Marine Observation Research Platform

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iCRAG — IRISH CENTRE FOR RESEARCH IN APPLIED GEOSCIENCES

Maynooth University — National University of Ireland Maynooth
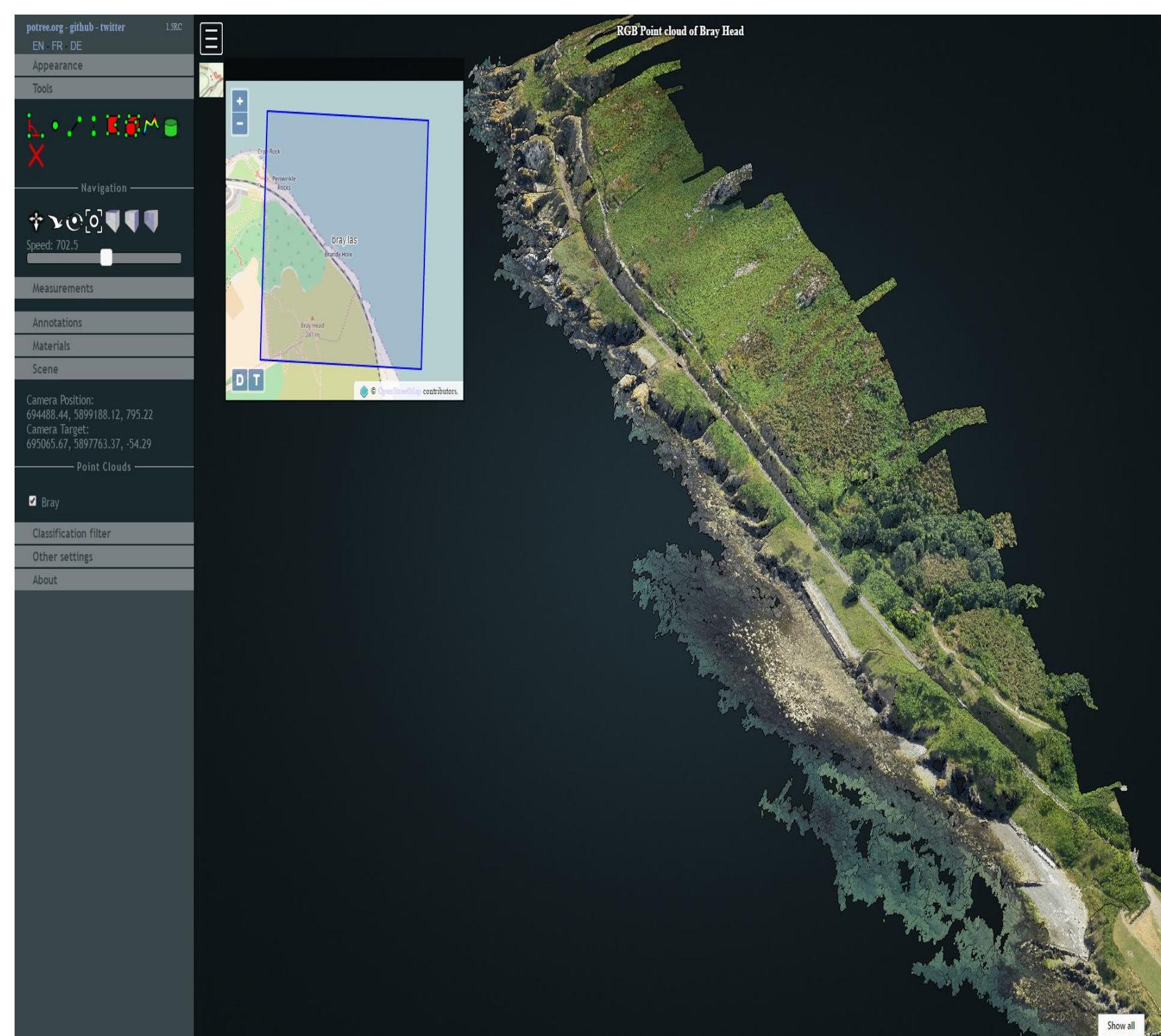
## #1 Marine Spatial Planning

A scalable, cloud-based marine observation platform utilising Remote Sensing and In-Situ data to help support decision making for sustainable exploitation of our maritime resources in coastal and offshore areas. The Marine Spatial Planning[1] project can be used to support collaborative or individual research activities.

