GMES Initial Operations- Network for Earth Observation Research and Training

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www.gionet.eu

Presentation outline

GIONET

- **Introduction / background**
- **Goals/objectives**
- **Partners**
- **ESRs**
- **Research programme**
- **Methodologies used**
- **Training delivered**

Introduction to the project

- **Context**
  - **GMES has space, in situ, services components**
  - **No training programme for young researchers to exploit these opportunities**
- **Obtained funding under the FP7-People Marie Curie Programme as an Initial Training Network**
  - **Co-ordinated by the University of Leicester**
- **GIONET to become the first 'European Centre of Excellence for Earth Observation Research Training'**
- **Potential for future GIONET programmes (Early Stage Research and Experienced Researchers)**

GIONET goals

- **Research into better earth observation methods for:**
  - **Observing and controlling deforestation and land cover change**
  - **Satellite monitoring for disaster relief after landslides and floods**
  - **Monitoring climate change**
  - **Measuring lake water quality and coastal dynamics**
- **Improve employability for highly skilled researchers**
- **Benefit the economy through strong collaboration of academics and private companies**
- **14 postgraduate researchers for 3-year doctoral projects**
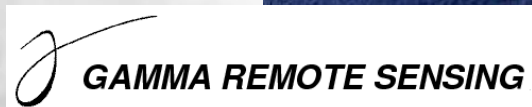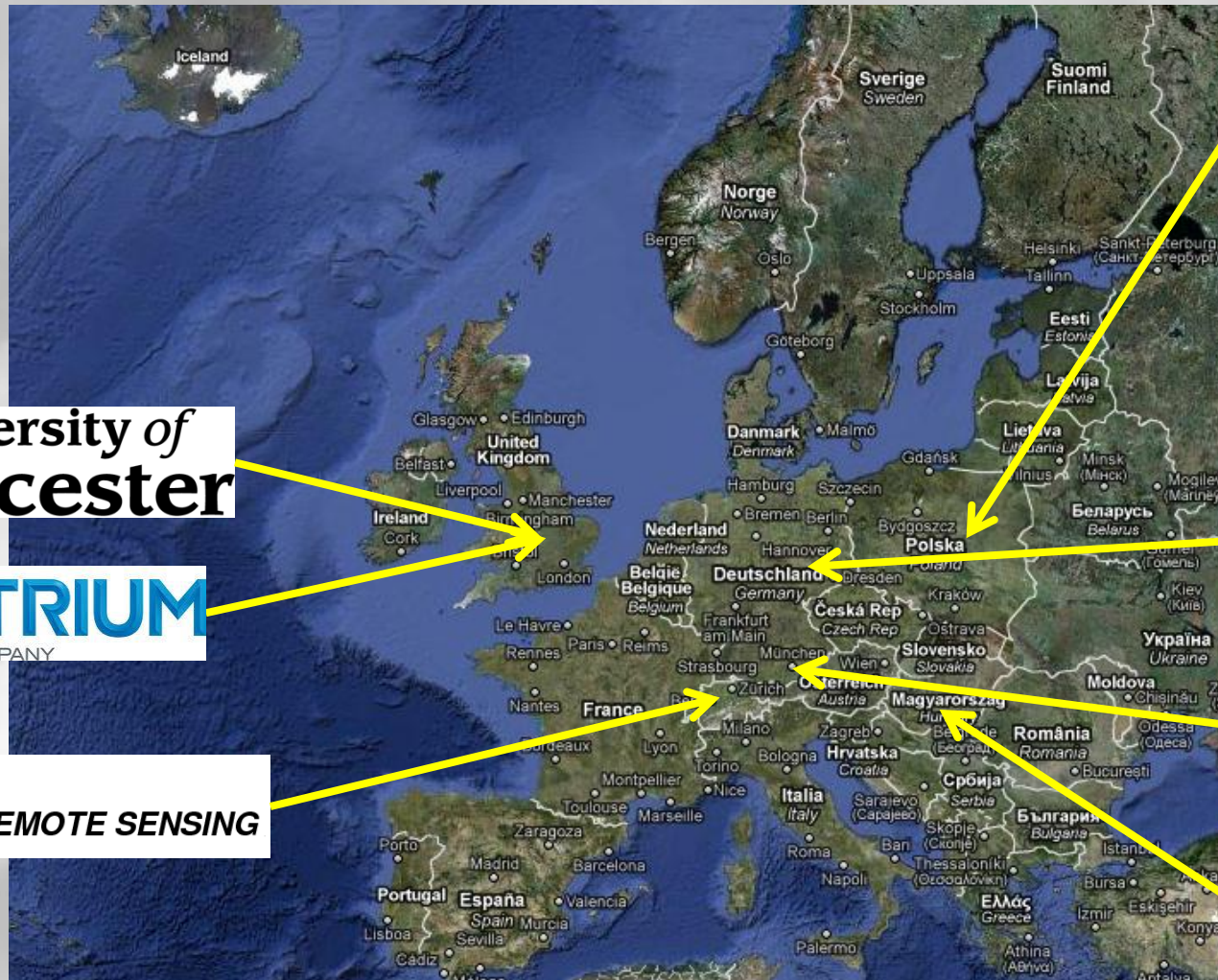- **4 open, international summer schools**

