



MEDITERRANEAN CLIMATE OUTLOOK FORUM MEDCOF-20 Online Forum

MONITORING SUMMARY MEDCOF-20

for April 2023

Final version

Last update: 29 May 2023

Compiled by

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The following MedCOF monitoring summary is based on

- Monitoring information from RA I NA RCC and RA VI RCC Node-CM
- Contribution from Météo France (draft of LRF bulletin)
- Further information from various sources (BOM, NOAA-CPC)
- SEECOF-29 Monitoring document

1. Oceanic Analysis

Significant change in the ocean state is found across all basins since last winter.

Over the Pacific Ocean: La Niña:

- In the equatorial area, the traces of "La Niña" are dissipated. An intense warm anomaly can be found near the coasts of South America for April 2023 and has further developed since last month (Fig. 1.1). In the other parts of the equatorial Pacific, sea surface temperature (SST) was close to normal. In summary, the current ENSO situation is neutral. The Nino3.4 index from Mercator Ocean PSYV4R2 analysis is close to $+0.2^{\circ}\text{C}$ for April 2023 (Fig. 1.2), according to NOAA CPC $+0.4^{\circ}\text{C}$.
- In the subsurface, too, cold anomalies in the equatorial Pacific have disappeared in April, whereas warm anomalies have expanded to the east. This might be a beginning of an El Niño development (Fig. 1.3).
- In the North Pacific, a PDO- (negative Pacific decadal oscillation) pattern still exists.
- For more details see:
 - <http://seasonal.meteo.fr/slides/BulTech> (password protected)
 - https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/enso_disc.shtml
 - <http://www.bom.gov.au/climate/enso/index.shtml#tabs=Pacific-Ocean>
 - PDO:
 - <https://www.ncdc.noaa.gov/teleconnections/pdo/>
 - <https://stateoftheocean.osmc.noaa.gov/atm/pdo.php>

Over the Maritime Continent and the Indian Ocean:

- Anomalies over the tropical Indian Ocean are quite weak.
- Indian Ocean Dipole (IOD) presently close to neutral, weakly positive. DMI monthly index issued from Mercator Ocean analysis: 0.3°C
- A cooling took place in the eastern part of the basin close to Australia. This can be the beginning of a positive IOD phase.

Over the North Atlantic:

- A cooling has occurred in the western parts of the North Atlantic, whereas a warm anomaly close to Africa and Iberia has increased.
- Northwest tropical and south tropical parts are close to neutrality.
- A strong warm anomaly is present in the east of the north tropical basin.
- NAT monthly index issued from Mercator Ocean analysis: 1.1°C

Over the Mediterranean and Black Sea:

- The western Mediterranean was slightly warmer than normal
- SST in the central and eastern Mediterranean was close to normal.
- The Black Sea was slightly warmer than normal.

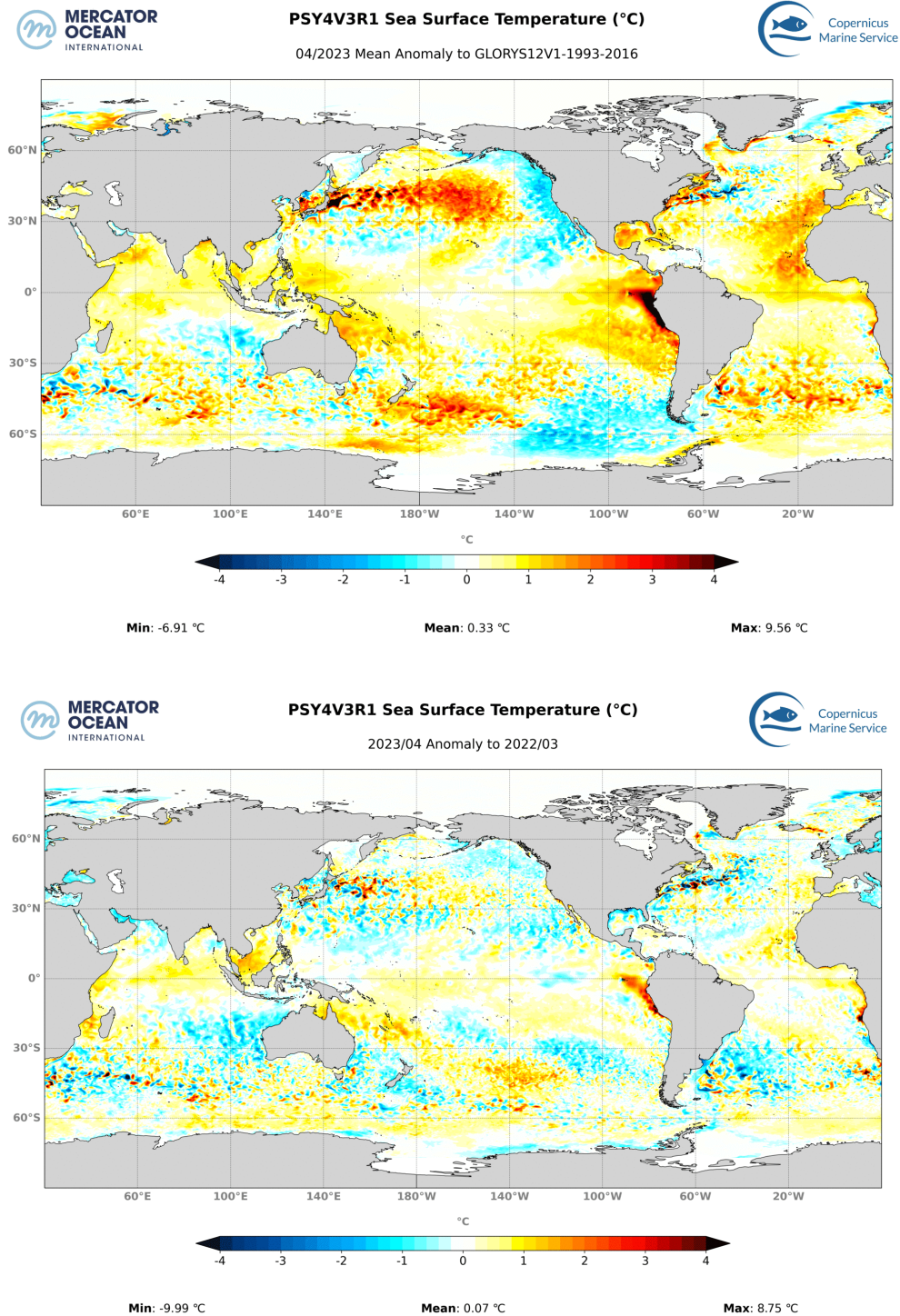


Figure 1.1: Sea surface temperature anomalies for April 2023, 1992-2013 reference (upper map) and anomaly differences April minus March 2023 (anomaly trend). Source: Météo France

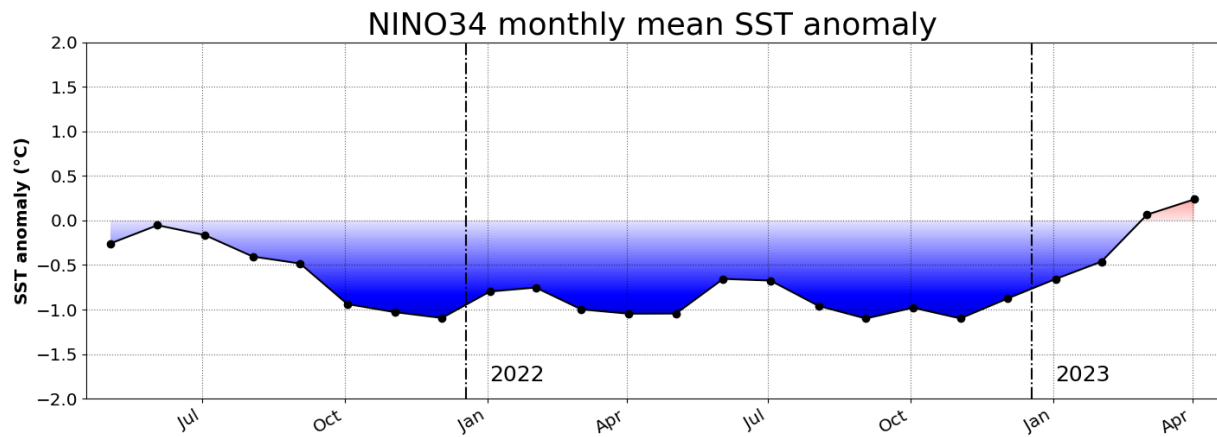


Figure 1.2: Evolution of sea surface temperature anomalies in the Niño3.4 box, 1992-2013 reference. Data from Mercator Ocean, source: Météo France.

