

# Global Tropics Hazards And Benefits Outlook

3/30/2021

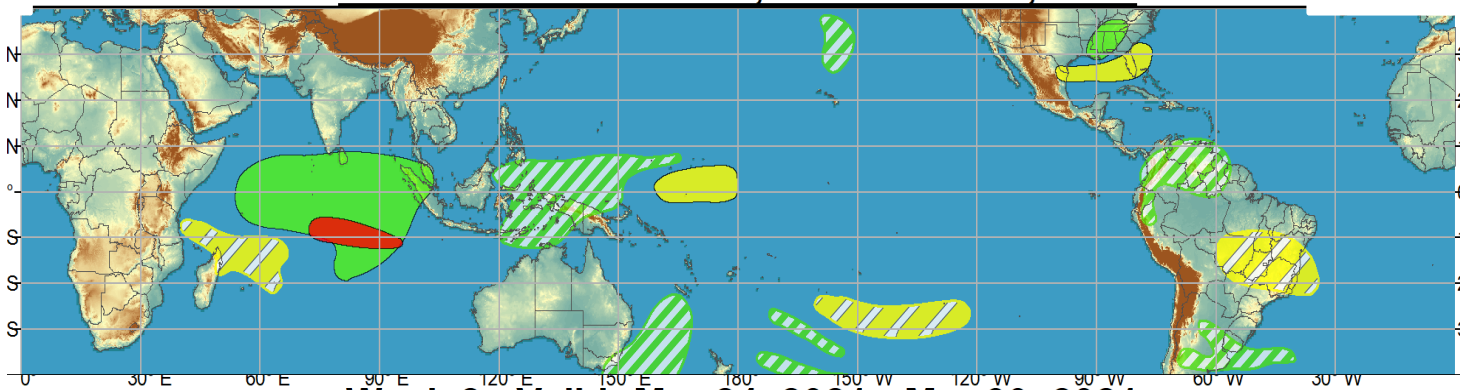
Kyle MacRitchie

## Outline

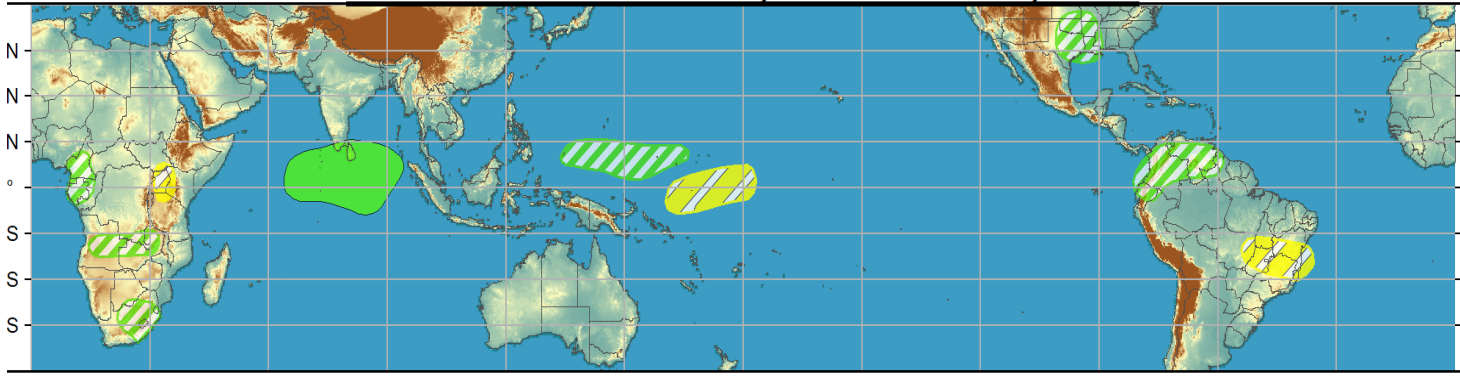
1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts

# Outlook Review

**Week 1 - Valid: Mar 24, 2021 - Mar 30, 2021**

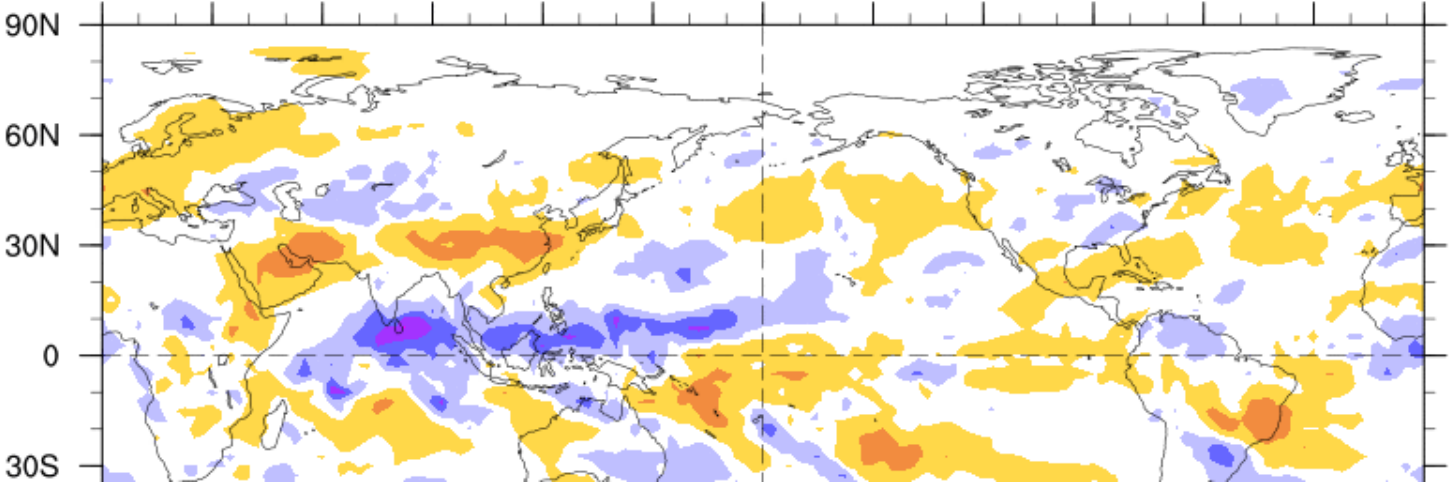


**Week 2 - Valid: Mar 24, 2021 - Mar 30, 2021**



**7-Day Average OLR Anomaly**

**2021/03/22 - 2021/03/28**



Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

# Synopsis of Climate Modes

## **ENSO: (March 11, 2021 Update)**

*next update on Apr. 8, 2021*

- ENSO Alert System Status: [La Niña Advisory](#)
- There is a ~60% chance of a transition from La Niña to ENSO-Neutral during the Northern Hemisphere spring 2021 (April-June).

