

Current status of operations of RCOF RA III: Southeast of South America Climate Outlook Forum (SSACOF)

Laura Aldeco

National Meteorological Service
Argentina



WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

**WMO International Workshop on Global
Review of Regional Climate Outlook
Forums, Ecuador, 5 – 7 September 2017**

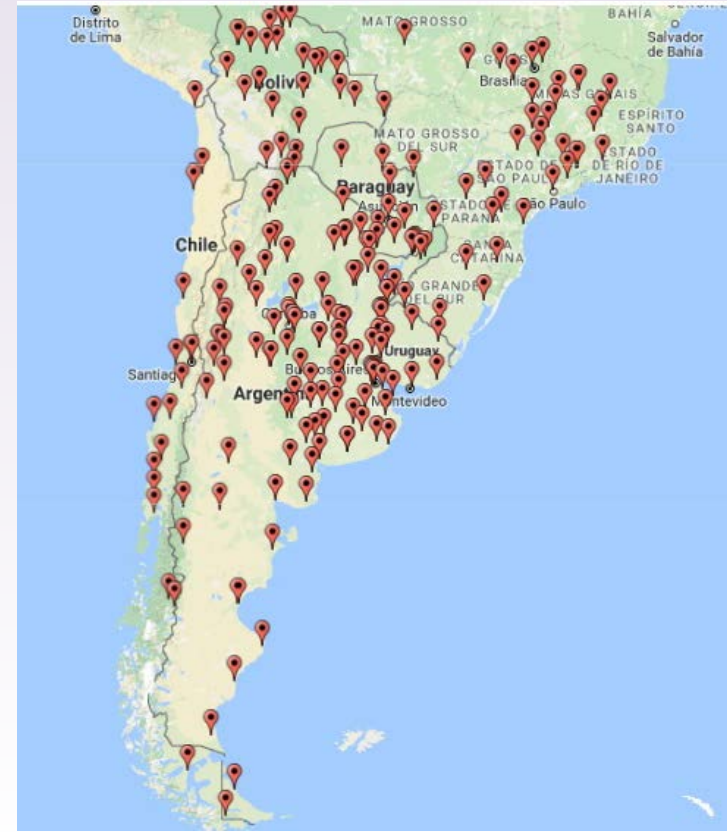
SSACOF background (1/3)

SSA covers a large area in South America between 10°S and 55°S that includes Argentina, Bolivia, South of 10°S of Brazil, Chile, Paraguay and Uruguay.

Started in 1997 under the guidance of the World Meteorological Organization (WMO), with the co-sponsorship of the International Research Institute for Climate and Society (IRI) and the National Oceanic and Atmospheric Administration (NOAA).

Since 1999, the forums have been organized by the National Meteorological and Hydrological Services (NMHSs), with the **financial support** of the WMO and, in recent years, also the State Agency for Meteorology of Spain (AEMET).

