

ENSO : Status and outlook

Olivia Yu

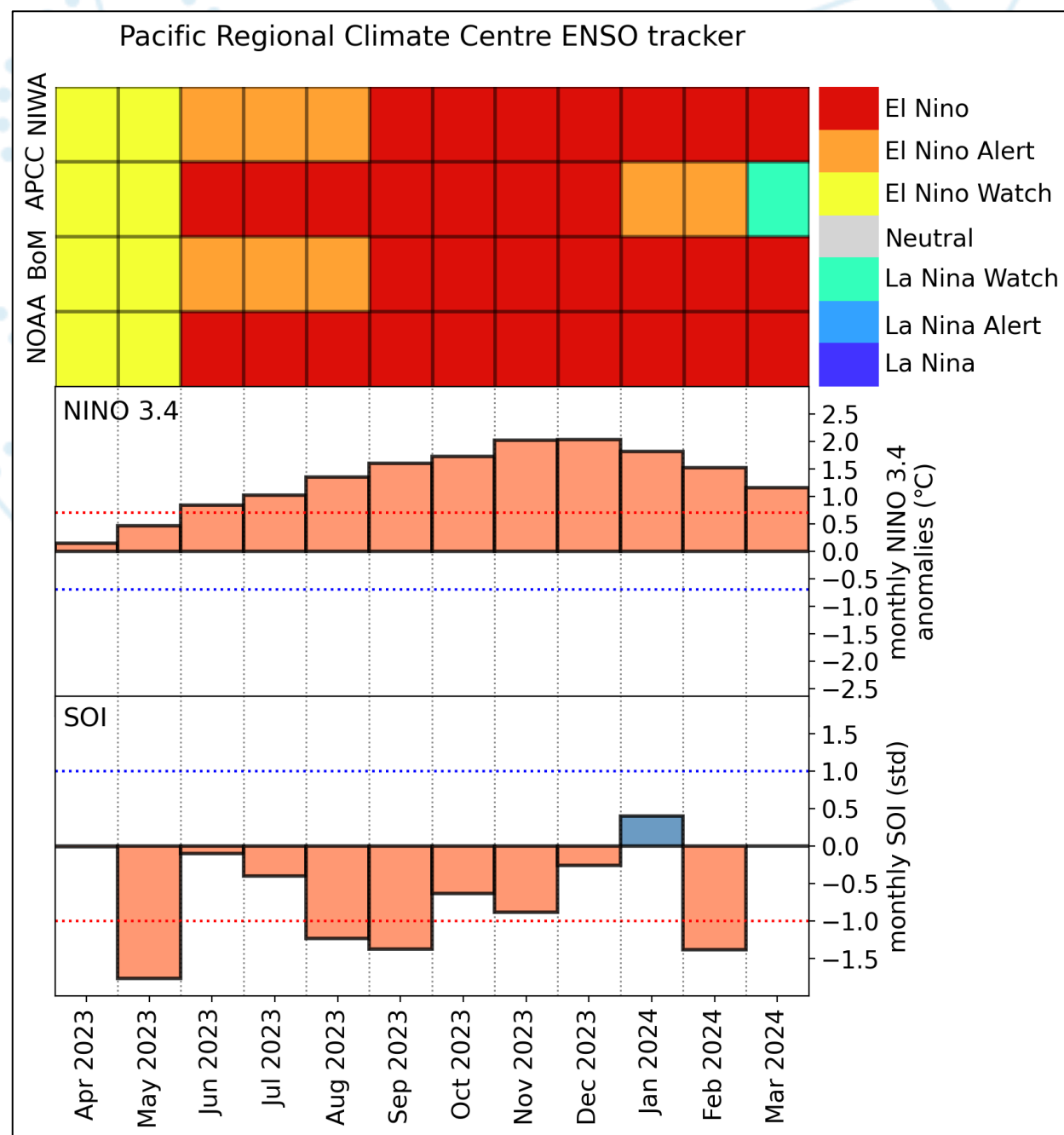
Meteorologist

Météo-France New Caledonia



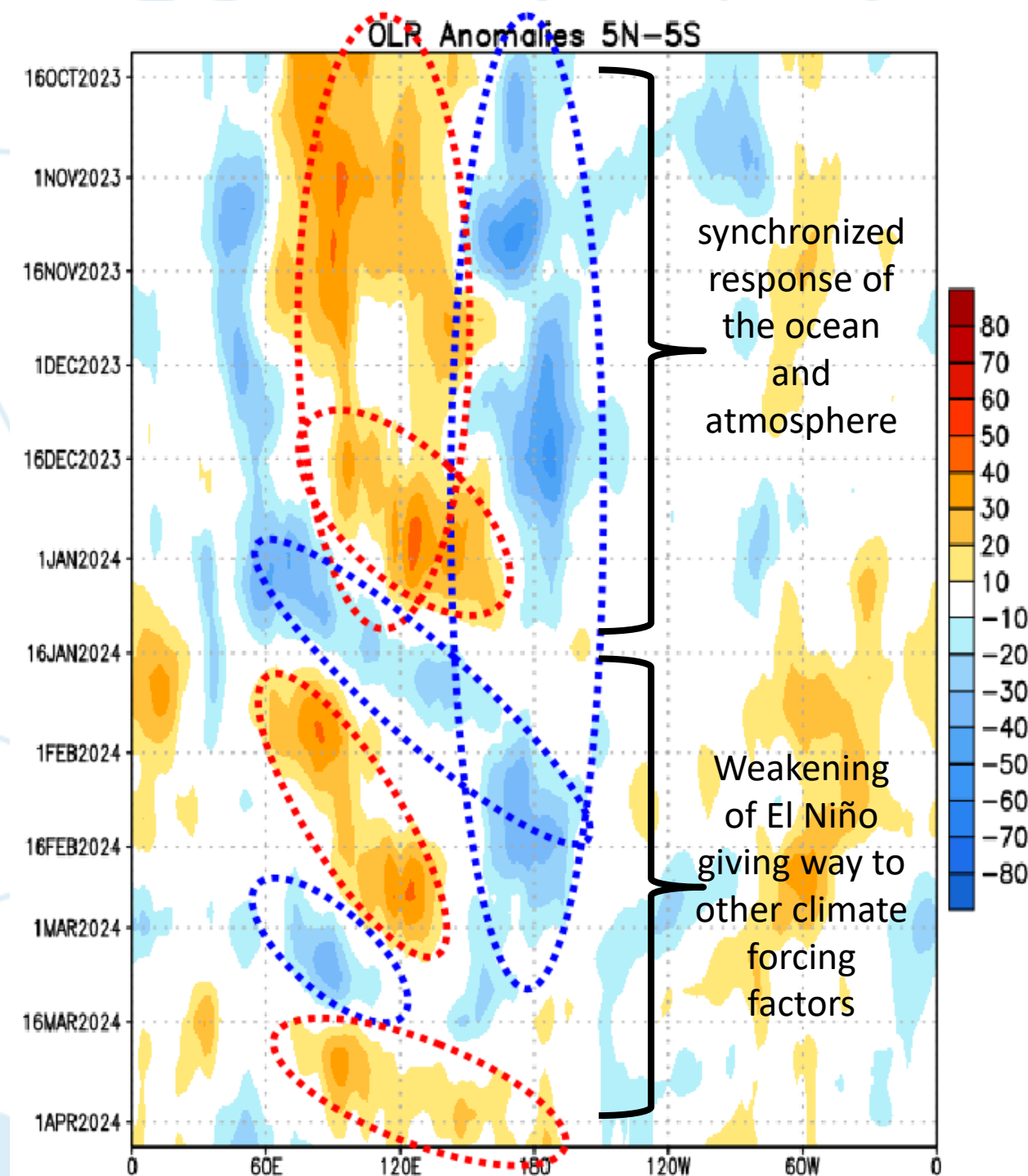
Pacific ENSO Tracker & Current status

State of ENSO from October to March



ENSO tracker from Apr.23 to Mar.24
<https://www.pacificmet.net/enso-tracker>

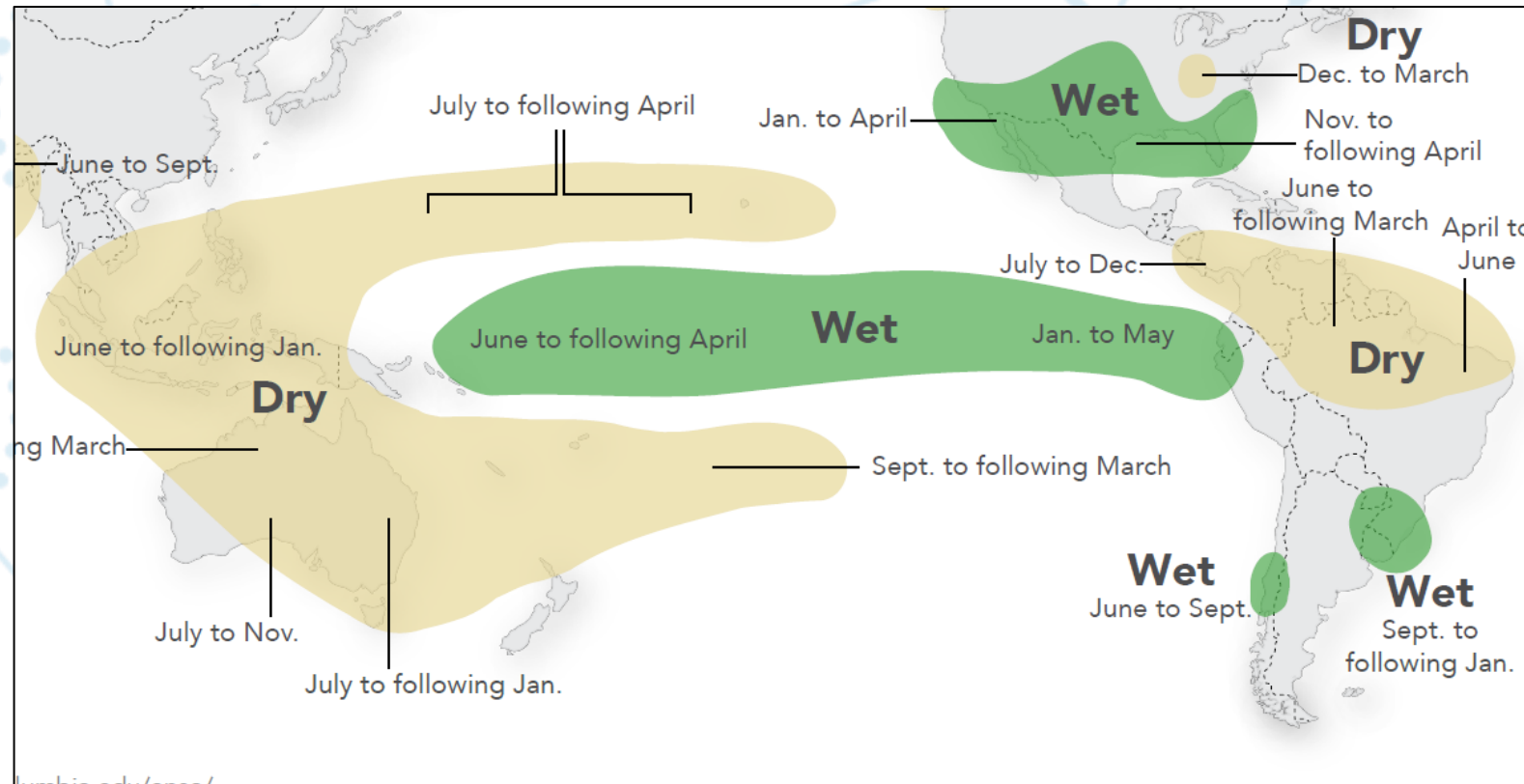
- According to the Niño 3.4 indicator, El Niño has been present since June 2023 until now, with a maximum peak intensity of +2.0°C in December, according to the monthly ERSSTv5 Niño 3.4 index (centered base periods)
- However, the ocean / atmosphere coupling has been discontinuous since January (SOI, OLR anomalies on this page, or rain and surface wind anomalies as shown on the following pages). As a result, the persistence of El Niño since January is questionable (as proposed by the APCC)



