



Global Monitoring for Environment and Security (GMES) State-of-play



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GMES in a nutshell

- **Earth observation is a powerful advanced technology which through space and ground based capacities can monitor the Earth's environment and security threats and provide timely and reliable information**
- **GMES is an EU-led initiative for an autonomous and operational European Earth observation capacity**
- **GMES aims at providing relevant information to policy-makers and other users, particularly in relation to environment and security**
- **A flagship of the European Space Policy**
- **Builds on existing capacities**

Recent milestones

- 2006** **A phased implementation approach for GMES**
3rd Council orientations; Graz Dialogue
- 2007** **GMES Architecture**
ESP Council Resolution; Munich Roadmap; Lisbon Process
- 2008** **GMES Governance**
Kourou orientations; ESP Council Resolution; Communication;
Competitiveness Council Conclusions
GMES Space Component
EC/ESA Agreement; ESA CMIN'08

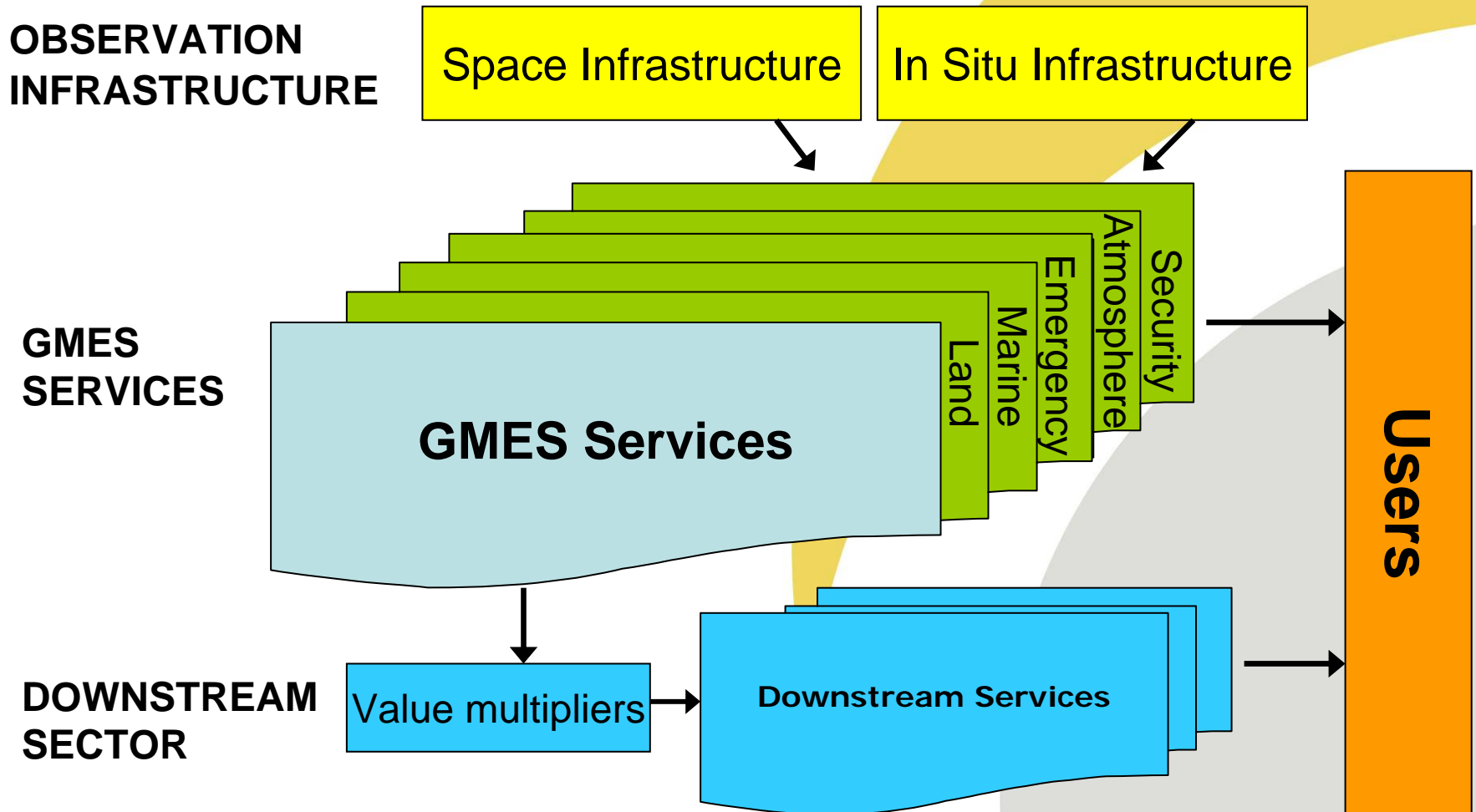
Consultation

- **GMES Advisory Council (GAC)**
- **Service implementation groups (scientific and technical advice)**
- **In-situ working group**
- **High-level GMES Space Component Coordination Group**
- **Industry workshops**

Main messages of the 2008 GMES Communication and Council Conclusions

- **An architecture that puts users at the forefront**
- **Public investment with impact on growth and jobs**
- **A European initiative open to international cooperation**
- **Financing approach**
 - **Cost assessment**
 - **EU Programme with modular approach**
- **Governance approach**
 - **Partnership Coordination**
 - **Defining the scope of the EU added value: towards an EU programme**
 - **Technical implementation entrusted to existing European entities (ESA, EU agencies, EUMETSAT)**
 - **Interim governance arrangements**

GMES Architecture (1/2)



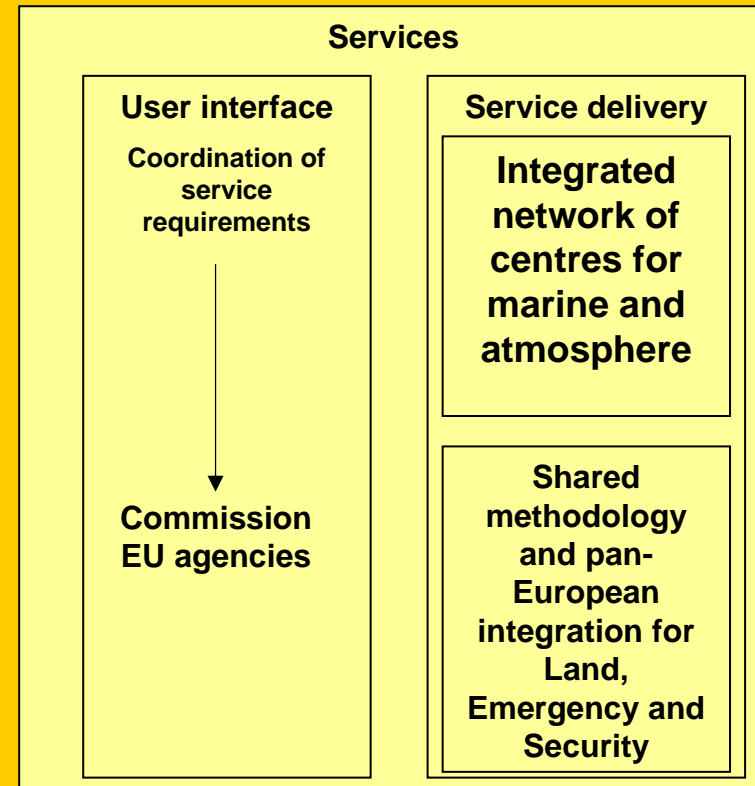
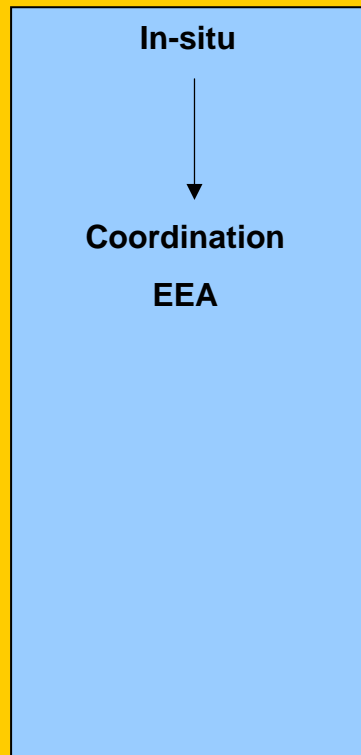
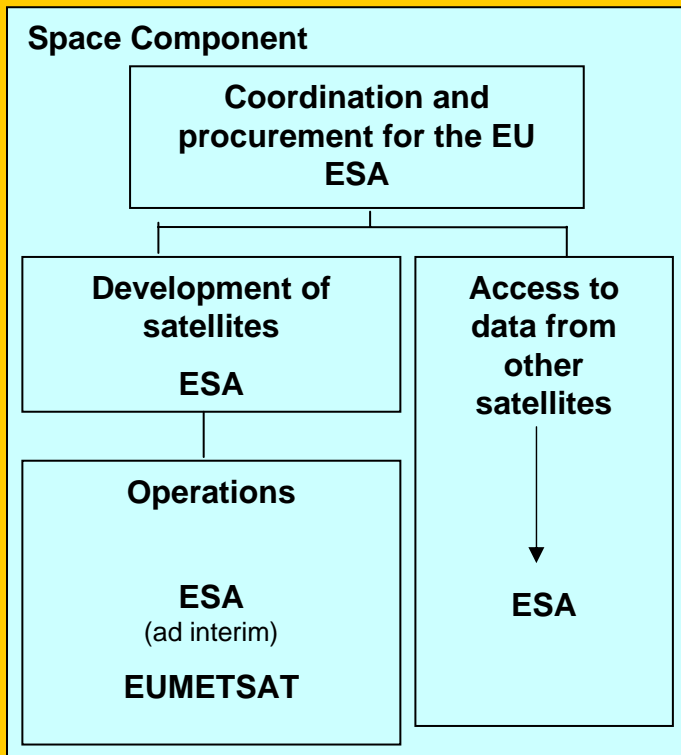
GMES Architecture (2/2)

