

# Global Tropics Hazards And Benefits Outlook

12/28/2021

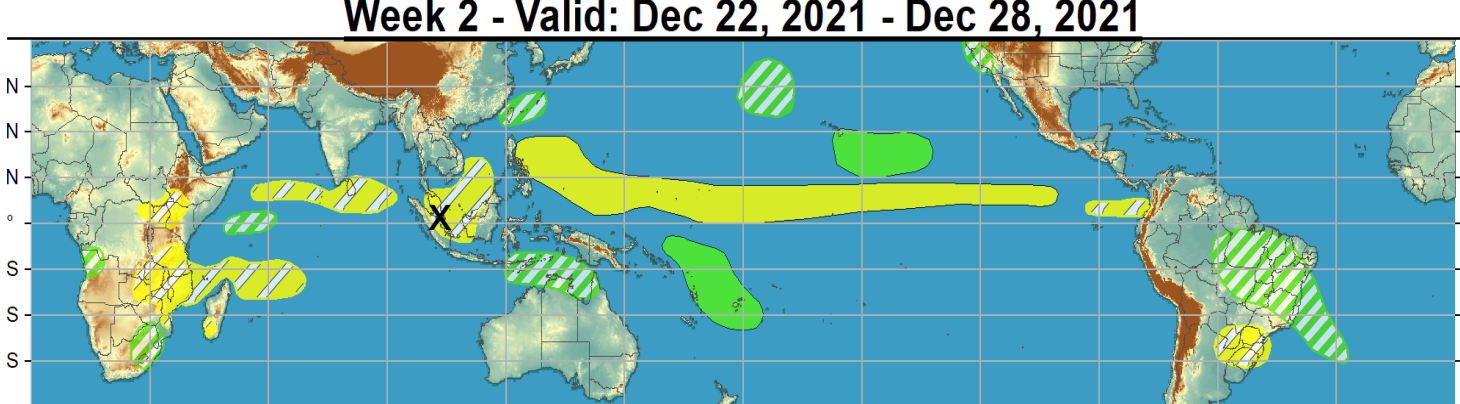
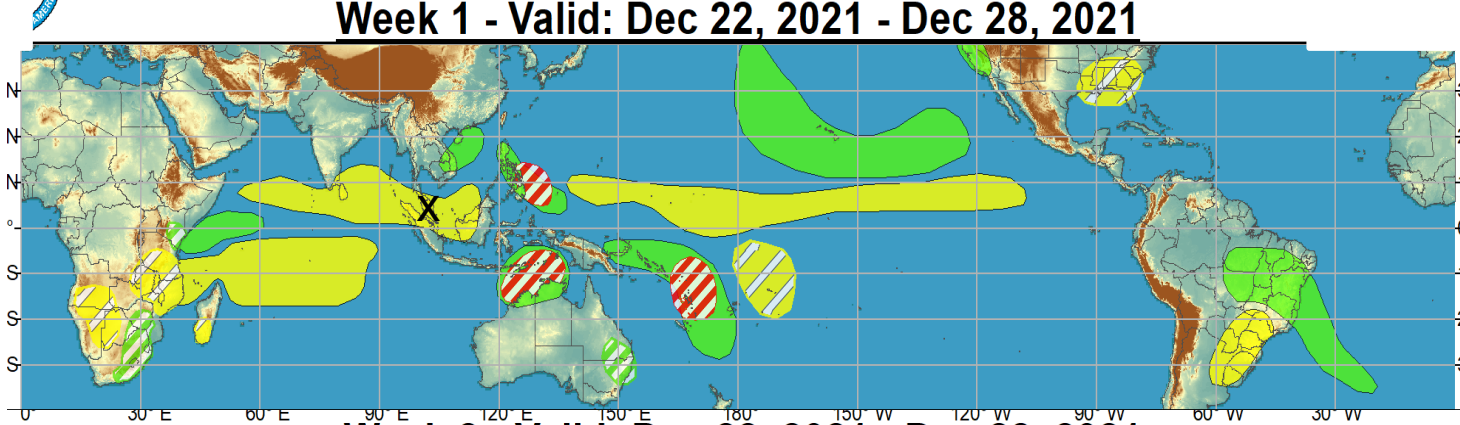
Nick Novella

## Outline

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

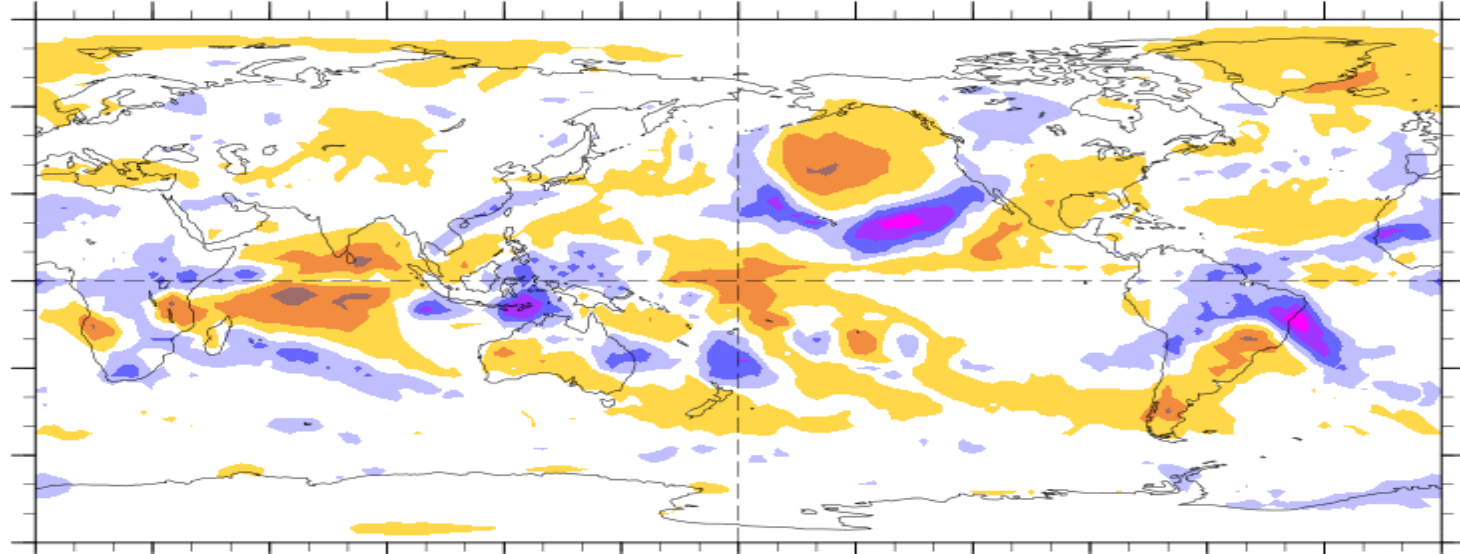
# Outlook Review

No TCs formed during the last week



7-Day Average OLR Anomaly

2021/12/20 - 2021/12/26



Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

# Synopsis of Climate Modes

## **ENSO: (December 9, 2021 Update)**

*next update on 13<sup>th</sup> 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:**

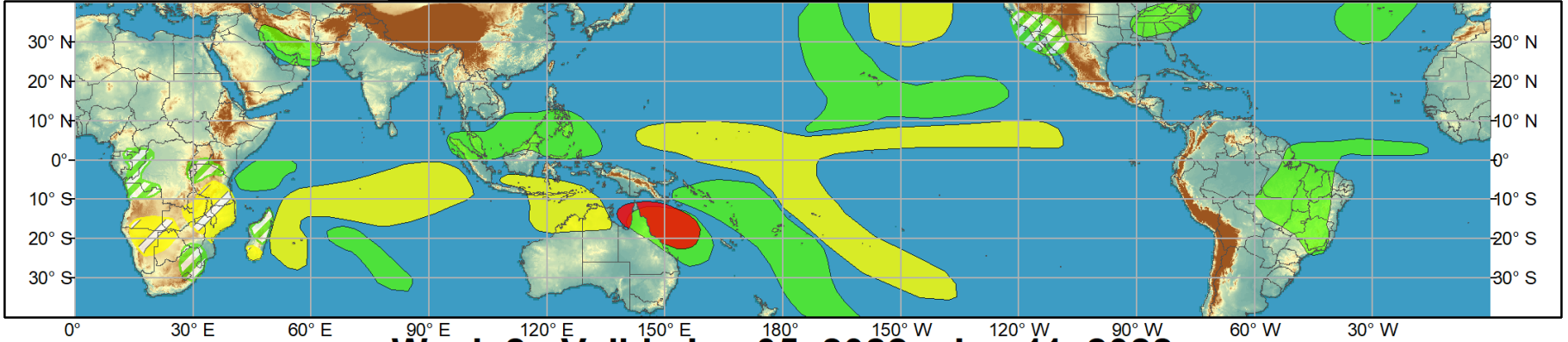
- The MJO remains active, but has generally been fairly stagnant in the West Pacific during the past few weeks.
- Despite some indications of renewed intraseasonal activity, RMM forecasts generally favor the westward retreat with some weakening of the MJO signal over the Western Pacific during week-1. Renewed eastward propagation is possible later in week-2, but there is still much uncertainty given destructive interference with the background La Nina state in the outlook.
- The large scale environment is expected to be favorable for TC formation in the South Pacific, with reduced chances in the Indian Ocean and northwestern Pacific.
- Downstream impacts tied to the MJO also remain uncertain, as guidance continues to favor a negative Pacific North American (-PNA) pattern, suggestive of La Nina dominating the extratropical response over North America well into January.



