

# Global Tropics Hazards And Benefits Outlook

2/11/2020

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

## TC Damien

2/6-2/10

Peak intensity: 95  
knots

## TC Uesi

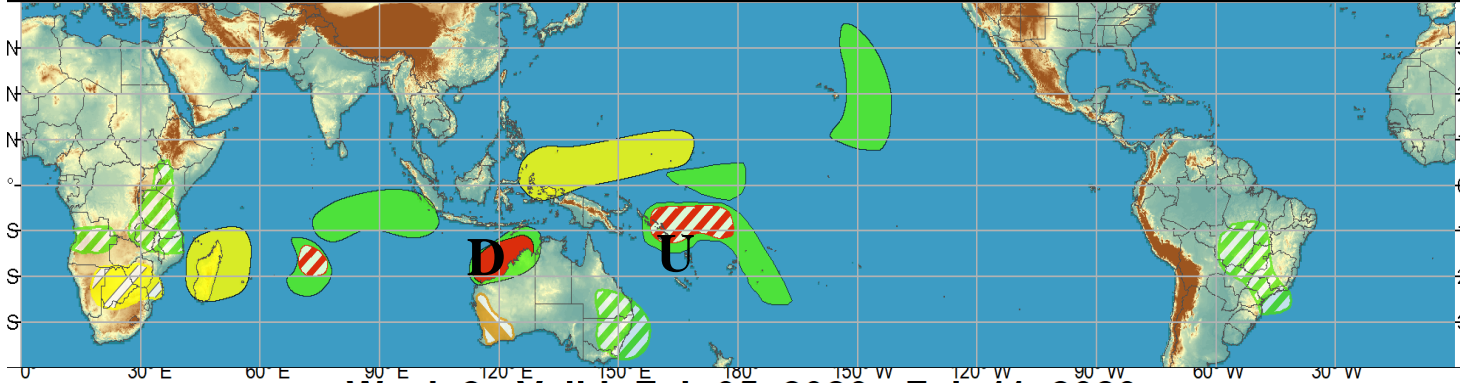
2/9-Present

Peak intensity: 75  
knots

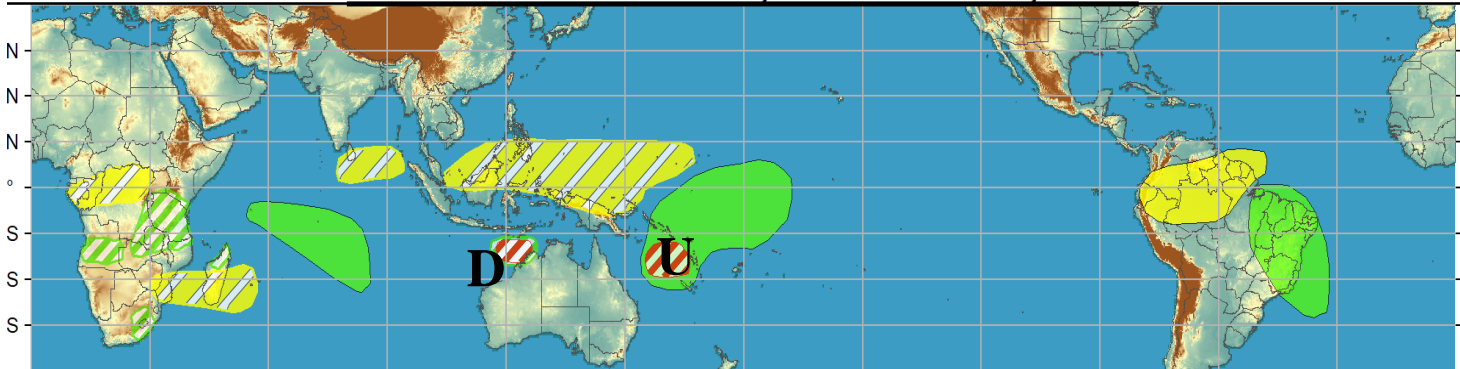
Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

Week 1 - Valid: Feb 05, 2020 - Feb 11, 2020

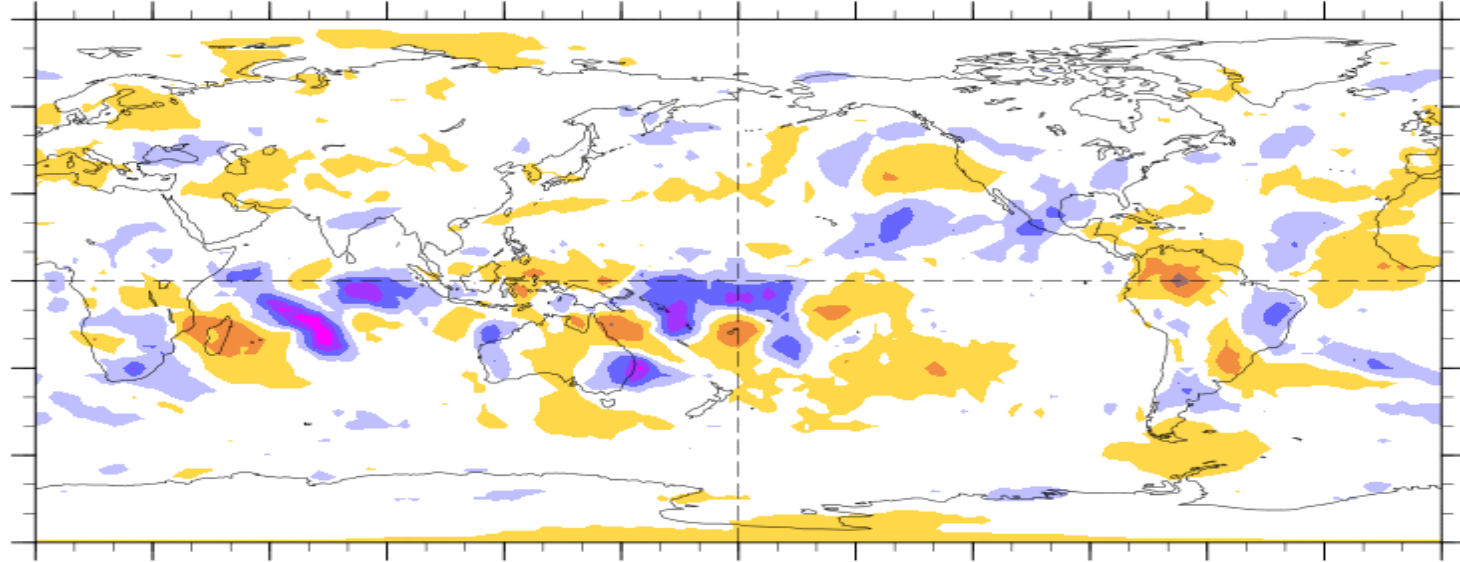


Week 2 - Valid: Feb 05, 2020 - Feb 11, 2020



7-Day Average OLR Anomaly

2020/02/03 - 2020/02/09



# Synopsis of Climate Modes

## **ENSO: (January 9, 2020 Update)**

*next update on 13<sup>th</sup> of Feb.!*

- ENSO Alert System Status: Not Active
- ENSO-neutral is favored through Northern Hemisphere spring (~60% chance), continuing through summer 2020 (~50% chance).

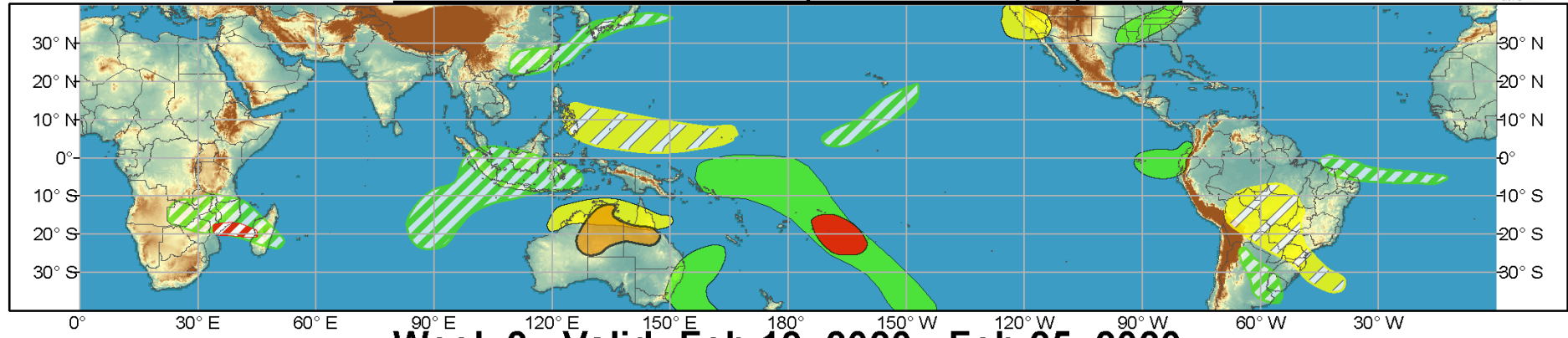
## **MJO and other subseasonal tropical variability:**

- Two eastward-propagating envelopes of enhanced convection are apparent: one over the eastern Indian Ocean and the other approaching the Date Line. How these evolve and if one comes to dominate will have major implications on the forecast.
- In general, the eastern center is forecast to strengthen and help to kill off the western convective center, but there is questions about how quickly this may occur.
- The eastern convective center is also forecast to trigger a westerly wind burst east of New Guinea in mid to late February. This has implications for building warm waters in the West Pacific for a possible El Niño event.
- A West Pacific Madden-Julian Oscillation is favored the next two weeks, despite questions of how robust the event will be and for any teleconnection responses.