- GMES consists of 3 components
- **Space Component** relies on:
 - Existing or planned European space infrastructure
 - Development of space infrastructure co-financed by the EU and ESA (Sentinels)
- **In-Situ Component** relies on:
 - facilities, instruments and services at national, regional and intergovernmental levels inside and outside the EU
- **Service component**
 - Forecasting and mapping services: marine, atmosphere, land, emergency
 - Priorities to develop: contribution of GMES to security and climate change monitoring

Political Coordination

European Commission
+
Partners Board, Programme Committee
Security Board and User Forum

Technical Implementation



Governance (2/2)

- **The partnership concept:**
 - a large number of players will contribute to the implementation of GMES
 - EU contribution through a dedicated EU programme
- **Political coordination**
 - European Commission assisted by a **Partners Board**, **Programme Committee**, **Security Board** and a **User Forum**
- **Technical implementation**
 - Space Component coordination, development and procurement for and on behalf of the EU: ESA
 - Sentinel Operations: ESA (ad interim) and EUMETSAT
 - In-situ and Service Components: EEA and other EU agencies

Public investment for growth

- **GMES is implemented through public investment**
- **GMES has a positive impact on economy, growth, jobs and innovation**
- **Free and open data policy: key success factor**
 - **Facilitating also Security of Information**

International cooperation

- Imperative to fulfil the European need for information at global level and to develop a cost efficient system
- GMES partners should ensure a coordinated approach for an international cooperation strategy building on existing cooperation schemes
- Group on Earth Observations (GEO) process
 - ensure access to observation data not controlled by Europe
 - define the European contribution to this international endeavour

