

Sub-task Number: AG-07-03c

Sub-task Title: Expanding Earth Observation Applications in Agriculture and Promoting Capacity Building in Developing Countries

Overarching Task: Global Agricultural Monitoring

Area: AGRICULTURE

Related Community of Practice: Global Agricultural Monitoring

Relevant Committee: TBD

Related Targets: (to be included in 2009)

Sub-task Definition (as given in the 2009-2011 Work Plan):

Develop training modules and expand the use of Earth observations for agricultural purposes in Africa, Asia, Latin America, Central and Eastern Europe, and Small Island States. Training modules will be underpinned by practical exercises using multi-source satellite data.

Leads (GEO Member or PO, Entity carrying out the work, Contact: e-mail):

Uganda (DPRTRP), Point of Contact: Johnson Owaro, johnson.owaro@gmail.com

China (Zhejiang University), Jingfeng Huang, hjf@zju.edu.cn

Korea Meteorological Administration (KMA)

Motivation/Background

Implementation of this task will lead to improved capabilities in global mapping and monitoring of changes in distribution of crop land areas and the associated cropping systems, global monitoring of agricultural production leading to accurate and timely reporting of national agricultural production statistics and accurate forecasting of shortfalls in crop production and food supply and facilitate reduction of risks and increased productivity and effective early warning of production failure or famine; enabling the timely mobilization of local and international response in food aid.

Outputs (e.g. products and services which result from the activities of the Task/sub-task; outlined in the form of deliverables with timelines)

Planned:

- Demonstrate usage of Earth observation data and products for the agricultural sectors in developing countries.
- Establish earth observation requirements for delivery of crop area estimates and determine best practices and future needs for national acreage forecasting.
- The major output is to develop an operational agricultural monitoring system; including for famine early warning and food security; especially at regional levels. This shall be an integrated system for systematic, timely, accurate and quantitative global land cover and land cover change mapping at high resolution (10-20 m), particularly for use in agriculture and forestry.

Produced (current status):

There exist national and international efforts to establish a coordinated global operational agricultural early warning system for food security and improved market efficiency.

With new partnerships, there are national-level agriculture reporting and statistics systems that can be enhanced using integrated EO-based precision farming methods, in situ and airborne surveys and socio-economic data.

Activities (operations or work processes through which resources are mobilized to produce specific outputs; outlined in the form of milestones including timelines)

Planned:

Workshop on developing an agricultural monitoring system of systems 11th -13th Feb. 2009 China

Meeting of Africa regional Agriculture team in Nairobi Kenya in June 2009 (held as a side event of the ICPAC Climate Outlook forum meeting. In Nairobi Kenya.

GEOSS EO Agriculture application side event at the forth coming Africa GIS meeting in Kampala, Uganda in October 2009.

Participate in an International GEO Workshop on Synthetic Aperture Radar (SAR) to support agriculture monitoring in Canada in November 2009 .

Progress (current status): ...

Major coordination engagements continue to be through GEO capacity building committee meetings.

Uganda as the GEO AG-06-07 Task lead has established contacts with both International institutions and governmental bodies and this especially was a major outcome of the the 2nd African Leadership conference on Space Science and Technology for Sustainable Development in South Africa. The array of contacts is now an important forum for the task coordination and collaboration.

A draft document reviewing the characteristics of Earth Observations and their strengths and weaknesses in each of the different agricultural sectors in Africa is being developed and shall be ready by end of June 2009.

The African Regional Centre for Space Science and Technology Education in English at the Obafemi Awolowo University campus, LLe-Ife Nigeria is supporting capacity building efforts in Space Science and Technology through post graduate scholarship offers to young African professionals. The center joined the Africa GEO Task AG/06/07 team and is contributing to the review of the draft Africa EO capabilities agricultural sector analysis document..

The University of Nairobi, represented by Dr. Ouma Andrew and Prof. Odingo Richard have joined the African task team and we have arranged a meeting in Nairobi to discuss opportunities for the African participation in implementation of the task.

Participated in a GEO Secretariat organised teleconference with Prof. Jingfeng Huang from Zhejiang University in China and Dr. Jinlong Fan of the GEO Secretariat. To organize a peer review of the training modules developed by the ICT of the Netherlands. Possible regional (China) and then International training workshop to be organized in China in the year 2010.

Awaiting final approval of GEO Supported Capacity Building Programme for Africa, with possible funding from the EU-ACP Secretariat. A number of capacity building activities are planned under this programme.

Current effort till August 2009

The task objectives, work plan and draft programme proposal were presented to GEOSS AG inter task meeting (developing an agriculture monitoring system of systems) in Beijing China 11th to 13th February 2009.

Uganda is now the secretariat of and spear heading development of a capacity building programme for Africa. The programme aims to develop and disseminate training modules on EO, support capacity building of individuals and African institutions and promote awareness of utility of EO. The lessons learned will then be transferred to other regions of the world.

Resources (indication of resources – e.g. financial, human – contributed by GEO Members or Participating Organizations to produce outputs)

The EU-ACP ACBA Programme would be a major resource support for a number of EO Agriculture Capacity Building activities.

Office of the Prime Minister Department of Disaster Preparedness is the secretariat of the proposed capacity building programme for Africa and is task Point of Contact..

China (Zhejiang University), Jingfeng Huang, hjf@zju.edu.cn is task co lead and is supporting review of training modules.

