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Accompanying the document

REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2016–2019

{COM(2021) 1000 final}

Pressure from Agriculture



United Kingdom's utilized agricultural area amounts 17 Mha, representing 70% of the total land area and has remained stable since 2010. The major outputs of the agricultural industry include in a decreasing order milk (16.9%), cattle (14%) and cereals (12%).

Eurostat

Major land use statistics for United Kingdom

Table 1.Utilized agricultural area (abbreviated as UAA)

United_Kingdom	2005	2007	2010	2013	2016
Utilised agricultural area UAA (1000 ha)	NA	17737	17231	17259	17357
arable land (1000 ha)	NA	6177	5976	6272	6031
permanent grass (1000 ha)	NA	11522	11219	10940	11288
permanent crops (1000 ha)	NA	35	36	36	38
kitchen gardens (1000 ha)	NA	0	0	NA	0

Note:

Eurostat (FSS)

United Kingdom's arable land has decreased since 2013, while permanent grass increased.

Animal distribution in United Kingdom

United Kingdom's poultry have increased since 2013. The livestock density index (livestock unit per hectare of Utilized Agricultural Area) has remained stable since 2010 and it is close to the EU average of 0.8.

Table 2. Livestock statistics

United_Kingdom	2005	2007	2010	2013	2016
Livestock index	0.90	0.86	0.79	0.76	0.79
dairy cows (10^6 heads)	NA	NA	NA	NA	NA
live bovines (10^6 heads)	NA	NA	NA	NA	NA
live pigs (10^6 heads)	4.73	4.67	4.38	4.38	4.54
live poultry (10^6 heads)	NA	NA	162.56	137.19	164.38

Note:

Eurostat (FSS)

Nitrogen and phosphorus fertilizers and surplus (kg/ha UAA)

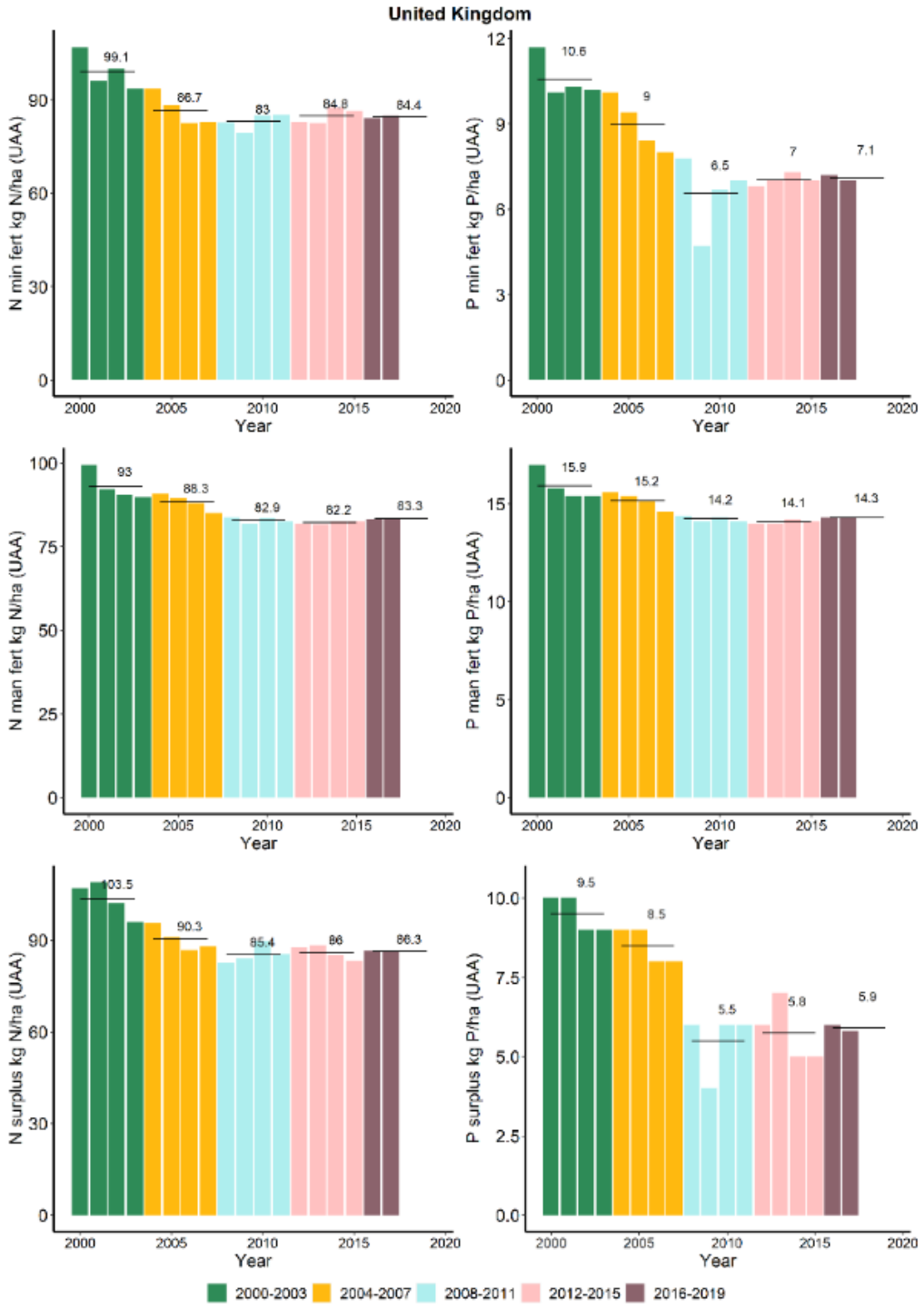


Figure 1. N and P fertilizers and gross surplus (kg/ha)

The N and P mineral fertilizer, manure and gross nitrogen (N) and phosphorus (P) surpluses originate from EUROSTAT data for the years 2000-2017. The consumption of inorganic N and P during the last reporting period remained stable. Both N and P from manure have slightly increased since the last reporting period. The N and P surpluses remained stable. In the plots: N/P min and N/P man are respectively the N/P mineral fertilizers and N/P manure.

