Global Tropics Hazards And Benefits Outlook

1/4/2022

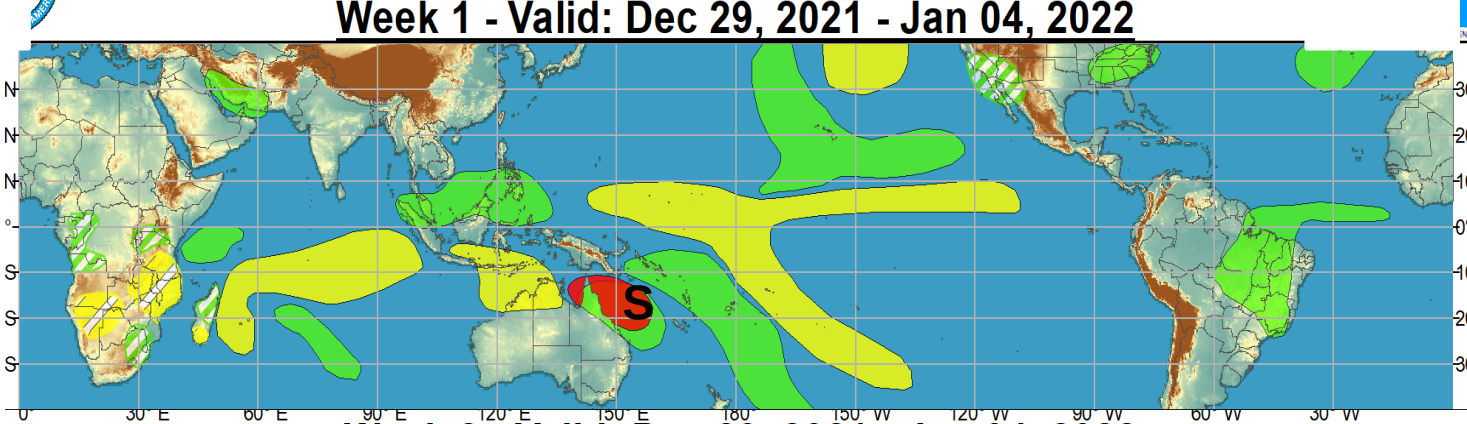
Thomas Collow

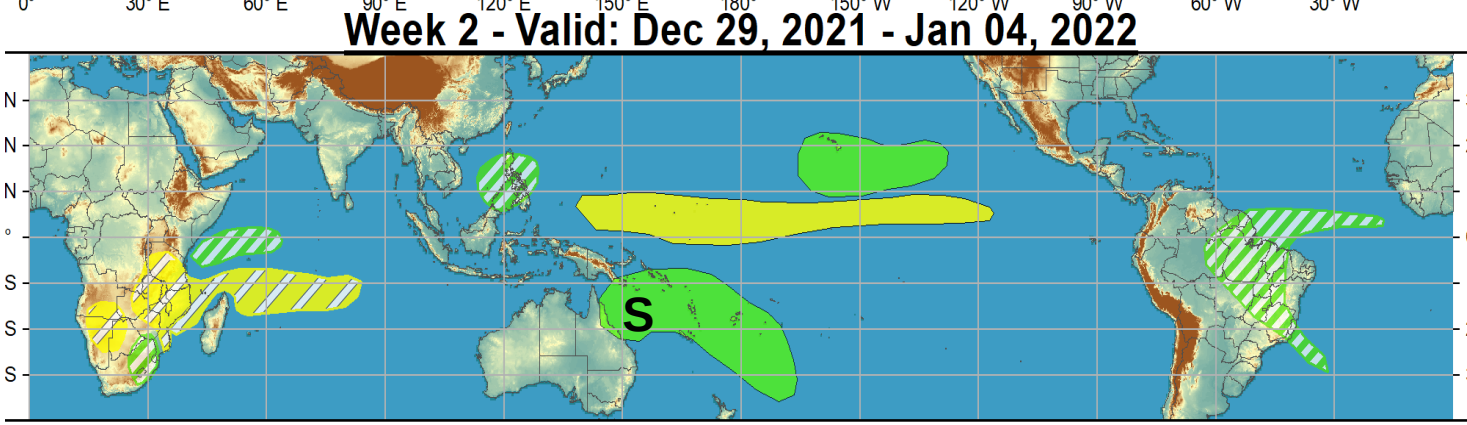
Outline

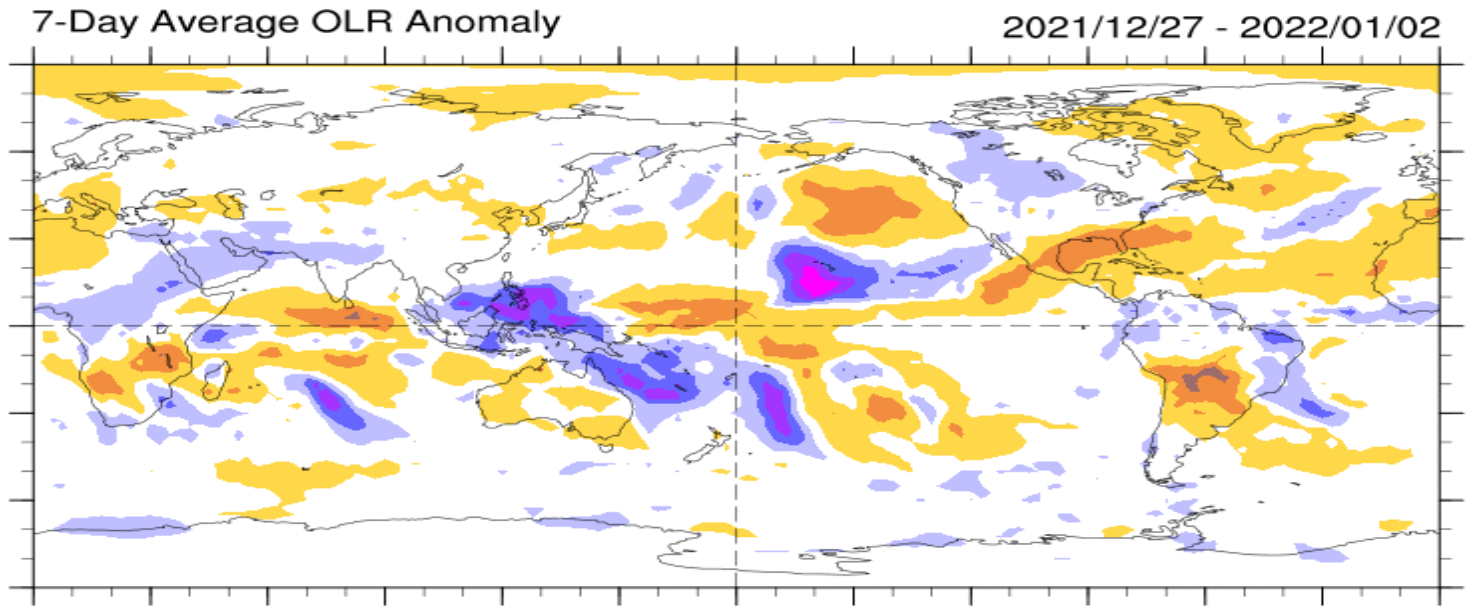
1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts

Outlook Review

TCs since 12/29:
Seth (12/31)







Cool shading
More clouds/rain

Warm shading
Less clouds/rain

Synopsis of Climate Modes

ENSO: (December 9, 2021 Update) ***next update on 13th of Jan.!***

- ENSO Alert System Status: La Niña Advisory

- La Niña is favored to continue through the Northern Hemisphere winter 2021-22 (~95% chance) and transition to ENSO-neutral during the spring 2022 (~60% chance during April-June).

MJO and other subseasonal tropical variability:

- The MJO has been meandering across the Western Pacific (RMM phase 7) during the past 2 weeks as it destructively interferes with the low frequency La Nina base state, as well as interaction with a persistent cyclonic circulation over the North Pacific.