## **MJO and other subseasonal tropical variability:**

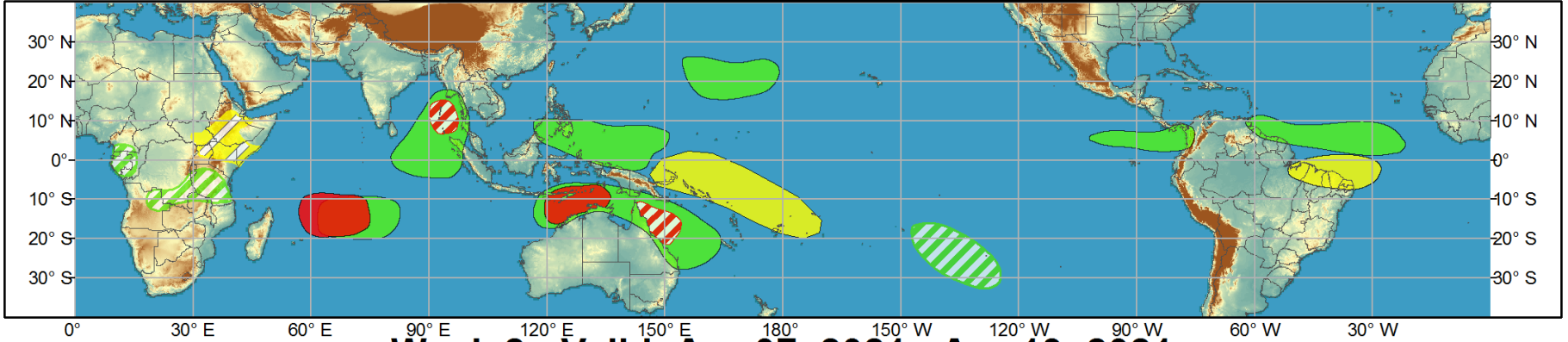
- Active convection related to the MJO is over the eastern Indian Ocean and Maritime Continent, consistent with RMM phase 4.
- Dynamical guidance is in good agreement that the MJO will continue to propagate over the Pacific and Western Hemisphere during the next two weeks.
- Convectively coupled Kelvin wave activity collocated with the projected MJO convection results in increased tropical cyclone formation threats in the Indian Ocean and the northern coast of Australia.
- The active convective area of the MJO may destructively interfere with the La Nina signal as it moves over the Pacific during Week-2.



# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center



## Week 1 - Valid: Mar 31, 2021 - Apr 06, 2021



## Week 2 - Valid: Apr 07, 2021 - Apr 13, 2021



**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.
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Forecaster: MacRitchie

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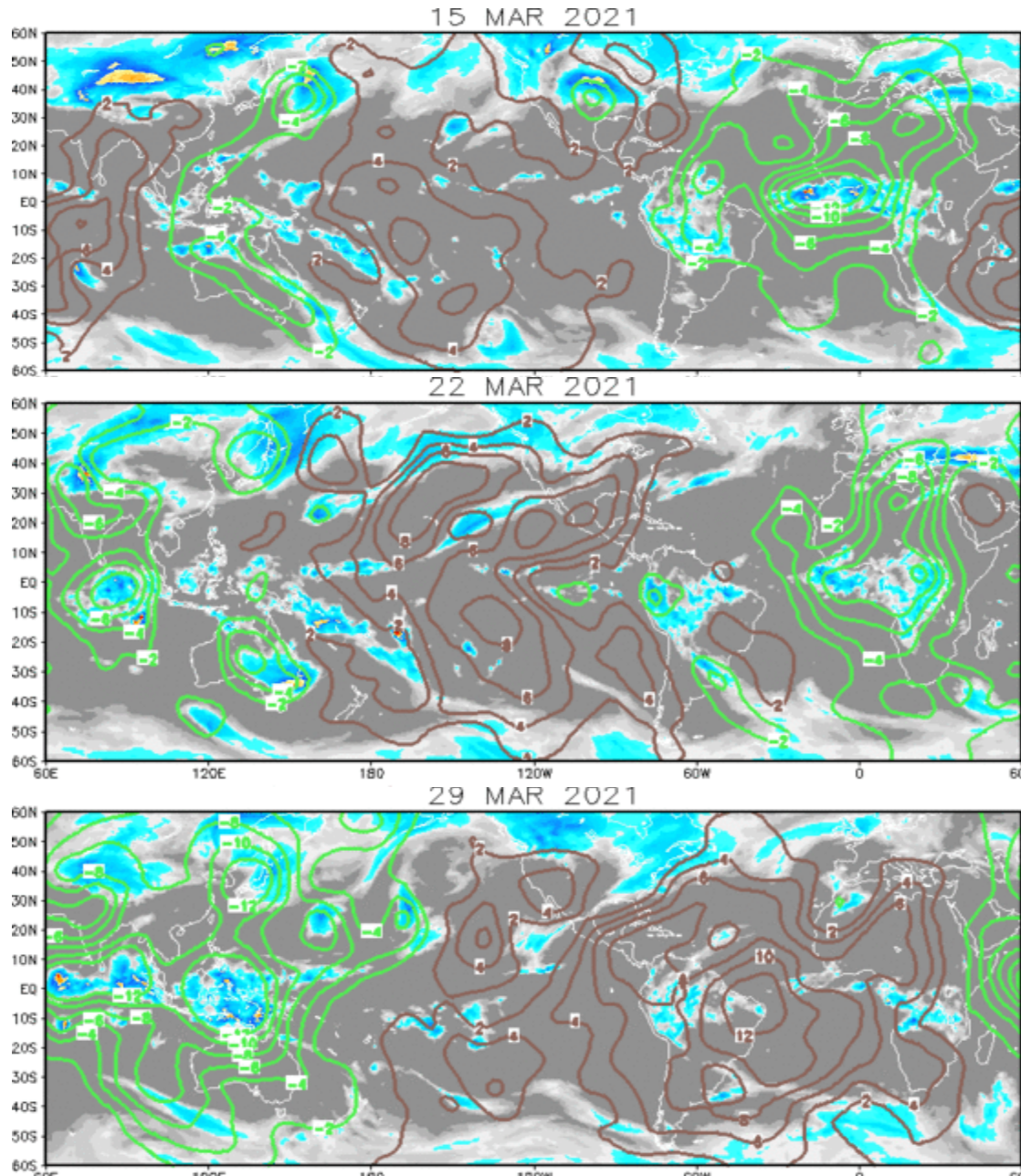
# IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence

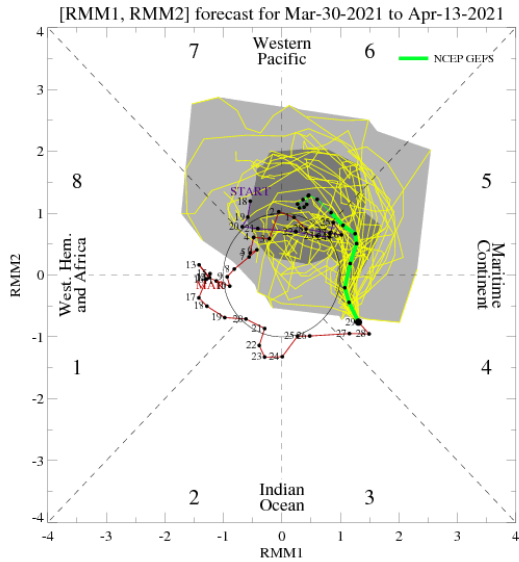
Brown: Enhanced Convergence

Large scale convection was fairly stationary during the first 2/3rds of March.

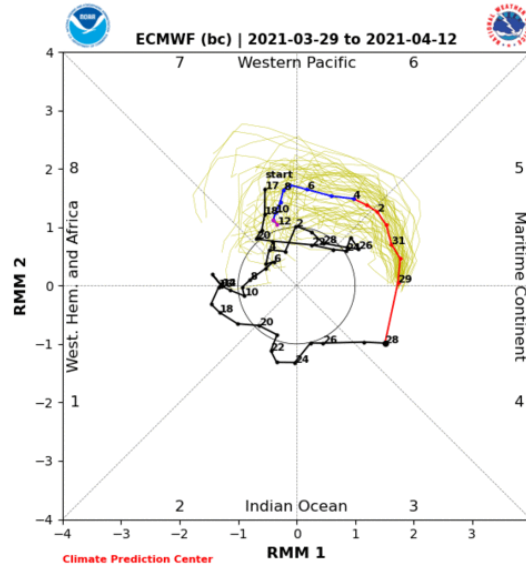
The large scale convective field has propagated eastward since March 22, following development and propagation of an active MJO event.



