

# Global Tropics Hazards And Benefits Outlook

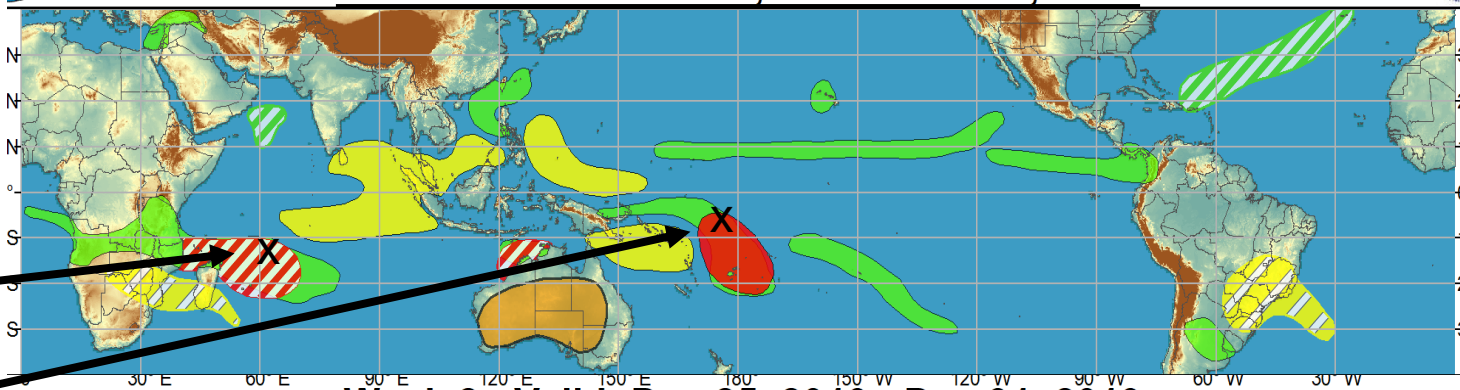
12/31/2019

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

**Week 1 - Valid: Dec 25, 2019 - Dec 31, 2019**

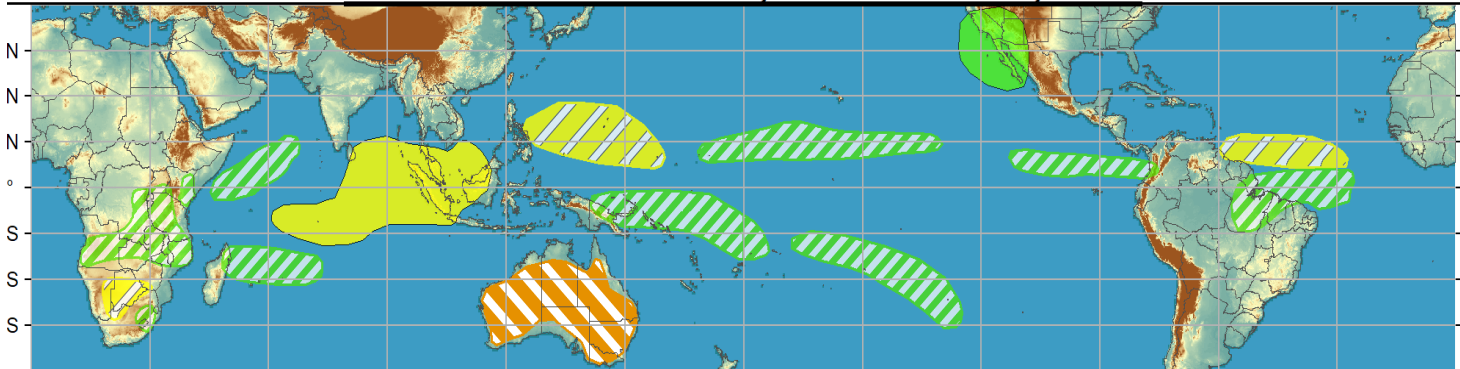


# Outlook Review

TC Calvinia – 12/29

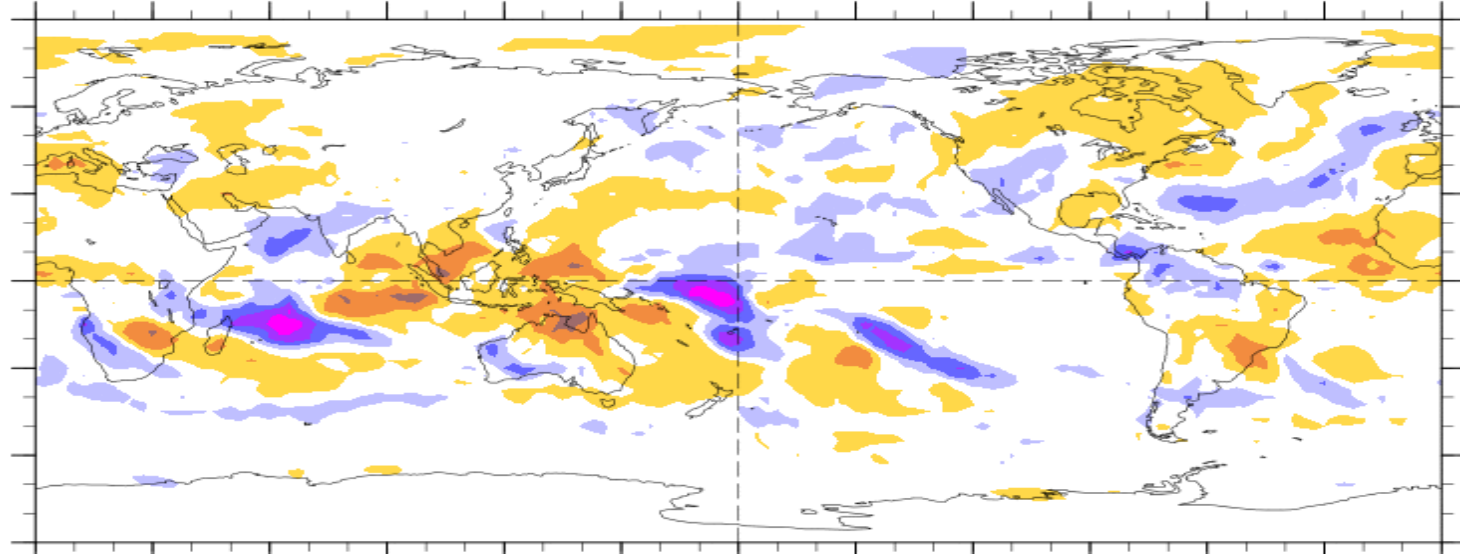
TC Sarai – 12/26

**Week 2 - Valid: Dec 25, 2019 - Dec 31, 2019**



7-Day Average OLR Anomaly

2019/12/23 - 2019/12/29



Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

# Synopsis of Climate Modes

## **ENSO: (December 12, 2019 Update)**

- ENSO Alert System Status: Not Active
- ENSO-neutral is favored during the Northern Hemisphere winter 2019-20 (70% chance), continuing through spring 2020 (~65% chance).

