

GOFC-GOLD

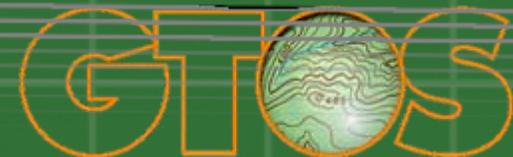
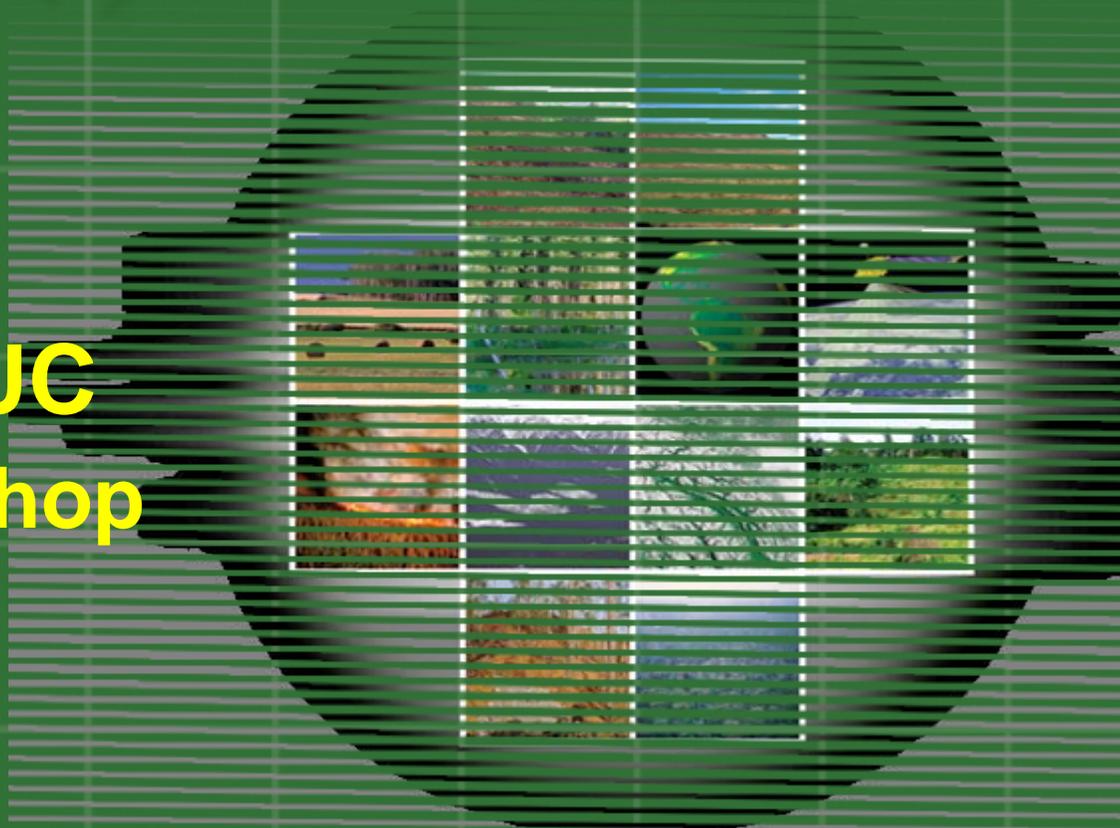
Global Observation of Forest and Land Cover Dynamics



GOFC-GOLD Overview

NEESPI / LCLUC Drylands Workshop

Chris Justice
Geography
UMd



Current Assessment On Earth Observations

The picture is mixed

- **We have never had so many satellite systems for earth observation and so much data as we have now**
 - **The quality of the data is also improving**
- **The ground based networks appear to be in serious decline and there is little indication that things are likely improve**
- **Budgets are shrinking – at least for now**
- **The demand for reliable and timely information is growing**
 - **For both science and natural resource management**
- **The internet is making data exchange easier**
- **The culture of data sharing is not widely shared**
- **There is broad agreement that better observations are needed**
- **There is precious little international coordination or cooperation on observations**

