

# Global Tropics Hazards And Benefits Outlook

12/11/2018

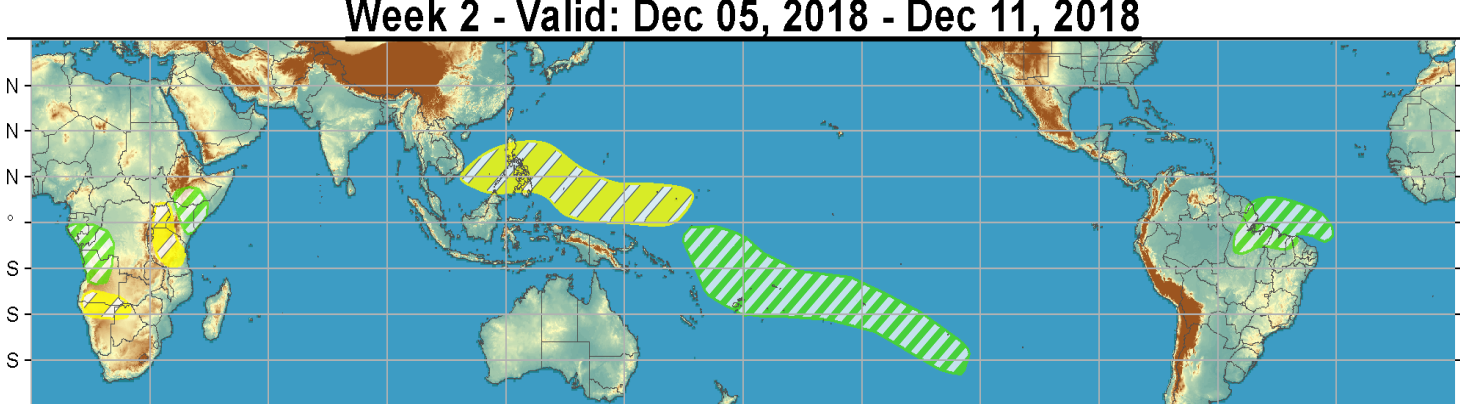
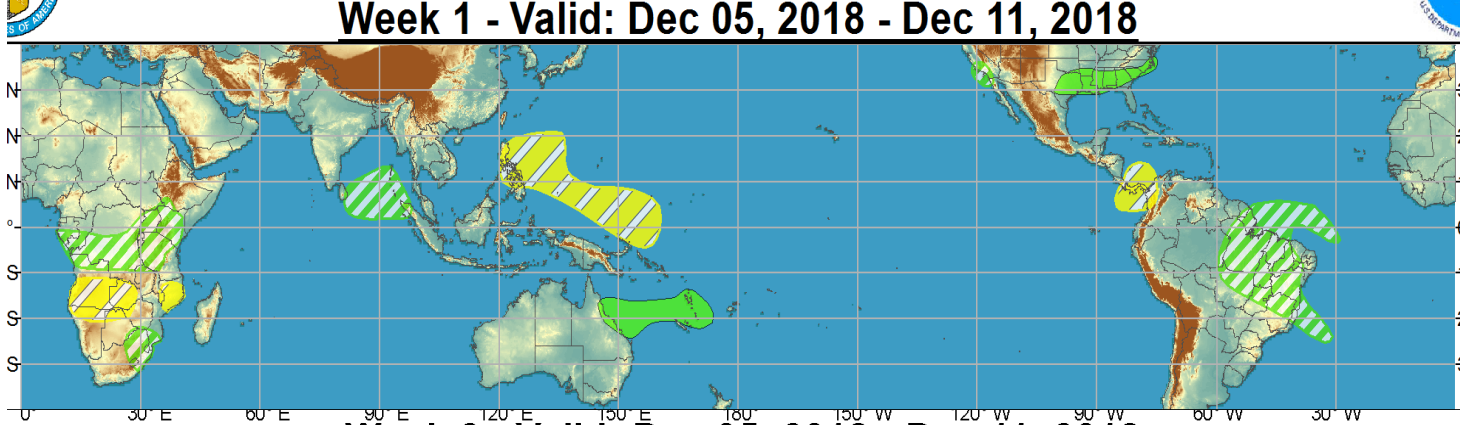
Dan Harnos

## Outline

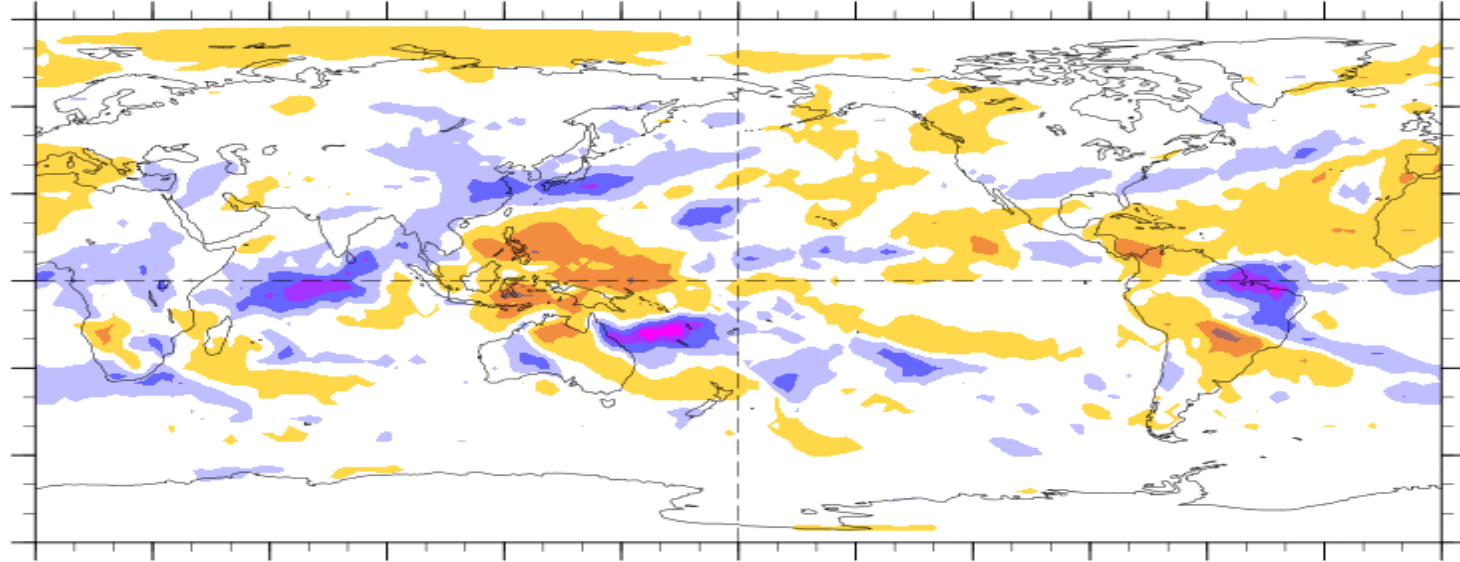
1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts

# Outlook Review

*No tropical cyclones developed during the last week.*



7-Day Average OLR Anomaly 2018/12/03 - 2018/12/09



Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

# Synopsis of Climate Modes

## **ENSO: (September 8, 2018 Update)**

- ENSO Alert System Status: [El Niño Watch](#)
- El Niño is expected to form and continue through the NH winter 2018-19 (~80% chance) and into spring (55-60% chance).

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

- The MJO remained active and moved from the western to eastern Indian Ocean during the past week.
- Dynamical models struggle to propagate the MJO eastward, due to tropical cyclone activity in the eastern hemisphere and extratropical influences in the western hemisphere creating competing intraseasonal signals. That said, the MJO is forecast to be over the eastern Indian Ocean/western Maritime Continent during Week-1 (Phases 3/4) and Maritime Continent during Week-2 (Phases 4/5).

