

A large flock of seagulls is captured in flight against a vibrant blue sky. The birds are scattered across the frame, with some appearing in small groups and others in pairs. The sky is mostly clear, with a few wispy white clouds visible, particularly towards the bottom and right edges. The overall scene conveys a sense of natural activity and movement.

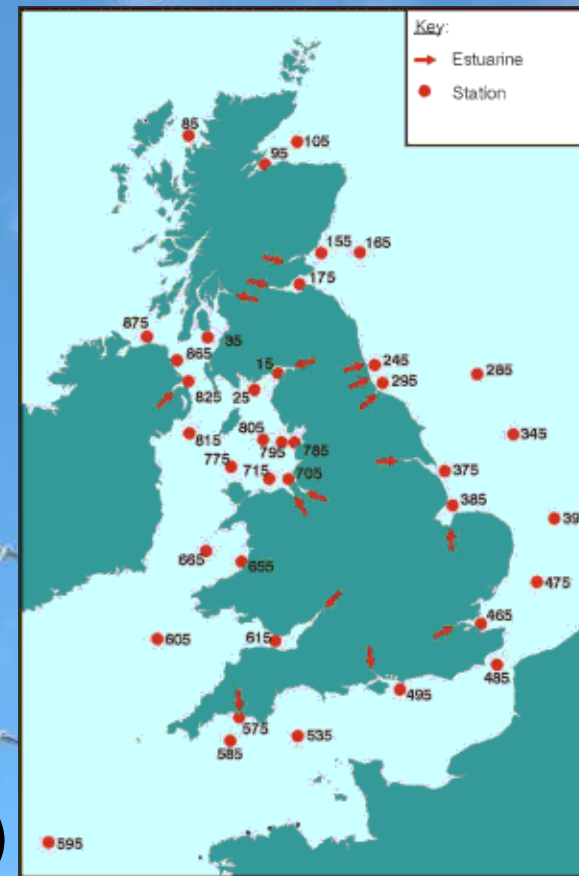
Integrating FerryBox into UK eutrophication monitoring

Outline

- Bit of history eutrophication monitoring
- FerryBox on Cefas Endeavour
- QA system
- Future

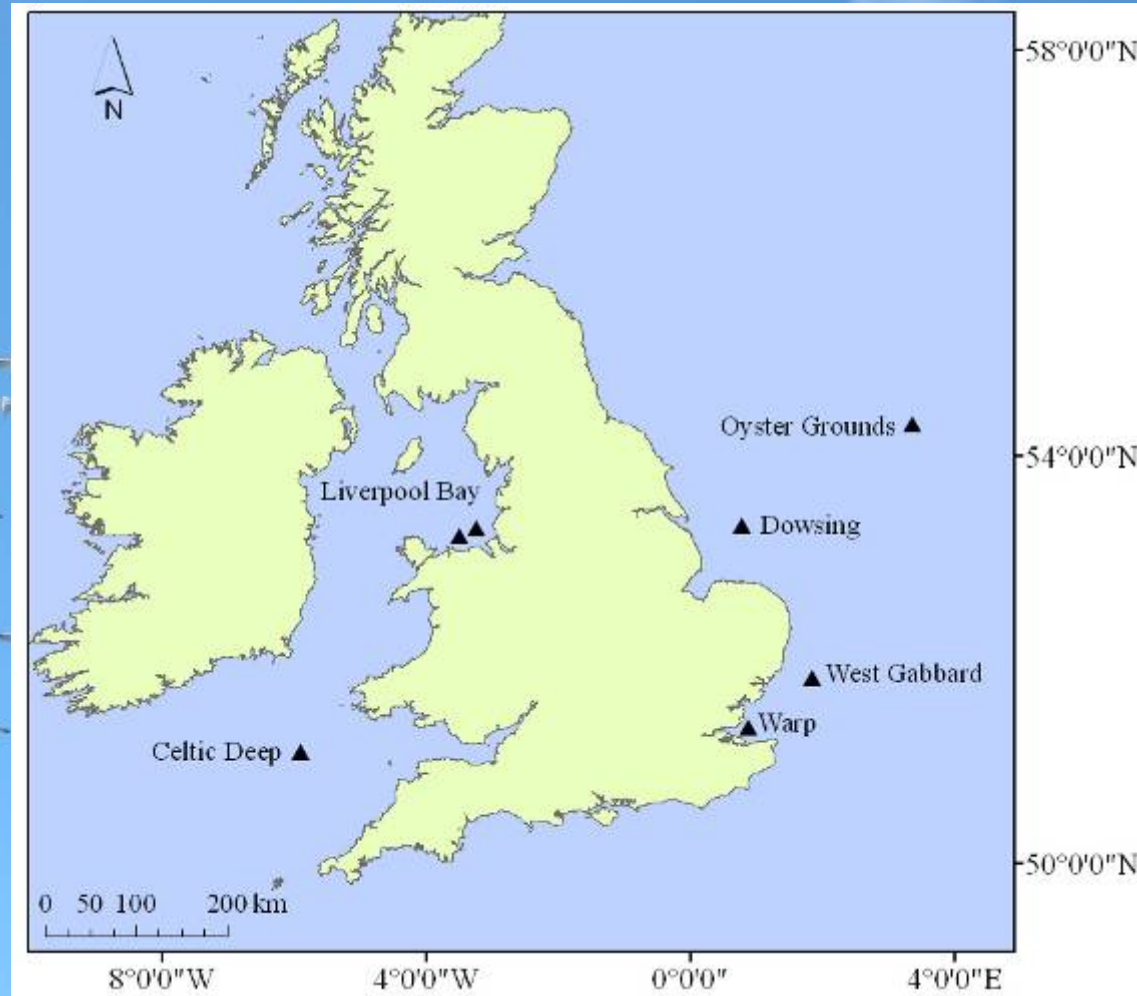
History of UK eutrophication monitoring (1990-2000)

