#### We have 60 minutes to

DISCUSS: Common Fire Management & Fire RS Challenges and Opportunities to benefit from GOFC-GOLD Fire & GWF-UNISDR network cooperation

### **Develop:** Draft GOFC-GOLD recommendations for the Friday Wildfire 2011 statement

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•Quick GOFC-GOLD fire overview (to inform our GFW-UNISDR colleagues who didn't attend this morning)

- GOFC-Fire regional fire networks
- An example network and some of its activities

Draft Discussion Points

# GOFC-GOLD is first and foremost concerned with satellite remote sensing



# What is GOFC-GOLD ?



GOFC-GOLD is a coordinated international effort developed to help ensure a continuous program of space-based and onthe-ground forest, fire and land cover observations.

GOFC-GOLD has a vision to share data, information and knowledge, leading to informed action and decision support,

is part of a long term process of building an improved match between Satellite Observations, Data Products & User Needs.

# **GOFC-GOLD** Fire



### http://gofc-fire.umd.edu/

## Map of GOFC-GOLD Regional Networks



Networks primarily developing and economically emergent countries, voluntary membership, composed of representatives from government agencies, universities, NGO'

## GOFC-GOLD Regional Networks and Coordinators

Regional Network	Coordinator	Country	Organization	Email
AMAZON RN	Souza, Carlos	Brazil	Imazon - Inst. do Homem e Meio Ambiente da Amazônia	souzajr@imazon.org.br
NERIN	Krankina, Olga	USA/Russia	Oregon State University	olga.krankina@oregonstate.edu
CARIN - Fire	Erdenetuya, M	Mongolia	Institute of Remote Sensing	m_erdenetuya@yahoo.com
OSFAC	Mane, Landing	DR Congo	OSFAC Office, Kinshasa, DRC	Imane@osfac.net
Redlatif	Cruz, Isabel	Mexico	CONABIO National Commission for the Knowledge and Use of the Biodiversity	isabel.cruz@conabio.gob.m
West Africa RN	Mbow, Cheikh	Sénégal	Université Cheikh Anta Diop	cheikh_penda@yahoo.fr
Miombo Network	Natasha Ribeiro	Mozambique	Eduardo Mondlane Univeristy	nriberiro@uem.mz
SAFNet	Frost, Philip Govender, Navashni Dlamini, Wisdom Sikaundi, Gift	South Africa, Swaziland, Zambia	CSIR-Meraka Institute, SANParks, Swaziland National Trust Commission, Environmental Council of Zambia	pfrost@csir.co.za navashni.govender@sanparks.org mwdlamini@gmail.com gift@necz.org.zm
SEARRIN	Thongboonchoo, Narisara	Thailand	King Mongkut's Institute of Technology	nthongbo@gamil.com
East Asia RN	Pang, Yong	China	Chinese Academy of Forestry	caf.pang@gmail.com
India	Badarinath, Murthy	India	National Remote Sensing Center	badarikvs@yahoo.com

# GOFC-GOLD Regional Networks

- GOFC-GOLD has facilitated the development of a number of regional networks across the world
  - primarily among developing and economically emergent countries
  - some networks are fire specific
  - some networks are forest and land cover specific
- The GOFC-GOLD Fire Regional networks
  - allow for lateral exchange of information, data, technology and methods within and between regions
  - provide a means for strengthening regional and in particular national satellite fire related fire activities

# Example GOFC-GOLD fire Regional Network:

# The Southern African Fire Network (SAFNet)

[this network selected because WILDFIRE 2011 is geographically located within the SAFNet region]

## SAFNet is one of 4 African GOFC-GOLD Regional Networks



## 8<sup>th</sup> SAFNet Meeting Golden Gate, South Africa, 6-8 May 2011





#### SAFNET Southern African Fire Network



Menu

Home

Overview

Activities

Meetings

Links

Contacts

Products

#### Welcome!

The Southern African Fire Network is a regional network that fosters collaborative efforts in fire monitoring and management in southern Africa. SAFNet is a Global Observation for Forest and Land Cover Dynamics (GOFC/GOLD) regional fire network and contributes to meeting the goals of the GOFC/GOLD program. SAFNet was initiated using small seed funding grants from NASA, USAID (EMIS and GISD) and START. Future collaboration with partners and funding agents is being sought.