The time appears to be right for a concerted effort

Global Observation of Forest Cover



Background to GOFC/GOLD

- Recognition by CEOS and Partners of the need for Integrated Global Observing Systems (IGOS) to serve and support
 - Climate and Global Change Research (e.g. ENSO, Global Warming)
 - International Treaties and Agreements (e.g. FCCC, Biodiversity, Desertification)
 - Global Assessments (e.g. IPCC, MEA)
 - Carbon accounting and verification
- GCOS/GOOS/GTOS established
- GOFC formed - emphasis on Observation Needs for Science, Assessments and Natural Resource Management
- GOFC a project of GTOS
- **GOFC advising and contributing to GEOSS**



Global Terrestrial Observing System GTOS

Activities

GLOBAL TERRESTRIAL OBSERVING SYSTEM

Terrestrial Carbon Observations

Terrestrial Networks

Climate Observations (TOPC)

Central and Eastern Europe

Land Dynamics (GOFC/GOLD)

Southern Africa

Terrestrial Coastal Environments (C-GTOS)

Net Primary Productivity



GOFC-GOLD

GOFC/GOLD Principal Sponsors

- Canadian Space Agency
- Canadian Forest Service
- NASA
- European Space Agency
- GTOS
- UN FAO
- European Commission



Management

- Co-Chair
 - Tony Janetos (PNL, USA)
 - Philippe Mayaux (EC JRC, Italy)
- Secretariat
 - Michael Brady (Canada FS)
- Land Cover
 - Christiana Schmullius (Jena, Germany)
 - Curtis Woodcock (Boston, USA)
 - Exec Officer – Martin Herold (Jena)
- Fire
 - Johann Goldammer (Max Planck, Germany)
 - Chris Justice (UMd)
 - Exec Officer – Ivan Csiszar (UMd)



