MEDITERRANEAN CLIMATE OUTLOOK FORUM
MEDCOF-24 ONLINE SESSION

ANALYSIS AND VERIFICATION
OF THE MEDCOF-23 CLIMATE OUTLOOK
FOR THE 2024-25 WINTER SEASON
FOR THE MEDITERRANEAN REGION (MED)

Final version

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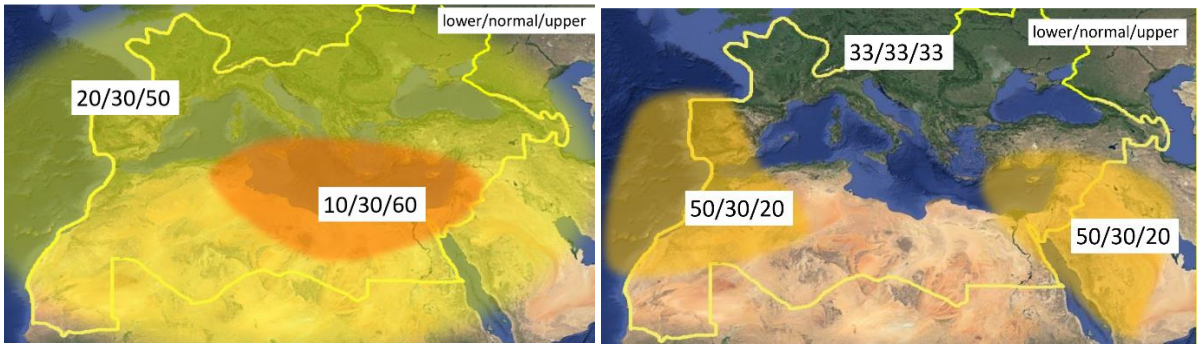
The following MedCOF verification report is based on

- the outcome of the consensus forecast of MedCOF 23,
- climate monitoring results of RA I NA RCC and RA VI RCC networks,
- national verification reports received from NMHSs or posted in RCOF forums of MedCOF, SEECOF or PRESANORD,
- SEECOF-33 verification report
- Data analyses of AEMET

1 MedCOF-23 Climate outlook for the 2024-25 winter season



(a) (b)

Figure 1: Graphical presentation of the climate outlook for the 2024-25 winter season for the Mediterranean region

(a) Temperature Outlook, (b) Precipitation Outlook

1.1 General circulation (ocean and atmosphere)

As stated in the MedCOF-23 consensus statement for the seasonal climate outlook for the 2024/25 winter season for the Mediterranean region, observed sea surface temperatures showed initially neutral El Niño conditions. However, most models forecasted a moderate La Niña in the winter months, with a strong positive SST anomaly on the tropical Atlantic, showing a tripole pattern over the northern hemisphere Atlantic, and a marked negative Pacific Decadal Oscillation. These elements favoured a positive phase of the North Atlantic Oscillation, which relates with drier than normal winters over Southern Europe. Model forecasts showed agreement with this, together with a trend to a positive East Atlantic Pattern, although they diverged in the anomaly patterns shown.

1.2 Temperature

With this general context, above-normal temperatures were expected over most of the domain, with a more robust signal over the Eastern Mediterranean. (Fig. 1a).

1.3 Precipitation

Precipitation forecasts showed a dry signal over the west of the domain and over parts of the Eastern Mediterranean and the Middle East, with no clear signal over the rest of the domain. (Fig. 1b).

2 Analysis of the 2024-25 winter season

Analysis of the winter season temperature and precipitation anomalies and general circulation are based on

- maps and seasonal bulletins on the climate in the WMO region I – NA and VI for the winter 2024/25:
  - WMO RA I RCC Node on Climate Monitoring: https://www.meteo.tn/en/climate-monitoring-watch
  - WMO RA VI RCC Offenbach Node on Climate Monitoring: http://www.dwd.de/rcc-cm),
- contributions from Météo France (http://seasonal.meteo.fr/),
- the Regional Climate Outlook Forum
  - for Southeastern Europe (SEECOF, http://www.seevccc.rs),
  - for North Africa (PRESANORD, https://rcc.acmad.org/presanord.php),
- national verification reports from MedCOF participants.

2.1 General circulation

2.1.1 Ocean

Sea surface temperature (SST) anomalies in the tropical Pacific (Fig. 2) showed a La Niña pattern in winter 2024/25 as expected; they were negative and larger than −0.5 °C in the central tropical Pacific.

Over the North Pacific, a large area of above-normal SST can be seen on its interior part, whereas much lower or even negative anomalies can be found close to the North American coast. This corresponds to a clearly negative Pacific Decadal Oscillation (PDO) as mentioned in the outlook.

Anomalies over the tropical and much of the northern Atlantic Ocean (except for some western parts) were positive. A tripole pattern over the northern hemisphere Atlantic can be seen as expected by the outlook (slightly negative anomalies over the western North Atlantic and two centers of positive anomalies, one over the eastern North Atlantic and one over the tropics).

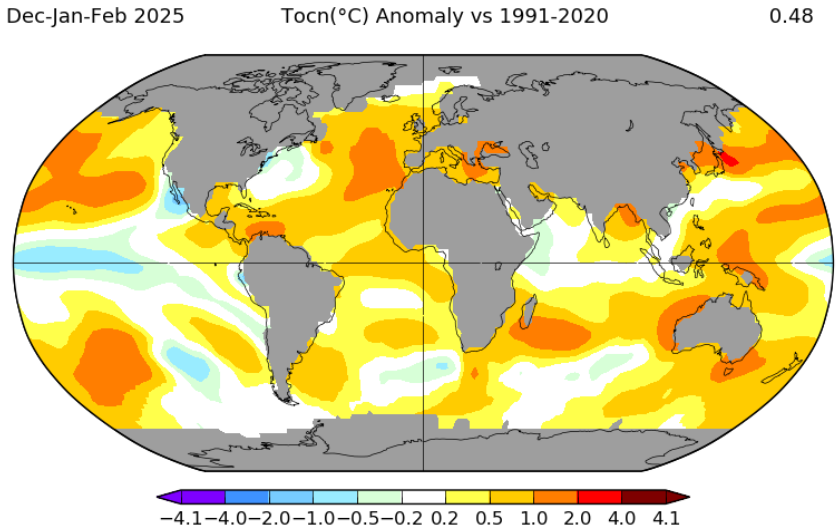


Figure 2: Sea surface temperature anomalies for boreal winter 2024-25 (December-February), 1991-2020 reference. Data from ERSSTv5 Ocean model analysis with 250km smoothing, source: NASA GISS, https://data.giss.nasa.gov/gistemp/maps/

ENSO

Looking at the standard Niño regions (Tab. 1, Fig. 3), anomalies were negative in all winter months in Niño regions 4 (the westernmost) and 3.4 and being larger than the La Niña threshold of -0.5°C in two of the three winter months. In the eastern regions 1+2 and 3, SST anomalies were slightly negative in December 2024 and January 2025, and turned to positive values in February 2025. This means that La Niña was active mainly in the central tropical Pacific that winter, with a peak in January and weakening in February.

Year	MON	NINO1+2	ANOM	NINO3	ANOM	NINO4	ANOM	NINO3.4	ANOM
2024	12	22.74	-0.10	24.91	-0.35	28.07	-0.37	26.03	-0.62
2025	1	24.32	-0.20	25.49	-0.18	27.59	-0.63	25.86	-0.71
2025	2	26.78	0.69	26.49	0.11	27.52	-0.58	26.38	-0.35

Table 1: Sea surface temperature and anomalies in °C for various Niño regions in boreal winter months 2024-25 (December-February), 1991-2020 reference. Data from ERSSTv5 Ocean model analysis, source: NOAA, https://www.cpc.ncep.noaa.gov/data/indices/sstoi.indices .

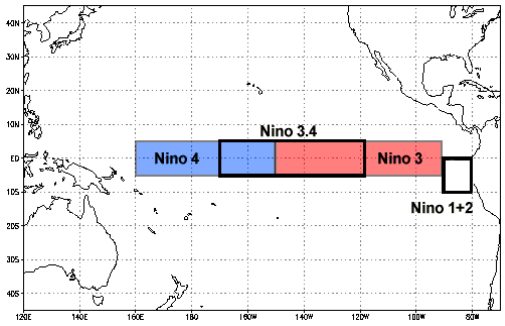


Figure 3: Definition of Niño regions, source: NOAA, https://www.ncei.noaa.gov/access/monitoring/enso/sst#oni

PDO

The Pacific Decadal Oscillation (PDO) is a long-term ocean fluctuation of the Pacific Ocean with a period of several years to decades. The change in location of the cold and warm water masses alters the path of the jet stream. PDO data can differ among various data sets, but newest satellite data agree that a negative PDO phase clearly exists since 2020 (Fig. 4). A negative PDO phase means warm SST anomalies in the interior of the North Pacific and cool SST anomalies along the North American coast, or above-average sea level pressures over the North Pacific.

