

SEECOF-6 verification for DJF 2011-2012 over Israel

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a. Precipitation

21 stations from Northern and Central Israel were used to calculate mean DJF precipitation over Israel. The average precipitation for DJF 2011-2012 was 379 mm. This value was compared to 3 reference periods of 30 years: 1961-1990, 1971-2000, 1981-2010. Table 1 presents different statistics including mean, median and tercile category.

Table 1: Comparing DJF average precipitation amount of **379 mm** to determine tercile categories and anomalies with respect to mean and median for 3 climatology reference periods.

climatology periods	Tercile thresholds	2011/12 category	mean	2011/12 mean anomaly	median	2011/12 median anomaly
1961-1990	286 - 399	Normal	349	9%	333	14%
1971-2000	282 - 371	Above	352	8%	315	20%
1981-2010	291 - 343	Above	348	9%	315	20%

- 1) The SEECOF-6 precipitation outlook indicate 45% chance for the “below normal” tercile, 35% for “normal” and 20% for the “above normal” terciles (Fig. 1).
- 2) Comparing to the two recent periods 1981-2010 and 1971-200, DJF 2011-2012 (379 mm) was in the “above normal” category, 8-9% above mean and 20% above median.
- 3) Referring to 1961-1990, DJF precipitation amount falls in the “normal” category, 9% above mean and 14% above median.
- 4) Comparing the results from 12 GPC’s (Fig. 2) shows that Exeter gave a strong negative anomaly and Washington gave a weak negative anomaly. All other models show no anomaly.

- 5) The Israeli Meteorological Service (IMS) statistical forecast based on EOF regression of global teleconnections gave 68% chance for the “below normal” tercile, 23% for “normal” and 9% for “above normal”. Combining with the ECMWF forecast the IMS forecast was that DJF precipitation will be below median.
- 6) **To conclude:** The observed 2011-2012 DJF did not match the most probable tercile of both SEECOF-6 and IMS forecasts. So did not the 12 GPC’s forecast.

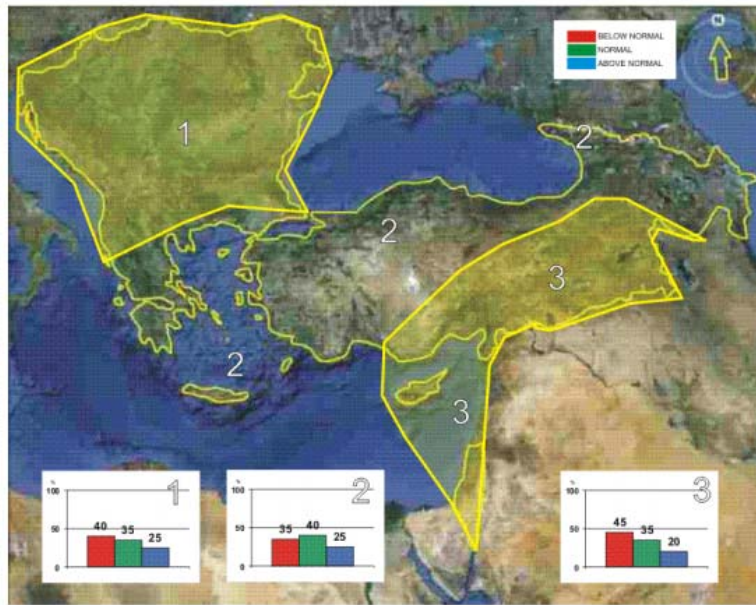


Figure 1. Graphical presentation 2011/2012 winter precipitation outlook

Fig. 1: The SEECOF-6 DJF precipitation forecast.

