RCOF Review 2017

[Mediterranean Climate Outlook Forum]

Status Report (Survey)

Annotated Outline

Specific Climate features of concerned region

The salient features of the seasonal climate of the region (rainy season, dry season), indicating the sources of seasonal predictability (ENSO for example); does a baseline study exist on climate variability in the region and its major forces? Include references to important recent peer-reviewed publications on the subject, along with a brief summary outlining the key messages on the status of scientific knowledge relevant to seasonal forecasting for the region of interest.

Highlight specific climate sensitive sectors in the region - like agriculture or water resources - mentioning impacts of seasonal climate variations on their activities, along with a brief outline of potential applications of seasonal forecasting products for decision-making.

The region of interest extends from the Iberian Peninsula to the Anatolian Peninsula, through the Balkan Peninsula and up to the north of Africa. The coastal countries are bordered by two main intercontinental seas: the Mediterranean Sea and the Black Sea.

The Mediterranean region is characterized by a complex morphology, due to the presence of many sharp orographic features: high mountain ridges surrounding the Mediterranean Sea on almost every side, distinct basins and gulfs, and islands and peninsulas of various sizes. These characteristics have important consequences on both sea and atmospheric circulation because they determine a large spatial variability and the presence of many sub-regional and mesoscale features.

Droughts and floods are among the most dangerous meteorological hazards affecting the Mediterranean countries, followed by windstorms and hail. Floods affect the entire Mediterranean region but their frequencies and impacts are not homogeneous over the entire area.

These regions are highly vulnerable and prone to significant economic losses, given the economic and cultural differences and the demographic contrasts, with high population densities in eastern Spain, southern France, Italy, the west of the Balkan Peninsula and Egypt. A number of Mediterranean countries have major stakes in water management, agriculture, energy, tourism, energy, and production and demand

The RCOF background

The RCOF details:

- *when/how it started (e.g. preceded by a scoping workshop);*
- *coordinating institution(s) (e.g. RCC/RCC-network, an NMHS, a regional organization)*

- *sub-region/countries involved;*
- *collaborating partner institutions;*
- *typical frequency, target season(s), tentative dates of the session (physical, or online)*

Note: Information already available in RCOF factsheets[1] published by WMO could be used, unless it needs to be updated.

Launched following the Scoping Meeting in June 2013 at the State Meteorological Agency of Spain (AEMET), the Mediterranean Climate Outlook Forum (MedCOF) generates consensus seasonal forecasts for the entire Mediterranean region, cutting across the two Regional Associations, RAVI and RAI. The forum reflects the desire of the World Meteorological Organization (WMO) to increase the availability of user-friendly climate service. Its purpose is to improve climate scientists' understanding of the information needs of different user groups and thus, be able to produce more usable and salient climate information.

The first forum was conducted in November 2013 by the Republic Hydro-meteorological Service of Serbia in Belgrade. Since then the forum is conducted twice per year, through teleconference from May to June and in an assembly in November. AEMET coordinates and facilitates MedCOF activities. More information and products are available at the website: http://medcof.aemet.es/

As it has been agreed by the participating countries, MedCOF operates as an overarching entity in support of two other RCOFs existing in the region, the South-East European Climate Outlook Forum (SEECOF) and PRESANORD (RCOF for North Africa), bringing together all the member countries of the SEECOF and those of the PRESANORD, with the addition of France, Italy, Lebanon, Malta, Mauritania, Portugal, Spain and the Syrian Arab Republic. The RA VI RCC and Northern Africa RCC networks play a paramount role supporting MedCOF activities and providing the needed material for both on-line and face-to-face sessions. The coordination of both RCC for the provision of information in a harmonized format has proven to be a key element for the success of MedCOF activities. Other WMO institutions, likewise ACMAD operating as RA I RCC and the South East European Climate Change Center (SEEVCCC), also support MedCOF activities. Other partner institutions, as e.g. IBIMET, CMCC, etc., have also collaborated with eand contributed to MedCOF.