- Report to OSPAR
- Ship based observations
- Good spatial coverage
- Poor temporal resolution
 - Annual winter nutrient survey
 - Occasional summer survey
- Limited biological data
 - Chlorophyll, oxygen
- Labour intensive (expensive)



SmartBuoy Locations

6 routine monitoring sites



FerryBox on Cefas Endeavour

Chlorophyll
and turbidity
(Turner
SCUFA)

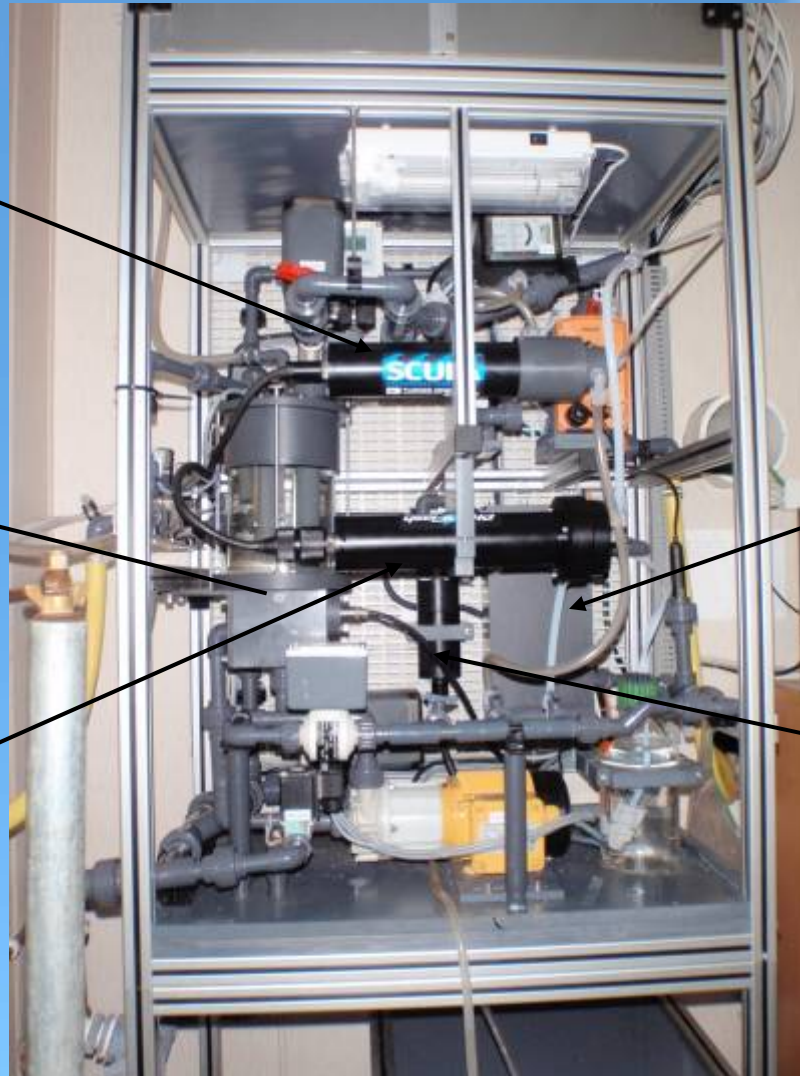
Oxygen
(Aanderaa
optode)

