Group on Earth Observations

GEOSS: A Global, Coordinated, Comprehensive and Sustained System of Observing Systems

Group on Earth Observations

GEOSS will Address Nine Societal Benefit Areas

1. Reduction and Prevention of Disasters
2. Human Health and Epidemiology
3. Energy Management
4. Climate Variability & Change
5. Water Management
6. Weather Forecasting
7. Ecosystems
8. Agriculture
9. Biodiversity

Improving water-resource management through better understanding of the water cycle

Water-related issues addressed by GEOSS will include: precipitation; soil moisture; streamflow; lake and reservoir levels; snow cover; glaciers and ice; evaporation and transpiration; groundwater; and water quality and water use. GEOSS implementation will improve integrated water-resource management by bringing together observations, prediction, and decision-support systems and by creating better linkages to climate and other data. In situ networks and the automation of data collection will be consolidated, and the capacity to collect and use hydrological observations will be built where it is lacking.

GEOSS 10-Year Implementation Plan, Section 4.1.5

Work Plan 07-09
WATER

GEO 2007-2009 WORK PLAN

TOWARD CONVERGENCE

Improving water-resource management through better understanding of the water cycle

WA-06-02: Forecast Models for Drought and Water Resource Management

This Task is led by WCRP and IGOS-P.

Enhanced prediction of the global water cycle variation is a key contribution to mitigation of water related disasters, drought and sustainable human development. Forecasting methods are to be improved for use by hydrological services throughout the world. The hydrological data and information system infrastructure should be determined, the data from hydrological and meteorological services should be pulled together first on a global level including moisture flux from the air-sea interface, on a national level including terrestrial systems and then on river basin level. The systems should also be made interoperable to facilitate global exchange of data and information. An international symposium is proposed to be held on approaches to Earth observations, drought predictive capabilities and management responses. This Task has clear links with DI-07-01, WA-06-05 and WA-07-02.

Improving water-resource management through better understanding of the water cycle

WA-06-05: In-situ Water Cycle Monitoring

This Task is led by Portugal and GOOS.

Initiate the creation of a coordination mechanism within GEO for global in-situ water observations, including ocean observations, and advocate synergy and sharing of infrastructure among observing systems. The current water cycle observation capability is inadequate for monitoring long-term changes in the global water system and their feedback into the climate system, and the lack of and inaccessibility of crucial data is also a major constraint for sustainable development of water resources and improvement of water management practices. In addition to filling gaps in measurement capability, interoperability of observing systems, and standardization of metadata for data sharing, progress in product development of the global near real-time river runoff network, advocate sharing of telecommunication infrastructure and joint know-how are important goals that need to be reached within the next few years.

Improving water-resource management through better understanding of the water cycle

WA-06-07: Capacity Building Program for Water Resource Management

This Task is led by IGOS-P.

Initiate capacity building programs to develop tools for using remote sensing data in support of water management, and to show the value of Earth observations generally in water resource management. The program will be initiated in Latin America and will then be extended to Asia and Africa. Linkages with existing efforts of GEO Members and Participating Organizations will be made.

Improving water-resource management through better understanding of the water cycle

WA-07-01: Global Water Quality Monitoring

Initial support has been expressed by IGWCO, NASA, JAXA, ESA, CSIRO, ICSU, CEOS and POGO.

Many aspects of water quality monitoring and assessment, both in-situ and remotely sensed are severely deficient. Many countries lack the technical, institutional, and financial resources to conduct proper assessments using in-situ water quality monitoring methods for terrestrial sources and in the coastal ocean. Remote-sensed operational systems of global-scale freshwater quality are non-existent. Operational observation systems need to be developed, and the resulting information systems should be made compatible and interoperable as part of the system of systems. This Task is built on the outcomes of the water quality workshop in 2006 (1st Inland and Coastal Water Quality workshop)and first pilot projects are being planned to begin in Asia as a result of the Asia Water Resource Management Capacity Building Workshop. This Task has relevant synergies with HE-07-02.

Improving water-resource management through better understanding of the water cycle

WA-07-02: Satellite Water Quantity Measurements and Integration with In-situ Data

Initial support has been expressed by IAG, GCOS, WCRP, CEOS and IGWCO.

Develop an operational mechanism to provide water level observations in rivers, lakes/reservoirs and estuaries from satellite observations to support the upgrade of deficient run-off water gauge networks. Combine different types of satellite data that are relevant for water quantity measurements (snow water equivalent, streamflow) with in-situ observations for better accuracy and global coverage. Produce an implementation plan for a broad and operational global water cycle data integration system that combines in-situ, satellite data and model outputs. An international symposium is proposed to be held to assess techniques and their maturity for transitions to operations. A workshop is planned in 2007.