

## Automated In-Situ Water Quality Monitoring Report - Weekly

Issued by the North of Ireland Joint Agency Coastal Monitoring Programme. For further information and data access please visit our website at:

[www.afbi.gov.uk/coastal-monitoring.htm](http://www.afbi.gov.uk/coastal-monitoring.htm)



Date of issue: 31 Jan 2012

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The Loughs Agency purchased the 6 Environmental Monitoring hardware currently operating in the sea Loughs Foyle and Carlingford and the system in the freshwater Lough Fad East, Co. Donegal. Four of these were purchased under the EU INTERREG III fund. The Agency has contracted the management and maintenance of these to AFBI.

NIEA contributed towards the Environmental Monitoring hardware currently operating in Belfast and Strangford Lough and the impoundments of the rivers Lagan, and the Quoile. The Agency has contracted the management and maintenance of these to AFBI.



## In Situ Water Quality Monitoring Report: Belfast Lough

Issued by the North of Ireland Joint Agency Coastal Monitoring Programme. For further information and data access please visit our website at: <http://www.afbini.gov.uk/index/services/specialist-advice/coastal-monitoring.htm>

**Data report start date:** 02 Jan 2012  
**Data report finish date:** 05 Jan 2012  
**Date of issue:** 31 Jan 2012

Belfast Lough is a shallow semi-enclosed marine bay situated at the mouth of the River Lagan on the eastern coast of Northern Ireland and has a catchment of 900 km<sup>2</sup>.

The inner area of the Lough comprises a series of mudflats and lagoons whilst the outer area is composed of mainly rocky shores with some small sandy bays.

The inner area of the Lough has historically been identified as being hypereutrophic (as a result of anthropogenic impacts) and subject to eutrophication.

A modified SeaBird 19+ instrument is moored in the inner lough close to the navigation channel, this package is occasionally supplemented with a remote access water sampler for nutrient sampling.

### Disclaimer

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Table 1. Descriptive statistics for *in situ* variables for current reporting period (last 7 days of data).

Parameter	Mean	Variance	Minimum	Maximum
Salinity	33.06	0.05	32.5712	33.4539
Temperature	7.93	0.09	7.3673	8.4608
Fluorescence	0.11	0.00	0.1022	0.1298
Turbidity (seapoint)	18.02	31.47	7.937	47.009

Table 2. Data points above and below OSPAR and ADRIS threshold values for current reporting period only.

Values within range	Surface		% surface	
Chlorophyll <i>a</i> conc. < 10 ug/l				
Chlorophyll <i>a</i> conc. > 10 ug/l				



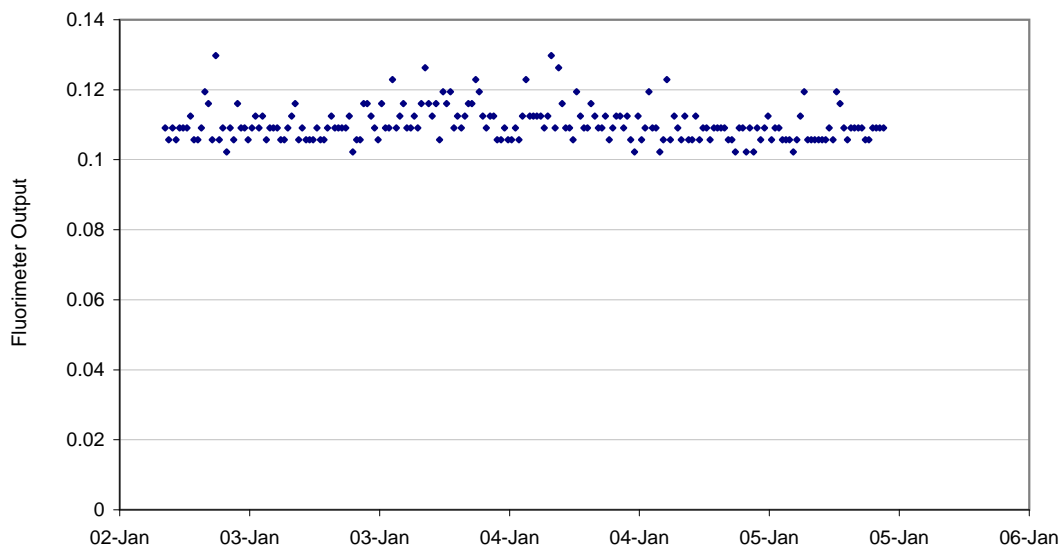


Figure 3. Fluorimeter output for week -3, week -2, week -1 and current reporting period.

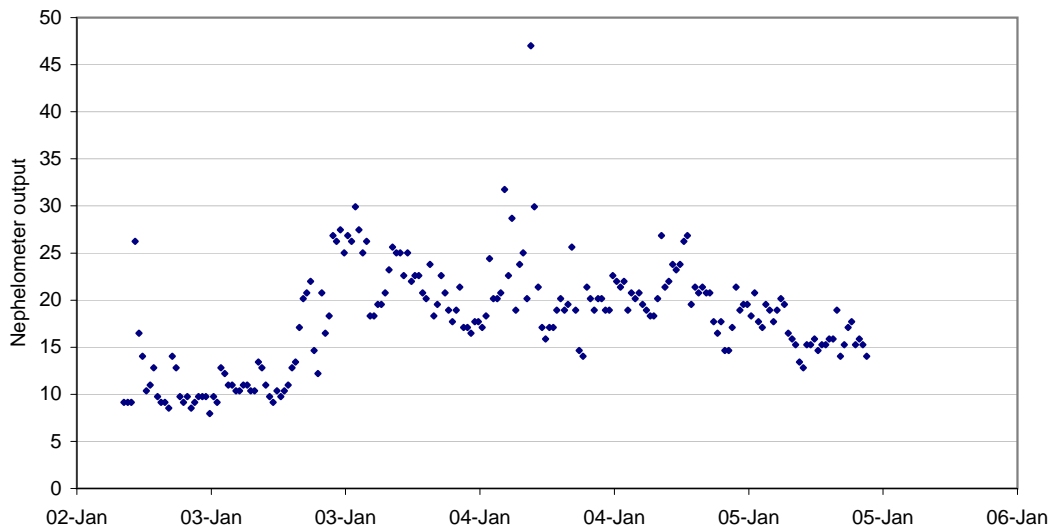


Figure 4. Nephelometer output for week -3, week -2, week -1 and current reporting period.

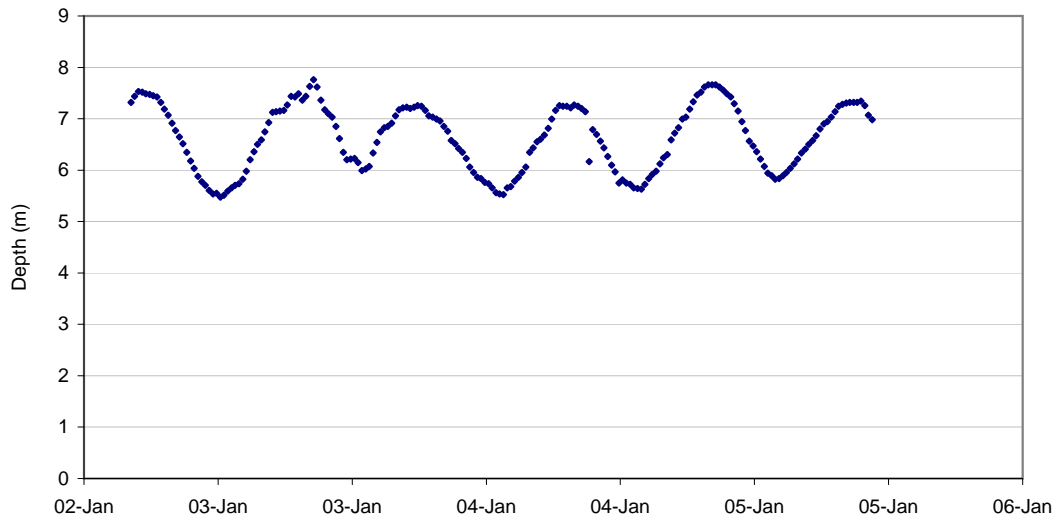


Figure 5. Instrument depth for week -3, week -2, week -1 and current reporting period.

## In Situ Water Quality Monitoring Report: Carlingford Lough North

Issued by the North of Ireland Joint Agency Coastal Monitoring Programme. For further information and data access please visit our website at: <http://www.afbini.gov.uk/index/services/specialist-advice/coastal-monitoring.htm>

**Data report start date:** 02 Jan 2012  
**Data report finish date:** 29 Jan 2012  
**Date of issue:** 31 Jan 2012

Carlingford Lough is a sea lough at the mouth of the Newry (or Clanrye) River on the east coast of Ireland with a total area of approximately 51 km<sup>2</sup>. The lough borders both the Irish Republic and Northern Ireland and has a catchment of approximately 474 km<sup>2</sup>. Carlingford lough is generally shallow with depths between 2 and 5 meters, but depths within the narrow navigable channel can extend to 36 meters.

Freshwater inputs from the Newry (Clanrye) river are relatively small and generally do not affect the salinity of the Lough - the water seems to be well mixed and turned over due to the small input and the large tidal influence.

A YSI6600 EDS instrument is located inside the northern basin near Killowen.

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Table 1. Descriptive statistics for *in situ* variables for current reporting period (last 7 days of data).

Parameter	Mean	Variance	Minimum	Maximum
Salinity (surface)	33.06	1.69	0.25	34.47
Temperature (surface)	7.02	0.17	6.12	8.16
DO % saturation (surface)	104.21	4.42	100.2	107.8
DO conc' mg/L <sup>-1</sup> (surface)	10.19	0.04	9.68	12.74
Fluorescence (surface)	262.78	98392.80	-1.9	674.3
Turbidity (surface)	183.16	47099.65	0.3	759.1

Table 2. Data points above and below OSPAR and ADRIS threshold values for current reporting period only.

Values within range	Surface	% surface
Dissolved oxygen > 6 mg/l	1919	100.0%
Dissolved oxygen < 6 mg/l	0	0.0%
Chlorophyll a conc. > 10 ug/l	830	43.3%
Chlorophyll a conc. < 10 ug/l	1089	56.7%
ADRS Class A	1919	100.0%
ADRS Class B	0	0.0%
ADRS Class C	0	0.0%
ADRS Class D	0	0.0%

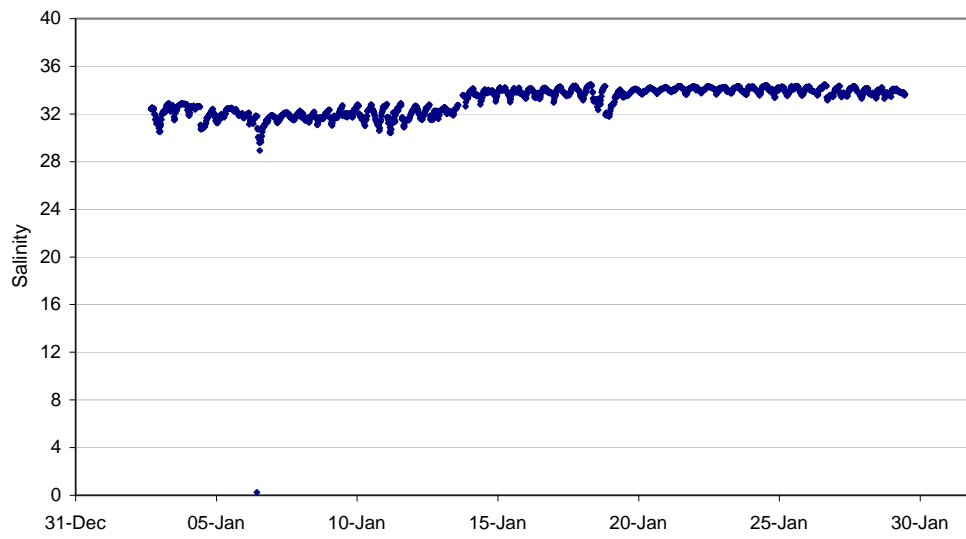


Figure 1. Surface salinity series for week -3, week -2, week -1 and current reporting period.

