

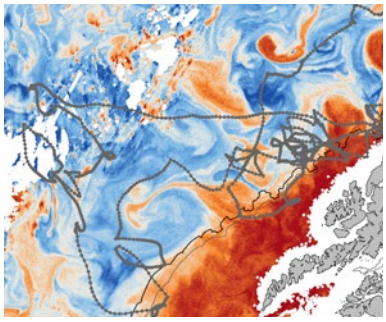
FACT SHEET

SPACE SYSTEMS AND APPLICATIONS

AIR CENTRE

To design platforms and tools tailored to basin-wide ocean observation. To co-develop satellite-based services that detect and monitor events of interest in ocean and coastal areas. To drive innovation, capacity building and adoption of space solutions.

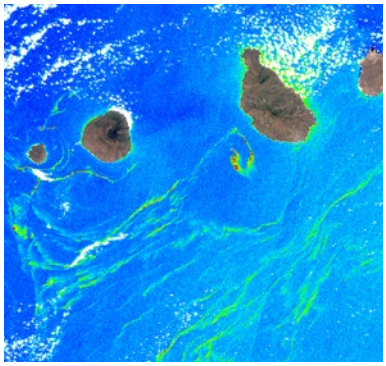
HIGHLIGHTS



Tracking zooplankton from space

Spaceborne Ocean Colour and LiDAR

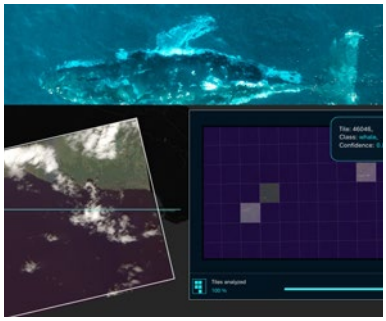
Satellite ocean colour has long been used to monitor ocean ecosystems and their response to global change. Hyperspectral sensors add spectral detail to distinguish plankton groups, and spaceborne LiDAR extends observations beyond the surface. The AIR Centre integrates hyperspectral and LiDAR data to study lower trophic levels and to develop new tools to map zooplankton.



Sargassum detection and monitoring

Tracking Macroalgae across the Atlantic

The spread of *Sargassum* across the Atlantic threatens coastal ecosystems and public health and has long been a concern for AIR Centre partners. More recently, strandings of the invasive macroalga *Rugulopteryx okamurae* on beaches in the Azores and elsewhere in the Atlantic have highlighted the need to better detect and forecast these events. The AIR Centre develops methods that combine satellite and *in situ* observations to monitor, map and forecast macroalgal proliferations and strandings.



AI detection of cetaceans in VHR imagery

AI for Ocean Observation

Extracting meaningful information from Earth observation (EO) data, especially very-high resolution (VHR) imagery, increasingly relies on machine learning. Large annotated datasets of whales, marine debris and small vessels are being used by the AIR Centre to train novel AI models that detect these targets with increasing accuracy, enabling automated, operational monitoring across large areas and long time periods.