

# Report on GOFC-GOLD Regional Network Data Initiative – Africa Pilot Workshop

April 23-May 8, 2009

## *Background, Implementation, and Lessons Learned*

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with contributions from workshop organizers and participants

### **BACKGROUND**

The international panel for Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD) collaborates with a number of regional networks around the globe to strengthen capacity in earth observation analysis and applications for the terrestrial environment. These efforts are supported by a number of sponsors including NASA, START, WMO, JRC, ESA, CSA and the USGS through the provision of financial and technical resources.

A regional network data initiative was developed using NASA/START GOFC-GOLD funding, which has a developing country emphasis and takes advantage of the data recently made available through the opening up of the USGS Landsat archive. The following goals were set for the initiative:

- 1) disseminate Landsat data to the international science community in regions where currently available distribution methods are not effective,
- 2) compile regional and country-level data sets relevant to land cover and fire observations and make them freely available to the community of users in the regions, and
- 3) engage regional science expertise in the global data set development, evaluation, and validation.

Given the problems with internet data access in Africa, an African pilot was planned to involve one data specialist from the following existing regional networks:

- OSFAC (Central Africa Regional Network)
- SAFNET (Southern Africa Regional Fire Network)
- WARN (West Africa Regional Network)
- East Africa Regional network (emerging, initiated by Sudan)
- Miombo (Miombo Regional Network)

Based on the results of the Africa pilot, further initiatives will be undertaken for the other GOFC-GOLD regional networks, including NERIN (Northern Eurasia), SEARRIN (Southeast Asia), RedLatif (Latin America) and emerging networks in Amazon and East Asia.

The plan for the Africa pilot included a two-week visit of network representatives to USGS EDC to compile the data archive, receive training, and provide input on regional data needs, a follow-up visit with collaborators at US universities to develop plans for data distribution and use, and follow-up activities within the networks and broader regional communities to promote the use of data archive. While the main focus was on Landsat data, it was expected that other publicly available data and products (e.g., MODIS) would be included in regional data sets as well.

***Roles and Responsibilities:***

- a) Members of GOFC-GOLD Executive Committee and LC Implementation Team (Tony Janetos, Michael Brady, Chris Justice, Tom Loveland, Matt Hanson, Dave Skole, Olga Krankina, Kathleen Landauer) developed the overall plan for Africa Pilot Workshop
- b) The GOFC-GOLD Regional Network Coordinator (Olga Krankina) was responsible for the overall coordination. She worked with the regional networks to identify candidates and define regions of interest. Olga visited with the group while at EDC for 3 days to collect feedbacks from participants, identify lessons learned and plan next steps.
- c) The START Officer (Kathleen Landauer) coordinated travel support for the 2 week visit to USGS EDC and South Dakota State University and provided data storage hardware as needed. She also arranged the group visit to Washington DC on the way back to debrief START and visit University of Maryland. After the completion of the US visit Kathleen reviewed and processed proposals for follow-up activities to distribute the data within the regions.
- d) A partnership was established with USGS through efforts of Michael Brady at the GOFC-GOLD Project Office. Tom Loveland is a member of the GOFC-GOLD land Cover IT and he played a key role in directing and coordinating the daily activities during the visit to EDC. Tom led the development of detailed workshop agenda and the overall visit plan for South Dakota (Attachment 2); he planned the training and data compilation to ensure efforts are aligned with GOFC-GOLD objectives.
- e) Matt Hanson and David Roy planned the visit of participants to SDSU and hosted the group, Chris Justice hosted the group during their visit to UMD and Dave Skole hosted one participant for a follow-up to Michigan. Erin Naydenov helped maintain communication among organizers and participants.
- f) Erin Naydenov of the GOFC-GOLD Project Office was instrumental in providing support for planning and implementation activities; she also visited EDC to assess progress of the pilot workshop.