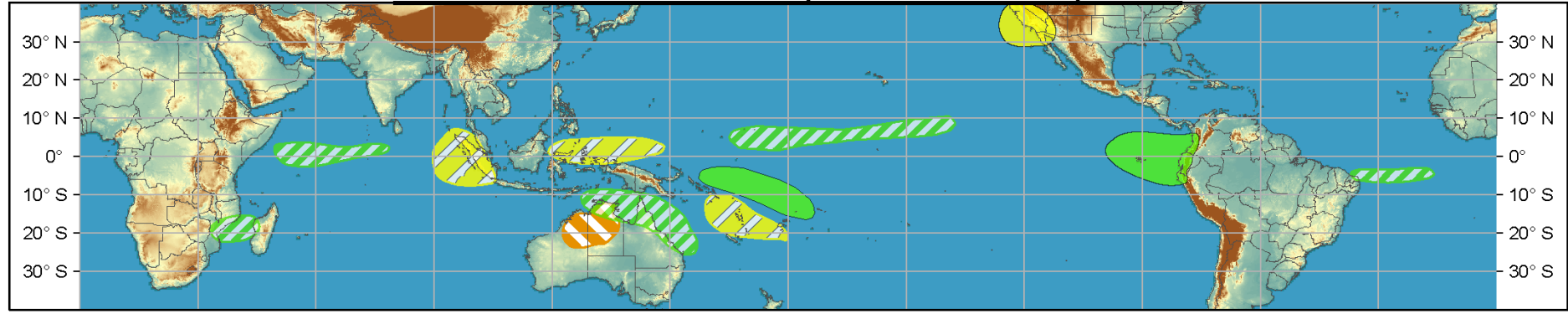


# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

## Week 1 - Valid: Feb 12, 2020 - Feb 18, 2020



## Week 2 - Valid: Feb 19, 2020 - Feb 25, 2020



Produced: 02/11/2020  
Forecaster: Harnos

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.

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

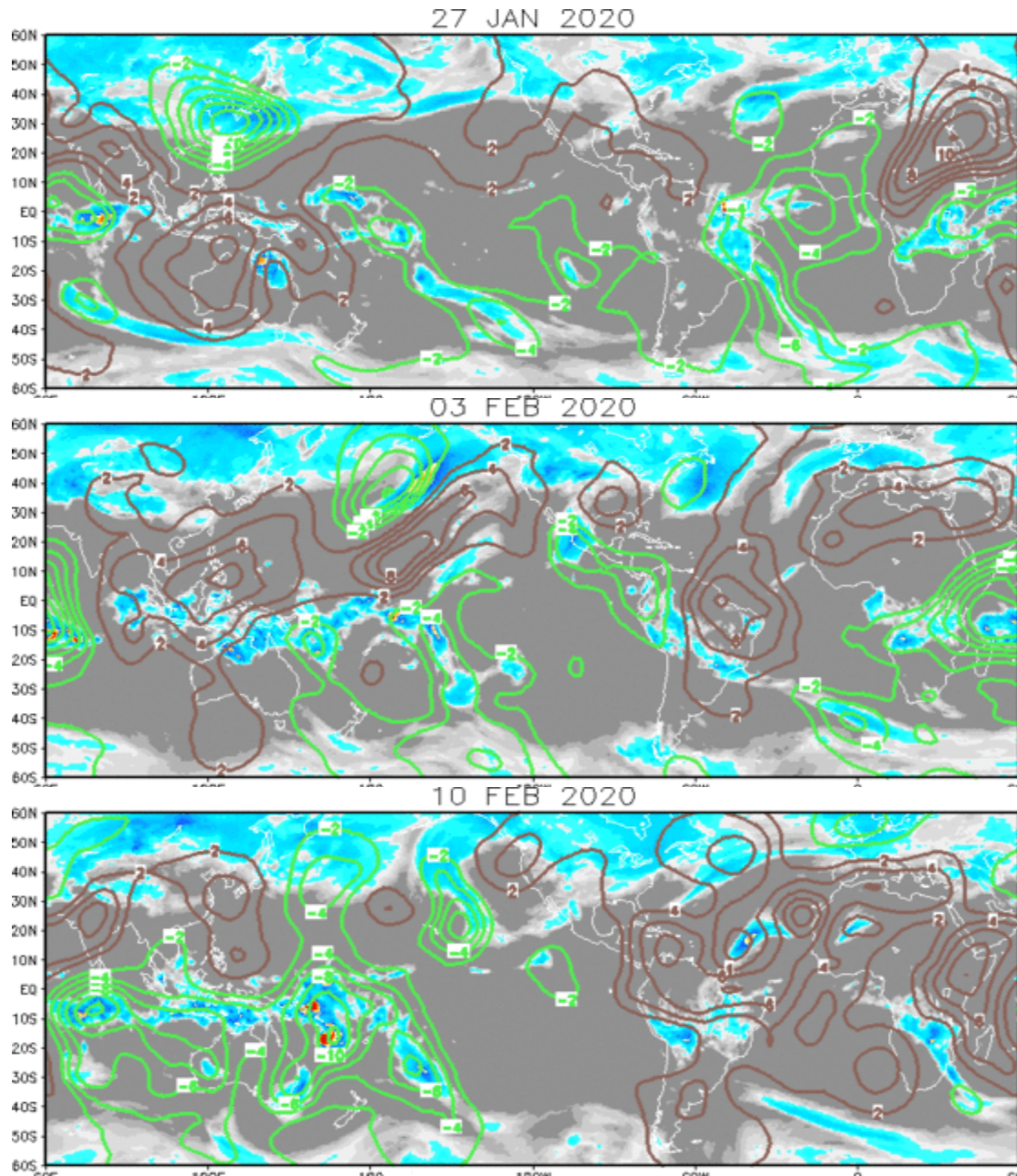
Green: Enhanced Divergence

Brown: Enhanced Convergence

Incoherent pattern, but an eastward moving envelope between the Atlantic and western Indian Ocean.

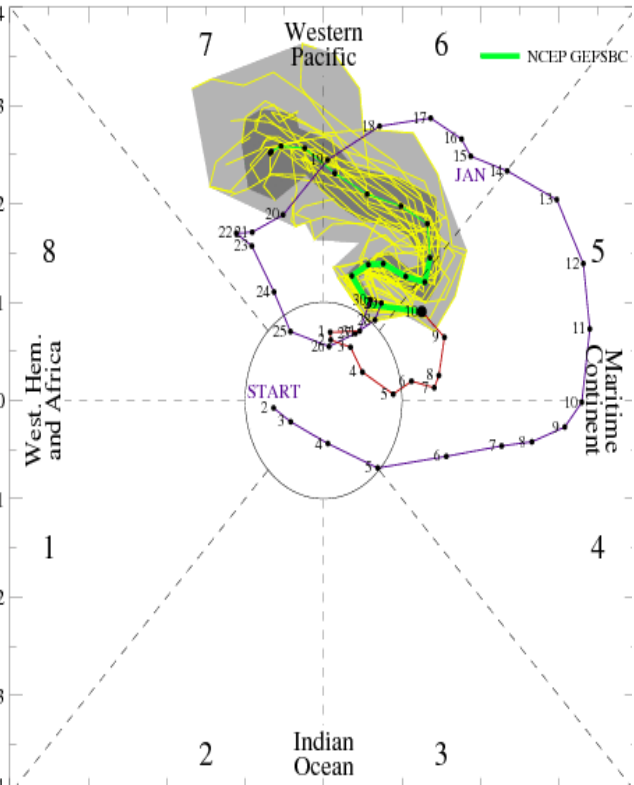
Eastward shift of the convective envelope to near 60E while it strengthens. A complicated perspective exists across the Pacific and western Hemisphere.

Continued eastward propagation and a wave-1 pattern emerges. Indicative of a robust MJO, but possibly 2 convective centers?