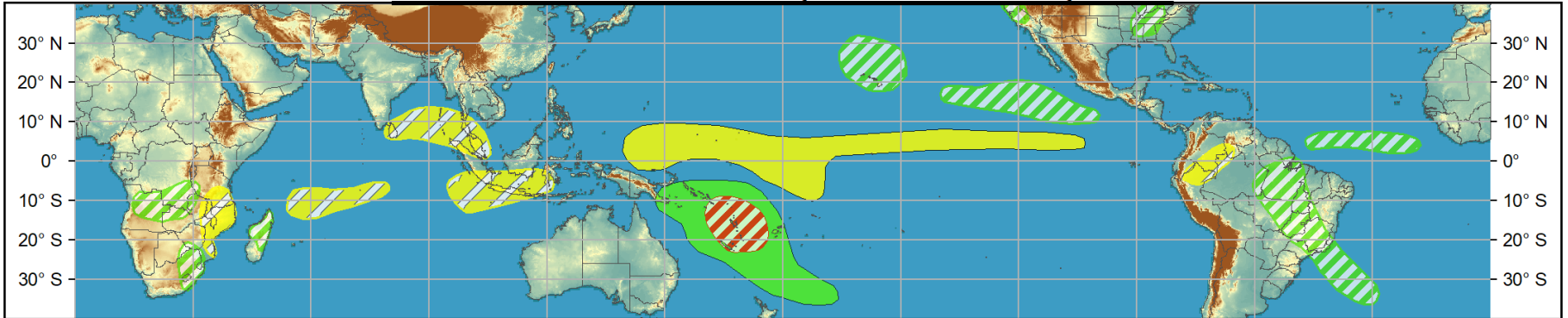
# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center



## Week 1 - Valid: Dec 29, 2021 - Jan 04, 2022



## Week 2 - Valid: Jan 05, 2022 - Jan 11, 2022



**Confidence**  
 High Moderate

- Tropical Cyclone Formation** Development of a tropical cyclone (tropical depression - TD, or greater strength).
- Above-average rainfall** Weekly total rainfall in the upper third of the historical range.
- Below-average rainfall** Weekly total rainfall in the lower third of the historical range.
- Above-normal temperatures** 7-day mean temperatures in the upper third of the historical range.
- Below-normal temperatures** 7-day mean temperatures in the lower third of the historical range.

**Produced: 12/28/2021**  
**Forecaster: Novella**

**Product is updated once per week, except from 6/1 - 11/30 for the region from 120E to 0, 0 to 40N. The product targets broad scale conditions integrated over a 7-day period for US interests only. Consult your local responsible forecast agency.**





# IR Satellite & 200-hpa Velocity Potential Anomalies

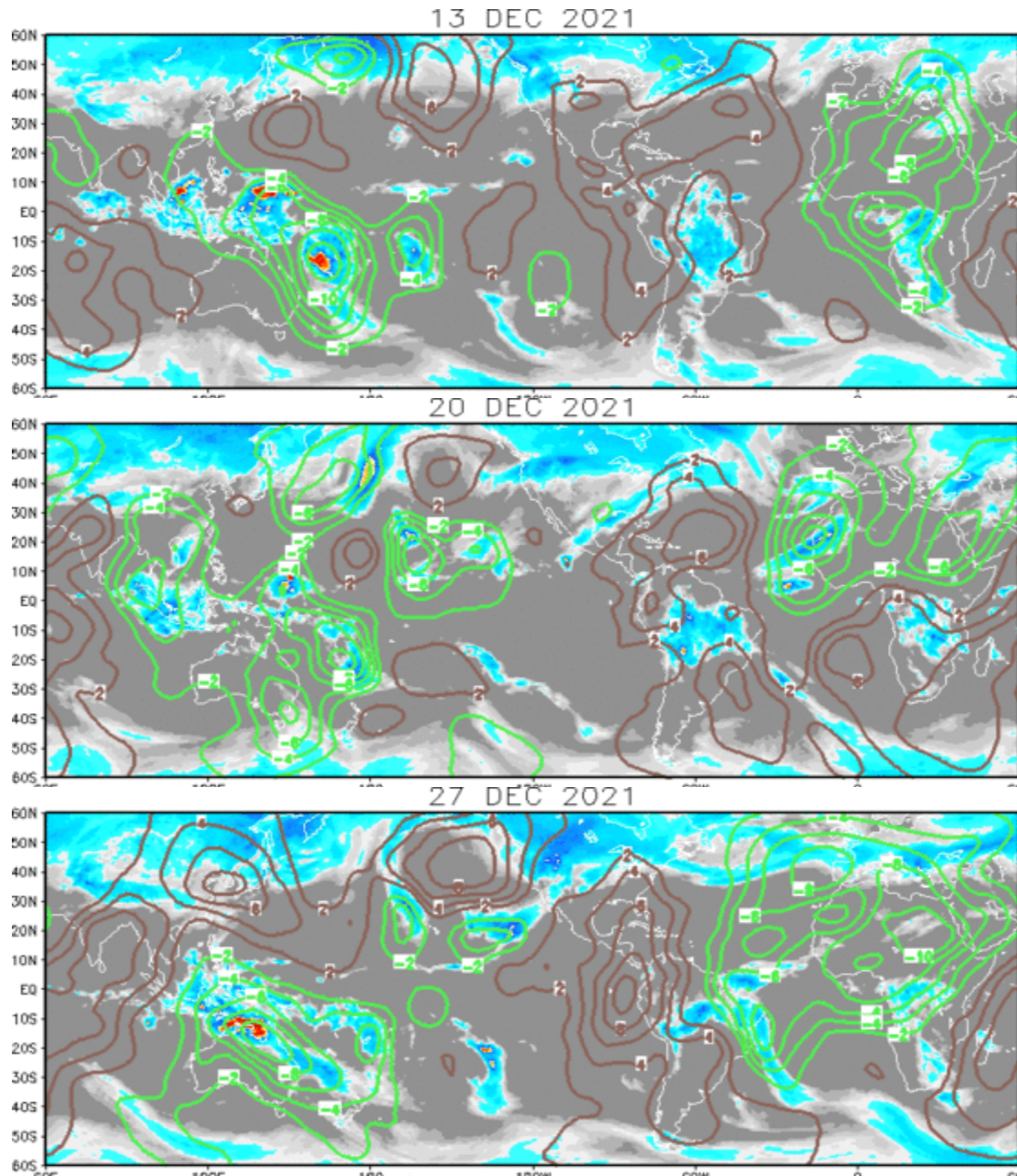
Green: Enhanced Divergence

Brown: Enhanced Convergence

Enhanced convection over the southwest Pacific, with enhanced convection also expanding over Africa in the wake of the MJO and increased upper level divergence.

