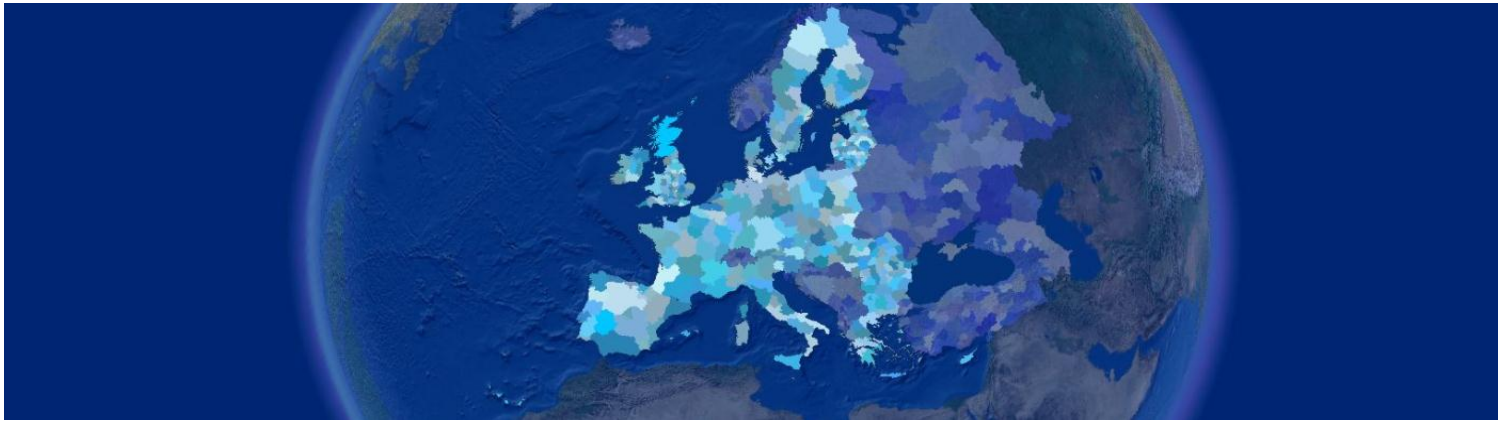


Uptake of Space Technologies – An Educational Programme

H. Bacai, S. Zolotikova, M. Young, J. R. Cowsill, A. Wells, P. Monks, and T. Smith

G-STEP, University of Leicester

United Kingdom

EGU2013 – EOS5, 08.04.2013

G-STEP Innovating / Training / Collaborating
University of Leicester
EUROPEAN UNION Investing in Your Future
European Regional Development Fund 2007-13

Copernicus in the Region

- Copernicus (previously known as GMES - Global Monitoring for Environment and Security), is the European Earth observation programme to collect and process EO data to support policy developments at European level.
- At a regional level, a network of Regional Contact Offices (RCOs) have been established across Europe through the DORIS_Net project to provide knowledge, training and access to local expertise with Earth observation themes.
- The network of RCOs provide space technology training and expertise to end-users on Copernicus-themed applications across and within European regions.

DORIS_Net - East Midlands Regional Contact Office

- East Midlands RCO is hosted by the University of Leicester through G–STEP – a business facing partnership
- Aims to develop training and educational material to local businesses and local regional authorities (LRA)
- Promote awareness of Copernicus-themed applications and tools through seminars, e-learning modules and developing hands-on experiences for local businesses and LRA
- Influence Local Authority action plans and provide innovative solutions to critical local issues.

