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## **GEOSS Workshop XXII Air Quality and Coastal Ecosystems**

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Co-organizers:

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### **Background**

The Global Earth Observation System of Systems (GEOSS) is a complex system of sensors, communication devices, storage systems, computational and other devices used to observe the Earth and to gather the data needed for a better understanding of the Earth's processes. In addition, GEOSS includes models and processes to create information from the observational data. The 2003 Earth Observations Summit established the objective *"to monitor continuously the state of the Earth, to increase understanding of dynamic Earth processes, to enhance prediction of the Earth system, and to further implement our international environmental treaty obligations"*.

The GEOSS Implementation Plan states that GEOSS will provide the overall conceptual and organizational framework for integrated global Earth observations to meet user needs. GEOSS will be a "system of systems" consisting of existing and future Earth observation systems, supplementing but not supplanting their own mandates and governance arrangements. It will provide the institutional mechanisms for ensuring the necessary level of coordination, for strengthening and supplementing existing Earth observation systems, and for reinforcing and supporting component systems in carrying out their mandates.

The emphasis of GEOSS is on societal benefits, initially in nine key areas. Sound management of the Earth system, in both its natural and human aspects, requires information that is timely, of known quality, long-term, and global. Interpretation and use of Earth observations requires information on drivers and consequences of change, including geo-referenced socio-economic data and indicators. The nine areas addressed in the implementation plan are:

Disasters: Reducing loss of life and property from natural and human-induced disasters

Health: Understanding environmental factors affecting human health and well-being

Energy: Improving management of energy resources

Climate: Understanding, assessing, predicting, mitigating, and adapting to climate variability and change

Water: Improving water resource management through better understanding of the water cycle

Weather: Improving weather information, forecasting and warning

Ecosystems: Improving the management and protection of terrestrial, coastal and marine resources

Agriculture: Supporting sustainable agriculture and combating desertification

Biodiversity: Understanding, monitoring and conserving biodiversity

Although all of the above societal benefit areas of the Implementation Plan are important for GEOSS, this workshop will focus more specifically on air quality and coastal ecosystems.

### **Air Quality and Coastal Ecosystems**

The rapid pace of global development is increasing the stresses on air quality. The effects of air quality on the natural environment and human health in particular are complex but important to understand. Improved monitoring of air quality can provide valuable contextual data for clinical medical studies and climate change analysis. In the case of catastrophic events such as volcano eruptions, wildfires, and industrial accidents, timely monitoring and publishing of changes in air quality can be crucial for guiding evacuation plans and saving lives. As this workshop is taking place in Boston, we will emphasize the use of coastal monitoring systems and data. Key representatives from industry, academia, and government will be providing invited talks on these and related issues that impact GEOSS implementation for disaster mitigation and relief.

### **Workshop Objective**

The goals of this workshop are to share with the IGARSS community the progress in developing GEOSS, and to engage broader interest and participation in developing the information infrastructure needed for implementing the GEOSS vision. This specific workshop will present current work on development of the GEOSS web portal and clearing house, and air quality monitoring. Breakout sessions will be held to engage workshop participants in answering key questions facing the community, such as: (1) What remote sensing systems are needed to ensure that air quality regulations are adhered to; (2) What are potential gaps in air quality monitoring coverage along coastal regions; (3) How do we connect coastal air and water quality monitoring efforts with GEOSS; (4) How can GEOSS data be used internationally to identify and diagnose air quality problems; (5) How can successful coastal monitoring efforts for GEOSS be extended globally?

**Come join us to consider and address these issues!**