GIONET partners (I)

GIONET FULL PARTNERS

GIONET ASSOCIATED PARTNERS
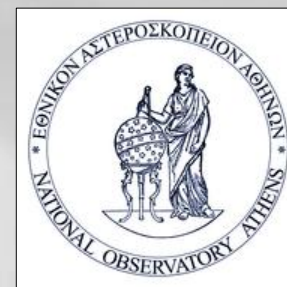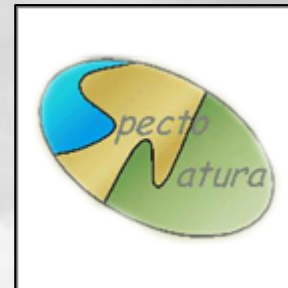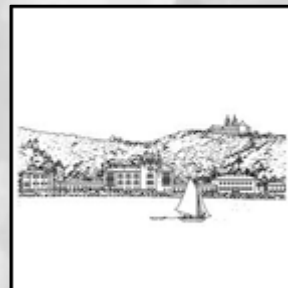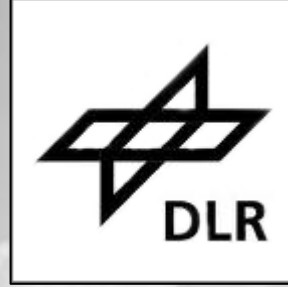
GIONET partners (II)

Early Stage Researchers

James Wheeler (ULEIC)

Christoff Fourie (DLR)

Jessica Papke (Gamma)

Dimitris Stratoulias (BLRI)

Sybrand van Beijma (Astrium)

Bernard Spies (Astrium)

Pedro Rodriguez-Veiga (ULEIC)
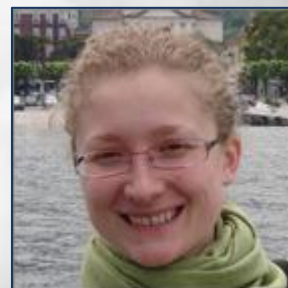
Matthew Ofwono (IGiK)

Penelope Kourkoli (Gamma)

Shailesh Shrestha (IGiK)

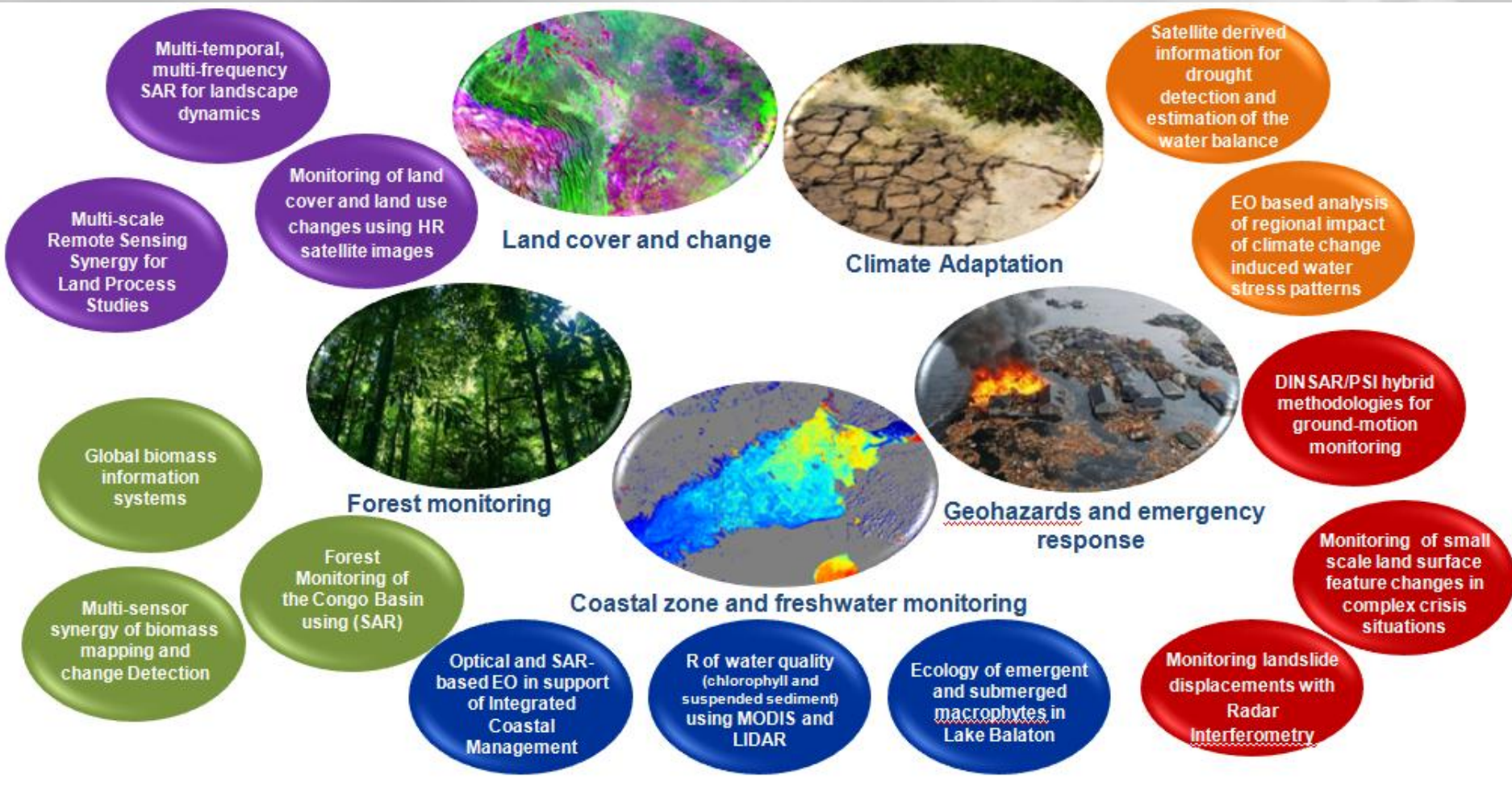Maxin Chernetskiy (FSU Jena)