Livestock unit - LSU /ha -England

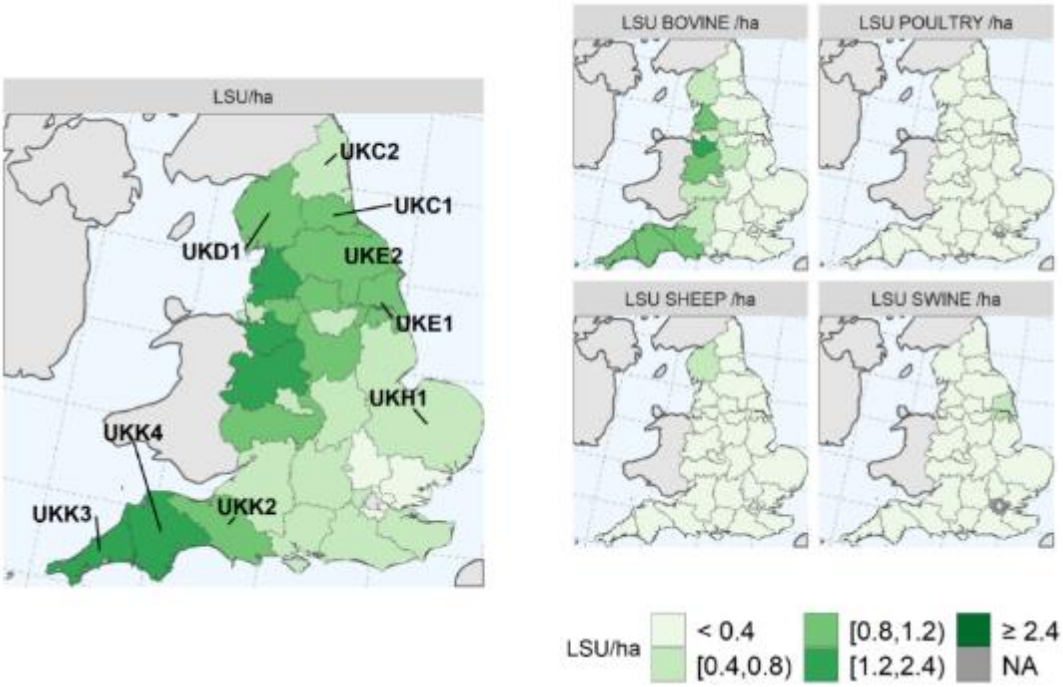


Figure 2. Map of livestock unit distribution, year 2016 (Source: Eurostat, February 2021)

Animal production is concentrated in the eastern part of England and the bovine have the highest LSU/ha (total LSU and LSU by animal type were retrieved individually from EUROSTAT).

Livestock unit - LSU /ha -North Ireland

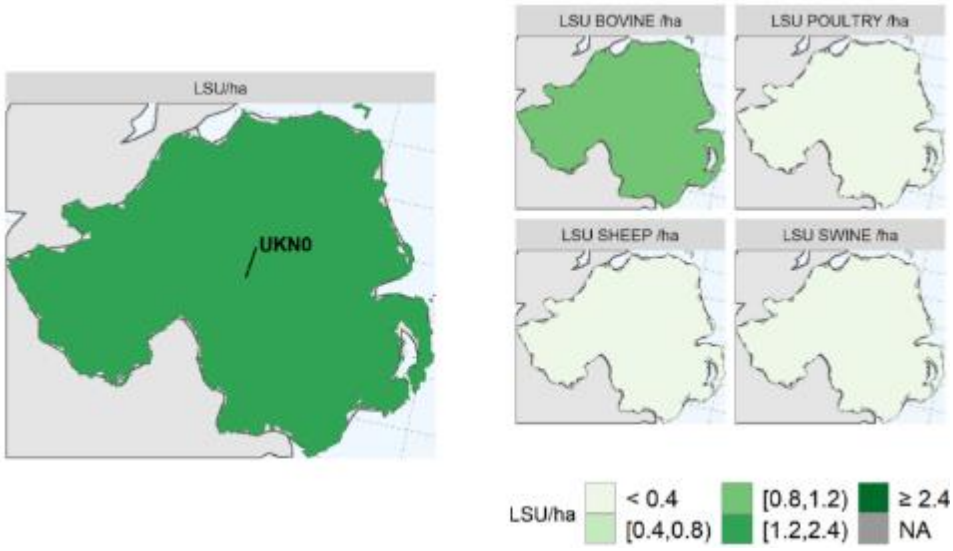


Figure 3. Map of livestock unit distribution, year 2016 (Source: Eurostat, February 2021)

The bovine LSU/ha is dominant in North Ireland (total LSU and LSU by animal type were retrieved individually from EUROSTAT).

Livestock unit - LSU /ha -Scotland

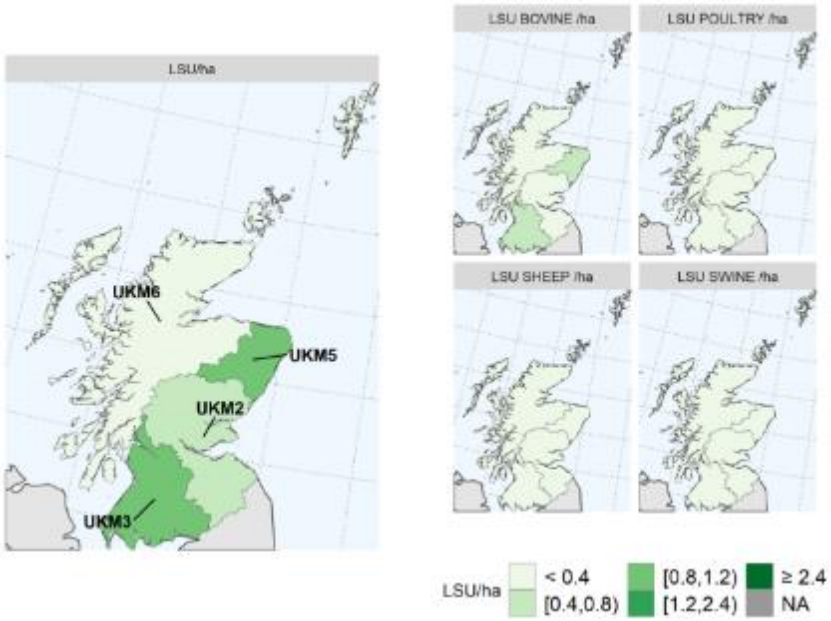


Figure 4. Map of livestock unit distribution, year 2016 (Source: Eurostat, February 2021)

Animal production is concentrated in the south eastern part of the Scotland (total LSU and LSU by animal type were retrieved individually from EUROSTAT).

Livestock unit - LSU /ha -Wales

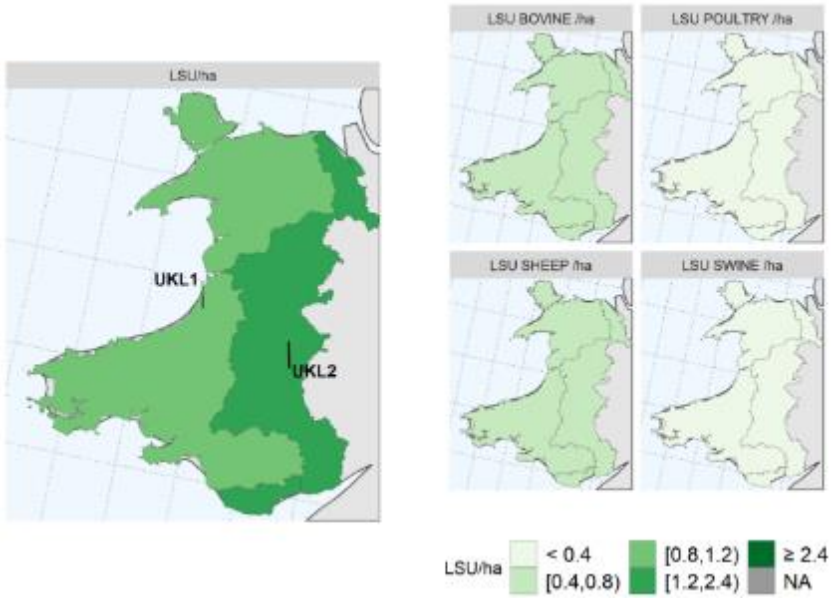


Figure 5. Map of livestock unit distribution, year 2016 (Source: Eurostat, February 2021)

Bovine and Sheep production is dominant in Wales (total LSU and LSU by animal type were retrieved individually from EUROSTAT).

