Central America Climate Outlook Forum (CA-RCOF)
Status Report

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Background

The Central American region (CA-RCOF) is a consolidated mechanism to issue seasonal outlooks, and climate risk scenarios for climate sensitive sectors in Central America Isthmus. CA-RCOF integrates the capacities of the national meteorological and hydrological services (NMHSs) of Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panamá and the Geophysics Research Center from the University of Costa Rica (CIGEFI-UCR) main collaborating partner institution supporting the advance of its research scientific agenda. Since 2014, with the active participation of Cuba, México and Dominican Republican NMHS, the CA-RCOF has enlarged its geographical scope to the Mesoamerican Region and the Spanish speaking Caribbean countries. This initiative has been supported by the Mesoamerica Cooperation Program of the government of Mexico.

Area Climate Features:

Mesoamerica is a narrow strip of land between the Pacific and Atlantic oceans and the continental masses of North and South America. In the tropical climate of the Region two main rainfall patterns are present: "Pacific" with a dry and a rainy season and "Caribbean" with rainfall during almost the whole year and only a decrease in the amount of rain in some months. The salient features of seasonal climate and its predictability in the region are found, among others, in oscillations like ENSO, PDO, NAO, Artic Oscillation, and their interactions. However complex, relationships between these climate drivers show signals that allow some predictability for seasonal forecast in this region.

Central America Regional Climate Forum

The Central American Regional Climate Forum (CA-COF), started in 2000; since then, it has issued 53 Regional Seasonal Climate Outlooks. Outlooks are prepared in April for MJJl, the first planting period or "La Primera", in July for ASO, the second planting or "La Postrera" and in November for the winter season (DJF) or the "Apante" in which, beside rainfall, low temperatures and winds are variables of interest. The Regional Committee of Hydraulic Resources (CRRH), technical secretariat for climate and water of the Central America Integration System (SICA) is the main coordinator and convener.

[1] CA-RCOF Coordinator 2001-2016

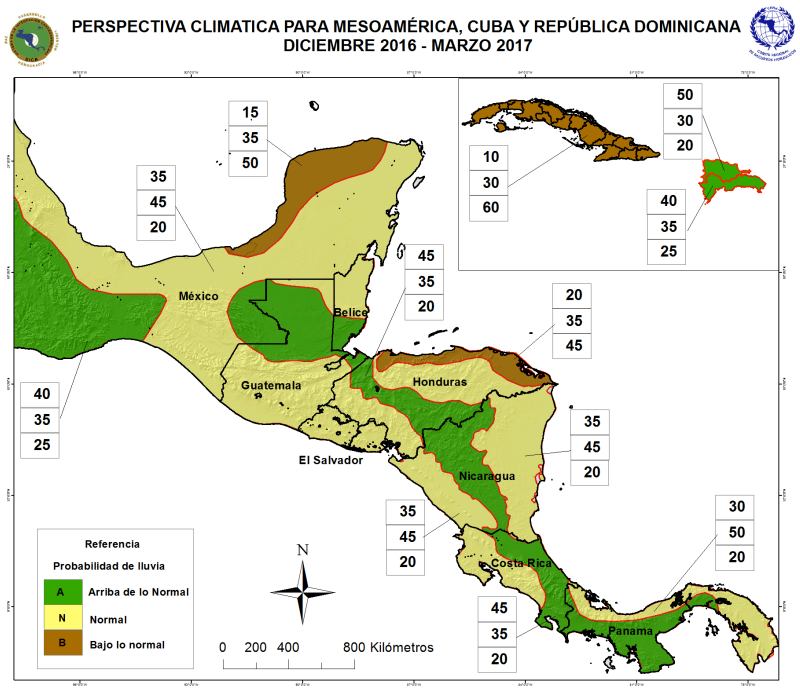


Figure 1.
Example of Climate Outlook for Mesoamerica and Spanish Speaking Caribbean

Since November 2015, Standard Precipitation Index (SPI) Outlooks is also produced and disseminated by CA-RCOF. SPI Outlooks helped region authorities to decide on measures to cope the impacts of the drought associated with ¨El Niño¨ 2015-2016.