#### The SAFNet Mission

SAFNet's **goal** is to achieve more effective and appropriate fire management policies and practices in southern Africa through the use of remote sensing and other geospatial information technology.

SAFNet's **purpose** is to enhance the use of information from field observations and remote sensing of fires for natural resource management in southern Africa.

#### Announcements

#### 8th SAFNET meeting at Golden Gate National Park

2010-09-28

The 8th Southern Africa Fire Network meeting will be held at Golden Gate National Park, South Africa from 5 -8 May 2011. The meeting will take place a few days before the Wildfire 2011 conference (that will be held at Sun City) to allow SAFNET participants to also attend the Wildfire event. More detail will be posted soon!

Some SAFNet Satellite Product Generation and Distribution Activities

### MODIS Active Fire Product generated in South Africa by SAFNet members is being used operationally



### MODIS Active Fire Product generated in South Africa by SAFNet members is being used operationally



Africa Fire Information System (CSIR, Philip Frost)



# Limited Internet in Africa

- The relative problems in accessing large data volume files over the internet are emphasized when it is considered that in 2006 Norway had 1.5 times more bandwidth than all of Africa
- However
  - African internet access has increased by 1100% 2000 to 2010
  - new deep sea fibre optic cables from Europe and the US have been laid in the last few years
- Internet access, particularly away from Metropolitan areas, will continue to be restricted because of
  - problems of establishing networks within country networks
  - the pricing structure for user access
  - government regulation
- One solution is Geonetcast



#### Africa Monitoring of the Environment for Sustainable Development (AMESD) Proposed Fire Information Service

Operational AFIS field terminal installed in all SADC countries initially and then for rest of Africa after evaluation

**AFIS Field terminal** viewer **Reception station AFIS Processing System** . . .



### List of Products that will be disseminated through AMESD via Geonetcast

Product	Name	Frequency	Format
Active Fire	MODIS Active Fire	Every 6 hours	ASCII
	MSG Active Fire	Every 15 min	ASCII
Fire Danger Index	Fire Weather Index	Daily (3 day forecast)	ASCII
	Lowveld FDI	,	ASCII
Burned Area	MODIS BA raster	Monthly	Geotiff
	Vegetation Condition Index	Every 10 days	Geotiff
Fuel condition	Day since last burn	Annual	Geotiff
	Vegetation Productivity Index	Every 10 days	Geotiff

# Example SAFNet Satellite Product Validation Activity



#### SAFNet burned area validation protocol

developed during 2nd SAFNet meeting field trip held to develop the protocol and to discuss southern African fire information needs and how these could be met through the use of satellite products, Zimbabwe-Zambia, 11-19<sup>th</sup> July 2000







The Southern Africa Fire Network (SAFNet) regional burned area product validation protocol , Roy, D., Frost, P., Justice, C., Landmann, T., Le Roux, J., Gumbo, K., Makungwa, S., Dunham, K., Du Toit, R., Mhwandagara, K., Zacarias, A., Tacheba, B., Dube, O.P., Pereira, J.., Mushove, P., Morisette, J., Santhana Vannan, S., Davies, D., Submitted to SAFARI 2000 International Journal of Remote Sensing

### Landsat ETM+

Sept. 4th



### Landsat ETM+

Oct. 6th

Yellow vectors = ETM+ interpreted burned areas occurring between the two ETM+ acquisitions

MODIS 500m Burned Areas

Sept. 4 to Oct. 6



SAFNet MODIS burned area validation scenes distributed from dry savanna to wet miombo woodland to quantify product accuracy over range of representative biomass burning conditions



## L3JRC Burned Area Product - A/S/O 2001



### GLOBCARBON Burned Area Product - A/S/O 2001



### MODIS Burned Area Product (MCD45) - A/S/O 2001



### L3JRC Burned Area product Validation The slope of the regression line is 0.136, The intercept is 0.001 and the r2 is 0.128



### GLOBCARBON Burned Area product Validation. The slope of the regression line is 0.595, The intercept is 0.013 and the r2 is 0.509



### MODIS Burned Area product Validation The slope of the regression line is 0.75, The intercept is -0.005 and the r2 is 0.746



