

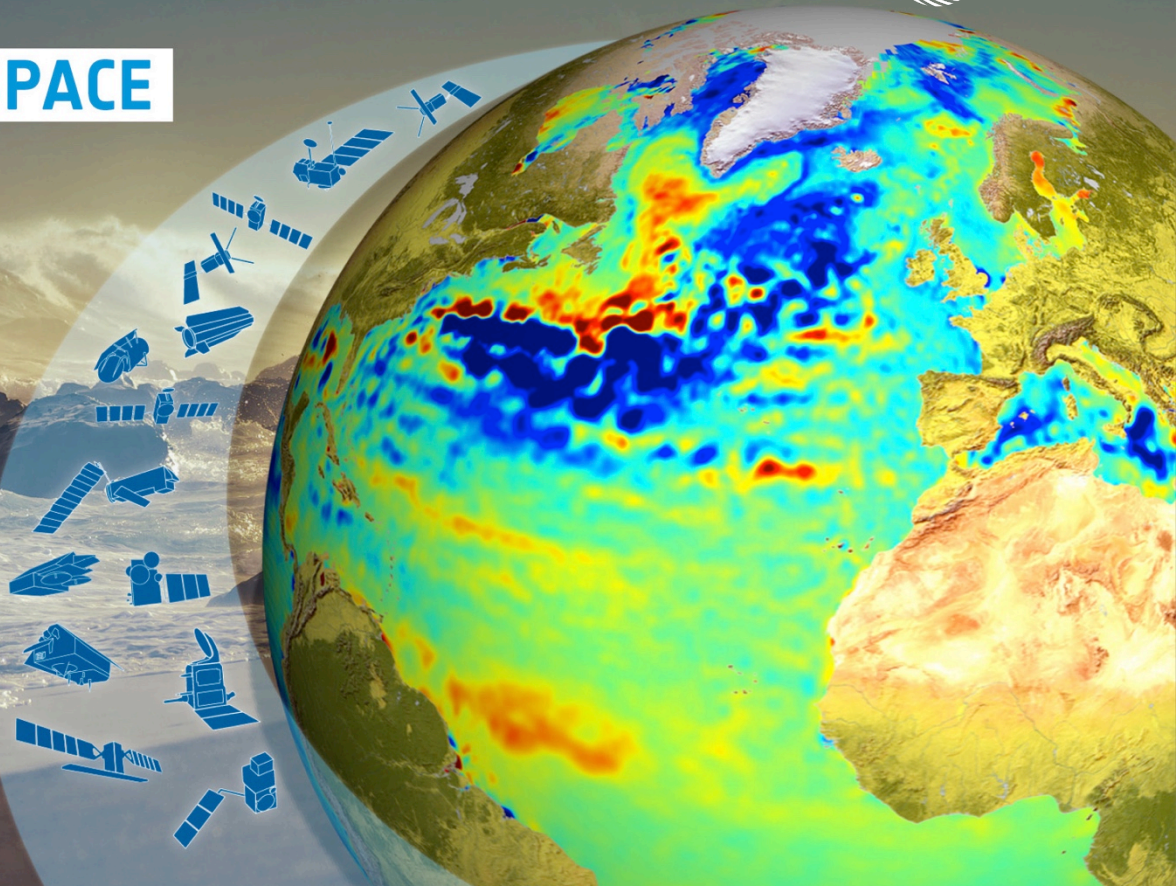
→ ATLANTIC FROM SPACE WORKSHOP

23–25 January 2019
National Oceanography Centre
Southampton, UK

Combining EO & In Situ
Data for Atlantic Coastal
Applications

Sinéad McGlynn

TechWorks Marine
Ireland

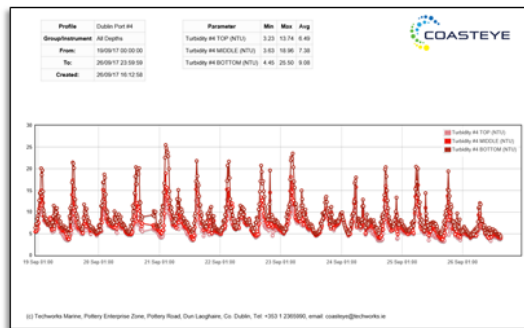
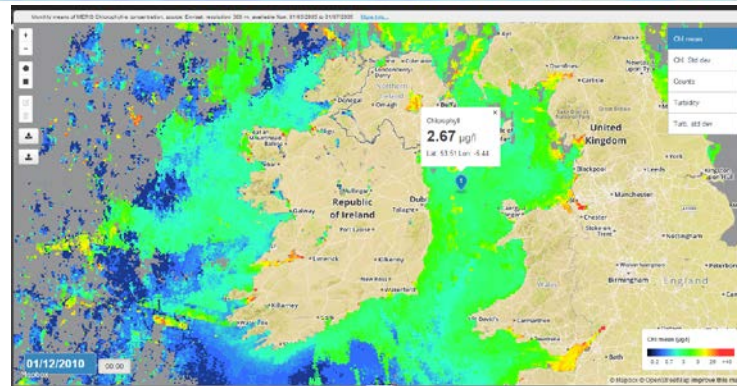


Company Background



International Leaders in Robust, Reliable, Secure Marine Data

- Established in 2002 in Ireland
- 12 staff
- Multidisciplinary team
- Turnover <€2M
- Serving a broad range of clients (public and private)