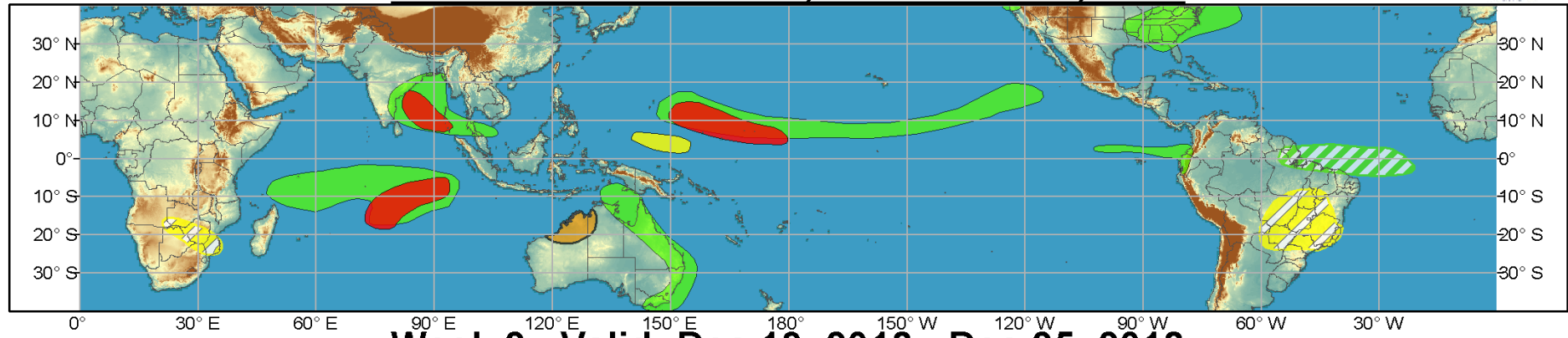
## **Extratropics:**

- Circulation forecasts are inconsistent with historical expectations for an active MJO over the eastern Indian Ocean.
- An uptick in tropical cyclone activity is possible over the Indian Ocean during Week-1, as the MJO pushes east of the basin.

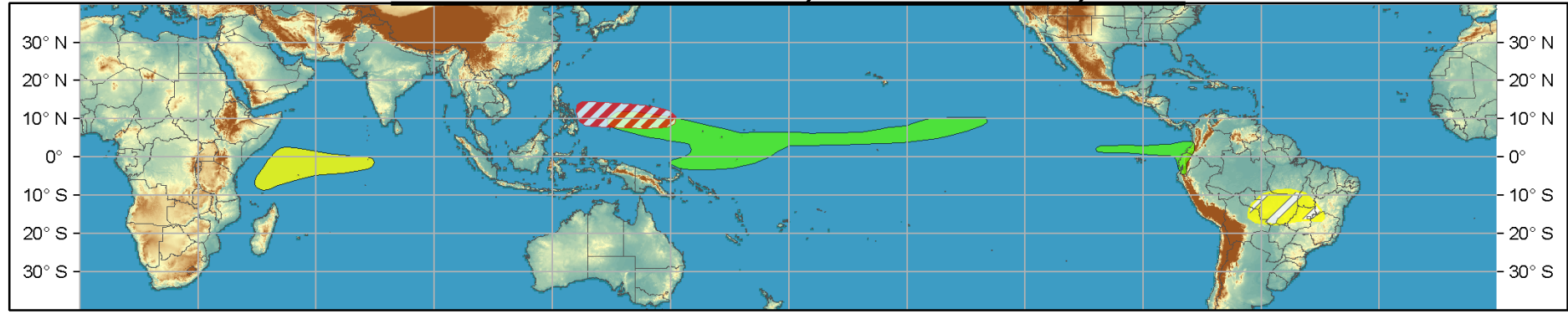


# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

## Week 1 - Valid: Dec 12, 2018 - Dec 18, 2018



## Week 2 - Valid: Dec 19, 2018 - Dec 25, 2018



**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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- Above-normal temperatures** 7-day mean temperatures in the upper third of the historical range.
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**Produced: 12/11/2018**  
**Forecaster: D.Harnos**

**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

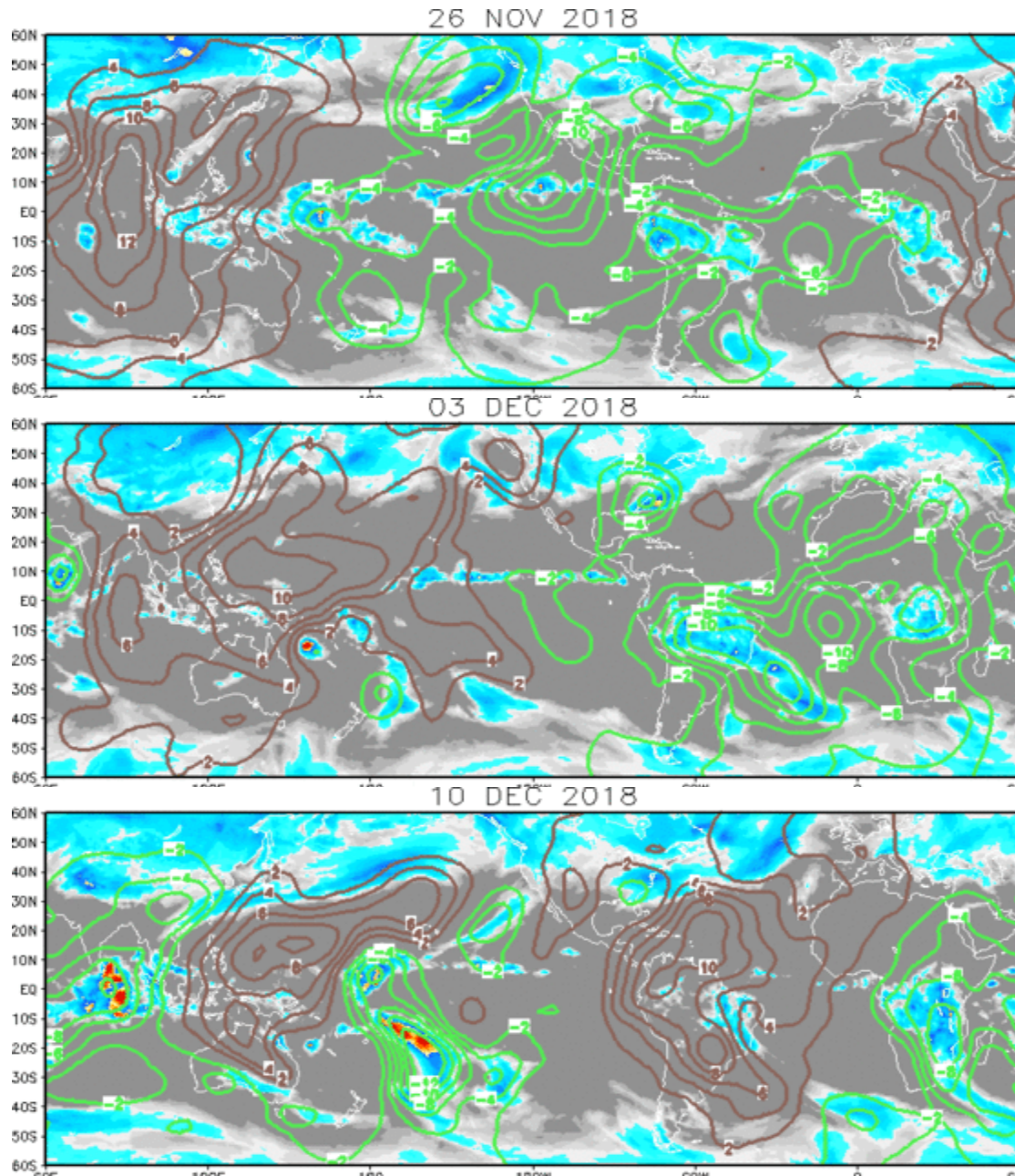
Green: Enhanced Divergence

Brown: Enhanced Convergence

Wave-1 pattern consistent with the active MJO entering the Western Hemisphere.

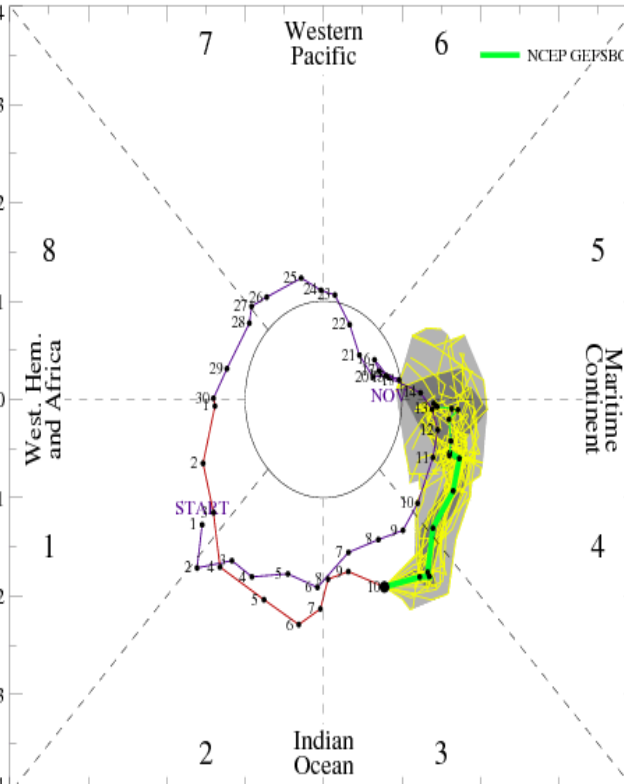
Continued wave-1 pattern, with eastward progression towards Africa.

Some breakdown into a wave-2 pattern, with enhanced convection tied to the MJO over the Indian Ocean, while Rossby wave and extratropical activity are driving enhanced convection over the South Pacific.



