Burned Area Estimation in Latin America using a Collaborative Virtual Environment.

A workshop and regional network meeting organized by the

Global Observation of Forest and Land Cover Dynamics
Latin American Network for Remote Sensing and Forest Fires (RedLaTIF)

National Commission for Knowledge and Use of Biodiversity (CONABIO), August 1-3, 2017

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Workshop report

The workshop was held at the National Commission for Knowledge and Use of Biodiversity (CONABIO) in Mexico City during the first week of August. Participants were located at a nearby Radisson hotel. We had 15 speakers and several invited participants. One participant, Carlos Souza, from Brazil was invited via "web meeting" to present his experience in the project http://mapbiomas.org/ in the context of the Google Earth Engine (EE) collaborative environment.

Participant	Insititution	Country
Maria Isabel Cruz Lopez	CONABIO	Mexico
Lilia de Lourdes Manzo	UNAM	Mexico
Gerardo LOPEZ-SALDAñaA	University of Reading, Assimila	Mexico-United Kingdom
Armando Manuel Rodriguez	Amigos de la naturaleza	Bolivia
Walter Fabian Sione	UADER	Argentina
Jesus adolfo ANAYA ACEVEDO	Universidad de Medellín	Colombia
Wilfrid SCHROEDER	University of Maryland	USA
Nicolas Alejandro Mari	INTA	Argentina
Fabiano Morelli	INPE	Brazil
German Mauricio VALENCIA	Univ. de San Buenaventura	Colombia
Alexander Ariza Pastrana	Univ. Católica de Manizales	Colombia
John Gajardo	Universidad de Talca	Chile
Carlos Souza (web meeting)	MapBiomas project	Brazil
José Carlos Beltrán	Univ. Autónoma de Sinaloa	Mexico
Victor Manuel Jiménez	UNAM	Mexico
Laura González	CONABIO	Mexico
Martín Cuahutle	CONABIO	Mexico
Humberto Muñoa	COANBIO	Mexico
Silvestre Ruíz	CONABIO	Mexico
Federico González (web meeting)	Consultant	Spain

Author and Title of oral presentations.:

J. Anaya RedLaTIF update.
A. Rodriguez_Areas Quemadas y series de tiempo utilizando GEE
G. Valencia. Estimación de GEI en el norte de Sur América
F.Morelli. Terrama, plataforma de alerta de incendios
J.Gajardo. Incendios en el contexto de la ecología
W. Sione. Estudio de la dinámica del fuego en ambiente de humedales
G. López. Modelling probabilistic wildfire risk using ensemble numerical weather predictin
C. Beltran. Áreas quemadas en la cuenca Pacífico Norte, México.
A. Ariza. Análisis de la estructura del paisaje en incendios.
N. Mari. Incendios en Córdoba (Argentina): una historia de fuego
L. Manzo. Incendios en áreas protegidas de México.
I. Cruz. Sistemas de alerta temprana
G. López. Llamado a propuestas IPP
W.Schroeder. Global Active Fire Datasets. GOESR summary.

Workshop goals

We had three main goals, first, to discuss the results or modifications of the model developed at the 2015 RedLaTIF meeting in São Jose dos Campos, second, to present and discuss participants' activities in terms of remote sensing and forest fires, and third, to have a round-table discussion about sources for financing network activities.

Day 1: Welcome message and introduction to new participants, followed by a description of the workshop. Two oral presentations were made about fire occurrence in protected areas in Mexico. The contribution of CONABIO to provide final users with near real-time early warnings. An update on Global Active Fire Data Sets was also presented to complement the near real-time capability with emphasis on VIIRS and methods for data validation. Other presentations describing the state of the art in burned area mapping applications in Latin America included "fires in the Parana Wetlands", "burned areas in the Pacific North-West of Mexico", and "fire regime, climate and vegetation in the Sierras de Cordoba, Argentina".

Days 2: A fair amount of time was given to the International Partnerships Programme (IPP) proposal presented by Assimila, a U.K.-based startup company co-chaired by RedLaTIF member Mr. Lopez-Saldaña. The discussion was centered on the funding announcement recently released by the UK Space Agency IPP, after which RedLaTIF members were invited to participate in the intended proposal. Emphasis was given to the need of fire information systems providing early warning support to fire management agencies. Identified potential partners were:

Argentina (National Agricultural Technology Institute)

Brazil (National Institute for Space Research)

Colombia (University of Medellin)

México (CONABIO, UNAM)

During the afternoon session Dr. Souza Jr. introduced the EE collaborative environment. Following that discussion, participants addressed the qualities and limitations involving the burned area data processing script proposed in 2015 in São Jose Dos Campos based on the group's findings after two years of testing and verification. The main argument concerned the overfitting of burned-area-thresholds when looking for the minimum sum of Omission Errors and Commission Errors. In this sense, it was concluded that the proposed approach is useful as a method to find the best burned area (BA) mapping tool using Landsat 8 in the EE for a given place and time, but cannot be used to produce BA maps systematically and across different geographic regions. A new proposal using EE and a set of indexes was presented by Armando Rodriguez, in order to improve the BA detection by using thresholds derived from fire perimeters digitized by an expert image analyst. This new script was introduced to novices and experienced users of EE. All participants were instructed through a protocol on how to access and use the EE interface.

Meeting room at CONABIO.

Day 3:

A brief discussion was held about the positive aspects of the new model and things to improve. At this point only Landsat Surface Reflectance is used as input for the model, however, it is expected that Sentinel 2 data will be included. All participants were able to run the script and see the results for a given area. A final oral presentation was given in order to define a strategy to apply for the IPP call.

Final Program

		01-ago	02-ago	03-ago
930	10	I. Cruz J.Anaya	F. Morelli	Conclusions regarding the new version
10	1030	I. Cruz	G. Lopez(swir)	Conclusions regarding the new version
1030	11	G.López		Preliminary results
11	1130	Café	Café	Café
1130	12	W. Schroeder	J. Gajardo	Preliminary results
12	1230	L. Manzo	Carlos Souza	Future projects (IPP)
1230	13	N. Mari	A. Rodriguez	Future projects, farewell
13	15	Lunch	Lunch	Lunch
15	1530	W. Sione	BA discussion	
1530	16	A. Ariza	BA discussion	
16	1630	Café	Café	

1630	17	J. Beltrán	Changes to GEE script	
17	1730		Capacity building on GEE	
1730	18		Capacity building on GEE	
18	1830		Responsibilities	

With these activities all the goals of the workshop were accomplished and a new set of activities were assigned.

Future activities and responsibilities:

-Create a new version of the protocol describing the use of EE by 16 of August 2017.
-Finish a paper using the optimal thresholds stratified by ecoregions explaining the potential and limitation of this method.
-Verify the new version of the script in areas subject to fires in different countries. A total of 13 sub-regions corresponding to unique Landsat-8 scenes have been selected.
-Carry periodical web meetings to discuss the results and further refine the data processing script. The study period will cover data acquired between January 1st and December 31st 2016.
-Validate results by November 14th 2017.
-Define match-funding from each institution represented by a RedLaTIF member in order to participate in the IPP call
-Draft a letter-of-intent from each institution by the end of August.
-It was defined that the next meeting of RedLaTIF will be held in the context of the WildFire conference, 2019, 06-10 of May.
-Two members (Nicolas and Gerardo) will represent RedLaTIF in the Regional Network Summit in Tbilisi, Georgia.

Group photo and farewell.