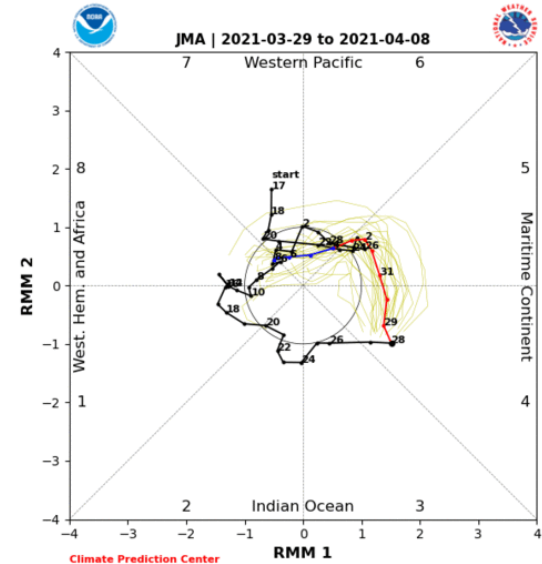
# MJO Observation/Forecast



GEFS



ECMWF

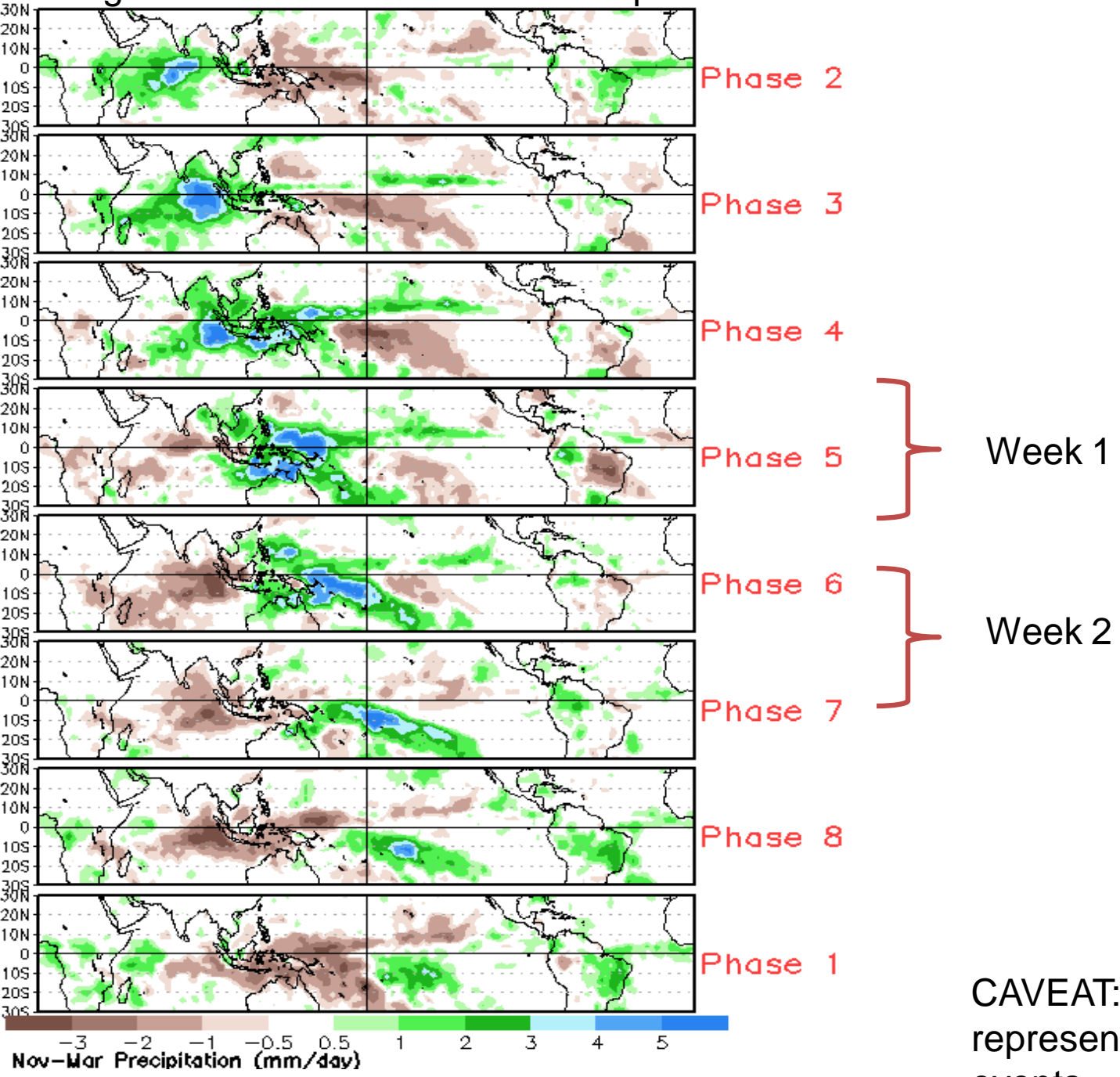


JMA

The GEFS, ECMWF, and JMA dynamical models are all in agreement that the MJO will continue propagating around the equator during the next two weeks.

The JMA weakens the MJO over the Western Pacific more than the other models. This is consistent with the anomalously cold SSTs over the central and eastern Pacific that often cause the MJO to decouple from convection faster than it does in non-La Nina background states.

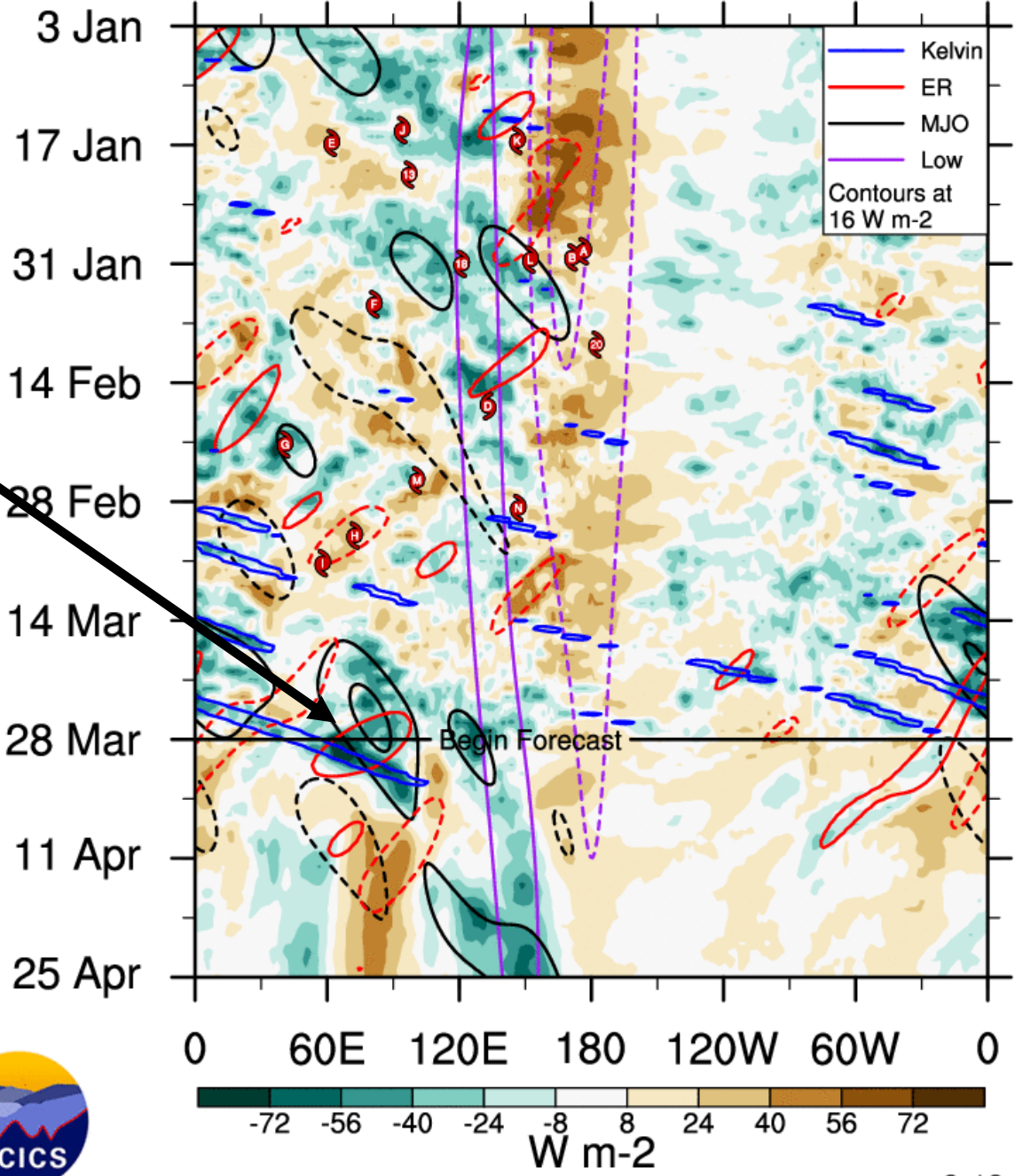
# Average Conditions when the MJO is present



CAVEAT: These panels are representative of robust MJO events.

