

**NEREUS – Session: “Role of EU-flagships (EGNOS/Galileo  
and Copernicus, formerly GMES)  
to respond to societal challenges of Horizon2020-program”**



**GMES**

**Global Monitoring for Environment and Security**

**Potentials of GMES/Copernicus for the  
Societal Challenges of Horizon2020**

**6 March 2013, Bruxelles**

**Josef Aschbacher, Head of GMES Space Office**



## Global Monitoring for Environment and Security

- being renamed to  
**Copernicus**

European **independence** &  
contribution to **global  
observing system**

Global, timely and easily  
accessible information

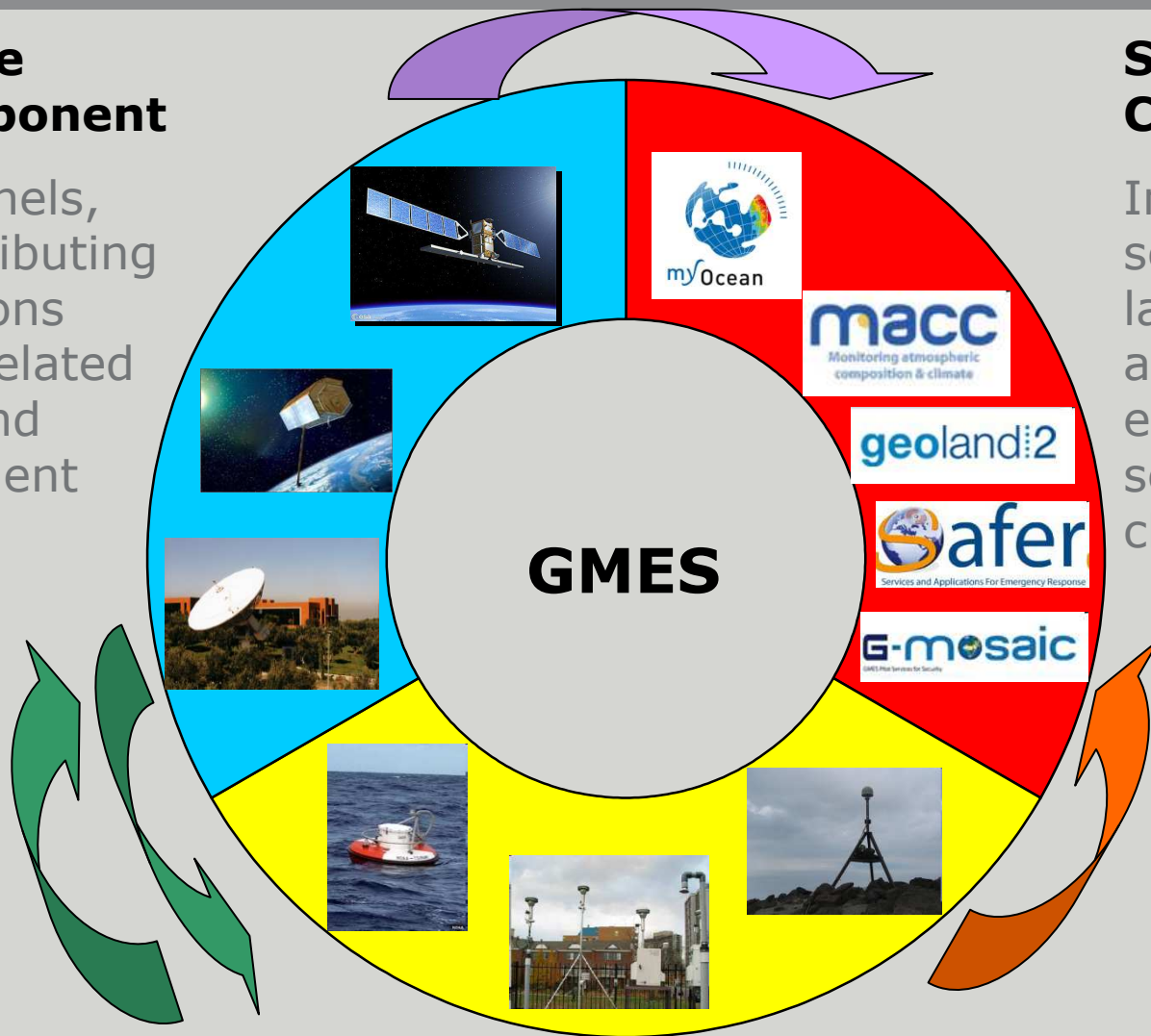
Land, Marine, Atmosphere,  
Emergency response,  
Security and Climate Change