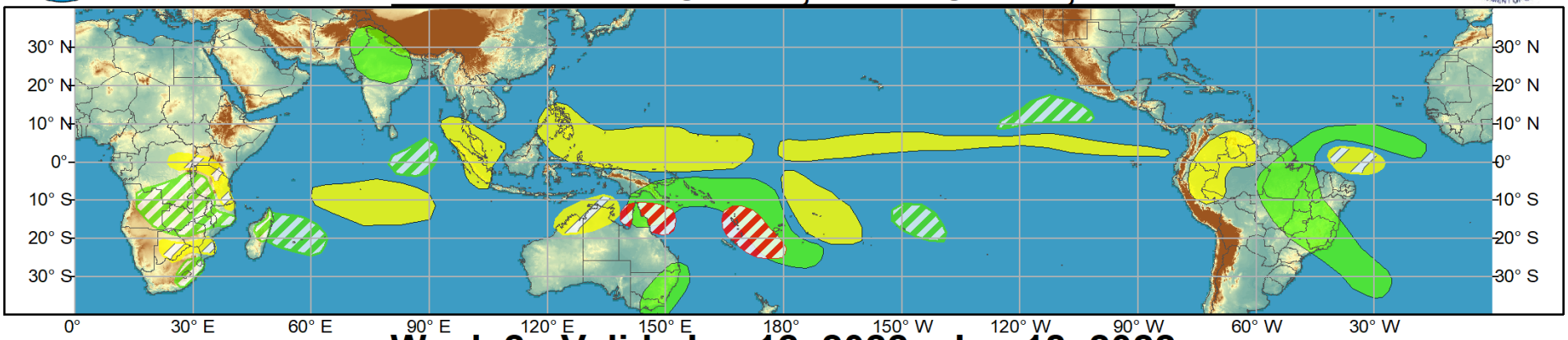
- Low level westerly wind burst during December associated with the MJO propagation has resulted in positive subsurface ocean temperature anomalies extending east of the Date Line (~160°W).

- Dynamical models, in particular the ECMWF and the JMA, depict a weakening of the MJO signal during the next 2 weeks, with more ensemble variability in the GEFS.

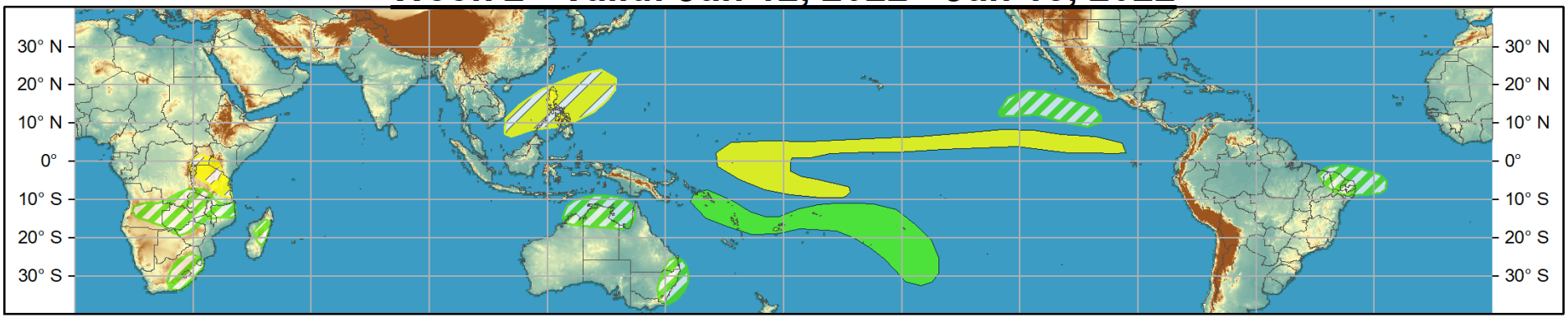
- The large scale environment is expected to remain favorable for TC formation over the southwestern Pacific, with reduced chances over the Indian Ocean and northwestern Pacific due to the decreasing influence from the MJO and the climatology for this time of year.

Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Jan 05, 2022 - Jan 11, 2022



Week 2 - Valid: Jan 12, 2022 - Jan 18, 2022



Produced: 01/04/2022

Forecaster: Collow

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Tropical Cyclone Formation			Development of a tropical cyclone (tropical depression - TD, or greater strength).
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NPS PRAESTANTIA PER SCIENTIAM

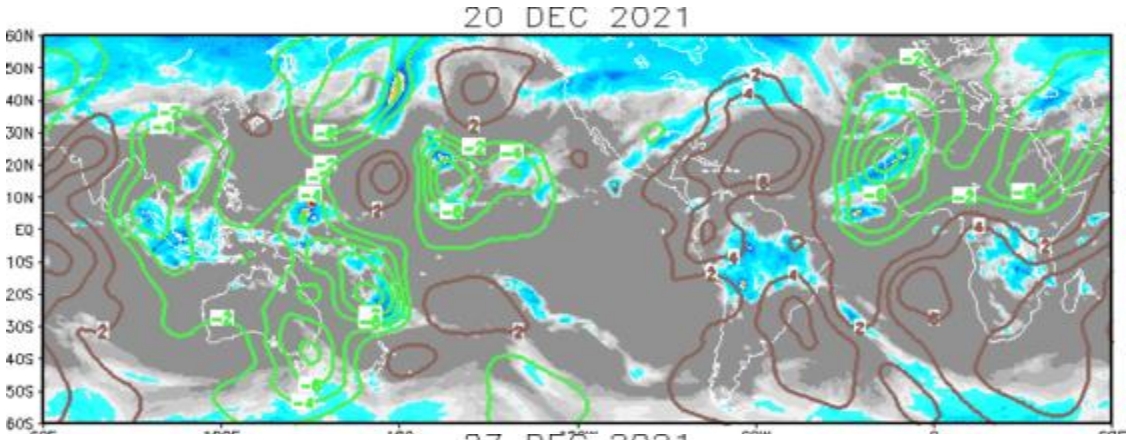
IR Satellite & 200-hpa Velocity Potential Anomalies

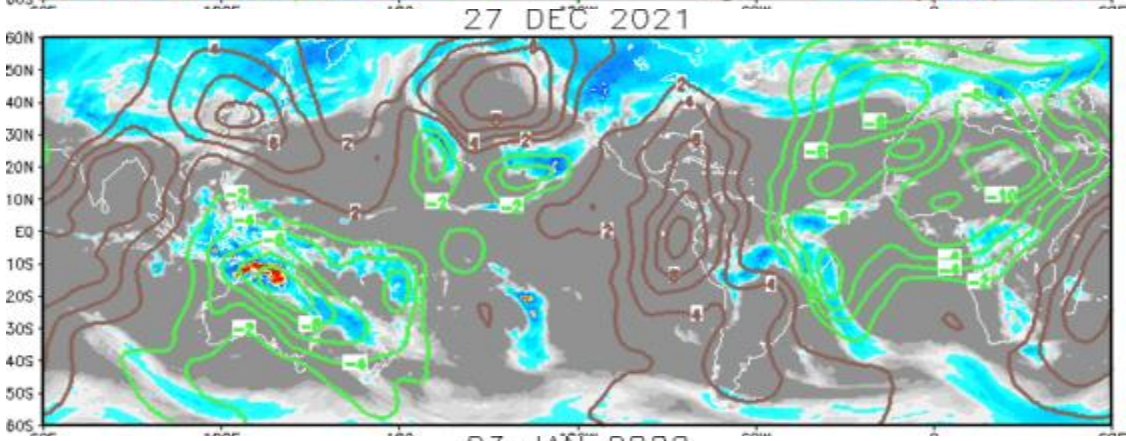
Green: Enhanced Divergence Brown: Enhanced Convergence

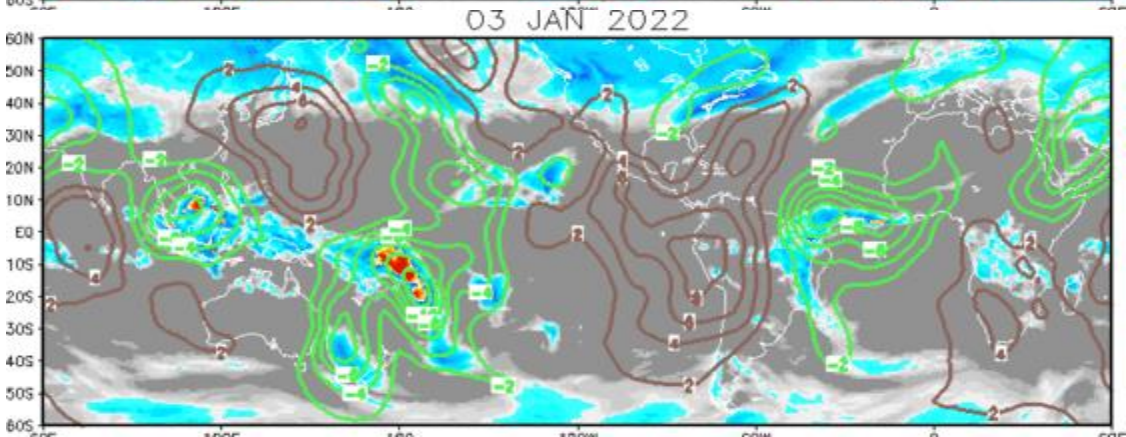
Incoherent pattern in the velocity potential pattern in late-December resulting from competing modes of tropical and extra-tropical variability.

