



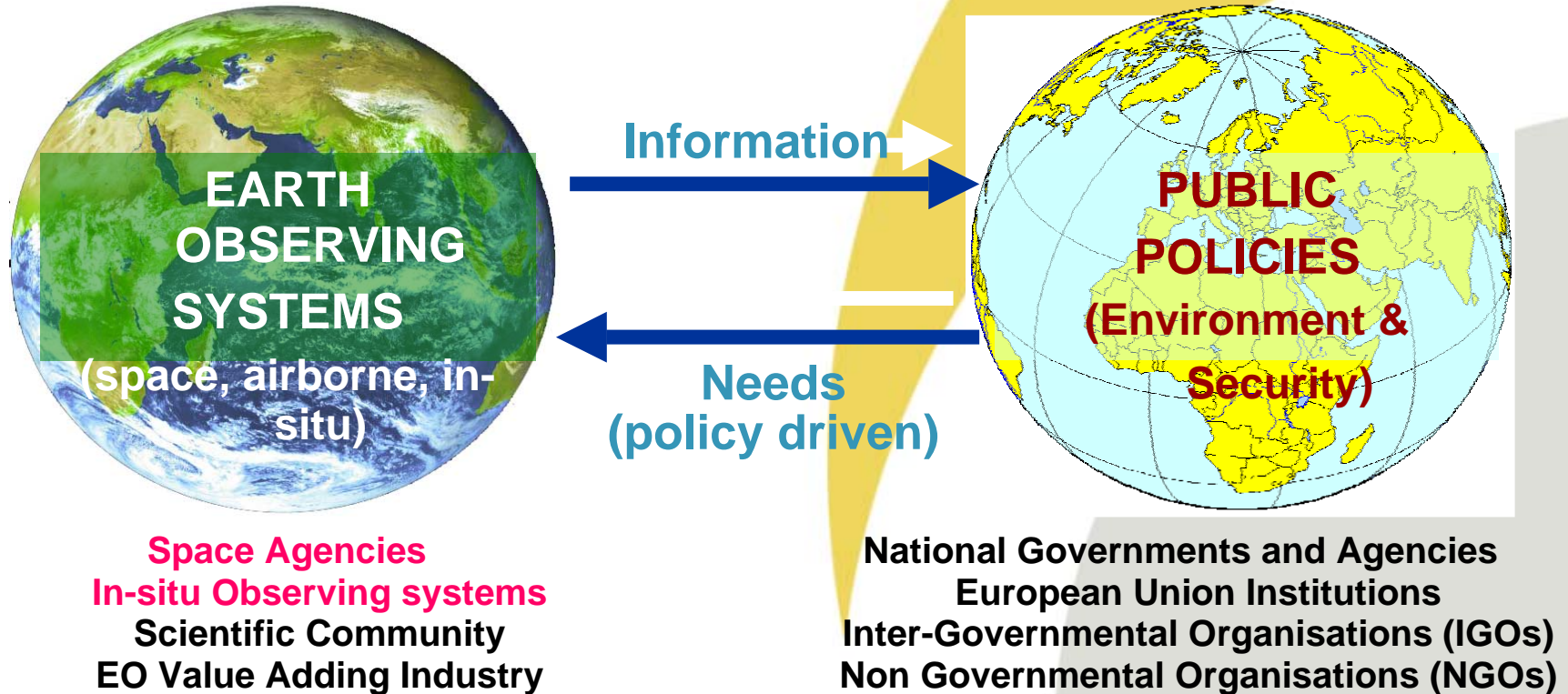
Towards a GMES contribution to climate

Arno Kaschl
European Commission
GMES Bureau



GMES - What is the objective?

..to provide information services to policy-makers and other users
Autonomous capacity → **strategic for EU**



Other users: **European citizens; Downstream industry, especially SMEs**

Current international context

- **Mitigation**: Copenhagen Process:
 - New international framework after 2012?
- **Adaptation** policies: we will need to adapt!
The more mitigation, the less adaptation needed
- 3rd **World Climate Conference** (WCC), September 2009:
Likely move towards developing operational services:
“Network of Climate Information” to support continuous production of regional/national scale climate services.

Three Service areas based on Earth systems:

- **Land Monitoring:** Portfolio of different services of varying resolution and scale; e.g. CORINE landcover, “urban atlas”, thematic layers: forests, soil sealing; “Global Land” elements
- **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**



Status quo on climate in GMES

- FP7 Projects for Marine (“myOcean”, Land “Geoland 2”, Atmosphere “MACC”)
portfolios (lists of products delivered) available at ec.europa.eu/enterprise/space_research/proposals.htm
- Implementation Groups
- Stakeholder Dialogue

Atmosphere Service pilot project MACC (2009-2011):
Focuses on Air Quality, **Climate Forcing**, Stratospheric
Ozone

Climate relevant:

- Monitors NRT atmospheric composition essential climate variables (ECVs): CO₂, CH₄, aerosols [gridded fields]
- Sources & sinks, carbon fluxes, key aspects of climate forcing, e.g. aerosols, fire emissions
- Limited reanalysis Greenhouse Gases, Reactive Gases, Aerosols (2003-2010)
- Some ECVs not in MACC (e.g. CFCs)

My Ocean

- Focuses on monitoring of many marine essential climate variables (ECVs):
daily -> monthly fields, seasonal forecasting
[sea level, ocean color, SST, sea ice, wind, waves, sea state, current, salinity, T..
Biochemical: Chl-a, nutrients, O2]
- Limited reanalysis from 1993 – present
(global ocean; regional seas (Arctic, Black..))

