Report on the Fifth Meeting of the GOFC-GOLD Regional Networks

as part of the

GOFC-GOLD Symposium on Forest and Land Cover Observations

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Edited by

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Summary

The overview of the Regional Networks within GOFC-GOLD highlighted their importance to the program mission along with ongoing challenges in maintaining support and active participation. Activities of established networks were briefly reviewed, including: NERIN, WARN, SEARRIN, OSFAC, Miombo, RedLatif, and SAFNet. Emerging opportunities for Regional Networks were discussed including the GOFC-GOLD Regional Network Data Initiative, FRA 2010, and closer collaboration with implementation teams (land cover product validation and the Global Fire Assessment 2010). The second session was a Business Meeting that reviewed and discussed GOFC-GOLD policies and collaborative plans for networks. The workshop participants expressed great interest in expanding the Data Initiative beyond the Africa Pilot; nominated Olga Krankina to continue as the Regional Network representative to the Executive Committee and as Regional Networks coordinator, and supported greater integration of Regional Networks with other GOFC-GOLD activities. A Regional Network Workshop should be held every two years.

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1. Introduction

Two sessions were included in the 5th meeting of the Regional Networks of the panel for Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD), with an overall goal to plan future activities and collaborations. The first session provided an overview of the Regional Networks, expectations and functions of networks within GOFC-GOLD and discussions on emerging opportunities for Regional Networks including; the GOFC-GOLD Regional Network Data Initiative, FRA 2010, land cover product validation, and the Global Fire Assessment 2010. The second session was a Business Meeting to review and discuss GOFC-GOLD policies and collaborative plans for networks.

The meeting was opened by Olga Krankina (Regional Networks Coordinator) and Michael Brady (Executive Director, GOFC-GOLD). Following participant introductions (listed in Appendix 1), Olga Krankina reviewed the meeting goals, objectives and agenda (Appendix 2).

Background

GOFC-GOLD Regional Networks provide a mechanism for the sharing of resources and expertise, and a forum for regional scientists, data providers, and operational users to articulate their information requirements and improve access to and use of the earth observations. Sustaining these networks in developing regions is among the primary objectives of the current GOFC-GOLD Strategy.

The previous 4th meeting of the GOFC-GOLD Regional Networks (Friedrich-Schiller University, Jena, Germany, 25 March 2006) discussed the changing roles and responsibilities of the Regional Networks. *SAFNet, Miombo, OSFAC*, *SEARRIN, NERIN*, and *REDLATIF-Fire;* (http://www.fao.org/gtos/gofc-gold/networks.html) were reviewed and new areas for network activities were identified including strengthening contacts with Implementation Teams (IT). Regular teleconferences and network representation at the Executive Committee were instituted to promote information exchange and ongoing coordination.

There are six established networks; three additional networks are at different stages of development. Over the past two years, the Regional Networks have conducted 21 regional workshops and participated in 15 workshops and symposia organized by the ITs. In addition, the initial workshop was held for *WARN* (West Africa), the initial workshop for *Amazon* network has been planned, and discussions on forming new networks in East Asia, Eastern Europe, and India/South Asia are ongoing. Projects are critically important to the functioning of the Regional Networks and several projects are ongoing. However, projects begin and end while Regional Network needs are continuous. Overall, there is a gap between the capacity of RN to advance their goals and the actual mechanisms to make it happen.

2. Session 1: Strategic Review

The objectives of this section were to review expectations and functions of networks within GOFC-GOLD, discuss emerging network activities including; the GOFC-GOLD Regional Network Data Initiative, collaborative activities with Land Cover IT (FRA 2010, Land cover product validation) and collaborative activities with Fire IT (Global Fire Assessment 2010).

Functions of Regional Networks in GOFC-GOLD

Michael Brady and Tony Janetos presented an overview of GOFC-GOLD.

GOFC-GOLD is a coordinated international effort to ensure a continuous program of space-based and on-the-ground forest and land cover observations at regional and global scales. GOFC-GOLD is a network of participants implementing coordinated research, demonstration and operational projects. GOFC-GOLD's vision is to share data, information and knowledge, leading to informed action and decision support. This effort is a long term process of building an improved match between Observations, Data Products and User Needs.

GOFC-GOLD is a partnership between Natural Resources Canada - Canadian Forest Service, Canadian Space Agency, European Commission, European Space Agency, Global Terrestrial Observing System (FAO, WMO, UNEP, UNESCO, ICSU), and US NASA.

Functions of GOFC-GOLD

The initial GOFC-GOLD strategy was developed in 1999, and then revisited in 2005 to ensure the global systematic collection of observations of land cover and fire.

The functions of GOFC-GOLD are:
1. Specifying requirements for products
2. Assessing algorithms and data assimilation procedures
3. Ensuring the availability of observations
4. Harmonization and the development of protocols and standards
5. Ensuring that operational products meet accuracy requirements
6. Creating GOFC-GOLD products and services
7. Providing information to support international assessments
8. Advocacy role, especially in relation to the continuity of observations and validation
9. Capacity building and the role of regional networks

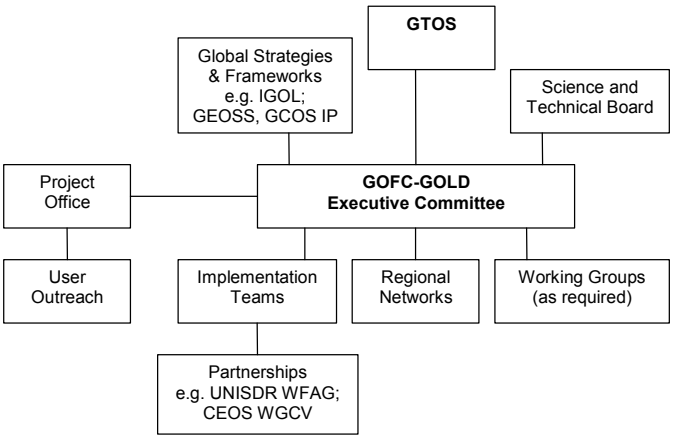

Figure 1. Regional Networks within the structure of the GOFC-GOLD panel of the Global Terrestrial Observing System (GTOS).

Regional Networks

Regional Networks provide a critical component of GOFC-GOLD; they are the interface between the implementation teams and national level data users.

Regional Networks articulate and document regional earth observation requirements, evaluate the utility of global LC and Fire products for regional use, advise and assist in increasing regional use of products, and promote lateral transfer of technology and collaborations within countries and regions.

Approach to developing Regional Networks:

- Identify one or two regional champions
- Include practitioners, interested in helping develop the network, preferably with institutional backing
- Undertake an inventory of groups, active projects, activities in the region
- Provide and maintain a web site listing projects and points of contact
- Identify data providers, and links to web sites / portals
- Identify primary information users and stakeholders
- Organize an initial Regional Workshop
- Identify interested parties, potential players and national points of contact
- Identify and prioritize regional requirements, needs, and issues
- Invite GOFC-GOLD leaders to present updates on recent or planned developments
- Outline some initial activities for the network built around the prioritized activities
- Identify potential sources for network funding, consider joint proposals with members of ITs
- Plan a follow up thematic workshop within 12-24 months
- Outline a science or application plan
- Invite additional players as needed to support the program
- Develop a plan for continued support of network activities and workshops

GOFC-GOLD guide to foster consistent collaboration:

- Among others, adopt the goals and functions of GOFC-GOLD
- Establish membership throughout region
- Minimize duplication with other networks in the region
- Develop outreach strategy and promote achievements for mutual benefit
- Knowledgeable of GOFC-GOLD EO approaches
- Maintain inventory of regional data sets and maps (land/fire)
- Establish network structure and planning mechanisms
- Articulate regional and national needs for EO information, advisory support and capacity strengthening
- As able, participate in both GOFC-GOLD themes and IT activities, and ensure their relevance to the region
- Maintain regular communication with members, ITs and Executive Committee
- Define support required to strengthen network and participate in activities to foster such support, including joint proposals

Developing Initiatives to strengthen linkages

At the 2005 STB meeting the GOFC-GOLD network guide was developed. Regional networks have been involved in the development of a network of calibrations and validation test sites. Regional networks have provided guidance and contributions to national carbon reporting post 2012 (UNFCCC SBSTA) and have played a role in the implementation of GEOSS and other international conventions. Regional networks link network activities to national priorities and requirements.

