# Global Tropics Hazards And Benefits Outlook

10/9/2018

Christina Finan

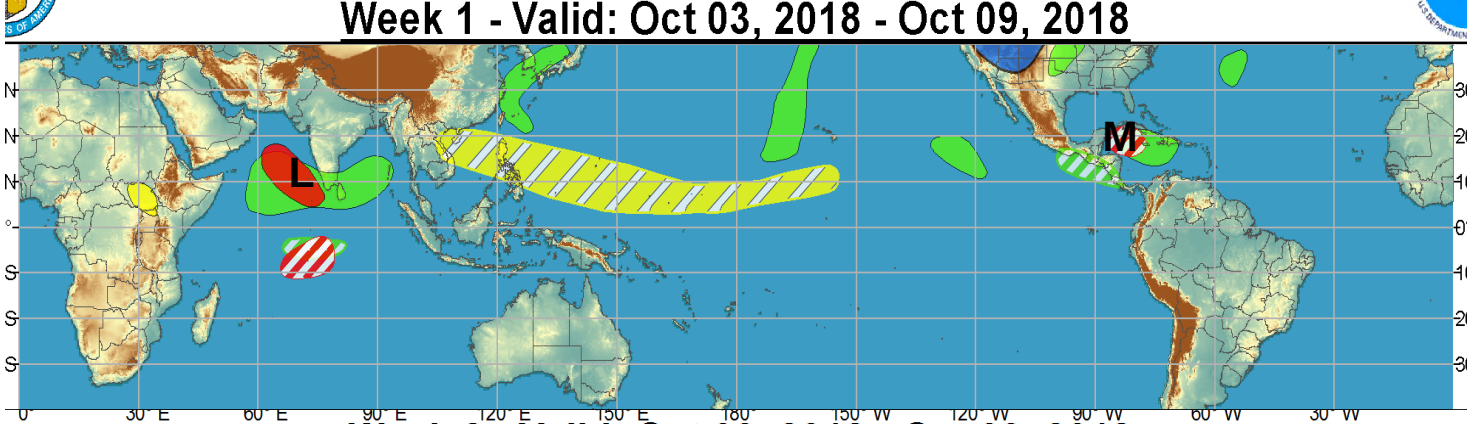
## Outline

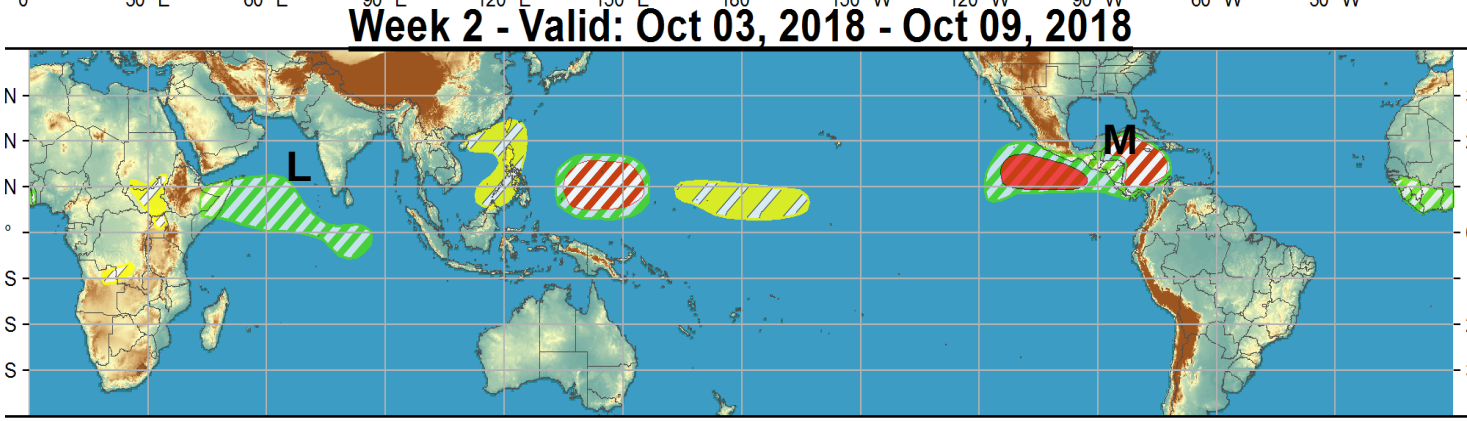
1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts

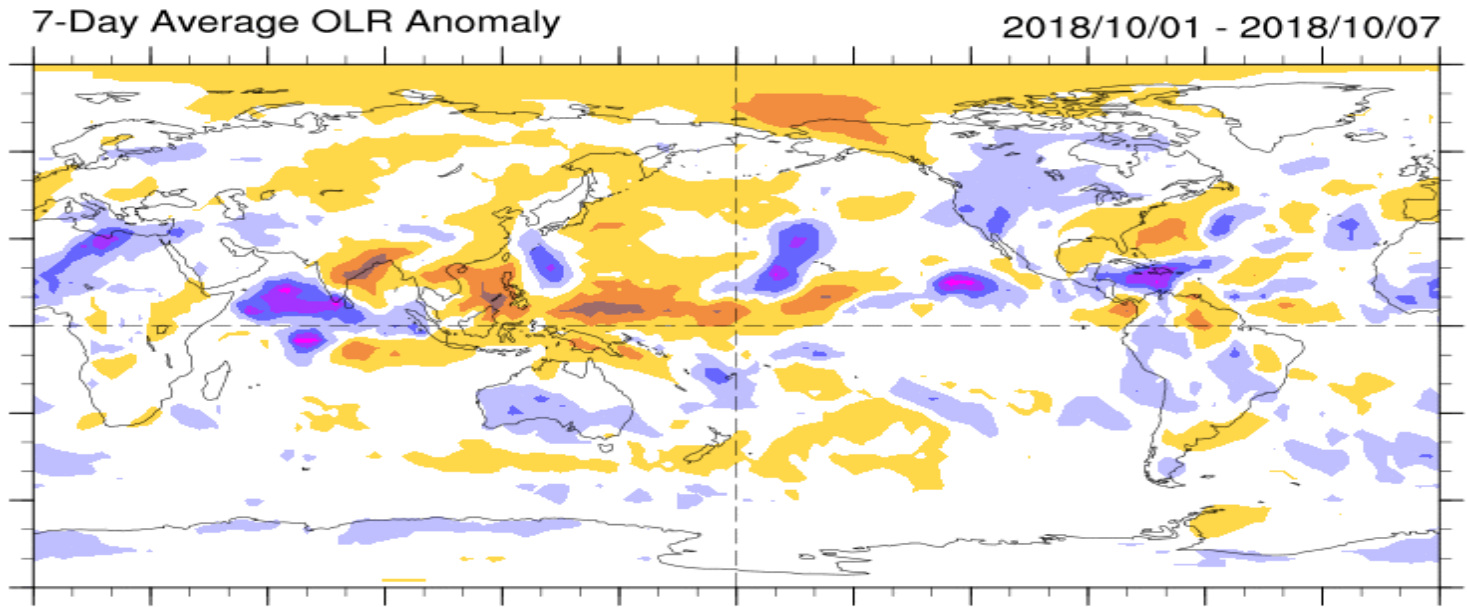
# Outlook Review

Tropical Storm
LUBAN – 10/08

Hurricane
MICHAEL – 10/06




Cool shading
More clouds/rain

Warm shading
Less clouds/rain

# Synopsis of Climate Modes

**ENSO:**

- ENSO Alert System Status as of 13 September: ***El Niño Watch***
  - There is a 50-55% chance of El Nino onset during NH Fall (SON) 2018, increasing to 65-70% during winter 2018-19.
- The strong westerly wind burst east of New Guinea the last few weeks is likely to improve these odds for the next release (11 October).

**MJO and other subseasonal tropical variability:**

• The MJO remained active through the past week, propagating through Phase 1. Interactions with Rossby and Kelvin waves, as well as the low frequency base state, damped some of the convective signal over the Indian Ocean.

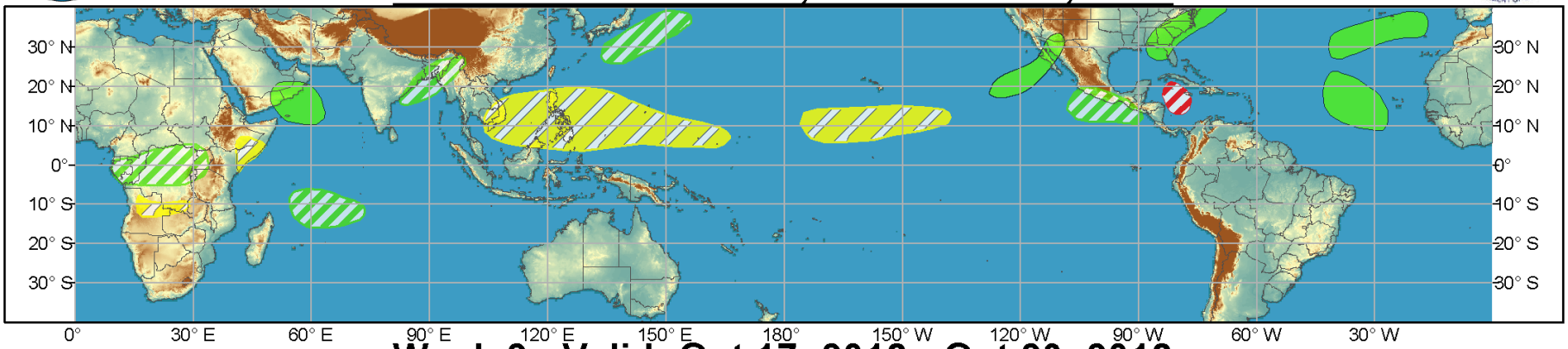
• Model forecasts for the MJO show continued activity through Week-1 as it transitions to Phase 2 and into Week-2. The RMM Index indicates likely rapid decay during Week-2; however, this decay could be due to the strengthening base state biasing the index.