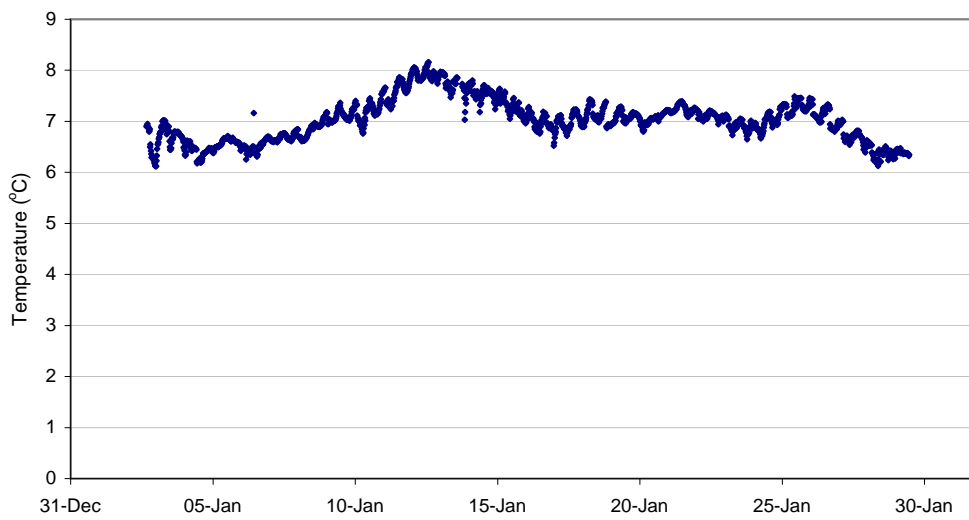


Figure 2. Surface temperature series for week -3, week -2, week -1 and current reporting period.

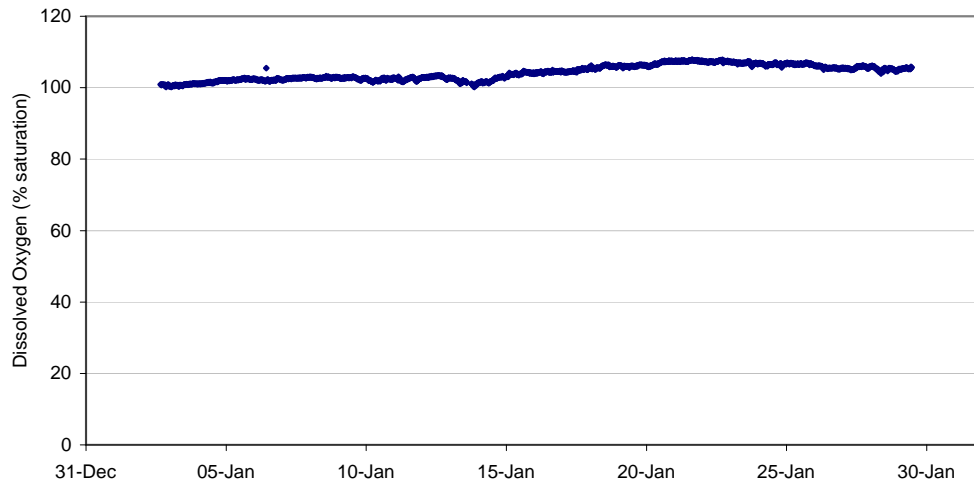


Figure 3. Surface DO (% saturation) series for week -3, week -2, week -1 and current reporting period.

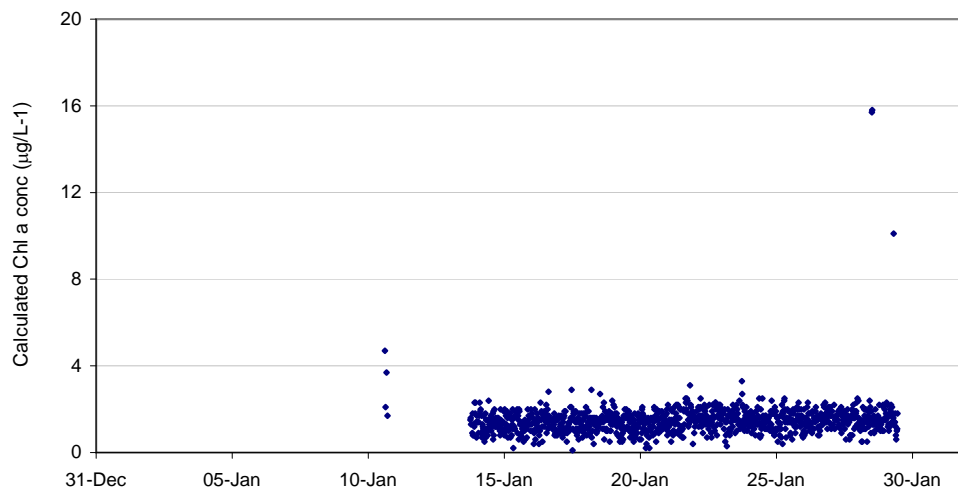


Figure 4. Fluorescence calculated chlorophyll a concentration for week -3, week -2, week -1 and current reporting period.

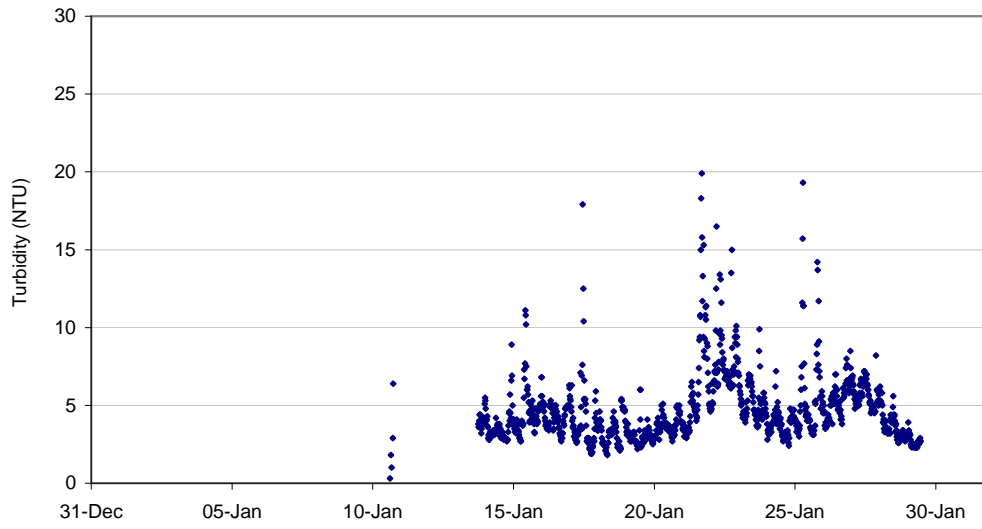


Figure 5. Surface turbidity series for week -3, week -2, week -1 and current reporting period.

## In Situ Water Quality Monitoring Report: Carlingford Lough South

Issued by the North of Ireland Joint Agency Coastal Monitoring Programme. For further information and data access please visit our website at: <http://www.afbini.gov.uk/index/services/specialist-advice/coastal-monitoring.htm>

**Data report start date:** 02 Jan 2012  
**Data report finish date:** 29 Jan 2012  
**Date of issue:** 31 Jan 2012

Carlingford Lough is a sea lough at the mouth of the Newry (or Clanrye) River on the east coast of Ireland with a total area of approximately 51 km<sup>2</sup>. The lough borders both the Irish Republic and Northern Ireland and has a catchment of approximately 474 km<sup>2</sup>. Carlingford lough is generally shallow with depths between 2 and 5 meters, but depths within the narrow navigable channel can extend to 36 meters. Freshwater inputs from the Newry (Clanrye) river are relatively small and generally do not affect the salinity of the Lough - the water seems to be well mixed and turned over due to the small input and the large tidal influence. A YSI6600 EDS instrument is located inside the mouth of the lough near near Greenore.

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Table 1. Descriptive statistics for *in situ* variables for current reporting period (last 7 days of data).

Parameter	Mean	Variance	Minimum	Maximum
Salinity (surface)	34.80	0.21	33.16	35.6
Temperature (surface)	6.98	0.18	5.88	7.92
DO % saturation (surface)	102.62	1.17	99.4	105
DO conc' mg/L <sup>-1</sup> (surface)	9.93	0.02	9.59	10.2
Fluorescence (surface)	1.73	0.18	0.1	3.5
Turbidity (surface)	7.95	4.26	4.7	18.9

Table 2. Data points above and below OSPAR and ADRIS threshold values for current reporting period only.

Values within range	Surface	% surface
Dissolved oxygen > 6 mg/l	1149	100.0%
Dissolved oxygen < 6 mg/l	0	0.0%
Chlorophyll a conc. > 10 ug/l	0	0.0%
Chlorophyll a conc. < 10 ug/l	1149	100.0%
ADRIS Class A	1149	100.0%
ADRIS Class B	0	0.0%
ADRIS Class C	0	0.0%
ADRIS Class D	0	0.0%

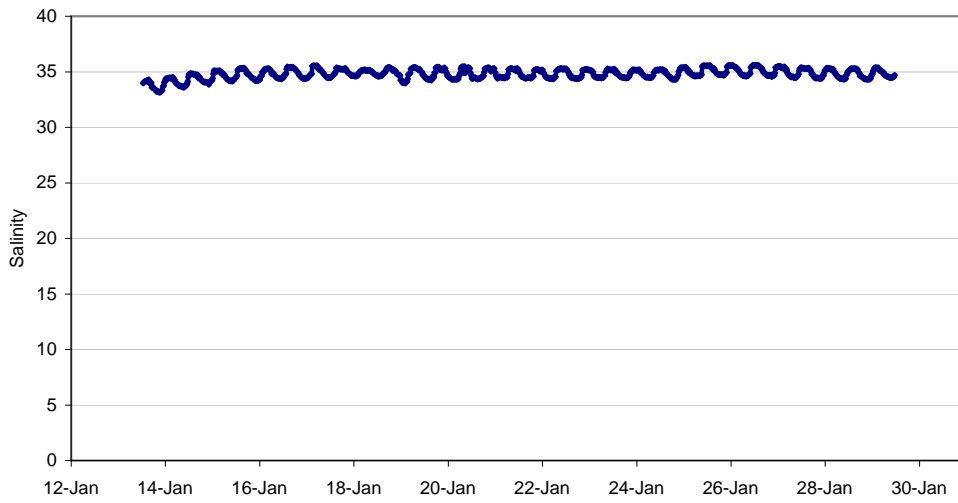


Figure 1. Surface salinity series for week -3, week -2, week -1 and current reporting period.

