

Annex

Country: Israel

Institute: Israel Meteorological Service

Name: Itzhak Carmona

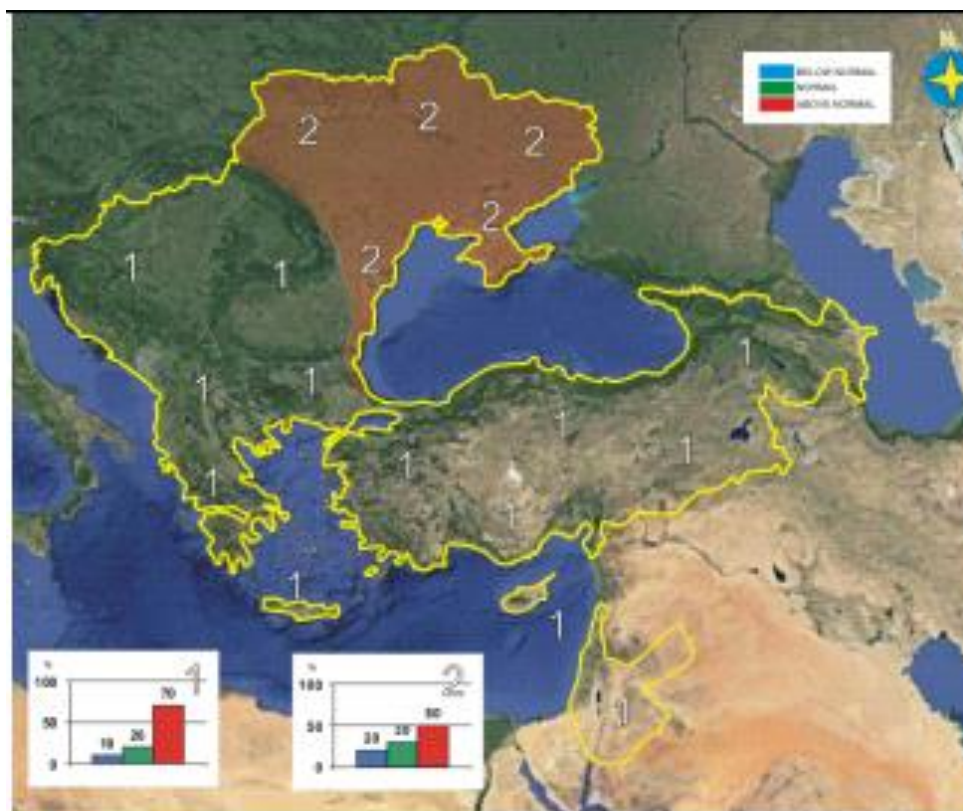
E-mail: carmonai@ims.gov.il

Assessment of the seasonal forecast for the summer season

JJA 2022

1. SEECOF-27 Climate outlook for the 2022 summer season:

The SEECOF-27 temperature outlook assigned 70% chance for the “above normal” tercile, 20% for the “normal” tercile and 10% for the “below normal” terciles (fig. 1).



Graphical presentation of the 2022 summer temperature outlook

Fig. 1: SEECOF 27 temperature prediction for summer (JJA) 2022

2. Analysis of the 2022 summer season:

Temperature

The country average temperature was calculated by the average of five stations, which represent most of the country's climate regime. The stations used are: Eilat (southern Israel) Negba (southern coastal plan), Bet-Gimal (central low mountain ridge), Jerusalem (central mountain ridge) and Zefad (Northern mountain ridge). The choice was proved to be correct as these stations' average temperature for the last decade (2001-2010) turned out to be almost identical to the average temperature calculated from 39 stations spread all over the country.

It can be seen from figure 3 that the JJA 2022 average temperature resides in the “above normal” tercile. The JJA 2022 average temperature resides in the 90% quintile. The anomaly JJA 2022 average temperature is $+0.86^{\circ}\text{C}$ relative to JJA 1981-2010.