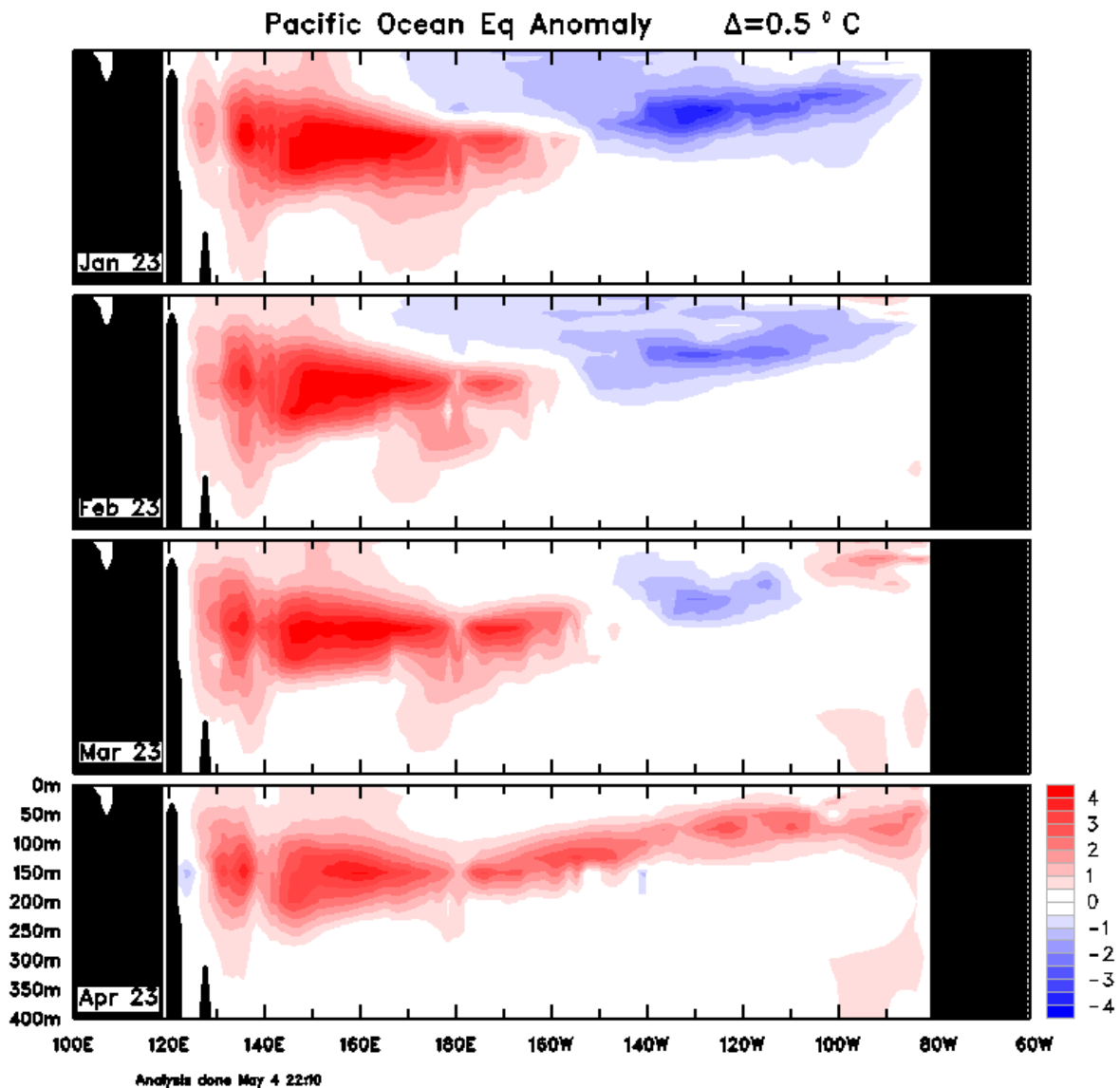


Figure 1.3: Monthly Pacific Ocean temperature anomalies in the sub-surface January-April 2023, 1900-1992 reference (Climatology after [Levitus World Ocean Atlas](http://www.bom.gov.au/climate/enso/index.shtml#tabs=Sea-sub%E2%80%93surface)). Source: BOM, <http://www.bom.gov.au/climate/enso/index.shtml#tabs=Sea-sub%E2%80%93surface>

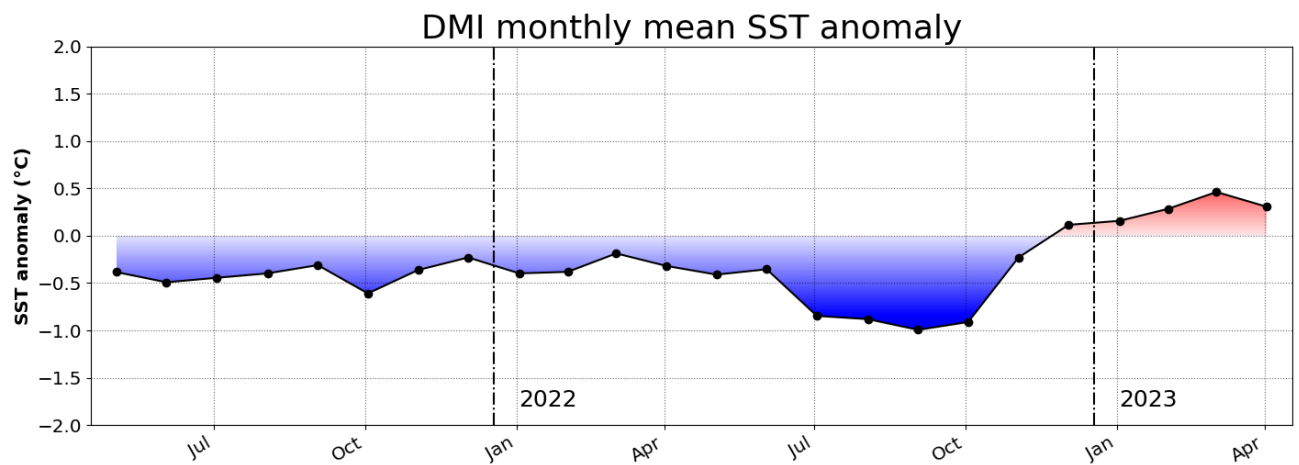


Figure 1.4: Evolution of the DMI monthly index (Indian Ocean Dipole), 1992-2013 reference. Data from Mercator Ocean, source: Météo France.

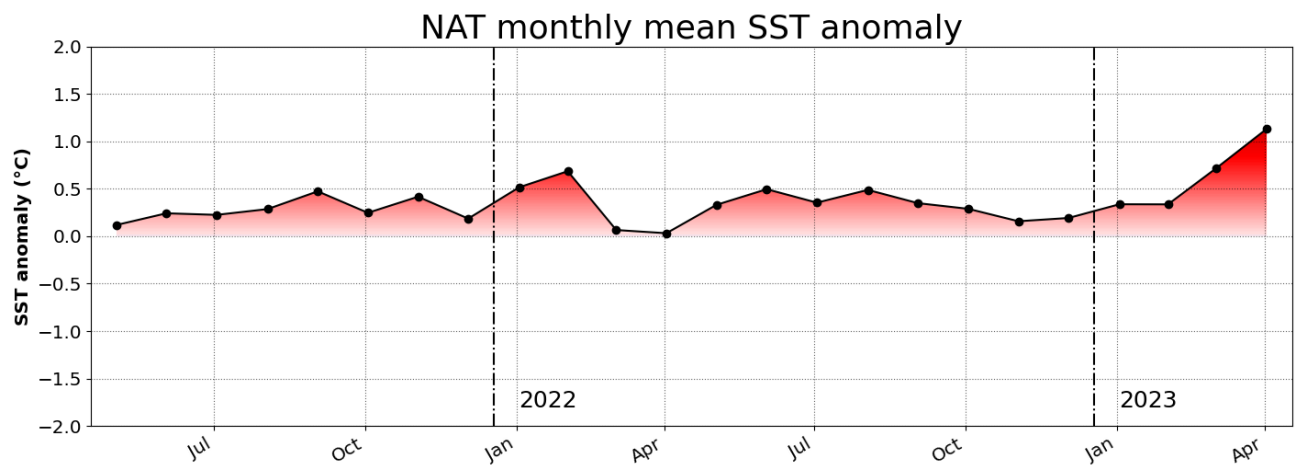


Figure 1.5: Evolution of the NAT monthly index (North Atlantic temperature), 1992-2013 reference. Data from Mercator Ocean, source: Météo France.

2. Atmospheric Circulation Analysis

Velocity Potential Anomaly field in the high troposphere (fig. 2.1a – insight into Hadley-Walker circulation anomalies), Southern Oscillation Index (SOI) and Madden-Julian Oscillation (MJO) (fig. 2.1.b)

- Upward motion anomaly over the western and central tropical Pacific and close to Australia and the maritime continent, downward over both the eastern tropical Pacific and the Indian Ocean. While the upward anomaly over the central tropical Pacific and the strong downward anomaly over the Indian Ocean point to El Niño conditions, the downward anomaly over the eastern Pacific is rather typical for La Niña and does not correspond to the ocean warm anomaly in that region. This means that the atmosphere is still in a transitional state between La Niña and El Niño, and an El Niño atmospheric circulation has not fully developed yet.
- SOI values were close to zero for both March and April 2023 (+0.2 for both months according to NOAA CPC)
 - <https://www.ncdc.noaa.gov/teleconnections/enso/soi>
 - <http://www.bom.gov.au/climate/enso/index.shtml#tabs=Pacific-Ocean&pacific=SOI>
- The downward anomaly over the Indian Ocean together with a weak upward anomaly over Africa implies also a development of a positive IOD phase.

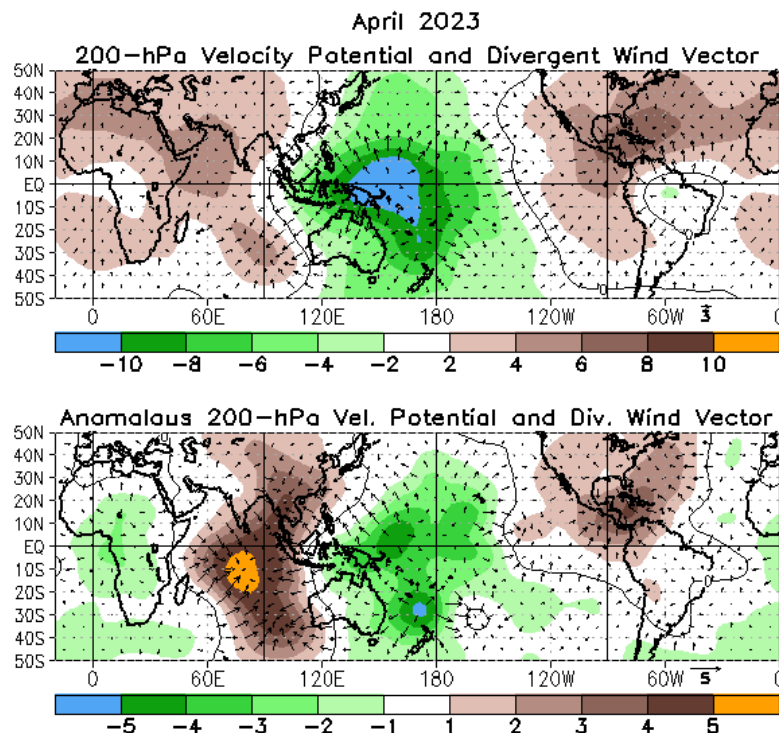


Figure 2.1.a: Velocity Potential monthly mean (upper map) and anomalies (lower map) at 200 hPa and associated divergent circulation mean and anomaly for April 2023. Green (brown) indicates a divergence-upward motion (anomaly) (convergence-downward motion anomaly). <http://www.cpc.ncep.noaa.gov/products/CDB/Tropics/figt24.shtml>

- MJO was active during April 2023, but not particularly strong. In early May 2023, a strong MJO pulse lied over the Maritime Continent and is forecast to move into the western Pacific region in the next few days and weaken marginally. An MJO pulse over the western Pacific would likely weaken trade winds across the equatorial Pacific Ocean. This, in turn, would result in further warming of the equatorial Pacific Ocean and hence drive further development towards El Niño. At the end of May, the MJO is forecast to be strong over eastern parts of the Pacific and might induce an upward circulation there.

