Report on the 2010 annual meetings of REDLATIF and the SERENA project within the framework of the 14th International Symposium SELPER

Maria Isabel Cruz Lopez
Dr. Ivan Csiszar

Contents:

I. Report on the 2010 annual meeting REDLATIF

Place and date:: Guanajuato, México, 9 and 10 November 2010
Participation: 24 participants (attached is the list of participants)

Objectives:

1. Inform about two GOFC-GOLD meetings
   - GOFC-GOLD Fire Implementation Team Workshop
   - 4th GOFC – GOLD REDD Sourcebook Development Workshop
2. Integrate participants of the Global Wildland Fire Network (GWFN) into REDLATIF
3. Analyze the participation of REDLATIF in GHOFC-GOLD validation activities
4. Define future directions for REDLATIF.

Agenda

Tuesday November 9, 2010

Time	Activity	Responsable person
17:00 -17:10	Introduction to the workshop Review of the agenda	Isabel Cruz CONABIO
17:10 -17:30	Meeting reports: -Fire forest Implementation teem -4th GOFC – GOLD REDD Sourcebook development workshop.	Isabel Cruz CONABIO
17:30 – 17:50	Activities of the Global Wildland Fire Network in Mesoamerica	Luis Diego Roman Ministry of Environment, Costa Rica
17:50 – 18:10	Activities of the Global Wildland Fire Network in South America	Dr. Isabel Manta Nolasco University of La MOLINA, Peru
18:10 – 18:30	Developments and current status of the SERENA project	Dr. Carlos di Bella INTA
18:30 - 18:45	Break	
18:45 – 19:00	NBAR dynamic composite	Gerardo Lopez University College London
19:00 – 19:15	Geonetcast system	Fabiano Morelli INPE
19:15 – 19:30	Close of day 1	Isabel Cruz CONABIO

Wednesday November 10, 2010

Time	Activity	Responsable person
17:00 -17:10	Introduction	Isabel Cruz
17:10 -17:30	Product validation	Dr. Ivan Csiszar NOAA
17:30 – 17:50	Fire Disturbance project	Dr. Emilio Chuvieco University of Alcala, Spain
18:00 -18:15	Break	
18:15 – 19:00	General discussion and selection of the topic of the new project.	Isabel Cruz
19:00 – 20:00	Organization of the new project, adjourn	Isabel Cruz

Minutes of the agenda

November 9, 2010

1. The meeting started at 17:10 with the introduction of the participants, the review of the agenda and a short presentation on the objectives of REDLATIF.

2. Isabel Cruz presented the most relevant points of the meetings:

   - GOFC-GOLD Fire Implementation Team Workshop
   - 4th GOFC – GOLD REDD Sourcebook Development Workshop

   The following points were emphasized in the agreements made at the Fire Implementation Team meeting:

   - Access to data and products. Knowledge of their existence and how to use them.
   - Communication and collaboration among regional networks, such as with the network GWFN.
   - More presence and collaboration with the users of products when they are generated.
   - Assistance for training was requested, ESA offered opportunities, primarily for the networks on the African continent.
   - Product validation is currently a priority.
   - There are new data planned for the generation of fire products.
   - It is necessary to generate products that are applicable for global change analysis. These products have to be validated.
   - The development and validation of fire products is required for the participation of regional networks. However, capacity building and exchange between the networks, and also with product users.

3. Luis Diego Roman from Costa Rica presented the talk “Fire Management in Central America”. Highlights of the presentation are the following:
   - GWFN consists of 13 regional networks. In Latin America there are three: Mesoamerica, the Caribbean and South America. At the meeting representatives of the Mesoamerica and South America regions were present.
   - The problem of forest fires in the Mesoamerican region
   - The main components of the Central American Strategy for Fire Management, approved by the ministers of environment of the region in 2005. Also, various events that occurred in the region in the topic of fire management.

