

Global Tropics Hazards And Benefits Outlook

2/25/2020

Kyle MacRitchie

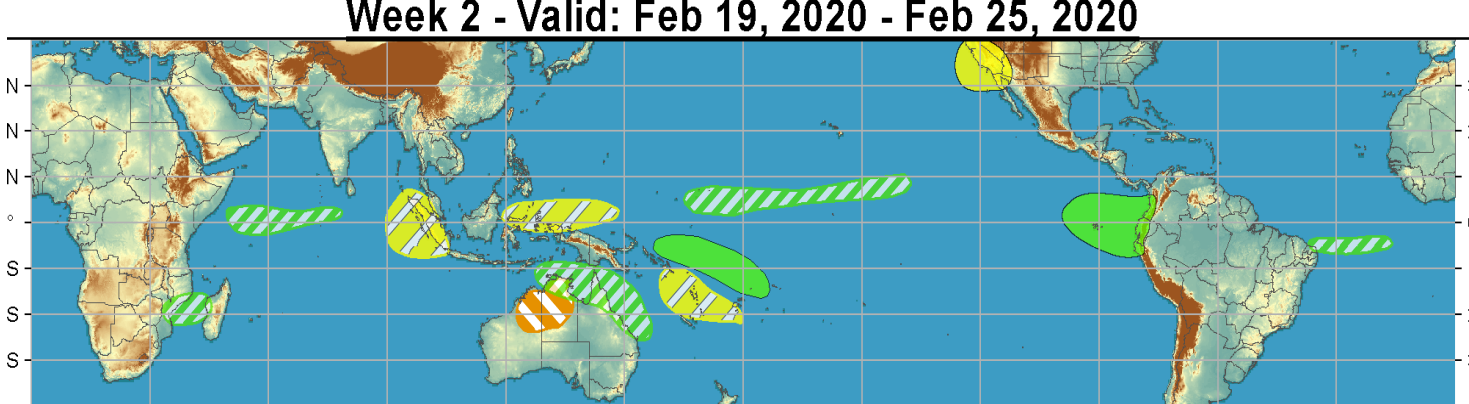
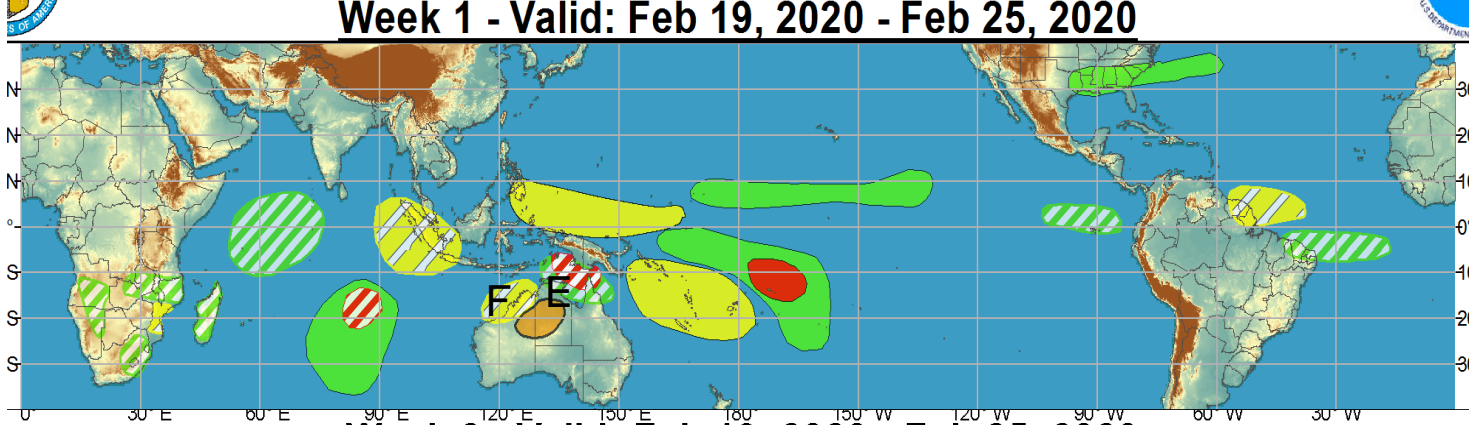
Outline