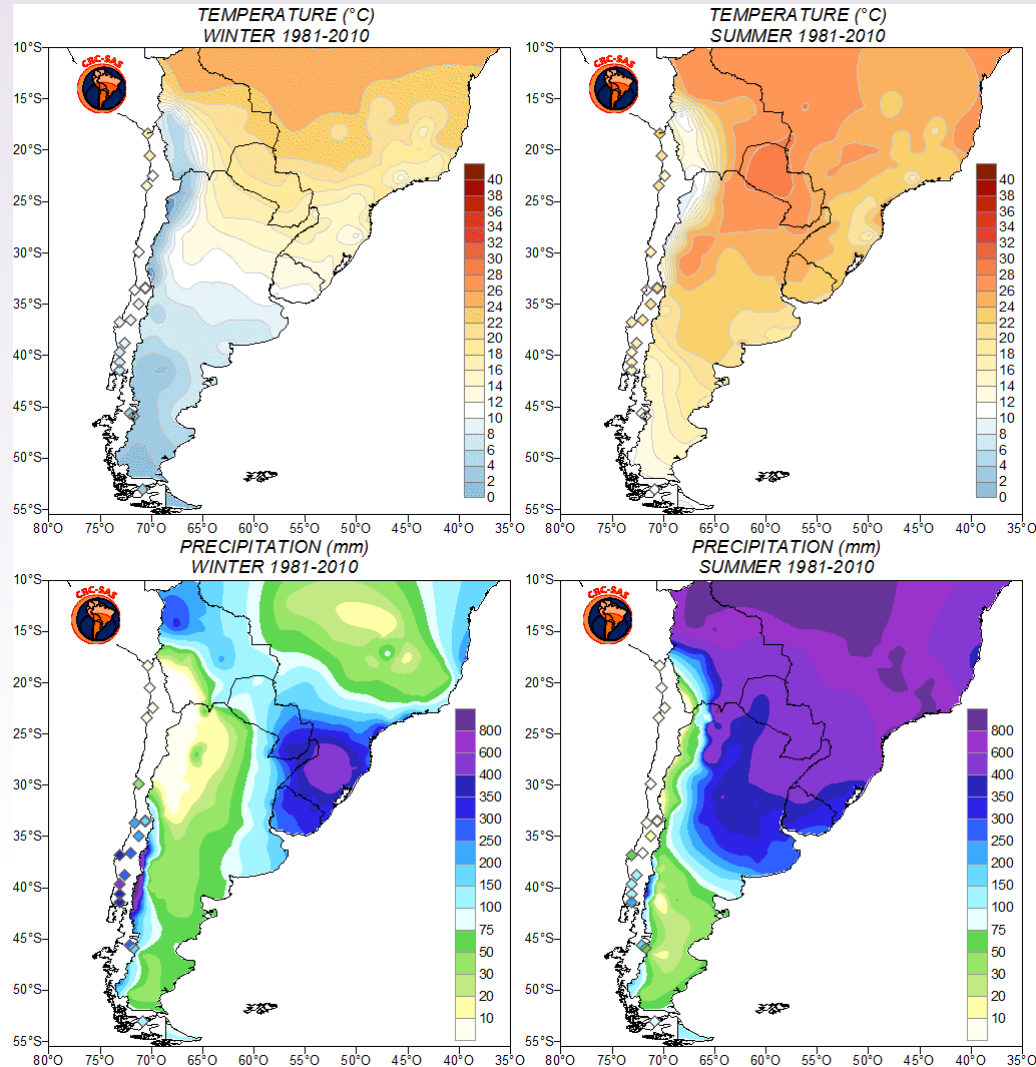
Prior to 2004, the SSACOF session was put in place around three times per year. Since 2004, it has been reduced to **twice a year** (ideally, one Forum for winter forecast and another for summer forecast).



SSACOF Domain with surface meteorological stations from RCC network SSA

SSACOF background (2/3)

- SSACOF is characterized by diverse geographical features with the Andes Mountains in the west coast and the highlands and plateaus in the east.
- Bolivia, western Argentina and Paraguay exhibit a monsoonal precipitation regime with maxima during the austral summer and dry season in austral winter.
- At the opposite end, the regions of central Chile and west Patagonia in Argentina have a dry season during the austral summer.