During the 2006 RN meeting the Vice Chair of GOFC-GOLD conducted a strategic overview of regional network involvement in the panel. It was decided that a regional network coordinator would participate on the Executive Committee. The Strategic guide and network plans were discussed. A need for Pan RN Symposiums was highlighted. Potential regional network activities were presented including; frameworks for LC validation at test sites, global fire assessment, and the global fire danger rating system.

Several new initiatives were discussed during the 2008 RN meeting including; free access to Landsat, FRA 2010, GWFN, LCPV, CEOS, and Radarsat, with the goal of developing action plans.

Regional Network Overview

Miombo

The Miombo network was founded in 1995 under the auspices of the IGBP, LUCC and START. More than 40 scientists and natural resources managers are involved. The Network is focused on land cover activities that address critical global change research questions for the Miombo woodland ecosystems. The network also addresses capacity building and training needs in the Southern Africa region. The need for forestry training in the Niassa/Mozambique area is of particular concern.

The key issues for Miombo include patterns, causes and rates of change in land cover in relation to land use, the consequences of land-use and land-cover changes on regional climate, natural resources, hydrology, carbon storage, and trace gas emissions, as well as the factors contributing to the distribution of species and ecosystems in Miombo. Miombo intersects a range of other national and regional programmes, and collaborates with existing and proposed activities, to avoid duplication of effort.

Miombo activities to date:

- Region Land Cover Mapping
- Changes in Land-use and Land Cover
- The Millennium Ecosystem Assessment - Zambezi River Basin
    - Land cover
    - Wetlands
- Adaptations to Climate Change & Flood monitoring (AIACC)
- SADC Regional Biodiversity Strategy
- Global Observation of Forest Cover (GOFC-GOLD)

There is a need for Miombo to be an operational network with a formalized Secretariat, possibly to be hosted at the Centro de Informarção Geográfica e Ambiente at

Universidade Católica de Moçambique, Beira. A Secretariat would help Miombo recruit new members and NCs, maintain an updated website, and continue capacity building of network members and institutions in Southern Africa. The Secretariat would also support the network develop new products to meet national and regional needs, help update existing LUCC products, using new data to improve the baseline.

Southern Africa Fire Network (SAFNet)

SAFNet was initiated in 2000 during a GOFC-GOLD regional network meeting with support from NASA, USAID and START. SAFNet is an open network of fire scientists, managers, policy makers and communicators comprising over 40 members drawn from 12 Southern African Countries.

Currently the network has no secure funding and no salary funds. Network meetings, funded predominantly by START, are held every 1-2 years. All SAFNet activities are conducted on a voluntary basis.

SAFNet is a regional network that fosters collaborative efforts in fire monitoring and management in southern Africa. The goal of the network is to achieve more effective and appropriate fire management policies and practices in southern Africa through the use of remote sensing and other geospatial technology, to enhance the use of information from field observations and remote sensing of fires for natural resource management in southern Africa.

SAFNet meetings:
- 1st meeting IGBP/START/LCLUC Miombo Network Workshop on Ecology and Management of Fire in Miombo, Matopo, Zimbabwe, 19-23 April 1999
- 2nd meeting Zimbabwe-Zambia Traveling Meeting, 11-19th July 2000
- 3rd Meeting University of Botswana, Gaborone, Botswana, 29 July – 1 August, 2002
- 4th Meeting Kruger National Park, South Africa, 17-23 August 2003
- 5th Meeting Mangochi, Malawi, 9-13 August 2004
- 6th Meeting Maputo, Mozambique, 5-6 October 2006
- 7th Meeting Katima Mulilo, Namibia, 22-26th September 2008

The Southeast Asia Regional Research Information Network (SEARRIN):

SEARRIN was initiated during the Manila workshop in 2000. Activities have involved more than 60 scientists and natural resource managers working on both fire and land cover. The network consists of scientists in the SEA region, dedicated to the scientific understanding of human-environment interactions influenced by global changes. The SEARRIN research organization consists of 7 nations in SEA including; Thailand, Indonesia, Malaysia, Philippines, Vietnam, Laos, Cambodia, and a member from the USA. The researchers in the Land Use and Land Cover-Change (LUCC) network are from multi-disciplinary areas comprising both the natural and social sciences. SEARRIN is able to provide services to validate satellite data products.

Implementing agencies of SEARRIN include:

Country	Agency
Cambodia	Ministry of Environment; Forestry Office of Kampong Cham Province
Indonesia	Centre for Technology for Natural Resources Inventory (BPPT); LAPAN;

	University of Indonesia
Laos	Faculty of Forestry, National University of Laos
Malaysia	Department of Geography, UKM; Malaysian Centre for Remote Sensing (MACRES), Forestry Department; Meteorological Services of Malaysia; Meteorological Services of Malaysia
Philippines	National Mapping and Resource; Information (NAMRIA), Philippines Atmospheric, Geophysical and Astronomical Services Administration (PAGASA); University of Philippines (UP)
Thailand	National Research Council Thailand (NRCT), Chiang Mai University; Kasetsat University; Mahidol University; GISTDA
USA	Department of Geography, Michigan State University
Vietnam	Department of Satellite Application, National Centre for Hydro-Meteorological Forecasting; Forest Inventory and Planning Institute

Northern Eurasian Regional Network (NERIN):

NERIN was initiated at the GOFC-GOLD Boreal Forest workshop in Novosibirsk, Russia in 2000. The network has over 50 scientists and natural resources managers involved in both fire and land cover activities.

The initial focus of NERIN was on the boreal zone. Over the last few years there has been a growing interest in having a greater focus on non-boreal issues including; agricultural and stepp regions of Northern Eurasia. Dr. Spivak has plans to developing the non-boreal focus of NERIN in the future, including a possible workshop in Kazakhstan in 2009.

NERIN workshops:

- Boreal Forest Workshop (Novosibirsk, Russia, August 2000)
- Regional workshop for Western Russia-Fennoscandia (St. Petersburg, Russia, June 2001)
- Northern Eurasia Earth Science Partnership Initiative (NEESPI) workshops (Suzdal', April 2003; Yalta, September 2003)
- "Observational Data in Support of NEESPI", St. Petersburg, Feb. 23-26, 2004
- "Observations of land cover and needs of research projects in Northern Eurasia", June 18-19, 2005, St. Petersburg, Russia
- "NELDA project" July 8, 2006, Tomsk, Russia
- "Detection and Validation of Land-cover Change", December 15-16, 2006, Moscow, Russia
- Requirements for Observations of Landcover Dynamics in Dryland Regions of Northern Eurasia, September 20, 2007, Urumqi, China
- Land Cover Mapping at High Latitudes, July 9-11, 2008, Syktyvkar, Russia
- Next workshop tentatively planned in Kazakhstan, 2009

Northern Eurasia Landcover Dynamics Analysis (NELDA) project has built on a series of detailed land cover studies across the region, to develop a set of test sites to assess available global and continental scale land cover maps. NELDA is developing a new continental land cover map for the region based on MODIS data. A new expansion has been proposed that will add sites to the data set and to increase thematic depth. The

expanded project will study the driving forces of change and attempt to understand which factors drive land cover change at continental scales.

The Russian language web site for NERIN is maintained by the Director of the Siberian Center for Environmental Research and Training (Dr. Gordov, Director). This Center received funding to expand the NELDA network of validation sites. Dr. Spivak from Space Research Center of the Republic of Kazakhstan presented their plan to be a part of this proposed study and to lead the expansion of NERIN into the agricultural and arid regions of Northern Eurasia, potentially forming a separate network. A planned NERIN workshop in autumn of 2009 will discuss this issue.

Red Latinoamericana de Teledeteccion Incendios Forestales (RedLaTIF)

Initially focused on fire issues, RedLaTIF is the Latin-American regional network of the GOFC-GOLD fire program, and is now also open to other topics.