# GMES Components



## Space Component

Sentinels,  
Contributing  
Missions  
and related  
Ground  
Segment



## Services Component

Information  
services for  
land, marine,  
atmosphere,  
emergency,  
security and  
climate change

**In-situ Component** Land, air and water monitoring sensors



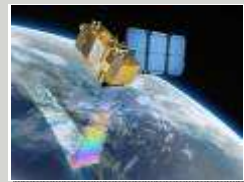
# GMES Space Component - Sentinel & Jason missions



## Sentinel-1 (A/B) – SAR imaging

All weather, day/night applications, interferometry

2013 /2015



## Sentinel-2 (A/B) – Multi-spectral imaging

Land applications: urban, forest, agriculture,...  
Continuity of Landsat, SPOT

2014 /2016



## Sentinel-3 (A/B) – Ocean and global land monitoring

Wide-swath ocean color, vegetation, sea/land  
surface temperature, altimetry

2014/2017



## Sentinel-4 (A/B) – Geostationary atmospheric

Atmospheric composition monitoring, trans-  
boundary pollution

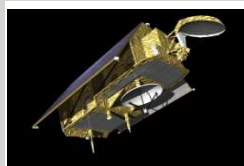
2019/2027



## Sentinel-5 precursor/ Sentinel-5 (A/B) – Low-orbit atmospheric

Atmospheric composition monitoring

2015/2020/2027



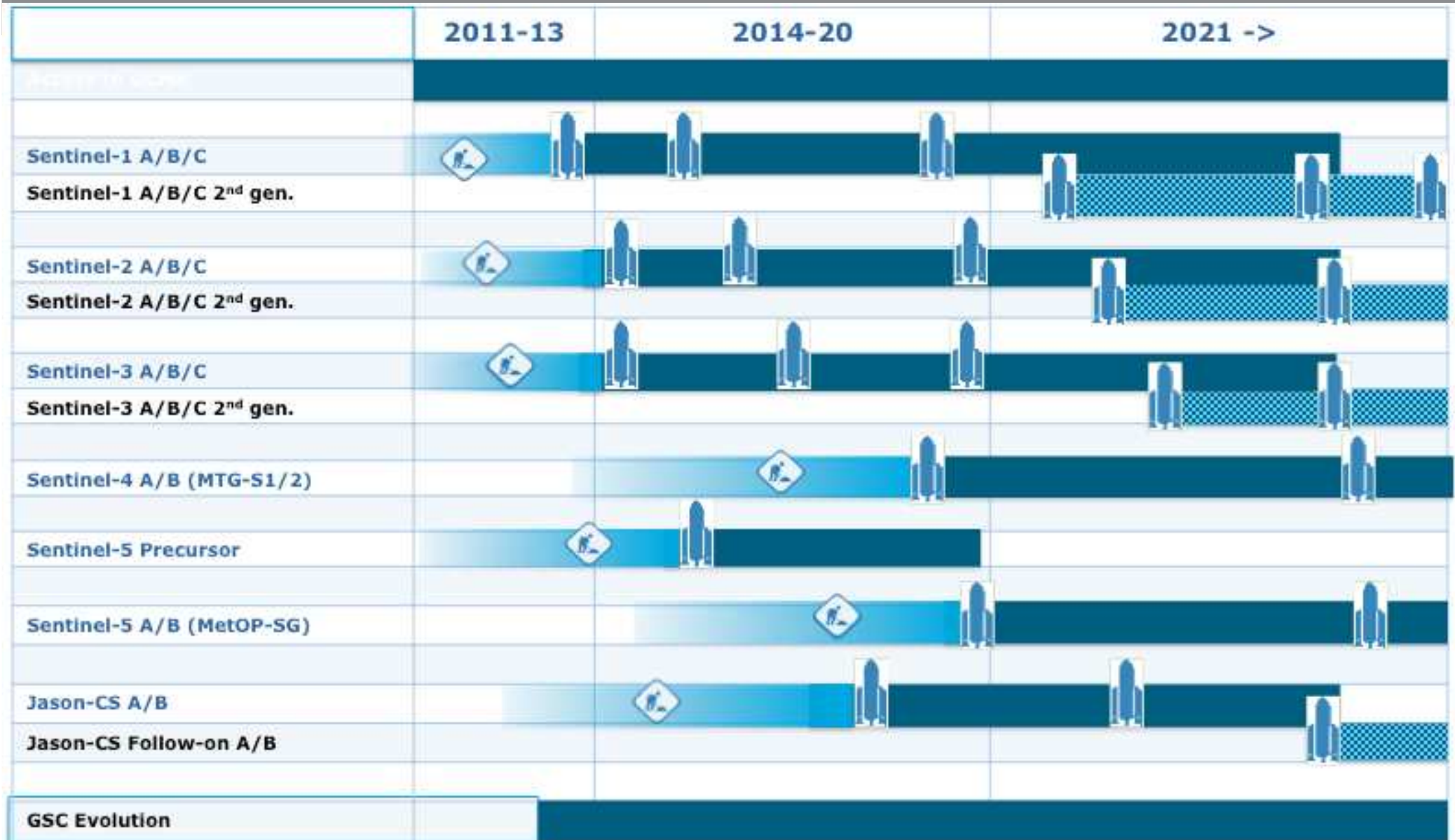
## Jason-CS (A/B) – Low inclination Altimetry