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

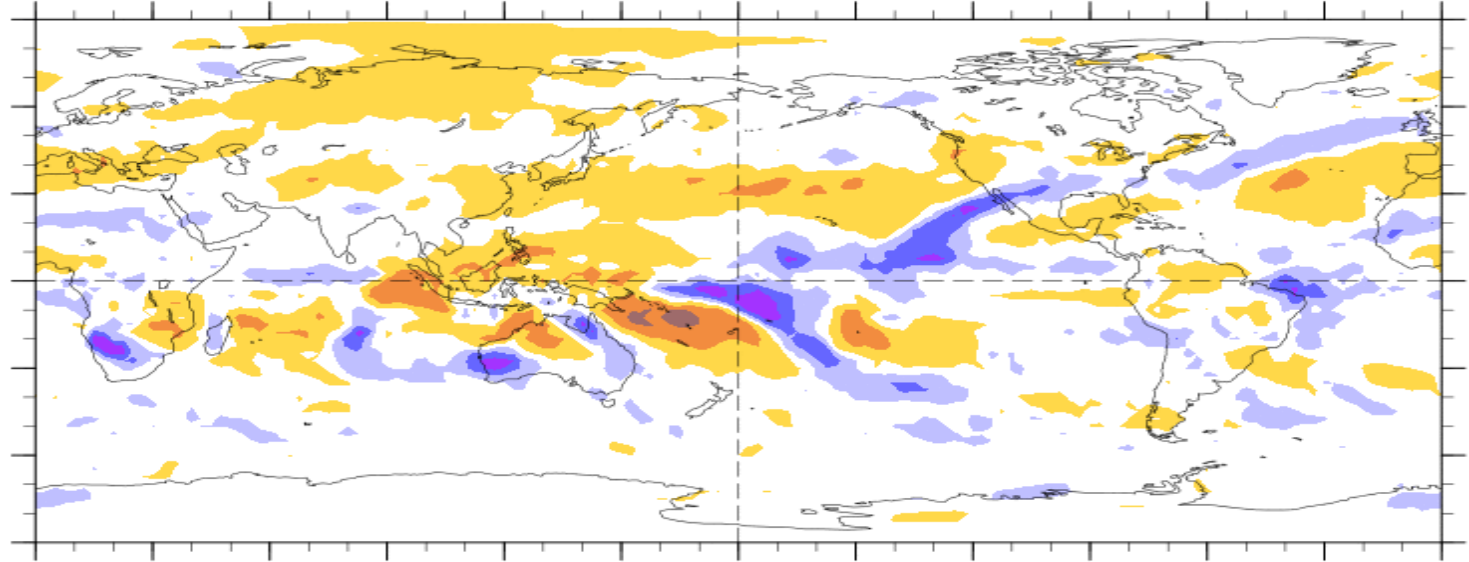
Outlook Review

TC Ferdinand –
2/23

TC Esther - 2/23



7-Day Average OLR Anomaly 2020/02/17 - 2020/02/23



Cool shading
More clouds/rain

Warm shading
Less clouds/rain

Synopsis of Climate Modes

ENSO: (February 13, 2020 Update)

