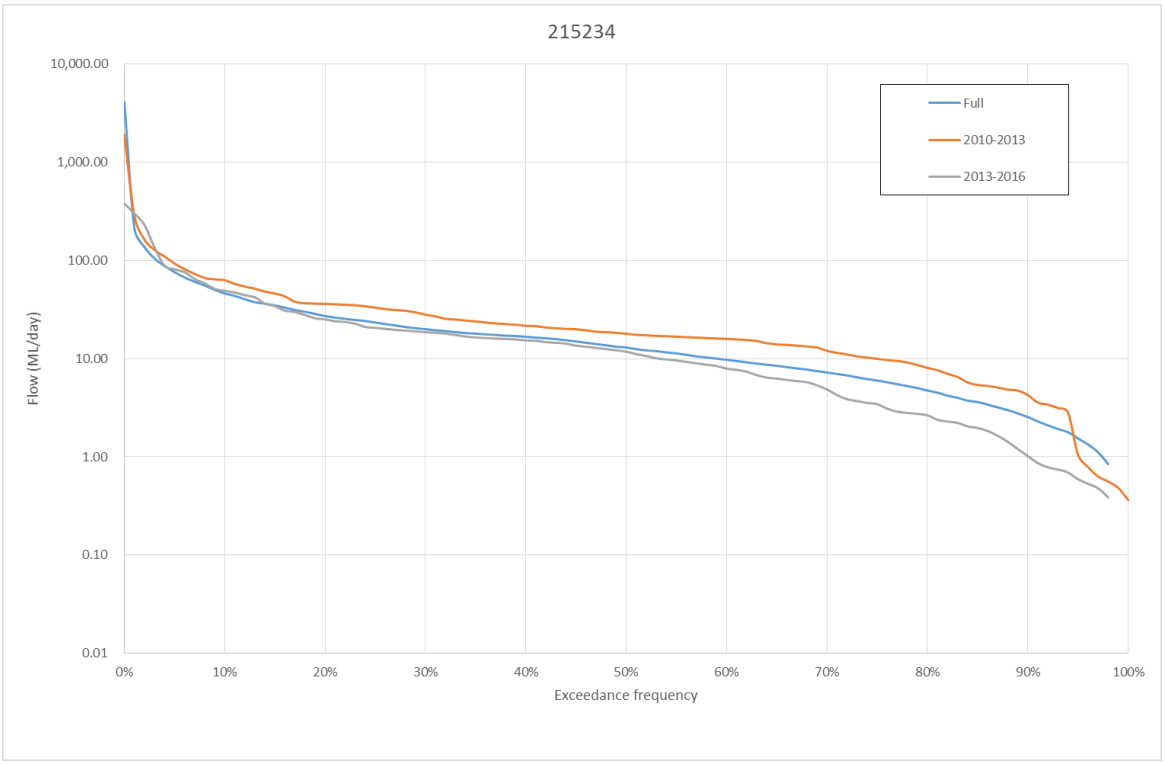
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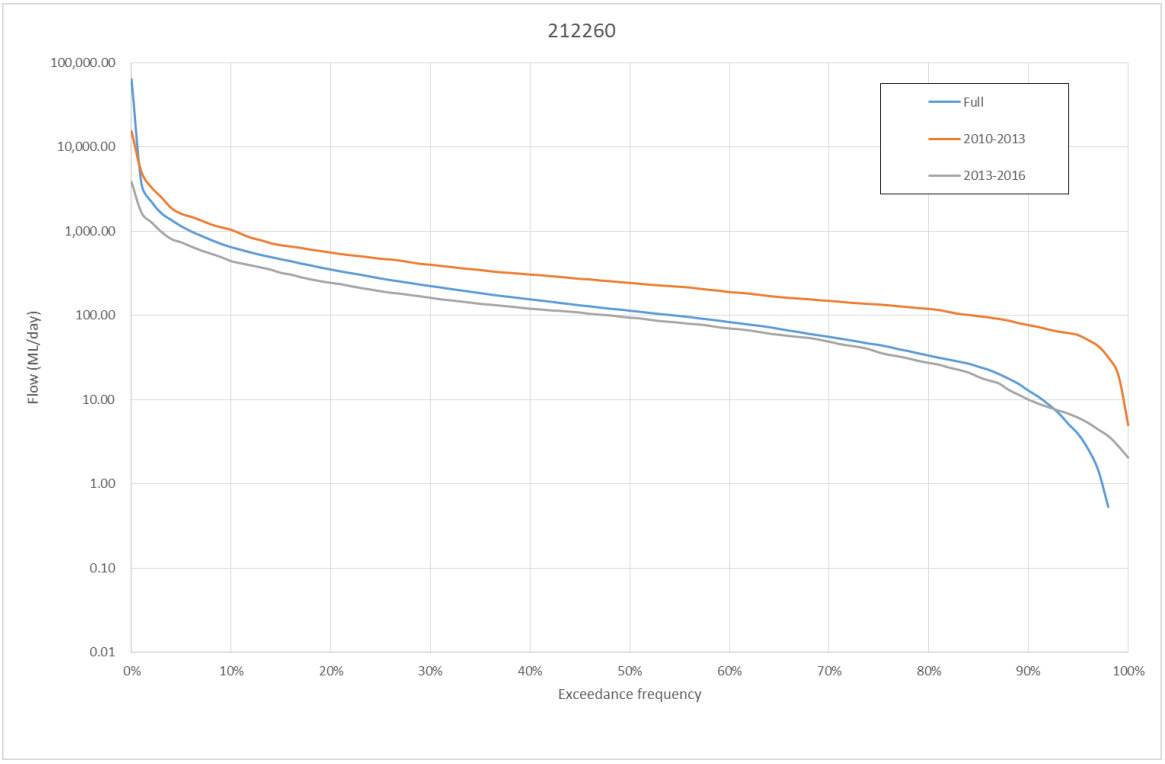
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