

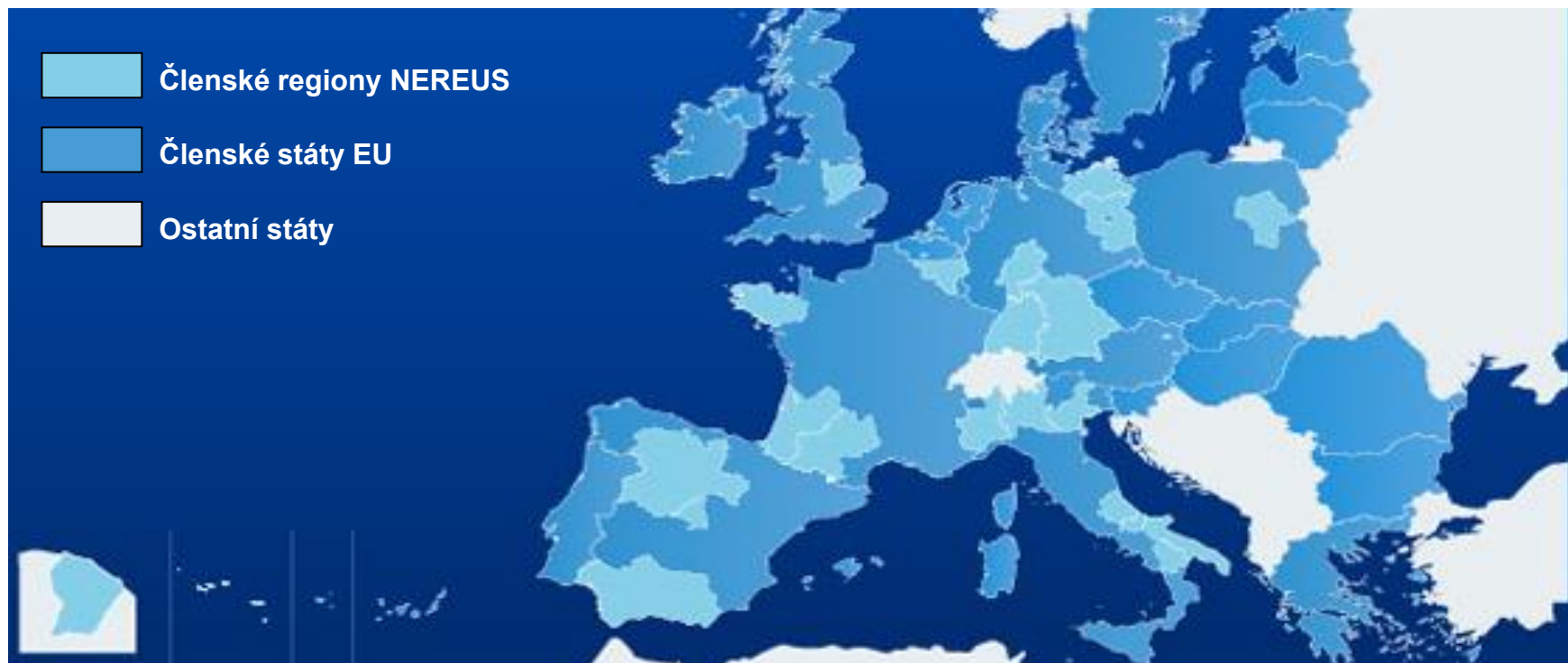


Sdružení Evropských regionů využívajících kosmické technologie

Ondřej Šváb

# Co je NEREUS

- **Network of European Regions Using Space Technologies**  
(Sdružení Evropských regionů využívajících kosmické technologie)
- Mezinárodní nezisková asociace založená v dubnu 2008
- 26 členských regionů, 37 přidružených členů