External Collaborators: Harbour Authorities (Shannon Foynes Port, Waterford), Marine Institute
[1]Linked to EU Maritime Spatial Planning Directive

#2 Slick Feature Mapping

The Slick Feature mapping project incorporates synthetic Aperture RADAR (SAR) and multispectral satellite imagery in a processing chain to locate, classify and quantify marine slicks through their surface-roughness and spectral/thermal signatures. Additional spatial contextual information assists in classification.
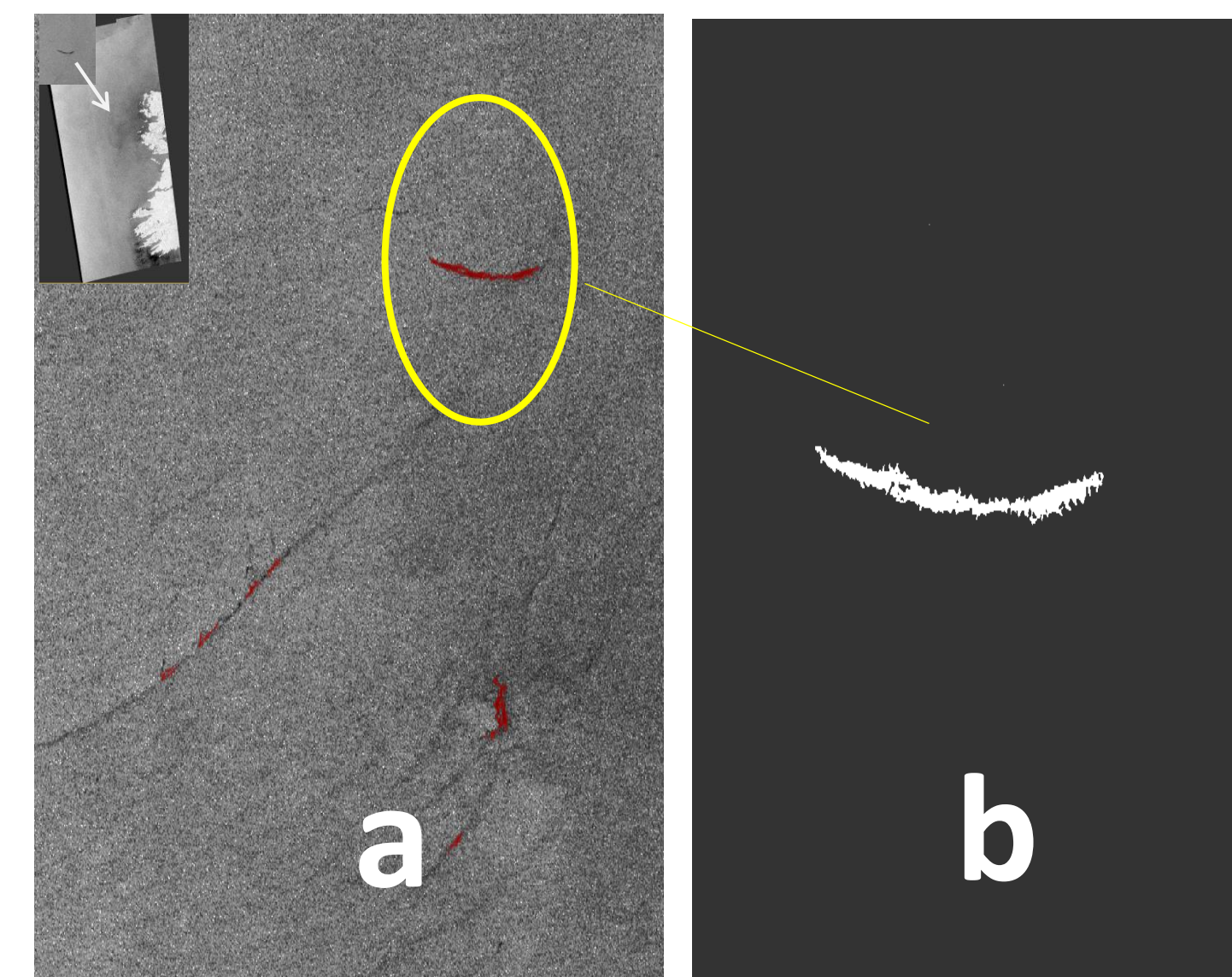
Sentinel 1 SAR satellite can identify potential slicks off the west coast in all weather conditions and at night. Spectral, meteorological and contextual information eliminate false slicks such as rain front and ocean currents (a) an adaptive algorithm accounts for varying wind speed (b) extracted slick polygon