Functions of GOFC-GOLD

1999 Strategy revisited in 2005 to ensure the global systematic collection of observations of land cover and fire

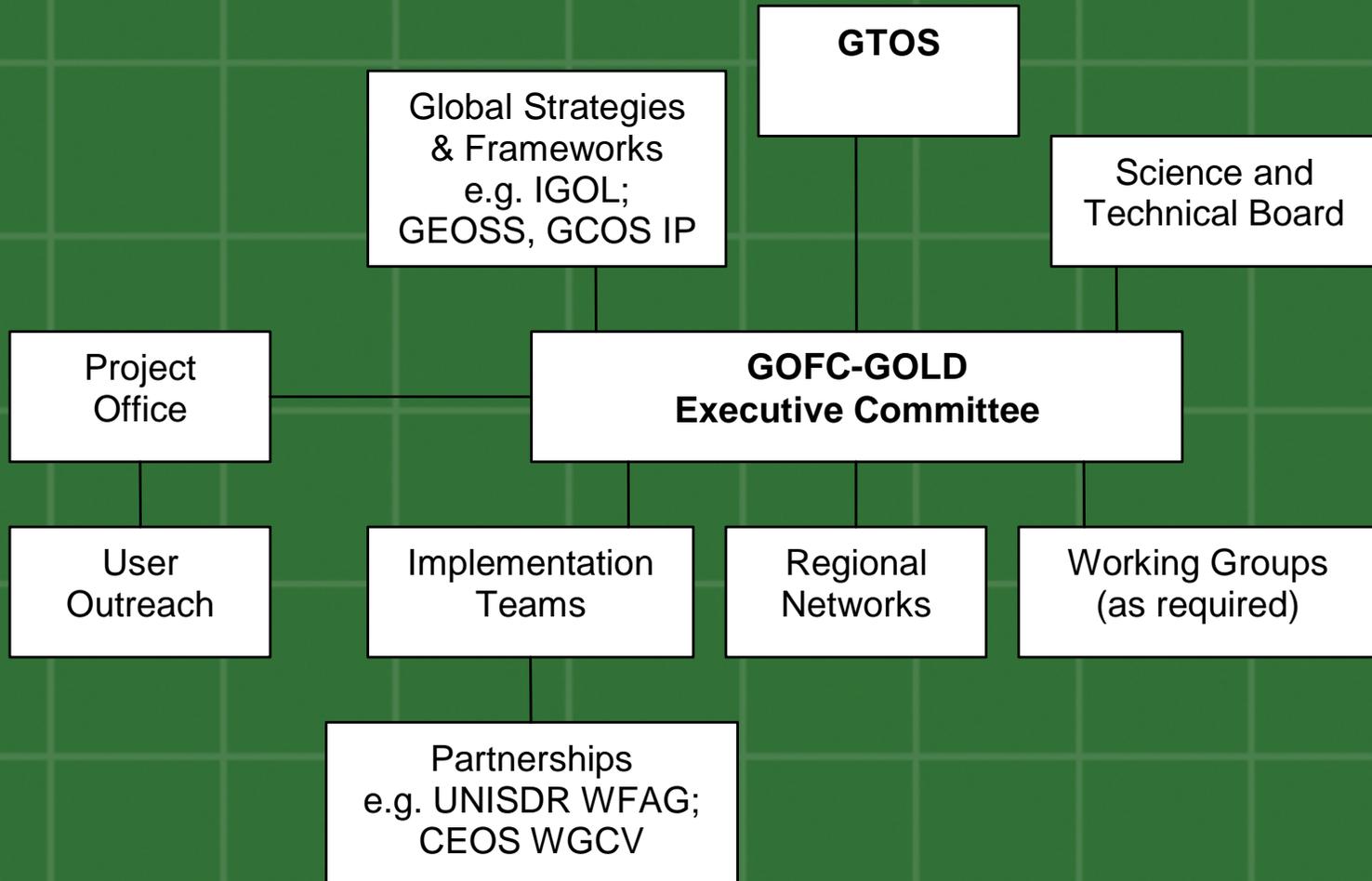
1. Specifying requirements for products
2. Assessing algorithms and data assimilation procedures
3. Ensuring the availability of observations
4. Harmonization and the development of protocols and standards
5. Ensuring that operational products meet accuracy requirements
6. Capacity building and the role of regional networks

7. Creating GOFC-GOLD products and services
8. Providing information to support international assessments
9. Advocacy role, especially in relation to the continuity of observations and validation



