1st GOFC-GOLD Fire Inter-Regional Network &

1st Joint GOFC-GOLD and GWFN Network meeting

Side Event at the

5th International Wildland Fire Conference 'Wildfire 2011'

Sun City, South Africa, 9 May 2011

Report prepared by Anja A. Hoffmann
Regional Fire Network Coordination

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Special thanks are given to David Roy for his support and active role making this side event a success and achieving its objectives. Appreciation is given to Luigi Boschetti for his support in consolidating the GOFC Fire recommendations.

Finally I am extremely grateful to Navashni Govender and Philip Frost (both SAFNET) for all the hands-on and logistical support during the entire week.

ABBREVIATIONS AND ACRONYMS

CARIN	Central Asia Regional Information Network
DRC	Democratic Republic of Congo
EOS	Earth Observation Systems
GFMC	Global Fire Monitoring Center
GOFC –GOLD	Global Observation of Forest and Land Cover Dynamics
GOFC IT	GOFC Implementation Team
GWFN	Global Wildland Fire Networks
LANCE	Land Atmosphere Near-real time Capability for EOS
NASA	National Aeronautics and Space Administration
OSFAC	Observatoire Satellital des Forêts d'Afrique Centrale
REDLATIF	The Latin American Remote Sensing and Forest Fires Network
REDD	Reduced emission from Deforestation and Forest Degradation
SAFNET	Southern African Fire Network
SEARRIN	South East Asian Regional Information Network
SEAFireNet	South East Asia Fire Network
START	Global Change **S**ys**T**em for **A**nalysis, **R**esearch and **T**raining
UNSIDR	United Nations Strategy for International Disaster Reduction
WARN	West African Regional Network
WFAG	Wildland Fire Advisory Group

Contents

List of Appendices

List of Tables

List of Figures

1 Introduction

Fire Monitoring and Mapping is one of the two primary themes of Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD), a coordinated international effort working to provide ongoing space-based and *in-situ* observations of forests and other vegetation cover, for the sustainable management of terrestrial resources and to obtain an accurate, reliable, quantitative understanding of the terrestrial carbon budget. **The GOFC-GOLD Fire Mapping and Monitoring theme** is aimed at refining and articulating the international requirements for fire related observations and making the best possible use of fire products from the existing and future satellite observation systems, for fire management, policy decision-making and global change research.

1.1 GOFC Regional Networks

To execute and design projects, develop consensus algorithms and methodologies for product generation and validation, the GOFC-GOLD Fire Implementation eam works with GOFC-GOLD Regional Networks in Eurasia, Asia, Africa, South and Latin America to bring together fire data providers, users and researchers operating in (or with an interest in) a common geographic area, and represents a link between national agencies, user groups and the global user/producer. Figure 1 shows the currently active GOFC-GOLD networks; the following networks have a particular focus on fire mapping and monitoring:

SAFNet, RedLaTIF, CARIN and SEARRIN.

Networks like WARN and OSFAC have recently started to have specific activities and/or projects on fire mapping and monitoring.