External Collaborators: Coast Guard, EMSA

#3 Coastal Vegetation Mapping
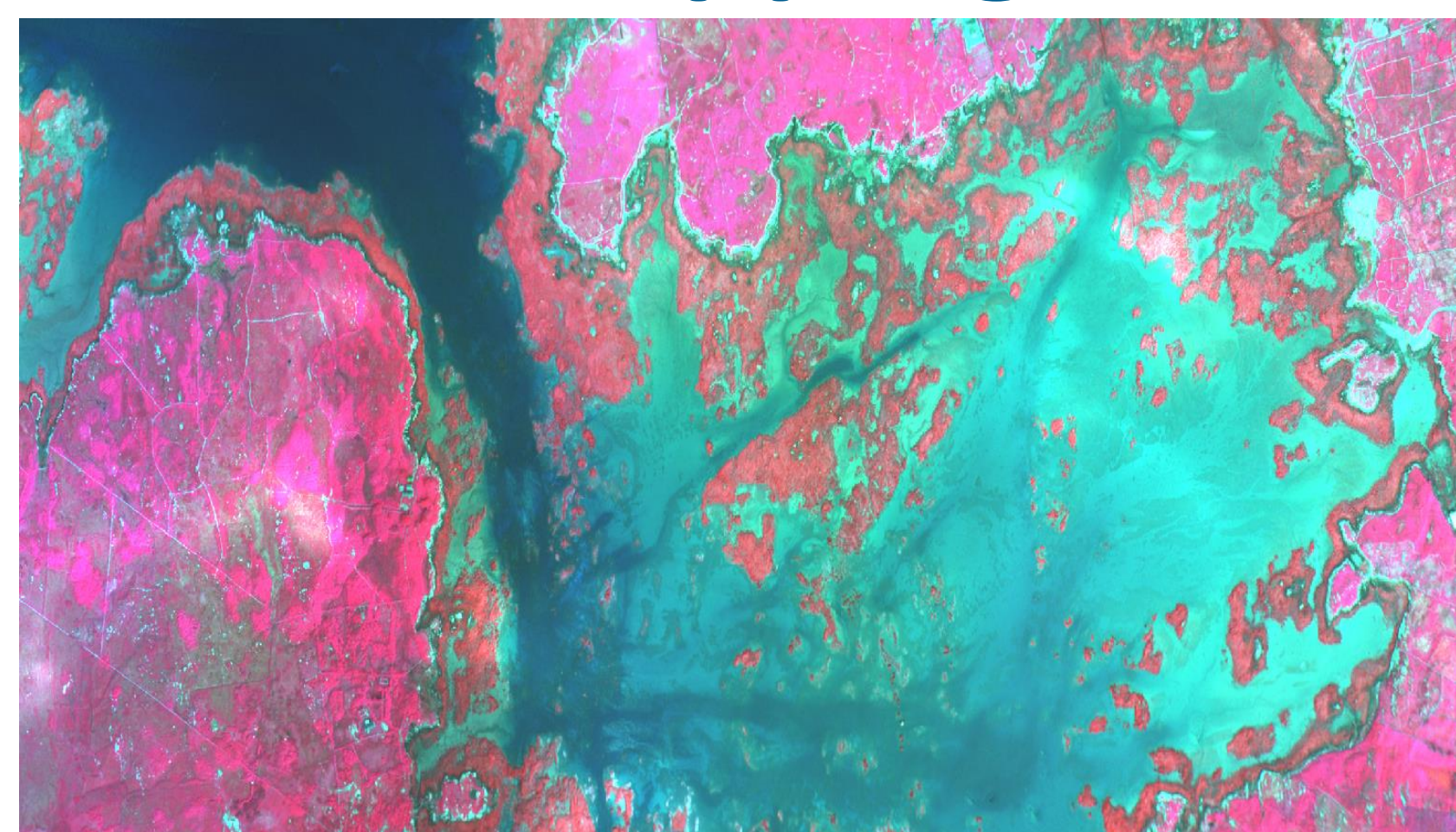
Multi-spectral imagery recorded from aerial and unmanned aerial vehicles (UAVs/Drones) can be used as a more targeted approach to map seaweed growth patterns along Ireland's coastline. Exploiting the high reflectance of near infrared light by chlorophyll, vegetation can be easily identified as red in the false colour image above. The high spatial accuracy enables more accurate estimations of seaweed cover to be computed.