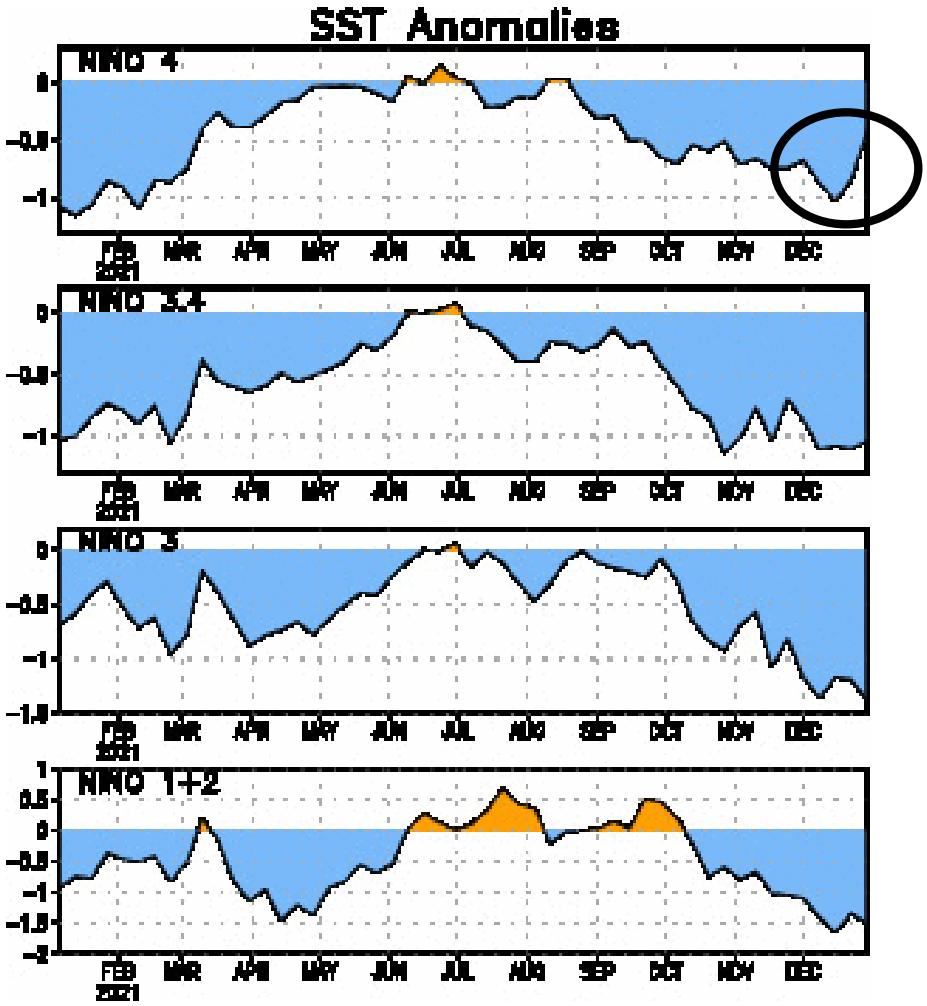
Enhanced convection observed across Australia and the southwest Pacific tied to the MJO; suppressed convection over the Indian Ocean.

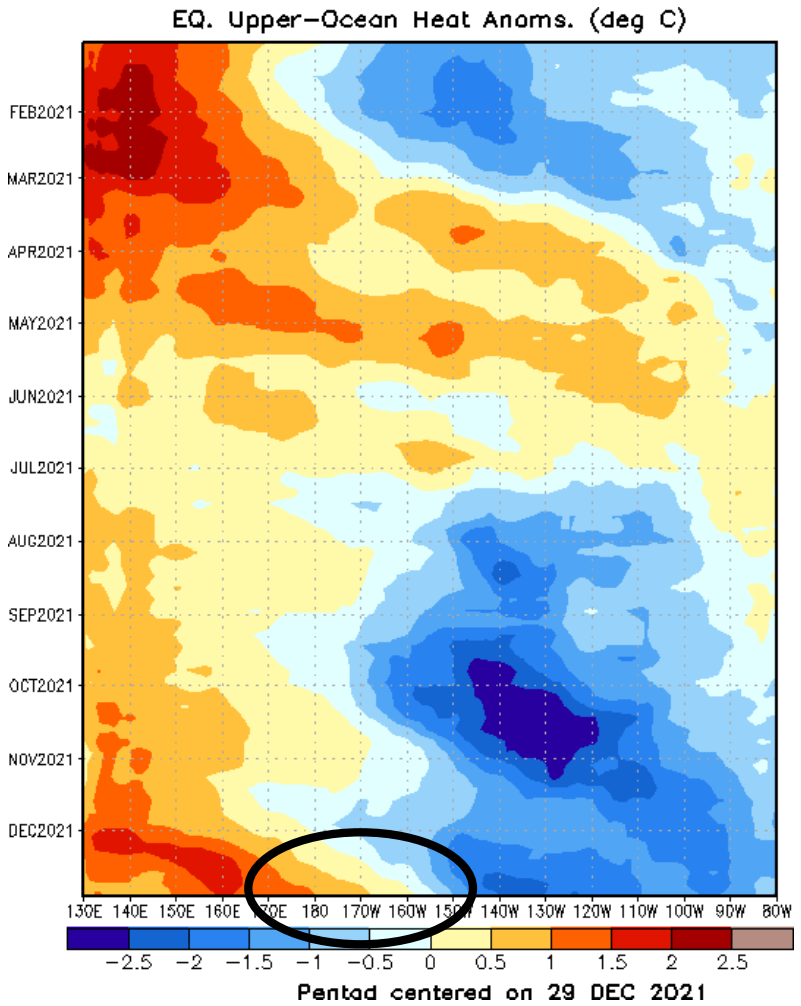
Largely incoherent pattern persists into the new year; enhanced convection across equatorial Atlantic associated with Kelvin Wave activity.





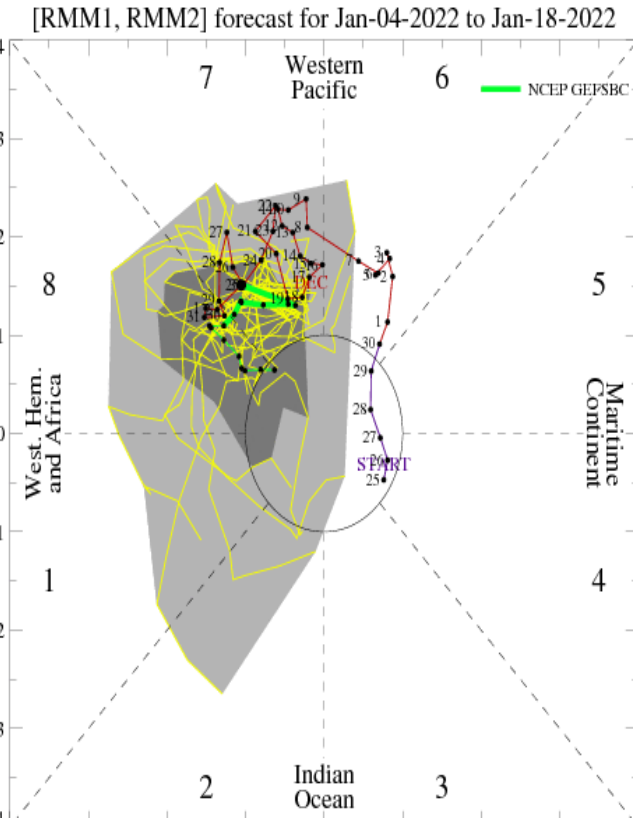




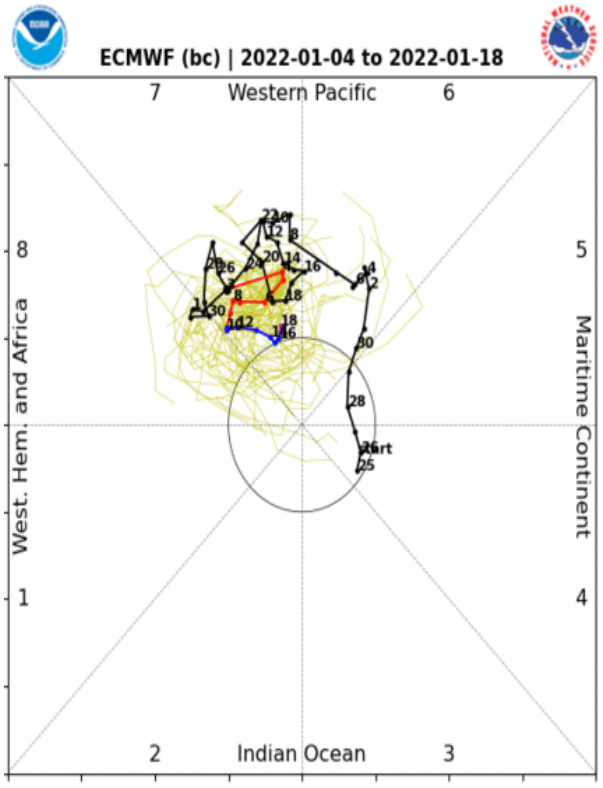


MJO propagation resulted in anomalously warm subsurface ocean temperatures spreading across the Western and Central Pacific, with a marked increase in sea surface temperatures (SSTs) observed in the Niño-4 region.