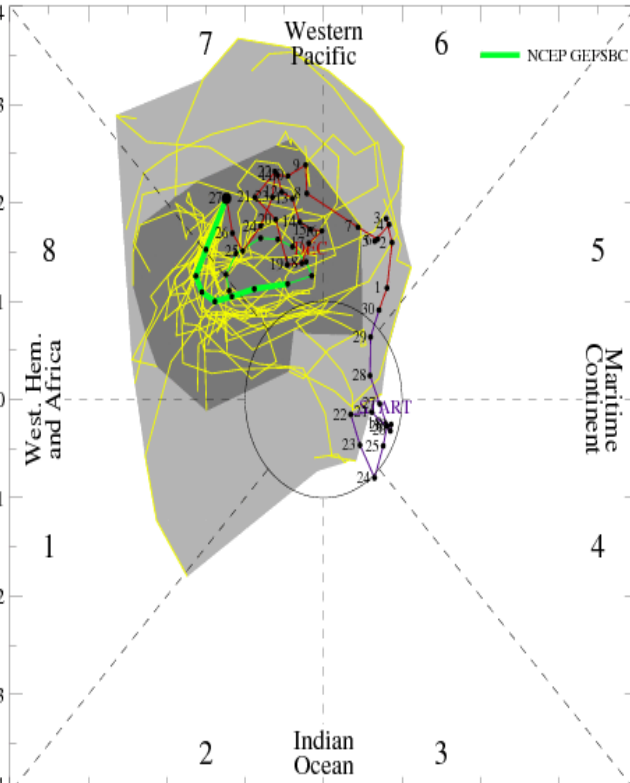
Increased convection developed across the Central Pacific and Hawaii.

Incoherent pattern persists in late December. Strengthening suppressed conditions over Indian Ocean and enhanced convection returning over South Pacific.

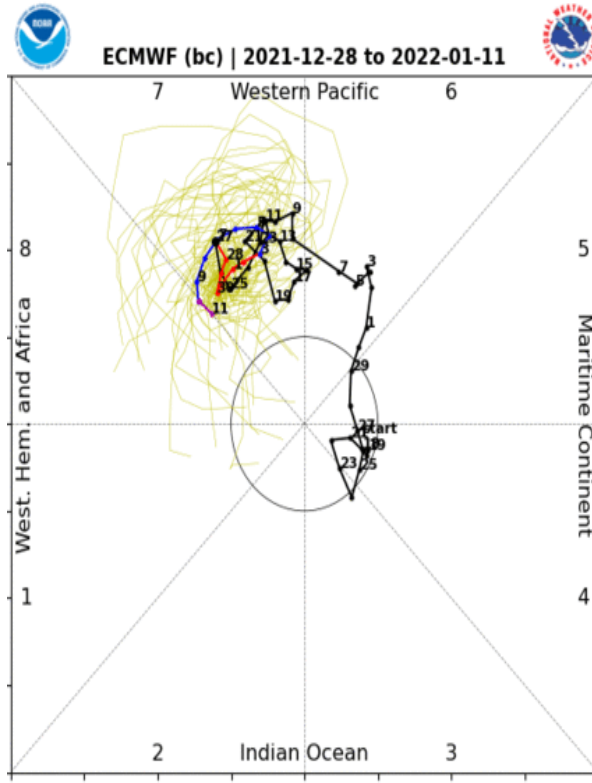


# MJO Observation/Forecast

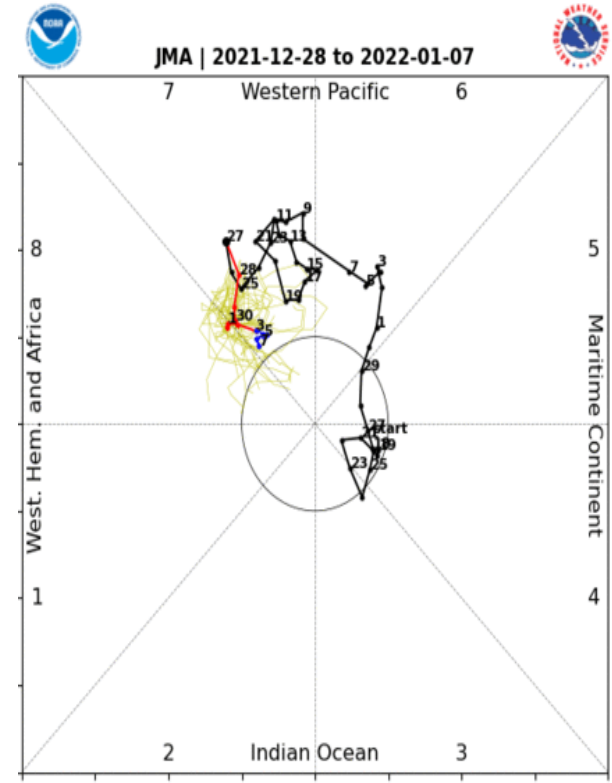
[RMM1, RMM2] forecast for Dec-28-2021 to Jan-11-2022



GEFS



ECMWF

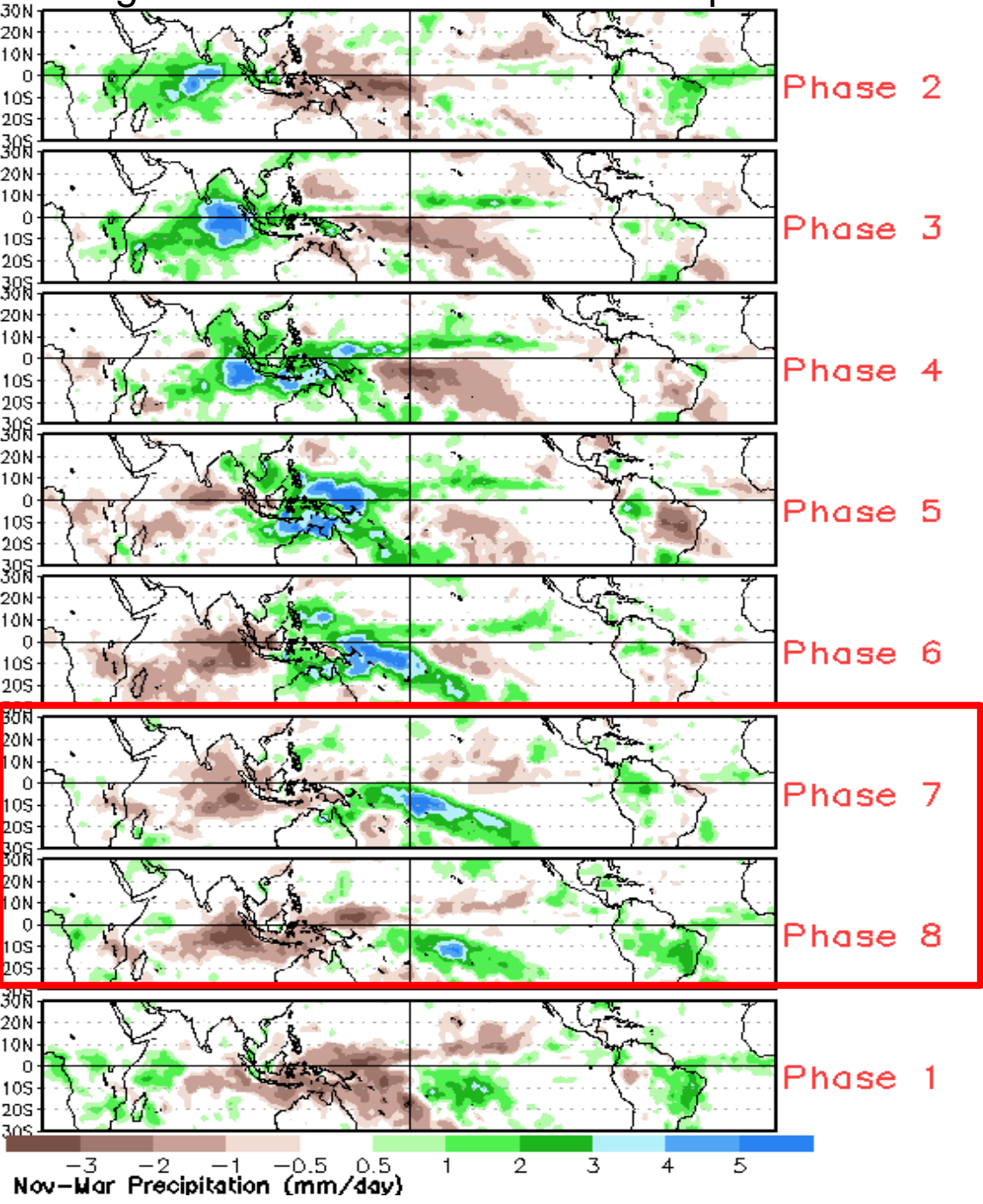


JMA

The GEFS and CFS remains the most progressive on the near-term, but dynamical models generally favor the MJO signal either returning to or remaining in phase 7 during the next two weeks.