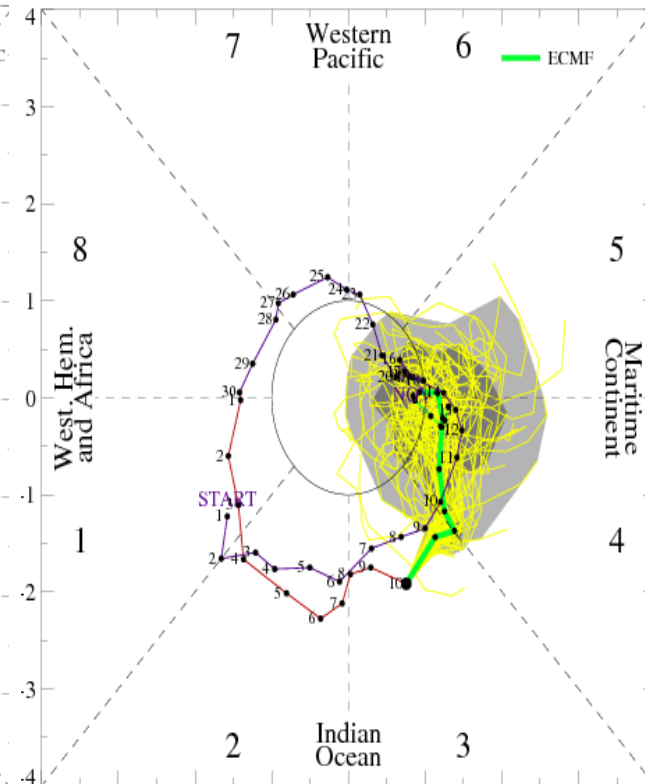
# MJO Observation/Forecast

[RMM1, RMM2] forecast for Dec-11-2018 to Dec-25-2018



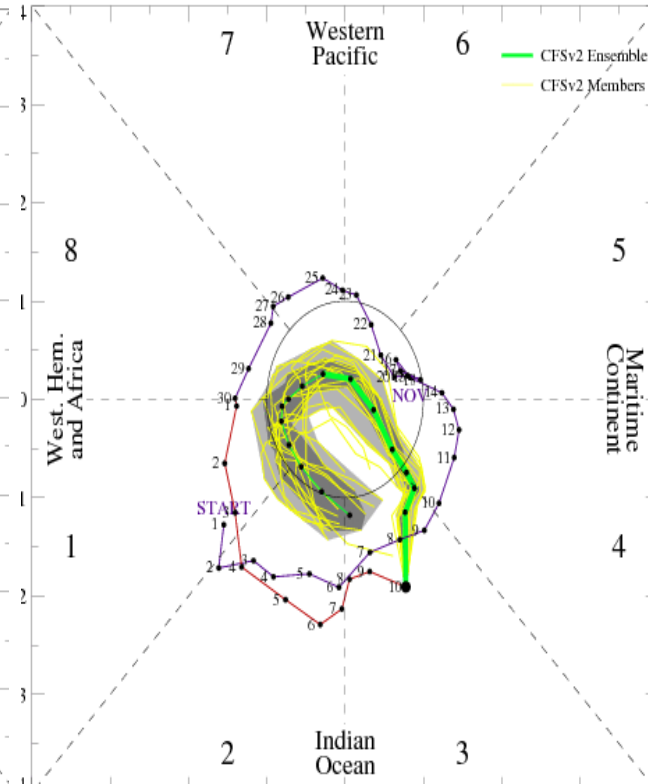
GEFS

MJO Index Forecast for 11Dec2018-25Dec2018



ECMWF

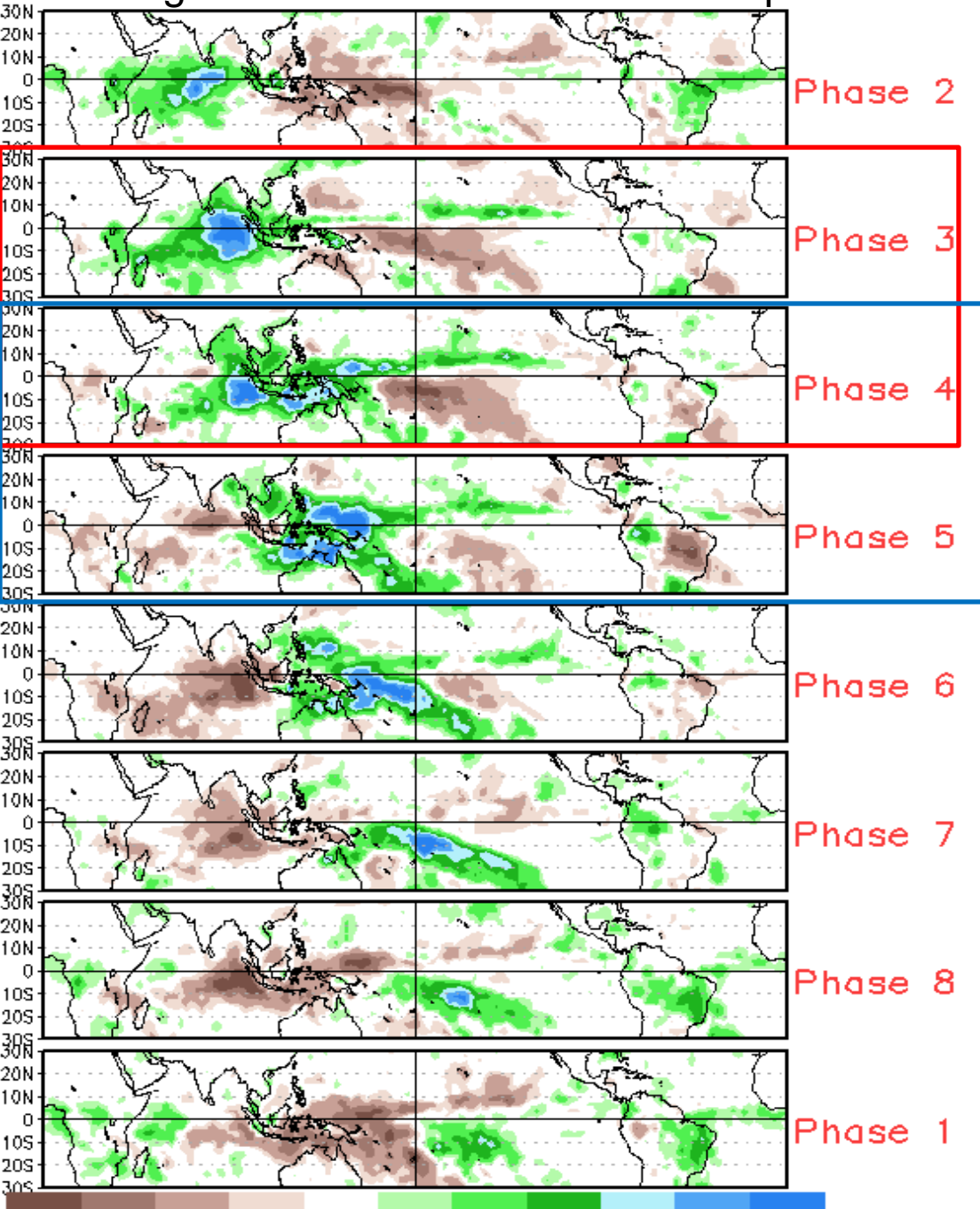
[RMM1, RMM2] forecast for Dec-11-2018 to Dec-25-2018



CFS

- The GEFS stalls the MJO over the Maritime Continent by late in Week-2.
- The ECWTF has some members pushing the MJO over the eastern Maritime Continent during the next 2 weeks, while other members overplay TC activity in the eastern hemisphere.
- The CFS focuses on another center of action over the western hemisphere driven by the extratropics, failing to track the existing MJO event.