OLR anomalies from Oct.23 to Apr.24
<https://www.cpc.ncep.noaa.gov>

Pacific ENSO Tracker & Current status

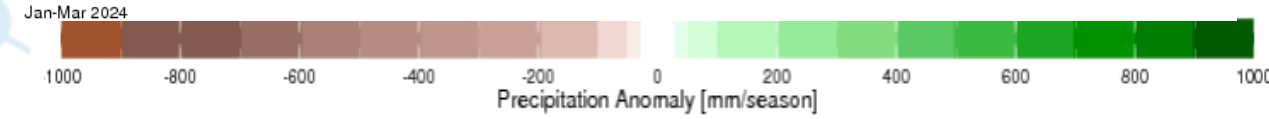
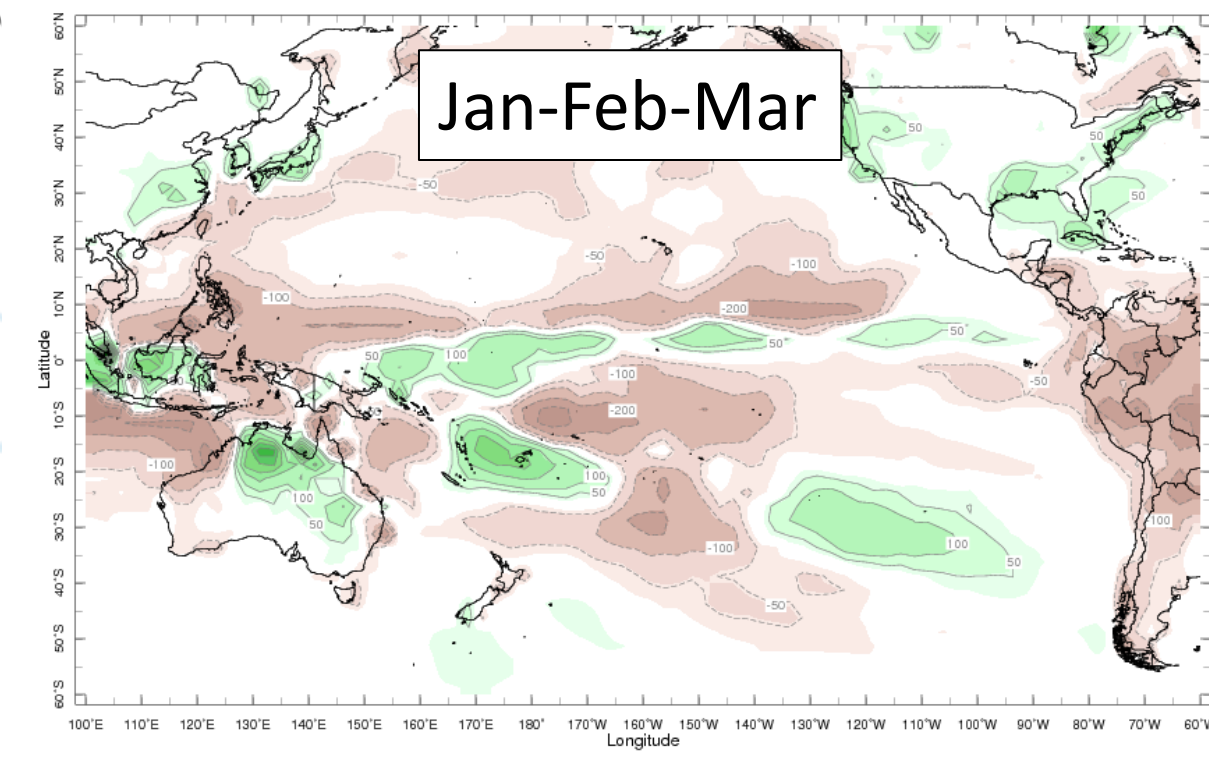
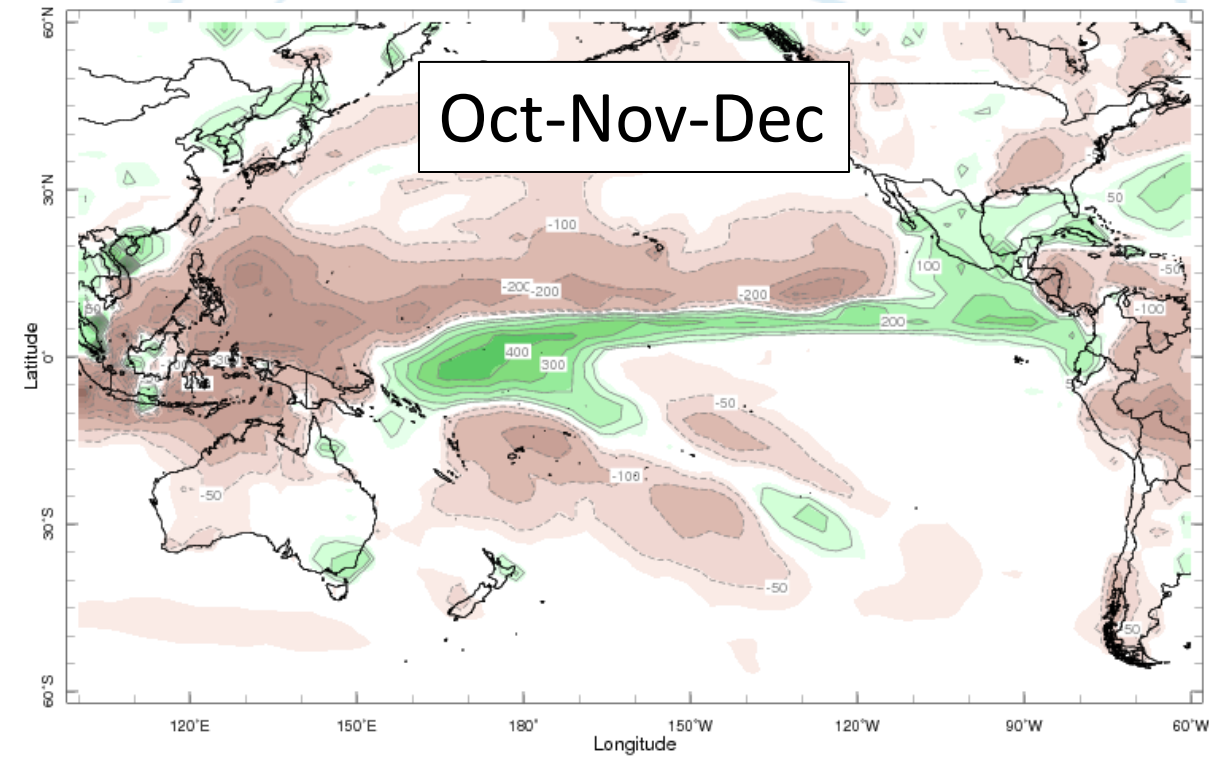
Rain distribution not really consistent with El Niño since January



Climatology of rainfall anomalies during El Niño

<https://iri.columbia.edu/our-expertise/climate/enso/>

In coherence with OLR distribution, rainfall anomalies over the Pacific Ocean are consistent with a El Niño event during Oct-Nov-Dec, but not since January, reflecting a weakening of El Niño since the beginning of the year.

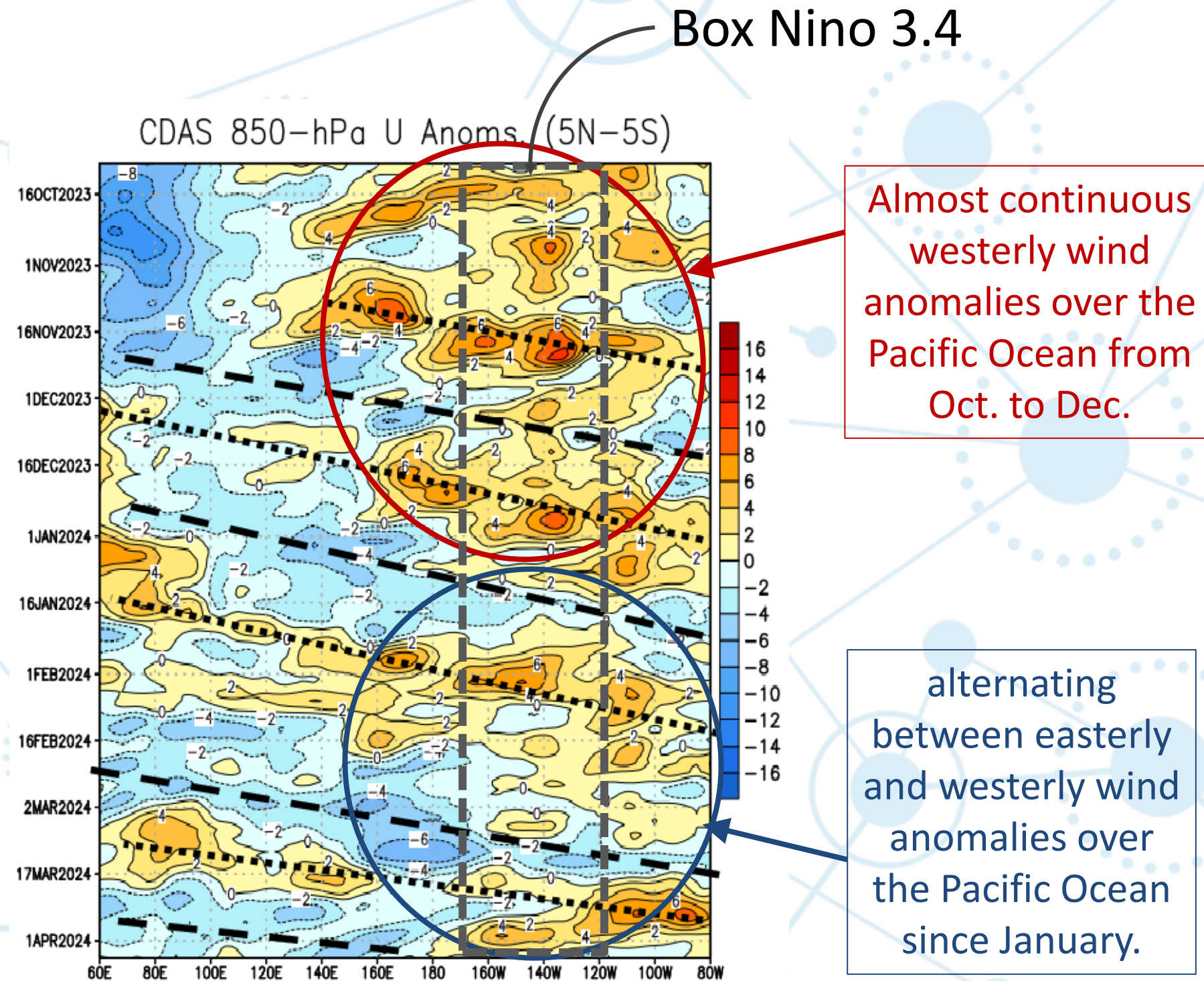


Rainfall anomalies during Oct-Nov-Dec 2023 and during Jan-Feb-Mar 2024

Source : [IRI - Columbia](https://iri.columbia.edu/)

