DJF 2024/25 Seasonal Outlook: Israel

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The Seasonal forecast issued by the Israeli Meteorological Service (IMS) is based on ECMWF system 5 seasonal forecast.

1. **Prediction of near surface air temperature in the surface (2m above ground level) for DJF 2024/25**

   Figure 1 presents the probabilities for the 3 near surface air temperature (2m above ground) terciles over Israel for winter 2024/25 in Israel (DJF 2024/25).
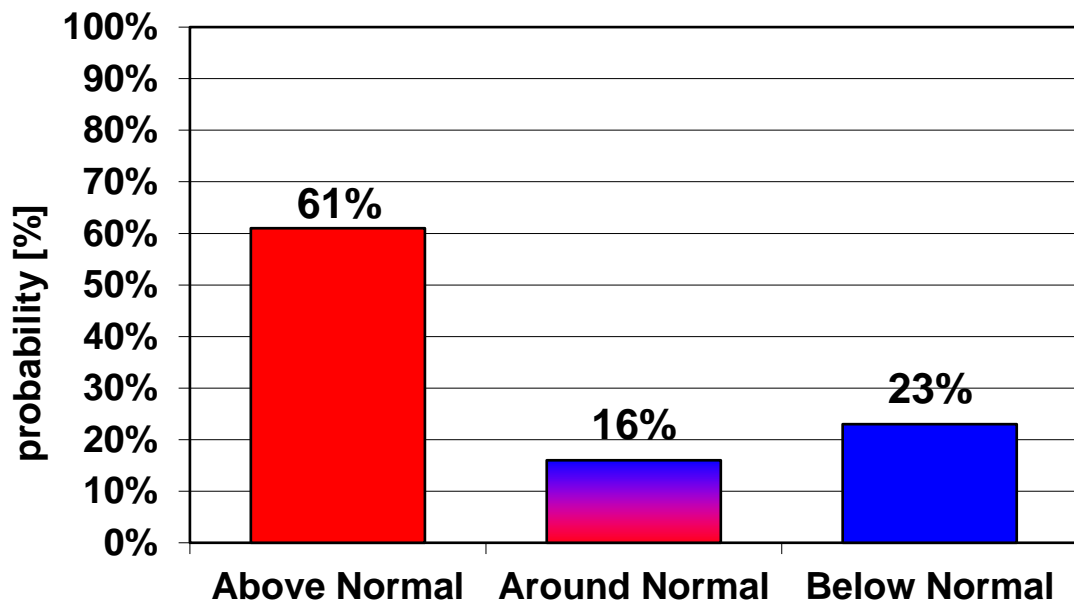

Figure 1: The probability of seasonal temperature falling within each tercile for winter 2024/25 in Israel (DJF 2024/25).

According to figure 1, a "preferred category", defined as a category above or equal to 40%, exists. The highest probability, 61%, is found in the "Above Normal" category.

The probability for an "Around Normal" is 16% and the probability for a "Below Normal" is only 23%. Hence, DJF averaged near surface air temperature in the surface (2m) is expected to be above the normal, in the upper tercile. The mean ensemble mean of 2024/25 relies in the percentile above 91.8% regarding in reference to the distribution of the 1993/94-2016/17 climatology period.