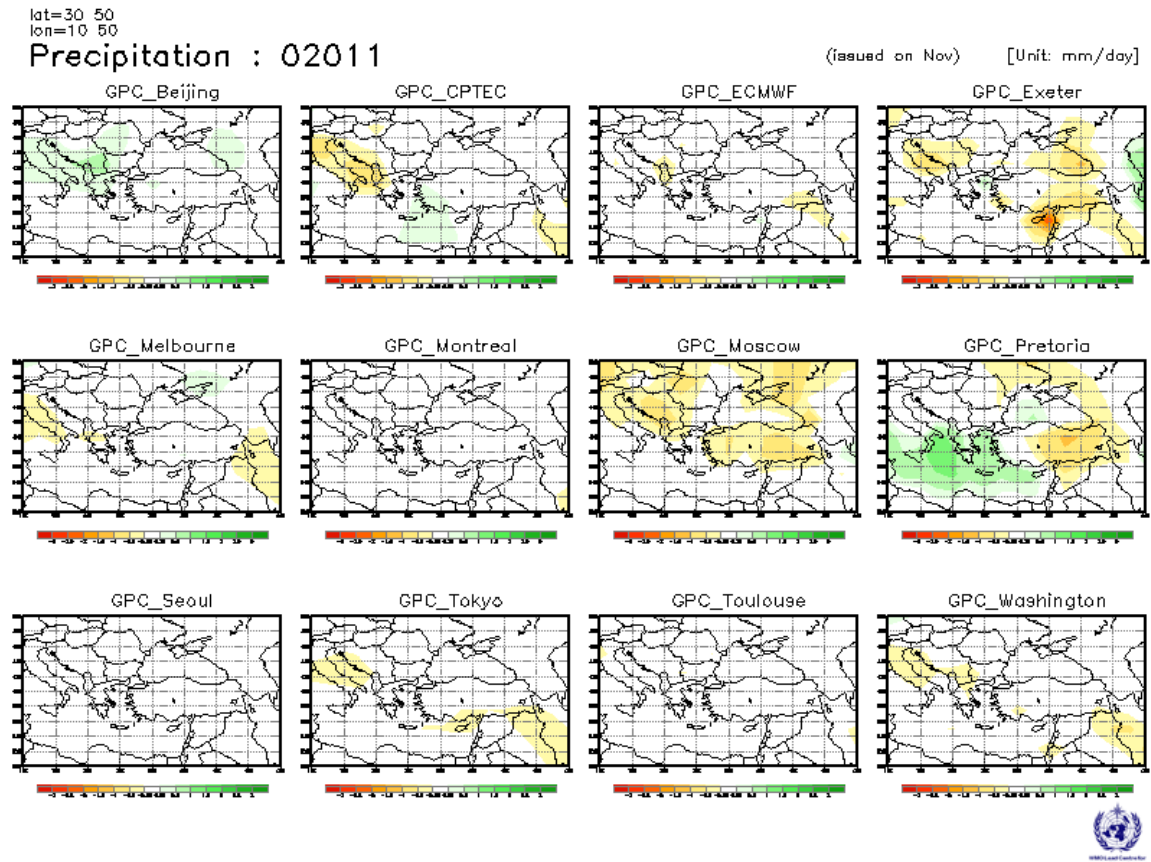


Fig 2: 12 GPC forecast for DJF precipitation anomaly over the SEECOF domain.

b. Temperature

The average temperature of five stations, with a relative long record, was compared to the DJF 2011-2012 seasonal forecast: Eilat (southern Israel) Negba (southern coastal plan), Bet-Gimal (central low mountain ridge), Jerusalem (central mountain ridge), Zefad (Northern mountain ridge). The average temperature for DJF 2011-2012 was 11.9°C. Table 2 presents the five stations average median and tercile values which were compared to 3 reference periods of 30 years: 1961-1990, 1971-2000, 1981-2010.