Educational Programme

Tiered Training System

- **3 levels of training to build awareness and develop partnerships**

> ***Introductory*: 'Business breakfasts' to present an overview of EO applications and tools relevant to local community**

> ***Intermediate*: Training Workshops with specific themes for users**

> ***Advanced*: Further specialised training provided, following interest from users to develop specific application of EO data.**

Educational Programme

Introductory training

- **'Business breakfasts' – overview of Space technology applications and tools.**
- **Premise:**
  - **Informal morning meeting with introductory space technology presentations, followed by a practical workshop using real data and scenarios.**
  - **Discussion on the needs of end users and networking environment to explores ideas and develop relationships**
- **Overall an informal environment for local end users to gain awareness of EO services and capabilities and how these may benefit individual situations.**

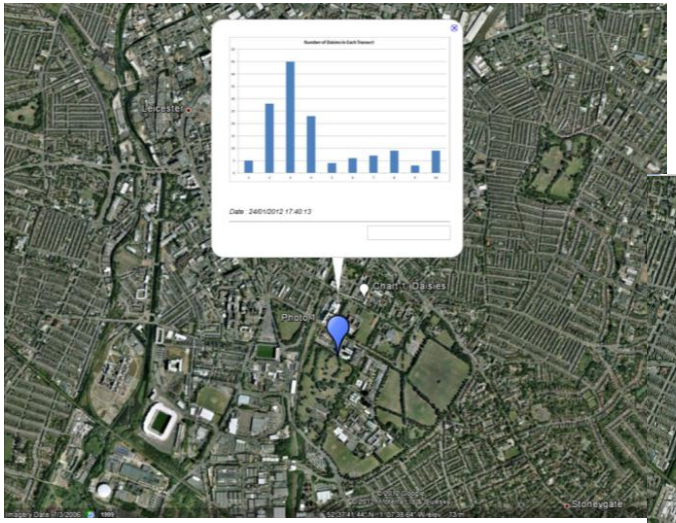
Educational Programme

Introductory training - Example

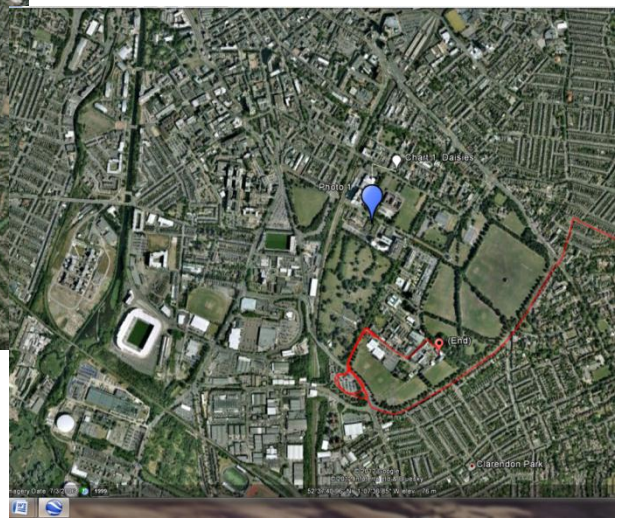
- **Geospatial Technology for the Classroom - Mobile phone apps**

> **A mobile phone app created to exploit the in-built GPS technology to geo-tag images.**
> **Users record and log fieldwork data which can be further analysed using maps and charts.**

> **Teachers can develop resources based on the information gathered.**



An example of a site in which a photo and survey of daisies has been displayed on Google Earth



Same image showing additional information in the form of a GPS track

Educational Programme

Intermediate Training

- **Interactive training workshops developed using feedback from the 'Business Breakfasts' and larger 'Business Meets Space' events**
- **2 workshops organised:**

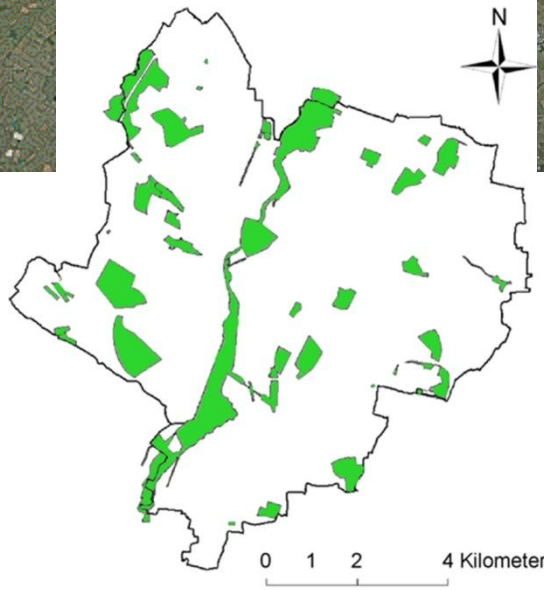
> **Land mapping of an urban environment to determine the quantity and quality of green space. Indicated the improvements that could be achieved using dedicated GMES satellites, such as Sentinels and use of the European Urban Atlas.**