Pacific ENSO Tracker & Current status

Wind anomalies not really consistent with El Niño since January



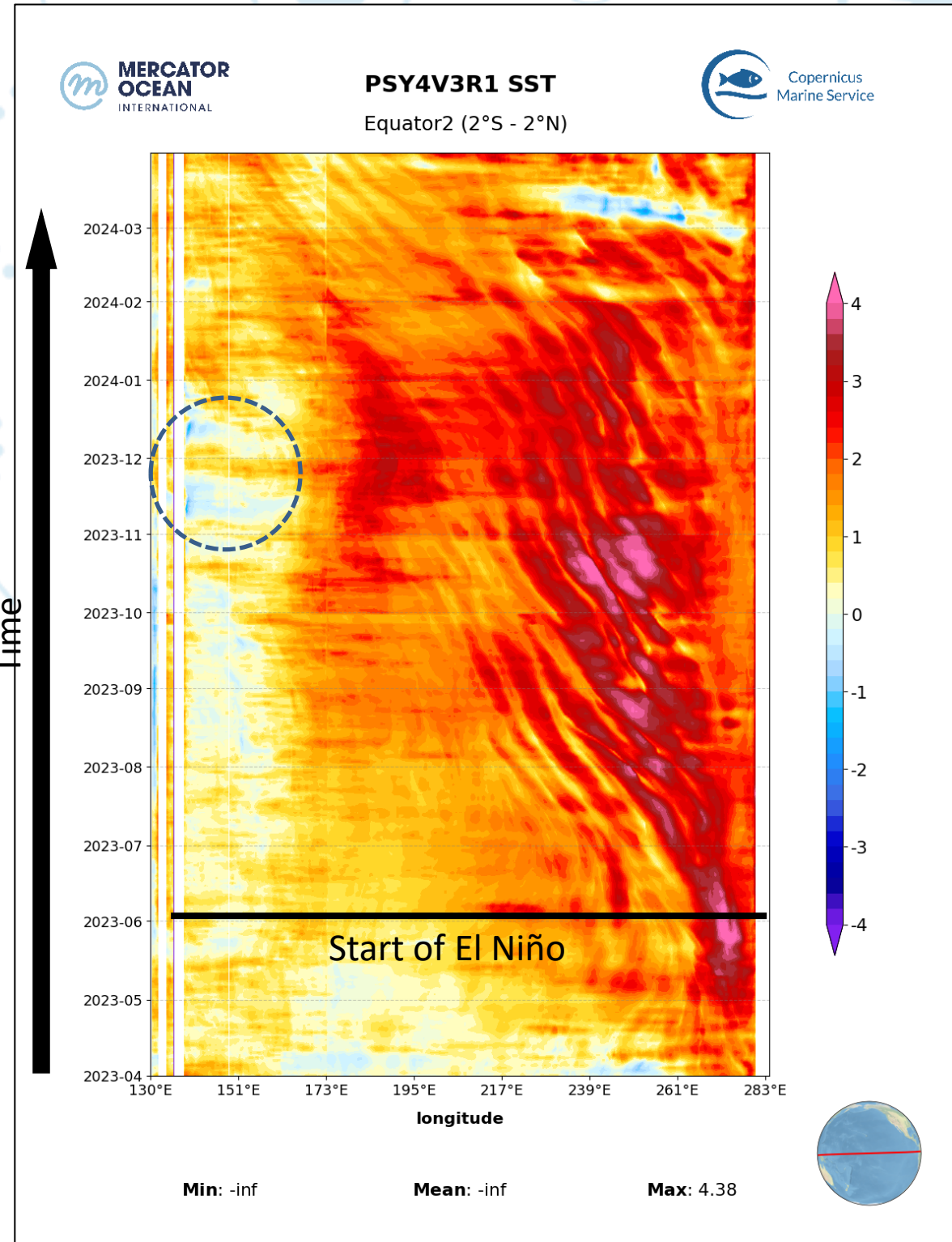
- In terms of surface wind, we can't observe a continuous phasing with El Niño between January and March.
- The repeated presence of easterly wind anomalies since January is favorable to the resurgence of upwellings in the east of the equatorial Pacific basin (see next page)

850 hPa U anomalies from Oct.23 to Apr.24

<https://www.cpc.ncep.noaa.gov>

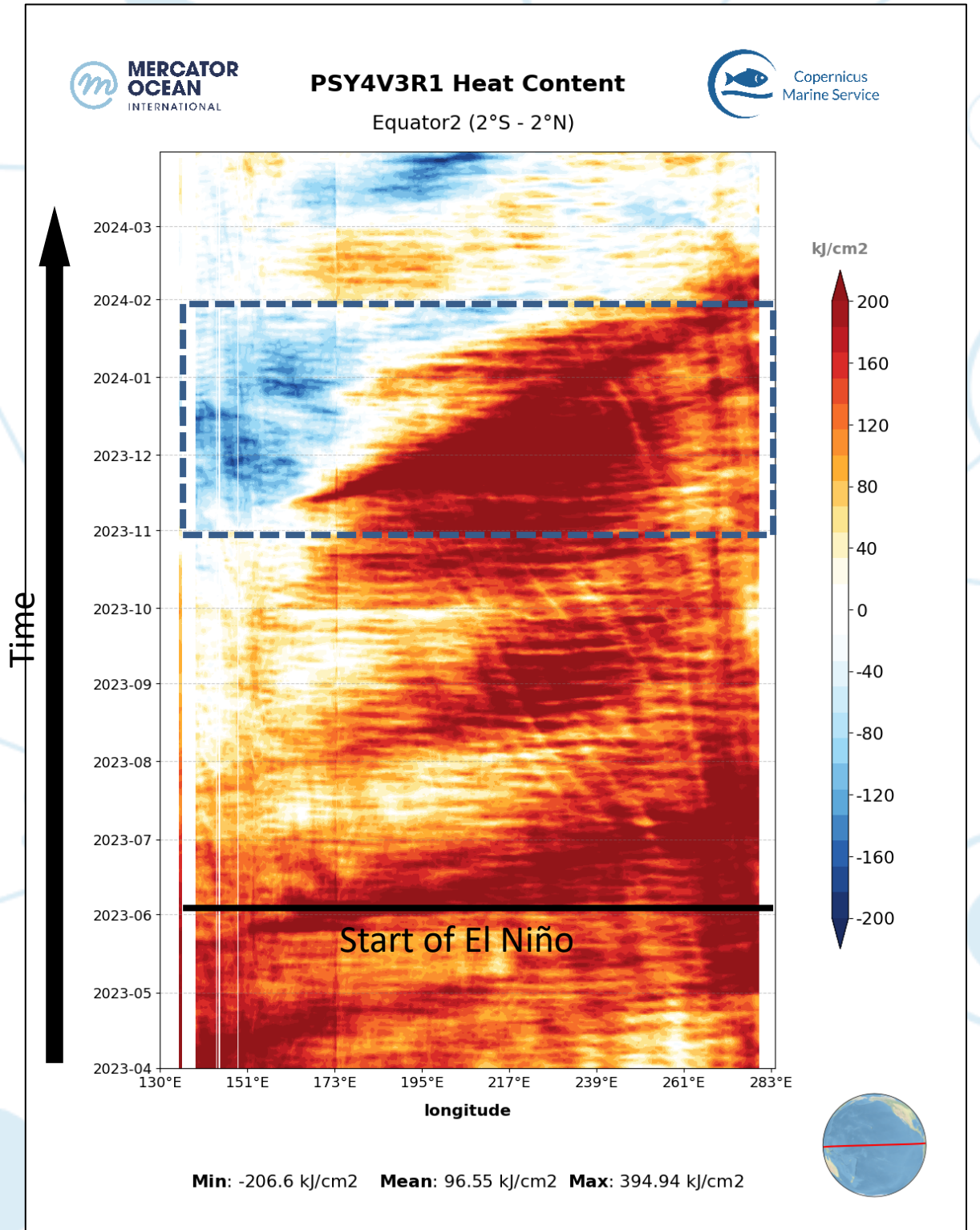
Pacific ENSO Tracker & Current status

SST & Heat content in the Pacific Ocean from October to March



Unlike typical El Niño event, no cold SST's anomalies were observed in the west of the basin throughout the period from June to March (except in December), which is unprecedented during an El Niño episode.

Nevertheless, a hot/cold dipole was well established at depth from November to January. Since February, these cold deep waters have extended throughout the equatorial Pacific, suggesting an upcoming La Niña episode...