Architecture and Data Component

1) Please briefly describe any task-related Earth observation resources (data set, system, website/portal) and any related Web Service interfaces that are contributed to GEOSS. State whether these items are or will be registered with the GEOSS Component and Service Registry for access via the GEO Web Portals, and whether any associated standards or other interoperability arrangements will be registered in the Standards and Interoperability Registry.

2) Please also describe what data and information your activity/system needs that you would request to be accessible through the GEOSS Common Infrastructure.

Capacity Building Component

(capacity building is defined to include the development of capacity related to: (i) Infrastructure and technology transfer (Hardware, Software and other technology required to develop, access and use EO); (ii) Individuals (education and training of individuals to be aware of, access, use and develop EO) and (iii) Institutions – building policies, programs & organizational structures to enhance the value of EO data and products).

1) In accordance with the above definition does this Task have a capacity-building component? If so, please provide a short description of this component including a description of end users.

Yes, it does.

The capacity building component of the task is through enhancement of the utility of integrated remotely sensed and in situ observation networks for meeting the needs of characterizing, assessing and monitoring, in a consistent analysis and reporting framework for Africa, Asia, Latin America, Central and Eastern Europe, and in Small Island States. This will be through training, creation of access to information and development of capacities to utilise the EO products for agriculture development.

End users; international and national organizations and development agencies concerned with global food security, Agricultural ministries and international organizations concerned with food markets and crop performance, Crop insurance sector needs information on predicted and actual harvest shortfalls and recent trends, Land managers and local and global change research community.

2) Have any additional CB needs for this Task been identified? Please provide a short description.

The major CB need for this task is In developing the soft ware for designing the module and mobilisation of financial resources needed for dissemination of the module to demonstrate EO utility to end users.

There is also need to enhance human, technical and institutional capacities in developing countries to enable them maximise EO utility for sustainable development. Success in all this effort will hinge on strengthening of existing capacities with respect to the understanding and use of earth observation technologies for agriculture development.

User Engagement Component

(please briefly describe to what extent end users are engaged in this Task and influence the nature of the outputs produced)

For now, mainly the academic institutions have been involved in discussions on the task, however, a number of specialised agencies have shown interest in supporting sustainable training programs at national and regional levels. This support will include travel for scientists from developing countries to participate in international science workshops.

Science and Technology (S&T) Component

1) Please briefly describe the elements of scientific research or technological development contained in this Task.

The task aims to ensure data accessibility and use and development of value-added EO products through development of training modules using best practices in developing countries.

2) In relation to the S&T component(s) of this task, please describe gaps, priorities, continuity needs, barriers, scientific expertise and additional resource needs (this information will be used for developing a gaps and needs assessment in Task ST-09-01)

Members and POs' Contributions to Outputs and Activities above:

(Input is optional. This section gives the chance to Members and POs to provide more details (3-5 lines) on their individual activities, making a clear connection with the Outputs and Activities outlined above).

Uganda

Uganda as the GEO AG-06-07 Task lead has established contacts with both International institutions and governmental bodies and this especially was a major outcome of the 2nd African Leadership conference on Space Science and Technology for Sustainable Development in South Africa. The array of contacts is now an important forum for the task coordination and collaboration.

The IAO has organized regularly since 1974 a Post-graduate Course on Geomatics and Natural Resources Evaluation, to provide participants from different academic backgrounds with a common grounding in Geomatics as management tool for assessing and inventorying natural resources, with special emphasis on rural areas in developing countries. Specific objectives of the Course are to train in Remote sensing data interpretation and accurate field data collection and to demonstrate the setup and use of Geographical Information Systems (GIS) for natural resources evaluation. Course is open to 16 participants having a University Master Degree in Agriculture, Forestry, Geology, Natural Sciences and other related disciplines. They are likely to have had academic training in Remote Sensing or related topics, and/or to be (or have been) engaged in work in this area in a co-operation or research project in a developing country.

China

Zhejiang University: Our contribution is in rice remote sensing, we will prepare rice sensing training modules and expand the use of rice remote sensing observations for agricultural purposes in Asia using satellite data.

Japan

NARO: To contribute in supporting a remote education organization and developing the contents for it.

CEOS

Preparation and delivery of training resources for GEO CBC activities. This is dependent on development of GEO portal and GEO NETcast services.

This is a continuous task achieved via an assortment of training actions and courses conducted by several CEOS agencies and affiliates. Through its web site/portal, WGEdu will raise awareness of forthcoming training events of CEOS Members and other Organisations.

Participation (Table to be filled in 2009):

| Type | Representing | Organisation | Name | EmailAddress |
|-------------|--------------|--|----------------|----------------------------|
| Lead(PoC) | Uganda | Office of the Prime Minister- Government of Uganda | Johnson Owaro | johnson.owaro@gmail.com |
| Lead | China | Zhejiang University | Jingfeng Huang | hjf@zju.edu.cn |
| Lead | Korea | KMA | | |
| Contributor | CEOS | EUMETSAT | Gordon Bridge | gordon.bridge@eumetsat.int |

| Type | Representing | Organisation | Name | EmailAddress |
|-------------|--------------|---|---------------------|------------------------------------|
| Contributor | EC | CEOP-AEGIS | Massimo Menenti | Massimo.Menenti@ensps.u-strasbg.fr |
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