**IMPLEMENTATION**

In preparation for the workshop network representatives were identified (see Attachment 1) who were capable of completing the data compilation and have the appropriate institutional support for housing the data distribution activity within their regions. Then regions of interest for each network were identified so that a core dataset could be prepared prior to the workshop. While the percent of Africa coverage in the overall EDC Landsat archive is relatively small, the number of available scenes is still huge and this presented obvious challenges for selecting the scenes to be copied.

Table. **Availability of Africa Scenes in EDC Landsat Archive (Tom Loveland, pers. comm.)**

Sensor	Archive Total	African Scenes	Percent	CC > 80%
MSS 1-3	288,874	10,580	3.66%	~1600
MSS 4-5	225,432	18,099	8.03%	~4000
TM 4-5	795,711	47,519	5.97%	~4500
ETM	930,271	117,247	12.60%	~9500
<b>sum</b>	<b>2,240,288</b>	<b>193,445</b>	<b>8.63%</b>	

In addition to six participants from Africa, one representative of NERIN (Northern Eurasia Regional Information Network) joined the group as he (Alexander Titov, Tomsk, Russia) showed great interest in participating and offered to cover his own travel expenses to/from Sioux Falls, SD.

Photo. **Participants of the Africa Pilot Workshop**



Top row: Patrick Lola Amani Kuburhanwa, Olga Krankina, Philip Frost, Tom Loveland, Blessing Siwela, Erin Naydenov. Bottom row: Alexander Titov, Cheikh Mbow, Dominick Kweesha, Mohamed Elgamri A. Ibrahim.

The agenda (Attachment 2) was developed to include a mix of training sessions, lectures, time for data copying, seminars to be given by participants, and side visits. Time was also allocated for participants to familiarize themselves with EDC, meet with specialists, provide feedback to organizers of the Africa Pilot Workshop, and develop plans for follow-up activities. The proposals to START for follow-up activities were prepared by all participating networks either during the visit to US or within a few weeks after the return to their home countries. The proposed follow-up activities were supported by START and included making presentations on

available data at regional conferences and seminars, distribution of data on CDs, purchase of hardware for data back-up, development of web-based data search application in a local language (Russian), and training workshops for local data users.

The participants also provided valuable technical feedback and an evaluation of the workshop (summarized below).

## **LESSONS LEARNED**

The informal feedback was solicited from participants during the workshop and written comments were requested after their return to their home countries. The overall tone of participant feedback was very positive, the participants clearly saw the value of the data and were appreciative of the training and information exchange opportunities that the workshop provided.

With respect to training location and facilities, participants felt that the EROS data center was a very convenient training place as it had high-end computer and internet access and it allowed visitors to interact with a many experts and learn from them. Expert presentations on current programs within USGS were characterized as very informative and inspiring. Availability of excellent technical assistance to smooth logistics was pointed out as well. Tight security and lack of after-hours access were mentioned as minor negatives.

The hotel accommodation was excellent and the transportation was well organized. A possible future improvement would be access to high-speed internet after hours to continue downloading the datasets.

Length of stay at EDC (18 days) seemed right for some participants while others felt that it could be shortened by a few days to a week. Some felt that advance preparation of regional data would make a shorter stay at EDC feasible while still accomplishing the workshop objectives. Others pointed out the importance of substantial hands-on data downloading in order to have a good understanding of the utility of data mining programs and filtering assets for subsequent capacity building in the regional community of data users. Some participants felt they did not have enough time: “The download speeds of the internet in EROS, SDSU and UMD are excellent and it was great opportunity to download as much as possible images, but the time available for the download was not enough to download all the images available for each scene. I have downloaded 300 GB of compressed images, which is only one third of the total amount I was supposed to download. For the next workshops I recommend increasing the time available for the download and it can take place also at SDSU and UMD so the participants will find the chance to work at night and at the weekends.” This diversity of opinions probably reflects somewhat different backgrounds and individual objectives of participants.

