

ProSus

Promoting Sustainability Solutions

July 2020

MANAGING THE
EARTH'S RESOURCES
MORE SUSTAINABLY
THROUGH SATELLITE
OBSERVATIONS

START

In this issue



3 Welcome
By Jon Padgham

5 A view from Garik Gutman,
NASA Land-Cover/Land-Use
Change Program Manager

4 A view from Chris
Justice, Chair of the
GOFC-GOLD Program

7 Zoom on the
Regional
Networks

24 Perspectives
from
Data Initiative
training fellows



6 Sustainably managing the Earth's resources through global observations of land-use change and forest cover

8 OSFAC (Observatoire Satellital des Forêts d'Afrique Centrale)
With Landing Mané, OSFAC

10 Southern Africa Fire Network (SAFNET)
With Navashni Govender, Kruger National Park, South Africa

12 Miombo Network
With Natasha Ribeiro, Eduardo Mondlane University,
Mozambique

14 South Asia Regional Information Network (SARIN)
With Jai K. Garg, TERI School of Advanced Studies, India

**15 Southeast Asia Regional Research and Information Network
(SEARRIN)** With Kasturi Devi Kanniah, UTM - Universiti
Teknologi Malaysia

**16 South Central and Eastern European Regional Information
Network (SCERIN)** With Jana Albrechtova, Charles University,
Czech Republic, and Petya Campbell, University of Maryland and
NASA Goddard Space Flight Center, USA

18 Mediterranean Regional Information Network (MedRIN)
With Vincent Ambrosia, California State University - Monterey
Bay and NASA, USA; Ioannis Gitas, Aristotle University of
Thessaloniki, Greece; and Diofantos Hadjimitsis, Cyprus
University of Technology and ERATOSTHENES Centre of
Excellence, Cyprus

**20 Red Latinoamericana de Teledetección e Incendios Forestales
(RedLaTif)** With Nicolás Alejandro Mari, Instituto Nacional de
Tecnología Agropecuaria (INTA), Argentina

23 Strengthening earth observation science through training, connections and resources

**26 How can satellite data
help public officials better
understand and manage fires in
Eswatini?**
With Wisdom Mdumiseni
Dlamini, University of Eswatini

**27 How can earth observations
promote pathways for more
sustainable development?**
With Shiva Khanal, Forest
Research and Training Center
(FRTC), Nepal

**28 How can satellite images help
contain the spread of wildfires
in Mexico?**
With Lilia de Lourdes Manzo
Delgado, National Autonomous
University of Mexico (UNAM)

29 The journey continues:
A conversation with Data
Initiative alumni on how they
are keeping involved with
GOFC-GOLD and with other
fellows.

Welcome

By Jon Padgham, START's Executive Director

This issue of ProSus brings stories of impact from across the GOFC-GOLD networks, showing how involvement in these networks has allowed scientists to not only increase their skills but also their visibility and connectivity to the global community of land-use change research.

- Jon Padgham

Since its inception in 1997, NASA's Global Observations of Forest Cover and Land-use Dynamics (GOFC-GOLD) program has had a tremendous impact on advancing the use of satellite-based technologies in land-use land-cover change science across Africa, Asia, Latin America, Eastern Europe, and the Mediterranean Basin. With its emphasis on skill development, network building, and practical application to land-use decision making, the GOFC-GOLD program has greatly expanded access to and utilization of state-of-the-art remote sensing tools in regions experiencing high land-use change pressures.

This issue of the ProSus Magazine showcases GOFC-GOLD's legacy around the world, from humid forests in Southeast Asia and Central Africa to fire-dominated landscapes in Africa and Latin America, and more. It brings stories of impact from across the GOFC-GOLD networks, showing how involvement in these networks has allowed scientists to not only increase their skills but also their visibility and

connectivity to the global community of land-use change research.

START is pleased to dedicate this issue of [ProSus](#) to the GOFC-GOLD program, and we are proud to have been a core partner of GOFC-GOLD since the program's inception, playing a lead role in coordinating the training and network meetings and introducing skill building innovations such as the Data Initiative trainings. A coalition of international organizations and partners have contributed to the success of the GOFC-GOLD program. Current major partner organizations include NASA, the University of Maryland, Boston University, Wageningen University, Michigan State University, the Earth Resources Observation and Science Center of the US Geological Survey and START. Our sincere appreciation to all who have contributed to GOFC-GOLD's enduring legacy.



Jon Padgham
Executive Director,
START International

ProSus is a biannual e-magazine published by START International. Find out more at www.start.org/prosus_magazine



A view from Chris Justice, Chair of the GOFC-GOLD Program

This issue of ProSus is focused on the breadth of the GOFC-GOLD Program, as manifested by some of its regional networks, and celebrates the long-standing partnership between GOFC-GOLD and START (under the leadership of Hassan Virji, Cheikh Mbow and most recently Jon Padgham).

The GOFC-GOLD regional network coordination activity is currently co-chaired by Krishna Vadrevu (NASA Marshall Space Flight Center) and Jon Padgham (START), who are dedicated to understanding and meeting the needs of regional scientists and practitioners in the use of earth observations.

The first GOFC Secretariat was established in 1997, hosted by the Canadian Forest Service (Frank Ahern, then Michael Brady) and supported by the Canadian Space Agency; subsequently, the Secretariat was collocated with the GOFC-GOLD Land Cover Project Office initially at the University of Jena (Christiane Schmallius) and then at the University of Wageningen (Martin Herold), supported by the European Space Agency (Olivier Arino). David Skole (Michigan State University) recently joined Martin Herold as the Land Cover Implementation Team co-chair.

The GOFC-GOLD Fire Implementation Team is co-chaired by David Roy (Michigan State University), Martin Wooster (Kings College, London) and Jesus San Miguel Ayanz (European Commission's Joint Research Center, Ispra) and the Project Office is hosted at the University of Maryland, supported by NASA's Land-Cover/Land-Use Change Program (Garik Gutman).

The support from space agencies has been fundamental in enabling the program to have a broad international reach with a strong technical grounding in earth observations.

GOFC-GOLD has been an active program since its inception. Chaired initially by John Townshend and subsequently by Tony Janetos, I stepped into the Chair's role this year, following the untimely passing of Tony.

With the proliferation of satellite data provided by different countries, advances in cloud computing and the recognized need of up-to-date land use information, there is a greater need than ever to help regional scientists navigate which of the various international data or products to use for different science applications and how to process the data to obtain the information that is needed.

One of my goals as GOFC-GOLD Chair is to strengthen the regional networks, working with the networks' co-chairs and leads to identify opportunities to increase the use of earth observations and provide the associated training and technical support for both research and applications.

I also plan to strengthen the program's participation in the Committee on Earth Observation Satellites (CEOS) and the partnerships with the Group on Earth Observations (GEO) to support the sustainable management of natural resources at different scales.



Chris Justice
Professor and Chair
Department of Geographical Sciences
University of Maryland



A view from Garik Gutman, NASA Land-Cover/Land-Use Change Program Manager

As the GOFC-GOLD program approaches its silver jubilee within the next couple of years, the program is going through a transition with the leadership ready to revise its structure, strategy and foci.

The late Tony Janetos (former NASA LCLUC Program Manager) was one of the founders of GOFC (not GOLD yet), which at that time was a CEOS Pilot Project.

GOFC's major premises and goals were described in a special publication, edited by T. Janetos and F. Ahern, following the first GOFC workshop in Ottawa, Canada, in 1997.

Later, GOFC got its "gold designation" and became GOFC-GOLD, recognizing its expansion to include non-forest land cover. More recently, to stress the central role of land use in a number of policy directives at the global and national scale, the acronym was further modified to stand for Global Observations of Forest Cover and Land-use Dynamics.

The importance of regional capacity building and networks was emphasized in the aforementioned 1997 publication and later reiterated in "A Revised Strategy 2006: GOFC-GOLD Report No. 24" co-edited by Chair J. Townshend (University of Maryland) and Program Executive Officer, M. Brady (Canadian Forest Service).