- The document Forest Fire Prevention Handbook developed as a joint effort of the Central American Fire Management Group**.** This document is aimed at integrating some concepts that are used in the region.
- The development of a study on fire ecology in the various ecosystems of the region.
- The use of the information generated from MODIS images for fire detection and monitoring.
- The need for training.

4. The next presentation was given by Dr. Isabel Manta from Peru, entitled "Activities of the South American fire management working group". The most important points are:

   - The objectives established at the forest fire workshops regarding the official recognition of the sub-regional networks under the auspices of GFMC and FAO.

     > Reduce the number of forest fires and their negative effects on forests, natural ecosystems, forest plantations, agro-ecosystems, the society and the economy. Promote the correct use of fires, strengthening the national and sub-regional policies and strategies through the integration of efforts and cooperation agreements among the countries of South America.

   - The activities developed at national, bi-lateral and regional levels.
   - The need to homogenize the formats of the statistical databases of forest fires in the region. Currently there is a proposal, but this needs to be revised and evaluated.
   - There are satellite-based information systems, such as that of Brazil and other institutions, but it was commented that it was necessary to validate the information and promote the **correct use** of the information.
   - Regarding future work, a need for bilateral and regional agreements was mentioned to carry out fire management; and also the **training** of users of the satellite information.
   - Establish cooperation with research institutions with the goal of carrying out fire behavior studies.
   - Investigate how much is lost in a forest fire.

5. Dr. Carlos di Bella talked about the current status of the SERENA Project. Principal developments and results were presented as talk during the XIV international SELPER symposium. Dr. Di Bella explained that the project has duration of four years, of which three have passed, and therefore 2011 is the last year of the Project. Thus, it is expected to obtain the results that the Project committed to.

   The distribution of the results will be done through various means, such as the SERENA Project website and workshops on the use of the information.

At the end two questions were raised:

What happens to the Project in 2012? A. It is hoped that the generation of the products is working, primarily if the processes are automated.

What happens if MODIS stops working? A. The comment was that it was necessary to consider other sensors that could be used for the same products. In addition, it was necessary to consider the adaptation of data from new sensors.

6. The fourth talk was given by Gerardo Lopez from England, who presented the proposed generation of the Dynamic Nadir BRDF-Adjusted Reflectance (NBAR) product. The principal idea is the adaptation of the algorithm and code at three direct-readout stations in the region to generate the reference product for BRDF-corrected surface reflectance, using MODIS data from Terra and Aqua. The product corresponds to the 500m MOD09 product and can be generated by tiles or swath.

7. The last talk of the day was given by Fabiano Morelli from Brazil and Dr. Hector del Valle from Argentina, with the title "Data distribution networks: opportunities and challenges". The possibility of using some existing resources was raised, primarily the GEONETCAST network as a basis for the distribution of information generated from REDLATIF projects.

8. Close of session at 19:50.

November 10, 2010

1. The session opened at 17:00 with the revision of the agenda.

2. Dr. Ivan Csiszar from the United States of America presented the topic of validation. The presentation focused on two products: burned areas and hot spots. He also talked about the need for validating the reference data (e.g. Landsat or other images) which will be used to validate the products. For this in situ information is needed, which can be provided by members of GWFN.

   Currently the validation of the burned area product is at Stage 2. Validation metrics, such as regression and confusion matrices were discussed. Sites selected for global validation were presented. In the case of Latin America there are eight tiles with 15 pairs of Landsat images. It was also mentioned that the selection of validation sites was also based on the availability of reference data. The validation data will be available for the community on the MODIS fire website.

The detection of a coding error for burned areas was mentioned, which resulted in smaller areas. The correction of this error will be included in collection 6.

Regarding the validation of hot spots, the different results from the use of different reference sensors were discussed. Aster and Landsat sensors were used for the validation. Commission errors in various land cover types were discussed.

Finally, the first validation efforts for the VIIRS products were discussed, using Landsat imagery.