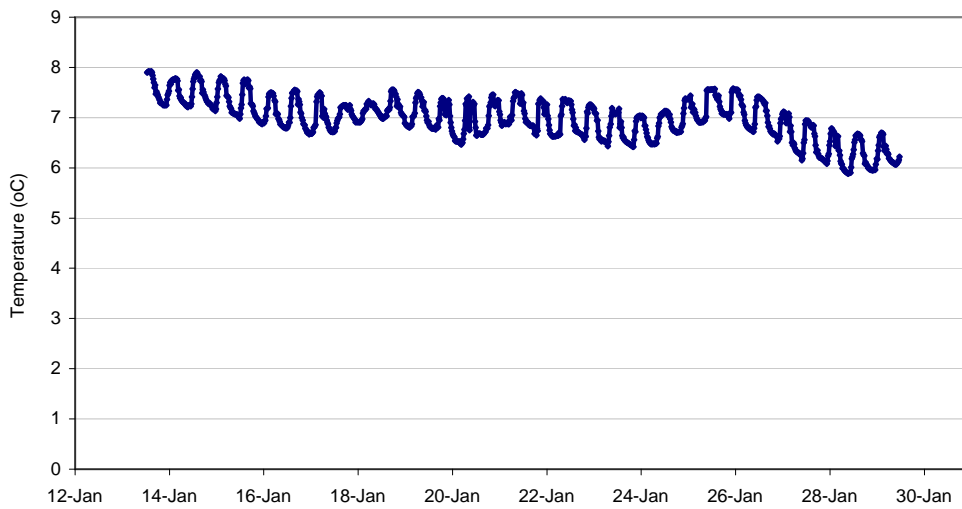


Figure 2. Surface temperature series for week -3, week -2, week -1 and current reporting period.

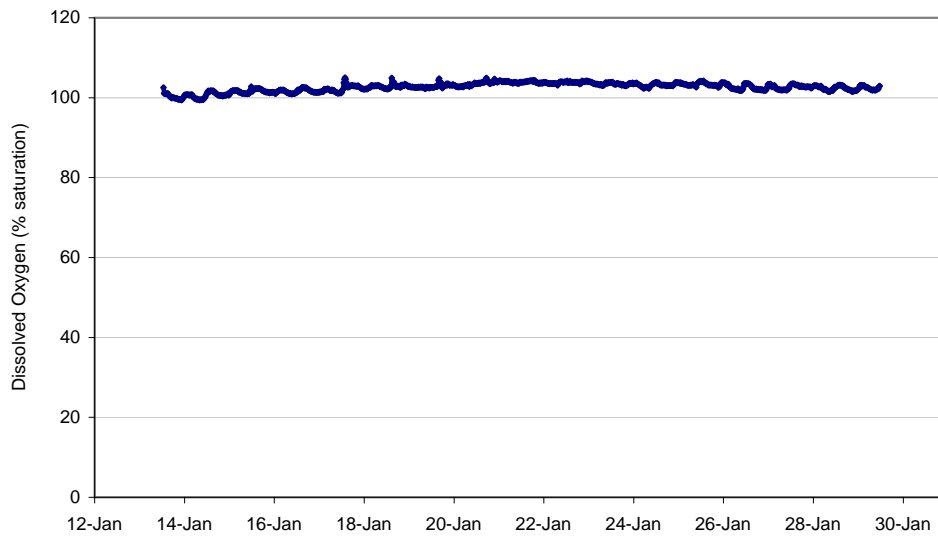


Figure 3. Surface DO (% saturation) series for week -3, week -2, week -1 and current reporting period.

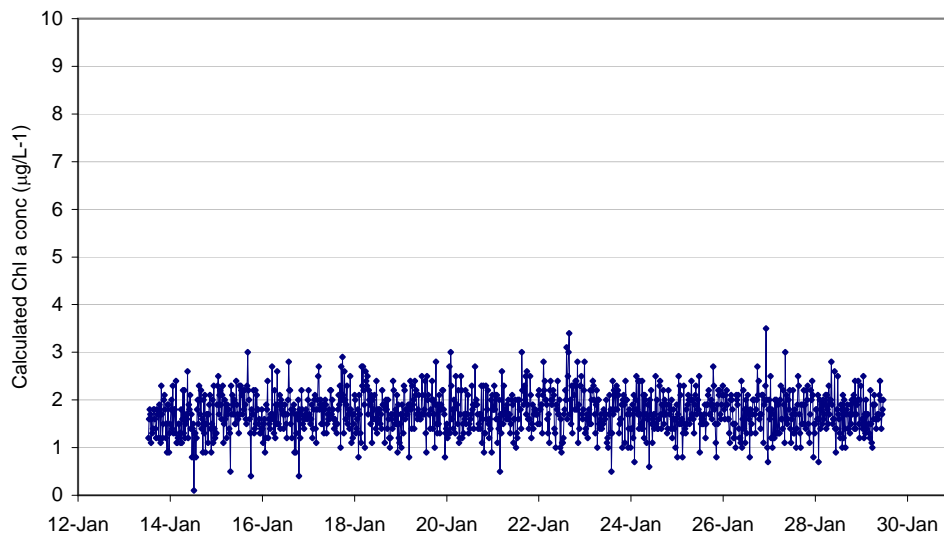


Figure 4. Fluorescence calculated chlorophyll a concentration for week -3, week -2, week -1 and current reporting period.

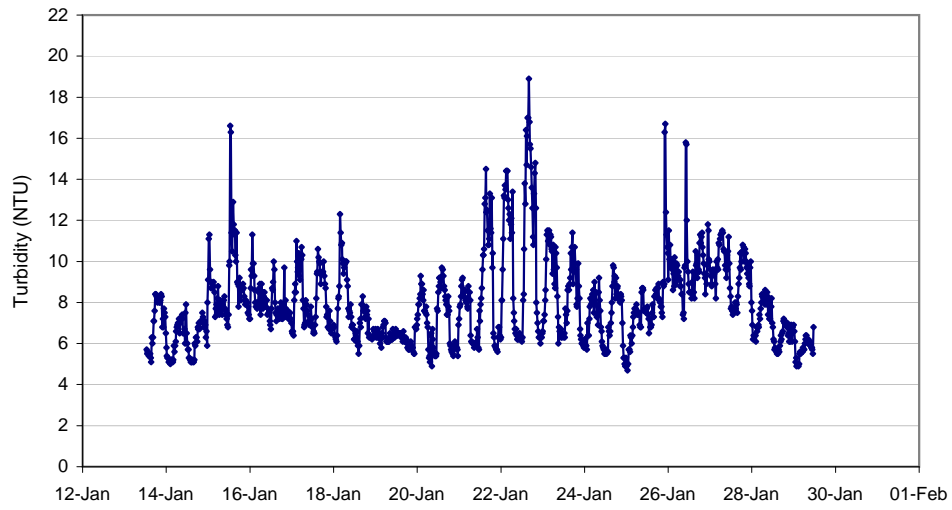


Figure 5. Surface turbidity series for week -3, week -2, week -1 and current reporting period.

## In Situ Water Quality Monitoring Report: Lagan

Issued by the North of Ireland Joint Agency Coastal Monitoring Programme. For further information and data access please visit our website at: <http://www.afbi.gov.uk/coastal-monitoring.htm>

**Data report start date:** 23 Jan 2012  
**Data report finish date:** 25 Jan 2012  
**Date of issue:** 31 Jan 2012



Natural tidal fluctuations in the Lagan impoundment are modified by the Lagan Weir. The estuary is periodically stratified, accentuated by the saline water trapped as a layer under the freshwater flow.

Two Valeport 606 monitoring instruments are deployed under a communication buoy in the vicinity of the Ormeau Bridge; one instrument is near surface whilst the other is near-bottom.

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Table 1. Descriptive statistics for *in situ* variables for current reporting period (last 7 days of data).

Parameter	Mean	Variance	Minimum	Maximum
Salinity (surface)	17.95	67.59	3.13	26.41
Salinity (bottom)	27.62	0.18	26.13	28.23
Temperature (surface)	6.67	0.13	5.93	8.10
Temperature (bottom)	7.25	0.01	7.13	8.07
DO % saturation (surface)	85.96	49.83	69.62	100.39
DO % saturation (bottom)	68.80	28.11	55.37	96.73
DO conc (surface)	9.38	1.48	7.16	11.31
DO conc (bottom)	6.91	0.23	5.62	8.21
Fluorescence (surface)	23.57	28.45	4.50	33.38
Fluorescence (bottom)	13.38	6.94	7.00	20.13

Table 2. Data points above and below OSPAR and ADRIS threshold values for current reporting period only.

Values within range	Surface	Bottom	% surface	% bottom
Dissolved oxygen > 6 mg/l	126	120	100.0%	96.0%
Dissolved oxygen < 6 mg/l	0	5	0.0%	4.0%
ADRIS Class A	126	120	100.0%	96.0%
ADRIS Class B	0	5	0.0%	4.0%
ADRIS Class C	0	0	0.0%	0.0%
ADRIS Class D	0	0	0.0%	0.0%

Instrument Service 26-01-12

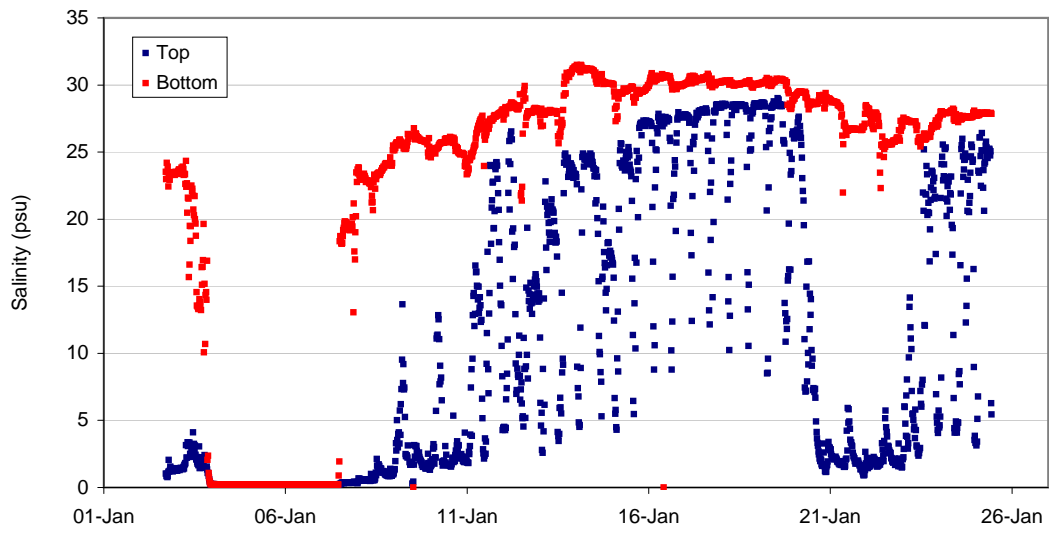


Figure 1. Surface and bottom salinity series for week -3, week -2, week -1 and current reporting period.

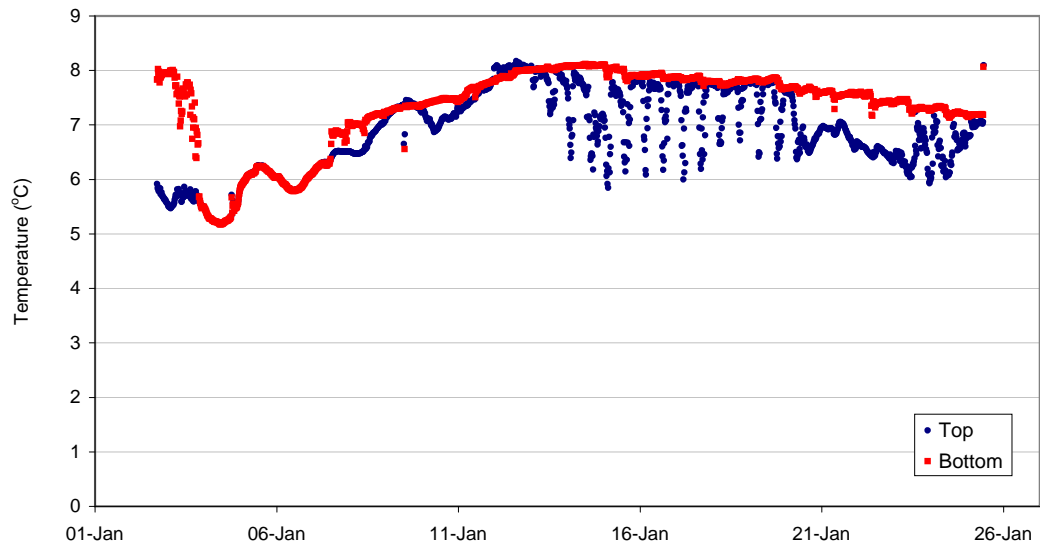


Figure 2. Surface and bottom temperature series for week -3, week -2, week -1 and current reporting period.