# Average Conditions when the MJO is present

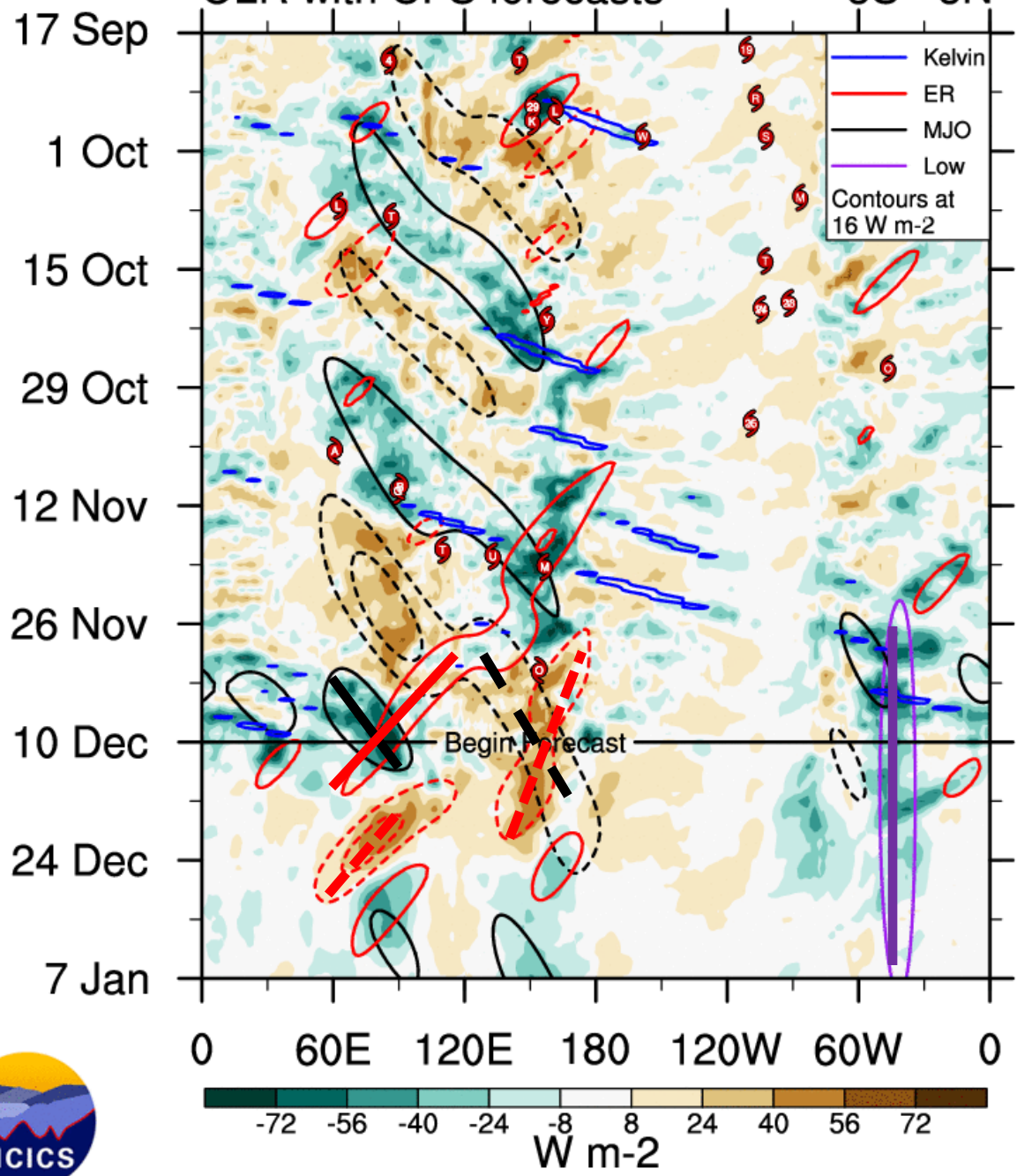


Week-1: Phases 3/4  
Week-2: Phases 4/5

CAVEAT: These panels are representative of robust MJO events.

# OLR with CFS forecasts

5S - 5N



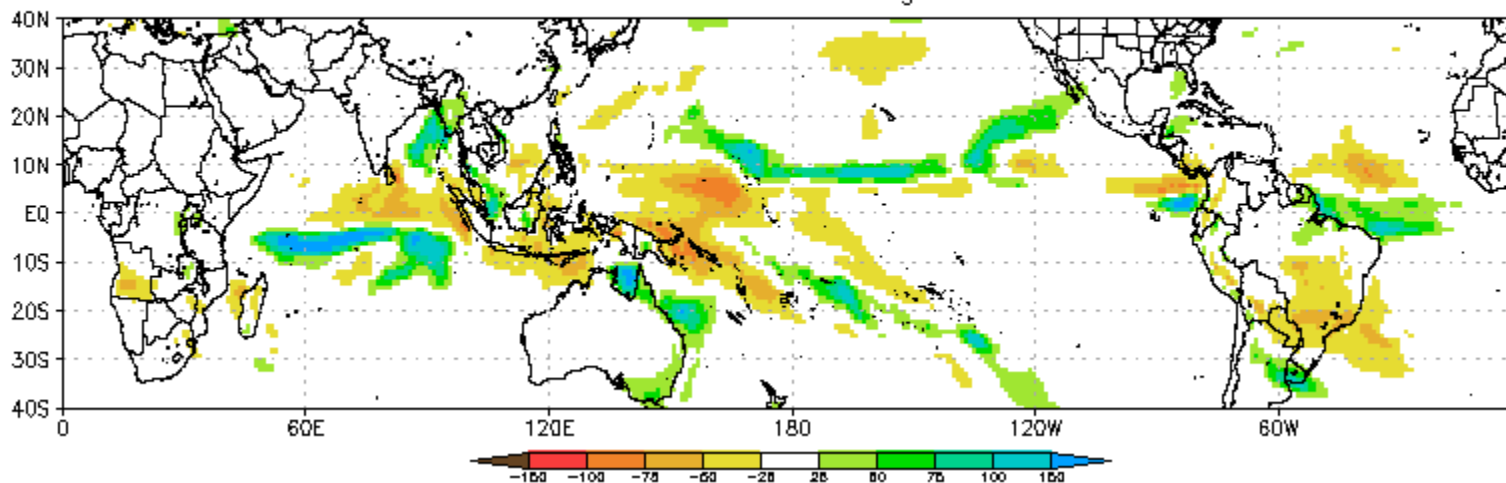
Currently we are observing constructive interference of enhanced (suppressed) convection over the Indian Ocean (West Pacific) by the **MJO** and **Rossby waves**.

This graphic does not analyze it as **low-frequency**, but note the persistent enhanced convection near 80W the next 2-3 weeks (west coast of South America).

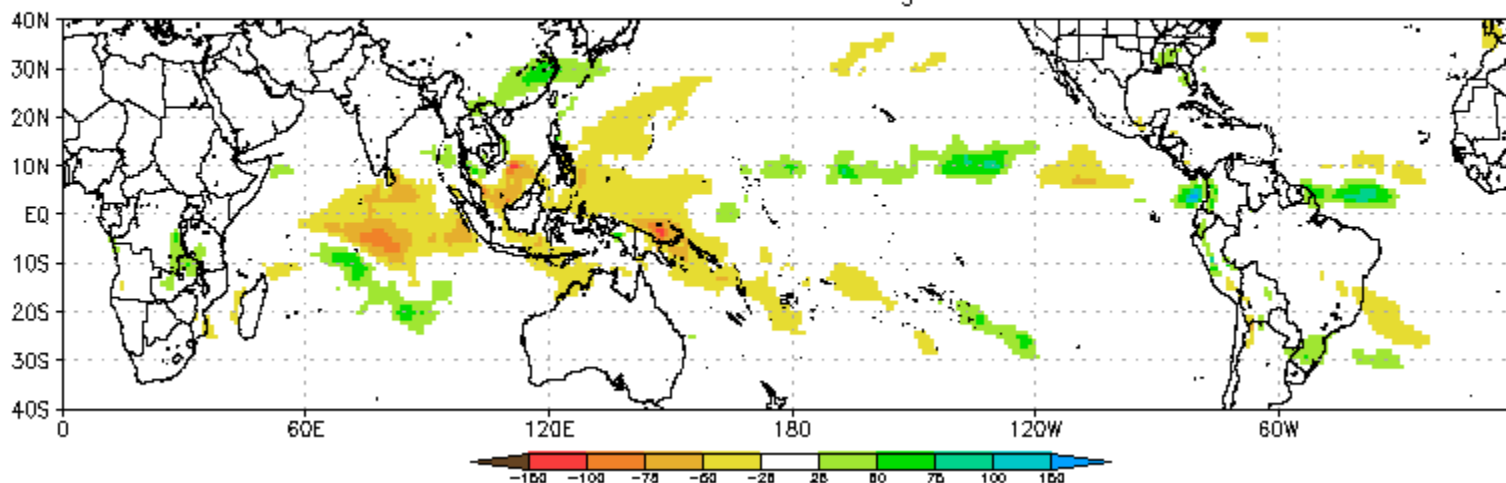




CFS Precipitation Anomalies (mm) Issued 10Dec2018  
Week-1 Forecast Ending 18Dec2018