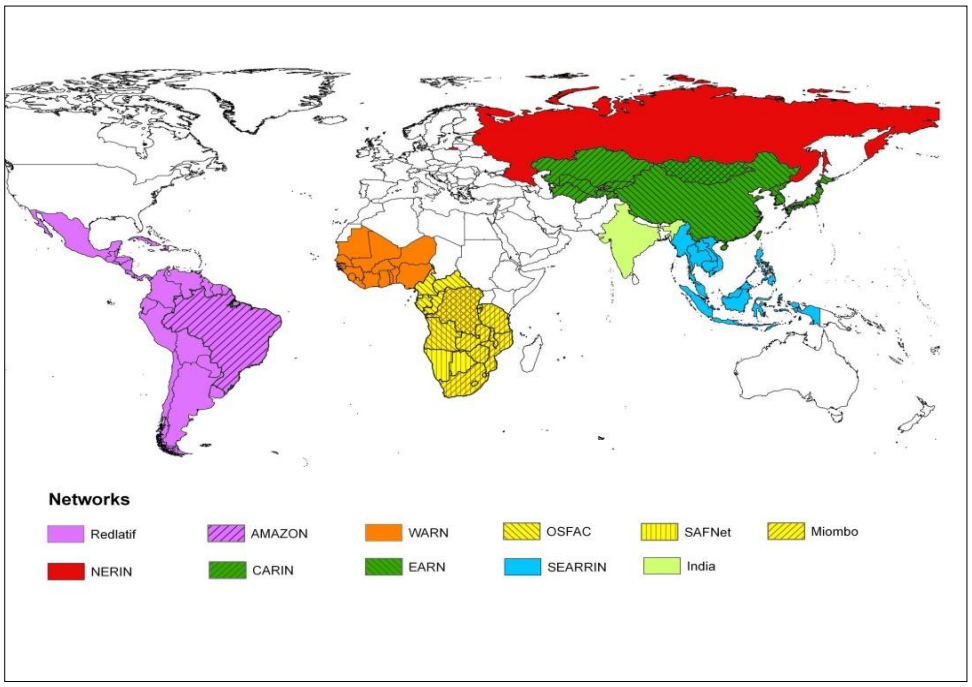


Figure 1: GOFC-GOLD Regional Networks (courtesy D. Roy)

1.2 Global Wildland Fire Networks

The Wildland Fire Advisory Group (WFAG) of the UN International Strategy for Disaster Reduction (UNISDR) operates through the Global Wildland Fire Network (GWFN) and consists of 15 regional networks and national focal points with the aim to support the development of integrated fire management approaches around the world assisted by the use and application of satellite based fire information. Figure 2 shows the current network structure.

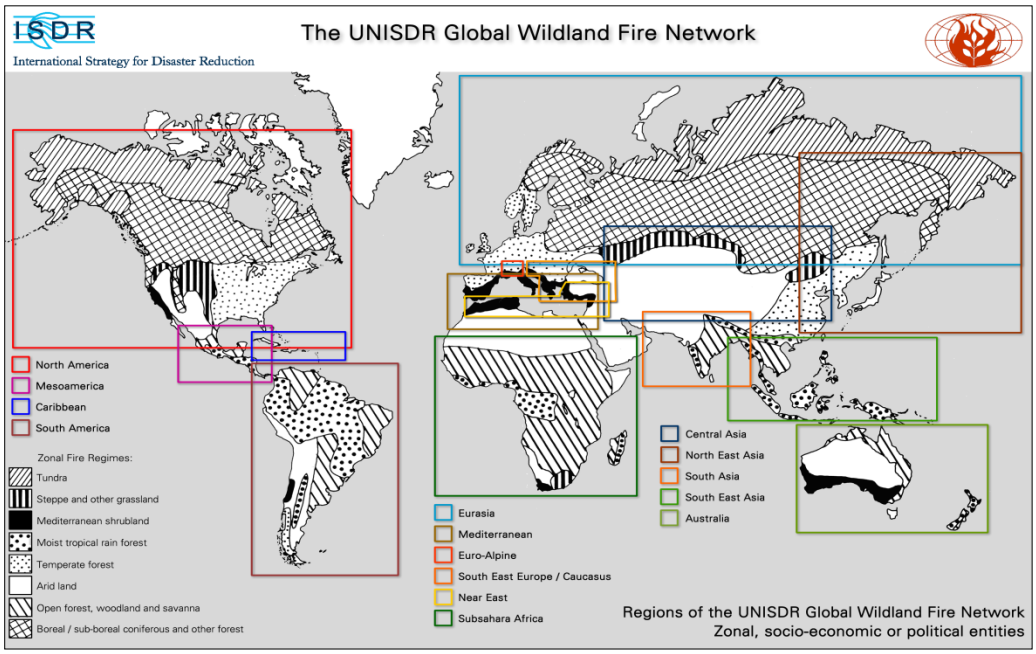


Figure 2: GWFN Fire Networks (courtesy GFMC)

2 Rationale of the Side Event

Both the GOFC-GOLD and GWF regional networks are working to engage the fire user and management community to address regional concerns and issues, to provide a voice for regional needs and to foster lateral transfer of technology and methods concerning fire science and management within and between regions.

The 5th International Wildland Fire Conference 2011 in South Africa provided a unique opportunity for GOFC-GOLD Fire regional network members from around the globe to meet, and discuss fire related EOS themes for fire management, policy decision-making and global change research. This "networking day" of the GOFC-GOLD fire networks and the UNISDR Regional Wildland Fire Networks in two sessions, brought together both the fire science and the practitioner community to foster future cooperation and advance dialogue in order to (i) highlight good practice examples, (ii) identify knowledge gaps and needs of both communities, and (iii) join forces and mutually support each other's networks.

2.1 Objectives of the two sessions

1. Session I (Morning) 1st GOFC-GOLD Fire Inter-Regional Network meeting: The objective was: to facilitate inter-regional network cooperation amongst GOFC-GOLD Fire network members around the globe and the exchange of knowledge,

experiences and solutions in accessing and using satellite data for fire science and applications.

