

# Global Tropics Hazards And Benefits Outlook

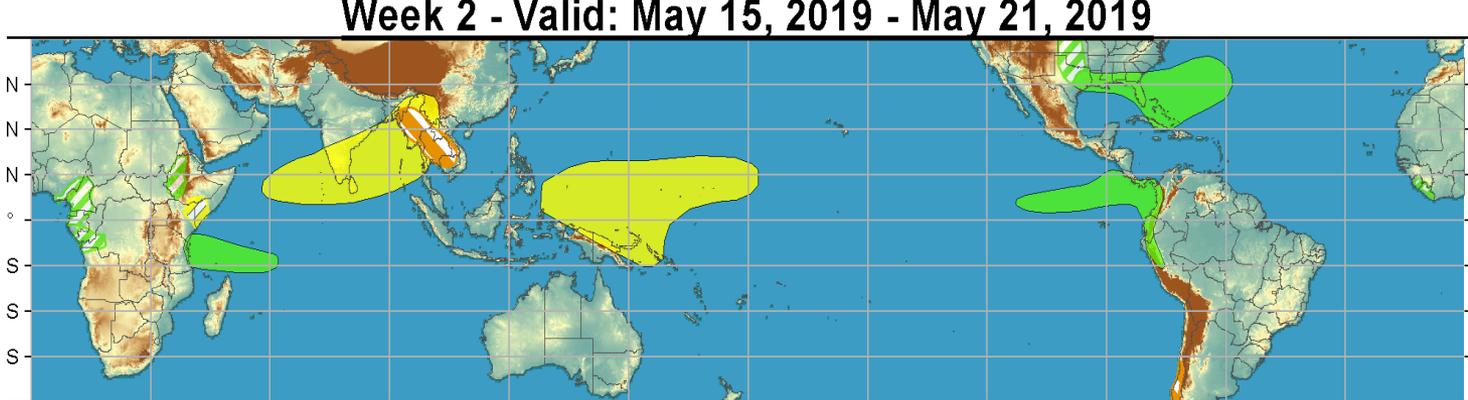
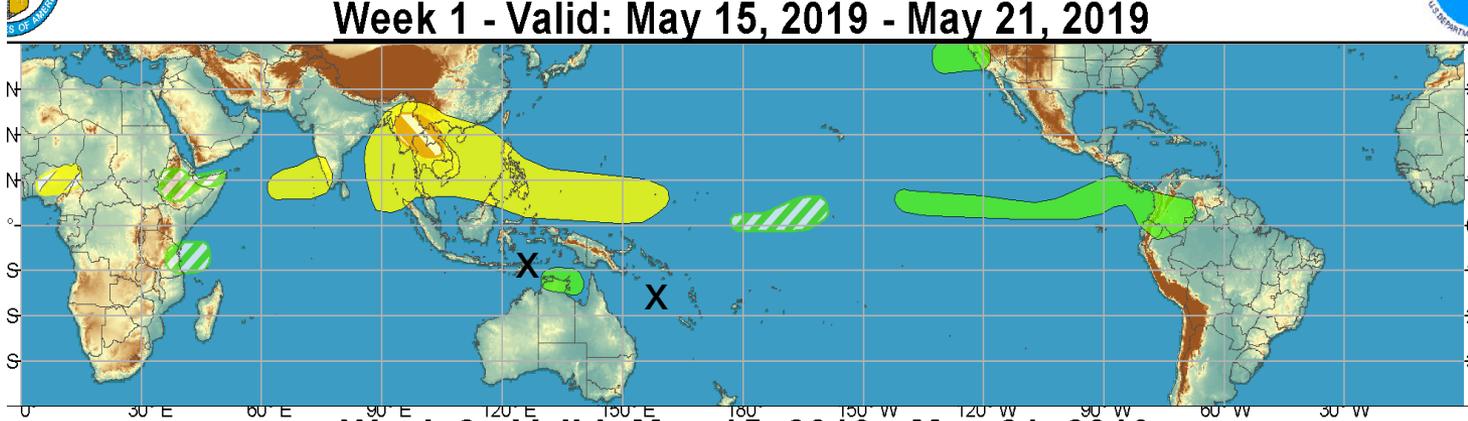
5/21/2019

Anthony Artusa & Nick Novella

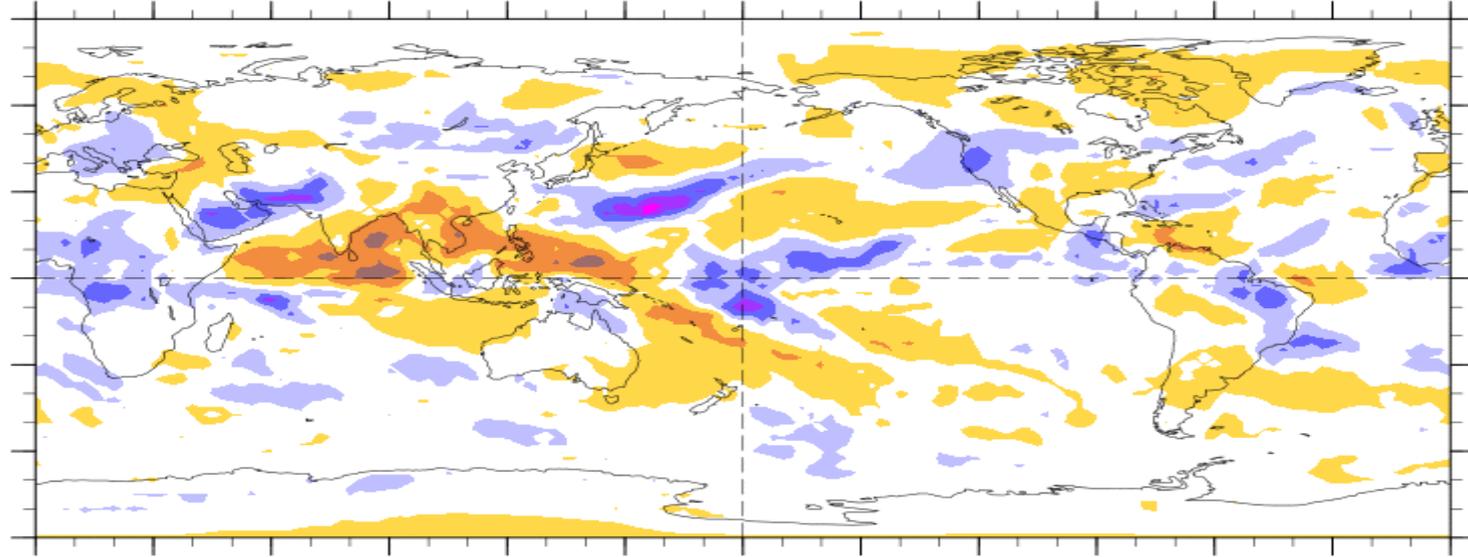
## Outline

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

# Outlook Review



7-Day Average OLR Anomaly 2019/05/13 - 2019/05/19



Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

# Synopsis of Climate Modes

## **ENSO: (May 9, 2019 Update)**

- ENSO Alert System Status: [El Niño Advisory](#)
- El Niño is likely to continue through the Northern Hemisphere summer 2019 (70% chance) and fall (55-60% chance).

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

- The MJO continued to slowly propagate eastward over the Pacific Ocean, with enhanced convection centered over the Western Hemisphere and into Africa.
- Dynamical models indicate that the MJO is likely to continue shifting east over the Western Hemisphere (Phase 8) during week-1, and Africa and possibly over the Indian Ocean (Phases 1/2) during week2.
- The MJO is expected to elevate chances for tropical cyclone development across the East Pacific. A delay in the onset of the Indian Monsoon is expected until MJO re-emerges over Indian Ocean in early June.