In this document, the NUTS-2013 version is used. (https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/nuts)

Water Quality Monitoring- England

Since the country report of England report was not available no descriptions are reported in the following sections. England, as in previous reporting periods, did not provide the trophic status for the current reporting period.
It is noteworthy that in some cases in the bar charts the total value can differ from 100% due to rounding errors.

Groundwater quality monitoring network

Table 3. Number of GW stations with measurements and trends per type

		Number of stations with measurements			Number of stations with Trends		
Station Type	Description	2008-2011	2012-2015	2016-2019	2008-2011	2012-2015	2016-2019
0	Phreatic groundwater (shallow): 0-5 m	0	63	70	0	57	68
1a	Phreatic groundwater (deep) 5-15 m	991	119	134	752	106	103
1b	Phreatic groundwater (deep) 15-30 m	0	804	724	0	662	714
1c	Phreatic groundwater (deep) >30 m	1119	1076	1041	904	940	942
2	Captive groundwater	478	460	433	397	398	404
3	Karstic groundwater	0	0	0	0	0	0
9	Not specified	0	0	0	0	0	0
	Total	**2588**	**2522**	**2402**	**2053**	**2163**	**2231**

Surface water quality monitoring network

Table 4. Number of SW stations with measurements, trends and trophic status per type

		Number of stations with measurements			Number of stations with Trends			Number of stations with Trophic status		
Station Type	Description	2008-2011	2012-2015	2016-2019	2008-2011	2012-2015	2016-2019	2008-2011	2012-2015	2016-2019
4	River water	5276	6462	6086	4522	4228	5667	0	0	0
5	Lake/reservoir water	0	0	46	0	0	13	0	0	0
6	Transitional water	0	0	212	0	0	183	0	0	0
7	Coastal water	641	426	139	388	391	110	0	0	0
8	Marine water	0	0	0	0	0	0	0	0	0
9	Not specified	0	0	0	0	0	0	0	0	0
	Total	**5917**	**6888**	**6483**	**4910**	**4619**	**5973**	**0**	**0**	**0**

Groundwater Quality - England

Groundwater average annual nitrate concentration

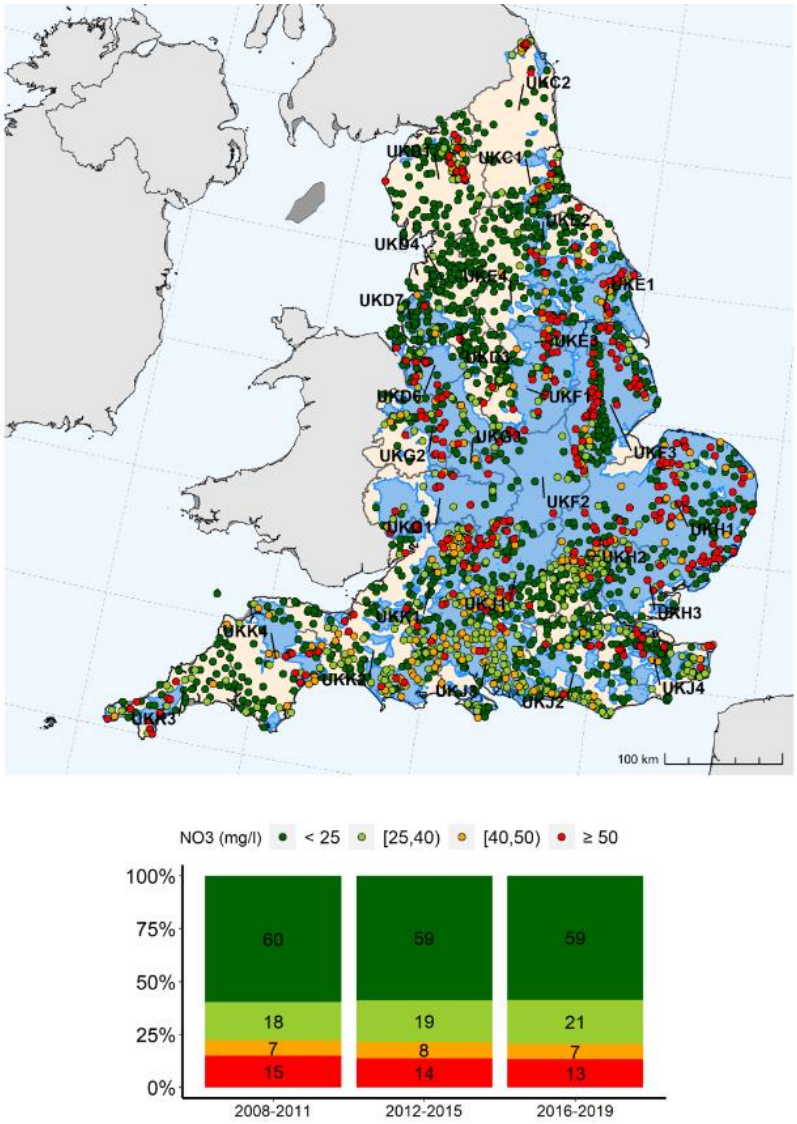


Figure 6. Spatial distribution of average NO3 annual concentration (map) and corresponding percentage of monitoring points per classes of concentration by reporting period (x axis). In the map in blue the NVZ.

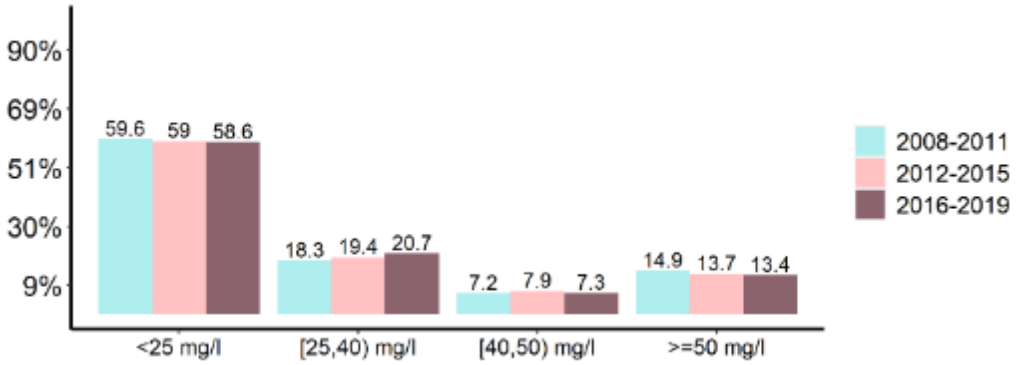


Figure 7. Comparison of percentage of monitoring points in the three reporting periods by classes of average NO3 annual concentration (x axis).

