SOUTH EAST EUROPEAN CLIMATE OUTLOOK FORUM
SEECOF-33 Online Forum

MONITORING SUMMARY SEECOF-33

for April 2025

Draft version

Last update: 15 May 2025

Compiled by

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The following SEECOF monitoring summary is based on

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

1. Oceanic Analysis

Over the equatorial Pacific Ocean:

- During April 2025, equatorial sea surface temperatures (SSTs) were below average in the central equatorial Pacific Ocean, and above-average SSTs were built up in the eastern equatorial Pacific Ocean.
- Niño index values (SST anomalies) were above normal for the eastern regions Niño-1+2 and Niño-3 from February to mid-April, and below normal for the westernmost Niño-4 region, but with tendency towards normal. The combined region Niño-3.4 had close-to-normal SST in March and April. **This means in summary a neutral ENSO state of the oceanic component.**
- Subsurface temperature anomalies weakened from March to April.
- **Neutral ENSO conditions will likely continue over summer 2025 according to the Australian Bureau of Meteorology (BOM) and NOAA.**

Over the North Pacific:

- In the North Pacific, a PDO- (negative Pacific decadal oscillation) pattern still exists since 2020.

For more details see:

- http://seasonal.meteo.fr/slides/BulTech (password protected)
- https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml
- https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml
- http://www.bom.gov.au/climate/enso/index.shtml#tabs=Pacific-Ocean
- PDO: https://www.ncdc.noaa.gov/teleconnections/pdo/

Over the Maritime Continent and the Indian Ocean:

- The tropical Indian Ocean was warmer than normal in April 2025, but no significant gradient can be seen. **IOD is neutral. Forecasts of BOM show neutral to negative IOD for summer 2025.**

Over the North Atlantic:

- In the tropical North Atlantic mostly normal to above normal, but clearly above normal close in eastern parts of the North Atlantic, especially close to the coasts of Western Europe and North Africa.

Over the Mediterranean and Black Sea:

- The Mediterranean Sea was warmer than normal in April 2025, 0.5-1 °C in the central and eastern parts and above 1 °C in the western parts.
- SST in the Black Sea was slightly above normal (<1 °C anomaly).

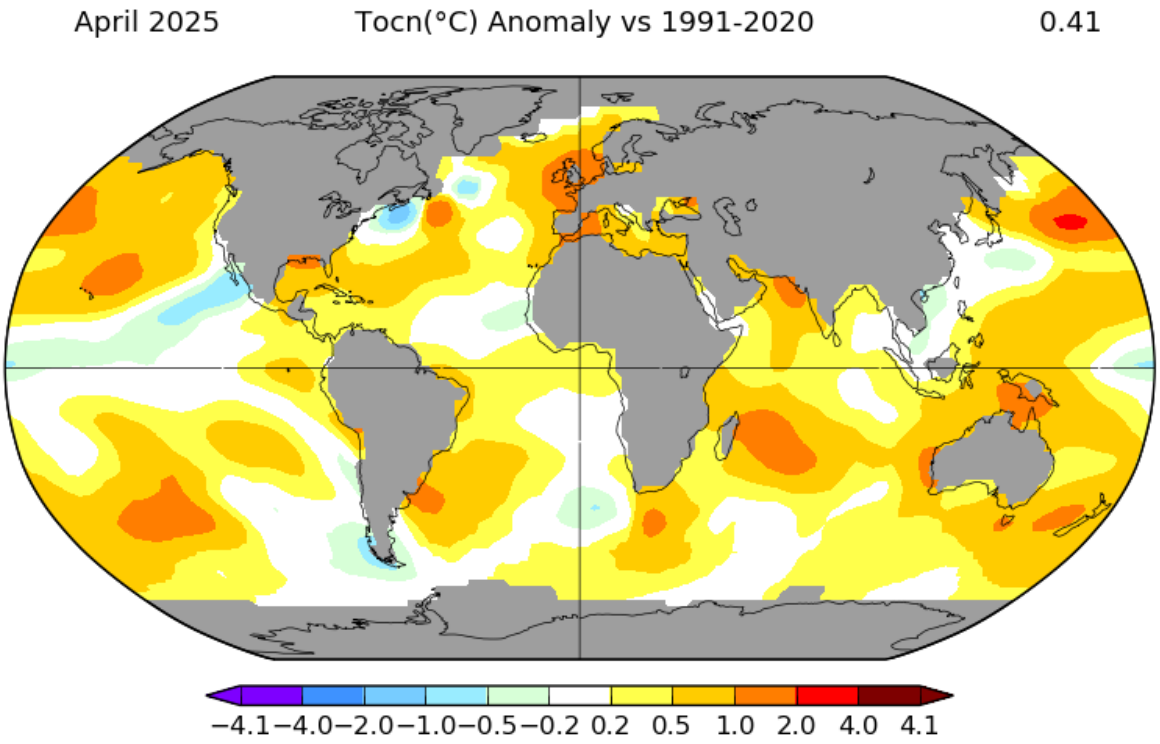


Figure 1.1: Sea surface temperature anomalies for April 2025, 1991-2020 reference. Source: NASA GISS, https://data.giss.nasa.gov/gistemp/maps/ . Data source : ERSST_v5