Ensemble spread remains high, with an increased number of members entering the RMM unit circle in the recent forecasts.

# Average Conditions when the MJO is present



CAVEAT: These panels are representative of robust MJO events.

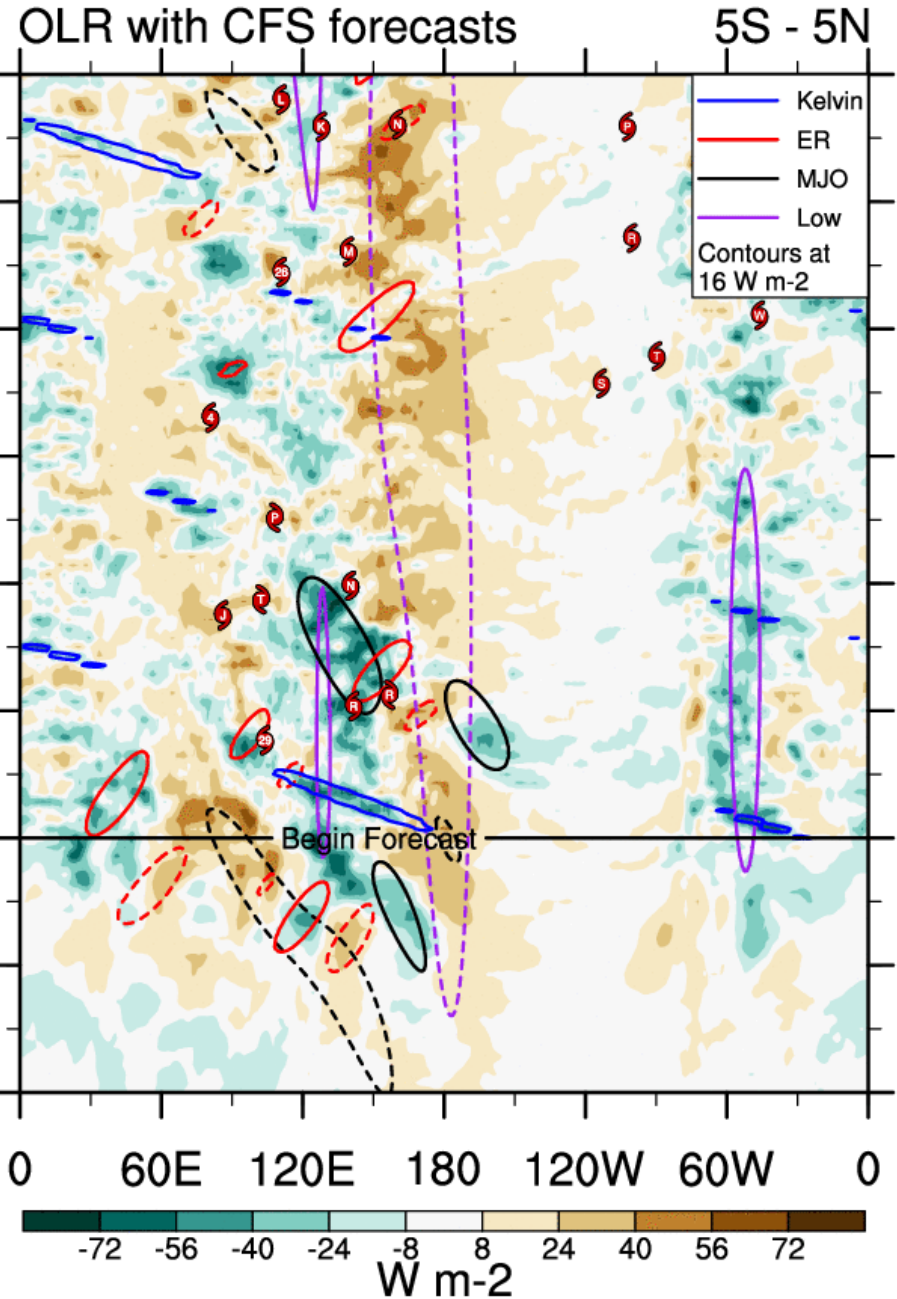


A convectively coupled **Kelvin wave** is analyzed in the observed OLR field

**Rossby wave** and **MJO** activity is coming through the filtering in the forecast OLR field.

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

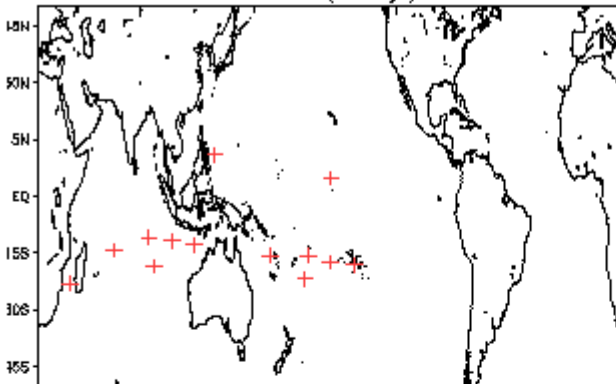
Suppressed convection looks to become established over the Indian Ocean