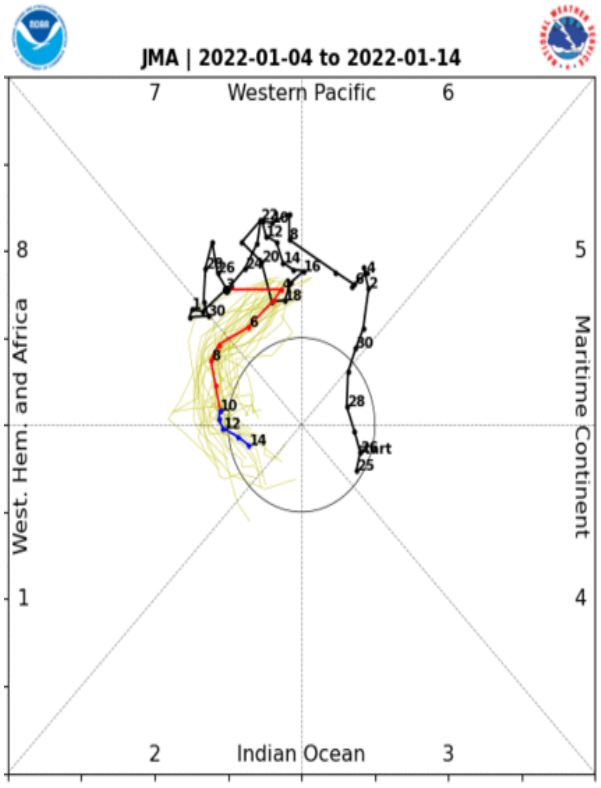
MJO Observation/Forecast



GEFS



ECMWF

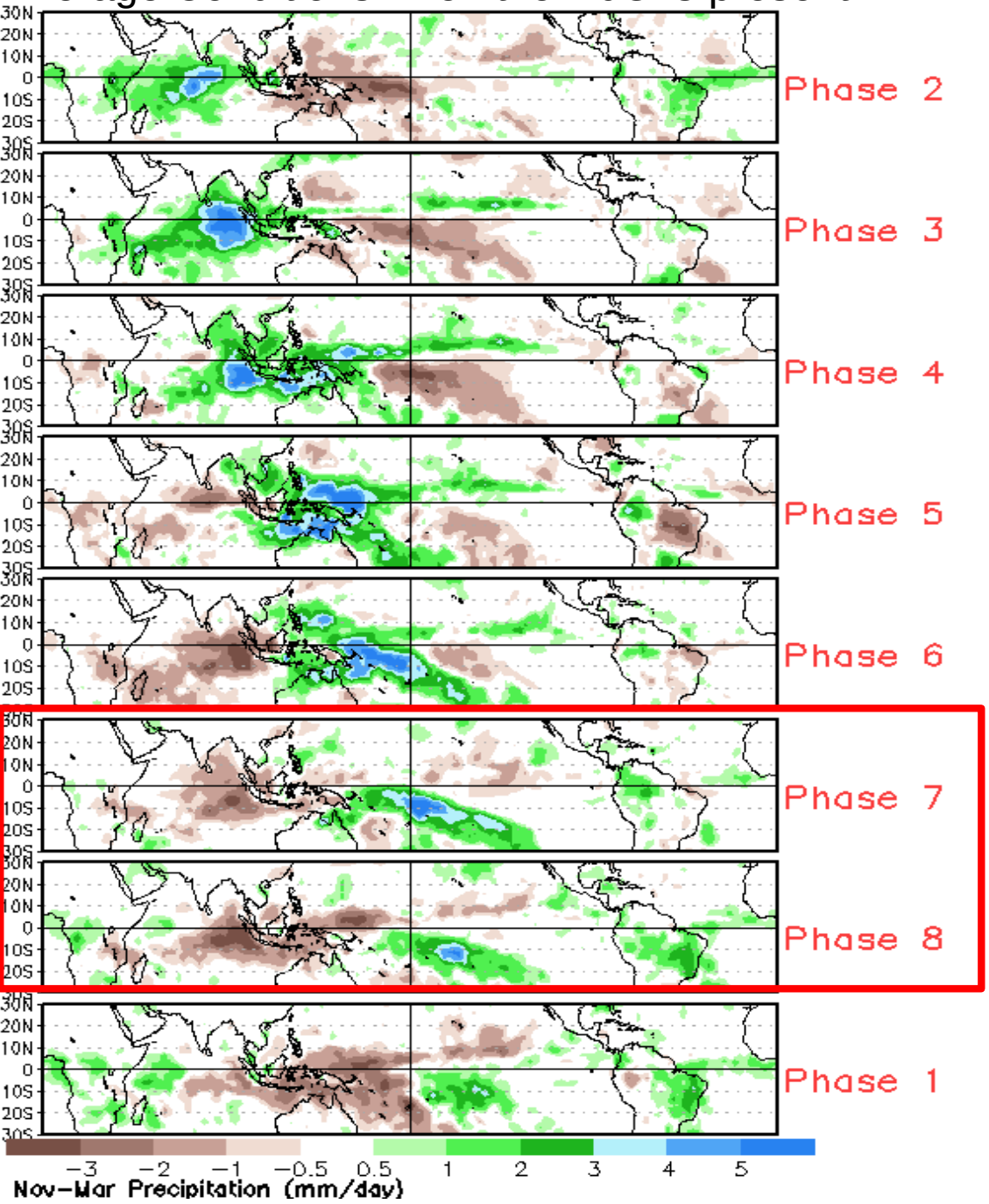


JMA

The GEFS indicates large ensemble variability regarding the evolution of the MJO during the next 2 weeks, with a clearer weakening of the signal depicted in the ECMWF and JMA ensembles.

The JMA (along with some GEFS ensemble members) indicates a weak signal continuing to propagate around the periphery of the RMM-unit circle, reaching Africa by mid-January.

