

## **Annex**

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### **Assessment of the SEECOF-28 Climate Outlook for Slovenia for the winter season 2022/23**

#### **SEECOF-28 Climate Outlook for Slovenia for the winter season 2022/23**

The consensus statement of SEECOF-28 climate outlook for the 2022/23 winter season emphasized moderate la Niña conditions and negative Pacific Decadal Oscillation in the three months of winter. These drivers, together with westerly phase of QBO, tended to favour positive phase of North Atlantic Oscillation. Models suggested higher than normal odds for blocking over Central Europe and Scandinavian Peninsula.

The consensus was, that winter temperature was likely to be near or above-normal in most of the SEECOF region (zone 1 in Figure 1) and above-normal in Jordan, Israel, southern parts of Turkey, along the coasts of the Ionian, Aegean, Central and Eastern Mediterranean Seas with belonging hinterland (zone 2 in Figure 1). For Slovenia, the probabilities for below-, near- and above-normal temperature were estimated to be 20, 40 and 40 %.

For winter precipitation totals in the south of Greece, Turkey, Israel, Jordan, along the coasts of Ionian, southern coasts of the Aegean, southern and eastern coasts of the Black Sea (zone 2 in Figure 2), the consensus was that it would likely to be below-normal, while in rest of the SEECOF region (zone 1 in Figure 2) the uncertainty was high: probabilities for below, near- or above-average conditions were approximately equal. For Slovenia that meant probabilities of around 33 % for any of tercile categories.

It was noted that sub-seasonal developments might occur and, in addition, local factors (for example SST in the smaller basins of the region) might shape local variability at a regional level.

Figures 1 and 2 show the probabilistic consensus forecast for tercile categories of anomalies of seasonal temperature and precipitation, relative to the period 1981–2010.