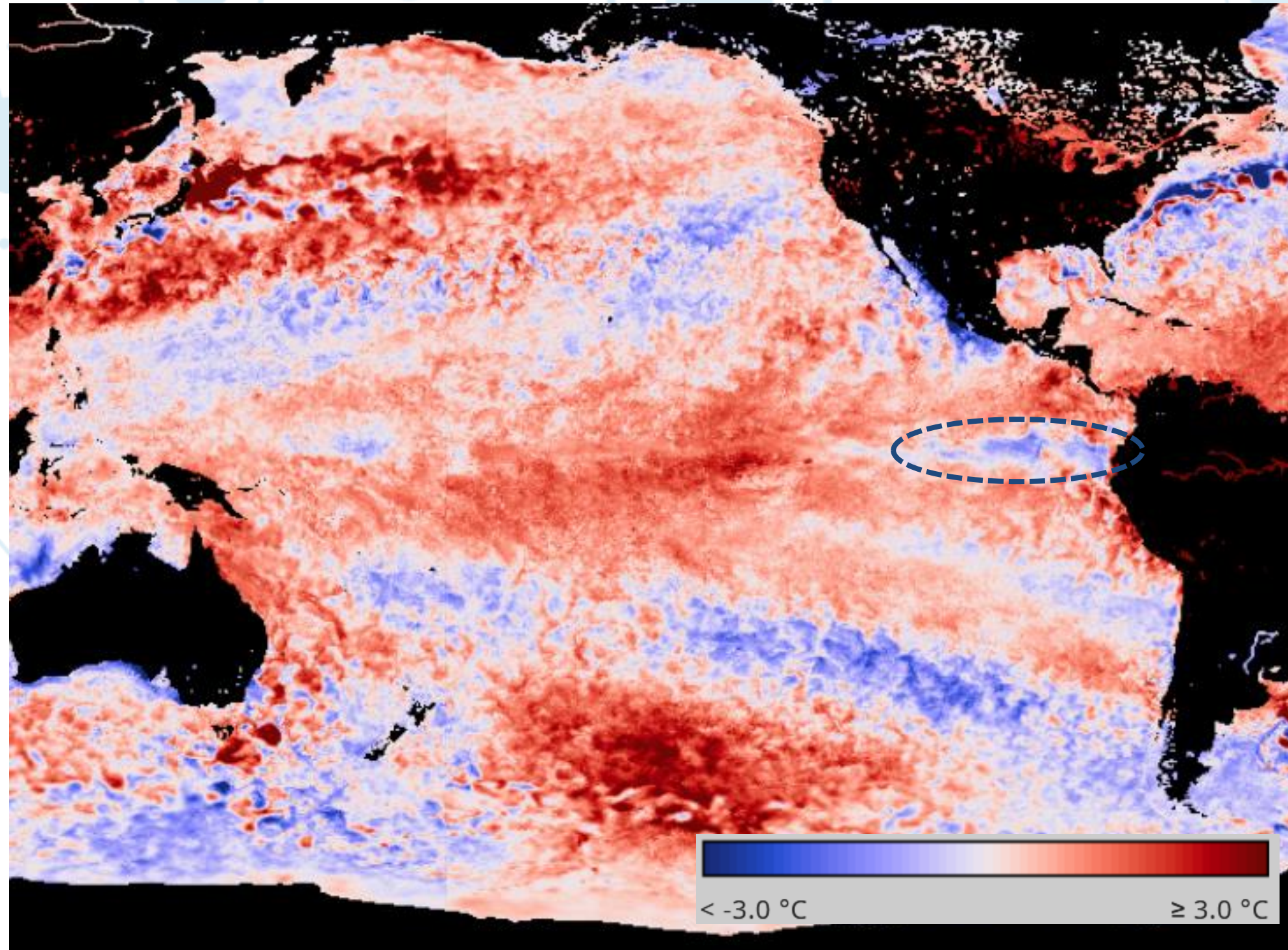


Pacific equatorial SST form Apr.23 to Mar.24
(Source : Mercator Ocean)

Pacific equatorial heat content form Apr.23 to Mar.24
(Source : Mercator Ocean)

Pacific ENSO Tracker & Current status

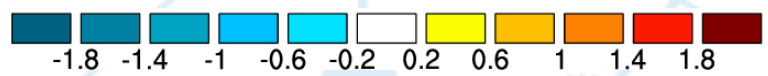
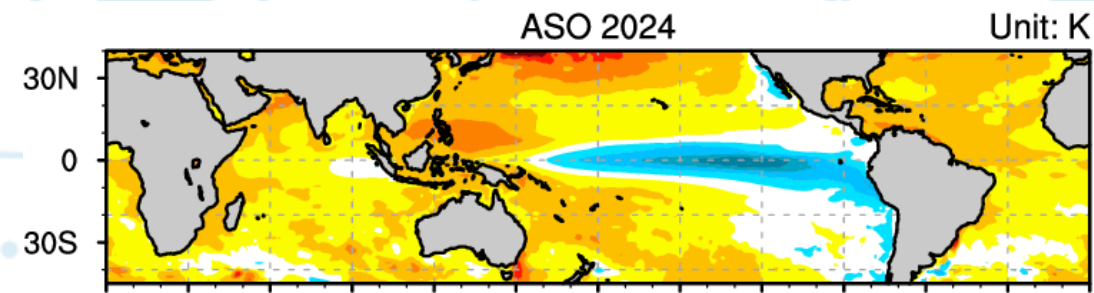
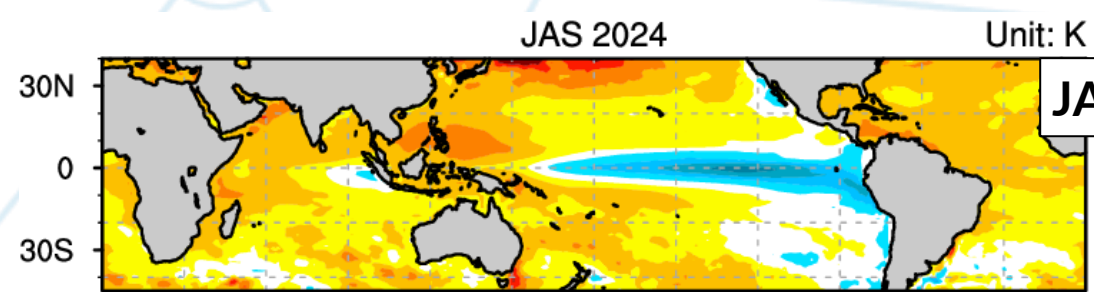
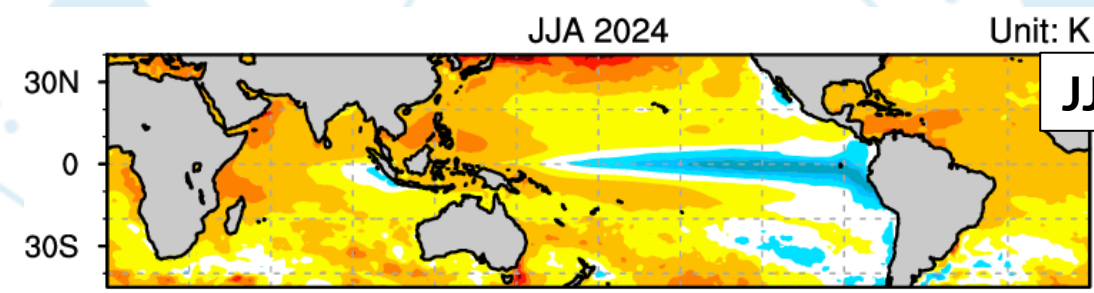
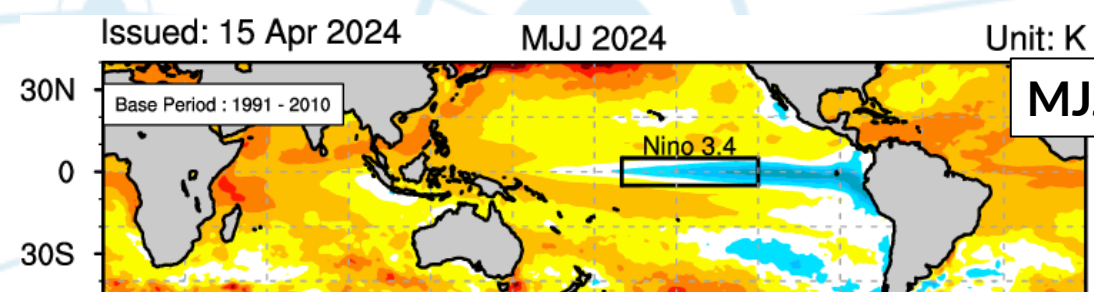
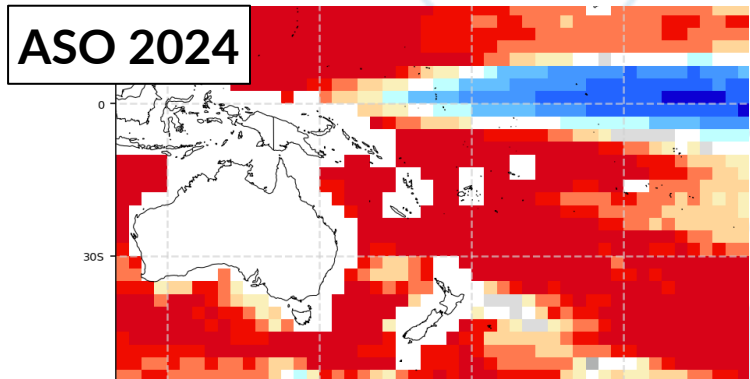
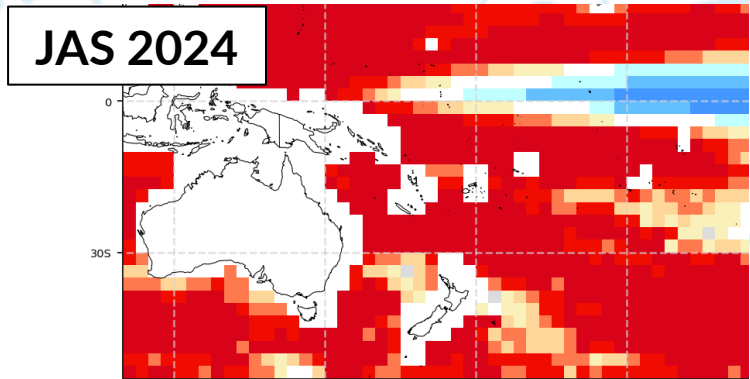
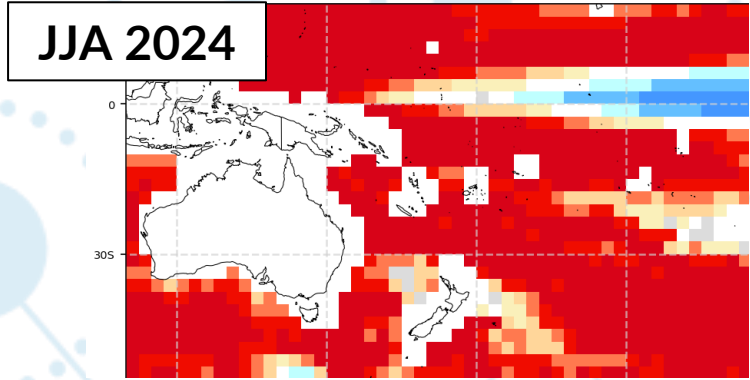
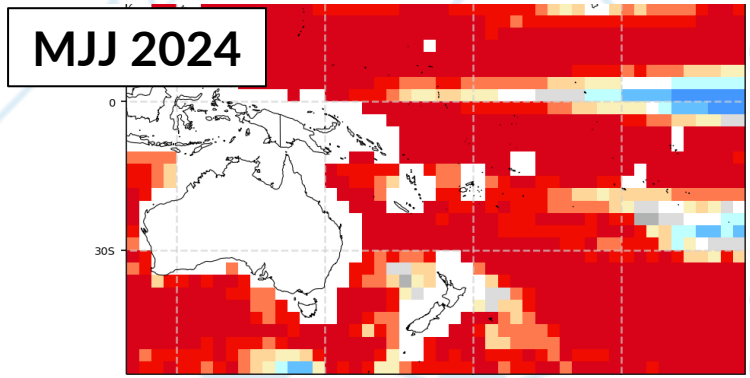
Heat content in the Pacific Ocean at the beginning of April



Since mid-March and until mid-April, an upwelling has appeared along the coasts of Peru and is spreading day by day, as a precursor of a new La Niña event.