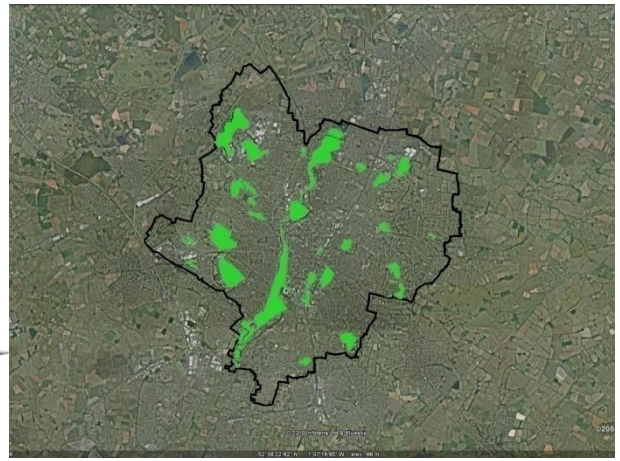
> **Layering of GMES data onto GIS maps to create a bespoke tool for clients interested in specific subset of customers.**

Educational Programme

Example: ***GIS data manipulation*** **- Identifying green space in urban environments**

Open source software – Quantum GIS or proprietary ArcGIS





- **Availability of green space**
- **Urban development**
- **Tree mapping**

Educational Programme

Intermediate Training

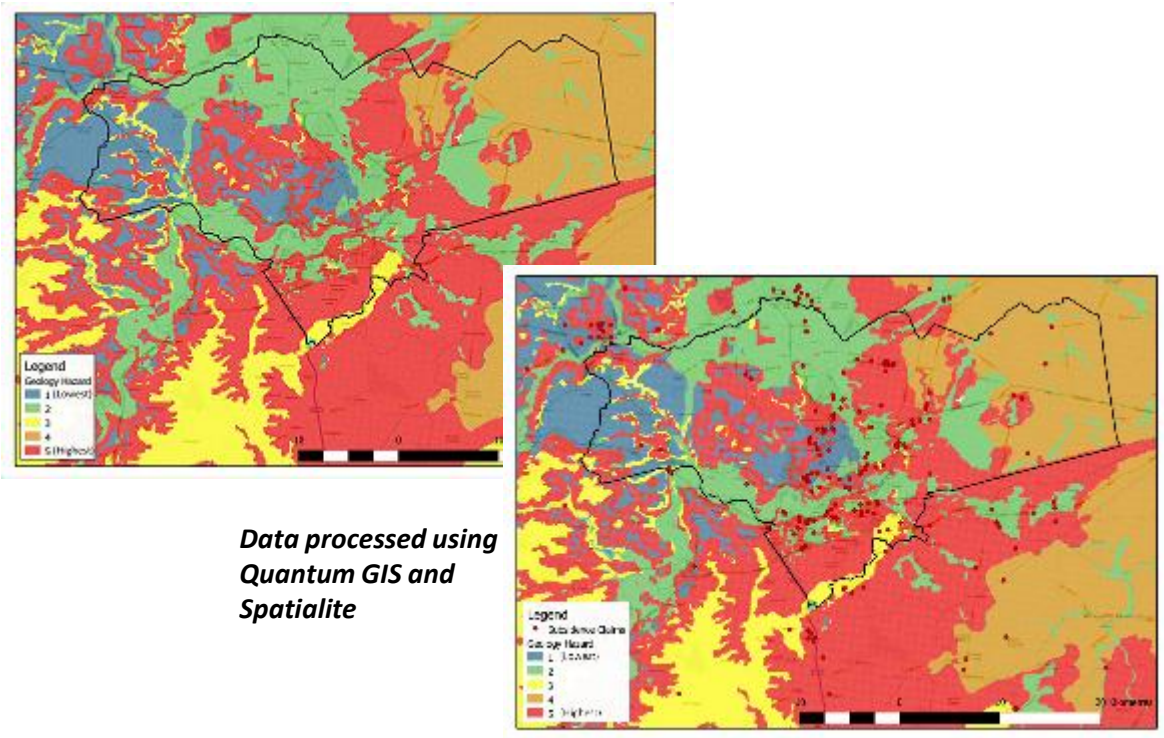
- Interactive training workshops developed using feedback from the 'Business Breakfasts'
- 2 workshops organised:
  - > Land mapping of an urban environment to determine the quantity and quality of green space. Indicated the improvements that could be achieved using dedicated GMES satellites, such as Sentinels and use of the European Urban Atlas.
  - > Layering of GMES data onto GIS maps to create a bespoke tool for clients interested in specific subset of customers.
- **Video conferencing – Introduction to GIS applications**
  - > **G-STEP, UK conducted a skype video-link to present 'Introduction to GIS applications' during 'GIS day meeting' in The Azores**
  - > **Wider audience participation and targeting of a diverse range of prospective users**
  - > **Ability to share experiences and expertise without the need of additional resources**