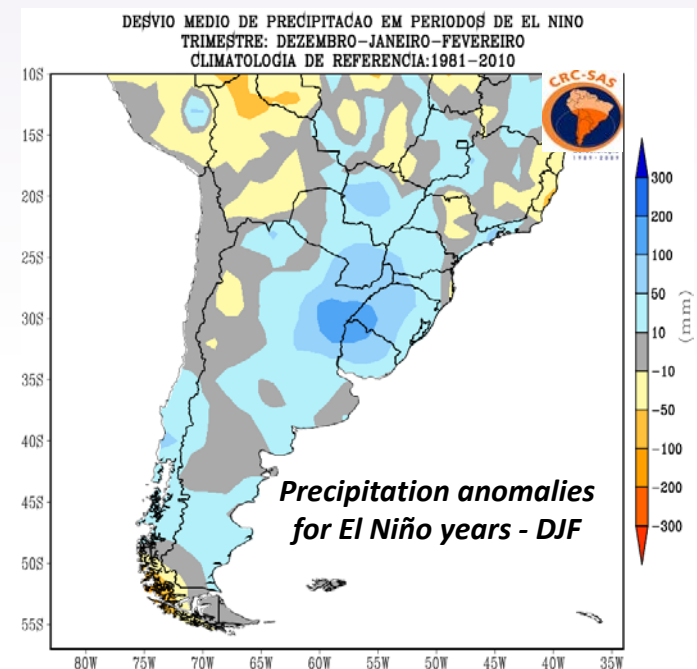
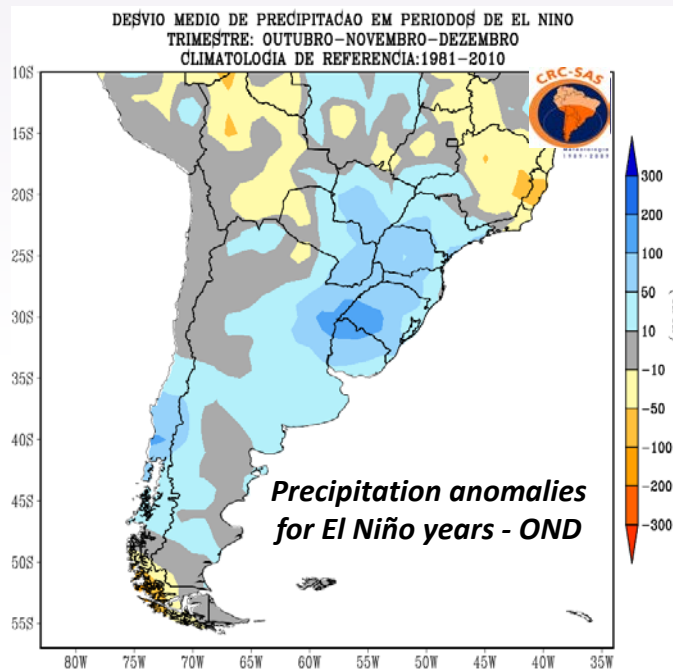
Mean precipitation and temperature for 1981-2010 period (surface stations from RCC network SSA) for winter and summer seasons.

SSACOF background (3/3)

Sources of predictability: South Atlantic Convergence Zone (SACZ), the Indian Ocean Dipole, the Sea Surface Temperatures in the Atlantic, the Southern Annular Mode, the Madden-Julian Oscillation and El Niño Southern Oscillation (ENSO).

El Niño is usually associated with above normal winter temperatures and increased precipitation, especially from April to September in central and south Chile and northwest Patagonia in Argentina, and from September to March in northeastern Argentina, Eastern Paraguay, southern Brazil and Uruguay.

Conversely, **La Niña** event is associated with below normal winter temperatures and below normal precipitation from August to February in a similar region.



The SSACOF process (1/4)

The SSACOF process has two main steps:

- 1) Diagnosis of the global and regional climate conditions of previous months, including the evaluation of the key drivers of the region's climate (ENSO status, Antarctic Oscillation, Indian Dipole and Madden-Julian Oscillation)
- 2) Use of forecasting tools (both statistical and dynamical) for preparing the final forecast outlook. The final outlook is based on statistical and dynamical models information.

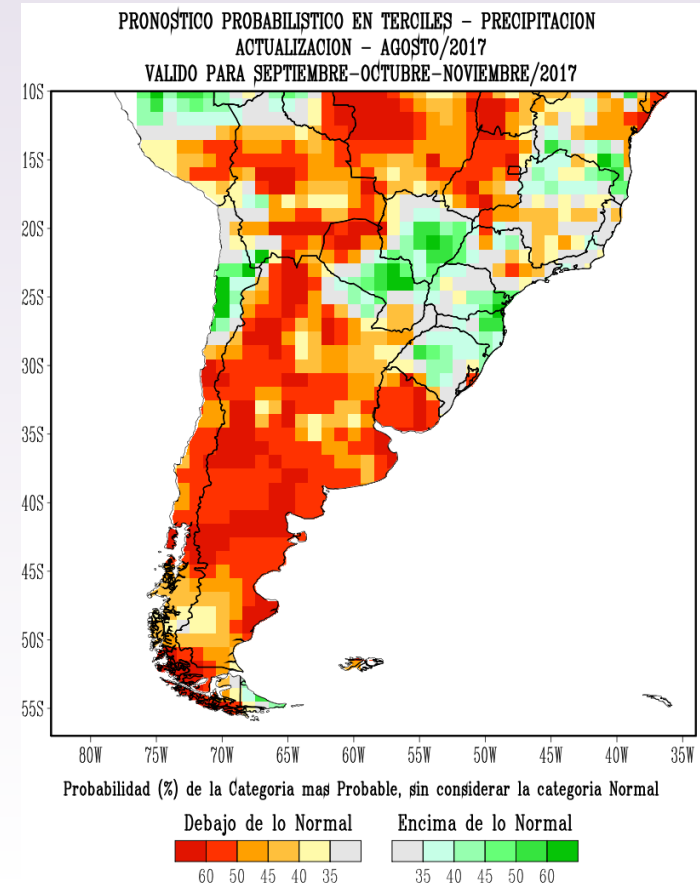
Dynamical models considered in the discussion for preparing the outlook:

- Global and regionally downscaled forecasts produced by the local Global Producing Centre for Long-Range Forecasts (GPC), CPTEC (Centre for Weather Forecasts and Climate Studies), Brazil.
- The multi-model ensemble forecast of the 12 WMO GPCs, EUROSIP, NMME, IRI, EUROBRISA and APEC Climate Center.

The SSACOF process (2/4)

Statistical models considered in the discussion for preparing the outlook:

- Circulation and sea surface temperature (SST) based forecasts produced with the Climate Predictability Tool (CPT -IRI) run at the **RCC Network-SSA forecast**.
- Circulation and SST based CPT forecasts run at the Meteorological Services of Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay.
- Circulation and SST based forecasts run at CIMA (Argentina)
- EUROBRISA (An Euro-Brazilian Initiative for improving South American seasonal forecasts)



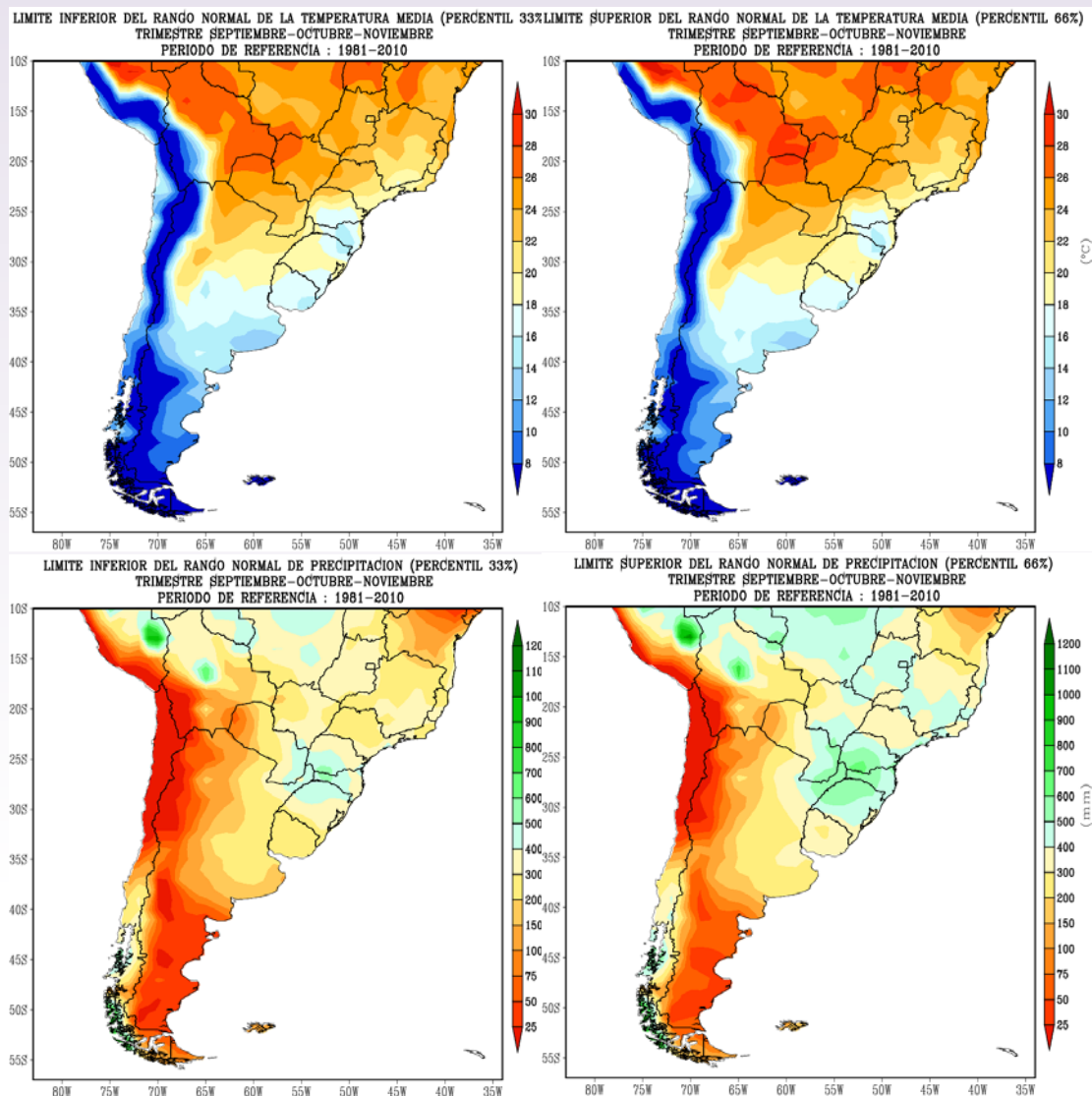
Example: Statistical probabilistic forecast of precipitation for Sep-Oct-Nov 2017 run at RCC Network-SSA using CPT -IRI