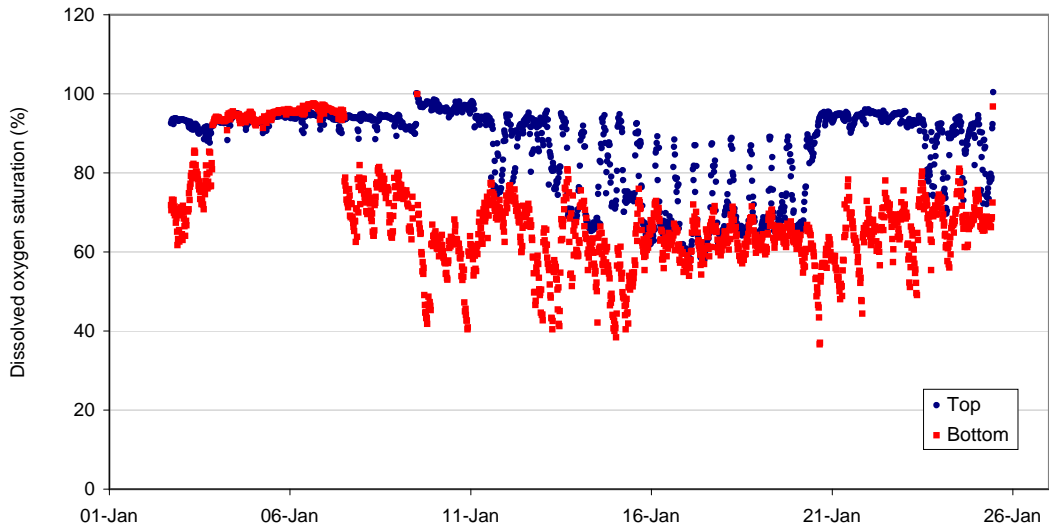


Figure 3. Surface and bottom DO (% saturation) series for week -3, week -2, week -1 and current reporting period.

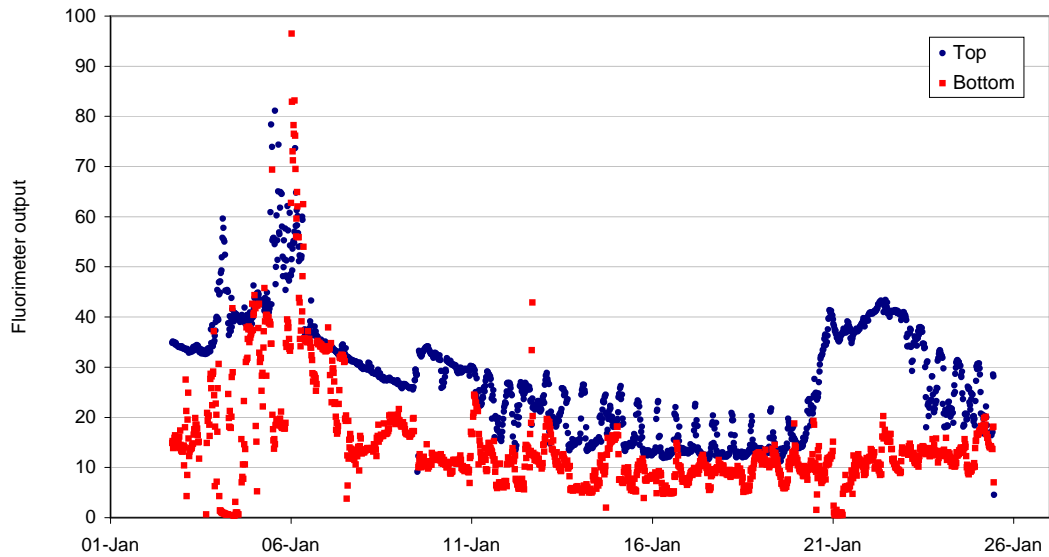


Figure 4. Chlorophyll fluorescence for week -3, week -2, week -1 and current reporting period.

## In Situ Water Quality Monitoring Report: Lough Foyle North

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**Data report start date:** 02 Jan 2012  
**Data report finish date:** 29 Jan 2012  
**Date of issue:** 31 Jan 2012

Lough Foyle is a shallow coastal embayment at the mouth of the River Foyle on the north coast of Ireland. The lough borders both the Irish Republic and Northern Ireland and has one of the largest catchments of all Irish sea-loughs at 3,700 km<sup>2</sup>.  
 Lough Foyle is approximately 179 km<sup>2</sup> in size with an average depth of 5m - intertidal mudflats cover 20% of its area.  
 Two moored YSI6600 EDS instruments are located inside the mouth of the Lough at Magilligan; one located near-surface and the other located near-bottom.

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Table 1. Descriptive statistics for *in situ* variables for current reporting period (last 7 days of data).

Parameter	Mean	Variance	Minimum	Maximum
Salinity (surface)	28.58	18.74	14.61	33.51
Salinity (bottom)	32.95	10.51	20.18	36.06
Temperature (surface)	7.47	0.88	4.88	8.93
Temperature (bottom)	7.58	0.55	4.65	8.66
DO % saturation (surface)	101.75	2.38	97.3	106.9
DO % saturation (bottom)	99.89	2.00	92	105.7
DO conc' mg/L <sup>-1</sup> (surface)	10.15	0.14	9.61	11.37
DO conc' mg/L <sup>-1</sup> (bottom)	9.65	0.09	8.89	10.85
Fluorescence (surface)	2.06	1.19	0.4	7.8
Fluorescence (bottom)	2.26	1.45	0	10
Turbidity (surface)	20.12	215.20	3.6	163.4
Turbidity (bottom)	33.39	688.85	5.7	255.9

Table 2. Data points above and below OSPAR and ADRIS threshold values for current reporting period only.

Values within range	Surface	Bottom	% surface	% bottom
Dissolved oxygen > 6 mg/l	1899	1899	100.0%	100.0%
Dissolved oxygen < 6 mg/l	0	0	0.0%	0.0%
Chlorophyll a conc. > 10 ug/l	0	0	0.0%	0.0%
Chlorophyll a conc. < 10 ug/l	1899	1898	100.0%	100.0%
ADRIS Class A	1899	1899	100.0%	100.0%
ADRIS Class B	0	0	0.0%	0.0%
ADRIS Class C	0	0	0.0%	0.0%
ADRIS Class D	0	0	0.0%	0.0%

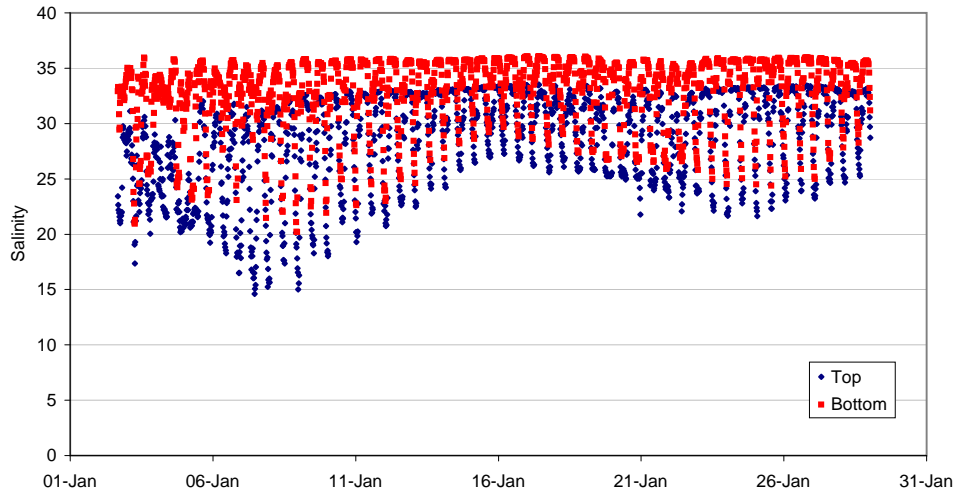


Figure 1. Surface and bottom salinity series for week -3, week -2, week -1 and current reporting period.

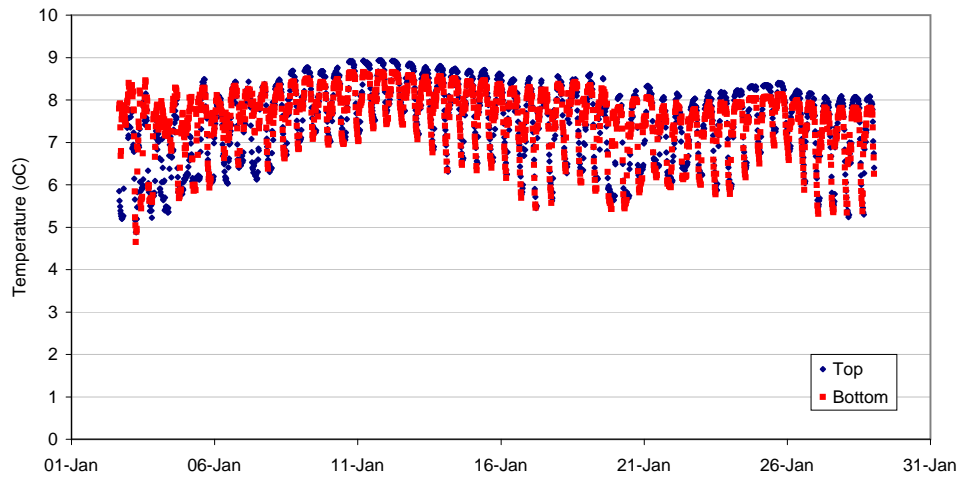


Figure 2. Surface and bottom temperature series for week -3, week -2, week -1 and current reporting period.

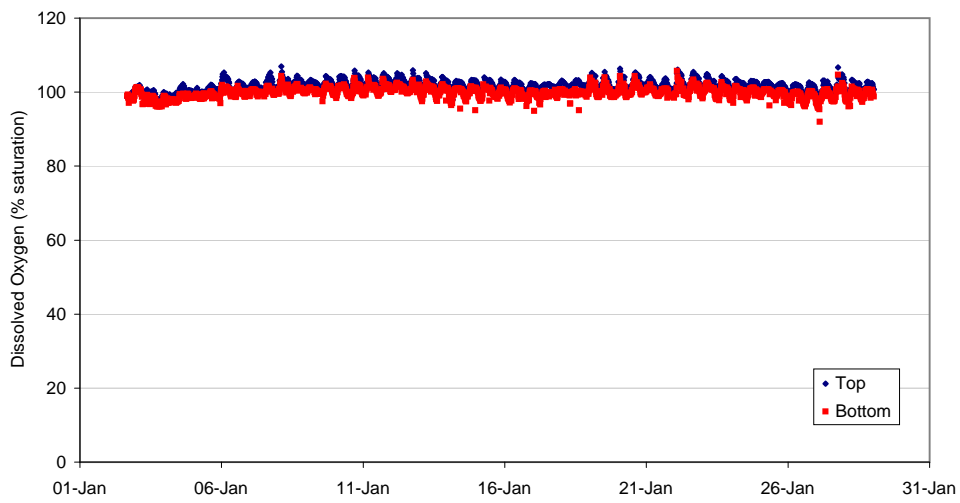


Figure 3. Surface and bottom DO (% saturation) series for week -3, week -2, week -1 and current reporting period.