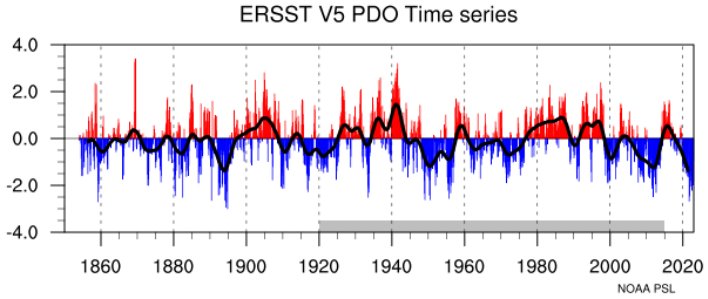


Figure 4: Time series of PDO from ERSST V5 satellite data and reconstructed to earlier years from January 1854 to April 2025. Source: NOAA, https://psl.noaa.gov/pdo/

2.1.2 Atmosphere

North Atlantic Oscillation (NAO) and East Atlantic Pattern (EA)

The NAO was mostly in a positive phase in boreal winter 2024/25 in agreement to the MedCOF outlook, though with a disruption in January, when NAO switched temporarily to a negative phase (Table 2). The EA, too, was mostly in a positive phase during that winter as expected, here in January and February, after a neutral phase in December.

Month	December 2024	January 2025	February 2025
NAO	+1.03	-1.12	+1.36
EA	-0.08	+2.70	+0.65

Table 2: Monthly means for NAO and EA for the boreal winter months 2024/25. Source: NOAA CPC, https://ftp.cpc.ncep.noaa.gov/wd52dg/data/indices/tele_index.nh

500 hPa Geopotential

Seasonal averages of 500-hPa geopotential in winter 2024/25 show NAO+ over the western North Atlantic, but a large blocking high over Europe. Anomalies were also positive over the whole Mediterranean Sea area and North Africa (Fig. 5).

However, when looking at individual months, anomaly centers over the North Atlantic have different positions. In December, the anticyclonic area was shifted quite far to the north. In January, the zonal pattern was located more to the south, but a ridge developed close to the Iberian Peninsula and Morocco, implying that an EA+ had been established. However, in February the zonal flow over the North Atlantic extended more to its eastern parts, which means an increasing NAO+, but a weakening of the EA+ pattern. Furthermore, some cyclonic structures can be detected in individual months, especially over the central Mediterranean in December, and over Algeria and eastern Türkiye / South Caucasus in February.

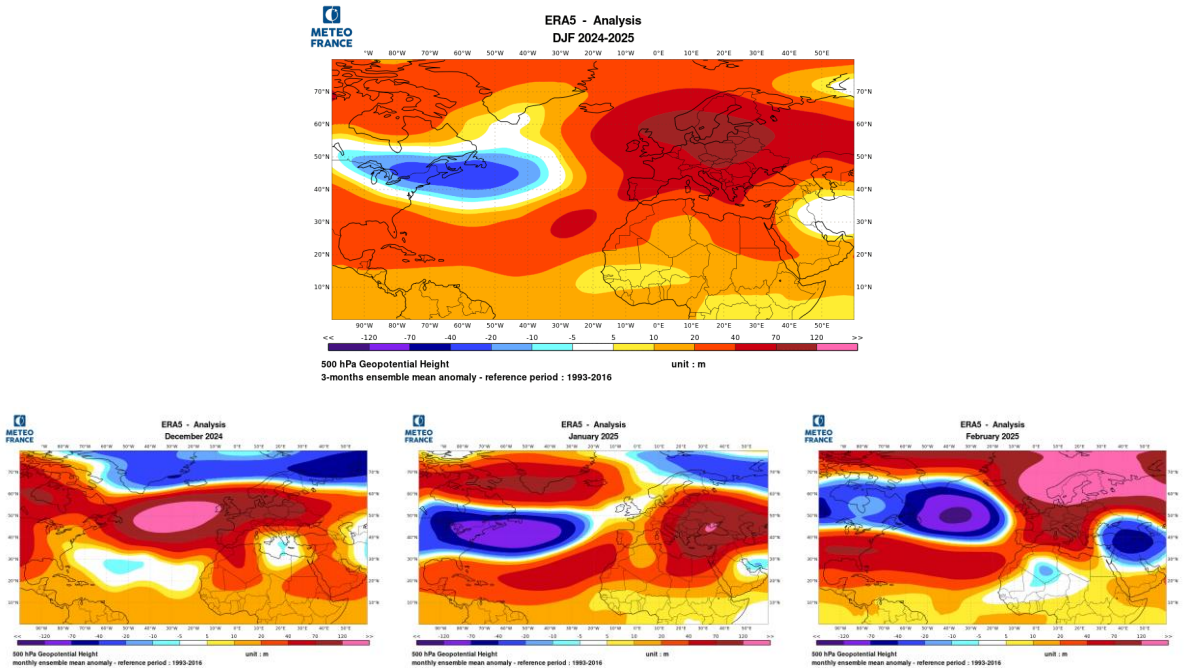


Figure 5: Geopotential height anomalies in 500 hPa, source: Meteo France, http://seasonal.meteo.fr/content/suivi-clim-cartes-ref93-16

Weather types

The distribution of weather types (Meteo France classification, Fig. 6) also reflects the monthly variability. A high number of Atlantic Ridge types occurred in December, but became rare in January and did not show at all in February. In contrary, the number of NAO+ types increased from December to February, but was much less frequent than normal (about two thirds of normal). The most dominant type over the whole season was winter blocking, with an outstandingly high number of 13 days in each month.

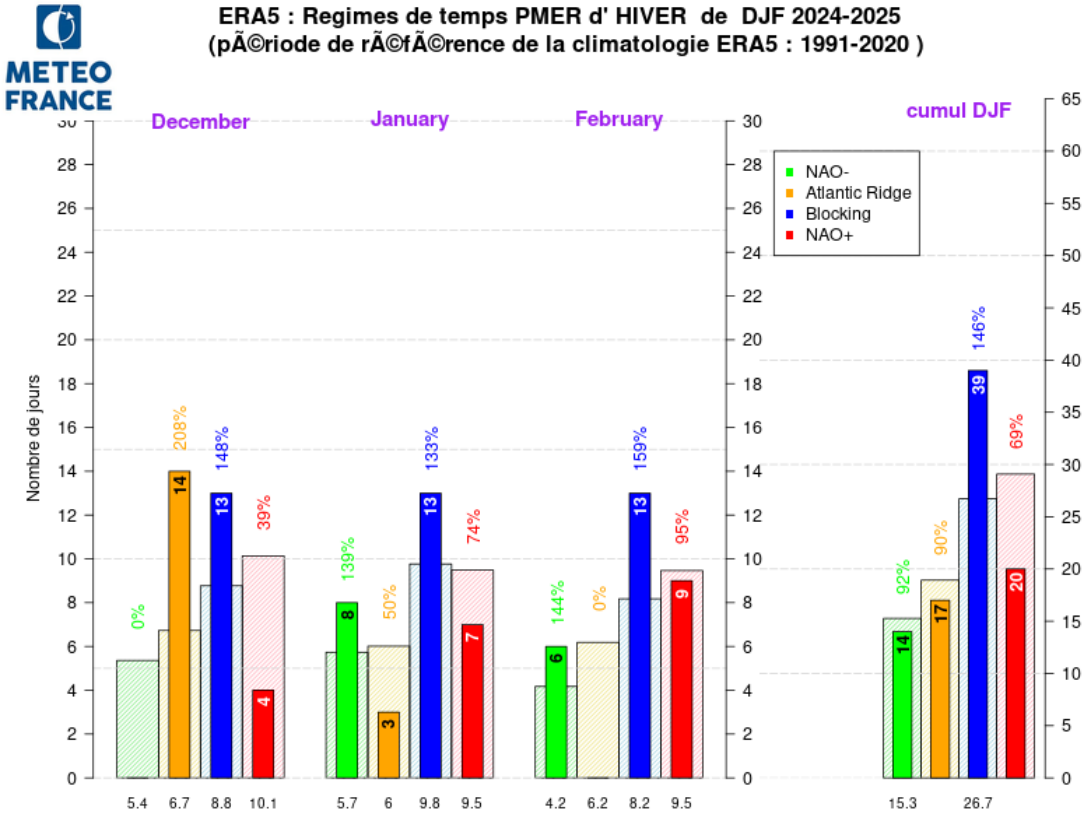


Figure 6: Number of days with circulation types of the Météo France classification for each month of the winter 2024/25 season and for the whole season (right), and in percent of the climatological frequency distribution 1991-2020. Source: Météo France, http://seasonal.meteo.fr/content/suivi-clim-regimes-trim?language=en

Teleconnection patterns

When comparing the other teleconnection patterns after NOAA CPC, the large monthly variability is also revealed. Notably, the positive Scandinavia pattern (SCAND+), which represents blocking over Scandinavia, had a comparable contribution to northern hemispheric teleconnection like NAO+ in December, and a negative East Atlantic / Western Russia pattern (EATL/WRUS) came out in January, implying that the blocking high rather moved to Russia that month.