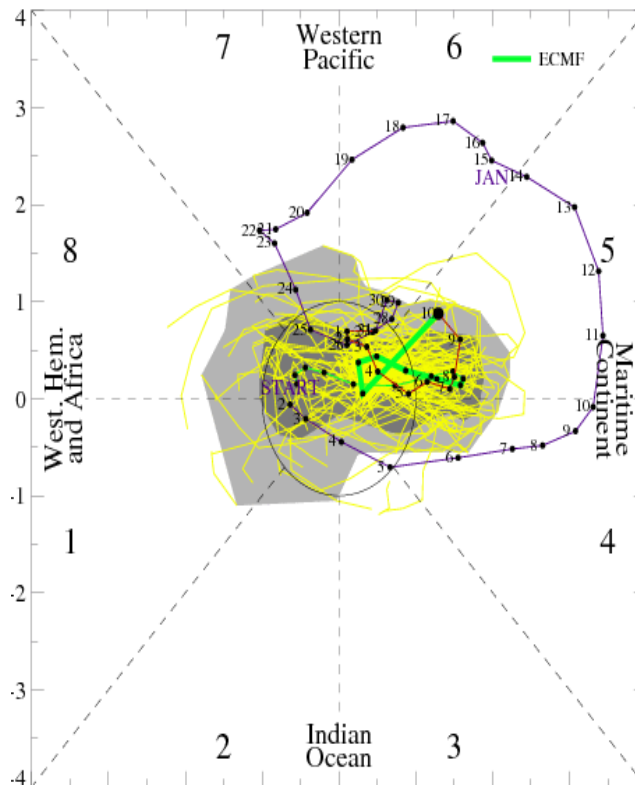
# MJO Observation/Forecast

[RMM1, RMM2] forecast for Feb-11-2020 to Feb-25-2020



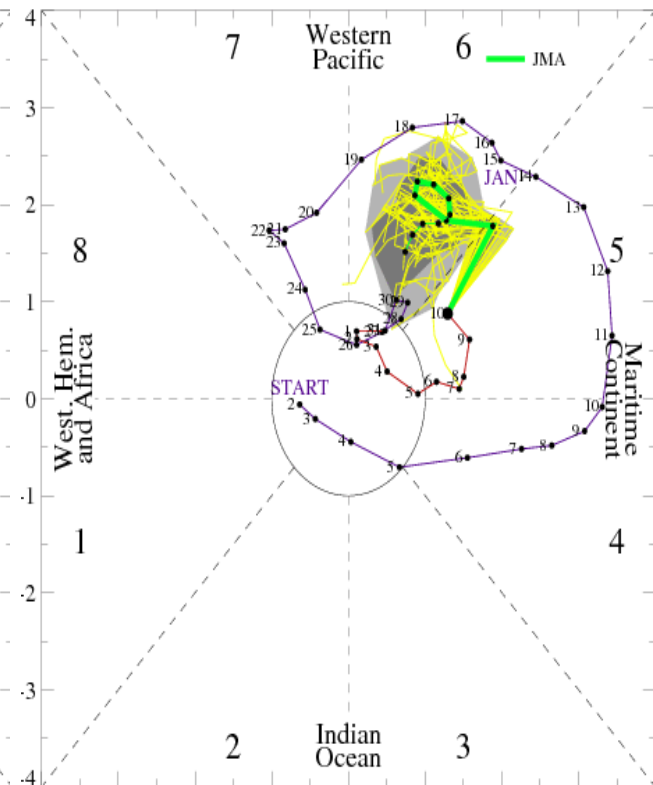
GEFS

MJO Index Forecast for 11Feb2020-25Feb2020



ECMWF

MJO Index Forecast for 11Feb2020-19Feb2020

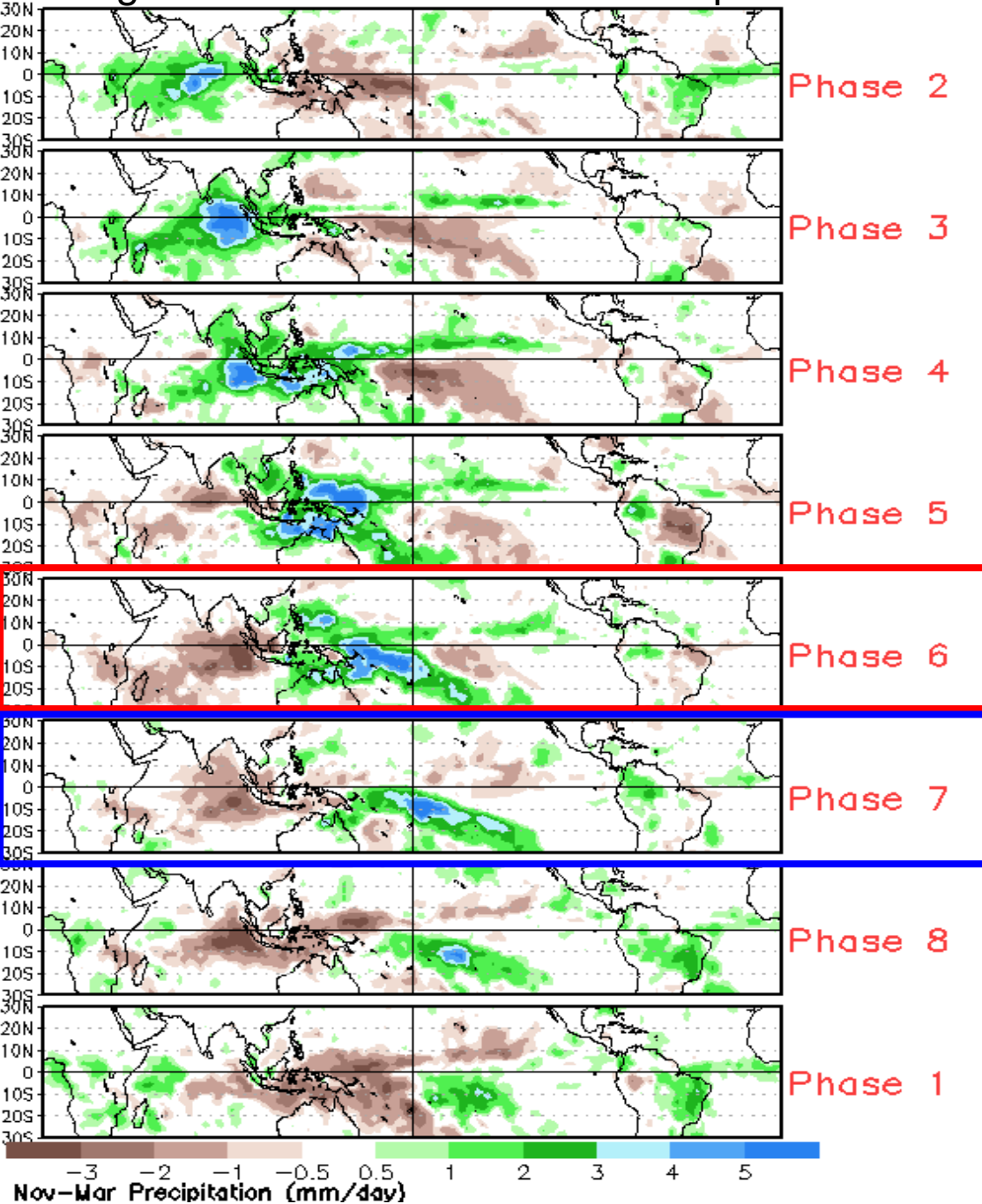


JMA

The GEFS and JMA models highlight the eastern portion of the enhanced convection over the Eastern Hemisphere, pushing it into the Pacific by mid-February.

The ECMWF lingers over the Maritime Continent, with the two convective centers of action over the Eastern Hemisphere being maintained much longer, and the western portion receiving greater emphasis.

# Average Conditions when the MJO is present



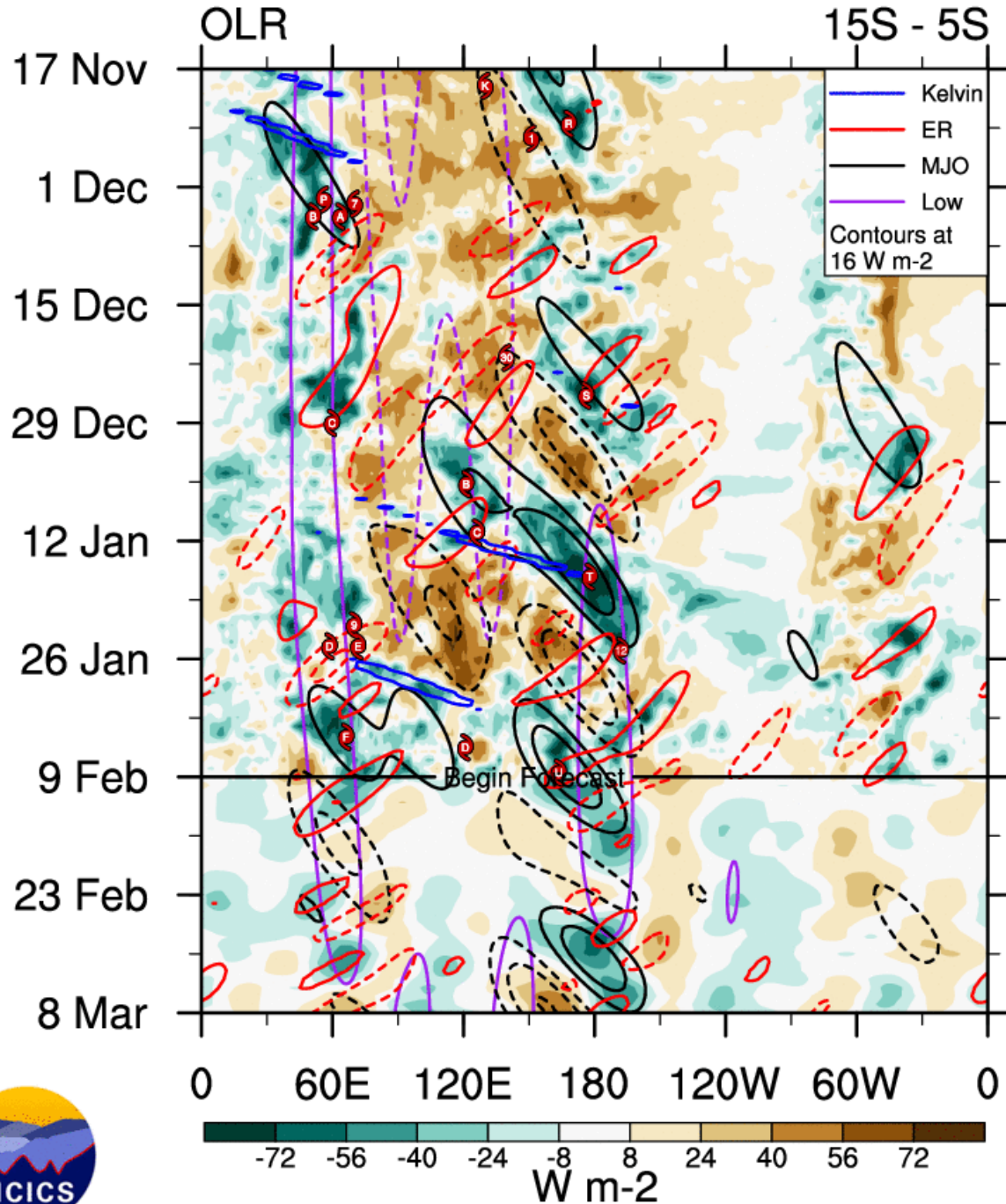
Week-1: Phase 6  
Week-2: Phase 7

CAVEAT: These panels are representative of robust MJO events.