RedLaTIF involves 75 Latin-American experts working on remote sensing and forest fires. The network fosters the participation of Latin-American scientists in global networks related to the GOFC-GOLD fire program; and is generating a thematic network for participation in fire-related projects within the Latin-American region.

SERENA is the Latin-American network of study focused on monitoring natural resources. Created as part of the RedLaTIF network, SERENA is totally funded by the CYTED program, with more than 13 Latin-American participant countries participating.

The principal goal of SERENA is to design and develop a continental processing system, using remote sensing and ancillary for information, for:
- Fire detection
- Burned area quantification
- Fire risk estimation
- Local validation

There is a need for local validation, and for combining information from satellite remote sensing to the products of FDR. The goal is to develop a product for Latin-America that is uniform, accurate, and in real time.

Observatoire Satellital des Forêts d'Afrique centrale (OSFAC)

OSFAC was initiated as a GOFC-GOLD network for Central Africa in 2000, to promote operational forest monitoring in the Congo Basin. OSFAC is linked to the GIS/RS lab at the University of Kinshasa. The network is focused on land cover with some work on fire.

The Secretariat obtained legal recognition as a non-government organization in the Democratic Republic of Congo in 2005. OSFAC operates with 7 full-time staff and maintains a RS/GIS lab within the School of Agronomy at the University of Kinshasa. OSFAC receives technical assistance and financial support from NASA, UMD and SDSU through USAID-funded Central African Regional Program for the Environment.

The primary activities of OSFAC from 2005-2008 were to facilitate satellite data distribution in Central Africa, increase GIS/basic remote sensing capacity in Central

Africa, and build network sustainability by establishing a local NGO with income generating activities.

Objectives of OSFAC for 2008-2010:
- 2009 OSFAC network meeting
- Establish country focal points
- Improve data accessibility in Central Africa
- Continue towards increased independence and sustainability of the network
- Build remote sensing capacity in Central Africa
- Transfer capacity for routine forest monitoring to the region
    - Produce 2005 - 2010 forest change dataset
- Work with government and local agencies to determine accuracy of datasets and combine with in situ datasets
- Serve as the remote sensing component of the Forest Observatory for Central Africa

Many of the constraints to using remotely sensed data that were identified at the start of OSFAC remain substantial across Central Africa, including costs, lack of local expertise, lack of basic resources, poor internet access and data accessibility. OSFAC has succeeded in helping to address some of these issues and has succeeded at establishing itself as a resource in the Central Africa region; however it remains behind in its contribution to scientific research.

West Africa Regional Network (WARN):

WARN was initiated at a GOFC-GOLD regional workshop in Ghana in 2005. WARN has primarily focused on four thematic areas including; wildland fires, coastal/urban areas, carbon/forest, and water. The thematic activities are coordinated by a Secretariat, which links WARN activities to other networks, transnational projects, regional organizations (GLCN; AMMA; SUN), national organizations, and GOFC-GOLD.

WARN membership:

High Involvement	Not Involved
Ghana	Cape Vert
Togo	Guinie-Bisseau
Benin	
Burkina Faso	
Mali	
Mauritania	
Gambia	
Nigeria	
Senegal	
Niger	

East Asia Regional Network

An East Asia Regional Network is being developed; it will likely focus on both land cover and fire. An initial workshop was held in 2005 at Beijing, with follow up meetings at Mongolia in June 2006 and Beijing in 2008.

Emerging opportunities for Regional Networks

A variety of emerging opportunities for Regional Networks were presented including; the GOFC-GOLD Regional Network Data Initiative, FRA 2010, land cover product validation, Canadian Space Agency SAR archive, funding opportunities and the Global Fire Assessment 2010.

GOFC-GOLD Regional Network Data Initiative

Michael Brady introduced the GOFC-GOLD Regional Network Data Initiative. The primary goals of the initiative are to disseminate US earth observation data in regions where available distribution methods are not effective, compile regional and country data sets relevant to land cover and fire observations and make them freely available, and engage regional expertise in global data set development, evaluation and validation.

Opportunity:
- USGS to complete the orthorectified GLS 2005 data set and provide free access to Landsat 4–7 archive at EDC
- New LC and LCC products using GLS data
- Use of Landsat data for validating global science results
- Growing MODIS record and availability of MODIS-based fire and LC/change products

The approach to regional data dissemination will be to establish nodes within the GOFC-GOLD regional network structure. The data will be disseminated through various media (DVD, Disk). Provide training to encourage development of regional products, and collect and document information on regional data sets.

Tom Loveland presented and overview of the U.S. Landsat archive. All Landsat data acquired and held by the USGS will be openly available at no charge by December 31, 2008.

The data includes:
- ETM+: Landsat 7
    - 830,440 scenes
    - Archive grows by 260 GB Daily
- TM: Landsat 4 & Landsat 5
    - 745,235 scenes
    - Archive Grows by 40 GB Daily
- MSS: Landsat 1 through 5
    - 652,174 scenes
    - 20 TB of Data

Other EROS Global Holdings include:
- Digital Elevation Data
- Earth Observer-1
    - Advanced Land Imager
    - Hyperion
- Declassified Satellite Imagery
- NOAA AVHRR (global coverage for 1990's)

- SRTM DEM
- Through NASA LPDAAC
    - MODIS
    - ASTER

Currently Landsat 5 can only be received from ground stations that cover the region. Each ground station, however has their own data policy, and therefore current fees will likely continue. This will change in a few years, as ground stations become required to send data to USGS, which will then be made freely available.

FRA 2010 Global Networking

Adam Gerrand presented the role of global networking in the FRA process, the use of national correspondents, expert consultation, and partnership with other institutions and networks. There are unprecedented global changes, but a lack of consistent monitoring data over time and countries. The wide range of agencies and processes require co-ordination, which has lead to the GEO task AG-06-04: Integrate international efforts on forest monitoring. The role of the Food and Agriculture Organization of the United Nations (FAO) is to support forest monitoring and reporting through strong relationships with countries and international agencies.

Countries are very involved in both the design and implementation of the FRA programme. The FRA 2005 was built on 229 country inputs and had over 800 contributors. FAO is in regular contact with regional activities, through national correspondents. There is currently one national correspondent in 172 countries; however alternates are required. The FRA will continue to work with contacts that were made during FRA 2005, and will support the establishment and maintenance of regional networks.

National correspondents are crucial to the success of the FRA process. The FRA data collection is completed with strong country participation. National correspondents help improve the use of existing data (better estimates, improved capacity). Through active National correspondent participation there is increased ownership of the process and results by countries.

Expert consultations on FRA are done though a series of meetings held in Kotka, Finland. The key recommendations for the next global assessment (FRA 2010) stemming from Kotka V. were endorsed by the FRA Advisory Group at its meeting in January 2008. Plans for FRA 2010 are being prepared based on the recommendations. There have been five meetings between 1987 and 2006, with over 100 people participating. The meetings review previous FRA and plan for the next one. The next meeting is planned for 2011, to review FRA 2010.

Other networks linked to FRA include;

- The UNECE/FAO Team of Specialists on Monitoring Forest Resources for Sustainable Forest Management, which has been active for more than 10 years (under various names) for UNECE region, which includes 56 countries located in Europe, North America and the Commonwealth of Independent States (CIS).
- FAO/Japan Monitoring Assessment and Reporting Project: MAR focal points in Asia and Pacific.

- Regional/sub-regional networking activities, which include South America and Francophone Africa.
- FORAF in Central Africa, where FRA aims to become more active
- Proposed "peer network for the exchange of MARV information" as part of the UN-REDD Programme

FRA 2010 regional workshops are important to strengthen the capacity of the national correspondents and networks. The workshops ensure that the country reports will reach the best possible quality standards. Nine regional workshops will be carried out during the last quarter of 2008. Draft country reports will be reviewed at the workshops to discuss and clarify issues.

Remote Sensing Survey regional workshops are aimed at country remote sensing focal points. The workshops will help ensure that reports are consistent and high quality. RS training will be provided to increase country capacity. 10 to 15 regional workshops will be carried out during 2009 and into 2010. GOFC-GOLD and/or regional experts are welcome to participate.