Groundwater average annual nitrate concentration trend

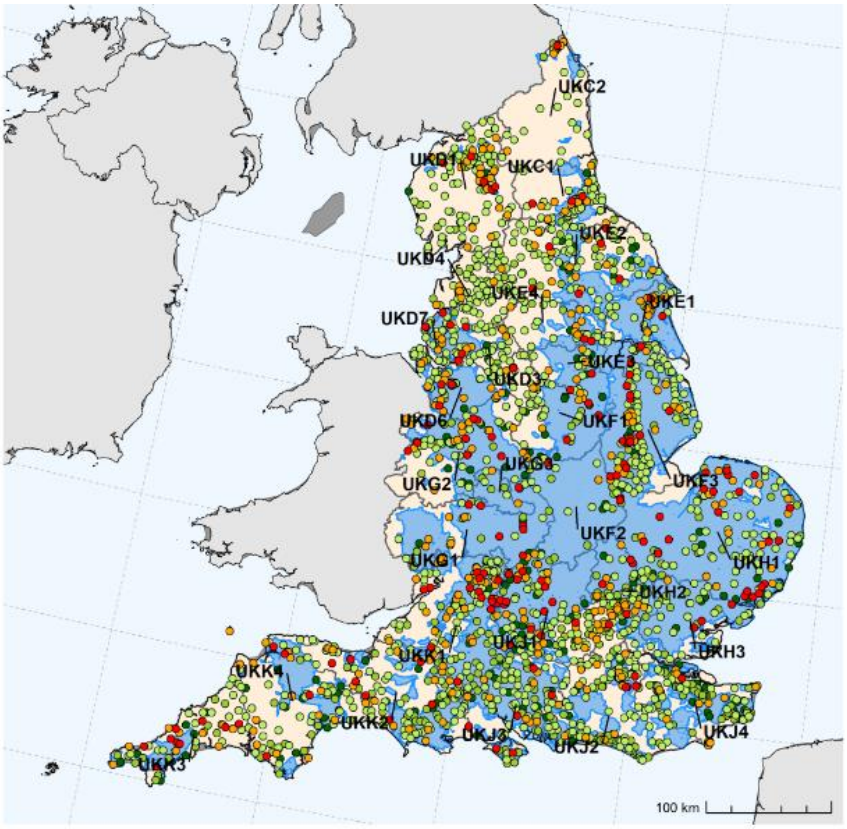


Figure 8. Spatial distribution of average NO3 annual trends (map) and corresponding percentage of monitoring points per classes of trends by reporting period (x axis). In the map in blue the NVZ.

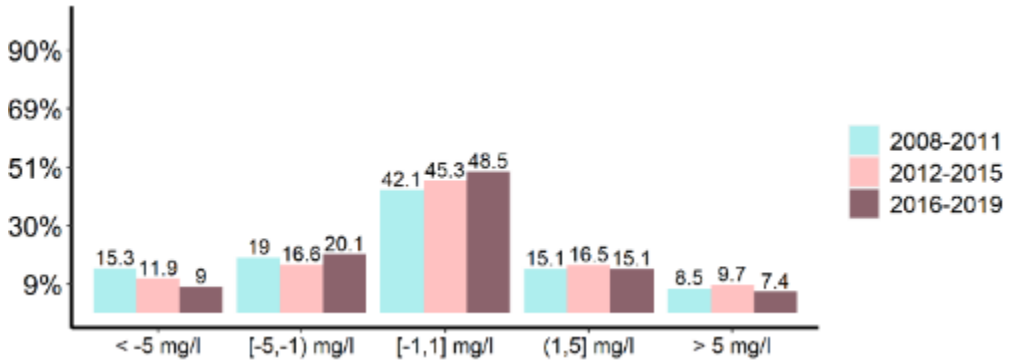
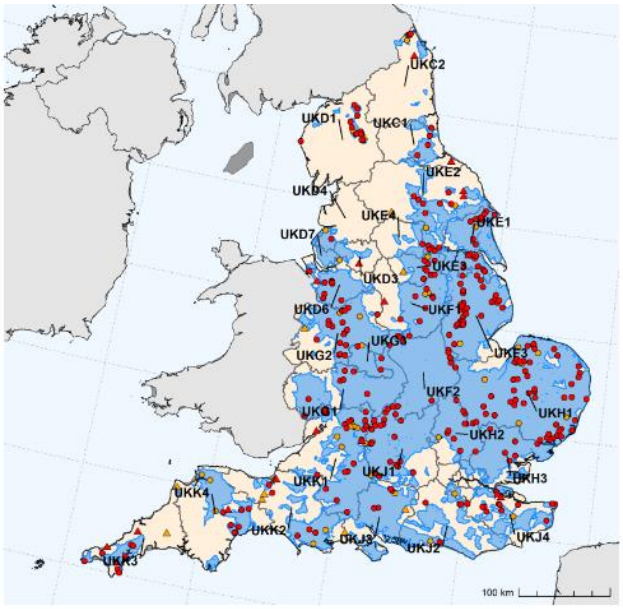


Figure 9. Comparison of percentage of monitoring points in the three reporting periods by classes of average NO3 annual trends (x axis).

Groundwater hotspot



NO3 (mg/l) [40,50) incr. trend InNVZ [40,50) incr. trend OutNVZ ≥ 50 InNVZ ≥ 50 OutNVZ

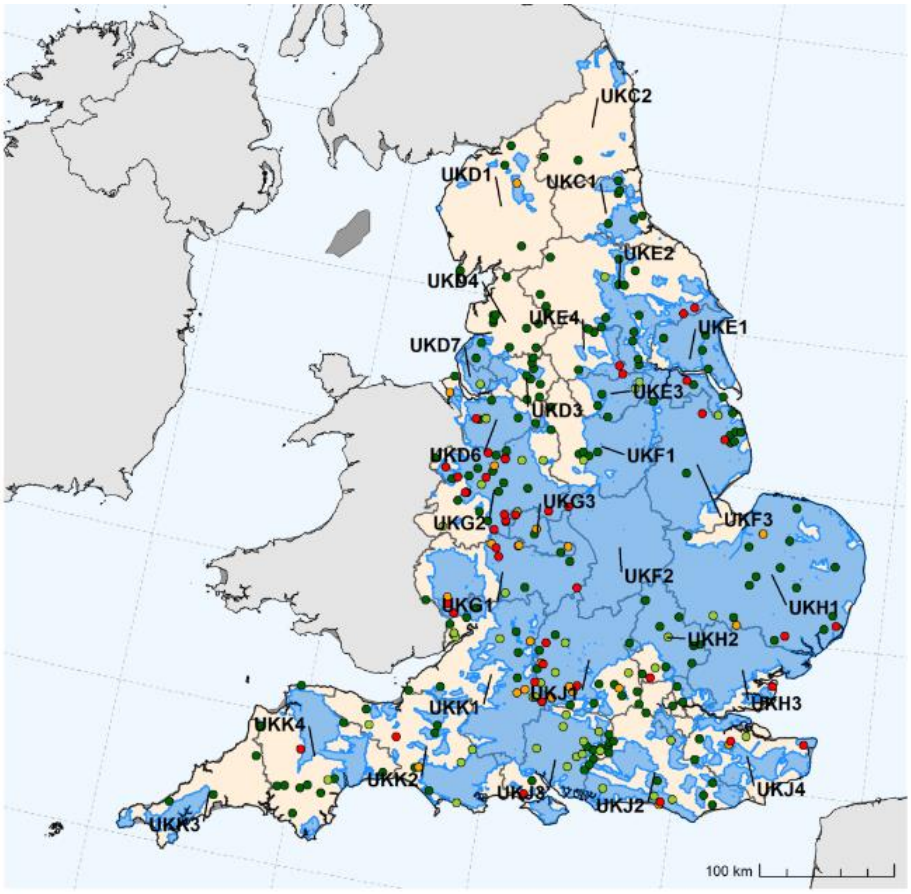
		>=40 and < 50 mg/l incr.trend		>=50 mg/l	
NUTS ID	NUTS NAME	InNVZ	OutNVZ	InNVZ	OutNVZ
UKC1	Tees Valley and Durham	0	0	3	1
UKC2	Northumberland and Tyne and Wear	1	0	4	1
UKD1	Cumbria	2	1	13	0
UKD3	Greater Manchester	0	0	0	1
UKD4	Lancashire	1	0	1	0
UKD6	Cheshire	2	0	11	1
UKE1	East Yorkshire and Northern Lincolnshire	1	0	19	2
UKE2	North Yorkshire	2	1	11	2
UKE3	South Yorkshire	1	1	8	0
UKE4	West Yorkshire	0	0	1	0
UKF1	Derbyshire and Nottinghamshire	2	0	9	1
UKF2	Leicestershire, Rutland and Northamptonshire	0	0	12	0
UKF3	Lincolnshire	1	0	33	0
UKG1	Herefordshire, Worcestershire and Warwickshire	0	0	8	0
UKG2	Shropshire and Staffordshire	3	1	20	0
UKG3	West Midlands	0	0	1	0
UKH1	East Anglia	8	0	55	0
UKH2	Bedfordshire and Hertfordshire	1	0	8	0
UKH3	Essex	0	0	6	0
UKI6	Outer London - South	1	0	0	0
UKJ1	Berkshire, Buckinghamshire and Oxfordshire	3	0	22	0
UKJ2	Surrey, East and West Sussex	2	0	6	0
UKJ3	Hampshire and Isle of Wight	1	2	4	0
UKJ4	Kent	1	0	12	1
UKK1	Gloucestershire, Wiltshire and Bristol/Bath area	6	1	19	2
UKK2	Dorset and Somerset	2	2	5	1
UKK3	Cornwall and Isles of Scilly	0	1	8	2
UKK4	Devon	3	1	6	1
	Total	**44**	**11**	**305**	**16**