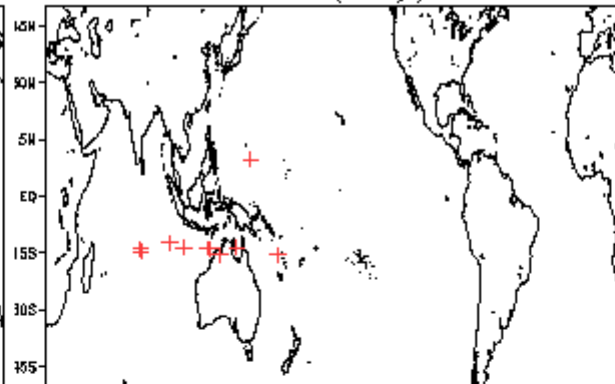


# January Tropical Storm Formation by MJO phase

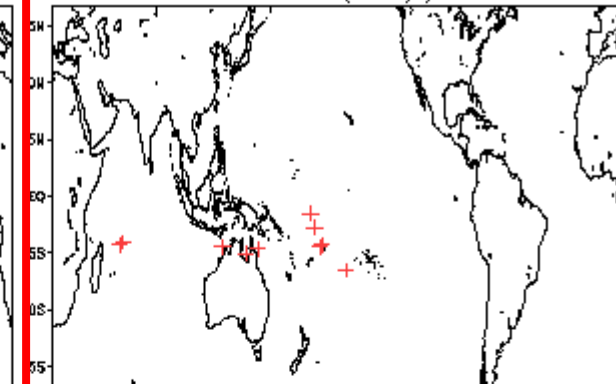
Phase 1 (67 days) 14 storms



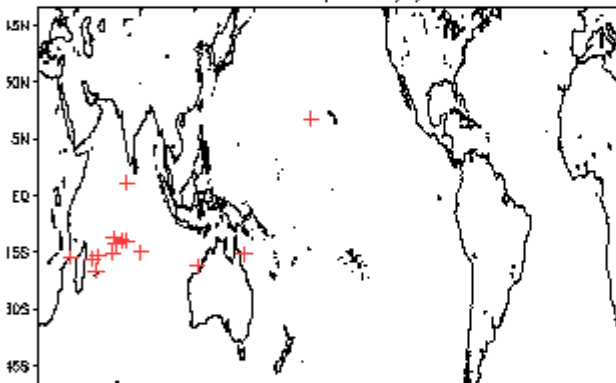
Phase 4 (69 days) 11 storms



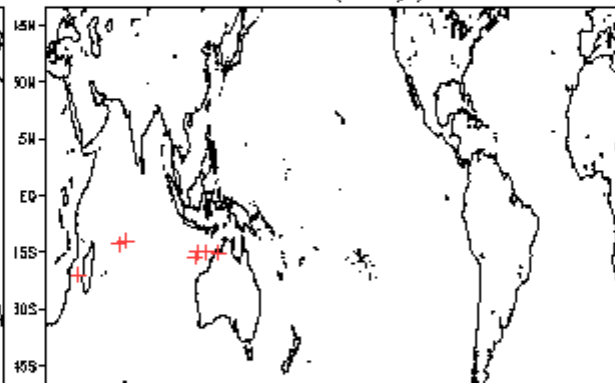
Phase 7 (81 days) 11 storms



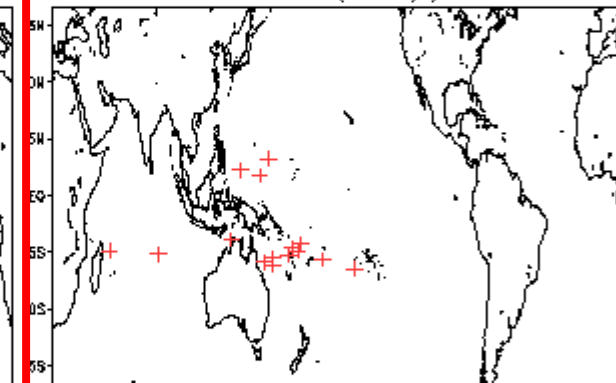
Phase 2 (101 days) 15 storms



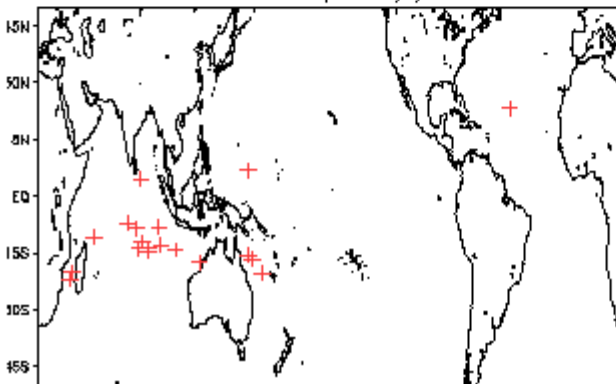
Phase 5 (67 days) 8 storms



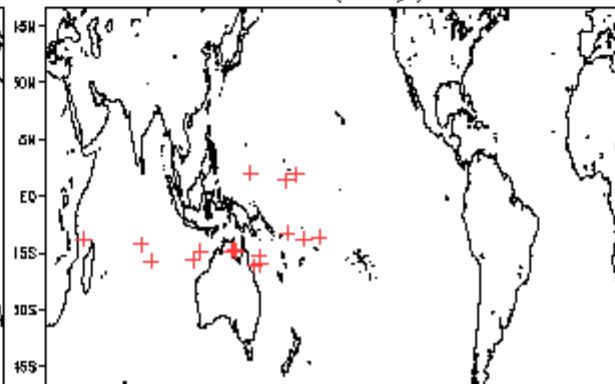
Phase 8 (105 days) 16 storms



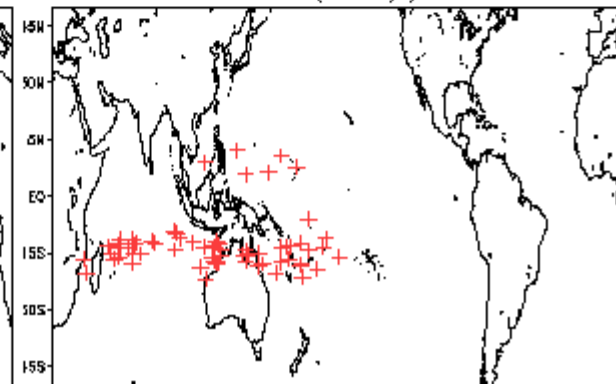
Phase 3 (112 days) 20 storms



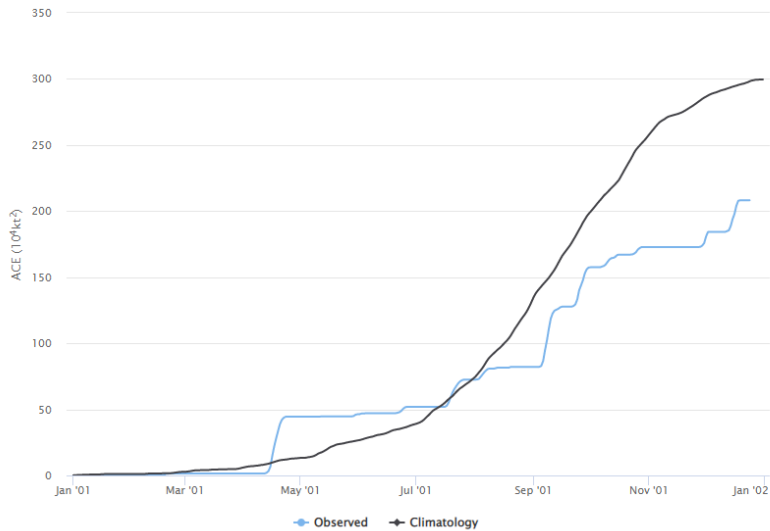
Phase 6 (88 days) 18 storms



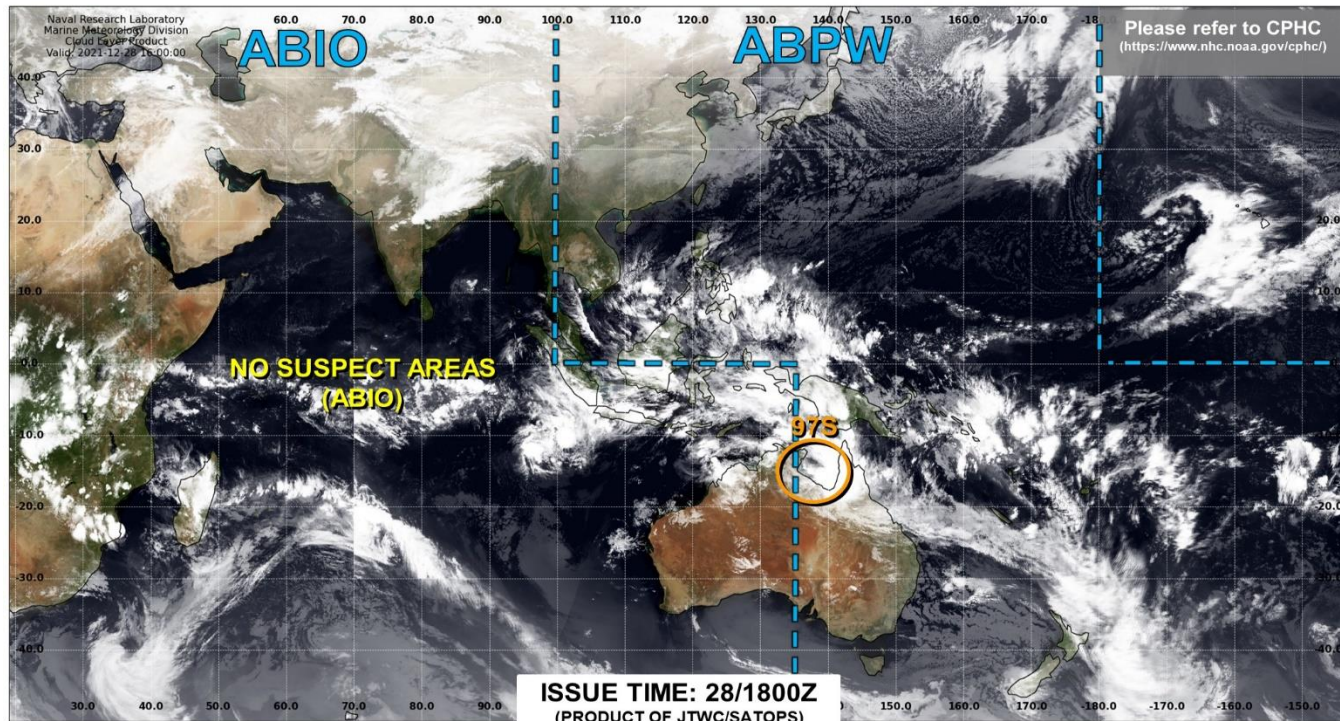
Null (364 days) 67 storms



Current Season Northwest Pacific Ocean ACE (1991–2020 Climatology)