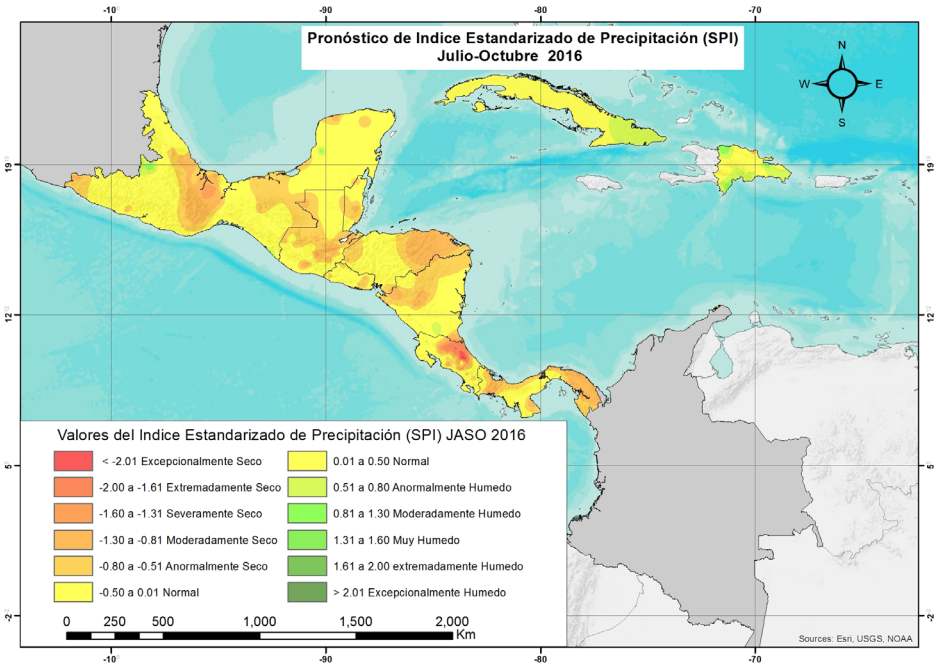
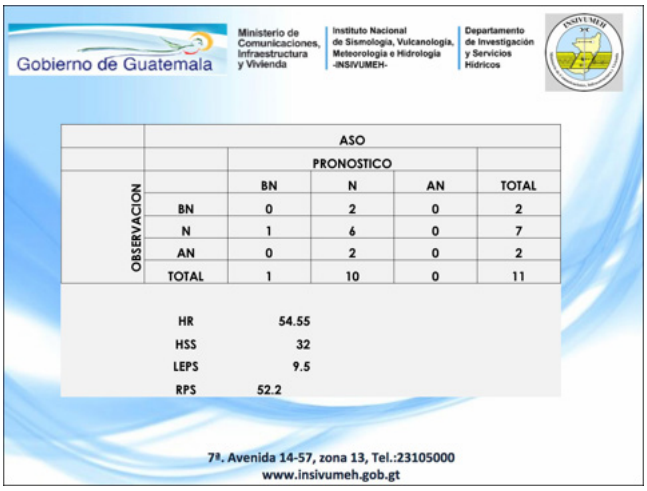


Figure No 2
Example of SPI Outlook issued by Mesoamerica and Spanish Speaking Caribbean RCOF.

Evaluation of Regional Climate Outlooks in CA-RCOF

In CA-RCOF evaluation of the outlooks is considered essential to provide feedback to members on

the performance of tools and methodologies used in the forecast. Verification statistics like Hit Rate (HR), Heidke Skill Score (HSS), Linear Error in Probability Space (LEPS) and Ranked Skill Score (RPS) are applied to regular monitor the forecast skill for each country and for the region.



		ASO			
		PRONOSTICO			
OBSERVACION		BN	N	AN	TOTAL
	BN	0	2	0	2
	N	1	6	0	7
	AN	0	2	0	2
	TOTAL	1	10	0	11

HR	54.55
HSS	32
LEPS	9.5
RPS	52.2

Table No 1
August-October 2015 (ASO 2015) Outlook verification for Guatemala, produced by Guatemala´s National Institute for Seismology, Volcanology, Meteorology and Hydrology (INSIVUMEH), member of CA-RCOF.