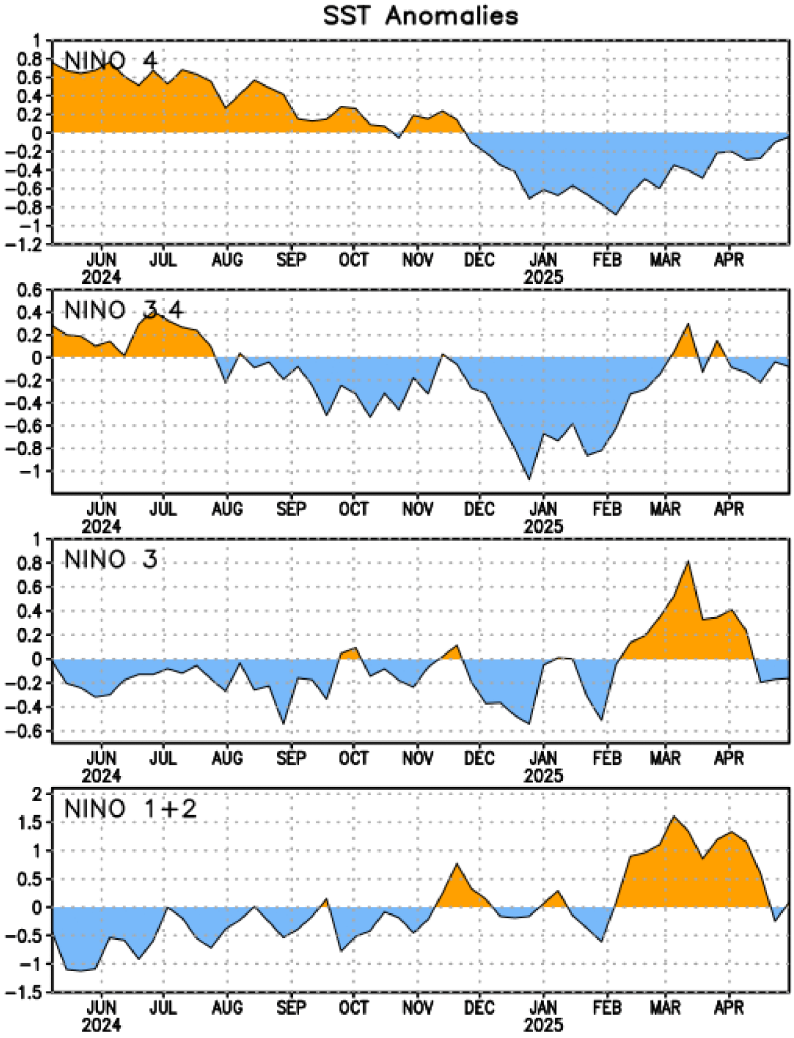


Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies (°C) in the Niño regions [Niño-4 (5ºN-5ºS, 150ºW-160ºE), Niño-3.4 (5°N-5°S, 170°W-120°W), Niño-3 (5°N-5°S, 150°W-90°W), Niño-1+2 (0°-10°S, 90°W-80°W)]. SST anomalies are departures from the 1991-2020 base period weekly means.

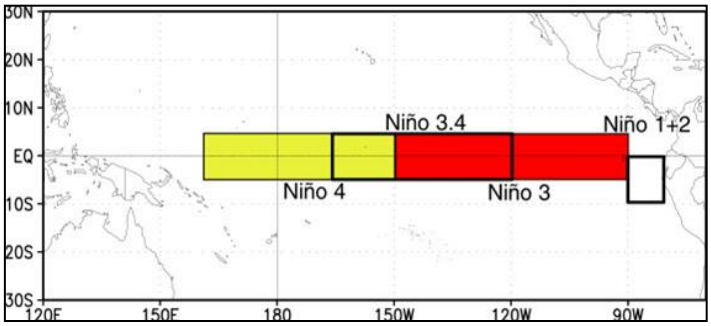


Figure 1.2: Evolution of sea surface temperature anomalies in Niño3.4 regions, 1991-2020 reference. Source: NOAA CPC, https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/figure02.gif

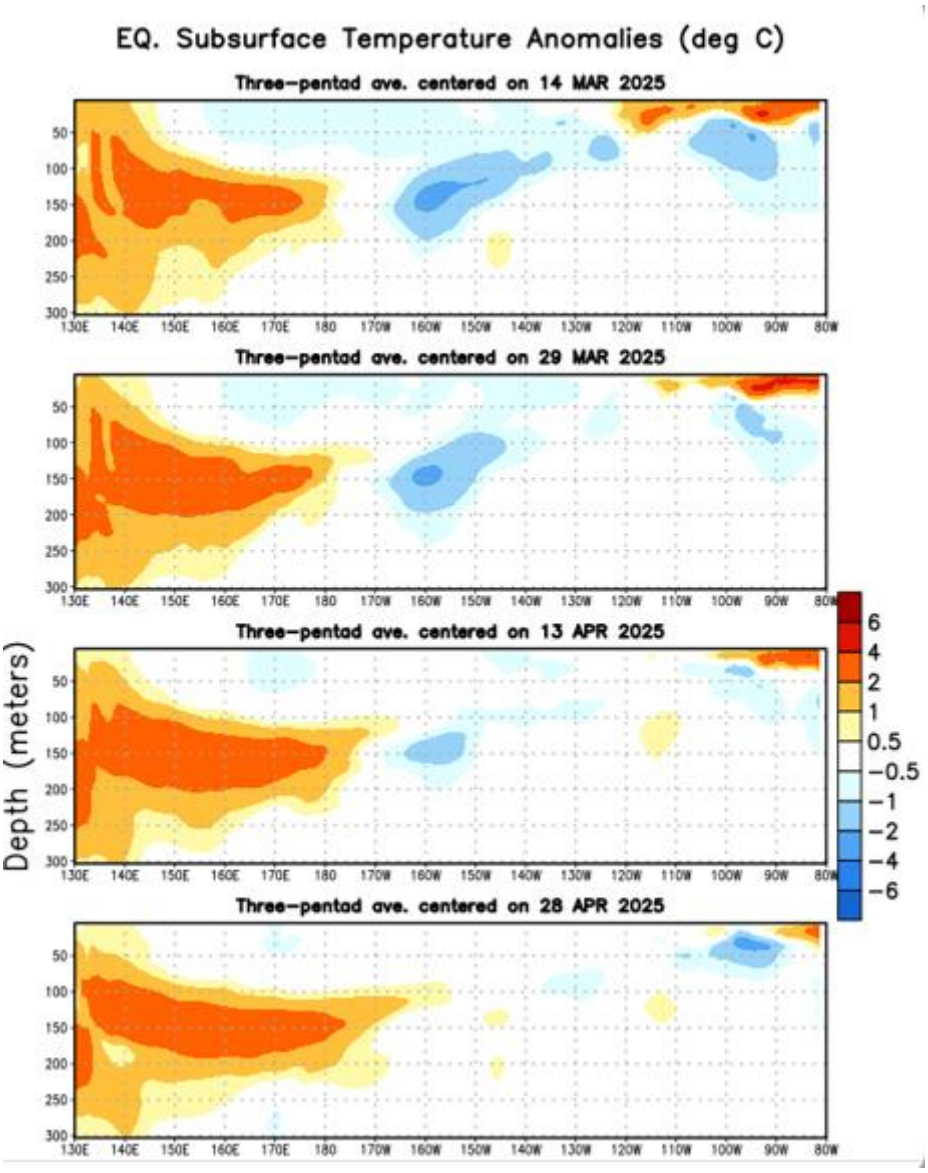


Figure 1.3: 15-day equatorial Pacific Ocean temperature anomalies in the sub-surface March-April 2025. Source: NOAA, https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml

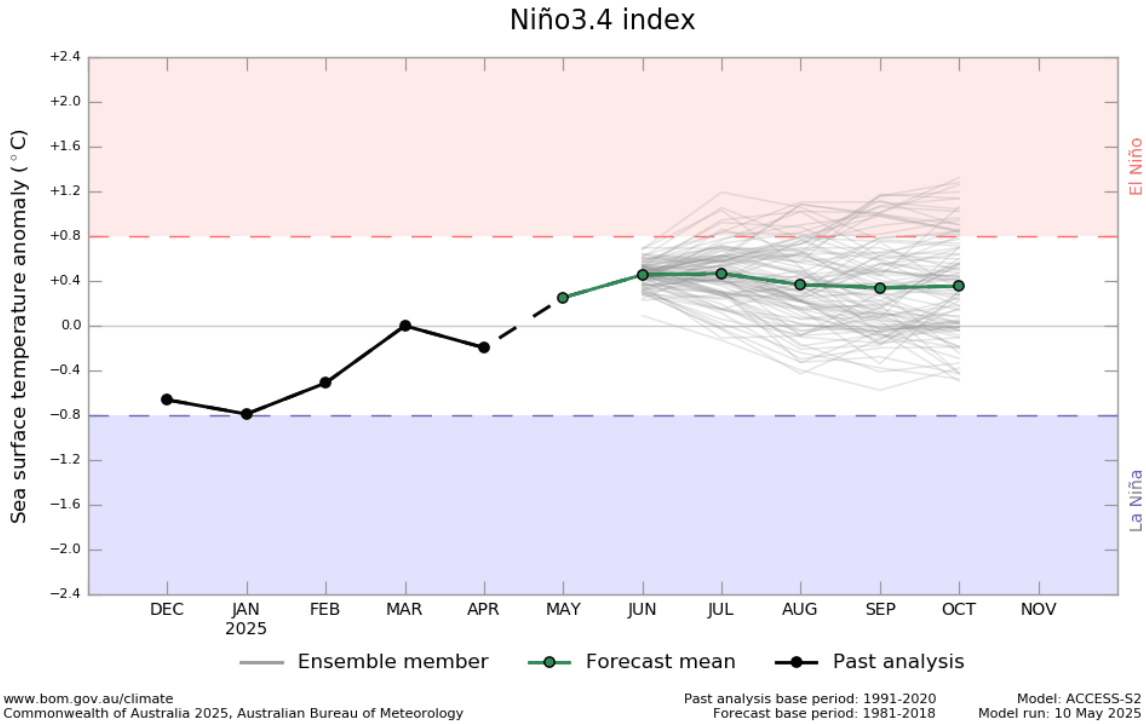
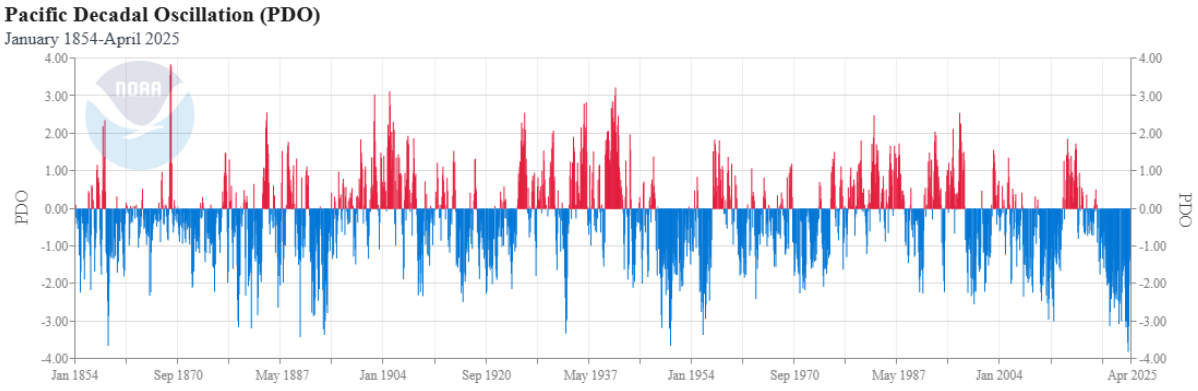


Figure 1.4: Sea surface temperature anomalies in the Niño3.4 region, December 2024-October 2025 (analysis and forecast). Source: BOM, http://www.bom.gov.au/climate/ocean/outlooks/?index=nino34



Source: https://www.ncei.noaa.gov/pub/data/cmb/ersst/v5/index/ersst.v5.pdo.dat

Figure 1.5: Time series of PDO. Source: NOAA, https://www.ncei.noaa.gov/access/monitoring/pdo/

2. Atmospheric Circulation Analysis

2.1. Velocity Potential Anomaly field in the high troposphere (insight into Hadley-Walker circulation anomalies) and Southern Oscillation Index (SOI)

- Quite strong upward motion anomaly over the maritime continent and the western tropical Pacific, but only small anomalies over the central and eastern tropical Pacific. This implies that a part of an atmospheric component of La Niña circulation is still active but weakening and decaying.
- SOI was still positive, but weak (monthly value for April 2025 was +0.4)
  - https://www.ncdc.noaa.gov/teleconnections/enso/soi
  - http://www.bom.gov.au/climate/enso/index.shtml#tabs=Pacific-Ocean&pacific=SOI
- A strong downward motion anomaly can be seen over the tropical Indian Ocean.

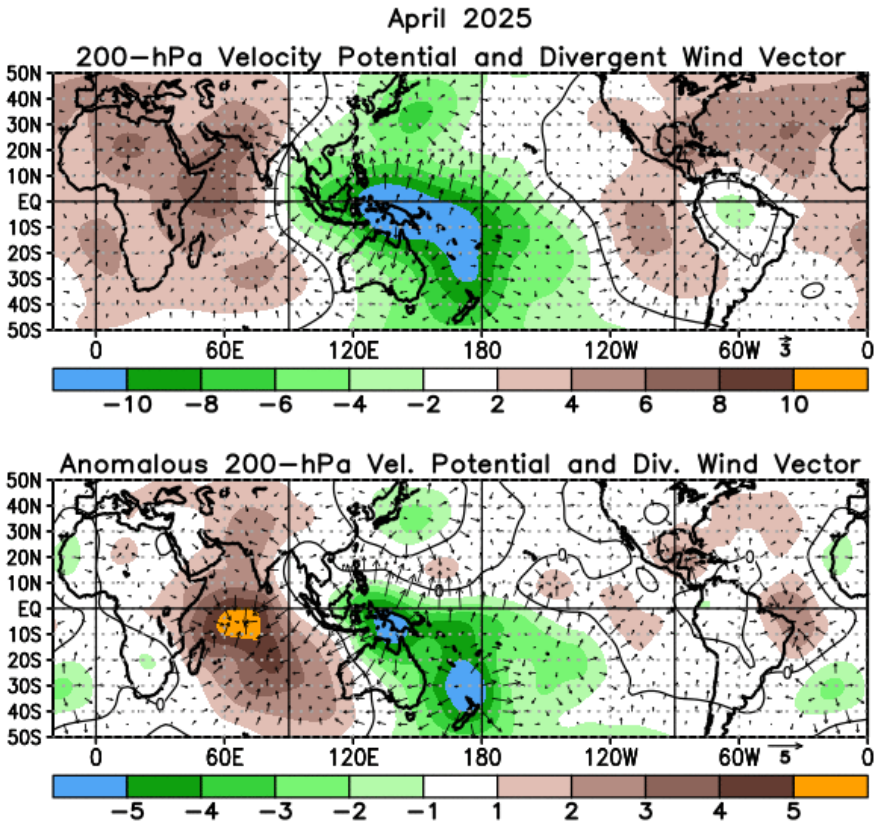


Figure 2.1.a: Velocity Potential monthly mean (upper map) and anomalies (lower map) at 200 hPa and associated divergent circulation mean and anomaly for April 2025. Green (brown) indicates a divergence-upward motion anomaly (convergence-downward motion anomaly). Source: NOAA,
http://www.cpc.ncep.noaa.gov/products/CDB/Tropics/figt24.shtml