MONTH	NAO	EA	WP	EP-NP	PNA	TNH	EATL/WRUS	SCAND	POLEUR
FEB 25	1.4	0.7	0.3	0.6	1.6	1.3	0.3	1.4	-2.9
JAN 25	-1.1	2.7	1.0	-0.4	0.7	2.1	-1.3	-0.7	0.2
DEC 24	1.0	-0.1	-0.3	---	1.4	0.2	0.0	-0.6	-0.6

Table 3: Circulation indices of NOAA CPC patterns for the winter months 2024/25. Source: https://www.cpc.ncep.noaa.gov/products/CDB/Extratropics/table3.shtml

Sea level pressure

Seasonal mean sea level pressure (SLP) in winter 2024/25 is displayed in Fig. 7. The seasonal mean distribution of SLP looks like normal (SLP gradient from northwest to southeast), but absolute values of SLP where much higher than normal on average, given by the large extensive positive anomalies. This reflects again the high number of anticyclonic blocking patterns during that winter.

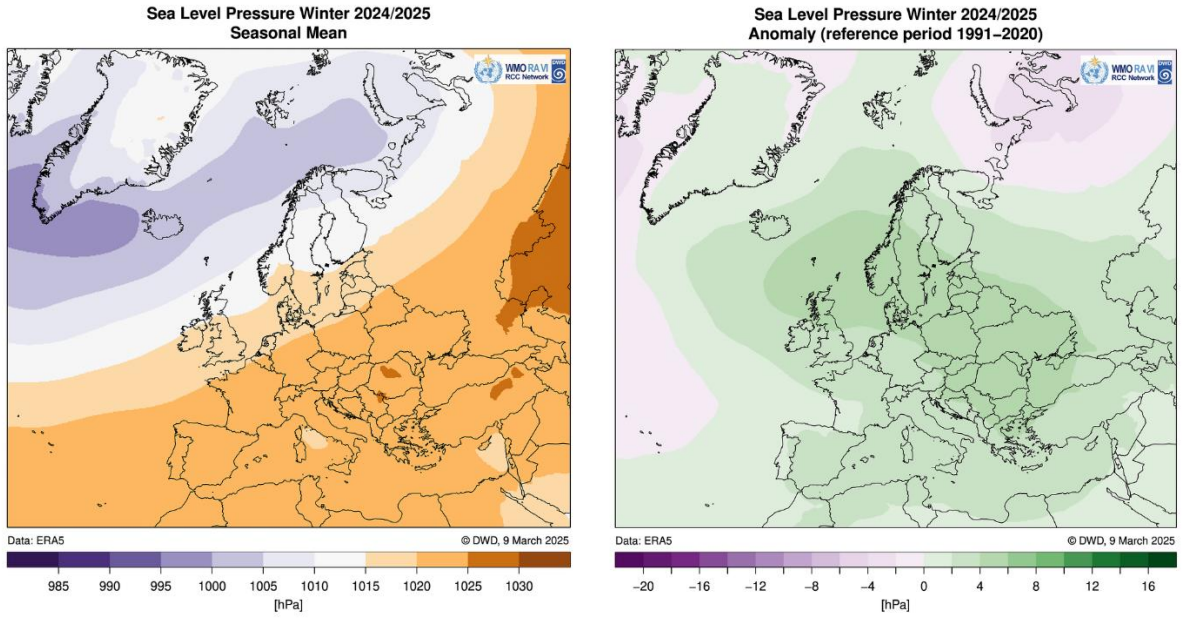


Figure 7: Seasonal mean sea level pressure and its anomalies for winter 2024/25 (1991-2020 reference). Source: Deutscher Wetterdienst (DWD), https://www.dwd.de/EN/ourservices/rcccm/int/rcccm_int_ppp.html, data source: ERA5 reanalysis, https://www.ecmwf.int/en/forecasts/dataset/ecmwf-reanalysis-v5

Sea level pressure distributions for single months are shown in the following figures (Fig. 8). The large number of Atlantic Ridge types in December triggered an extension of the Azores High to the north and to the east, which resulted in more high-pressure conditions over the western parts of the MedCOF domain. This changed completely in January, when these parts were affected by a North Atlantic airflow. In February, there was again a change of the pattern, this time to more meridional conditions with a trough over the eastern North Atlantic and a blocking high over whole Europe. Eastern parts of the domain, on the other hand, saw anticyclonic anomalies over the whole winter, particularly in January and February.

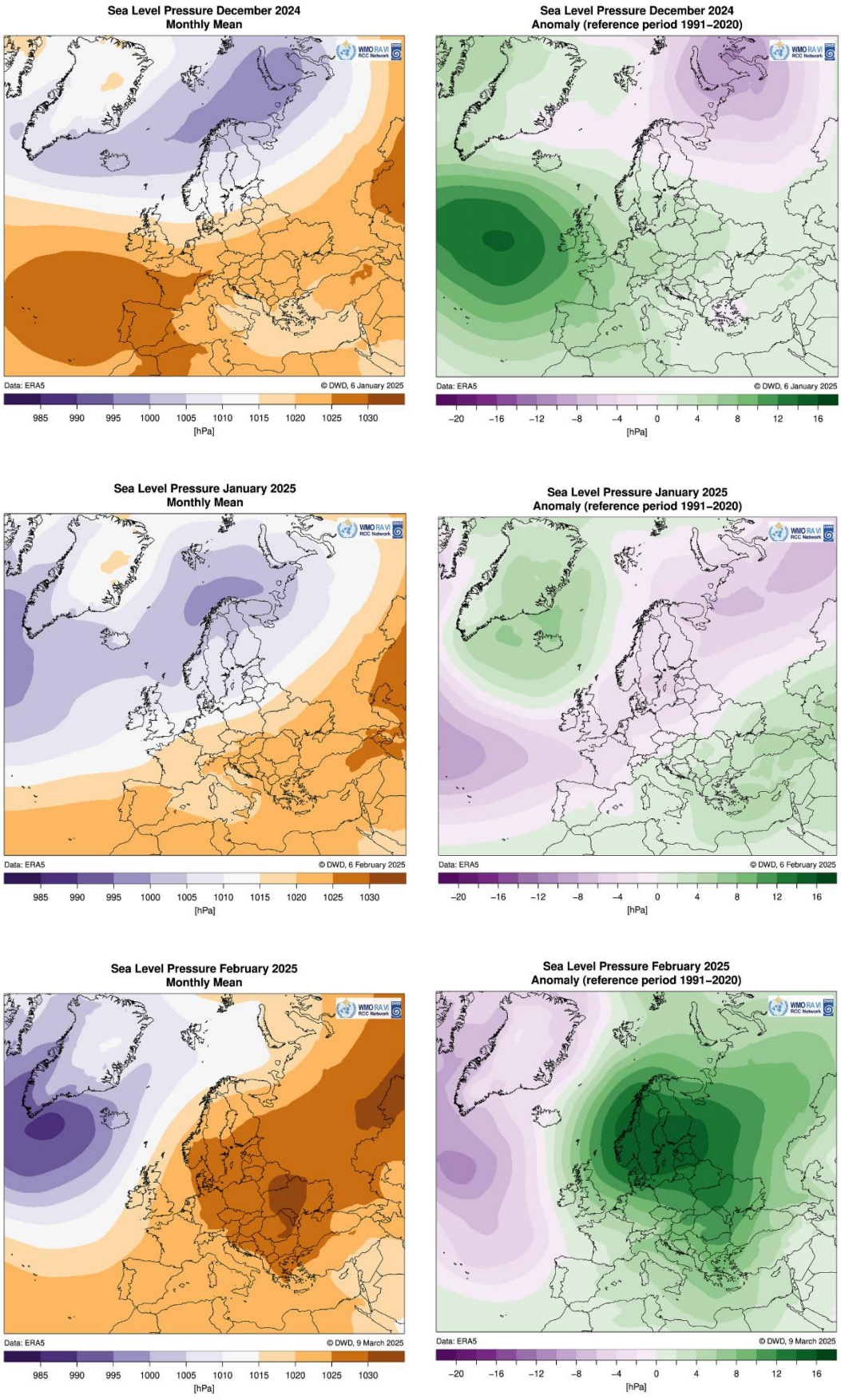


Figure 8: Same as Figure 7, but for the individual months December 2024 – February 2025. (Data source: ERA5)

2.2 Temperature

Europe and Middle East (RA VI)

Seasonal means and anomalies

Seasonal mean temperature in winter 2024/25 ranged from below −10 °C in the northeastern highlands of Türkiye to around 15 °C in southwestern Israel (Fig. 9). Mostly the seasonal means ranged between 0 and 5 °C in the lowlands, in western and southern parts between 5 and 10 °C, in the Middle East and on the southwestern Iberian Peninsula partly between 10 and 15 °C. The Ukraine and some higher elevated areas had seasonal averages mostly below 0 °C.