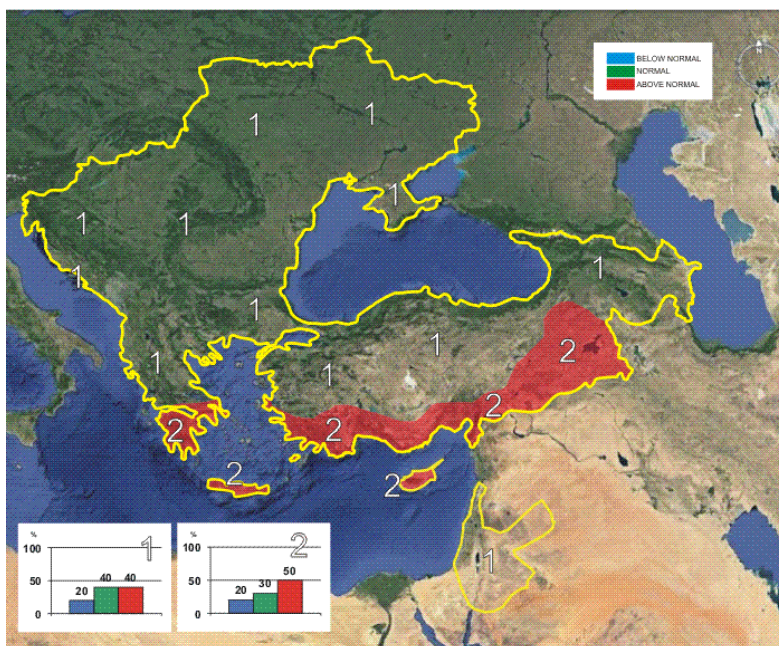


Figure 1. Graphical presentation of the winter 2022/23 temperature outlook

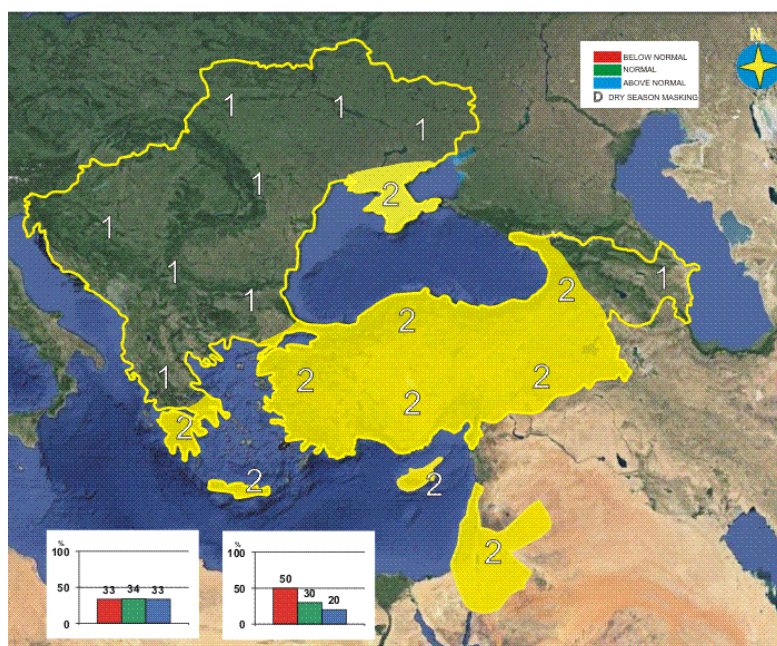


Figure 2. Graphical presentation of the winter 2022/23 precipitation outlook

### Analysis of the winter season 2022/23

Average air temperature in Slovenia in winter 2022/23 was above the average of the 30-year period 1981–2010 in whole country (Figure 3). Corresponding air temperature anomalies for winter 2022/23 (months December, January and February) were between 1.3 °C and 3.5 °C, average anomaly was 2.4 °C (surface weighted average value). The anomalies were largest at the east, at the border with Croatia, and smallest in the Alps (in the north-west of the country). The winter was among 4<sup>th</sup> to 7<sup>th</sup> warmest since 1950.

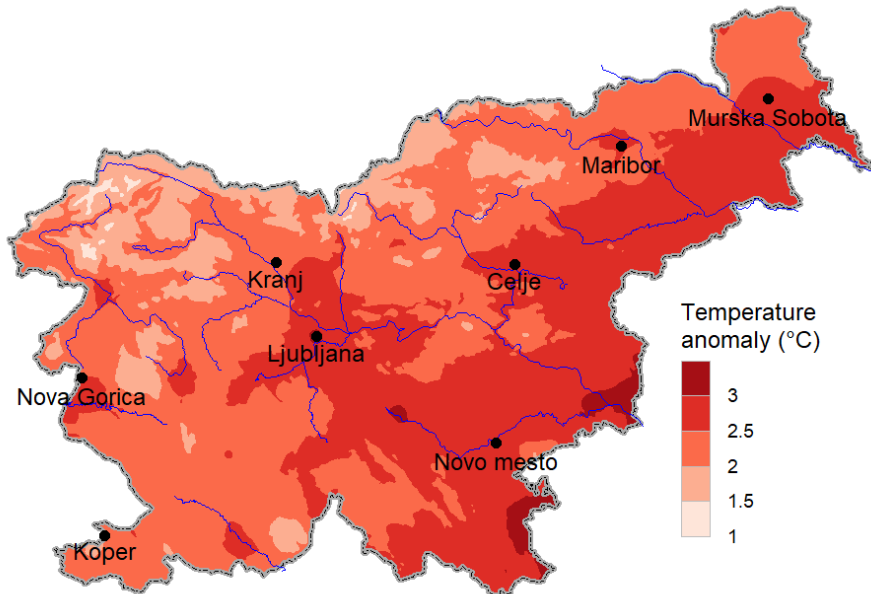


Figure 3. Mean air temperature anomaly in Slovenia in winter 2022/23, relative to the 1981/82–2010/11 average. Data are from 92 meteorological stations.

According to tercile ranks, thermal conditions in Slovenia in winter 2022/23 were above normal in the whole country (Figure 4).