Financing

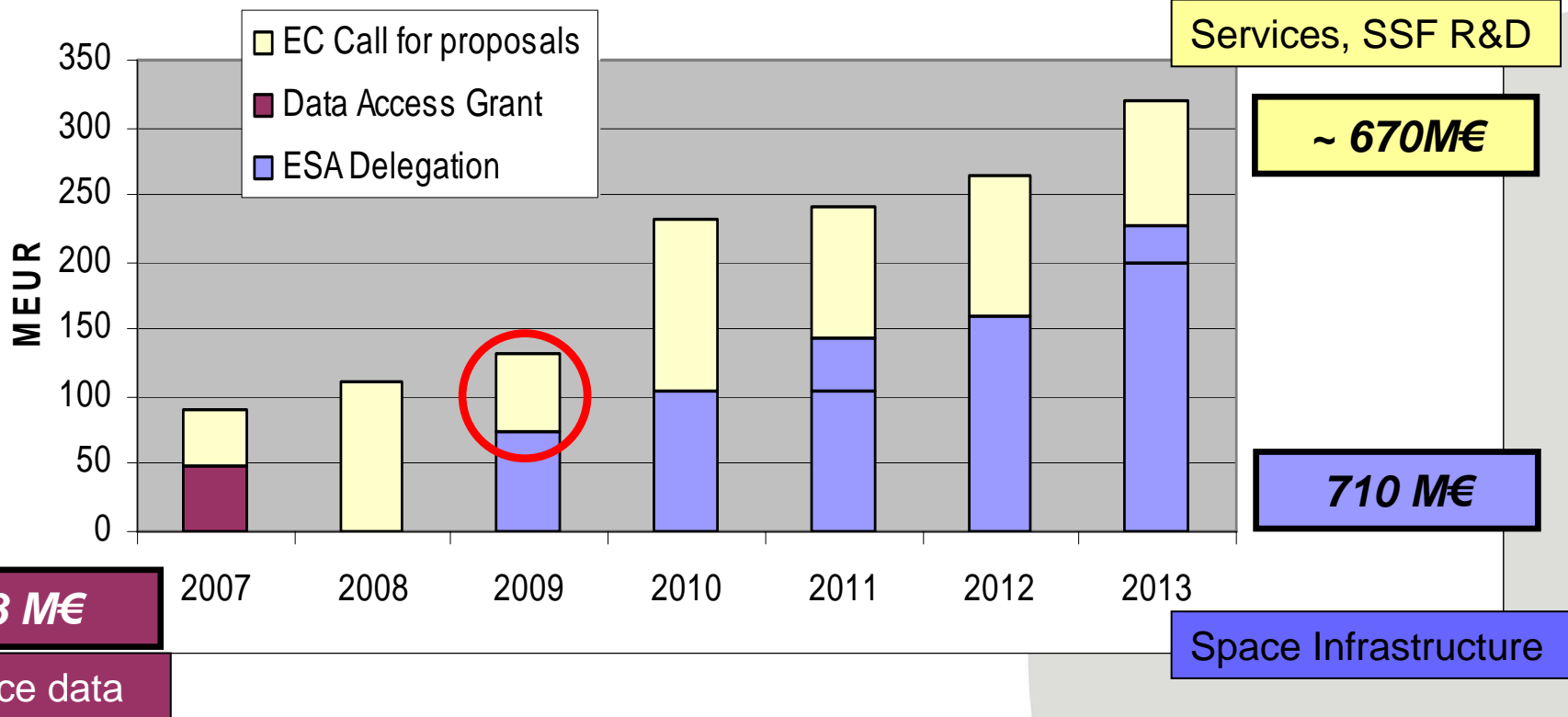
- Public financing for GMES with a modular approach
- Three stages:
 - demonstration stage (R&D funding)
 - pre-operational stage (mixed R&D and operational funding)
 - operational stage (operational funding)

FP7 Space: % distribution at a glance

- Space-based applications at the service of European society (GMES) (85% of budget, i.e. 1.2 billion)
 - About **30%** for services development: EC
 - About **10%** for data procurement (space-based and in-situ): ESA + EEA
 - About **45%** foreseen for developing space infrastructure: ESA
- Strengthening Space Foundations (**15%** of budget, i.e. 0.2 billion)

When and how will FP7 Space funding be made available?