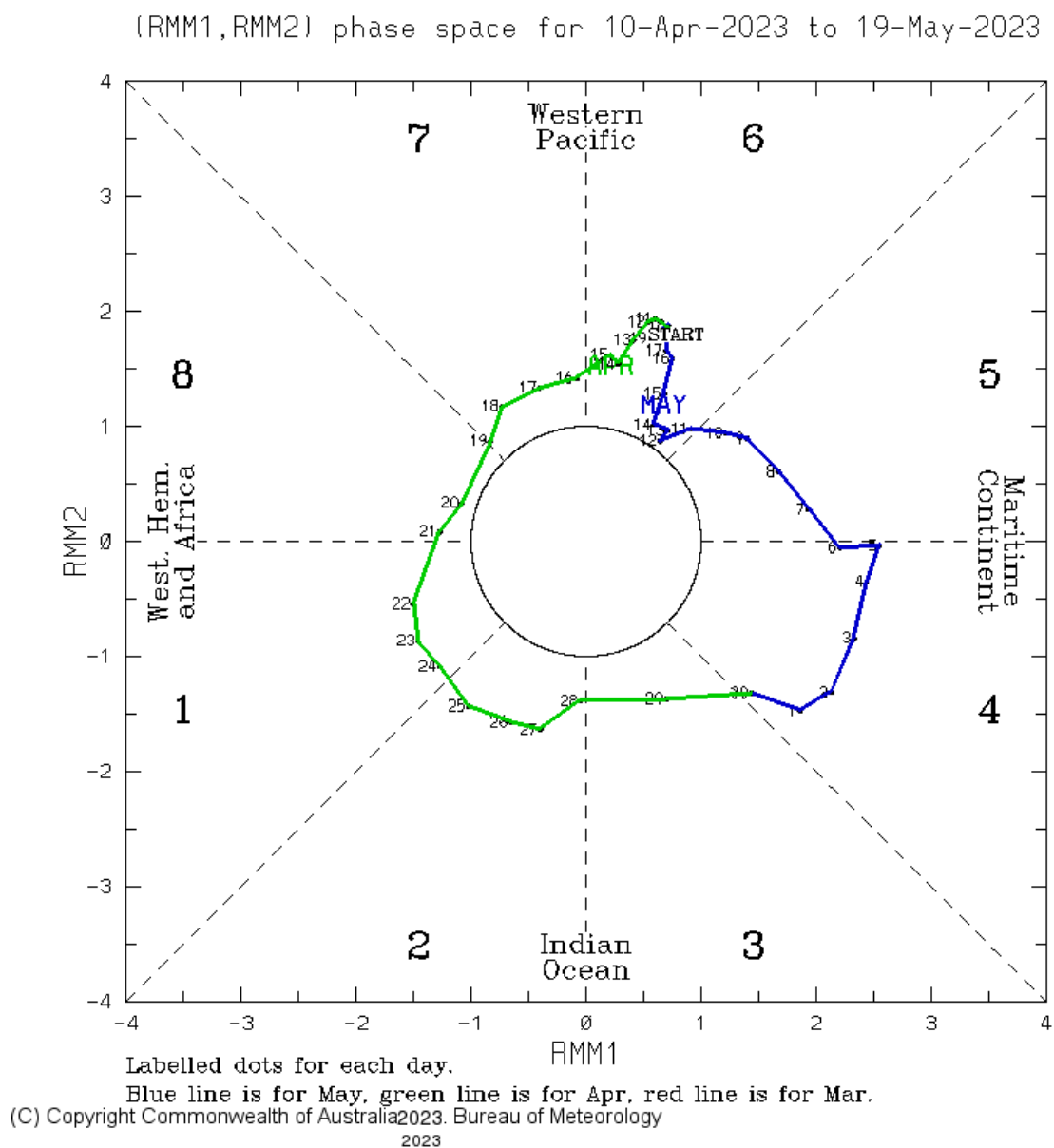


Figure 2.1.b: indices MJO

<http://www.bom.gov.au/climate/mjo/>

Stream Function anomalies in the high troposphere (fig. 2.2 – insight into teleconnection patterns tropically forced):

A chance of presently weak teleconnection might be over the central Pacific.

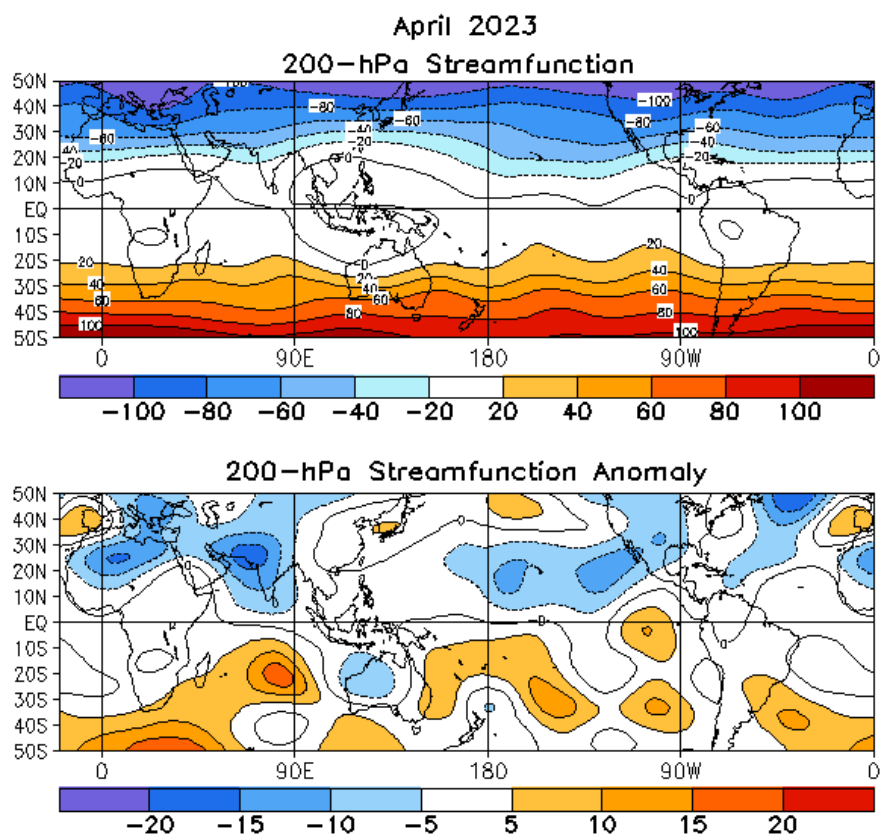


Figure 2.2: Stream Function and anomalies at 200 hPa in April 2023.

<http://www.cpc.ncep.noaa.gov/products/CDB/Tropics/figt22.shtml>

Geopotential height at 500 hPa (fig. 2.3 – insight into mid-latitude general circulation):

- Weak negative PNA pattern in April 2023 (PNA index -0.42 according to NOAA, <https://www.ncdc.noaa.gov/teleconnections/pna/>).
- From North America a large wave propagated over the North Atlantic to Europe and Asia, inducing a pronounced meridional circulation with NAO-/AO-.
- Most dominant patterns for Europe were NAO- and Scandinavian blocking.
- Particularly over the central Mediterranean region negative geopotential anomalies (large trough on monthly average), but high geopotential over Iberia.

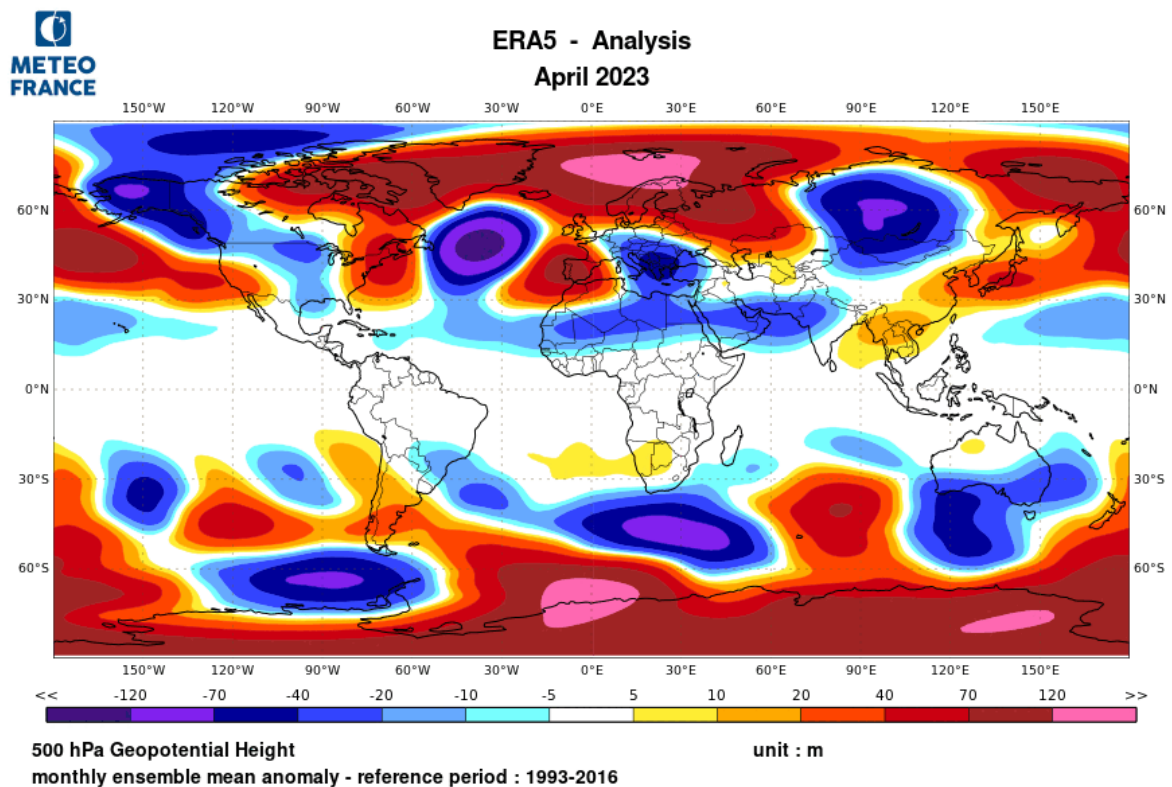


Figure 2.3: Anomalies of Geopotential height at 500hPa (ERA5 data),

Source: Météo-France, <http://seasonal.meteo.fr/content/suivi-clim-cartes-ref93-16>