Average Conditions when the MJO is present

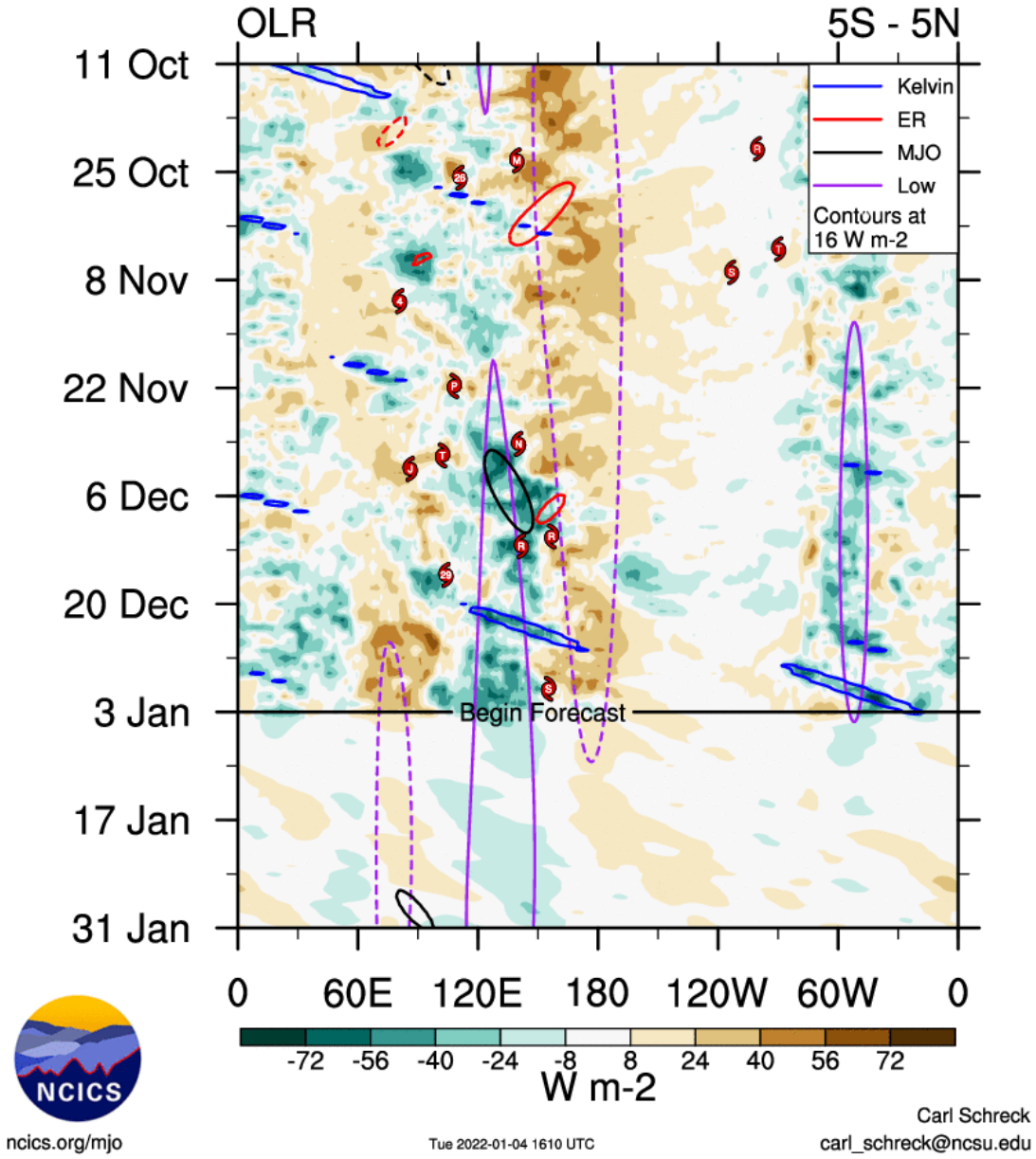


CAVEAT: These panels are representative of robust MJO events.

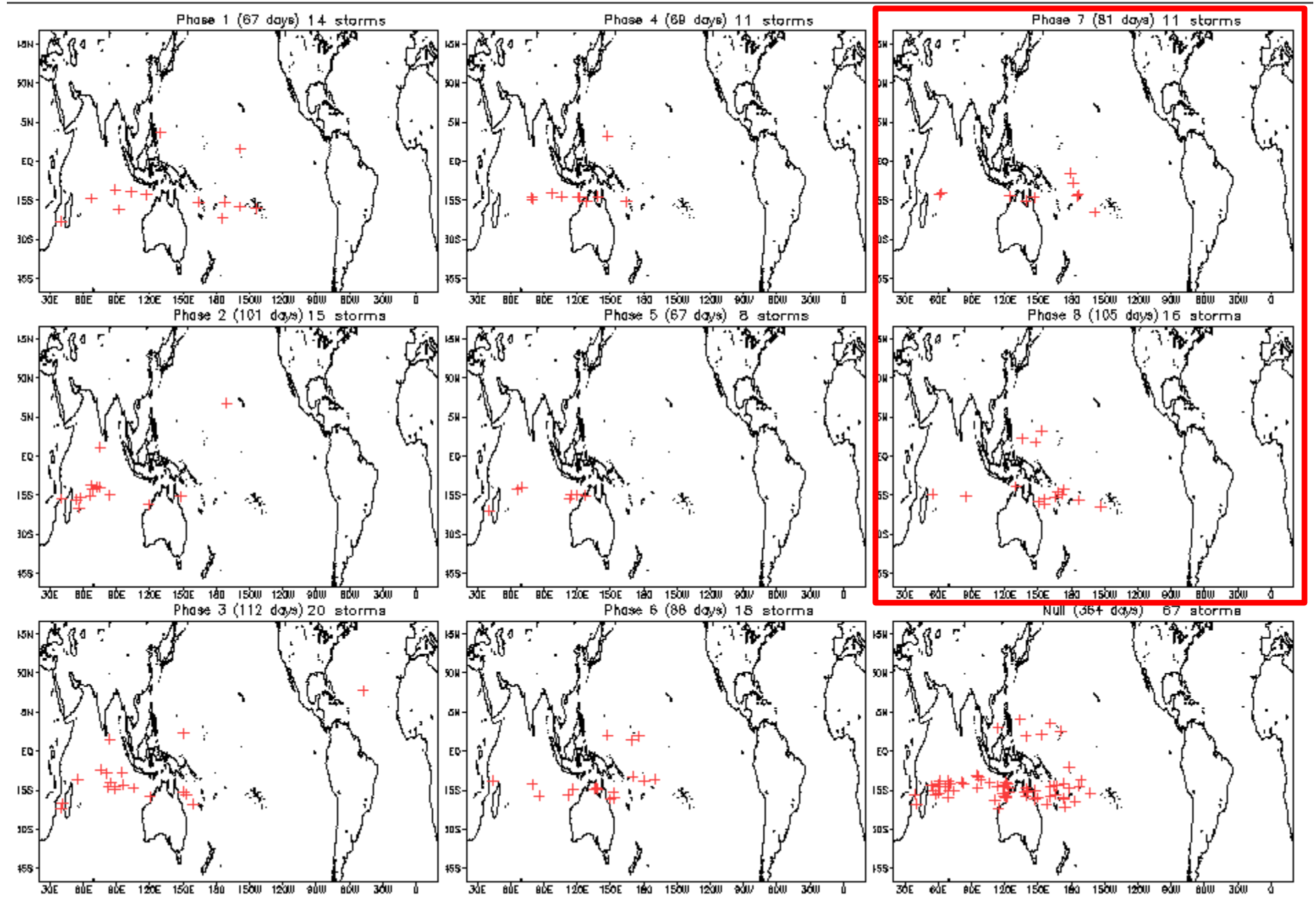
A convectively coupled **Kelvin wave** is analyzed in the observed OLR field originating over the West Pacific and remerging over the Atlantic at the end of December.

MJO activity was seen through the filtering in early December, but has since been absent as eastward propagation slowed and meandered.

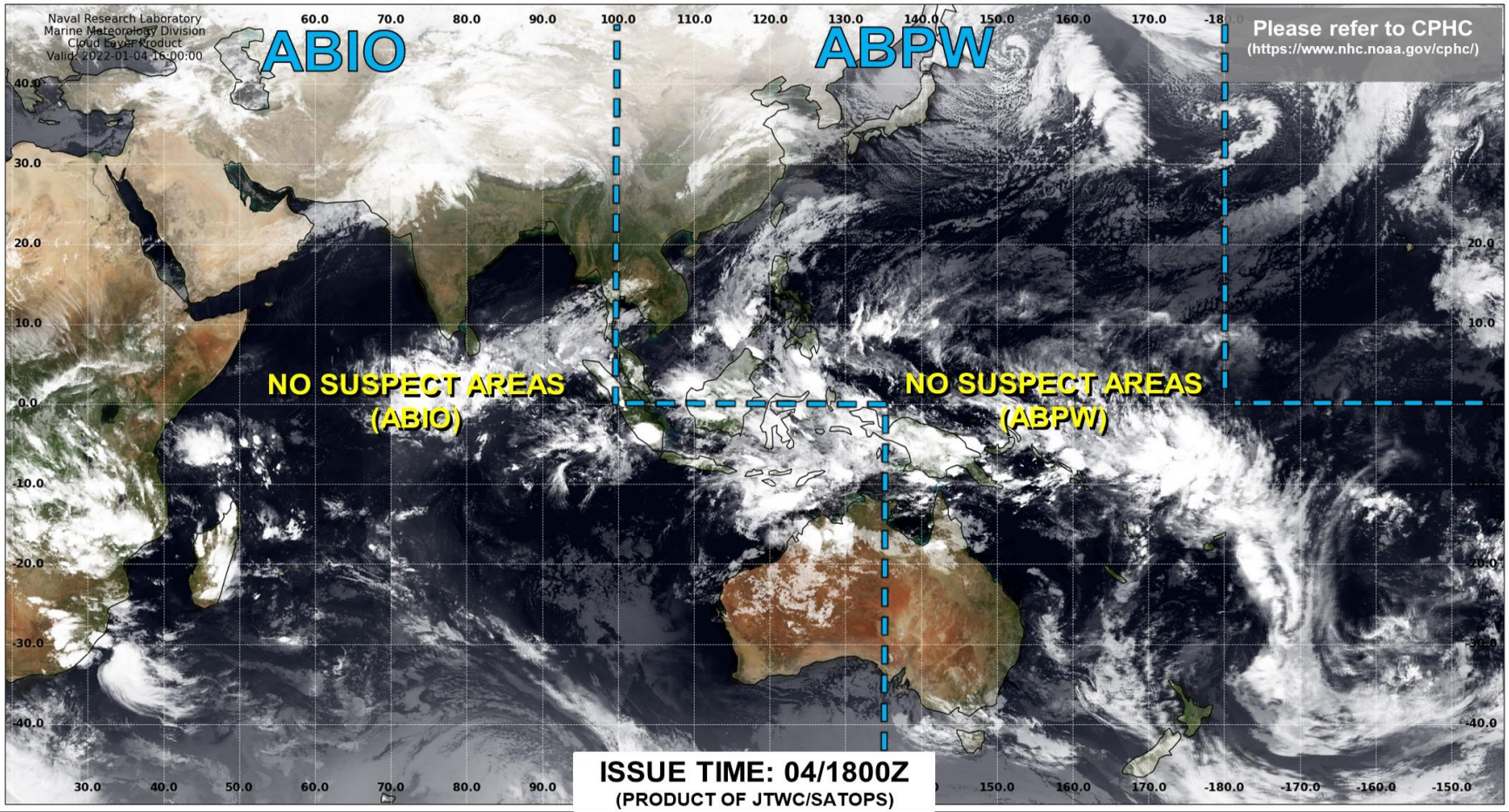
Low frequency contours near the Date Line represents the low frequency La Niña base state.