The MedCOF sessions focus on the large-scale forcings (e.g., NAO), that are shared by the whole basin, although the effects are different across the region, and the production of consensus seasonal forecasts for the whole Mediterranean basin with the inputs from GPCs and RCCs operating in RAI and RAVI. MedCOF sessions are organized back-to-back with sessions of the subregional RCOFs for Northern Africa (PRESANORD) and South Eastern Europe (SEECOF). Whereas MedCOF pay special attention to large-scale forcings, the subregional RCOFs focus on smaller-scale forcings refining and adapting the consensus forecasts provided by MedCOF.

The forum provides an opportunity for member countries to exchange information on the last and current knowledge of climate conditions. Training workshops conducted for MedCOF participants contribute to developing capacities on seasonal forecasting in the NMHSs. The forum produces information concerning the state of the ocean and other climate drivers for the region, probabilistic forecast of temperature, precipitation and hydrological relevant variables, information on climate monitoring since the previous season, and verification of the last forecasted period. MedCOF is currently focusing on the non-negligible task of coordinating the region for the production of a coherent, consistent and agreed message on probabilistic seasonal forecast.

[1] RCOF Factsheets published by WMO available at : https://library.wmo.int/opac/doc_num.php?explnum_id=3191

The RCOF process

The RCOF implementation process, including the capacity development activities, the main forum structure, joint sessions with user involvement, sessions focused on specific sector(s), if any.

The current methodology/approach adopted for preparing the seasonal predictions and consensus outlook, including the global/regional/national technical inputs for the process. Indicate whether real-time products from GPC-LRFs are routinely accessed and used.

Evaluation of the previous season's consensus outlook:

- *how is outlook skill evaluated, with which skill measures (verification metrics if any), and for what period, with what resulting skill score(s);*
- *how (or whether) is outlook skill communicated to users*

Further value addition and dissemination of outlooks to stakeholders at national scale, e.g., through National Climate Outlook Forums (NCOFs), or similar activities

Information updates between RCOF events, e.g., through a Climate Watch, monthly updates of forecasts etc., including through the operations of Regional Climate Centres (RCCs) and its dissemination to stakeholders

Provision of climatological information together with the outlook (for context and information)

Capacity development plays a central role within MedCOF. Acknowledging the huge variety of countries participating in MedCOF and the very different level of development in both operational and research climate activities, the organization of training workshops has always been a priority since the start of MedCOF activities. These training activities have payed special attention to practical sessions aiming to provide tools for operational tasks and to enhance the transfer of knowledge within the region. Along the last three years, training workshops have been organized focused in thematic areas of knowledge relevant mainly for operational seasonal forecasting duties.

Evaluation of the previous season's consensus outlook is always conducted in each MedCOF exercise. This evaluation starts with the verification reports provided by the participating countries that are invited to provide national reports including information on: a) high-impact events during the last forecasted season; b) brief assessments of the correctness of the last outlook, and c) comments on user perceptions of the outlook. The skill is evaluated by looking at the verifying tercile maps for temperature and precipitation, then this information is integrated and complemented with global and regional monitoring databases. The low number of consensus outlooks carried out so far has not allowed the computation of the usual probabilistic verification scores.

Information updates between RCOF events are produced and disseminated only at national level. Climate Watch is routinely done by RCCs and alerts/warnings (if any) are disseminated through national focal points and using a dedicated web page.

Capacity needs

What are the main capacity needs of the major stakeholders observed to date, of the NMHSs? RCC? Users?

How are these needs being addressed through the RCOF process? How could they be further addressed?

There is a variety of stakeholders with different capacity needs. Whereas stakeholders from certain sectors, e.g., energy, insurance, have a long experience on using probabilistic seasonal outlooks, others, like e.g., agriculture, have still difficulties using this type of information to improve decision making for their activities. The EC has funded several research projects aiming to demonstrate and quantify the impact of seasonal forecasts on decision making for some selected sectors. In particular, a new project (MEDSCOPE) specifically for the Mediterranean region has been recently funded by the EU initiative ERA4CS. Most partners of this project are active participants in MedCOF and know very well the needs of the region. The project will produce after its completion a collection of tools helping for the decision making process in some selected sectors relevant for the region.