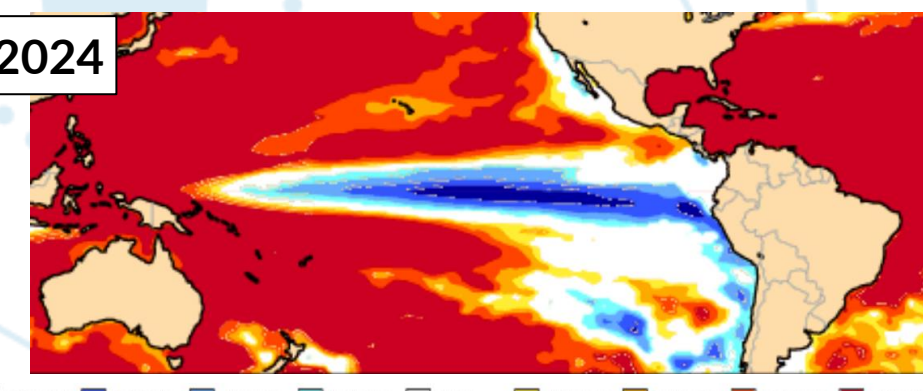
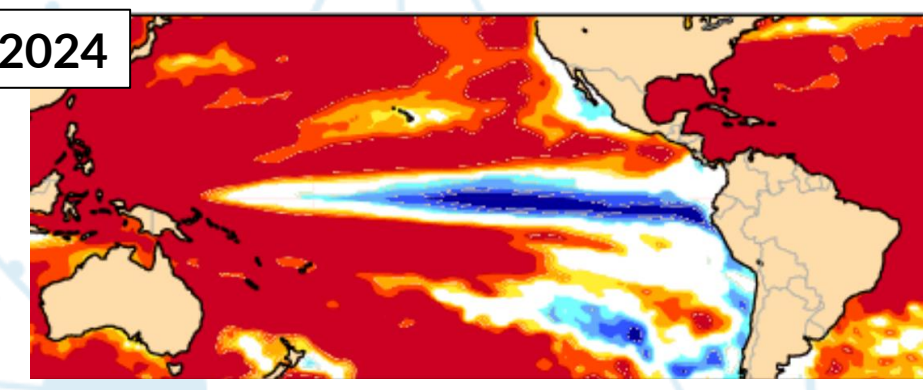
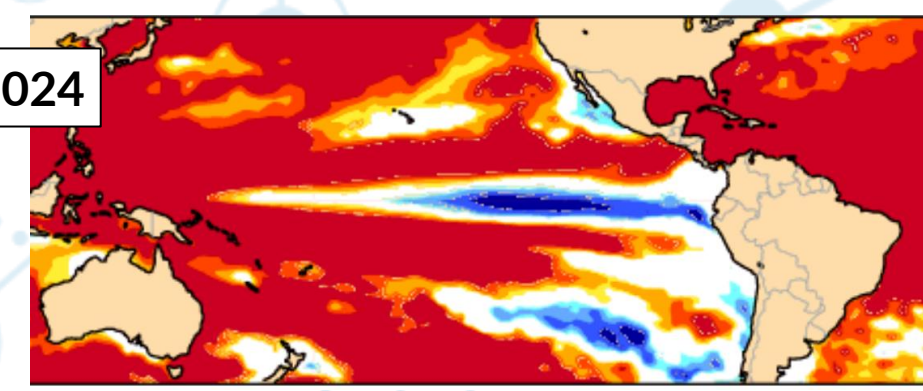
Sea Surface Temperature anomalies (L4, MUR) on Monday April 8, 2024
(Source : [SOTO by Worldview](#))

Outlook 3-month SST

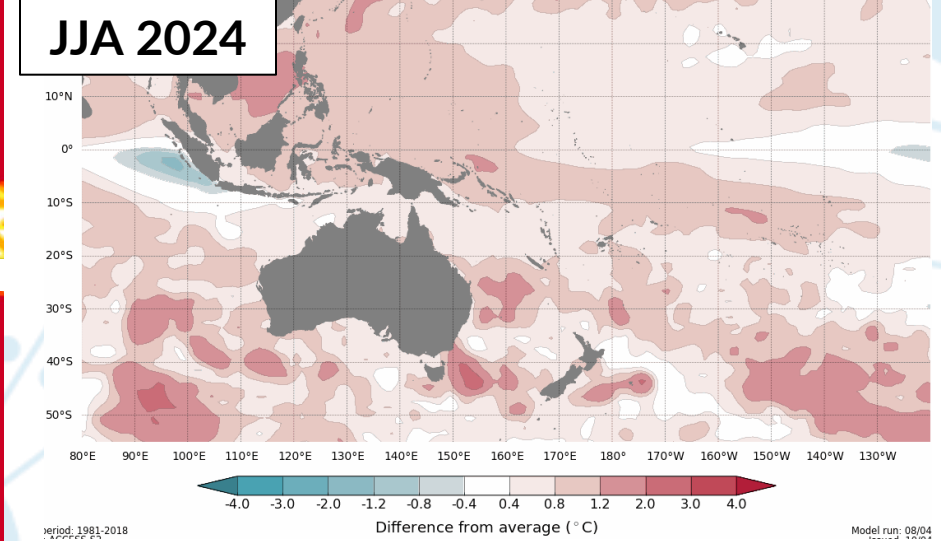
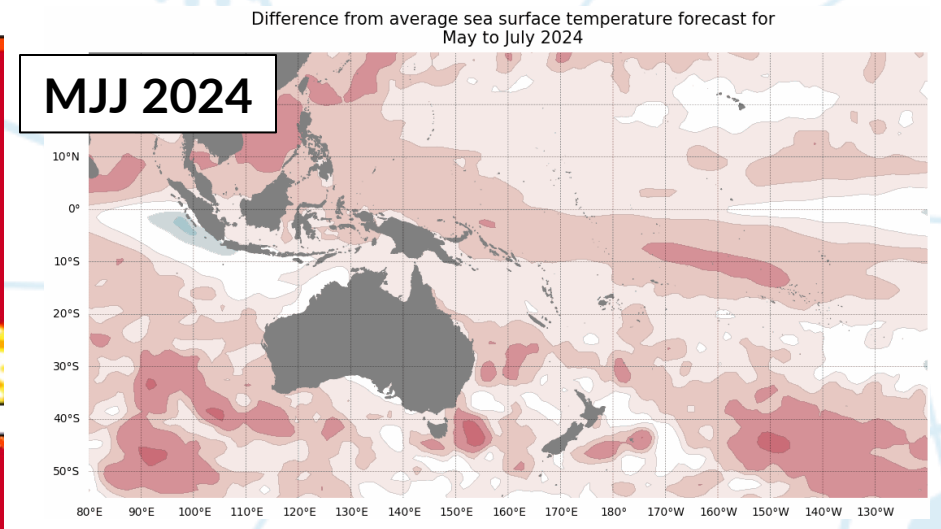


Probabilistic MME Forecast
© APCC

<https://www.apcc21.org/prediction/global/sst?year=2024&month=04>



C3S Multisystem seasonal forecast
© Copernicus
https://climate.copernicus.eu/charts/packages/c3s_seasonal/



ACCESS-S2 Forecast
© Australian Bureau of Meteorology
<http://www.bom.gov.au/climate/pacific/outlooks/>

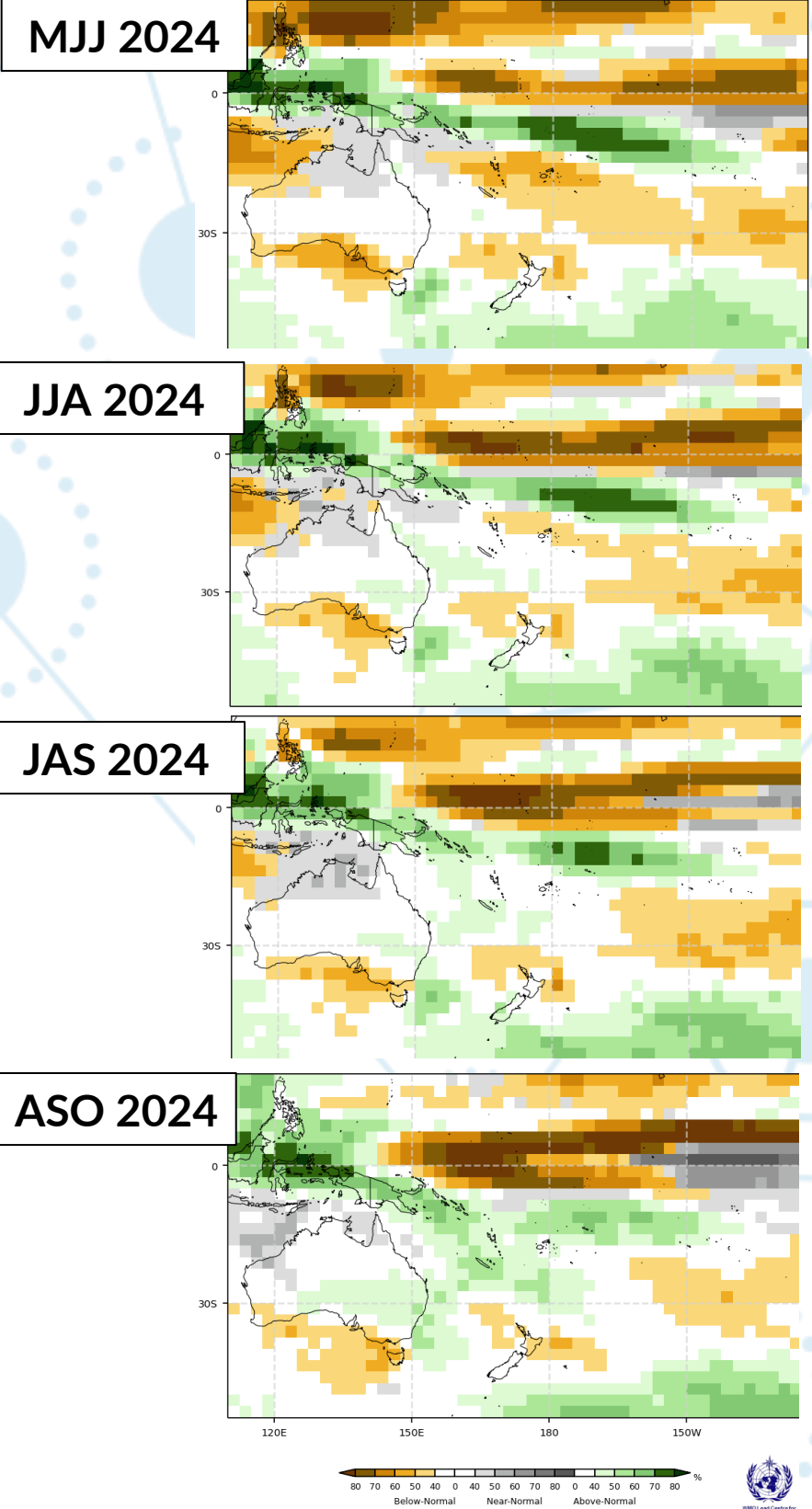
Probabilistic MME Forecast
© WMO LC-LRFMME