Turner Phytoflash

Hull mounted PRT

Salinity and temp
(SBE45)

Chlorophyll
(Seapoint SCF)



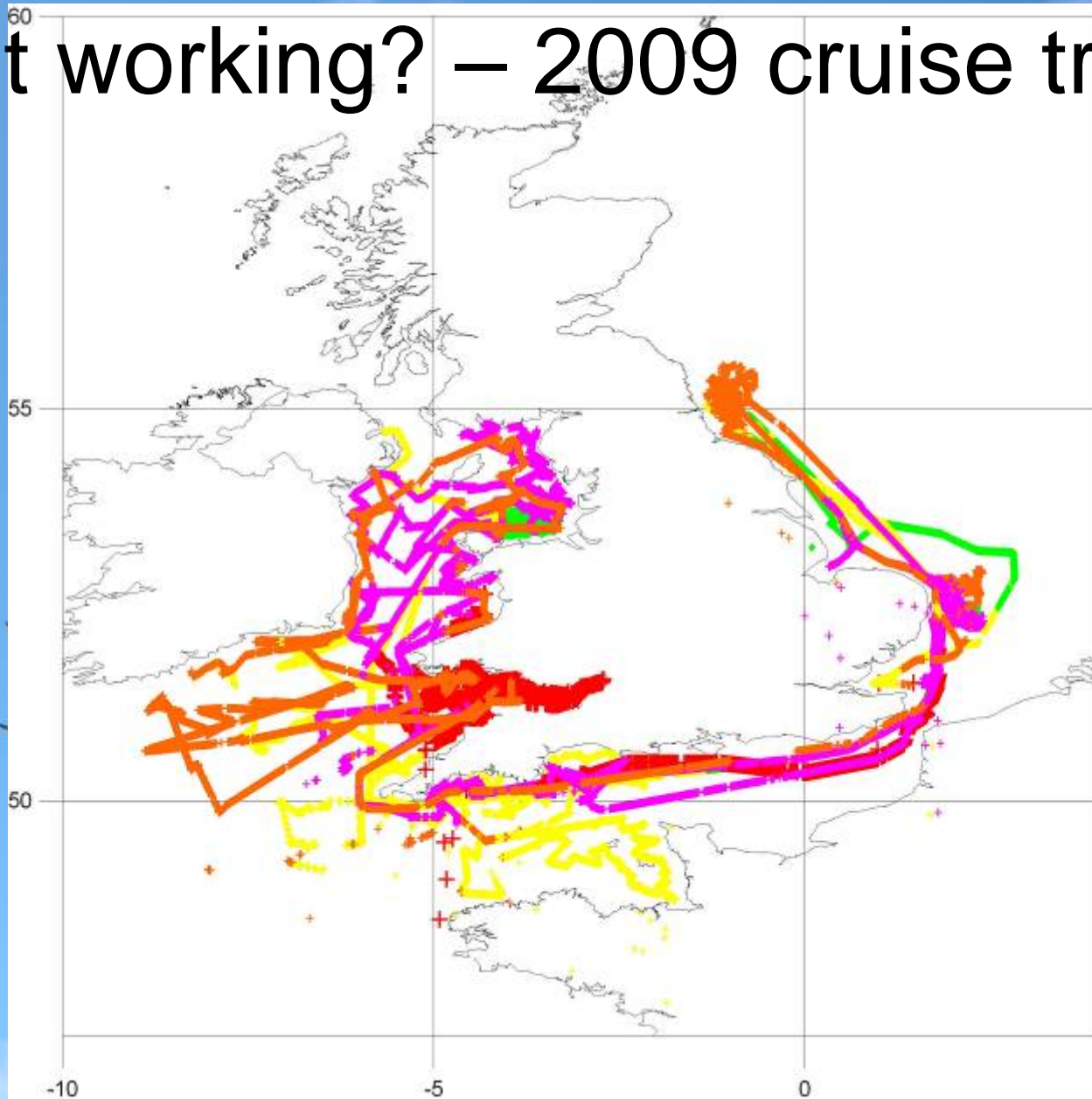
ISCO water sampler



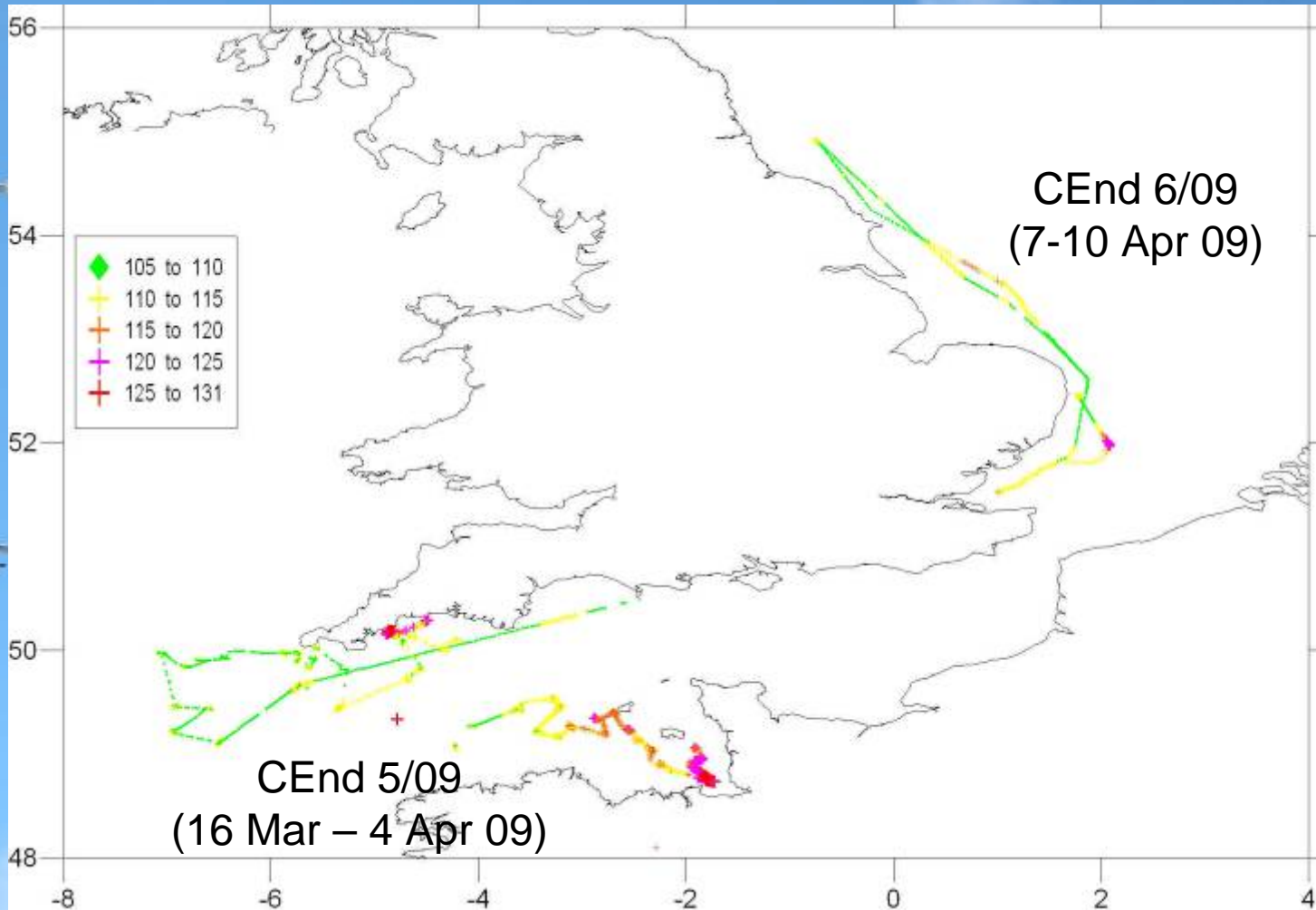
How Often?