It was stressed that the regional networks should provide a mechanism to achieve capacity building and that the associated activities should be strengthened.

The document noted that "to ensure that capacity building is maintained, the regional networks should form or strengthen their linkages and partnerships to international development agencies and organizations."

In this context, the long-term commitment from the institutions involved in the regional networks is critical. Training and other capacity building activities to achieve GOFC-GOLD objectives have continued to be facilitated by the diligent support of START staff, funded through a grant from NASA.

Based on the lessons learned from 20+ years of experience, my personal observations suggest that regional networks should aspire to equal representation from all countries in the regions, aiming at the involvement of not only institutions from the capital cities but also reaching out to provincial institutions.

I also note that diversification of the venues for the trainings/workshops to encompass the variety of institutional interests is of utmost importance.

As we are moving to focus more on land use, it is important to involve socio-economic specialists in the networks and the planned activities, to study the societal drivers and impacts of land use change, to complement the expertise provided by the remote sensing specialists and physical scientists already in the networks.

The networks need to continue to be dynamic with new members, implementing national and regional initiatives, punctuated by periodic regional meetings. During the trying times of 2020, with no travel, meetings, nor trainings in the near future, it is critical to maintain network activities by personal electronic communications, virtual webinars and trainings to sustain viable networks.



Garik Gutman
Program Manager,
NASA Land-Cover/Land-Use Change
(LCLUC) Program

Sustainably managing the Earth's resources through global observations of land-use change and forest cover

Satellite images and remote sensing data provide critical information to better understand complex dynamics between forest cover, land-use change and climate change. Such information is key for informing decision makers on sustainably managing natural resources and developing appropriate climate adaptation and mitigation strategies.

Although satellite data are readily available in northern countries, access remains a challenge for scientists in the south. The Global Observations of Forest Cover and Land-use Dynamics (GOFC-GOLD) program addresses this critical need through a coordinated effort to broaden access to existing data; increase scientists'

capacity to produce and analyze new data; and foster regional and international networks of scientists working on land cover and forest change issues.

GOFC-GOLD acts as an international forum to exchange information, coordinate satellite observations, and provide a framework for establishing

long-term monitoring systems. To achieve its goals, GOFC-GOLD has developed regional networks of data providers, brokers and users.

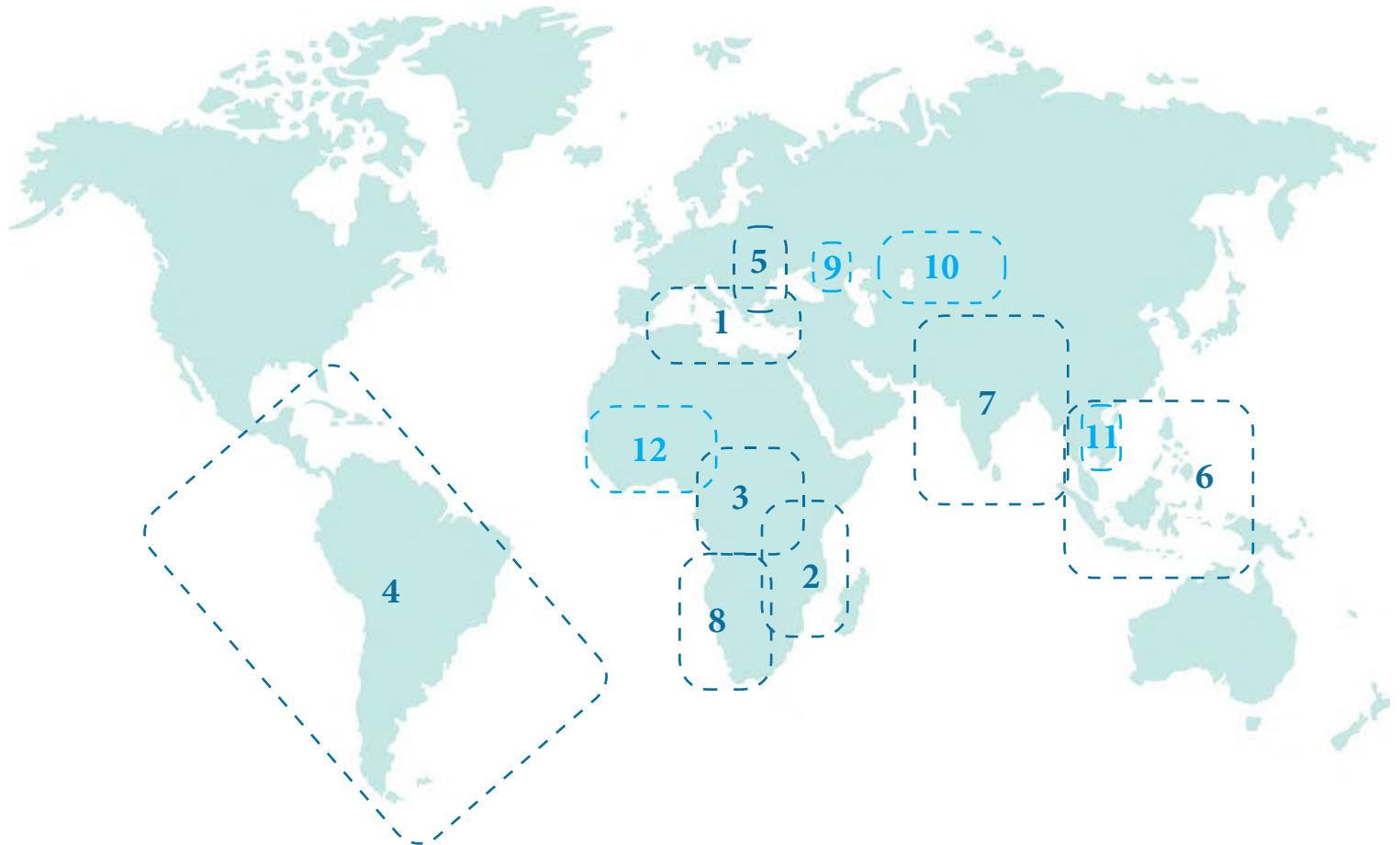
GOFC-GOLD networks are strengthened through workshops that address regional skill building needs and strategic planning concerns. This effort provides a strong voice for regional needs and fosters lateral transfer of technology and methods within and between regions. The regional networks play an important capacity development role for regionally based researchers.

<https://gofcgold.org>

GOFC-GOLD's activities are guided by an executive committee, primarily with support from NASA and the European Space Agency (ESA). The program was established as part of a Committee on Earth Observation Satellites (CEOS) pilot project in 1997. Its initial focus on global observations of forest cover was later expanded to include land cover and fire mapping and monitoring.



ZOOM ON THE GOF-C-GOLD REGIONAL NETWORKS



1. Mediterranean Regional Information Network (MedRIN)



Founded: 2018

Countries: Cyprus, France, Greece, Israel, Italy, Lebanon and Turkey.

2. Miombo Network



Founded: 1995

Countries: Angola, Democratic Republic of Congo, Malawi, Mozambique, Tanzania, Zimbabwe and Zambia.

3. Observatoire Satellital des Forets d'Afrique Centrale (OSFAC)



Founded: 2000

Countries: Cameroon, Central Africa Republic, Republic of Congo, Democratic Republic of Congo, Gabon and Equatorial Guinea.

4. Red Latinoamericana de Teledetección e Incendios Forestales (RedLaTif)



Founded: 2002

Countries: Argentina, Brazil, Bolivia, Chile, Colombia, Costa Rica, Mexico, Peru and Spain.

5. South Central and Eastern European Regional Information Network (SCERIN)



Founded: 2012

Countries: Bosnia and Herzegovina, Bulgaria, Czech Republic, Croatia, Greece, Hungary, Northern Macedonia, Moldova, Poland, Romania, Serbia, Slovakia, Slovenia, Turkey and Ukraine.

