

Current Status of the SEECOF Operations

Head of the Group for the LRF,
SEECOF Forum Moderator



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World Meteorological Organization
Organisation météorologique mondiale

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

SEECOF Background (1/3)



Coordinating institution – RA VI RCC-SEEVCC/RHMS of Serbia

SEECOF-1 – **the first RCOF on the territory of RA VI**, organized in Zagreb, Croatia in June 2008

SEECOF-2 – face-to-face RCOF held in Budapest, Hungary, Nov. 2009

SEECOF-3 – **the first online meeting** in the period April-May 2010

SEECOF-5 – face-to-face meeting in Belgrade, Serbia, Nov. 2011

SEECOF-6 – online meeting in April-May 2011

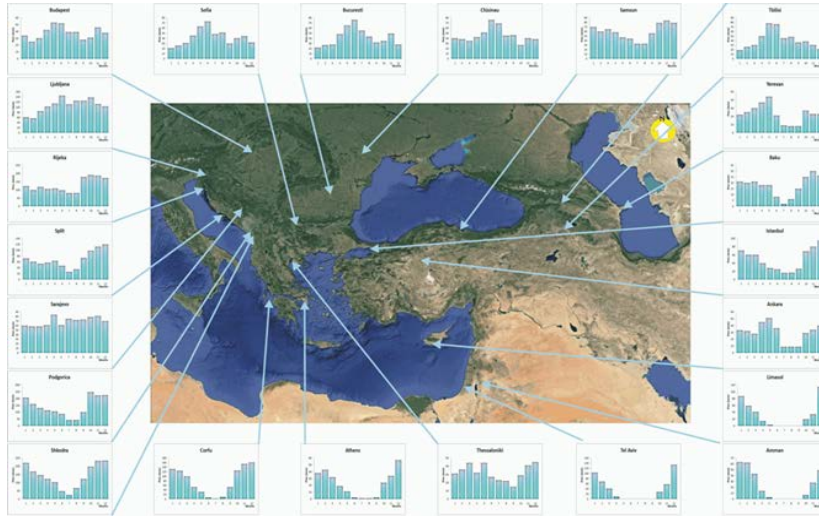
SEECOF-8 – face-to-face meeting in Podgorica, Montenegro in November 2012

SEECOF-16 & MedCOF-7 – face-to-face meeting in Rome, Italy, Nov. 2016

20 NMHSs of the countries of the South-East Europe and Caucasus region:

- Albania,
- Armenia,
- Azerbaijan
- Bosnia and Herzegovina/Federation of Bosnia and Herzegovina
- Bosnia and Herzegovina/Republic of Srpska,
- Bulgaria,
- Croatia,
- Cyprus,
- Georgia,
- Greece,
- Hungary
- Israel,
- Republic of Moldova,
- Montenegro,
- Romania
- Serbia,
- Slovenia,
- The Former Yugoslav Republic of Macedonia,
- Turkey
- Ukraine

SEECOF Background (2/3)



The region of South-Eastern Europe covers highly diverse territories, ranging from the lowland plains in the Pannonia plain, through the Alpine Dinaric, Carpathian and Rhodope Mountains in the western, central and north-eastern Balkans, to the mountains in Turkey and in the south Caucasus region in the east, and to the desert areas in Israel and Jordan.

Consequently, the climate is also very varied.

Monthly precipitation sums for different locations in the SEECOD region during 1981-2010 referent. climatological period.

- Mediterranean climate prevails along the coasts of the Adriatic, Ionian, Aegean, Black and Mediterranean Sea and belonging hinterlands,
- Desert climate is predominant in the desert areas in the inland of Israel and Jordan,
- Humid continental climate prevails in the inland of the SEECOF region,
- even Alpine climate is present on the high mountains of the region.

In most of the SEECOF region, we can differentiate between two seasons :

- dry season, lasting in the period from June to August across most of the region, continuing even throughout September in the southern parts of the region,
- wet season, which is well defined in most of the region during the period November-February, while in the continental parts of the Balkan Peninsula and of the South Caucasus region the second interval with maximum precipitation quantity occurs in the period May-June.

SEECOF Background (3/3)

The **main sources of predictability** in the South East European and South Caucasus region can be:

- Sea-ice and snow-cover,
- North Atlantic Oscillation,
- Sea Surface Temperatures (SSTs) with ocean-atmosphere connections, especially the influence of the El Nino Southern Oscillation,
- Volcanic aerosols,
- Stratospheric connections,
- Atlantic multi-decadal oscillation,
- Local factors such as the effect of soil moisture on the local climate.