3. The last scheduled talk was given by Dr. Emilio Chuvieco from Spain, with the title "*Fire Disturbance*". This corresponds to an international Project supported by the *European Space Agenc*y (ESA). Its focus is the generation of information for climate models proposed by the *Intergovernmental Panel on Climate Change* (IPCC). For this, it is necessary to define user requirements with the *Essential Climate Variable* (ECV) framework. Data and algorithm shave been chosen to achieve the goals of the Project. Error management is planned to be done, considering the errors that arise at every stage of the process. A principal component is product validation, with the followings:

   Provision of reference data
   Validation in the time series
   Validation in the coverage of 2005

   Dr. Chuvieco showed the locations of the ten sites selected for global-scale validation. In the case of Latin America there are two, the first one in Colombia and the second one in Brazil.

   A program for the identification of burned areas was proposed based on decision trees, and context and logistic regression techniques. This Works within *ArcGis* 9.2 with the module *spatial analysis*. This program can be distributed to institutions that are interested.

4. Once the presentations were finished, based on talks and comments from the previous day, discussion points were presented, organized into two groups:

   a) Collaboration with other networks or organizations

      - Participation in REDD + the fire component
      - Establish communication with the land cover network, coordinated by Carlos Souza.
      - Working areas between REDLATIF and GWFN
        - Access to information
        - Validation of methods and results with in situ data

- Training for the management of information generated by remote sensing methods
- Training in the topic of remote sensing
- Concepts in the general framework of fire management

b) Products
- Consolidate the SERENA project in 2011
- Generate the Dynamic Nadir BRDF-Adjusted Reflectance (NBAR) product at the three receiving stations
- Review data from future sensors
- Improve the distribution and availability of information (GEONETcast)
- Evaluate burned areas

Agreements

1. Federico Gonzalez will generate a proposal for an initiative for the participation in REDD + in the topic of fires.

2. Isabel Cruz will communicate with Dr. Anja Hoffmann, who is the coordinator of the GOFC regional networks, to establish communication with the land cover network coordinated by Carlos Souza.

3. Luis Diego Roman will digitize the Forest Fire Prevention Manual for sharing it with REDLATIF.

4. Fabiano Morellli will generate a proposal for training for the GWFN regional networks, in two areas: training for the management of information generated by remote sensing methods; and the topic of remote sensing.
   The members of the GWFN will develop a document on the training needs to be covered.
   For the training **financial resources** will need to be sought for the various stages: preparation of the material, courses and evaluation.
   Various ways of training were discussed: personal, distribution of products, within already established workshops and online.
   Fabiano Morelli initiated a quick poll among the REDLATIF members to identify the topics that can be taught and the topics that require training. Results of this poll will be provided soon.

5. Regarding the topic of validation, members of GWFN stated that they would talk to other members to participate in product validation; and also that the program mentioned by Dr. Emilio Chuvieco could also be used for validation. Dr. Ivan Csiszar and Dr. Emilio Chuvieco were asked

for a list of information needs for validation. Dr. Chuvieco stated that he would provide a format to be used.

6. Carlos di Bella stated that the functioning of REDLATIF had been adequate thanks to the existence of a project in which all members participated. This led to the proposal of topics. Basically the validation of burned areas and the calculation of losses were mentioned, however, REDLATIF needs a person who could perform the evaluation of economic impacts.

7. After the discussion it was agreed that Isabel Cruz would develop a proposal for a project for the evaluation of burned areas to submit it to various organizations that could finance the project.

   The meeting ended at 19:30.