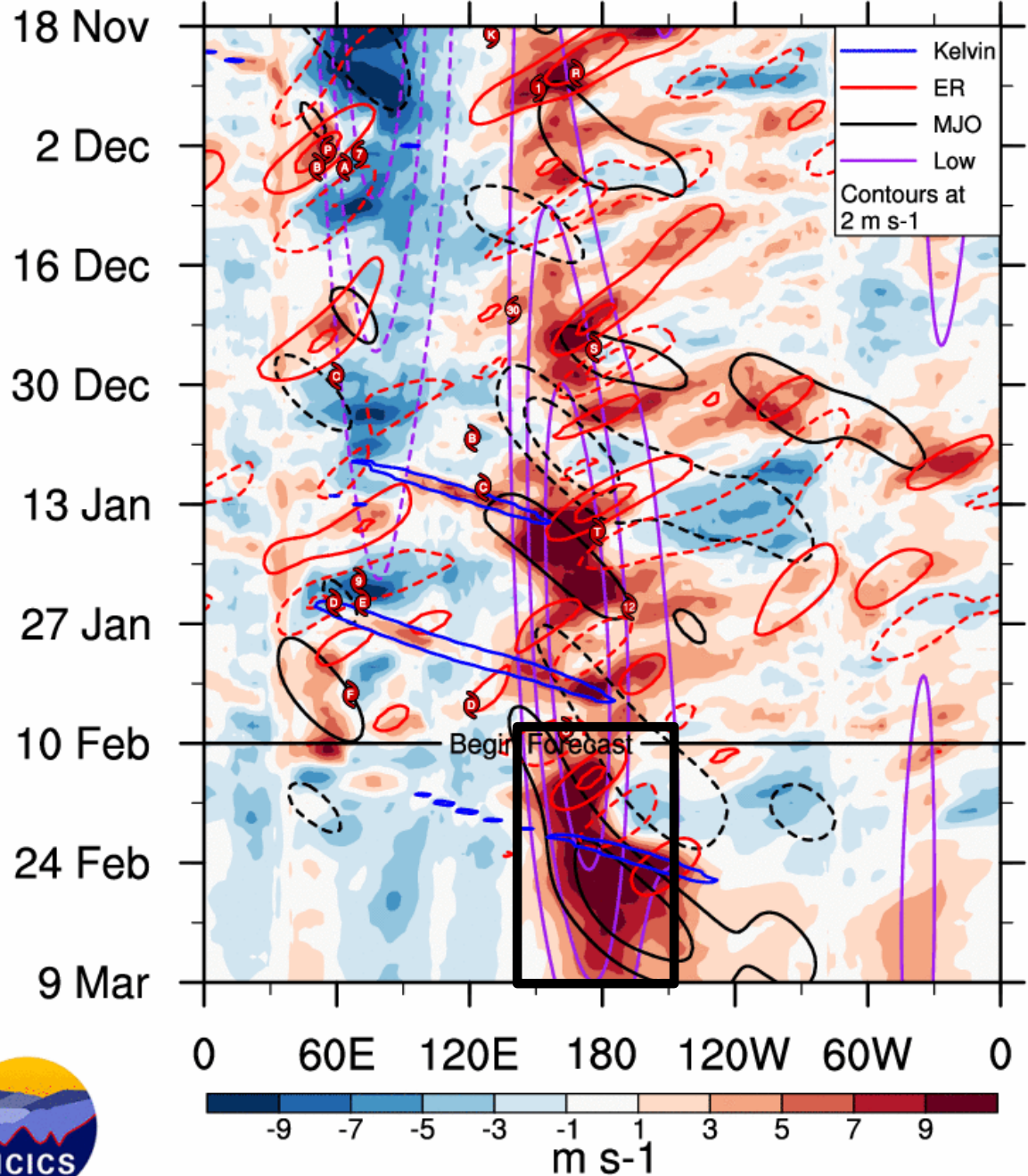
Two convective centers identified as the **MJO** over the Eastern Hemisphere.

**Low frequency** footprints over the western Indian Ocean and near the Date Line (El Niño?).

Periodic **Rossby wave** activity near and just east of the Date Line and over the Western Indian Ocean.







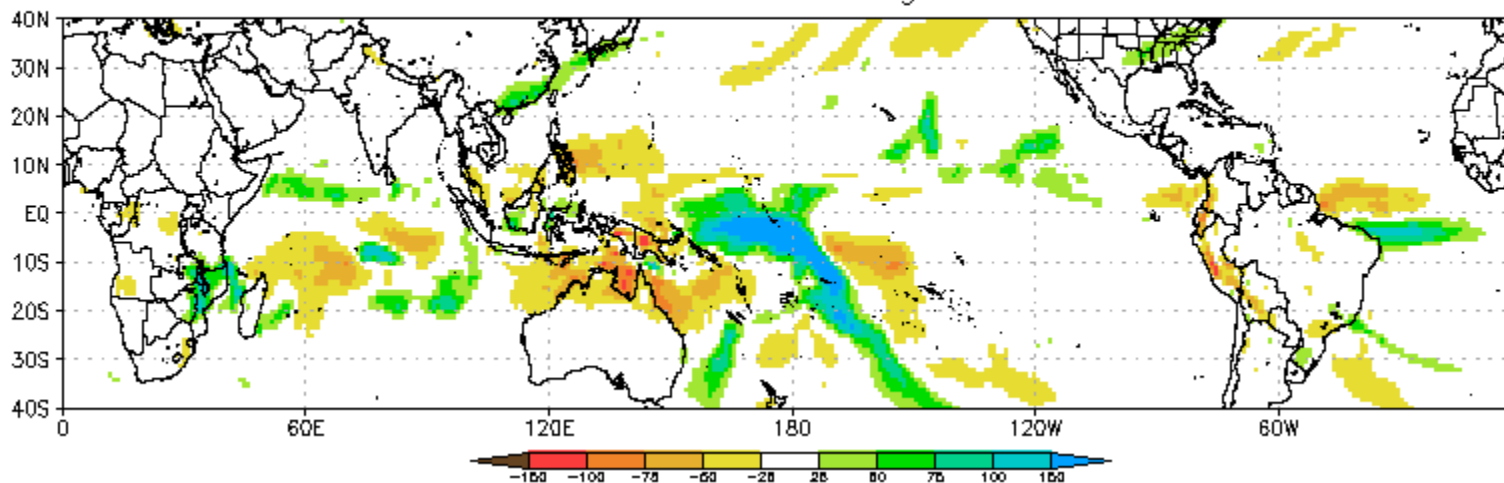
A westerly wind burst near the Date Line is featured among model guidance during mid- to late February (black box).

This could help trigger a downwelling oceanic Kelvin wave that reinforces warm water available for a possible El Niño event to work with.

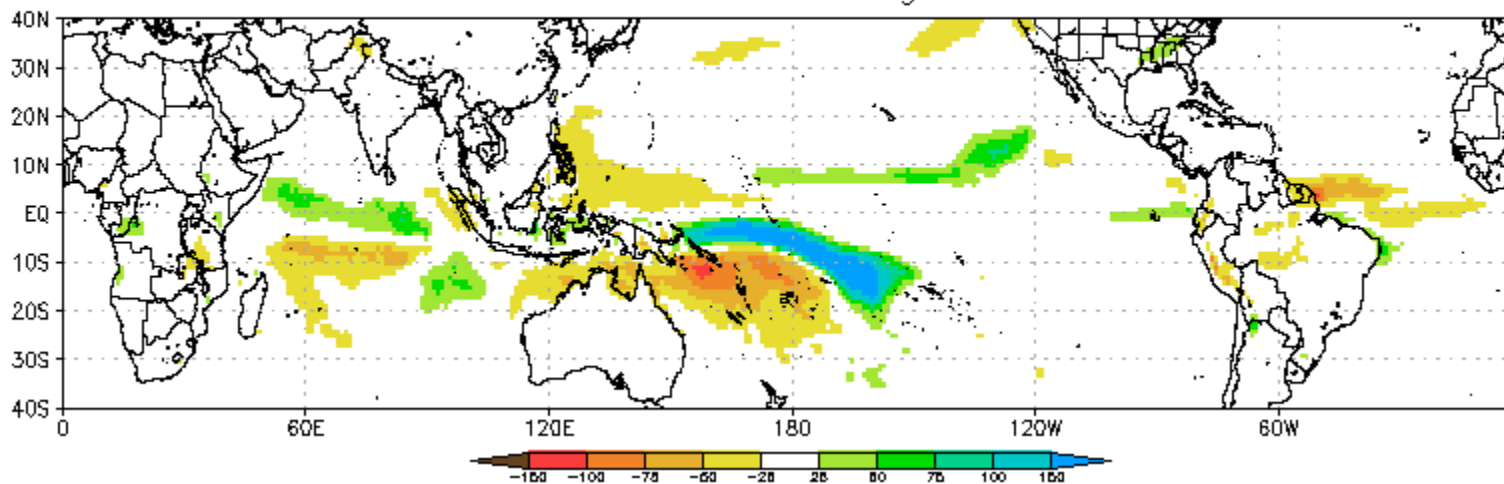
**Caution must be exercised,** as winds and oceanic conditions during March have limited skill in predicting the state of ENSO during the subsequent winter (see ENSO blog from March 2015).