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

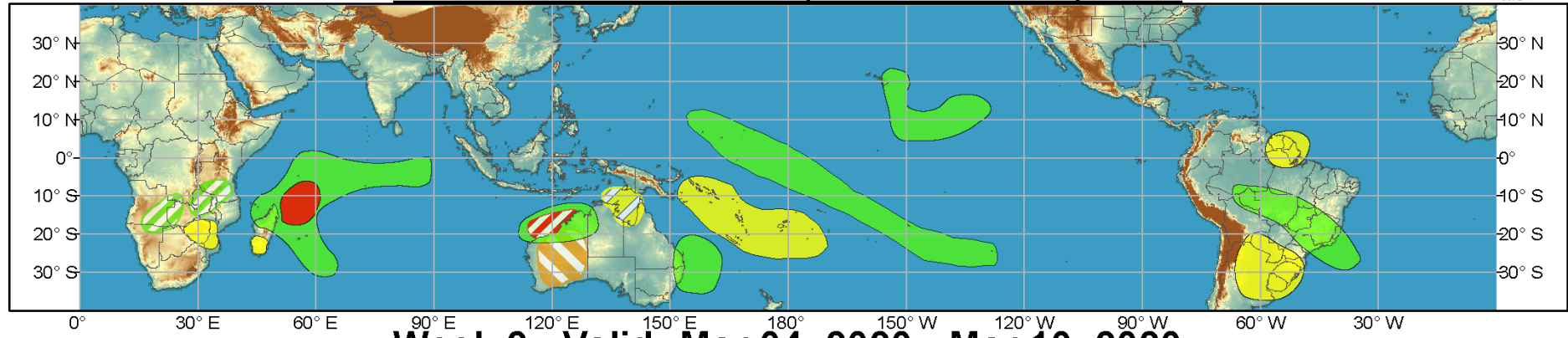
MJO and other subseasonal tropical variability:

- The MJO is weak in an RMM sense.
- There is a weak, but coherent, upper-level MJO signal, evident in zonal wind and OLR fields.
- Models indicate that the MJO may strengthen during the end of Week-1/early Week-2 over the Maritime Continent.
- There is also important atmospheric Kelvin and equatorial Rossby wave activity over the western Indian Ocean.

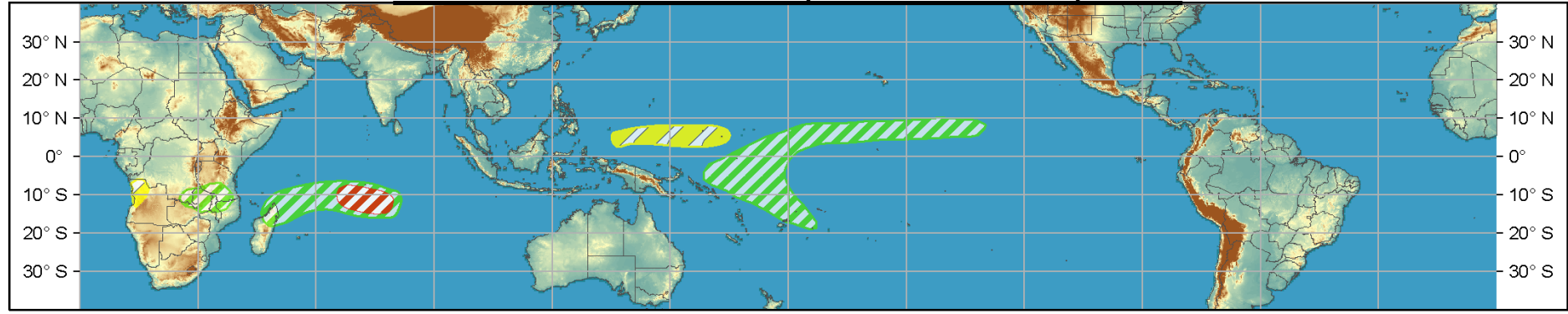


Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Feb 26, 2020 - Mar 03, 2020



Week 2 - Valid: Mar 04, 2020 - Mar 10, 2020



Produced: 02/25/2020

Forecaster: MacRitchie

| 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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IR Satellite & 200-hpa Velocity Potential Anomalies