Temperature was above the 1991-2020 normal in most of the MedCOF region with anomalies mostly between +1 °C and +2 °C, in the Ukraine up to +3 °C. In some western and eastern parts of the domain, seasonal averages were close to normal, in the highlands of eastern Türkiye below normal (around −1 °C anomaly).

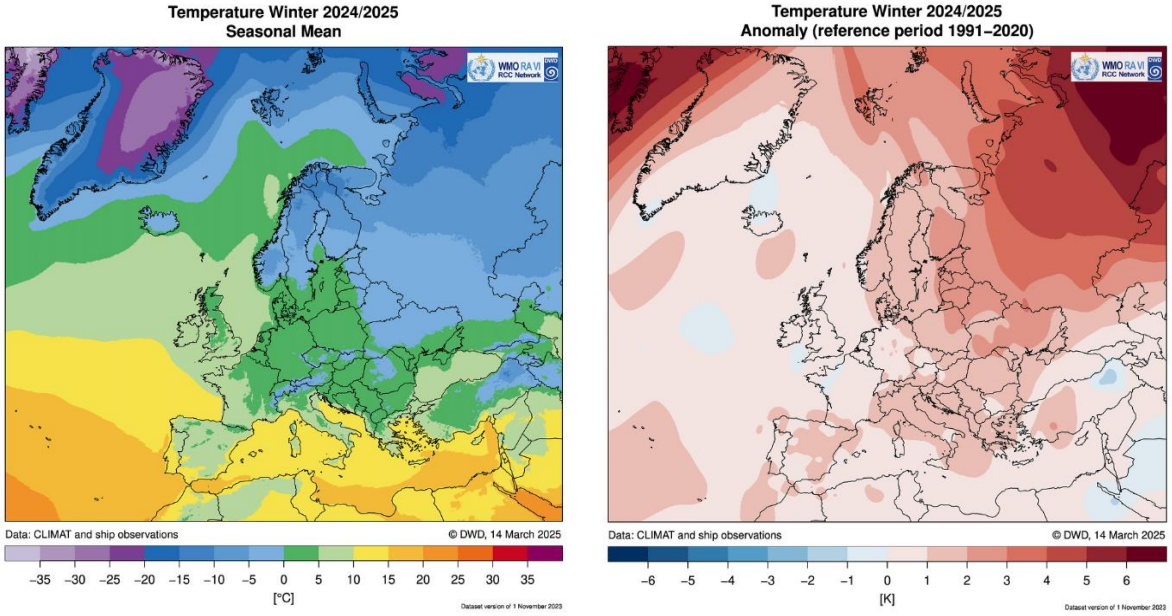


Figure 9: Surface air temperature for winter 2024/25. Left: seasonal mean, right: anomalies, 1991-2020 reference, source of both maps: WMO RA VI RCC, based on interpolated CLIMAT data, www.dwd.de/rcc-cm

Terciles

In terms of terciles, most of the RA VI MedCOF domain had temperatures in the upper tercile range in winter 2024/25, according to all datasets (ERA5, E-OBS, ECA&D, Fig. 10-12). There were some areas, where mean seasonal temperature was in the middle tercile range; these were most of France, small parts of Italy and the northwestern Balkan Peninsula, parts of Türkiye and South Caucasus. Some places of eastern Türkiye and South Caucasus had seasonal averages even in the lower percentile range. Note that differences in analyses of Fig. 10-12 can be due to different reference periods (1993-2016 in Fig. 10, 1981-2010 in Fig. 11 and 1991-2020 in Fig. 12), but also due to different methods (reanalysis vs station data interpolation) and differences in input data coverage.

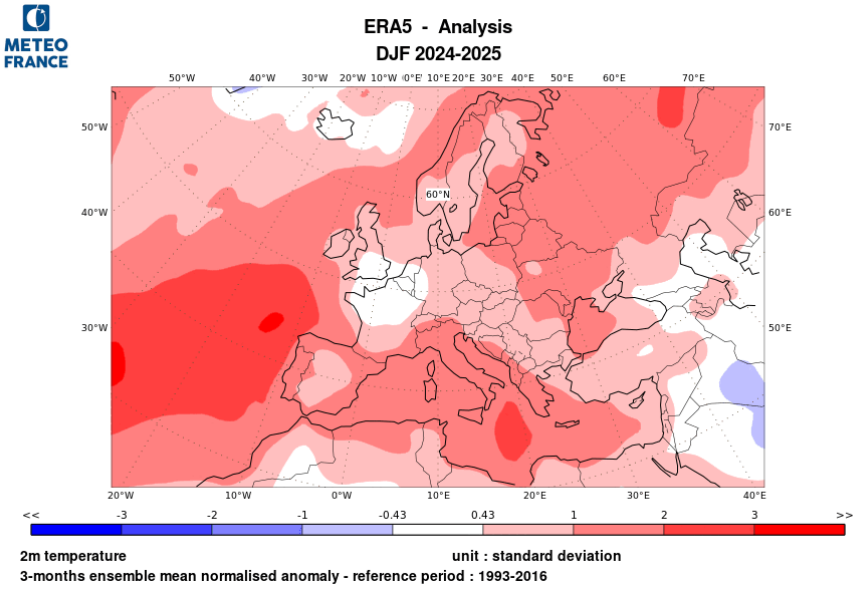


Figure 10: Seasonal normalized anomalies of winter 2024/25 2m air temperature based on ECMWF-ERA5 gridded data, 1993-2016 reference. The data range between -0.43 and +0.43 represents the middle tercile range, below -0.43 the lower tercile range and above +0.43 the upper tercile range. Source: Météo France, http://seasonal.meteo.fr/content/suivi-clim-cartes-ref93-16

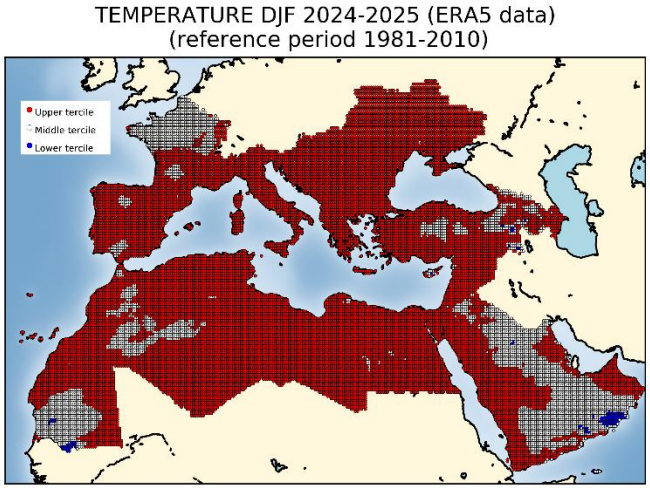
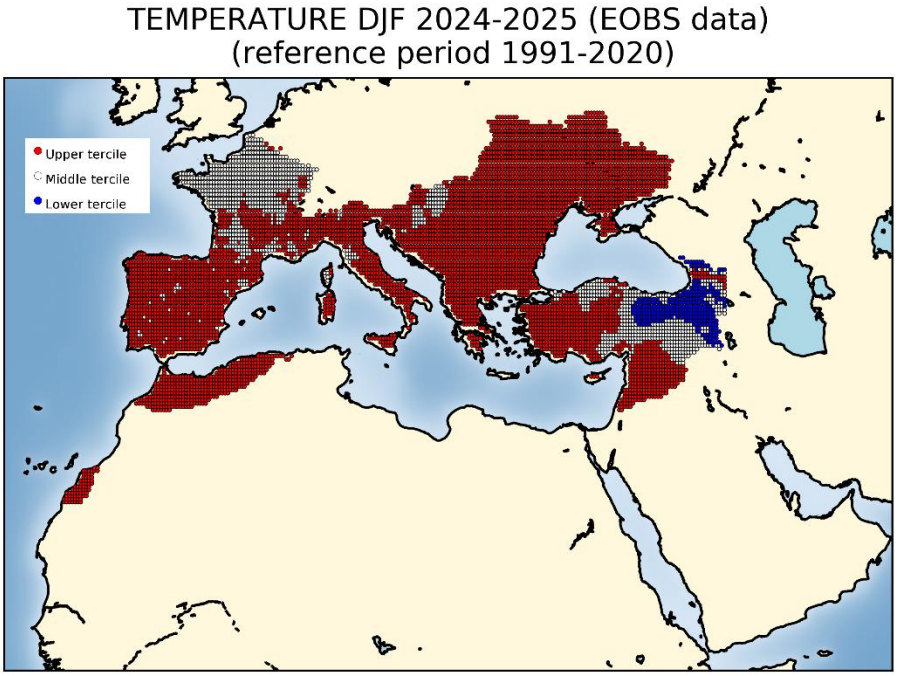