GOFC-GOLD

Management Structure

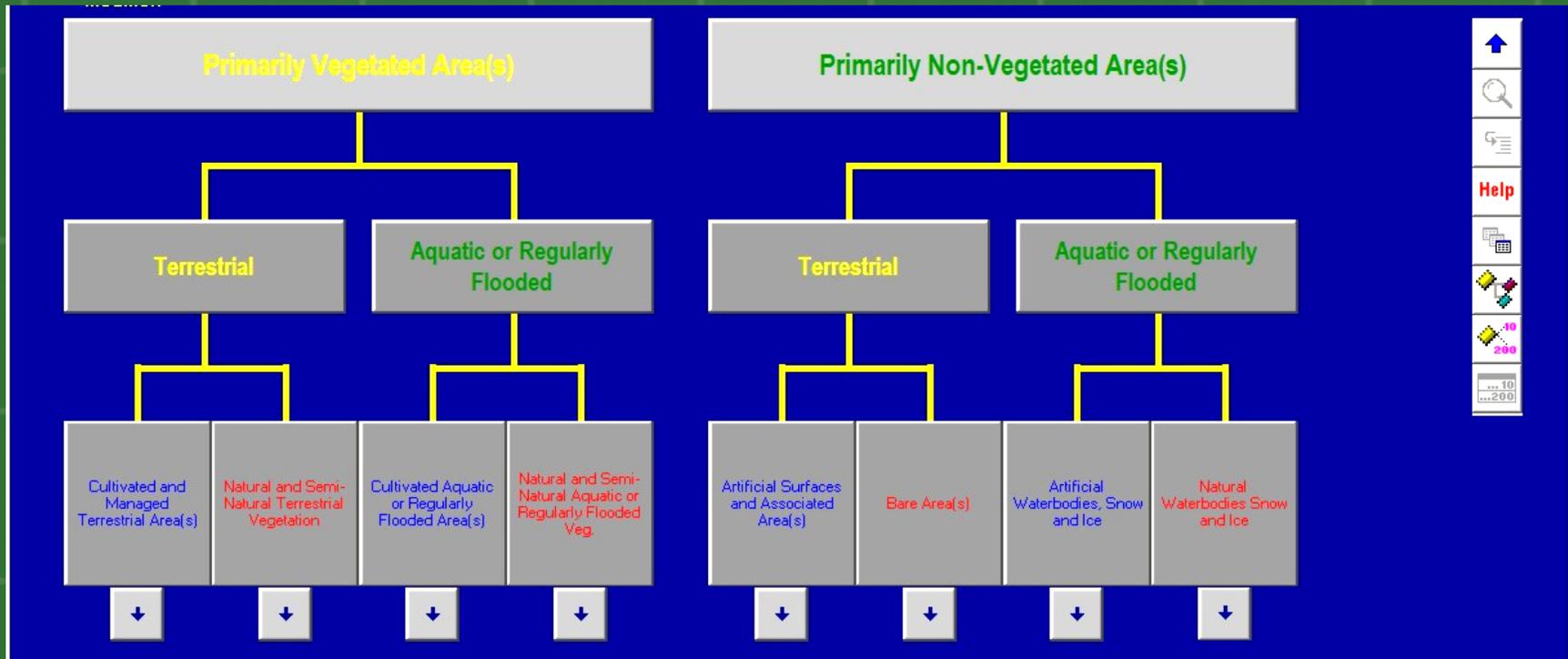


Land Cover IT Areas of Focus

- Joint global land cover validation and evolving a "best available" map
- GEO initiative on global land cover
- Progress in the area of reducing emissions from deforestation
- Mid-decadal and Decadal global Landsat datasets
- Involvement in producing in global land cover datasets (i.e. GLOBCOVER)
- Effort to define the "best practices" for validating land cover change
- Harmonization and Land Cover Classification System (LCCS)
- UNFCCC standards for essential climate variable's - land cover
- Progress for evolving IGOL and transition into GEO
- UN Forest Resource Assessment 2010 progress
- Support of new satellite sensors (LDCM OLI, Sentinel 2,ESA-BIOMASS)

FAO LCCS LAND COVER HARMONIZATION SCHEME

user interface at the initial dichotomous classification phase



LCCS is a world-wide reference system for land cover able to combine high flexibility with an absolute level of standardization of class definitions between different users. The system allows a dynamic creation of classes without the user having to relate to a pre-defined list of names by a dynamic combination of land cover diagnostic attributes called classifiers.



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GEO Task (AR-06-09)

- Advocate establishing continuity for near real-time, 30-m (or better) resolution, multi-spectral remote-sensing coverage everywhere on the Earth's surface, including support for the launch of Landsat-equivalent follow-on missions.
- Led by USA; CEOS (USGS); GTOS (GOFC-GOLD)