Table 2: Comparing the five stations average DJF temperature of 11.9°C to determine tercile categories and anomalies with respect to mean and median for 3 climatology reference periods.

climatology periods	Tercile thresholds	2011/12 category	mean	2011/12 mean anomaly	median	2011/12 median anomaly
1961-1990	11.7-12.6	Normal	12.1	-0.2	12.2	-0.3%
1971-2000	11.6-12.7	Normal	12.0	-0.1	12.2	-0.3%
1981-2010	12.2-12.8	Below	12.4	-0.5	12.6	-0.7%

- 1) The SEECOF-6 temperature outlook gave 45% chance for the “above normal” tercile, 35% for the “normal” tercile and 20% for the “below normal” terciles (Fig. 3).
- 2) It can be seen in table 2 that the current DJF average temperature was 0.2-0.5°C below mean. Comparing to the SEECOF reference period, 1971-2000, the mean DJF temperature in Israel was in the “normal” tercile (0.1°C below mean), (Fig. 6).
- 3) From the 12 GPC’s forecasts (Figs. 4, 5) two GPC’s (Montreal, Pretoria) indicated above normal, four (exte, Moscow, Toulous, Washington) below normal and six (Beijing, CPTEC, ECMWF, Melbourne, Seoul, Tokyo) indicate

no anomaly. The average of all GPC's indicated a small negative anomaly of - 0.1°C.

- 4) **To conclude:** referring to the 1971-2000 period the average DJF temperature was in the “normal” category, the value was close to the 33% percentile. Referring to the recent period (1981-2010) the temperature would be at the “below normal” category. The average anomaly of the 12 GPC's was very close to the observed.

c. Discussion

During the SEECOF-6 discussions, based on the GPC's, there was a tendency to give higher probability to the “below normal” temperature category. In Israel the winters tends to be cold and wet or hot and dry (table 3). As the precipitation outlook was for a dry season the temperature outlook was changed to meet the precipitation outlook. Perhaps for the next SEECOF further investigation of different forecasts skill should be performed.

Table 3: Contingency table for 61 year (1951-2011) of joint Rain-Temperature tercile probabilities, calculated for the reference period 1971-2000.

		Temperature		
		Below	Normal	Above
Rain	Below	2%	5%	20%
	Normal	8%	16%	15%
	Above	13%	16%	5%

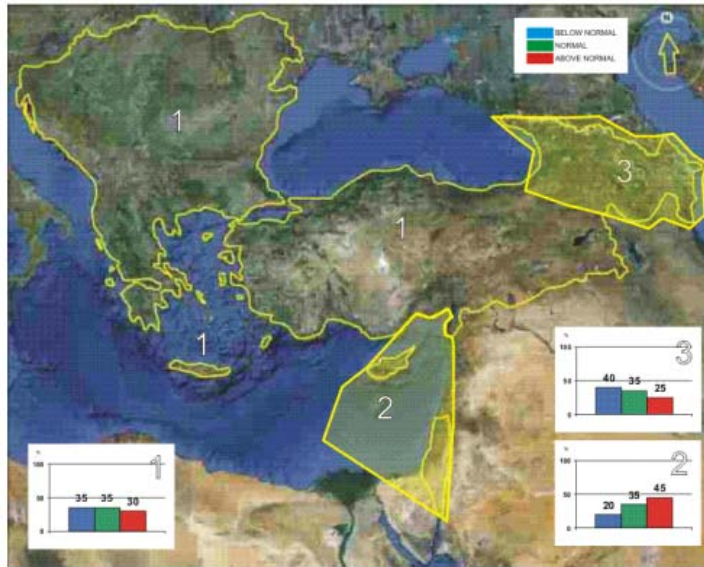


Figure 2. Graphical presentation 2011/2012 winter temperature outlook

Fig. 3: The SECOFF-6 DJF temperature forecast.