Anomaly of JJA T2m for 5 stations. The anomaly is relative to JJA 1981-2010

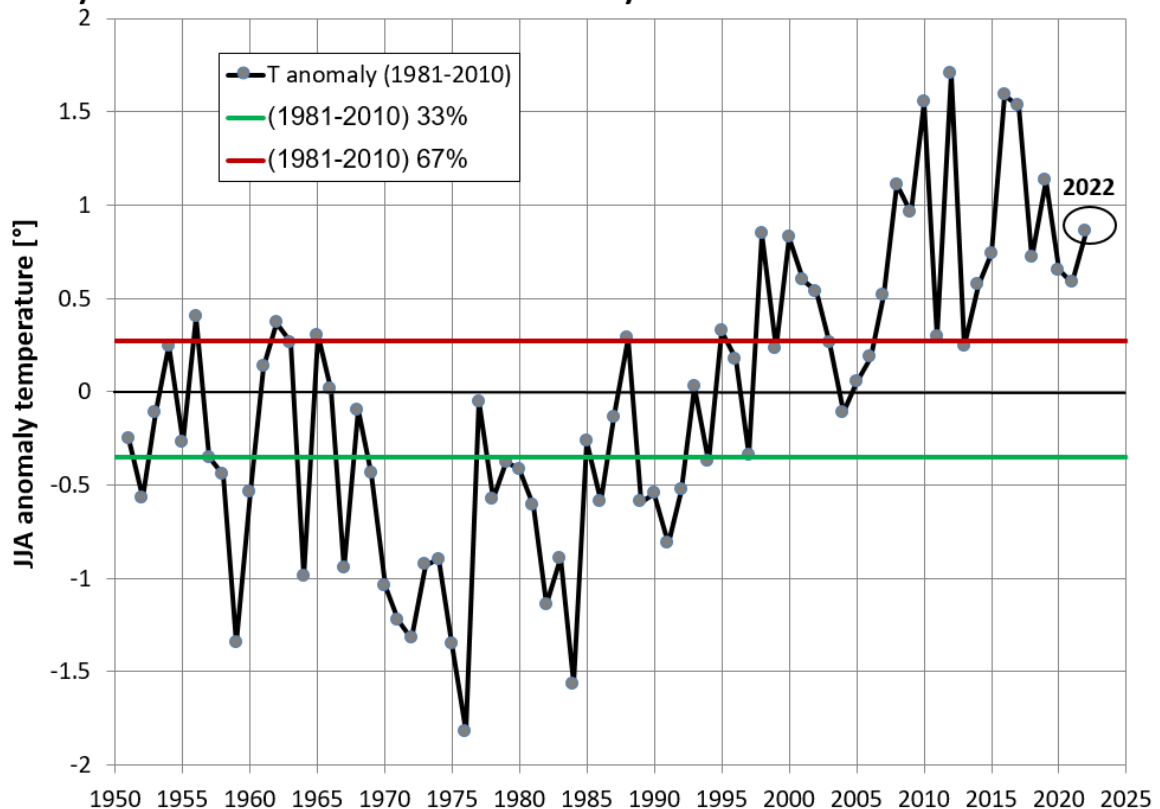


Fig. 2: JJA average temperature anomalies for Israel since 1951. The horizontal lines represent the **upper** and **lower** tercile thresholds for the 1981-2010 reference periods.

Precipitation

As there is no precipitation during JJA there is no need for seasonal forecast.

3. High Impacts Events:

JJA 2022 had no high impact events.

4. Verification of the SEECOF -27 climate outlook for the JJA 2018:

The table below is a verification summary of the climate outlook for the JJA 2022 to the reference period of 1981-2010. The RPSS indicates a positive skill for the summer forecast.

Country	Seasonal temperature (JJA)				
	Observed	SEECOF-27 climate outlook for temperature			Ranked Probability Skill Score*
Israel	above normal	A	N	B	0.82
		0.7	0.2	0.1	

*The Rank Probability Skill Score (RPSS) is essentially an extension of the Brier score to 3 event situation.

$$RPS = \sum_{m=1}^j \left[\left(\sum_{j=1}^m F_j \right) - \left(\sum_{j=1}^m O_j \right) \right]^2$$

Where F and O denotes the Forecast and Observed values, respectively for tercile forecasts j=3.

The skill score is defined by:

$$RPSS = 1 - \frac{RPS}{RPS_{clim}}$$

Where RPS_{clim} is obtained by assigning equal probability of 33.33% to all categories. The RPSS values vary from 1 for a perfect forecast (100% probability for the observed tercile) to -3.5 for a wrong (opposite?) forecast.

5. Users' perceptions of the SEECOF-27 outlook

We provided the summer climate outlook.