The region of South-Eastern Europe is not exempt from the climate change. Based on the Intergovernmental Panel on Climate Change (IPCC) projections and future scenarios, this region was identified as one of the most vulnerable areas to climate change in Europe, likely to be adversely affected by the worsening climate conditions.

The region is frequently affected by severe weather conditions like floods, earthquakes, extreme temperatures, landslides and wildfires. The occurrence of disasters caused by natural hazards led to the implementation of a Regional Climate Outlook Forum (RCOF) in South-Eastern Europe.

Source of funding's:

- SEECOF face-to-face meetings are supported by WMO and familiar institutions,
- SEECOF on-line meetings are supported by RA VI RCC-SEEVCCC/RHMSS equipment and staff



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SEECOF Process (1/5)

The SEECOF meeting (virtual or face-to-face) consists of 3 steps:

- **Step 1** deals with the qualitative verification of the past SEECOF Consensus Statement on the Climate Outlook for the winter or summer season. The SEEVCCC expert team, together with the colleagues from the SEECOF region, prepares draft version of the Final Assessment of the SEECOF Climate Outlook for the previous forecast season and uploads it to the online forum for discussion. The draft version provides brief description of the previously forecast seasonal climate, information on high-impact events of the previous season, brief assessments of the accuracy of the SEECOF Climate Outlook and comments on user perceptions of the SEECOF Climate Outlook. The final document of the Step 1 – Final Assessment of the SEECOF Climate Outlook for the previous forecast season (winter or summer) – is adopted on a face-to-face SEECOF meeting.
- **Step 2** comprises an assessment of the current state of the climate, including large-scale climate patterns worldwide, and assessments of the likely evolution of climate in the course of the following months, prepared by the RCC on CM (DWD) and LRF (Meteo-France).
- **Step 3** aims at composing the Consensus Statement on the Climate Outlook for the following season (summer or winter). The SEEVCCC expert team, together with the colleagues from the region, prepares draft version of the Climate Outlook for the following season and uploads it to the SEECOF and MedCOF on-line forums for discussion. Together with WMO, RCC on CM and LRF, and experts from the MedCOF region, the members of the SEECOF region actively participate in issuing the MedCOF Consensus Statement on the Climate Outlook for the following season. In the end, based on the MedCOF Consensus Statement, SEECOF experts issue the SEECOF Consensus Statement on the Climate Outlook for the relevant season in probabilistic form, with 1981-2010 as reference climatological period.

A joint face-to-face session of MedCOF, PRESANORD and SEECOF always includes a workshop as a pre-COF meeting, with the aim of improving the NMHSs capacities for LRF, as well as a joint session with the end-users from different economy sectors.



SEECOF Process (2/5)

During the SEECOF meetings, for the assessment of current state of the climate, including large-scale climate patterns worldwide, and for the preparation of Consensus Statements on the Climate Outlook for the upcoming season, the following material is being used:

- *Bulletins from the RA VI RCC LC nodes of CM and LRF;*
- *CPC NCEP ENSO diagnostic discussion.*

SEECOF Consensus Statements for the forthcoming seasons (DJF or JJA) are issued based on the harmonized opinions of the SEECOF members, using the seasonal forecasting maps for the following meteorological parameters: T2m, temperature on 850 hPa, MSLP, 500 GPH, precipitation, SST in terms of:

- *Ensemble mean;*
- *Probability: for most likely category, by tercile categories, of outer quintiles;*
- *Anomaly correlation, ROC scores and reliability for tercile categories;*
- *Simple composite map anomaly;*
- *Composite MME Forecast from all 12 GPCs from the WMO Leading Centre for LRF MME (www.wmolc.org);*
- *Consistency map of all 12 GPCs (www.wmolc.org) – on 20. day of month (maps of all 12 GPCs sometimes are not available)*

All GPS-LRF materials are routinely accessed and used (For the SEECOF members all materials are available the SEECOF Forum on: <http://www.seevccc.rs/forum/>).