Educational Programme

Advanced Training

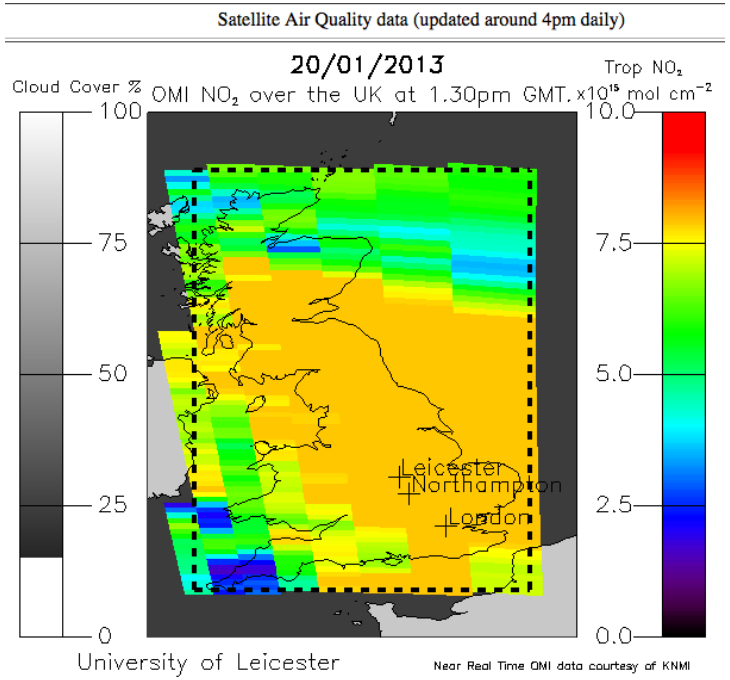
- **Bespoke training provided following interest from users**

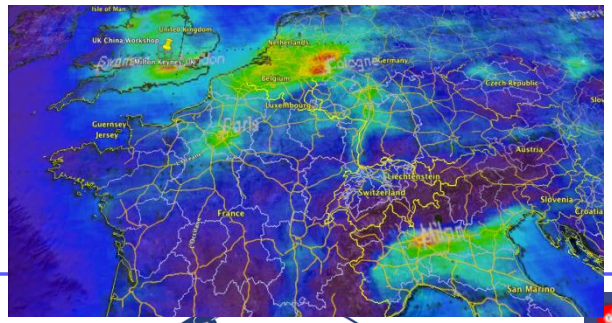
> **Example:**
>> **Local East Midlands SME interested in levels of subsidence in a region.**
>> **East Midlands RCO developed a solution on client specifications and provided training on using the model.**



Data processed using Quantum GIS and Spatialite

Success stories





- **Through the awareness building campaign, local authorities developed relationships with academics to tackle local issue of traffic management and air quality in Leicester, UK**
- **Formation of i-TRAQ demonstrator project – Intelligent Traffic Management**
  - **Utilising EO data and GMES services to develop a dynamic traffic management system to optimise road network use and high standards of air quality control.**
  - **Development of a prototype service using local authority traffic system, Air Quality models, and GMES MACC inputs.**

Success stories

Aerial mapping company Bluesky is helping electricity companies ensure their power networks are resilient to the threats form falling trees and overgrown vegetation

http://www.adas.co.uk/

Using Bluesky's ProximiTREE data the Environmental Informatics team at ADAS is able to automatically analyse entire electricity networks.