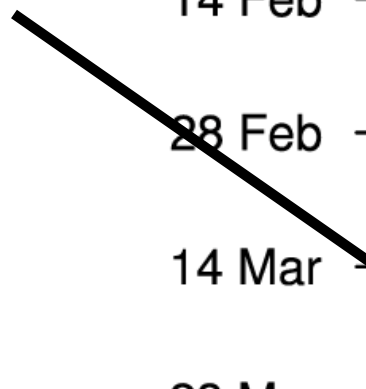
# OLR with CFS forecasts

5S - 5N

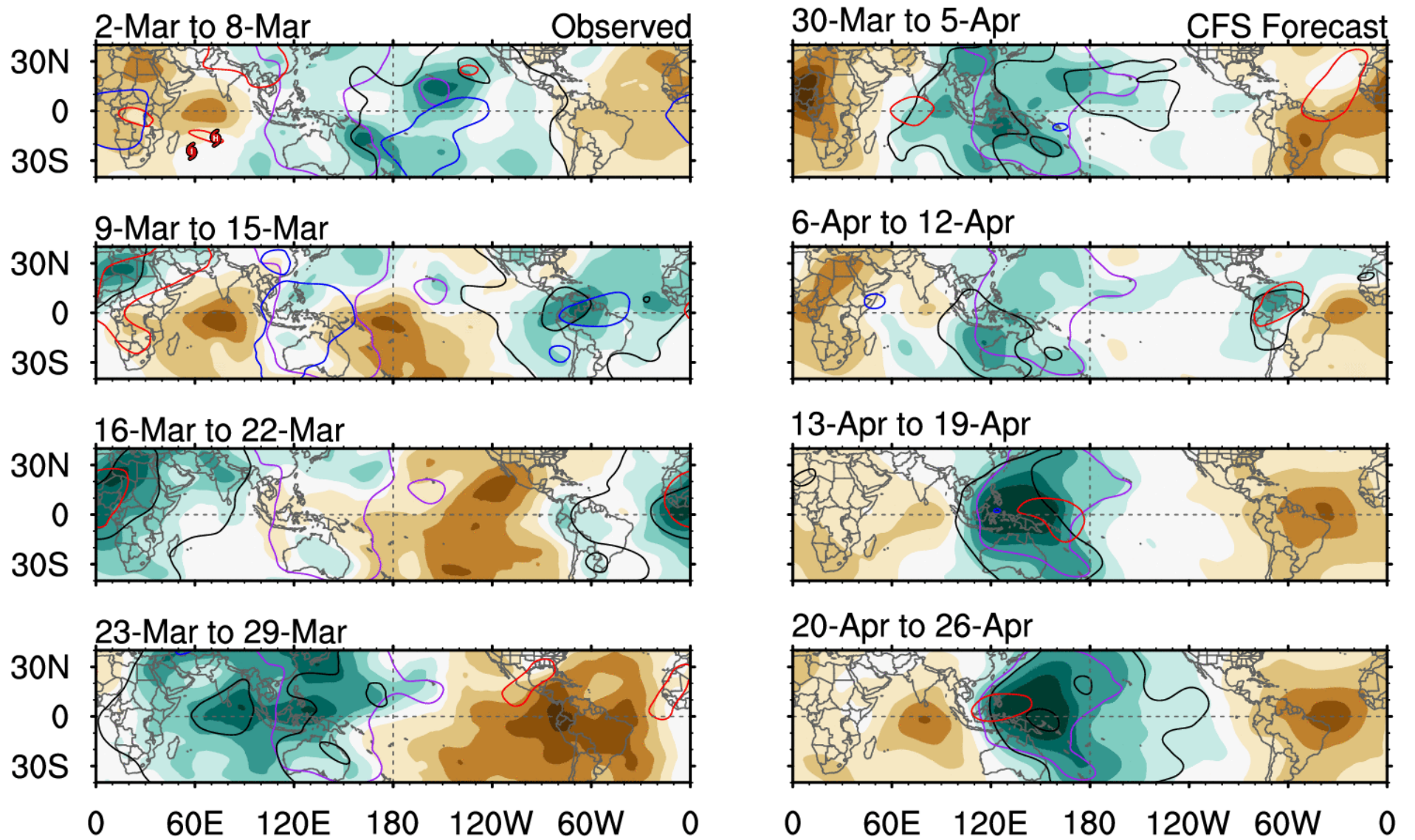


The current **MJO** event is collocated with a **Kelvin wave**.

The CFS is the only dynamical model that we routinely look at which does not propagate a strong MJO event over the Pacific.