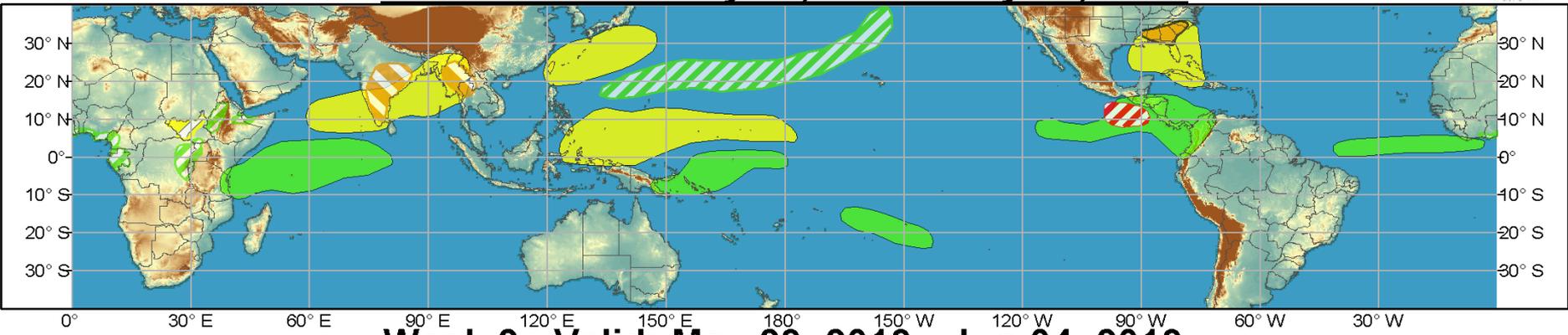
## **Extratropics:**

- Although a mid-latitude trough is the major contributor to a wet pattern over the Western US over the next two weeks, enhanced moisture from the subtropics is consistent with MJO evolution and El Niño.

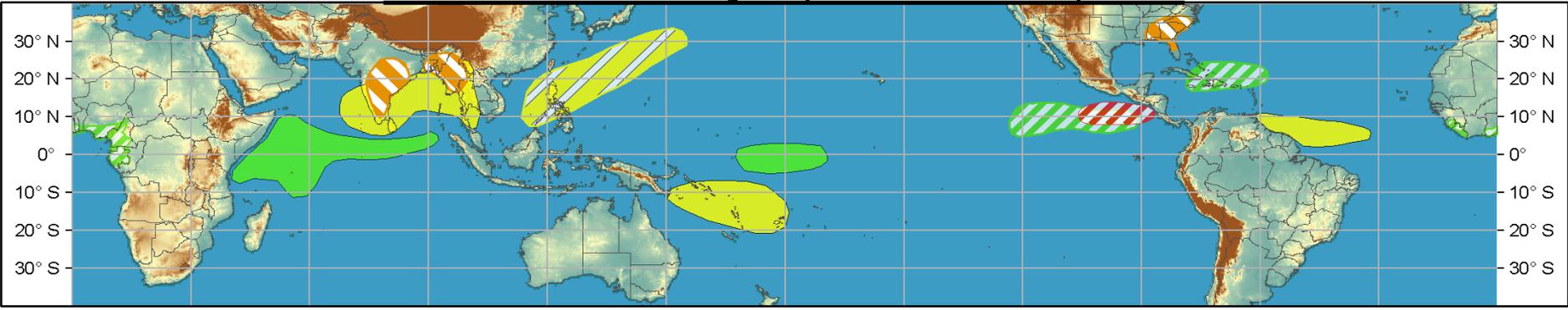


# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

## Week 1 - Valid: May 22, 2019 - May 28, 2019



## Week 2 - Valid: May 29, 2019 - Jun 04, 2019



### 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.
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Forecaster: Novella

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# IR Satellite & 200-hpa Velocity Potential Anomalies

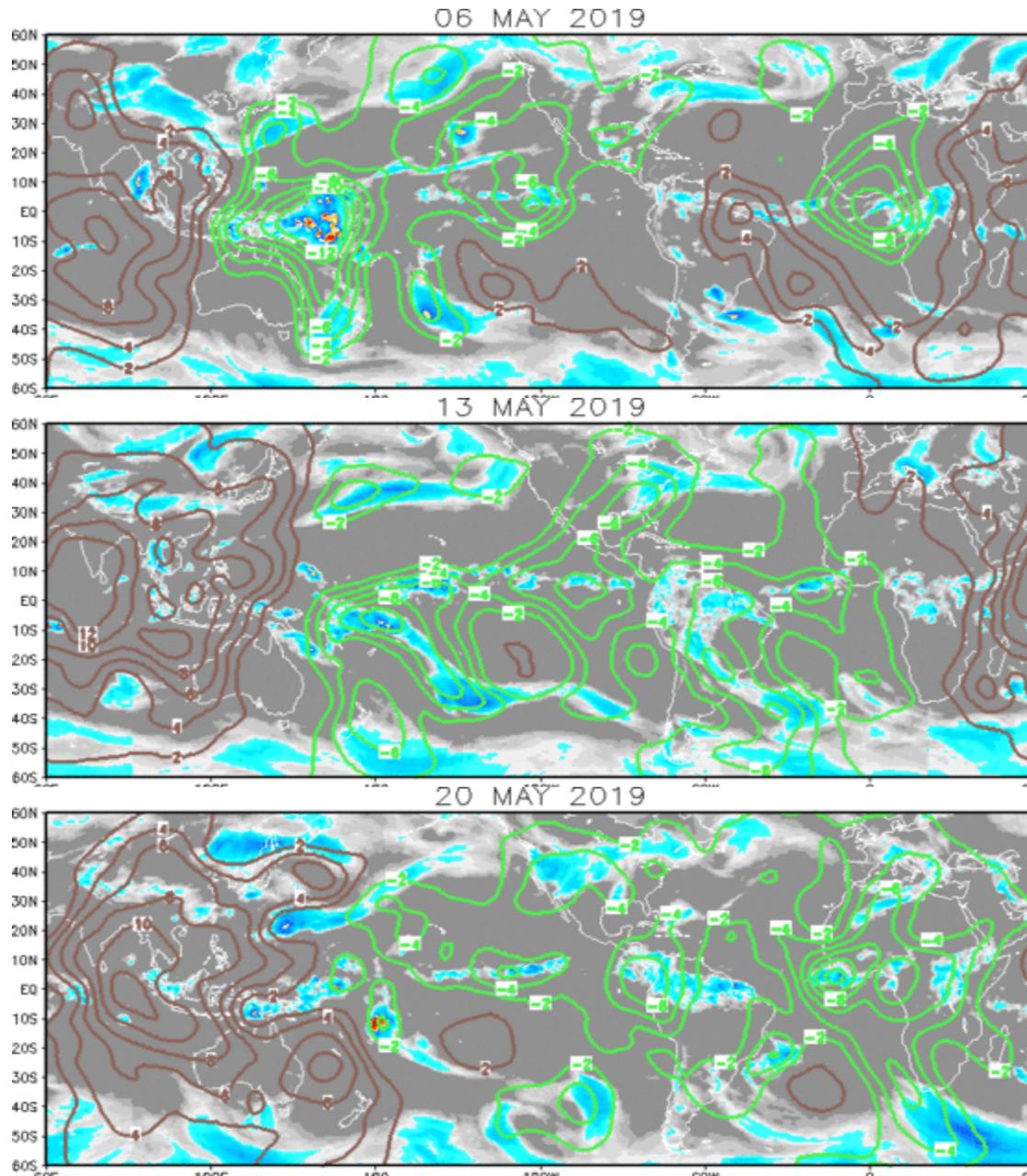
Green: Enhanced Divergence

Brown: Enhanced Convergence

Shift to somewhat more of a wave-2 pattern, with a Rossby wave over Africa partially to blame for the split.