https://www.wmolc.org/seasonPmmeUI/plot_PMME#

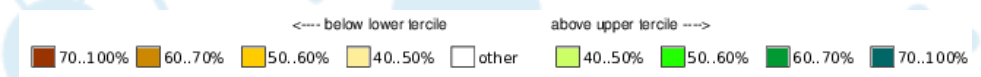
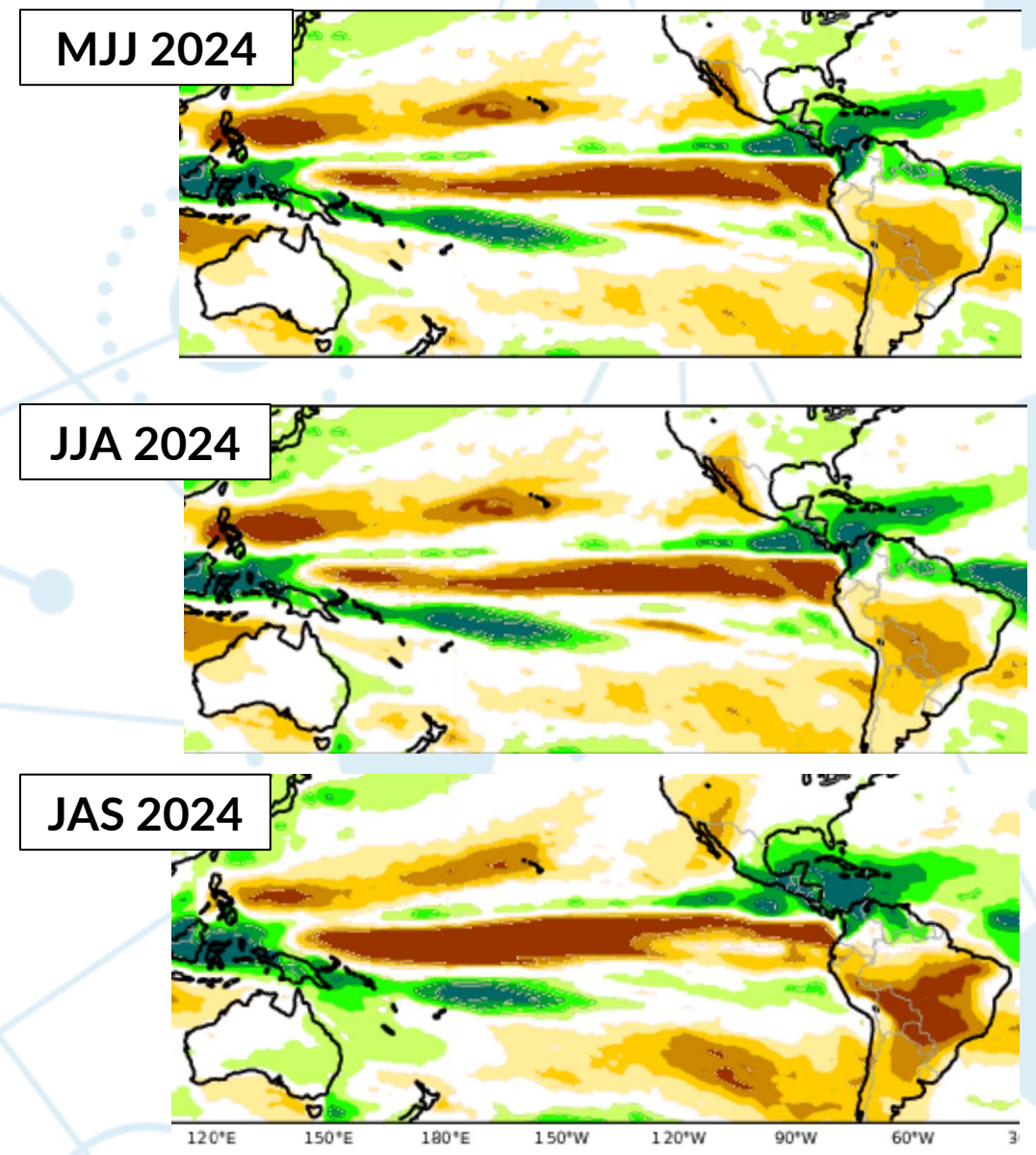
Over the coming months, the central and eastern of equatorial Pacific are expected to cool.

Outlook

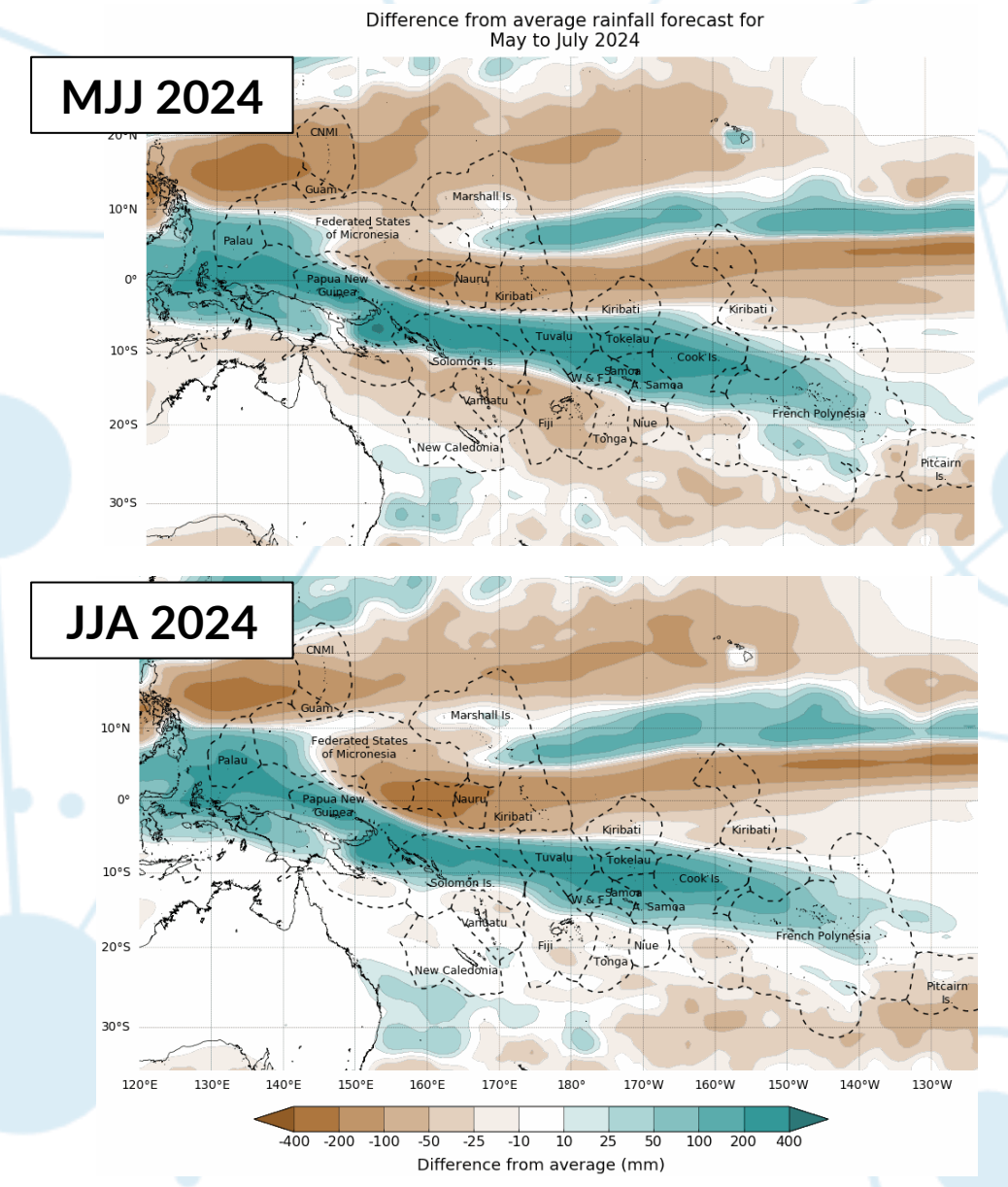
3-month Precipitation



Over the coming months, precipitation are expected to be lower than normal the central and eastern of equatorial Pacific. Along an axis stretching from the Maritime Continent to French Polynesia, as well as over most of Australia, conditions are likely to be wetter than normal.