CFS Precipitation Anomalies (mm) Issued 10Feb2020  
Week-1 Forecast Ending 18Feb2020

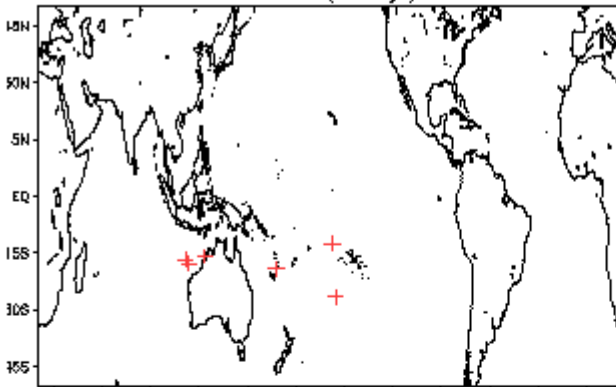


CFS Precipitation Anomalies (mm) Issued 10Feb2020  
Week-2 Forecast Ending 25Feb2020

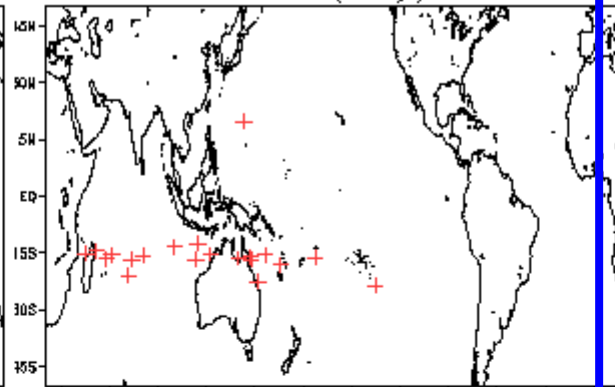


# February Tropical Storm Formation by MJO phase

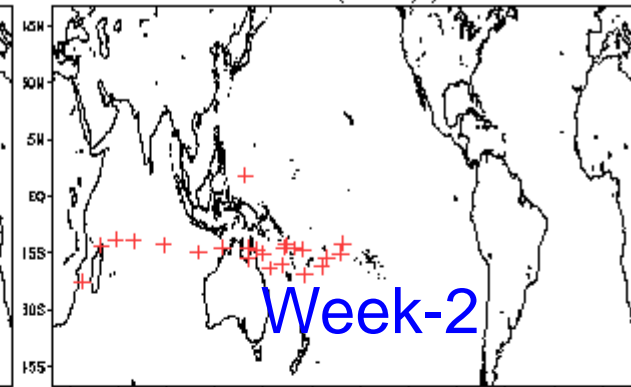
Phase 1 (41 days) 7 storms



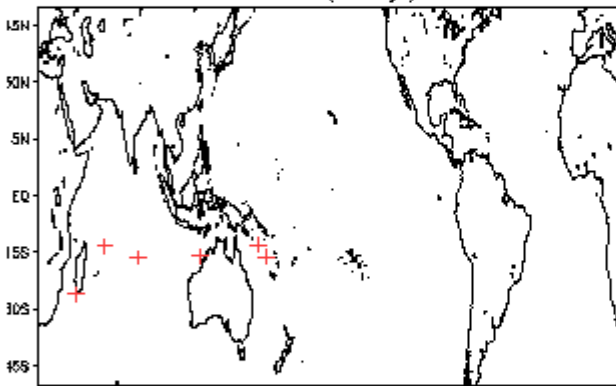
Phase 4 (92 days) 21 storms



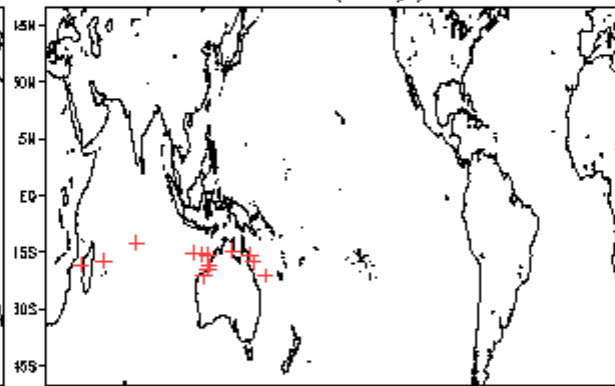
Phase 7 (125 days) 24 storms



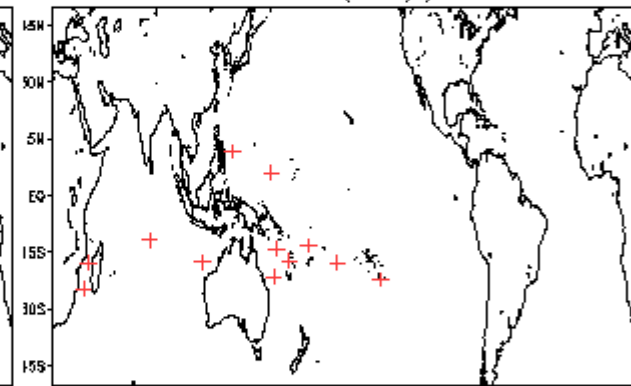
Phase 2 (51 days) 7 storms



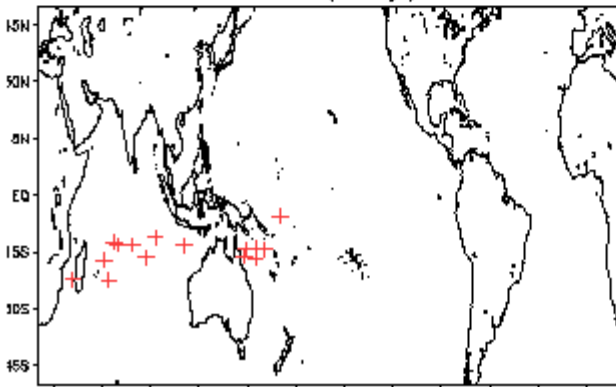
Phase 5 (70 days) 14 storms



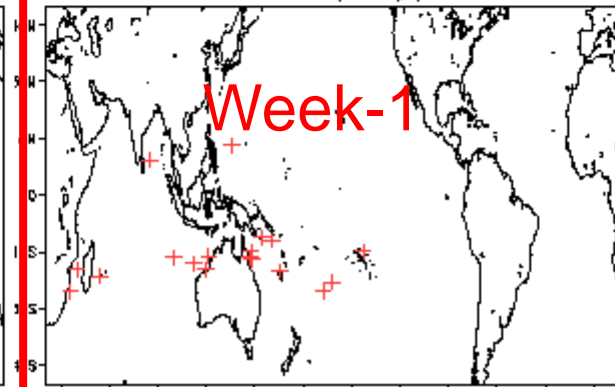
Phase 8 (84 days) 13 storms



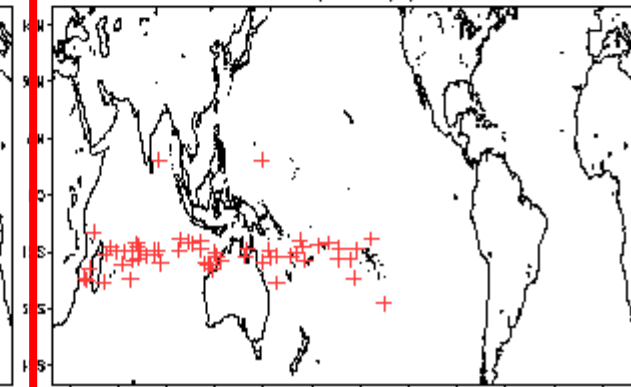
Phase 3 (89 days) 16 storms

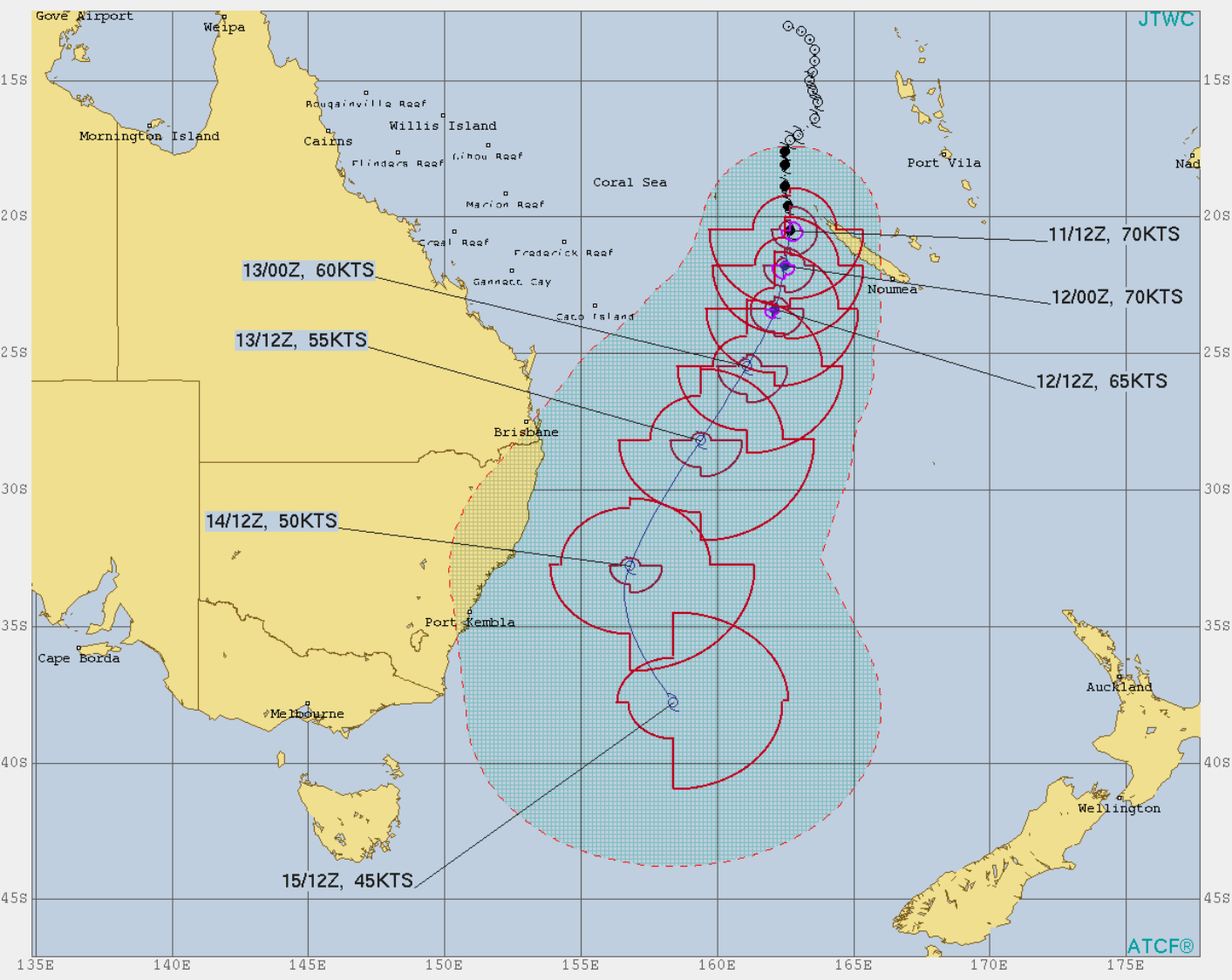


Phase 6 (92 days) 19 storms



Null (308 days) 60 storms





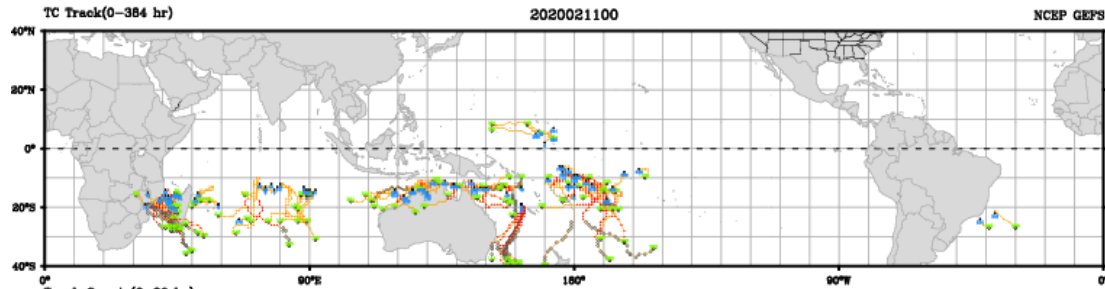
**TROPICAL CYCLONE 15P (UESI) WARNING #11**  
 WTPS31 PGTW 111500  
 111200Z POSIT: NEAR 20.5S 162.7E  