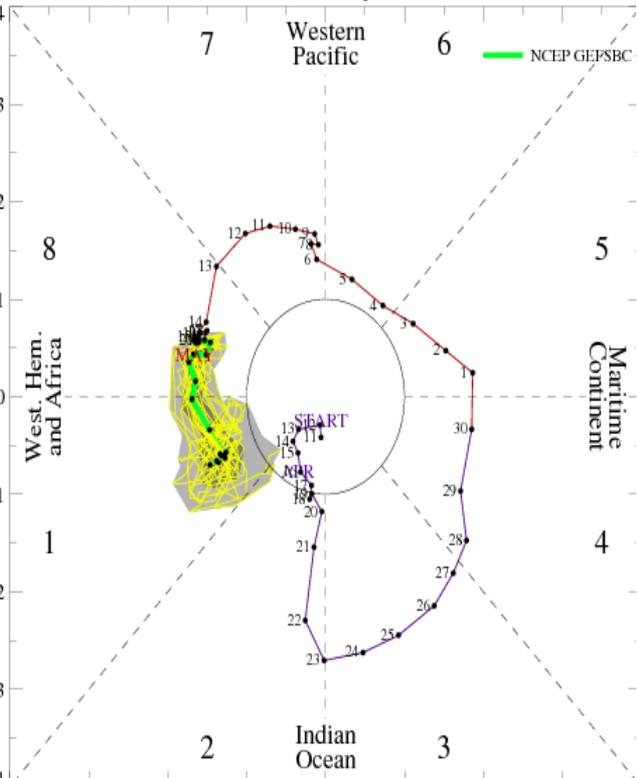
Constructive interference between the MJO and El Niño resulted in a coherent pattern spatially with large anomalies.

Currently, the suppressed phase still remains centered over the Indian Ocean and Maritime continent, with the enhanced phase expanded eastward over Africa during the last week.



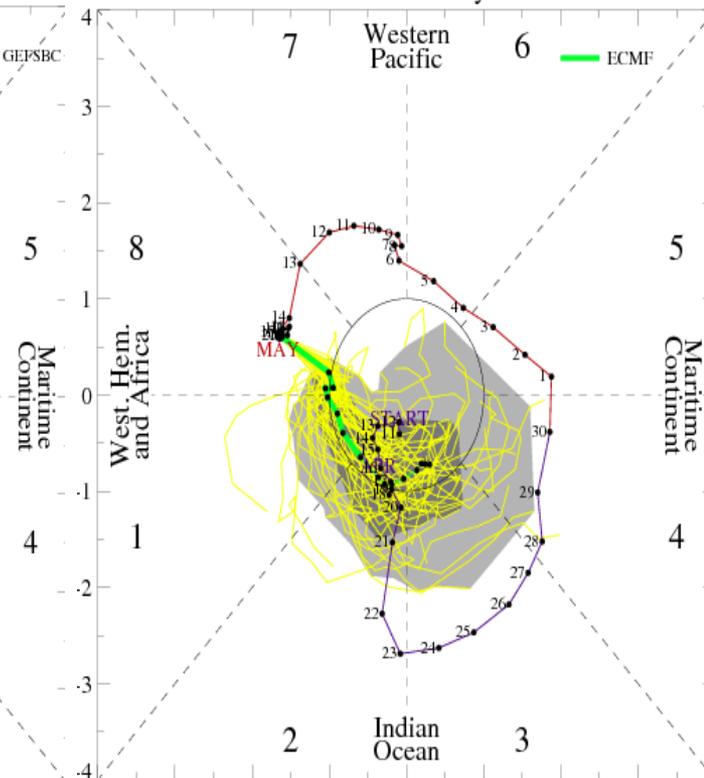
# MJO Observation/Forecast

[RMM1, RMM2] forecast for May-21-2019 to Jun-04-2019



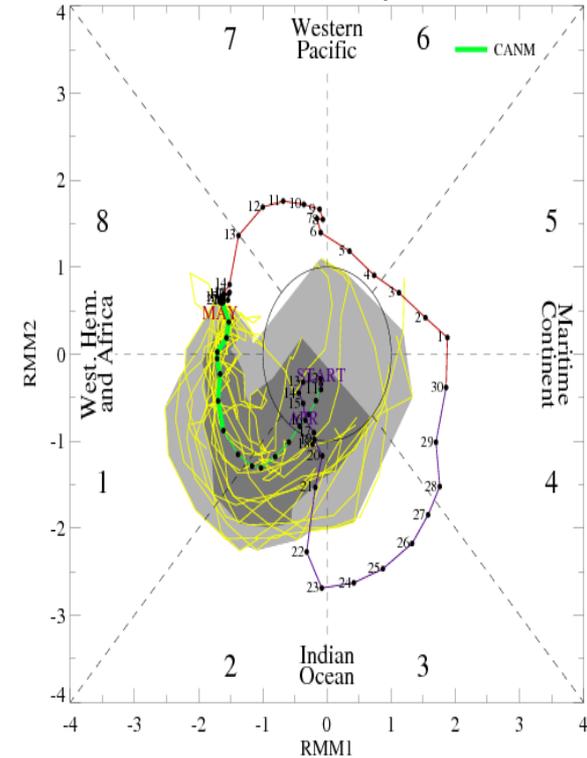
GEFS

MJO Index Forecast for 21 May 2019-04 Jun 2019



ECMWF

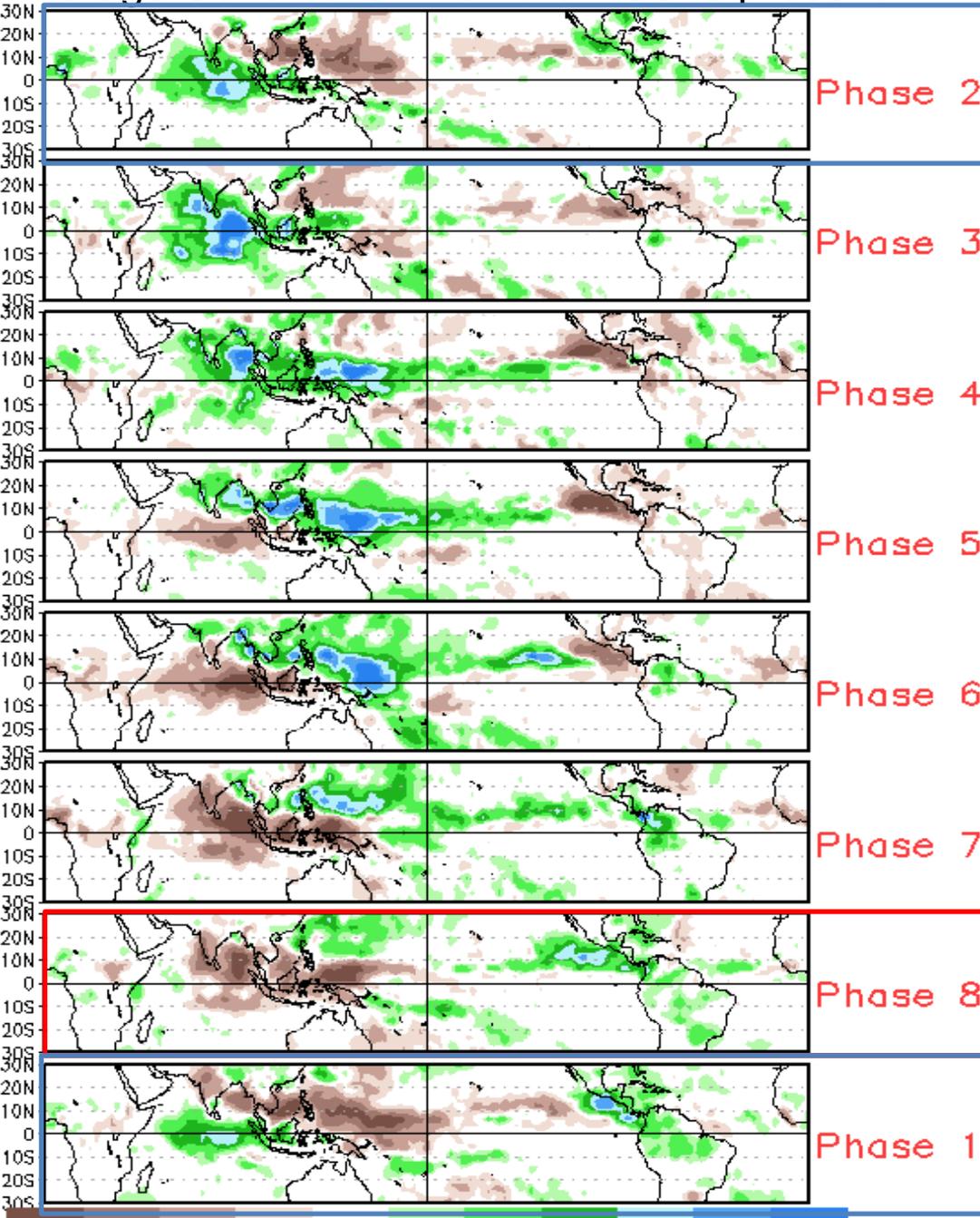
MJO Index Forecast for 21 May 2019-04 Jun 2019