Stephanie Palmer (BLRI)

Martyna Stelmaszuk (FSU-Jena)

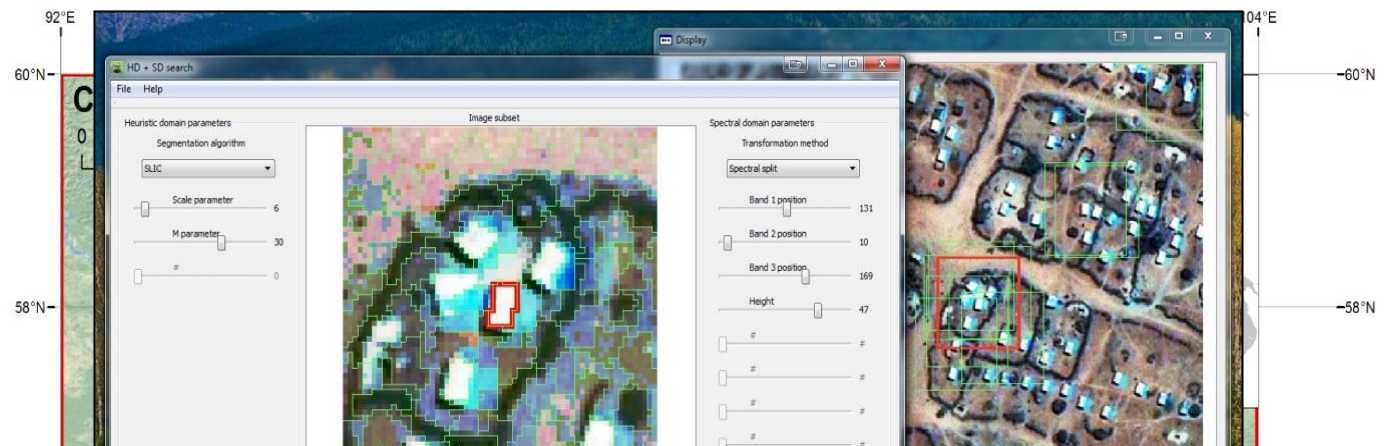Linda Moser (DLR)