Figure 11: Terciles of winter 2024/25 surface air temperature based on ERA5 Reanalysis, 1981-2010 reference. Source: AEMET, data source https://www.ecmwf.int/en/forecasts/dataset/ecmwf-reanalysis-v5



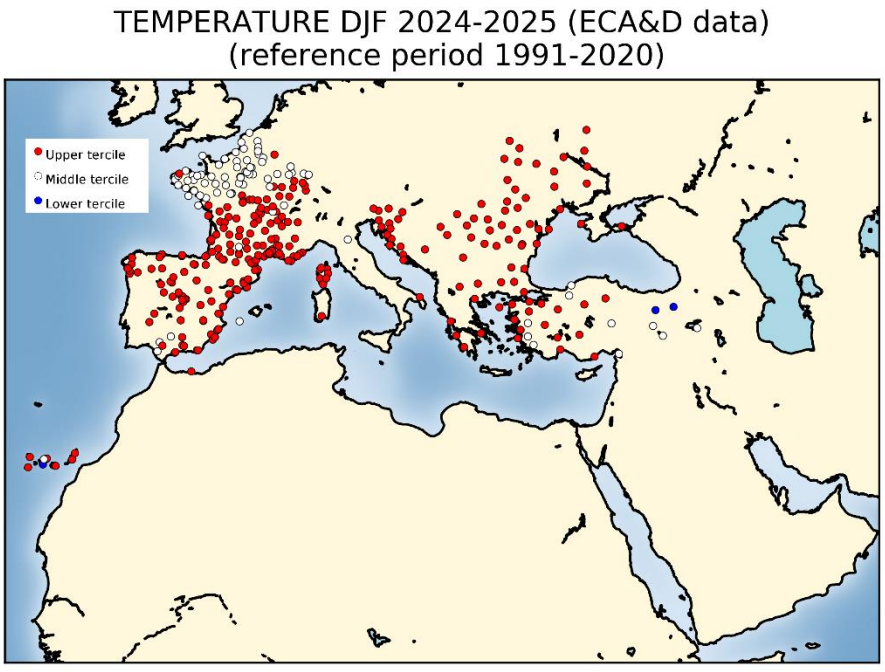


Figure 12: Terciles of winter 2024/25 surface air temperature based on interpolated E-OBS gridded data (upper graph) and individual ECA&D station data (lower graph), 1991-2020 reference. Source: AEMET, data source: https://www.ecad.eu/

North Africa (RA I)

Winter 2024-2025 was warmer than normal over the most regions of the North African domain.

Seasonal mean temperatures ranged between 6 °C and 23 °C. Winter season mean temperature is at its minimum over the northwest of Tunisia, the north of Algeria and the eastern part of Morocco.

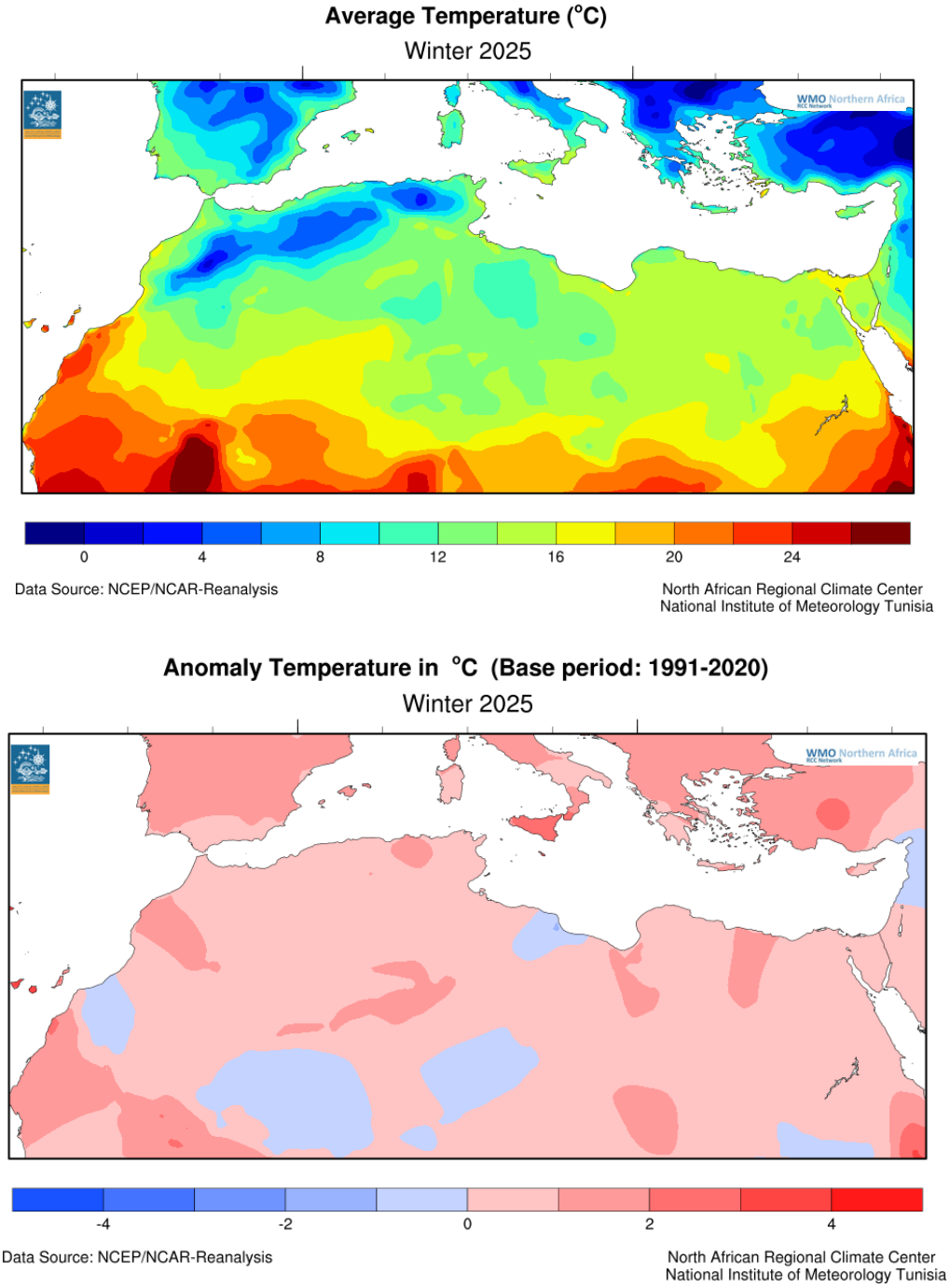


Figure 13: Winter (DJF 2024/25) mean temperatures and 1991-2020 anomalies in North Africa (in °C). Source: North African Regional Climate Center, National Institute of Meteorology Tunisia

During winter 2024/2025, the Northern African region experienced above-average temperatures compared to the reference period 1991–2020. Most countries, including Morocco, Algeria, Tunisia, Libya, and Egypt, recorded positive temperature anomalies generally ranging between +0.5 °C and +2 °C. The strongest warm anomalies were observed in northern Algeria, northern Tunisia, northern and southern Morocco, and parts of Egypt, where anomalies exceeded +2 °C in localized areas.
Although the general trend was warming, some small zones particularly over the Atlantic parts of Morocco, parts of the Libyan coast and the central Sahara showed slight negative anomalies (approximately -0.5 °C to -1 °C), but these were spatially limited. Along the Mediterranean coast, the warming pattern was consistent, reflecting the broader regional warming tendencies across the Mediterranean basin.
In Tunisia, the 2024–2025 winter season was warmer than normal across the entire country. The average seasonal temperature ranged from 7.9 °C at the northwest station of Thala to 15.7 °C in the south (station of Djerba). The national average seasonal temperature reached 12.7 °C, exceeding the normal (11.8 °C) by +0.9 °C.

In summary, winter 2024/2025 in Northern Africa was marked by mild to significantly warmer-than-normal conditions, continuing the ongoing warming trend observed over recent decades.