- Parameters recorded every 1 second
- Each parameter create day file (1 min average)
- 10 minute data files – ftp to Cefas – database
- Track files – daily or continuous (port to port)

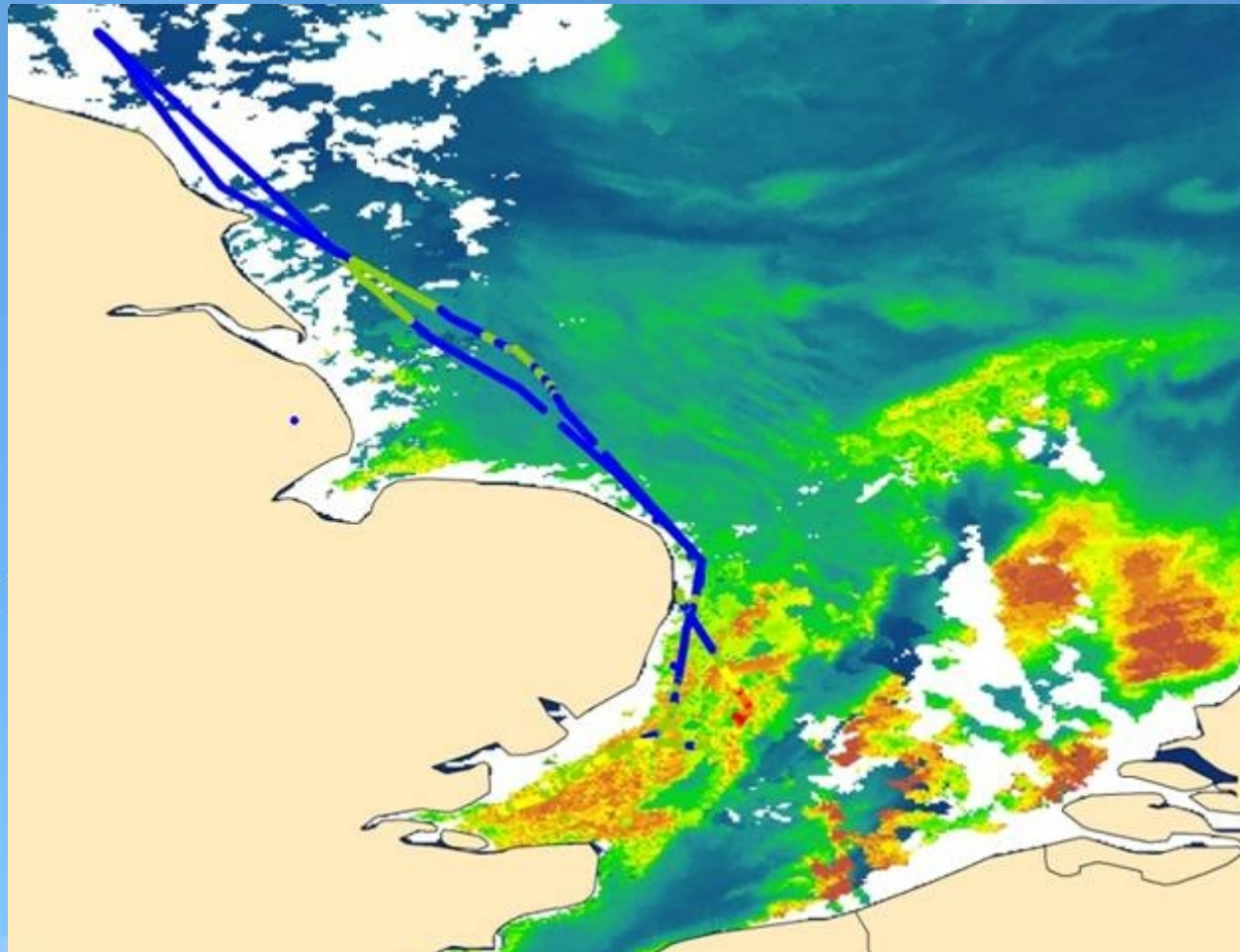
Is it working? – 2009 cruise track



DO on CEnd 5/09 and CEnd 6/09



chlorophyll from CEnd 6/09 (7-10
Apr 09)



What next – this year?