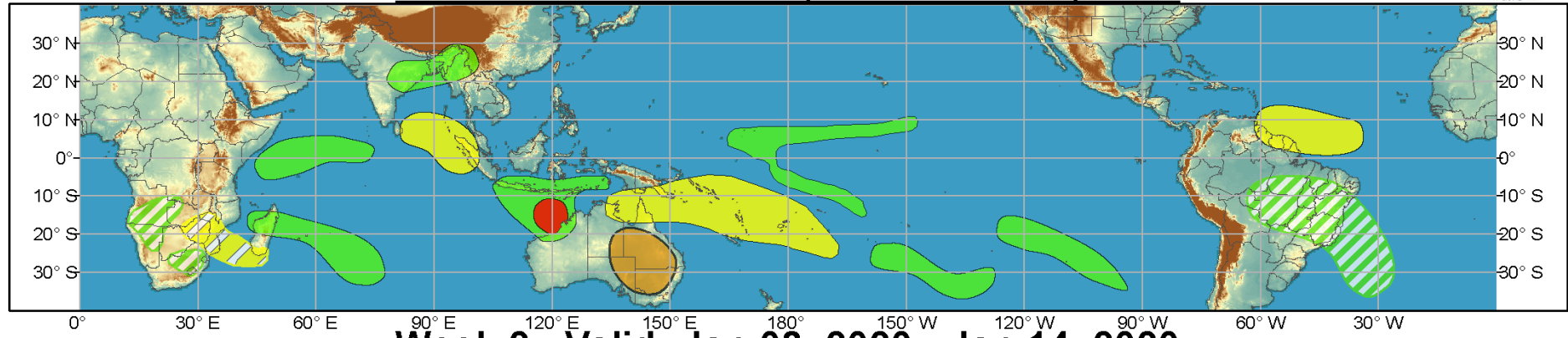
## **MJO and other subseasonal tropical variability:**

- The Indian Ocean Dipole has weakened substantially during the last couple of weeks.
- The MJO was weak throughout much of December. There are indications in the models that it will strengthen during the end of Week-1 or beginning of Week-2.
- Most of the recent tropical convective signal comes from tropical cyclone activity.