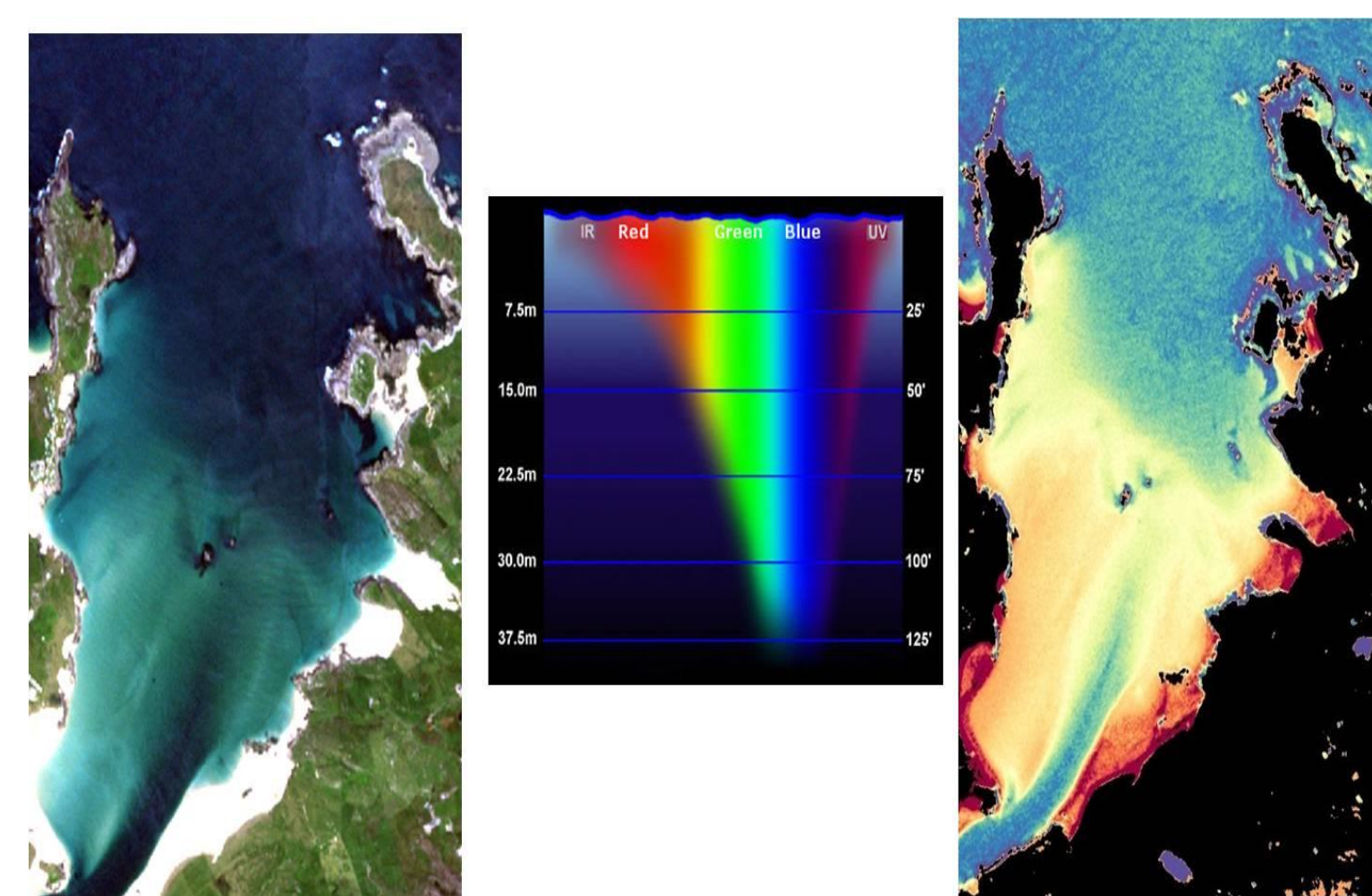External Collaborators: NUIG, Marine Institute