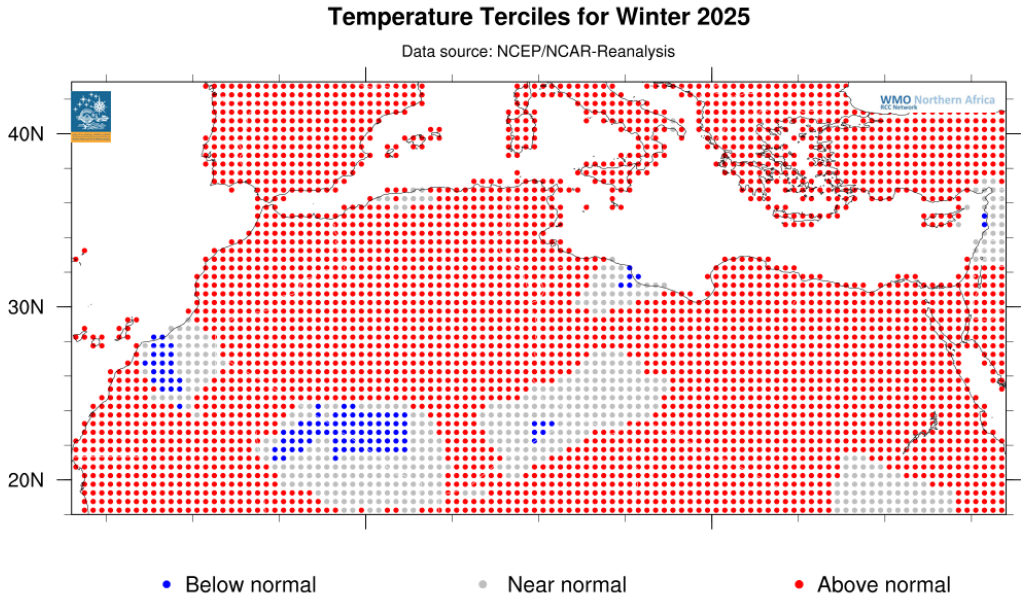


Figure 14: Temperature terciles for the 2024-2025 winter season in North Africa (Reference period 1991-2020)

According to percentile ranks, the analysis reveals a dominant presence of the upper tercile range (above-normal temperatures) across the entire region, including Morocco, Algeria, Tunisia, Libya, and Egypt.

2.3 Precipitation

Europe and Middle East (RA VI)

Seasonal means and anomalies

Seasonal precipitation totals in winter 2024/25 in the MedCOF RA VI domain ranged from close to zero in places of Syria to above 450 mm in various places, especially in north-western Spain, Montenegro, and southwestern Türkiye (Fig. 15). Precipitation was below normal in most of the domain, especially eastern Spain, Hungary, western Romania, central and eastern Türkiye, and the Middle East. These areas received less than 60% of its normal precipitation, partly less than 40%. In some interior parts of the Middle East, winter precipitation was mainly missing at all.

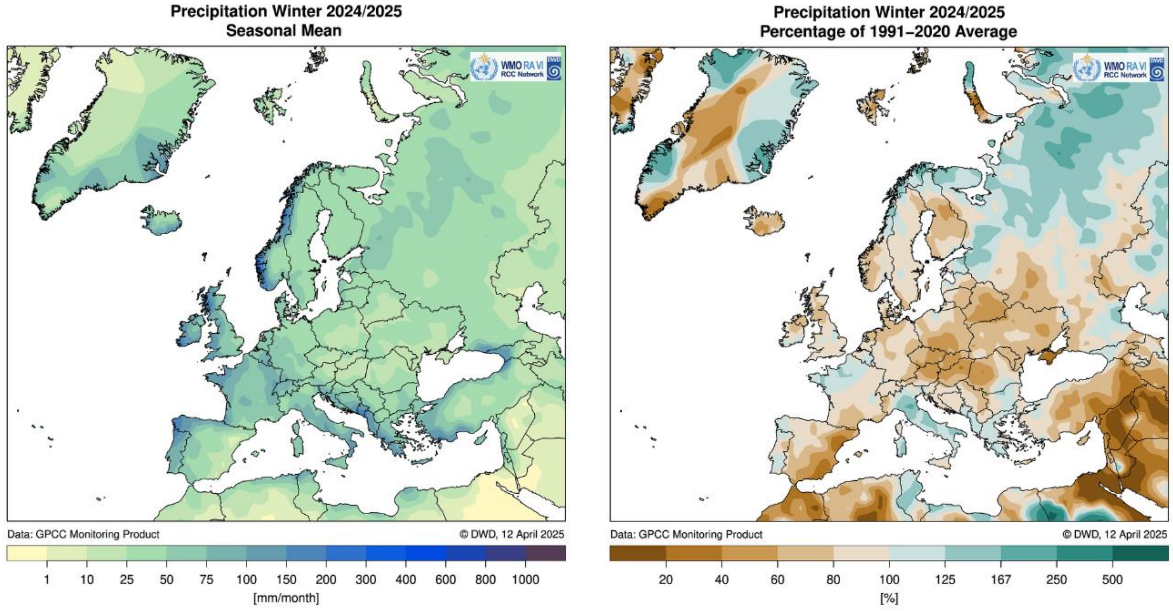
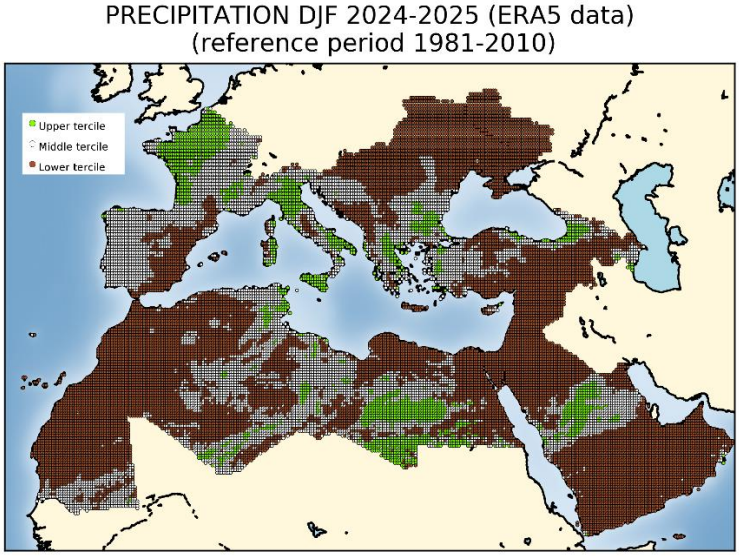


Figure 15: Precipitation for winter 2024/25 in Europe/RA VI. Left: seasonal total in mm/month, right: percentage of 1991-2020 average, source: WMO RAVI RCC, www.dwd.de/rcc-cm, data source: GPCC, https://gpcc.dwd.de

Terciles

In terms of terciles, precipitation was in the middle or upper tercile range on the western and central Iberian Peninsula, much of France and Italy, large parts of the southern and eastern Balkan Peninsula, coastal parts of Türkiye, and most the South Caucasus. Eastern Spain, northern and middle parts of the Balkan Peninsula, Ukraine, most interior parts of Türkiye, and most of the Middle East had precipitation in the lower tercile range.



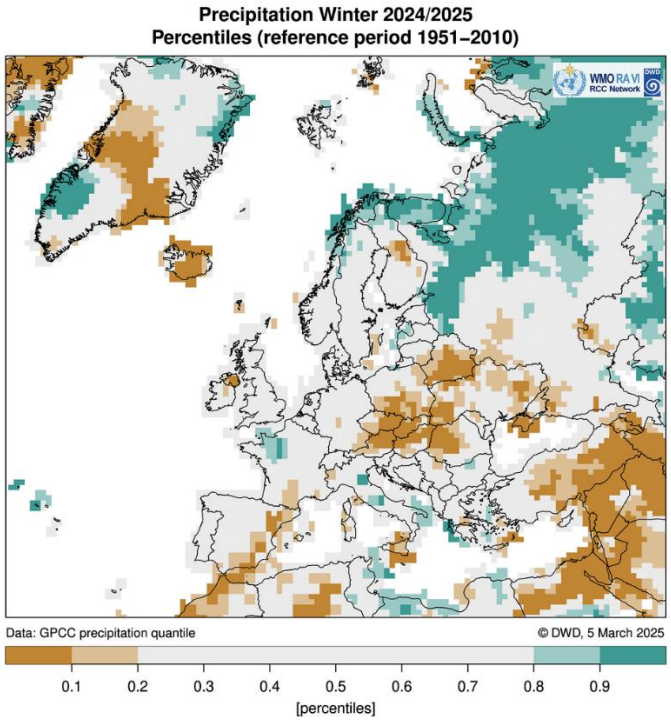
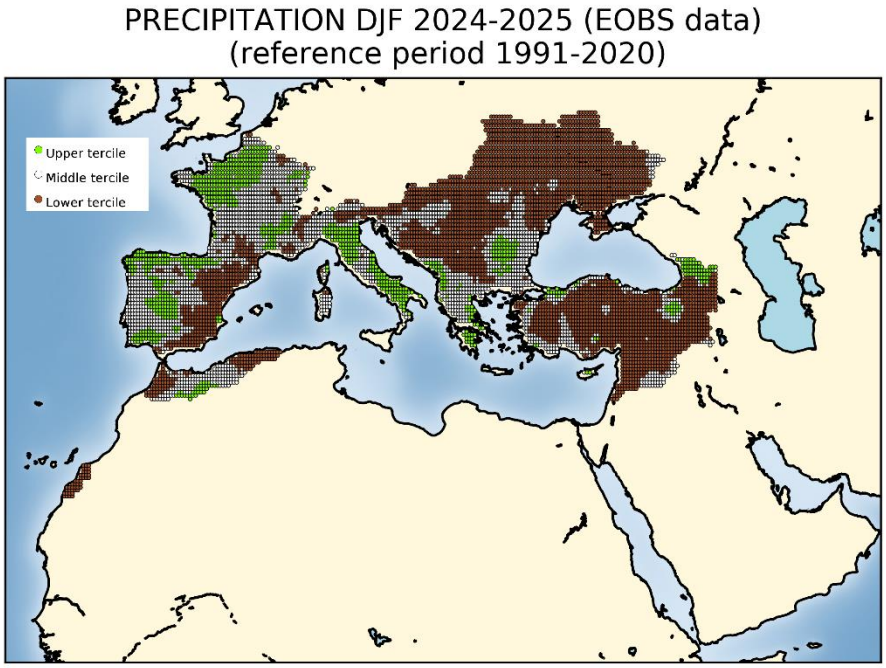