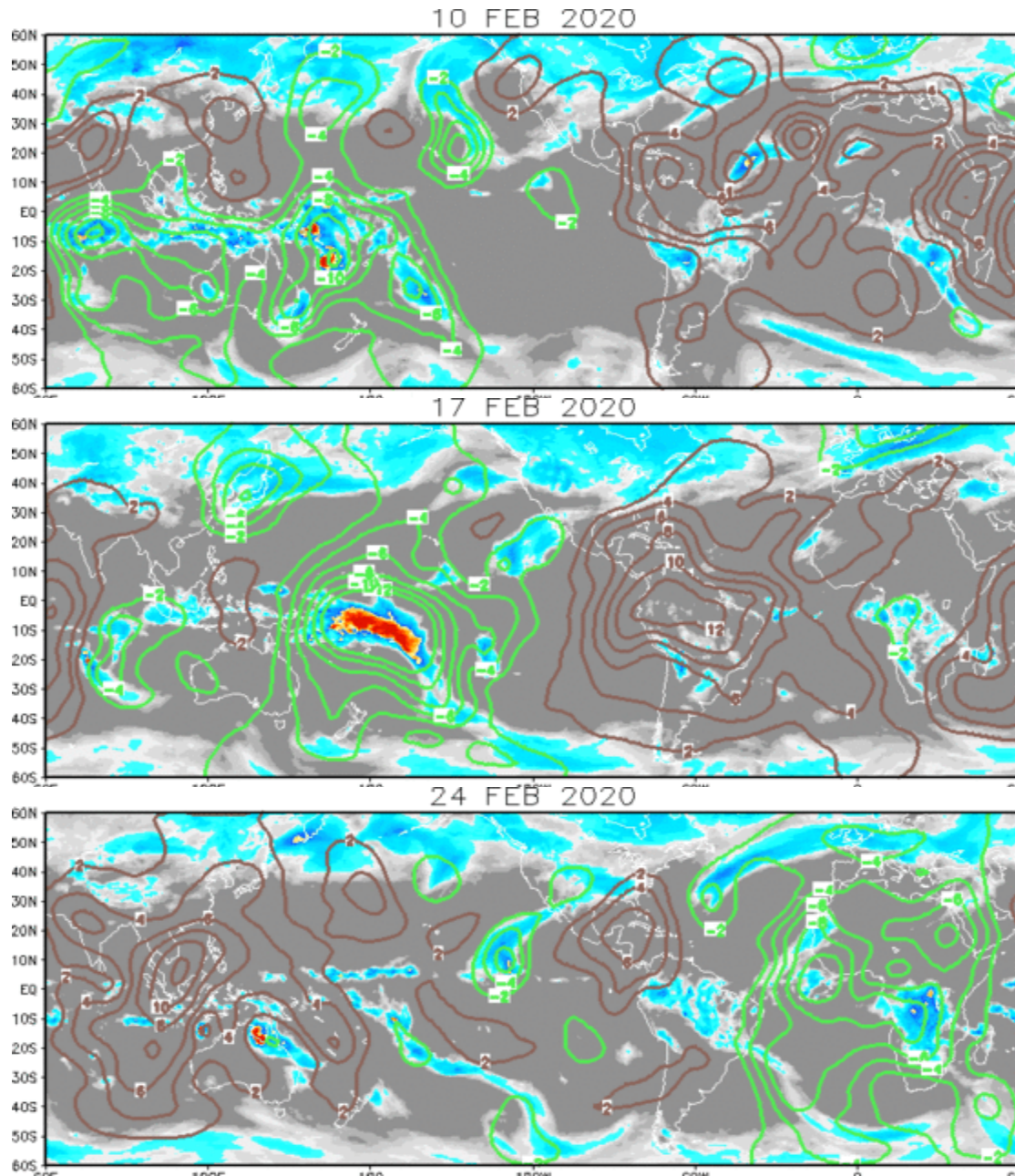
Green: Enhanced Divergence

Brown: Enhanced Convergence

Wave-1 pattern anchored by convection in the Indian Ocean and north of Australia.