2007-2013 Draft split EC Calls and ESA Delegation Agreement



GMES Preparatory Actions

- GMES preparatory actions
 - prepare the ground for an EU programme
 - complementary to FP7 budget
 - focus on services and user interface
- 2008 preparatory action
 - supports development of user interface in the field of emergency response
 - budget 3M€ over 3 years
 - Kick-off: 27-Jan-09
- 2009 preparatory action approved
 - Focus on GMES services
 - similar budget
 - probable publication in first semester 2009

Policy and Institutional Issues: Next steps

- The Commission will make a legislative proposal for the initial operations of GMES and for an EU Earth observation programme
- The GMES financing needs will be subject to an analysis led by the EU
- The Commission will propose interim governance arrangements
- Additional work
 - data policy
 - international cooperation
 - competitiveness and innovation

Three Service areas based on Earth systems:

- **Land Monitoring:** initially European land cover & urban spots
- **Marine Monitoring:** sea state & ecosystem characteristics over global ocean & European regional seas
- **Atmospheric Monitoring:** atmospheric composition for air quality (European) and climate forcing (global), ozone monitoring (global) and solar energies

Further, horizontal components:

- **Emergency Response**
- **Security**
- **Climate Change**



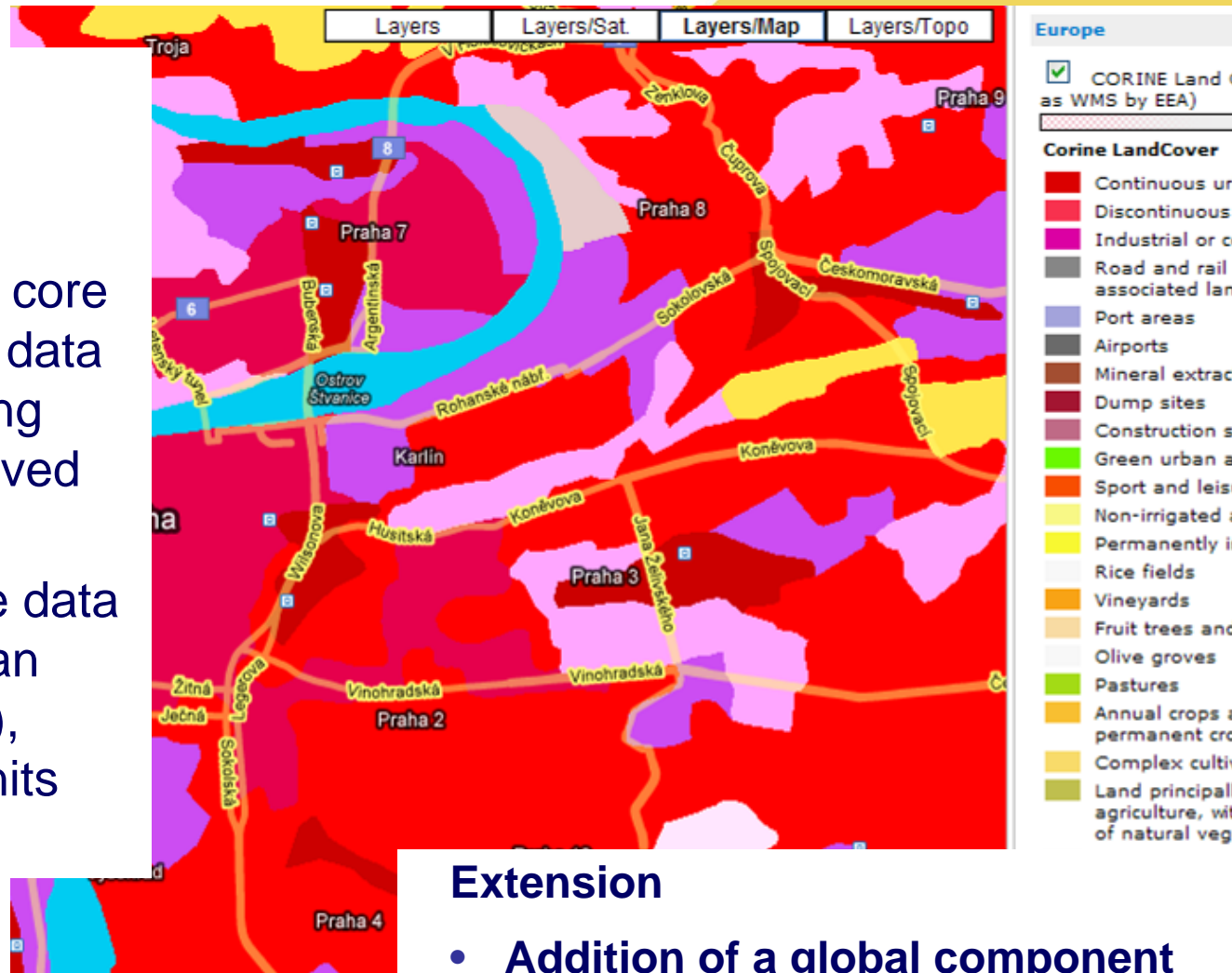
Emergency Response

- Initial scope of service: rapid mapping



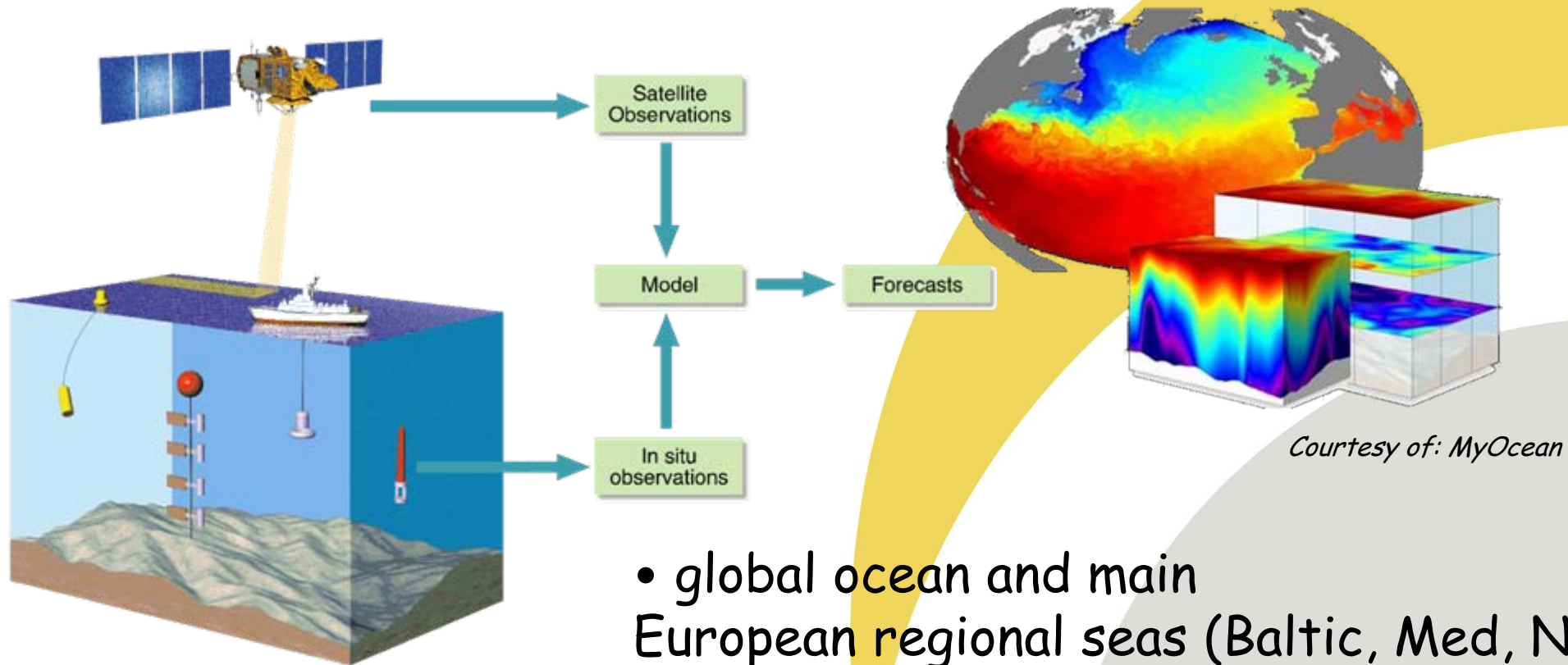
- Full service addresses entire emergency cycle

- Starting with...
- Main information over Europe
 - 3-5 yearly updates of core land cover / land use data with minimum mapping units of 1-5 ha, improved on Corine basis
 - Land cover / land use data of 500 functional urban areas ($\geq 100,000$ inh.), minimum mapping units 0.1 ha