FRA/FAO serves a large number of organizations and processes in addition to generating information useful to countries and the general public. FAO has included variables to help assess progress towards the global goals of the UNFF and the Millennium Development Goals. Countries participating in the Group on Earth Observations have identified a task on international monitoring of forest and forest area change, in which FAO is taking the lead in this with a number of partners. FAO is currently working with the Ministerial Conference for the Protection of Forests in Europe on the report on the status of forests and forest management in Europe and continues to build on the efforts of the Criteria and Indicator processes, and is building links with other regional and sub-regional organizations.

GOFC-GOLD can play a valuable role in the FRA process; by assisting with data from case studies or projects, providing expert input to regional meetings, and contributing to FRA methods or as peer review for results (especially remote sensing survey).

Global Fire Assessment and the GOFC-GOLD Regional Networks

Chris Justice presented details of the GOFC-GOLD Fire Implementation Team activities where there are opportunities for Regional Network involvement.

During the 2007 Fire IT meeting in Thessaloniki, it was recommendation that the Fire IT develop a satellite based global fire assessment for the 2010 period using best available data. The Fire IT plans to work closely with the regional networks and fire experts for the initial design and interpretation of results. The IT is looking for partners to help support the initiative. The draft outline of the Satellite-based Global Fire Assessment 2010 was presented, in which several sections were highlighted as areas of regional network involvement.

Decisions need to be made on which satellite data to use for the core analysis. The goal is for a consistent validated data set. The Fire IT and regional participants need to agree on data sources. A workshop should be held in mid-2009 to determine best available products, conduct product inter-comparisons and validation.

There is also a need to agree on the metrics to be extracted from the data. Example of fire regime metrics calculated for central Australia (Allan and Southgate 2002):

- Number of times burnt
- Minimum interval between fires
- Mean patch size
- Largest patch burnt
- Number of patches / 100km²
- Average proportion of region burnt per year
- Apparent fire return period
- Mean proportion burnt per year vs. variance of the proportion burnt per year

The next steps include a Fire Assessment Design Workshop in mid-2009, involving the Fire IT, Regional Network representatives, and additional regional fire experts and partners.

South Asian Perspectives on Wildland fire & Forest and Land Cover Change

Sundar P. Sharma presented an overview of perspectives on wildland fire, and forest and land cover change in South Asia. The general perception of people in the region is that fire is the main cause of forest degradation. People have high expectations from sustainable vegetation cover for livelihoods. The recurrent and uncontrolled fires seriously impact the socio-economy and ecology at local to regional levels.

The Regional South Asia Wildland Fire Network held a foundation meeting at Kathmandu, 2-3 April 2007, held under the auspices of the Global Fire Monitoring Center (GFMC) and within the UNISDR Global Wildland Fire Network. Participating countries include; Bangladesh, Bhutan, India, Nepal, and Sri Lanka.

Kathmandu Declaration 2007: Provide a platform for discussion, policy dialogue, research and development in wildland fire management in the south Asia. The goal is to enhance existing regional capability in fire management, including early detection, monitoring, early warning and impact assessment, and facilitating international cooperation in wildland fire management, with an emphasis on community-based approach to wildland fire management and to enhance cooperation amongst the countries for sharing technology and data, integration of fire as a component of land use and forest management.

The 4th International Wildland Fire Conference was held at Sevilla, Spain in May 2007. The regional session conclusions and recommendations included;

- Building fire management capability at local, national and regional levels, as well as through bilateral and multilateral cooperation agreements
- Fire assessments
- Technology, expertise and data sharing in fire management
- Establishment of regional South Asia Fire Management Center

A National Round Table meeting in was held at Kathmandu, Nepal in December 2007. All national key players (including high level bureaucrats, development partners, academicians, NGOs, Civil societies, practitioners and managers etc.) met together and agreed upon the ‘Resolutions’ in Kathmandu in December 2007. The ‘Resolutions’ are in

line with the 'the Declaration of the Tenth SAARC Summit Colombo 1998 on Environment ', 'KTM Declarations 2007', and the road maps of the 'Seville Conference 2007'.

The 'Resolutions of Round Table' emphasized:
- Participatory approach to fire management
- Legal, institutional and policy frameworks development
- Human resource development
- Land-use change involving increasing fire use for conversion of vegetation and land management including slash-and-burn practices in the hills
- National fire assessment
- Enhance cooperation among countries within the region and at inter-regional levels, aimed at sharing technology, expertise and data in fire management

A Joint Meeting of the Wildland Fire Advisory Group / Global Wildland Fire Network International Liaison Committee (ILC), Fire Management Actions Alliance Advisory Group was held at Freiburg, Germany in July 2008. The meeting discussed activities, priorities and actions of the South Asia Regional WFN 2007-2011.

Commitments beyond 2008 include the establishment of a Regional Fire Management Center. The Centre will use remote sensing tools for early detection, monitoring, early warning and fire assessment. Weather-forecast derived early warning tools will be used in conjunction with community-based wildland fire management programmes, which will include technology and data sharing for fire assessments.

Regional activities will include workshops, trainings, and consultations. The potential focus is on regional information and capacity building, which may include FRA 2010, Fire Monitoring and Early warning, Fire Assessment, and Land cover. Country level professional training courses could be held to train mid-level technicians, field level technicians, and community level people.

Land Cover Product Validation Initiative

Curtis Woodcock discussed the global land cover validation and a "Best Currently Available" land cover map projects.

International Drivers:

1. United Framework Convention on Climate Change:
   - Reduce uncertainties in monitoring the global climate system through observing essential climate variables
   - Capacity building needs to address stronger role of developing countries in post-2012 agreement
2. Group on Earth Observation (GEO) task DA-07-02:
   - "Provide a suite of global land cover datasets, initially based on improved and validated moderate resolution land cover maps and eventually including land-cover change at high resolution (task co-lead by USGS and GOFC-GOLD)"
3. Global land cover monitoring and assessments:
   - GLOBCOVER, FAO-Forest Resources Assessment 2010
   - Operational validation / Efforts for deriving "Best map"

Observing Essential Climate Variables (ECVs):

Terrestrial ECV	Observing System (i.e. ESA, others)
River Discharge	In situ networks,
Water Use	In situ networks, regional remote sensing activities
Groundwater	In situ networks,
Lake and Reservoir Levels and Volumes	In situ networks, regional remote sensing activities
Snow Cover	GLOBSNOW
Glaciers and Ice Caps	GLOBGLACIER
Permafrost	Regional activities (i.e. circum-arctic)
Albedo and Reflectance Anisotropy	GLOBALBEDO
Land Cover	GLOBCOVER, MODIS land cover …
Fraction of Absorbed Photosynthetically Active Radiation (FAPAR)	GLOBCARBON, MODIS and Seawifs products
Leaf Area Index	GLOBCARBON, MODIS products
Biomass	Regional activities, e.g. Siberia
Fire Disturbance	Several global products from AATSR or MODIS
Soil moisture	SMOS satellite mission

As the land cover community matures, there is an increasing emphasis on validation and accuracy assessment, which is a difficult and expensive activity. The Land Cover Implementation Team has decided to support the broader community through validation. The goal is to collect ground reference data independent of any single land cover product to support validation of many land cover datasets. The intent is to supplement and complement ongoing validation activities associated with individual land cover datasets.