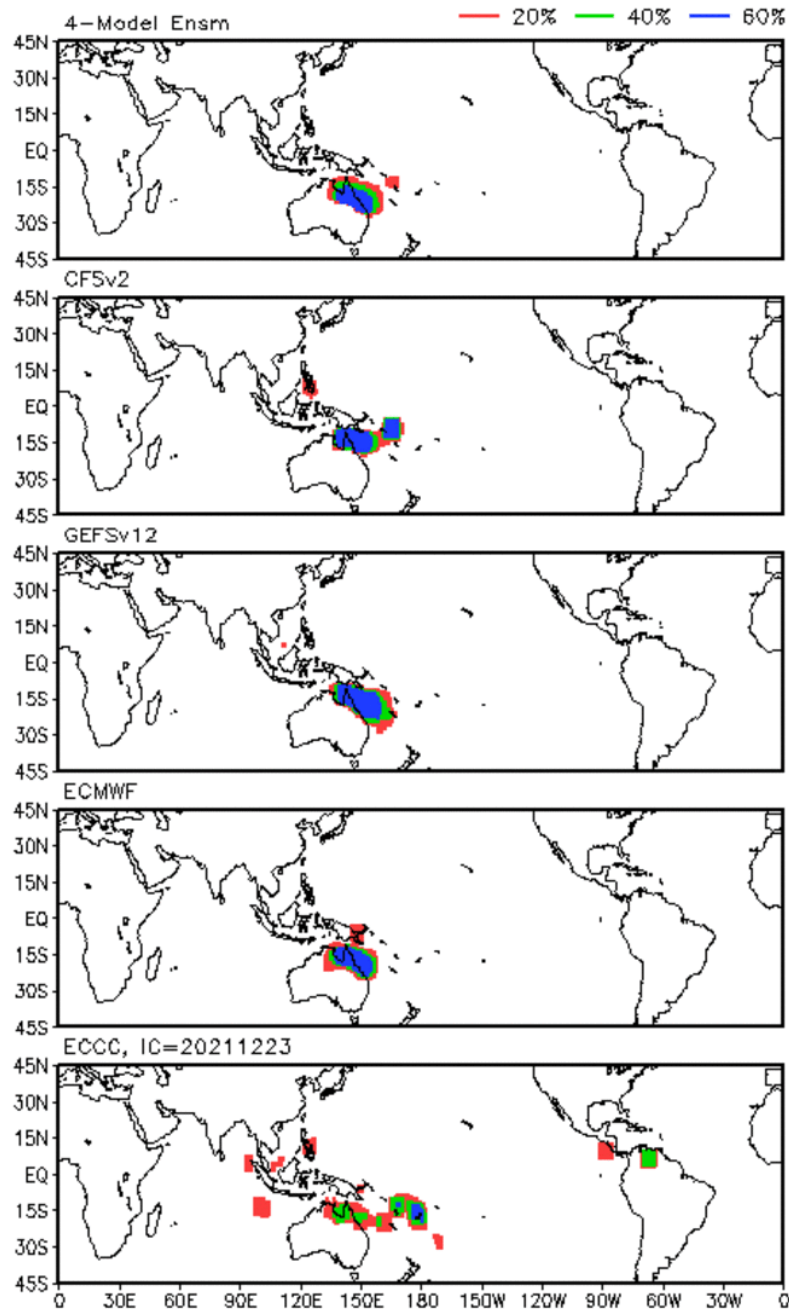
# JOINT TYPHOON WARNING CENTER



 <p><b>LOW</b> TC development unlikely within 24 hours</p>	 <p><b>MEDIUM</b> TC development likely, but expected to occur beyond 24 hours</p>	 <p><b>HIGH</b> TC development likely within 24 hours (Reference TCFA)</p>	 <p><b>SUB TROPICAL</b> Monitoring for potential transition to TC. Invest label color denotes tropical transition probability</p>	 <p>Tropical Cyclone (Reference Warning)</p>
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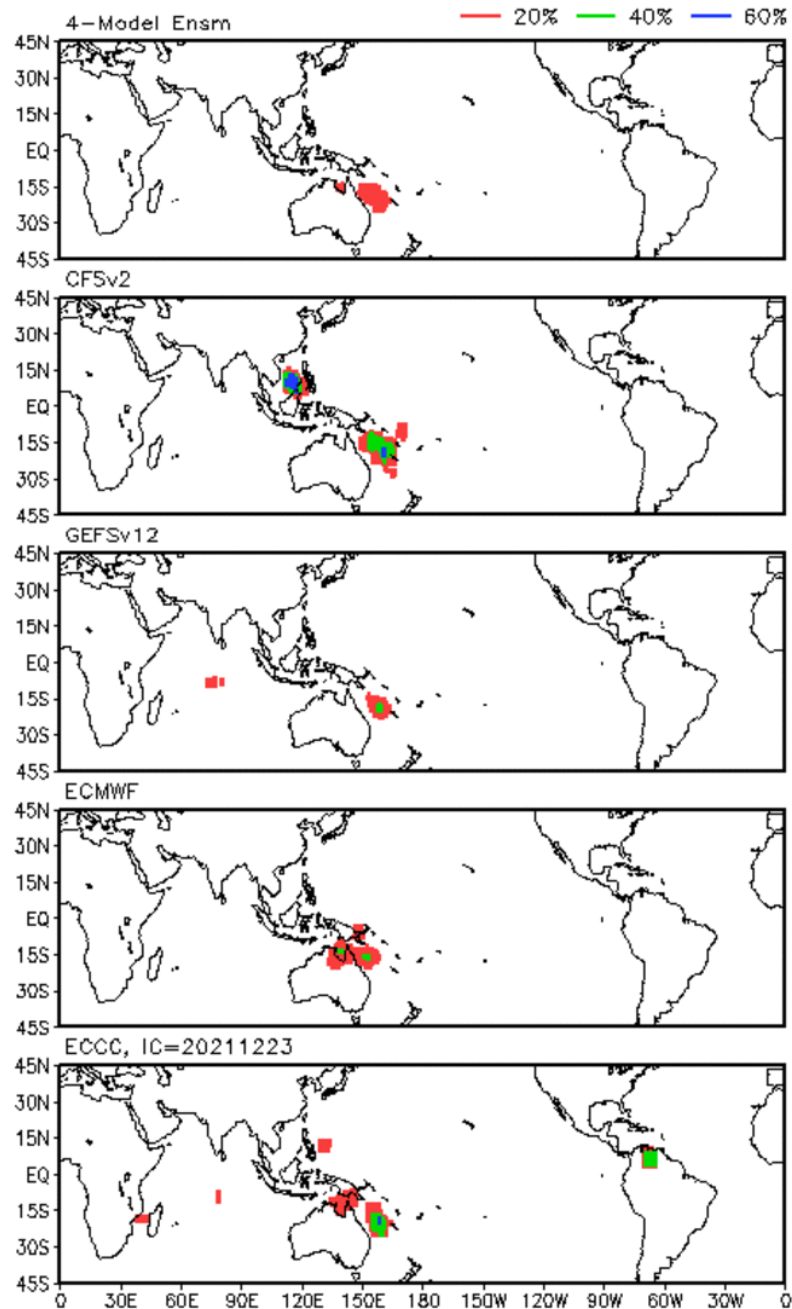
Storm Track Probabilities, IC=20211227

