

## Report on research institutions and value adding companies

### Flemish Institute for Technological Research (VITO)

#### The AGRICAB project: Developing increased Earth Observation capacity for better agriculture and forestry management in Africa

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The main focus of the recently started AGRICAB project 'A Framework for enhancing earth observation capacity for agriculture and forest management in Africa as a contribution to GEOSS', funded by EC-FP7, is to integrate European and African research capacity and advances in the use of earth observation technology for agriculture and forestry.

Apart from the sustained provision of data, the project aims at a continued and better exploitation of and access to satellite data. Twinning partnerships between African and European institutes are being set up in order to integrate earth observation and predictive modeling in agriculture and forest management in different themes: (i) yield forecasting for food crops, (ii) early warning and agricultural mapping of food crops, (iii) agricultural statistics, (iv) livestock and rangeland monitoring, and (v) forest and forest fire monitoring.

The rapid expansion of earth observation based information services to society requires continuous knowledge gain and scientific know-how expansion by various user communities. AGRICAB engages in a deliberate effort to enhance local capacity and knowledge transfer for developing a sustainable data and information management capacity. AGRICAB intends to allow African partners: (i) to get exposed to state-of-the art techniques and models for agricultural and forest monitoring, (ii) to discover these techniques and models through workshops and dedicated training, (iii) to gain experience in the application of these techniques and models on the local conditions in various use cases, and finally, (iv) to adapt appropriate models for integration in the local operational workflows. Through the use cases, located in North Africa, Senegal, Kenya, Mozambique and South Africa, methodologies will be adapted to local conditions and demonstrated in different agro-meteorological conditions.

In the coming years, a series of national and regional training workshops will be organized in Tunisia, Niger, Senegal, Kenya, Mozambique and South-Africa. For more information: [www.agricab.info](http://www.agricab.info) and [agricab@vito.be](mailto:agricab@vito.be).

#### The HABISTAT and MS.MONINA project: Remote sensing services for NATURA 2000 habitat monitoring and conservation status assessment

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The ever increasing impact of modern human society on biodiversity and the resources it provides, has made biodiversity conservation a topic of growing societal concern in the last decades. Concurrently with the professionalization of nature conservation, the field has gradually taken up stronger

commitments towards society of achieving predefined targets. This evolution is prevalent at different spatial levels: global (e.g. Convention on Biological Diversity), European (e.g. Habitats and Birds Directives), national and sub-national (e.g. the Flemish MINA-plan, regional Natura 2000 conservation goals), and site level (e.g. management plans, Natura 2000 site-specific conservation objectives). In order to reach biodiversity conservation targets, data are needed. This includes both baseline data as well as a monitoring of changes taking place. In the European Union (EU) for instance, the Habitats Directive, obliges all member states to survey and evaluate the conservation status of protected habitat types and species, and to report this to the European Commission on a six-yearly basis. For habitats, this requires a.o. monitoring and reporting the status and trends of distribution, range, areal extent, habitat quality (structure and functions), and future prospects.

In the recently finished, BELSPO-funded HABISTAT project (2007-2011; <http://habistat.vgt.vito.be/>), a conceptual framework was developed for an operation-oriented methodology to map, monitor and evaluate vegetation and habitat types and their degree of development. The developed methodology consists of a consecutive three-step approach, where each component builds on the outcomes of the previous one(s). In each of the three steps, the input from both ecological and remote sensing knowledge proved crucial for its success. For the first time in Flanders, Natura 2000 habitats in two pilot sites have been successfully mapped and their conservation status assessed using remote sensing. The project has shown that with an integrated ecological and remote sensing knowledge approach, it is possible to meet the highly detailed requirements for NATURA 2000 monitoring. As such, the project has laid the necessary fundamentals and identified the remaining key research issues, to evolve from exemplary study and showcases to a Natura 2000 monitoring system that is operationally supported by remote sensing services. A final report on the project and a multitude of publications are available on request with the corresponding author.

The recently started EC FP7-SPACE project MS.MONINA (2010-2013; <http://www.ms-monina.eu/>) intends to set the basis for and demonstrate such a service, complying with pan-European efforts for data harmonization and exchange (GMES, INSPIRE, SEIS), and relying on a strong user involvement

### **The HeathReCover project: Remote sensing support to assist ecological restoration management after heathland fires**

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Heathland and peat bogs are highly valued as habitats for biodiversity conservation and as landscapes of common European cultural heritage. In the past decades, a lot of efforts and resources have been invested to protect the remaining areas, and to properly manage them in order to conserve their intrinsic value. Nevertheless, in Belgium, continuing external pressures on heathlands and peat-bogs, such as nitrogen deposition and desiccation, remain high, endangering the long-term positive outcome of these investments. The recent catastrophic wildfires of 2011 in the nature reserves of the *Kalmthoutse Heide* (Flanders) and the *Hautes Fagnes* (Wallonia) have raised a lot of public concern regarding the vulnerability of these unique heathland ecosystems to uncontrolled fires. Remote sensing (RS) has been shown to be useful to clarify the complex interaction between fires and ecosystems. A variety of methodologies can be applied to delineate burn scars, assess the short-term fire severity and monitor the long-term vegetation recovery. Available methodologies range from hyperspectral post-fire data analysis to multi-temporal analysis of vegetation indices derived from multispectral data. These approaches showed the complementarities of hyperspectral and multi-temporal (VNIR-SWIR) data sets, with hyperspectral imagery representing the specific surface cover conditions over large areas and multi-temporal imagery revealing the intra- and inter-

annual changes. The recent and historical *Kalmthoutse Heide* and *Hautes Fagnes* fire events provide an excellent opportunity to study post-fire vegetation regeneration as the areas have served as a study area in several (RS and non-RS) projects over the past years. As a result, the pre-fire vegetation of both areas is very well documented with a multitude of image and field data already acquired. The BELSPO-funded HeathReCover project (2012-2013) will exploit this opportunity to push forward advancements and crucial insights into heathland ecosystems and their (post-)fire susceptibility and management.