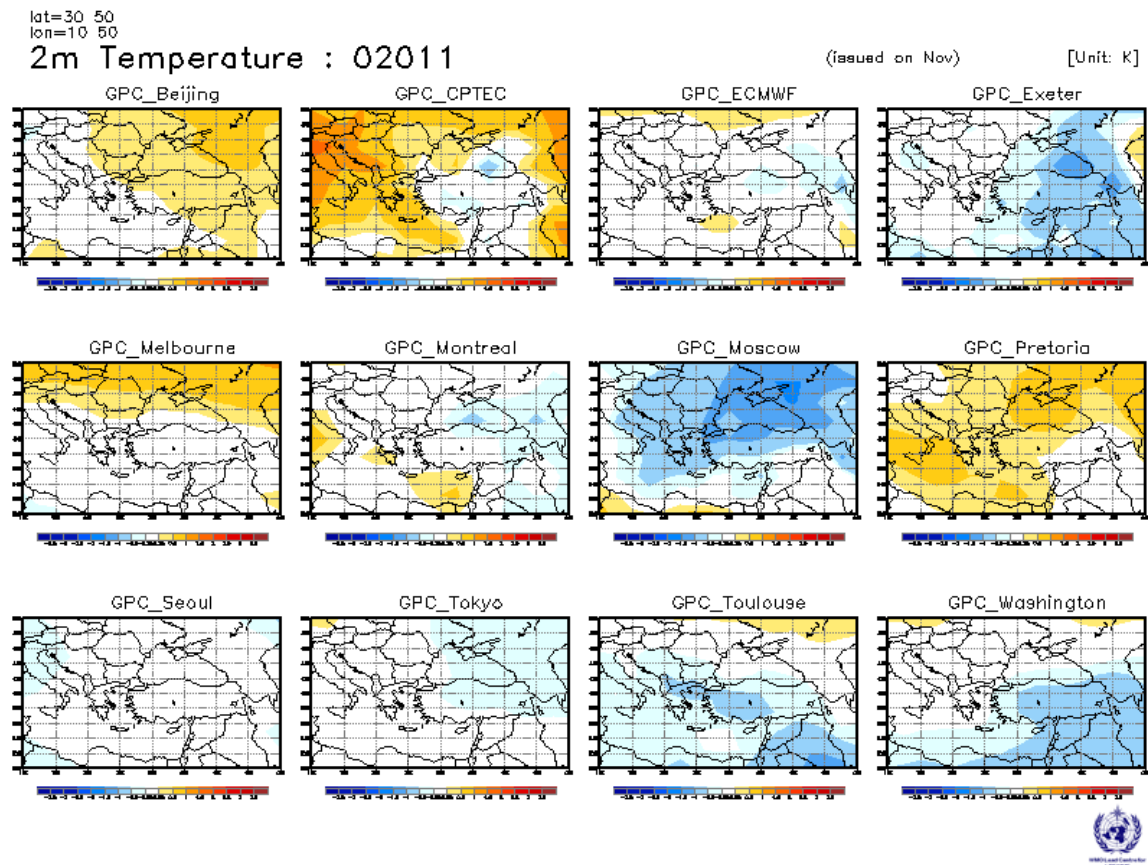


Fig 4: 12 GPC forecast for DJF temperature anomaly over SEECOF domain.