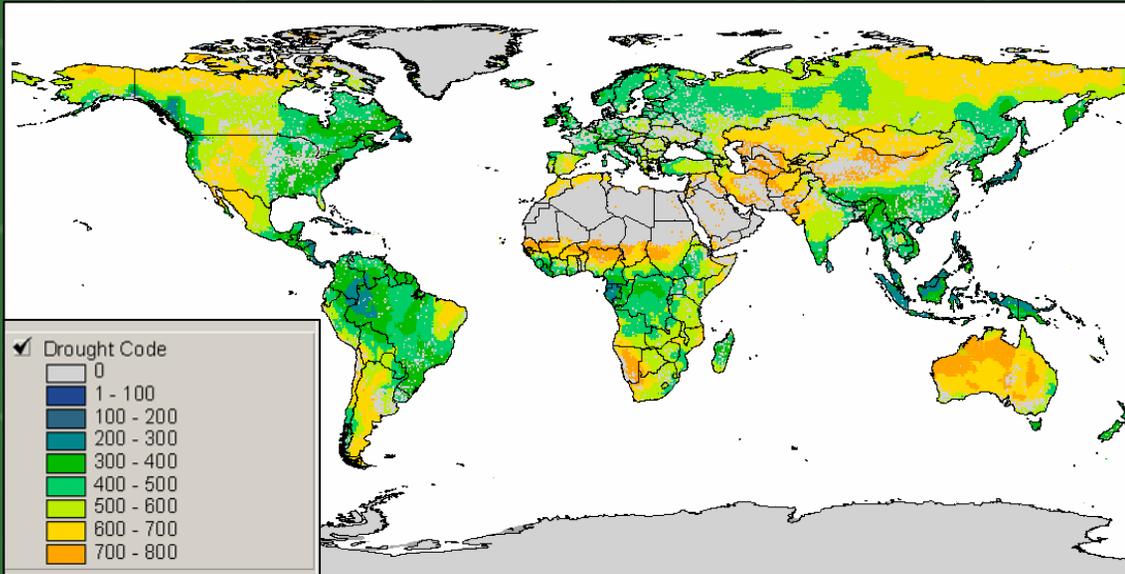


Fire Monitoring IT Areas of Focus

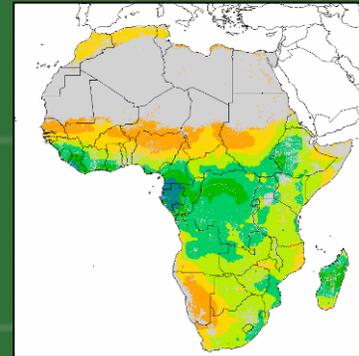
- Emerging Geostationary Global Fire Network
- Near Real Time Global Daily Active Fire Monitoring
- Web based Fire and Imagery Distribution Systems
- Multi-source fire information integration
- Regional / Global Burned Area Monitoring
- Systematic product validation
- Near real-time and Regional fire emissions modeling
- Global Fire Danger Rating System Development
- Sensor Web Demonstration and Technology Development
- Planning Fire Monitoring on Next Generation Polar Orbiters
- *Global Fire Assessment 2010 – TBD Thessaloniki*



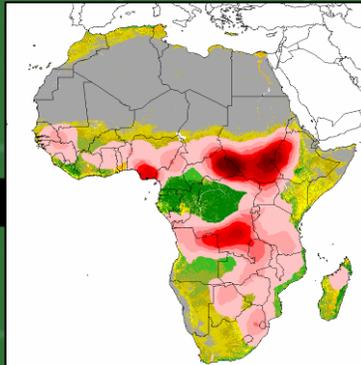
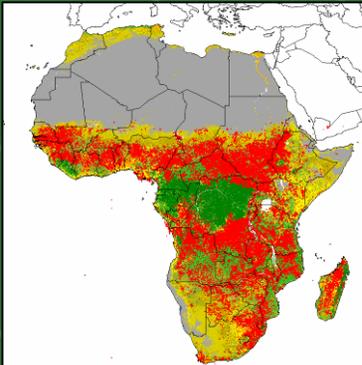
Global Fire Danger Rating System