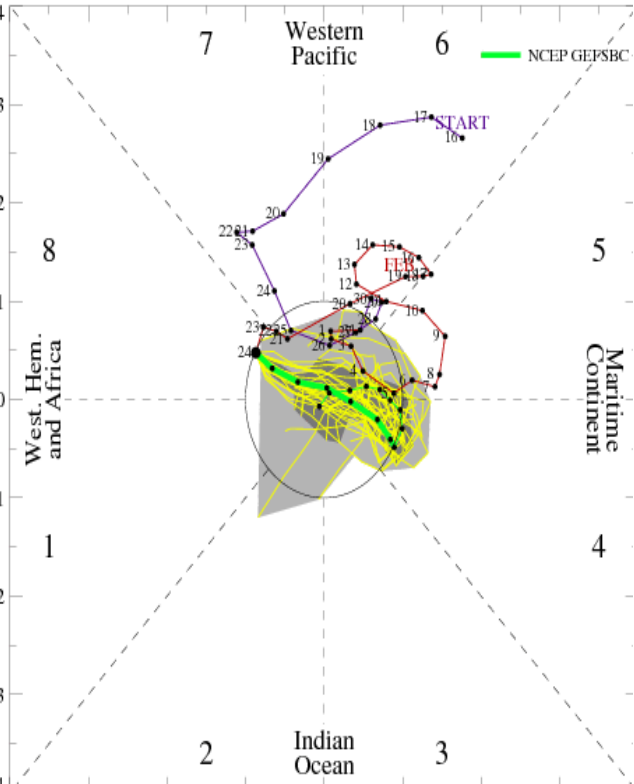
The enhanced convection spreads eastward over the SPCZ. Suppressed convection doesn't move much.

Enhanced convection over the western Indian Ocean, associated with tropical waves, helps to anchor the Wave-1 pattern.