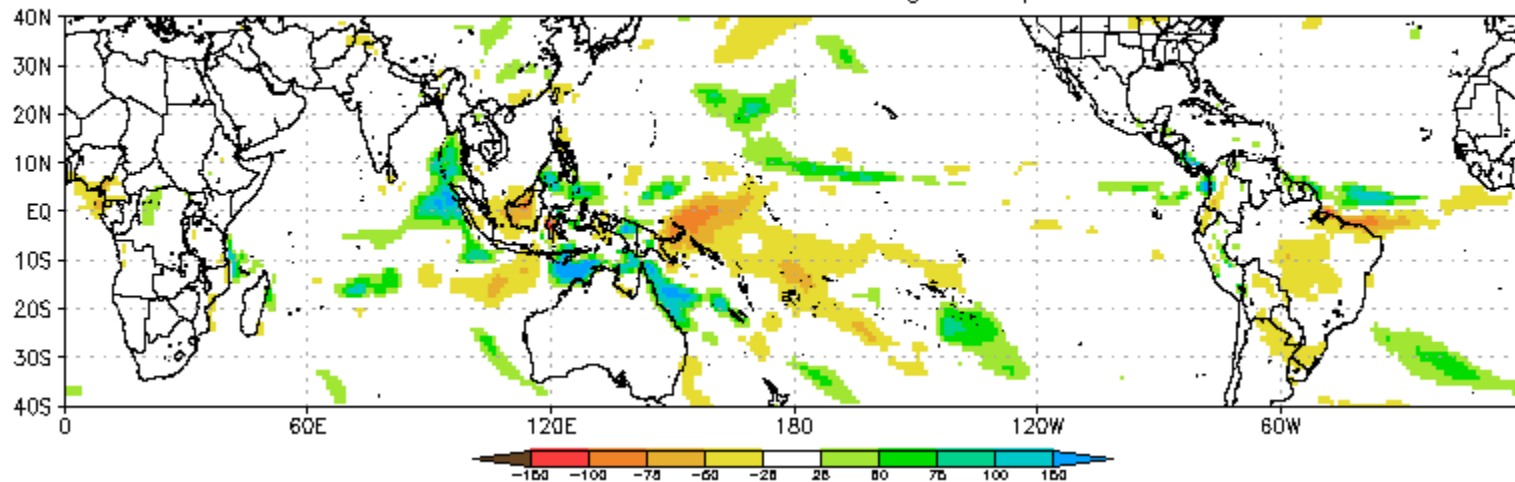


# 7-day CHI200 with CFS forecasts

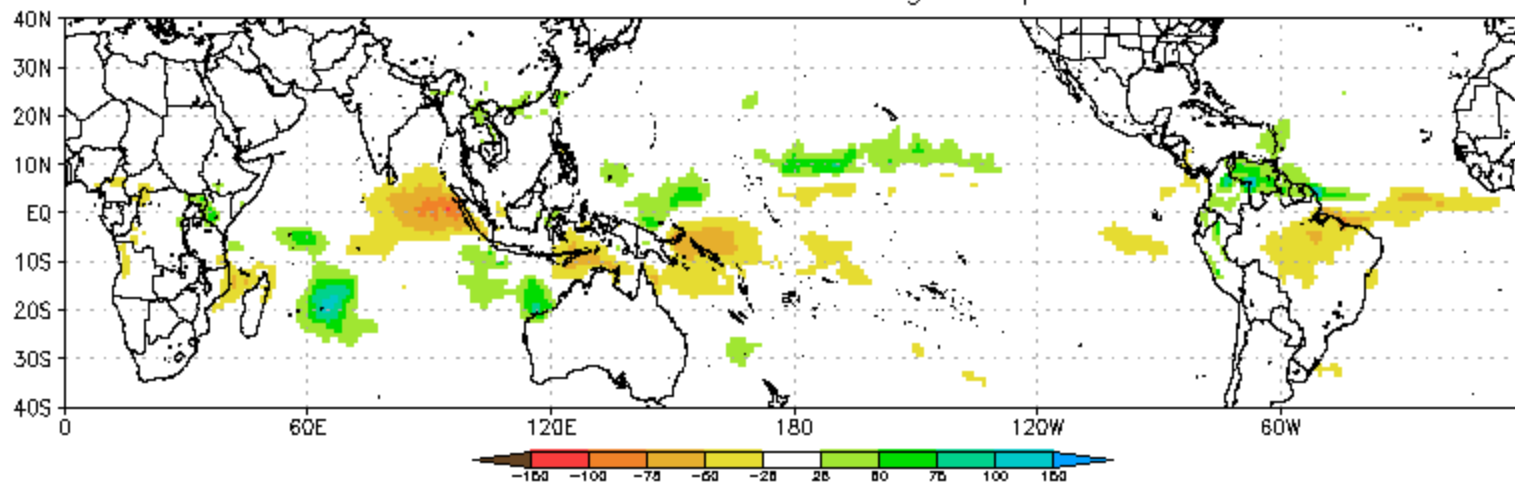
— MJO      — Kelvin x2  
 — Low      — ER

Contours at -2, -6  $\times 10^6$   $m^2 s^{-1}$

CFS Precipitation Anomalies (mm) Issued 29Mar2021  
Week-1 Forecast Ending 06Apr2021

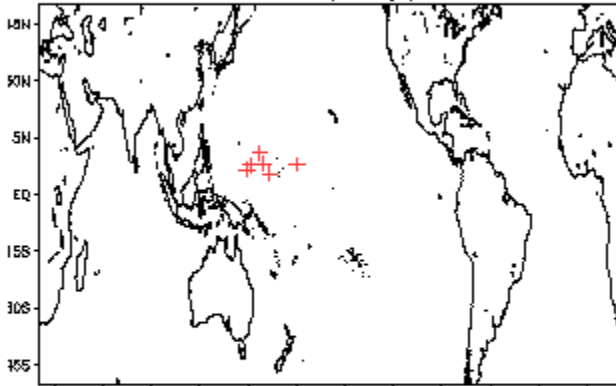


CFS Precipitation Anomalies (mm) Issued 29Mar2021  
Week-2 Forecast Ending 13Apr2021