January Tropical Storm Formation by MJO phase



JOINT TYPHOON WARNING CENTER



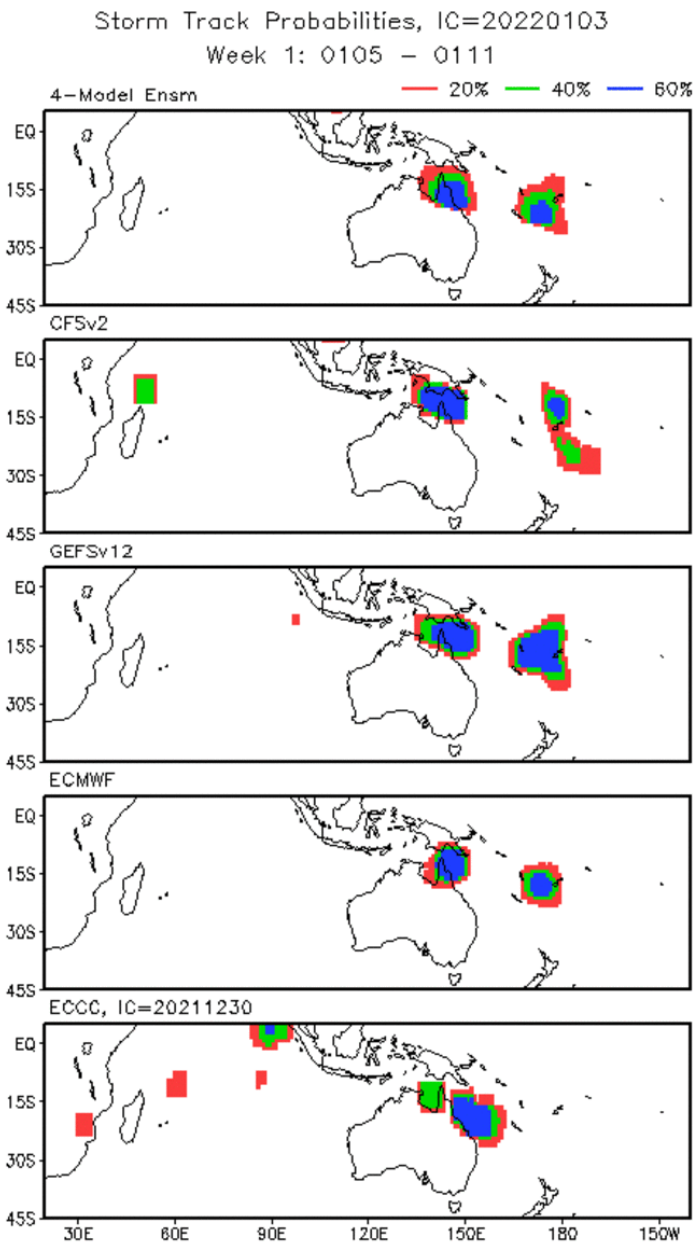
LOW — TC development unlikely within 24 hours

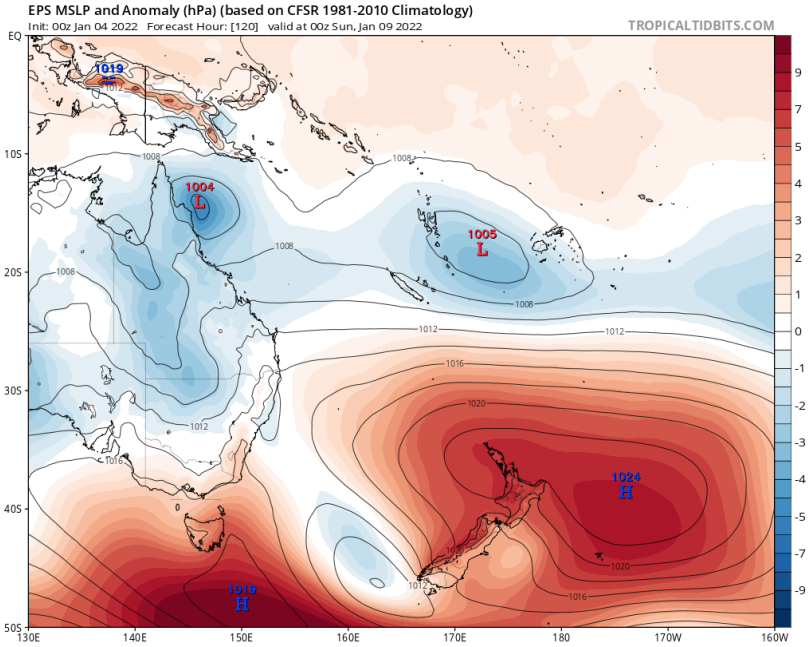
MEDIUM — TC development likely, but expected to occur beyond 24 hours

HIGH — TC development likely within 24 hours (Reference TCFA)

SUB TROPICAL — Monitoring for potential transition to TC. Invest label color denotes tropical transition probability

Tropical Cyclone (Reference Warning)



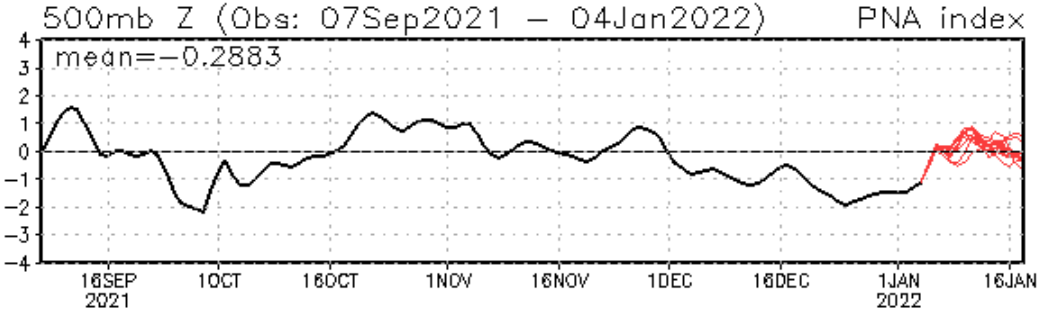


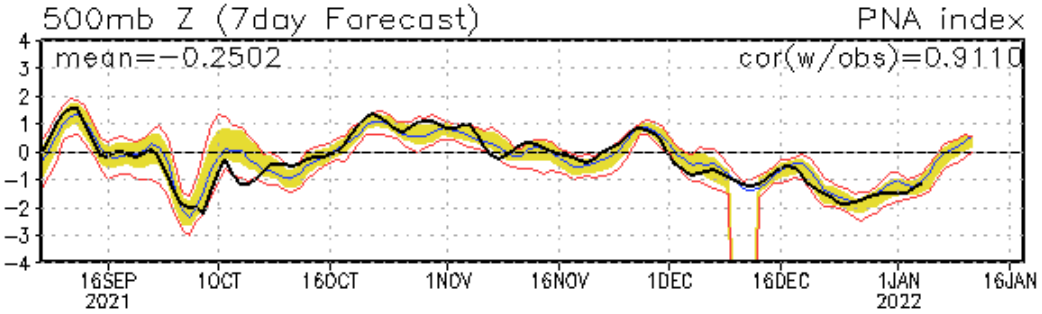
- Dynamical model ensembles **(left)** indicate increased storm track probabilities near the northeastern coast of Australia and in the vicinity of Vanuatu and Fiji.