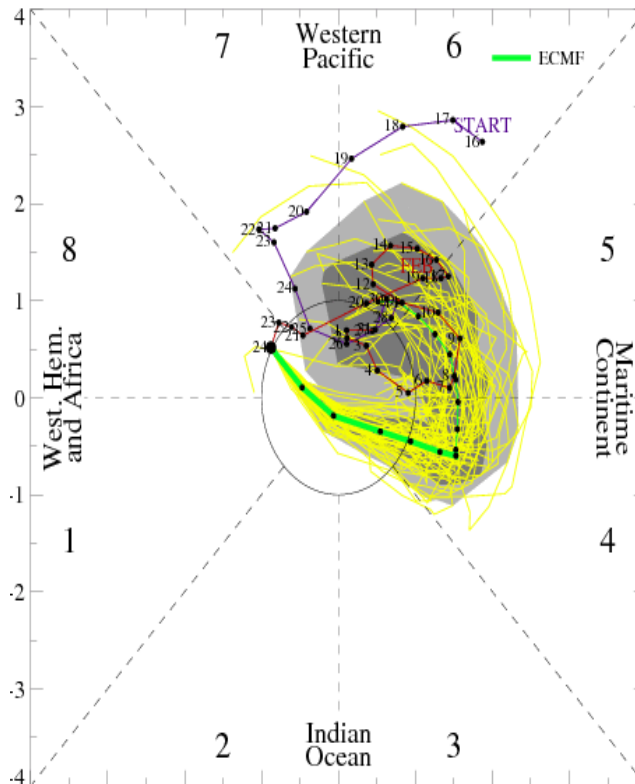
MJO Observation/Forecast

[RMM1, RMM2] forecast for Feb-25-2020 to Mar-10-2020



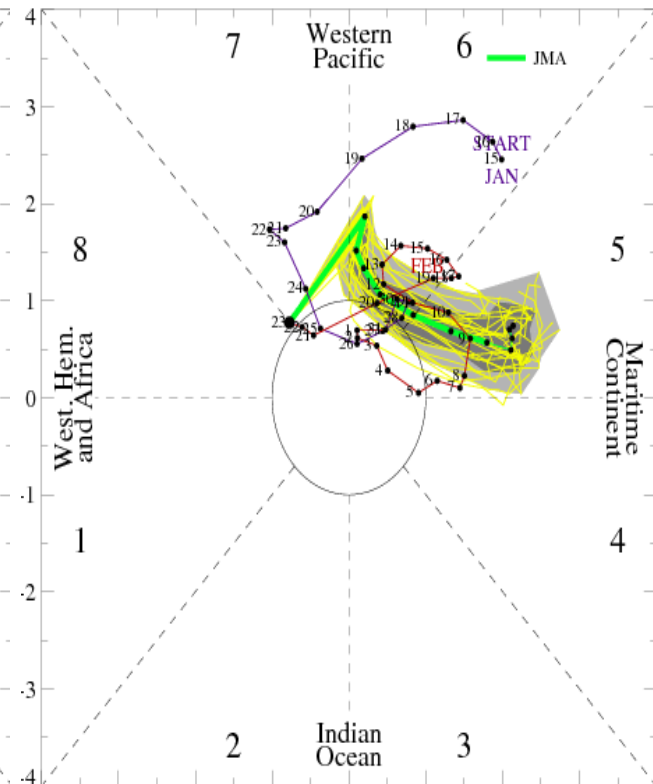
GEFS

MJO Index Forecast for 25Feb2020-10Mar2020