Figure 16: Terciles/percentiles of winter 2024/25 precipitation based on ERA5 reanalysis (upper graph) and GPCC (lower graph) gridded data, 1981-2010 / 1951-2010 reference. Source: AEMET (upper graph) / DWD (lower graph), data reference: ERA5: https://www.ecmwf.int/en/forecasts/dataset/ecmwf-reanalysis-v5 , GPCC: https://gpcc.dwd.de



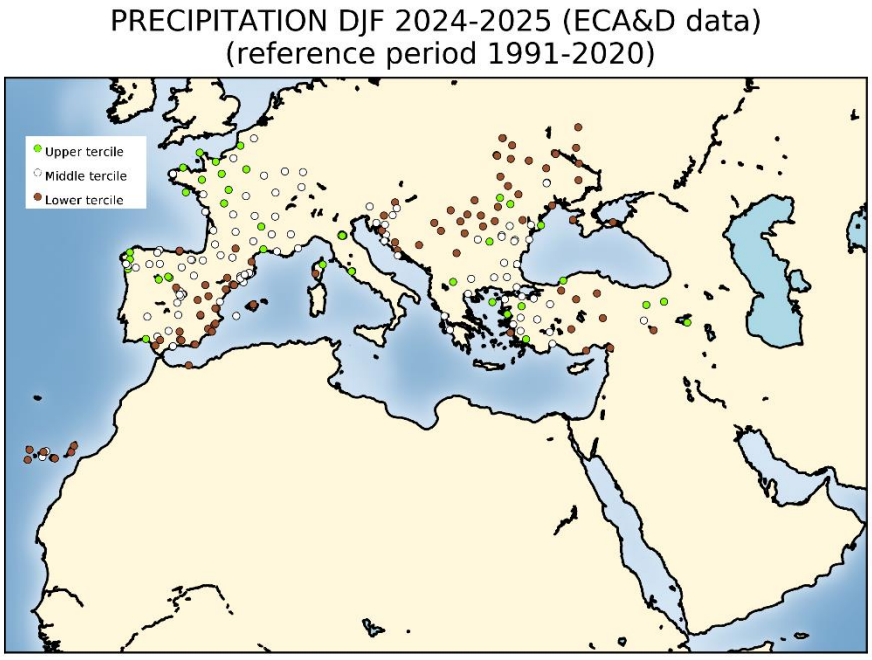


Figure 17: Terciles of winter 2024/25 precipitation based on interpolated E-OBS grid data (upper graph) and individual ECA&D station data (lower graph), 1991-2020 reference. Source: AEMET, data source: https://www.ecad.eu/

North Africa (RA I)

During winter 2024/2025, the accumulated precipitation over Northern Africa showed clear spatial contrasts. The northern coastal zones particularly northern Morocco, northern Algeria, and northern Tunisia received the highest rainfall, with totals generally between 260 mm and over 600 mm. This aligns with the typical Mediterranean winter rainfall regime.
In contrast, central and southern regions of Morocco, Algeria, Tunisia, Libya, and across the Sahara remained predominantly dry, with very limited precipitation, reflecting the persistent arid and desert climate that dominates these areas.
The eastern Mediterranean regions, including northeastern Libya and Egypt, also recorded noticeable winter precipitation, particularly along coastal zones.
Overall, winter 2024/2025 maintained the expected north-south rainfall gradient, with wet conditions in Mediterranean zones and minimal rainfall across the Sahara.

Wetter than normal winter conditions were observed in Tunisia, with the total seasonal accumulation of rainfall from the 27 main stations reaching 4,142.2 mm, exceeding the reference (normal) seasonal accumulation of 3,109.7 mm by approximately 33%.

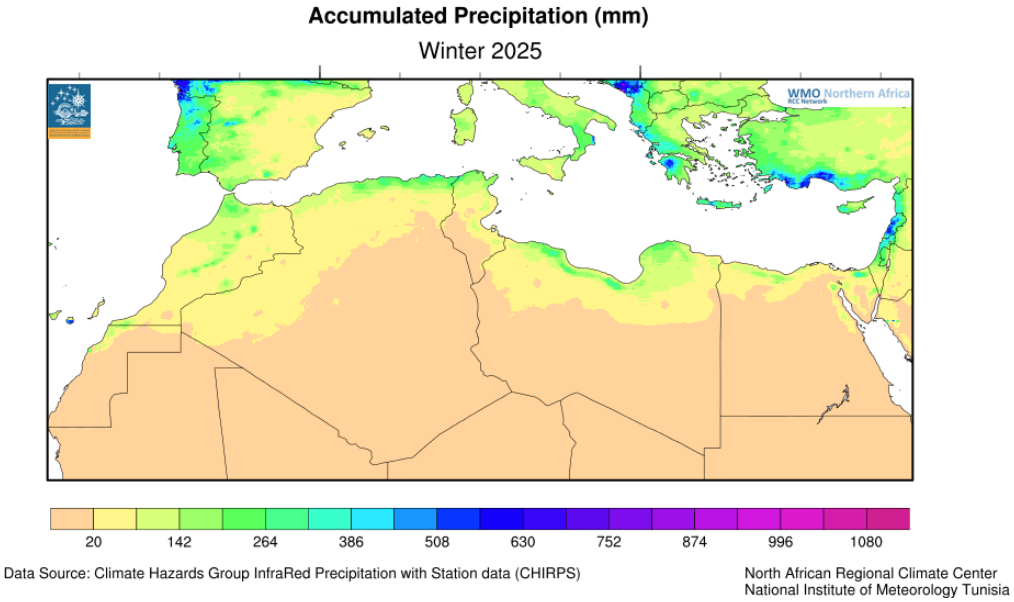


Figure 18: Winter (DJF 2024/25) precipitation totals (in mm) in North Africa. Source: North African Regional Climate Center, National Institute of Meteorology Tunisia

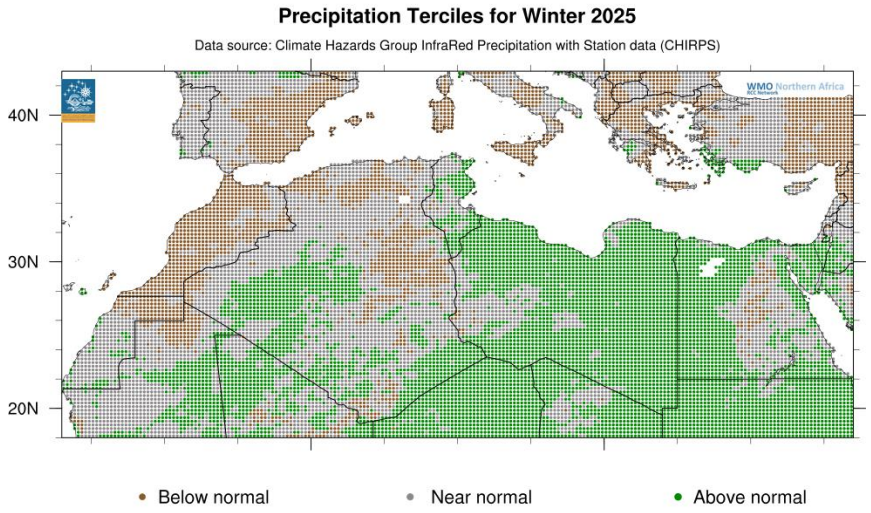


Figure 19: Precipitation terciles for 2024/2025 winter season in North Africa (Reference period 1991-2020). Source: North African Regional Climate Center, National Institute of Meteorology Tunisia

During winter 2024/2025, the precipitation tercile anomaly map reveals a marked spatial contrast across North Africa. In Morocco, most northern and western regions experienced below-normal precipitation. Similarly, northern and eastern Algeria and northern coastal Tunisia recorded rainfall deficits, with conditions ranging from below to near-normal. The western regions of Libya and the northern regions of Egypt, including the Nile Delta also recorded below to near-normal precipitation.
In contrast, the southern areas of Algeria, Tunisia, and Libya and the eastern parts of Egypt showed above-normal precipitation anomalies.