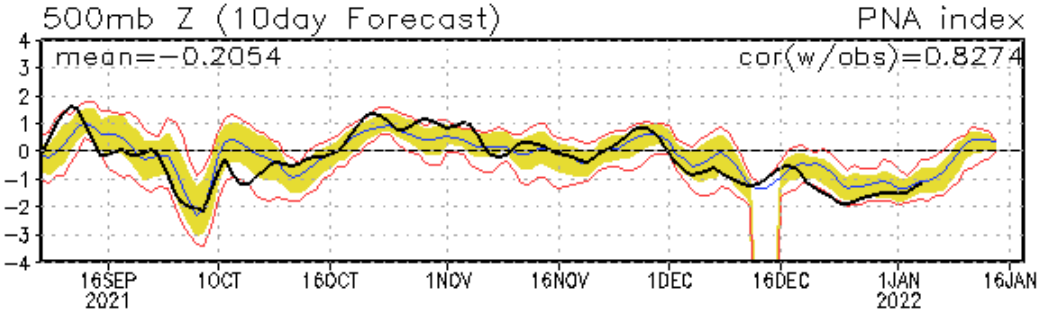
- Two areas of surface low pressure identified in the 0z ECMWF ensemble mean late in week-1 over these areas **(above).**

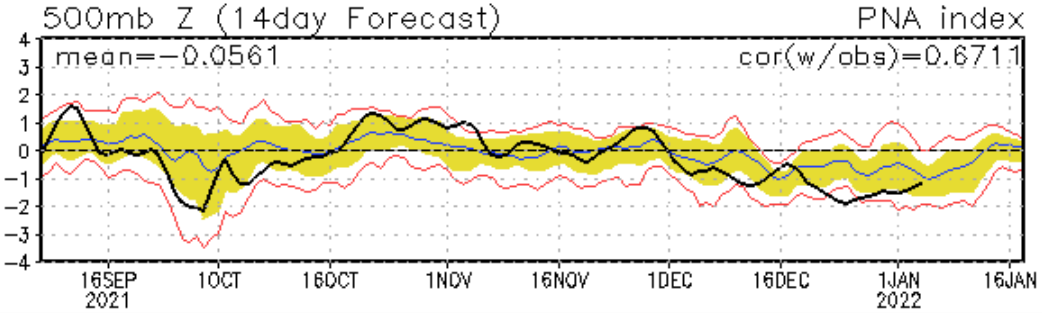
Connections to U.S. Impacts

PNA: Observed & ENSM forecasts

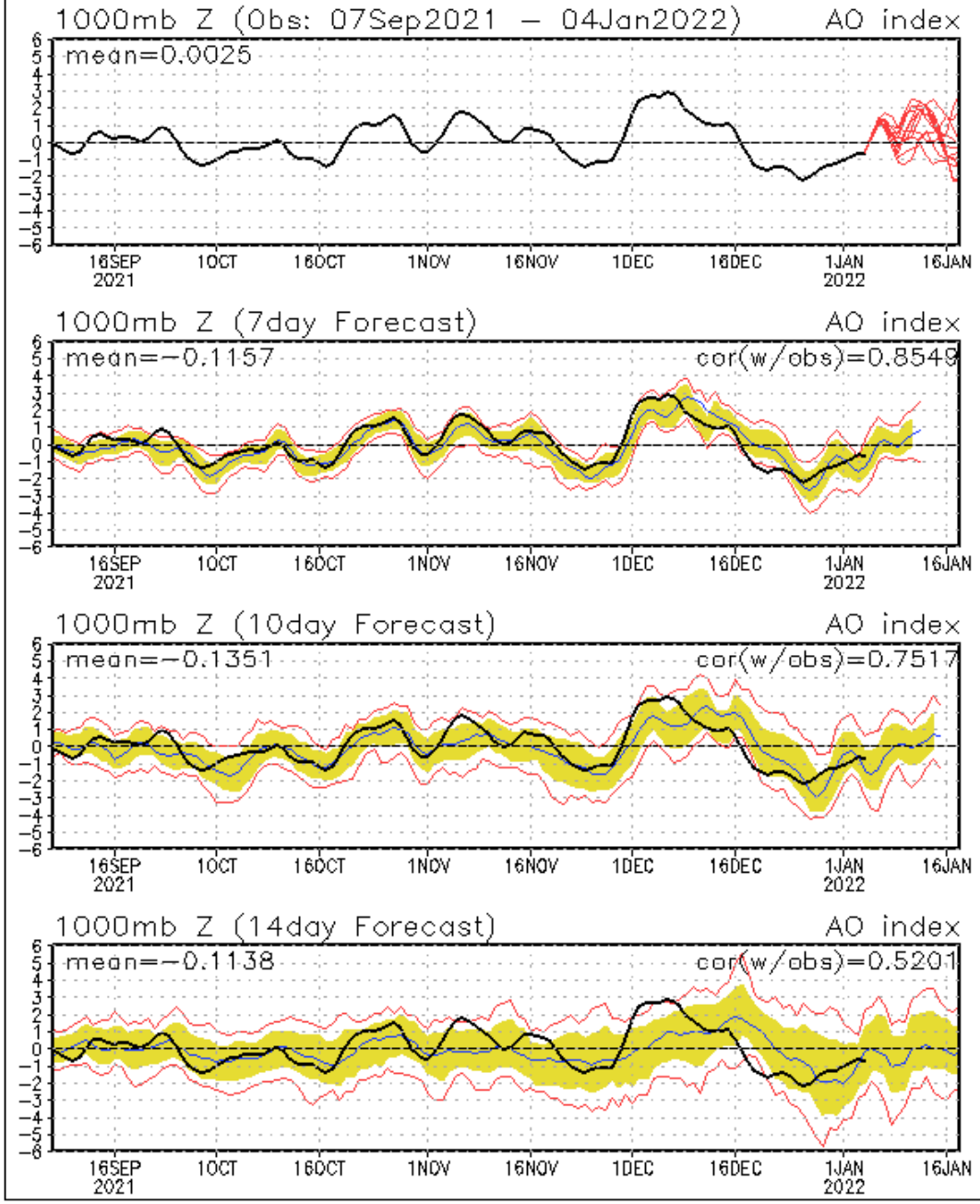


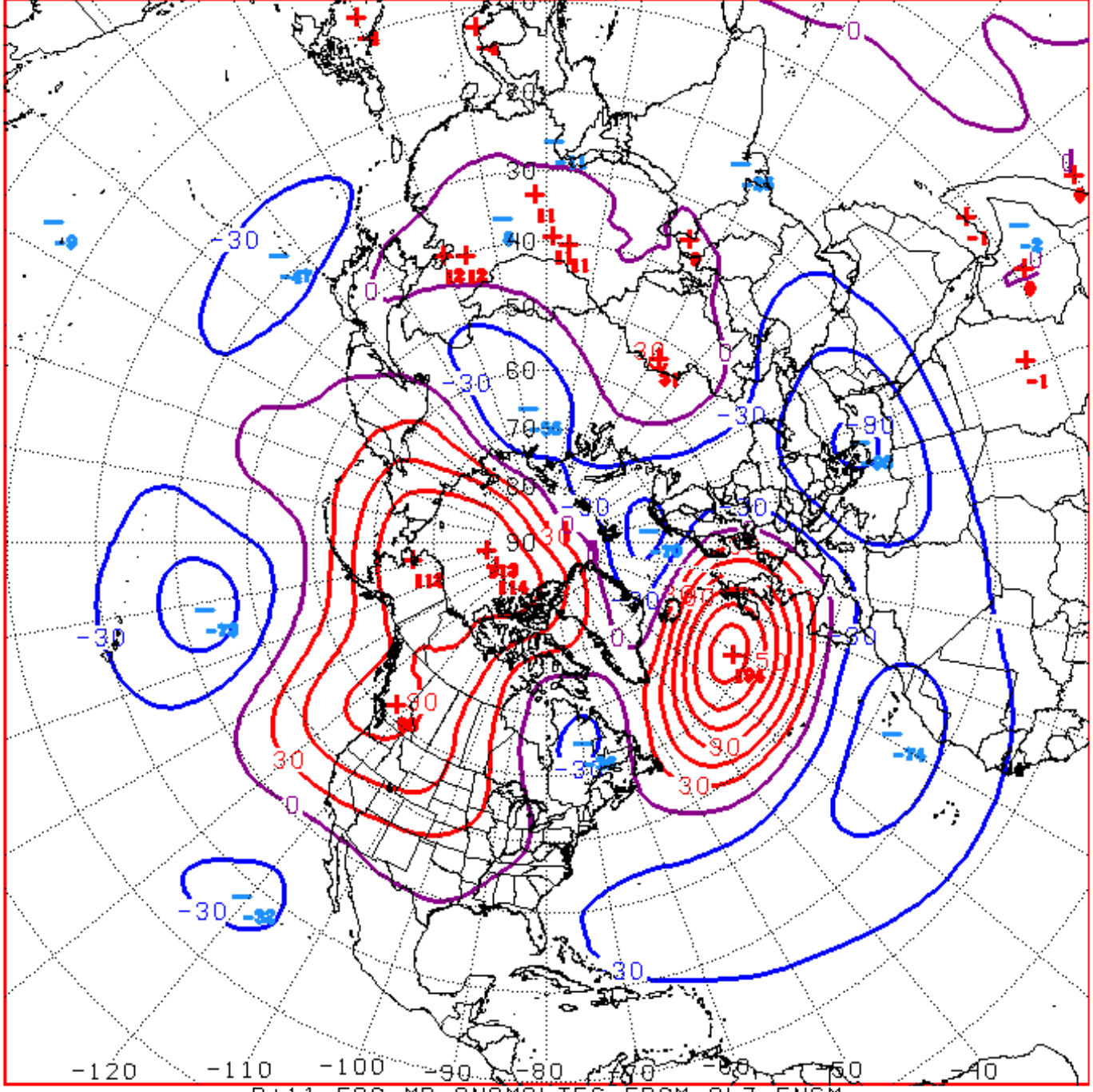






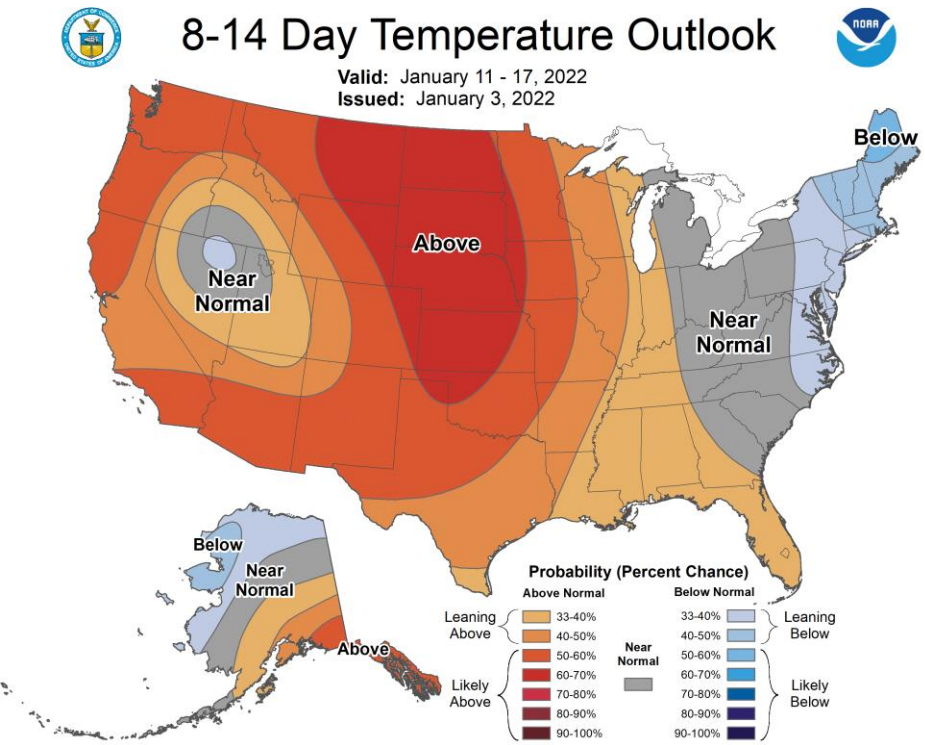
AO: Observed & ENSM forecasts

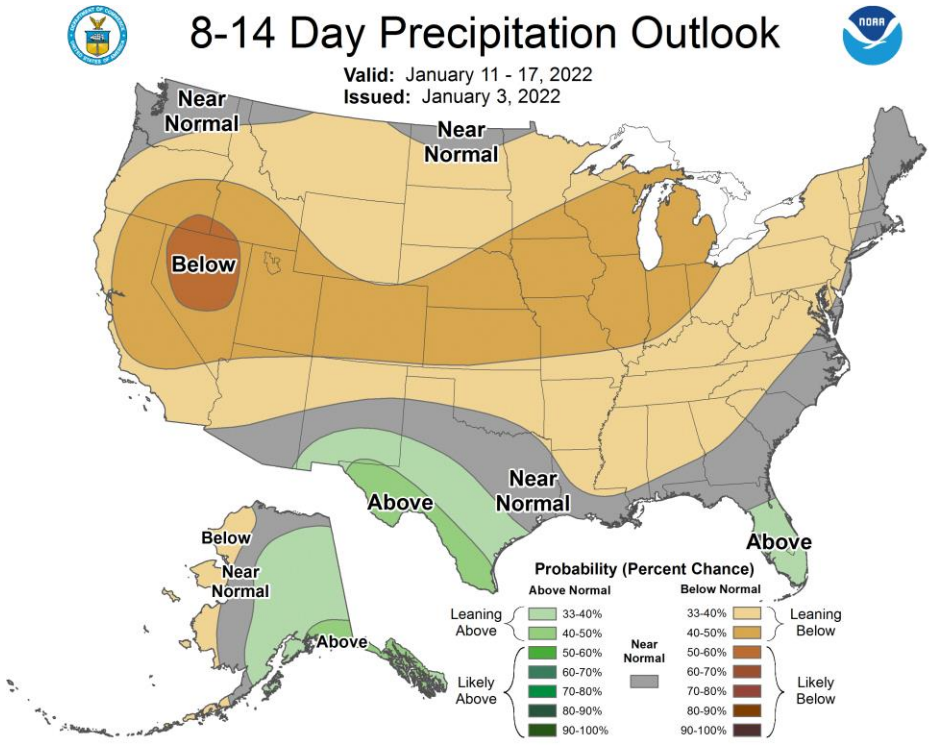