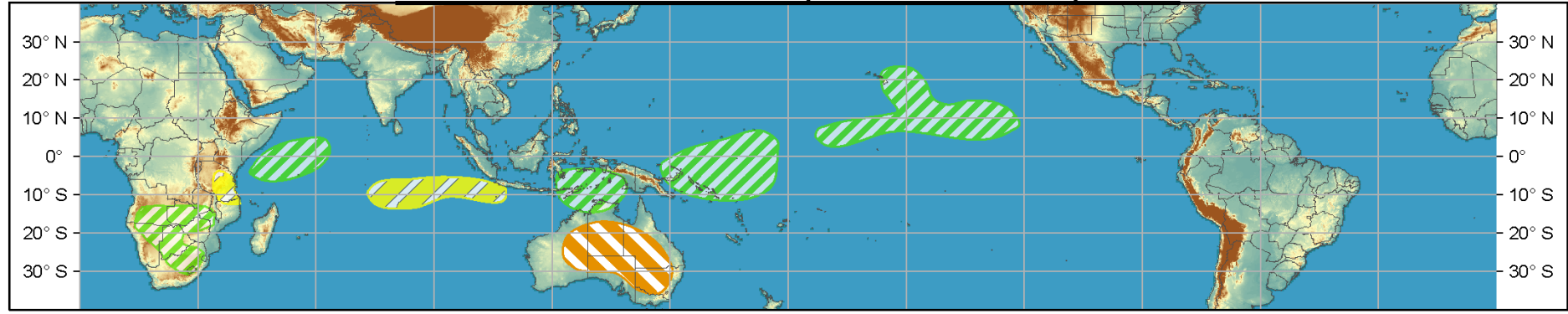


# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

## Week 1 - Valid: Jan 01, 2020 - Jan 07, 2020



## Week 2 - Valid: Jan 08, 2020 - Jan 14, 2020



**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: 12/31/2019

Forecaster: MacRitchie

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

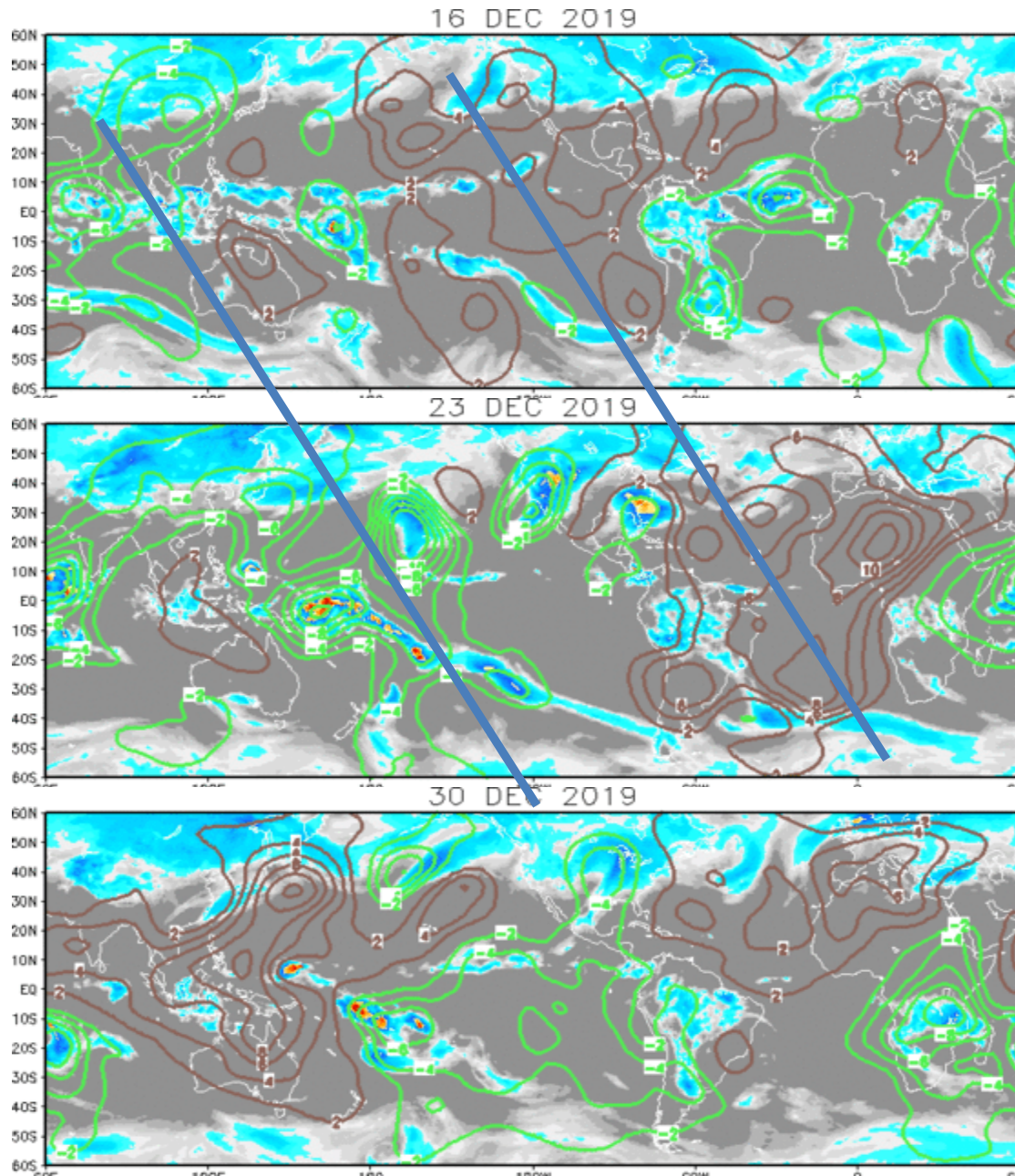
Green: Enhanced Divergence

Brown: Enhanced Convergence

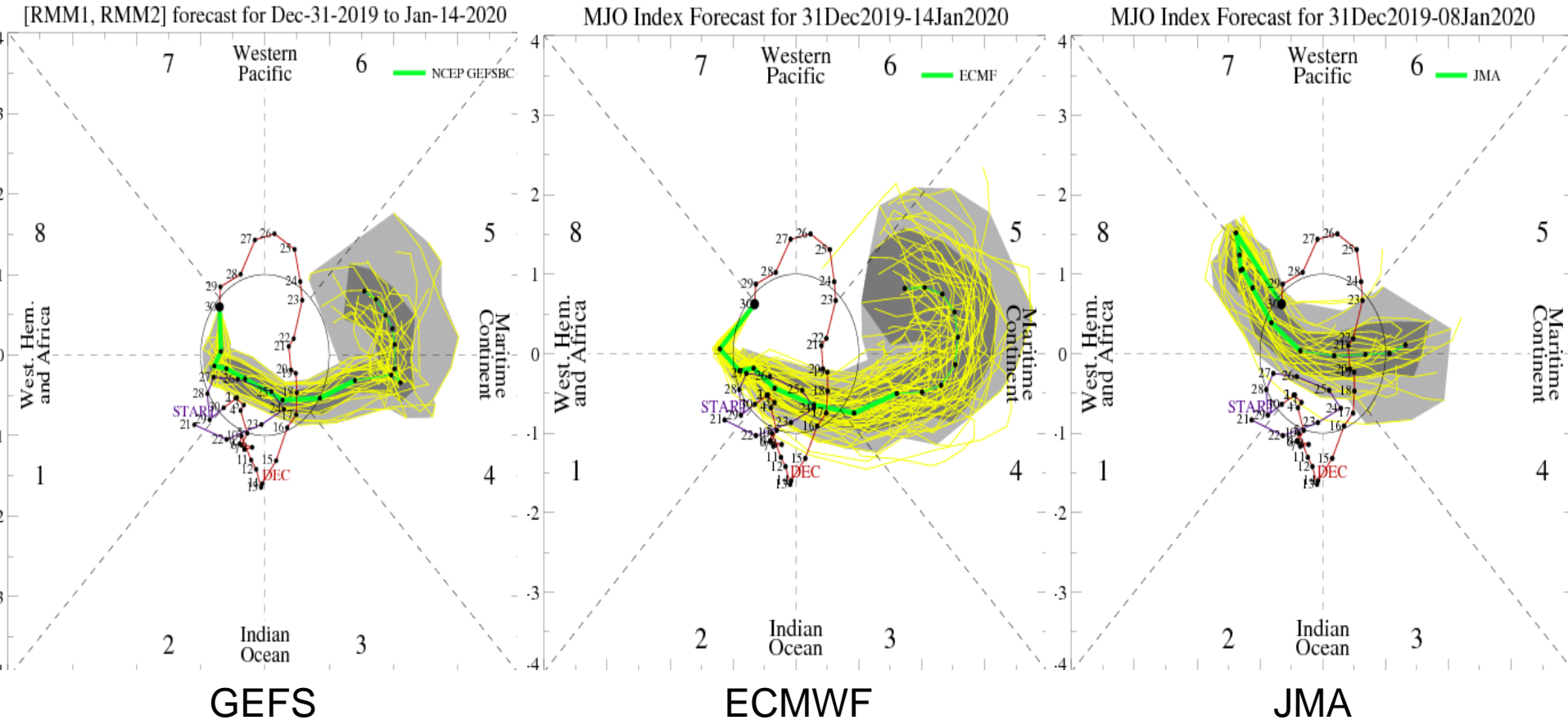
Notable eastward shift in the upper-level VP anomalies over the Indian Ocean as the IOD began to weaken.

Eastward propagation of the upper-level VP anomalies suggestive of an intraseasonal signal, though the IOD response continues.

Enhanced convergence, associated with dryness, moves over Australia.



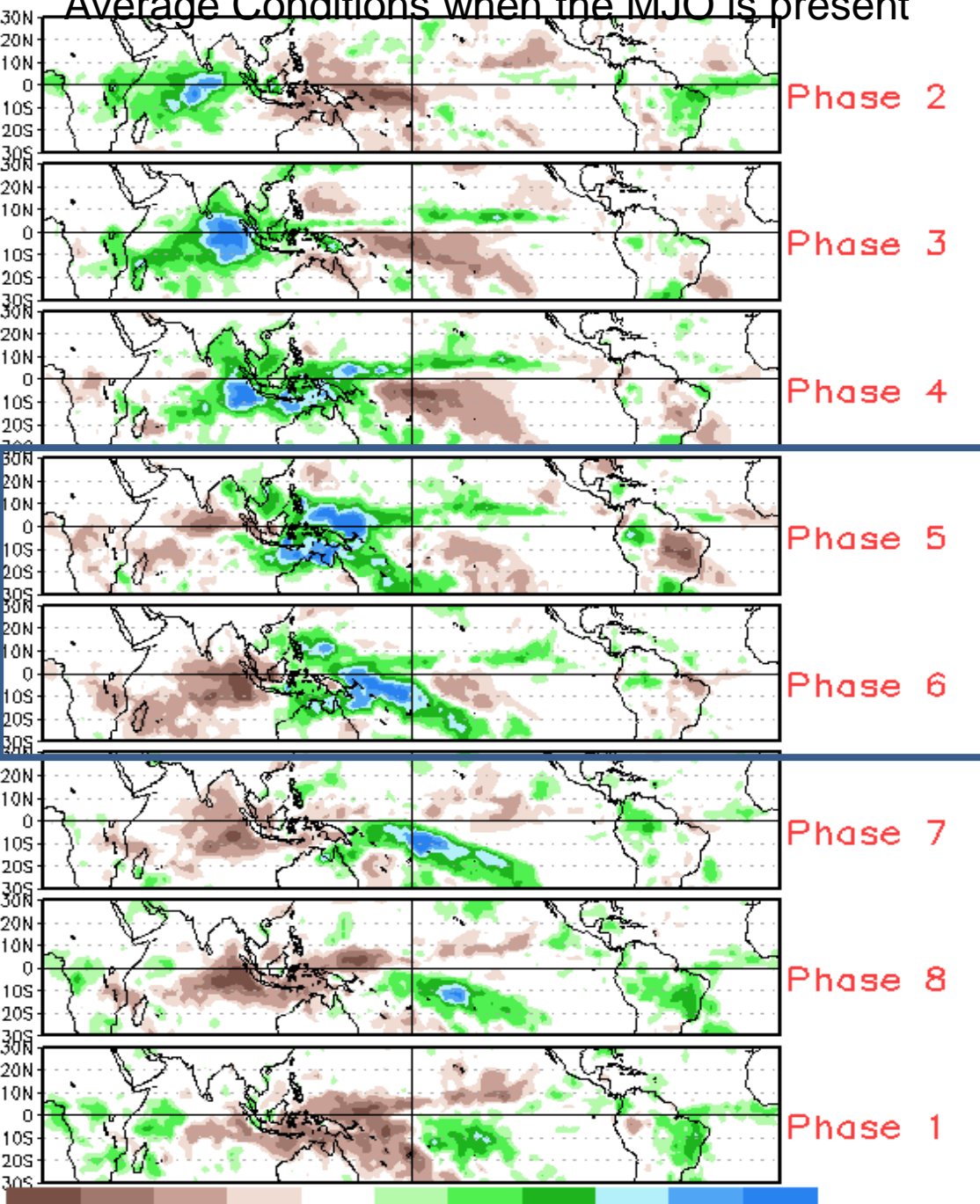
# MJO Observation/Forecast



The models all suggest that the MJO will strengthen over the Maritime Continent during Week-2.

There is uncertainty as to how quickly the MJO will propagate and whether it will remain strong enough to anchor the upper-level pattern during Week-2.