Figure 10. GW hotspot analysis map (top graph) and distribution by NUTS2 (lower graph) of average NO3 annual concentration greater than 40 mg/l. In the map in blue the NVZ.

The hotspot analysis identifies all the GW monitoring stations that have NO3 concentration in the range of 40-50 mg/l with increasing trends and above 50 mg/l. The map shows the spatial distribution of these points, and the table reports the number of stations by NUTS inside and outside NVZ.

Only the NUTS of interest are reported.

Groundwater stations removed



Station Type	Description	Number of removed stations		
		total removed	with measurements	with trends
0	Phreatic groundwater (shallow): 0-5 m	6	6	5
1a	Phreatic groundwater (deep) 5-15 m	15	15	15
1b	Phreatic groundwater (deep) 15-30 m	75	75	65
1c	Phreatic groundwater (deep) >30 m	140	140	120
2	Captive groundwater	55	55	48
3	Karstic groundwater	0	0	0
9	Not specified	0	0	0
	Total	**291**	**291**	**253**

Figure 11. GW removed stations map (top graph) and distribution by groundwater type (lower graph). In the map in blue the NVZ.

The removed stations analysis identifies all the GW monitoring stations that were removed in the current reporting period. The map shows the spatial distribution of these points with the concentrations of the previous reporting period, and the table reports the number of stations with measurements and trends per type.

Surface Water Quality-England

Surface water average annual nitrate concentration

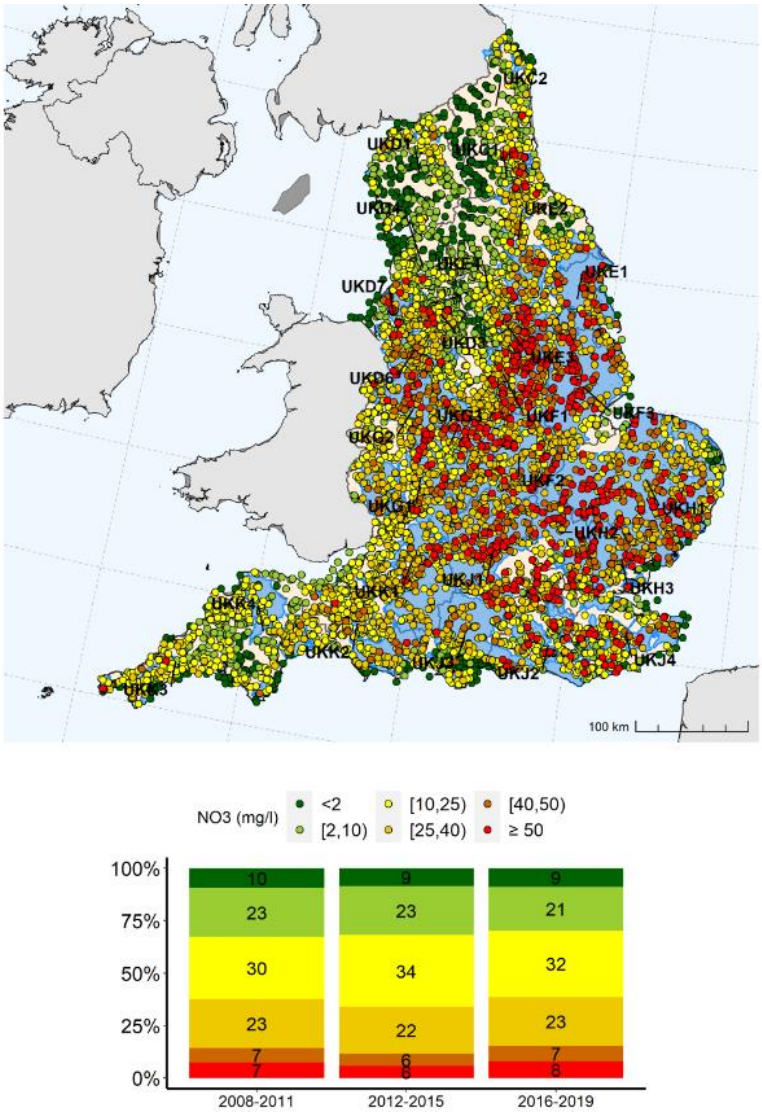


Figure 12. Spatial distribution of average NO3 annual concentration (map) and corresponding percentage of monitoring points per classes of concentration by reporting period (x axis). In the map in blue the NVZ.