D+11 500 MB ANOMALIES FROM ALZ ENSM
CPC MAP MADE JAN 04 2022 1356 UTC CNTD JAN 15 2022

Week 2 – Temperature and Precipitation





Since we are in an amplified, stable pattern today's outlooks are likely to be similar.

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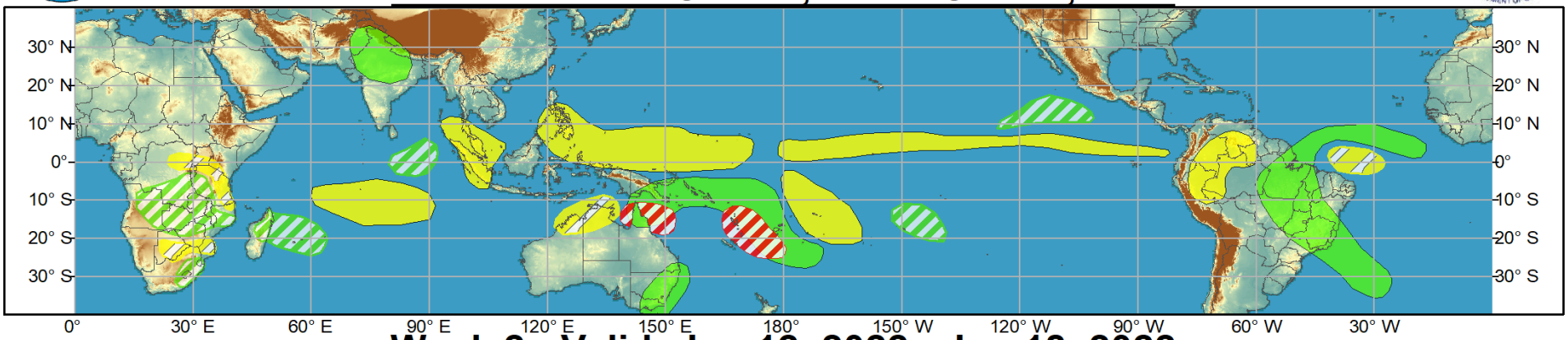

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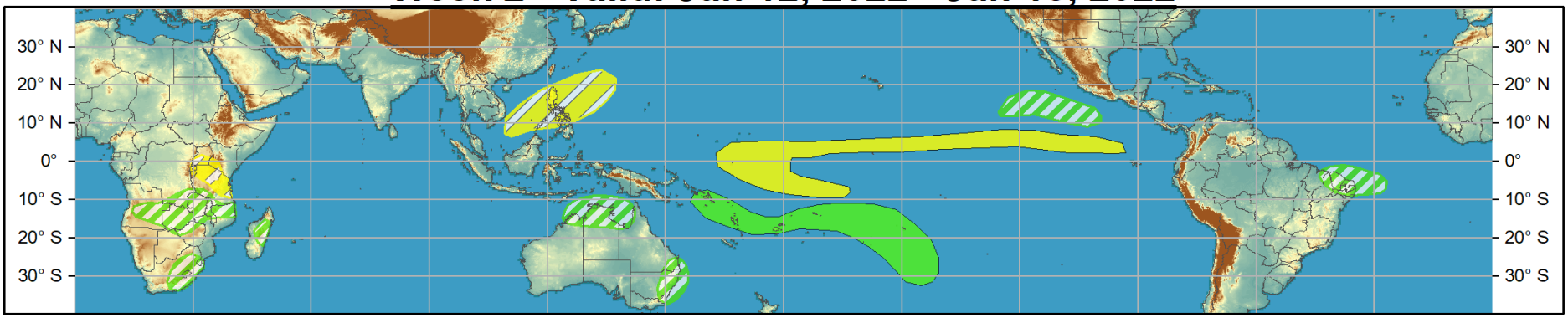

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