**Extratropics:**

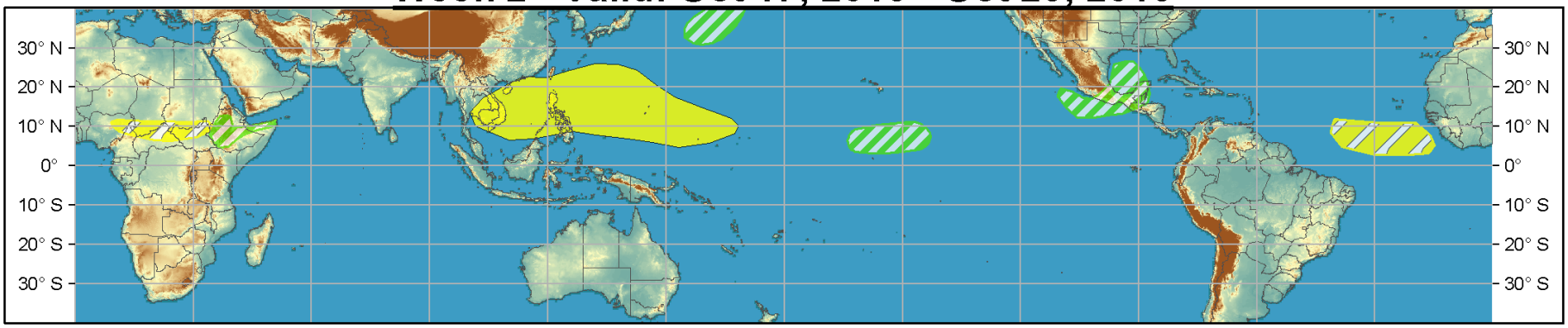
• Tropical cyclone activity continues to be the more impactful tropical influence on the extratropics, with active systems in the Atlantic, Eastern Pacific and Indian Ocean. The pattern over the U.S. does not seem to be tied to MJO activity and rather is attributable to extratropical forcings.

# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

## Week 1 - Valid: Oct 10, 2018 - Oct 16, 2018




## Week 2 - Valid: Oct 17, 2018 - Oct 23, 2018




**Produced: 10/09/2018**

**Forecaster: Finan**

| | Confidence: High | Confidence: 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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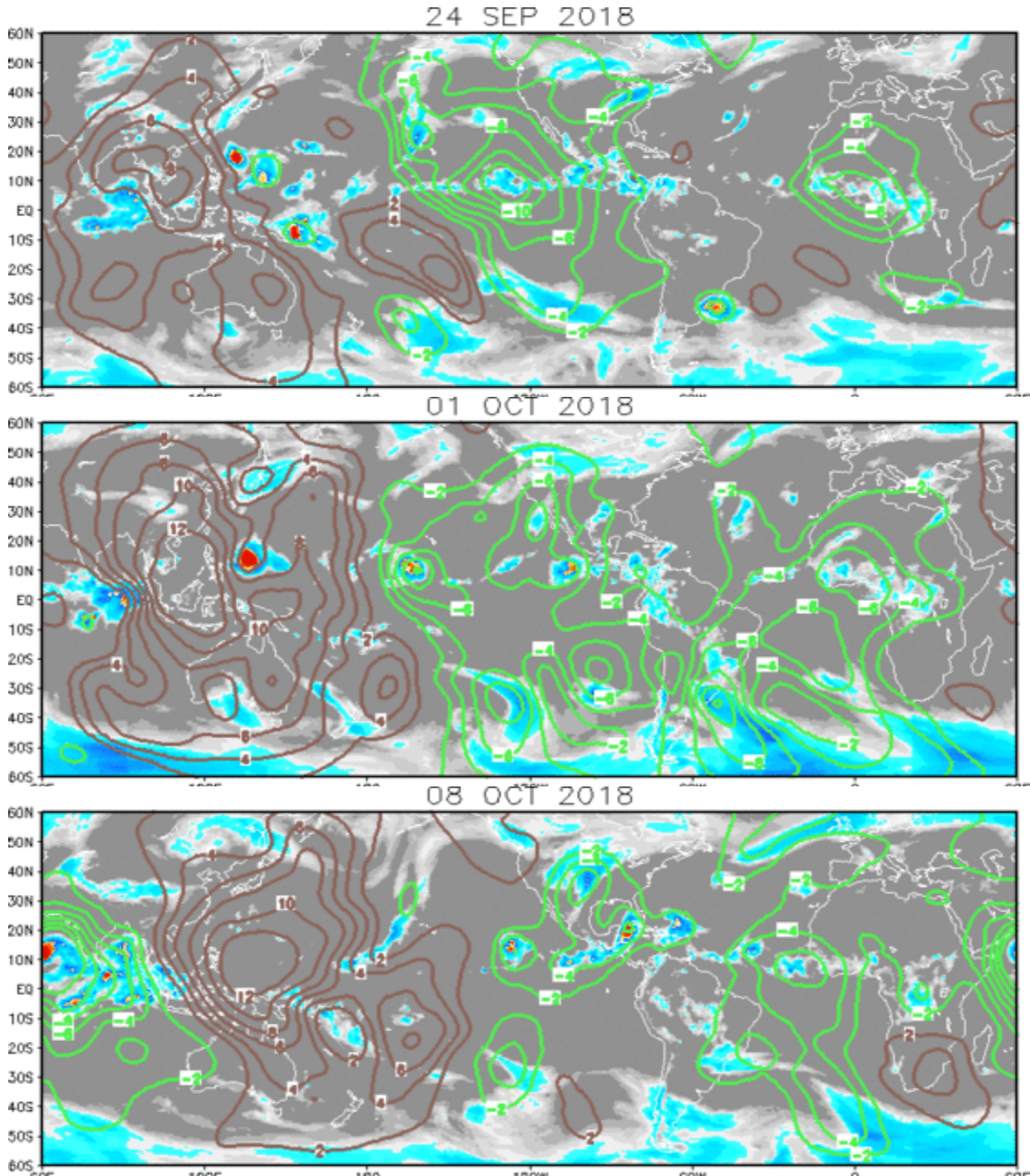
# IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence  Brown: Enhanced Convergence

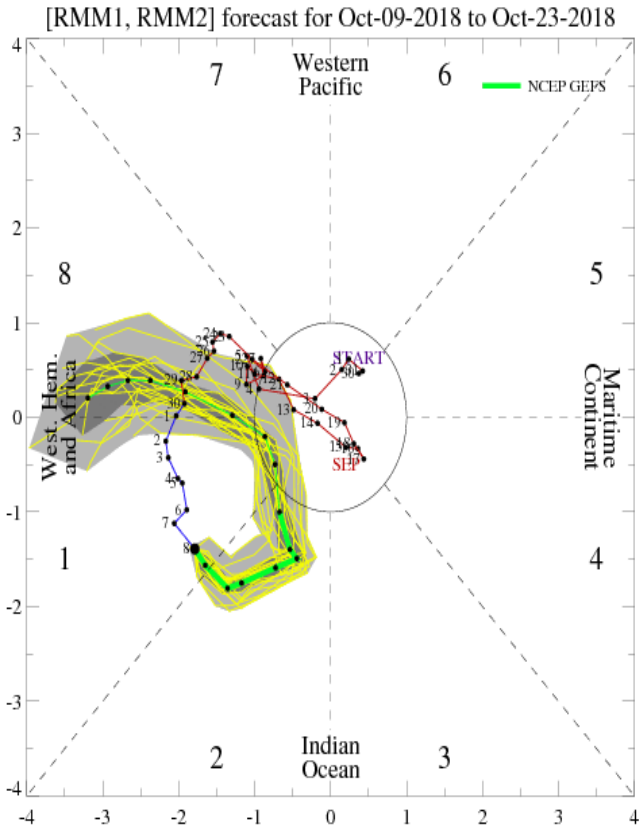
Mixed Wave-2 to Wave-1 pattern.

Full transition to a Wave-1 pattern, consistent with the MJO.