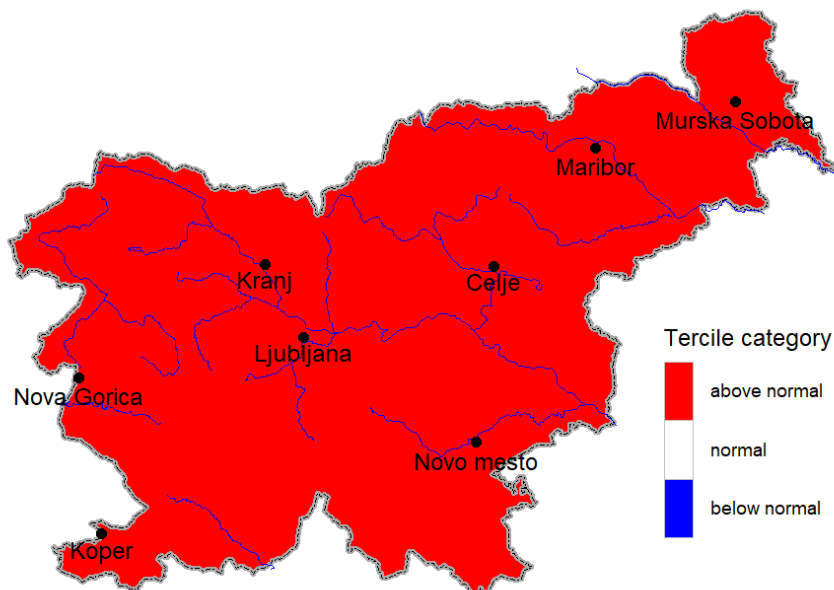


Figure 4. Mean air temperature tercile category of anomaly in Slovenia in winter 2022/23, relative to the period 1981/82–2010/11. Data are from 92 meteorological stations.

Precipitation index in Slovenia in winter 2022/23 was above average in almost the whole country, except for a small area at the north-west, where it was below average to average (Figure 5). Precipitation index was within the range from 79 % to 210 %, with surface weighted average value of 156 %. Winter 2022/23 has been the 12<sup>th</sup> wettest since the season 1950/51.

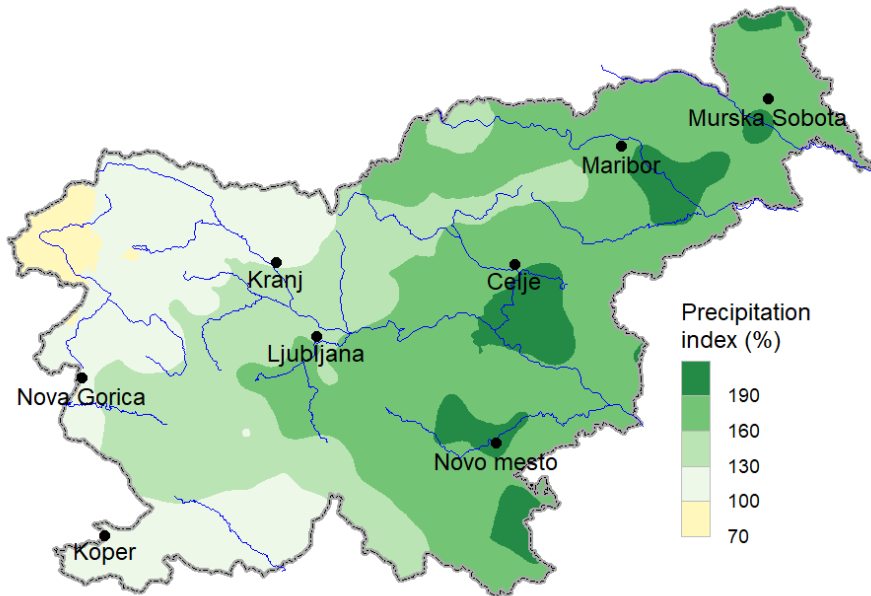


Figure 5. Precipitation index in Slovenia in winter 2022/23, relative to the 1981/82–2010/2011 average. Data are from 257 meteorological stations.

