

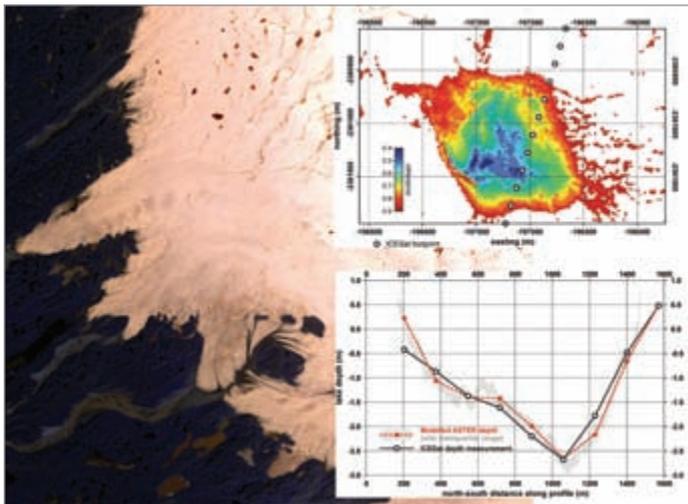
# TRAINING DAYS

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LATEST EDUCATIONAL INFORMATION ON TRAINING COURSES, DISTANCE LEARNING, COMPANY TRAINING DAYS, SEMINARS, AND WORKSHOPS CURRENTLY AVAILABLE. THIS SECTION WILL ALSO INCLUDE COMPETITIONS, AND STUDENT OFFERS AMONG OTHER EXCITING OPPORTUNITIES

## EARTH OBSERVATION TECHNOLOGY CLUSTER

ALISON MARSH AND DR PAUL APLIN REPORT ON A UK UNIVERSITY-LED KNOWLEDGE EXCHANGE INITIATIVE THAT HAS GLOBAL REACH



From studying leaf-fall via traffic cameras, through using the latest unmanned aerial technology for rapid surveying, to investigating ice sheets, the Earth Observation Technology Cluster has it all covered. The Cluster, based at the University of Nottingham, but working internationally, is a two-year knowledge exchange project funded by Britain's Natural Environment Research Council.

Cluster activities cover the full range of EO operations: new platform and sensor development, image retrieval and analysis, data applications and environmental modelling. Five key themes are being investigated in depth, including Unmanned Aerial Vehicles, LiDAR (*Light Detection and Ranging*), Fourier Transform Infrared Spectroscopy, hyper-temporal modelling, and polar applications. The Cluster aims to engage a wider EO community through workshops, demonstrations and networking to promote these technological advances.

Everyone is used to recycling waste these days, but how about EO data? A collaborative project at the University of Nottingham's School of Geography and Department of Electronic Engineering analyses images from the Highways Agency's traffic cameras to determine the type of vegetation present and the colour components of this vegetation. This 'Bridging the Gaps' project, funded by the Engineering and Physical Sciences Research Council, requires automated processing to deal with the 4,500 images acquired daily. This generates phenological data relating to the vegetation life-cycle, such as the timing of leaf-fall and budding.

## GIS247 – WE ARE EXPANDING...

Thank you to the thousands of users who make use of the e-learning for ArcGIS and MapInfo that we provide on-demand at GIS247. This month marks a key milestone in the availability of our service, as we are expanding.

The number and type of courses available at GIS247 is being extended. The first phase of this is the release of a number of training presentations around the theme 'GIS – Essentials'.

These presentations address a series of issues that are the foundation to the knowledge of users successfully implementing and analysing data in their GIS software.

A further key development at GIS247 is

now the ability to pick and pay for access to specific courses. Until now, a GIS247 licence has given users access to ALL the e-learning for their chosen GIS software. We have added to this approach with the ability for users to pick and choose a specific course or courses that they want access to, and pay accordingly. This is all supported by a new streamlined on-line ordering capability which gives greater flexibility to users wishing to follow an e-learning approach.

To take a look at our latest developments visit our Training Catalog <http://www.gis247.com/catalog>



The traffic camera information will be validated using data from a European Space Agency satellite, ultimately yielding information on climate change and food production.

**Eye in the sky**

Compared to street level cameras, those carried aboard advanced UAVs offer many advantages compared to manned flight: they are low-cost, flexible and accessible, and the resulting data can be processed quickly. Their high resolution photographs can be taken from viewpoints that other platforms cannot reach... a bonus for archaeological and historical surveys.

For example, Cheshire West and Chester Council recently surveyed its historic city walls to ascertain their condition. While the associated photographic survey was generally carried out on foot, one section of steep embankment demanded the use of a UAV that could fly close to the wall without risk to either pedestrians or the sandstone structure itself. The survey, conducted by SUAVE Aerial Photographers was completed quickly and without disruption to pedestrians or local businesses. Significantly, the captured high-resolution photographs had a deliberate degree of overlap, ideally suiting them for processing with 3D photogrammetric software.

**Measuring sea rise level**

To determine the characteristics of a really large area, such as the Greenland ice sheet,

satellite data are essential. Research is currently underway at Swansea University on the stability of this ice sheet (examples pictured on previous page). Meltwater lakes that form in summer are an important influence as the water they store can drain to the bed of the ice, acting as a lubricant and accelerating ice flow velocity. In turn, this process may influence increased ice-berg production at the glacier front and, hence, Greenland's contribution to sea-level rise.

In order to predict glacier acceleration, the researchers need to know how much water is stored in the meltwater lakes. There are thousands of these lakes and it would be impossible to measure them all directly. But by using high-resolution satellite images, such measurements are relatively easy. Estimating lake depth, however, is more problematic, and current research is assessing the potential of satellite-based methods to achieve this.

**Significant contribution**

In summary, the Cluster contributes significantly to contemporary scientific research and debate on widely differing scales, from the largest ice bodies in the world, to leaf fall from a single tree. Already attracting a wide body of participants across a diverse range of sectors, the Cluster coordinators are keen to expand the reach of this knowledge exchange initiative, further details of which can be found at [www.eotechcluster.org.uk](http://www.eotechcluster.org.uk) as well as the Earth Observation Technology Cluster 'LinkedIn'

social networking group.

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