The SSACOF process (3/4)

Since XL RCOF climatology reference maps (1981-2010) are included in the final report (from RCC-network SSA).

Also, a link to climatological information of the meteorological surface stations for every season is included (http://www.crc-sas.org/es/climatologia_faixa_norm_al.php)

Maps for every season are available in http://www.crc-sas.org/es/prevision_modelo_previ_sao_as.php



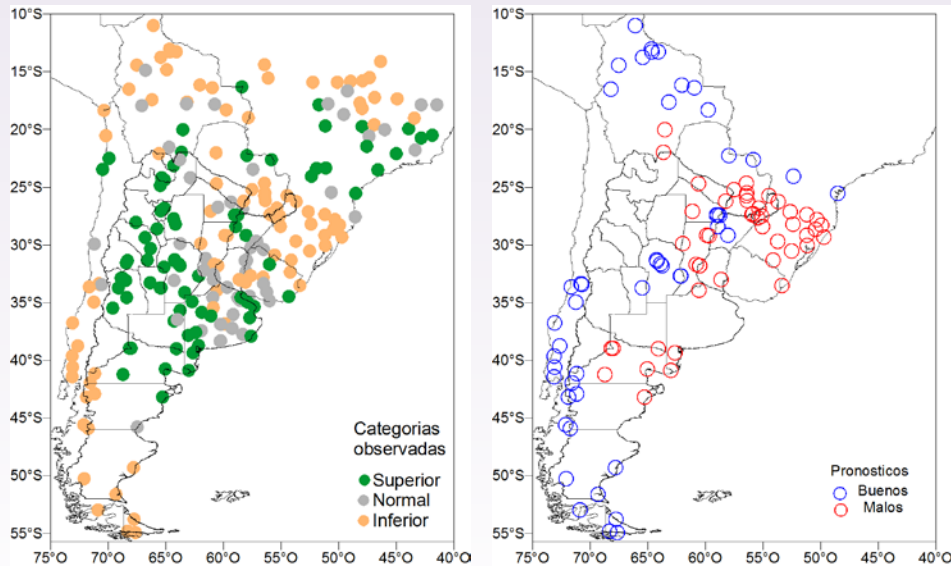
Example: Values of 33rd and 66th percentiles of mean temperature and mean precipitation for Sep-Oct-Nov 2017 (produced at RCC Network-SSA using CPT –IRI)



