

Welcome

There was never any doubt that Earth Observation (EO) was going to play a huge part in how we characterise, monitor and manage our environment and in this edition of Sphere there's plenty to show that to be the case. Environment Systems is part of a large consortium that will investigate the use of EO data for ecosystem modelling and services. Having demonstrated the efficacy of EO in mapping habitats we are now involved in research to use it for monitoring habitat condition over time. Progress too with our ecological activities and news of our involvement in the creation of a Land Parcel Identification System for Turkey. editor@envsys.co.uk

Ecopotential - Horizon 2020 Project



Sentinel 2 earth observation satellite part of the Copernicus programme - photo ESA/ATG medialab

Just underway Ecopotential is a €15m, four-year Horizon 2020 project funded by the EU. Environment Systems is part of the project consortium comprising 47 European and international partners spanning research institutes, universities, national space agencies, international bodies and SMEs. Ecopotential responds to the EU's call: "Making Earth Observation and Monitoring Data usable for ecosystem modelling and services."

Ecopotential has multiple strands and will use EO and in situ environmental monitoring data to characterise the current state, ongoing and expected changes in biodiversity, ecosystem functions, processes and services. The project will develop a suite of data access systems and virtual laboratories, addressing data harmonisation, to make the vast amount of available ecosystem data accessible to scientists,

policy-makers, citizens, and other concerned stakeholders. It will create an Ecosystem Data Service related to 'Copernicus', the programme for the establishment of a European capacity for EO.

The project study sites include UNESCO World Natural Heritage Sites, Biosphere Reserves, National Parks and important Natura 2000 sites. Additionally, two Large Marine Ecosystems (LME) in the Mediterranean and Caribbean are included. There are selected Protected Areas within Europe, with a strong emphasis on mountain ecosystems, including a specific pilot site in the Carpathians. Other sites include arid/semi-arid and coastal/marine ecosystems across a range of biogeographic regions.

We'll be reporting on Ecopotential progress in forthcoming issues of Sphere.

Ecology Matters Update

Ecology Matters @ Environment Systems is now working at full tilt, carrying out work across a broad spectrum of projects. Much of this work has focused on renewable energy sites.

At the Derwydd Bach Wind Farm in Denbighshire we are updating the Phase 1 Habitat Survey and undertaking pre-construction bat surveys.

At the Reeves Hill Wind Farm in Herefordshire we have been preparing a Habitat

Management Plan. On this site six hectares of habitat for ground nesting birds such as skylark will be created. We have also completed an ecological constraints appraisal for highway improvements for the site which has led to the undertaking of great crested newt and dormouse surveys. This will help protect species and identify opportunities to increase the local meta-populations through habitat connectivity enhancements.

The team is also undertaking Preliminary Ecological Appraisals for multiple small scale wind energy development sites.

Mapping Ashdown Forest Habitats

Environment Systems was recently commissioned by ECUS Ltd, on behalf of Wealden District Council to create a habitat map of the Ashdown Forest, a Natura 2000 (N2K) area, for the classification of wet and dry dwarf shrub heaths. The ecological importance of Ashdown Forest's heathlands is reflected by its designation as a Site of Specific Scientific Interest, as a Special Protection Area for birds, and as a Special Area of Conservation. It is an ancient area of open heathland occupying the highest sandy ridge of the High Weald Area of Outstanding Natural Beauty in East Sussex. On Natura sites such as this the emphasis is on ensuring that future management is sustainable, both ecologically and economically.



Habitat map of the Ashdown Forest

Creating a habitat map of an area of this size lends itself to the use of satellite remote sensing because large areas can be analysed relatively quickly; it is also an Environment Systems specialism. In this case Spot 5 and WorldView 2 satellite imagery was used to produce the map. Results generated by the initial output were verified by ECUS ground surveys. This is a robust and repeatable approach to obtaining habitat spatial extents. It provides Wealden District Council with the baseline maps and evidential data to facilitate the monitoring and management of this important and beautiful area of East Sussex both now and in the future.



Turkey is a huge country with a land area of over 780,000 km², image courtesy NASA

Expert role for ES in Turkish LPIS project

Environment Systems is providing one of four 'experts' involved in the external quality control of a project to create a Land Parcel Identification System (LPIS) for Turkey.

As an accession country Turkey has been keen to align itself closer with the EU. This project funded jointly by the EU and the Turkish government will provide technical assistance to the Ministry of Agriculture in Ankara (MOFAL) to create an area based agricultural support system in line with EU best practices and EU 'acquis' (body of EU law). The project will create a Land Parcel Identification System (LPIS) for the whole country, a preliminary stage to a full Integrated Administration and Control System (IACS).

The project will be carried out by a consortium led by Italian company Agrotec. An aerial survey of the whole of Turkey, an area 40 times the size of Wales, will be carried out over the next two years. A team of over 200 will work with the ortho-imagery in a huge digitisation exercise to create a seamless geodatabase of reference parcels (agricultural blocks) covering the whole of Turkey's agricultural surface and non-agricultural areas. The project is expected to deliver over 1 million gigabytes of data as orthophotos together with LPIS polygons which need to be identified, digitised and classified.

Environment Systems expert Chris Finch will be splitting his time between Ankara and the UK over the next two years providing expert quality assurance advice on orthophoto interpretation for agriculture.

New Starters

Pippa Lewis



Pippa has just finished her BSc in Ecology at Aberystwyth University. She will be working at Environment Systems as an Assistant Ecologist, helping out with work on various projects as well as carrying out ecological field survey work.

Daniella Ord-Hume



After travelling as far abroad as New Zealand and Borneo, and pursuing a BSc in Ecology complete with a dissertation in bat ecology, Daniella is now working as an Assistant Ecologist for Ecology Matters @ Environment Systems.

Using EO to assess Habitat Condition



Detailed ground data on grassland condition will be examined and compared over time

Following on from previous work for Defra and JNCC, sometimes referred to as 'Making Earth Observation Work for Biodiversity' (MEOW), Environment Systems has won another research project and work is now under way.

Unlike previous phases of MEOW, which focused on mapping habitat extent across a variety of very different landscapes in England and Scotland, this project will test and evaluate how EO can be used to produce and monitor measures of habitat condition using much of the experience gained on the earlier MEOW projects.

The project focus will be on grassland habitats. Detailed ground data on grassland condition will be examined and compared, over time and between sites, with image data to establish the utility of EO derived indices for habitat condition monitoring. The project team involves a multi-disciplinary group of experts from Environment Systems, Team Projects, Specto-Natura, Bournemouth University and FERA.

Harwell Office



We have recently taken office space in the Electron Building in Harwell, Oxfordshire, the home of the Satellite Applications Catapult. Here we can take advantage of the Catapult's world-class facilities and expertise and network with the businesses, and researchers working with the Catapult to develop new satellite-based products, services and applications. At the time of writing Samuel Pike is doing a three month secondment to provide technical and capacity support to the Catapult on environmental remote sensing. He has a special focus on the use of EO and satellite imagery for ecosystem services analysis.