# Average Conditions when the MJO is present



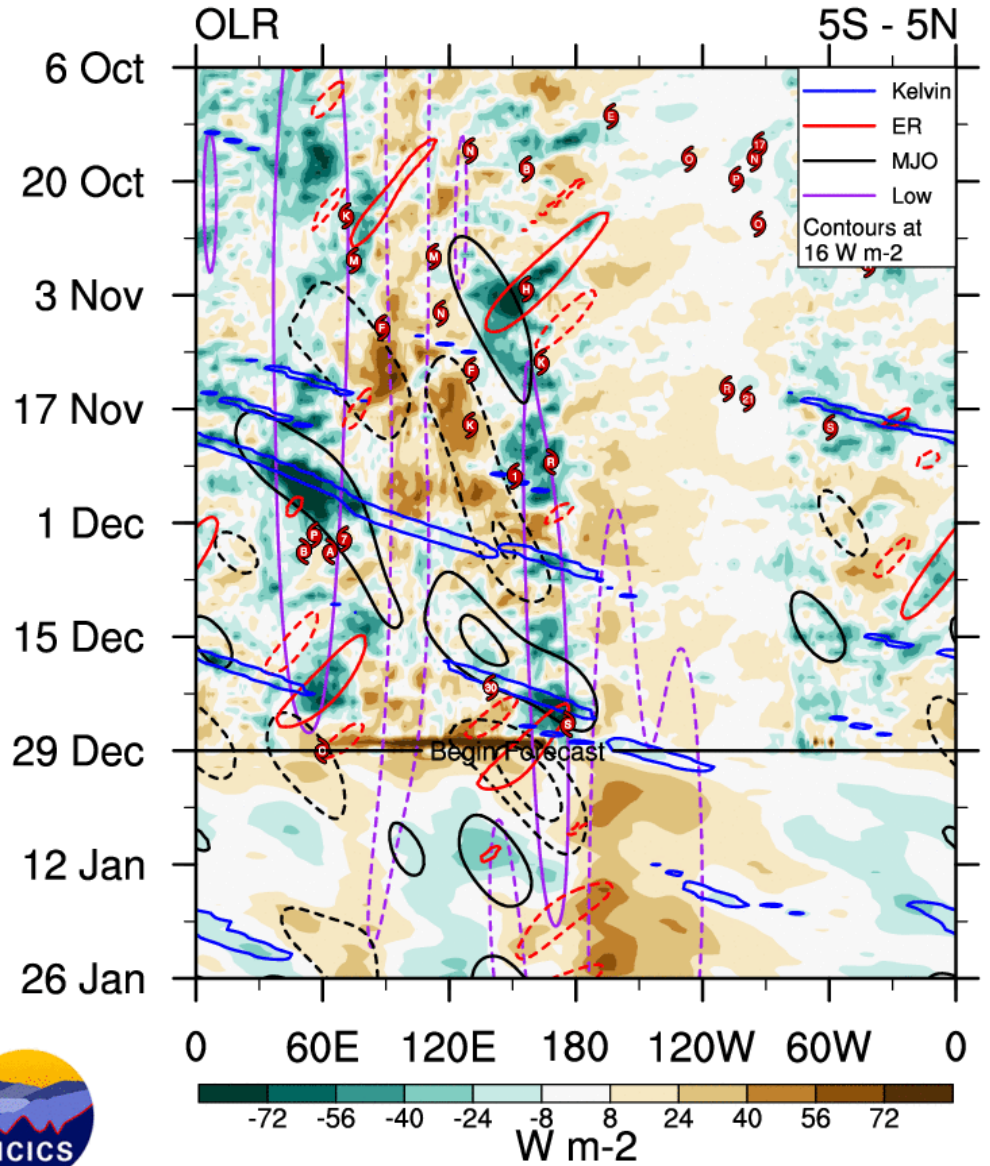
**Maybe** during Week-2.

CAVEAT: These panels are representative of robust MJO events.



Weak MJO, Kelvin and ER wave signals.

IOD-related low frequency contour ends in mid-December.

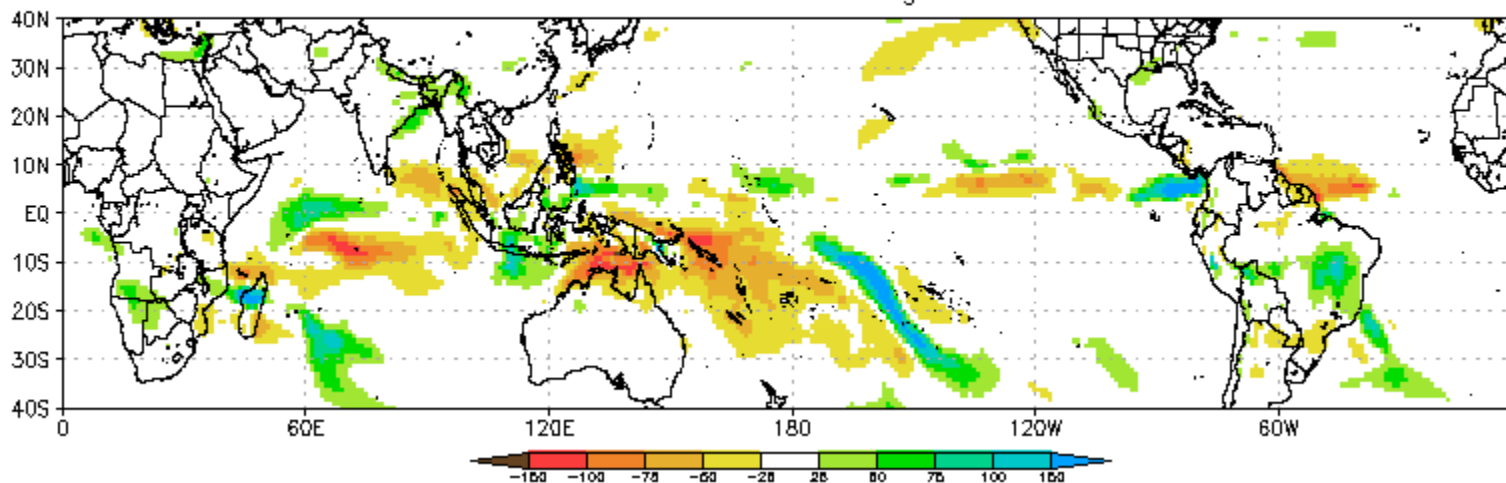


Mon 2019-12-30 1611 UTC

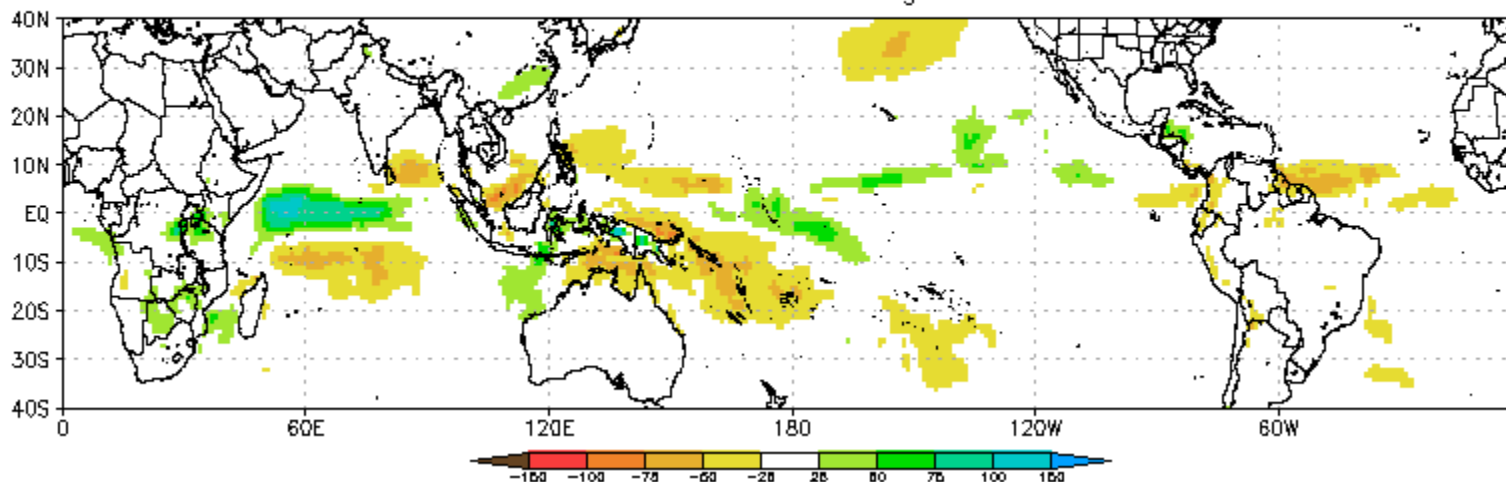
Carl Schreck  
carl\_schreck@ncsu.edu



CFS Precipitation Anomalies (mm) Issued 30Dec2019  
Week-1 Forecast Ending 07Jan2020