Sea-level, wave height and marine wind speed

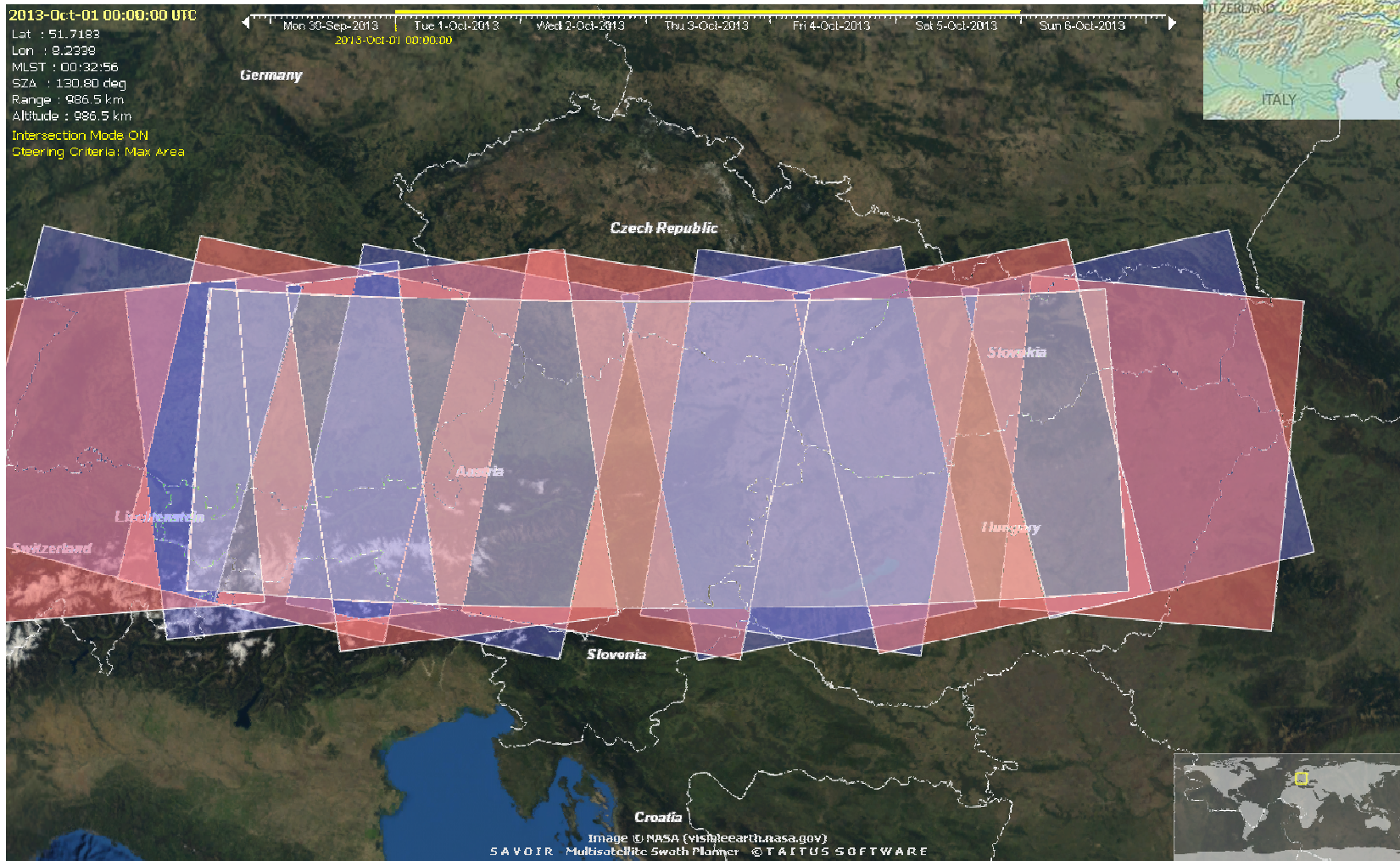
2018/2023



# Users need long-term observations



# Users need frequent observations Envisat / Sentinel-1 coverage in 5 days



Until 2012:  
ENVISAT

2013+:  
Sentinel 1A