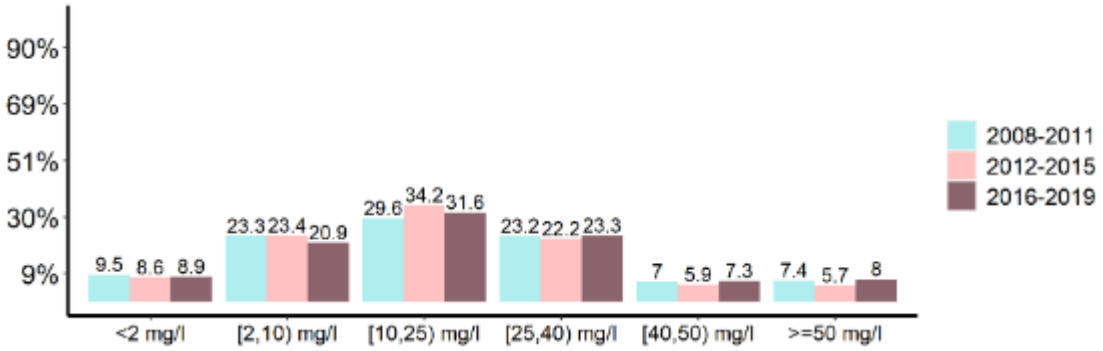
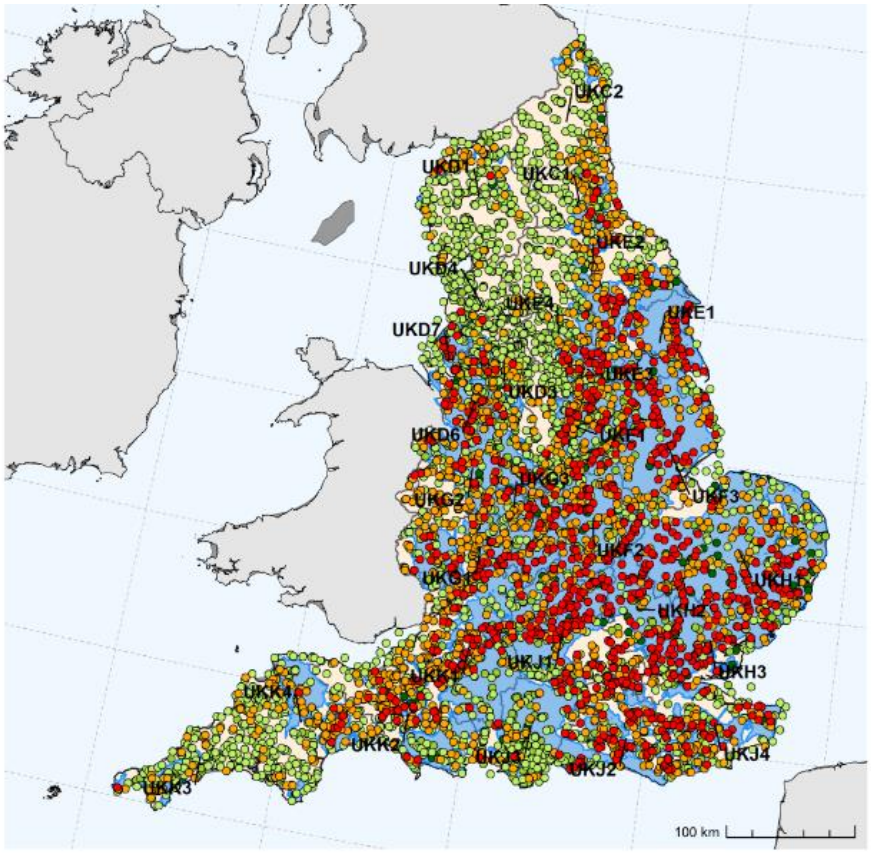


Figure 13. Comparison of percentage of monitoring points in the three reporting periods by classes of average NO3 annual concentration (x axis)

Surface water average annual nitrate concentration trend



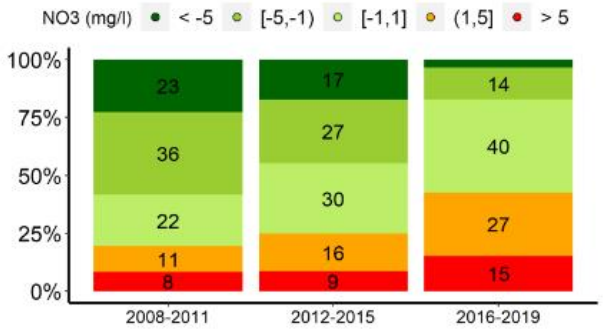


Figure 14. Spatial distribution of average NO3 annual trends (map) and corresponding percentage of monitoring points per classes of trends by reporting period (x axis). The percentages below 5% are not labelled, see the next plot for more information. In the map in blue the NVZ.

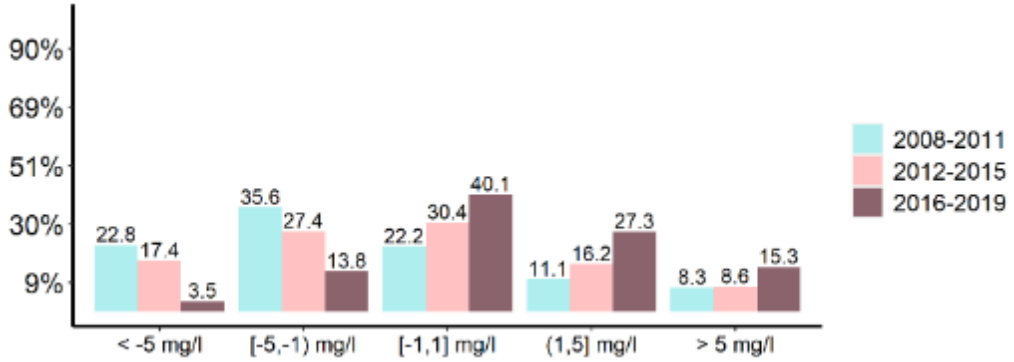
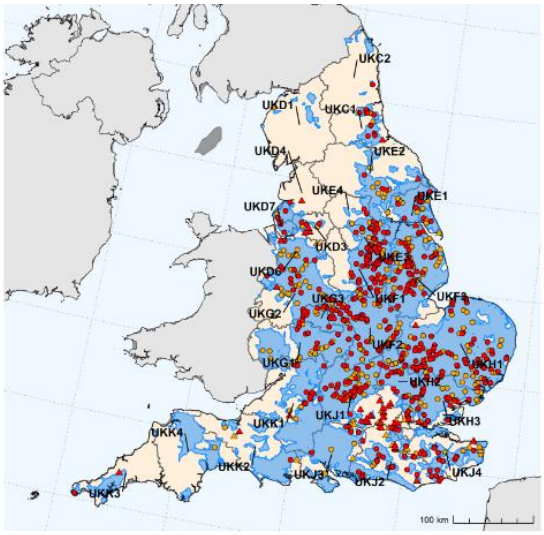


Figure 15. Comparison of percentage of monitoring points in the three reporting periods by classes of average NO3 annual trends (x axis).

