GEO TASK AG-07-03a: Global Agricultural Monitoring

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and

GEO Task Ag-07-03a
Community of Practice

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GEO Agricultural Monitoring System of Systems

TASK GOALS

1. Global monitoring of agricultural production, facilitating reduction of risk and increased productivity at a range of scales

2. Timely and accurate national (sub-national) agricultural statistical reporting

3. Accurate forecasting of shortfalls in crop production and food supply

4. Effective early warning of famine, enabling a timely mobilization of an international response in food aid

5. Global mapping, monitoring and modeling of changes in agricultural land use, type and distribution, in their social and ecological context (land use change / climate change)
GEO Agricultural Monitoring
Near Term Task Initiatives (5 years)

• **Initiative 1:** A Multi-source Production, Acreage and Yield (PAY) database
  – Common centralized online database to enable objective assessment of food security and risk management planning
  – Facilitate inter-comparison and convergence of estimation methods

• **Initiative 2:** Joint Experiments on Crop Assessment and Monitoring (JECAM)
  – undertaking data, modeling and monitoring method inter-comparisons, accuracy assessments and integration, based on multi-source satellite and in-situ data
  – prototyping a system of systems
The PAY-a Production, Acreage, Yield multi-source online database Initiative

- **GOAL:** to allow for comparisons between crop statistics generated by these agencies, through a common centralized online database of Production, Area, and Yield (PAY)
  - enable identification of agreements and disagreements in national level crop statistics

- Four groups generate agricultural statistics on a regular basis for multiple countries: the USDA FAS, JRC MARS, IRSA Crop Watch and the UN FAO

- **STATUS:** Currently the database is being populated with national level estimates from these 4 agencies and will later be expanded to include statistics from individual countries
The PAY web-interface

The PAY web-interface and database (xml based) have been designed and implemented (UMD)

- Interface allows for queries on Yield, Production and Area by:
  - Agency
  - Commodity (Corn, Soy, Wheat, Rice)
  - Country
  - Year (2005-present)
  - Date of Forecast
  - Data Type (Forecast, Reported)

- Currently open only to GEO Ag CoP
- Query results can be downloaded
- agencies upload their crop forecasts using xml files into the PAY database
JECAM: Joint Experiments on Crop Assessment and Monitoring

JECAM is a GEO Agriculture Community of Practice Initiative to:

• Facilitate the **inter-comparison** of monitoring and modeling methods, product accuracy assessments, data fusion and product integration, for agricultural monitoring

• Network distributed regional experiments on cropland pilot sites around the world representing a **range of agricultural systems**

• Share time series datasets from a variety of **earth observing satellites** and **in-situ data**

• Synthesis of the results from JECAM will enable:
  – development of **international standards** for monitoring and reporting protocols
  – a convergence of the approaches to define **best practices** for different agricultural systems
  – identify **requirements** for future EO systems for agriculture monitoring
JECAM: Joint Experiments on Crop Assessment and Monitoring

Progress to Date:

- **November 2009**, first JECAM meeting held during SAR for agricultural monitoring workshop, Kananaskis Alberta, Canada

- **December 2009**, at the request of the community of practice, Agriculture Canada took on leadership of the JECAM coordination

- **January 2010**, call sent out to the international community to provide standardized documentation of research sites. To date five sites have been initiated (Canada, Argentina, Mexico, China(x2)) and several additional sites are in the planning phase.

- **March 2010**, a website was launched for the JECAM initiative: [http://www.umanitoba.ca/outreach/aesb-jecam/](http://www.umanitoba.ca/outreach/aesb-jecam/)

- **April 2010**, site descriptions and **data needs** for the initial five JECAM sites were **submitted to CEOS** for data access considerations
JECAM Website

http://umanitoba.ca/outreach/aesb-jecam/
GEO Agricultural Monitoring Task Initiatives

• **Initiative 3: Coordinated Data Initiatives for Global Agricultural Monitoring (CDIGAM)**
  - To ensure the on-going, frequent and timely acquisition, accessibility of satellite data during crop growing season and the continuity of those observations necessary for agricultural monitoring,
  - Compile the best available information on agricultural areas, crop calendars and cropping systems,
  - To fill the gaps in the current in-situ observations.

• **Initiative 4: GLAMSS Thematic Workshop Series (GTWS)**
  - Community workshops thematic methodological issues and topics to improve communication amongst the CoP, develop best practices and standards, encourage cooperation, coordination and data sharing.

• **Initiative 5: Global Agriculture and Climate Change (GACC)**
  - Initiative in development – integration of models and observations.
GLAMSS Thematic Workshop Series (GTWS)

- To improve communication among the Community of Practice,
- Develop best practices and standards,
- Increase international cooperation and coordination

**Beijing 2009 –**
System of Systems Components

**Ispra 2008 –**
Crop Area Estimation
Best Practices

**Kananaskis 2009 -**
SAR to support AGMON
Initiative 5: Global Agriculture and Climate Change

ISPRS WG VIII/6 & GEO AG 07 03 Workshop on “Impact of Climate Change on Agriculture” held in December 09
Follow up working group formation under consideration, interested individuals and institutions are welcome to join.
Web site: www.commission8.isprs.org/wg6/
Near Term Activities Planned

• JECAM Workshop and International Workshop on Global Agricultural Monitoring Digital Earth Technologies for Agriculture, Chinese University of Hongkong, Sept. 28-30, 2010


• Developing a GEO Global Agricultural Monitoring System of Systems: Current Status and the Way Forward (Nov. 2, 2010)-Sidelines Event with GEO Plenary and Ministerial, Beijing, Nov. 2-5, 2010

• Workshop for Developing New Cropland and Rangeland Extent Spatial Data, IIASA, Vienna, Tentative date: Feb. 2011

• Improving Countries Agristat in South America, Parallel Session with XV Brazilian Remote Sensing Symposium, Brazil April 30-May 5, 2011
Targets for 2015 Time-Frame

- Development of a coordinated global agricultural monitoring system of systems to:

  - Sensor Systems
  - Data Reception and Dissemination
  - Global Agricultural Monitoring System of Systems (GAMSS)
  - Parameter Retrieval and Modeling
  - Community of Practice
  - Capacity Building
  - Institutionalization

Improve Earth observations and their utilization in agriculture, to enhance monitoring and management of sustainable agriculture, providing timely and operational information on crop production, famine early warning, food security, and risk assessment, and building capacity in developing countries.
Ag0703 request for support from UIC

• Help to interface with the other GEO communities of practice and tasks that can help complete the AG-07-03 sub-tasks goals and vice-versa

• Help with collection, coordination and provision of EO data from the various international systems for the JECAM experimental sites and for capacity-building workshops
THANK YOU

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