

Industry and science join forces to strengthen UK capability in monitoring the environment from space

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Chairman's Welcome

Welcome to the latest edition of the BARSC Newsletter; the first since I was confirmed as Chairman at the AGM in May.

Following a resolution, passed at the AGM, that BARSC should refresh its image, the Executive Committee members have selected a new logo for use on our website, publications and correspondence. We feel that the new design is a bit more eye-catching than the old one – perhaps even enhancing the notion that, as a community, we have access to rather more sources of satellite data than we did when the previous logo was designed! Anyway, we hope you like the 'refreshment'; we will certainly find ways to ensure that it is well used over the coming months.

Graham Deane,
BARSC Chairman



A new Centre for Earth Observation Instrumentation (CEOI) is now in operation to strengthen the UK position in international Earth Observation programmes.

The CEOI is a new initiative from the Natural Environment Research Council (NERC) and the Department of Innovation, University and Skills (DIUS), as members of the British National Space Centre (BNSC). It brings together scientific expertise and industrial capabilities that will put the UK in a much stronger position to win international contracts for the development of new, technologically advanced space instruments.

Astrium Ltd is leading the CEOI and is in partnership with the University of Leicester, Rutherford Appleton Laboratory and QinetiQ. All partners will have major roles in the operation of the Centre and development of advanced EO technologies.

Driven by the UK's science objectives, the centre's first development programmes will focus on key environmental issues relating to climate and air quality. They will develop new remote sensing technologies to understand how atmospheric chemistry affects climate; detectors that measure pollutants in the atmosphere; novel space-based instruments to analyse the quantity and flow of carbon dioxide; and to monitor trace gases in the lowest part of the atmosphere.

Dr Arwyn Davies, Director of Earth Observation for both NERC and BNSC, said, "I am delighted that the CEOI is now established. It is an important strand in taking our Earth Observation strategy forward, and will cement relationships between our scientific and industrial communities in this crucial area."

CEOI Director, Mick Johnson added, "This is a very important step for the UK, which will enable us to provide excellent satellite instruments to increase the understanding of our planet and to monitor its health. I am looking forward to bringing together the best capabilities in science and industry to deliver new instruments and new technologies."

For more information, contact Mick Johnson:
mick.johnson@astrium.eads.net

BARSC Committee 2007-8

Chairman: Graham Deane
Vice-Chair: David Hodgson
Secretary: Gareth Davies
Treasurer: David Morten

Members:
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Iain MacInnes
Tony Sephton

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Save the Elephants Software Donation

PCI Geomatics donated its software suite, Geomatica, to assist the Save the Elephants (STE) organisation in Africa to process and analyse satellite imagery to help understand the movement and ranging behaviour of elephants.

Geomatica will be used for orthorectifying historic aerial photos for comparison against current aerial photography, and assessment of vegetation degradation. It will also be used to process and analyse Fine Beam Radar imagery acquired over Mali to map human settlements in the range of elephants. Utilising thermal imagery, Geomatica



will help identify water sources, as well as supervised classification of vegetation using Landsat/Aster imagery in areas of key importance to elephants.

For more information, contact Iain MacInnes: macinnes@pcigeomatics.com

Terrafirma moves to Stage 2

Terrafirma is an ESA GMES project aimed at establishing a 'terrain motion' hazard information service across Europe in support of policies aimed at saving lives, improving safety and reducing economic loss. Terrafirma, now in Stage 2 and starting its fourth year of activity, is based on a combination of radar satellite interferometry and expert geophysical interpretation to produce terrain motion information products that relate to four key areas of concern: urban stability (including mining), flood-risk (coastal lowlands, floodplain subsidence and flood defence integrity), crustal deformation (earthquakes) and landslides.

Terrafirma has so far enlisted the national geological organisations of 22 member states (including the British Geological Survey), as well as the main pan-European geological associations (EuroGeoSurveys, European Federation of Geologists and the Euro-Mediterranean Seismological Centre). Terrafirma therefore represents a single point of contact for geohazard expertise in Europe. The project is delivering products for at least one major town in each of the EU25, plus 17 landslide products in Italy, Spain, Greece and Switzerland.

For further information, contact Ren Capes: ren@npagroup.com

DMCii to launch new higher-resolution satellite imaging service in 2008

DMC International Imaging Ltd. (DMCii) plans to launch a high-resolution optical imaging satellite, UK DMC-2, in 2008 to provide continuous Continent-level imaging with direct downlink of data to customers' ground stations.