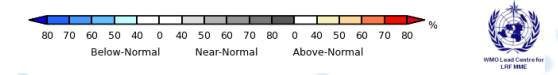
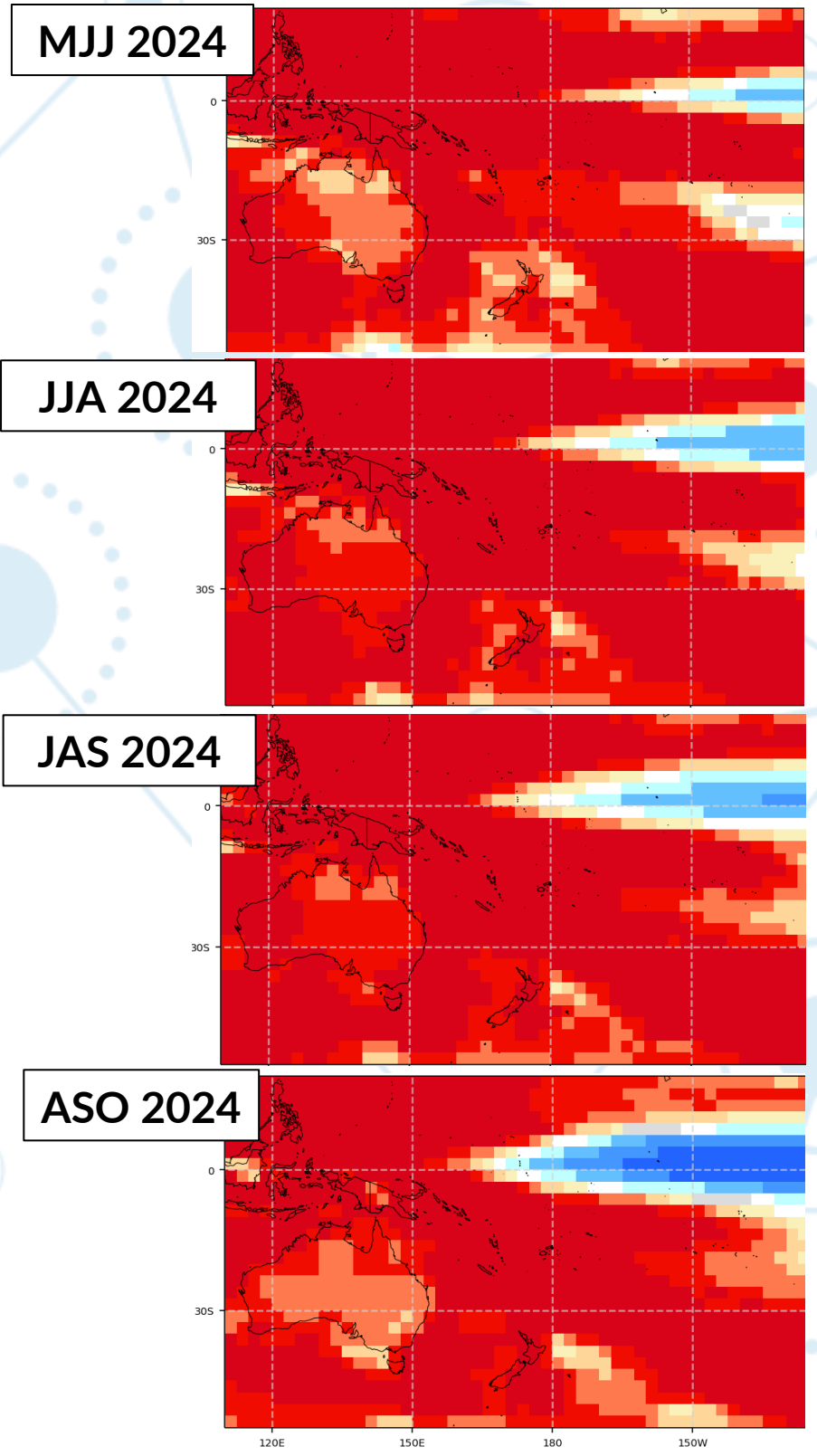
C3S Multisystem seasonal forecast
© Copernicus
https://climate.copernicus.eu/charts/packages/c3s_seasonal/



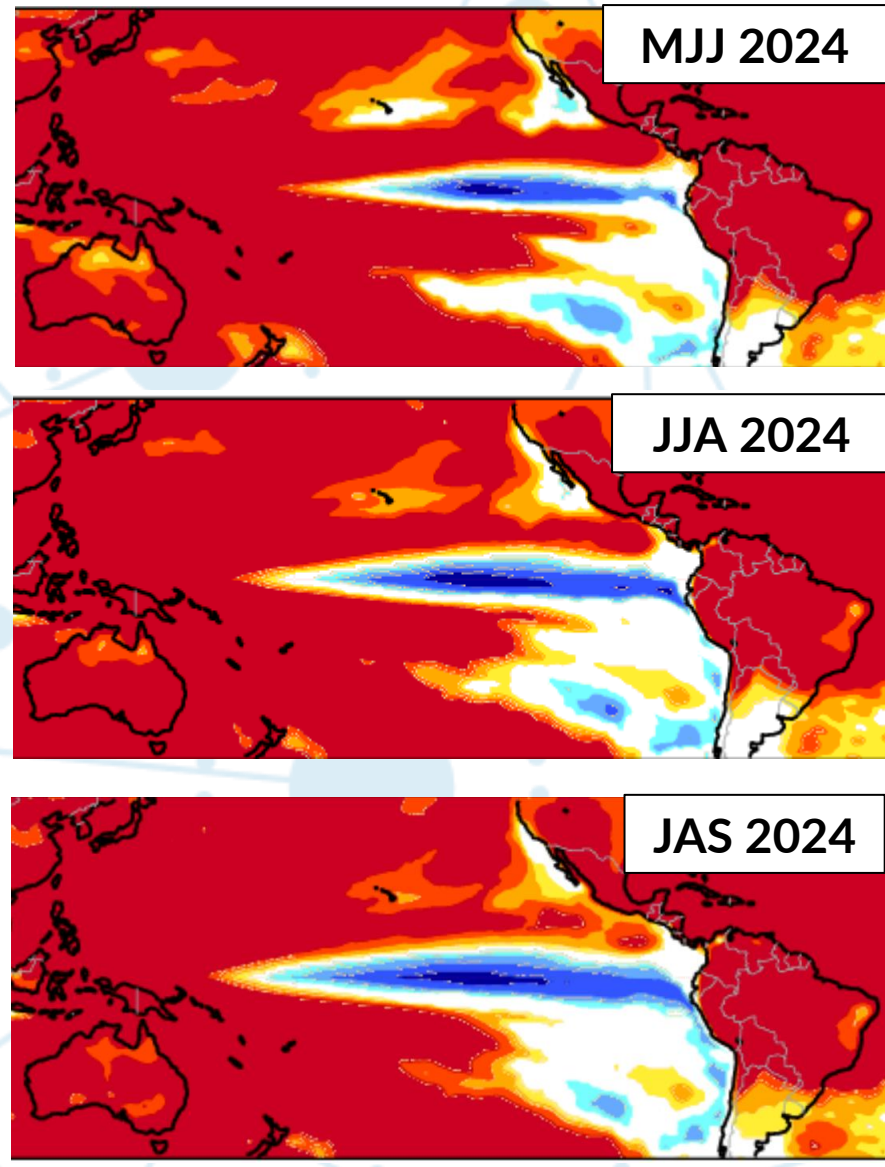
ACCESS-S2 Forecast
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<http://www.bom.gov.au/climate/pacific/outlooks/>

Outlook

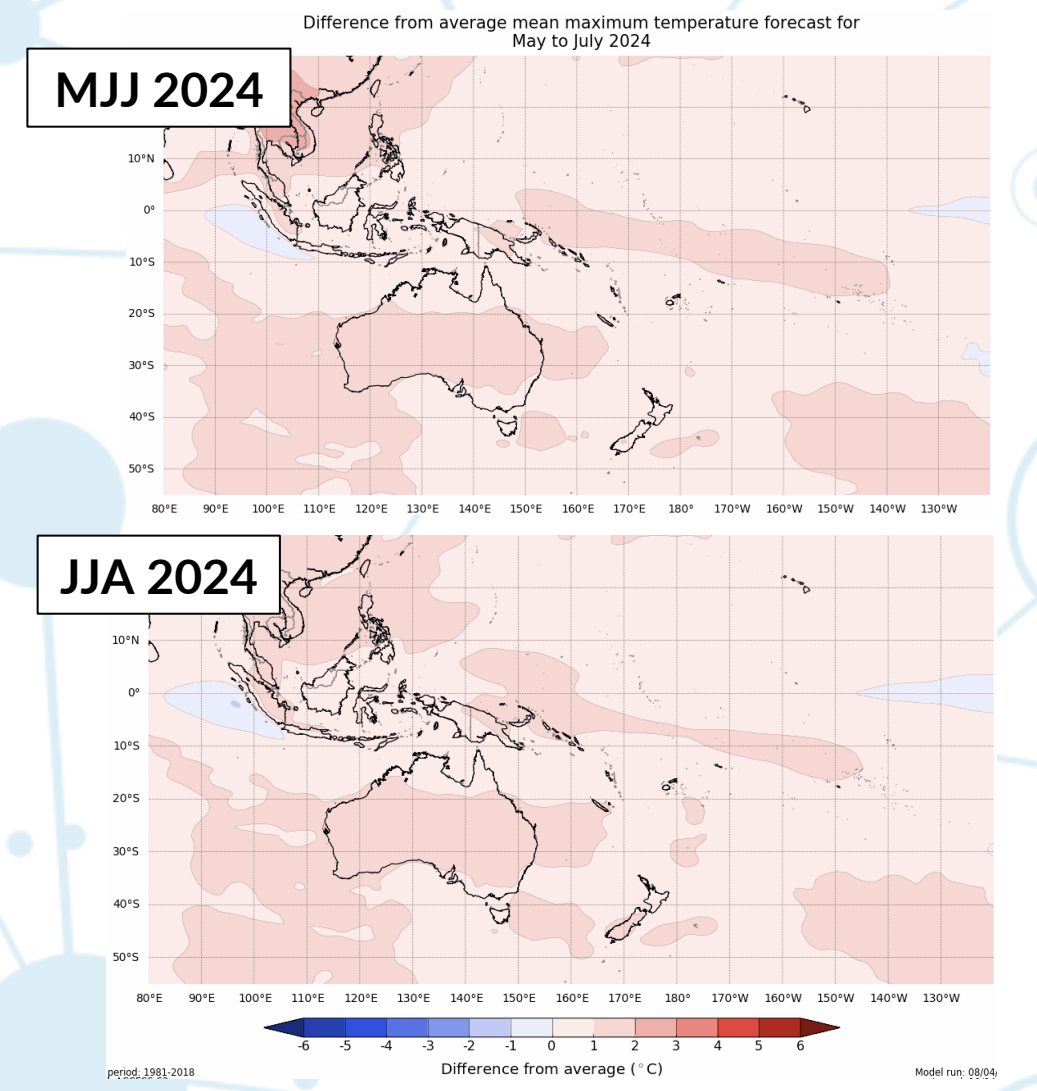
3-month Temperature 2m



Over the coming months, the central and eastern of equatorial Pacific are expected to cool.