 MOVING 175 DEGREES TRUE AT 09 KNOTS  
 MAXIMUM SIGNIFICANT WAVE HEIGHT: 24 FEET  
 11/12Z, WINDS 070 KTS, GUSTS TO 085 KTS  
 12/00Z, WINDS 070 KTS, GUSTS TO 085 KTS  
 12/12Z, WINDS 065 KTS, GUSTS TO 080 KTS  
 13/00Z, WINDS 060 KTS, GUSTS TO 075 KTS  
 13/12Z, WINDS 055 KTS, GUSTS TO 070 KTS  
 14/12Z, WINDS 050 KTS, GUSTS TO 065 KTS  
 15/12Z, WINDS 045 KTS, GUSTS TO 055 KTS

CPA TO:	NM	DTG
NOUMEA	200	11/21Z
BRISBANE	311	13/22Z
SYDNEY	269	14/18Z

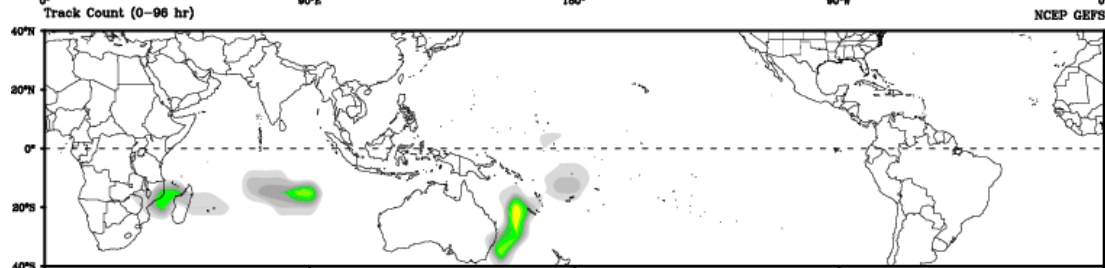
BEARING AND DISTANCE	DIR	DIST (NM)	TAU (HRS)
NOUMEA	296	213	0
PORT VILA	241	359	0
LUGANVILLE	219	391	0

- LESS THAN 34 KNOTS
- 34-63 KNOTS
- MORE THAN 63 KNOTS
- FORECAST CYCLONE TRACK
- PAST CYCLONE TRACK
- DENOTES 34 KNOT WIND DANGER AREA/USN SHIP AVOIDANCE AREA
- FORECAST 34/50/64 KNOT WIND RADII (WINDS VALID OVER OPEN OCEAN ONLY)

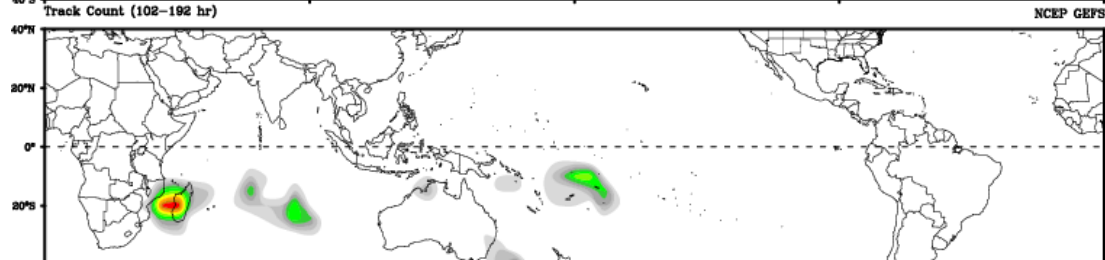
ATCF®



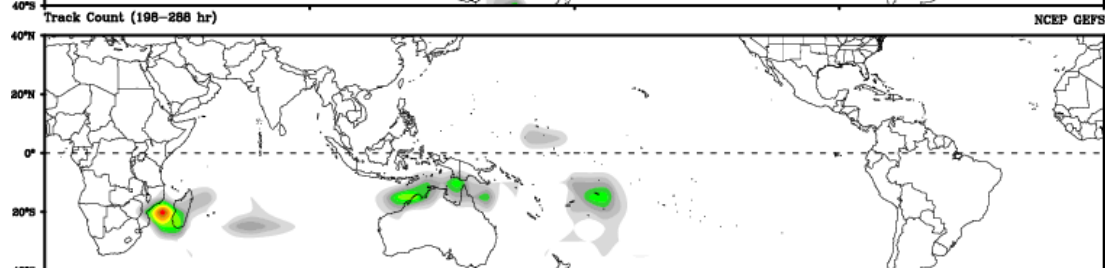
Days 1-4



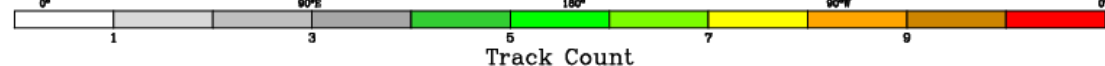
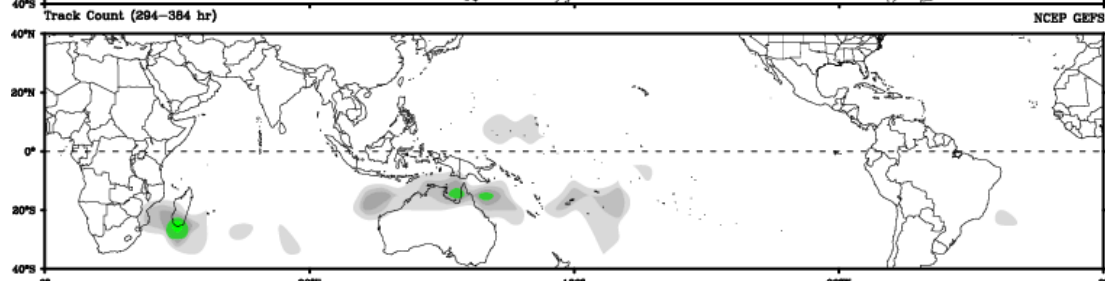
Day 5-8