CMC

The GEFS and ECMWF models indicate continued eastward propagation of the MJO during the next two weeks albeit with a decrease in amplitude.

# Average Conditions when the MJO is present



Phase 2

Phase 3

Phase 4

Phase 5

Phase 6

Phase 7

Phase 8

Phase 1

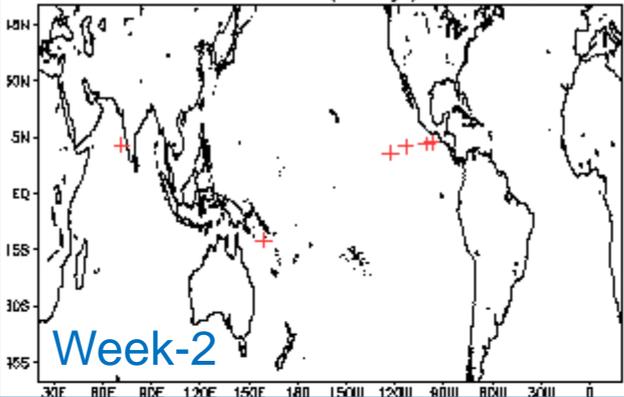
Week-1: Phase 8

Week-2: Phases 1/2

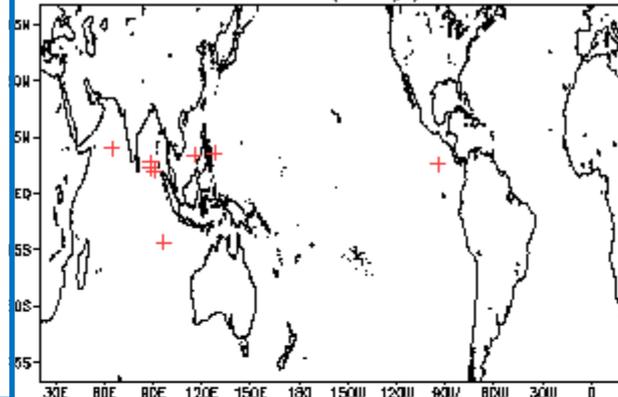
CAVEAT: These panels are representative of robust MJO events.