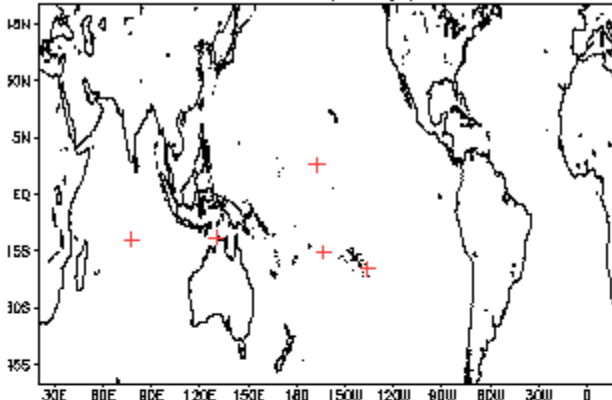


CFS Precipitation Anomalies (mm) Issued 10Dec2018  
Week-2 Forecast Ending 25Dec2018

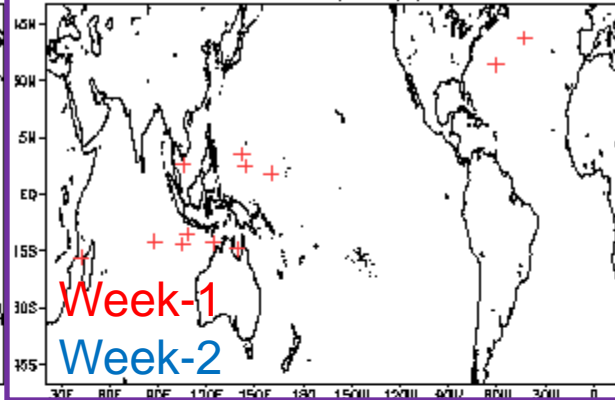


# December Tropical Storm Formation by MJO phase

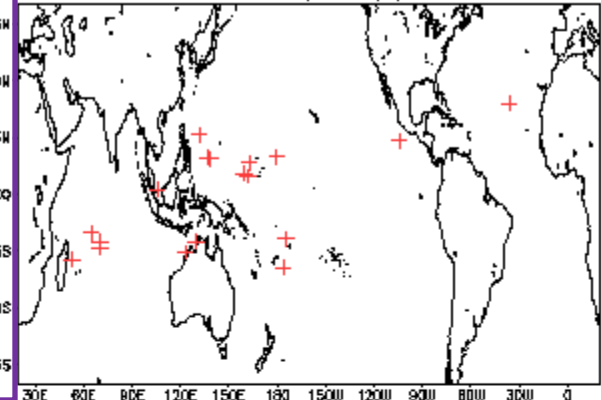
Phase 1 (48 days) 7 storms



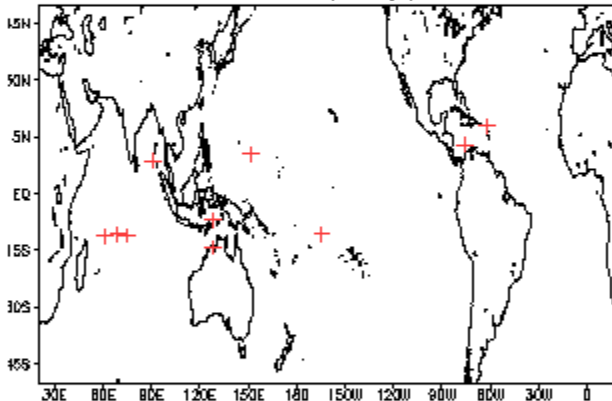
Phase 4 (72 days) 13 storms



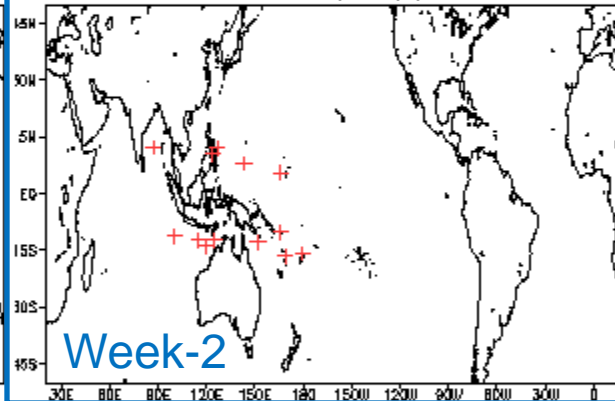
Phase 7 (103 days) 19 storms



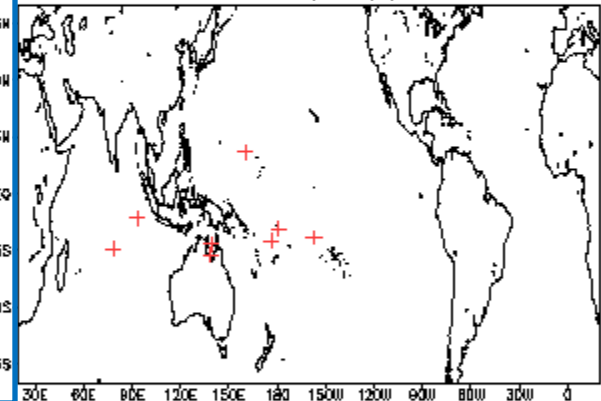
Phase 2 (67 days) 11 storms



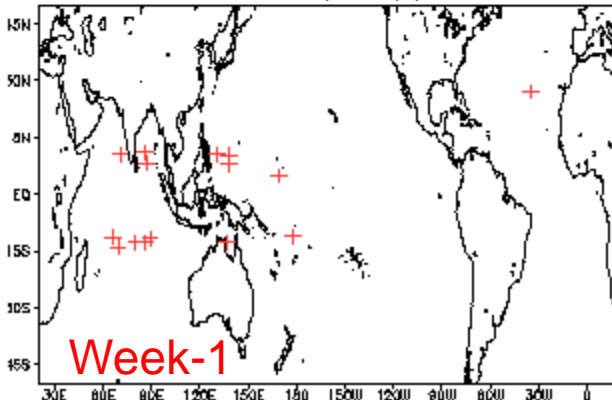
Phase 5 (73 days) 14 storms



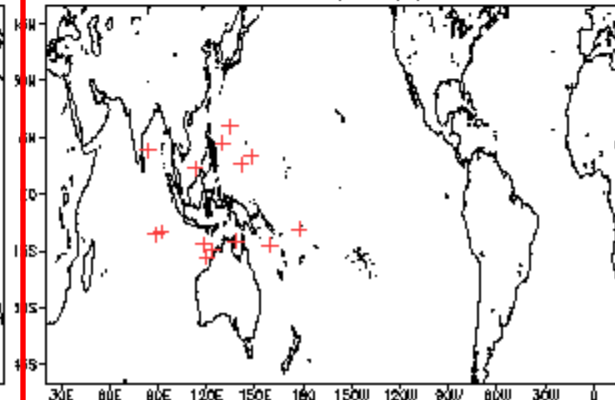
Phase 8 (76 days) 9 storms



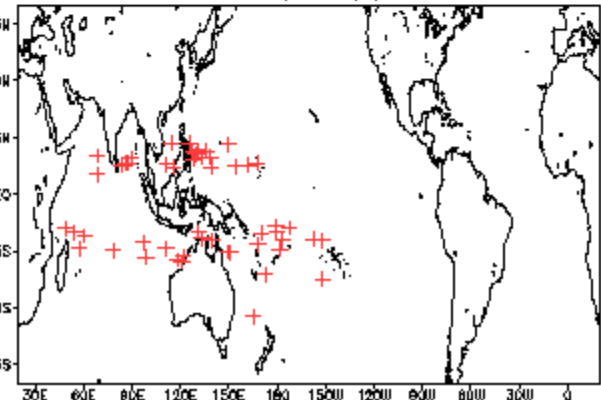
Phase 3 (101 days) 18 storms



Phase 6 (69 days) 15 storms