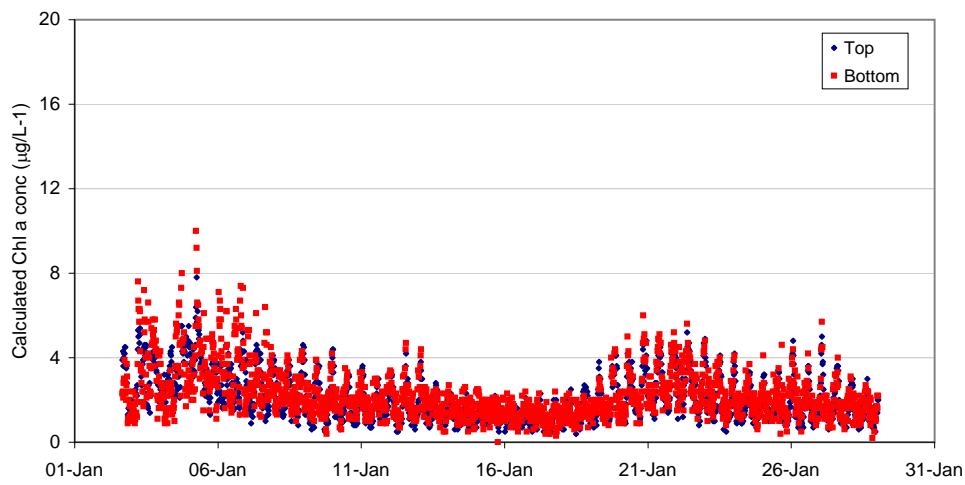


Figure 4. Fluorescence calculated chlorophyll a concentration for week -3, week -2, week -1 and current reporting period.

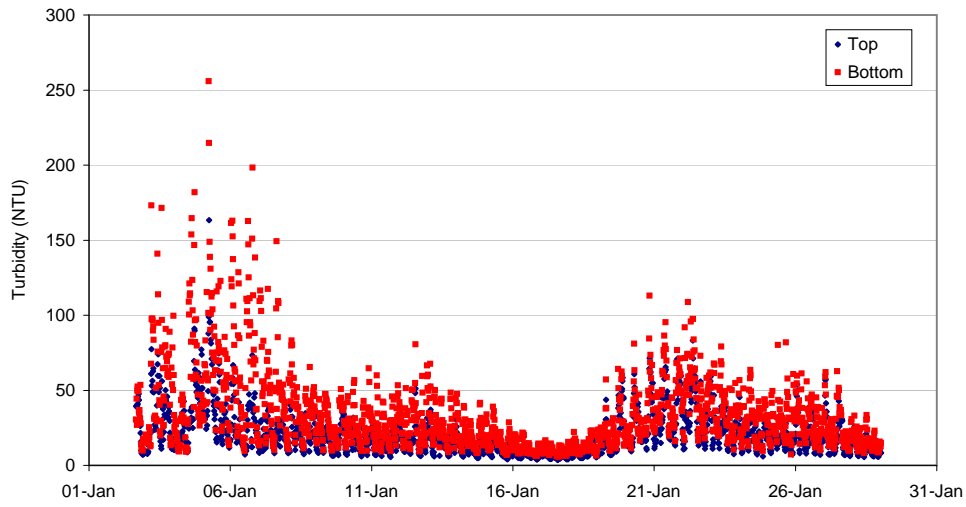


Figure 5. Surface and bottom turbidity series for week -3, week -2, week -1 and current reporting period.

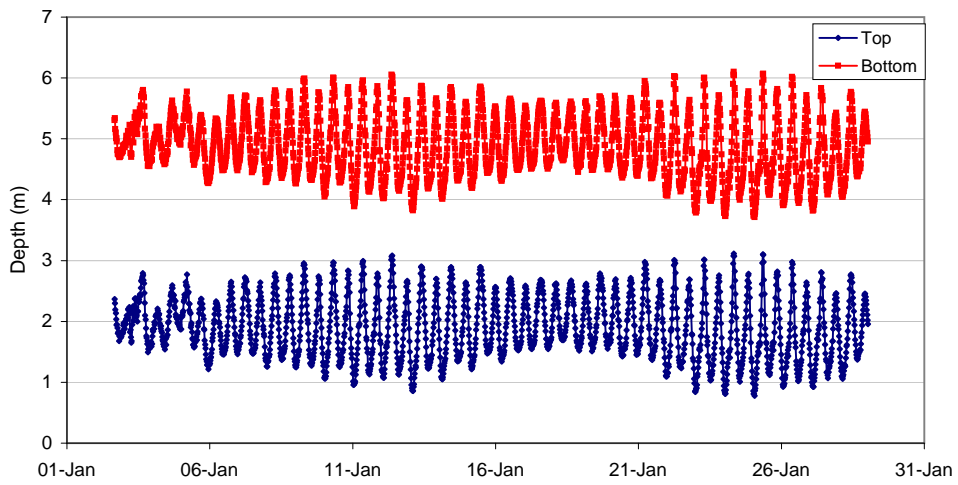


Figure 6. Surface and bottom depth series for week -3, week -2, week -1 and current reporting period.

## In Situ Water Quality Monitoring Report: Lough Foyle South

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Lough Foyle is approximately 179 km<sup>2</sup> in size with an average depth of 5m - intertidal mudflats cover 20% of its area.

Two moored YSI6600 EDS instruments are located near the Foyle estuary at Black Brae; one located near-surface and the other located near-bottom.

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Table 1. Descriptive statistics for *in situ* variables for current reporting period (last 7 days of data).

Parameter	Mean	Variance	Minimum	Maximum
Salinity (surface)	14.27	13.48	3.13	22.19
Salinity (bottom)				
Temperature (surface)	6.84	0.21	5.21	7.97
Temperature (bottom)				
DO % saturation (surface)	100.55	2.47	96.2	104
DO % saturation (bottom)				
DO conc' mg/L <sup>-1</sup> (surface)	11.17	0.08	10.4	12.22
DO conc' mg/L <sup>-1</sup> (bottom)				
Fluorescence (surface)	3.23	0.58	1.3	6.3
Fluorescence (bottom)				
Turbidity (surface)	17.29	1306.07	6.9	1202.9
Turbidity (bottom)				

Table 2. Data points above and below OSPAR and ADRIS threshold values for current reporting period only.

Values within range				
Dissolved oxygen > 6 mg/l	1898	1898	100.0%	100.0%
Dissolved oxygen < 6 mg/l	0	0	0.0%	0.0%
Chlorophyll a conc. > 10 ug/l	0	0	0.0%	0.0%
Chlorophyll a conc. < 10 ug/l	1898	1898	100.0%	100.0%
ADRIS Class A	1898	1898	100.0%	100.0%
ADRIS Class B	0	0	0.0%	0.0%
ADRIS Class C	0	0	0.0%	0.0%
ADRIS Class D	0	0	0.0%	0.0%

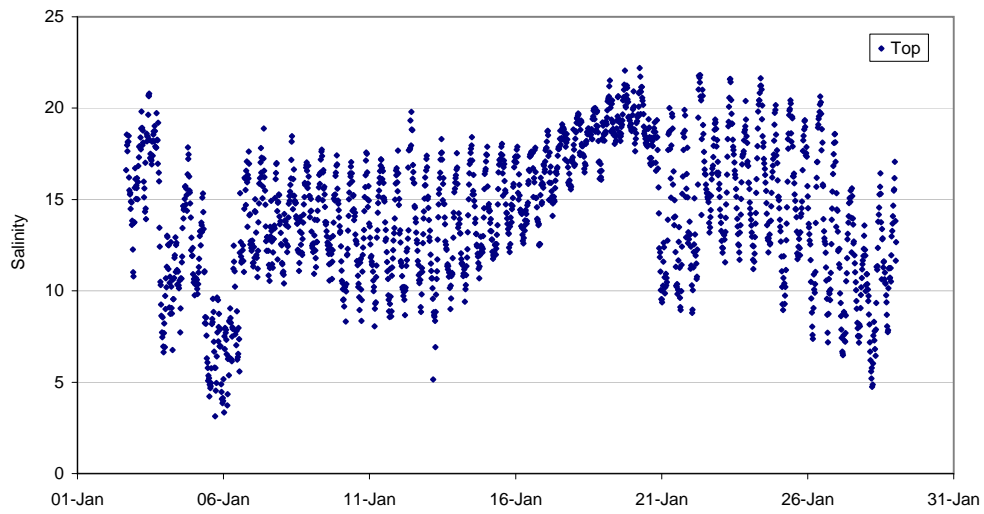


Figure 1. Surface and bottom salinity series for week -3, week -2, week -1 and current reporting period.

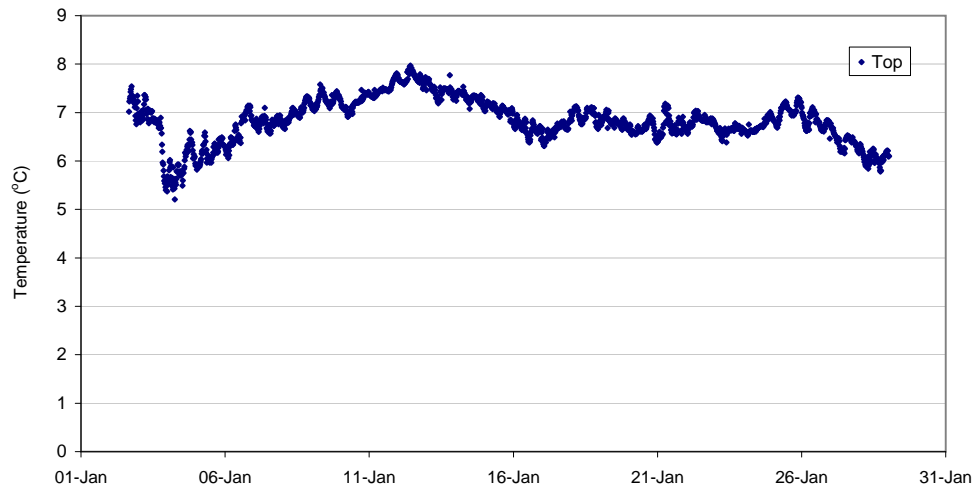


Figure 2. Surface and bottom temperature series for week -3, week -2, week -1 and current reporting period.

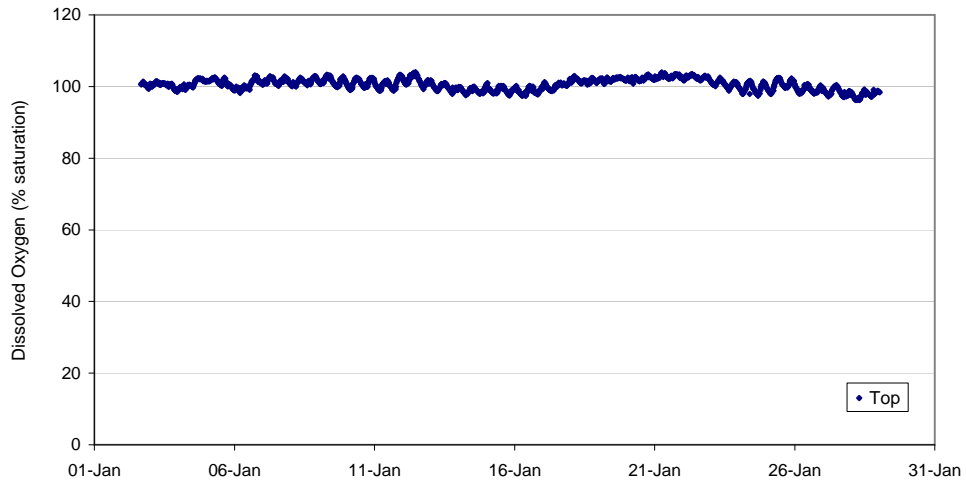


Figure 3. Surface and bottom DO (% saturation) series for week -3, week -2, week -1 and current reporting period.