Surface Water quality hotspot



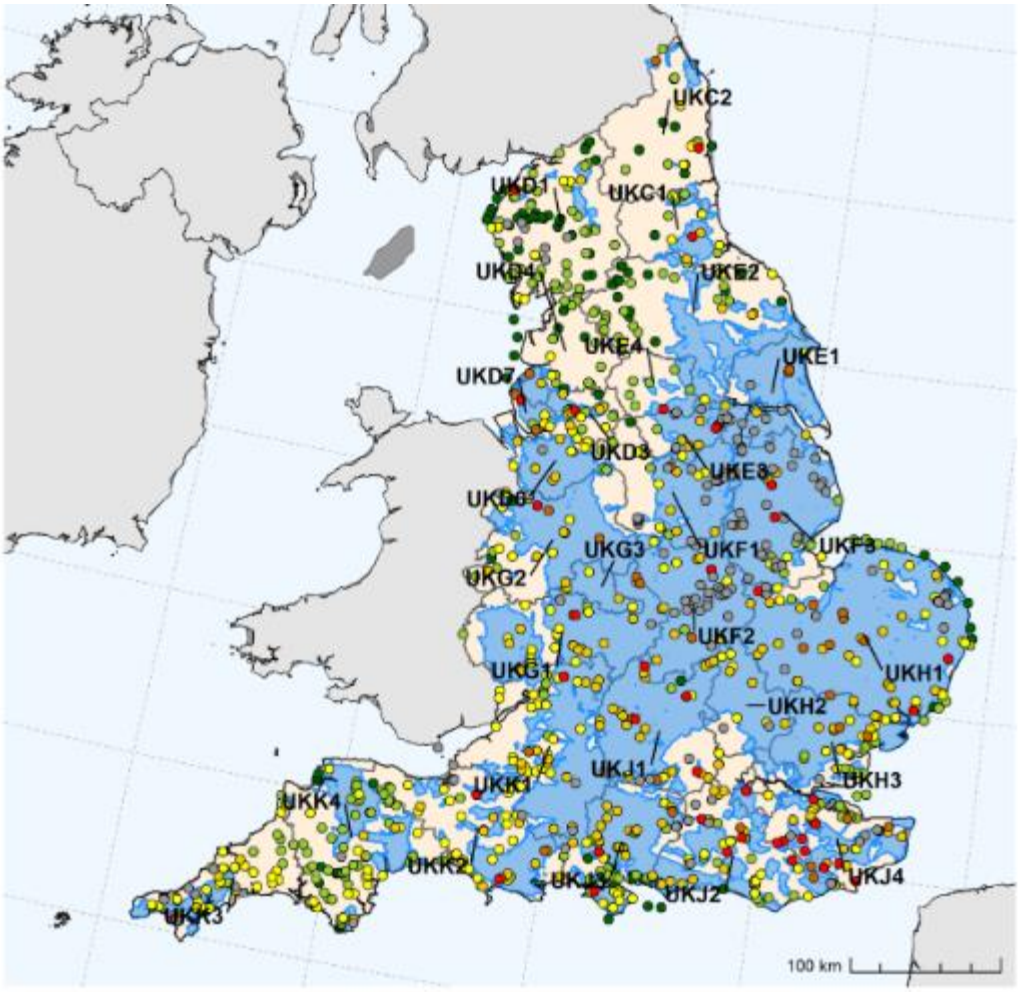
		High trophic status		>=40 and < 50 mg/l incr.trend		>=50 mg/l	
NUTS ID	NUTS NAME	InNVZ	OutNVZ	InNVZ	OutNVZ	InNVZ	OutNVZ
NO_NUTS	SALINE	0	0	0	4	0	0
UKC1	Tees Valley and Durham	0	0	3	1	8	1
UKC2	Northumberland and Tyne and Wear	0	0	0	0	2	0
UKD1	Cumbria	0	0	1	0	0	0
UKD3	Greater Manchester	0	0	2	0	3	3
UKD4	Lancashire	0	0	1	0	3	1
UKD6	Cheshire	0	0	8	1	4	1
UKD7	Merseyside	0	0	0	0	5	0
UKE1	East Yorkshire and Northern Lincolnshire	0	0	17	1	18	2
UKE2	North Yorkshire	0	0	8	0	6	1
UKE3	South Yorkshire	0	0	4	0	19	0
UKE4	West Yorkshire	0	0	2	0	2	0
UKF1	Derbyshire and Nottinghamshire	0	0	12	0	51	0
UKF2	Leicestershire, Rutland and Northamptonshire	0	0	24	0	41	0
UKF3	Lincolnshire	0	0	33	1	45	0
UKG1	Herefordshire, Worcestershire and Warwickshire	0	0	17	0	19	0
UKG2	Shropshire and Staffordshire	0	0	21	1	24	1
UKG3	West Midlands	0	0	2	0	3	0
UKH1	East Anglia	0	0	46	0	70	1
UKH2	Bedfordshire and Hertfordshire	0	0	8	0	22	2
UKH3	Essex	0	0	17	0	24	0
UKI3	Inner London - West	0	0	0	0	1	1
UKI4	Inner London - East	0	0	0	0	3	1
UKI5	Outer London - East and North East	0	0	2	0	4	1
UKI6	Outer London - South	0	0	0	0	4	0
UKI7	Outer London - West and North West	0	0	0	0	0	5
UKJ1	Berkshire, Buckinghamshire and Oxfordshire	0	0	24	4	36	8
UKJ2	Surrey, East and West Sussex	0	0	3	4	25	9
UKJ3	Hampshire and Isle of Wight	0	0	4	1	4	0
UKJ4	Kent	0	0	5	1	14	2
UKK1	Gloucestershire, Wiltshire and Bristol/Bath area	0	0	7	1	12	1
UKK2	Dorset and Somerset	0	0	1	2	1	1
UKK3	Cornwall and Isles of Scilly	0	0	2	0	1	1
UKK4	Devon	0	0	1	0	0	0
	Total	**0**	**0**	**275**	**22**	**474**	**43**

Figure 16. SW hotspot analysis map (top graph) and distribution by NUTS2 (lower graph) of average NO3 annual concentration greater than 40 mg/l. In the map in blue the NVZ.

The hotspot analysis identifies all the SW monitoring stations that have high trophic status, NO3 concentration in the range of 40-50 mg/l with increasing trends and above 50 mg/l. The map shows the spatial distribution of these points, and the table reports the number of stations by NUTS inside and outside NVZ.

Only the NUTS of interest are reported.

Surface Water Stations Removed



NO3 (mg/l) <2 [2,10) [10,25) [25,40) [40,50) ≥ 50 NA

Station Type	Description	Number of removed stations			
		total removed	with measurements	with trends	with trophic status
4	River water	932	767	538	0
5	Lake/reservoir water	0	0	0	0
6	Transitional water	0	0	0	0
7	Coastal water	122	121	103	0
8	Marine water	0	0	0	0
9	Not specified	0	0	0	0
	Total	**1054**	**888**	**641**	**0**

Figure 17. SW removed stations map (top graph) and distribution by surface water type (lower graph). In the map NVZ areas in blue.

The removed stations analysis identifies all the SW monitoring stations that were removed in the current reporting period. The map shows the spatial distribution of these points with the concentrations of the previous reporting period, and the table reports the number of stations with measurements and trends per type.

Measures in the Action Program- England

The Measures in the Action Program are not available since the country report of England was not submitted.

Controls - England

The information about the controls are not available since the country report of England was not submitted.

Designation of NVZ - England

England decreased the NVZ areas since the last reporting period. The total area is 72441 km^2, about 3% lower with respect to the previous reporting period (74697 km^2).

Forecast of Water Quality - England

Forecast analysis are not available since the country report of England was not submitted.