WMO OMM

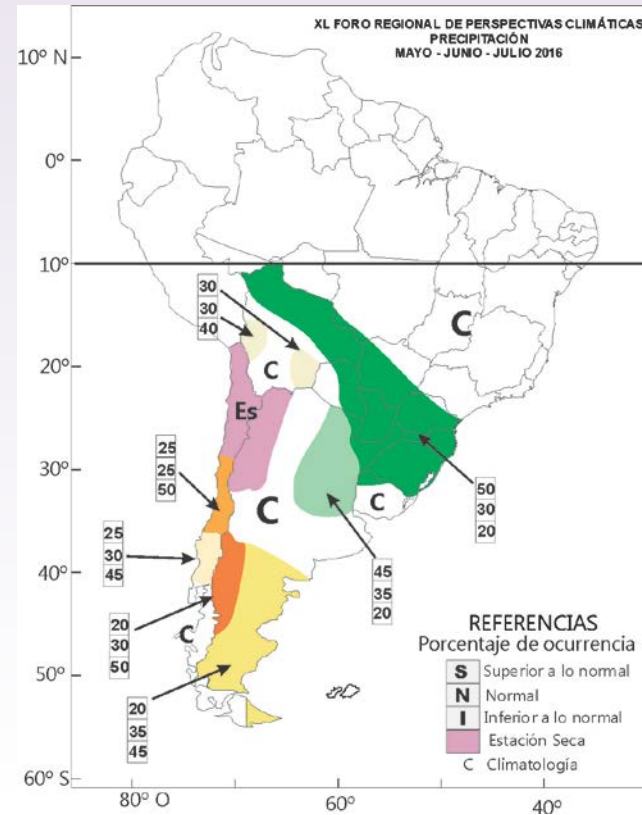
The SSACOF process (4/4)

Previous to the elaboration of the forecast, a categorical verification is made, where temperature and precipitation consensus forecasts are compared with observational data from the RCC-network SSA.



All participants contribute to the final discussion for elaborating the upcoming seasonal forecast by consensus agreement. Finally, seasonal climate outlooks are distributed by the RCC-Network SSA and NMHSs to regional and national users.

Additionally, in some cases a press conference is made.



Consensus Example: Percentage of occurrence of precipitation for May-Jun-July 2016 for SSACOF domain

Capacity Development activities

Since the creation of the RCC-SSA, part of the time of the forums is used to update activities of the RCC and new objectives are discussed and coordinated.

During the rest of the forum, other activities are held :

- December 2015, Porto Alegre, Brazil: agricultural and hydric experts and users were invited to get a closer look to their needs.
- May 2016, Santiago de Chile, Chile: Regional Workshop on Climate Services for IberoAmerica: agricultural and health experts and users were invited to get a closer look to their needs.
- December 2016, Asunción, Paraguay: Training Workshop on Subseasonal Prediction.

User Involvement

- SSACOF involves experts from NMHSs, universities, specialists in climate forecast, researchers in meteorology, hydrology and related environmental sciences, anthropologists, government organizations, international institutes and users from sectors such as agriculture, water resources, hydro-electric generation, civil defense and disaster awareness.
- These users usually contribute to the discussion showing presentations on subjects such as the condition of rivers, hydro-electric dams, crops, soil moisture, and damages and losses due to recent weather conditions.
- Agricultural and water sectors use the information provided by the forum and in some cases, integrate this information into crops models or hydrological models.
- In the forums that were held during El Niño 2015-2016 several professionals from hydric institutions had an active participation in the forums due to the big concern about the possible impacts of this event. Every country had at least, one representative.



SWOT analysis

Strengths:

- Continuity, SSACOF has been conducted since 1997.
- RCC and forums count with active participation of professionals from the hydrological sector and agricultural sector.
- Support of RCC-network SSA.

Opportunity: to discuss with colleagues from other countries the different climatic situations in each country. Also, it's way of knowing how other NMHSs work, or what users from other countries require most, finding points in common and new positions too.

Weaknesses: Communication to the users is difficult. As the final consensus is presented in terciles probabilities, each country has made an effort to explain these results as clear as possible to the users (through each NMHSs websites, or in press conferences, depending on the country).

Threats:

- Lack of funding from government
- There are few professional at the National Meteorological services

Way Forward

- The main efforts for the near future should be focused in: **calibration and verification** of seasonal climate numerical models; verification and integration of the consensus forecasts; development of additional products for monitoring and forecast and tailoring forecast.
- It is also very important to have an **integration of the numerical models** in our region. This is not easy due to the poor skill that most models have in many regions of South of South America. This makes more evident that calibration and a study to decide which models should be integrated based on their performance are needed.
- There are possibilities of incorporating new products in order to improve the monitoring in sub seasonal to seasonal scale.
- Another identified challenge is to work on impact-based forecast.
- Actually, efforts are being done in developing strategies for an early warning system of droughts.



Thank you Merci Gracias!



WMO OMM

World Meteorological Organization
Organisation météorologique mondiale