This will enable DMCii to continue and considerably extend its service providing rapid revisit imaging for customers around the world. For example, the Brazilian Space

Research Agency (INPE) has, for the third year, commissioned DMCii to carry out imaging campaigns over the 5.8 million sq km Amazon Basin to help monitor deforestation.

The UK DMC-2 satellite will also continue the UK's commitment to rapid disaster response with the other four nations in the Disaster Monitoring Constellation (DMC) and through the International Charter; Space & Major Disasters.

Infoterra supplies aerial imagery for new flight simulator scenery

Infoterra Ltd, a leader in the provision of geographic information products and services, has supplied GeoPerspectives™ aerial imagery and terrain data to Just Flight Ltd, the world's leading flight simulation specialist, for use within a series of photographic scenery packages for flight simulation on home PCs.

At a resolution of 1m, the high quality and accurate imagery of England and Wales will allow Just Flight to differentiate themselves from their competitors and help them build on their market leading position. The VFR Real Scenery series, to be used with the latest version of Microsoft's Flight Simulator X, is now available on the high street.

GeoPerspectives is a joint venture between Infoterra and BlueSky providing national coverage of orthorectified aerial photography, digital terrain & surface models (DTM/DSM) for 3D modelling, and colour infra-red imagery (CIR) for vegetation analysis.

For more information, please contact: info@infoterra-global.com



Simulation of continuous imaging and direct download over the USA from the UK DMC-2 satellite

At just 120kg, UK DMC-2 will be a very capable low cost Earth Observation (EO) satellite, carrying a higher-resolution (22-metre) multi-spectral DMC imager than before with an ultra-wide 660km imaging swath. The enhanced micro-satellite will be able to image continuously while delivering data in near real-time to licensed ground stations.

For more information, contact Paul Stephens: P.Stephens@dmcii.com

BlueSky completes thermal fly past for online mapping portal

BlueSky has completed an aerial thermal survey of North London to highlight heat loss from properties. Displayed on Haringey Council's website, each property is colour coded by temperature to identify those with high levels of heat loss. The survey is part of an initiative by Haringey to reduce energy consumption, increase energy efficiency and help the Council improve the provision of housing within the borough.



The property level survey was captured using an airborne thermal infrared sensor, a modified version of the technology used by the military for night vision. The sensor measures up to 256 individual variations in temperature and is sensitive to 0.25°C. The raw survey data was then processed by BlueSky to match Haringey Council's Ordnance Survey® MasterMap® giving an average heat-loss value for each building polygon. By matching this information to Haringey's residential address database, an easy-to-use web page enables visitors to search by street name or postcode and view a thermal image of their property.

For more information, contact James Eddy:
james.eddy@bluesky-world.com

Knowledge Transfer Workshop 2007

The annual BARSC workshop was held on Thursday 3rd May at the DTI Conference Centre near Victoria, London. The event was supported by BNSC and NERC. Approximately 70 people attended the event including representatives from BARSC, NERC, BNSC, various academic institutions, and representatives of a number of knowledge transfer initiatives.

The aims of the workshop were ambitious: to bring together the parties required for a successful knowledge transfer partnership. Talks from the knowledge transfer initiatives raised the awareness of these organisations within the industrial and academic sectors. The presentations from industry outlined a set of ways in which industry has partnered with the academic sector in the past. Finally,

presentations from the academic sector outlined some promising new avenues for future knowledge transfer partnerships. These included some major new sources of funding for UK research in Earth Observation and EO Instrumentation.

The major point arising out of the discussion was the need for greater awareness of the various knowledge transfer initiatives and the ways in which they can assist both the academic and industrial sectors in founding a successful knowledge transfer partnership.

The speeches reflected the diversity of organisations represented, and were well received. They are available on the BARSC website for download.

Swansea University tracks glacial activity in Norway

Researchers at Swansea University, U.K. study glacier melt in Svalbard, Norway. The glaciers around Svalbard could make the largest contribution to sea-level rise of any arctic region outside of Greenland. A field study was conducted to measure volume changes of the benchmark Svalbard glaciers using LIDAR and photogrammetrically derived DEMs.