6. Southeast Asia Regional Research and Information Network (SEARRIN)



Founded: 1993

Countries: India, Indonesia, Japan, Malaysia, Philippines, Singapore, Sri Lanka, Thailand and Vietnam.

7. South Asia Regional Information Network (SARIN)



Founded: 2013

Countries: Afghanistan, Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Pakistan.

8. Southern Africa Fire Network (SAFNET)



Founded: 2000

Countries: Angola, Botswana, Eswatini, Madagascar, Malawi, Mozambique, Namibia, South Africa, Tanzania, Uganda, Zimbabwe and Zambia.

9. Caucasus Regional Information Network (CaucRIN)

10. Central Asia Regional Information Network

11. Mekong Regional Information Network (MekRIN)

12. West African Regional Network (WARN)

Networks

- Featured in this ProSus issue
- Not featured in this issue

Areas of work

- Land-use/land-cover change
- Forests
- Fire
- REDD+
- Biodiversity and conservation



OSFAC (Observatoire Satellital des Forêts d'Afrique Centrale)

With approximatively 200 million hectares, the Congo Basin forests constitute the second largest block of humid tropical forests in the world. The Congo Basin forests are rich in biodiversity and they provide a critically important carbon sink. Earth observations provide reliable and up-to-date information on the state and dynamics of the forests that inform both international research initiatives in the region as well as national and regional decision making on conservation and climate change in Central Africa.

Objectives and priorities

OSFAC strengthens regional capacities to produce reliable information on forest cover change and biodiversity across Central Africa using satellite data and modern mapping techniques. OSFAC's data, products and services directly support efforts of Central African states to equitably and effectively monitor and manage their environment and natural resources.

Forest monitoring by remote sensing: OSFAC and its partners - the University of Maryland, NASA, USAID/CARPE and FAO - conduct regular monitoring of the forests of the Congo Basin to produce information for climate change, REDD+, and land-use planning projects.

REDD+ (Reducing Emissions from Deforestation and forest Degradation): OSFAC provides technical support to national institutions and stakeholders for the implementation of REDD+ projects. The support mainly focuses on biomass and carbon quantification, carbon emissions and Monitoring Reporting and Verification (MRV/REDD+) activities.

Biodiversity and Conservation: in partnership with UNEP/WCMC, OSFAC uses spatial analysis to support national institutions in analyzing climate change impacts and synergies between REDD+, biodiversity and conservation programs.

Natural disasters and regional planning: OSFAC implements World Bank and UNDP projects on the analysis of natural risks in urban areas (erosion and flooding) and land development plans in the provinces of the Democratic Republic of Congo (DRC).

OSFAC was launched in 2000, and since 2005 it has been legally established as a non-governmental organization with regional vocation in Kinshasa, DR Congo.

www.osfac.net

Accomplishments

To date OSFAC has:

- Developed and established a **free distribution system for tens of thousands of satellite images and derived products** for monitoring the forests and environment of the Congo Basin countries.
- **Trained over 3,700 people** from various institutions, organizations and universities on the use of new information technologies (GIS, Remote Sensing, GPS and Spatial Analysis) for sustainable management of forest analysis and natural resources.
- Actively contributed to the conservation of biodiversity and mitigation of climate change by regularly providing national and international institutions, civil society organizations and decision makers with **reliable and relevant information on the state of forests** (extent, gains, biomass, carbon and CO2 emissions) and wildlife habitat in the Congo Basin.



Landing Mané
OSFAC Director

“

In just a few years, and in collaboration with numerous partners, OSFAC has become a center of excellence, and is now training and helping others to increase their capacity in earth observations. 95 percent of the DRC's GIS users were trained in one of OSFAC's training labs.

We make our findings available for free, and we are committed to ensuring that the information produced through earth observations is used effectively for the sustainable management of the Congo Basin forests.

”



Workshop with local stakeholders to validate geospatial data.



Southern Africa Fire Network (SAFNET)

Famously known as the “fire continent”, Africa is home to more than two thirds of the world’s fires. These fires not only release greenhouse gases, but when not properly managed, they result in widespread destruction of property and livelihoods. Using earth observation data to better understand the wildfire patterns and processes and support decision making across the Southern Africa region can greatly benefit people and ecosystems.

Objectives and priorities

The Southern African Fire Network fosters collaborative efforts in fire monitoring and management across Southern Africa. Major activities include collaborative research and training on the use of remote sensing and other geospatial information technology to achieve more effective and appropriate fire management policies and practices in southern Africa.

Essentially the Network serves as a link, contact and support for the Southern African fire management community and researchers.

Accomplishments

Since its inception in 2000, SAFNET has convened wildfire researchers and the practitioner community from across the region to share new discoveries in wildfire science, foster cooperation, and advance dialogue.

There have also been collaborative research initiatives conducted with universities from abroad, thereby encouraging north-south cooperation in areas of wildfire science. This has led to the establishment of joint regional and international fire science projects and validation sites.

The network has also increased researchers’ exposure to state-of-the-art satellite-based fire monitoring products and methodologies to calculate fire emissions and biomass estimates for fuel monitoring.

Recent papers by SAFNET members include:

Chanza, N., Chigona, A., Nyahuye, A., Mataera-Chanza, L., Mundoga, T., & Nondo, N. (2019). Diagnosing barriers to climate change adaptation at community level: reflections from Silobela, Zimbabwe. *GeoJournal*. doi.org/10.1007/s10708-018-9890-3

Ribeiro, N., Ruecker, G., Govender, N., Macandza, V., Pais, A., Machava, D., Chauque, A., Lisboa, S., N., & Bandeira, R. (2019). Interactions between landscape and fire frequency in relation to structure and botanical composition of savanna ecosystems. *Ecology and Evolution*. 9(14):8253-82649. [doi: 10.1002/ece3.5400](https://doi.org/10.1002/ece3.5400)

Donaldson, J. E., Archibald, S., Govender, N., Pollard, D., Luhdo, Z., & Parr, C. L. (2018). Ecological engineering through fire-herbivory feedbacks drives the formation of savanna grazing lawns. *Journal of Applied Ecology*. doi.org/10.1111/1365-2664.12956

“Without SAFNET, Kruger National Park would be using a very different methodology to map and monitor fires.”



Navashni Govender is Senior Manager, Conservation Management, at the iconic Kruger National Park, in South Africa. Involved with the Southern Africa Fire Network (SAFNET) since its early days, and now a member of the network's Steering Committee, she shared her insights on the network's broader impact.

What have been the major impacts of SAFNET in the region, in your view?

I have been participating in SAFNET's activities since 2002. Initially the group came together around a remote sensing burnt area validation project in Southern Africa that brought in experts from the United States. The project introduced cutting edge tools and technologies to the region, including the tools based on MODIS and Landsat information. Currently we are using MODIS information at Kruger National Park to map our fires. Without SAFNET and the introduction to MODIS, the park would be using a very different methodology, which would not be as effective. MODIS suits our requirements for cost effectiveness as well as spatial and temporal resolution. Many SAFNET members have also participated in GOFD-GOLD mapping and GIS trainings. All the knowledge and resources gained during trainings and network meetings is brought back to each of their institutions and work environments, creating a positive impact all across the region.

What is the role of fire in Kruger National Park?

Fire is a very important driver of land-use change, biodiversity, and socio-economics in Southern Africa, and it is very often seen as a contributor to carbon emissions. However, in the region, including in Kruger National Park, fire must be recognized as an important

resource and management tool needed to maintain the tree-grass balance of Savanna ecosystems. We map and monitor our fires through remote sensing, using tools developed in collaboration with the University of Maryland, thanks to the GOFD-GOLD program.