2015+:  
Sentinel 1A+B



# Users need frequent observations & anywhere Landsat / Sentinel-2 coverage (in 10 days, Cameroon)



Landsat

Landsat &  
Sentinel 2A

Landsat &  
Sentinel 2A &  
Sentinel 2B

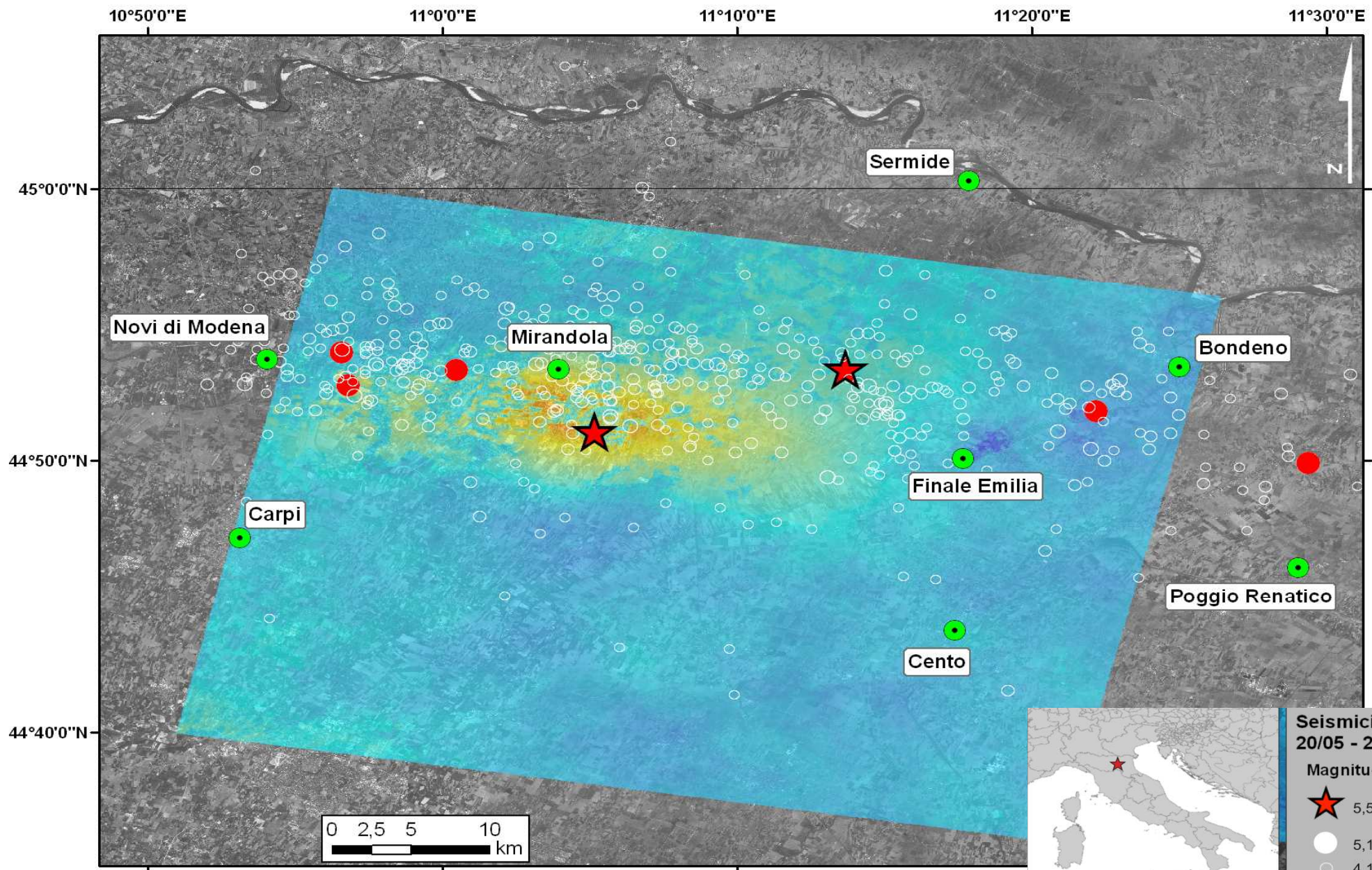