### Events organized in 2011

- The annual Belgian Earth Observation day organised by the Belgian Science Policy Office took place in Oudenburg in **May 2011**. The invited keynote speaker was Dr. Jadu Dash, lecturer at the school of geography of the Southampton University (UK). You can find all the presentations of this meeting on our website in the following page:  
<http://eo.belspo.be/Directory/Resources/Presentations.aspx>
- In **May**, In the frame of the AGRISAR workshop organised by ESA at ESA-ESTEC in Noordwijk (The Netherlands) a complete session focussed on the results of the GLOBAM project (Global Agricultural Monitoring systems by integration of earth observation and modelling techniques) funded by BELSPO in the frame of the STEREO II programme.  
<http://eo.belspo.be/Directory/Projects.aspx>
- In the frame of the Belcouleur2 and the Quest4d projects both supported by the Belgian Science Policy Office a symposium called "Human footprint on the seafloor, keys from the past, doors to the future" was organised in Brussels on Friday September 2nd 2011.  
<http://www.mumm.ac.be/BELCOLOUR/EN/index.php>

### Events scheduled in 2012

- **May 7-11**: Organisation by the University of Liège (Belgium) of the 44th International Liege Colloquium on Ocean Dynamics with the title: "Remote sensing of colour, temperature and salinity – new challenges and opportunities". More information available on the website:  
<http://modb.oce.ulg.ac.be/colloquium/>
- **May 21-24**: In the frame of 32nd EARSeL Symposium organised in Mykonos Island (Greece) a complete session will be dedicated to the PROBA-V preparatory programme. Website  
<http://www.earsel.org/symposia/2012-symposium-Mykonos>
- **September 4 and 5** a joint event will be organised in Bruges (Belgium) by the Belgian Science Policy. The **4 September** a workshop dedicated to the results of the hyperspectral flight campaigns organised in Belgium and Europe with the APEX sensor is planned. The **5 September** will be dedicated to the annual Belgian Earth Observation day. Don't hesitate to consult the following website for more information: <http://eo.belspo.be/News/News.aspx>
- **September 19-22**: 3rd Workshop on Remote Sensing for Archaeology and Cultural Heritage Management. Ghent, Belgium.

## Remote Sensing Activities in UK 2011

Samantha Lavender  
Chairman, RSPSoc

### General UK Activities/Developments

The UK Space Agency (<http://www.bis.gov.uk/ukspaceagency>) became a full executive agency in April 2011 reporting to the Minister of State for Universities and Science. Its roles include: co-ordinating UK civil space activity; supporting academic research; nurturing the UK space industry; raising the profile of UK space activities at home and abroad; working to increase understanding of space and its practical benefits and; inspiring the next generation of UK scientists and engineers. In July 2011 there was a 2 day UK Space Conference at Warwick University where RSPSoc co-chaired an Earth Observation session. The next UK Space Conference will be held in the summer of 2013.

The London Mapping Festival (<http://www.londonmappingfestival.org/>), June 2011 to December 2012, showcases a range of mapping and innovative technologies that exist for the UK capital. The aims are to: incorporate a series of public events; demonstrate all aspects of mapping London; include events organised by commercial companies, public sector organisations, research and academic institutions, societies and industry bodies.

### Remote Sensing and Photogrammetry Society

The Remote Sensing and Photogrammetry Society (RSPSoc) is a learned society promoting the education of remote sensing and photogrammetry. RSPSoc is an international society, although it's based in the UK and acts as the national affiliating body to the International Society for Photogrammetry and Remote Sensing.

RSPSoc held a number of technical events in 2011:

- **27 January**, UKGeoforum Annual lecture 2011 given by Vanessa Lawrence CB (Director General and Chief Executive Ordnance Survey) on "The Future of Mapping"
- **14-16 March**, Annual Student Meeting in the Peak District
- **07-08 July**, Annual Lecture/Conversazione with 2-day UAV workshop at Durham University
- **13-15 September**, RSPSoc 2011 Annual Conference – Earth Observation in a Changing World at Bournemouth University
- **7-9 December**, GRSG Annual Meeting, ESA, Frascati

Forthcoming 2012 events include (for further details see <http://www.rspsoc.org/events/>):

- **26 January**, UKGeoforum Annual lecture 2012 given by Mike Parker entitled "You Are Here"
- **12-14 March**, RSPSoc Annual Student Meeting, Falmouth, UK Spring, Annual Lecture/Conversazione, details TBC
- **3-5 September**, EAGE/GRSG Remote Sensing Workshop, Paris
- **11-14 September**, RSPSoc 2012 Annual Conference, University of Greenwich

### UK EARSeL representatives

Dr Samantha Lavender (ARGANS Ltd) is the Chairman of RSPSoc and Chairman of RSPSoc's External Affairs Committee. Dr Colm Jordan (British Geological Society) is Vice-Chairman of RSPSoc. Dr Lavender is the regular UK representative at EARSeL Council meetings with Dr Jordan deputising for her.