Summary -England

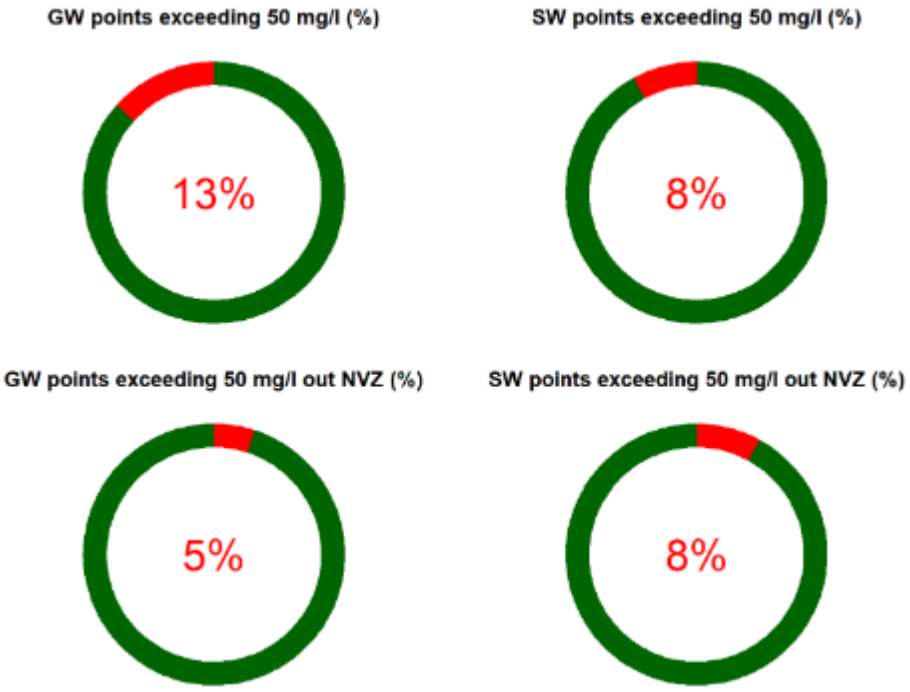


Figure 18. The summary plot for the period 2016-2019

This plot provides in the first row the percentage of stations exceeding 50 mg/l with respect to the total stations with measures. In the second row, the percentage of stations exceeding 50 mg/l that are outside NVZ with respect to the total of stations exceeding 50 mg/.

Long term analysis -England

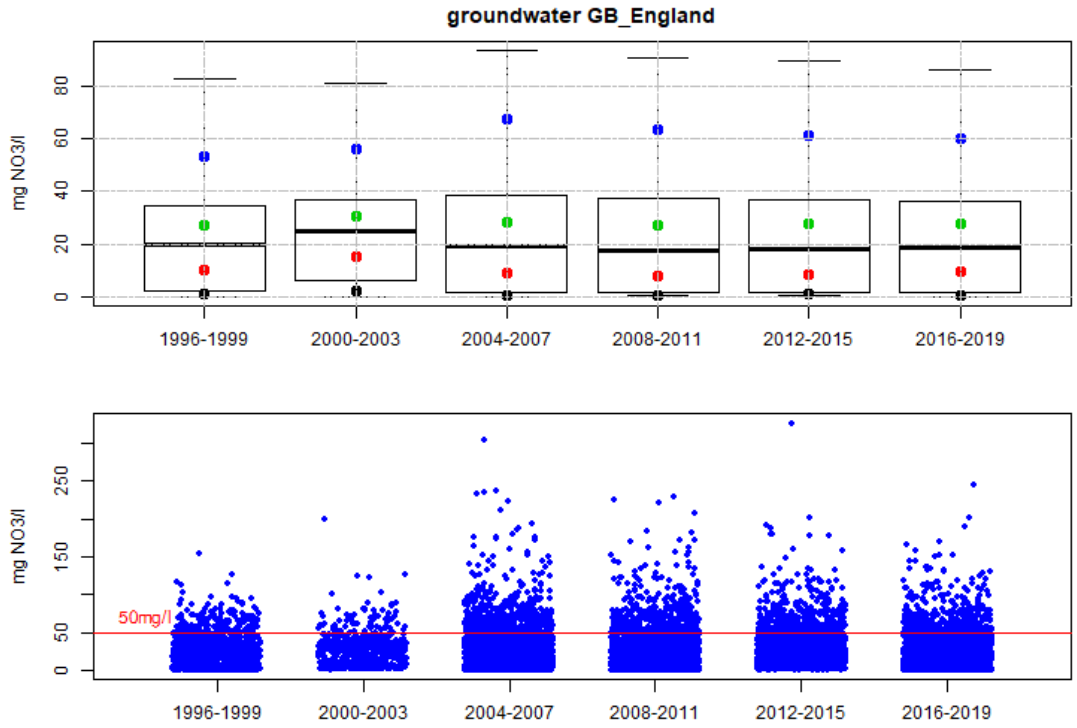


Figure 19. Time series of box whisker plots along with the distribution of the values average NO3 annual concentrations for each reporting period for groundwater stations. RPs represent the reporting periods, RP7 being the last period (2016-2019). The blue, red, green and black dots represent the mean of the fourth third, second and first quartiles, respectively.

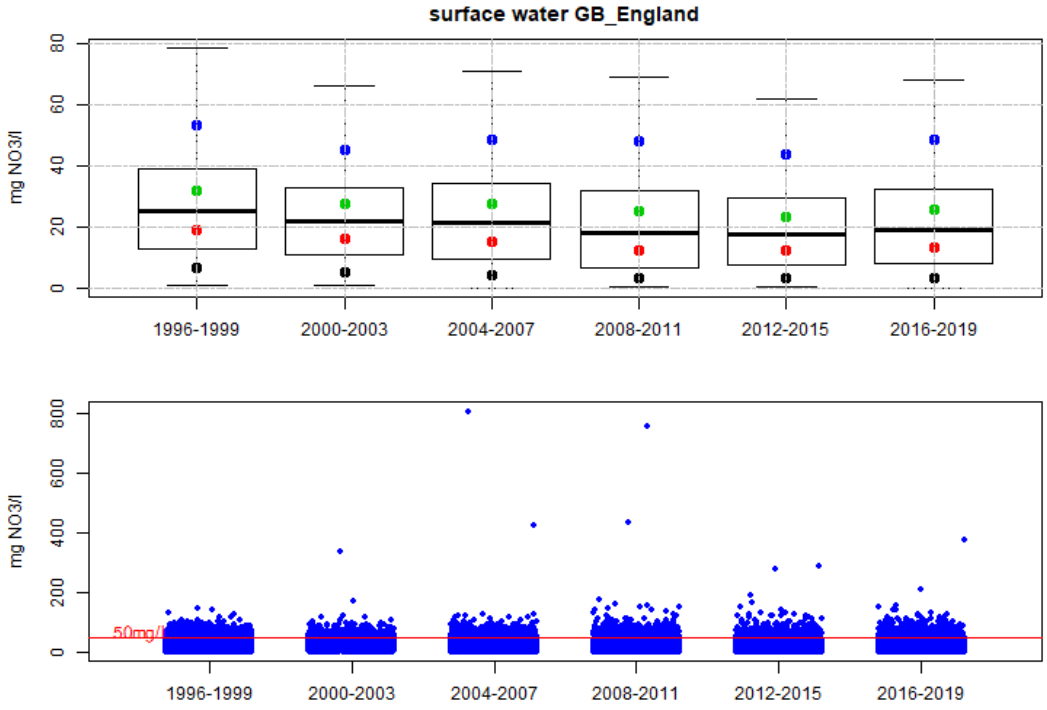


Figure 20. Time series of box whisker plots along with the distribution of the values average NO3 annual concentrations for each reporting period for surface water stations. RPs represent the reporting periods, RP7 being the last period (2016-2019). The blue, red, green and black dots represent the mean of the fourth third, second and first quartiles, respectively.