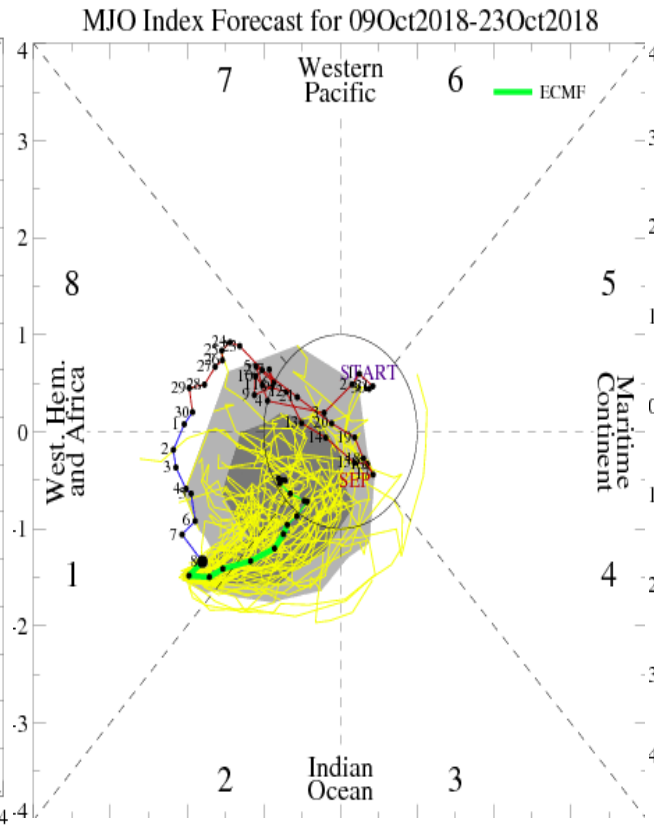
Wave-1 pattern propagated eastward, centered over W Pacific. Noisy in the Southern Hemisphere due to Kelvin wave activity. Cyclone activity apparent in the EPac and Atlantic.



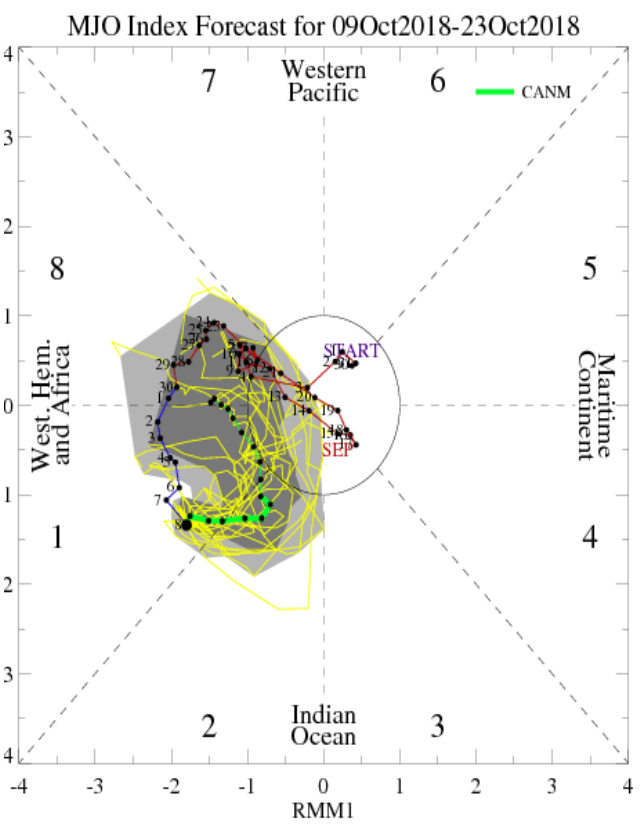
# MJO Observation/Forecast




GEFS




ECMWF

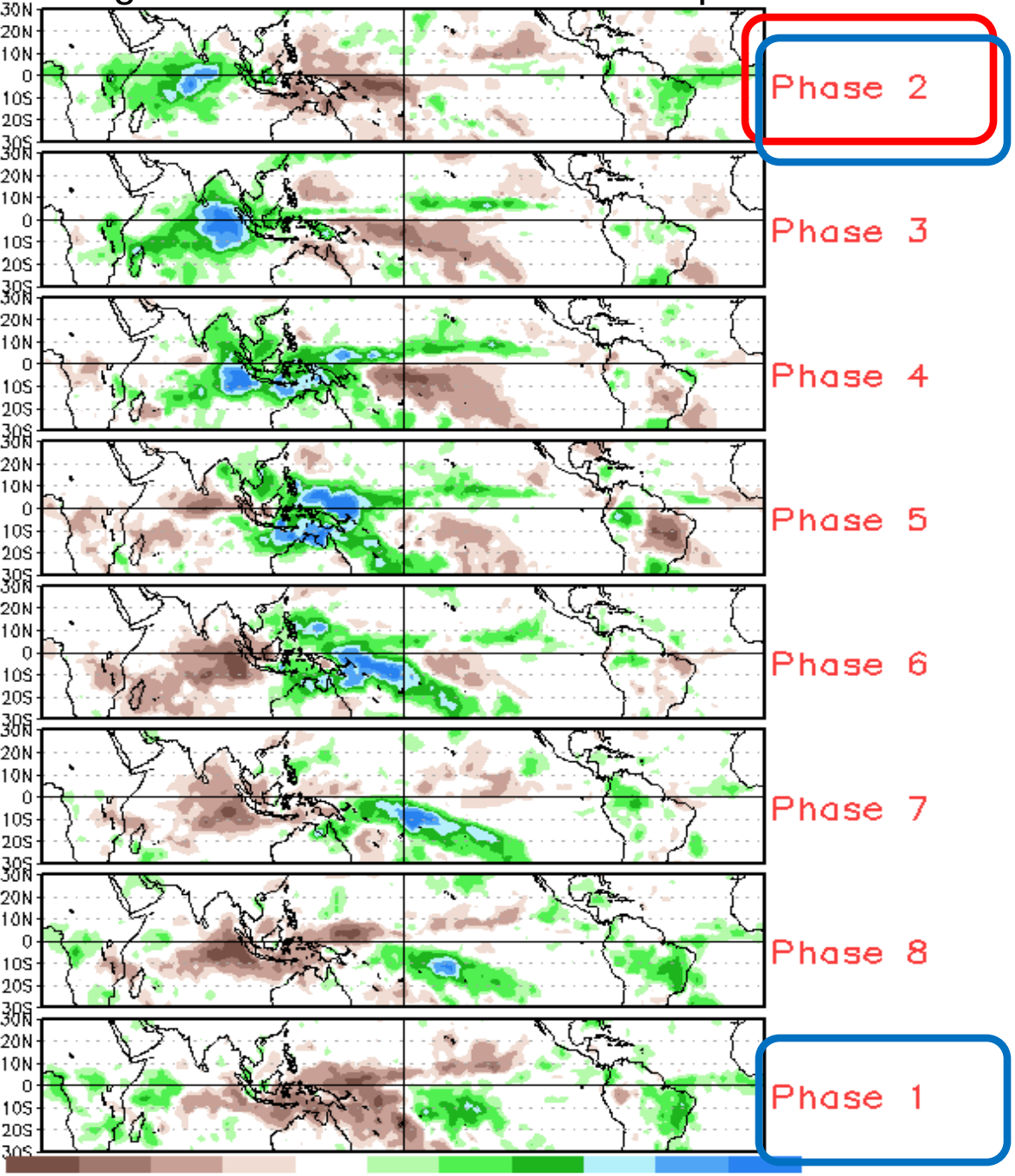



Canadian

RMM index forecasts indicate the signal to continue propagation through Phase early in Week-1, with a transition into Phase 2 mid Week-1. Late Week-1 into Week-2, the signal is forecast to rapidly decay.

This weakening may be tied to the building El Niño conditions in the Pacific that bias the RMM index towards Phases 7 and 8, rather than the MJO actually weakening.