GIONET research themes

| Host partners	ESR Name	Research Topics
Forest Monitoring		
ULEIC	Pedro Rodriguez Veiga	Global biomass information systems
ULEIC	James Wheeler	Forest Monitoring of the Congo Basin using Synthetic Aperture Radar (SAR)
FSU	Martyna Stelmaszczuk	Multi-concept Earth Observation Capabilities for Biomass Mapping and Change Detection: Synergy of Multi-temporal and M...
Land cover and change		
Astrium	Bernard Spies	
IGiK	Shailesh Shresth	
FSU	Maxim Chernet	
Coastal Zone and freshwater		
Astrium	Sybrand van Bei	
BLRI	Dimitris Stratou	
BLRI	Stephanie Palm	
Geohazards a		
Gamma		
Gamma		
DLR		
Climate adapt		
IGiK		
DLR		
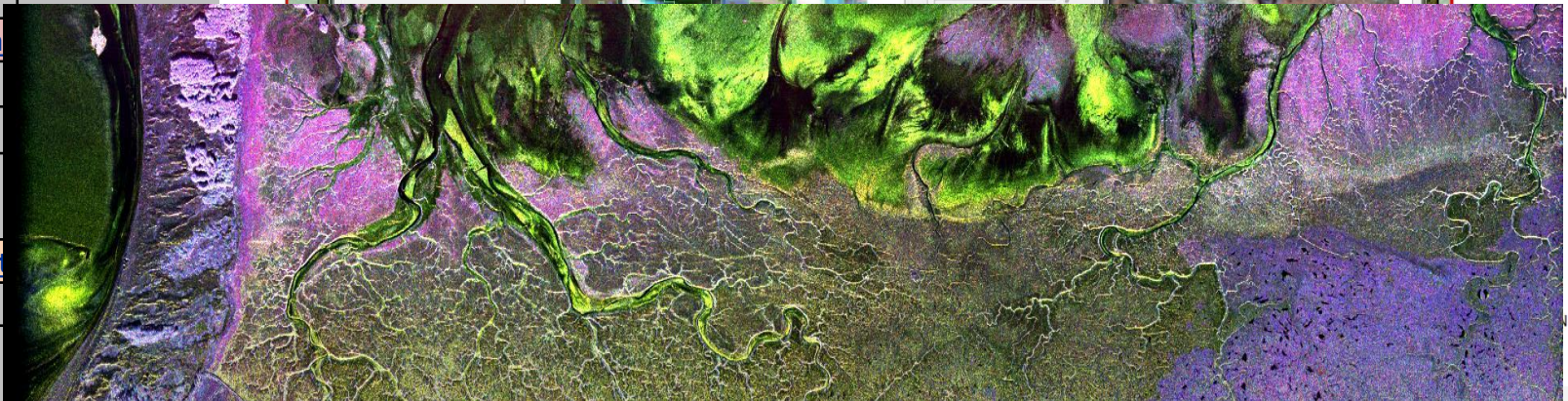
Methodologies (I)

Techniques and skills that are being used in the GIONET research programme include:

- Satellite image calibration, orthorectification, geocoding and mosaicking
- **Object-oriented and pixel-based classification**, fuzzy logic
- Integration of satellite data products in Geographical Information Systems (GIS), as raster and vector layers, geospatial analysis methods
- Assessment of biophysical parameters such as LAI / fPAR as indicators of environmental change
- **Satellite data product validation using field data**, accuracy assessment, uncertainty analysis and related statistical methods
- **Modelling of radiative transfer** in the atmosphere and on the land surface, microwave scattering models, and atmospheric correction methods

Methodologies (II)

- Evaluation of different definitions of land cover classes and **analysis of semantic and classification uncertainty in land cover maps**

- Limnological applications of remote sensing, focussing on suspended sediment concentrations, chlorophyll and lake surface temperature

- Novel methods including **SAR interferometry, Differential Interferometric SAR and Persistent Scatterer Technology**, and LIDAR to characterise landscapes in three dimensions

- Hyperspectral and thermal remote sensing

- Assessment of the ESA Sentinel missions and other forthcoming Earth Observation missions, and **an understanding of future imaging capabilities**

- Integration of EO-based products into models and downstream applications.

Training

- **Research training through individually supervised research**

- **Local research training at partner organisations**

- **GIONET summer schools:**

  - **Summer school 1, FSU-Jena (Germany) October 2011, *"New operational radar satellite applications: Introduction to SAR, Interferometry and Polarimetry for Land Surface Mapping"***

  - **Summer school 2, University of Leicester (UK) September 2012, *"Remote sensing of land cover and forest change"***

  - **Summer school 3, IGiK Warsaw (Poland) September 2013, *"Remote Sensing Applications for environmental modelling and classification"***

  - **Summer School 4, JRC (Italy) Summer 2014, *"Monitoring the Earth for Environmental Policy and Decision Making"***

3rd GIONET Summer School 2013
"*Remote Sensing Applications for environmental modelling and classification* "
Venue: Institute of Geodesy and Cartography in Warsaw
18th-27th September 2013

**Application deadline for the Summer School:
30th April 2013**

Thank you for listening!

**For more information about GIONET, our summer schools or to subscribe to our newsletter please go to www.gionet.eu
or contact GIONET Project Manager
Dr. Virginia Nicolas-Perea at virginia.nicolas@le.ac.uk**

Acknowledgements