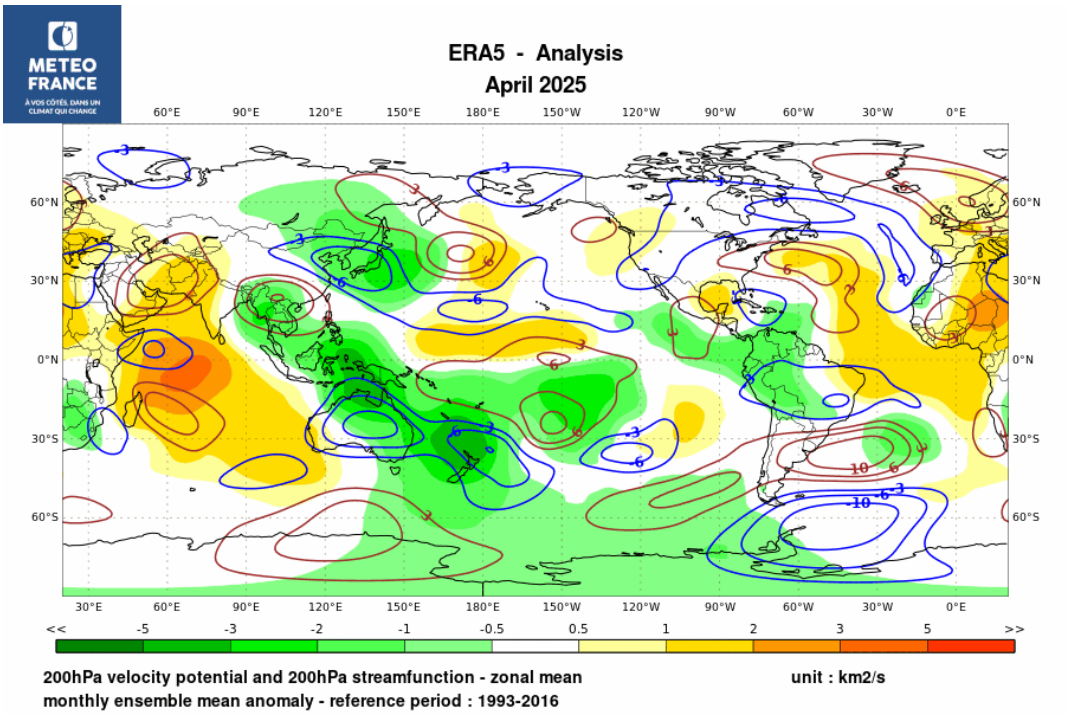


Figure 2.1.b: Velocity Potential monthly anomalies at 200 hPa for April 2025 (shaded areas). Green (yellow/orange) indicates a divergence-upward motion anomaly (convergence-downward motion anomaly). Contours represent corresponding stream function anomalies in 200 hPa. Source: Meteo France, http://seasonal.meteo.fr/content/suivi-clim-cartes-ref93-16

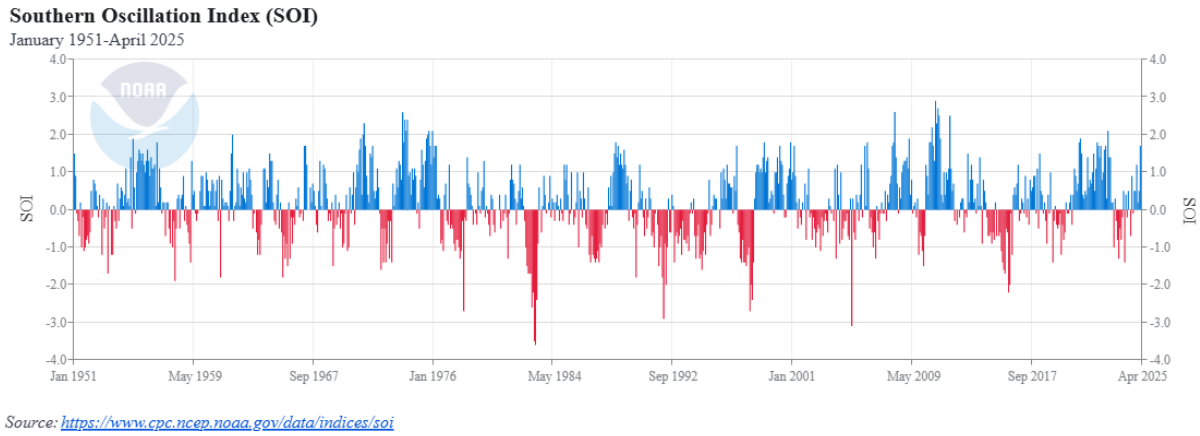


Figure 2.2: Southern Oscillation Index. Source: NOAA, https://www.ncei.noaa.gov/access/monitoring/enso/soi

2.2. Stream functions (insight into teleconnections)

- A teleconnection is visible from the eastern tropical Pacific over the North Atlantic up to North-western Europe (Fig. 2.1.b). However, since La Niña is decaying, no long persistence is expected.
- Another teleconnection can be detected from the western Indian Ocean to the north and the south, but it does not much extend beyond the tropics and had no significant impact to the SEECOF domain.

2.3. Madden-Julian Oscillation (MJO)

- MJO was inactive or very weak in April and the first half of May 2025.