2. Session II (Afternoon) 1st Joint GOFC-GOLD and GWFN Network Meeting: The objective was: to facilitate cooperation and collaboration amongst GOFC-GOLD and UNISDR Regional Wildland Fire Networks in order to enhance the efficient and targeted application of Earth Observation data for applied integrated fire management.

3 Regional network members and side event participants

Through GOFC-GOLD START funding 23 people, either fully or partly sponsored, could attend the side event and the Wildfire 2011 conference (Table 1). All sponsored participants were advised to arrive on Sunday the 08/05/11, to be able to attend and present at the side event meeting. However three participants (one from Sudan and two from Mongolia) missed connecting flights and only arrived in the afternoon of the 09/05/11 hence missed the side event.

Table 1: Sponsored GOFC side event participants

No	Name	Country/Network	Organisation/Institution
1	Shahinda Abdelrahman Yahya Elkhalifa	Sudan	National Centre for Research (NCR), Remote Sensing Authority (RSA), /Sudan
2	Francoise Valea	Burkina Faso/ WARN	Laboratoire GEOPHEN (Géographie Physique et environnement)
3	Thongboonchoo, Narisara *	Thailand/SEARRIN	College of Chemical Engineering Faculty of Engineering King Mongkut's Institute of Technology
4	Orbita Roswintiara	Indonesia / SEARRIN	Director Remote Sensing Data Center Indonesian National Institute of Aeronautics and Space (LAPAN)
5	Tanpipat, Veerachai	Thailand/ SEARRIN	Forest Fire Control Division, National Park Wildlife and Plant Conservation Department, Remote Sensing
6	Solichin Solichin#	Indonesia / SEARRIN	REDD-Merang Project
7	Erdenetuya, M	CARIN	Senior Remote Sensing Specialist /NRSC of Mongolia/ Environmental Information Center,
8	Tsolomon Renchin	CARIN	National University of Mongolia
9	Cruz, Isabel*	Mexico/RedLaTif	CONABIO National Commission for the Knowledge and Use of the Biodiversity
10	Natasha Ribereiro*	Mozambique/Miombo	University of Eduardo Mondlane Mozambique
11	Landing Mane*	DRC/OSFAC	OSFAC office Kinshasa, DRC
12	Patrick Lola Amani	DRC/OSFAC	OSFAC office Kinshasa, DRC
13	Ntandokamlimu Nondo,	Zimbabwe/SAFNET	
14	Michael Otsub	Namibia/SAFNet	Directorate of Forestry Namibia
15	Mdumiseni Wisdom Dlamini	Swaziland/SAFNet	Swaziland National Trust Commission
16	David Nangoma, Mulanje	Malawi/SAFNet	Muljane Mountain Trust
17	Eric Chisanga	Zambia/SAFNet	School of Natural Resources, Copperbelt University
18	Richard Kapere	Uganda/SAFNet	Wildlife Department Uganda
19	Gerardo Lopez Saldana	RedLaTif/Conabio	Department of Forestry, Instituto Superior de Agronomia (DEF/ISA), Technical University of Lisbon,

20	Kekilia Kabalimu	Tanzania/SAFNET	Department of Forestry & Beekeeping, Senior Cartogrpaher
21	Anja Hoffmann	GOFC Fire IT	GOFC Fire IT
22	Philip Frost*	Republic of South Africa/SAFNet	CSIR Meraka Institute, Remote Sensing Unit
23	Navashni Govender*	Republic of South Africa/SAFNet	Kruger National Park, Fire Ecologist

* = Network Coordinator

#= partly sponsored

Besides the sponsored participants other invited or interested conference guests attended the meeting (see Appendix II). Global Wildland Fire Network members joined the afternoon session.

4 Programme and Summary of presentations

The meeting started with some delay due to technical problems of the sound system. On behalf of the GOFC Fire Co-Chair Chris Justice, David Roy GOFC Fire IT member gave welcome remarks including an overview of the structure and goals of GOFC-GOLD with particular focus on GOFC-GOLD Fire and the regional networks.

The six speakers who followed summarized the Regional Networks activities with a 15 minutes presentation each that outlined the major activities and fire products that their networks offer to regional GOFC-GOLD Fire member countries and fire practitioners. The morning session was closed by a presentation from Kevin Murphy titled "Improving Access to NASAs Near-real Time Fire Observations: The Land, Atmospheres Near-real time Capability for EOS (LANCE)" (http://lance.nasa.gov/).

The proposed CARIN network presentation could not be held as the two participants from Mongolia had not arrived in time due to a missed connection flight. The sessions were chaired by the meeting participants.