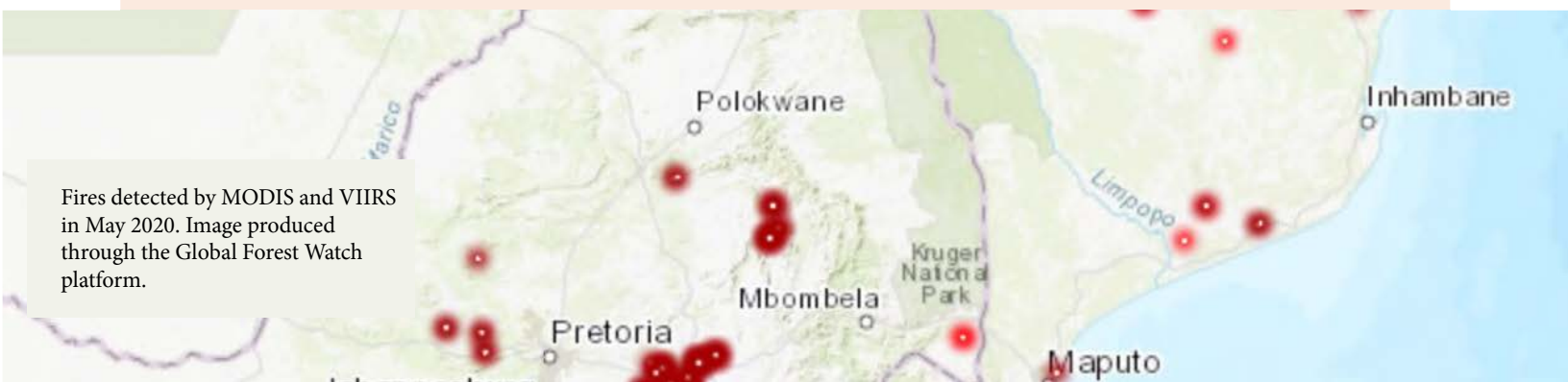
What are the main benefits of being a SAFNET member?

In my day-to-day work, being a member of SAFNET is a precious opportunity to connect with experts from the region and around the world, working in other fields – not only fire, but also land use – and other types of institutions, including the government, ministries, and organizations.

The SAFNET network is well established, with active connections and, since 2008, a Steering Committee to drive its activities. The support we receive from START to bring together the network's members every two years is crucial to ensure that we keep connected and up-to-date with latest science and technologies.

In 2018, we hosted a field validation course in Kruger National Park, and we used this opportunity to also organize a training and field data collection course to support satellite validation of fire detections and mapping. Researchers from within and outside the region were very excited to learn and share about satellite fire data validation in Kruger, a site where we can burn and monitor large areas thereby providing an ideal study field.

Fires detected by MODIS and VIIRS in May 2020. Image produced through the Global Forest Watch platform.





Miombo Network

The Miombo woodlands span seven Southern African countries that are home to over 70% of Southern Africa's human population. This fragile ecosystem is facing a multitude of deforestation and forest degradation pressures. Earth observations are key to better understanding how forest cover change is affecting the integrity of the Miombo woodlands.

The information produced through earth observations supports key decisions about conservation, restoration and management of the area. For example, it can be used to create easily accessible web-based systems that allow local-level planning decisions to be communicated with local communities, such as regarding existing stocks, areas of degradation, or for planning management activities. However, access to internet and cloud-based platforms are important impediments to allowing the Miombo region greater independence in producing relevant information.

Priorities

Main activities include science meetings, policy briefs on Miombo key management issues, scientific publications, information sharing via email list, joint research activities and capacity building.

Accomplishments

Founded in 1995, the Miombo network is the oldest regional GOFC-GOLD network in Southern Africa. It has a strong legacy of producing scientifically credible and relevant information in support of regional resource management, strengthened research and publication capacities, and increased awareness about the critical importance of Miombo woodlands and their conservation needs.

Network members have produced policy briefs which focus on Miombo restoration, land-use planning, sustainable management and forest policy. Members have also submitted to Springer a scientific book on Miombo in the global change context, that will be published and accessible to the wide scientific and decision making communities in September 2020.

Policy briefs issued by the Miombo Network include:

Syampungani, S, Ribeiro, N, and Archibald, S. (2018). Promoting Sustainable Management of the Miombo Woodlands. World Bank's website. [Link](#)

Archibald, S, Syampungani, S, Kamoto, J, Ryan, C, and Ribeiro, N. (2018). Land Use Planning : a Tool to Minimize the Environmental and Social Impacts of Agricultural Expansion in Southern Africa. World Bank's website. [Link](#)

“We decided to actively engage with ‘champions’ at government institutions who can get across our message to the right person, at the right time.”



Natasha Ribeiro is the Miombo network coordinator, based at Eduardo Mondlane University in Maputo, Mozambique. She has been involved with the network since 2002, and has participated in the 2012 Data Initiative training. She shared with us her perspectives on the network’s impact on policies and decision making in the region, and her insights on the Data Initiative experience.

How is the Miombo network contributing to inform decision making in the region?

In the past few years, network members have increasingly been discussing strategies to make the knowledge produced by the network more visible to decision makers. Our first efforts in this direction included the development and dissemination of four policy briefs, but we realized that this was not enough to ensure that the information was actually being read and used. So we decided to actively engage with colleagues based in government institutions, “champions” who can get across our message to the right person, at the right time.

Each of the members, in their respective countries, are doing this. It is a slow process, but it seems to be working. Mozambique, for example, is undergoing many changes at the policy level, and we have seen some of the messages from the policy briefs being taken up in new biodiversity conservation regulations.

Another example is a book on Miombo in the global change context that will be published by Springer in September. Various network members have been working on this book, which targets not only the scientific community but also decision makers with specific “policy highlights” included at the end of each chapter. In the book we also mention the need to engage more with the communities dependent on the Miombo ecosystems, because despite their wealth

of knowledge they have not been fully engaged in the management and restoration of the woodlands up to now.

What have been the major benefits of taking part in the 2012 GOF-C-GOLD Data Initiative training?

The training was very useful and helped enhance my capacity to conduct remote sensing analysis. It was interesting to see the USGS data archive in the United States – from here, with the internet limitations issues we face every day, we are not always aware of all the data available. I was able to download all the relevant data and eager to share it with my colleagues in the region, but due to technical limitations, this was not easy to do. I decided to share the data with interested colleagues as a disk, during the following Miombo network meeting.

The Initiative was also an interesting opportunity to meet colleagues from other regional networks and different contexts. I am still in contact with some of them, both socially and professionally. In fact, I am working on a multi-year project with colleagues from Boston University and from Laos met through the 2012 Data Initiative, as well as other fellows from other Data Initiative sessions. We are developing an algorithm, called [GLanCE](#), that based on a large dataset of Landsat imagery, will quickly produce results to address land-use/land-cover changes.