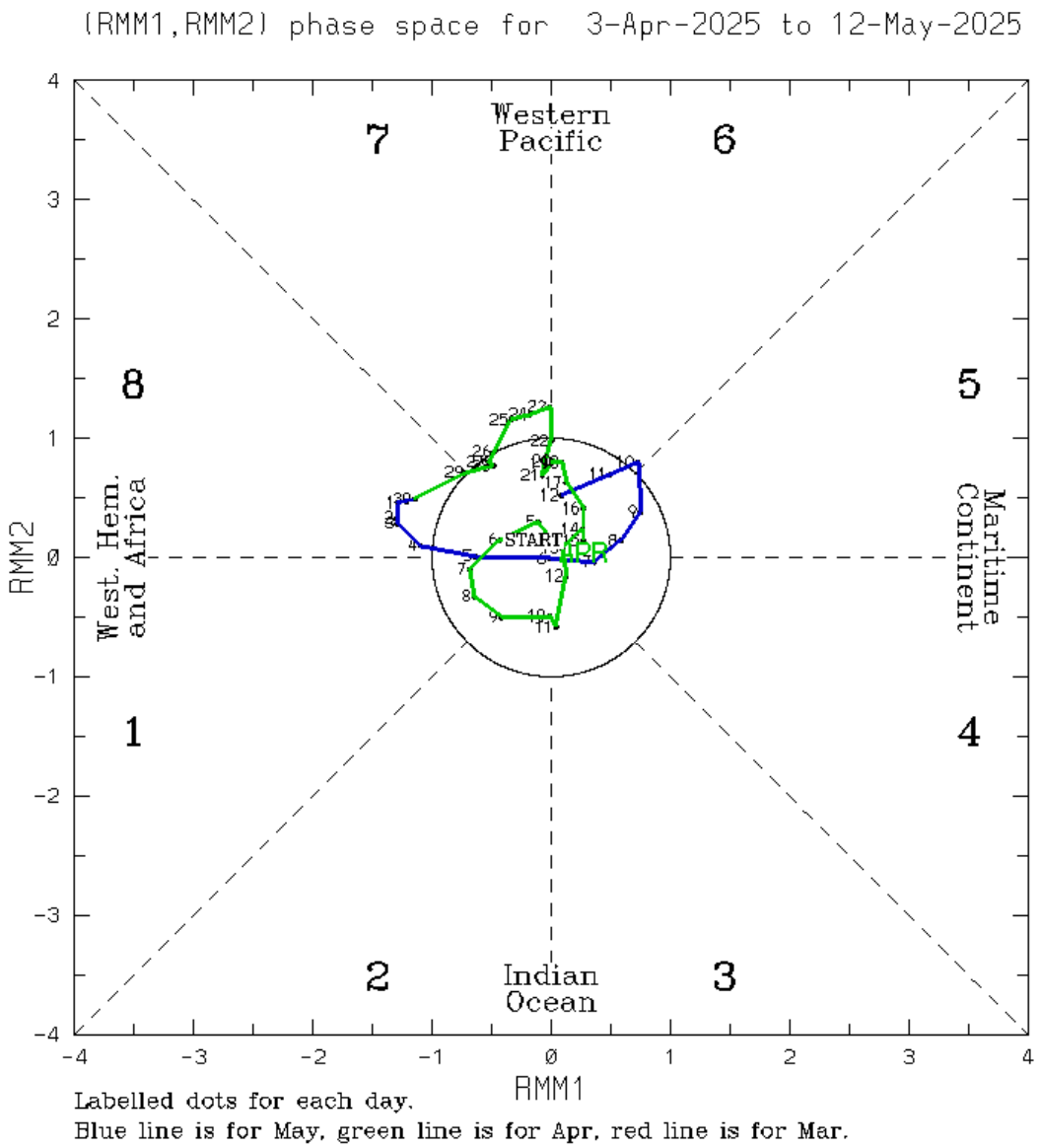


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Figure 2.3: indices MJO

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

2.4. Geopotential height at 500 hPa

- Strong teleconnection pattern over the North Atlantic to Northwestern Europe and the Arctic north of Russia.
- Anticyclonic conditions expanded from Northwestern Europe also to other parts of Europe including Eastern and Southeastern Europe.
- Anticyclonic conditions also over large parts of southern Asia, associated with significant downward motion in this area.
- Between these two anticyclonic areas a cyclonic area over the eastern Mediterranean, Türkiye, up to the Black Sea, often caused by troughs expanding from northern Russia far to the south.

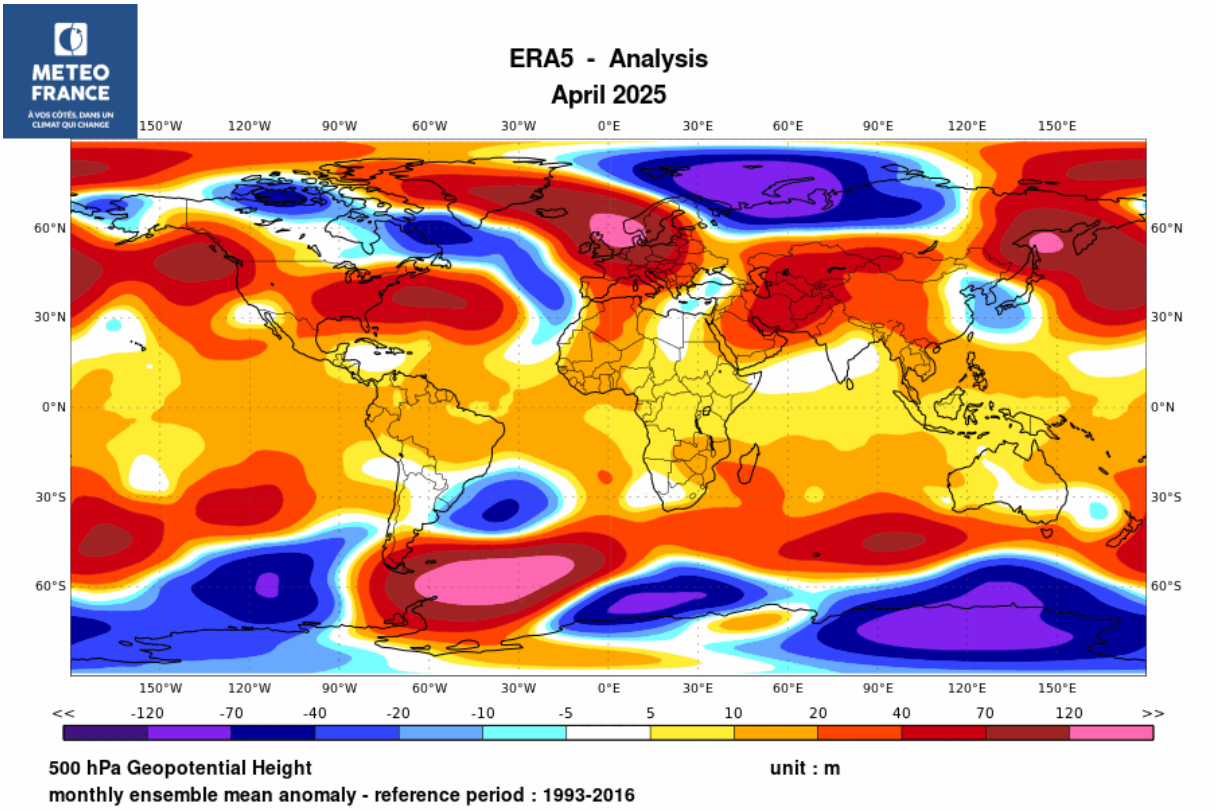

Figure 2.4: Anomalies of Geopotential height at 500hPa (ERA5 data),

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

2.5. Sea level pressure (SLP)

- Teleconnection pattern North Atlantic – Northwestern Europe – Northern Russia can also be seen in SLP pattern, particularly in terms of anomalies.
- High pressure expanded to large parts of Europe, including large parts of Eastern and Southeastern Europe, western and central Mediterranean.
- Slight low-pressure anomalies over the eastern Mediterranean, the Middle East, southern and eastern Türkiye and South Caucasus.