Average Conditions when the MJO is present



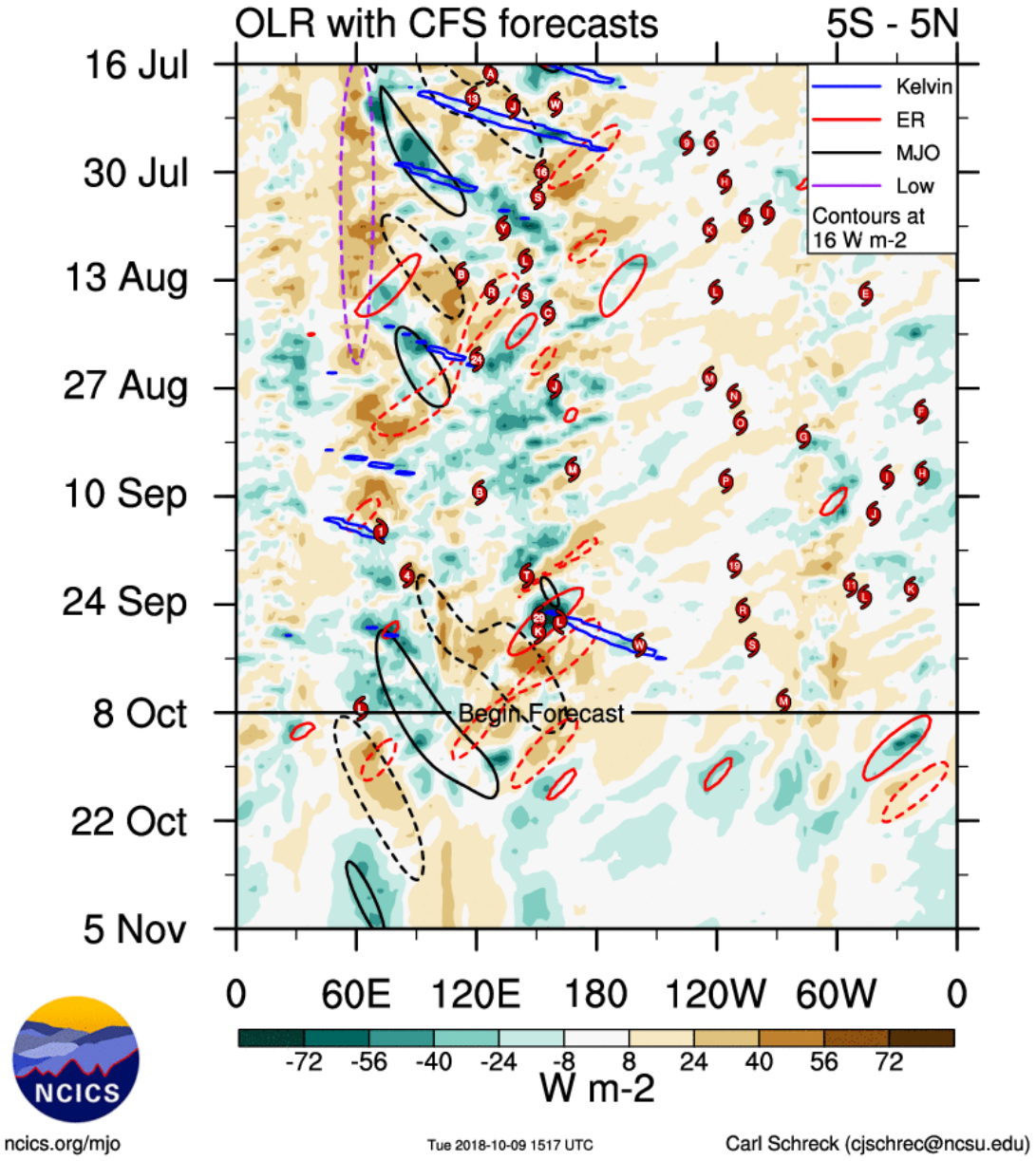

Week-1

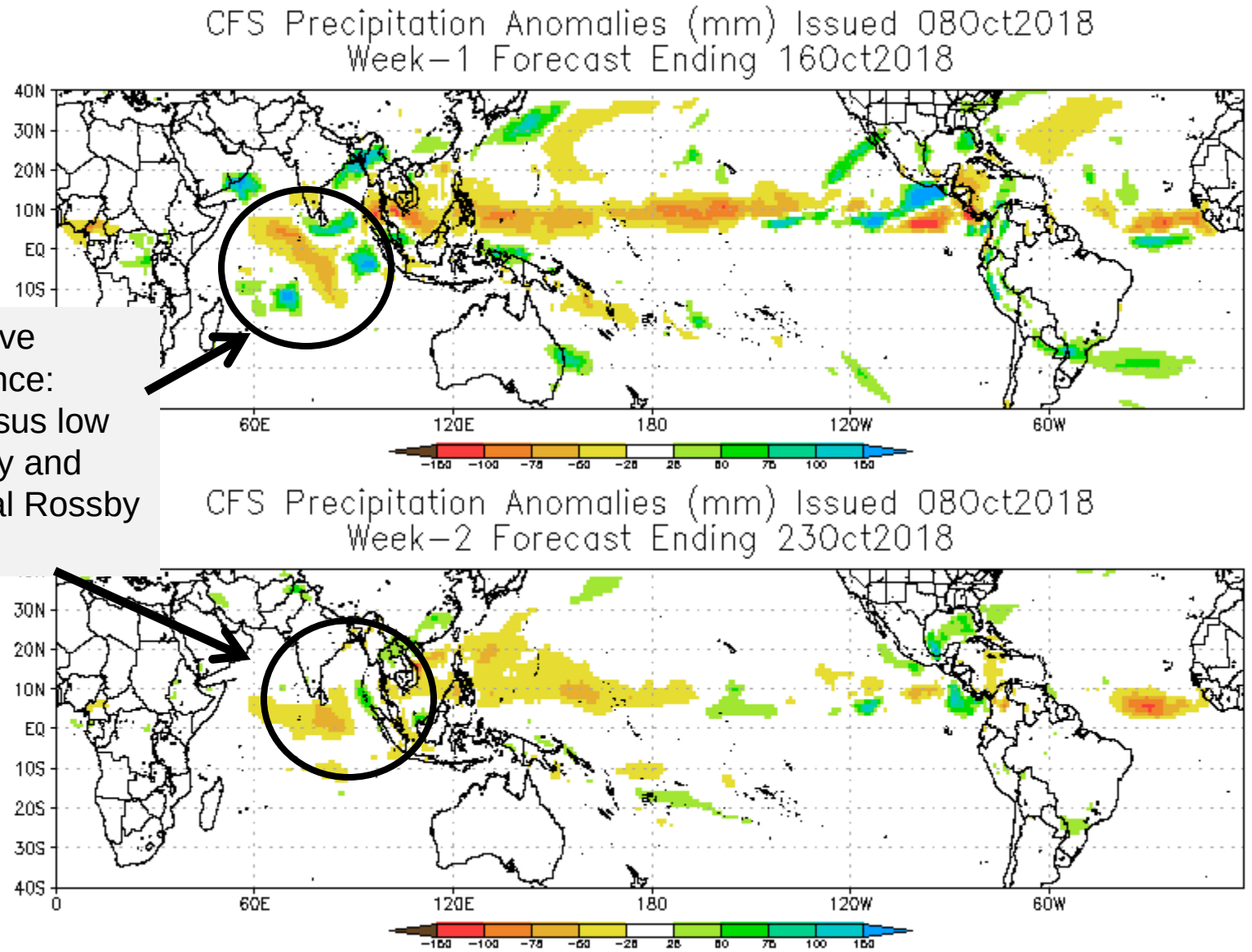
Week-2

CAVEAT: These panels are representative of robust MJO events.

**MJO competing with**
**Rossby waves** and TC's

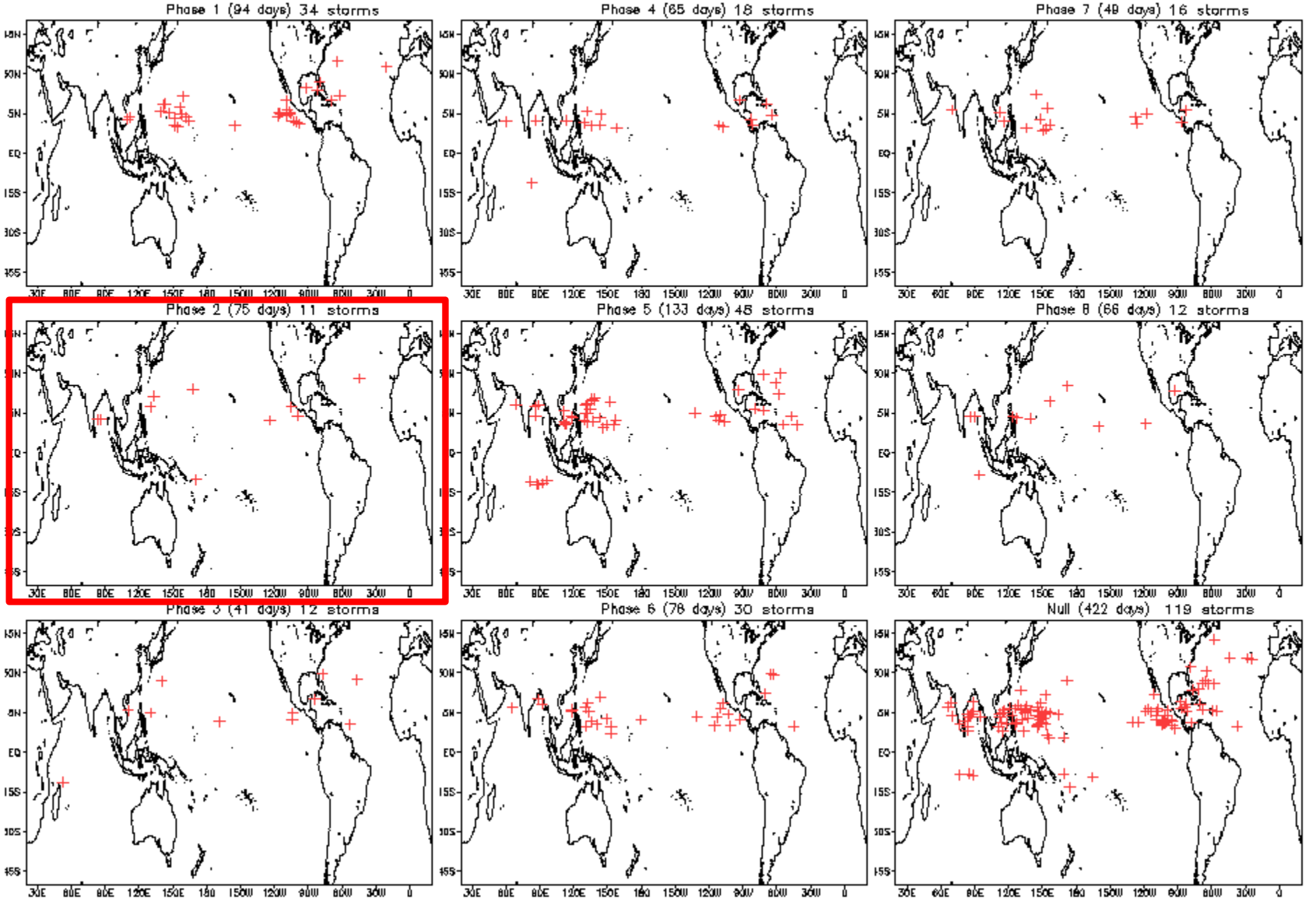
**Low-frequency pattern** less of an influence