Day 9-12

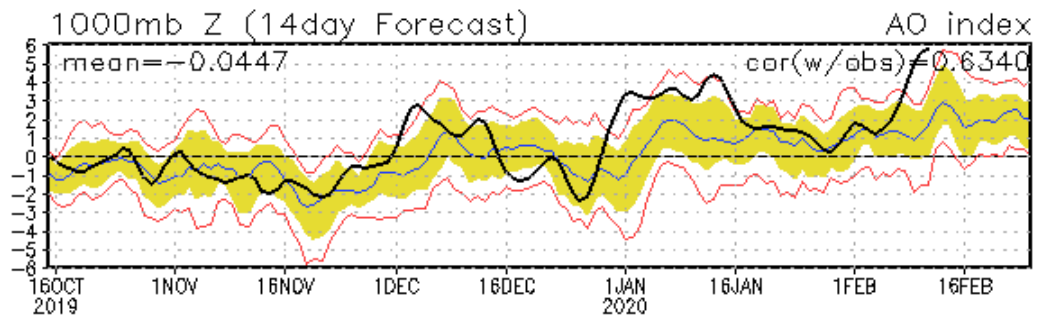
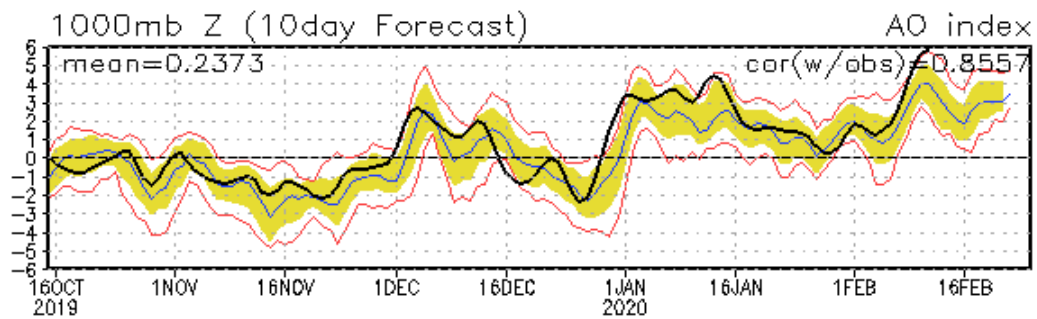
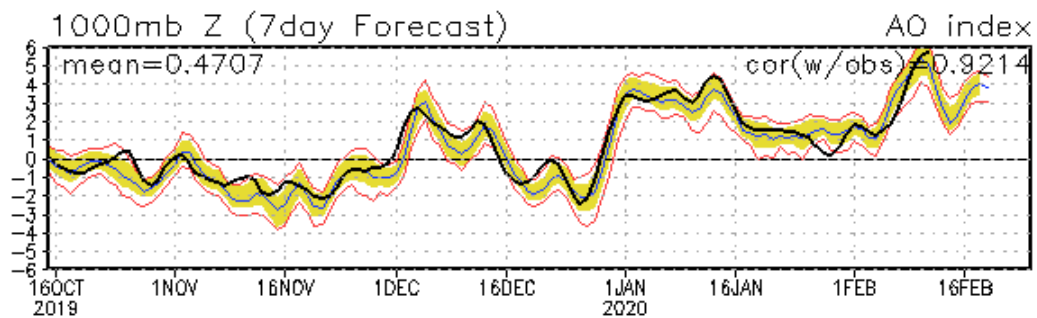
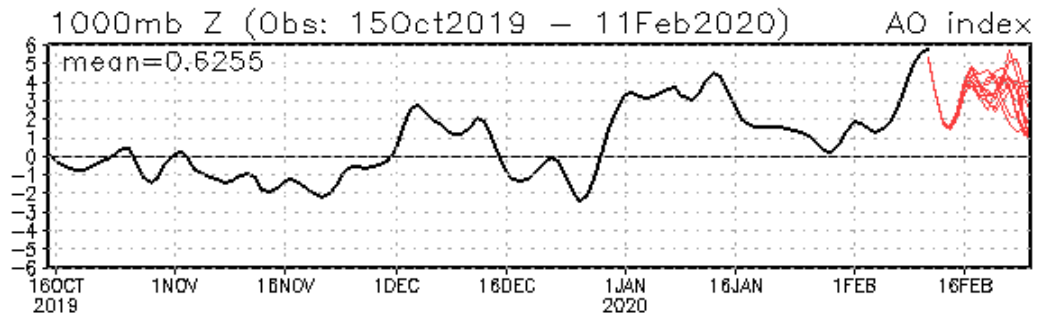