# May Tropical Storm Formation by MJO phase

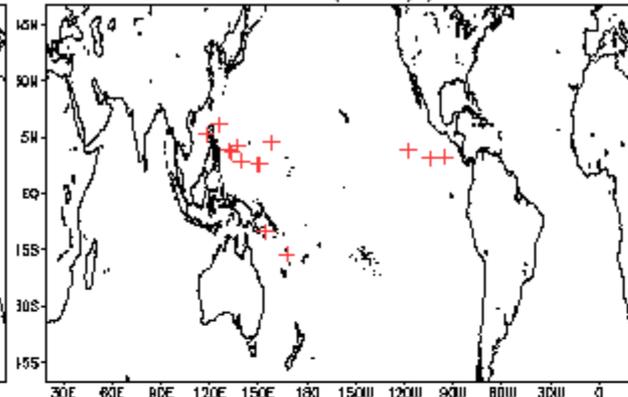
Phase 1 (85 days) 7 storms



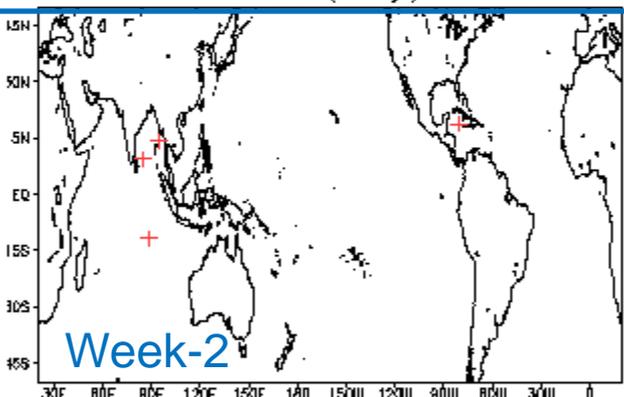
Phase 4 (85 days) 9 storms



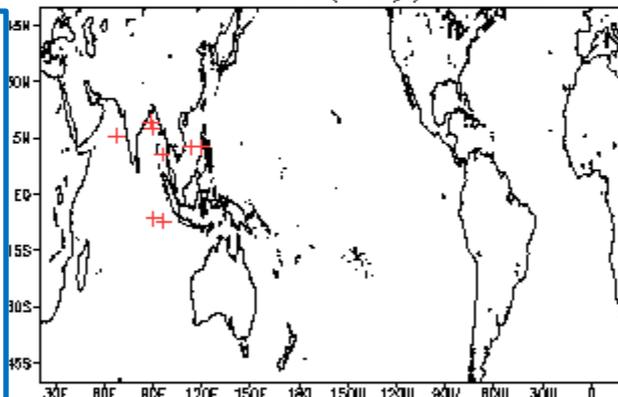
Phase 7 (111 days) 15 storms



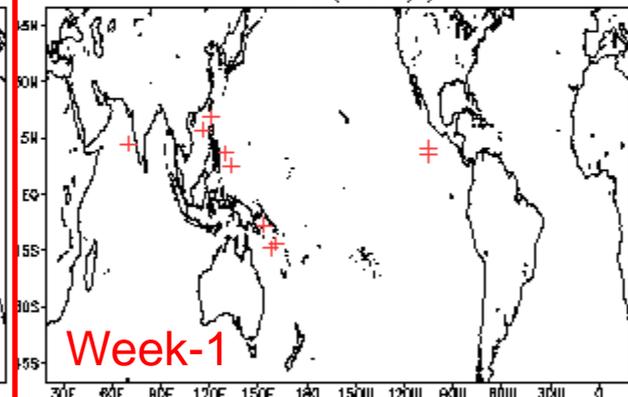
Phase 2 (76 days) 5 storms



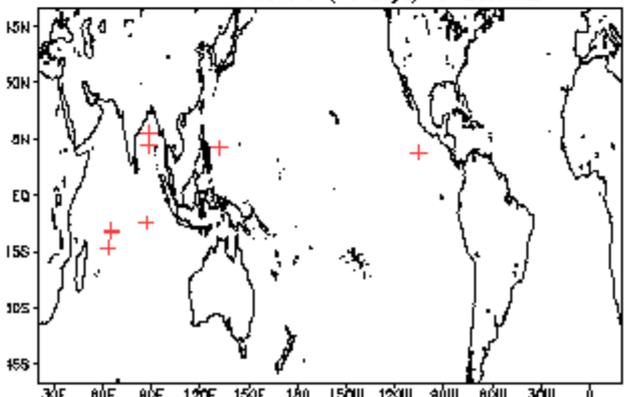
Phase 5 (66 days) 9 storms



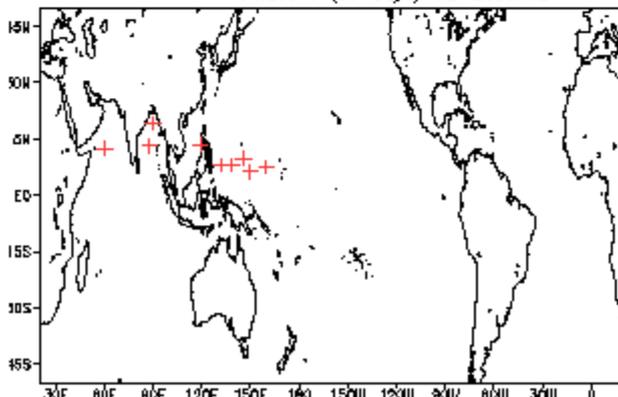
Phase 8 (111 days) 11 storms



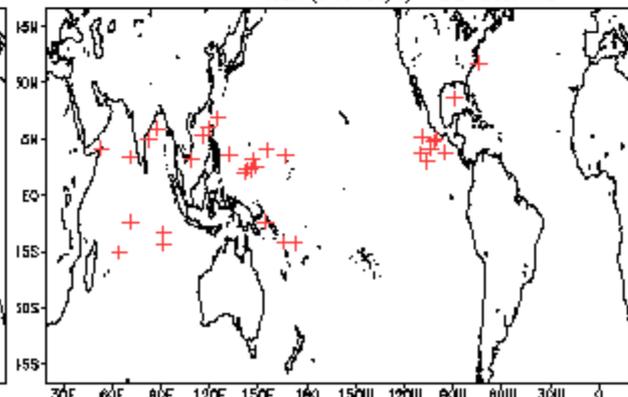
Phase 3 (73 days) 9 storms

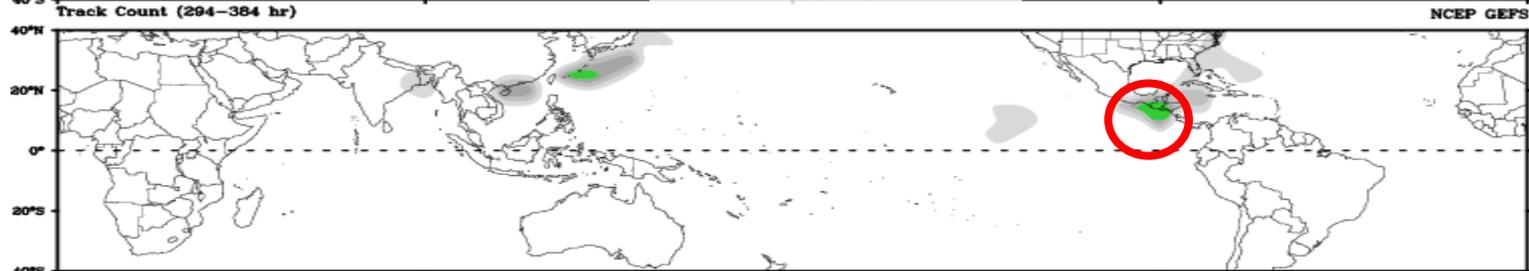
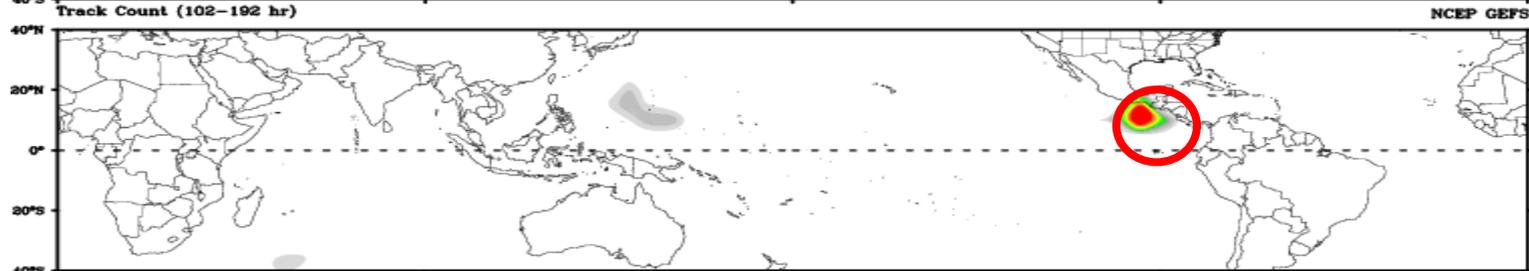
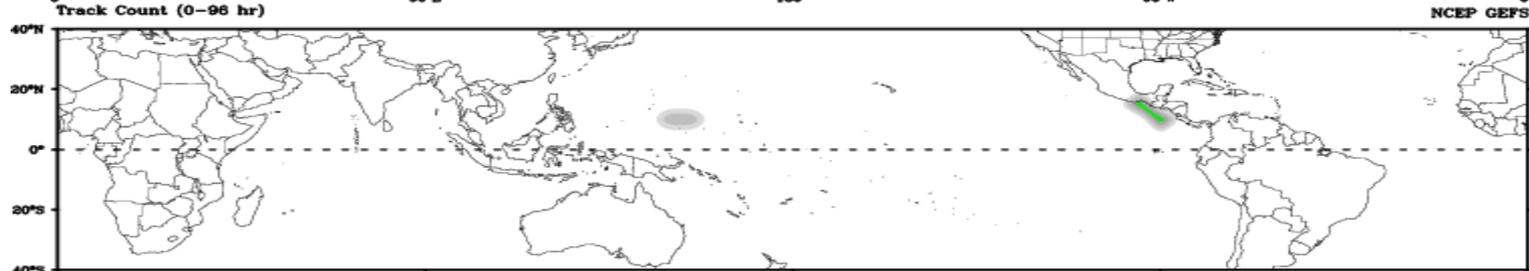
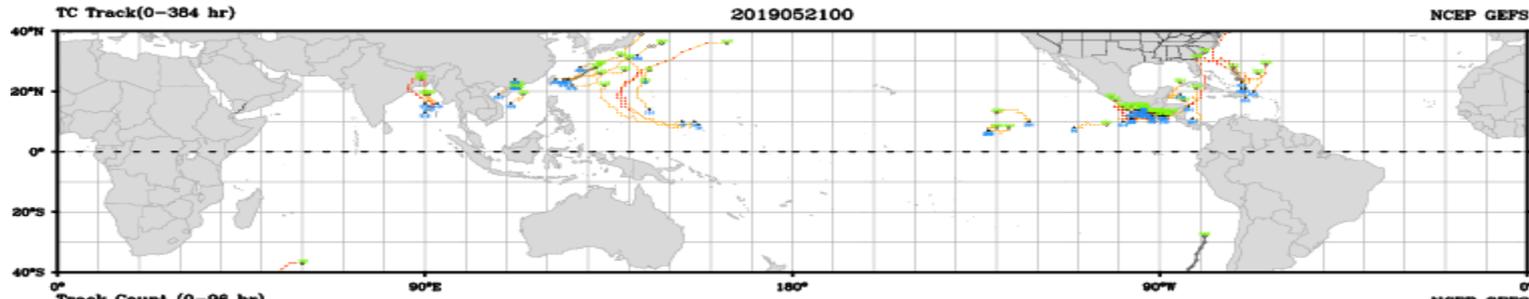