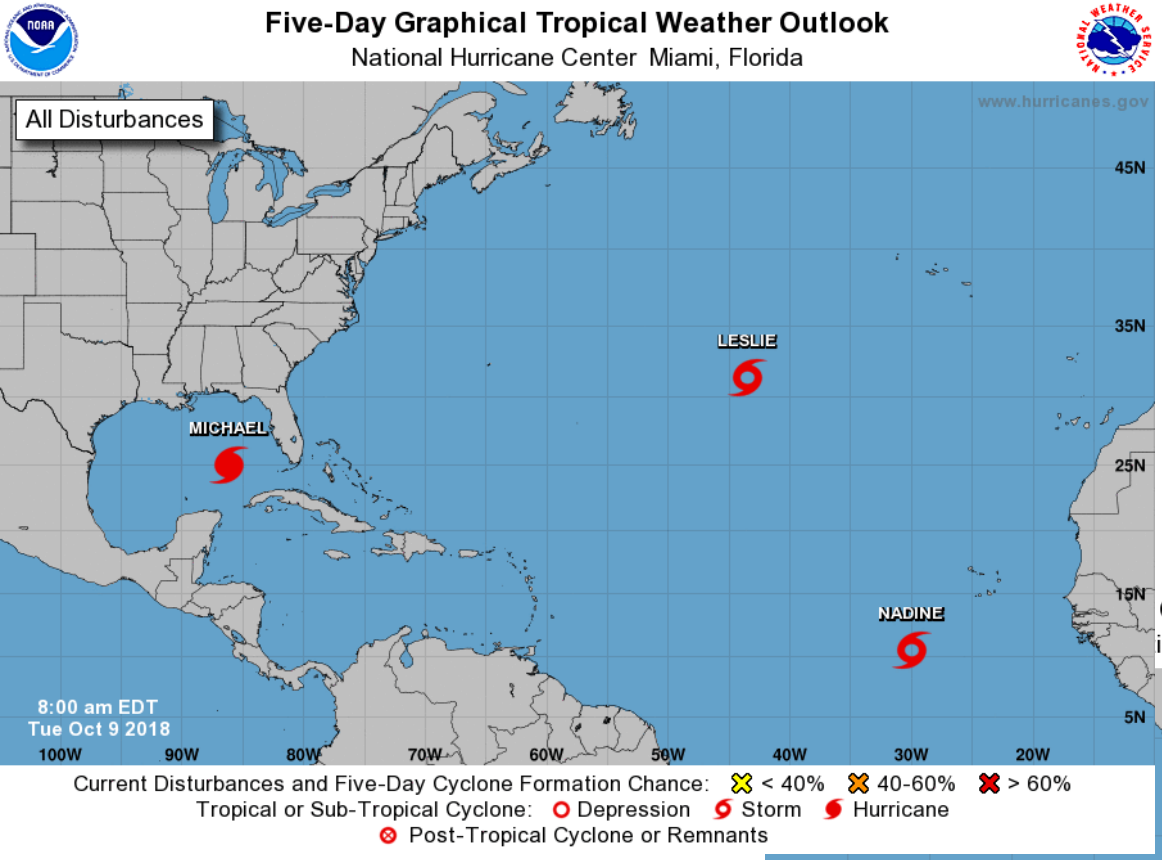




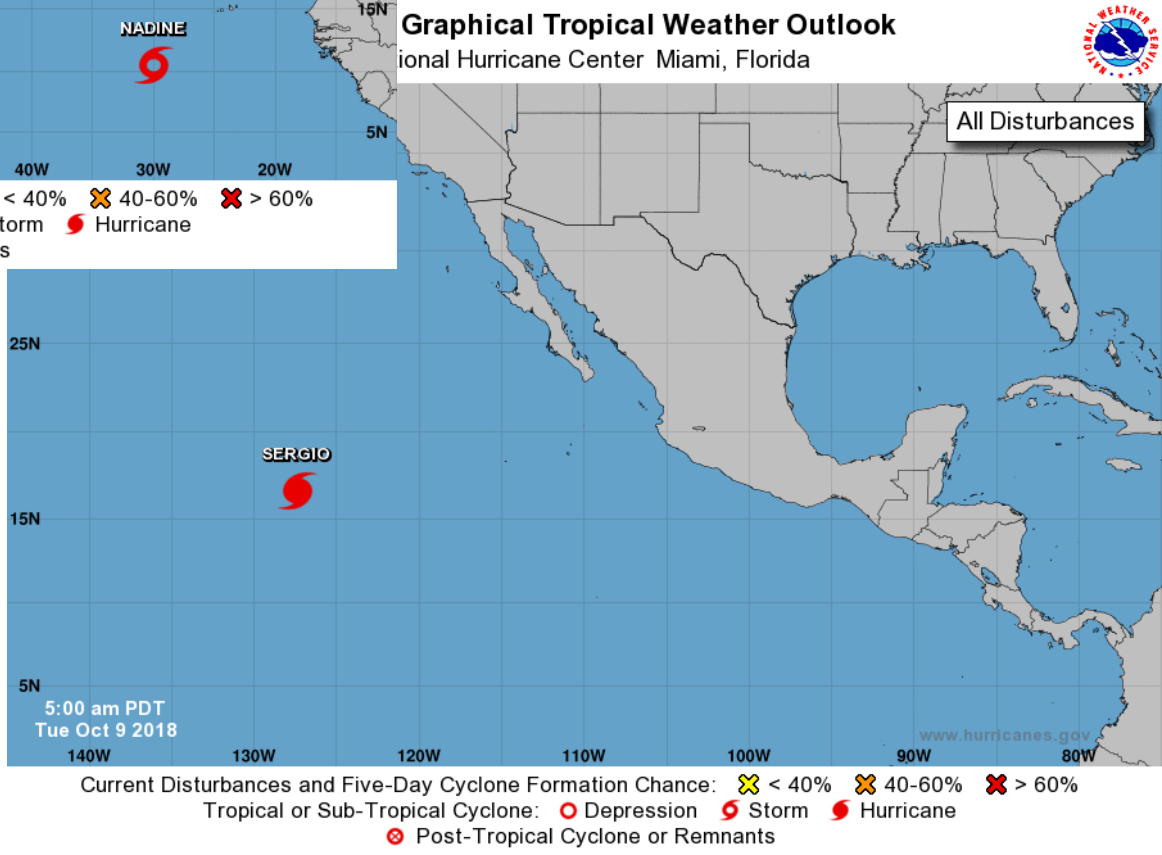

Destructive interference: MJO versus low frequency and equatorial Rossby wave

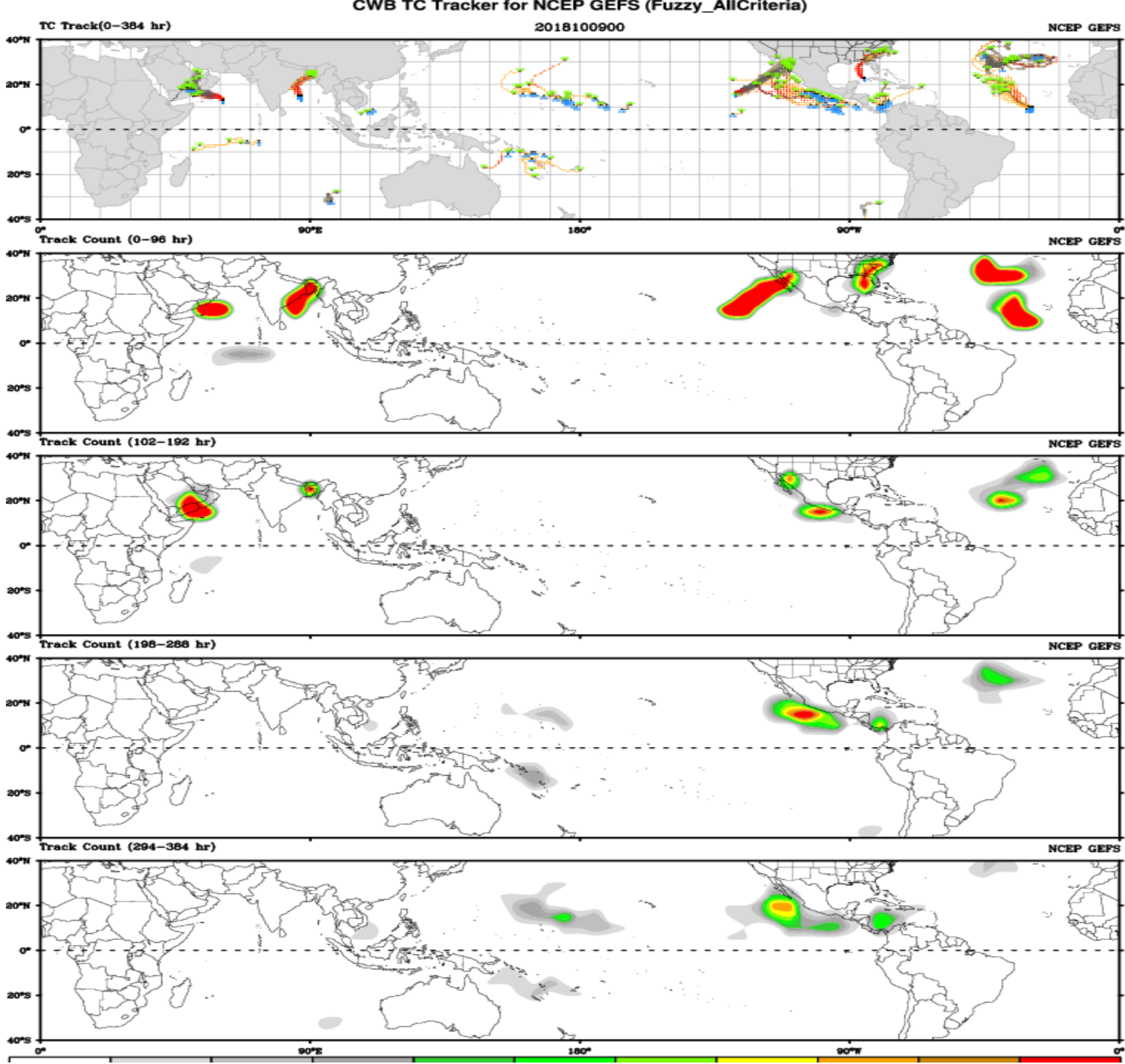
# October Tropical Storm Formation by MJO phase