SEECOF Process (3/5)

SEECOF Partner Institutions are the following:

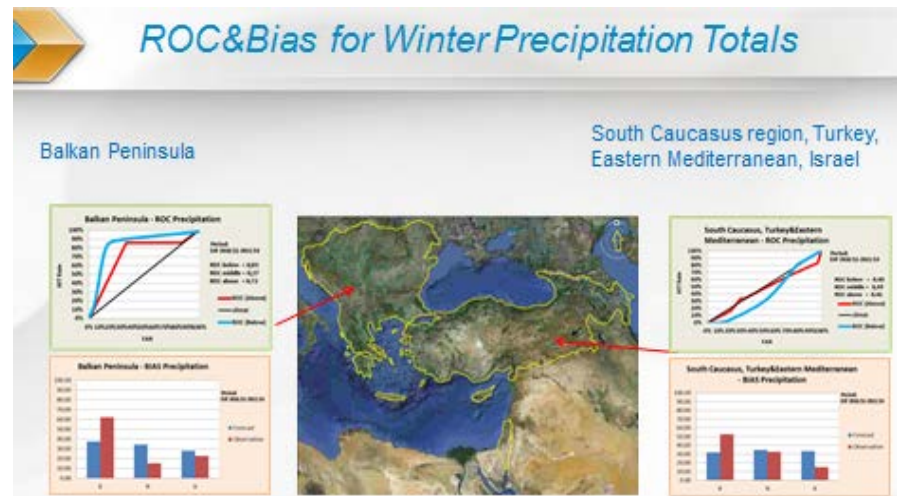
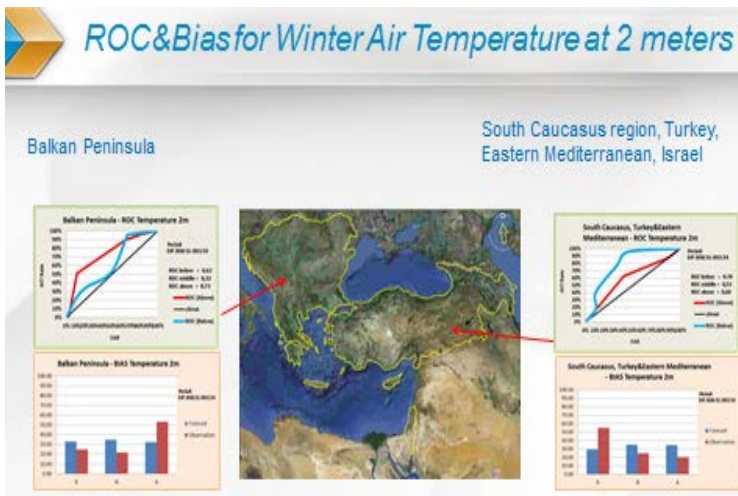
- *GPC ECMWF,*
- *GPC Meteo-France ,*
- *GPC UKMO,*
- *GPC Roshydromet,*
- *GPC NCEP,*
- *WMO Leading Centre for Long Range Multi-Model Ensemble (WMO LRF MME) (www.wmolc.org) together with 12 cooperating GPCs,*
- *RA VI RCC LC on Long Range Forecast (Meteo-France),*
- *RA VI RCC LC on Climate Monitoring (DWD),*
- *RA VI RCC-SEEVCCC/RHMSS member of the RA VI RCC Networks (LRF, CM, CD)*
- *International Research Institute for Climate and Society, Columbia University, USA,*



SEECOF Process (4/5)

Evaluation of the previous SEECOF meeting is prepared at the start of the ongoing SEECOF meeting on the basis of National Climate Reports for the past season delivered by the participants, but also based on the materials of the RA VI RCC on Climate Monitoring (Deutscher Wetterdienst) and RA VI RCC SEEVCCC/RHMSS, member of the RA VI RCC Network. At the first SEECOF meeting, the reference period was 1961-1990, but during the last several meetings the period of 1981-2010 was used as the reference period.

In addition to a usual verification of the issued Climate Outlook, RA VI RCC SEEVCCC/RMHSS has started to evaluate Climate Outlooks for the period of last 5 years using bias and ROC parameters. This evaluation was presented to the SEECOF participants and end-users during the SEECOF-14 meeting held in November 2015.



SEECOF Process (5/5)

Each NMHS, like the NMHS of Serbia, delivers additional climatological information to the stakeholders and the public (link of the NMHS of Serbia for additional climatological information, available together with the Climate Outlook for the Summer Season 2017:

http://www.hidmet.gov.rs/podaci/novosti/1496860575_doc2_eng.pdf

http://www.hidmet.gov.rs/podaci/novosti/1496860575_doc1_eng.pdf

Climate Watch (Serial No.: 20170821-06)

Issued 21/08/2017

Topic: temperature and precipitation
Organization issuing: SEEVCCC

Issued/Amended /
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Contact: E-mail: cssevccc@hidmet.gov.rs
Phone: +381(11)2606025
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Valid from + to: 21-08-2017-30-11-2017 Next amendment: 21-08-2017