# THE GROWING USE OF GMES ACROSS EUROPE'S REGIONS

67 use cases  
47 regions  
17 countries





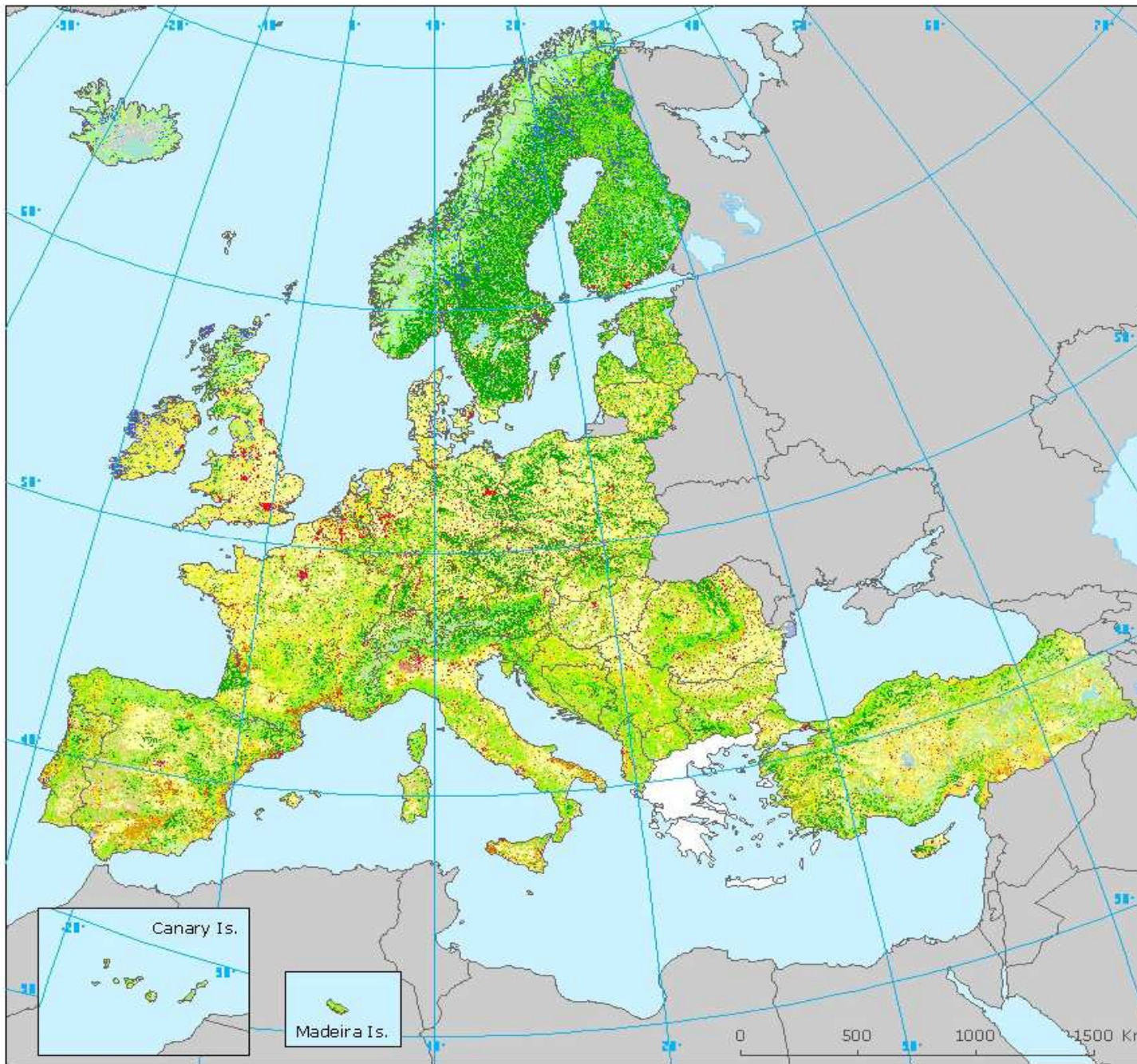


**Seismicity  
20/05 - 20/06**




**Magnitude**

- ★ 5,5 - 5,9
- 5,1 - 5,4
- 4,1 - 5,0
- 2,5 - 4,0

edits: INGV. Satellite data: CosmoSkyMed]