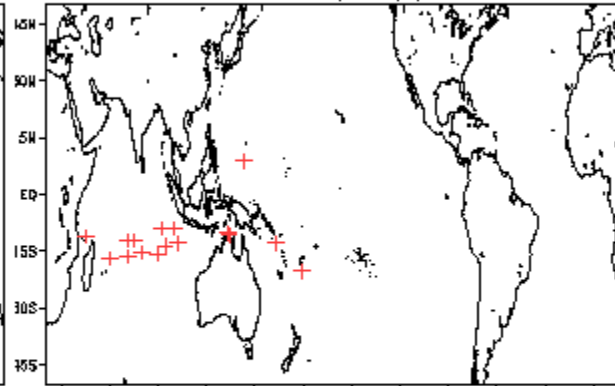


# April Tropical Storm Formation by MJO phase

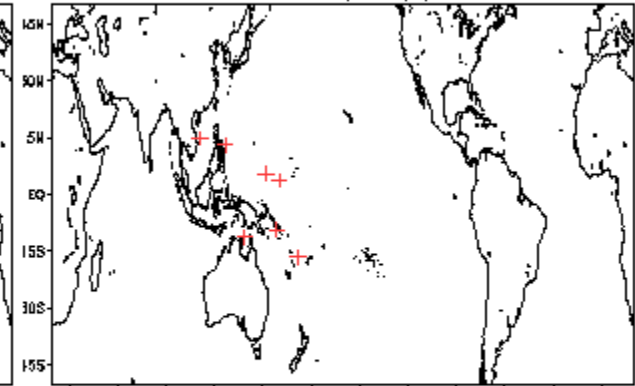
Phase 1 (70 days) 7 storms



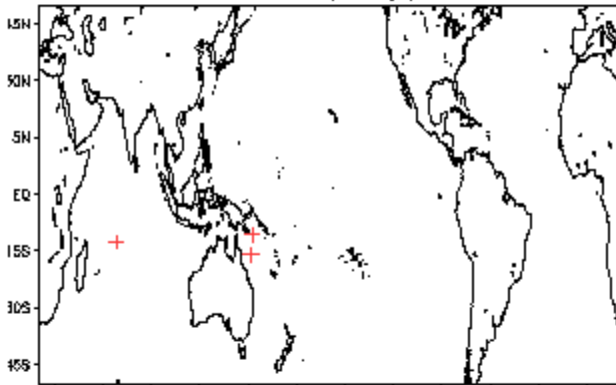
Phase 4 (95 days) 17 storms



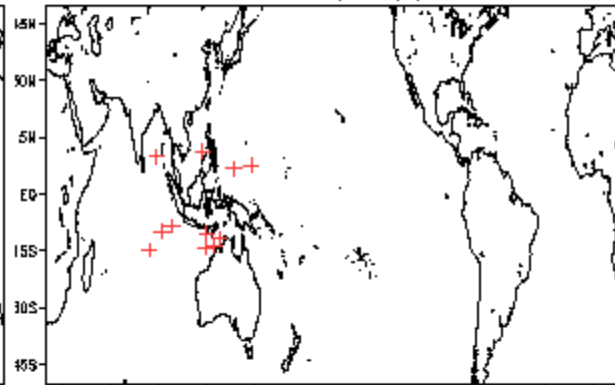
Phase 7 (87 days) 8 storms



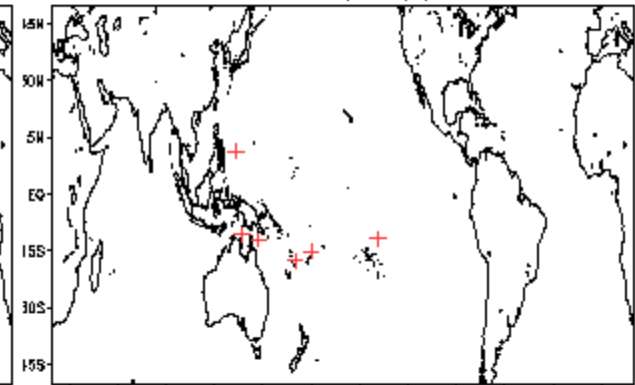
Phase 2 (65 days) 4 storms



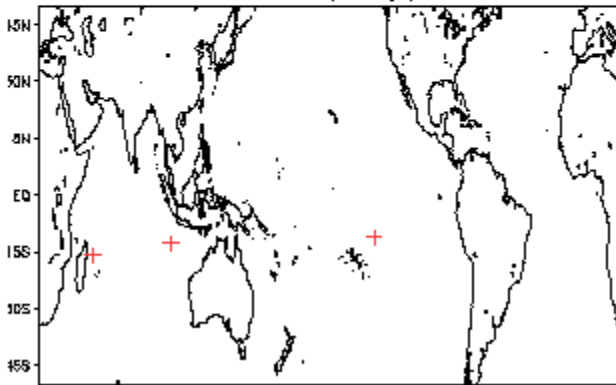
Phase 5 (77 days) 12 storms



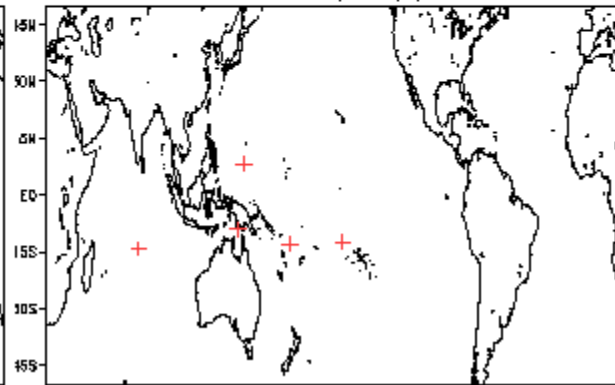
Phase 8 (75 days) 7 storms



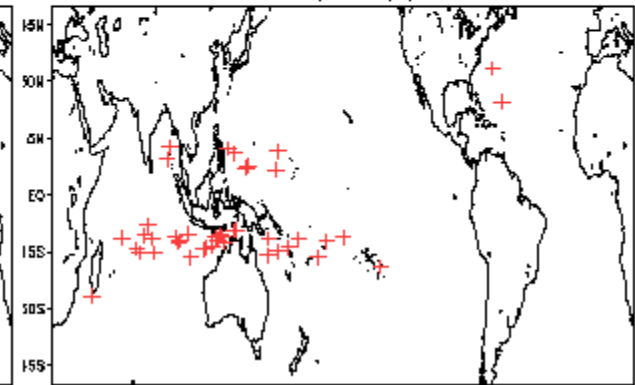
Phase 3 (68 days) 4 storms



Phase 6 (65 days) 8 storms

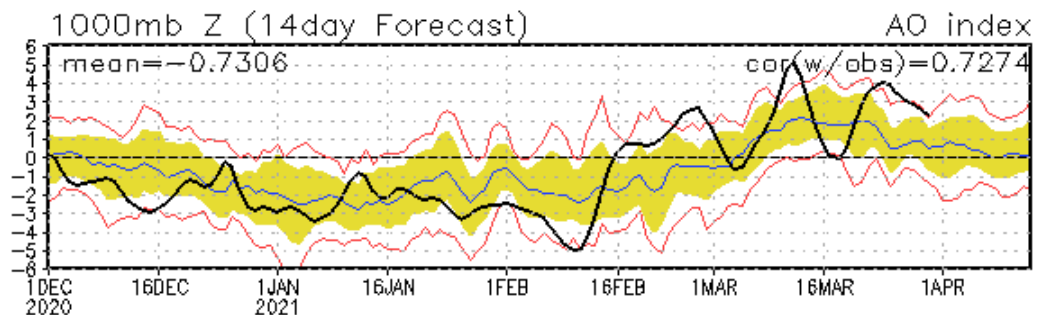
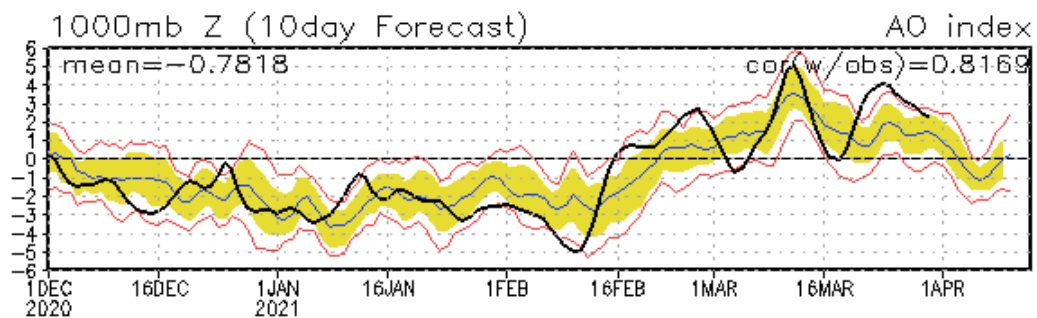
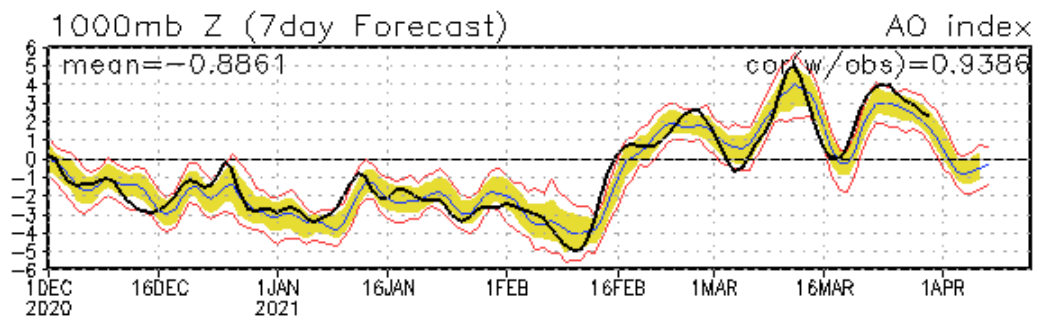
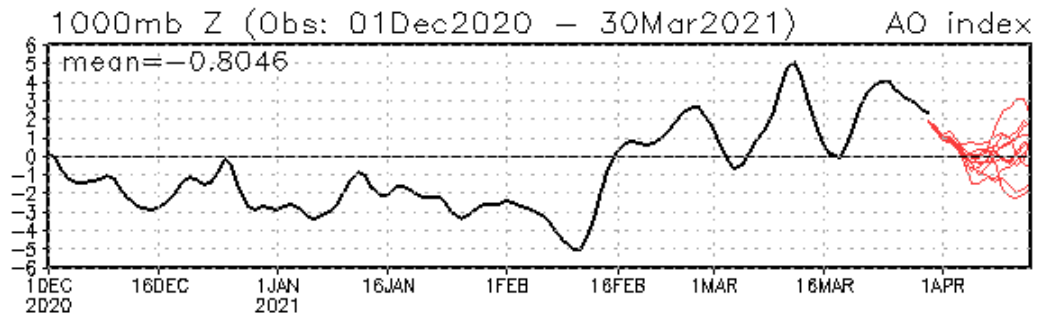