MarObs.eu
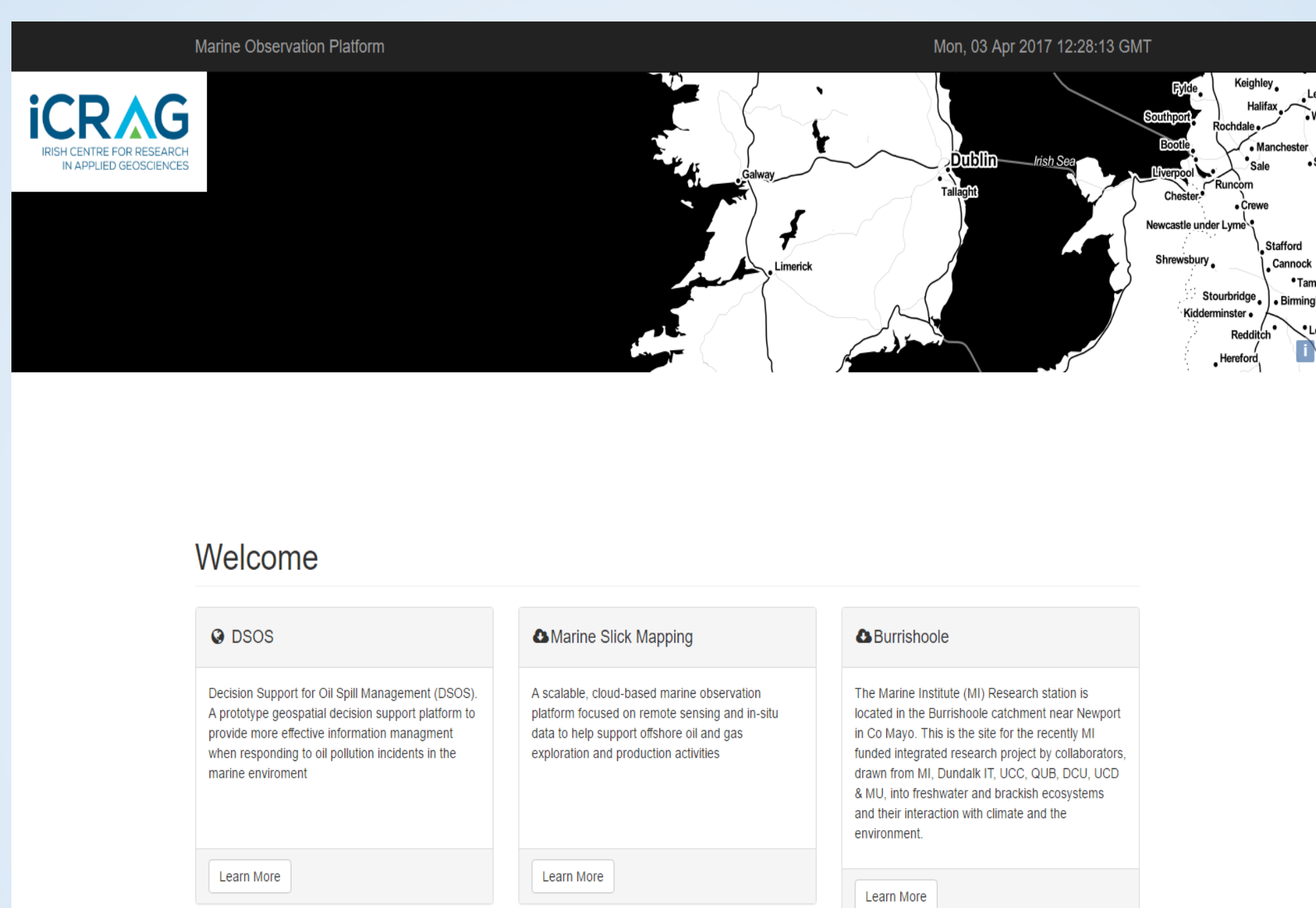
About Marobs.eu

The Marine Observation (MarObs) platform is built around a number of highly versatile Geospatial computational modules that enable collaborative research both within iCRAG as well as with an increasing number of external partners.

#4 Bathymetric Mapping

Satellite Remote Sensing offers an alternative survey method based on the manner of light transmission in water that potentially offers a regular, flexible, efficient and cost-effective means of mapping bathymetry over large areas. Sentinel-2 multispectral imagery will be available free of charge every 5 days.