Phase 6 (87 days) 10 storms



Null (349 days) 33 storms





Days 1-4

Days 5-8

Days 9-12

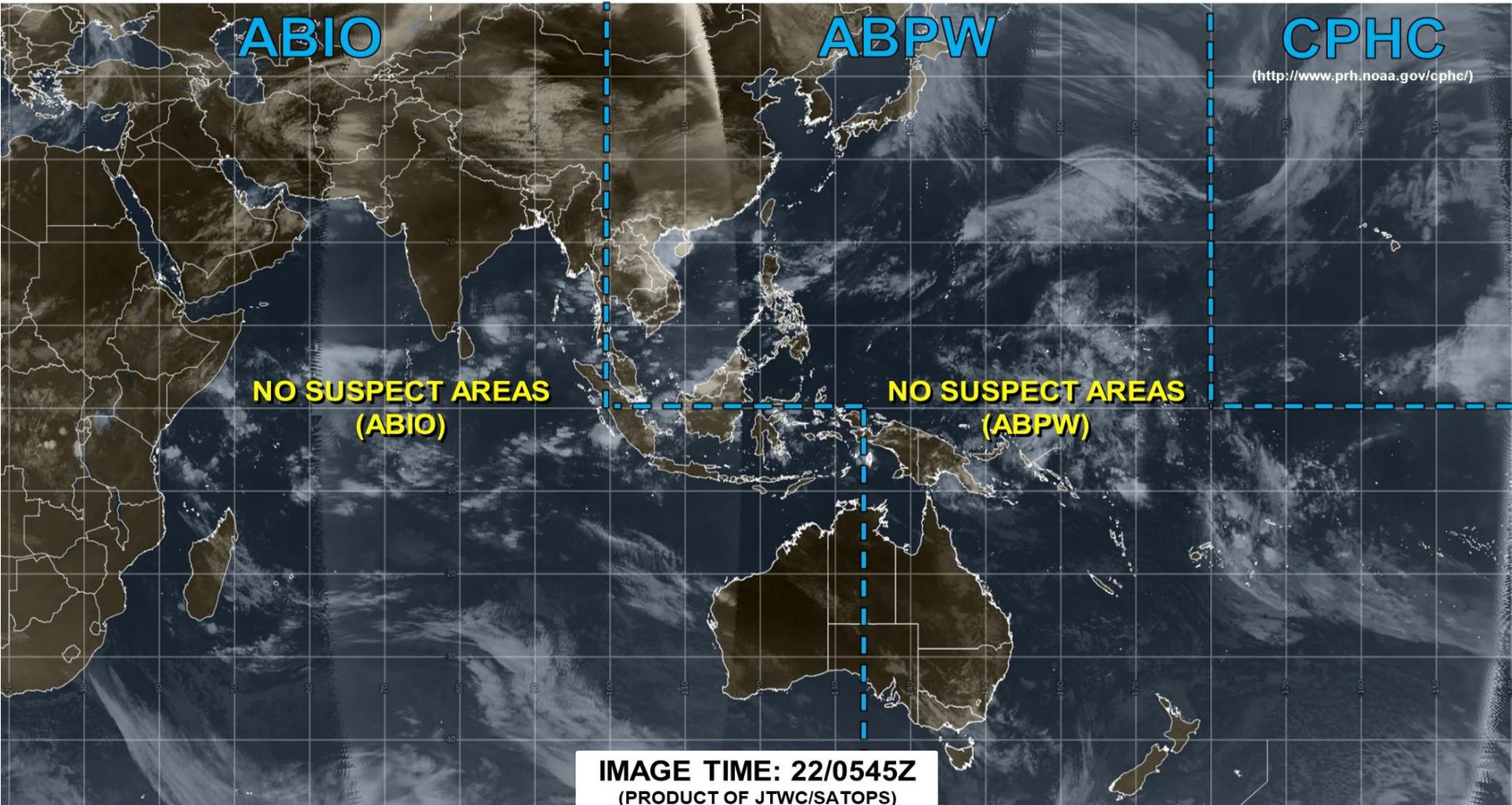
Days 13-16

East Pacific  
season begun  
5/15





# JOINT TYPHOON WARNING CENTER



**ABIO**

**ABPW**

**CPHC**

(<http://www.prh.noaa.gov/cphc/>)

**NO SUSPECT AREAS  
(ABIO)**

**NO SUSPECT AREAS  
(ABPW)**

**IMAGE TIME: 22/0545Z**  
(PRODUCT OF JTWC/SATOPS)

**LOW**

TC development unlikely within 24 hours

**MEDIUM**

TC development likely, but expected to occur beyond 24 hours

**HIGH**

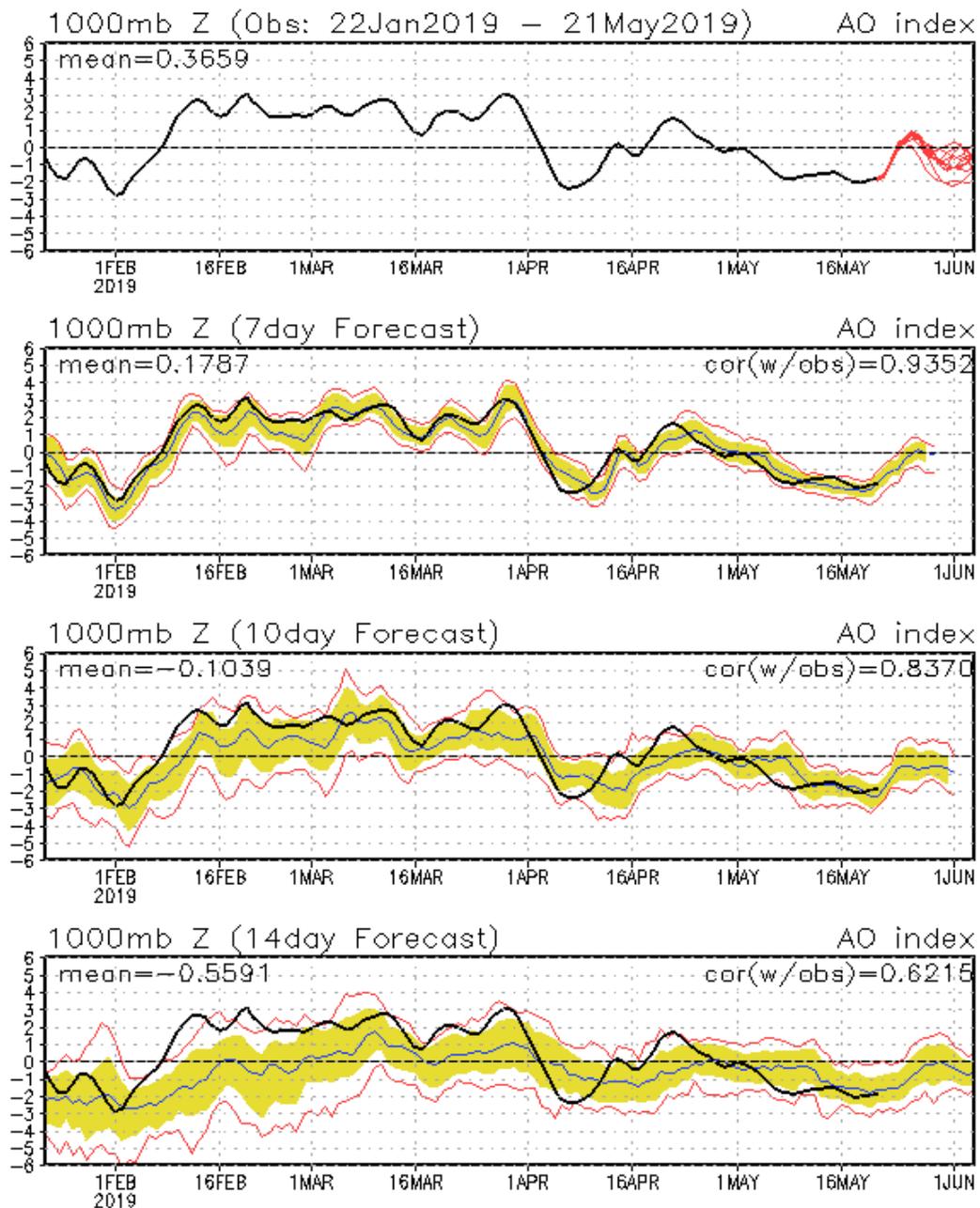
TC development likely within 24 hours  
(Reference TCFA)