**CLC2006 map of Europe**

-  CLC2006
-  Missing data
-  Other countries

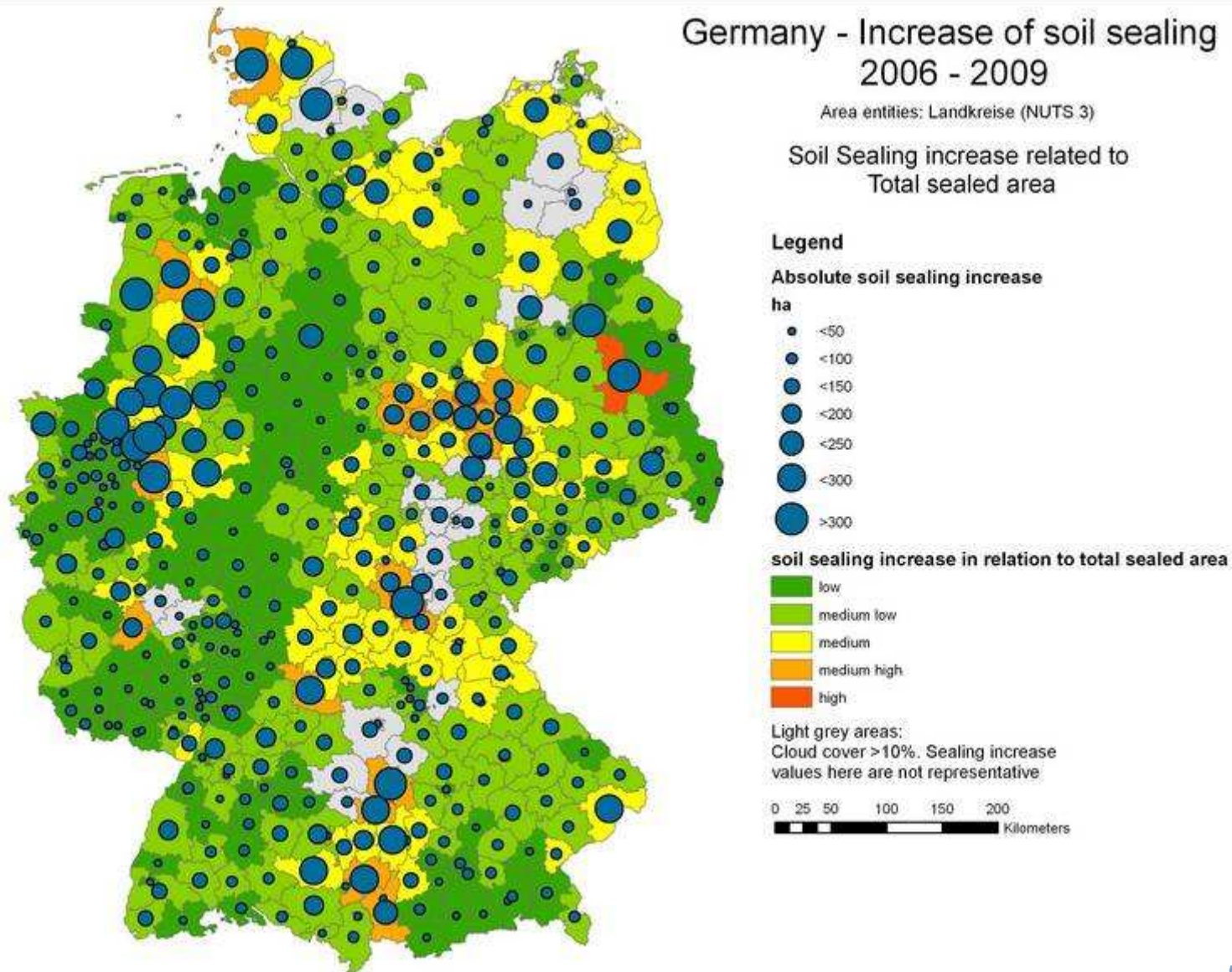


European Topic Centre  
Spatial Information and Analysis

Prepared by ETC SIA partner FÖMI

[Source: EEA]

# Example of Land cover and land use monitoring: Soil sealing increase



**SOIL SEALING** is the loss of soil resources due to the covering of land for housing, roads or other construction work.

Credits: Geoland2/GMES



## **FREE and OPEN**

**Joint EU/ESA Sentinel Data Policy Principles (adopted by ESA MSs in 2009) based on:**

- **Open access to Sentinel data by anybody and for any use**
- **Free of charge data licenses**
