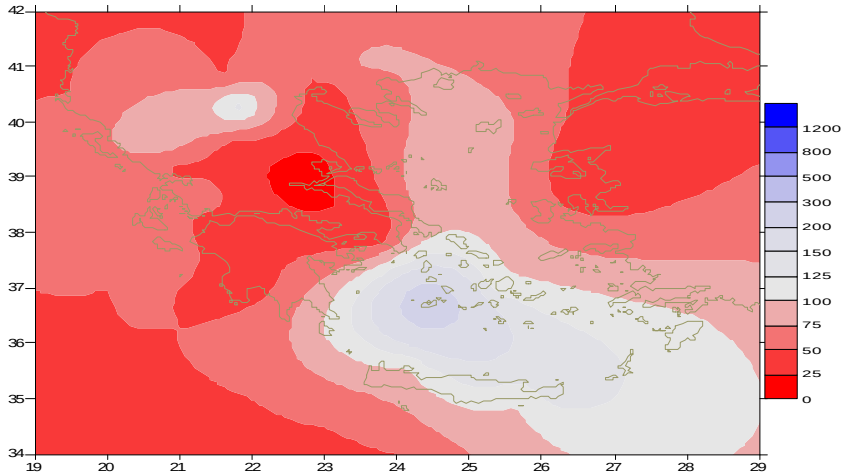
Qualitative evaluation of the Winter 2010/2011 forecast in Greece

1. First, an analysis of air temperature and precipitation on a monthly basis was carried out for the winter season 2010/2011. Then an assessment for the whole winter period was done. The reference climatological period used was 1961-1990.

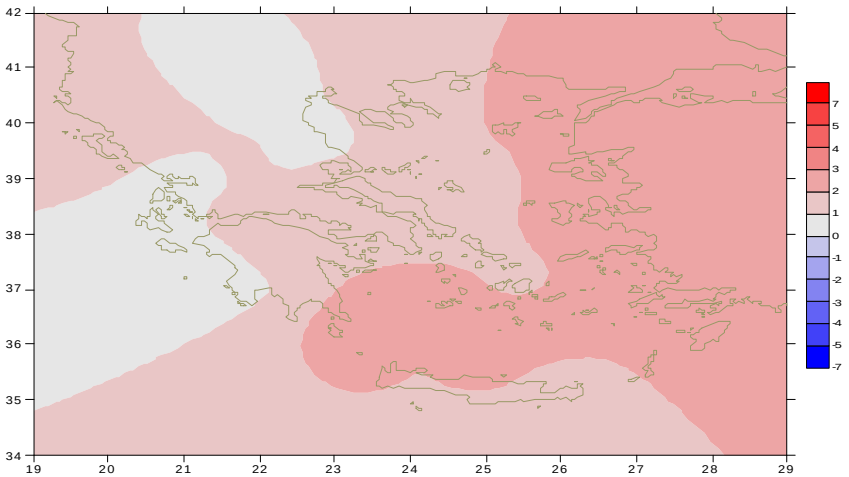
1.1 On monthly basis:

December 2010

The precipitation amounts were below normal in most areas of the country, particularly in Thessaly, east Sterea and the Peloponnese. In contrast, precipitation was above normal in the southern Aegean and Crete. December was, in general, milder than the climatological average. The mean temperatures were above normal throughout the country, particularly in the eastern Aegean, the Dodecanese and part of the southern Aegean.



a. Deviation plot of precipitation (%)