Collaborators: Geological Survey Ireland, Marine Institute

#5 Burrishoole Catchment
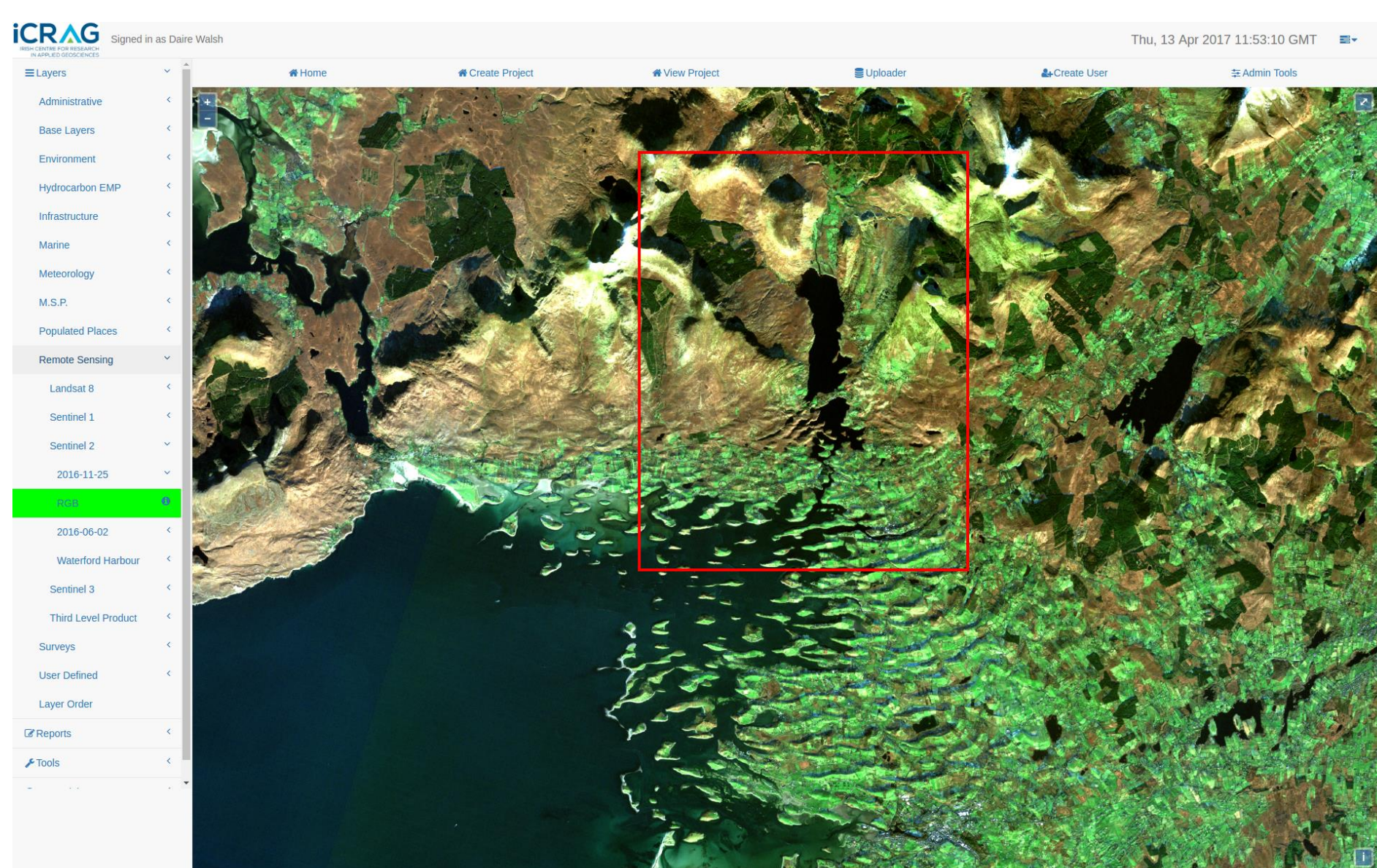
The focus of this research is to gain a better understanding of the interdependent physical, biological and chemical processes within the Burrishoole catchment area. iCRAG's Marine Observation is providing some key Remote Sensing and Geospatial Analysis to address these research questions.