- **Restrictions possible, but expected to be limited**

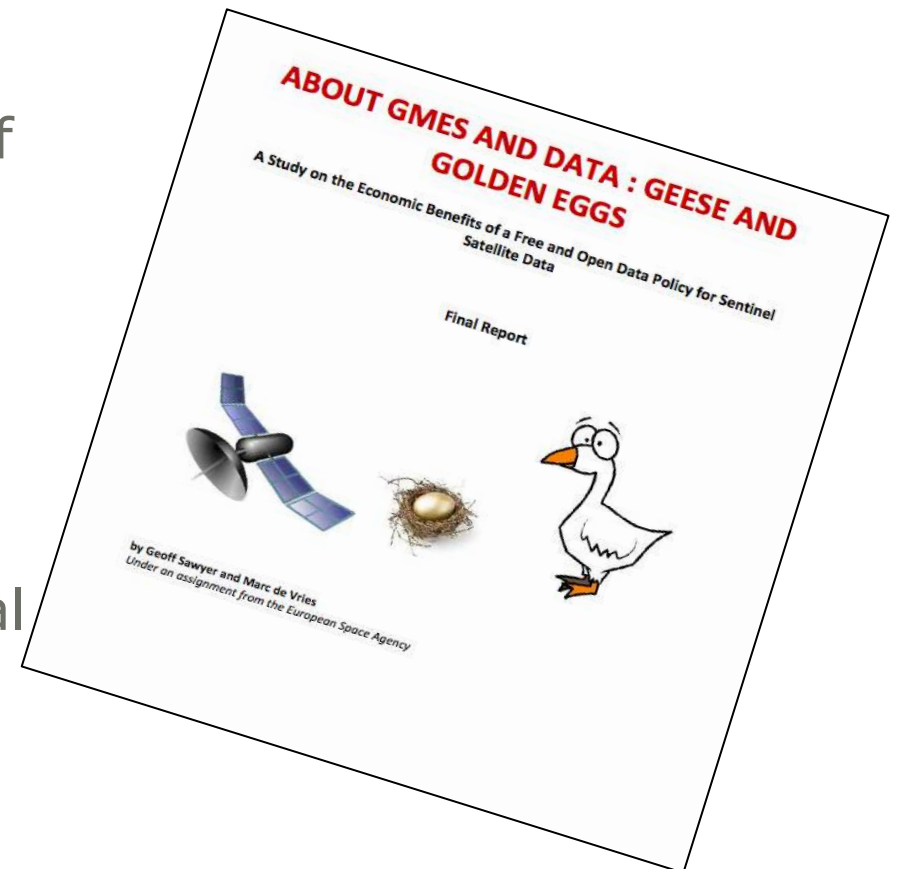
**An EU Regulation is currently finalized, which defines the overall GMES data and information policy.**



# GMES socio-economic studies indicate that ...



- ✓ For every €1 spent by the European tax payer on GMES, a public return of up to €10 can be expected (ESPI N. 39, 2011)
- ✓ Until 2030, GMES overall impact on employment is estimated at ~83000 jobs in Europe (SpaceTec, 2012)
- ✓ The estimated GMES-enabled downstream services market potential is €2.6 billion (Ecorys, 2008)



**GMES open and free data policy is expected to promote innovation and economic growth**