- New seawater pumps in Jan 10
- QA data processing implementation
- Feed QA data into the European Marine Ecosystem Observatory (EMECO)
- Website – ships track and data trail
- User accessible data on demand

Data Management System

Sensor and deployment configuration

SmartBuoy Data Management System

Maintain Records Select Files For Processing Data Visualisation Result QA CTD Profiling Queries Options Window Help

Select Deployments

Id: Date Range - From: To: Currently Active:

Description:

Groups:

- Liverpool Bay Coastal Observatory
- Liverpool Bay Coastal Observatory Site 2
- Liverpool Bay WaveNet Site
- Lowestoft Lab Test Site
- Miscellaneous ESM2 Deployments

Platform Types:

- ADCP Frame
- AquaLander
- COBO Lander
- CTD Platforms
- Directional Waverider

Mooring Locators:

- 11693(GPSMML s/n 11633)
- 11694(GPSMML s/n 11632)
- 11695(GPSMML s/n 11634)
- 22998(GPSMML s/n 69022)
- 26110(GPSMML s/n 77944)

Display Selected Records (62)

Dep Id	Group	Descr	Platform Type	Date From	Date To
LIVBAY/039	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 039	SmartBuoy	14/02/2007	17/04/2007
LIVBAY/040	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 040	SmartBuoy	16/04/2007	16/05/2007
LIVBAY/041	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 041	SmartBuoy	15/05/2007	21/06/2007
LIVBAY/042	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 042	SmartBuoy	20/06/2007	29/07/2007
LIVBAY/043	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 043	SmartBuoy	26/07/2007	30/08/2007
LIVBAY/044	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 044	SmartBuoy	29/08/2007	04/10/2007
LIVBAY/045	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 045	SmartBuoy	03/10/2007	22/11/2007
LIVBAY/046	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 046	SmartBuoy	21/11/2007	13/01/2008
LIVBAY/047	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 047	SmartBuoy	10/01/2008	15/03/2008
LIVBAY/048	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 048	SmartBuoy	12/03/2008	20/04/2008
LIVBAY/049	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 049	SmartBuoy	16/04/2008	14/05/2008
LIVBAY/050	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 050	SmartBuoy	13/05/2008	31/07/2008
LIVBAY/051	Liverpool Bay Coastal Observatory	Liverpool Bay Coastal Observatory - 051	SmartBuoy	30/07/2008	11/09/2008

Select Cancel Add New ...

Logge... [Icons]

SmartBuoy on SmartBuoyDbLive David Sivyer LOWCTX5 Win2000 3.8.0

Data Management System

Sensor and deployment configuration

The screenshot displays the 'LIVBAY/040 - Deployment Details' window. The 'Sensors / Instruments' tab is active, showing a tree view of the deployment configuration. The 'Eco System Monitor - V2a (UL031)' is selected, and its details are shown in the 'Sensor Details (ID 261)' window.

Right-Click on the 'TreeView' to display a popup menu of options

DEPLOYMENT CONFIGURATION

- [-] Eco System Monitor - V2a (UL031)
 - Channel 0 / Optical Back Scatter - #1433, @1
 - Channel 1 / Seapoint Fluorometer - #2245, @1
 - Channel 2 / FSI CT Module - #1821, @1.0m
 - Channel 3 / Druck 5 bar Pressure Transducer
 - Channel 4 / Analog Devices Roll / Pitch - #31,
 - [-] Channel 5
 - LiCor Light Sensor - #8, @2.0m
 - LiCor Light Sensor - #20, @1.0m
 - Channel 7 / Battery Monitor - #31, @1.0m
 - Channel 16 / Aanderaa Optode - Type 3835 -
- [-] STAND-ALONE SENSORS
 - WMS-2 AquaMonitor (upgraded) - #2326, @1
 - NAS-3X Nutrient Sensor (upgraded) - #2273,

Display Unused Channels

Sensor Details (ID 261)

General | Declarations | Parameters | Service History | Additional Comments | Audit Details

Id: 261

Description: Aanderaa Optode - Type 3830

Sensor Type: Aanderaa Optode

Serial Number: 467

Sensor Handling Method: SERIAL INTERFACED SENSOR

Has Gain Control?:

Current Drawn (mA): 80

Service Interval (months): 12

Calibration Interval (months): 12

Deployments Where This Sensor Has Been Used: TH1/050, TH1/052, TH1/054, TH1/056, TH1/058

Current Record?:

OK Apply Cancel

Data Management System

QA Level 2 (manual QA by expert user)

Manual QA Analysis - to level 2 (for SmartBuoy)

Deployment: Liverpool Bay Coastal Observatory - 033
Liverpool Bay Coastal Observatory - 034
Liverpool Bay Coastal Observatory - 035
Liverpool Bay Coastal Observatory - 036
Liverpool Bay Coastal Observatory - 037
Liverpool Bay Coastal Observatory - 038
Liverpool Bay Coastal Observatory Site 2
Lowestoft Lab Test Site