# SAFNet Burned Area Product Validation Protocol

- Now the official Committee on Earth Observing Systems (CEOS) burned area validation protocol
  - Independent reference data derived by expert interpretation of multi-date higher spatial resolution satellite data
  - Landsat data an attractive data source given that the US Landsat archive is now free

**DISCUSS:** Common Fire Management & Fire RS Challenges and Opportunities to benefit from GOFC-GOLD Fire & GWFN-UNISDR network cooperation

![](_page_32_Figure_1.jpeg)

#### Common Fire Management & Fire RS Challenges and Opportunities to benefit from GOFC-GOLD Fire & GWFN-UNISDR network cooperation **Draft Discussion Points - Products**

- Product/Data access (internet access and awareness issues)
  - Validated space agency satellite Fire products
  - Raw" satellite data needed to derive regionally specific fire products
  - Near real time fire products
- Product documentation and analysis
  - Develop product documentation that is more meaningful to fire managers
  - Need for Case Studies & lessons learned illustrating use of satellite products for fire management
- Strengthen involvement of regional networks for improved validation of satellite fire products
  - "next generation" fire products e.g. fire danger indices
  - fire products from new satellites about to be launched
  - Make product accuracy information comprehensible to non-scientists e.g., fire managers
- Formats different for different user communities e.g. sci. V management user types
- Regional specific products encouraged if validated
- Training & Capacity Building empower stakeholders, technical workers

Common Fire Management & Fire RS Challenges and Opportunities to benefit from GOFC-GOLD Fire & GWFN-UNISDR network cooperation **Draft Discussion Points - Products** 

#### Fire Characterization

- categorize fire cause lighting or human
- ф
- characterize if a fire is a ground, surface, or crown fire characterize what is burning (e.g. deforestation fire, pasture maintancance fire) ÷
- characterize fuel type & condition ф
- Fire intensity ÷
- Fire severity 0
- Need long term satellite derived spatially and temporally explicit fire data records 0
- Clear schedule for future fire products ۲
- Play increased role in future satellite missions ÷
- Regional network roster of fire product experts 0

![](_page_34_Picture_12.jpeg)

Common Fire Management & Fire RS Challenges and Opportunities to benefit from GOFC-GOLD Fire & GWFN-UNISDR network cooperation

### **Draft Discussion Points - Science**

- Global fire assessment endorsed by network community
  - Consistent
  - Demonstration of relevance e.g., support national reporting of area burned and emissions
  - Validated in a consensus way
  - Endorsed by network community
  - Highlight need for repeat global fire assessment e.g. every 5 years
- Development of a calibrated Fire Weather Index (FWI, FFMC etc.) for different regions.
- Improve maps/inputs for Global Fire Early Warning System.
- Evaluating Global fire regimes, and link with land use cover change and climate.
  - Seasonality
  - Duration etc
  - Regional scale: Fuel characterization, consumption, seasonal emission factors.

### Training !

Common Fire Management & Fire RS Challenges and Opportunities to benefit from GOFC-GOLD Fire & GWFN-UNISDR network cooperation Draft Discussion Points - Fire Management

- Advocate what is needed for fire management
- National emissions assessment
  - Science emissions research translating into fire management domain including e.g., REDD
  - Sources and sinks of emissions trans-boundary
- Appropriate tools for use of products
- Product QA and detection confidence understanding
- More transparency in validation results errors of omission and commission expressed in a meaningful way to fire managers
- Training & Capacity Building
- Scale global to local/property scale
  - Free Landsat offers great opportunities

Common Fire Management & Fire RS Challenges and Opportunities to benefit from GOFC-GOLD Fire & GWFN-UNISDR network cooperation **Draft Discussion Points** 

Cross network collaboration

e.g., validation and assessment of global product leading to product refinement/reprocessing

Secure funding for our networks

# Develop:

# Draft GOFC-GOLD recommendations for the Friday Wildfire 2011 statement

Draft GOFC-GOLD recommendations for the Friday

### Wildfire 2011 statement

Points we want to emphasize

- Introductory paragraph
- The previous points
- No more than one page

Write Thursday – Johann present Friday

#### Draft GOFC-GOLD recommendations for the Friday

### Wildfire 2011 statement

Points we want to emphasize