GEOLAND 2

- Observing/Monitoring of some terrestrial essential climate variables [limited area]:
land cover, vegetation/leaf area index, surface albedo, water bodies, soil moisture,..
- Global Land discussions: ambition to address all terrestrial ECVs...

Implementation Groups

- The service implementation groups (incl. on Global Land) have called for a **general inclusion of climate records** for essential climate variables (ECVs) in the services.
- Several ECVs necessary for climate science and better predictions are currently included in the scope of the FP7 service precursor projects (mostly atmosphere and marine service).
- IGs also call for **elaborated products** for policymakers (forecasting, predictive, analysis capacities) e.g. long-time trends as established by reanalysis, statistics on impact changes, indicators

Many users for climate services

- **EU level** policy making:
Climate Mitigation, Climate Adaptation, Environmental thematic areas, Civil Protection, Renewable Energies, Sustainable Development, Agricultural/Regional, Research, Maritime, Health, Infrastructure..
- At **national/regional level**:
Policy making, Planning/Implementing adaptation measures,..
→ many different clients: authorities/agenices, companies, insurances, citizens,..
- **Climate research**

Many Users/High diversity of information needs <->

A lot of information is already available at all levels:

- Space agencies: ESA, EUMETSAT
- National level: Meteorological institutes, Research institutions, Environmental agencies,..
- Internationally
- Where does GMES add value?

What is needed?

Mitigation policies (Kyoto, post-Kyoto)

- Monitoring of GHGs
- IPCC scenarios based on projections: improvements would be welcome, especially for long-term projections
- Improve uncertainty in climate science, observations systems, ECVs, modelling, scenarios...

Joint EEA/WHO/JRC report:

“Impacts of Europe's changing climate — 2008

indicator-based assessment”:

- climate policies need **better and available information on past and current climate data** → reliable scenarios into the future (down to regional scale)
- adequate information basis
 - focused and cost-efficient adaptation measures.
 - reduce uncertainty on**
 - ..long-time climate impacts**
 - ..identify key vulnerabilities,**
 - .. Likelihood of extreme events and climate-related disasters**

What is needed?

Joint EEA/WHO/JRC report:

Need for a "**sustained integrated monitoring and observation system** for Europe [..], integrating the main climate system elements, including atmospheric, oceanic, terrestrial, cryospheric and biological observations [..] to produce sufficiently long and accurate time series of all key system elements from in situ and satellite sources."

What is needed?

Commission White Paper on Adaptation:

- 1) **Strengthen the knowledge/evidence base**
- 2) Mainstream climate adaptation into key policy areas
- 3) Work in Partnership with Member States
- 4) Advance work internationally on Adaptation

Needs for adaptation: impacts, trends, extreme events, **impact indicators**

EC approach on how to assure the right knowledge basis for climate policies, relying on

- the **SEIS** activities including the planned **Clearing house for CC** adaptation for planning the response to changes;
- the **FP for research** for understanding of the climate system;
- **GMES** for information on long-term trends; bridging the gaps between science & policy (→ indicators)

EU political frame

- **Communication 2008 « GMES – we care for a safer planet »**
EC will propose approach on Climate Change contribution based on the services Land, Marine and Atmosphere
 - **Competitiveness Council 12/08:** welcomes Communication, urgency to have programme → to define climate contribution by end-2009
 - **European Parliament:** on space policy, but also explicitly GMES, wants to see action plan on framework, governance, funding, implementation etc..
→ reminds EC to submit recommendations on space & CC
 - EC has stated in its APS 2010 that "**the Global Monitoring for Environment and Security (GMES) operational services will be further developed to monitor the effects of climate change.**"
- ⇒ **Political momentum to move forward!**

Current developments

Starting point for climate services: Existing GMES service projects

Earth-system based GMES services (Land, Marine, and Atmosphere) will prioritise the needs of climate change monitoring (ECVs)

- Current CS extension call
- ESA initiative on ECVs and other existing capacities

→ User discussion to define the GMES CC contribution

Stakeholder dialogue

Dialogue with relevant stakeholders to define the GMES climate contribution.

Milestones

- (i) EEA workshop on reanalysis, 11-12 February
- (ii) JRC workshop, 30-31 March: existing capacities and efforts in Europe with regard to ECVs, possible gaps, role of GMES in this context.
- (iii) JRC 33rd International Symposium on Remote Sensing of Environment on 4-8 May, will host a GMES Global Land workshop with one strong focus being climate change.
- (iv) EEA conference "A global setting for European environmental monitoring - measuring what we must manage"
- Separately, the EEA has offered to contribute to the consultation process by using their EIONET contacts and networking events. A similar dialogue should be established with EUMETNET.
- → "orientation document"

EEA reanalysis workshop – GMES session

- (1) priority to ensure the sustainable provision of **high-quality climatological data sets**, building upon existing in-situ, space based and reanalysis programmes and capabilities.
- (2) need to undertake **analysis in relation to ECVs** with respect to both what is available and what is still needed in Europe → upcoming JRC workshop.
- (3) GMES has the potential to help addressing the **gap between climate research and policy-relevant information**; e.g. by providing information for indicators.
- (4) a further **consultation** of different user groups and organisations in the Member States is necessary for scoping of a GMES climate contribution.

Conclusions

- The (rudimentary) pillars are there: Earth-system services; details to be defined
- Complementarity!
- GMES can make an important contribution:
 - Monitoring of ECVs
 - Supporting Adaption Policies
- Political environment favorable for moving ahead
- Climate call 2009, further funding based on outcome of **stakeholder dialogue**

Thank you for your attention!