No new highlighted disturbances from NHC for 5 day forecast



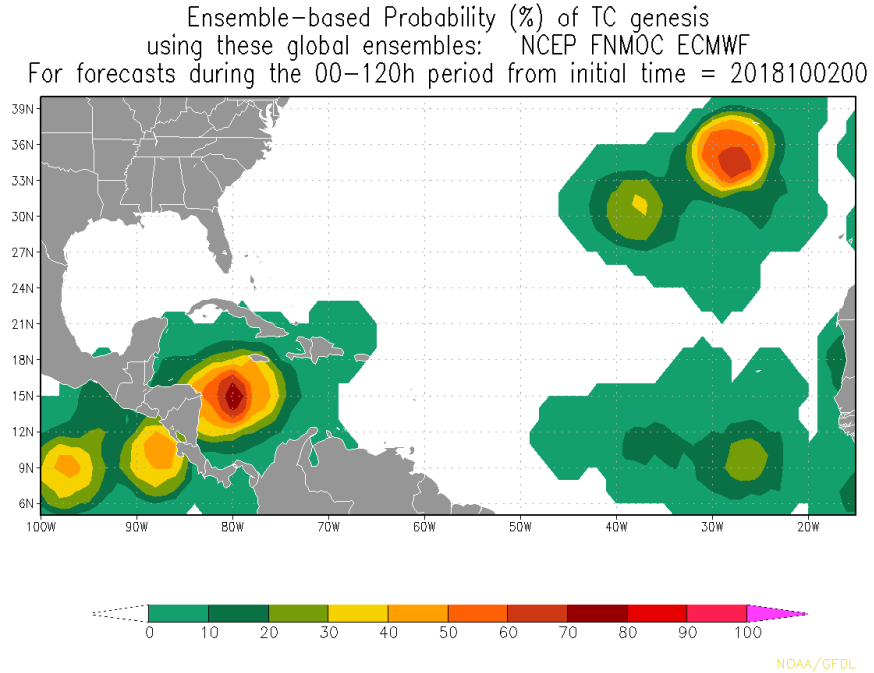



Days 1-4

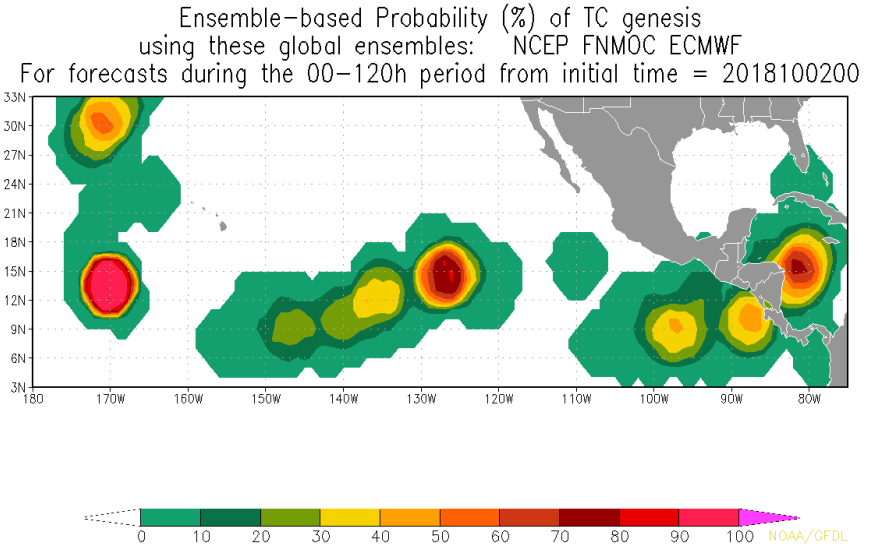
Day 5-8

Day 9-12

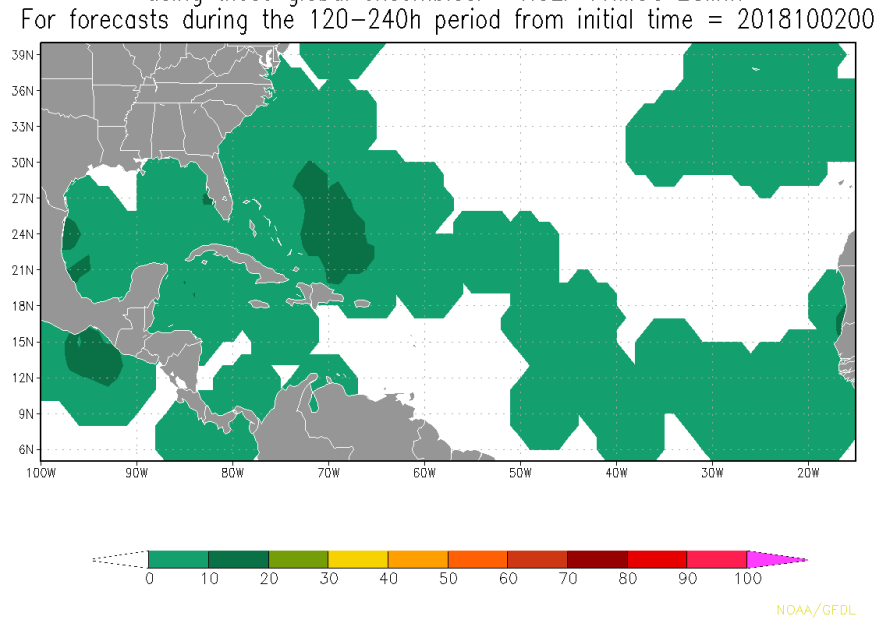
Day 13-15



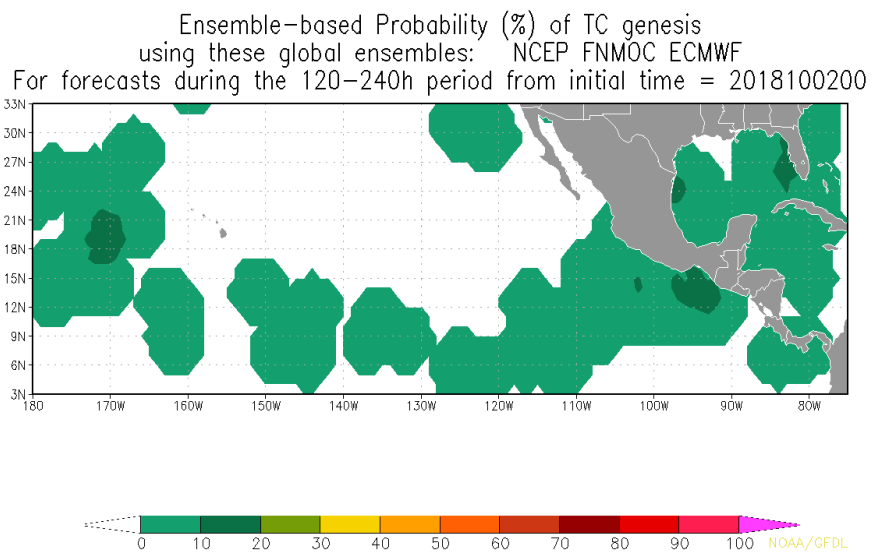

**Days 1-5**




Very quiet for Week-2 in the models

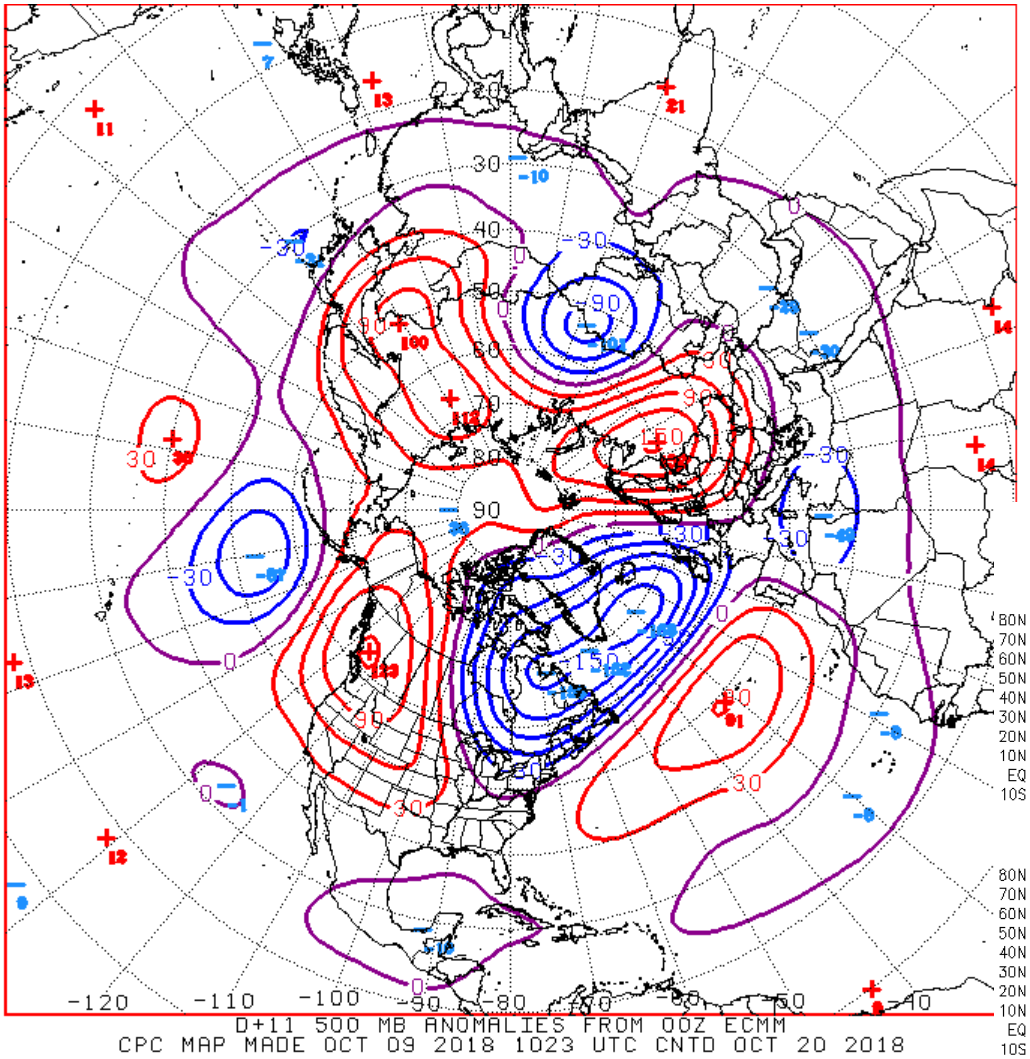


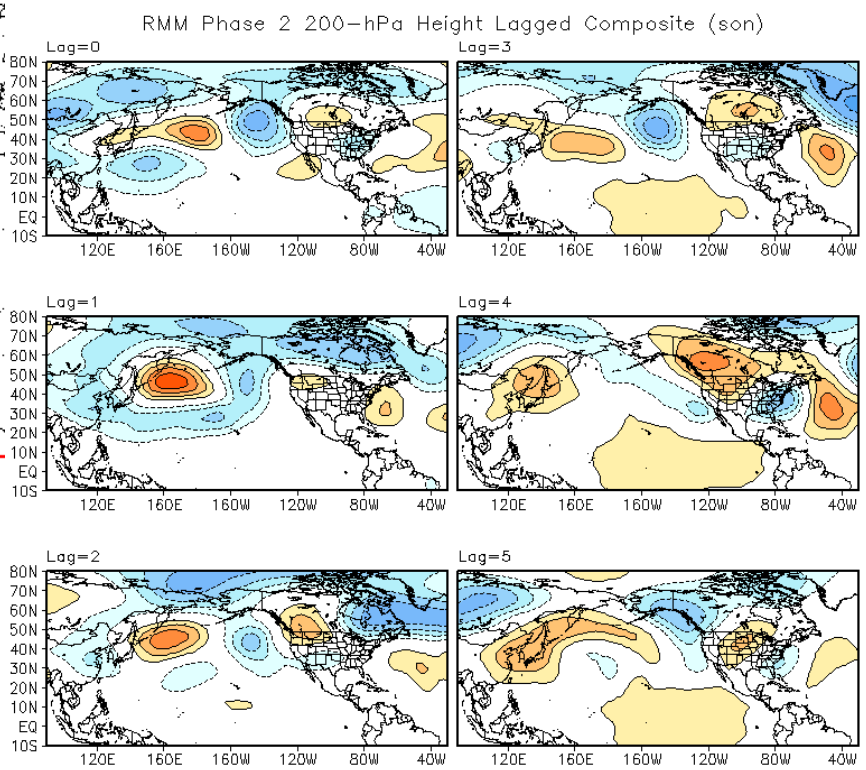