Presentation sequence of the Morning Session I:

- Welcome remarks to Session I: Overview of GOFC-GOLD Fire and the Regional networks - **D. Roy**, K. Vadrevu, C. Justice
- Southern African Fire Network (SAFNet) Wide Area Monitoring Information System (WAMIS) and fire products for the southern African region - **P. Frost**
- West African Regional Network (WARN) - Bush fires in Burkina Faso with MODIS data - **F. Valea**
- Observatoire Satellital des For괧 d'Afrique Centrale (OSFAC) (Central Africa) - Fire Monitoring in the Congo Basin based on MODIS: current drawbacks and future requirements - **L. Mane**
- South East Asia Regional Research Information Network (SEARRIN) Fire Situation in South East Asia - **N. Thongbooncho**
- Remote Sensing Data in Supporting Wildfire Early Warning and Monitoring in Indonesia - **O.Roswintiara**

- The Latin American Remote Sensing and Forest Fires Network (RedLaTIF) - **I. Cruz**
- Improving Access to NASAs Near-real Time Fire Observations The Land, Atmospheres Near-real time Capability for EOS (LANCE) - **K. Murphy**

The afternoon session was joined by GWFN network members and welcomed by Johann Goldammer Co-Chair of GOFC-GOLD Fire IT and head of the Global Fire Monitoring Center (GFMC) with an overview of the UNISDR-Global Wildland Fire Networks.

Presentation Sequence of the Afternoon Session II:

- Welcome remarks to Session II: Summarized status-quo overview of GWF-UNISDR fire networks ; Wildfire 2011 and the objectives of the Regional Sessions - **J.G. Goldammer**
- Global Fire Early Warning by - **B. Groot** and regional example Southern Africa by - **K. Steenkamp**
- Common fire management & fire RS challenges, opportunities to benefit from GOFC-GOLD and GWF-UNISDR network cooperation and products. Plenary discussion for inputs GOFC/GOLD Recommendation for Wildfire 2011 statement - **D. Roy and A.A. Hoffmann**

All presentations can be found at:

http://gofc-fire.umd.edu/Wildfire_RN_SA_2011/index.asp

5 GOFC-GOLF Fire Recommendations for the Final Wildfire 2011 Statement

During the plenary discussion inputs for GOFC/GOLD recommendations for the final Wildfire 2011 Conference statement were put forward by the audience and later consolidated to draft recommendations. Capacity building in the use of fire satellite products was considered the top priority for the majority of the participants.

The final GOFC-GOLD fire recommendations were:

1. Need for capacity building in the use of fire satellite products, specifically the need for:
   a) Case studies and practical examples illustrating how to use of satellite products and data for fire management.
   b) Product documentation that is written in a way that is meaningful to the needs of fire managers and not just remote sensing experts, including explanations of the proper use of Quality Assessment labels.
   c) Development of a comprehensive and standardised University fire information curriculum modules and support for its dissemination and adoption within developing countries.
2. Product / data access (internet access and awareness issues) recommendations:
   a) Standard products should be distributed by agencies in a variety of formats recognizing the needs of the different user communities including the fire management community.

b) Standard products should be validated, and product accuracy information should be documented with accuracy metrics relevant to the different user communities (e.g. atmospheric modelers and fire managers)

c) Access to raw satellite data should be facilitated to derive regionally specific fire products, which are encouraged if they are validated following agreed protocols.

3. Strengthen involvement of regional networks in validation and quality assessment (leading to product refinement/reprocessing) of satellite fire products.

   a) Validation both of existing products as well as "next generation" fire products such as fire danger indices and fire characterizations (ground vs. surface fire; fuel type and condition; fire intensity and severity)

4. Fire Early Warning Systems

   b) Through collaboration between the UNISDR Regional Wildland Fire Networks and the GOFC-GOLD Fire Regional Networks, calibrate Fire Weather Index System parameters for different global regions using EO data, including:

      (i) Ignition Potential (or fire start) indicator using for example correlations between hot spot frequency and Fine Fuel Moisture Code (FFMC), and possibly other fine fuel moisture indicators;

      (ii) 'Fire Danger' indicators for example comparing area burned data, long-term drying (Drought Code, Buildup Index) and fire behaviour (Initial Spread Index, Fire Weather Index) indicators;

   c) Through the UNISDR Regional Wildland Fire Networks, support regional to local implementation of the Fire Early Warning System and Community Based Fire Management by facilitating:

      (iii) the development of locally (or regionally) derived fire management decision-aids/guidelines based on the calibrated indices of the Fire Early Warning System;