Best Currently Available Land Cover Map:

- Combine the strengths of multiple sources of land cover data across multiple extents and resolutions (national, regional and global sources)
- Based on what is learned in the validation exercise
- A transparent and community endorsed activity
- LCCS compatibility is critical
- Simple guidance criteria:
    - more accurate is better
    - finer spatial resolution is better
    - more thematic detail is better

Supporting Developments:

1. Prior experiences with global land cover validation
2. Emergence of LCCS - and its value in promoting consistency in land cover descriptors used in the development of legends for land cover datasets
3. Development of community consensus on best practices for global land cover accuracy assessment (CEOS WGC report)

A living reference dataset:
- A set of validation sites distributed around the globe
- Based on high resolution (a few meters) imagery interpreted by regional experts (the regional networks)
- Checked annually for land cover change, and updated periodically
- Limited set of land cover classifiers
    - life form - (trees, shrubs, herbaceous)
    - cover
    - leaf type
    - leaf phenology

Land Cover validation framework:
- Effort serves purpose for estimating:
    - Individual map accuracy / best available map
    - Area of land-cover classes
- Sampling design:
    - 10 km by 10 km block (Landsat – MODIS)
    - Flexible to increase sample size to provide precise country or region specific estimates
    - Stratification by geographic reporting regions, areas where maps differ, important rare land-cover classes
- Response design:
    - Reference data (high resolution) interpreted by regional experts (i.e. GOFC-GOLD networks) using LCCS classifiers
- Analysis design:
    - Error matrix for each map and region
    - Estimates of class area
    - Supplementary accuracy information on land-cover composition and landscape pattern

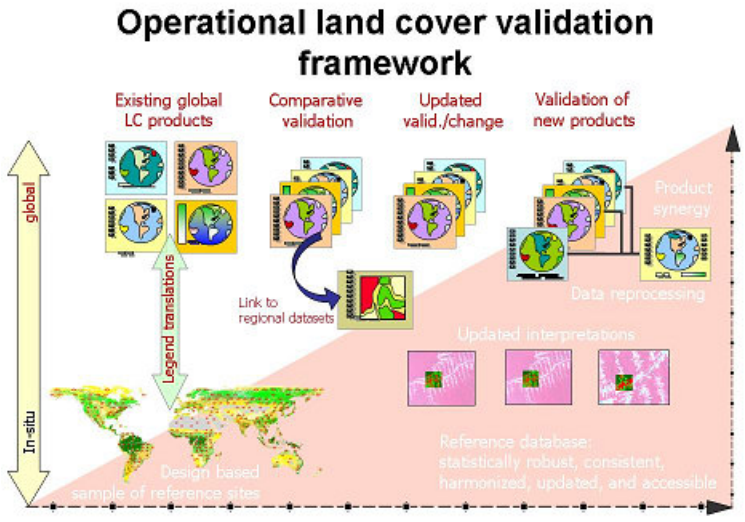

Figure 2. Operational land cover validation dramework

Next Steps:
1. Sample Site Selection
2. Find a source for the imagery (several meters)
3. Get the imagery collected and processed
4. Prototype effort
5. Identify regional experts for interpretation
6. Find support for the interpretation by the regional experts
   - training workshops
   - capacity building
   - support for the interpreters
7. Begin validation analysis (working with the land cover data providers)

Opportunities for GOFC-GOLD networks

Philippe Mayaux presented opportunities for data and funding that are available to Regional Networks.

Data provision

The GEONETCAST system is a broadcasting system for satellite-derived products. Currently data are sent to 53 PUMA (Preparation for the Use of the Meteosat Second Generation satellite in Africa) receiving stations of the Africa Met services. More stations have been installed in the frame of the African Monitoring of the Environment for Sustainable Development (AMESD) project in the environmental agencies. It is an open/free system (registration with Eumetsat); the cost of a receiving station and processing facilities is approximately 5000 EURO.
Data is broadcasted with near-real time biophysical parameters, which are derived from SPOT-VEGETATION and MSG (VITO and LandSAF), and include:
- Vegetation: NDVI, Leaf Area Index, FPAR, Fractional Cover, Phenology, and Productivity
- Fires: Active fires, Burned Areas
- Radiation: Albedo
- Water: NDWI, Water bodies
- 10-days products

Future perspectives include potential new data providers (MERIS, MODIS), medium-resolution data (Landsat) with uplink possibilities from African nodes in 2010.

The AMESD project is an EDF project managed by the African Union for 4 years and includes 21 MEURO. This is a follow-up of PUMA, and a precursor of GMES Africa. The project completed an analysis of coarse resolution data by regional centres that included:
- Land degradation and natural habitat: ICPAC (Nairobi)
- Water for crops and rangeland: Agrhymet (Niamey)
- Integrated Watersheds Management: CICOS (Kinshasa)
- Natural resource management and cropland : SADC (Gaborone)
- Marine resources: COI (Mauritius)

Network of national users
- Focused on institutional stakeholders

- GOFC-GOLD networks need more involvement

Collaboration with EU research projects

The GMES Africa programme is focused on improving the long-term use of EO in natural resources management in Africa. In the frame of AU-EU Strategic Partnership, but is linked with global initiatives. The programme will improve data provision, provision of services, capacity-building, strengthen infrastructure. The expected duration is 2010-2018.

- Consultation process (2008-2009):
  - African side: AUC, RECs, Ministerial conferences
  - European side: EC (JRC, ENTR, DEV), Member-States (PT, F, B…), ESA, EUMETSAT
- Draft roadmap by Feb-Mar 2009 drafted by EU/AU experts:
  - Consultation (by internet and thematic workshops)
  - Roadmap ready for the AU/EU summit
- Capacity-building framework
- Institutional framework
- Infrastructure and data framework
- Thematic framework:
  - Natural disasters
  - Long-term management of natural resources
  - Impacts of climate variability and change
  - Food security and rural development
  - Water resource management
  - Marine and coastal areas
  - Conflicts and political crises
  - Infrastructures and territorial development

Funding Opportunities

7th Framework Program for Research and Technological Development (FP 7):

- Based on call for proposals
- Interesting sectors: Space, Environment, ICT
- Different funding schemes
- Open to Third Countries for all the calls
- South Africa is contributor
- Possibility of building networks

GMES Africa call:

- Consortium are now being established

Opportunities for GOFC-GOLD:

- FP7 calls
  - Submit scientific projects in partnership with European teams
  - Include management expenses
- GMES Africa
  - Contact the leaders of the potential consortium:

  - GOFC-GOLD Networks must be active in the consultation process of GMES Africa
- AMESD
  - Contact the AMESD project (http://www.amesd.org)

CEOS/WGCV/LPV & Land Cover products

Frederic Baret presented the Committee on Earth Observation Satellites CEOS working group on calibration and validation, land product validation subgroup.

The subgroups' mission is to foster quantitative validation in a traceable way of higher level global land products derived from remote sensing data and relay results so they are relevant to users. The goal is to increase the quality and efficiency of global satellite product validation via developing and promoting international standards and protocols for field sampling, scaling, error budgeting, and data exchange. The subgroup also provides feed-back to international structures (GEO/GEOSS) for requirements and achievements on product accuracy and quality assurance, and definitions of future missions.

Products targeted include:
- Land cover
- Fire (active, burnt area)
- Biophysical characteristics (LAI, fAPAR, fCover, chlorophyll, phenology)
- Energy (albedo, short and long wave fluxes)
- Soil (moisture, type)

Products not targeted are:
- Net Ecosystem Exchange/Productivity (NEE/NEP)
- Evapotranspiration

Currently, there is a structural problem with land cover product validation, as biophysical products are not as close to sensors as radiometric calibration is. The community is large and scattered, with more focus on product families that correspond to better identified communities, such as land cover, fire, biophysical, energy, and soil.

Proposed new structure:

Topic	Potential member
Land Cover	M. Herold, M. Friedl
Fire	K. Tansey, C. Justice
Biophysical characteristics	R. Fernandes, NASA
Energy	G. Shaepman, C. Schaaf
Soil	W. Wagner, Y. Kerr

Accomplishments and ongoing activities:
- The intercomparisons over CEOS-BELMANIP
  - 397 sites representing the variability over surface types and latitudes
- Direct validation - Comparison with ground measurements: bottom-up approach
- Development of OLIVE: On Line Interactive Validation Exercise
- Characterization of products PSF
- On going work over VEGETATION, MODIS and MERIS fAPAR products

Future plans:

- Extension of the validation exercise
    - Continuous validation (OLIVE)
    - Other products
        - fAPAR
        - Albedo
- Contribute to virtual constellations
- Topical workshops
    - Albedo (Beijing March 2009)
    - Fire (Montana June 2009)
- Increase interactions with Land-cover community
    - Best practices
    - relation with agencies/GEO

RASTER: A New Opportunity of Collaboration

Paul Briand provided an overview of an upcoming opportunity for Regional Networks to gain access to the Canadian Space Agency SAR archive.