Side visits to SDSU and follow-up visits were seen as a very valuable part of the workshop. These visits allowed participants to interact with other researchers and students who are using Earth Observation data, to attend science presentations, learn about different practical applications of Landsat data and limitation of the USGS data base including the SLC-off, stitching issues. Furthermore, several ideas of collaboration on the use of the data have been discussed during these visits.

The visit to Washington, DC allowed the African visitors to get more informed on the activities and role of START and also inform START of their own activities and impressions of the Africa Pilot workshop. It also allowed the visitors to take care of administrative matters regarding the travel arrangements to the USA. At the UMD Geography Department, visitors got an overview of the activities of the Global Land Cover Facility and shared their own experiences in the area of land cover assessments.

The field trip gave the opportunity to tour the western part of South Dakota, including the SD capital Pierre, the Black Hills, and the Badlands. The trip was well organized, and led by knowledgeable USGS staff. The trip was well worth the time and the travelling since it helped the visitors appreciate the natural environment of South Dakota. The trip was well timed at the end of the stay.

Visitors were given adequate opportunities to present the work that they are doing in their own institutions in Africa. Participants were given half hour time allocations to present their work and research at EROS offices. Meetings held at SDSU also allowed the participants share information about their work. The participants who visited University of Maryland also got a 20-minute time allocation to make presentations on their work and research. The participants were informed well in advance of the expected presentations and the time allocations so they had enough time to prepare their presentations and to raise interest of possible collaborations with US scientists.

Training was a significant component of the agenda but the diversity of topics covered appeared to be too great to cover them in depth. While it proved difficult for the visiting team to agree on specific topics of interest, more extensive consultation (via e-mail) on training topics before the workshops may be helpful. Some participants felt that training deserved even greater emphasis, while data downloading can be de-emphasized. Overall participants felt that training at the workshop made a good contribution to capacity building which is paramount in GOFC-GOLD agenda. Based on observations at the workshop Olga Krankina felt that topics to be added at future workshops can include data archiving, metadata standards (ISO), LCCS, overview of methods for image processing (including change detection, product accuracy assessment, and linking the Landsat and related data to ground-based observations, especially socio-economic data), and carbon monitoring (REDD source book). In addition, it would be very useful to plan for a half-day to 1-day GOFC-GOLD workshop to update Regional Networks representatives on GOFC-GOLD developments and to exchange information and experiences among networks. Several participants supported these suggestions.

Planning for follow-up activities to promote and distribute the data within regions was difficult because of insufficient time to develop proposals. Earlier notice and specifications for expected proposals would be helpful in the future. The dissemination of data to the regions is very important to foster participation and project development within the networks.

Other participant suggestions for future improvement included that a greater effort be made in pre-workshop communication with participants and that images be copied ahead of the visit. The overall communication before and during the workshop was done very well and this helped the

participants to know exactly what was required of them. However, some details were only explained during the workshop and participants felt that it was stressful. Another suggestion was to help participants find (or develop) materials for training or publicity regarding the availability of Landsat data so that users learn to easily search and select appropriate images.

Participants were unanimous in pointing out excellent organization of the workshop, e.g.: “We met a very cooperative people from Tom Loveland the first person I met to Lydia Prentis the last person I said goodbye; everything was well organized and better than I was expecting. We attended useful scientific Remote Sensing presentations in EROS, SDSU and UMD and we get chances to present our work and share ideas. It was good opportunity to have contacts with several USA scientists, which will help us to improve our research work.”

**In summary**, Africa Pilot Workshop of the GOFC-GOLD Regional Network Data Initiative clearly was very successful. In addition to accomplishing the main goal of data dissemination it provided valuable experience for organizers. Lessons learned will help conduct similar workshops for other regions and considering the geography of internet access limitations. Asia appears to be a good candidate for the next workshop (including SEARRIN, NERIN and emerging networks in East and South Asia).