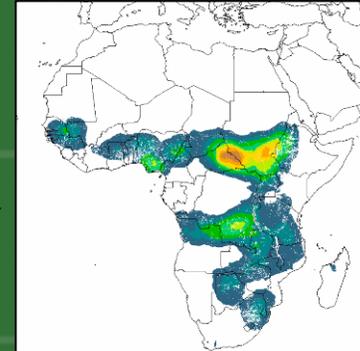
Drought masked by fuel



ATSR Hotspots, 1995-2000



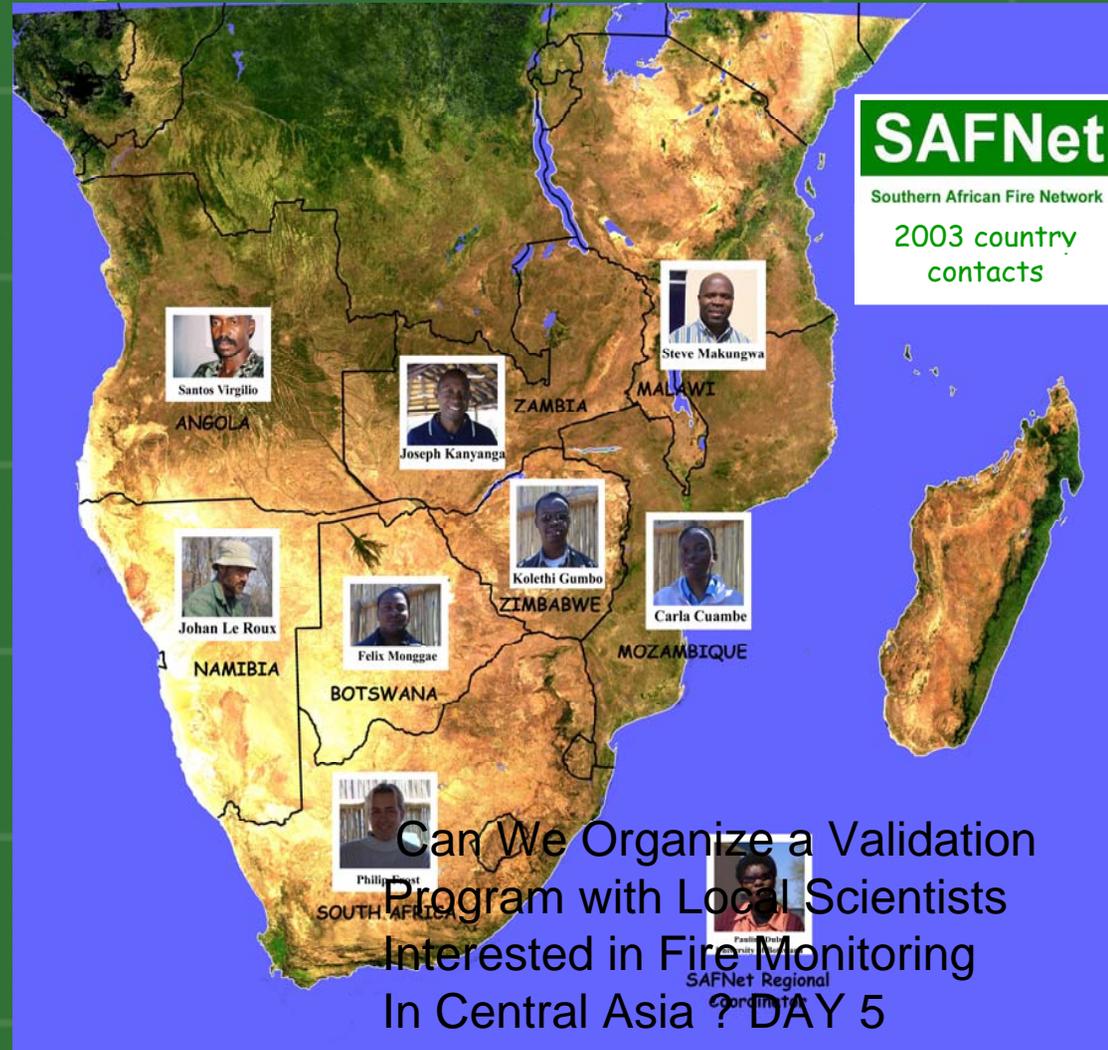
Drought x Fuel x Hotspot Density



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Coordinated Validation of Burned Area products