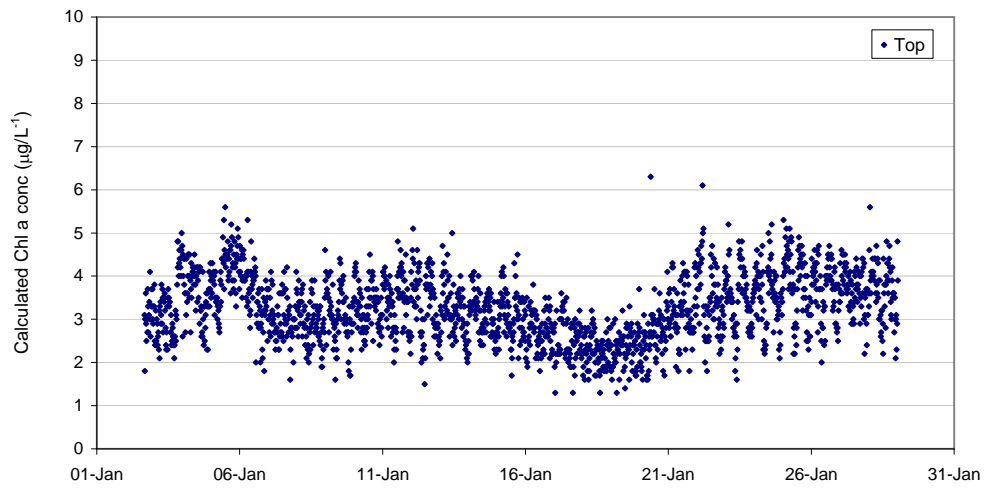


Figure 4. Fluorescence calculated chlorophyll a concentration for week -3, week -2, week -1 and current reporting period.

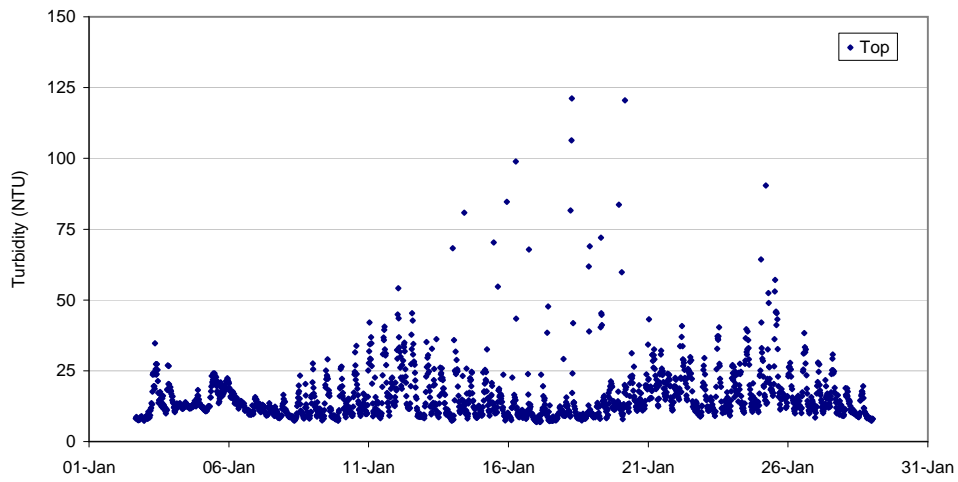


Figure 5. Surface and bottom turbidity series for week -3, week -2, week -1 and current reporting period.

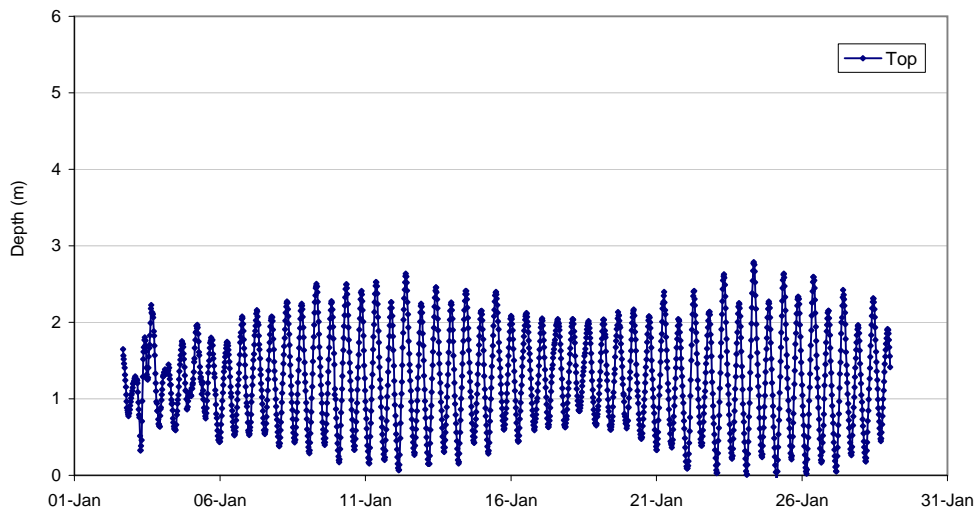
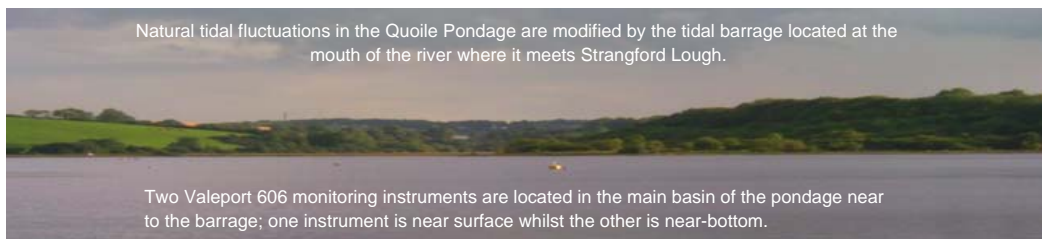


Figure 6. Surface and bottom depth series for week -3, week -2, week -1 and current reporting period.

## In Situ Water Quality Monitoring Report: Quoile

Issued by the North of Ireland Joint Agency Coastal Monitoring Programme. For further information and data access please visit our website at: <http://www.afbini.gov.uk/coastal-monitoring.htm>

**Data report start date:** 23 Jan 2012  
**Data report finish date:** 30 Jan 2012  
**Date of issue:** 31 Jan 2012



### Disclaimer

Data is automatically updated to these reports (and the website) with minimal expert reviewing to allow the rapid dissemination of high resolution near-real-time data to interested parties.

This data must be viewed as provisional and used for interpretive purposes only; the data has not been thoroughly reviewed or edited and **data corruption will occur** as a result of instrument fouling, drift or failure.

Higher resolution approved and reviewed data may be made available by direct request.

Data are reviewed and checked against other methods of measurement to ensure accuracy and may therefore be subject to change or exclusion at a later date.

These data are considered provisional until published in peer-reviewed literature or reviewed and distributed directly to named individuals; no guarantee of data accuracy is given or implied in this report.

No responsibility or liability is accepted by AFB1 (or other involved parties named in association with this programme) for damages occurring from the use or misuse of data obtained from this report or the website.

Table 1. Descriptive statistics for *in situ* variables for current reporting period (last 7 days of data).

Parameter	Mean	Variance	Minimum	Maximum
Salinity (surface)	0.34	0.02	0.19	0.66
Salinity (bottom)				
Temperature (surface)	5.46	0.60	4.334	6.846
Temperature (bottom)				
DO % saturation (surface)	85.81	16.40	72.469	94.34
DO % saturation (bottom)				
DO conc' mg/L <sup>-1</sup> (surface)				
DO conc' mg/L <sup>-1</sup> (bottom)				
Fluorescence (surface)	52.60	8.12	46.583	62.333
Fluorescence (bottom)				

Table 2. Data points above and below OSPAR and ADRIS threshold values for current reporting period only.

Values within range	Surface	Bottom	% surface	% bottom
Dissolved oxygen > 6 mg/l	0	0	#DIV/0!	#DIV/0!
Dissolved oxygen < 6 mg/l	0	0	#DIV/0!	#DIV/0!
ADRIS Class A	0	0	#DIV/0!	#DIV/0!
ADRIS Class B	0	0	#DIV/0!	#DIV/0!
ADRIS Class C	0	0	#DIV/0!	#DIV/0!
ADRIS Class D	0	0	#DIV/0!	#DIV/0!

Instrument Service 19-01-12

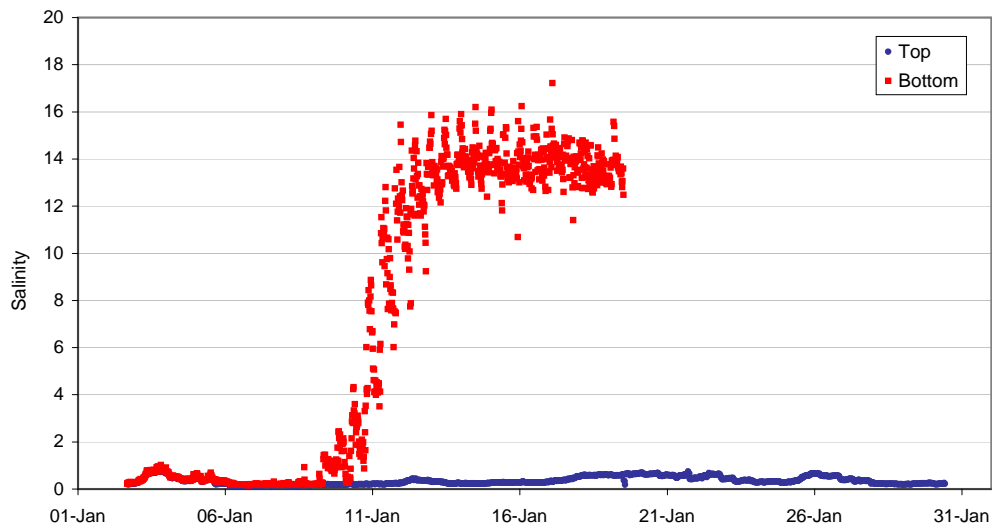


Figure 1. Surface and bottom salinity series for week -3, week -2, week -1 and current reporting period.

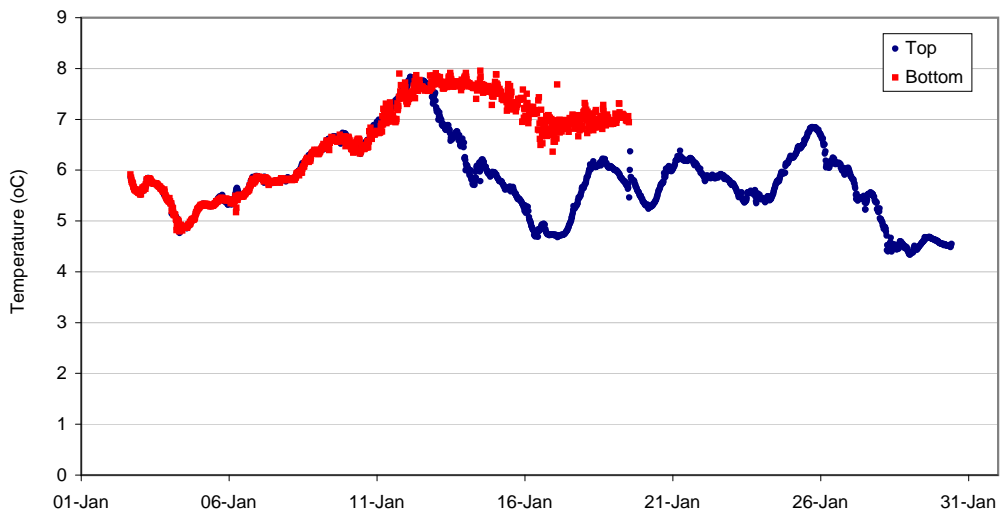


Figure 2. Surface and bottom temperature series for week -3, week -2, week -1 and current reporting period.