Extension

- Addition of a global component
- Thematic services: agriculture, forest, soils, water resources



Courtesy of: MyOcean

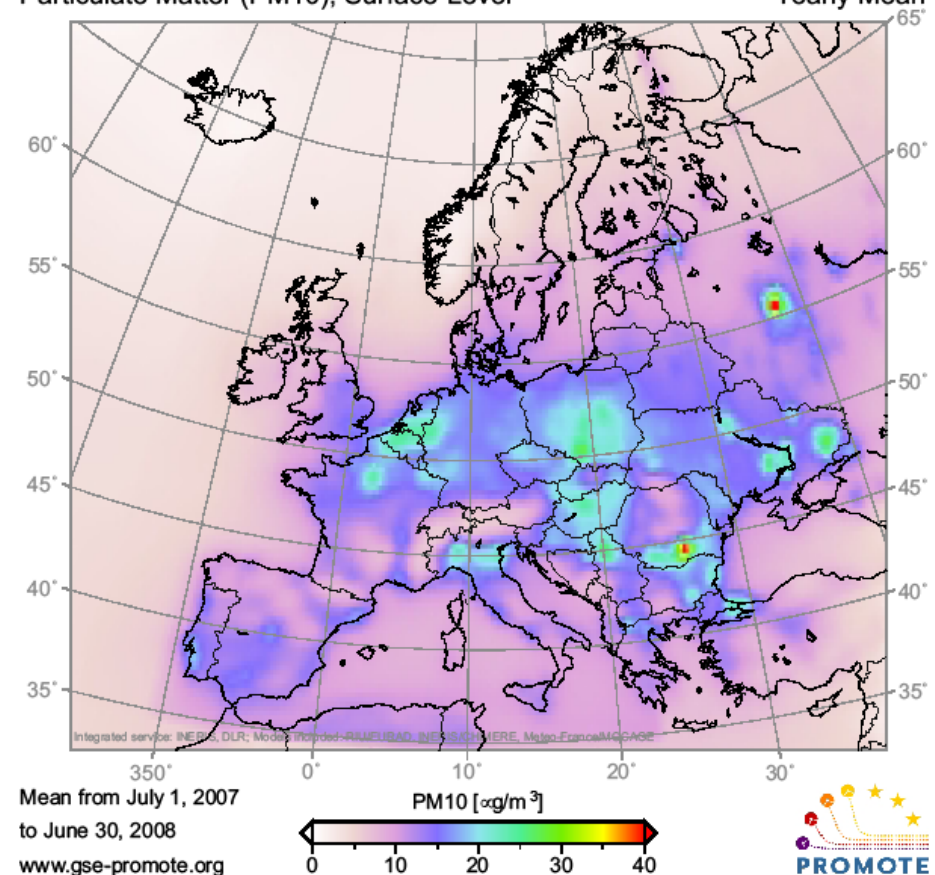
- global ocean and main European regional seas (Baltic, Med, N Atlantic, Black Sea)
- physical ocean state ("**ocean weather**" and primary ecosystem)
- allow hindcasting, nowcasting, forecasting
- reanalysis for marine ECVs
- evolution towards coastal domain & marine resources

Main information globally & more detailed in Europe

- Air quality
- Climate forcing
- Stratospheric Ozone & UV
- Renewable energy support

Integrated Air Quality Ensemble
Particulate Matter (PM10), Surface Level

July 2007 to June 2008
Yearly Mean



Climate Change and GMES

- Address the topic horizontally in the Earth System components of GMES Services (Land, Marine, Atmosphere)
- **Scope**
 - Generation of long time series of consistent observation datasets and reanalyses of past observational data → provide added value on essential climate variables (ECVs) identified by GCOS and drive the development of climate change (earth system) modelling to be performed by existing capacities outside of GMES
 - Generate impact indicator statistics past and predicted to help interface geo-information into socio-economic models

Thank you for your attention

For further information:

- EU Policy and Institutional Issues:
<http://ec.europa.eu/gmes>
- EU Space Research:
http://ec.europa.eu/enterprise/space_research/index_en.htm
- ESA GMES Space Component Programme:
<http://www.esa.int/esaLP/LPgmes.html>