**Days 6-10**

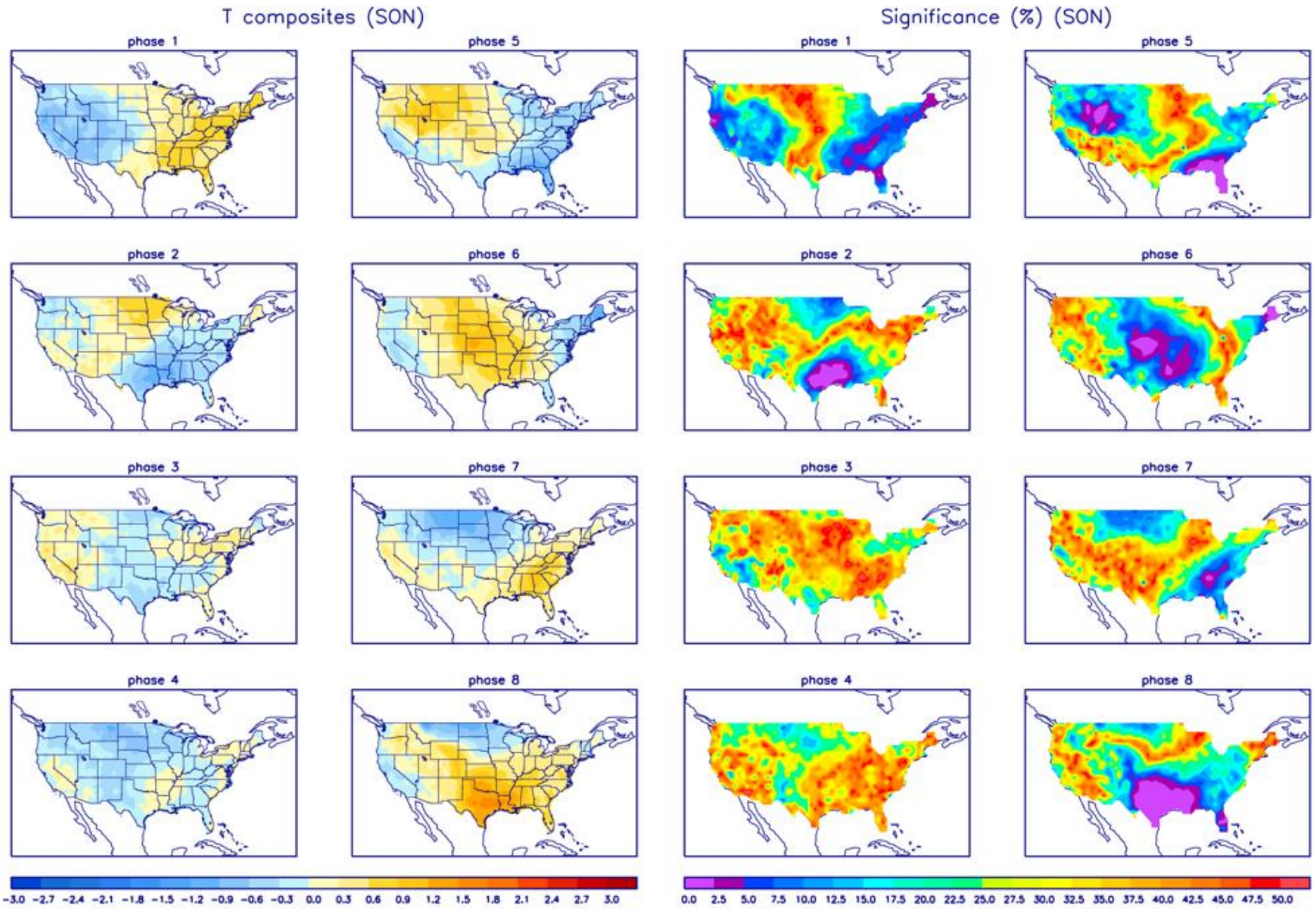


# Connections to U.S. Impacts

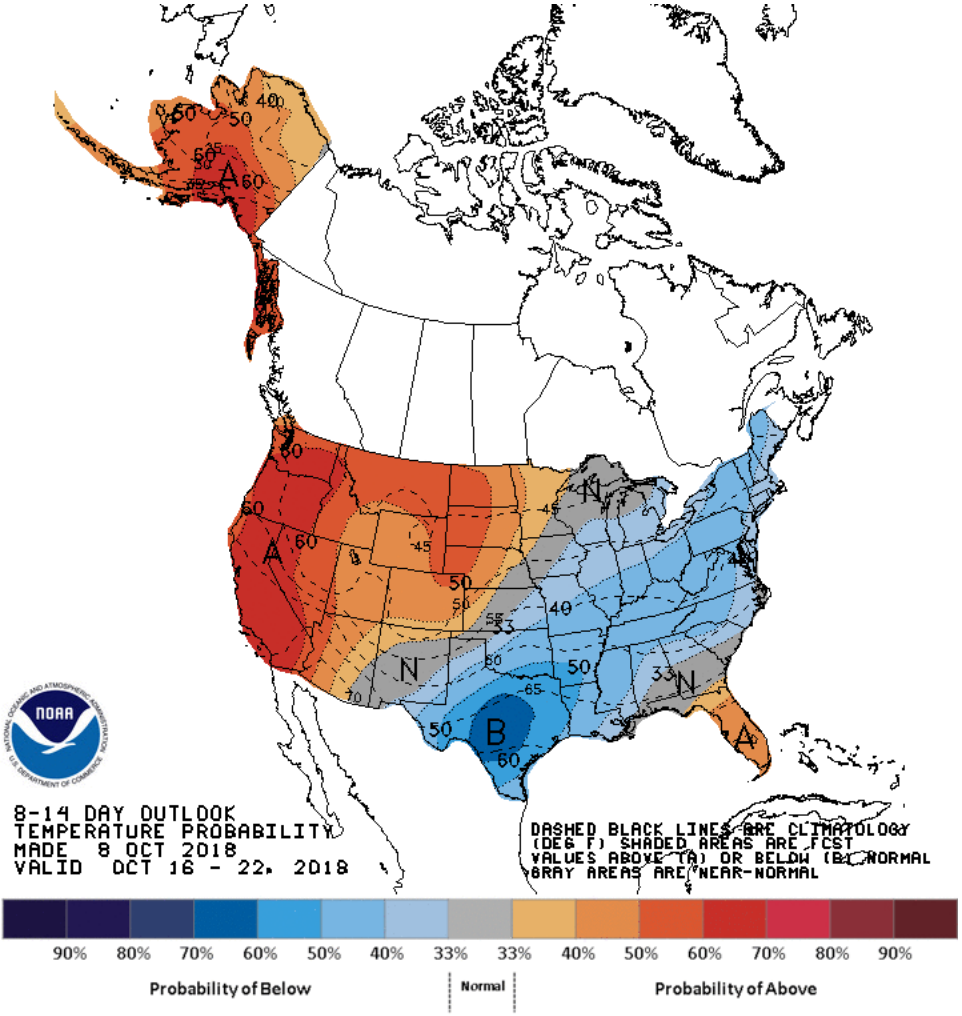
# September - November

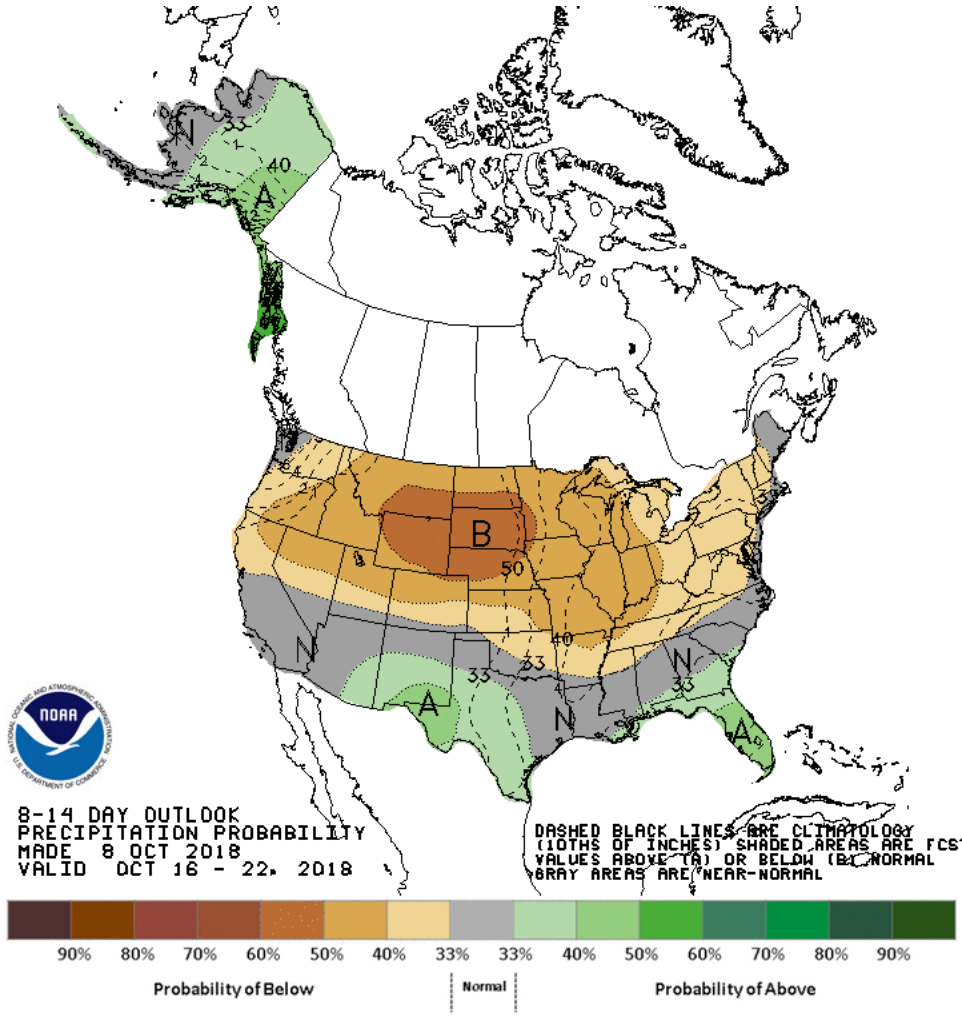



T composites (SON)
Significance (%) (SON)
phase 1
phase 5
phase 2
phase 6
phase 3
phase 7
phase 4
phase 8
−3.0 −2.7 −2.4 −2.1 −1.8 −1.5 −1.2 −0.9 −0.6 −0.3 0.0 0.3 0.6 0.9 1.2 1.5 1.8 2.1 2.4 2.7 3.0