Sea level pressure and circulation types relevant for the domain

- Outstanding low pressure area over the North Atlantic.
- Intense high-pressure over Scandinavia/Northern Europe, resulting in NAO-, Atlantic Low and SCAND+ blocking patterns.
- NAO-/AO- were especially intense in the second half of April and early May 2023. In mid-May, change to NAO+/AO+, but forecasts show further development to neutral conditions until beginning of June.
- Mostly anticyclonic over Iberia including Balerares.
- Over the central and eastern parts of the MedCOF region mostly cyclonic influence.
- Cold airflow from northeast affected particularly the central Mediterranean region.

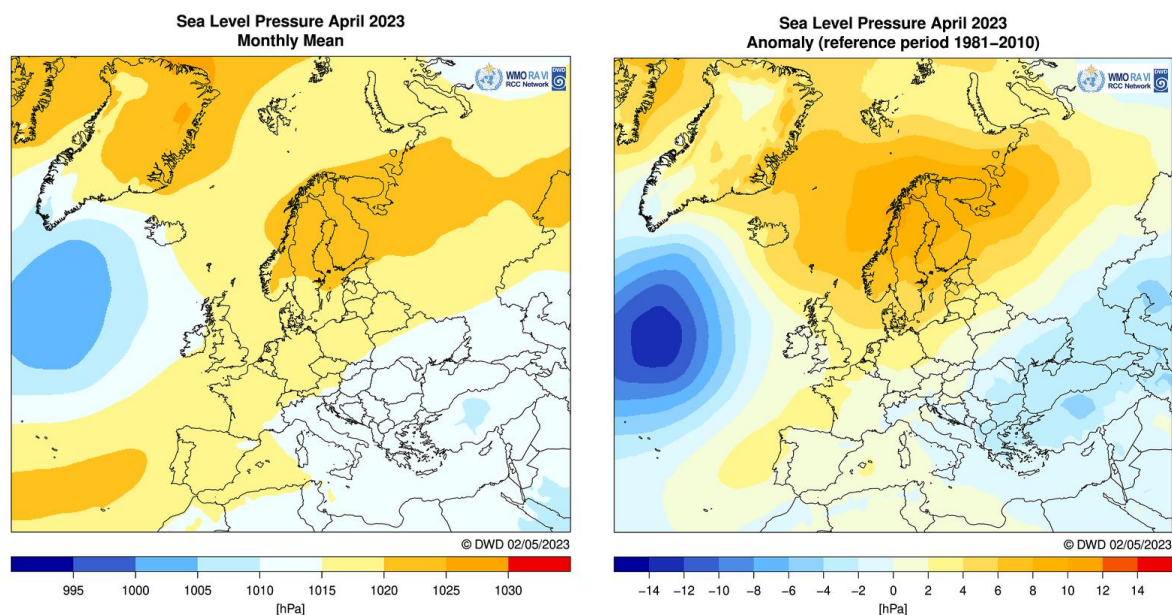
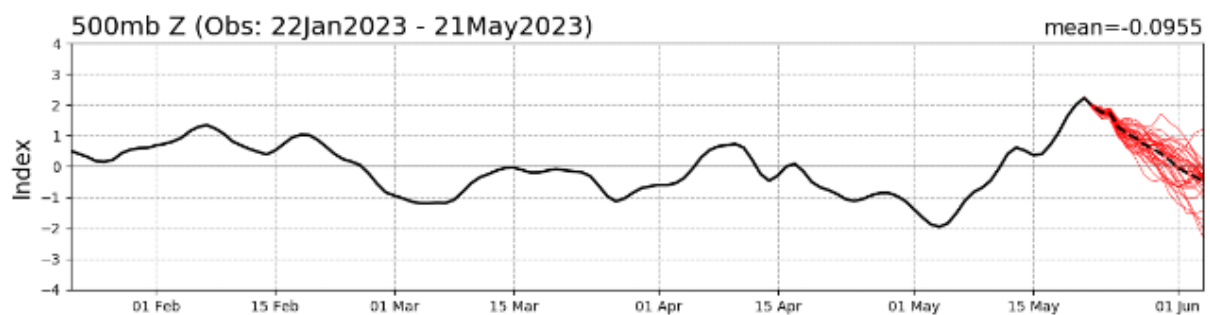


Figure 2.4: Mean sea level pressure over the North Atlantic, Europe and North Africa and 1981-2010 anomalies for April 2023. Source: DWD, https://www.dwd.de/DE/leistungen/rcccm/int/rcccm_int_ppp.html?nn=490674

MONTH	NAO	EA	WP	EP-NP	PNA	TNH	EATL/WRUS	SCAND	POLEUR
APR 23	-0.8	-0.2	-0.2	-0.7	-0.7	---	-0.2	1.3	-0.7
MAR 23	-1.6	0.5	0.6	0.4	-1.9	---	2.0	-2.1	0.9
FEB 23	0.6	-0.8	2.5	-0.5	-1.2	1.7	1.5	-0.7	-0.9
JAN 23	0.9	-1.0	2.0	1.4	-0.4	-0.4	-0.6	0.7	-1.1
DEC 22	-0.2	0.0	0.0	---	-1.0	-0.7	-1.2	0.9	-1.2
NOV 22	0.6	1.2	0.3	0.4	-0.7	---	0.8	1.6	-0.3
OCT 22	-0.3	0.2	1.0	-0.1	0.3	---	-0.7	-0.2	1.1
SEP 22	-1.4	-1.2	1.8	-0.8	0.1	---	-1.1	0.5	-0.6
AUG 22	1.8	1.4	-0.4	-1.1	0.8	---	-3.4	1.0	-0.3
JUL 22	-0.1	1.4	-0.5	-1.6	2.0	---	-1.2	-0.5	0.0
JUN 22	0.2	0.5	-1.7	0.0	-0.2	---	-0.5	0.0	-1.3
MAY 22	0.7	0.2	-1.4	-0.3	-0.6	---	0.9	-1.5	-0.3
APR 22	-0.5	-0.9	0.3	-0.7	-1.0	---	-0.1	-0.7	-1.2

Table 1: Evolution of the main atmospheric indices for the Northern Hemisphere for the last months:
<http://www.cpc.ncep.noaa.gov/products/CDB/Extratropics/table3.shtml>

NAO Index: Observed & GEFS Forecasts



AO Index: Observed & GEFS Forecasts

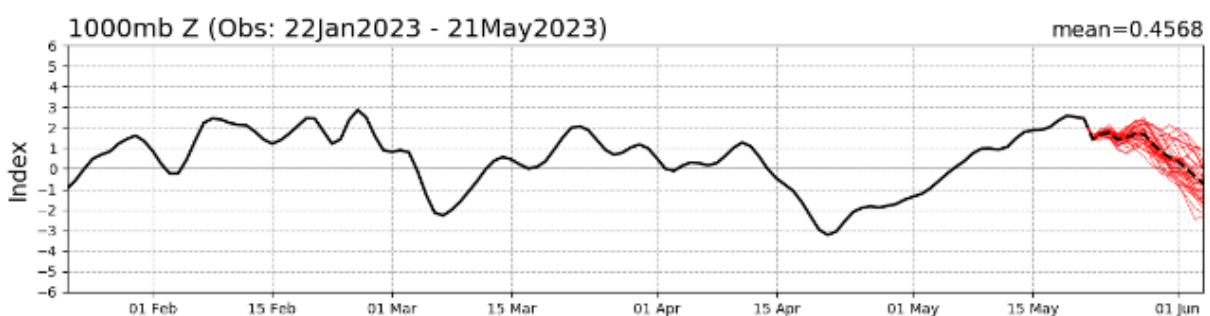


Figure 2.5: North Atlantic Oscillation (NAO) and Arctic Oscillation (AO) indices. Source: NOAA CPC,
https://www.cpc.ncep.noaa.gov/products/precip/CWlink/daily_ao_index/teleconnections.shtml