User involvement

Since 2006 and application element was introduced in order to easy the use of CA- RCOF climate outlooks by user sectors. Under the coordination of CRRH-SICA Secretariat, and with the cooperation of other SICA´s Technical Secretariats, the ¨Foro de Aplicaciones del Pronóstico Climático¨ (FAPC) integrates climate experts and RCOF interested users into "virtual working tables" for the preparation of climate risk scenarios for the period of the outlook. Experts and users integrate information and data of specific climate threats in each sector to identify potential risks and preventive measures to mitigate impacts of climate variability. Climate risk scenarios so generated focus on food security factors like agriculture, fisheries, water, health, as well as cross-cutting areas like risk management and emergency responses. Since 2016, with the involvement of the Regional Organization for Plant and Animal Health, (OIRSA), climate risk scenarios for animal and plants diseases are also produced.

The FAPC product is shared with stakeholders and authorities in all participating countries and disseminated to a wide range of users in private sector.

Recent Advances.

CA-RCOF is considered by its members as a continuous process that must advance towards the full establishment of climate services in Mesoamerica. To achieve this goal, improvement in human resources, data availability and communications are considered essential, and regional partners have committed their support to this goal. In this line of cooperation the Regional Climate Change Program (USAID-PRCC) supported CA-RCOF with a VPN communication system that allows now regular meetings of the group and Outlook updates whenever necessary. Additionally USAID-PRCC helped the process to implement and adapt WRFC model to an appropriate domain for the Mesoamerica region. Currently, the model is run by the Environment Observatory of El

Salvador, which provides its climate forecast to CA-RCOF members as an input for the seasonal outlook.

Outlook category	Geographic Area	Potential risks for health and food security	Suggested measures for authorities
		Food scarcity. Increased risk of malnutrition Reduced drinking water vailability Potential increase in skin disease and diarrhea cases Dengue, Malaria o Chikungunya. likely to increase during the second part of the rainy season.	Prepare for food support to vulnerable families Prepare for drinking water supply in commnunities without water storage capacity Promote familly orchards and water harvest. Reinforce health surveillance Community health promotion and capacity building.. Plan for supplies and medicines and lab reagents catering. Increase vector control and work with vulnerable communties for surveillance and control of **breeding grounds.**
Below Normal	Departments of Comayagua, Francisco Morazán, El Paraíso, Choluteca, Valle, southern part of Yoro, and western part of e Olancho y and municipalities close to El Salvador.		

Table No 2
Risk scenario and suggested measures for health and food security produce by Health FAPC "virtual working table" for ASO 2015

Success stories

Starting in June 2015, during the last El Niño, SICA´s Regional Council of Ministries of Agriculture (CAC-SICA), with the support of the Interamerican Institute for Agriculture (IICA) and UNEP's REGATTA, worked the seasonal climate outlooks and risk scenarios produced by CA-RCOF to prepare for the potential impacts of the event. Lists of measures and policies were issued at regional level and adapted at national level. Under the leadership and coordination of SICA-CAC, a working group of climate risk in agriculture based on climate outlooks was established as a permanent mechanism for climate risk management in Central America and Dominican Republic.

Challenges.

CA-RCOF is consolidated and recognized by users in SICA countries as authorized source of climate information for decision making; however, important challenges for its advance and sustainability remain, including automate the verification, open access to more climate data, systematization of tools and Outlook assembling process and continuous capacity building for technical personnel at NMHSs as well as use and proper understanding of climate products for the users.

Looking Forward.

CRRH-SICA intends to continue with CA-RCOF, facilitating and supporting the work of the NMHSs in Central America. In cooperation with regional partners in from SICA´s technical secretariats. The Center for Geophysical Research of the University of Costa Rica is expected to continue a scientific agenda, which may help to increase the knowledge on regional climate drivers. In relation to user involvement, it is expected to continue collaboration with the other regional organizations to enhance their involvement in the provision of sectorial information and the expertise of their members to the climate risk scenarios. Interaction with stakeholders and feedback from them is expected to increase with the use of communication technologies for distant conferences and fora. Increase in user sectors involvement through the Centro-Clima climate information platform, that will start operations in 2018, is expected to help its sustainability.