 - Government/Industry/Agencies



S. McGlynn





Integrated Data Buoys

- Real-time enabled
- Data acquisition system
- Plug and play with a wide range of marine sensors
- 4G/VHF/Iridium communications



Data Management and Delivery

- Regular field service
- Data telemetry
- Data management including: quality assurance, calibration
- Live data portals



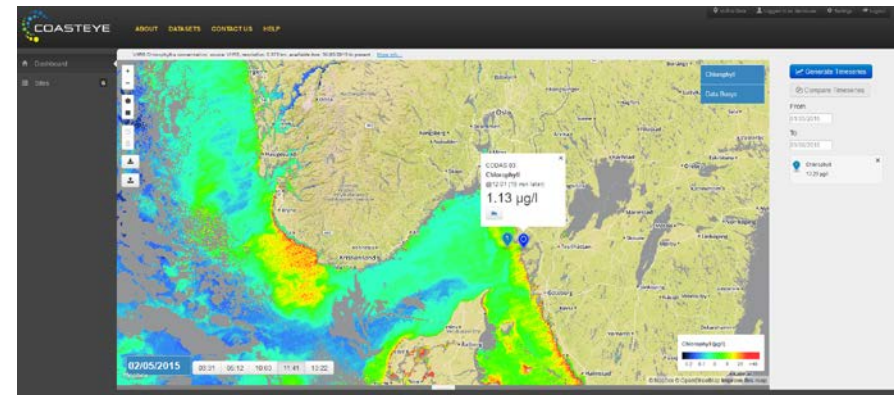
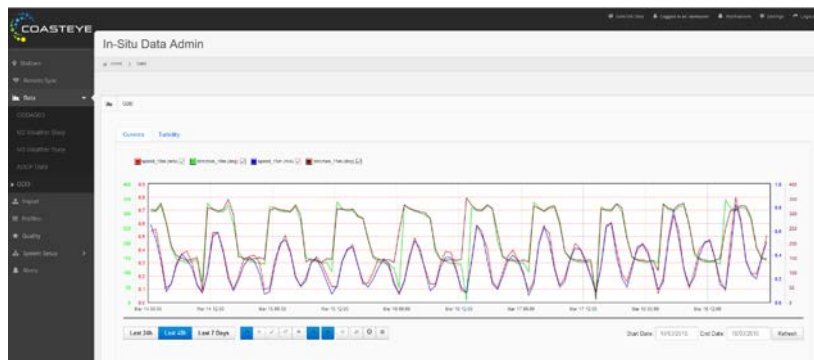
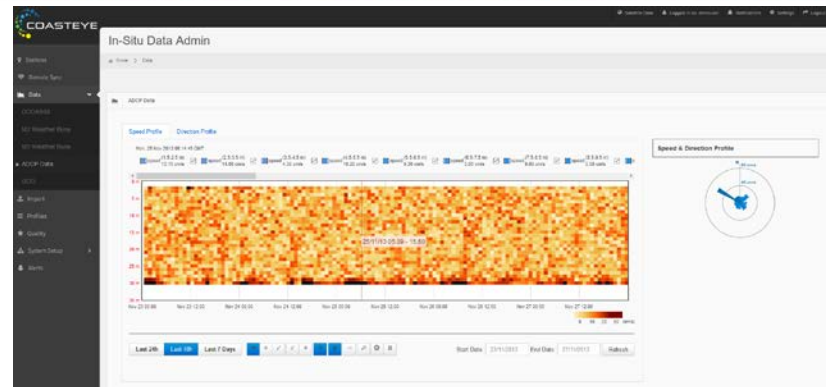
Value added products & services