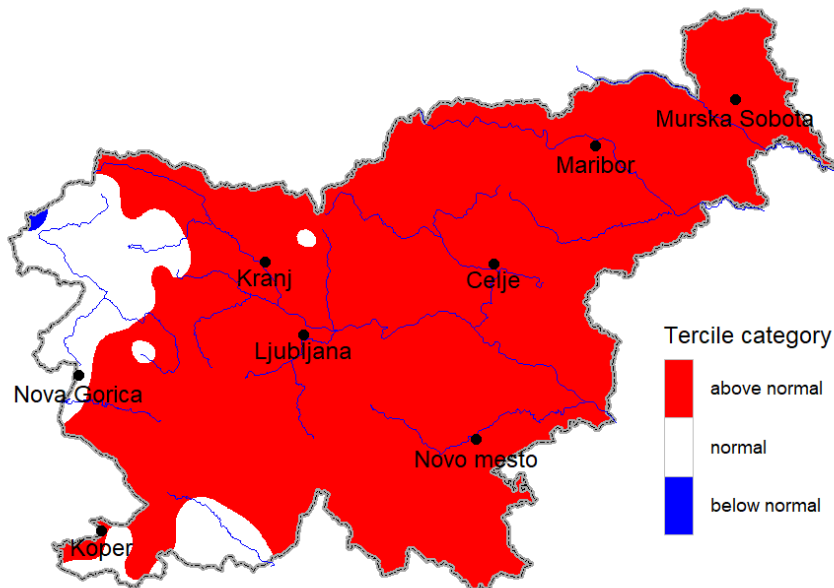


Figure 6. Precipitation tercile category of anomaly in Slovenia in winter 2022/23, relative to the period 1981/82–2010/11. Data are from 257 meteorological stations.

According to this, the precipitation was within the third tercile (above-normal) in major part of Slovenia (87 % of meteorological stations), within the second tercile (normal) at 12 % of stations at the south and north-west, and within the first tercile (below-normal) only at one station (Figure 6).

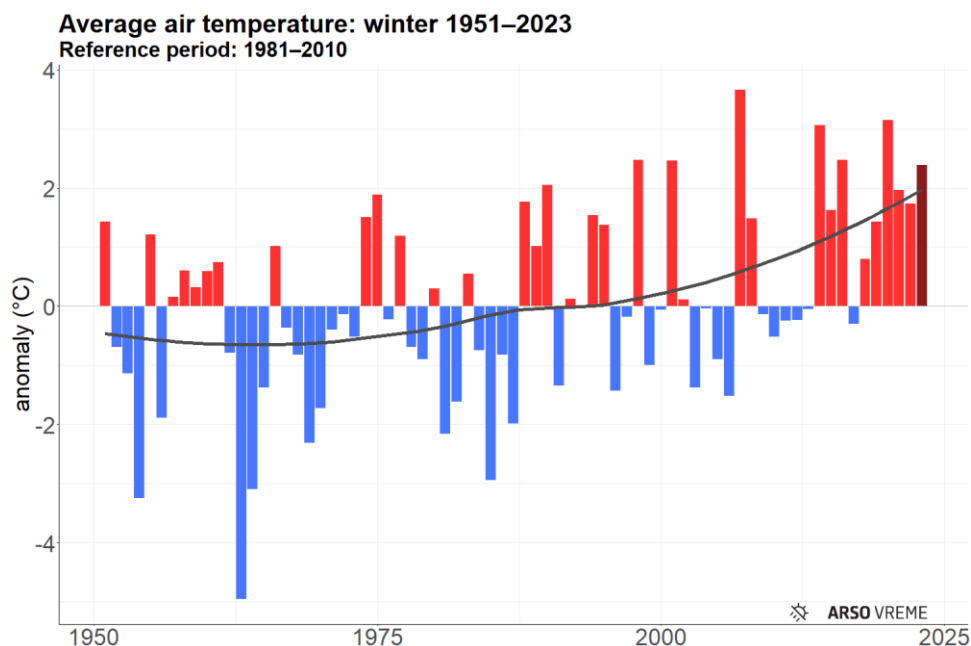


Figure 7. Winter mean air temperature anomaly in Slovenia in the period 1950/51–2022/23, relative to the 1981/82–2010/11 average. Winter 2022/23 is marked with dark red colour.