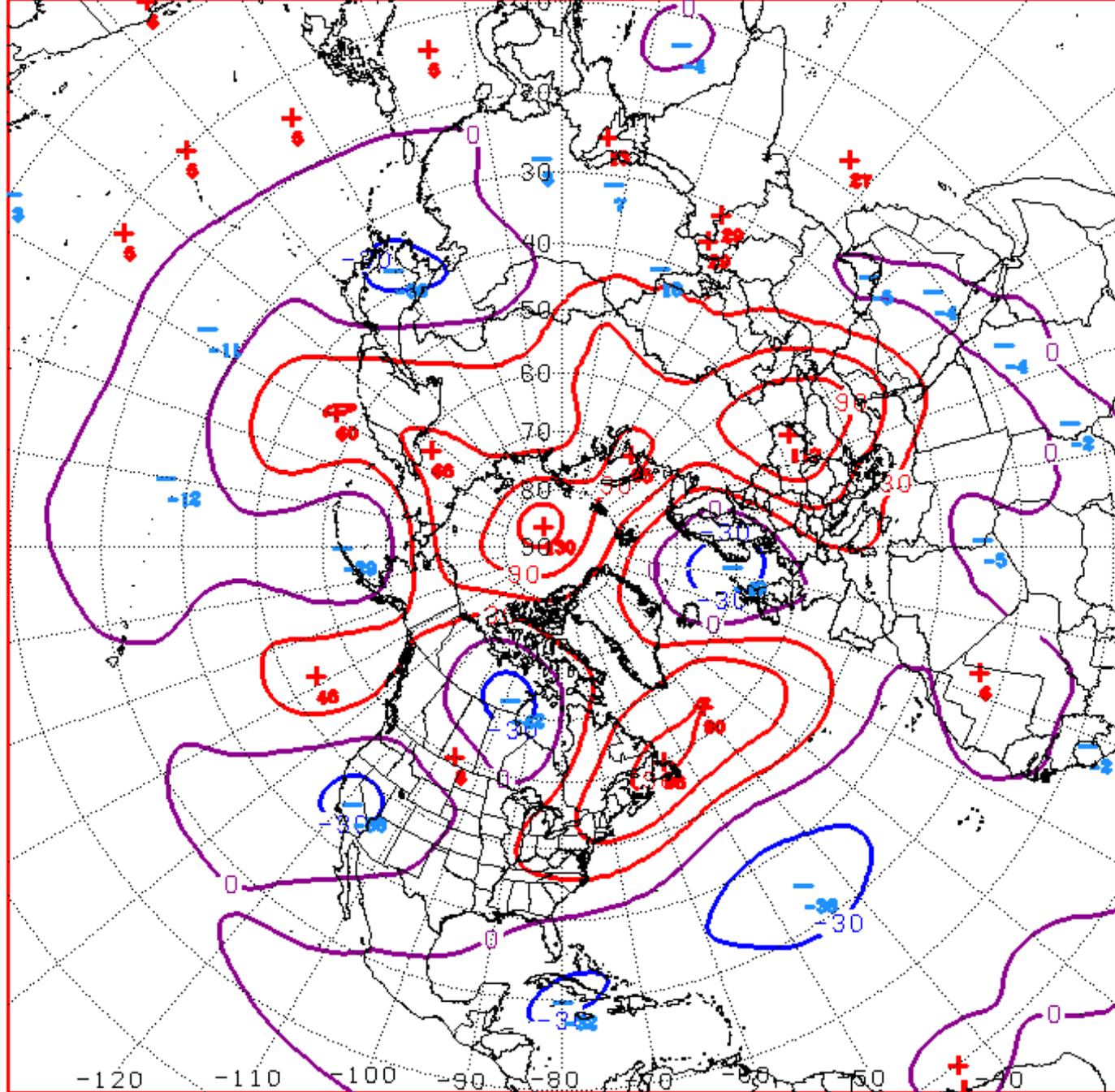


Tropical Cyclone  
(Reference Warning)

