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Earth Observation for all!

In the first of a regular column, Terri Freemantle outlines recent developments in remote sensing at the Satellite Applications Catapult – an independent body that is playing a key role in supporting the Government's objective to grow Britain's share of the World space economy to £40bn by 2030

In recent years, new technology developments from Google Earth have brought EO to a wider public, stimulating interest in its economic, societal and environmental potential.

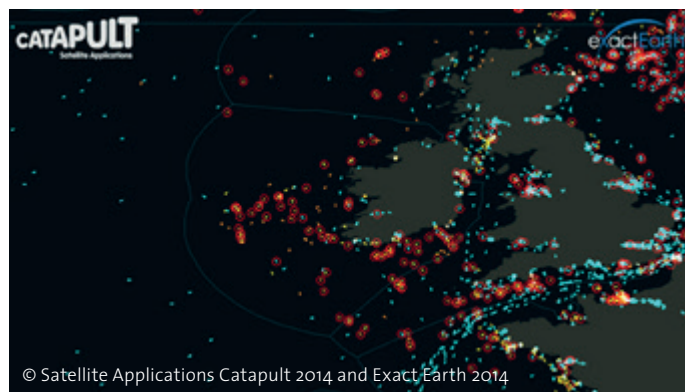
At the same time, advances in satellite technology have allowed satellites to be built smaller and cheaper than their traditional large-payload counterparts.

This, coupled with Europe's Copernicus programme, has facilitated access to low-cost, or even free, satellite imagery. Under the Copernicus programme, all data generated by the Sentinel satellites will be made freely available for exploitation under the Copernicus Services initiative. The Catapult will be providing access to this data for the UK community via its Climate, Environmental and Monitoring from Space (CEMS) system.

Safeguarding fish stocks

One example of Catapult activities using EO data is 'Eye on the Seas', a project to detect illegal, unregulated and unreported fishing. Working in association with the PEW Charitable Trusts, the Catapult has developed a 'Virtual Watch Room' to provide near-real time satellite monitoring of suspicious fishing activity.

Traditionally, vessels of 300 gross tons or more, and all passenger ships regardless of size, must transmit Automated Identification System (AIS) signals. Such systems are often de-activated when vessels engage in illegal activity (a process known as 'going dark'). SAR data, being weather-independent, can be used to track 'dark' vessels using fairly simple object-detection algorithms. Once a vessel is located using SAR, high resolution optical data can be used for



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Screenshot from 'Virtual Watchroom' developed for the 'Eye on the Seas' project

vessel identification.

Long-term objectives for this project include refining and improving the system and extending its reach as more nations, regional fisheries organisations and retail groups adopt its use to ensure that only legally-caught seafood reaches consumers' plates.

Assessing historic landfill sites

Moving onto land, the Catapult recently supported Terra Recovery - an SME that undertakes resource recovery by prospecting historic landfill sites - to ascertain how satellite imagery could assist its business model.

The EO team used data from Digital Globe's WorldView-2, coupled with Landsat-8 multispectral and thermal data from the Operational Land Imager and the Thermal Infrared Sensor (TIRS) to assess two landfill test sites in the UK and Germany.

It was concluded that EO data could assist in mapping the landfill boundaries, and that thermal response from Landsat TIRS (despite the moderate spatial resolution of 100m – resampled to 30m) showed sufficient temperature variation to hypothesize the presence of subsurface biomass decomposition and guide future ground calibration.

For more information about Catapult activities, or if you wish to collaborate on a project, please visit <https://sa.catapult.org.uk/>



Data © ESA 2014.
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Sentinel-1 Dual Pol Interferometric Wide Swath
Data 10th Dec 2014
Basel Coordinates: V3-V4-V5

SA Catapult will be providing access to Sentinel-1 satellite data to the UK community (Sentinel-1 Synthetic Aperture Radar image pictured here)