There is a need to monitor the state of Global forest and land cover. The SAR archive acquired over landmass is under used/exploited. Over 15 years of multi-frequency polarization data available over global forests.

The SAR archive acquired over Global Forest and landmass includes:
- Multi frequency (L-, C-, X-Band)
- Multi temporal (Since JERS to future sensors)
- Multi resolution (from wide swath continental to fine resolution local)

The opportunity exists to demonstrate the capabilities of this data set for forest and land cover applications. The CSA is making accessible the SAR archives acquired over Global Forest to the international science community.

GOFC-GOLD could lead and coordinate scientific requirements (definition of global products and regional products of global significance), develop user requirement fact sheets, and science plans to help space agencies in the definition of their contribution. The focus is on global scale key products, and regional scale products of global importance. The input of International, National and Regional science expertise in the exploitation of this global dataset is crucial to create new products, and support global science. This effort will require coordination among the Space Agencies.

The approach:
- Development of a science requirement document (GOFC-GOLD)
- Coordination agreement between space agencies, which need to be articulated by the scientific community (GOFC-GOLD and Space Agencies)
- Archive data selection and processing (GOFC-GOLD and Space Agencies)
- Plan for new acquisitions (GOFC-GOLD and Space Agencies)
- Data access and dissemination (use existing infrastructures)
- Encourage product development at the International, National and Regional level to support priorities applications (GOFC-GOLD and Space Agencies)
- Workshops and Training activities

GOFC-GOLD scientists working with regional network partners would benefit from having rapid and free access to a large archive of world-wide Radarsat data and those from other SAR sensors for regional and continental studies of the states of the global and local forests. This would be a significant contribution to GEOSS.

3. Session 2: Business Meeting

The objectives of this section were to review and discuss GOFC-GOLD policies and collaborative plans for networks, discuss network support issues, and develop an action plan for the pilot phase of the Data Initiative.

Funding guideline for GOFC-GOLD Regional Networks

Erin Naydenov reviewed GOFC-GOLD support principles. GOFC-GOLD operates on a best efforts basis. GOFC-GOLD Implementation Teams, Regional Networks and Working Group are self organizing. Financial support is based on project oriented funding, with finite time and cost limits. Funding sources are variable and often include differing requirements.

There are three types of Regional Network funding available including; Regional Network travel, Regional Network activities, and operational support for new Regional Networks.

Travel for RN representation at IT-related activities will be supported as recommended by the IT co-leads including RN members participation at IT activities and RN activities. RN activities may be supported for a portion or entire duration of the activity's lifespan (i.e. the data initiative). GOFC-GOLD may help individual RN's to obtain resources, and may provide short term initial support for new networks (i.e. costs of one or two meetings; administration and outreach support).

Proposals should be developed following preliminary discussions with IT or ExComm members for RN activities and new RN operational support. Agencies and other funding sources will be approached on a case by case basis. GOFC-GOLD assumes that the majority of funding for implementation will be obtained either by agencies agreeing to take on responsibilities, or by individual groups seeking funds within their own countries.

The project office administers support provided by the Canadian Space Agency (CSA) and Natural Resources Canada, Canadian Forest Service (CFS). The global change SysTem for Analysis, Research, and Training (START) administers support provided by National Aeronautics and Space Administration (NASA). The Joint Research Council, Committee on Earth Observation Satellites (CEOS), and other agencies have from time to time provided resources.

Support requests for Regional Network activities should be submitted 6 months in advance of approximate start date. Requests for operational support for new Regional Networks should be processed within 6 months.

Regional Network needs will be matched with the priorities given to funding requests by IT co-chairs. The prioritization will be then used to determine which proposals are accepted and the amount of funds allocated. Then potential support providers will be identified.

Support agencies will aim to distribute Regional Network support evenly among the RN's requesting support. Support is based on an annual funding plan established by the Executive Committee each year. Funds are typically reimbursed by cheque following an event. If funds are required in a specific format, this should be highlighted in the funding request proposal.

The expense guidelines ensure consistency and transparency among various working groups, events and funding sources. The guidelines are used for GOFC-GOLD meetings and workshops when funds are provided by START and CFS. Support is not provided for salaries, honorariums, alcohol, gifts, etc.

Opportunities for Regional Network Inputs

Land Cover IT

The Land Cover Implementation Teams work on accuracy assessments and validation efforts will require local expertise for the approximately 500 validation test sites. Local experts are needed to determine the source for high resolution imagery, and the location of the test sites. There will be workshops for training and for interpretation. The next step is to find support for this activity. This activity will take time due to data acquisition. A pilot project may be developed to start.

The GOFC-GOLD data initiative participants will be selected from organizations that will provide institutional support when possible.

CEOS is looking for interaction with GOFC-GOLD for best practices and validation. Currently there is an imbalance in support for different agencies, and there are gaps in the tropics.

There are operational opportunities for Regional Network involvement, but there needs to be organized support to do this. Additional systematic efforts to identify regions are required. GOFC-GOLD should develop a list of priority regions, those with the biggest gaps in our understanding, and then find support when opportunities arrive. Bundling the major global coordination activities should be considered.

LCCS training is an activity that should be expanded to include more Regional Networks. Currently NERIN is the only network that has directly received a detailed LCCS training at the workshop. There was FAO LCCS training session in the Miombo region, however it not focused on the Miombo Regional Network specifically.

Fire IT

Chris Justice plans to step down as co-chair of the Fire Implementation Team, and an election will be held to determine a co-chair. The process will be repeated for Johann Goldammer in the future. The idea is to rotate both Co-Chair positions. Both Chris Justice and Johann Goldammer plan to remain on the Fire IT. Regional Network participants should advise Chris Justice if they are interested in joining the Fire IT.

There may be a Fire IT meeting in 2009 on the back of another meeting (i.e. September 2009, Meteosat meeting at Sofia, Bulgaria). Both SEARRIN and SAFNet are involved in the burned area validation effort. This activity builds capacity and awareness of the

capabilities in the regions. If there are specific training needs, advise Chris Justice so that requests can be made to various agencies to send a representative.

The global fire assessment will involve a series of meeting and travel support will be required.

New Regional Network activities should involve China, as there is a gap currently. China is very compartmentalized, so it is difficult to determine who should be involved. Chinese representation on the Fire Implementation Team would be beneficial.

Canadian Space Agency SAR Data Initiative

The potential Canadian Space Agency SAR data initiative will require input from Regional Networks to advise what scientists in tropical regions want to use the data for. The use of the data will help determine which data will be selected and processed. The data will then be provided freely, possibly following a similar approach to the IPY programme. There will be opportunities for workshops and training activities for regional user communities. This initiative along with the USGA data initiative will encourage other space agencies to provide free and open access.

The potential process would require Regional Network input to define what the data is required for. Once the data requirements are assessed, define what data is available and then develop science plan. A committee/task force is needed to begin this process. CSA could support an initiative/plan to do this.

Response to the data initiative proposal

The data initiative is a real breakthrough, as data access is an ongoing problem in many regions. The high purchasing costs for international data is a problem. Regional Networks are critical for data flow, and will help to avoid many government requirements. Regional capacity building and distribution are the critical issues for the success of this initiative. The structure of this initiative could provide a model for the developing CSA SAR initiative.

The availability of the Landsat data will provide opportunities for Regional Networks to join other networks around test sites for validation, and enable Regional Networks to participate in FRA process. The Landsat data could be used for training and validation data sets. Regional Networks can use the data to implement projects in line with regional problems, such as regional mapping. The Landsat data will allow wall to wall mapping from the 1990's, with an update in early 2000, which will help identify deforestation and development (change detection).

The availability of the data will have an impact beyond data access. International experts may be required to travel to the region to provide additional capacity building. The Regional Networks may need to improve their infrastructure to support the distribution of data within their region. Software to process the data is required; therefore the data node will require a standard set of software and hardware. There will need to be continuous training effort, where the person trained at the EROS Data Center should schedule a regional workshop to provide several days of training.