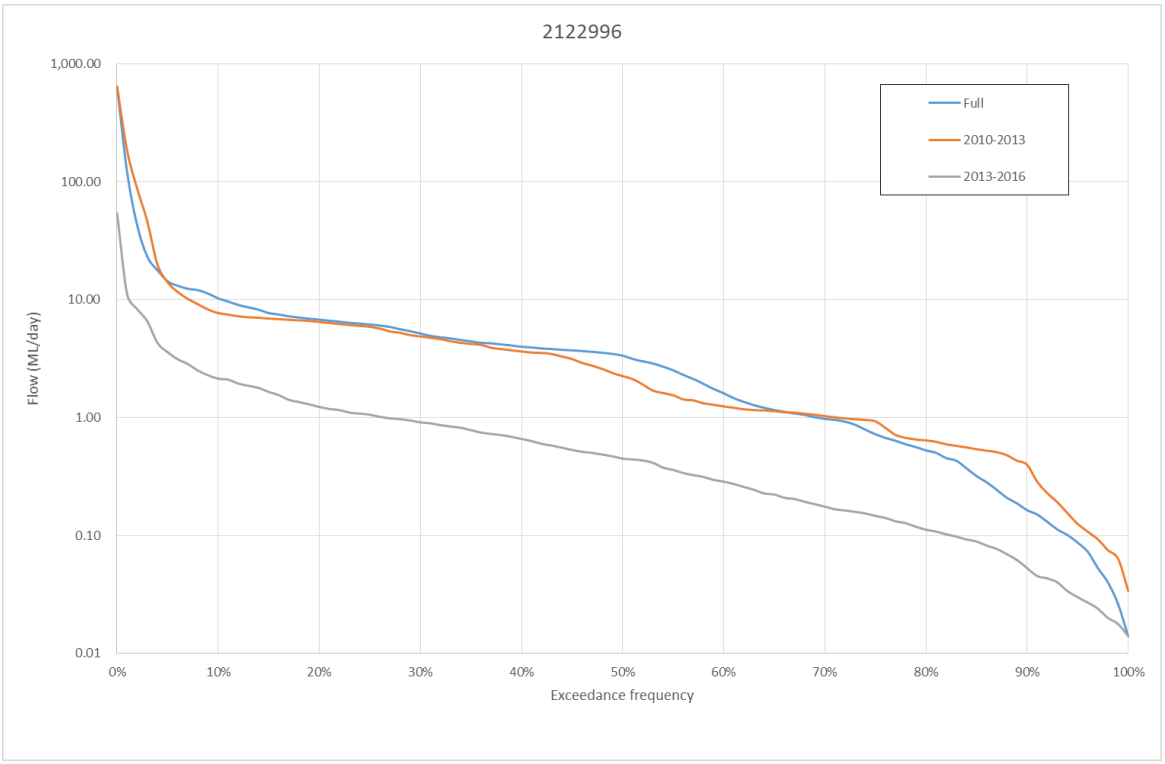
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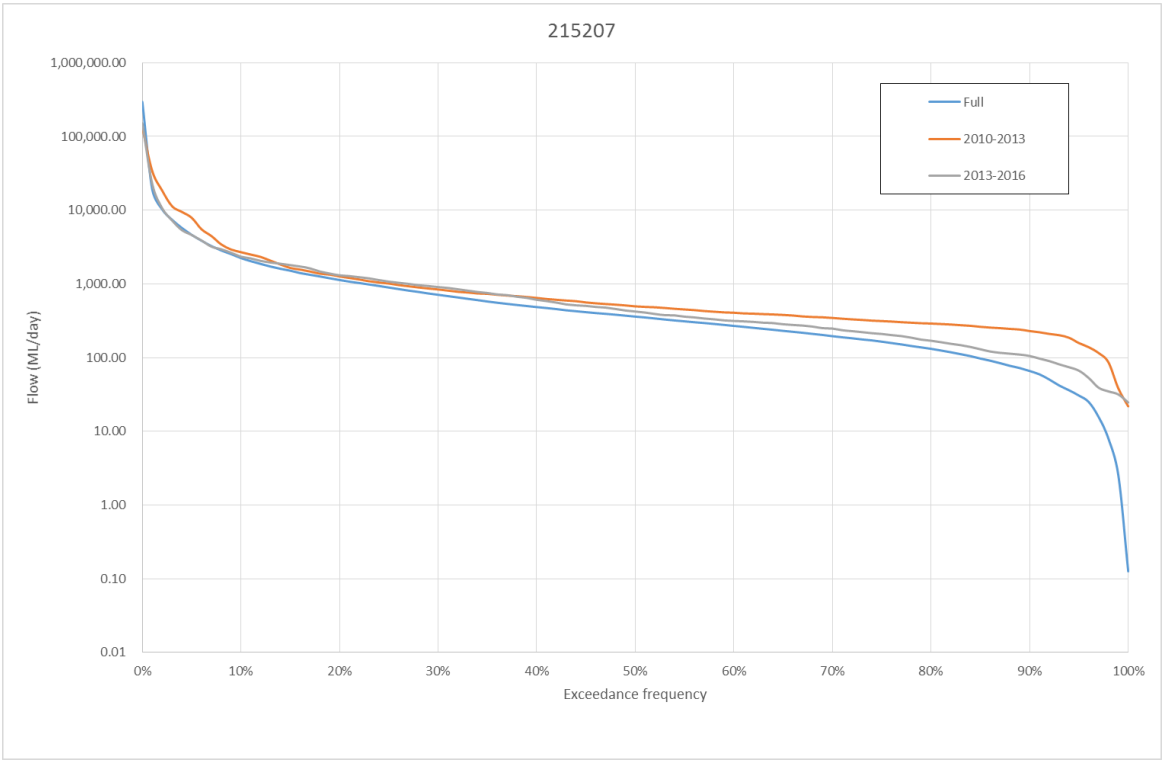