External Collaborators: Burrishoole R.C., DKIT, DCU & UCC

#6 Decision Support for Oil Spill (DSOS) Management
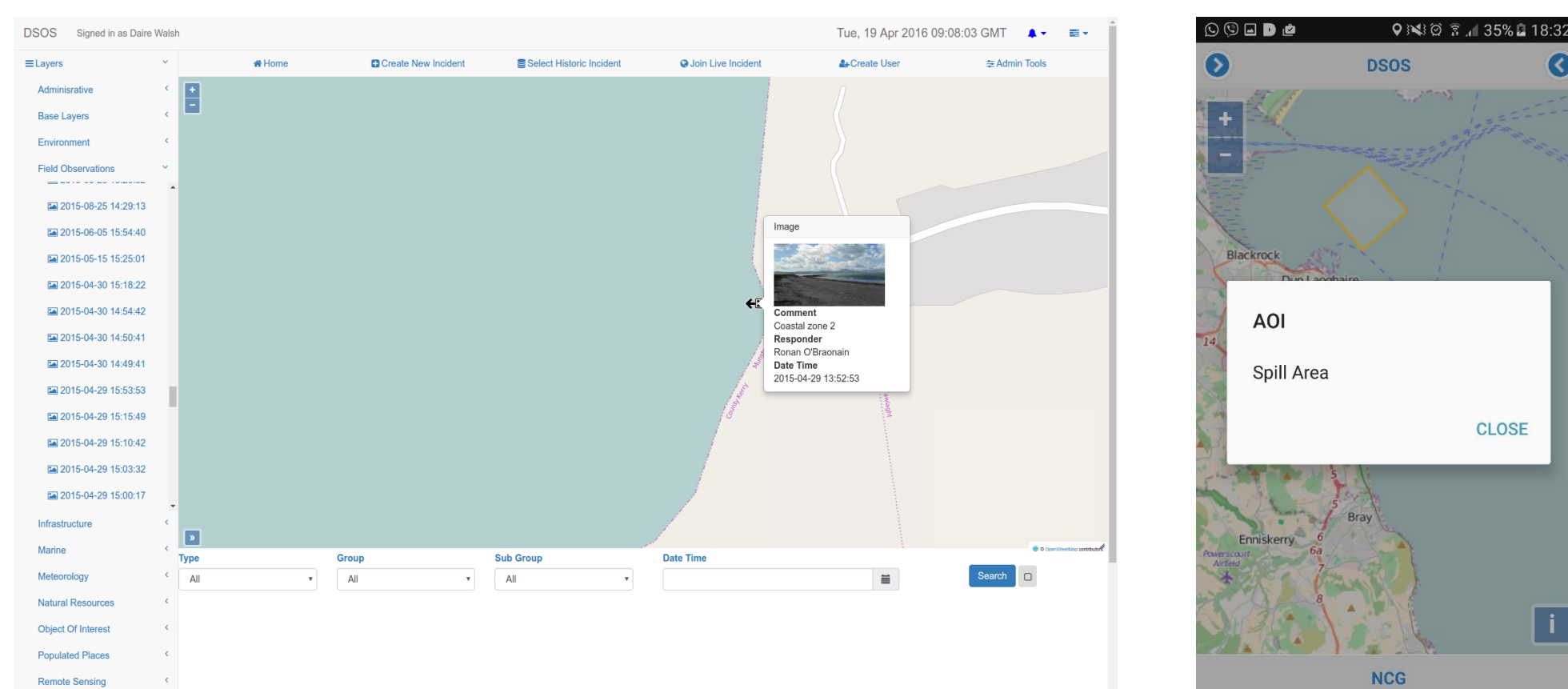
Decision Support for Oil Spill Management (DSOS). A prototype geospatial decision support platform to provide more effective information management when responding to oil pollution incidents in the marine environment. DSOS consists of a Web application and a cross platform mobile app.

Collaborators: PIP, Harbour Authorities (SFPC), Coast Guard

#7 MarineWatch Demonstrator

This MarineWatch demonstrator will evaluate some innovative research outputs including UAS Traffic Management (UTM), scalable Common Operational Picture modules, Search Pattern Strategies and Earth Observation Data Fusion (Sentinel, UAS, In-Situ) techniques together with National agencies as well as international industry collaborators.

External Collaborators: Coast Guard, Irish Lights, Airbus, Irelandia

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PIP — Petroleum Infrastructure Programme