The predication of near surface air temperature for winter in Israel is based on ECMWF seasonal forecast system 5 ensemble, which contains 51 members for the operative prediction. The prediction is relative to the model climatological l period 1993/94-2016/17, which is based on ensemble of 600 members. The prediction is based on a 38-grid point's area, which include the whole area of Israel (Figure 2).
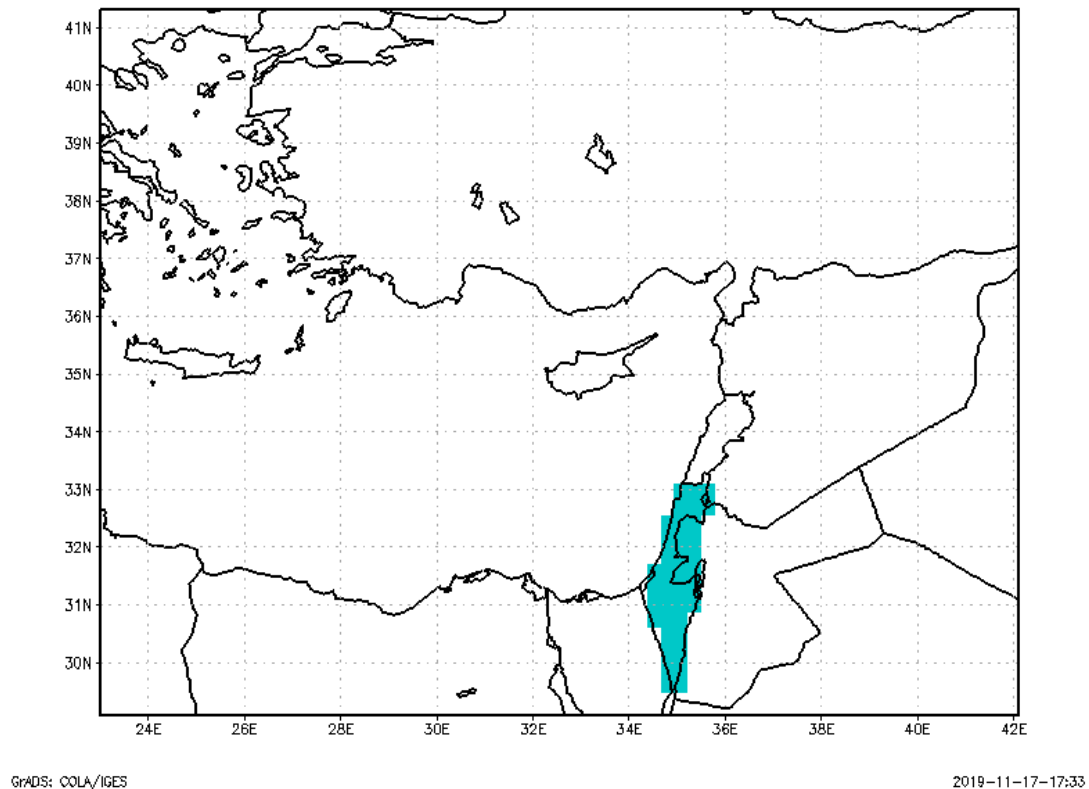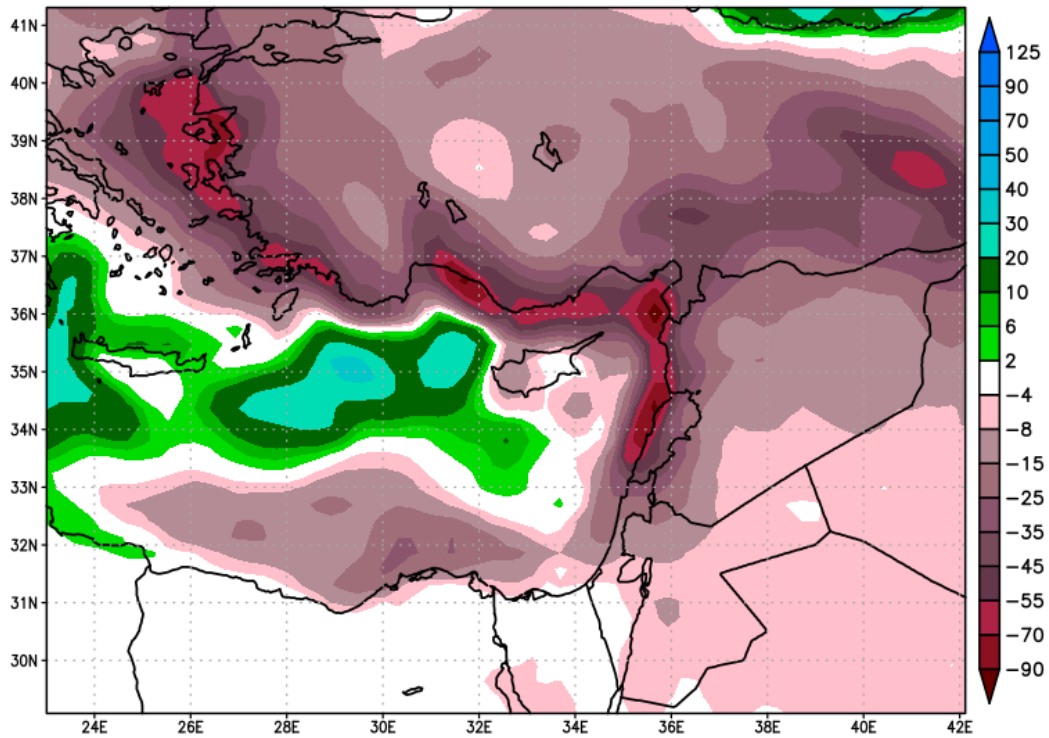

Figure 2: The area (green) with 38 grid points being used for generating the DJF near surface air temperature forecast in Israel.