The Regional Networks should nominate a candidate to take the training at EROS Data Center. The person selected must have the time available to take on this challenge, as they will be responsible to distribute the data and will invariably end up providing training (1 hr) to those making the requests.

The data initiative should be developed and promoted within the Regional Networks. The availability of the Landsat data will need to be communicated throughout the region, possibly as a part of regional outreach/demonstration meetings. Education on how the data can be used and what kinds of products can be made from using the data will need to be communicated through out the regions.

Increased capacity for processing and capabilities on data use in the regions in needed. GOFC-GOLD should develop a capacity building initiative, so that the capacity in the region is there to handle the data that is released. Regional Networks should develop joint training programmes and future projects.

To help distribute data throughout regions a data storage center, or web based product should be developed to access processed data. The data storage/distribution centre could operate as a centre of excellence as a way for institutes to support this initiative. The use of regional nodes for data dissemination is better than one institution or country; however country nodes will need to be developed as well, to ensure further distribution in the region.

Following the pilot phase of the data initiative, Regional Networks should discuss this topic to go through the problems together, and learn from each other.

Recommendations:
1. Collaborate with Regional Networks to develop and promote the data initiative
2. Develop a capacity building initiative
3. Include a component on Regional Network infrastructure needs into the EROS training session
4. Provide a standard set of software and hardware to data nodes
5. Support participants who received the training to lead a regional training session
6. Organize regional meetings to communicate what the data can be used for and provide training on how to use the data
7. Support international experts participate in regional capacity building activities
8. Develop country nodes ensure further data distribution in the region
9. Develop a web based product or data storage center to facilitate user access
10. Conduct a Post Mortem of pilot phase with Regional Network involvement

Training will cover:
- Data organization
- Data management
- Product strategies for applying the data
- Spend time looking at validation issues with the data
- Spend time on RN distribution mechanisms

Next Steps:
1. EROS to provide Regional Networks with a list of the data that is available in their region

2. EROS will develop and distribute a questionnaire ahead of the workshop to determine data requirements including: temporal depth, regional coverage, current software and hardware being used in the region
3. Regional Networks will decide what data they want prior to the training session including;
    a. historical data
    b. region of interest for each type of data available
    c. identify the regional and temporal dimensions
4. The training will be two weeks in late April 2009
5. Develop training agenda, following clear objectives
6. Develop second proposal for the next round of training

Organizational Issues and Planning

Olga Krankina was nominated to continue as the Regional Network representative to the Executive Committee for another rotation. Every two to three years there will be a round of nominations. As the Regional Networks coordinator, Olga Krankina was asked to continue efforts to include Eastern European Regional Network participants, coordinate with global change community (with IGBP), and try to integrate Regional Networks with other GOFC-GOLD activities. A Regional Network Workshop should be held every two years.

4. Appendices

Appendix 1. List of Participants

Name	Representing
Executive Committee	
Janetos, Anthony	Chair, GOFC-GOLD
Mayaux, Philippe	Vice-chair GOFC-GOLD
Brady, Michael	Executive Director GOFC-GOLD
Krankina, Olga	Regional Networks coordinator; NERIN
Justice, Chris	Co-chair Fire IT
Woodcock, Curtis	Co-chair Land Cover IT
Naydenov, Erin	GOFC-GOLD project office
Regional Network Representatives	
Gordov, Evgeny	NERIN; SCERT
Spivak, Lev	NERIN
Kufogbe, Sosthenes	WARN
Diaw, Amadou Tahirou	WARN
Thongboonchoo, Narisara	SEARRIN
Mahmud, Mastura	SEARRIN
de Marcken, Paya	OSFAC; UMD
Kwesha, Dominick	Miombo Network
Saldańa, Gerardo Lopez	RedLatif
Dlamini, Wisdom	SAFNet
Land Cover IT members	
Loveland, Tom	USGS
External board, sponsors, and participants	
Briand, Paul	Canadian Space Agency
Schlesinger, Peter	Remote Sensing Solutions GmbH
Erhard, Markus	EEA
Lück, Wolfgang	SAC/CSIR SA
Baret, Frederic	CEOS
Tan, Bingxiang	Chinese Academy of Forestry
Ke, Chang-Oing	Namjing University, China
Silapathong, Chaowalit	GISTDA, Thailand
Sharma, Sundar P.	Regional South Asia Wildland Fire Network
Stephens, Paul	DMC International Imaging, UK
Gerrand, Adam	FAO

Appendix 2. Agenda

GOFC-GOLD Regional network meeting		
Tuesday, 14.10.2008, Rose halls		
SESSION 1: Strategic Review		
09.00-09.40 09.40-10.00 10.00-10.15 10.15-10.30	Workshop overview and RN introductions (round table) Functions of networks within GOFC-GOLD Regional Network Data Initiative FRA 2010 and the role for networks	Olga Krankina, RN reps (9 networks – 3 min each) Janetos, Brady Justice, Loveland Gerrand, Hansen
10.30-11.00 Break		
SESSION 1 ***Strategic Review*** (continued)		
11.00 – 11.15 11:15 – 11.30 11.30 – 11.45 11:45 – 12.00 12.00 – 12.15 12.15 – 12.30	Global Fire Assessment 2010 and the role of the regional networks Links to Global Wildland Fire Networks Land Cover Product Validation Initiative TBD CEOS Cal Val land activities GEO call for participation, RASTER init.	 Justice Sharma Woodcock, Herold Mayaux Baret Briand
12.30-13.30 Lunch		
SESSION 2 ***Business meeting***		
13.30-14.00 14.00-15.00	Action plan for pilot phase of Regional Network Data Initiative Plans for New Networks (Amazon, E. Europe., E. Asia, NERIN-south)	Krankina, Loveland and RN Reps Souza, Woodcock / East Europe rep, Townshend/ Tan Bingxiang, Sharma, Spivak
15.00-15.30 Break		
SESSION 2 ***Business meeting*** (Continued)		
15:30-15:45 15:45-16:00 16:00-17:00 17:00-17:30	Review of RN representation/coordination CFS plans; Policy on network support Planning for RN participation in IT activities General discussion of future activities and collaborations	Krankina Naydenov Justice, Schmullius All RN Reps
18:00 Adjourn		

Appendix 3. List of Presentations

No.	Title	Author(s)
1	Regional Networks Meeting, Part 1: Strategic Review	Olga Krankina, Michael Brady
2	Functions of Regional Networks in GOFC-GOLD	Anthony Janetos, Michael Brady
3	USGS Earth Resources Observation and Science (EROS) Center	Tom Loveland
4	FRA 2010 Global Networking	Mette L. Wilkie, Adam Gerrand
5	Global Fire Assessment and the GOFC-GOLD Regional Networks	Chris Justice
6	South Asian Perspectives on Wildland fire & Forest and Land Cover Change	Sundar Sharma
7	Opportunities for GOFC-GOLD networks	Philippe Mayaux
8	CEOS/WGCV/LPV … & Land Cover products	Frederic Baret
9	RASTER: A New Opportunity of Collaboration	Paul Briand
10	Funding guideline for GOFC-GOLD Regional Networks	Erin Naydenov