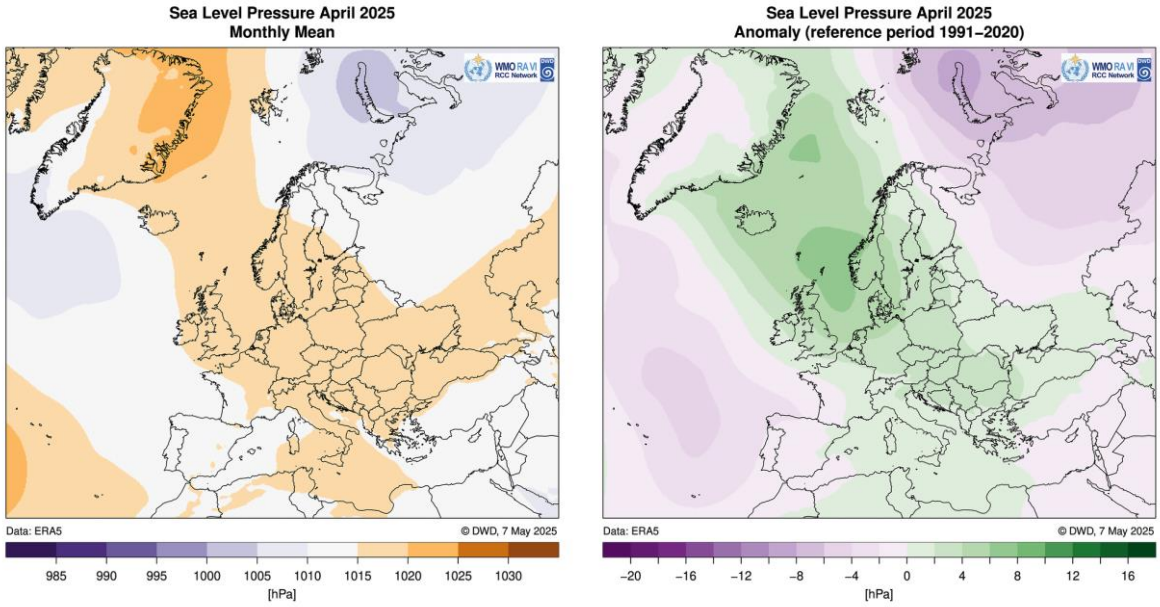

Figure 2.5: Mean sea level pressure over the North Atlantic, Europe and North Africa and 1991-2020 anomalies for April 2025. Source: DWD, https://www.dwd.de/DE/leistungen/rcccm/int/rcccm_int_ppp.html?nn=490674

Circulation patterns

- The standard NOAA circulation patterns were not very intense in April 2025.
- NAO was neutral during the whole month of April.
- Arctic Oscillation (AO) also was mostly neutral, with only short fluctuations into the positive range (zonal).
- According to the Meteo France weather type classification, the most dominating type in April was Blocking (more than 50% of all days in the month). Blocking was also frequent in the preceding months (since November 2024 the number of blocking types was well above normal, at least on 12 days in a month), and also in in the first half of May, blocking occurred on 10 out of 14 days. This implies a high persistency of this pattern and is related to the high-pressure area over much of Europe with core over Northwestern Europe. It might be possible that this pattern was triggered by ENSO (La Niña).

MONTH	NAO	EA	WP	EP-NP	PNA	TNH	EATL/WRUS	SCAND	POLEUR
APR 25	0.1	0.4	-0.8	-0.6	-1.1	---	0.5	-0.9	-0.7
MAR 25	-0.1	0.8	0.8	0.7	-0.4	---	0.1	-0.2	0.0
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
NOV 24	-0.4	1.1	-0.2	-0.6	0.0	---	1.1	-0.8	-0.4
OCT 24	0.1	1.0	0.9	-1.8	0.2	---	-1.4	1.1	-1.0
SEP 24	-1.2	1.3	1.4	-2.8	1.1	---	-3.4	0.4	0.3
AUG 24	0.7	3.7	1.1	-2.6	-1.0	---	-0.3	-1.2	-1.3
JUL 24	1.5	2.4	-0.8	-0.5	2.0	---	-0.4	-1.6	-0.1
JUN 24	0.2	1.3	-1.3	1.2	1.1	---	-2.3	-1.2	-1.0
MAY 24	-0.4	-0.2	-0.3	-0.9	-2.3	---	0.3	0.9	-0.6
APR 24	-1.0	3.0	0.7	-0.3	-0.9	---	-0.7	-0.7	0.4

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

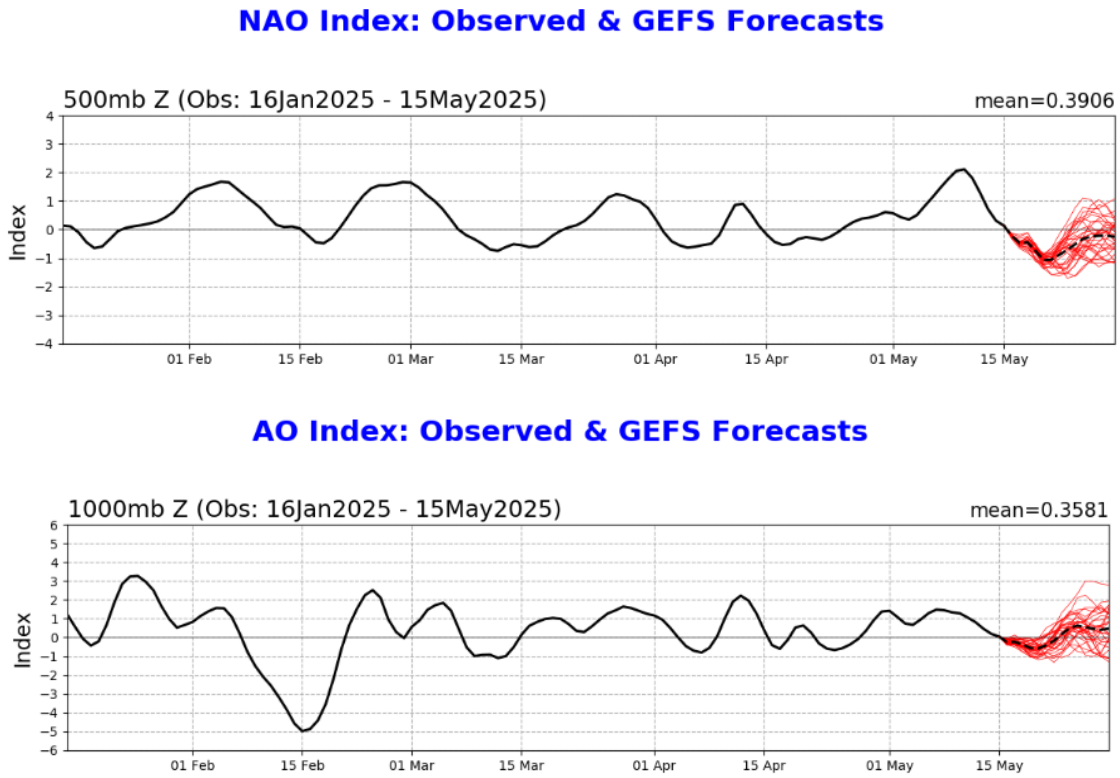

Figure 2.6: North Atlantic Oscillation (NAO) and Arctic Oscillation (AO) indices. Source: NOAA CPC, https://www.cpc.ncep.noaa.gov/products/precip/CWlink/daily_ao_index/teleconnections.shtml