User involvement

How user needs are reflected in the forum, and after the forum,

Indicate the main (regional) users involved in RCOF

How is the forum used as a mechanism to collect user feedback? What are the main messages from feedback to date? What changes/plans have been made to address these (e.g., development of tailored products, forecasts of sector-specific variables)?

How are seasonal outlooks evaluated from user perspectives, and challenges met by them in the process of applying the information into decision making process identified, and how is this input addressed through the RCOF process?

Water and energy sectors, both from the production and demand sides, were initially indicated as major stakes for a number of Mediterranean countries. Efforts are currently conducted in conjunction with research projects to demonstrate the benefits of seasonal forecast in both targeted sectors. User involvement is mainly conducted at national level. Certain sectors, as e.g. water management, renewable energy, etc., are closely collaborating in the exploitation of seasonal outlooks not only coming from MedCOF but from the national services.

SWOT analysis

Describe the main Strengths (indicate key benefits realized, with some examples of success stories based on user feedback), Weaknesses, Opportunities and Threats (SWOT) pertinent to the RCOF, both on regional and national scales.

The main Strength is the harmonization of seasonal forecasts within the region. MedCOF has also helped to develop operational seasonal activities in the less advanced countries within the region. The main Weakness is related with the need of demonstration of the value added by the consensus exercise to the final products. Among the Opportunities we may perhaps mention the starting of activities and projects aiming to develop tools helping to the decision making process in specific sectors. Finally, the main Threat is the uncertain sustainability of MedCOF activities.

Sustainability of RCOF

Role of a Regional Climate Centre (RCC)/RCC-Network functioning in the concerned region in the RCOF process

Recognition of the role of RCOF by the countries in the region

Coordination mechanisms established (such as, a network of focal points, management group) to plan, organize the sessions, discuss challenges and find solutions (such as on-line sessions)

Existing funding mechanisms, need for mobilizing resources to sustain the RCOF; List some of the major projects implemented with support to the RCOF sessions. Suggest approaches for long-term sustainability with minimal dependence on external resources.

The role of RCC Networks (RA VI and Northern Africa) is essential for the functioning of the MedCOF process. On the other hand, the MedCOF process itself has promoted the development and harmonization of products generated by both RCC Networks.

The role of MedCOF has been widely recognized by countries in the region and enhanced the visibility of NMHSs in connection with seasonal forecasting activities.

The main coordination mechanism is a management group (MG) that includes representatives from RCC-Networks and from subregional RCOFs. MG virtual meetings are organized with an approximately frequency of 2 months to discuss and decide on items relevant for MedCOF. Also a network of focal points allows a quick and efficient dissemination of information among the participant countries.

Apart from the resources mobilized by WMO, the main funding mechanism so far has been the support of AEMET to the Northern Africa representatives. Several approaches for long-term sustainability have been explored although for the moment the only successful mechanism has resulted from coordination with EU funded COPERNICUS activities. Organization of back-to-back COPERNICUS and MedCOF events allows partial funding by COPERNICUS. It is important to note also the in-kind contribution usually provided by host countries. Other EU calls and opportunities are envisaged as possible funding mechanisms for the MedCOF process.

Way forward

The future efforts in science (including key research questions and needs), operation, user engagement, sustainability.

Use of objective regional seasonal forecasts in preparing the outlook, and suggestions for the development of global standards for RCOF operational practices

Possibility to expand the RCOF product portfolio (such as monitoring information for the recent and current seasons, sub-seasonal information including onset date, rainfall distribution, etc., variables other than rainfall and temperature, impact-based outlooks, etc.)

Alongside future MedCOF efforts are the following priorities:

- improving evaluation and verification procedures pointing to the implementation of objective verification methods, following the recommendations of the WMO Commission for Climatology (CCl);
- development and implementation of tools for online working to facilitate the organization of remote MedCOF sessions;
- development of diagnostic tools for assessing the actual predictability at seasonal time scales over the MedCOF region during each MedCOF exercise;
- special stress will be put on capacity building and transfer of knowledge, as big differences in expertise among countries in the region still exist;
- progress on user involvement remains a standing item and a challenge.