II. Comments on the workshop on the project Latin American Society of Remote Sensing - Red Latinoamericana de Seguimiento y Estudio de los Recursos Naturales (SERENA)

The SERENA Project meeting took place in Guanajuato, México, on 8 and 12 November. Dr. Carlos di Bella was in charge of the meeting. On the first day the discussion was on the status and problems of each topical area under development. It was also mentioned that the progress would be presented as talks at the SELPER symposium. On the second day commitments were made to provide input on the progress for the annual report with a deadline of December 15. Commitments were also made for the delivery of the final products. Fabiano Morelli stated that there was a problem with merging the two tiles and that a reference was needed to resolve this. Regarding the complementary information, metadata will be developed according to ISO and will be made available on the website. It was stated that currently there is a merged site with hot spots that are generated at the three receiving stations, accessible through the REDLATIF website. Carlos di Bella stated that this should also be on the SERENA website. The burned area mapping method is being developed and will include Mario Lillo y Lilia Manzo for validation. The activities 6, 7 y 8 are integrated into one. Rene Colditz will travel to Argentina in March 2011 to carry out the processing. The data system activity is delayed, but there will be one more person to work on it.

Activity nº 1	***Basic information***
Responsible	Isabel Cruz
Activity nº 2	***Complementary information***
Responsible	Hector Francisco del Valle
Activity nº 3	**Hot spots**
Responsible	Nicolas Mari
Activity nº 4	**Burned areas**
Responsible	Sergio Opazo
Activity nº 5	**Fire danger**
Responsible	Carlos Di Bella
Activity nº 6	**Legend**
Responsible	Maria de los Angeles Fischer
Activity nº 7	**Classifier, Input data and training**
Responsible	Paula Blanco
Activity nº 8	**Validation**
Responsible	Hector del Valle
Activity nº 9	**Data system**
Responsible	Arturo Emiliano Melchiori

More information on the progress of the project is available at
http://www.fuego.org.ar/serena/inicio/inicio_es.html

III. Participation at the Symposium

The participation of the REDLATIF members in the XIV International SELPER Symposium had three fundamental aspects:

1.- Workshops

On November 6 and 7 two workshops took place prior to the symposium, which were held by REDLATIF members.

1.- Multi-temporal analysis of remote sensing, taught by **Dr. Emilio Chuvieco**, Department of Geography, University of Alcala, with a duration of eight hours.

Objective

Teach the students about the possibilities of remote sensing for detecting and analyzing changes over the territory.

Topics

- The temporal factor of remote sensing: advantages and drawbacks
- Prior requirements in temporal analysis
    - 2.1. Calibration and apparent reflectivity.
    - 2.2. Atmospheric correction.
    - 2.3. Topographic correction.
    - 2.4. Correction of thermal data.
- Analysis of stationary variations: time series of imagery (MODIS, VEGETATION, MERIS).
- Change detection analysis.
    - Techniques for continuous variables.
    - Techniques for temporal classification.
- Validation of the results of temporal analysis.

The workshop was attended by 37 persons from various countries. Attached is the list of attendants.

2.- Theoretical and practical course of analysis and processing of data and products from the MODIS sensor, taught by **Gerardo Lopez** from the University College London, **Dr. Rene Colditz** and **Isabel Cruz** from CONABIO.

Objectives

Provide the participants the characteristics and principal applications of the MODIS sensor, the products available on the web and provide technical skills for the processing and analysis of the data.

Topics

Day 1.

Introduction to the MODIS sensor (**Isabel Cruz**)

- Characteristics of the MODIS images
- Generated products
- Processing levels
- Terminology used
- Availability of data

Data processing (**Gerardo Lopez**)

- Practice for generating products at various processing levels
- Analysis of the pixel quality flags
- Evaluation of the quality of vegetation indices
- Development of cloud-free composites
- Data processing

Day 2.

Generation and analysis of time series (**Rene Colditz**)

- Use of the Time Series Generator (TiSeG)
- Generation of a time series
- Discussion of the results
- Advantages and drawbacks of various programs for time series
- Time series analysis
- Discussion of tools for time series analysis

2.- Keynote presentations

As part of the symposium, four keynote presentations related to global change were scheduled. Two of them were presented by REDLATIF members:

Remote Sensing and Global Models
Dr. Emilio Chuvieco
Presented on November 8

It is intended to show the interest in modeling to better understand the processes that affect the whole planet and how remote sensing can feed these models with data. The interaction takes place both at the levels of calibration and validation of the models. Some possibilities for using modeling techniques for the proper interpretation of satellite images, with continental and global scale applications, are also presented.