Sensor: Aanderaa Optode - Type 3835 - #127

There are a total of 2016 bursts
Select number of Records to be viewed at one time: -
 All Records
 100 500 1000
 2000

Highest QA level: 4

Burst	Date	Oxygen concentration	Oxygen percent saturation	Temperature
773	07-Oct-2006 12:30:00	7.7646	96.0006	15.7856
774	07-Oct-2006 13:00:00	7.8197	96.615	15.769
775	07-Oct-2006 13:30:00	7.8415	96.8458	15.7643
776	07-Oct-2006 14:00:00	7.8563	97.0231	15.7639
777	07-Oct-2006 14:30:00	7.8142	95.2461	15.2997
778	07-Oct-2006 15:00:00	7.8292	95.7116	15.4068

Liverpool Bay Coastal Observatory - 036
Aanderaa Optode - Type 3835 - #127, @1.0m

Legend:
 Oxygen concentration (mg/l)
 Oxygen percent saturation (%)
 Temperature (°C)

Actions ...
Enable Rejection Reasons
Enable Zoom/Scroll
Stop Graph
Save
Close

0%

Data Management System QA Level 3 (applying field calibrations)

QA3 Factor Data

Deployment:

- Liverpool Bay Coastal Observatory - 036
- Liverpool Bay Coastal Observatory - 037
- Liverpool Bay Coastal Observatory - 038
- Liverpool Bay Coastal Observatory - 039
- Liverpool Bay Coastal Observatory - 040
- Liverpool Bay Coastal Observatory Site 2**
- Liverpool Bay WaveNet Site**

Sensor: Optical Back Scatter - #10933, @1.0m

Sensor Parameters: Turbidity (SP) (FTU) Resultant Factored Data: Suspended load (mg/l)

Offset: 0 % Factor: 1

FTU U/Limit: 500 FTU L/Limit: 0.1 SUSPLD U/Limit: 500 SUSPLD L/Limit: 0.1

View Original Data

Factor All Factor Bulk Factor Daily View Factored Data View Both Error Value:

Original Only

Data for Liverpool Bay Coastal Observatory - 037 Optical Back Scatter - #10933, @1.0m Turbidity (SP)

Buttons:

- Apply Factoring To Turbidity (SP) To Create Suspended load
- Undo Factoring in DB
- View Audit Trail
- Stop Graph
- Save Factored Data
- Cancel

Data Management System

QA Level 3 (applying field calibrations)

SmartBuoy Data Management System

Maintain Records Select Files For Processing Data Visualisation Result QA CTD Profiling Queries Options Window Help

CTD Profiling: manual QA analysis to level 3

CTD Profiles: Headers:

- 19-Oct-09 23:26:56
- 20-Oct-09 00:18:35
- 20-Oct-09 02:32:46
- 20-Oct-09 03:33:04
- 20-Oct-09 04:33:31
- 20-Oct-09 05:21:21

PR006: 19-Oct-09 23:26:56
 Optical Back Scatter - #10553
 Turbidity (SP)

Header	Offset (secs)	Time	Depth	Result (pre-factoring)	Result (post-factoring)
19-Oct-09 23:26:56	910	23:42:06.0	58.53	20.625	
19-Oct-09 23:26:56	910.5	23:42:06.5	58.51	20.525	
19-Oct-09 23:26:56	911	23:42:07.0	58.53	20.425	
19-Oct-09 23:26:56	911.5	23:42:07.5	58.53	20.525	
19-Oct-09 23:26:56	912	23:42:08.0	58.52	20.275	
19-Oct-09 23:26:56	912.5	23:42:08.5	58.52	20.550	
19-Oct-09 23:26:56	913	23:42:09.0	58.52	20.500	
19-Oct-09 23:26:56	913.5	23:42:09.5	58.51	20.650	
19-Oct-09 23:26:56	914	23:42:10.0	58.5	20.600	
19-Oct-09 23:26:56	914.5	23:42:10.5	58.51	20.600	
19-Oct-09 23:26:56	915	23:42:11.0	58.54	20.425	
19-Oct-09 23:26:56	915.5	23:42:11.5	58.54	20.800	

Factoring Values:
 Slope: Intercept:

0%

Web access to data



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You are in: [Data](#) ▶ [Marine monitoring](#) ▶ [SmartBuoy Basic Map](#)

Marine monitoring

▶ [Data policy](#)