2. **Prediction of precipitation for DJF 2024/25**

Figure 3 presents the precipitation anomalies over the eastern Mediterranean region.

The anomalies are defined as the mean operative ensemble precipitation amount prediction for DJF 2024/25 relative to the mean hindcasting ensemble for DJF 1993/94-2016/17.

The precipitation anomalies are based on ECMWF seasonal forecasting system 5 (SEAS5) prediction. The operative model initial time is 1/11/2024 00UTC.

The operative prediction for DJF 2024/25 contains 51 ensemble members.

The hindcasting ensemble that was used to calculate the anomalies is for the period of DJF 1993/94-2016/17, and it contains 600 members. The initial model time in each year is NOV-1st 00UTC.

Figure 3: The precipitation anomalies in the East Mediterranean area for DJF 2024/25 [mm] according to ECMWF model with initial time 1/11/2024 00UTC.

Figure 3 presents the precipitation anomalies in the East Mediterranean area for DJF 2024/25 [mm] according to ECMWF model with initial time 1/11/2024 00UTC. According to the figure, there are negative precipitation anomalies in the eastern side of the Mediterranean Sea. In the Northern Israel the anomaly values are less than

(–35) – (-45) mm (DJF season).

Figure 4 presents the probabilities for the 3 precipitation terciles over Israel for winter 2024/25 in Israel.
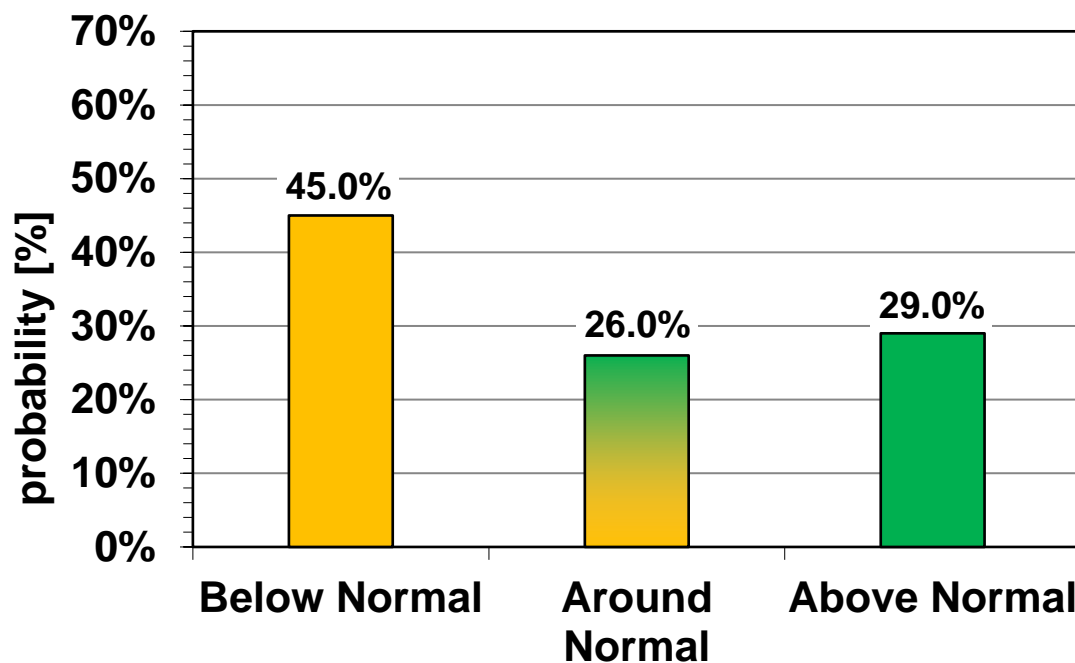

Figure 4: The probability of seasonal precipitation falling within each tercile for winter 2024/25 in Israel (DJF 2024/25).