      (iv) local capacity building through technology transfer and training in operating a Fire Early Warning System at the regional to local levels;

5. Need for a consistent Global Fire assessment that is endorsed by the network community and that is updated on a regular (annual or more frequently than decadal) basis. This is needed to:

   a) support reporting of area burned and emissions at national and other scales

   b) assessment of global fire regimes

6. To assist the GOFC regions in quantifying pyrogenic emissions defining protocols and standards to use in a regionally appropriate manner:

   a) Guide on how to quantify the additional variables needed to compute emissions from burned area data such as fuel consumption and fuel density

   b) Integrate, publicize, and make available existing ancillary data sets and current scientific knowledge for emission inventories, including ground- and satellite-based land cover and land use data sets, fuels mapping and models, fire weather models/indices, combustion completeness, vegetation health/dryness, emission factors.

5.1 Integration of the GOFC recommendations into the Final Conference statement

The GOFC Fire Recommendations formulated at the side event meeting were integrated into the final Wildfire 2011 conference statement under the heading ”Common international tools”:

“Successful development of advanced technologies for wildland fire science and management, notably Satellite Earth Observation products, meteorological observations and forecasting, and climate modeling, is calling for systematic application in support to fire management:

- Development of fire weather and early warning systems at local to global levels
- Capacity Building in the use of fire satellite products
- Design and implementation of a global fire assessment (including fire regime assessment) and establishment of a constantly updated long term satellite fire record which is consistent, validated and endorsed by the Satellite Earth Observation community
- Support national reporting of area burned and emissions
- Support the establishment of regional fire monitoring centers”

The full conference statement can be found in Annex 1.

6 Evaluation of the Side Event

An evaluation form was handed out to the delegates after the meeting (see text box 1). Responses were received and reviewed by nine delegates.

Text Box 1: Evaluation Form

Evaluation ***Form***

1 = strongly disagree, 2 = disagree, 3 = Satisfactory, 4 = agree, 5 = strongly agree

1. **Program**
   a. **The contents of the program were adequate for the purpose of the side event.**

1	*2*	*3*	*4*	5

2. **Presentations**
   a. **Presentations were helpful in idea generation for your own network/ work.**

1	*2*	*3*	*4*	5

3. **Time**
   a. **Time was sufficient for the workshop and its topics.**

1	*2*	*3*	*4*	5

4. **Side event objectives**
   a. **The event were meeting the intended objectives:**
      - To facilitate inter-regional network cooperation amongst GOFC-GOLD Fire network members around the globe through the exchange of knowledge, experiences and solutions in accessing and using EOS data for fire applications techniques

1	*2*	*3*	*4*	5

      - To facilitate cooperation and collaboration amongst GOFC-GOLD and UNISDR Regional Wildland Fire Networks in order to enhance the efficient and targeted application of Earth Observation data for applied integrated fire management.

1	*2*	*3*	*4*	5

5. **Conference facilities**
   a. **The conference facilities were conducive for the meeting**