Region of concern: Turkey, south Caucasus, Ukraine, the Balkans and Jordan

In the period from August 21st to September 15th 2017, above normal mean monthly air temperature, with anomaly up to +1°C, is forecasted for some central parts of the Balkans, Carpathian Mountains, Ukraine, Turkey, south Caucasus and Jordan. Probability for exceeding upper tercile is a range from 40% in the central Balkans and Ukraine, up to 90% in south Caucasus, eastern Turkey and Jordan. Precipitation surplus is expected in the northwestern Balkans and eastern Turkey, with up to 40% probability for exceeding upper tercile. Precipitation deficit is predicted for south Caucasus and southern Turkey, with up to 70% probability for exceeding lower tercile.

Monitoring

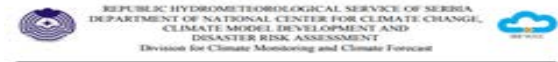
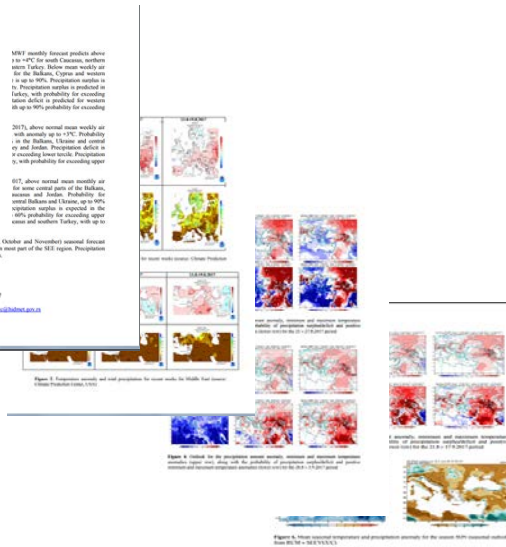
In the period from August 17th to 19th 2017, above normal air temperature, with anomaly up to +1°C, was observed in most of the SEE region, while air temperature anomaly up to +2°C was registered in Ukraine and some parts of Turkey. Weekly precipitation sums were below 10 mm in most of the SEE region, while some parts of the central Balkans, Carpathian Mountains, Ukraine and Turkey received between 20 mm and 100 mm of precipitation.

During the following three months (September, October and November) seasonal forecast predicts above normal seasonal air temperature in most part of the SEE region. Precipitation deficit is expected in Ukraine and South Caucasus.

Update

Amplified statement will be issued on 21-08-2017

For further information please contact: cssevccc@hidmet.gov.rs



SUMMER 2017 CLIMATE OUTLOOK

Based on the recent outputs from our regional numerical climate model for seasonal weather forecasts, and in line with the forecasts of other European and world centers, Serbia is expected to experience warm and relatively dry summer.

In the lowland of Serbia, mean summer air temperature is expected to be in a 21°C-25°C range, and in the hilly-mountainous regions in a 13°C-19°C range.

In July and August heat waves may occur, that is the prolonged periods with consecutive series of very warm days. In summer, the number of tropical days (with the maximum air temperature above 30°C) will range from 30 to 55 days in the lowland, and up to 9 days on the mountains. The number of tropical nights (with the minimum air temperature above 20°C) is expected to range from 11 days in the lowland of Serbia to 26 days in Belgrade, and up to 3 days in the hilly-mountainous regions.

Climate outlook indicates that precipitation sums will be below or within the multiannual average during all three months across most of Serbia. Seasonal precipitation sums are expected to be in a 130-250 mm range, and in a hilly-mountainous regions in a 190-260 mm range.

The number of rainy days during summer will range from 17 to 28 days. It should be noted that hilly-mountainous regions may receive higher precipitation sums due to the more intense development of convective cloudiness.

Note: Summer of 2017 is expected to be warmer and drier compared to the previous summer.

Moreover, starting from the beginning of 2013, RA VI RCC-SEEVCCC/RMHSS has been operationally issuing CWS bulletins on a weekly basis, that is, every Monday, only for the participants of the SEECOF Forum. RA VI RCC-SEEVCCC/RMHSS CWS bulletin includes monitoring of the mean temperature and weekly precipitation sums from the previous week, forecasts for the following two weeks, and for one and three months ahead, as well as the information on a potential warning in case there is a need for it.