0.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 27.5 30.0 32.5 35.0 37.5 40.0 42.5 45.0 47.5 50.0

# Week 2 – Temperature and Precipitation



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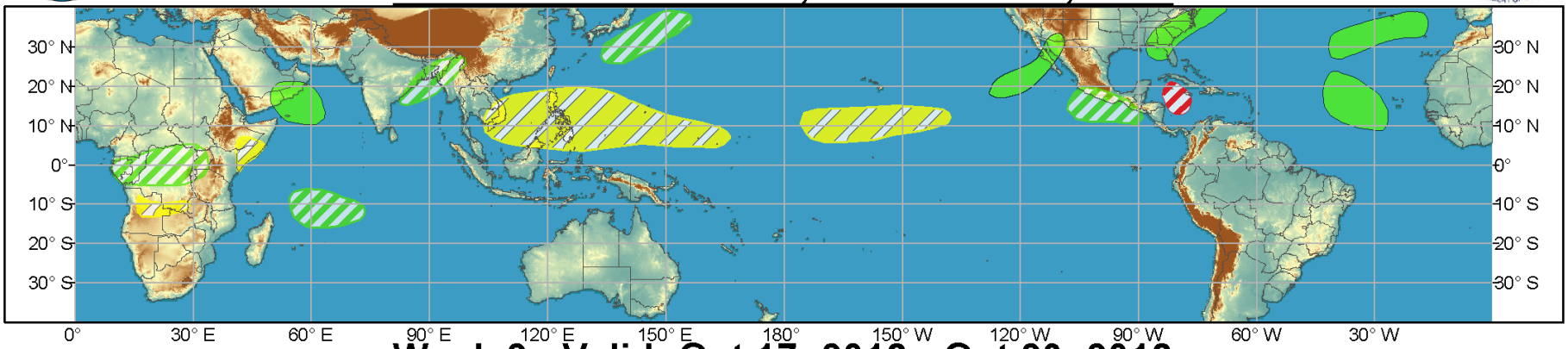


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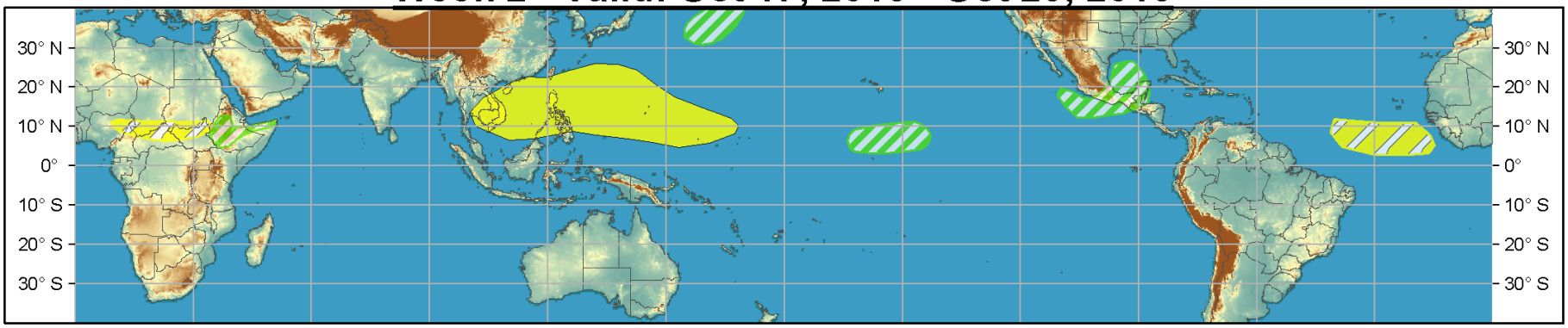


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