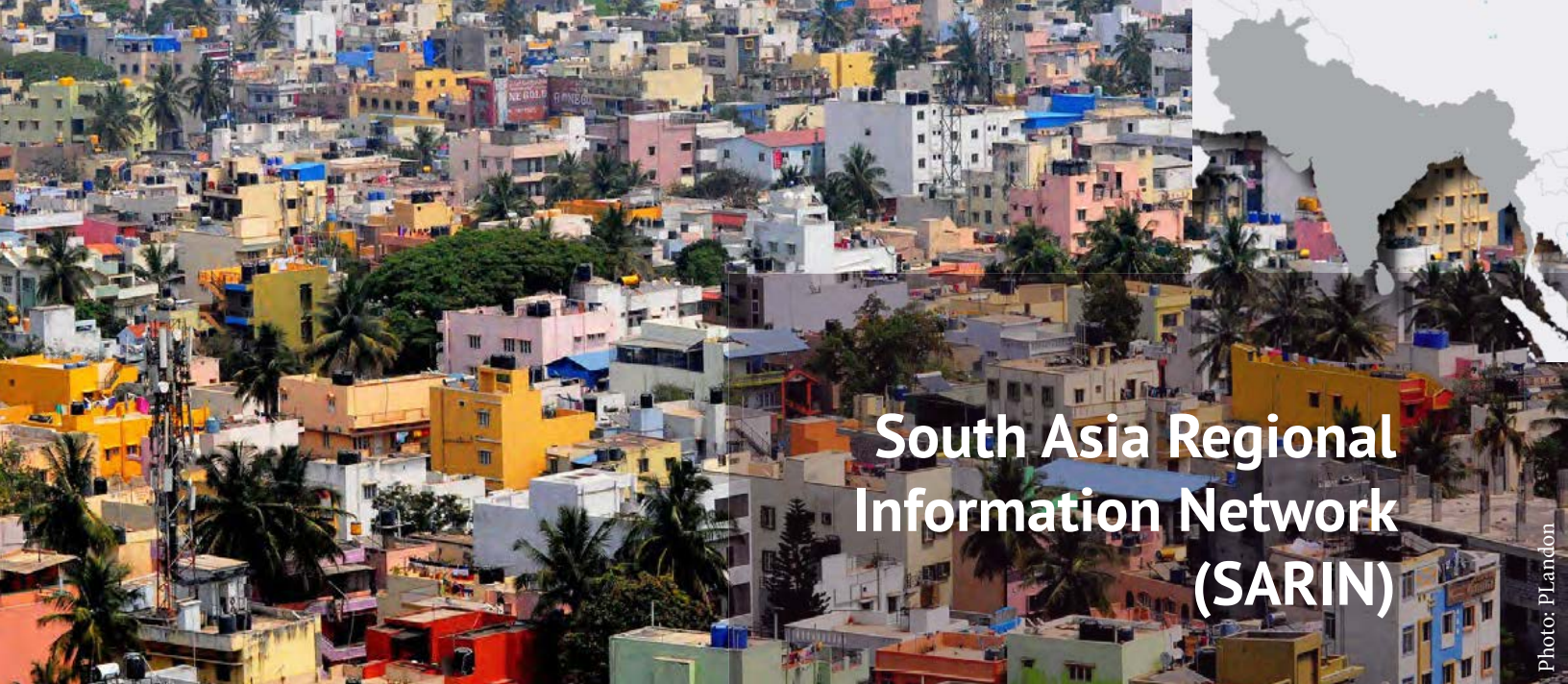


Photo: Plandon

South Asia Regional Information Network (SARIN)

Home to about 2 billion people, South Asia faces significant challenges stemming from the confluence of hydromet hazards, land-use and land-cover change and sustainable management of water resources. Remote sensing and GIS, in conjunction with conventional data, is critical for managing the region's resources. Remote sensing data is freely available and is widely used for decision making, environmental mapping and monitoring - India, for example has used remote sensing and GIS for monitoring forest resources since 1985.

Objectives and priorities

The SARIN network provides a platform for strengthening the capacities of researchers, educators and students involved in land-cover and land-use change (LCLUC) science with respect to use of state-of-the-art geospatial science and technologies. The network also promotes integration of LCLUC sciences with social sciences to develop solutions that advance the UN Sustainable Development Goals.

Accomplishments

SARIN has enabled collaboration in the region through meetings and workshops, gathering scientists from major space organizations, government departments and academic institutions.

The network also provides opportunities for training and capacity building to young researchers, convened by experts from the region, often on a voluntary basis.

The network has also produced several scientific outputs. A list of recent publications facilitated by the networks in the region can be found here:

<https://sari.umd.edu>



The events of the South Asia Regional Information Network (SARIN) attract scientists from major institutions in the region - space agencies, government and academia. The successful hosting of these meetings and training events, often co-funded by various organizations in the region, is a testimonial of the network's engagement and vitality.

Scientific outputs are a priority for us. We organize special issues in journals and encourage regional scientists to submit articles. We also provide support to early-career scientists, including by helping them with science algorithms and manuscript editing.



Jai K. Garg
Senior Fellow
TERI School of
Advanced Studies
India





Southeast Asia Regional Research and Information Network (SEARRIN)

Southeast Asia is undergoing rapid environmental change due to population growth, urbanization and economic development. These drivers are exerting immense land-use change pressures. The conversion of land from forest to agriculture and from agricultural areas to residential and urban uses is undermining vital ecosystem services that, among other factors, protect human settlements from flooding and other extreme events.

Remote sensing technology is critical in this region for ensuring robust monitoring and research on the impacts of land-cover and land-use change. This in turn helps to support public awareness and decision making that affect forestry and industry. The widespread conversion of forests to oil palm cultivation is a key case in point.

Objectives and priorities

The SEARRIN network promotes collaboration and capacity building (through annual meetings and training events) that enhance the use of remote sensing data for LCLUC studies.

Recent meetings include an International Regional Science Meeting held in Malaysia in 2019, which brought together 170 participants from 16 countries, explored the availability, potential, and limitations of different data sources and methodologies for research and monitoring LCLUC in the region. A 3-day hands-on training for 85 young researchers followed the meeting.

Another 3-day training event was offered in 2019 in Thailand to 90 scientists, mostly early-career researchers from South and Southeast Asia. The event was organized by the space agencies of the United States (NASA), Japan (JAXA), Thailand (GISTDA) and India (ISRO).



Kasturi Devi Kanniah
Head of TropicalMap
research group
UTM - Universiti
Teknologi Malaysia



Participating in the network provides a great opportunity for increased visibility and reputation to UTM - Universiti Teknologi Malaysia. During a recent network meeting, researchers from Malaysia presented outcomes in the field of forestry, atmosphere, urban and coastal areas.

Personally, thanks to the network I have been able to collaborate with researchers from the region and publish in special issue journals and book chapters.

I have also been invited to be a trainer in one of the capacity building events hosted by the NASA LCLUC program in Phuket in 2019 and to present perspectives from Southeast Asia in a meeting in Washington, DC.





South Central and Eastern European Regional Information Network (SCERIN)

Objectives

The South, Central and Eastern Europe Regional Information Network (SCERIN) provides a platform for collaboration among regional experts on remote sensing and environment; facilitates progress and consistent implementation of remote sensing methodologies in studying land-cover and land-use change; fosters regional collaboration for monitoring the dynamics, stability, and vulnerability of the major ecosystems in the region; and promotes effective sustainable management and preservation of natural resources at local, regional and pan-European level.

Priorities and accomplishments

SCERIN provides a coordinating mechanism for regional and international activities, information and data exchange, and a framework for long-term monitoring and sustainable management of forests and agricultural land.

SCERIN organizes annual workshops and, when possible, associated training for students and young professionals in collaboration with the Trans-Atlantic Training (TAT, ESA/NASA) initiative.

SCERIN members collaborate on joint research projects and exchange knowledge, new ideas, methods and techniques. The network facilitates the sharing of information, tools and teaching curricula, and enables short- and long-term exchanges of student and faculty in the region.

The upcoming joint network meeting, postponed to June 2021 due to the global COVID-19 pandemic, is being organized in collaboration with the GOFC-GOLD Mediterranean Regional Information Network (MedRIN). The countries represented by the two GOFC-GOLD European regional networks share similar challenges in studying land-cover/use interactions with climate fluctuations under anomalous heat waves, floods and droughts. Their collaboration will bring increased opportunities to strengthen accumulated knowledge and connections in the broader region.

A recent joint paper including contributions from 20+ SCERIN members is an excellent example of collaborative work:

Manakos, I.; Tomaszewska, M.; Gkinis, I.; Brovkina, O.; Filchev, L.; Genc, L.; Gitas, I.; Halabuk, A.; Inalpulat, M.; Irimescu, A.; Jelev, G.; Karantzalos, K.; Katagis, T.; Kupkova, L.; Lavreniuk, M.; Mesaros, M.; Mihailescu, D.; Nita, M.; Rusnak, T.; Stych, P.; Zemek, F.; Albrechtova, A.; Campbell, P.K.E. (2018). Comparison of Global and Continental Land Cover Products for Selected Study Areas in South Central and Eastern European Region. Remote Sens. 2018, Special Issue Remote Sensing for Land Cover/Land Use Mapping at Local and Regional Scales, 10(12), 1967.

