

Integrating remote sensing imagery analysis with GIS: new perspectives for the Territories – South Atlantic region.

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In the South Atlantic region the use of remotely sensed images in environmental analyses should be considered more often. A couple of research projects are going to begin soon: one aims at using Landsat imageries to identify giant kelp in the sea surrounding the Falkland Islands. The project will be carried out with the support and expertise provided by the Welsh consultancy group Environment Systems. Freely available Landsat imageries and e-cognition (proprietary software) will be employed for the analyses and as a part of the project training will be provided to SAERI staff in order to acquire more confidence and skill in remotely sensed image processing and analysis.

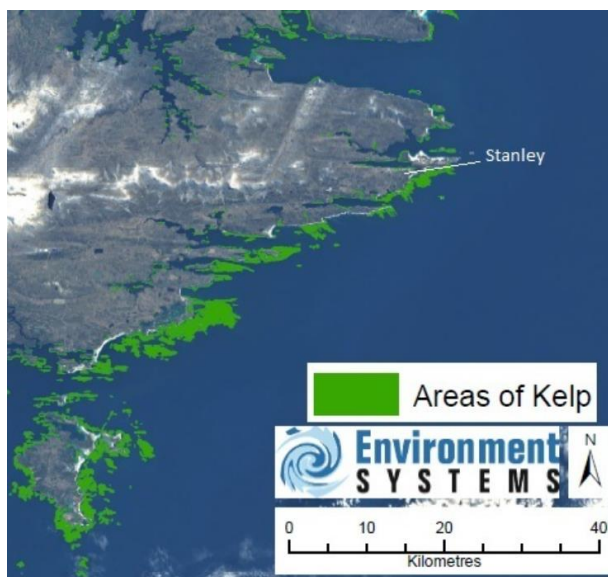
The second project, led by the marine team in Saint Helena, includes the use of side scan sonar (starfish device) techniques to gather imageries, using acoustics, of the seabed in inshore waters around the island. The images, once analysed, should provide sound baseline information to derive, along with other data layers, a habitat map for inshore waters. An intense two day course was provided in the UK by CEFAS (Centre for Environment, Fisheries and Aquaculture Science), which delivers internationally renowned science (they have many years of multibeam and side scan sonar data collection, processing and analysis experience) and collaborative relationships with UK government, EU, NGOs, research centres and industry. Support from CEFAS will continue during the project and the process of mapping marine habitats is going to be carried out as well in Ascension and in the Falkland Islands, where a new fisheries department (Ascension) has been recently created and a new project on inshore fisheries (Falkland Islands), which is led by Dr Debs Davidson (SAERI), has just started.

The use of remotely sensed images has got two important advantages: spatially it is possible to cover large areas that with a manual survey would take long time. Temporally it is possible to have measurements of the same area at different and planned periods. Hence it is possible to detect which

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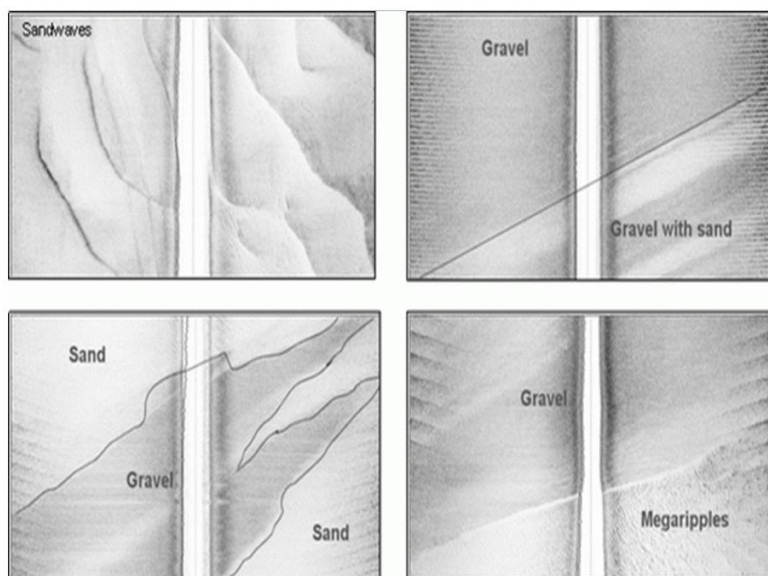
dynamics interest/affect a geographical area by looking at the spatial, spectral, radiometric and temporal properties of the sensor.

The integration of Remote Sensing to GIS would be advantageous for researchers working for the local communities of the South Atlantic region, however it throws up a few challenges. For example, the cost of very high resolution data (resolution ≤ 5 metres) and the partial coverage of free high resolution (between 5 and 30 metres) satellite images, such as Landsat, for the small and remote islands of this area of the Atlantic Ocean; the management of the amount and size of data collected; the complexity of the pre-processing phase of the overall image analysis process, which requires the use of proprietary software and high level of expertise.



This last point is going to be addressed progressively. The goal is to build local expertise and skills in the use of Remote Sensing techniques, however initial support from external experts, such as Environment Systems and CEFAS, is essential to deliver the projects and to gain how to practically analyse remotely sensed data.

Extract from the Kelp Map. Copyright Environment Systems



Examples of seabed classification based on side scan sonar imagery. Copyright CEFAS