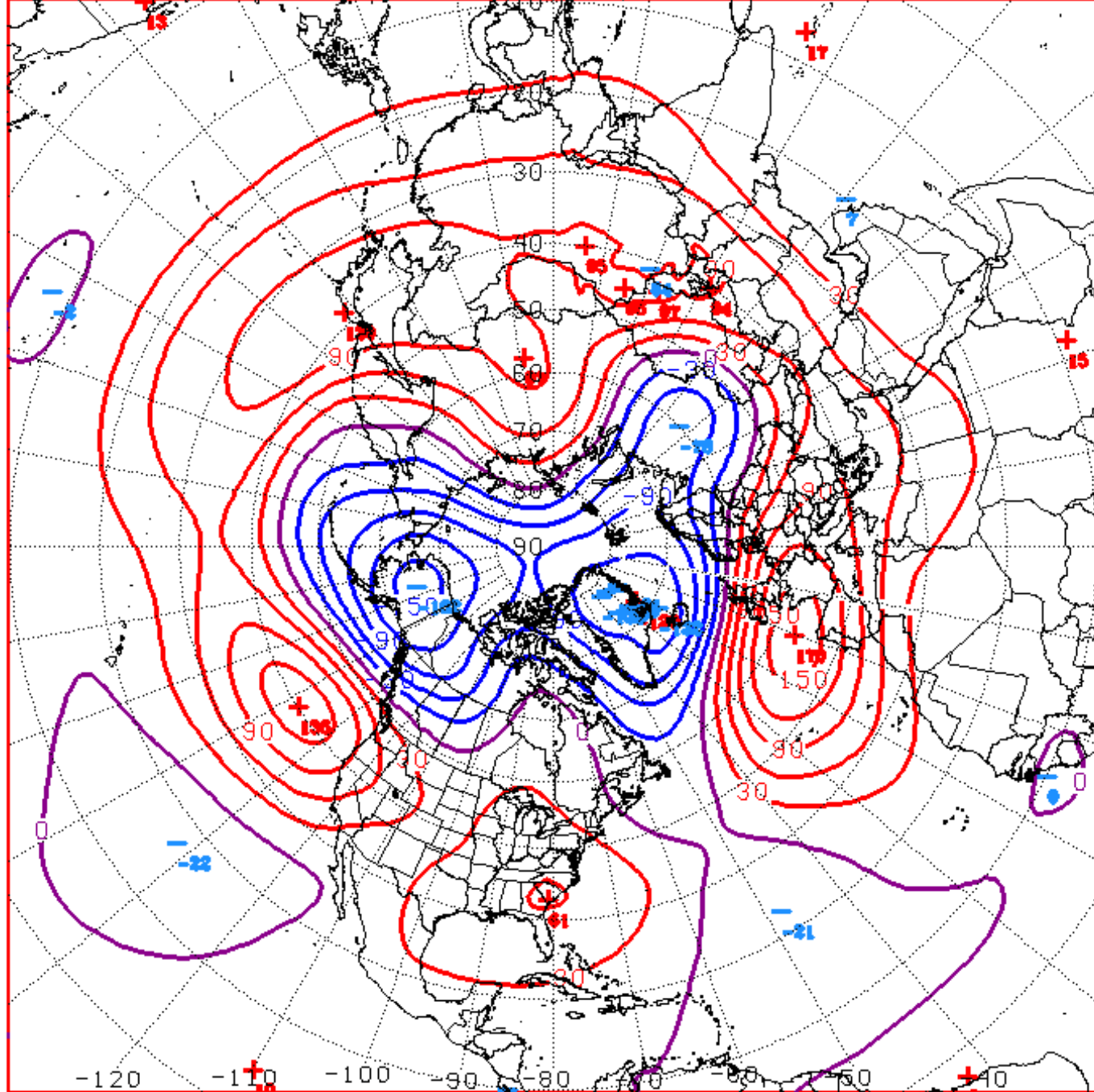
Day 13-15



# Connections to U.S. Impacts

## AO: Observed & ENSM forecasts

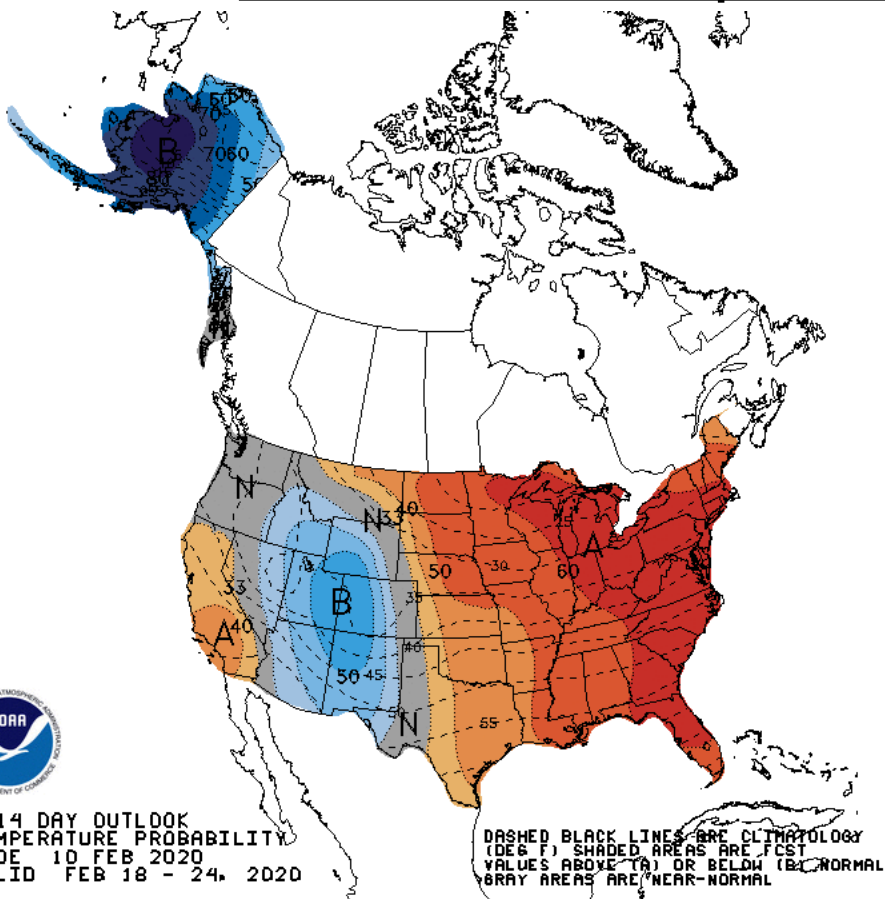




D+11 500 MB ANOMALIES FROM ALZ ENSM  
 CPC MAP MADE FEB 11 2020 1317 UTC CNTD FEB 22 2020

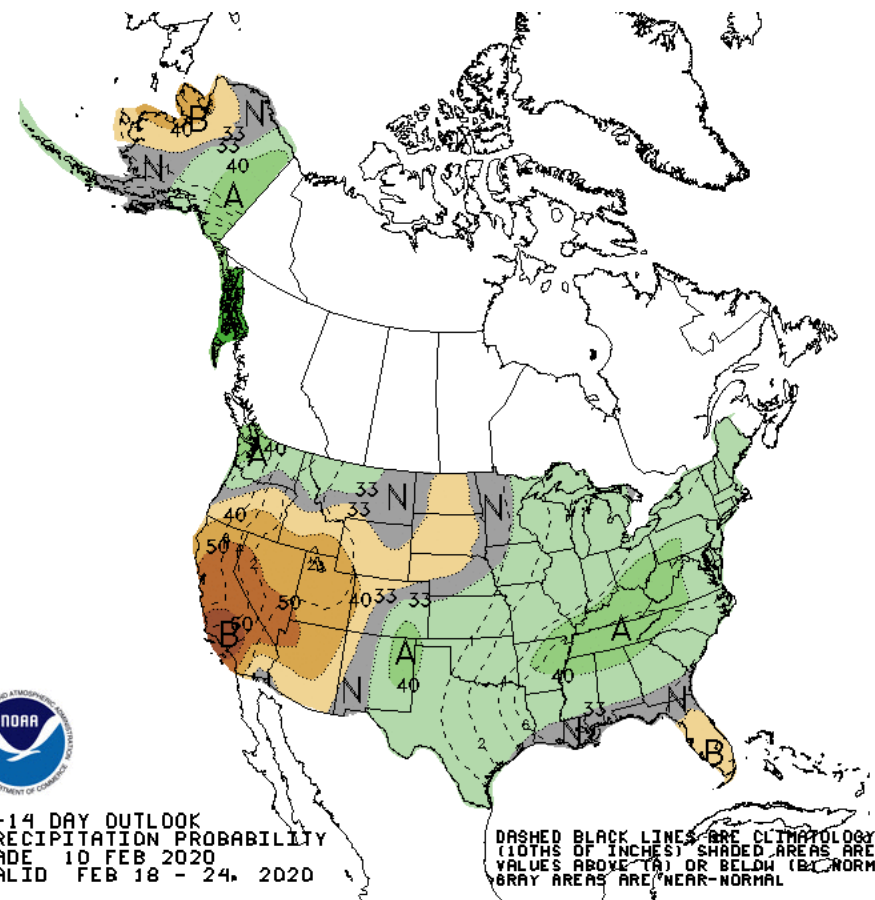
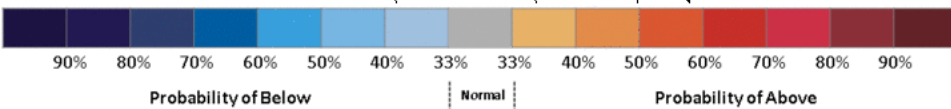


# Week 2 – Temperature and Precipitation



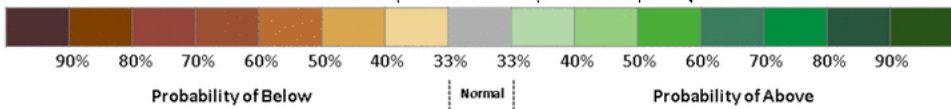
8-14 DAY OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 10 FEB 2020  
VALID FEB 18 - 24, 2020

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 10 FEB 2020  
VALID FEB 18 - 24, 2020

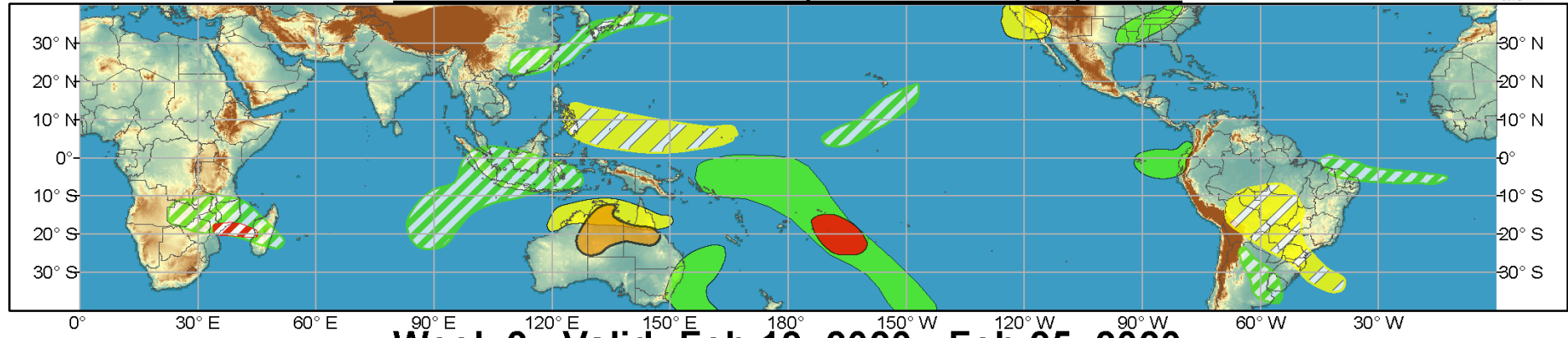
DASHED BLACK LINES ARE CLIMATOLOGY (TENTHS OF INCHES). SHADED AREAS ARE FCST VALUES ABOVE (A) OR BELOW (B) NORMAL. GRAY AREAS ARE NEAR-NORMAL.



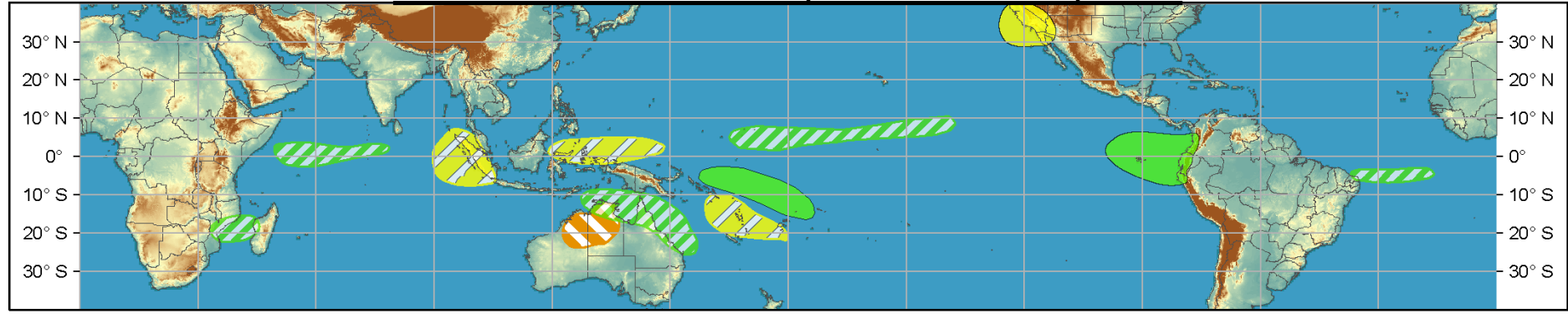


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Produced: 02/11/2020  
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