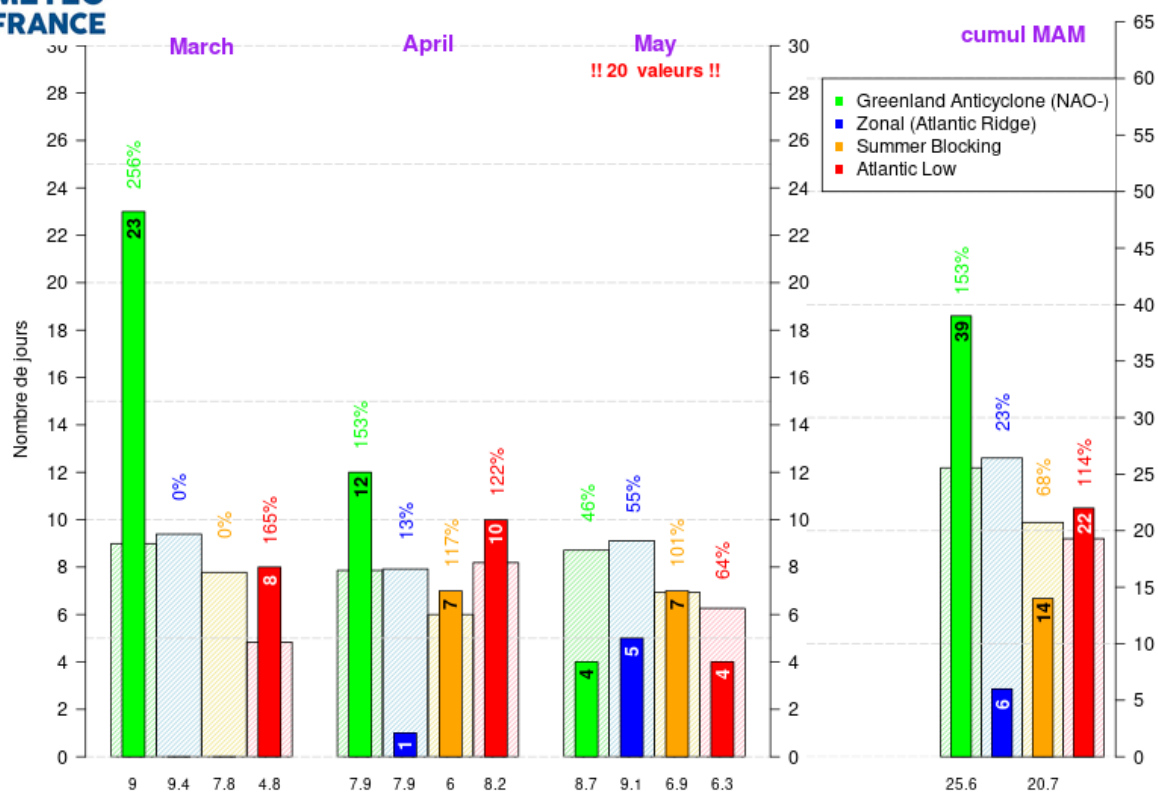


Figure 2.6: Distribution of weather types of Météo France classification (summer regime) for March-May 2023.

Source: Météo France, <http://seasonal.meteo.fr/content/suivi-clim-regimes-trim>

3. Precipitation

Europe/RA VI domain

Monthly precipitation totals in April 2023 ranged from below 10 mm in much of Spain, eastern Jordan and parts of Syria to locally above 150 mm especially in Moldova and eastern Türkiye, according to GPCC analysis.

Monthly precipitation in April 2023 was above normal (1991-2020 reference) in most of the eastern parts of the MedCOF domain with particularly high anomalies around the Black Sea and southern Italy, exceeding the 90th percentile. Also, Israel and Jordan received high monthly totals, mainly due to a heavy rain event. Northern parts of France, too, noted above-normal rain. Precipitation was below normal particularly in the southwestern parts of the domain (Iberia, western Mediterranean, southern France and northern Italy), but also in places along the west Balkan coast, in Hungary, northern Syria, and Azerbaijan. Precipitation was extremely low in eastern parts of Portugal, much of Spain and southern France, where drought conditions occurred, with less than 20% of normal and below the 10th percentile, partly almost no precipitation at all.

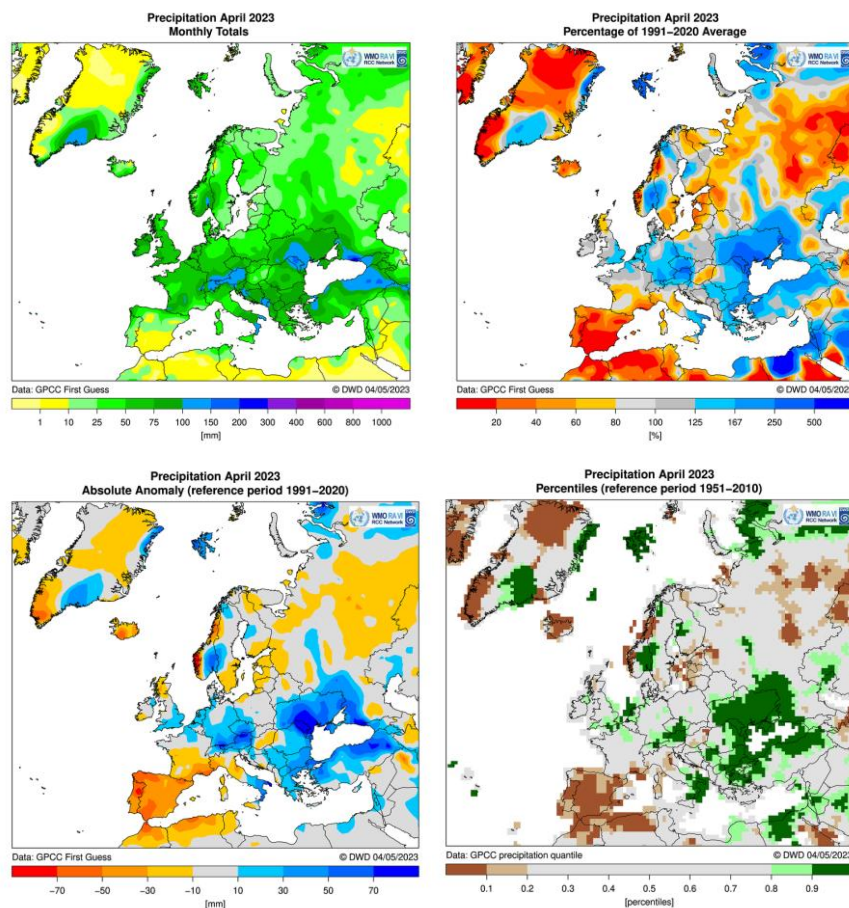


Figure 3a: Monthly precipitation sum (upper left), percentage of normal (upper right), absolute anomalies (lower left), and percentiles (lower right) for April 2023 (1991-2020 reference for percentages and anomalies, 1951-2010 for percentiles) in Europe/RAVI. Data from GPCC (First Guess version). Source: DWD, http://www.dwd.de/DE/leistungen/rccm/int/rccm_int_rrr.html?nn=16102

Precipitation in North Africa

The majority of the North African domain was very dry in April 2023. The precipitations were less than 20 mm, except some parts of the northern regions of Tunisia, Algeria and of Morocco, which received nearly 44 mm (Fig.3.2, left map).

Comparing to the 1991-2020 reference period (Fig.3.2, right map), the precipitation anomalies during April 2023 were below normal over most parts of the domain except for the south of Egypt, which was slightly above normal.

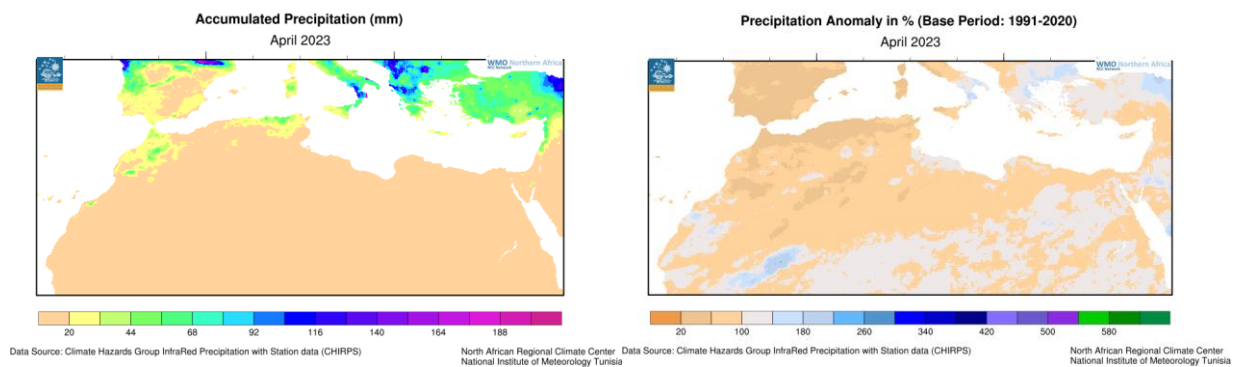


Fig.3.2: Left: Total precipitation; Right: Relative anomalies of precipitation (percentage of normal) in the RAI-NA Region (North Africa). Data from NCDC (National Climate Data Centre NOAA – reference 1991-2020). Source: INM Tunisia, <https://www.meteo.tn/en/climate-monitoring-watch>

Regarding to the tercile map (Fig.3.3), the precipitations were below normal in most parts of the North African region, and above normal over the south of Egypt.

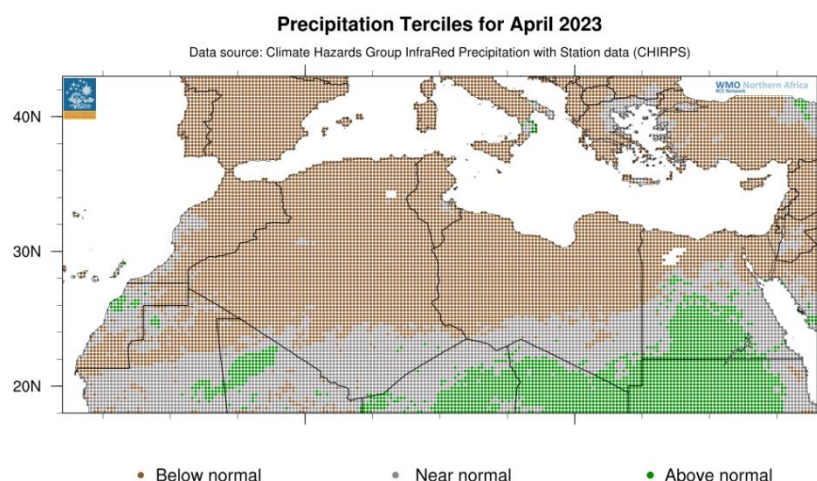


Fig.3.3: Precipitation terciles for April 2023 in the RAI-NA Region (North Africa). Source: INM Tunisia

4. Temperature

Europe/RA VI domain

Averaged over all RA VI land areas, the temperature anomaly in April 2023 was $+0.8^{\circ}\text{C}$ (1991-2020 reference, Fig. 4.1). This was the 5th warmest April since at least 1981 and the warmest since 2019. Much of that anomaly has been contributed by the warmth over the Iberian Peninsula; there it was the warmest April on record. The warming rate of RA VI was $+2.1^{\circ}\text{C}$ over the period 1981-2023 (43 years); this is equivalent to $+0.49^{\circ}\text{C}$ per decade.