1	*2*	*3*	*4*	5

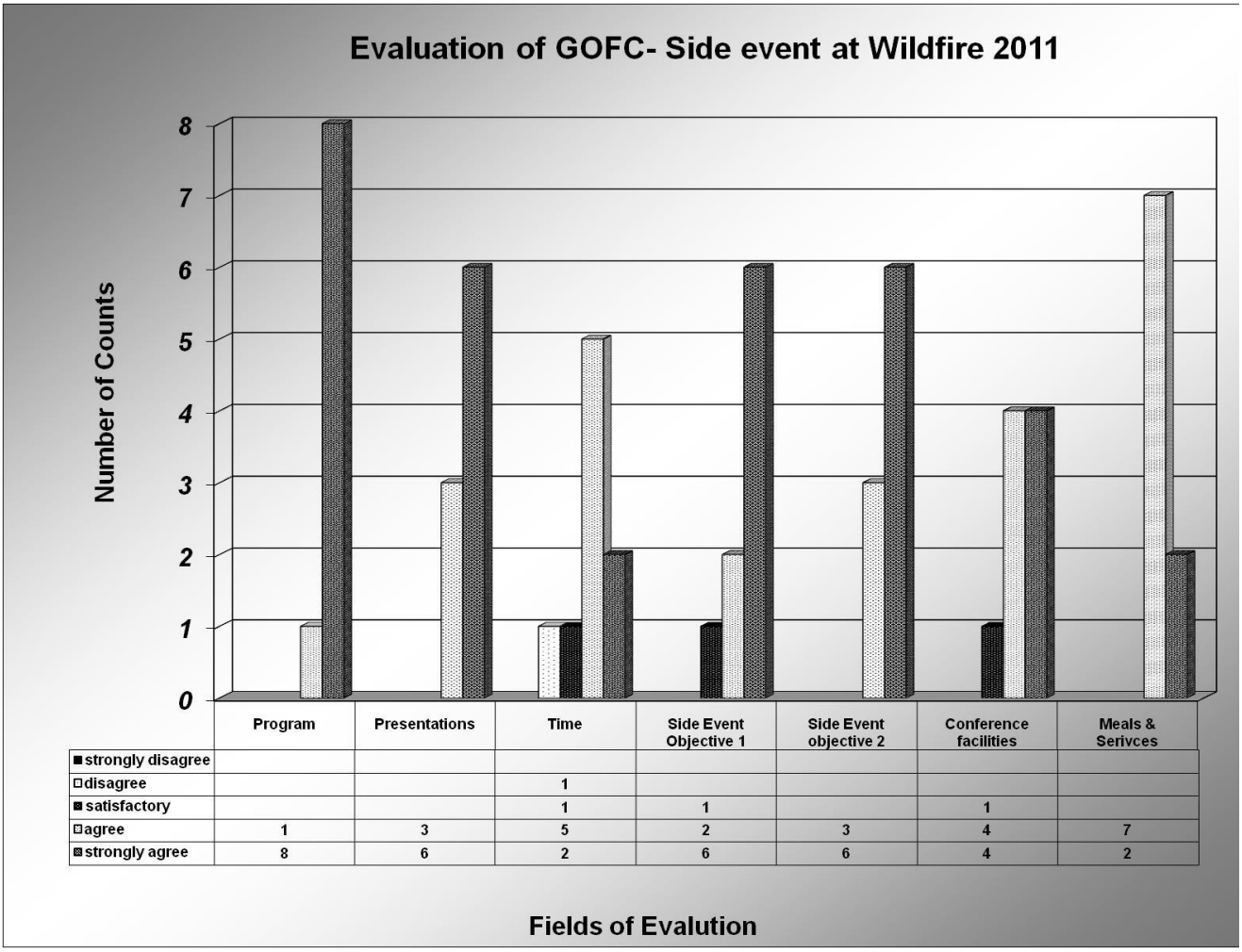
6. **Meals and service**
   a. **The meals and service provided were good.**

1	*2*	*3*	*4*	5

7. **Any other comments, recommendations and ideas for improving the GOFC-GOLD Fire Network relationship and works**

6.1 Results of Evaluation

Figure 3 shows the feedback given in the evaluation form of the respective questions.



	Program	Presentations	Time	Side Event Objective 1	Side Event objective 2	Conference facilities	Meals & Serivces
strongly disagree							
disagree			1				
satisfactory			1	1		1	
agree	1	3	5	2	3	4	7
strongly agree	8	6	2	6	6	4	2

Figure 3: Side event evaluation results

6.2 Additional comments

Any other comments, recommendations and ideas for improving the GOFC-GOLD Fire Network relationship and work:

1. Great many thanks conveyed from my executive director to GOFC-GOLD and the organizer for sponsoring MMCT to attend such an important network function. Our Trust is open and the net has been cast wide. All recommendations agreed in the session will assist improve GOFC-GOLD networking.
2. On individual level I have built my capacities and improved scope of looking at things that we must do for out Mount Muljane conservation area.
3. Have known people and organizations to network with.

4. For next meeting however (if possible) and funds permitting participants be accommodated in single rooms, no sharing. Or they should be asked to indicate special exceptions, for which information shall be strictly held in confidence but for pairing purposes
5. Need more time for presentation and discussions
6. Facilitate Earth observation data access to GOFC-GOLD fire network
7. Capacity building and training for member of network
8. Organize yearly meeting to facilitate exchange experiences on using earth observation data for fire monitoring
9. Courses to build capacity, e.g. Conabio has organized a MODIS course
10. Need more time for round table talking about strength and weakness of each network, how we could learn from experience of each network to help and promote the activities and strengthen the network
11. GOFC Fire could intensify communication among individual members and regional networks. A web based portal will potentially increase the knowledge sharing among members of regional networks. Moreover a mailing list will be very useful to ensure infrequent and intensive communication & info sharing to members and among members.

7 Other results and recommendations by network members

During the conference numerous individual and group discussions took place to further discuss improvements and ideas to advance networks and their objectives. During these talks all sponsored participants expressed great appreciation at being able to attend the side event followed by the conference and respective thematic sessions. For many it was the anticipated eye opener that fire and fire management is a global issue providing various opportunities for individual learning, improved networking and relationship building. The event and conference boosted the participants' motivation to be more active and revive network activities.