ECMWF

MJO Index Forecast for 24Feb2020-03Mar2020

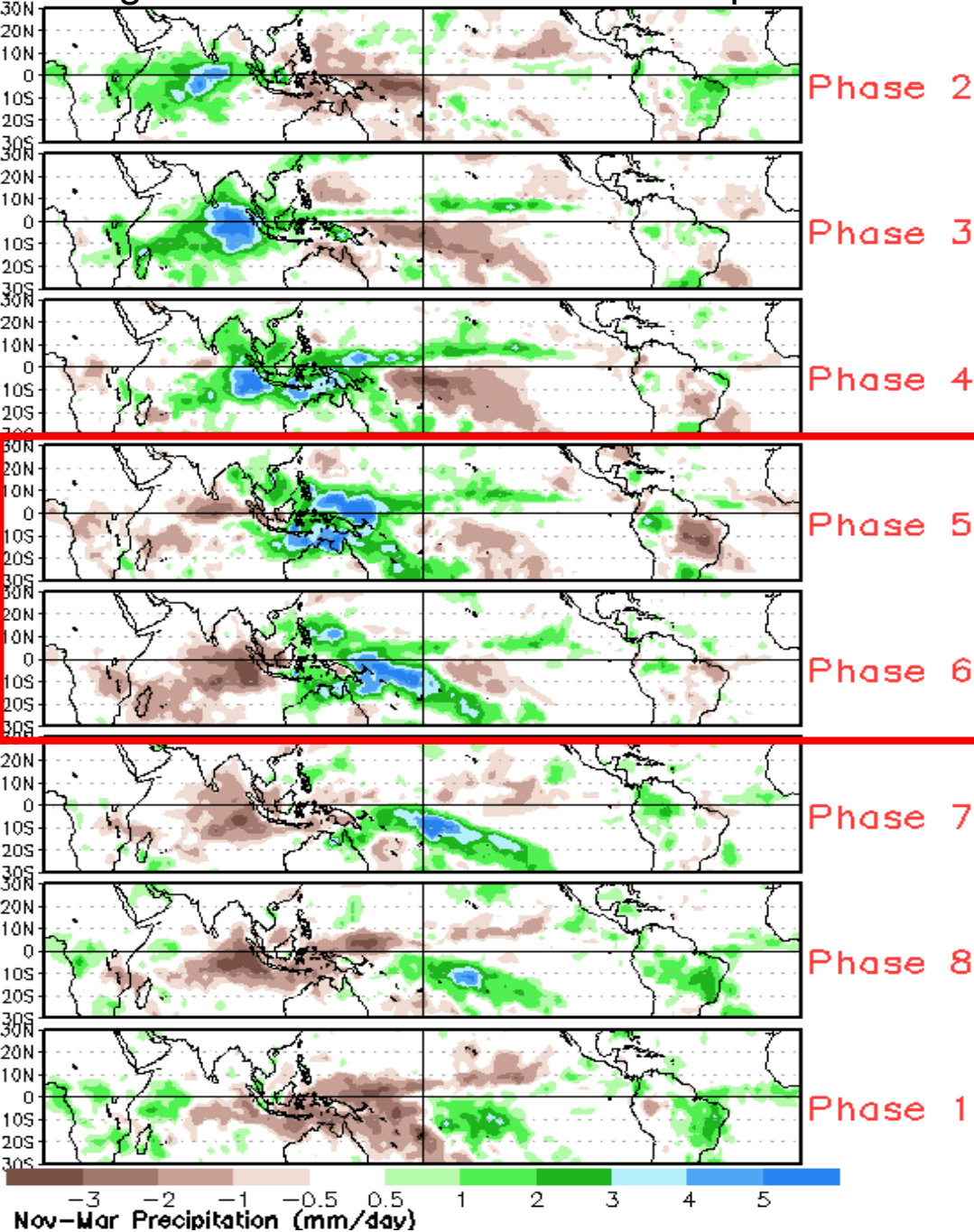


JMA

The ECMWF forecasts the most coherent MJO to develop during late Week-1/early Week-2.