- Validating numerical models
- Hydrographic/Metocean survey provision
- Equipment sales/Rental
- EO data products

CoastEye – Cloud Based Data Fusion Platform



- Manage and monitor all deployed data buoy systems
- Visualise real-time data
- Upload/download and annotate data
- Visualise spatial data e.g. Earth Observation products
- Access to model output
- All data quality controlled
- Secure client access



S. McGlynn | Atlantic from Space Workshop | 23-25/01/2019 | Slide 4



ESA projects => commercial



e.g. C-WAMS (2012-2014) Coastal Water Attribute Monitoring from Satellite

Waste water – Veolia (Ireland/UAE)

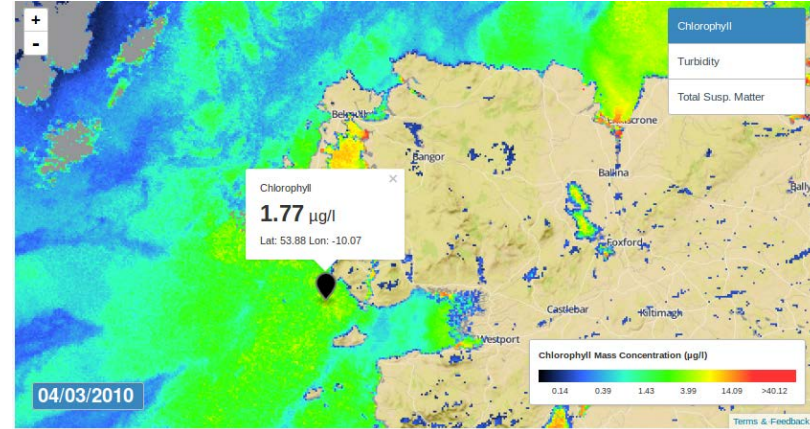
- Daily SST thematic maps in near real time
- Chlorophyll-a concentration estimates
- Water turbidity estimates

Desalination – Environment Agency (UAE)