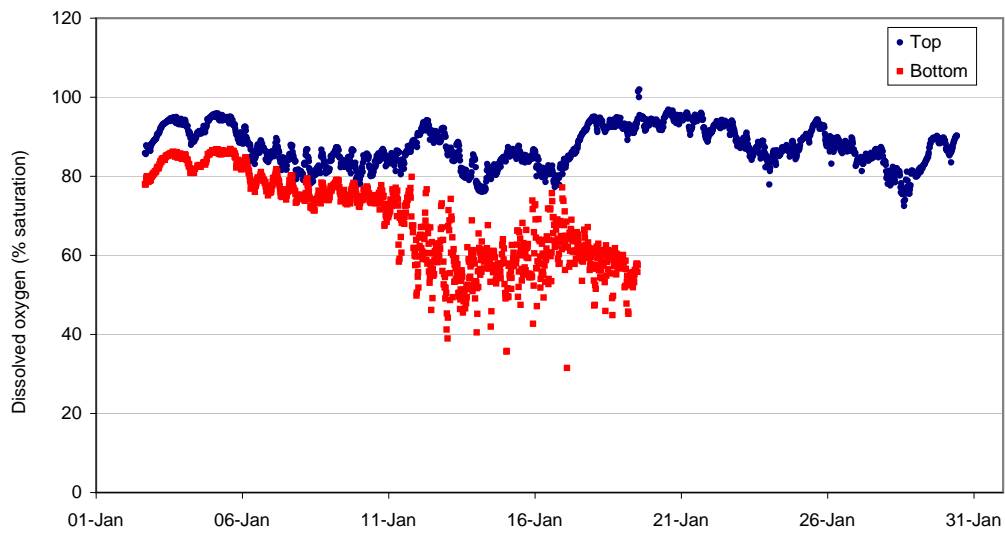


Figure 3. Surface and bottom DO (% saturation) series for week -3, week -2, week -1 and current reporting period.

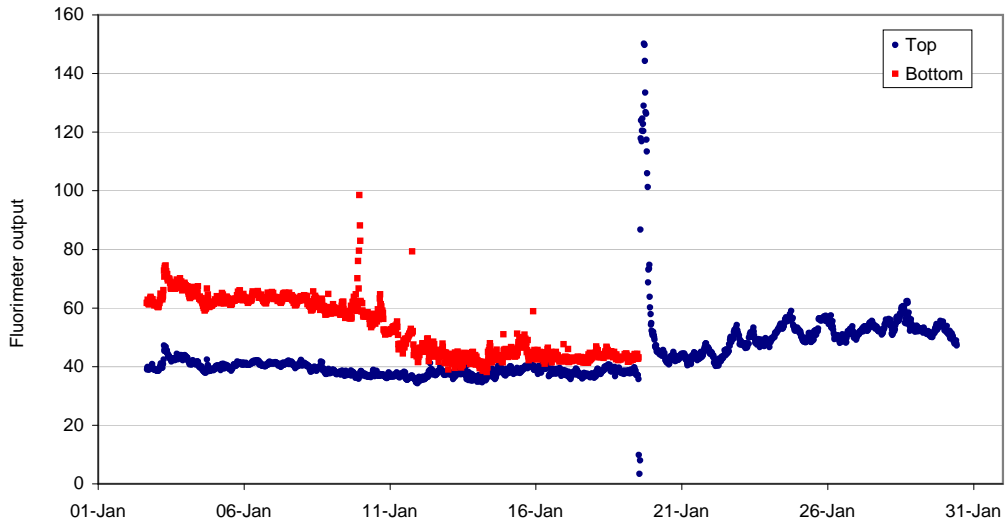


Figure 4. Chlorophyll fluorescence for week -3, week -2, week -1 and current reporting period.

## In Situ Water Quality Monitoring Report: North Coast

Issued by the North of Ireland Joint Agency Coastal Monitoring Programme. For further information and data access please visit our website at: <http://www.afbini.gov.uk/coastal-monitoring.htm>

**Data report start date:** 02 Jan 2012  
**Data report finish date:** 29 Jan 2012  
**Date of issue:** 31 Jan 2012



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Table 1. Descriptive statistics for *in situ* variables for current reporting period (last 7 days of data).

Parameter	Mean	Variance	Minimum	Maximum
Salinity (surface)	36.12	0.84	0.13	38.18
Temperature (surface)	9.03	0.10	6.36	9.58
DO % saturation (surface)	103.21	0.34	101.8	105.2
DO conc' mg/L <sup>-1</sup> (surface)	9.45	0.02	9.12	12.97
Fluorescence (surface)	-0.12	0.15	-3.6	1.6
Turbidity (surface)	4.24	308.28	-1.9	764.7

Table 2. Data points above and below OSPAR and ADRIS threshold values for current reporting period only.

Values within range	Surface	% surface
Dissolved oxygen > 6 mg/l	1898	100.0%
Dissolved oxygen < 6 mg/l	0	0.0%
Chlorophyll a conc. > 10 ug/l	0	0.0%
Chlorophyll a conc. /, 10 ug/l	1898	100.0%
ADRIS Class A	1898	100.0%
ADRIS Class B	0	0.0%
ADRIS Class C	0	0.0%
ADRIS Class D	0	0.0%

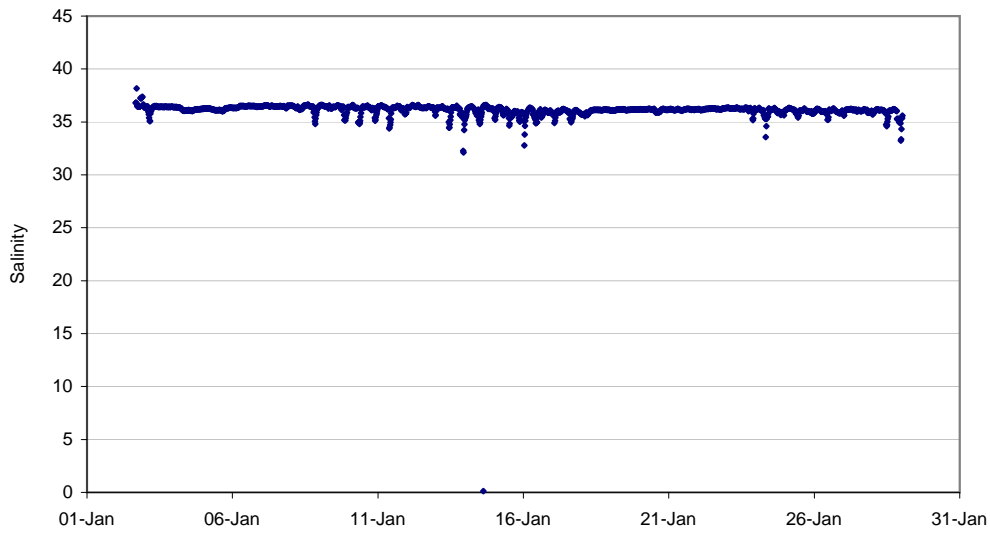


Figure 1. Surface salinity series for week -3, week -2, week -1 and current reporting period.

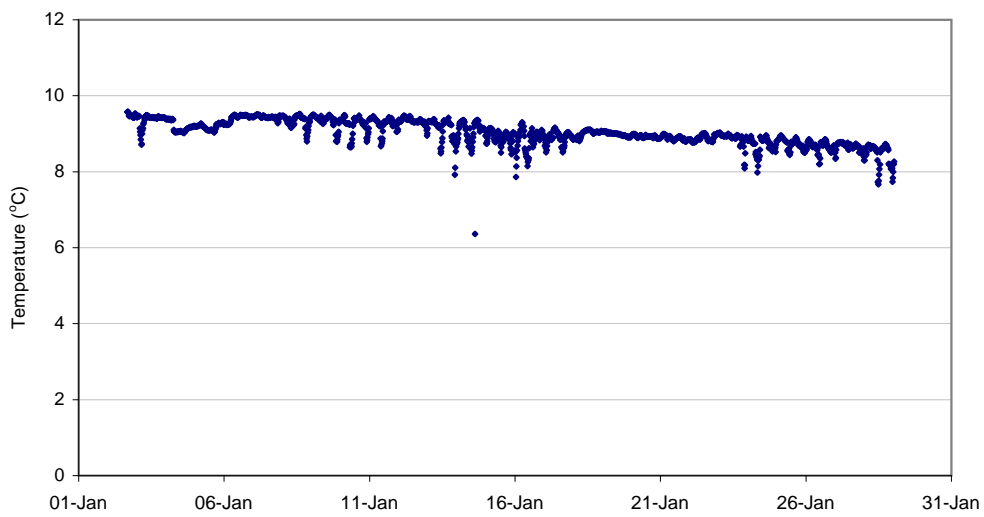


Figure 2. Surface temperature series for week -3, week -2, week -1 and current reporting period.

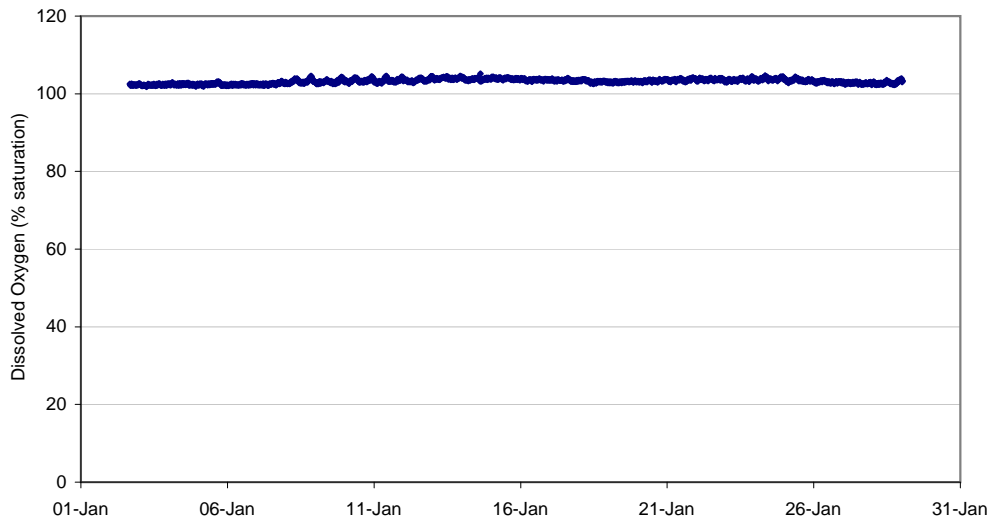


Figure 3. Surface DO (% saturation) series for week -3, week -2, week -1 and current reporting period.