Connecting the dots: How the SCERIN network is facilitating collaboration and capacity development in South Central and Eastern Europe

A conversation with **Jana Albrechtova**, Charles University (Czech Republic), and **Petya Campbell**, University of Maryland and NASA Goddard Space Flight Center (USA).

What are, in your view, the main benefits and impact of the SCERIN network?

J. A.: SCERIN provides excellent opportunities for networking and connecting with experts in the region. Since its establishment in 2012, we have held annual meetings in seven different countries, and this has greatly helped expand the network.

The connections that have been developed through the years are crucial for collaboration in the region, and have enabled members to work together on publications and projects.

For example, if I am working on a project proposal under Horizon 2020 or another similar scheme, I can easily contact fellow SCERIN members to propose a collaboration.

P. C.: This is true for connections within the region, but also with the United States. Recently, a SCERIN member from the Polish Academy of Sciences visited the United States with colleagues from Poland. They are starting to monitor

agriculture and forestry through new remote sensing approaches. In the United States they were able to meet and exchange information with colleagues at the University of Maryland, the US Forestry Department and NASA Goddard. The long-term relationship developed through SCERIN was crucial in securing these meetings.

How is SCERIN contributing to develop the capacity of younger generations?

P. C.: SCERIN meetings are often coupled with 3-day training courses, called “Trans-Atlantic Trainings” (TAT). These courses, organized by NASA and ESA, are not funded by SCERIN. However, the opportunity to host them in conjunction with SCERIN workshops is invaluable. The trainings are offered to groups of 30 to 50 students and young professionals participating in the SCERIN network, and include lectures and hands-on tutorials given by NASA and ESA experts, as well as SCERIN members, who have the opportunity to showcase their work, and to contribute

directly to strengthen the capacity of the younger generations in the region.

J. A.: We do have other activities targeting university students, including student exchanges. These are funded through programs such as the European Union’s Erasmus, but the connections established through SCERIN make these exchanges more efficient. For example, several institutions in the region are using the agreements they already have in place thanks to SCERIN, to organize university exchanges without having to sign additional contractual agreements.

As a parting thought, I would like to add that some of the members, including Petya and myself, had been working together since before the network, and we leveraged these existing connections to form and develop SCERIN. But there are so many new collaborations, opportunities and personal friendships that have emerged from the network itself, and this is the real value of SCERIN for the region.



Network members at the SCERIN 7 Meeting, June 2019, Novi Sad, Serbia



Mediterranean Regional Information Network (MedRIN)

MedRIN is the newest of the GOFC-GOLD networks, providing coordination on remote sensing to monitor land-cover change, inform soil and water resource management and monitor fire and other hazards. The Mediterranean region is characterized by several organizations and institutions with advanced knowledge and capacity in the area of earth observations. MedRIN aims to capitalize on existing relationships and initiatives, encouraging collaboration and communication to tackle common priorities.

Objectives

MedRIN aims at keeping its members abreast with the latest advancements in earth observation applications based on NASA and ESA satellite data and data products.

In particular, the network supports:

- better coordination and linkage of monitoring systems and databases across Mediterranean;
- strengthening and upgrading regional/national EO networks;
- alignment of multi-modal and multi-source data compliant to international norms;
- utilization of Copernicus and freely distributed services in the region by end users; and
- contribution to free publicly-available data through interoperable databases and services.

Launched in 2018,
MedRIN is the youngest
GOFC-GOLD regional
network, and as of
June 2020 it counts 75
members.

MedRIN web page:
<https://gofcgold.org/regional-networks/mediterranean-regional-network-medrin>

Priorities and accomplishments

During the 2018 kick-off event and the first network meeting held in 2019, participants discussed objectives, priorities, and strategy. A third meeting planned in collaboration with the SCERIN network for 2020 has been rescheduled to 2021 due to the global COVID-19 pandemic.

The network will include training and capacity building as major components of all its activities. Network coordinators are collaborating to develop a regional “inter-institutional” program which would enable Master and PhD students working on MedRIN issues to transfer between different institutions in the network. The network has also facilitated the participation of young scientists from the MedRIN region in a call from NASA for collaboration on land-use/land-cover change issues.

Capacity development efforts in secondary education include a training event for 100 secondary school students organized during the network’s 2019 meeting.

Perspectives from the development of the youngest GOFC-GOLD regional network, MedRIN

A conversation with **Vincent Ambrosia**, California State University - Monterey Bay and NASA (USA), **Ioannis Gitas**, Aristotle University of Thessaloniki (Greece) and **Diofantos Hadjimitsis**, Cyprus University of Technology and ERATOSTHENES Centre of Excellence (Cyprus).

How did the network start and what are the issues it aspires to address?

V.A.: The MedRIN network started with a kick-off meeting in 2018 in Greece. The first actual meeting took place in Cyprus in 2019. During this meeting, we identified five issues specific to the Mediterranean region on which we wanted to focus.

D.H.: These issues are: hazards (fires, earthquakes, floods, etc.) with emphasis on forest fires; urban and built-up areas with emphasis on land-use / land-cover change; rural areas / agriculture, forestry and wildlands; issues related to soil and water resources management (irrigation / hydrology, soil degradation, desertification); and training and promotion of earth observations.

What does the capacity building component of the network look like?

I.G.: We are working at different levels to develop the capacities of students and young researchers. During our first meeting we organized a training for high school students. The course was so successful that the schools have been asking us to repeat it.

At PhD level, we have started to put in place systems for joint supervision of students working on the network's thematic areas. We are also looking at developing joint distance learning resources, which would be a first in this field in the region.

V.A.: The network is also facilitating other opportunities for young researchers, for example a recent call from NASA invited young investigators from the region to join collaborations on land-use/land-cover change issues.

How does MedRIN fit in the landscape of existing regional collaborations?

I.G.: There are many initiatives in the region, including another GOFC-GOLD regional network, SCERIN, that overlaps in part with MedRIN. We do not want to replace existing relationships, but rather capitalize on them. These existing collaborations allowed us to hit the ground running with MedRIN.

D.H.: We plan to use existing initiatives to the benefit of MedRIN, and vice-versa. MedRIN aims to capitalize on existing relationships, capacities and networks such as 'GEO-CRADLE' and 'EXCELSIOR'. One of the biggest upcoming projects in the region is the 'EXCELSIOR' H2020 Widespread Teaming Project that aims to establish a sustainable, viable and autonomous Centre of Excellence in Cyprus with funding from the European Union, the Government of Cyprus and the Cyprus University of Technology. The ERATOSTHENES Centre of Excellence (ECoE) will be a world class digital innovation hub for earth observation and geospatial information, becoming the reference in the Eastern Mediterranean, Middle East and North Africa region. MedRIN members are deeply involved in this project: Vincent Ambrosia is a member of the Advisory Board and Ioannis Gitas participates through Aristotle University as a committed organization.

What are the priorities for the future of MedRIN?

I.G.: We want to expand the network by encouraging new members to join. Once the collaborations are established, they are very successful, but how can we spark that connection? How do we enable younger researchers to participate, when there is no specific funding allocated? How can we encourage established experts to get involved? These are some of the challenges we are trying to solve.

V.A.: One of the ways we are overcoming these challenges is by organizing MedRIN meetings around larger events. This provides an opportunity to maximize travel budget and increase the visibility of the network.

D.H.: There isn't a "how-to" manual for regional networks. We have been discussing various strategies to make the network more visible and sustainable, from developing its online presence, to looking at registering it as a legal entity in one or more countries. It is work in progress but for the moment we are really enjoying the collaboration and the early benefits that it has brought to the region.

Network members in Cyprus in 2019.





Red Latinoamericana de Teledetección e Incendios Forestales (RedLaTif)

Photo: NASA

Satellite data is critical to monitoring and assessing the widespread fires that regularly occur in Latin America's forests, grasslands and savanna regions. While more and more data is available to scientists, there is an increasing need to make this data and satellite products accessible to the end users, ranging from firefighters to policymakers.