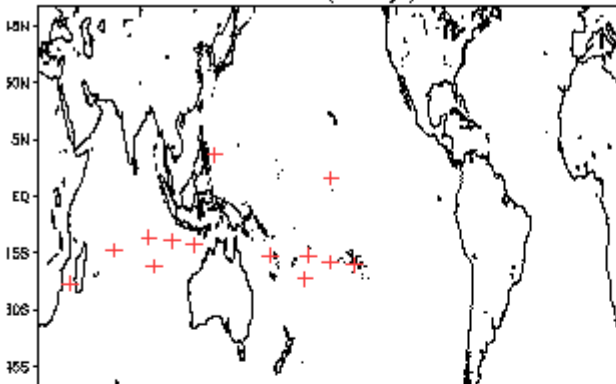


CFS Precipitation Anomalies (mm) Issued 30Dec2019  
Week-2 Forecast Ending 14Jan2020

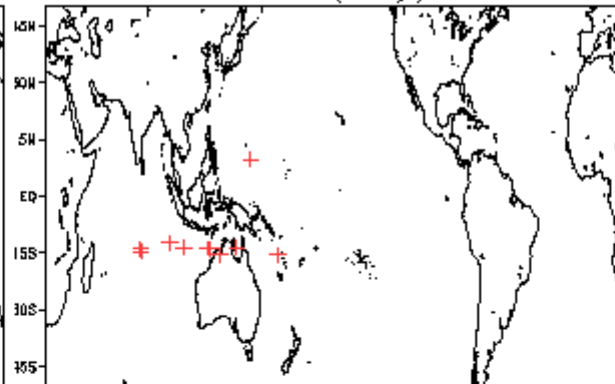


# January Tropical Storm Formation by MJO phase

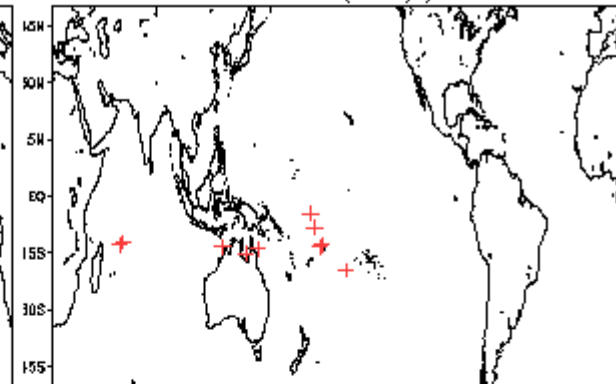
Phase 1 (67 days) 14 storms



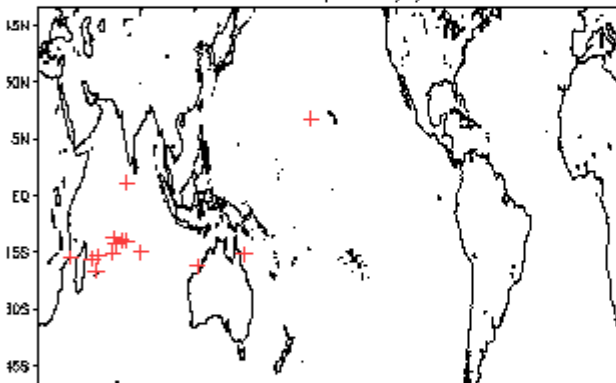
Phase 4 (69 days) 11 storms



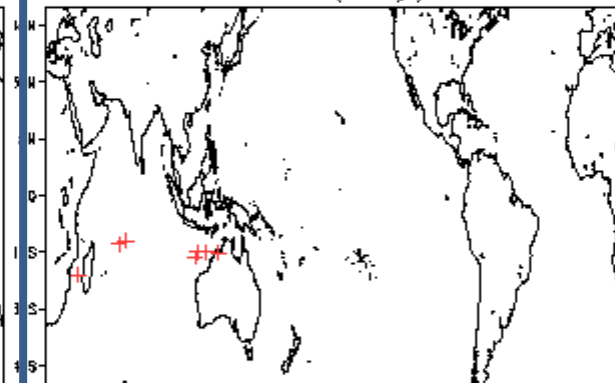
Phase 7 (81 days) 11 storms



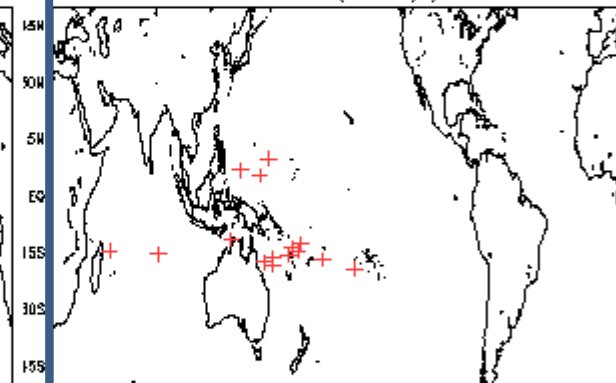
Phase 2 (101 days) 15 storms



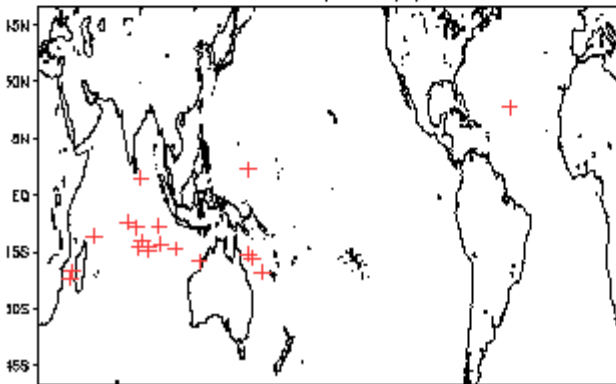
Phase 5 (67 days) 8 storms



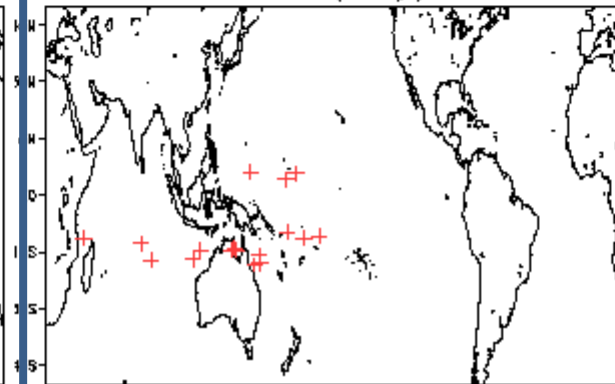