3 Verification of the MedCOF-23 climate outlook (2024-25 winter season)

3.1 Temperature

Europe/RA VI

The MedCOF-23 outlook favored the upper tercile range for the entire domain with higher probability over the eastern Mediterranean (60%) than in the rest of the domain (50%).

The outlook was correct for most of the domain, but not everywhere. Especially northern France and eastern Türkiye had largely temperatures in the middle or lower tercile range.

North Africa (RAI)

The MedCOF-23 climate outlook for the 2024-2025 winter season favored above-normal temperatures over the entire domain.

In fact, temperature anomalies were above normal over the most parts of the North African domain.

This indicates that the MedCOF-23 climate outlook for the winter season temperature was able to predict positive temperature anomalies registered.

3.2 Precipitation

Europe/RA VI

The MedCOF-23 outlook favored the dry scenario (lower tercile range) for most of the Iberian Peninsula and over parts of the Eastern Mediterranean and the Middle East with 50% probability each, and no privileged scenario for the rest of the domain.

The outlook predicted correctly the mostly dry area in the eastern Mediterranean region, but for most of the Iberian Peninsula, normal to above-normal precipitation occurred in contrary to the outlook. Also, the outlook did not predict the wet conditions in northwestern France and the dry areas in Ukraine and over parts of the Balkan Peninsula.

North Africa

Over the North African region, the MedCOF-23 climate outlook favored the lower tercile range for northern and central of Morocco, western Algeria and northeastern Egypt. For the rest of the domain, no preference for any climate defined categories was given.

In fact, the winter 2024-2025 was drier than normal over Morocco, the north and the east of Algeria and the east of Egypt. For the other anomalies in the domain, no prediction was given.

This indicates that the MedCOF-23 climate outlook for the winter season precipitation was able to predict part of the drier signal but was unable to predict the positive anomalies.

4 Users' perceptions of the MedCOF-23 outlook

Europe/RA VI:

No feedback from users was reported.

North Africa

No feedback was given from users.

Appendix A: Contributors to MEDCOF-24, Verification

- World Meteorological Organization

Europe and Middle East (RA VI)

- Climate Centres:

- WMO RA VI RCC Offenbach Node on Climate Monitoring, Deutscher Wetterdienst, Germany
- South East European Virtual Climate Change Center hosted by Republic Hydrometeorological Service of Serbia, Republic of Serbia

- National Meteorological and Hydrological Services:

- Agencia Estatal de Meteorología (AEMET), Spain
- Israeli Meteorological Service (IMS)
- others via SEECOF-31

North Africa (RA VI)

- Climate Centres:

- WMO RA I North African RCC Tunisia Node on Climate Monitoring, National Institute on Meteorology, Tunisia

- National Meteorological and Hydrological Services:

- National Institute of Meteorology, Tunisia

APPENDIX B: **Analysis and verification of the MedCOF-23 climate outlook for the winter season 2024/2025:**

National verification results are mainly given in the verification reports of SEECOF and PRESANORD. Only for those countries, which do not participate in any of these two RCOFs, the results are presented here in the following table, as agreed in the MedCOF Management Group.

This verification summary is based on the national reports and contributions of participants of MedCOF-24.

In brackets: probabilities in % (lower, middle, upper tercile range) for the country concerned, as stated by the MedCOF outlook.

Europe (RA VI)

Country	Seasonal temperature (DJF)		Seasonal precipitation (DJF)		High Impact Events
	Observed	**MedCOF-23 climate outlook for temperature**	**Observed**	**MedCOF-23 climate outlook for precipitation**	
France*	Mostly around normal, in the south above normal	Above normal (20/30/50)	Mostly normal or above normal, only locally below normal	No signal (33/33/33)	No events reported
Italy*	Above normal	North and central: Above normal (20/30/50) South: Above normal (10/30/60)	Mostly normal or above normal Locally below normal in the north	No signal (33/33/33)	No events reported
Lebanon *	Above normal	Above normal (10/30/60)	Below normal	Below normal (50/30/20)	No events reported

Country	Seasonal temperature (DJF)		Seasonal precipitation (DJF)		High Impact Events
	Observed	MedCOF-23 climate outlook for temperature	Observed	MedCOF-23 climate outlook for precipitation	
Portugal *	Above normal	Above normal (20/30/50)	Around normal	Below normal (50/30/20)	No events reported
Spain (1)	Above normal	Above normal (20/30/50)	Normal or above normal in western and central parts Below normal in the east	Mostly below normal (50/30/20) In the northeast no signal (33/33/33)	Based on the current data available, there were four warm episodes. The highest winter temperatures among the main was : 28.1°C (Murcia, 27 January). In relation to low temperatures, we can consider that there were three cold episodes based on the current data available, although none of them can be considered a cold wave. The lowest winter temperatures among the main stations were the following values: -11.2 °C (Molina de Aragón, 14 January), -9.7 °C (Salamanca/airport, 14 January), -9.6°C, (Teruel, 14 January). The highest daily rainfall recorded at main observatories were in winter: 56.1 mm (Pamplona/airport, 8 December), 52.9 mm (Málaga/airport,12 December), 45.8 mm (Vigo/airport, 18 December) and 43.4 mm (San Sebastián/Igueldo, 24 December), 96.7 mm (A Coruña/airport, 26 January), 58.8 mm (Albacete, 26 January) 47.6 mm (Alicante-Elche/airport, 5 January), and 75.7 mm (Santiago de Compostela/airport, 16 January), 68.2 mm (A Coruña, 24 February), 38.9 mm (Santiago de Compostela/airport 24 February), 39.3 mm (Málaga/airport, 28 February) and 38.4 mm (Vigo/airport, 21 February).
Syria *	Above normal	Above normal (10/30/60)	Below normal	Below normal (50/30/20)	No events reported

Note:

1 – Basic climatological period (1991-2020)

*Data base: ERA5 1991-2020 for temperature, GPCC 1981-2010 for precipitation

North Africa (RA I):

Country	Seasonal temperature (DJF)		Seasonal precipitation (DJF)		High impacts events
	Observed	MedCOF-23 climate outlook for temperature	Observed	MedCOF-23 climate outlook for precipitation	
Algeria*	Below to near normal to normal in the south Above normal elsewhere	Above normal (20/30/50)	Above normal in the south Below normal in the north and the center	Below normal in the west (50/30/20) No clear signal elsewhere (33/ 33/33)	No comment
Egypt*	Above normal	Above normal	Above normal in the west Below normal in the east	Below normal over the east (50/30/20) No clear signal elsewhere (33/ 33/33)	No comment
Libya (1)	Above normal	Above normal	Mostly below normal	No clear signal (33/ 33/33)	Extreme drought
Morocco*	Below normal over the center Above normal elsewhere	Above normal	Below normal	Below normal over the north and the center (50/30/20/) No clear signal elsewhere (33/ 33/33)	No comment
Tunisia (1)	Above normal	Above normal	Above normal over the center, the south and the eastern coast Below normal elsewhere	No clear signal (33/ 33/33)	No comment

Note:

(1) Basic climatological period (1991-2020)

* Data source: The National Climatic Data Center (NCDC)

References:

MedCOF-23 Outlook: http://medcof.aemet.es/images/doc_events/medcof23/step3/docStep3/Consensus-Statement-MedCOF23_final.pdf

WMO RA I RCC Node on Climate Monitoring Website with monitoring results: https://www.meteo.tn/en/climate-monitoring-watch

WMO RA VI RCC Node-CM Website with monitoring results: http://www.dwd.de/rcc-cm

MedCOF Online Forum: http://medcoforum.aemet.es/index.php

SEECOF Online Forum: http://www.seevccc.rs/forum/

PRESANORD: https://rcc.acmad.org/presanord.php

Météo France climate monitoring products: http://seasonal.meteo.fr

ECMWF ERA5 reanalysis: https://www.ecmwf.int/en/forecasts/dataset/ecmwf-reanalysis-v5

NOAA-NCEP-CPC northern hemisphere teleconnection patterns: http://www.cpc.ncep.noaa.gov/data/teledoc/telecontents.shtml

ECA&D, E-OBS: https://www.ecad.eu

GPCC: http://gpcc.dwd.de