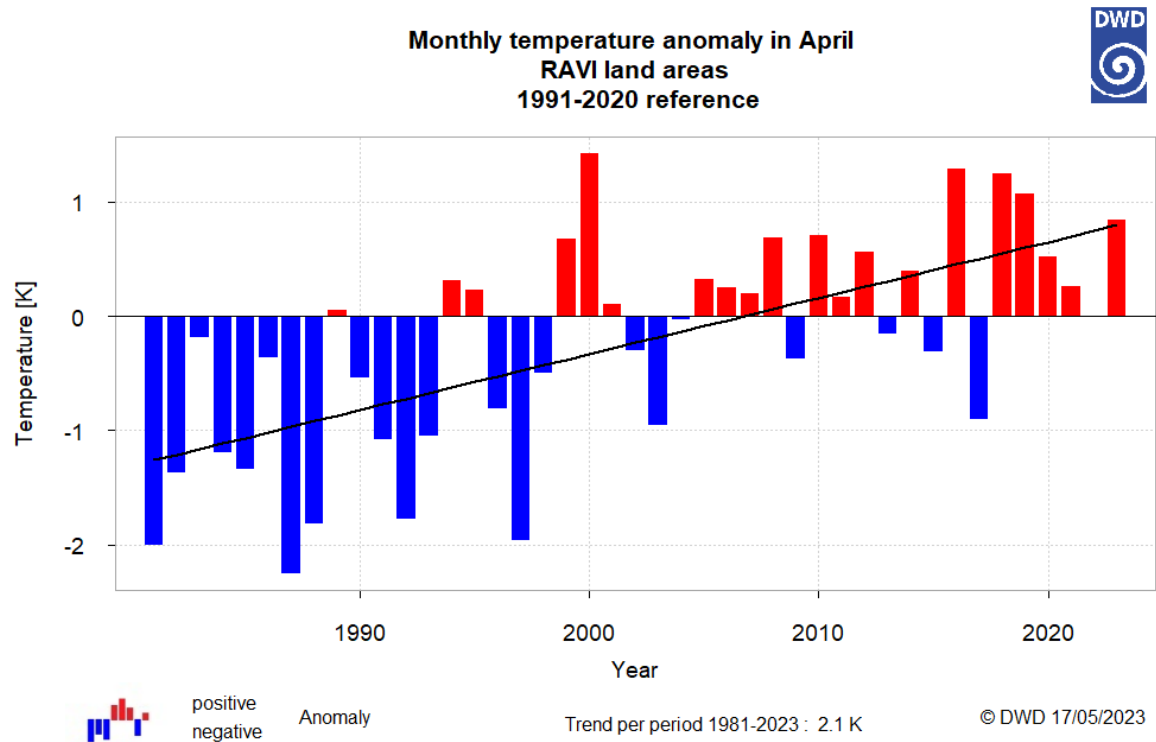


Fig. 4.1: Monthly mean temperature anomaly time series for the years 1981-2023 with trend line, averaged over all RA VI land areas. Source: DWD

Monthly mean temperatures in the MedCOF RA VI domain in April 2023 ranged from below -5°C in the Alps to above 20°C in southern Spain, southern Israel, southeastern Jordan and eastern Syria (Fig. 4.2). Most lowland areas had monthly averages of $10\text{--}15^{\circ}\text{C}$, only some parts in the north and in higher altitudes had lower values. Over southern Iberia, the Middle East, and most of the Mediterranean sea surface, the air was warmer ($15\text{--}20^{\circ}\text{C}$).

Compared to the 1991–2020 normal, particularly Iberia was warmer than normal with anomalies up to above $+4^{\circ}\text{C}$ in central Spain. Southwestern France and eastern Azerbaijan were at least 1°C warmer than normal. On the other hand, northeastern France, northeastern Italy, much of the Balkans, Hungary, Romania, Moldova and southeastern Ukraine were mostly $1\text{--}2^{\circ}\text{C}$ colder than normal, locally more. The rest of the domain had mainly around-normal temperatures ($\pm 1^{\circ}\text{C}$ anomalies), places in western Türkiye were more than 1°C colder than normal.

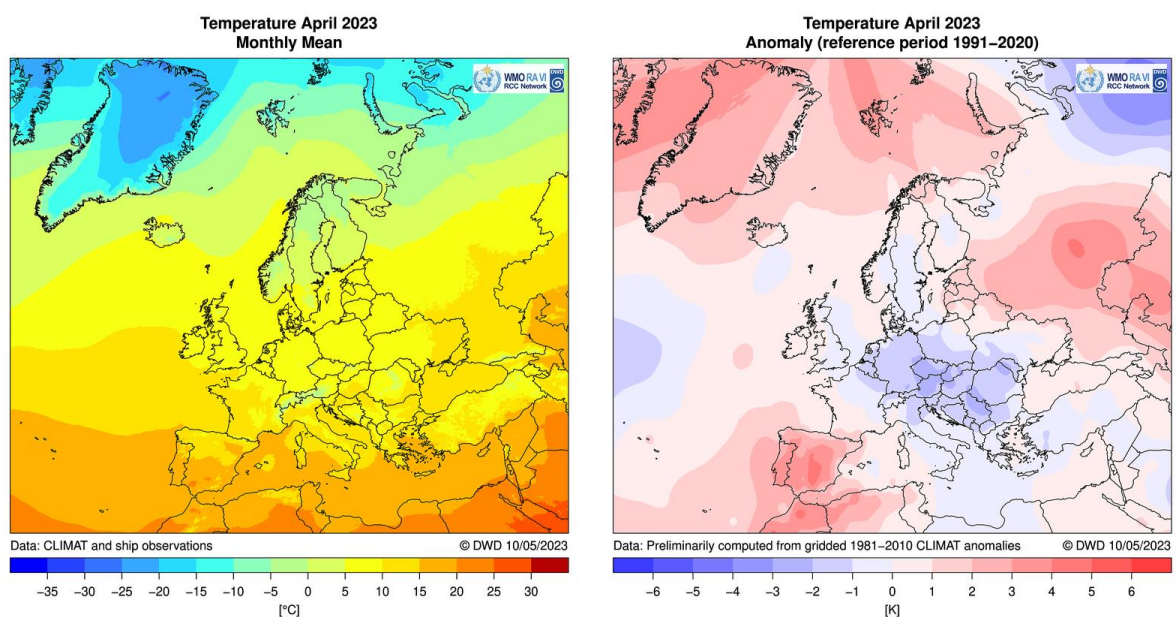


Figure 4.2: Mean temperature (left) and anomalies (1991–2020 reference, right) in $^{\circ}\text{C}$ in the RA VI Region (Europe) interpolated from CLIMAT station data, for April 2023. Source: DWD, http://www.dwd.de/DE/leistungen/rcccm/int/rcccm_int_ttt.html?nn=490674.

Temperature in North Africa

The graph in Fig. 4.3 shows the monthly trend of air temperature anomaly of April in degrees Celsius since 1979 through 2023. For each year, the positive anomaly is indicated by the red vertical bars and the negative anomaly is indicated by the blue vertical bars. The black line tracks the changes in the trend over time.

April 2023 ended with an excess of $+0.5^{\circ}\text{C}$ of the land mean temperature over the North African domain. The warming rate was about 0.36°C per decade.

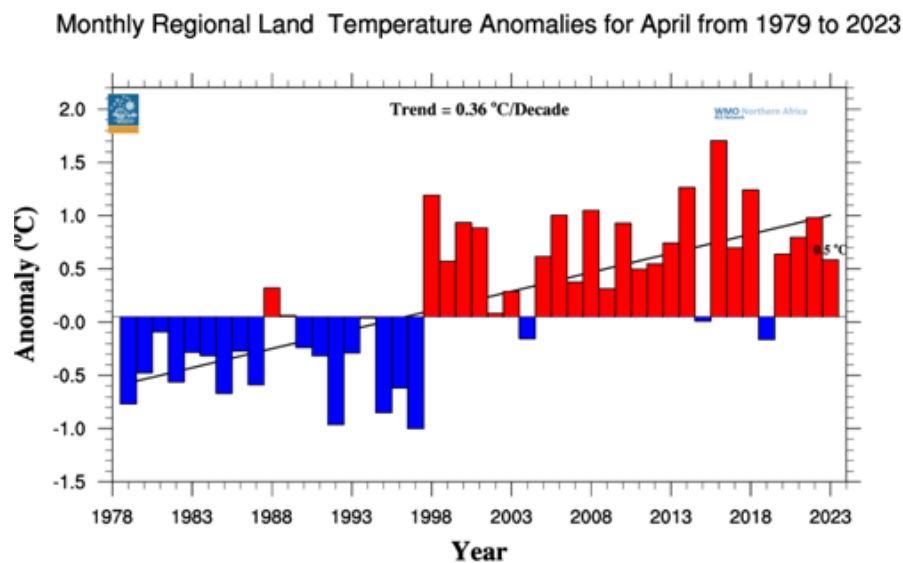


Figure 4.3: Monthly mean temperature anomaly time series 1979-2023 with trend line for land areas over the North African domain. Source: INM

The monthly mean temperature in April 2023 (Fig. 4.4) mostly ranged from 12°C to 28°C , in small parts reaching 6°C , especially in the center of Morocco and the north of Algeria. In some parts of southern Algeria, the eastern region of Libya, the mean temperature was above 28°C and locally in southern Egypt even 30°C .