Phase 8 (105 days) 16 storms



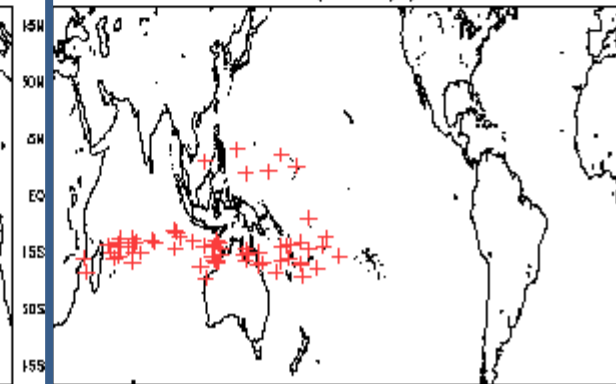
Phase 3 (112 days) 20 storms

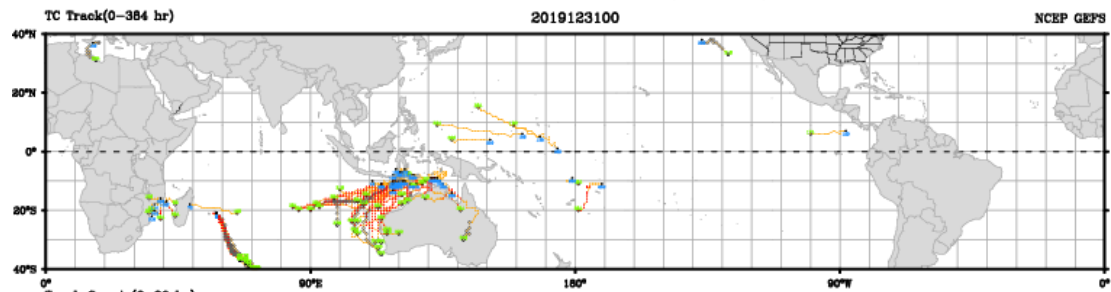


Phase 6 (88 days) 18 storms

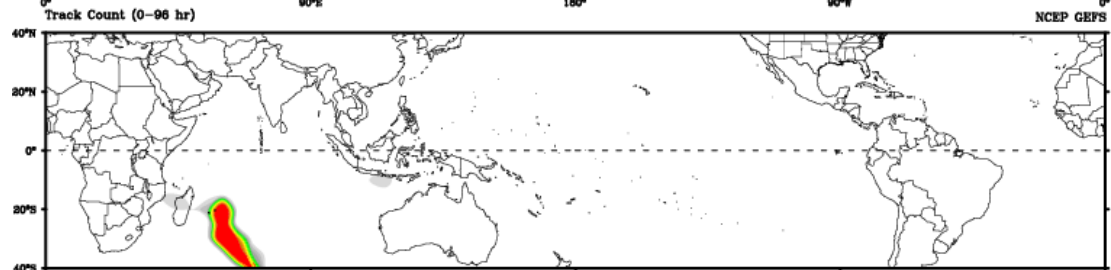


Null (364 days) 67 storms

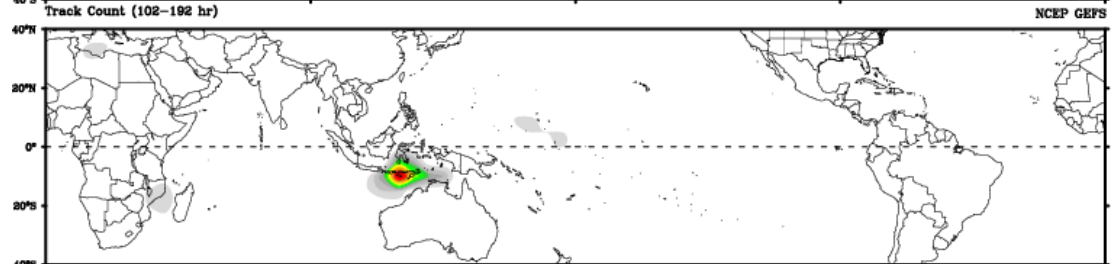




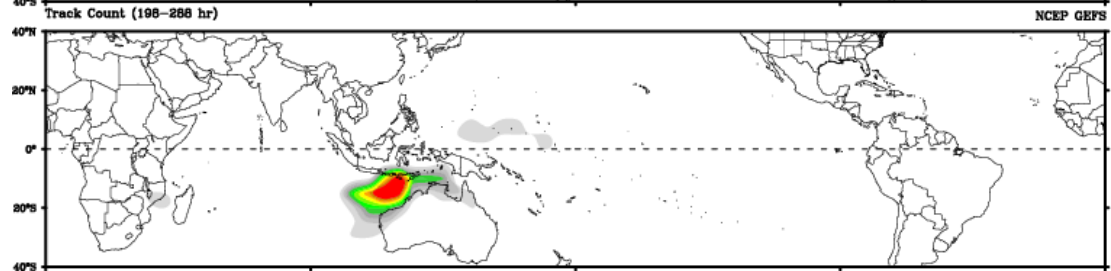
Days 1-4



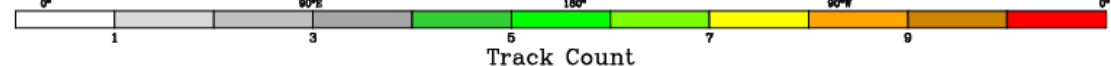
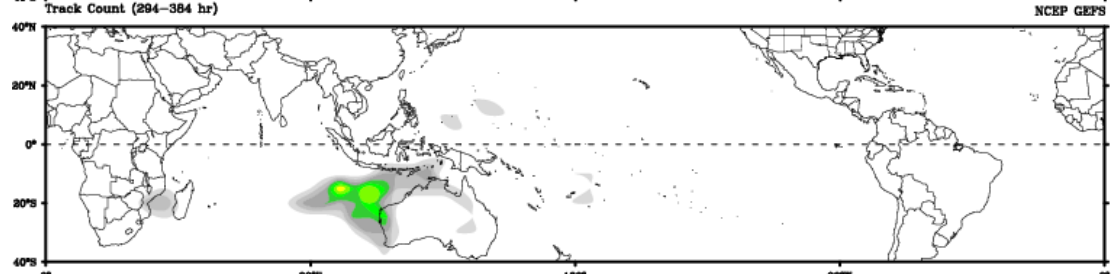
Day 5-8



Day 9-12



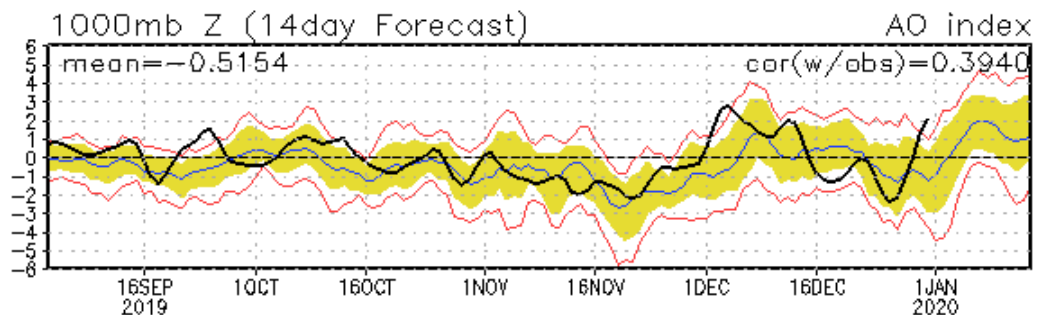
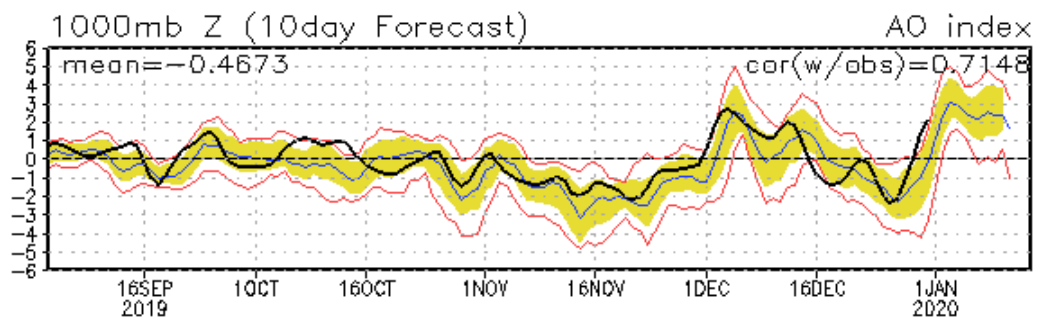
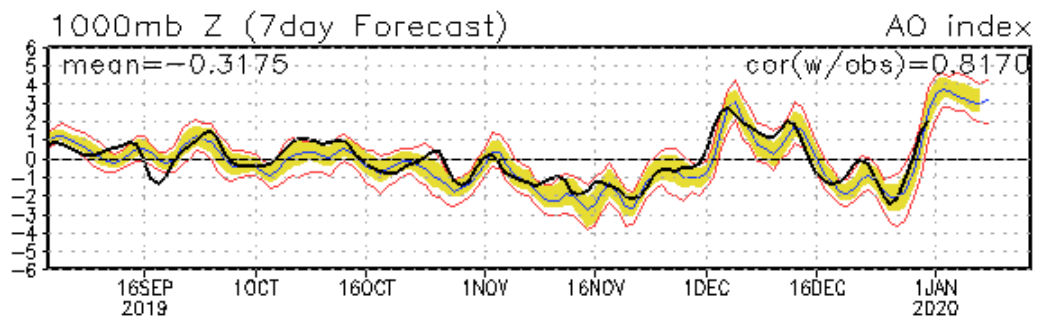
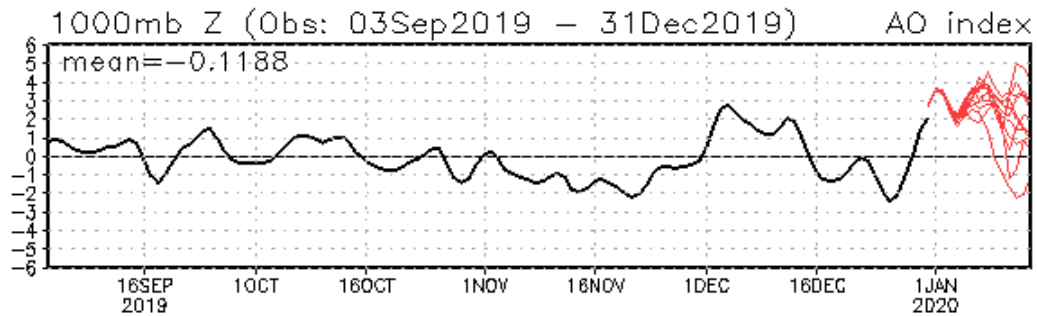
Day 13-15