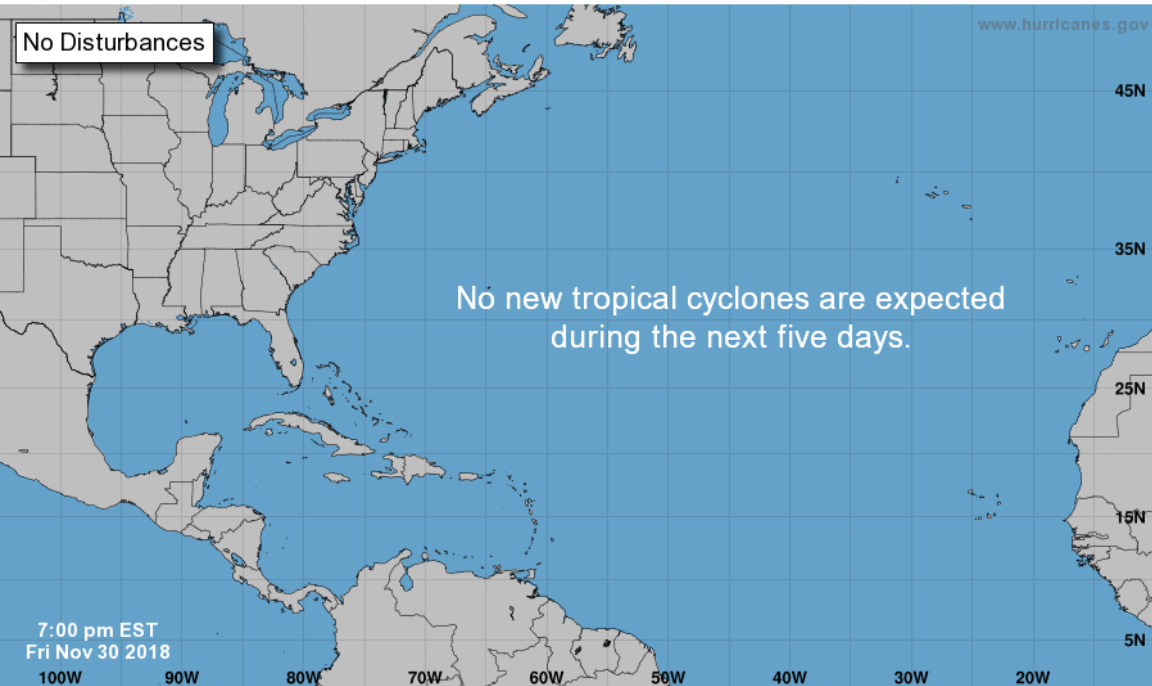
Null (416 days) 52 storms





# Five-Day Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida



Current Disturbances and Five-Day Cyclone Formation Chance: < 40% 40-60% > 60%

Tropical or Sub-Tropical Cyclone: Depression Storm Hurricane

Post-Tropical Cyclone or Remnants

# Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida



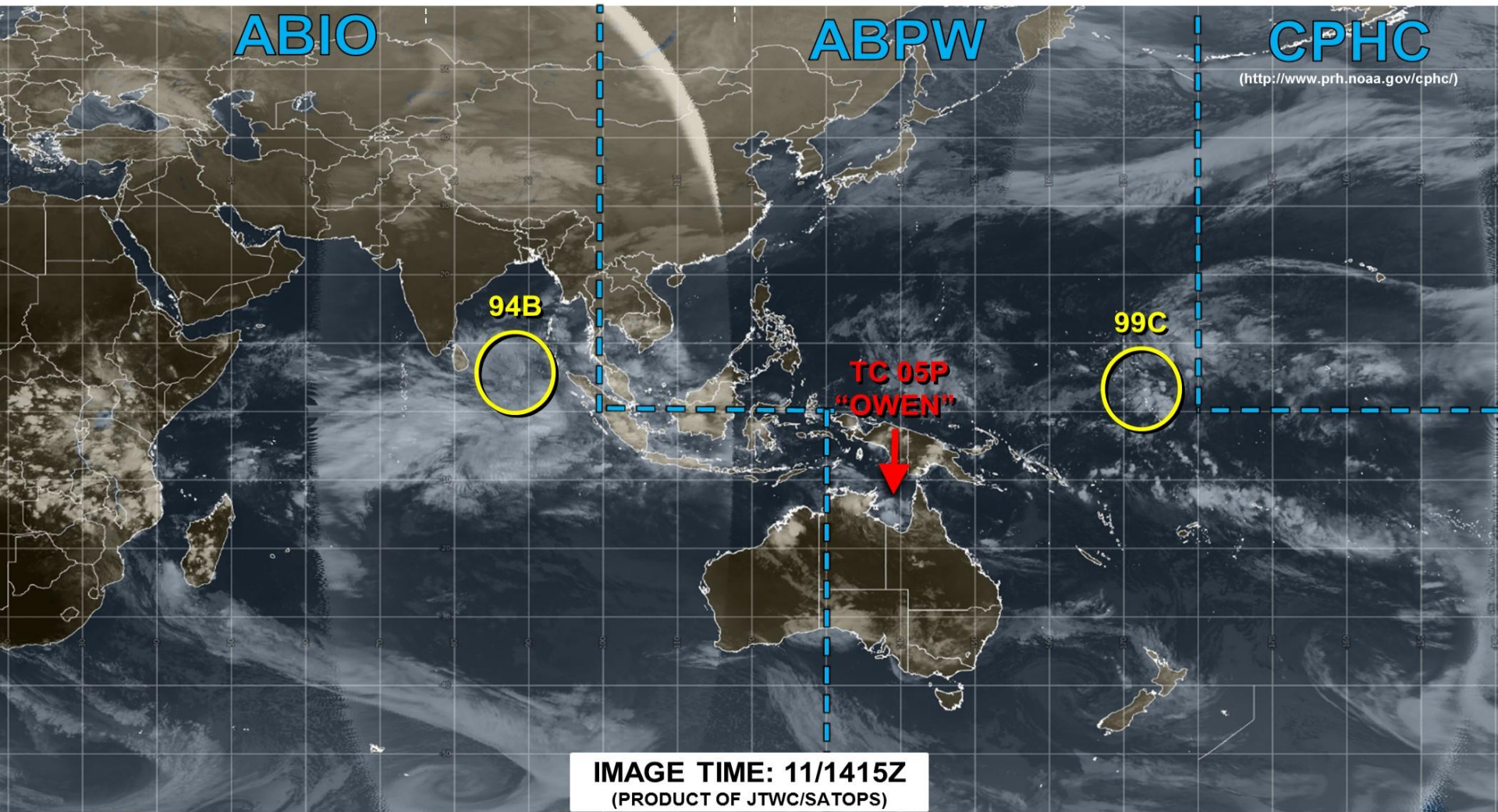
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# JOINT TYPHOON WARNING CENTER



TC development unlikely within 24 hours



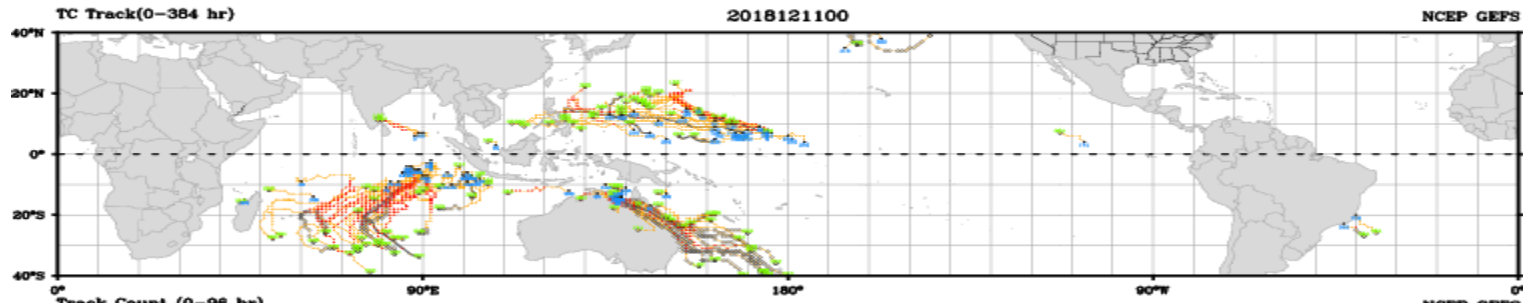
TC development likely, but expected to occur beyond 24 hours



TC development likely within 24 hours (Reference TCFA)



Tropical Cyclone (Reference Warning)