Week 1: 1229 - 0104



Storm Track Probabilities, IC=20211227

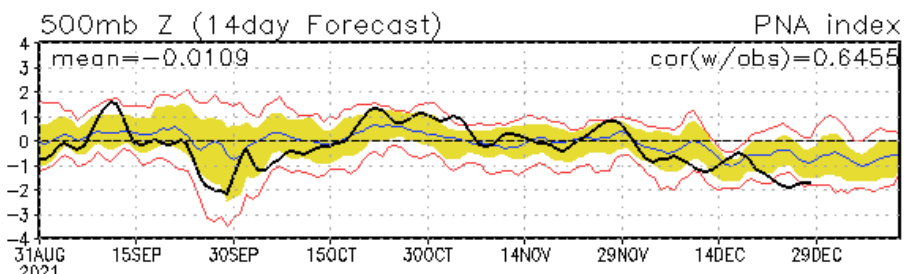
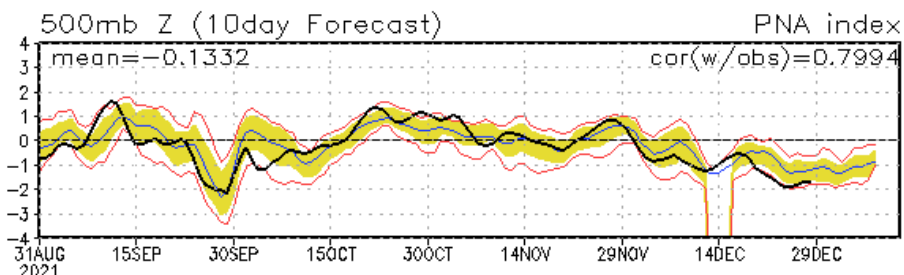
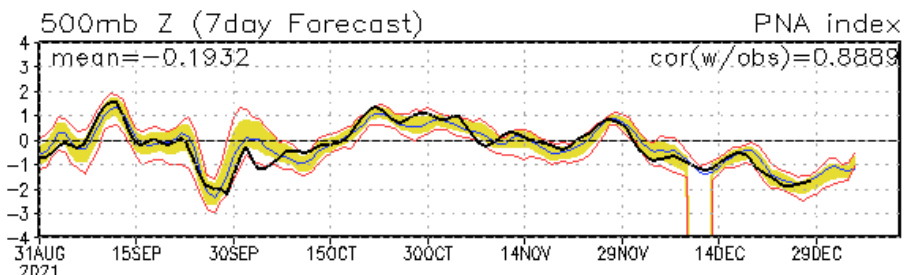
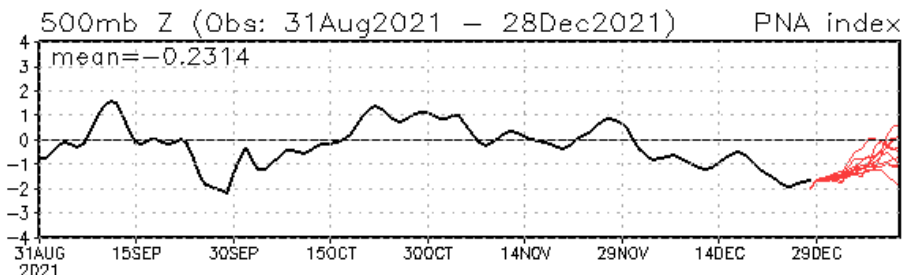
Week 2: 0105 - 0111



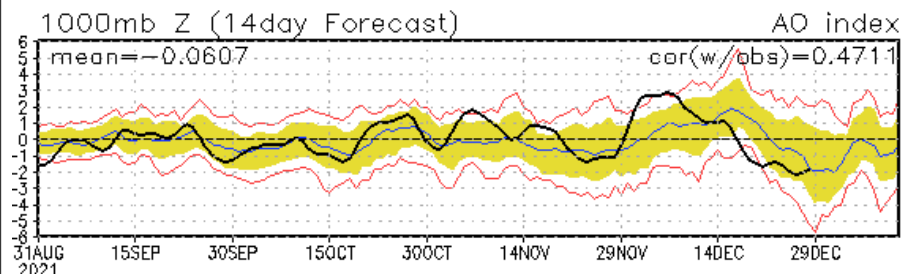
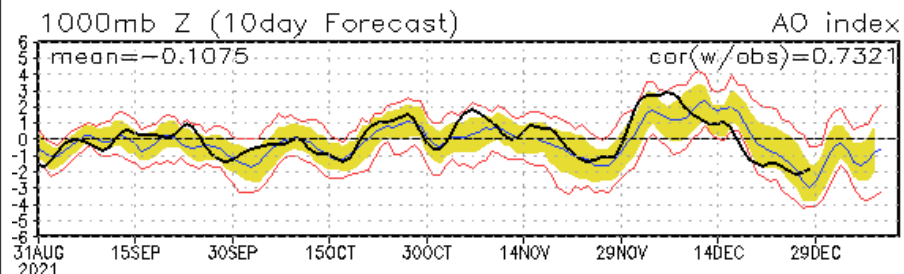
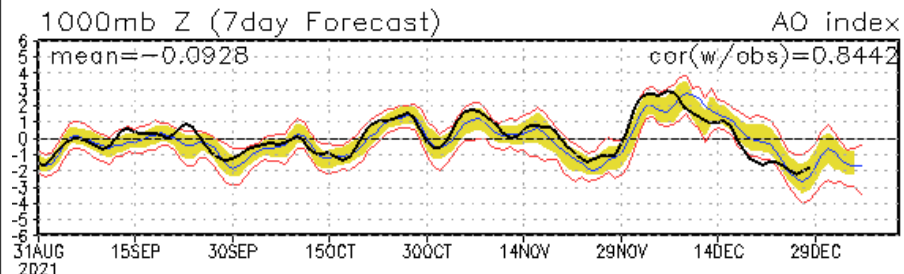
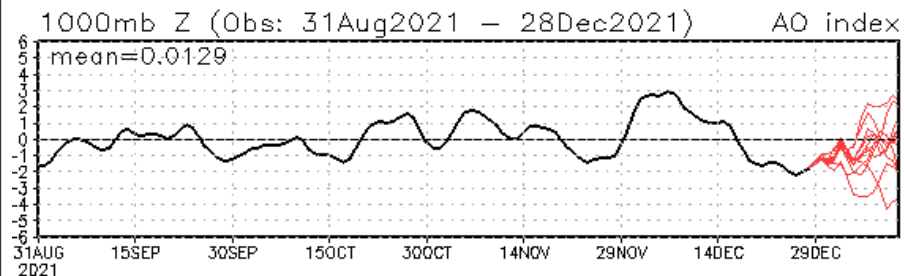
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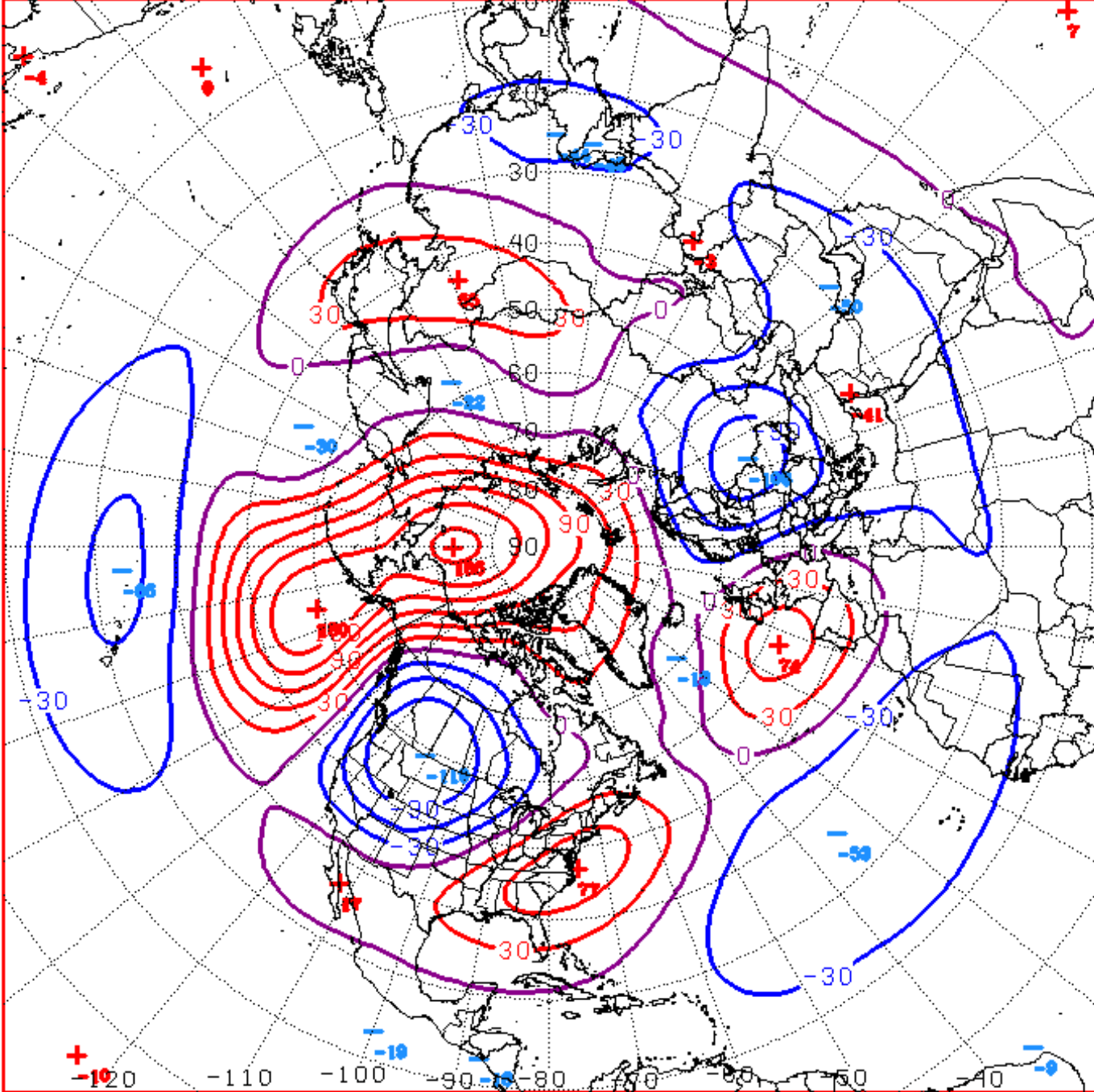