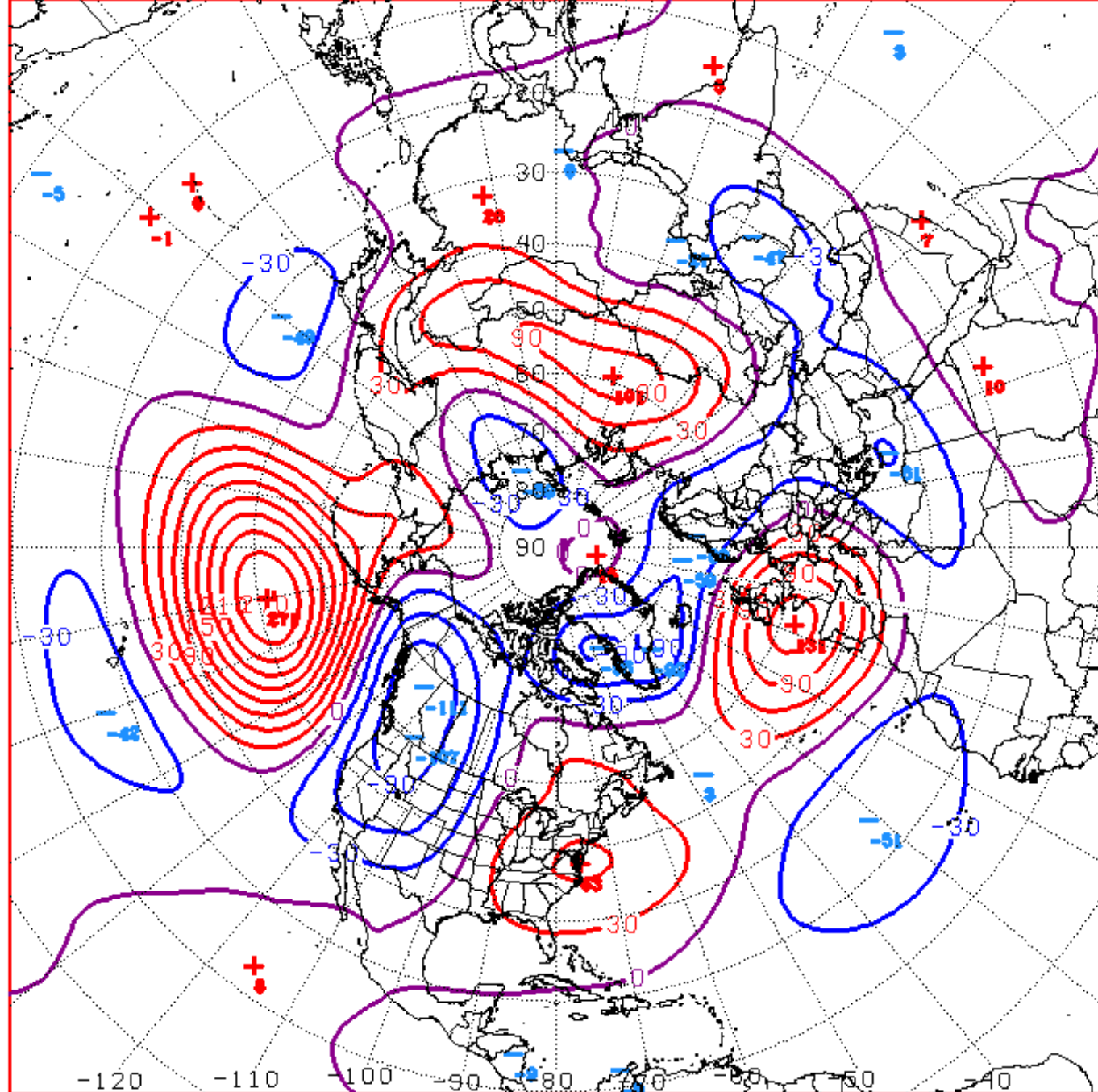


# Connections to U.S. Impacts



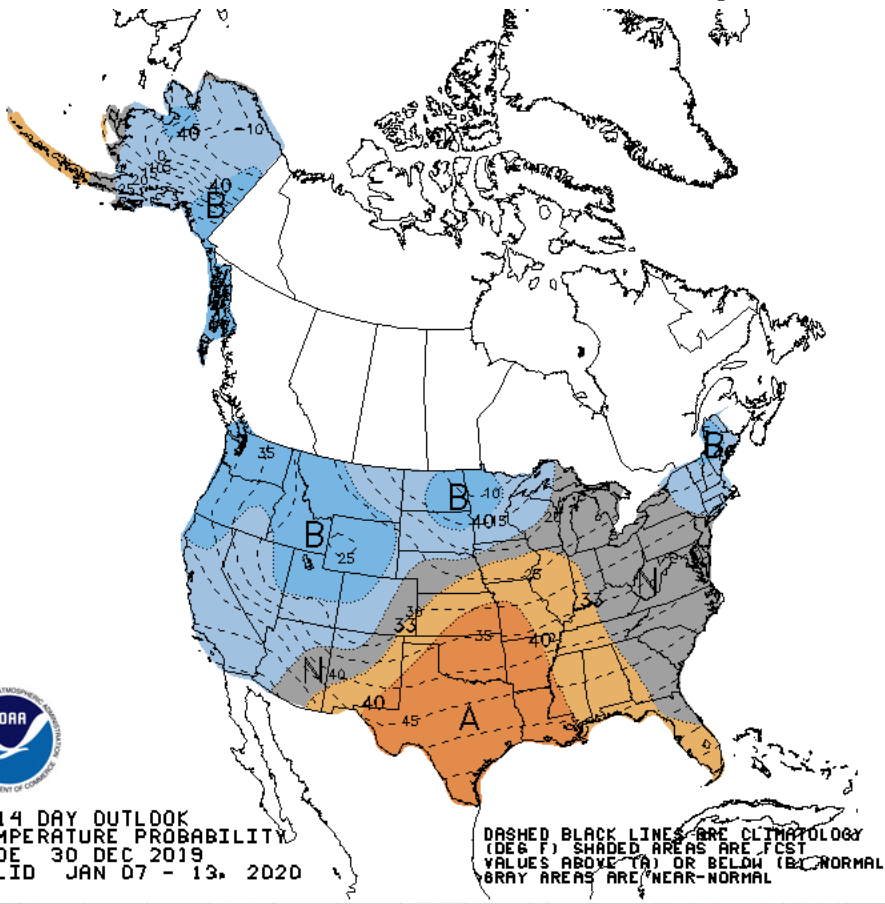
## AO: Observed & ENSM forecasts





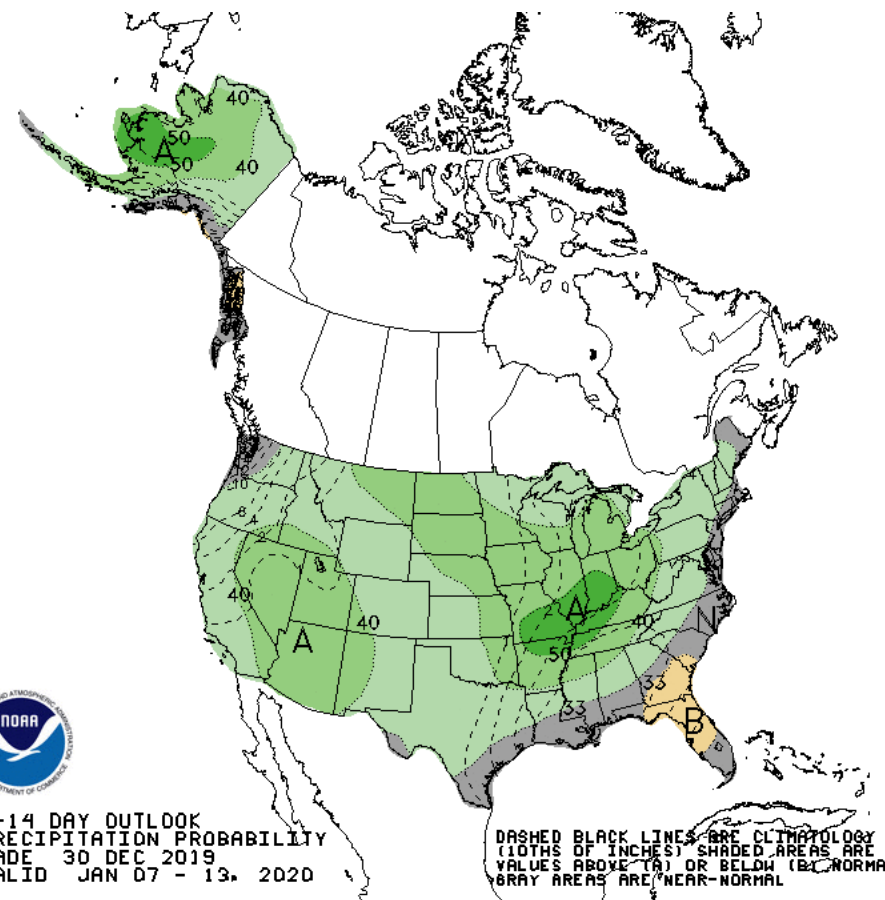
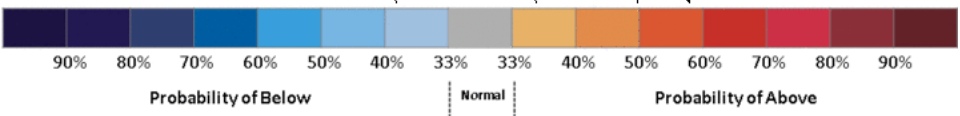
D+11 500 MB ANOMALIES FROM ALZ ENSM  
 CPC MAP MADE DEC 31 2019 1338 UTC CNTD JAN 11 2020

# Week 2 – Temperature and Precipitation



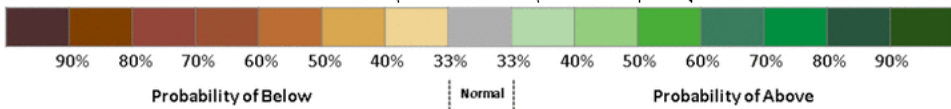