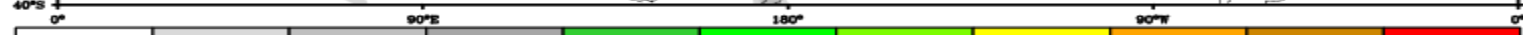
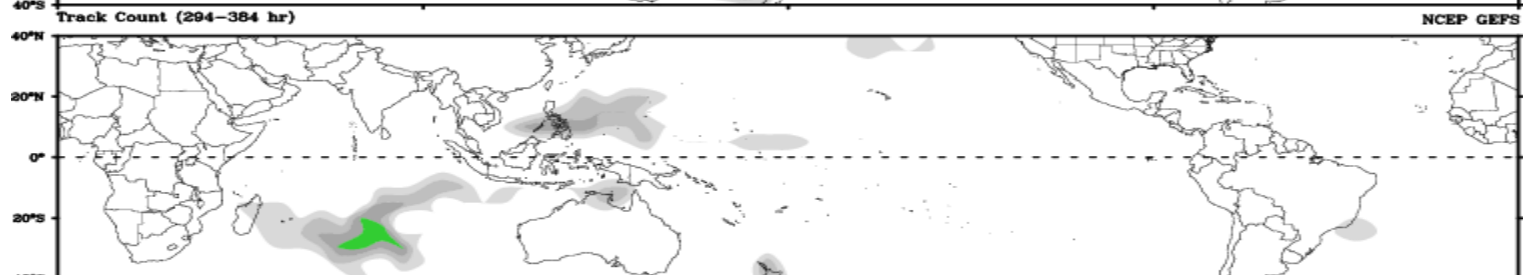
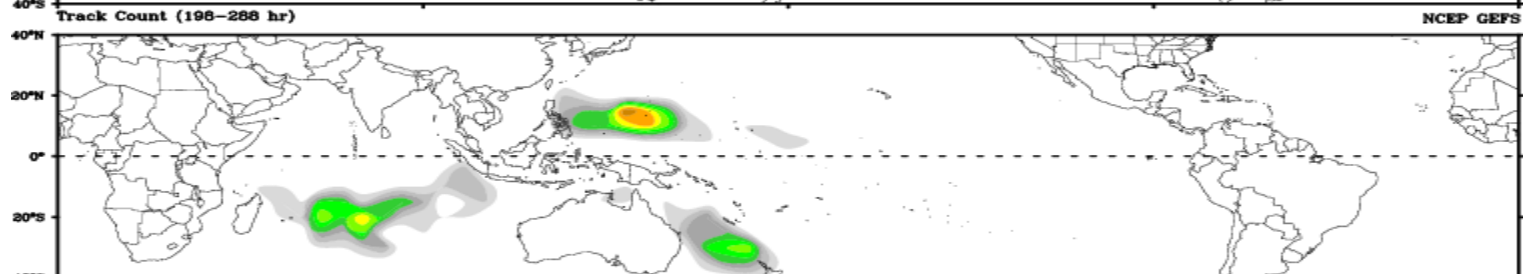
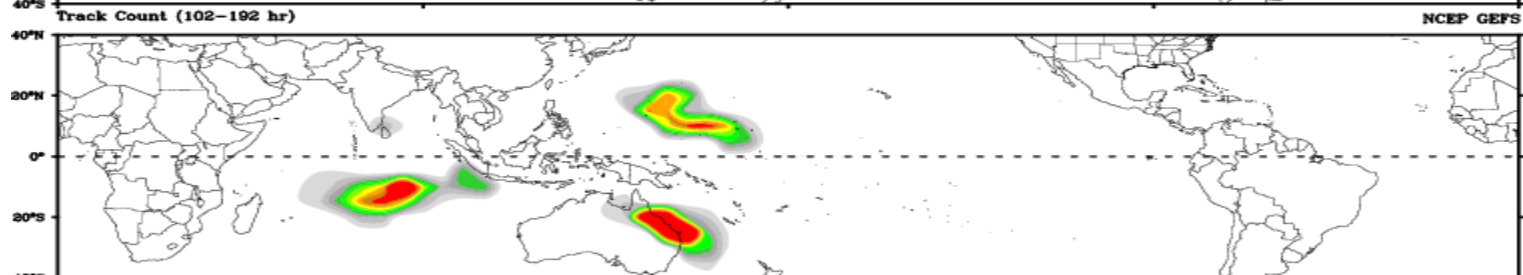
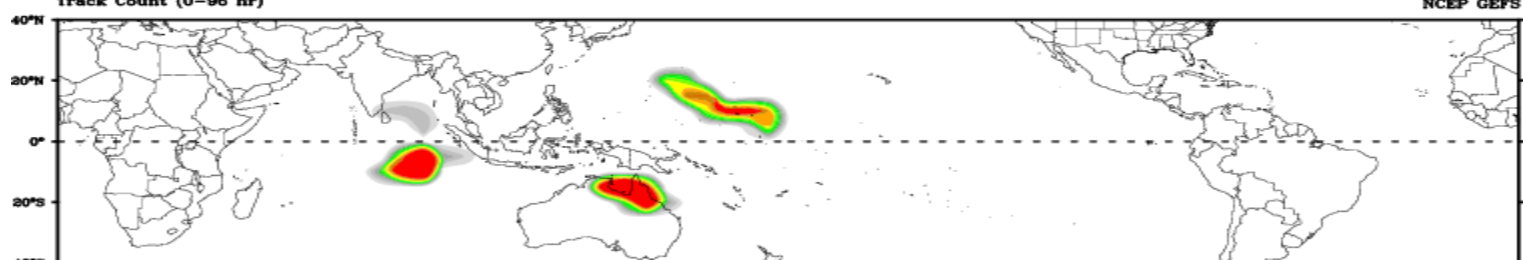