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Exceedance frequency
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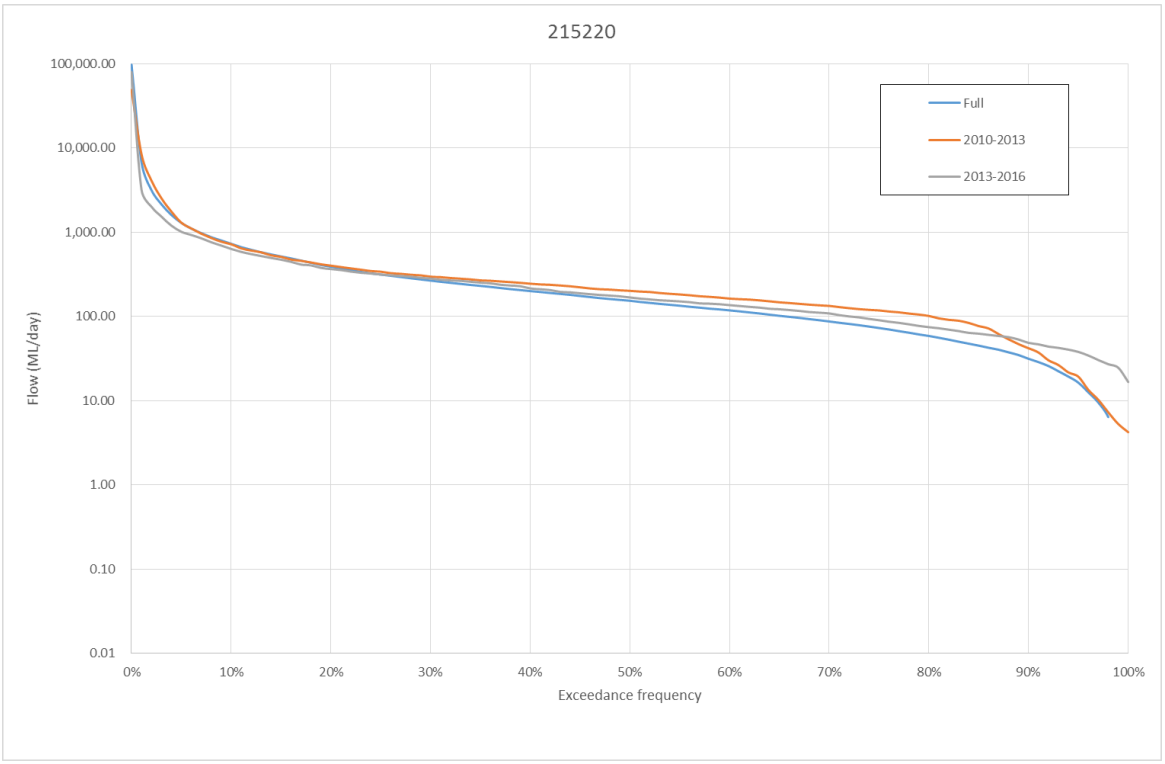