Objectives and priorities

The RedLaTif network coordinates activities related to the observation and management of fires in Latin America, which includes assessing and validating global satellite fire products, promoting use of remote sensing data, and bridging the gap between end users and space agencies. The network produces joint scientific publications, participates in fire-related congresses, and contributes to the GOFC-GOLD fire implementation team agenda.

Accomplishments

The network has greatly helped members access satellite fire products and apply them to real-life problems. **Thanks to the network, scientists and practitioners from the region have been able to benefit from the advanced systems, technology and knowledge of national programs such as Brazil's INPE and Mexico's CONABIO.**

Among the many joint activities and collaborations, a few notable examples include:

- A milestone paper in 2008, "[Global burned-land estimation in Latin America using MODIS composite data](#)", the result of the collaboration of experts from the entire region. The paper presented results from a GOFC-GOLD project through which monthly burned-land maps of the entire region, from Mexico to Patagonia, were obtained.
- The SERENA project, funded by CYTED, which provided the opportunity to receive additional funds for members to meet and coordinate the development and transfer of technologies. For example, Gerardo López from CONABIO visited Argentina's Instituto de Clima y Agua (INTA) and installed a [MODIS hotspot collection system](#), which is now working operationally.

More information:
redlatif.org

Accomplishments (cont.)

- A Burned Area Detection Workshop in 2015 organized by INPE - Instituto Nacional de Pesquisas Espaciais, in São José dos Campos, Brazil. The workshop had a double objective: to gather participants from across the region to conduct a practical mapping of burned areas (with each participant working on satellite images of their own country), and to host a satellite validation experiment with controlled burning on ground. Both activities were very useful to enhance participant's abilities in burned area detection and validation techniques.
- More recently, the promotion of webinars as a new way of communication and dissemination of fire-related activities and research. Five webinars have been held since November 2019, featuring network members and invited experts. Topics covered included cutting edge satellite products and services; advances in the development and implementation of methodological instruments for the analysis of fires through remote sensing; and opportunities and challenges for monitoring forest degradation.



Nicolás Alejandro Mari,
Investigador - extensionista,
Instituto Nacional de
Tecnología Agropecuaria
(INTA), Argentina

“

The RedLaTif network has been fundamental in facilitating collaboration and information sharing on earth observations in the region.

Thanks to the network, advanced programs such as Brazil's INPE and Mexico's CONABIO have shared their knowledge and technology with the other countries, and institutions across the region have been able to share data with end users, to improve fire management and solve real-life issues related to fire.

As an expanding network, we are focused on the integration of new participants with the hope to be a network with expert representation from all Latinoamerican countries. This will lead to more interactions and benefit those countries with fewer capabilities in remote sensing tools.

”



Network members at the
NOAA Center for Weather
and Climate Prediction
(NCWCP) in College Park,
MD, USA, in 2018.



Strengthening earth observation science through training, connections and resources

Capacity development is at the core of the GOFC-GOLD program, with regular training events organized for data and earth observation specialists from across the GOFC-GOLD networks.

Between 2011 and 2016, the program hosted five **Data Initiatives (DI)**, two-week training events on how to access, manage and analyze satellite data.

The first set of trainings brought together groups of a dozen early- and mid-career scientists to the USGS Earth Resources Observation and Science (EROS) Center in Sioux Falls, SD, and Boston University, MA, United States. The latest DI was organized in Sriracha, Thailand, and was offered to a group of about thirty scientists from ten countries in the South and Southeast Asia region.

Multiple-day training sessions are also organized regularly, and in particular during regional networks meetings. These trainings typically gather between 80 and 100 early-career researchers from the region, and cover a variety of topics including forest cover mapping, fire detection and monitoring, crop area mapping, and carbon cycle modeling.



PERSPECTIVES:

Fellows from the 2012, 2014 and 2015 Data Initiatives (DI) share their perspectives on the impact of this experience on their career trajectories.

Thanks to my participation in the DI, I have been able to better contribute to strengthening the production, structure, and operation of the Geospatial Analysis Laboratory and National Laboratory for Earth Observation of the Institute of Geography (LANOT). Presently, I am coordinating the National Early Warning System for Wildland Fires, which began its operational phase on the LANOT website this year.

Lilia de Lourdes Manzo Delgado
Full-time academic technician
National Autonomous University
of Mexico



The DI represented a unique experience, because of the institutions where the training program took place, and because of the opportunity to interact with leading researchers in the field. Thanks to the DI, I significantly improved my conceptual framework and background on remote sensing applied to land cover and I learned how to use tools that were highly advanced at the time. I was able to apply this knowledge in my doctoral thesis, which I completed in 2016.

Pamela Zamboni
CeReGeo - Geomatic Regional Center,
Autonomous University of Argentina



The DI was an exceptional opportunity to visit the world's largest satellite archive, be trained by world leading remote sensing scientists, and network with fellows from Africa, America, Europe and Asia.

Thanks to the skills and data gained during the training, I have been able to develop information on land-cover change that is being used for disaster risk reduction activities, sustainable wetland management and forest rehabilitation in my country.



Héou Maléki Badjana
Post-Doctoral Student,
University of Reading, UK
(PhD student at University
of Abomey-Calavi, Benin,
during the fellowship)

The DI equipped me with data and the ability to share this information and to train others. After the DI, I was able to share what I had learned with institutions back home in Africa.

After my engagement with the Data Initiative, I joined the South African Institute of International Affairs, and, working with the global Land Matrix Initiative, I had the opportunity to share skills on the significance of technology applications in meeting SDG targets globally.

Mercy Ojoyi
Strategic Programme
Manager
University of Pretoria,
South Africa



Read Mercy's blog post: [Space Technology: Role and Progress in Addressing SDG Targets In Africa](#)

Thanks to the DI, I was able to improve my remote sensing class for Bachelor students with better information on downloading Landsat data; better understanding of metadata; and a new outlook on accuracy assessments and area estimations of the classified images.

Lucie Červená
Research Assistant
Charles University, Prague, Czech Republic



The Data Initiative helped me gain crucial skills on data management and archiving practices. These skills have been very useful in my current role and have allowed me to join an important taskforce of the Government of Nepal.

Shiva Khanal
Research Officer
Forest Research and Training Center (FRTC), Nepal



The DI provided me with access to lots of archives of satellite images, which was very helpful, as it is more complicated to download satellite imagery in my country. The DI also improved my skills in remote sensing, especially in monitoring deforestation rates.

Nivohary Ramarason
Projects Monitoring Officer
General Secretary,
Ministry of Environment and Sustainable Development
Anatananarivo, Madagascar



The DI week at EROS Center, South Dakota, helped me better understand satellite systems including their data acquisition, storing and rendering capabilities. At the end of the week I could download a huge volume of satellite imagery which helped not only my research, but also that of many researchers in my region.

Sandeep Kumar Patakamuri
Research Scholar
Centre for Water Resources, Anna University, Chennai, India



How can satellite data help public officials better understand and manage fires in Eswatini?

“Extended, uncontrollable fires are increasingly common in Eswatini, causing great human, environmental and economic losses,” says Dr. Wisdom Mdumiseni Dlamini, former GOFC-GOLD Data Initiative fellow and researcher and lecturer at the University of Eswatini. “Most recently, a number of wildfires struck the country of Eswatini between April and July 2019, destroying homes, electricity and telecommunications infrastructure, and commercial forests. Unfortunately, Eswatini’s legal framework for fire management is outdated and not appropriate to respond to this crisis and emerging fire management challenges.”

In recent years Wisdom has been involved in the development of national fire management response strategies and policies that will enable officials to better control and manage wildfires in Eswatini.

“My involvement with the GOFC-GOLD network and my participation in the 2014 Data Initiative training have helped me deepen my knowledge and have provided concrete resources and tools that I have used while advising the government on fire management policies.”

“During the training I downloaded data sets collected by the Landsat series of satellites in the past 30 years. These data sets are freely available, but due to relatively

slow internet connection in Eswatini, I wouldn’t have been able to download the archive covering the entire country. Most importantly, I learned how to transform the data into crucial information on fires and changes in land use,” says Wisdom.