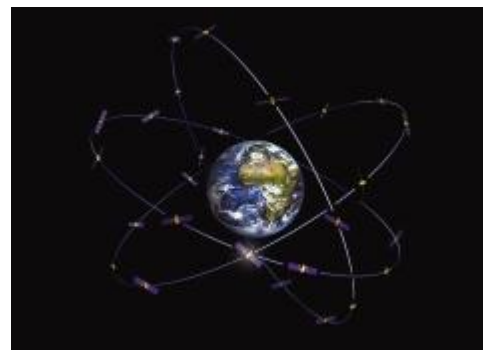
# Zaměření a aktivity sdružení

- Využití benefitů kosmických technologií v regionech
- Hlavní oblasti spolupráce:

Pozorování  
Země  
(GMES)



Družicová  
komunikace



Družicová  
navigace

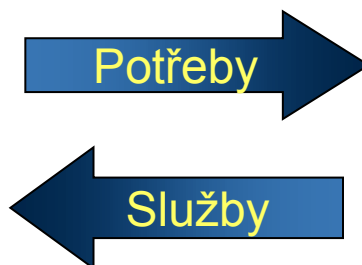
GNSS /  
Galileo /  
EGNOS



Vzdělávání,  
informovanost

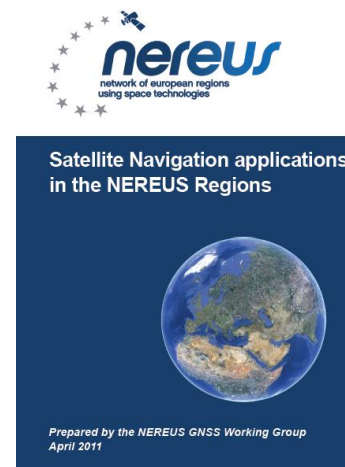
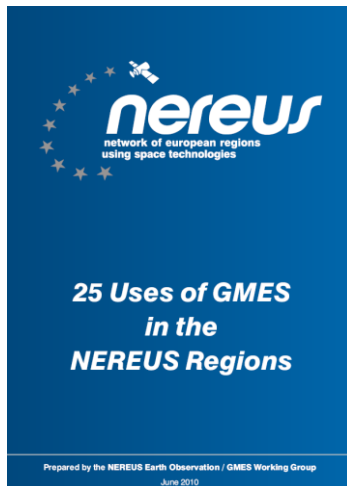
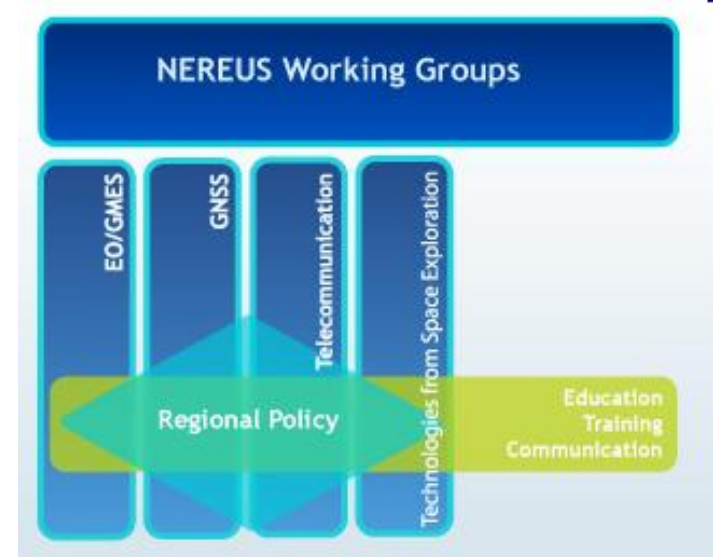
# Cíle NEREUS

- rozvoj kosmických aktivit (KA) regionů,
- soulad vývoje kosmických aktivit s požadavky koncových uživatelů a regionů,
- důraz na aplikace a benefity z KA pro koncové uživatele,
- koordinace a rozvoj kosmických aktivit regionů,
- služby založené na kosmických technologiích byly využívány napříč evropskými regiony.