Days 1-4

Day 5-8

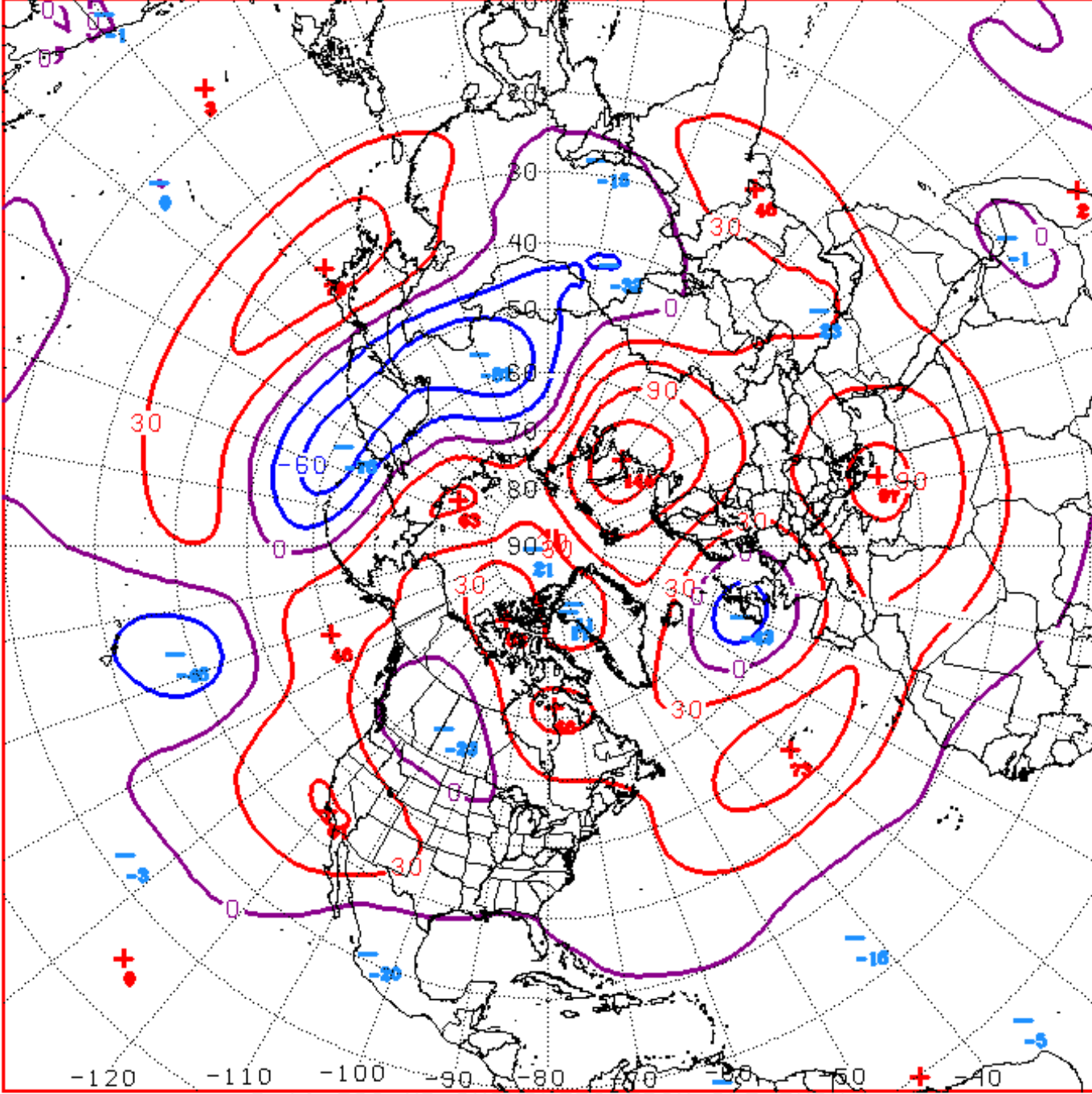
Day 9-12

Day 13-15





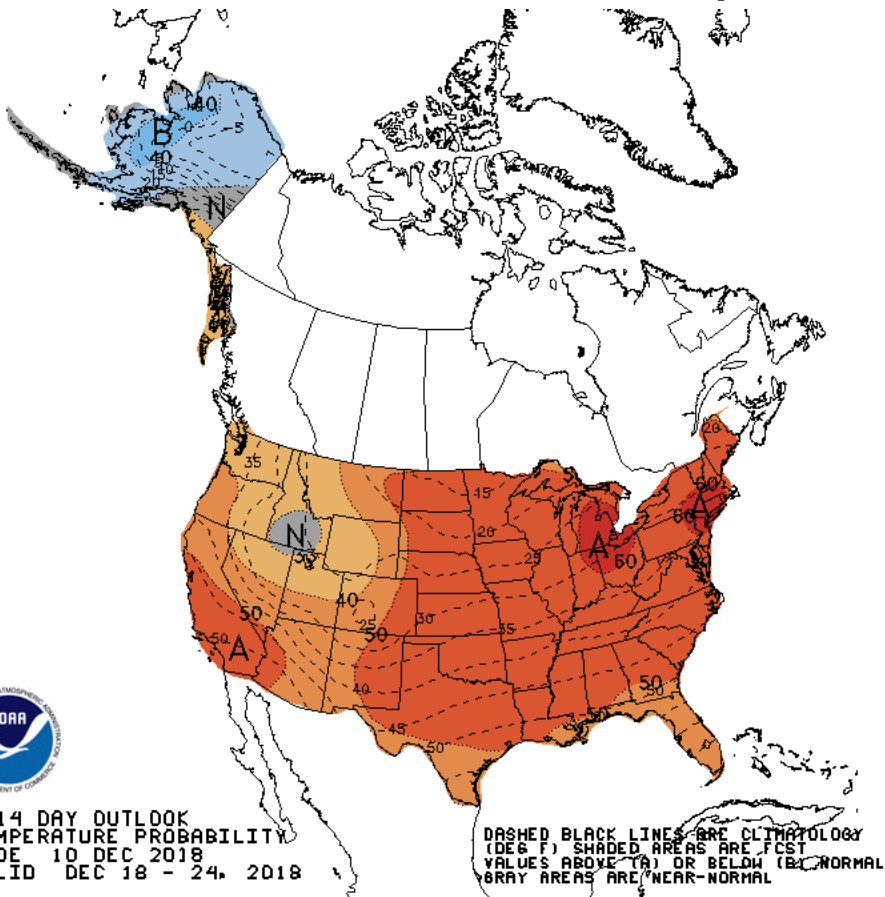
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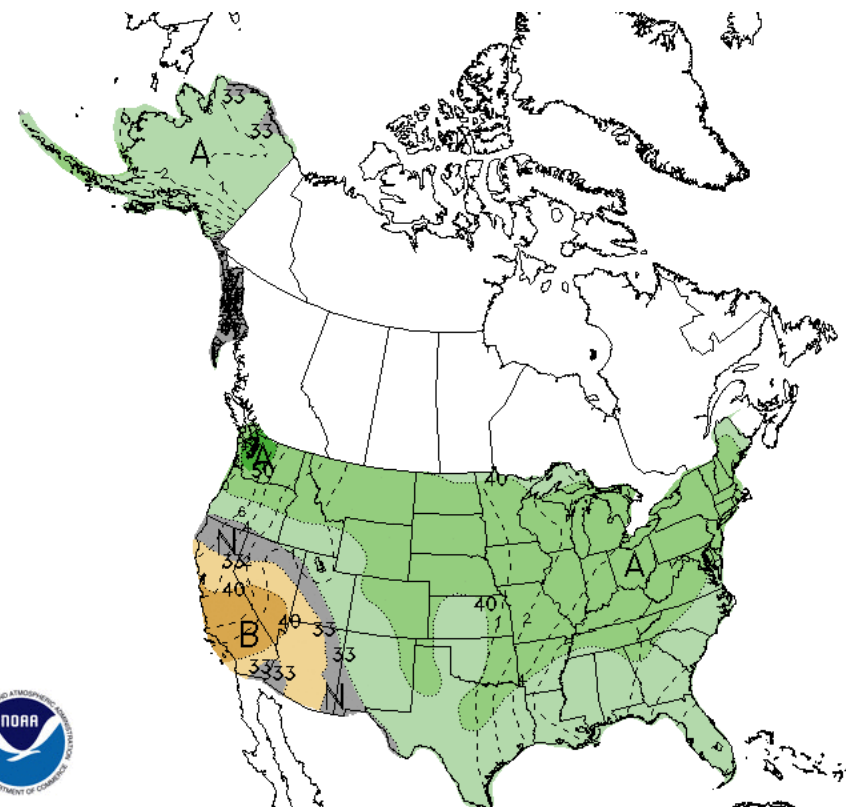
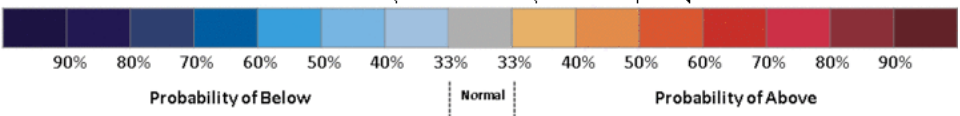
D+11 500 MB ANOMALIES FROM ALZ ENSM  
CPC MAP MADE DEC 11 2018 1404 UTC CNTD DEC 22 2018



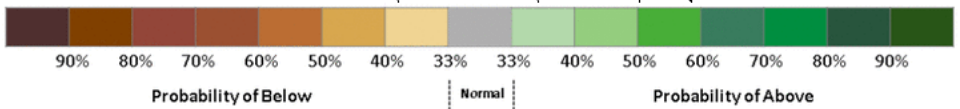
# Week 2 – Temperature and Precipitation



8-14 DAY OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 10 DEC 2018  
VALID DEC 18 - 24, 2018



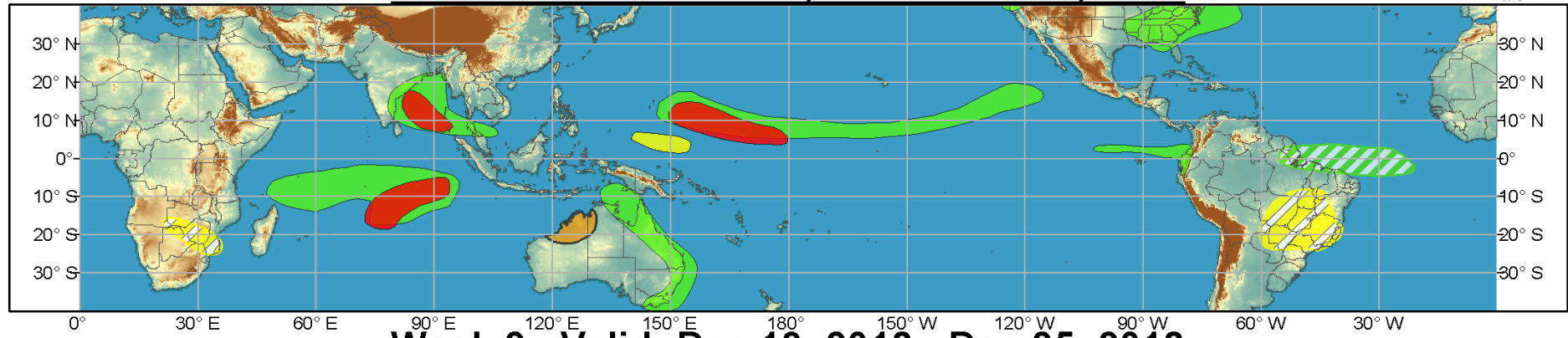
8-14 DAY OUTLOOK  
PRECIPITATION PROBABILITY  
MADE 10 DEC 2018  
VALID DEC 18 - 24, 2018



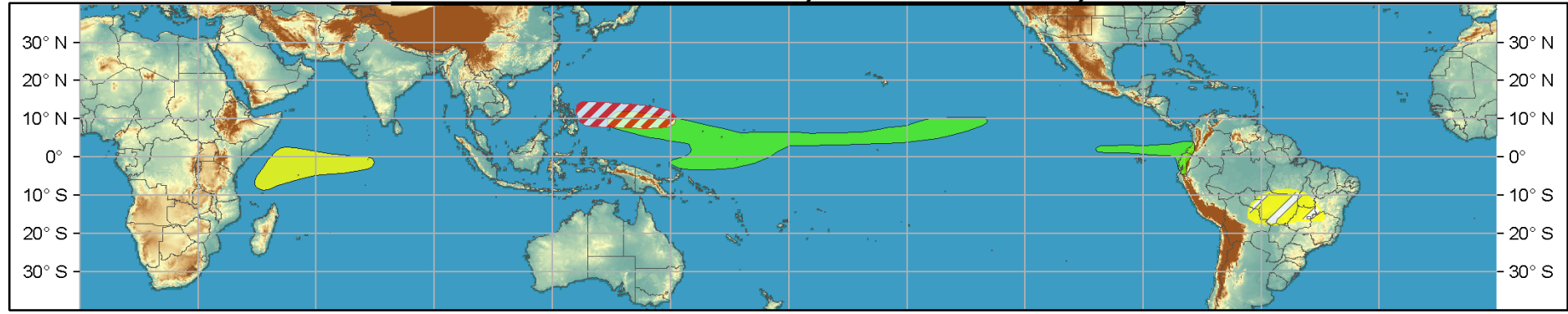


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