C3S Multisystem seasonal forecast
 © Copernicus
https://climate.copernicus.eu/charts/packages/c3s_seasonal/

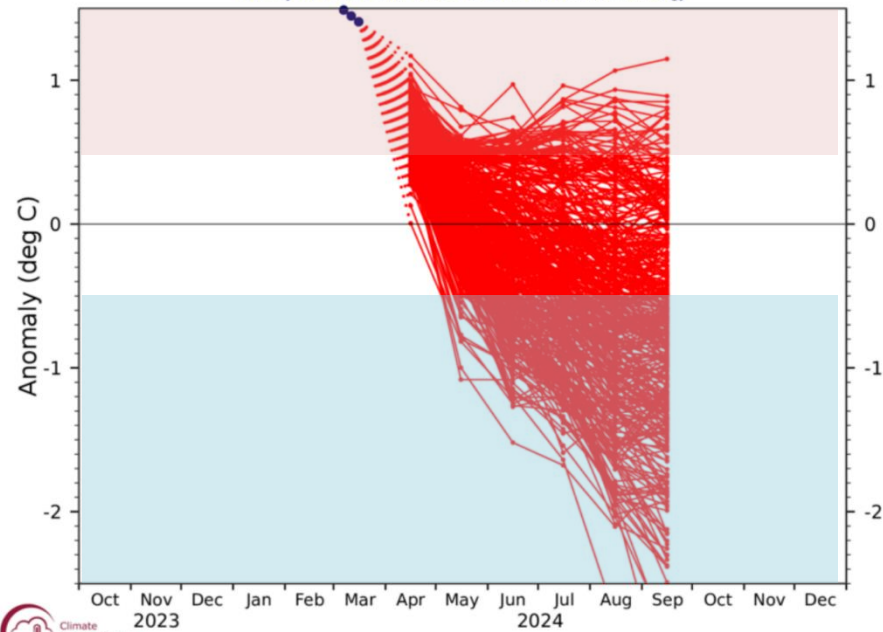


ACCESS-S2 Forecast
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<http://www.bom.gov.au/climate/pacific/outlooks/>

Outlook

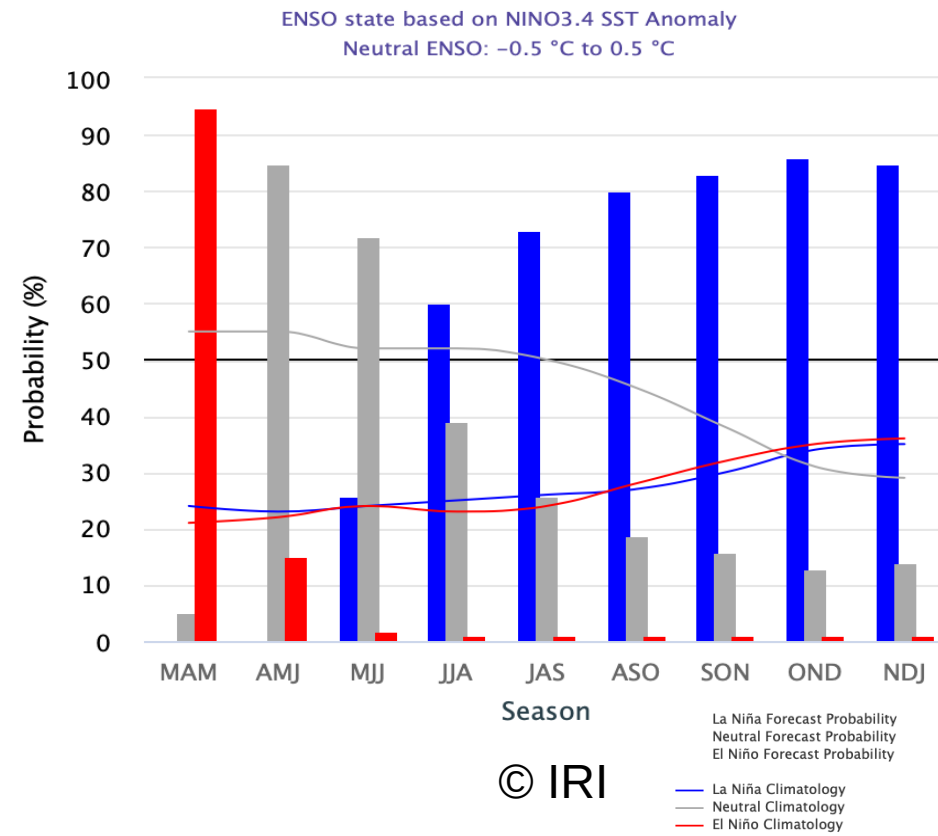
Niño 3.4 SST Anomaly & probabilistic ENSO forecasts

Niño3.4 SST anomaly plume
C3S multi-system forecast from 1 Apr 2024
ECMWF, Met Office, Météo-France, CMCC, DWD, NCEP, JMA, ECCO
Monthly mean anomalies relative to ERA5 1981-2010 climatology



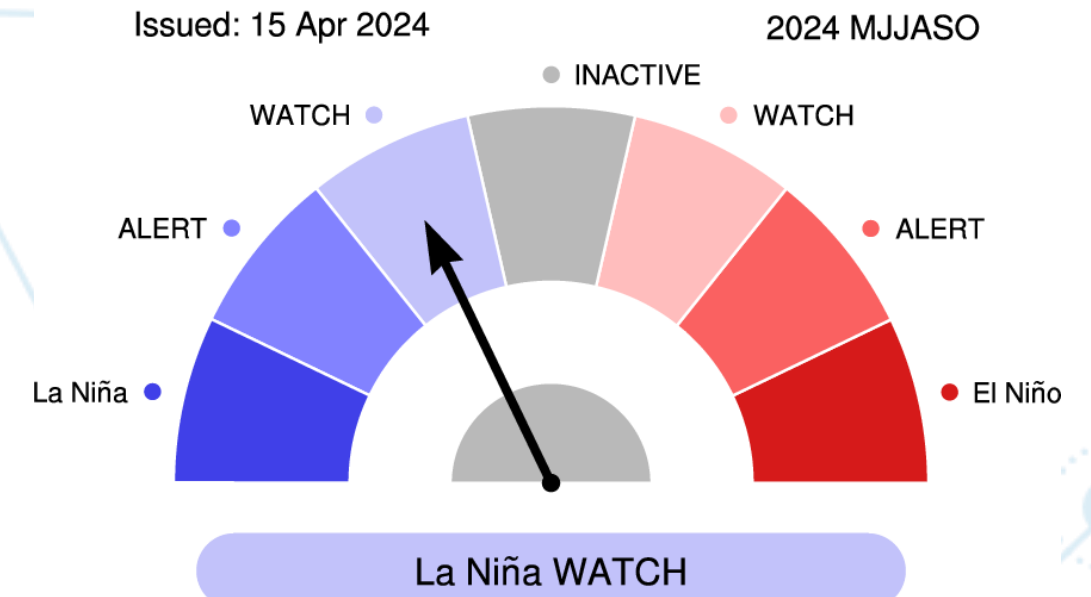
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Early-April 2024 CPC Official Probabilistic ENSO Forecasts



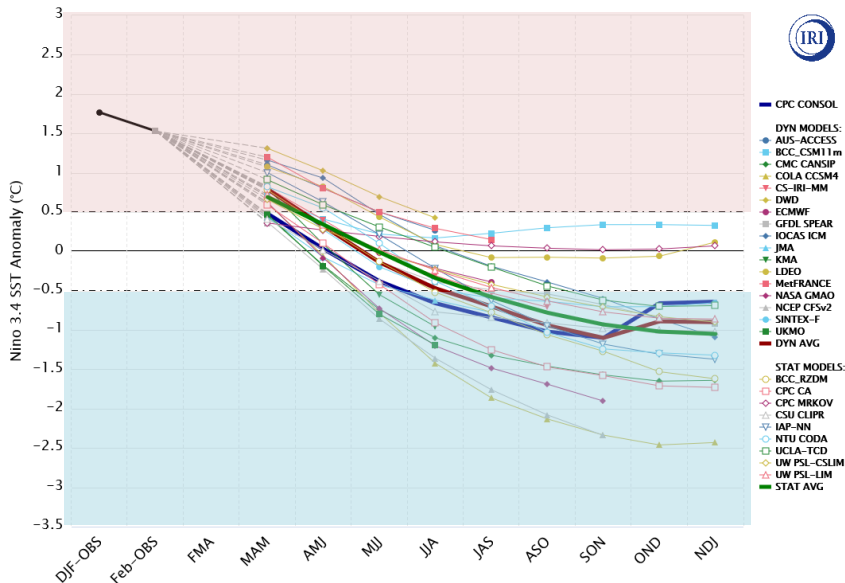
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ENSO Alert System



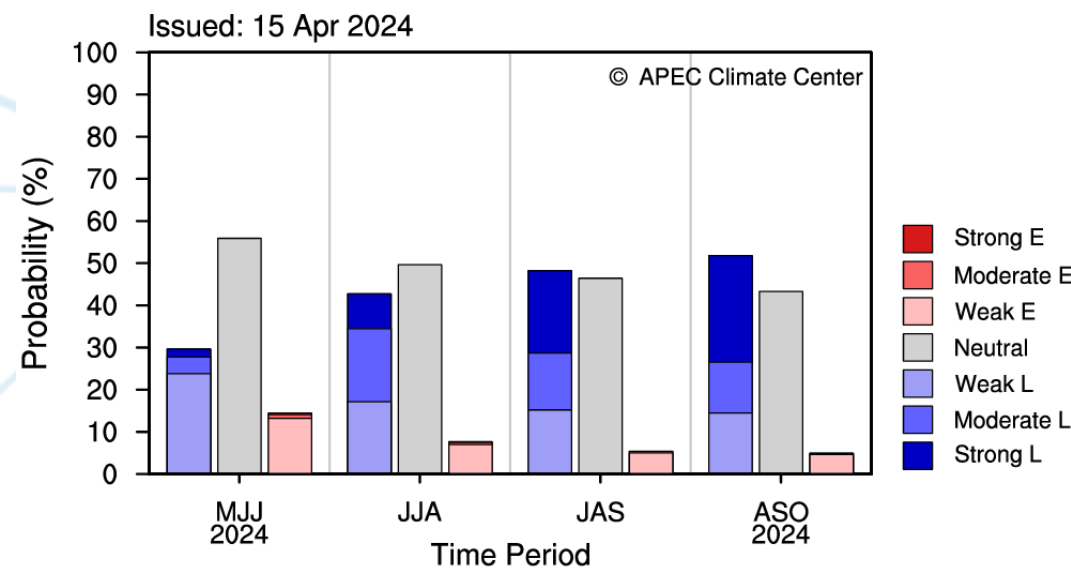
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Model Predictions of ENSO from Mar 2024



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Probabilistic ENSO Forecast for 2024 MJJASO



- Most of the climate models suggest a transition from El Niño to ENSO-neutral by April-May-June.
- La Niña is then favored in June-July-August.

* ENSO Intensity based on 3M Mean Niño3.4 SST Anomaly (Category Boundaries: +/-1.5, 1.0, 0.5°C)

Summary

- **El Niño has been present since June 2023.** But this El Niño stands out because the cold water anomaly hasn't been really present in the west of the Pacific basin.
- **Since January**, it has been showing **signs of weakness** (the ocean / atmosphere coupling has been discontinuous).
- **Since mid-March**, cold water anomaly has been appearing along the east coast of the Pacific basin, as a precursor of a La Niña event.
- Most of the climate models suggest a transition from El Niño to **ENSO-neutral** by **April-May-June**.
La Niña is then favored by **June-July-August**.



Thank you !

Contact



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