# Connections to U.S. Impacts

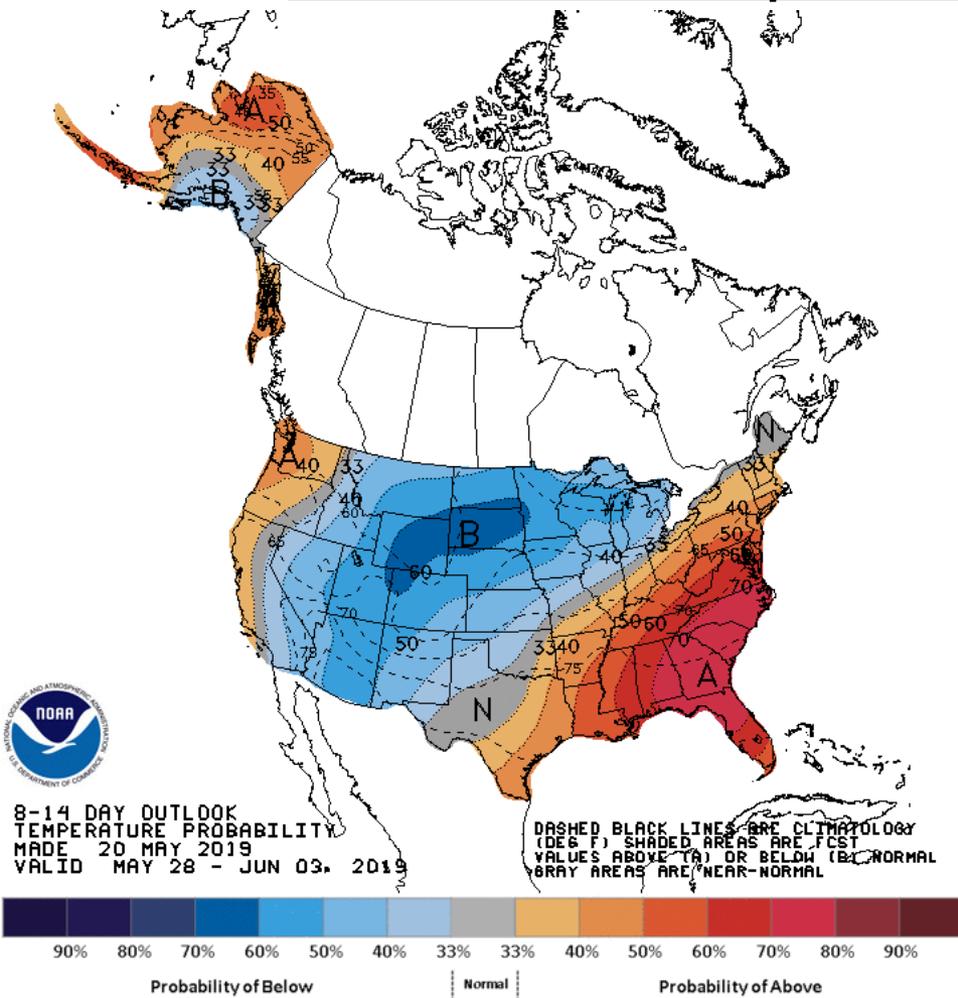
## AO: Observed & ENSM forecasts



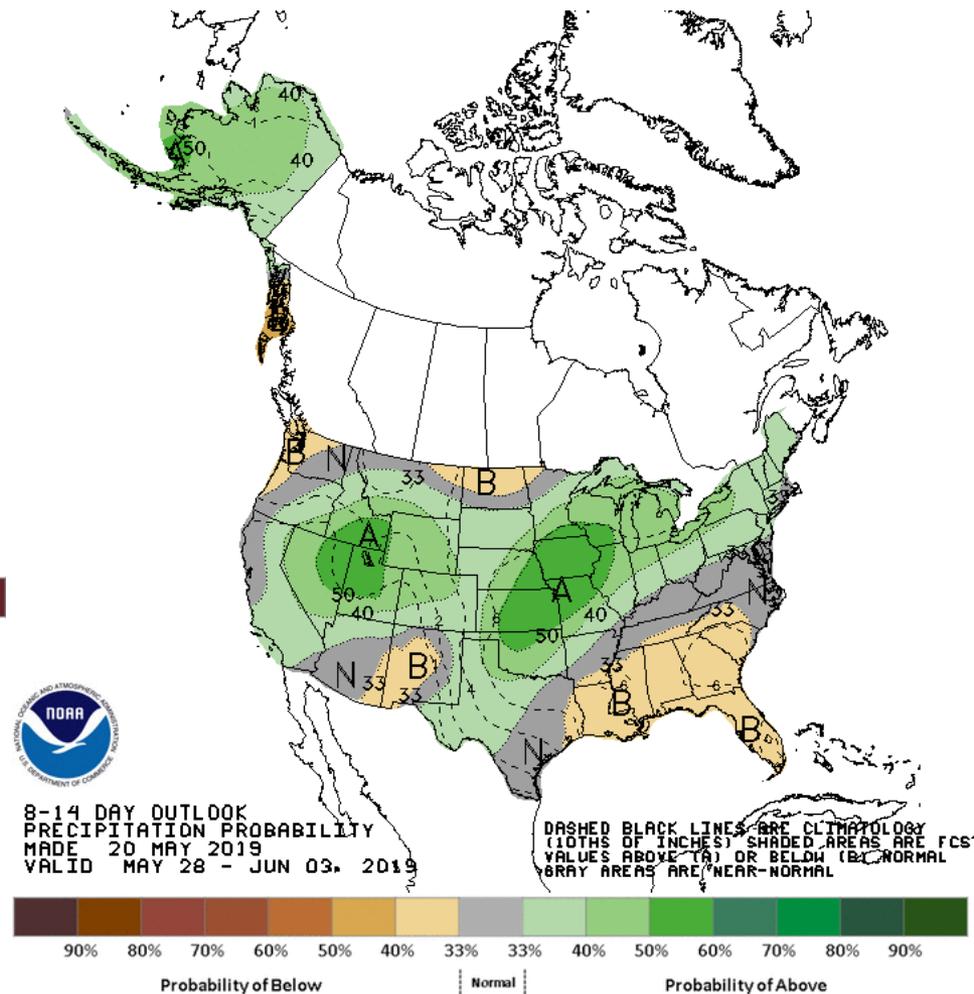


D+11 500 MB ANOMALIES FROM ALZ ENSM  
 CPC MAP MADE MAY 21 2019 1324 UTC CNTD JUN 01 2019

# Week 2 – Temperature and Precipitation



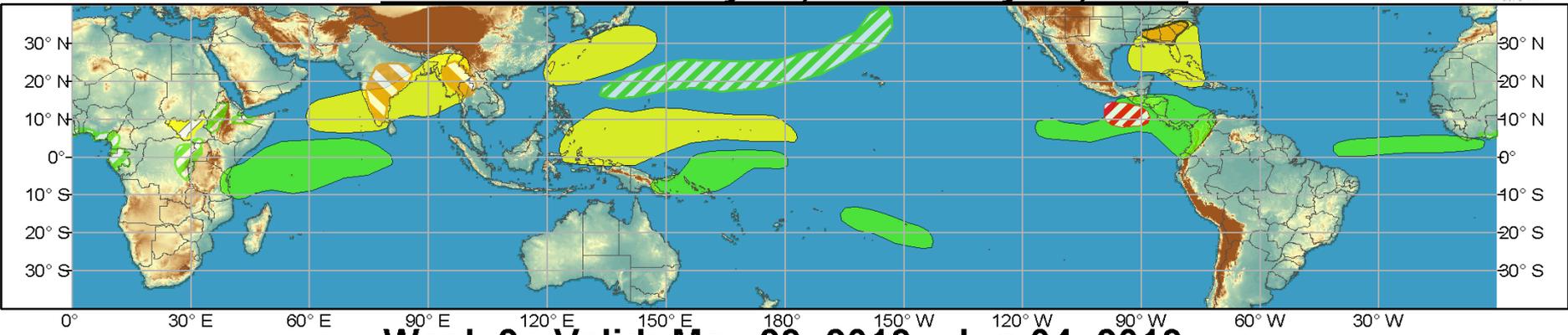
Relatively cool, wet pattern persists through week-2 across the West and northern central plains, while summer-like heat is still expected across the Southeast



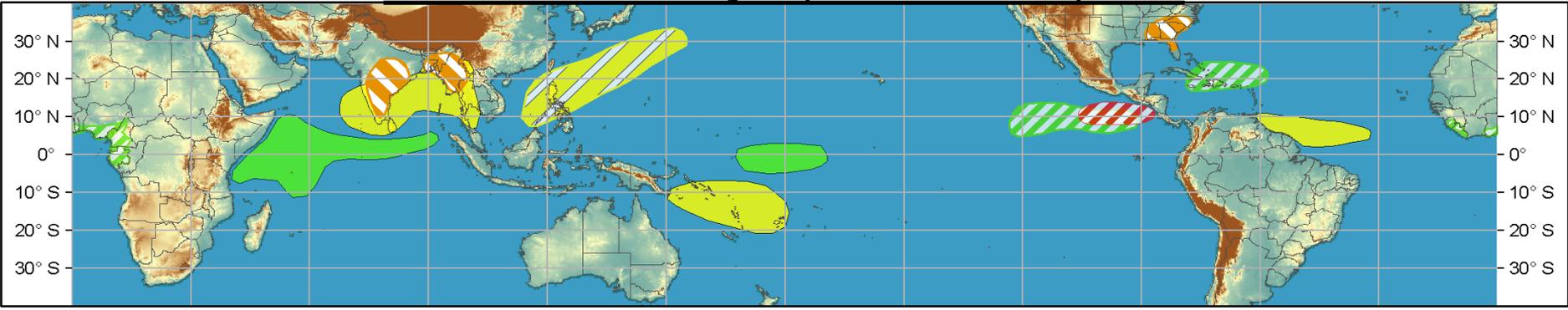


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