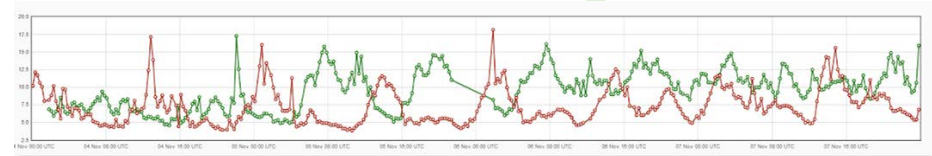
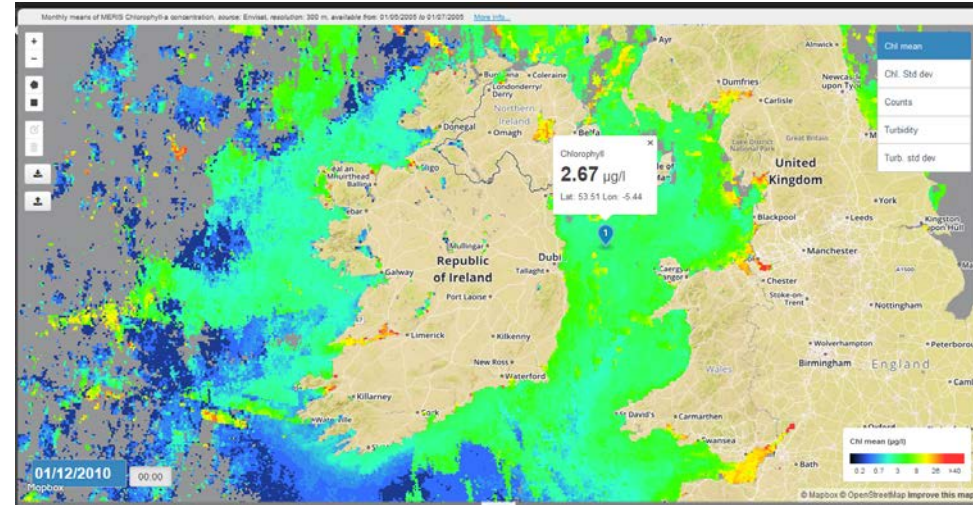
- Detection of Algal Blooms
- Water turbidity estimates
- Track progression of thermal plumes and fronts

Water quality monitoring – EPA (Ireland)

- Daily SST thematic maps in near real time
- Chlorophyll-a concentration estimates
- Water turbidity, total suspended matter estimates



- Monitoring & Assessing Dredging Environments
- Combine satellite and in-situ datasets
 - turbidity,
 - chlorophyll measurements,
 - water temperature/jellyfish/plumes
- Discussions with industry and agencies
 - accessing and visualising information
 - prototype application for demonstration
 - suggestions and feedback
 - fully operational service
- Validation using TWM turbidity & CMEMS products
- Address multisector issues



- **Atlantic Strategy:**
 - EC regional strategy, open & effective cooperation in Atlantic area
- **Atlantic Action Plan:**
 - promote entrepreneurship & innovation
 - protect, secure and enhance marine & coast
 - improve accessibility & connectivity
 - socially inclusive & sustainable model of regional development
- **Atlantic Initiative:**
 - ESA capacity building, applications development, future investment in region

Dredge Monitoring – Dublin Port Redevelopment



Multi-annual deployment of 4 state-of-the-art real-time data buoys (2017-2021):

- TWM 1:
 - Real-time Turbidity (3 water depths)
 - Real-time Hydrophone (PAM) system
 - Spectral Wave data
- TWM 2:
 - Real-time Turbidity (3 water depths)
 - Real-time Hydrophone (PAM) system
 - Spectral Wave and through water Current Profile
- TWM 3:
 - Real-time Turbidity (3 water depths)
- Control:
 - Real-time Turbidity (3 water depths)
 - Satellite Validation (radiance, irradiance, water quality)



CoastVal Project



- ESA-funded project, September 2016-18
- Phase 3 funded to August 2019
- Sentinel 3 Validation Team
- Aim: comparison of satellite and in situ water leaving radiance
 - develop a dedicated coastal colour observation platform for validation studies
- Challenging environment: “hypercoastal” region at high latitude with strong tidal effects