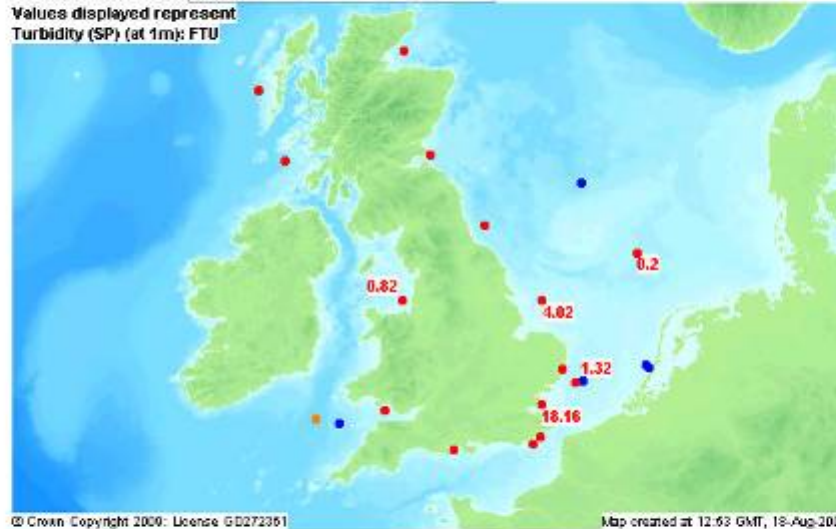
Marine monitoring

SmartBuoy Basic Map

Hover the mouse-pointer over a buoy location to view the latest data from that buoy

Display the value for:

Values displayed represent
Turbidity (SP) (at 1m): FTU



Acknowledgements

- Active buoy (outline only represents data > 8 hours old)
- Inactive buoy (no data for > 36 hours)
- Future location
- Inactive location

[More info](#)

Centre for Environment, Fisheries & Aquaculture Science (Cefas)

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Data Integration with EMECO



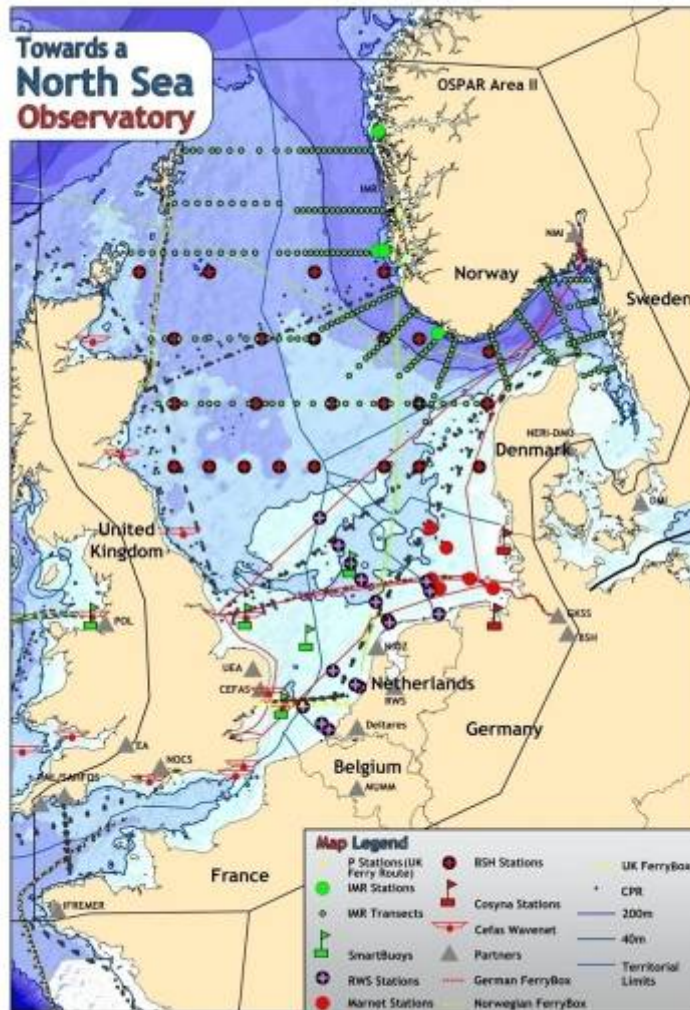
Research vessels



Towed bodies



Satellites



Ferries



Gliders



Buoys

What next – after this year?

- More frequent in-situ calibration samples
- More sensors?
- Add pCO₂
- Add Met system

Thank you