The researchers chose BAE Systems' SOCET SET® software to work with their data. The combination of automated and manual tools available in SOCET SET® is ideal for building terrain and surface models. For the Svalbard project, there were many large images that had been captured at 1:50,000 scale and scanned at a high resolution to maximise DEM resolution; SOCET SET® handled these flawlessly.



The findings were applied to the entire archipelago with a regional mass balance model, which was used to derive 20th and 21st century contributions to global sea-level rise in Svalbard. This work is extremely important for improving predictions of sea-level rise due to the density of population along the world's coastlines.

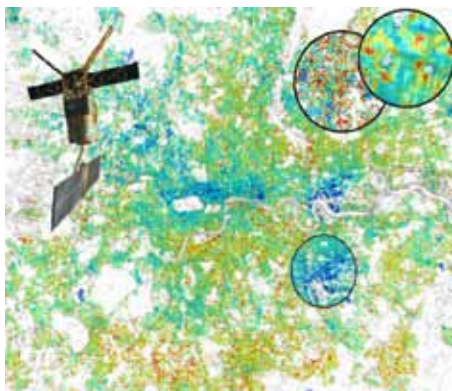
For details on the Svalbard study, and other projects underway within the Swansea Glaciology Group, please visit:
<http://geography.swan.ac.uk/glaciology>

BARSC Associate membership

BARSC introduced the new category of Associate Membership at an Extraordinary General Meeting on 21 November 2006. Associate Membership is free and is offered to very small companies. Associate Members receive the benefits of full members, but are not able to serve on the Executive Committee or to vote at the Annual General Meeting. Here are brief profiles of some of our newest members:

EnviroScience

EnviroScience's remote sensing business interest is based on developing remote sensing applications beyond academic research. In particular, SAR Interferometry (InSAR), applied to mining subsidence and London Clay subsidence, as InSAR application research, was proposed, led and first to be published, with major UK space sector partners, industry, BNSC and ESA support, by Richard Stow, now EnviroScience's principal scientist.



EnviroScience is strongly interdisciplinary and networks with wider expertise. It uses remote sensing as part of an environmental business covering ecology, environmental impacts, climate change, pollution, geohazards and resources. Remote sensing products and services offered are: application research, data/image processing, mapping, validation, ground truth and predictive models, especially due to climate change.

*For more information, contact Richard Stow:
envisci@onetel.com*

ERS InSAR image (reduced resolution) showing detected surface movement of London. Red is subsiding (<18mm) due mainly to clay shrinkage, Blue is rising (<6mm) mainly due to rising water table. Zooms (inset) show shrink and swell varying street by street and below, rising groundwater uplift at Stratford ©EnviroScience Research. European Space Agency satellite ERS2 (overlaid) ©ESA

ComSine

ComSine, established in 2002, is an SME specialising in IT consultancy and software/hardware development for the geographic information and mobile satellite communications industries.

On the GIS side of the business, ComSine has particular expertise in developing location-based services and applications with open architectures independent of a particular GIS vendor and where open standards e.g. Open Geospatial Consortium (OGC) web-service standards, XML/GML, ISO 19115, etc. are involved.

On the satellite communications side of the business, ComSine has considerable digital signal processing knowledge and is currently developing a new miniature satellite user terminal product to provide mobile internet and asset tracking services.

Customers to date have included: Inmarsat, ESA, BNSC, QinetiQ, LogicaCMG, the Ordnance Survey, the EC, the GNSS Supervisory Authority (GSA), ViaMichelin, 1Spatial, SEEDA and Anite Public Sector.

*For more information, contact Richard Proud:
richardp@comsine.co.uk*

Polar Imaging

Polar Imaging was established in 2006. The company provides consultancy support in the use of earth observation data in areas subject to snow and ice, including offshore operations for the oil and gas industry and product development support for national ice services.

The company is also working with the European Space Agency in the design of future sensors for imaging the polar regions.

*For more information, contact Kim Partington:
kim.partington@polarimaging.co.uk*

New Ground Systems Manager for SEA



Alan Fromberg has joined Systems Engineering & Assessment as Ground Systems Manager, after working on the Centre for Earth Observation programme at the European Commission, and the EGNOS navigation service for the European Space Agency.

Alan will be working in the areas of bringing SEA expertise on instrument characteristics to improving calibration of data products, including calibration transponders for active microwave instruments and also on the CAT, an alternative to corner reflectors for use in SAR interferometry.

Alan can be contacted on 01373 852174 or by email: alan.fromberg@sea.co.uk