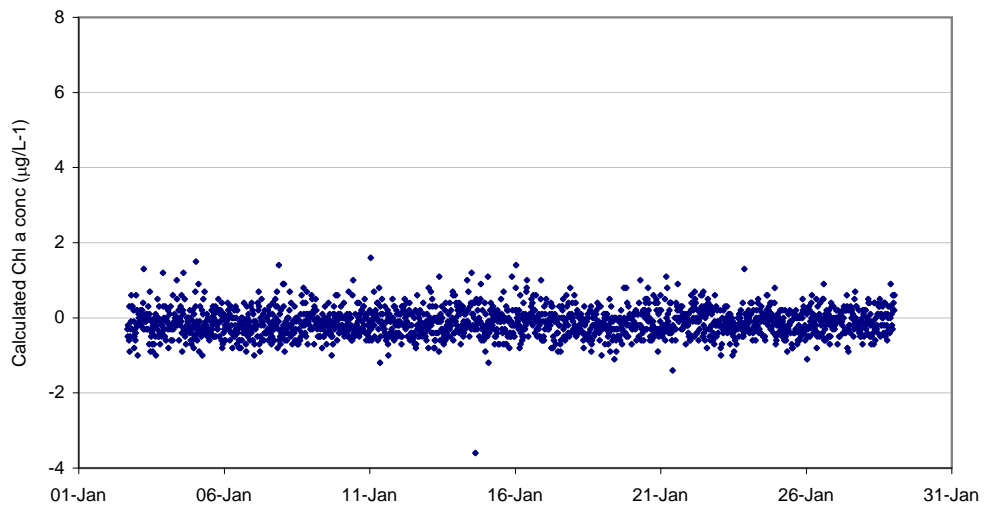


Figure 4. Fluorescence calculated chlorophyll a concentration for week -3, week -2, week -1 and current reporting period.

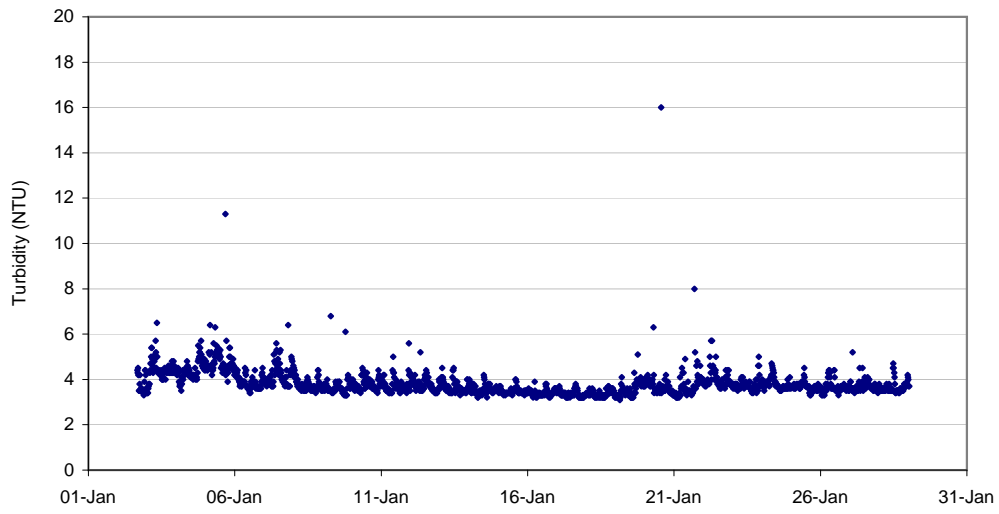


Figure 5. Surface turbidity series for week -3, week -2, week -1 and current reporting period.

## In Situ Water Quality Monitoring Report: Lough Fad

Issued by the North of Ireland Joint Agency Coastal Monitoring Programme. For further information and data access please visit our website at: <http://www.afbini.gov.uk/coastal-monitoring.htm>

**Data report start date:**

02 Jan 2012

**Data report finish date:**

29 Jan 2012

**Date of issue:**

31 Jan 2012



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Table 1. Descriptive statistics for *in situ* variables for current reporting period (last 7 days of data).

Parameter	Mean	Variance	Minimum	Maximum
Salinity (surface)	0.04	0.00	0.04	0.04
Temperature (surface)	4.43	0.16	3.78	5.4
DO % saturation (surface)	100.86	2.58	97.6	103.5
DO conc' mg/L <sup>-1</sup> (surface)	13.07	0.03	12.71	13.34
Fluorescence (surface)	5.25	0.22	3.8	9.2
Turbidity (surface)	-2.94	0.03	-3.2	-1.3

Table 2. Data points above and below OSPAR and ADRIS threshold values for current reporting period only.

Values within range	Surface	% surface
Dissolved oxygen > 6 mg/l	1898	100.0%
Dissolved oxygen < 6 mg/l	0	0.0%
Chlorophyll a conc. > 10 ug/l	0	0.0%
Chlorophyll a conc. < 10 ug/l	1898	100.0%
ADRIS Class A	1898	100.0%
ADRIS Class B	0	0.0%
ADRIS Class C	0	0.0%
ADRIS Class D	0	0.0%

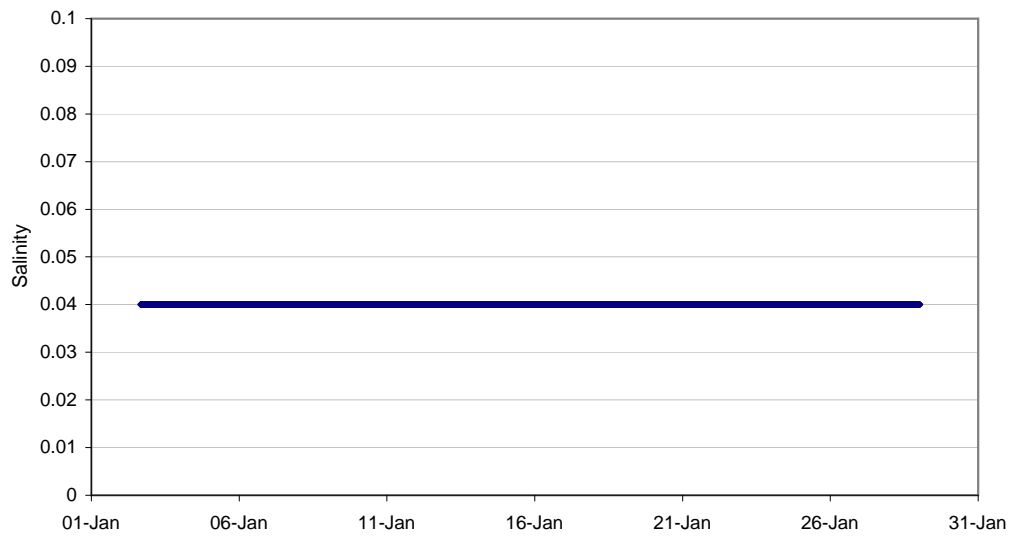


Figure 1. Surface salinity series for week -3, week -2, week -1 and current reporting period.

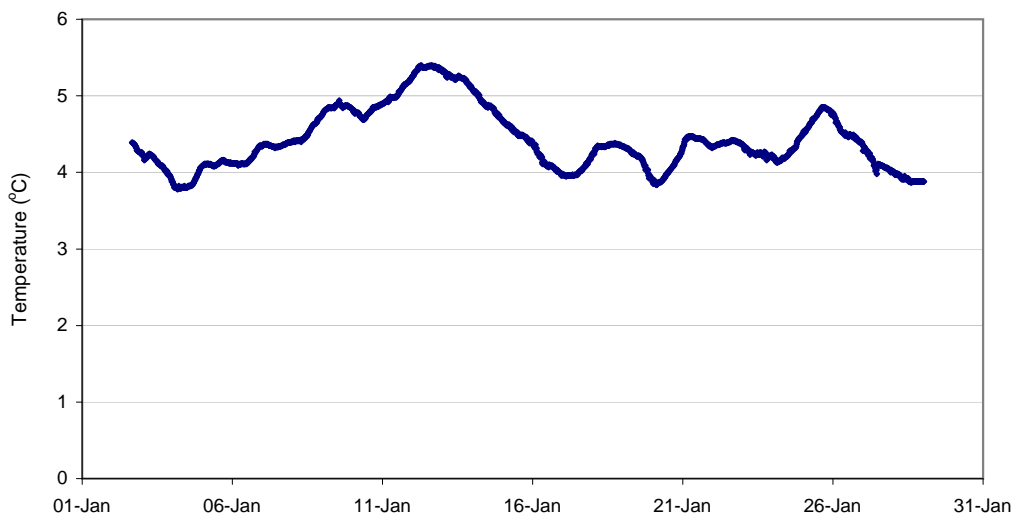


Figure 2. Surface temperature series for week -3, week -2, week -1 and current reporting period.

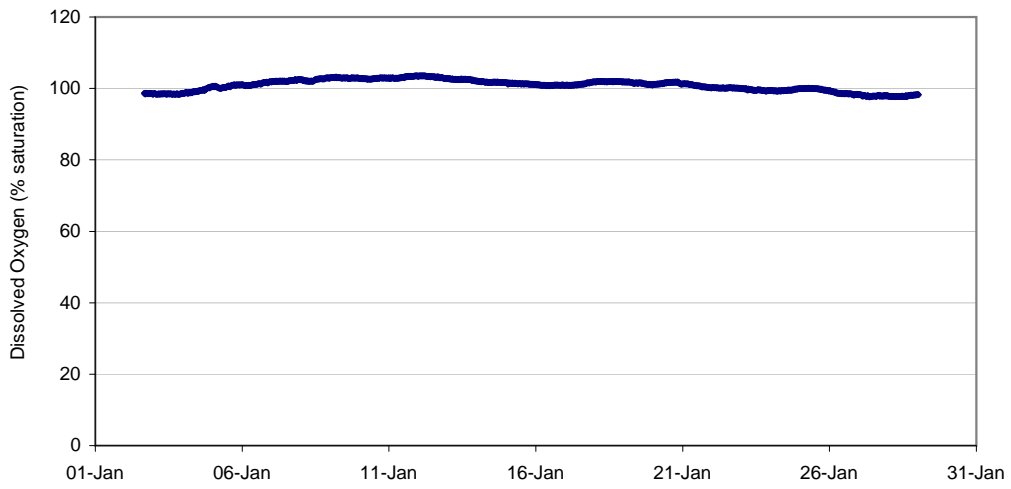


Figure 3. Surface DO (% saturation) series for week -3, week -2, week -1 and current reporting period.

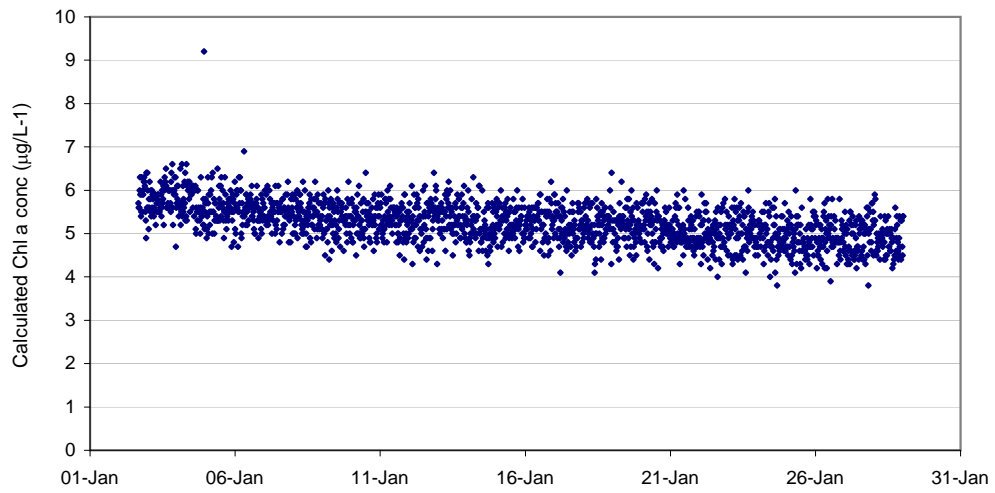


Figure 4. Fluorescence calculated chlorophyll a concentration for week -3, week -2, week -1 and current reporting period.