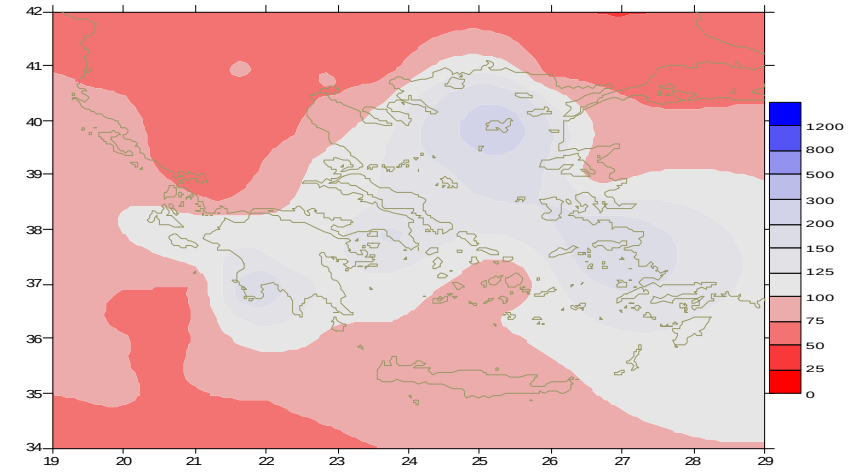


b. Deviation plot of mean temperature (°C)

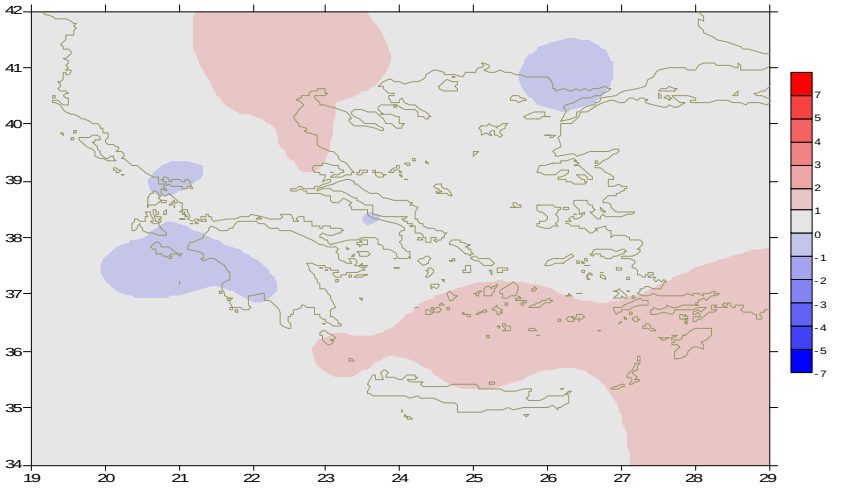
Figure 1. Deviation of the (a) mean temperature and (b) monthly precipitation amount from the climatological values for December.

January 2011

Somewhat below normal precipitation was recorded in most areas of the central and northern mainland of the country. In the rest of the country, the corresponding precipitation amounts were normal, except almost all the Aegean and Peloponnese which experienced above normal values. On the other hand, the mean temperatures were near normal in most areas of the country, though slightly above normal in part of the southern Aegean and central Macedonia.



a. Deviation plot of precipitation (%)



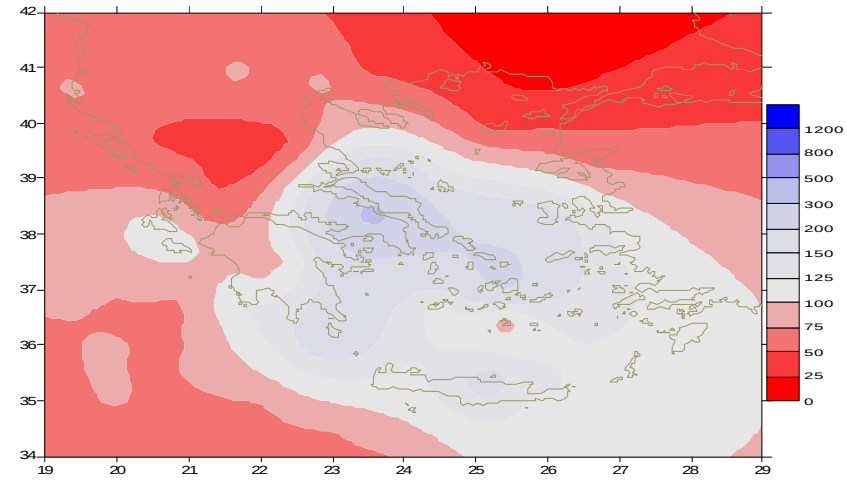
b. Deviation plot of mean temperature (°C)

Figure 2. Deviation of the (a) mean temperature and (b) monthly precipitation amount from the climatological values for January.