8-14 DAY OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 30 DEC 2019  
VALID JAN 07 - 13, 2020

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 30 DEC 2019  
VALID JAN 07 - 13, 2020

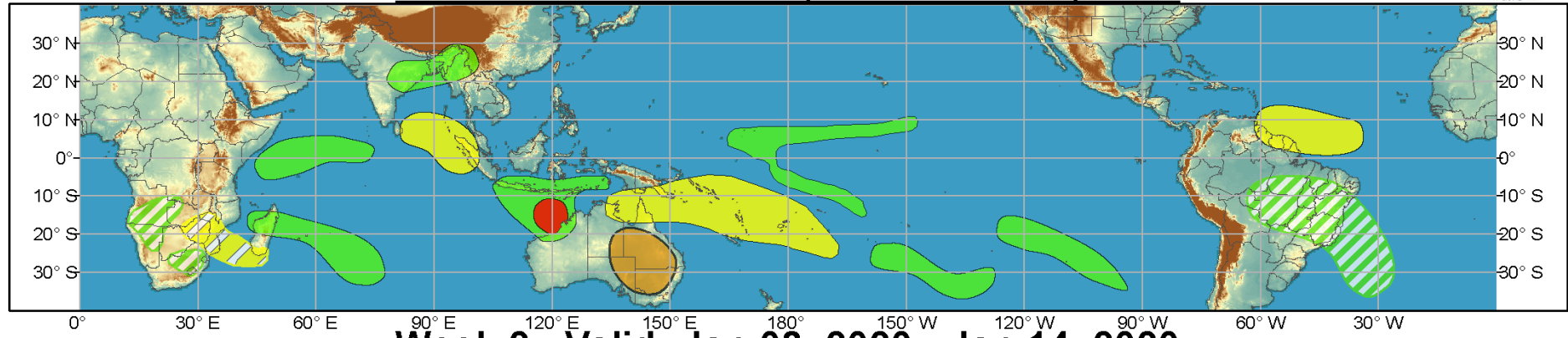
DASHED BLACK LINES ARE CLIMATOLOGY (TENTHS OF INCHES). SHADED AREAS ARE FCST VALUES ABOVE (A) OR BELOW (B) NORMAL. GRAY AREAS ARE NEAR-NORMAL.



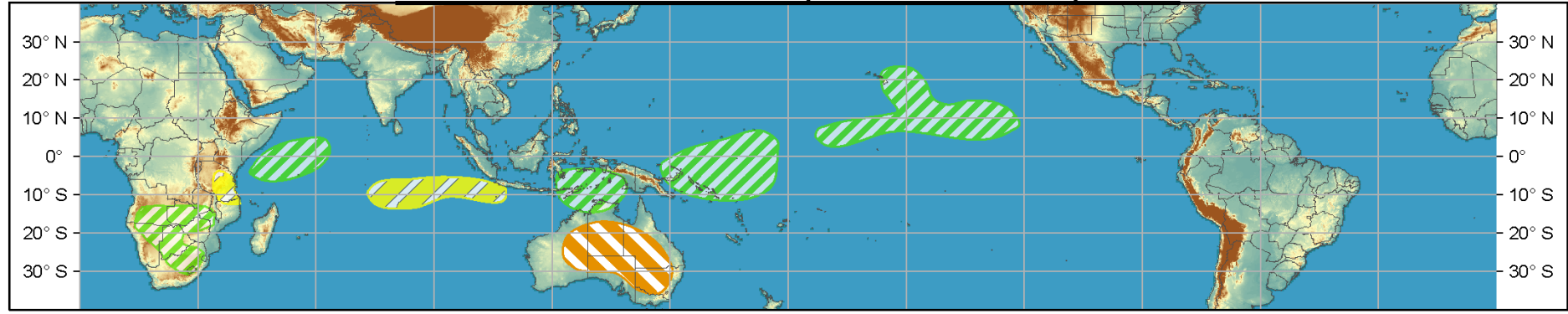


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