NOAA missions for global monitoring
Dr. Ivan Csiszar
Presented on November 10

The meteorological satellite systems of NOAA (*National Oceanic and Atmospheric Administration*; USA) have been providing systematic observations for many years. The sensor on the geostationary satellites GOES (*Geostationary Operational Environmental Satellite*) and polar satellites NOAA are useful for the monitoring of the oceans, the atmosphere and the land surface. The observations can support, in addition to operational applications, the monitoring of the climate system. GCOS (*Global Climate Observing System*) has defined various requirements for climate observations from satellites, with the goal of ensuring the quality and continuity as well as the generation and distribution of products. For example, AVHRR (*Advanced Very High Resolution Radiometer*) on the NOAA satellites provides optical observations that require corrections for calibration, orbital drift of the NOAA satellites, which are necessary to remove any anomalies due to this effects to establish adequate climate datasets. In the talk products generated systematically from NOAA missions for operational applications are presented, as well as some results of the climate analysis of the data. Sensors on the new generation of meteorological satellites GOES-R y NPP/JPSS (*NPOESS Preparatory Project / Joint Polar Satellite System*), which represent a significant improvement over the current operational systems GOES y NOAA and continuity with EOS (*Earth Observing System*) of NASA (*National Aeronautics and Space Administration*), will also be presented. The preparation for the new systems includes the development and evaluation of algorithms that utilize the better radiometric characteristics of the sensors, and the development of methodologies for ensuring the transition of observations and continuity for long-term global monitoring.

3.- Presentations

As it was mentioned above, some results of the SERENA project were presented as talks within the symposium. 18 presentations were given related to the topic of forest fires and land cover.

Conclusions

1. The participation of members of the Global Wildland Fire Network at the annual meeting of REDLATIF allowed for:

    - The exchange of knowledge on the topic of forest fires from the perspective of fire management, as well as the use of remote sensing for the detection and monitoring of fires.
    - Learn about research topics related to fire management, such as fire ecology.
    - Identify training needs for the users of products generated from satellite data.
    - Identify opportunities of collaboration with the users of the information as well as their participation in product validation.

2. The participation in the XIV SELPER Symposium vie workshops and keynote presentations allowed for showing the access to and use of products that are generated from satellite data; also to learn about the diversity of sensors that are currently used form the study of global change.

3. The scheduling of the REDLATIF and SERENA meetings within the framework of the XIV Symposium allowed for demonstrating the joint work carried out by the network and the project to the broad community that is involved in the use of remote sensing and geographical information systems. This resulted in the integration of new members into REDLATIF and the SERENA project.

4. Two topics were identified for development after the conclusion of the SERENA project.

Acknowledgement

The development of all activities described above was possible thanks to the collaboration and sponsorship of various institutions, both national and international. They are:

Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO) – *National Commission for the Knowledge and Use of Biodiversity*

Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD)

Global Change System for Analysis Research and Training (START)

National Aeronautics and Space Administration (NASA)

Red Latinoamericana de Seguimiento y Estudio de los Recursos Naturales (SERENA) – *Latin American Network for the Monitoring and Study of Natural Resources*

XIV Simposio Internacional SELPER – *XIV International Symposium SELPER*

Sociedad Latinoamericana de Percepción Remota y Sistemas de Información Espacial (SELPER) – *Latin American Society of Remote Sensing and Spatial Information Systems*

Universidad de Guanajuato – *University of Guanajuato*

Ciencia y Tecnología para el Desarrollo (CYTED) – *Science and Technology for Development*