# Organizace aktivit NEREUS

- 5 pracovních skupin
  - Earth Observation / GMES
  - GNSS
  - Telecommunication
  - Technologies from Space Exploration
  - Communication, Education and Training



## Precision agriculture and agri-environment

Agnès Salvatori<sup>1</sup>, Gérard Dedieu<sup>2</sup>  
Spot Infoterra - Astrium Services<sup>1</sup>; Centre d'Etudes Spatiales de la Biosphère<sup>2</sup>

### Abstract

Developing an environment-friendly agriculture has become a priority in many European countries facing the consequence of abusive consumption of water and extensive use of chemicals.

Crop management services based on satellite imagery are already commercially available and used to ease crop monitoring at critical growth stages. Users, service providers and relevant research institutes can be found in the Midi-Pyrénées and Aquitaine regions. The same technologies, skills and products can be used to address the environmental aspects of agriculture and support environment-friendly agriculture. The satellite images necessary for such applications are optical multi-spectral data from which bio-physical parameters of the vegetation can be retrieved, and which need to be collected at strategic periods of crop growth and at times relevant for monitoring the impact of risky practices (such as wrong use of fertilizer).

### Regional Objectives for Application of GMES

The specific downstream Agri-environment services that the Midi-Pyrénées and the Aquitaine regions would like to highlight encompass: precision agriculture (crops and vineyards), water consumption management, diffuse pollution assessment and dynamical monitoring of land cover and land use.

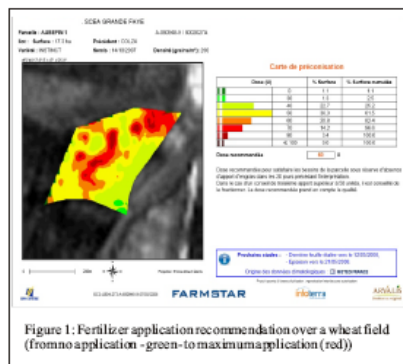


Figure 1: Fertilizer application recommendation over a wheat field (from no application - green - to maximum application (red))

The scope of the GMES Land Monitoring Service, as planned from 2011 onwards, should encompass a Global Component, a European Component and Local Component. The European component includes five high resolution layers that can serve the agri-environment applications, even if they will probably need to be complemented by additional data acquisition at relevant periods of the year. This is because the pan European coverage will not be updated frequently enough to allow for a timely monitoring of vegetation across the year.

### Results or Performance using GMES in this regional application

Precision Agriculture is about "doing the right thing, in the right place and at the right time". It strongly relates to sustainable practices. The ability of remote sensing to provide with both spatially and spectrally accurate data makes it a key tool for Precision Agriculture. It can be applied to field crops management and also inspires more novel applications in the area of viticulture. The services associated to Precision Agriculture are multiple: crop or vineyard plot identification and delineation, crops/vine species detection, crops/vine vigour mapping, fertilizer requirement estimation for precision fertilizer application, early detection of crop disease, weed or insect pest (early detection allows to take immediate and well quantified measures to be taken).

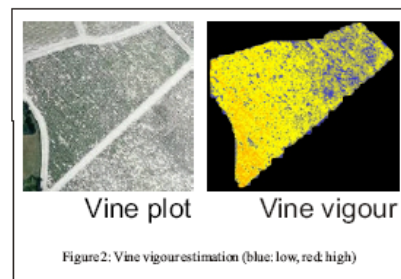


Figure 2: Vine vigour estimation (blue: low, red: high)

## Support for Management of Natural Disasters

Manfred Schroeder, bavAIRia e. V  
Gunter Schreier, DLR-DFD

### Abstract

Bavaria does not have much to fear from volcanic eruptions, earthquakes and tsunamis. However in central Europe forest fires and vast masses of snow and water can cause extensive damage and loss of life. Geostationary weather satellites are already giving us in advance warning of extreme weather situations. But precise analysis of the extent of a natural disaster is based on data from earth orbiting satellites which can provide images at much higher spatial resolution.