### PNA: Observed & ENSM forecasts



### AO: Observed & ENSM forecasts





D+11 500 MB ANOMALIES FROM ALZ ENSM  
CPC MAP MADE DEC 28 2021 1356 UTC CNTD JAN 08 2022

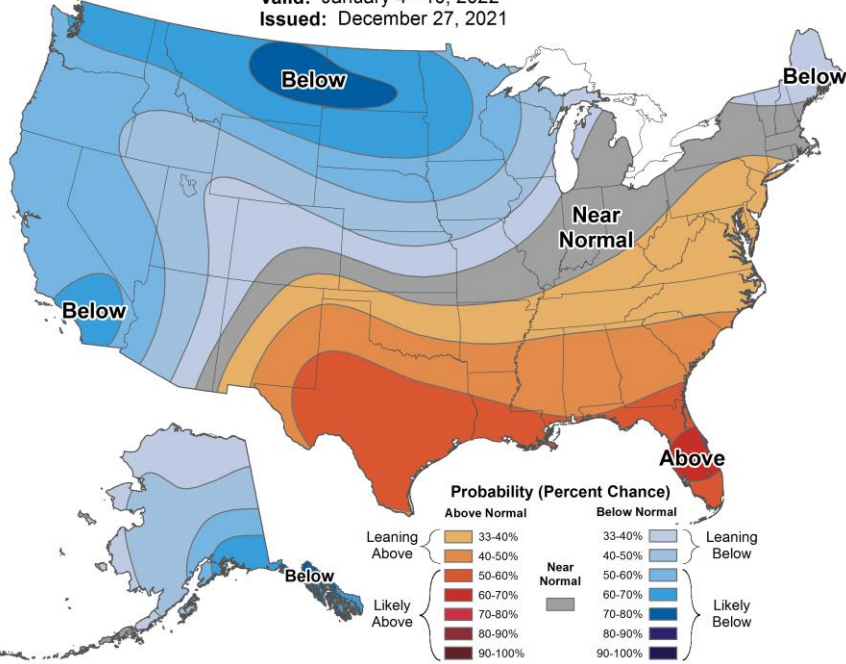
# Week 2 – Temperature and Precipitation



## 8-14 Day Temperature Outlook



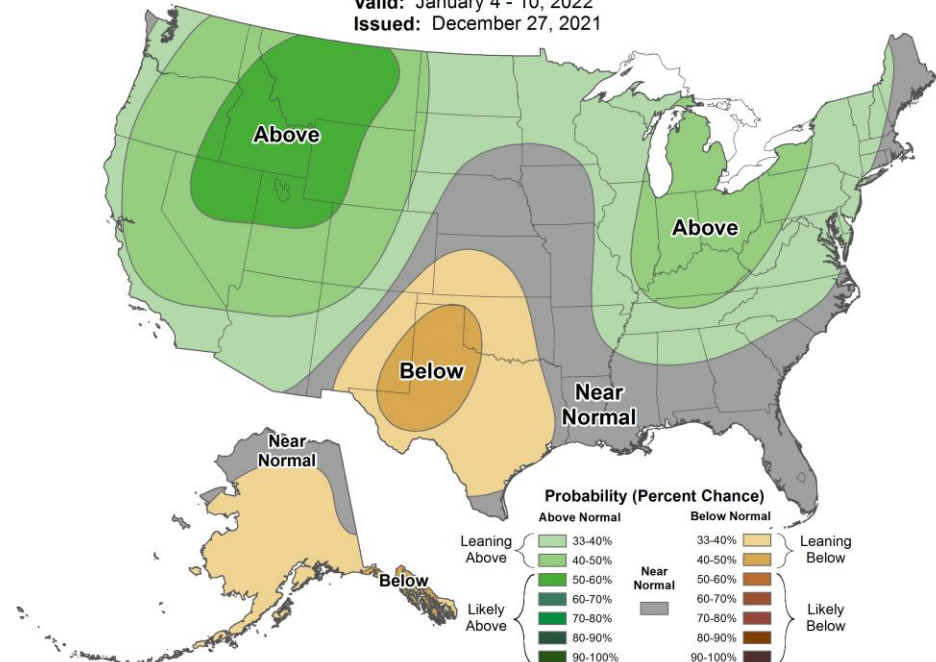
Valid: January 4 - 10, 2022  
Issued: December 27, 2021



## 8-14 Day Precipitation Outlook



Valid: January 4 - 10, 2022  
Issued: December 27, 2021



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

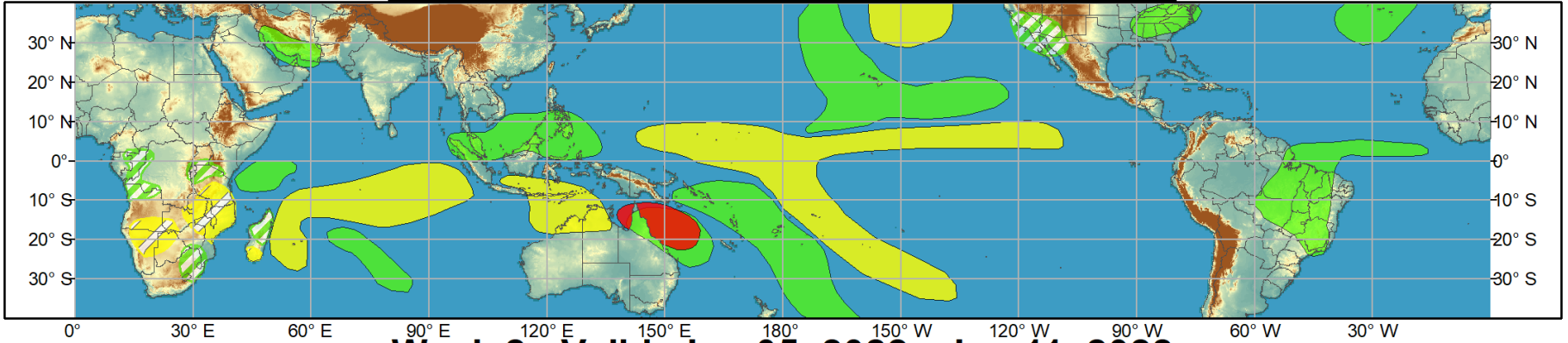




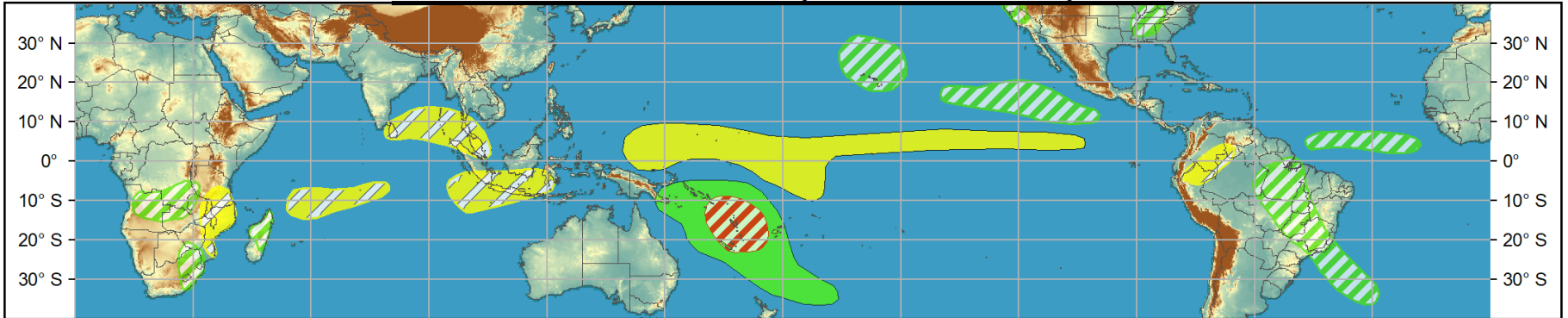
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