Next to the often mentioned need for capacity building measures in the use and application of satellite based fire information, many of the participants expressed the need of better communication and exchange between the different GOFC networks. As a result there is the need for a structural review of these networks and how cooperation amongst the networks could be improved also through review of operationalisation of GOFC Fire IT projects. A first step could be the renewing of the GOFC fire homepage and the respective appearance of the regional networks. Moreover a greater transparency of the existing network memberships and the creation of network mailing list following the example of e.g. SAFNet

It was noticed that in some regions the cooperation and exchange between the two networks GOFC Fire and GWFN works well informally. These informal working relationships should be strengthened through bilateral projects. In Table 2 additional recommendations and ideas related to the networks are summarized.

Network	Suggestions/Recommendations
SEARRIN	□ Clarification of coordinator role (Land cover/Fire Theme) □ Establishment of SEARRIN Fire □ Set up of homepage □ Request member list from Mastura □ Propose SEARRIN Fire meeting to bring to togetherfire researchers and officially elect coordinator, □ Cooperate with SEAFIRE network □ Design joint projects □ Close collaboration with UNISDR – GWF network
Miombo	□ Revive network and hold a meeting in 2011

Appendix 1

Overall Wildfire 2011Conference Statement

5th International Wildland Fire Conference - 'Wildfire 2011'

Sun City / Pilanesberg National Park, South Africa, 9-13 May 2011

Conference Statement

Background and Rationale

The 5th International Wildland Fire Conference 'Wildfire 2011' was held in Sun City / Pilanesberg National Park, South Africa, 9-13 May 2011. The conference was held under the auspices of the United Nations International Strategy for Disaster Reduction (UNISDR) and the Food and Agriculture Organization of the United Nations (FAO) in conjunction with the Third Session of the Global Platform for Disaster Risk Reduction in Geneva. The Secretary General of the United Nations, Mr. Ban Ki-moon, conveyed an opening statement to the 500 delegates from 61 countries. He welcomed the efforts of fire specialists from around the world to develop a spirit of global cooperation in addressing the role of fire in the global environment and its impacts on society. The conference participants elaborated on both the need for the wise use of fire in sustainable management of natural and cultural ecosystems, and on the adverse effects of wildfires at local to global scales. They expressed strong concern at the escalation of wildfires across the globe, many unprecedented in the modern era for the severe impact on communities, the environment and the world economy. The conference participants acknowledged the benefits derived through collaboration in sharing information and researching new ways to tackle emerging issues. The conference participants, including the representatives of Regional Wildland Fire Networks and international thematic networks, concluded that efforts be strengthened in capacity building in wildland fire science and management, and that this can be fostered by international cooperation and sharing of expertise and resources.

Recommendations

The following recommendations are addressing common international concerns and reflect the consensus that priority has to be given to:

Areas of concern

Rural and industrialized societies have altered the natural environment and fire regimes. Vice-versa, humans are becoming increasingly vulnerable to the consequences of wildfires. This is calling for:

- Increase of fire management efforts on terrain contaminated by radioactivity, unexploded ordnance, land mines and chemical deposits, notably in the regions affected by the nuclear fallout of the nuclear power plant failures in Chernobyl (1986) and Fukushima (2011)
- Increase of efforts on securing peat bog / wetland ecosystems that are subjected to drainage and climate-driven desiccation to become affected by fire
- Increase of effort to reduce unnecessary burning on croplands, fallow and other lands to reduce the negative impact of greenhouse gas and black carbon emissions on the regional, arctic and global environment
- Address the increasing vulnerability of society at the wildland-urban interface by wildfires
- Provide necessary awareness and means to protect human health and security from wildland fire smoke pollution

Peoples participation

Experience in the involvement of civil society in fire management through participatory approaches (community-based fire management) to successfully reduce wildfire hazards, and enhance productivity and stability of land and the environment, is calling for:

- Creation of operational environments where community decision-making and implementation balance traditional and contemporary fire management requirements
- Management of fire on its benefits, through controlled burning, to improve livelihoods and health of local populations, and reduce greenhouse gases over vast areas of the globe
- Promotion of establishment of volunteer groups to assist state authorities in rural fire management
- Convention of an international conference on community-based fire management

Common international principles

Considerable success has been made in applying advanced principles in fire management and promoting fire management tools adapted to local conditions. The need for widespread application of these principles in practice is calling for:

- Application of the Voluntary Guidelines for Fire Management (FAO, ITTO, WHO/UNEP)
- Translation of the International Wildland Fire Management Terminology to other languages
- Global adoption of the Incident Command System (ICS) for the management of incidents
- Integration of forest fire management principles and tools in the REDD+ scheme
- Application of methods and approaches in risk management decisions that as far as possible are common across the organization, jurisdictions and countries and reflect recognized contemporary best practice.
- Acknowledgement that fire management is a fundamental element for consideration in all policy, legislation and practices related to land management planning and objectives

Common international tools

Successful development of advanced technologies for wildland fire science and management, notably Satellite Earth Observation products, meteorological observations and forecasting, and climate modeling, is calling for systematic application in support to fire management:

- Development of fire weather and early warning systems at local to global levels
- Capacity Building in the use of fire satellite products
- Design and implementation of a global fire assessment (including fire regime assessment) and establishment of a constantly updated long term satellite fire record which is consistent, validated and endorsed by the Satellite Earth Observation community
- Support national reporting of area burned and emissions
- Support the establishment of regional fire monitoring centers

International cooperation

Experience of a number of successful bilateral and multilateral agreements on cooperation in fire management is calling for:

- Promotion of bilateral and multilateral / regional agreements on cooperation in wildland fire management and mutual assistance in wildland fire emergencies
- Development of a proposal for a Global Agreement on Transboundary Cooperation in Fire Management
- Further involvement of the six FAO Regional Forestry Commissions and the National Platforms for Disaster Risk Reduction in the implementation of principles as laid down in the fire management guidelines and the "Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters"

Efficiency of sharing ground and aerial fire management resources

Mutual assistance on suppression operations demands protocols to dispatch ground and aerial resources and to set operational procedures based on technical criteria, standardization and harmonization of terminology, and training and certification of human resources. This is calling for:

- Country support the International Fire Aviation Working Group's project to identify appropriate standards and best-management practices on which to base the development of voluntary guidelines.

Development of policies addressing global change and fire

In response to global change (interaction of climate change, socio-economic changes, and land-use change) and taking into account that global warming is a reality and will lead to an increasing occurrence and severity of wildland fires globally, and increasing impacts of society. Thus the following is recommended:

- Development of adaptive fire policies and strategies for mitigation, adaptation and protection at national to international levels
- Integration of fire management in the frame of natural resources / land management at landscape level, including use of plant biomass as a renewable and sustainable source for energy production for wildfire hazard reduction
- Support of countries to conduct fire management assessments, formulate legal frameworks and strategies, build sustainable fire management capabilities and institutions, develop fire management plans and human resources

Follow-up International Wildland Fire Conferences

In following up the 5th International Wildland Fire Conference, considering also the outcomes of the International Wildland Fire Summit (2003), it is recommended:

- That the regions organize Consultations, bringing together the operational fire experts and fire scientists be held globally, within the next 1-2 years, to further examine the fire issues resulting from population change and global warming
- That the 2nd International Wildland Fire "Summit" of operational fire experts and scientist, be held within the next 2 to 4 years under the auspices of the United Nations, with a view to developing recommendations for the United Nations, to address the global issues raised during this Conference's Regional Sessions
- That future wildland fire conferences consider expanding their audience beyond the fire management community

The conference participants thanked the organizers and hosts of the conference for bringing together the international community responsible for wildland fire science and management. The participants welcomed the offer of South Korea to host the 6th International Wildland Fire Conference in 2015.

Appendix 2

Side Event Attendance List

GOFC-GOLD Fire and UNISDR Wildland Regional Network Meeting

Side Event at the 5th International Wildland Fire Conference

'Wildfire 2011' - South Africa, 9 (10-13) May 2011

Registration Form

No.	Name	Country/Network	Government Department /Organization	Telephone	Physical Address Postal Address	Email
1	M. Otsub	Nambia/SAFNET	MAWF	+264-813085845	P.O. Box 3760 Windhoek	otsub@yahoo.co.uk
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5	D. Nangoma	Malawi/SAFNET	Muljane Trust	+265-1466282 +265-99215251	Box 139, Muljane, Malawi	davidnangoma@yahoo.com
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7	Valea, F.	Burkina Faso/WARN	University Burkina Faso	+33-683423566	Grand Parc, 14200 Herouville	francovalea@hotmail.com
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GOFC-GOLD Fire and UNISDR Wildland Regional Network Meeting

Side Event at the 5th International Wildland Fire Conference

'Wildfire 2011' - South Africa, 9 (10-13) May 2011

Registration Form

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