S. McG

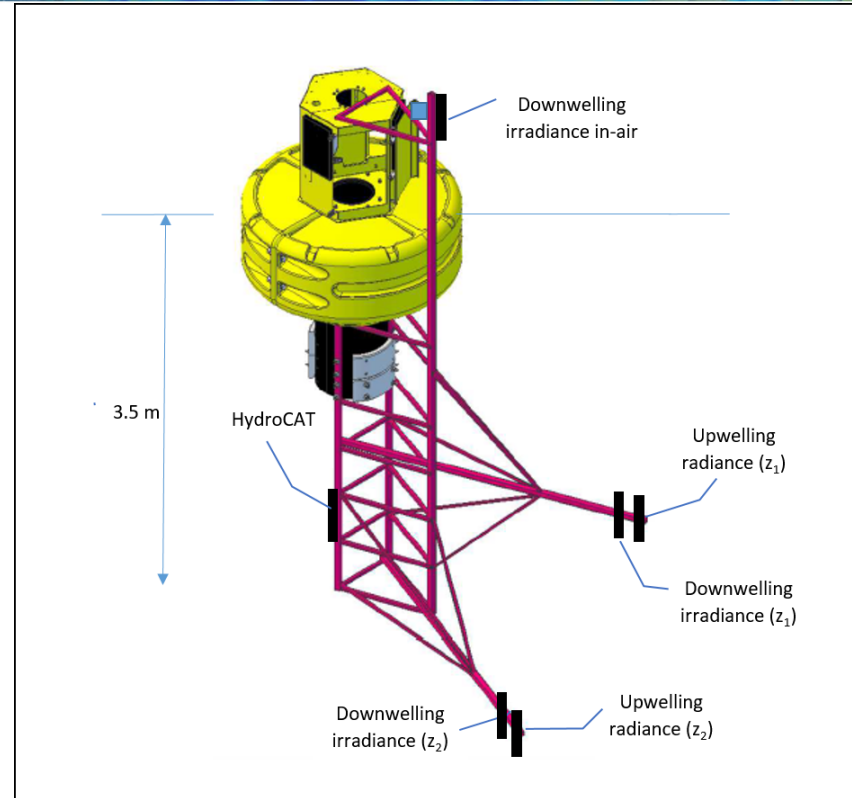
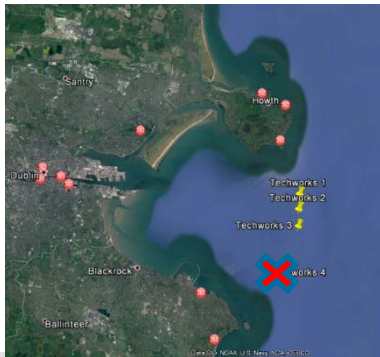


Developing and testing a buoy platform for coastal colour observation

- Sensor suite
- Automated data processing system
- Deployment

Developing satellite and in situ data processing platform

- Automated download, extraction and processing
- Satellite - in situ match-up generation