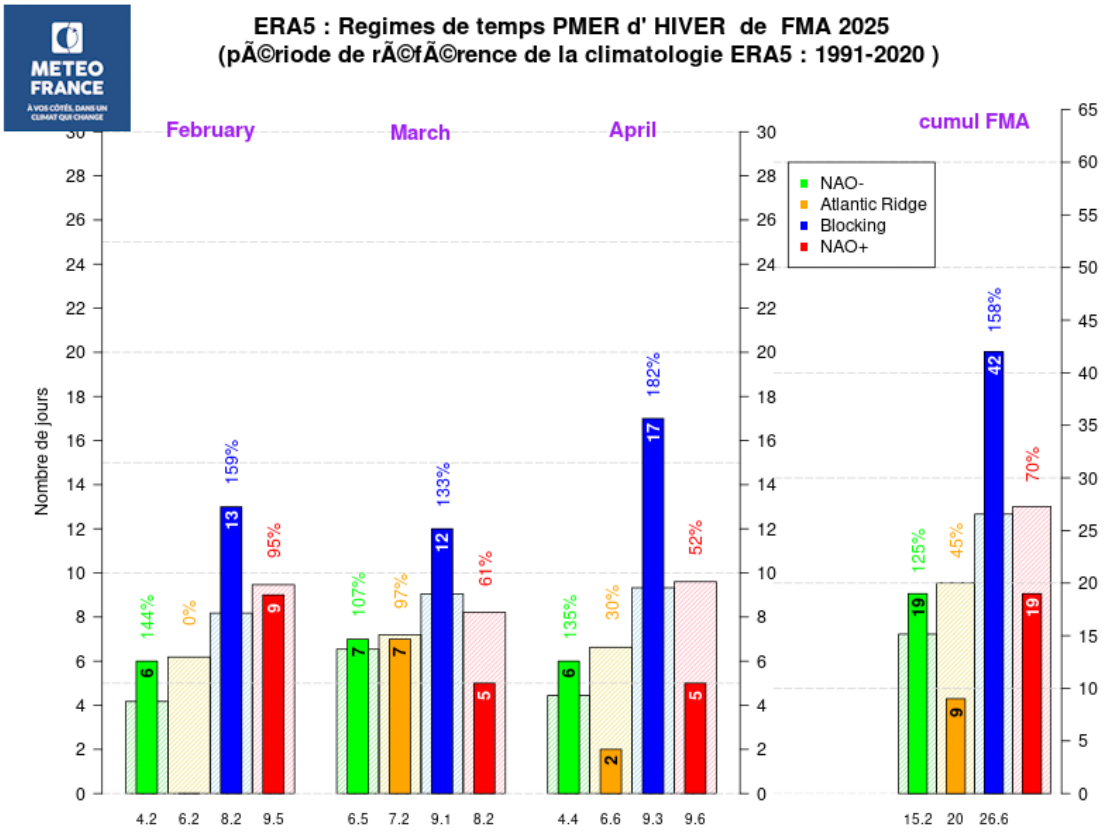

Figure 2.7: Distribution of weather types of Météo France classification (winter regime) for February-April 2025. Source: Météo France, http://seasonal.meteo.fr/content/suivi-clim-regimes-trim

3. Precipitation

Monthly precipitation in April 2025 shows quite high spatial variability within the SEECOF domain. Particularly dry was the Middle East, which includes Israel and Jordan. Especially eastern Jordan had places without any rain at all. Also much drier than normal were eastern Ukraine, Moldova, Romania, and eastern Hungary, which received less than 80% of the normal monthly total, partly less than 40%. The Balkans and Greece were partly drier, partly wetter than normal. Most of Türkiye and the South Caucasus, but also western Ukraine were wetter than normal, locally receiving more than 150% of normal.

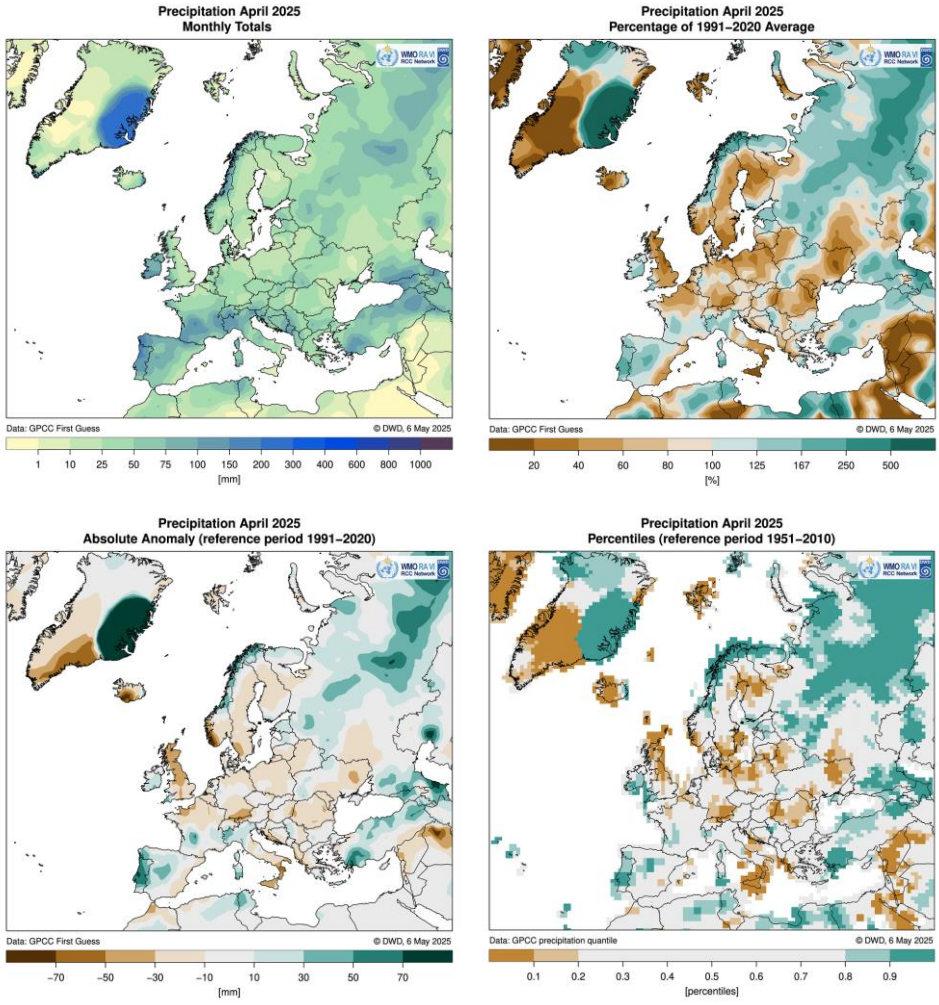

Figure 3: Monthly precipitation sum (upper left), percentage of normal (upper right), absolute anomalies (lower left), and percentiles (lower right) for April 2025 (1991-2020 reference for percentages and anomalies, 1951-2010 for percentiles) in Europe/RAVI. Data from GPCC (First Guess version). Source: DWD, https://www.dwd.de/DE/leistungen/rcccm/int/rcccm_month_rrr.html

4. Temperature

April 2025 was warmer than the 1991-2020 normal in most parts of the domain, especially in northern parts and in the southeast by more than 1 °C. Areas over and around the Black Sea were mostly slightly colder than normal, with largest anomalies over north-western Türkiye (−1 °C to −2 °C).