Appendices

Presentations

Title	Author
Development of the SERENA project: Latin American Network of the Monitoring and Study of Natural Resources	Carlos Di Bella Julieta Straschnoy
Development of a fire danger index for the semi-arid region of Argentina within the framework of the SERENA project	Maria de los Angeles Fischer Carlos Di Bella Alfredo Campos Santiago Cotroneo María Eugenia Beget
Burne area mapping in Latin America AQL2008	Sergio Opazo Saldivia Nicolás Mari Gerardo López Federico González Alonso Fabiano Morelli
Proposed methodology for the periodic generation of land cover maps in Latin America and the Caribbean	Paula Blanco Gerardo Lopez Saldaña Rene Colditz Nicolás Mari Maria de los Angeles Fischer Constanza Caride Pablo Aceñolaza Leonardo Hardtke Héctor del Valle Sergio Opazo Walter Sione Pamela Zamboni Maria Isabel Cruz Lopez Jesus Anaya Fabiano Morelli Silvia de Jesus
Characterization of burn efficiency from the time series analysis of the EVI vegetation index.	Jesus Anaya Acevedo Emilio Chuvieco Salinero
Estimation of gas emissions produced by fires detected by satellites in Ciénaga de Zapata. Cuba.	Eva Mejias Sedeño Ricardo Manso Jimenez
Use of MODIS composites for the identification of burned	Lilia Manzo Delgado

areas in Mexico	
Generation of fuel moisture maps for the central region of Argentina from the inversion of reflectivity models	Maria Eugenia Beget Marta Yebra Carlos Di Bella Patricio Oricchio Hugo Alvarez María de los Ángeles Fischer Santiago Cotroneo Alfredo Campos
Burned area mapping from Radar images. Identification of thresholds using MODIS hot spots and the Basa algorithm	Nicolas Mari Diego De Abelleyra Federico Gonzalez Alonso
The land cover of Mexico – a spatial analysis	Rene Roland Colditz Pedro Maeda Diaz Gerardo Lopez Saldana Maria Isabel Cruz Lopez Rainer Ressl
Quantification of principal factors of geospatial errors in change detection	Rene Roland Colditz Joanna Acosta Velazquez Jose Reyes Diaz Gallegos Alma Delia Vázquez Lule Maria Teresa Rodríguez Zuñiga Maria Isabel Cruz Lopez Rainer Ressl
Continuity of SPOT Vegetation: the PROBA-V mission	Karim Mellab Joe Zender Santandrea Stefano Riccardo Duca Carlos Di Bella
Validation of a fire risk index for South America	Santiago Cotroneo Alfredo Campos Maria de los Ángeles Fischer Carlos Di Bella Fabiano Morelli
Fire hot spots detected by satellites in various categories of land use and natural vegetation.	Eva Mejias Sedeño Ranses Vazquez Montenegro
Evaluation of commission errors of vegetation fire detection with MODIS INPE and FIRMS algorithms	Silvia Cristina de Jesus Fabiano Morelli Alberto Setzer Nicolas Mari

	Carlos Di Bella
Use of MODIS composites for identifying burned areas in Mexico	Lilia Manzo Delgado
Characterization of the heterogeneity of land cover in Latin America and the Caribbean	Pablo Aceñolaza Paula Blanco Rene Colditz Gerardo Lopez Saldaña Nicolas Mari Maria de los Angeles Fischer Constanza Caride Walter Sione Lisandra Zamboni Estela Rodriguez Leonardo Hardtke Hector del Valle Sergio Opazo Maria Isabel Cruz Lopez Jesus Anaya Fabiano Morelli Silvia de Jesús
Spatial estimation of climatic variables in the Argentine territory through the use of freeware	Paula Blanco Walter Sione Leonardo Hardtke Hector del Valle Pablo Aceñolaza Lisandra Zamboni Guillermo Heit Pablo Horak Pablo Cortese R. Moschini
Comparison of satellite products for fire detection in Paraguay	Nicolas Mari Patiño Correa Fabiano Morelli Carlos Di Bella Alberto Setzer Silvia De Jesús
Determination of the current fire regime in Monte Patagonico (Argentina), through the spatio-temporal grouping of MODIS hot spots	Leonardo Hardtke Mazzariello Hector del Valle Walter Sione Pamela Zamboni Paula Blanco