- Validation Protocol Established
- Select representative sites of different fire regimes with regional scientists in the GOFC/GOLD Regional Networks
- Map the Burned Areas at a higher resolution using images from two dates within the burning season (Landsat, SPOT, ASTER, CBERS etc)
- Determine the regional accuracy of the product
- Help regional scientists to use the data or develop their own customized products

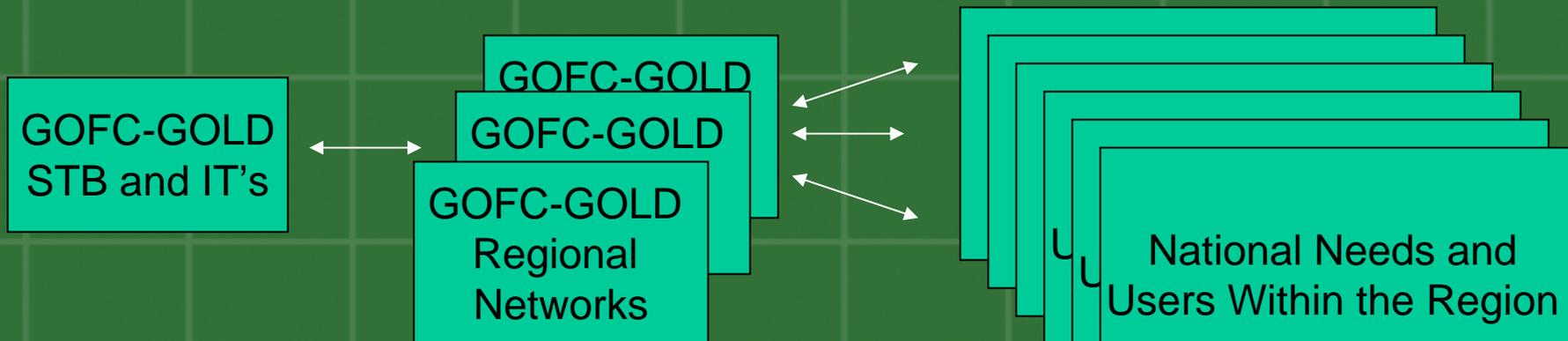


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Regional Networks

a critical component of the
implementation of GOFC-GOLD

Providing the interface between the IT's
and national level data users and needs



1. NEARIN – Northern Eurasia – Olga Krankina
2. SEARRIN - South East Asia – Mastura Mahmud
3. OSFAC - Central Africa – Didier Devers
4. Miombo - Southern Africa – Paul Desanker
5. SAFNET – Southern Africa – Pauline Dube
6. Latin America - Carlos DiBella