Compared to the 1991-2020 reference, temperature anomalies were above normal over Tunisia, northern Algeria, east of Libya, north of Egypt and mostly in Morocco. They were mostly in a range between $+1$ and $+3^{\circ}\text{C}$ and even $+4^{\circ}\text{C}$ locally in northern Morocco. Over the rest of the domain, temperature anomalies were below normal or near normal, mostly ranging between -1 and -2°C .

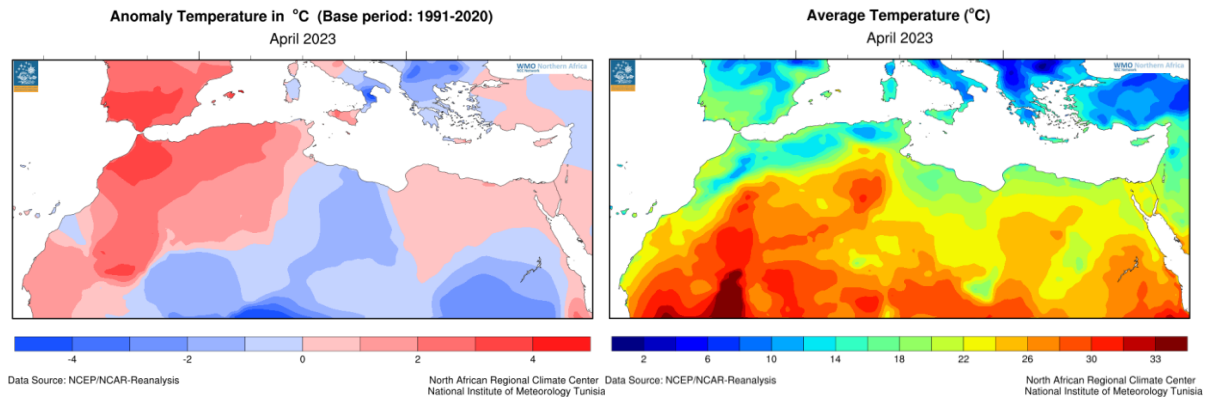


Fig. 4.4: Left: Mean temperature; Right: Absolute anomalies of temperature in the RAI-NA Region (North Africa).
Data from NCDC (National Climate Data Centre NOAA – reference 1991-2020), Source: INM,

<https://www.meteo.tn/en/climate-monitoring-watch>

Regarding to the tercile map, the temperature anomalies were above normal over Tunisia, Morocco, north and center of Algeria, northern and south eastern parts of Egypt. Normal to below normal over Libya, the south of Algeria, the center and the south of Egypt.

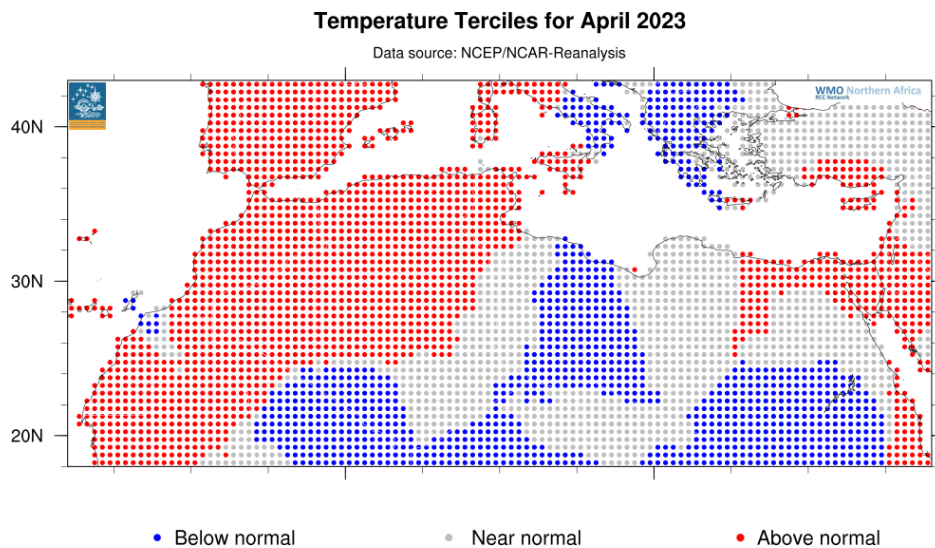


Fig. 4.5: Temperature terciles for April 2023 in the RAI-NA Region (North Africa).
Data from NCDC (National Climate Data Centre NOAA – reference 1991-2020). Source: INM

5. Soil moisture

Soil moisture is not only important for agrometeorology, but also for climate diagnostics. In case of long-lasting anticyclonic periods, a dry soil may amplify positive temperature anomalies (and the risk of heat waves) due to missing cooling by less evaporation. It has also impact on precipitation because less evaporation causes a lower water vapour content in the atmosphere and hence less precipitation (which dries out the soils further).

Europe/RA VI domain

In April 2023, soils (near surface) were much drier than normal in the drought-affected areas of Iberia, southern France, northern Italy and the western Mediterranean islands. The rest of the domain was mostly wetter than normal, except for Azerbaijan and elsewhere in places.

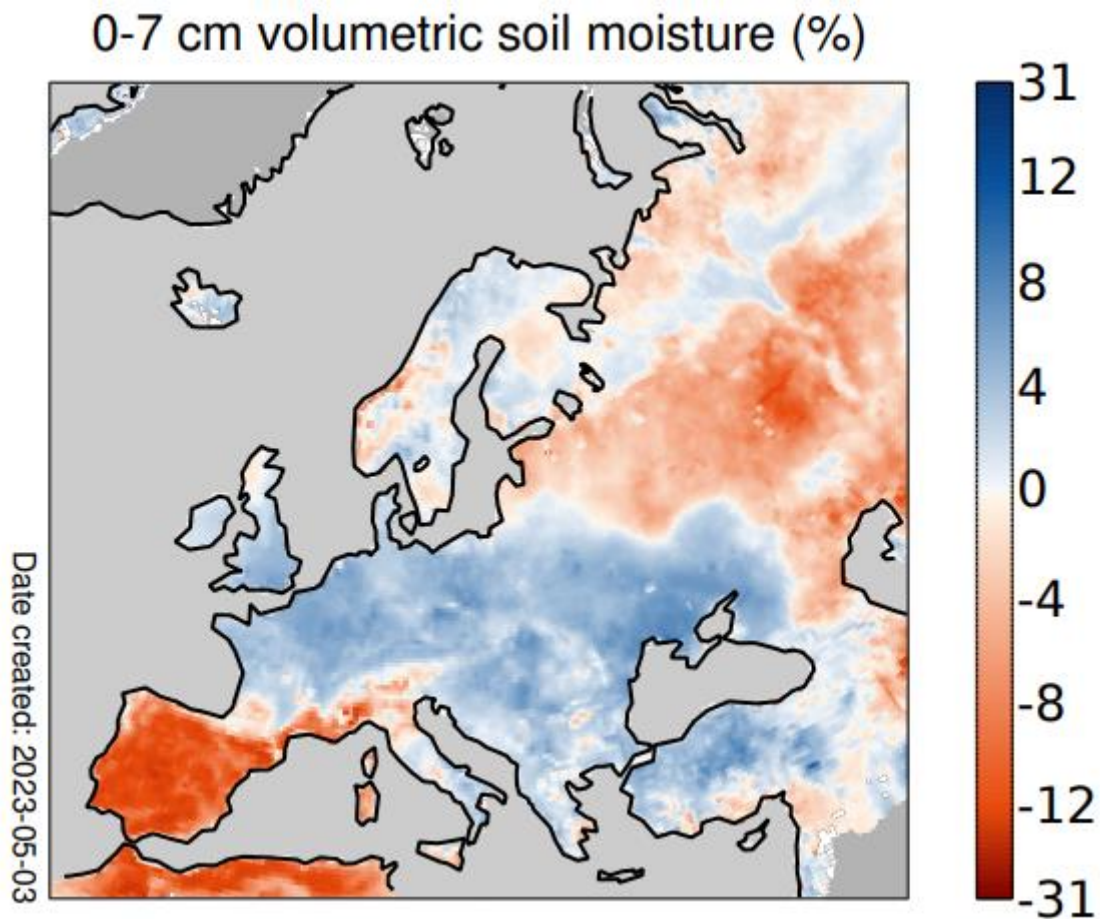


Fig. 5.1: Anomalies of soil moisture in Europe in % of the 1991-2020 normal in a depth layer of 0-7 cm for April 2023. Data from ERA5 reanalysis. Source: Copernicus, <https://climate.copernicus.eu/precipitation-relative-humidity-and-soil-moisture-april-2023>

In the first decade of May, soil moisture was still well below normal in most of Iberia, southeastern France and northwestern Italy including Sardinia Island, but also in Armenia, Azerbaijan, and easternmost Türkiye. In most of the rest of the domain, soil moisture decreased from above-normal to near normal values, except for some parts, like in the Ukraine and southern Italy.