Appendix 4. GOFC-GOLD Regional Networks Needs

Training and capacity building	
SAFNet	Training effectiveness can be improved if project based – i.e., where the participants choose a problem relevant to their country that requires RS/GIS and use of MODIS or other satellite data (e.g. Landsat/ASTER, etc) combined with ground validation etc. the training need areas are in geospatial technology and data utilization e.g. combining in situ, community knowledge systems and space-borne observations (basic remote sensing) for fire forecasting, monitoring, fire control, damage assessment and recovery. Use of existing fire products such as MODIS, MSG, etc. Opportunities are also needed for graduate/postgraduate studies at recognized institutions of higher learning.
Miombo	− Capacity building for network members and institutions − Short and long term training in use of EO data − Advanced analysis and modeling of LUCC − Inception of product in policy formulation and implementation
RedLatif	Active sensors (e.g., radar, LIDAR) data management and analysis
WARN	− Only few experts and technicians have been identified in research institutions operating under infrastructural constraints − Well planned training must be organized at the respective levels on ALL aspects of data analysis, archiving and distribution among members countries − Some infrastructure and technical support must be provided for laboratories which are operating under capacity − LANDSAT data base and training workshops on RS/GIS and on data dissemination (a travel in US USGS and a technical workshop on data dissemination; possible location Burkina Faso)
SEARRIN	Need to set up a training program to improve the knowledge for a new emerge information for member that did not have an access
Adequate funding for administration and programs	
Miombo	Funding need for a small secretariat, use of existing institution located in sub-region; Website hosting; New Miombo links. Missions incorporate DRC and Angola
RedLatif	Bi-yearly/yearly coordination meeting/technical workshops
WARN	Need support with respect to operation of the Network from two clusters, Anglophone (Ghana) and Francophone (Senegal). Emphasis on Permanent assistant: 500 $/month and Administration: 500 $ (telephone, email, fax)/month.
SEARRIN	– Minimal seed money is required for administration (engaging a research assistant for a temporary period of a few months a year to help update the network website, current news for members) – Funding for mini-projects that are endorsed by GOFC-GOLD/START for ground validation for using satellite to study land use and land cover change, and for studies on vegetation fires in the region. – If a key person (researcher) is identified to manage the 'data initiative' program, he might need a research assistant to help distribute the data to the data to the region, particularly if access to the internet is slow and lacking.
Standardization of monitoring mechanisms and systems used in the region	
SAFNet	Space-borne observations for fire monitoring, fire control, damage assessment and recovery. Including land cover data, common land cover classification systems for regional analysis. However, since each country is unique, it is often difficult to standardize. While that is so, the network should be a framework for identifying and

developing common practices that are applicable over different countries (that is why there is need for a network) to avoid duplication – the details that are specific to each country can be left for national attention.

Miombo
- Land use land cover classification
- Methodologies for map updating
- Data processing and analysis routines

RedLatif In-person meetings with technical experts are necessary in order to define the standard products to be generated with DB data received in Argentina, Brazil and Mexico.

WARN
- Provision is for In-country and Network training workshops. This will ensure effective use of data for planned projects
- Possibility to be connected with AFRICOVER
- Global Data infrastructure program

SEARRIN Need support for more frequent regional meetings for scientists in the region to get information about the similarities and differences in mechanisms and systems and form a general or standard system for the region.

Improved access to EO data

SAFNet There is lack of infrastructure for EO data access, e.g. hardware and software. Distributed networking infrastructure for EO data is needed as well as ability to utilize the newer data formats e.g. HDF. The GEONETCAST delivery system could greatly improve EO data access but not for large volume spatially explicit satellite data. Access could also be facilitated through access to software and hardware to use this data to answer specific questions/problems.

Miombo
- Increase Internet bandwidth by migrating from Intra
- Regular updates of existing and new data
- Making high resolution data more affordable

RedLatif None

WARN
- Data providers to make needed data available e.g. the proposed USGS training for selected network representatives and partners in 2009
- Be connected with the GOFC-GOLD/USGS initiative for data acquisition, develop EUMCAST projects in various countries

SEARRIN RN could be a regional gateway for member to access EO through internet with support from GOFC-GOLD

Improved dissemination to national and sub national levels

SAFNet There is generally a lack of infrastructure for the dissemination of information. The concept of SAFNet national points of contact/data nodes that broker regional data coming through SAFNet to filter into national structures has been suggested by SAFNet but has not been organized and may need some seed funds as a stimulus.

Miombo Website hosting and development of sub regional nodes. Development of partnerships for documentation and publication of work done.

RedLatif Adequate funding is necessary to improve national and sub national level dissemination. Also, we consider that this kind of interaction could improve our validation status

WARN Medium for data distribution as proposed in the USGS training for selected Network members/partners is most welcome.

SEARRIN Need to establish recognition at the national level through a key person.

Improved product validation based on standardized protocols

SAFNet SAFNET should play a bigger role in doing local validation on products in order to quantify product errors. There is a need for resources to assist the network to be a full and active participant in this. This process should involved engaging SAFNet in the overall project, rather than to just have contributions limited to validation. This will provide the basis for on the job training/capacity building, etc, and allow the network to visualize and appreciate the result of the validation exercise.

Miombo	Explore possible project(s) in conjunction with sub regional and international partners
RedLatif	We consider that the protocol standardization will improve significantly our regional products. However, here again, the network facilities with local users could improve this kind of products.
WARN	− Field-based studies with selected sites for short, medium and long term in each country is recommended. − Implication of Master and PhD students
SEARRIN	Need a support for more frequent regional meeting and funding for product validation

Stronger program and scientific coordination with implementation teams

SAFNet	This is lacking (as long as we focus only on engaging the network on validation) – for this to be realized the network needs to formulate programs - be part of the planning as well as the implementation and accessing the resources. Funds that are made available, from e.g. GOFC-GOLD etc, should be channelled into these programs. So that we enhance available local initiatives than to come up with new proposals ignoring the ones already defined by networks. SAFNet role and support to international environmental conventions and interaction with global earth observation and monitoring programs and global environmental change research initiatives.
Miombo	Establishment and strengthening of bilateral links with institutions such as universities, research centers, etc. Development of partnerships for documentation and publication of work done.
RedLatif	Short-stays for RN participants with selected implementation teams (Fire, BA, Land Cover) to adapt some products to regional needs.
WARN	− More frequent interaction among Network members − Network projects to seek strong support in Graduate programmes with adequate budget support − More joint research publications and support for conference presentations − Implementation of WARN working groups
SEARRIN	Need to establish recognition through a meeting and conference to share ideas. Form a working group to work on a particular subject and find a funding to support their activities.

Improved Internet access and capacity

SAFNet	Reliability of internet connections is currently one of SAFNet's biggest problems. Broadband and/or other high-speed internet access infrastructure is still largely lacking in many of the SAFNet countries.
Miombo	− Wireless network − Upgrade server (substituting the old 2 servers with new ones), improving the network infrastructure by adding more access points − Increase Internet bandwidth by migrating from Intra
RedLatif	None
WARN	− Recommendation for immediate needs assessment as basis for immediate technical support since the technology is advancing too rapidly. − WARN web page on GOFC GOLD page, to be developed with GOFC-GOLD project Office, with administrative rights for the secretariat, for eventual updates.
SEARRIN	Need to establish a database and online material for member. RN will need a funding for a part-time or full-time staff to maintain the database and update information.

Better understanding of other EO projects in the region

SAFNet	SAFNET could better link with other EO initiatives and organizations such as EIS Africa, and GEOSS.
Miombo	Development of partnerships for documentation and publication of work done.
RedLatif	None
WARN	– Well or better targeted planning and dissemination workshops with respect to

	National/Regional priorities as they relate to the thematic objectives of the Network. − Working groups
SEARRIN	GOFC-GOLD should send information related to other EO projects to RN and fund RN representatives to participate in the program. The RN representative will later pass information along to all members.
Other	
SAFNet	− Network glue money (cost of running and maintaining SAFNet) is critical – this can be in the order of $20 000 per year, failing which it should be that amount over 2yrs (rather than to have nothing at all). − Funding network meetings at reasonably defined periods is mandatory if the network is to continue. The network continues to seek assistance at the international level (e.g. GOFC-GOLD) and where pledged needs to be made available in time, or mechanisms for accessing these funds must be made clear to all parties in time, to allow proper planning and unnecessary and costly delays. − The network also needs support to disseminate information through publications - this could be financial assistance but also technical assistance.
Miombo	none
RedLatif	Two years ago we proposed that funding for doctorate and postdoctoral students could result in a very efficient and economical way to improve interactions between GOFC and regional networks. Might this be a feasible possibility?
WARN	− Urgent need to review or update the Thematic Needs Assessment of Dakar (2006) and Ghana (2007). − This must be done within the framework of national policies and priorities, National EO infrastructure and resources − Monitoring and Evaluation as integral part of WARN activities
SEARRIN	None