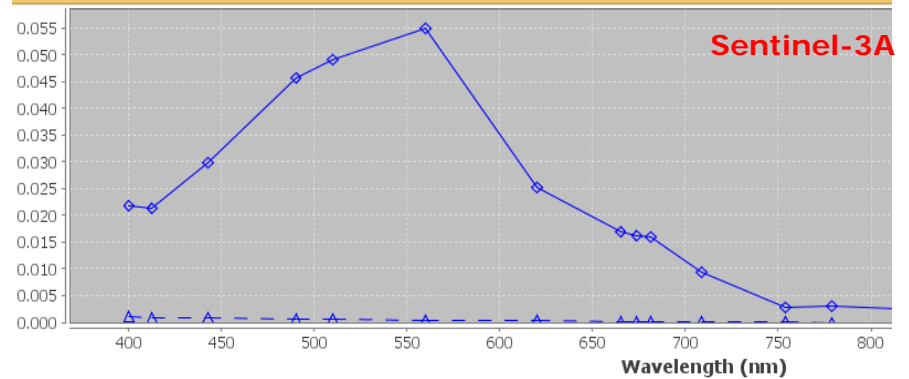
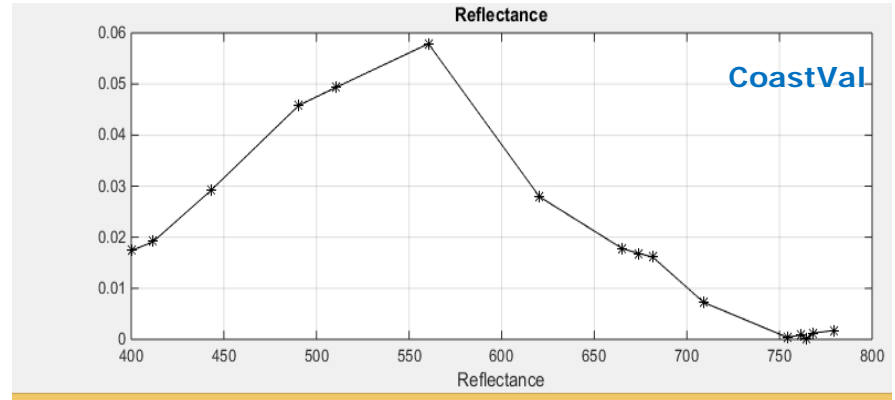
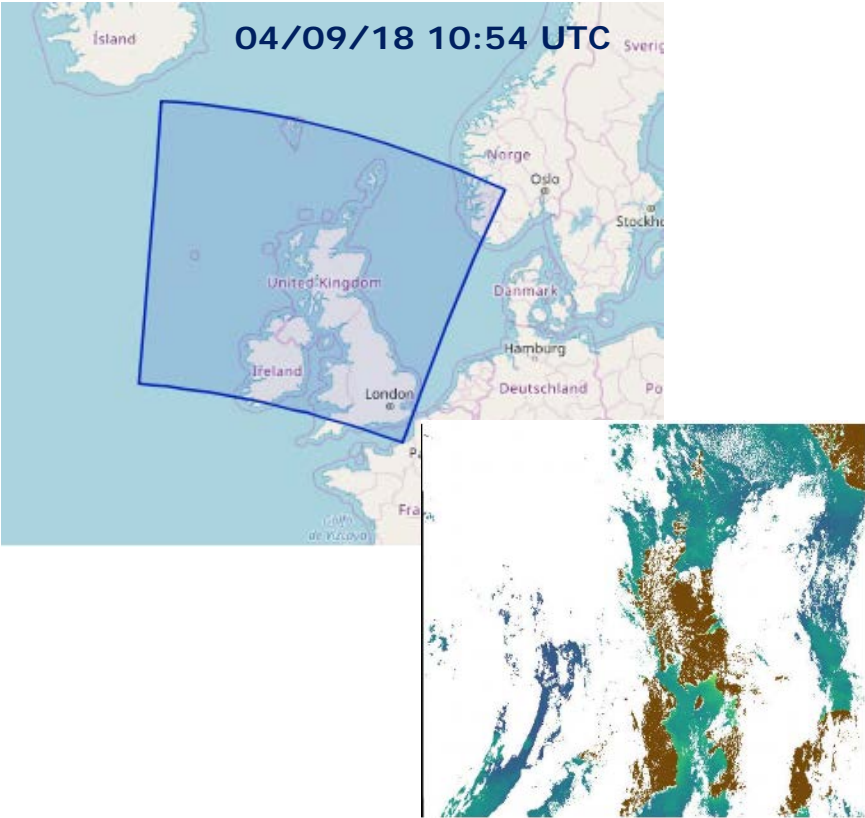