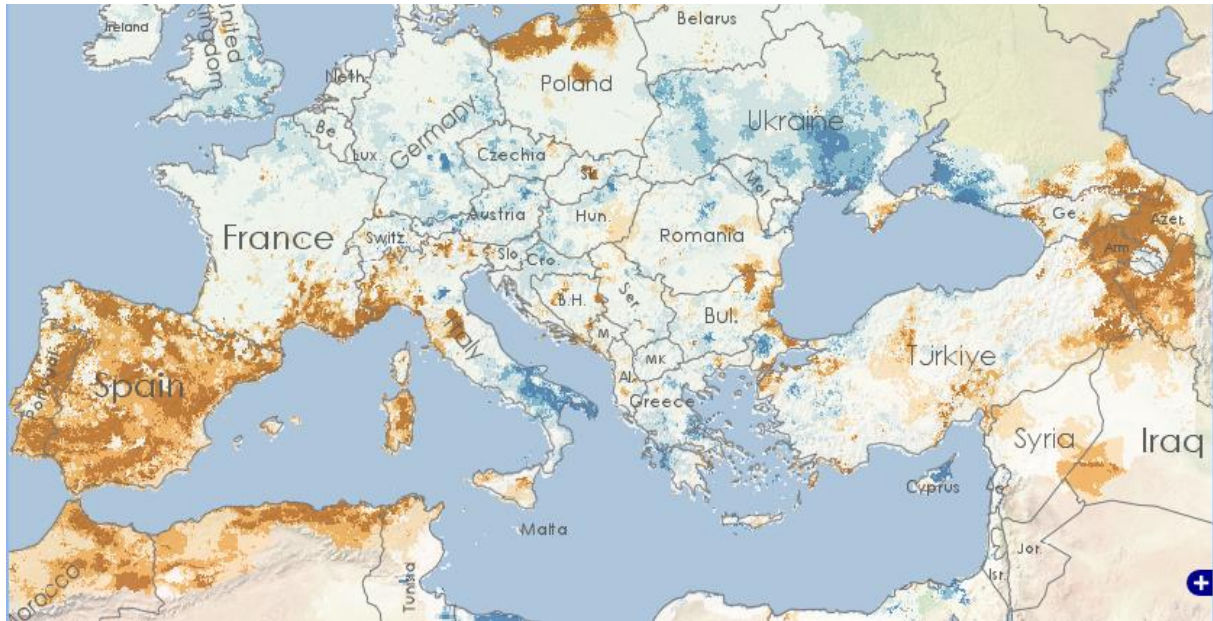


Fig. 5.2: Soil Moisture Index (SMI) anomaly for the first ten-day period of May 2023, 1995-2022 reference. Source: <https://edo.jrc.ec.europa.eu/edov2/php/index.php?id=1111>

6. Significant Events in April 2023 in the MedCOF region

Heat waves

The warm spell, which occurred particularly in **Spain** in March 2023, continued also in April. The station in Murcia (southeastern Spain) registered a minimum of 20.0 °C for the first time in April since the beginning of the series in 1984. This means it was a tropical night the first time in April in this place, and this was on 1 April, very early in the year.

A new historical record of daily maximum temperature in April was set at the Málaga-Airport station in southern Spain on 10 April 2023 with a reading of 33.7 °C (beating the old record of 33.1 °C on 17 April 2022). This was exceeded later in the month on 29 April with 34.3 °C.

Generally, the peak of this unusual heat was near the end of the month. Especially on 25–28 April 2023, daily maxima exceeded 35 °C in several places in Iberia, and multiple new local April heat records were reported. The highest value in Spain was 38.8 °C in Cordoba, in **Portugal** 36.9 °C in Mora, both on 27 April. These were also new April records for the entire mainland of both Spain and Portugal, and the peak in Spain was preliminarily also a new April record for the highest temperature in whole Europe. Even Madrid Retiro Station saw a new local April record that day at 30.5 °C, the previous record was set in 1945.

The heat reached also southern parts of **France**, particularly the southwest with daily maxima up to above 30 °C on 28 April, also with local monthly records. Even eastern parts of the western Mediterranean were hot, as a maximum at 34 °C was reached on Sardinia Island in **Italy** on 29 April.

Cold waves and snow

In the first week of April 2023, the cold air spread also over large parts of Europe, even to **northern Spain** and over the **Balkan Peninsula**. Northern Spain reported new local April low records at –4.5 °C in Vitoria (513 m altitude) and –6.9 °C in Burgos (894 m). Anomalies in northern Spain reached –8 °C in places. Southeastern Europe saw widespread frosts even in the lowlands, also with partly huge snowfalls. In **Serbia**, Belgrade reached 17cm of snow, the maximum snow depth ever recorded in April, with data since late 1800s.

14 April 2023: In **Slovenia**, 70 cm of fresh snow fell in 24 hours to 14 April 2023 on the Kredarica Mountain (2513 m altitude). The absolute depth on Kredarica was 330 cm on 18 April 2023. The same day in **Italy**, mountain resorts had been covered with a layer of up to 40 cm of fresh snow in 24 hours on Misurina Mountain in the Dolomites (Veneto region, northeastern Italy). Another mountain in Italy, Monte Santo Lussari in the Julian Alps (Friuli Venezia Giulia Region, around 1800 m altitude) received even over 1 m of fresh snow that day.

27 April 2023: At the end of the month, another cold spell spread over large parts of Central and Southeastern Europe, with daily minima around 0 °C or lower. Karajukića Bunari in southwestern **Serbia** recorded –3.2 °C in 2 m height above ground in the morning of 27 April while Kosanica in northern **Montenegro** recorded –8.1 °C.

Heavy rain and flooding

3-5 April 2023: Stormy weather caused heavy rain with flash floods, landslides, snow in higher elevations and wind damage in Calabria (**southern Italy**) on 3 April 2023. The worst affected areas were the provinces of Cosenza and Crotona. The commune Savelli in Crotona recorded 118.2 mm of rain that day. Schools were closed. In Cosenza, firefighters used a

helicopter to search for a man reported missing after being swept away by floods; he was found dead later. Several roads were closed, blocked by floods, fallen trees or landslide debris. Some minor flooding was reported in the Palermo area of Sicily (Italy) from 4 to 5 April. The heavy rain was caused by a large-scale low-pressure area over the central Mediterranean named "Ilina".

10–12 April 2023: Heavy rainfall affected the far southern **Israel** (in particular the Southern Negev Region) on 10–12 April 2023, causing river overflows and flash floods that have resulted in casualties and damage. At least two fatalities had been reported across the Southern Negev Region, where the most affected areas were the towns of Eilat and Paran and the Aravah region.

16 April 2023: Several rivers in **Ukraine** broke their banks causing flooding in eight regions of the country, including the region around Kyiv. In total, around 950 households were affected. Teams from the State Emergency Service pumped water from hundreds of houses and yards across affected areas and helped to evacuate over 200 residents from flooded homes. Among the hardest hit areas was Chernihiv Oblast where 474 households had been impacted by overflows from the Dnipro, Desna, Seim, Sozh and Vyt rivers. Transport connections were disrupted leaving 29 settlements isolated. Wide areas of agricultural land had been flooded, including 7 198 hectares in Volyn Oblast and 3 065 hectares in the Rivne region.

May 2023: Heavy rain with thunderstorms, flooding and hail in **Italy** (particularly Emilia-Romagna region), western **Balkans**, and later also in **Iberia** (following after a long drought period).

Storm

Storm Noa, originating off Ireland, caused strong winds in northern **France** on 12 April 2023. It was the second named storm of the 2022/2023 storm season. Gusts in France reached up to 135 km/h at Normandy coast. The consequences of this storm in France remained very limited because stormy gusts reaching at least 100 km/h mainly concerned the coastal fringe. Thus, little damage was to report. In Cherbourg, storm Noa tore off the moorings of a large ship; the damage remained minor and the ship could return to sea in the following night. Some tree falls were observed locally, particularly in Brittany, Normandy and Pas-de-Calais Regions, blocking roads. Several trains were cancelled preventively on the axes Caen-Cherbourg and Caen-Granville. Some heavy showers with hail had also been observed. This was an unusually severe storm for the time of year.

Tornado

20 April 2023: A large tornado (F1 on Fujita scale) hit the earthquake-relief camp in the area of Pazarcik City, Kahramanmaraş Province, southeastern **Türkiye** on 20 April 2023, resulting in casualties and widespread damage. The tornado was strong enough to overturn cars and large vehicles, and devastated tents and containers, which had temporarily become the home of earthquake survivors. Roofs which were in construction were lifted and metal roof pieces were thrown onto tents. At least three fatalities were reported and about 150 injured people, including eight seriously injured. The province was previously hit by an extremely damaging earthquake and a series of destructive aftershocks in early February 2023, leaving over 47 000 people dead.

Drought

Drought conditions became quite extreme in **Spain** in April. In the first 12 days of April, only 3 mm had accumulated in Spain as a whole, much lower than normal for this period. Large parts of the country (except the north) even saw no rain at all during that time. Over the whole month of April, some parts of southeastern Spain remained without any rain, and large parts of the country recorded less than 10 mm. Monthly rains did not even reach a quarter of normal average in much of the country.

Southeastern parts of **France**, notably the regions close to the Mediterranean, also were very dry in April. Totals in the first half of April were 5–20 mm at the eastern Mediterranean coast, but less than 5 mm at the western Mediterranean coast, while other parts of France received much higher amounts. Thus, soils in much of France had been remoistened after rainfalls in March and April, while there was an exceptional dryness of soils at the Mediterranean coast, comparable to a normal situation at the end of June.

A large **wildfire** occurred in the area of Cap Peyrefite (northern Cerbère, the southernmost Municipality of the Pyrénées-Orientales Department, south-eastern France, bordering with Spain) on 15 April, causing evacuations and damage. The fire burnt an area of approximately 930 ha in France and 120 ha in Spain. Around 300 people moved to temporary accommodation centres across the area of Cap Peyrefite and in the Cerbère Town. There were also two damaged houses reported and up to 1 200 power outages throughout the affected area. This was the largest fire observed in April in France in terms of surface area affected since 1973. It was fanned by the wind and by a historic drought in the territory concerned. In the affected area, the last daily rainfall above 10 mm was on 19 January 2023 and the last daily rainfall above 20 mm on 20 April 2022. In total over one year, about 230 mm fell on the sector, barely 36% of the annual normal (626.2 mm for the station over 1991–2020).

(Taken from the event calendar of RA VI RCC,
https://www.dwd.de/DE/leistungen/rcccm/int/rcccm_int_sse.html?nn=490674)

7. Likely evolution of large-scale climate patterns in the next months (June–August 2023)

- El Niño will develop, but presently no significant effect on Europe
- Positive IOD will develop. This can influence circulation over Eurasian mid-latitudes by teleconnection processes. However, such teleconnections are less frequent on the Northern Hemisphere in summer.
- Summer Blocking weather types more likely than others

References:

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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 on Climate Monitoring Website with monitoring results: <http://www.dwd.de/rcc-cm>

GPCC: <http://gpcc.dwd.de>

EDO (EU European Drought Observatory): <https://edo.jrc.ec.europa.eu>

SEECOF: <http://www.seevccc.rs/?p=22>

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BOM Climate Driver Update: <http://www.bom.gov.au/climate/enso/index.shtml#tabs=Overview>

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