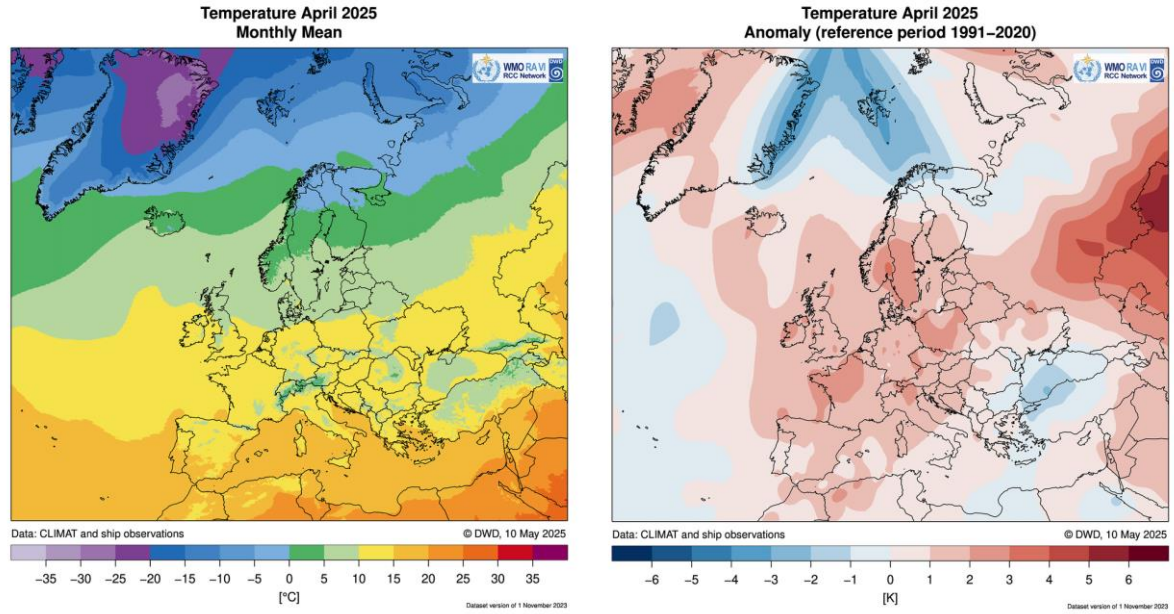

Figure 4: Mean temperature and anomalies (1991-2020 reference) in °C in the RA VI domain for April 2025. Source: DWD, https://www.dwd.de/DE/leistungen/rcccm/int/rcccm_month_ttt.html

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).

In April 2025, soils (near surface) were drier than normal especially north of the Black Sea and in the Middle East, but wetter than normal over parts of the Balkans, Greece, most of Türkiye, and South Caucasus.

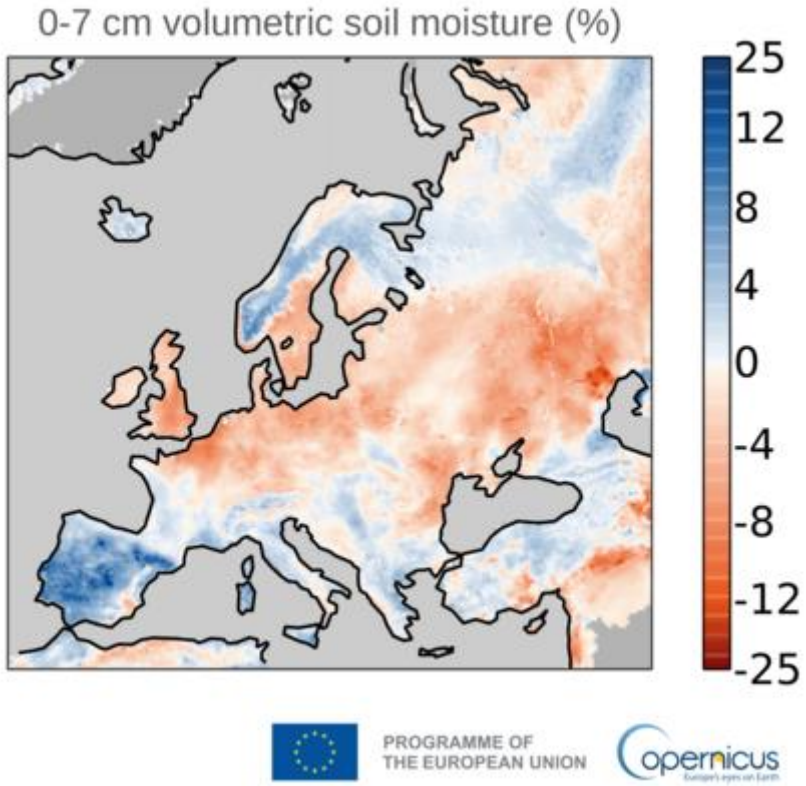

Fig. 5: Anomalies of soil moisture in Europe in % of the 1991-2020 normal in a depth layer of 0-7 cm in April 2025. Data from ERA5-Land reanalysis. Source: Copernicus, https://climate.copernicus.eu/precipitation-relative-humidity-and-soil-moisture-april-2024

6. Significant Events in April 2025 in the SEECOF region

Cold wave in Türkiye with severe frost:
https://watchers.news/2025/04/15/turkey-struck-by-severe-agricultural-frost-one-of-the-worst-in-recent-history/

Frost in Croatia:
https://www.istramet.hr/vijesti/jak-mraz-stisnuo-kontinent-uz-temperature-do-5-c-jos-sutra-kriticno-i-za-istru/

Heat Israel:
https://x.com/METEOROLOGY_IL/status/1914963275273453926

Wildfires Israel:
https://erccportal.jrc.ec.europa.eu/ECHO-Products/Echo-Flash#/daily-flash-archive/5331

Daily warming records Ukraine:
https://www.facebook.com/plugins/post.php?href=https%3A%2F%2Fwww.facebook.com%2FUkrHMC%2Fposts%2Fpfbid0oQVJb9nLvcrMgDPd7rBGiYryodFNYneguhDnVMStnnmRKtXgAFuTL7Nf3G15d5Rjl
https://www.facebook.com/photo?fbid=1107039231455908&set=a.291639129662593

Heavy rain in Greece (Cyclades):
https://erccportal.jrc.ec.europa.eu/ECHO-Products/Echo-Flash#/daily-flash-archive/5311
https://www.meteoweb.eu/2025/03/maltempo-grecia-nubifragio-tempesta-grandine-mykonos/1001769399/

Heavy rain and flooding in Serbia:
https://www.meteoweb.eu/2025/04/maltempo-serbia-allagamenti-autostrada-video/1001780962/
https://www.hidmet.gov.rs/data/klimatologija/nedeljni.pdf

Flooding in Bulgaria:
https://erccportal.jrc.ec.europa.eu/ECHO-Products/Echo-Flash#/daily-flash-archive/5328

Flooding in Azerbaijan:
https://az.sputniknews.ru/20250416/razgul-stikhii-v-baku-veter-valit-derevya-livni-paralizovali-transport-i-shkoly-471017138.html

References:

Météo France Monthly Seasonal Forecast Bulletin and climate monitoring maps: http://seasonal.meteo.fr

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

GPCC: http://gpcc.dwd.de

South East European Virtual Climate Change Center (SEEVCCC): http://www.seevccc.rs/

NOAA CPC NCEP ENSO discussion: https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

WMO Global Seasonal Climate Update: https://wmo.int/resources/documents/global-seasonal-climate-update

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

Copernicus monthly report: https://climate.copernicus.eu/surface-air-temperature-april-2024