Capacity Development Activities

Thus far, PRESANORD, SEECOF and MEDCOF, together with invaluable support of WMO and experts from RCC's and GPC's organized 2 training courses:

- The First Training Workshop on Seasonal Forecasting was held in Madrid, Spain, in October 26-30, 2015 with wide range of topics –verification of seasonal forecasts, climate drivers, use of Q-GIS graphic package, public relations with the media,*
- The Second Training Workshop on Seasonal Forecasting (Verification of operational seasonal Forecasting in the Mediterranean region), was held in Rome, Italy, in November 15-18, 2016, with verification of the operational probabilistic seasonal forecast- including introduction and learning about R tool and the use of R-tool forecast verification package.*

The MedCOF managing team is in a process of organizing the Third training workshop in Zagreb, Croatia, in the second half of November 2017, on the topic related to the climate drivers in the Mediterranean region.

The end-users, together with the governmental institutions, are expecting additional forecasting material (specific meteorological parameters, sub-seasonal forecasts) to be made available to them as soon as possible, but they also need the training courses for the efficient use of the issued probabilistic Climate Outlooks.

According to the needs of the end-users, NMHSs require additional training courses for the use of climate drivers (teleconnection patterns), as well as for the efficient use of the ocean model outputs (by using ocean model verification metrics). Experts from the NMHSs also need workshops with the topics such as public relations with the media and presentations of impacts of seasonal forecasts on the different sectors of economy or society.

User Involvement

There are no regional users! (Electric Power Companies from the region ???)

Only NMHS's and the end-users from different state institutions and economy sectors (forestry, agriculture, insurance, electric power companies and water management) attended the last eight face-to-face SEECOF meetings.

End-users of the country who was hosting the face-to-face SEECOF meeting presented their own work and the needs for the future Climate Outlooks.

The end-users from the previous face-to-face SEECOF meetings were afterwards also included in the SEECOF online forum on the website: www.seevccc.rs, hosted and supported by RA VI RCC SEEVCCC/RMHSS, but they are not too active in addressing their needs through the SEECOF on-line Forum.



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SWOT Analysis (1/2)

During summer, as well as winter season - the SEECOF Climate Outlook Bulletin with additional climate information was beneficial for the Water Resource Management and the Electric Power Industry of Serbia.

On the other hand, within the Sector of Agriculture, due to the small-size farms, the Climate Outlook Bulletin for the upcoming summer season was not used in an adequate way.



SWOT Analysis(2/2)

Principal strengths of the SEECOF Forum:

- Efficiency achieved by combining of online and physical sessions
- Rigorous climate monitoring component
- evaluation of previous season's outlook VS observed patterns (all previous material available on SEECOF online Forum)
- Organization of the training courses (SEECOF together with neighboring RCOFS (PRESANORD, MEDCOF), experts from WMO, RCC's and GPC's) for developing capacities of experts from the NHMS's who participate SEECOF

Principal weakness of the SEECOF Forum:

- Lack of funding mechanisms to ensure sustainability of SEECOF
- Lack of feedback from the NHMS on the follow-up and utilization of SEECOF outlook at national level
- Lack of prompt feedback during on-line meetings in delivering of NHMS contributions for the evaluation of the previous climate outlook and during preparation of the outlook for forthcoming season



Way Forward (1/2)

The SEECOF region countries are expecting the RCCs to tackle the following issues:

➤ RCC on CM:

- Monthly, seasonal and annual maps for anomalies, means and percentiles for all meteorological parameters should also have 1981-2010 as a reference period. This requirement applies in particular for the air temperature, for the purpose of probabilistic seasonal forecasts verification;
- Continuation of the issuance of CWS Bulletins, which turned out to be very useful;

➤ RCC on LRF:

- 3-month climagrams over SEECOF as a subdomain, large scale information (weather regimes and variability modes) and extreme event probability (heat wave days, severe winds and drought probability);
- Due to the future acceleration of free seasonal forecast delivery to the public, there is a need for earlier delivering of RCC LRF Bulletins – at least at the end of the second decade of the month.



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Way Forward (2/2)

- The SEECOF Network of focal points efficiently works on planning and organizing the sessions.
- The MedCOF Management Group, organized through on-line sessions, functions well in terms of planning and organizing the sessions, workshops, etc.
- The current funding mechanism for SEECOF face-to-face meetings is mostly based on the funds secured by WMO officers, while the SEEVCCC/RHMS of Serbia expert team supports on-line meetings through the SEECOF Forum and by issuing climate monitoring and regional climate model outputs for the SEECOF region, available on the link <http://www.seevccc.rs>.



Thank you



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