## **Attachment 1. List of Participants.**

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**Attachment 2. AGENDA** (April 23-May 8, 2009)

**Tuesday, 21 April and Wednesday, 22 April 2009**

Arrive in Sioux Falls – Courtyard by Marriott  
Courtyard by Marriot Sioux Falls  
4300 West Empire Place  
Sioux Falls, SD 57106  
+1 605-444-4300

**Thursday, 23 April 2009 – Training Room A**

9:00 Leave hotel for EROS  
9:30 Arrival at EROS  
10:00 EROS Tour (Miller, Berg, Hartpence, Loveland)  
12:00 Lunch  
1:00 Review workshop objectives (Loveland)  
1:30 Introduction to EROS and USGS (Loveland)  
2:30 Installation of Data Drives and Exploration of Contents (Hartpence)  
4:00 Adjourn

**Friday, 24 April 2009 – Training Room A**

8:30 Leave hotel for EROS  
9:00 Landsat data characteristics and holdings (Kline)  
10:30 Querying EROS archive holdings – Glovis and EarthExplorer (Hartpence)  
11:00 Landsat Metadata Characteristics (Adams)  
12:00 Lunch  
1:00 Global Land Survey Characteristics (Loveland)  
2:00 Archive Exploration  
4:00 Adjourn

**Monday, 27 April 2009 – Training Room A**

8:30 Leave hotel for EROS  
9:00 MODIS Data Search Tools (Lien)  
9:30 MODIS Characteristics and Products (Ramachandran)  
10:00 ASTER Holdings and Characteristics (Duda)  
10:30 ASTER Tasking Tools (Siemonsma or Wilson)  
11:00 Elevation Data Sets (Danielson)  
12:00 Lunch  
1:00 Depart for South Dakota State University Geographic Information Science Center of Excellence  
2:00 Discussion with SDSU GIScCE Staff (Hansen and Roy)  
4:00 GIScCE Krankina Seminar  
5:00 Depart for Sioux Falls

**Tuesday, 28 April 2009 – Training Room A**

8:30 Leave hotel for EROS

9:00 United National Environment Programme GRID Office Activities (Pengra)  
10:00 Discuss Regional Network Data Needs (Krankina and Participants)  
12:00 Lunch  
1:00 Finalize and Implement EROS Data Set Priorities (Participants)  
4:00 Adjourn

**Wednesday, 29 April 2009 – Executive Conference Room in AM, Training Room A in PM**

8:30 Leave hotel for EROS  
9:00 Regional Network Presentations (Participants)  
12:00 Lunch  
1:00 FEWS Activities (Rowland)  
2:00 Discussion on Strengthening National Mapping Programs Within Regions (Loveland, Participants)  
4:00 Adjourn

6:00 BBQ at Tom's House

**Thursday, 30 April 2009 – Training Room A**

8:30 Leave hotel for EROS  
9:00 EROS Land Cover Activities (Xian)  
10:00 Collect Data Sets  
12:00 Lunch  
1:00 Collect Data Sets  
4:00 Adjourn

**Friday, 1 May 2009 – Training Room A**

8:30 Leave hotel for EROS  
9:00 EROS Fire Activities (Vogelmann)  
10:00 Collect Data Sets  
4:00 Adjourn

**Monday, 4 May 2009**

8:00 Hotel Check Out – Depart for Brookings  
9:00 SDSU GIScCE  
4:00 Check In – Brookings Fairfield

**Tuesday, 5 May 2009**

9:00 SDSU GIScCE  
4:00 Adjourn

**Wednesday, 6 May 2009**

8:00 Hotel Check Out – Depart for Western South Dakota  
6:00 Rapid City Check In

**Thursday, 7 May 2009**

7:00 Begin Tour of Black Hills

6:00 Return to Hotel

**Friday, 8 May 2009**

8:00 Depart for Badlands and Sioux Falls

4:00 Arrive in Sioux Falls

**Saturday, 9 May 2009**

Depart for extended visits or home