According to Figure 4, the "Below Normal" (45%) is a preferred category (i.e., a category above or equal 40%). The highest probability is in the category of above normal, 29%. The probability for "Around Normal" is 26%, and the probability for "Below Normal" is 45%. Hence, DJF accumulated precipitation is expected to be above the normal. The mean ensemble of 2024/25 relies in the percentile of 20.4% regarding

in reference to the distribution of the climatology period 1993/94-2016/17 climatology period. The preferred category is below the mean although the total anomalies are close to zeros. The reason for this is that there are few extreme members in the lower tercile, which balance the positive members in the upper tercile.

The predication of precipitation for winter in Israel is based on ECMWF seasonal forecast system 5 ensemble, which contains 51 members for the operative prediction. The prediction is relative to the model climatological l period 1993/94-2016/17, which is based on 600 ensemble members. The prediction is based on the area of 20 grid points where the averaged observed precipitation is above the of 200 mm isohyet (for all the rainy season, not only DJF). Therefore, we include only the region which is north of Beer Sheva city (north of latitude 31.3°N). By According to GIS maps most of the area which is north to Beer Sheva have, on average, more than 200 mm of rainfall per rainy season.

In summary: The predication of precipitation in Israel includes only the area which is north of Beer Sheva city (north of latitude 31.3°N).

The next figure (Figure 5) presents the 20 grids point which we are using in order to make prediction for Israel precipitation in DJF season for generating the DJF precipitation forecast in Israel.
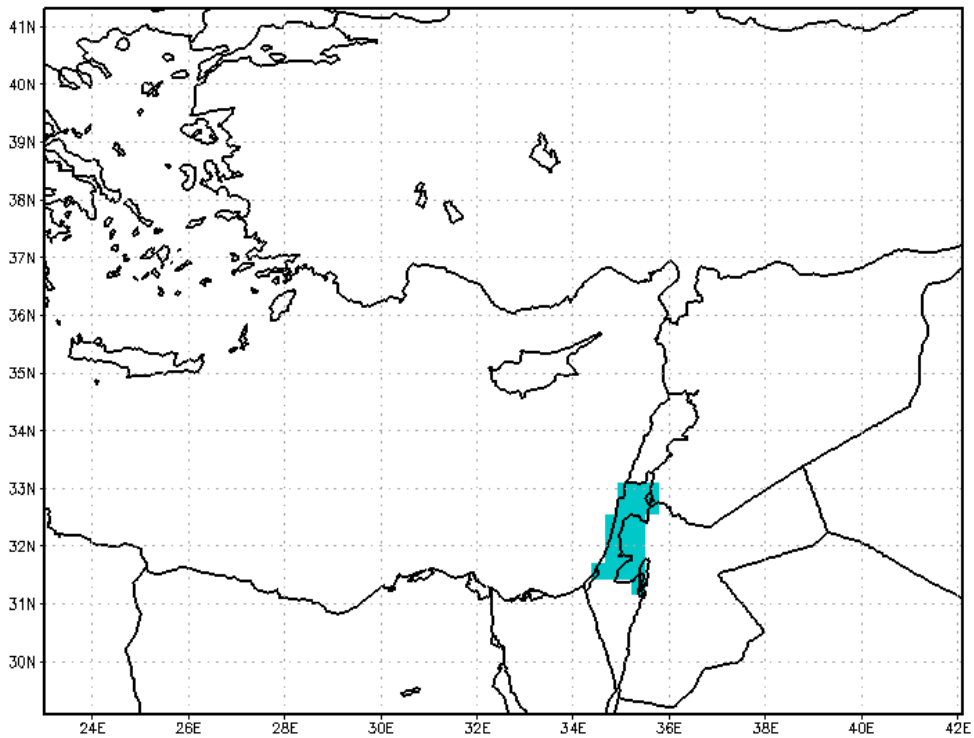
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Figure 5: The area (green) with 20 grid points being used for generating the DJF precipitation forecast in Israel.

Please notice that prior to DJF 2017/18, (DJF 2016/17 and earlier) we used ECWMF seasonal forecast system 4. System 4 was approximately half the system 5 resolution. Therefore, only 5 grid points were used to predict the winter seasonal forecast precipitation, instead of the 20 grid points being used today.