Null (388 days) 43 storms

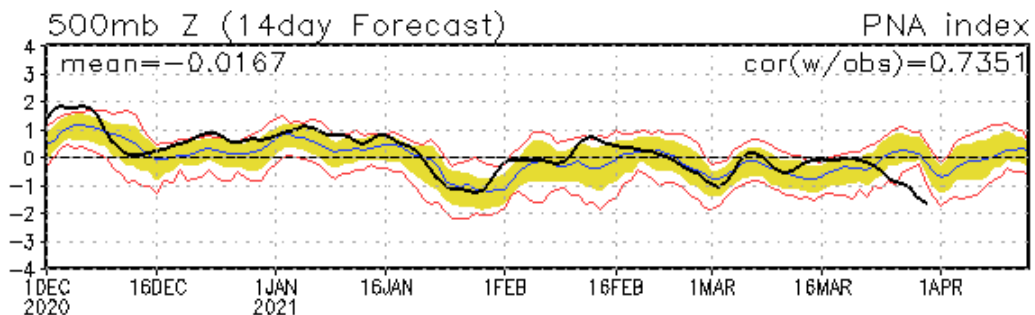
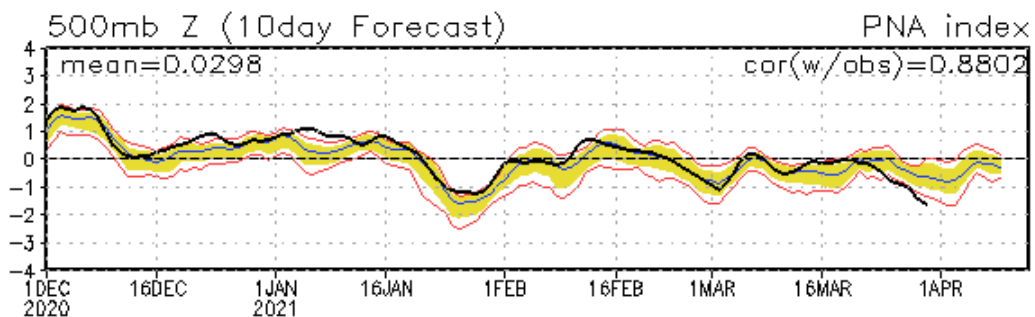
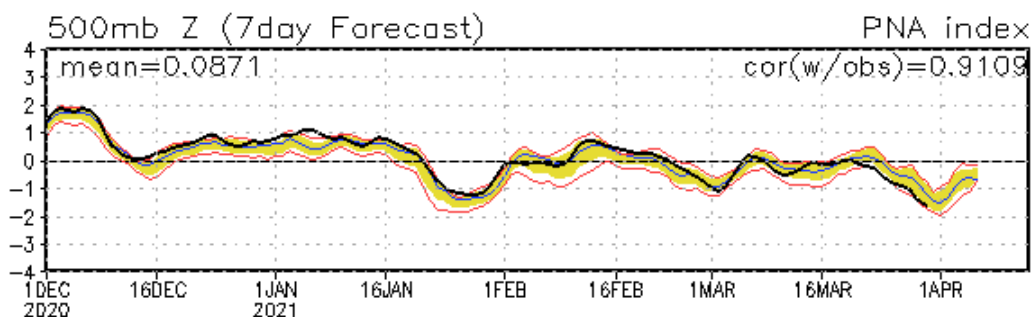
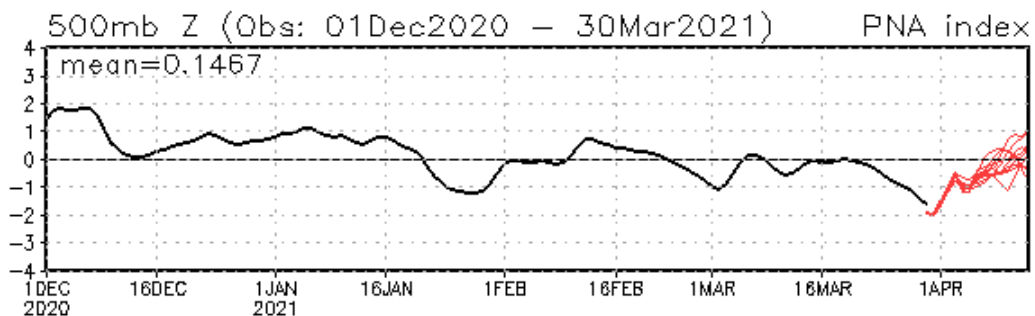