2013-2016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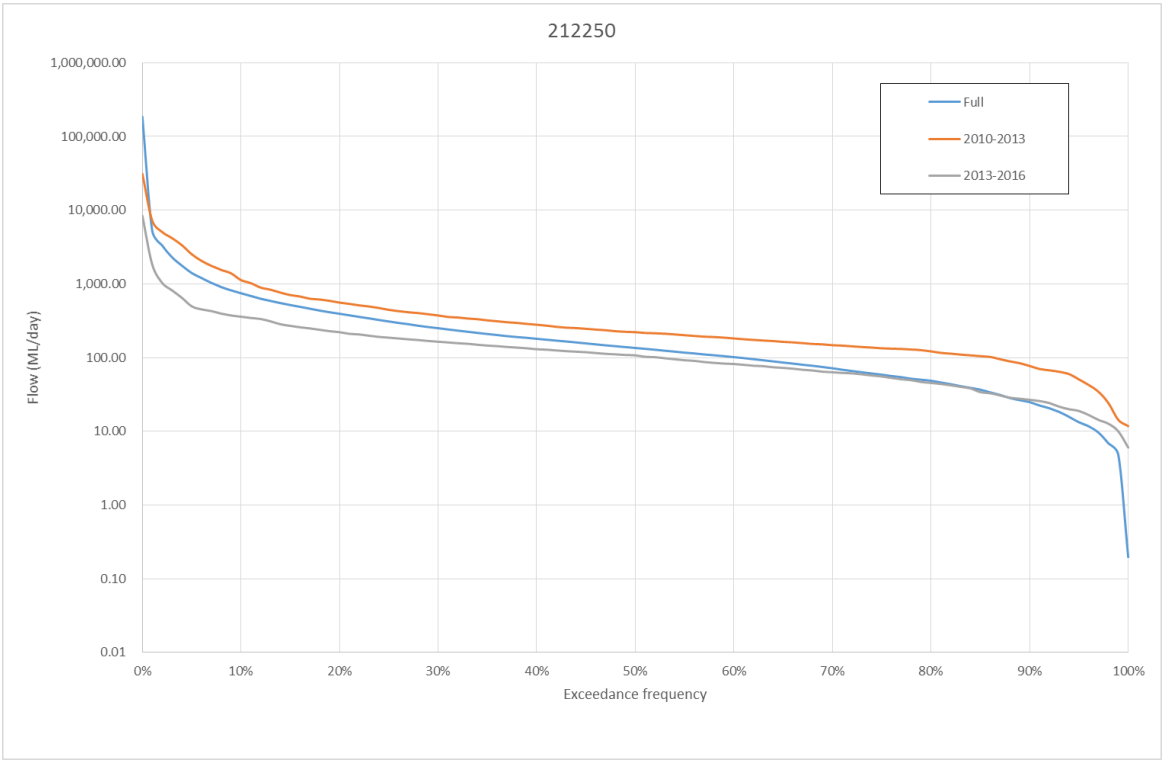
2013-2016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