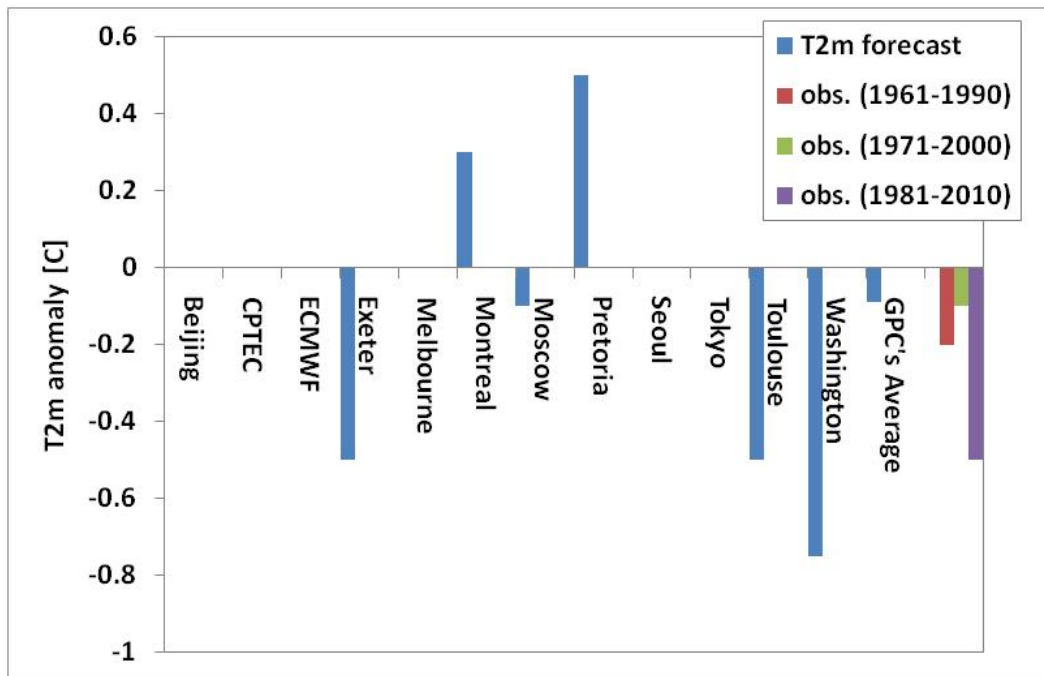


Fig. 5: the 12 GPC forecast temperature anomaly for DJF over Israel. The values were subjectively retrieved from figure 4. The observed are the average five stations anomaly calculated for 3 reference periods.

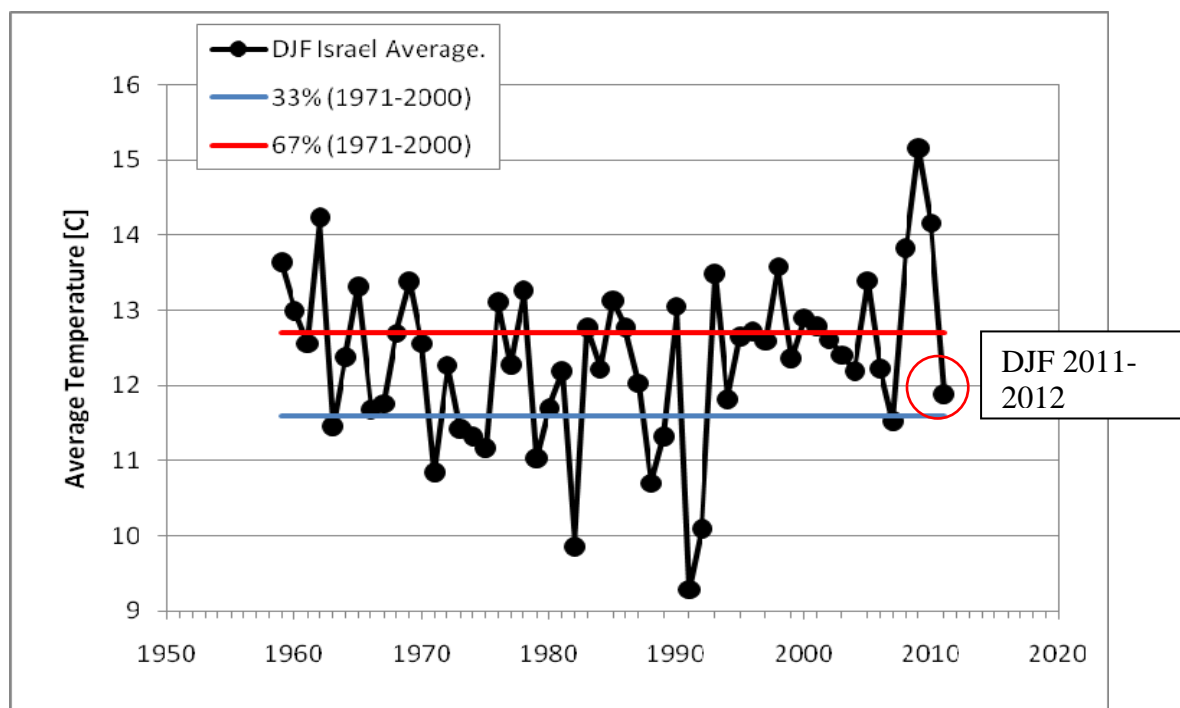


Fig. 6: The average DJF temperatures from five representing stations over Israel. The horizontal lines represent the upper and lower terciles for the 1971-2000 reference period.