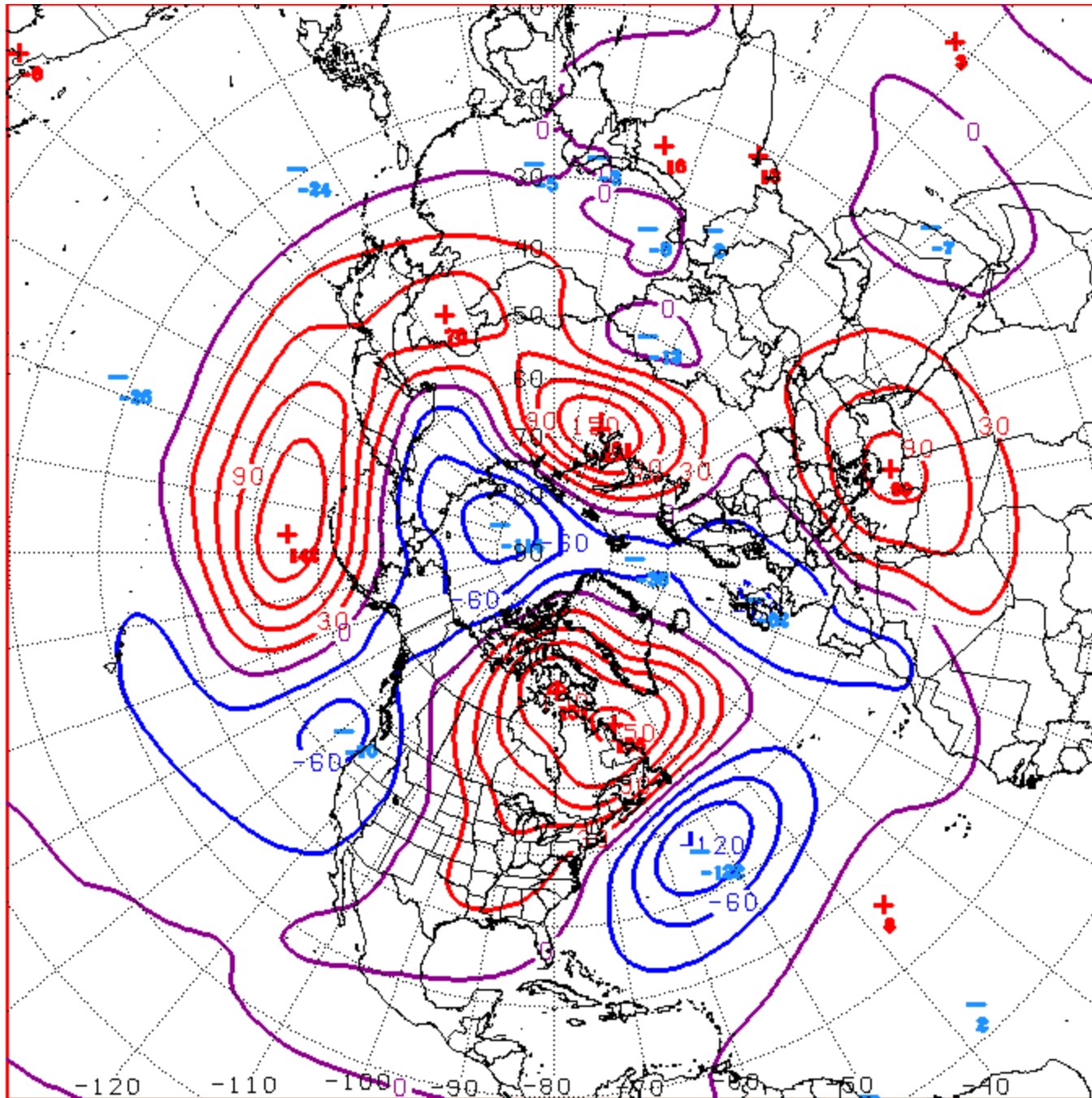
# Connections to U.S. Impacts

## AO: Observed & ENSM forecasts



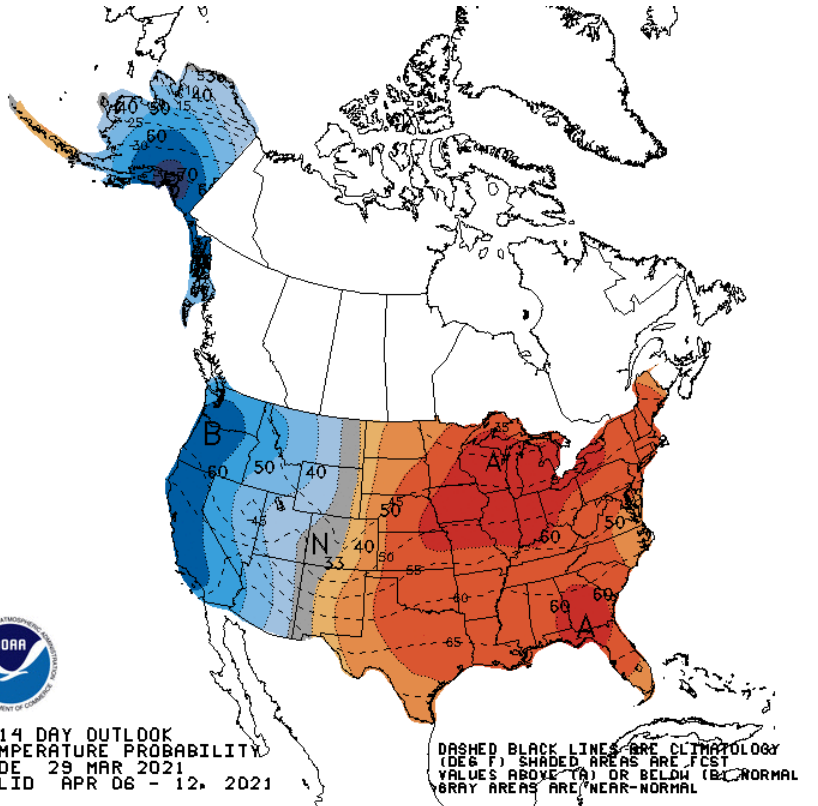
## PNA: Observed & ENSM forecasts





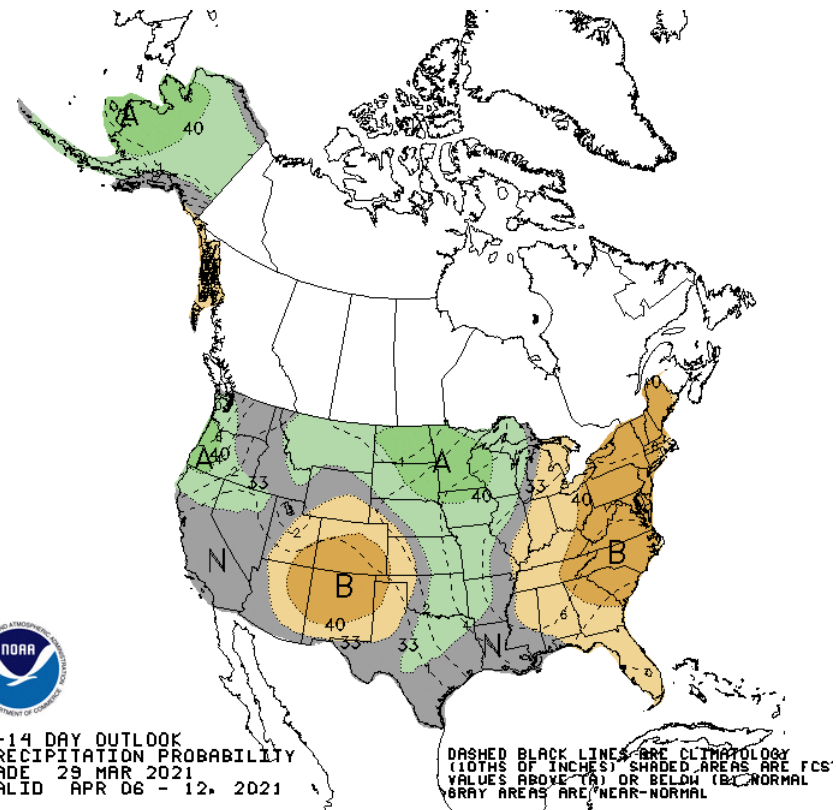
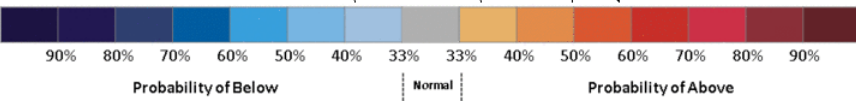
D+11 500 MB ANOMALIES FROM 06Z ENSM  
CPC MAP MADE MAR 30 2021 1337 UTC CNTD APR 10 2021

# Week 2 – Temperature and Precipitation



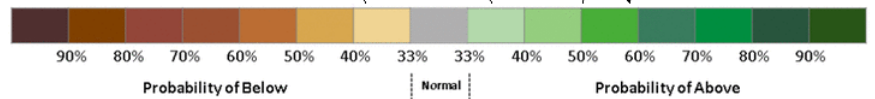
8-14 DAY OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 29 MAR 2021  
VALID APR 06 - 12, 2021

DASHED BLACK LINES ARE CLIMATOLOGY (DEG F). SHADED AREAS ARE FCST. VALUES ABOVE (A) OR BELOW (B) NORMAL. GRAY AREAS ARE NEAR-NORMAL.



8-14 DAY OUTLOOK  
PRECIPITATION PROBABILITY  
MADE 29 MAR 2021  
VALID APR 06 - 12, 2021

DASHED BLACK LINES ARE CLIMATOLOGY (10THS OF INCHES). SHADED AREAS ARE FCST. VALUES ABOVE (A) OR BELOW (B) NORMAL. GRAY AREAS ARE NEAR-NORMAL.



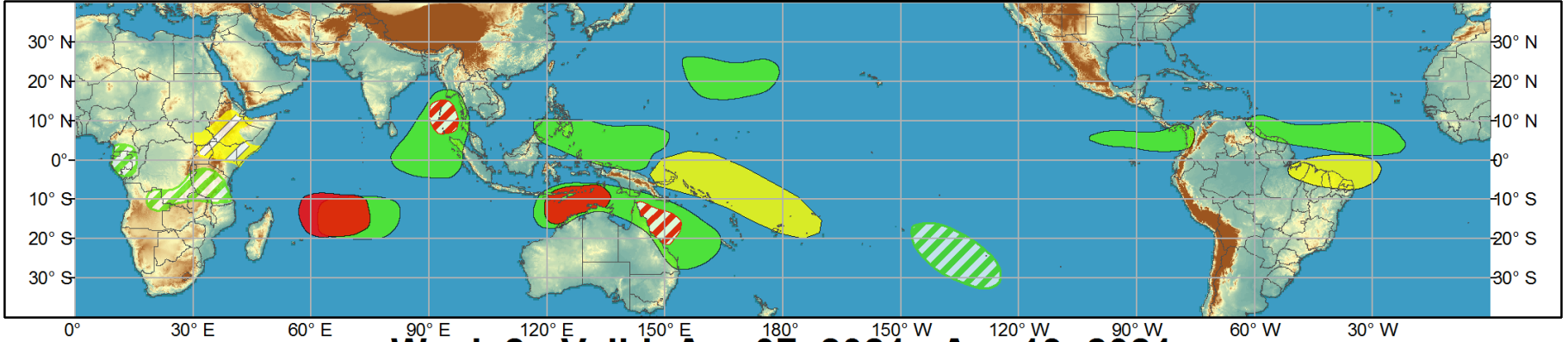




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