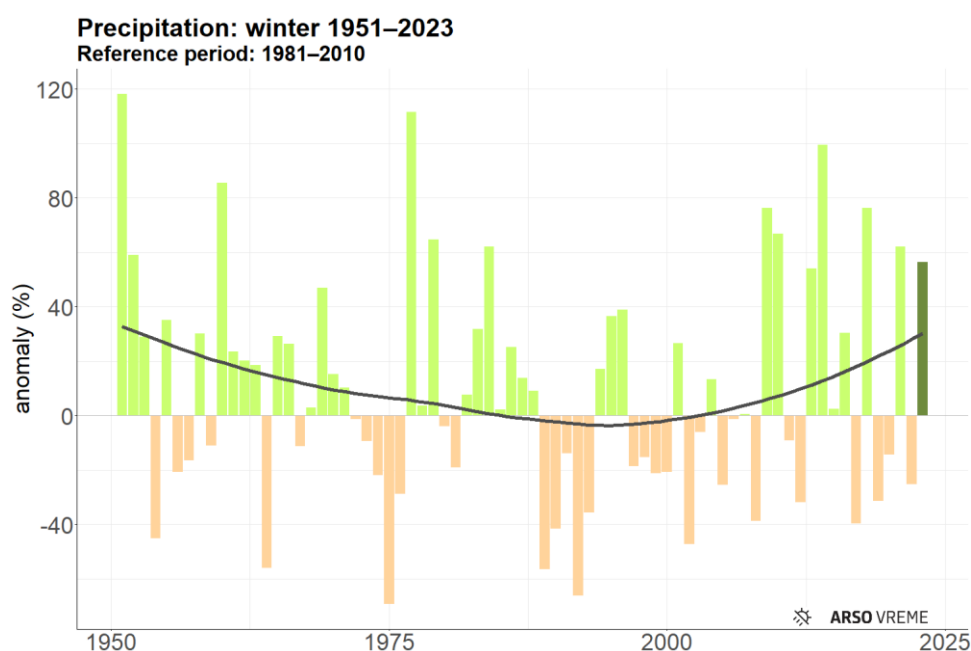


Figure 8. Winter precipitation anomaly in Slovenia in the period 1950/51–2022/23, relative to the 1981/82–2010/11 average. Winter 2022/23 is marked with dark brown colour.

Since 2001 there have been 13 winters with positive and 10 with negative temperature anomaly, but negative anomalies have been much smaller than positive (Figure 7). The winter 2022/23 is the sixth consecutive winter with the above-normal temperature. The record as the warmest winter holds the winter 2006/07 with temperature anomaly 3.7 °C. Linear winter temperature trend in the period 1950/51–2022/23 of 0.3 °C/decade is statistically significant. Winter precipitation index has statistically significant negative linear trend of approximately – 1 %/decade, but winter precipitation shows positive trend since the middle of nineties of the 20<sup>th</sup> century. There have been 12 winters with above-average precipitation index since 2001 (Figure 8).

The summary for winter 2022/23 and monthly (December, January and February) temperature and precipitation conditions can be found in the Table 1.

Table 1. The summary for winter 2022/23 temperature and precipitation in Slovenia

<b>SLOVENIA</b>	Temperature anomaly, relative to the period 1981–2010	Average temperature anomaly	Precipitation index, relative to the period 1981–2010	Average precipitation index
December 2022	0.8 to 4.1 °C	2.5 °C	83 to 206 %	153 %
January 2023	0.7 to 4.5 °C	3.2 °C	107 to 491 %	283 %
February 2023	–0.1 to 2.9 °C	1.5 °C	0 to 75 %	38 %
<b>Winter 2022/23</b>	<b>1.2 to 3.5 °C</b>	<b>2.4 °C</b>	<b>79 to 210 %</b>	<b>156 %</b>

## Highlights

Highlights for the winter 2022/23 in Slovenia:

- Temperature above average, the 4<sup>th</sup> to 7<sup>th</sup> warmest since the season 1950/51,
- Warm December and January, both the sixth warmest since 1950/51,
- Precipitation above average, the 12<sup>th</sup> wettest since 1950/51,
- Wet December, the 14<sup>th</sup> wettest since 1950/51, the wettest January since 1950/51, February among 10 driest since 1950/51.

## Verification of the SEECOF-28 Climate Outlook in Slovenia for winter season 2022/23

In the table 2 a verification summary of the SEECOF-28 climate outlook for the winter season 2022/23 (DJF) can be found. The climatological reference period is 1981–2010.

Table 2. SEECOF-28 climate outlook verification summary for Slovenia for winter 2022/23

Country	Seasonal temperature (JJA)		Seasonal precipitation (JJA)	
	Observed	SEECOF-28 climate outlook for temperature	Observed	SEECOF-28 climate outlook for precipitation
<b>SLOVENIA</b>	warmer than normal	normal or warmer than normal	wetter than normal, normal in parts of south and north-west Slovenia	no signal

### **Users' Perception of the SEECOF-28 Outlook**

Meteorological Service at the Slovenian Environment Agency for the time being doesn't provide seasonal outlook for the country.