“Moreover, as a member of the Southern African Fire Network (SAFNET), one of GOFC-GOLD’s regional networks, I have had the opportunity to interact with some of the best fire scientists in the region and the world. Such exposure has not only enhanced my understanding of wildfires but has also resulted in on-going collaborative research and access to expertise that may be lacking in Eswatini.”

How can satellite data help officials better understand and manage wildfires? “Long-term fire statistics are extremely important for fire management and prevention – for example,

historical data is used to characterize fire regimes, identify areas at risk and assess the probability of future fires. Many developing countries have not consistently recorded fire statistics – but can retrieve and analyze the datasets collected over the years by the satellites circling the Earth.”

My involvement with the GOFC-GOLD network and my participation in the 2014 Data Initiative training have helped me deepen my knowledge and have provided concrete resources and tools that I have used while advising the government on fire management policies.



Wisdom Dlamini in Boston during the 2014 Data Initiative

How can earth observations promote pathways for more sustainable development?

About forty percent of Nepal's land is covered by forests that provide crucial benefits to the local communities such as food, firewood, medicinal plants, and raw material for the wood industries.

"Forests serve as an important component of Nepal's economy, and better monitoring and managing them is critical to supporting the country's sustainable development," says Shiva Khanal, former GOFC-GOLD Data Initiative fellow and Research Officer at the Forest Research and Training Center (FRTC) in Nepal.

"Due to the high diversity of the country's landscape, and the difficult access of some of the high-altitude areas, field monitoring is costly, and often not even possible. Approaches that integrate remote sensing with field data are a much better option for monitoring forest and land cover in Nepal's mountains."

When Shiva took part in the 2015 GOFC-GOLD Data Initiative, he had already almost 10 years of experience in working in and around forests in various capacities including ranger, forest inventory crew leader, and research officer. He was eager to get practical insights into the acquisition and application of satellite data sets. "The Data Initiative helped me gain crucial skills on data management and archiving practices - from accessing to downloading to compiling pertinent regional and country-level data sets. These skills have been very useful in my current role and have allowed

me to join an important taskforce of the Government of Nepal," adds Shiva.

"I have been able to contribute to major initiatives of the Forest Ministry. One key example is the National Forest Reference Level, a study of Nepal's forests emissions submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2016 as required under the REDD+ framework. Another example is a 2018 detailed study of the country's forest cover, requested by the government to properly allocate financial and human resources to new local government structures that were being created around the country."

"Accurate forest cover and carbon stocks monitoring remains a critical challenge for many countries, and this has motivated me to pursue a PhD at Western Sydney University, Australia,

looking into new approaches integrating field observation, satellite data sets and statistical modeling" says Shiva. "Better monitoring will help countries in their efforts to reduce carbon emissions and promote pathways for more sustainable development."

The Data Initiative helped me gain crucial skills on data management and archiving practices. These skills have been very useful in my current role and have allowed me to join an important taskforce of the Government of Nepal.

Shiva Khanal (right) at Boston University during the Data Initiative.



How can satellite images help contain the spread of wildfires in Mexico?

Over 20,000 fires rage across Central America every year, affecting over 670,000 hectares of land (approximately 4.5 times the area of Mexico City) and contributing to regional and global challenges including deforestation, agricultural contamination, and climate change. In 2019, hot and dry conditions fueled an intense fire season in Mexico which caused hazardous air conditions in many parts of the country.

“Early warning can provide essential information to decision makers to both fight and control fires before they become more severe, as well as to civil protection agencies whose objective is to reduce the health impacts of forest fire smoke on the population” shares Lilia de Lourdes Manzo Delgado, a former GOFC-GOLD Data Initiative fellow and Academic Technician at the National Autonomous University of Mexico (UNAM).

Since 2017 Lilia has been coordinating a project to develop a National Early Warning System for Wildland Fires, which has been launched in March of this year. Lilia and her students, along with colleagues from INPE Brazil, developed an algorithm to detect hot spots for Mexico and made the system operational. “While the final tool is based on Sentinel-2, my experience with Landsat and the concepts reviewed during the DI training have been very important all along this project,” adds Lilia.

She also cites the Data Initiative as instrumental in improving her production

The Data Initiative training helped me to better understand the importance of using satellite imagery and helped improve my skills in using remote sensing techniques, geographic information systems and statistical analysis focused on the change of vegetation and land use.

and academic participation at the Institute of Geography at UNAM, including research projects, teaching, and publishing scientific articles. “The DI training helped me to better understand the importance of using satellite imagery and helped improve my skills in using remote sensing techniques, geographic information systems and statistical analysis focused on the change of vegetation and land use,” says Lilia. In fact, after the Data Initiative, Lilia had the opportunity to propose and teach a new class on “Vegetation and Land Use” for the Geography postgraduate program at UNAM. The structure and content of the class, which she has taught every year since 2014, includes many topics and activities that were covered in the training program at USGS-EROS and Boston University.

In her closing reflections about the Data Initiative, Lilia shared: “My favorite memory of the Data Initiative was when Professor Curtis Woodcock of Boston University invited us to reflect on what we would each do, back home, after the training. We all concluded how crucial it would be to share the information and knowledge we had gained from the Data Initiative with our colleagues, students and networks back home. This is what I did, after the DI training, and I am still doing today through my various projects.”

Lilia Manzo (left) with DI fellow Pamela Zamboni during the DI training



THE JOURNEY CONTINUES: A conversation with Data Initiative alumni on how they are keeping involved with GOFC-GOLD and with other fellows.

HOW HAVE YOU BEEN INVOLVED WITH GOFC-GOLD ACTIVITIES SINCE THE FELLOWSHIP?

Lilia de Lourdes Manzo Delgado

- As a member of the Latin American Network for Remote Sensing and Forest Fire (RedLaTIF), after the Data Initiative I have participated in several network meetings and workshops in the region (in Chile, Mexico and Brazil) and in the United States.

Shiva Khanal - After the Data Initiative, I have participated in other events directly or indirectly related to the GOFC-GOLD initiative. One example is a "Train the Trainers" event on REDD+ that took place in 2016 in Bangkok. This event provided an important platform to share lessons on REDD+ monitoring and reporting in the region.

Sandeep Kumar Patakamuri
I have attended the NASA LCLUC meetings and SARI

regional science meeting as well as training programs in Myanmar, Thailand, India and Malaysia. I actively participate in the meetings of the GOFC-GOLD South and Southeast Asia networks.

ARE YOU STILL IN CONTACT WITH OTHER FELLOWS AND DATA INITIATIVE TRAINERS?

Mercy Ojoyi - Yes. I have been in touch with other fellows, and we have collaborated on various activities including scientific publications and working on fundraising platforms together. In my view this collaboration helps a lot in enhancing the quality of proposals.

Sandeep Kumar Patakamuri
I am still in touch with the other participants. I am working in close collaboration with participants from Botswana and the Kingdom of Eswatini. I have reached out several times to fellows to seek their help in refining my research

work by peer-reviewing it and I have collaborated with them on various research projects as well.

Héou Maléki Badjana

- After the fellowship, I kept collaborating with Boston University researchers I met during the DI to publish a paper that is gaining significant interest and making an important contribution to my scientific career.

I am also currently involved in the NASA MEaSUREs project as an international collaborator for West Africa, and this is another outcome of the DI.

Lilia de Lourdes Manzo Delgado

- I am still in touch with some of the fellows. We send each other Christmas and New Year's greetings and invitations to attend symposiums or workshops.

2014 DI fellows

2015 DI fellows



ProSus is a biannual e-magazine
published by START International.
www.start.org/prosus_magazine

START provides opportunities for training,
research, education and networking that
strengthen scientific skills and inspire
leadership for advancing solutions to
critical sustainability challenges.



www.start.org



[startinternational](https://www.facebook.com/startinternational)



[start_intl](https://twitter.com/start_intl)



[start-international-inc](https://www.linkedin.com/company/start-international-inc)