S. McGlynn | Atlantic from Space Workshop | 23-25/01/2019 | Slide 10

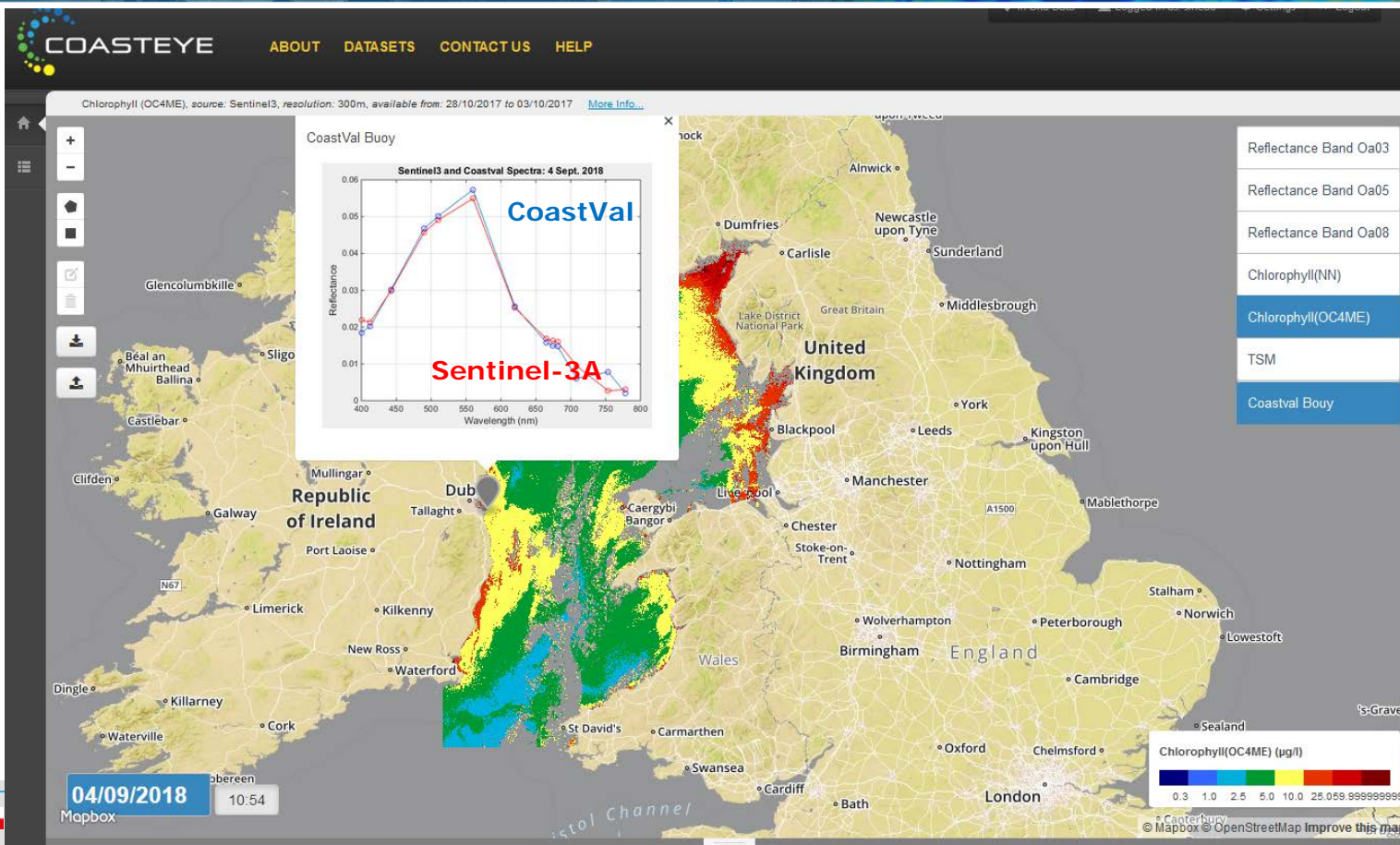
Comparison



04/09/18 10:54 UTC



Validation



- **Robust Reliable & Secure Marine Data**
- **Open for collaboration nationally & internationally**



Recommendations for Future Investment in Atlantic

- Validating information – fusion of insitu/EO/model data especially for marine processes
- Multidisciplinary approach
- Transatlantic collaboration (commercial focus)
- New actors – involve communities/organisations with no prior knowledge of EO