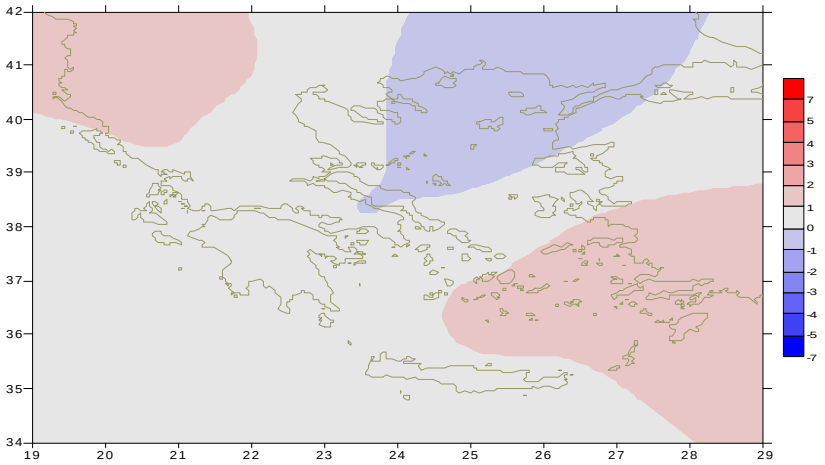
February 2011

In the greater part of the central and northern mainland of the country, the recorded precipitation amounts were well below normal. In contrast, in the Aegean, Crete, the Peloponnese and part of east Sterea the corresponding precipitation amounts were well above normal, while in the rest of the country precipitation amounts were near normal. The mean temperatures were near normal in most areas of the country but somewhat below

normal in northeast Greece.



a. Deviation plot of precipitation (%)



b. Deviation plot of mean temperature (°C)

Figure 3. Deviation of the (a) mean temperature and (b) monthly precipitation amount from the climatological values for February.

1.2 <u>On seasonal basis winter 2010/2011:</u>

Regarding the winter period as a whole, there were the following findings:

The winter 2010/2011 was generally milder than the climatological average 1961-1990. Particularly, the mean temperature was, in general, near or somewhat above normal (0.0-0.9 degrees Celsius), except the eastern Aegean, the Cyclades, Crete and the Dodecanese where the departure from normal varied between 1.0-2.1degrees Celsius.

With regard to precipitation, the winter in Greece presented a variety of patterns. It was below normal (58-79%) in the northern Ionian, Epirus, west Sterea and Thessaly, near normal in the southern Ionian and the Peloponnese and above normal throughout most of the Aegean (central and south), Crete and the Dodecanese.

2. Comparison of winter 2010 weather conditions over Greece with seasonal forecasts

The Hellenic National Meteorological Service (HNMS) receives seasonal forecasts from the European Centre for Medium-Range Weather Forecasts (ECMWF). Although HNMS does not disseminate seasonal forecasts to the public, they are used for research purposes.

The ECMWF forecast for winter 2010/2011 based on the model run of November 2010 indicated a negative anomaly of the order of 0.5-1ºC for mean temperature over Greece with respect to the model climatology. Based on the above description of the actual conditions, it can be concluded that the seasonal forecast did not correctly predict, qualitatively, the general trend for the mean temperature for the months of December to February. Only in February in the north-west part of the country were below average temperatures observed. This could be due to the fact that, in general, there were no large deviations from the normal seasonal values.

