

**An IGOL Workshop on Global Agricultural Monitoring  
in the framework of GEOSS,**

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Development of agricultural monitoring from space was initiated by the Large Area Crop Inventory Experiment (LACIE) programme which was developed jointly by NASA and USDA in the early 1970's. This programme focused on the use of the ERTS (renamed Landsat) high resolution data combined with field survey. In the 1980's research and development on the NOAA Advanced Very High Resolution Radiometer (AVHRR) led by the NASA Global Inventory Monitoring and Modeling Studies (GIMMS) group added monitoring of vegetation condition by coarse resolution time series data to the suite of agricultural monitoring tools. In the 1990's improvements were made to system capabilities advancing high resolution capabilities for example by the Landsat 7 programme and moderate resolution capabilities for example by SPOT Vegetation (1km) and NASA MODIS Terra and Aqua (1km -250m).

Recent initiatives to articulate the observation requirements have been developed by the Integrated Global Observing System (IGOS) and for the land community by the Integrated Global Observation of Land (IGOL) programme. Agricultural monitoring and land use change are key components of IGOL which is documenting current observational capabilities, gaps and future observational need. IGOL is concerned with both satellite and *in situ* observations needed for global monitoring, modeling and assessments. There is an emphasis on identifying current observations which can be readily enhanced, major gaps in the observations and the research and development needed for future critical improvements to the observing systems. Enhancements considered to the technologies, the continuity of observations and the information delivery systems. It is anticipated that the necessary enhancements to the observing systems will be developed under the emerging Global Earth Observing System of Systems (GEOSS) in cooperation with the Committee on Earth Observation Satellites (CEOS). The Global Earth Observing System of Systems (GEOSS) has been designed to put in place a comprehensive and sustained observing system. The goal of the 10 year GEOSS implementation plan is to provide enhanced observations which include those needed monitoring of crop production; agriculture food security and drought projections.

There are a number of groups around the world that are currently involved in agricultural monitoring for example: for the United Nations the Global Information and Early Warning System (GIEWS) keeps the world food supply under continuous review and reporting; a global agricultural monitoring system is maintained by the USDA Foreign Agricultural Service (FAS); the U.S. Agency for International Development (USAID)

funds the Africa-based Famine Early Warning System (FEWS); and the Monitoring Agriculture Remote Sensing (MARS) project and the emerging Global Monitoring for Food Security (GMFS) project provide global crop production data for Europe. There are also a number of other regional and national level agricultural monitoring systems for example in Russia, China and Australia. These groups are users of the observations and producers of information on global or regional crop condition and crop production. Satellite observations provide data that are combined with in situ measurements or local field reports as part of established decision support systems. The observations include satellite imagery and sampled *in situ* data on vegetation condition, rainfall and weather, plant water availability, germination and phenological stage and yield. The primary end users are governments and international organizations which use the information for improving food security, ameliorating famine or market outlook. The observations are used in different ways, for example to generate indices or as model input, for early warning, near-real time assessments or retrospective multiyear analysis.

During the development of the IGOL programme it was recognized that a more in depth assessment of the observation priorities for agricultural monitoring was needed. To this end a workshop was proposed for early 2006 to assess the current status of observations for global agricultural monitoring, to evaluate the current and emerging methods and techniques and identify the current and future observation needs and the necessary steps to secure them.

The workshop is intended as a contribution to GEOSS and will be hosted by the Food and Agriculture Organization of the United Nations (FAO), Rome, Italy. The workshop will include representatives from groups currently involved in global and agricultural monitoring and stakeholders concerned with using the data. The workshop will consist of invited overview presentations and breakout group discussions on priorities and the required steps for improving the observations. The outcome of the workshop will be a report which identifies and prioritizes the observations needed to continue and enhance current global agricultural monitoring capabilities.