

3rd GEOSS Stakeholder Workshop

Session: Monitoring and Foreseeing the Changes: The Role of Earth Observations (Chairs: Paola Campus, European Science Foundation and Andiswa Mlisa, GEO Secretariat)

Main outcomes of the Session

Monitoring the Changes (Paola Campus)

The Session highlighted that a crucial step towards the development of an effective plan for increasing resilience and supporting sustainable development is based on the adoption of a **comprehensive and interconnected monitoring of all the phenomena and parameters which might help issue early warnings associated to significant environmental changes.**

In this framework all the available Global, Regional and Local networks should be used to achieve the following common targets:

1. Acquisition of high-quality data
2. Transmission of such data to operational centres in near-real time to assure a rapid analysis and identification of a risk increase

In order to develop a robust Earth's monitoring plan it will be necessary to use:

1. Synergetic technologies and networks recording in real-time all the areas at risk on our Planet
2. Simultaneous data transmission to operational centres in near-real time
3. Optimized data analysis to rapidly identify a risk increase
4. Data sharing

The key questions to be addressed when developing a robust and comprehensive Earth's monitoring plan are:

1. Which type of monitoring networks are available?
2. Which type of monitoring networks are missing?
3. What should be done to fill the gaps?
4. Is there any scattering/duplication in data monitoring?
5. How to reach an efficient integration/link of data coming from different networks?
6. How to standardize the level of data quality across the networks?

Can GEOSS address the points above mentioned?

If yes, it would become easier to define the Essential Variables and the Key Indicators for each of the GEO Strategic Targets and to further develop a streamlined communication protocol with Policy Makers.

Monitoring the Polar Regions (Roberto Azzolini)

The Polar observations are very relevant for the purposes of GEO and GEOSS, both for their relevance in monitoring areas of the Planet that have such a decisive influence on global climate and related changes and for the already existing huge technological monitoring capacity.

Understanding and predicting changes in Polar Regions is crucial for managing appropriate mitigation measurements at a global scale.

Polar Regions show us in advance and with a greater clearness the climate changes happening in our Planet. A huge asset of well-equipped scientific infrastructure and technologies to monitor and understanding Polar processes is already available along with a top-level scientific community.

In order to improve the efficiency of the system, a common effort to strengthen cooperation supported by coordination, sharing infrastructure and data is needed.

In close contact with Polar Organizations and Programs and Stakeholders GEOSS may help:

- Prioritize observation targets (EVs)
- Avoid fragmentation/duplication
- Facilitate International Cooperation
- Data Policy and Quality control

A preliminary short list of **priority indicators** is herewith provided:

- Sea and continental ice loss (thickness, volume, ice-age)
- Sea Ice distributions
- Inflow of Atlantic waters in Arctic Basins
- Changes in Permafrost active layer
- Carbon/methane fluxes from land and sea
- Human Population and living resources dynamics
- Modification of regional/local habitat and environmental conditions
- Raise of temperature, humidity and cloudiness
- Frequency and distributions of extreme events

Please, note that the frequency and distributions of extreme events should be introduced as a key indicator of Changes.