E-learning tools

- **Development of web-interface tutorials, e-learning module to disseminate information freely to a wide audience.**
- **Created an 'Introduction to Copernicus' interface to give concise introduction to EO capabilities in the Copernicus programme to users.**
- **User friendly web-based interface allowing user to independently navigate the information relevant to their interest.**

Copernicus
The European Earth Observation Programme

E-Learning Module

European Commission
Enterprise and Industry

SEVENTH FRAMEWORK PROGRAMME

esa

University of Leicester

NEXT

Map

What is Copernicus?

Copernicus, previously known as GMES (Global Monitoring for Environment and Security), is the European Programme for the establishment of a European capacity for Earth Observation for a safer world.

The objective of Copernicus is to monitor and forecast the state of the environment on land, at sea and in the atmosphere and to improve the security of the citizens in a world facing an increased risk of natural and other disasters.

Map

Click on the red dots to find out more about Copernicus

Health – Climate change (UV exposure)

Ozone Layer & Ultra-Violet Radiation

Stratospheric ozone, also known as the ozone layer, is a key element of the Earth's atmosphere protecting exposed life forms on Earth from potentially harmful ultra-violet (UV) radiation that is emitted by the Sun. Over the last few decades, emissions of human-made chemicals, such as CFCs, have had a detrimental effect on the amount of ozone in the stratosphere. This is most clearly observed over the Antarctic, where the chemical destruction of ozone is known as the 'ozone hole'. The Montreal Protocol, signed in 1989, has been instrumental in phasing out the production and use of CFCs resulting in a slowed-down depletion of the ozone layer.

For more information please go to: MACC-II

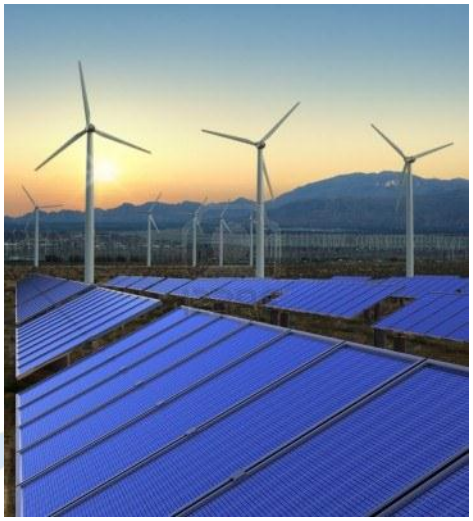
Click on picture to go back to the Copernicus

Nature resources - Renewable energies (wind farms, solar farms)

Renewable Energies

Green energy is a developing sector. Optimising the exploitation of renewable resources requires further investigations in several domains (potential of these resources, power system planning and operations...). A project has been launched to address these issues.

ENDORSE provides tools aiming at an increasing use of renewable resources (solar, wind and biomass energy), to promote them in buildings, electricity production and grid management and in decreasing dependency of Europe on fossil fuels and non-European suppliers.



Click on picture to go back to the Copernicus

For more information please go to:

ENDORSE

Summary

- The DORIS_Net RCO network provides an effective means of bringing together regional users and providers and enabling inter-regional exchange of ideas and best practice methodology
- Three levels of training developed to engage the regional stakeholders and build awareness of GMES services.
- Creation of web-interface tutorials, e-learning modules, and media tools promote learning and training for end users.
- Success stories of the uptake of space technologies by LRA to address critical issues demonstrate the benefit of an educational programme in the region

Thank you

Any Questions?