### Regional Objectives for Application of GMES

In Bavaria more than 30 GMES stakeholders from industry, research institutes and regional administration meet regularly in a GMES working group with the aim to exchange experience and to join competencies. These activities are coordinated by the Bavarian GMES office at bavAIRia e. V. Many of the involved companies have been participating for many years in GMES projects of the ESA and the EU with the aim to generate geo-information products. The experience gained in these projects is used on a regional level, e.g. for land use mapping and for mapping of floods and other natural disasters. Also support of forest fire monitoring for other European areas is regarded as a regional application and as a good example for cooperation between regions across borders.

Besides regional applications GMES products from satellite images are presently mainly used for international cooperation and to support supranational organizations. This involvement of Bavarian earth observation companies in international projects makes an essential contribution to their economic benefit and is sustaining a high added value capability in the region.

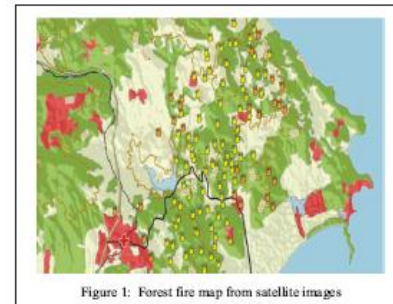


Figure 1: Forest fire map from satellite images

### Results or Performance using GMES in regional applications

Provision of "Rapid Mapping" products from satellite images to support the management of natural disasters is a good example of cooperation on a regional and international level.

High resolution satellite images can be used to map floods, with radar systems like the German radar satellite TerraSAR-X even through cloud cover. Questions about the extent of wind and fire damage in forests, the destruction of infrastructure after earthquakes, the accessibility of streets, and the location of refugee camps can be answered with the help of satellite images.

Because of its practical use for European support and management in the case of natural disasters (Example Forest Fire in Greece) and as a European contribution for other locations (Example: Flood in Namibia-Angola), rapid mapping during emergencies using satellite imagery is a core GMES service.

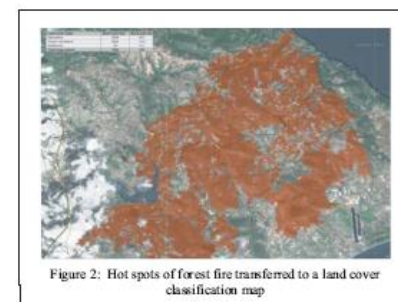


Figure 2: Hot spots of forest fire transferred to a land cover classification map

### Example: Greece-Attica, Northern Part - Forest Fire, August 25, 2009

Several forest fires occurred since August 21, 2009, in the prefecture Attica, north-eastern of Athens. Many residents had to be evacuated from their homes. The map (Fig. 1) shows the burnt areas (reddish colour) derived by the analysis of SPOT-5 satellite data acquired on August 25, 2009 and the location of active fire spots on different days (yellow, orange and red spots). Only cloudless areas could have been considered for calculating the

# Co Vám členství přinese

- Sdílení informací a zkušeností mezi regiony
- Možnosti pro další spolupráci (rámec)
  - Účast v programech EU (partnerství, vývoj služeb a produktů, které nelze financovat z vlastních rozpočtů).
- Silnější slovo v Evropě
  - prosazování vlastních požadavků (přístup k datům, službám...)
- a mnoho dalšího...



Zdroj obrázku: NEREUS; <http://nereus-regions.eu/>

# Kdo může být členem NEREUS

- Region, instituce, organizace, univerzita, firma, asociace...
- Plné členství
  - Regiony, územní jednotky: 10 000,- EUR / rok
  - Plné hlasovací právo, možnost podílet se na aktivitách NEREUS atp.
- Přidružené členství
  - Společnosti nad 250 zaměstnanců: 5 000,- EUR / rok
  - SMEs pod 250 zaměstnanců: 1 000,- EUR / rok
  - Místní úřady, univerzity, vědecká pracoviště atp: 500,- EUR / rok
  - možnost podílet se na aktivitách NEREUS atp.



# Kontaktní bod

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# Děkuji za pozornost!

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