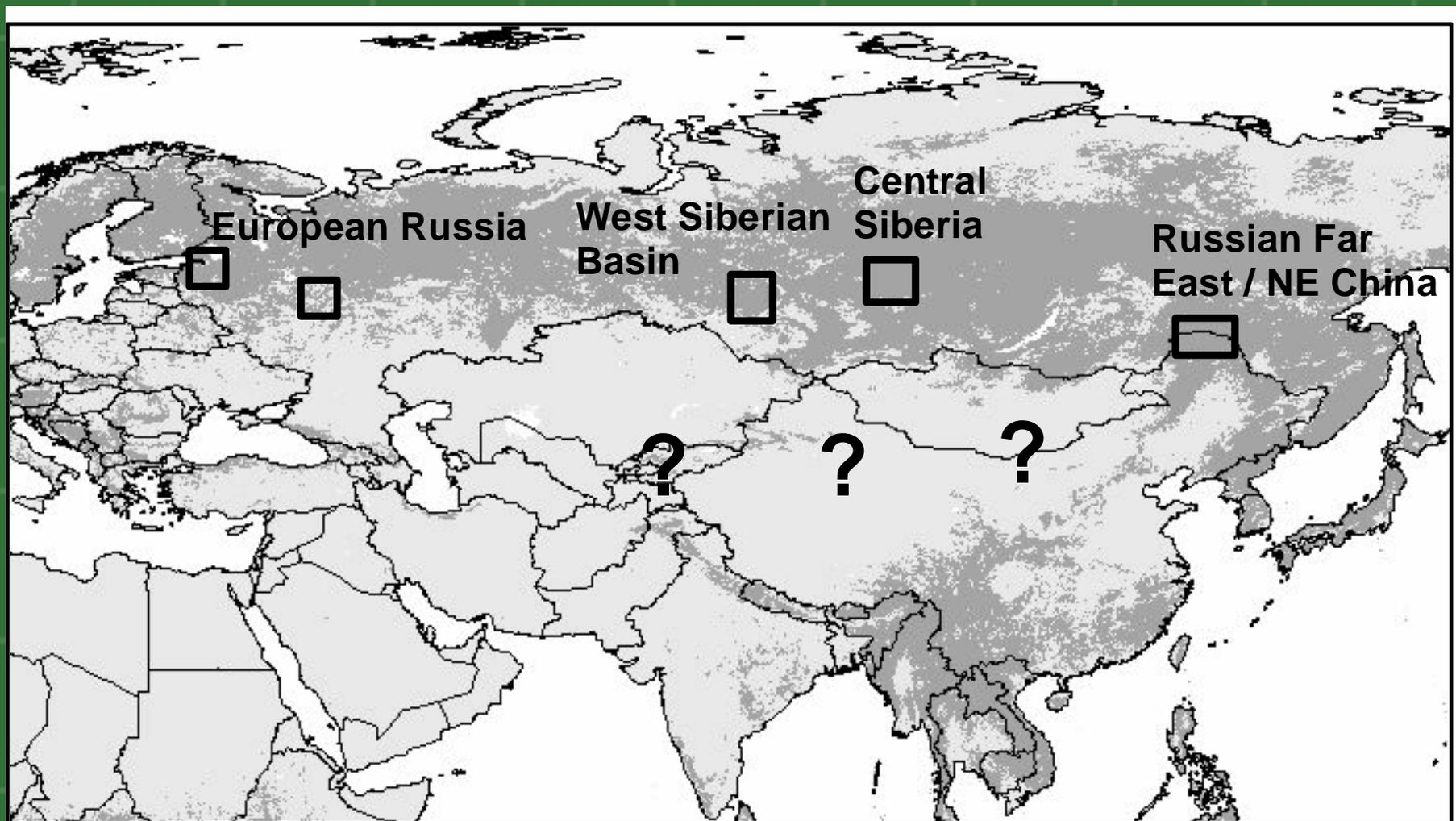
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Role of Regional Networks in GOFC/GOLD

- **Articulate and document regional earth observation requirements**
 - Observations (measurements)
 - Derived products and their associated accuracy requirements
 - Distribution systems
 - Regional data policy issues
- **Evaluation of the utility of global LC and Fire products for regional use e.g. for regional assessment, national reporting, natural resource/fire management**
 - Participate in regional product inter comparison and validation initiatives (providing local expertise)
 - Feedback to producers
- **Advise and assist in increasing regional use of products**
 - Web site – e.g. links to GOFC-GOLD-Fire and land cover websites
 - Establish regional data dissemination nodes
 - Encourage standardization and harmonization of regional products
 - Outreach workshops with regional practitioners and decision makers
 - Coordinate regional capacity building and training of users
- **Promote lateral transfer of technology between countries within the region and between regions**
 - Training and workshops

NERIN: NELDA study regions and sites

FOCUS SESSION ON DRYLANDS DAY 5



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