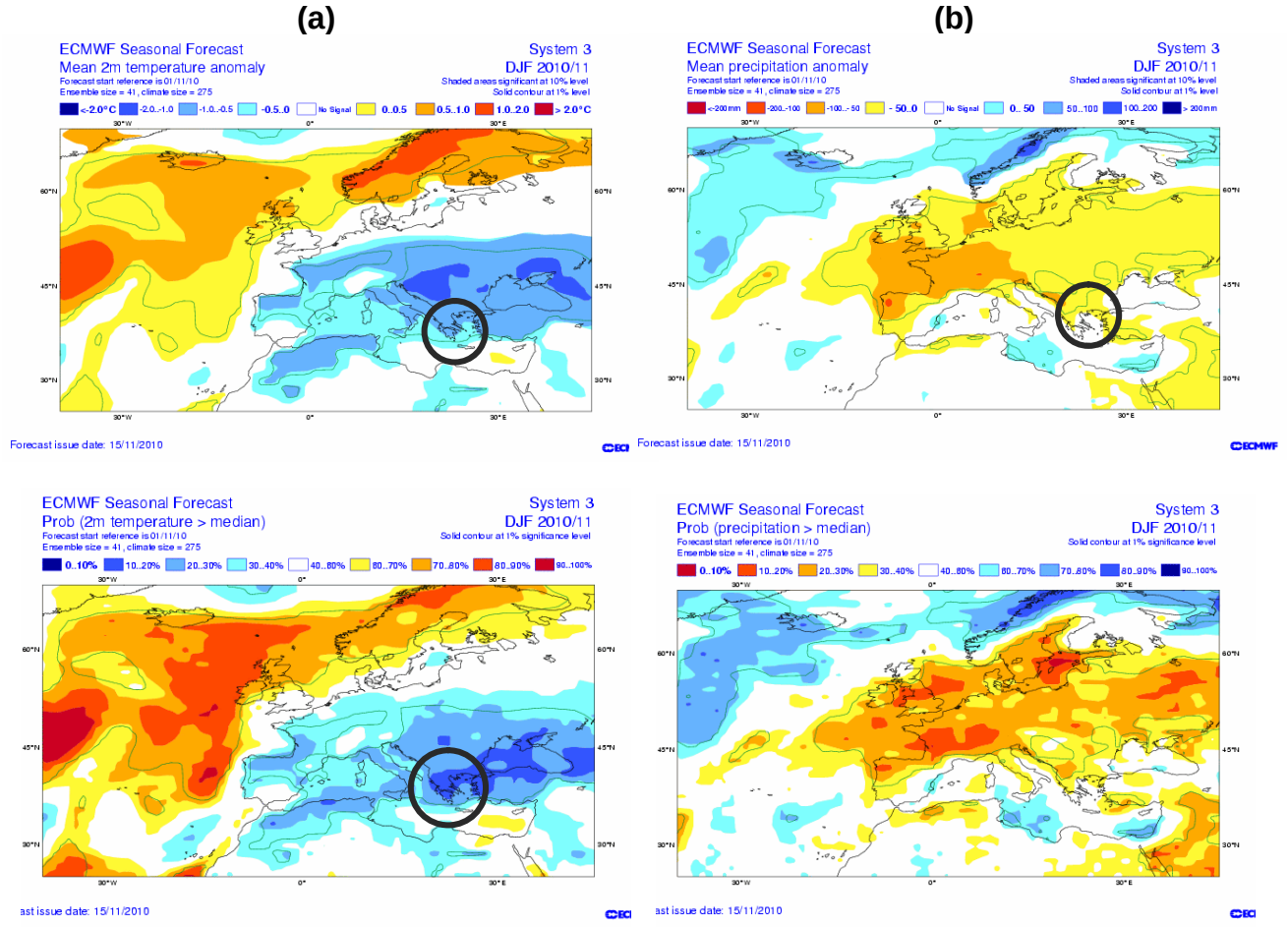


Figure 4. ECMWF seasonal forecast plots for winter 2011 based on the November 2010 run for (a) mean temperature and (b) mean precipitation anomalies and probabilities of values higher than median.

Regarding the mean precipitation, the ECMWF seasonal forecast predicted a small negative anomaly over central and northern Greece, while for the rest of Greece no signal was apparent in comparison to the model climatology. Comparing the actual conditions with the forecast, it seems that the forecast was on target. There was a negative anomaly

for precipitation over the same region, which was most evident during the last month of the season.

These arguments are in close accordance with the consensus statement produced at the end of the SEECOF-IV meeting for both mean temperature and precipitation as overall we did not have any strong deviation of the actual from the mean climatological values. In the relevant statement it was indicated that there is no predictive strong signal for temperature for this part of the region, something that was evident from the close to normal values that were observed. A similar remark was produced for the mean precipitation with a slightly higher possibility for drier conditions in the northern part of the country, something that what also in accordance with the climatological analysis of the season given above.