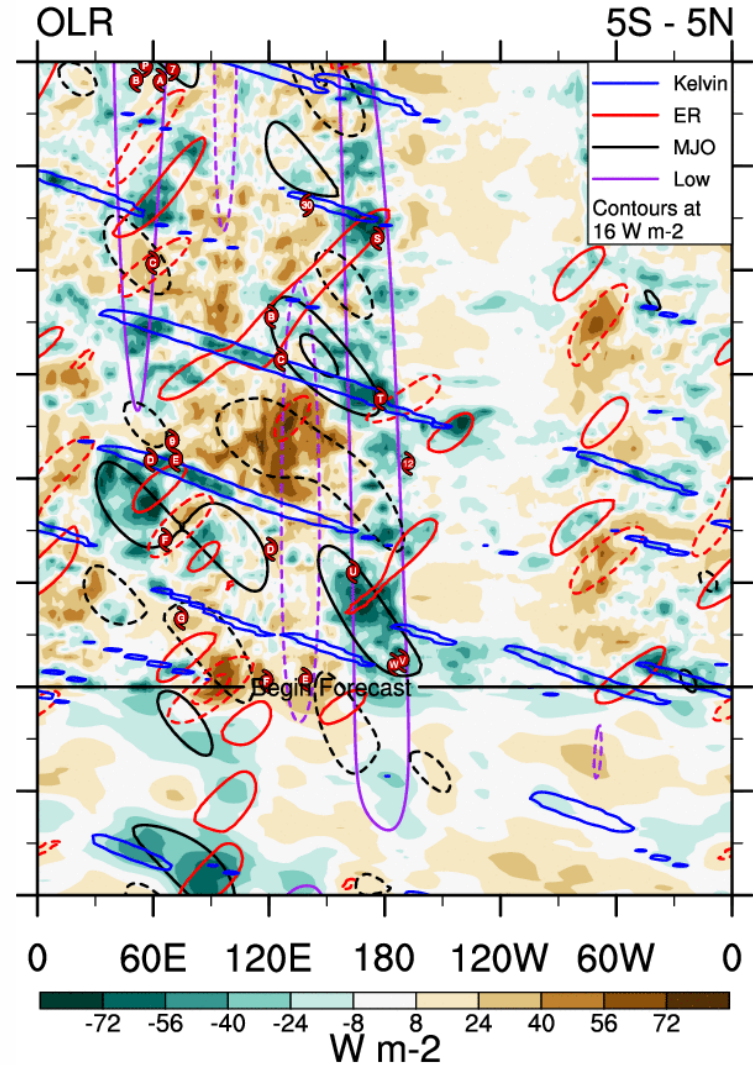
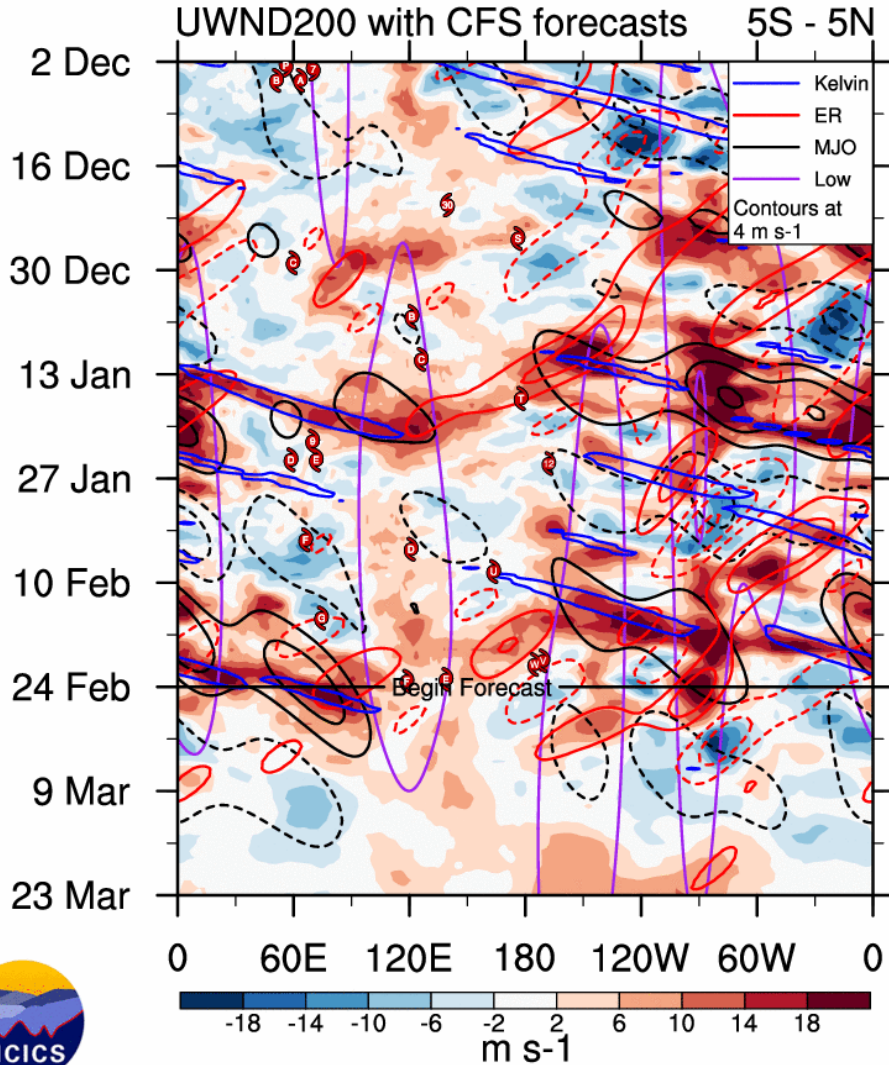
The GEFS and JMA have somewhat unconventional forecasts, but both hint at the fact that enhanced convection might develop over the Maritime Continent.

Average Conditions when the MJO is present



Possibly late Week-1/early Week-2

CAVEAT: These panels are representative of robust MJO events.



ncics.org/mjo

Tue 2020-02-25 1124 UTC

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carl_schreck@ncsu.edu

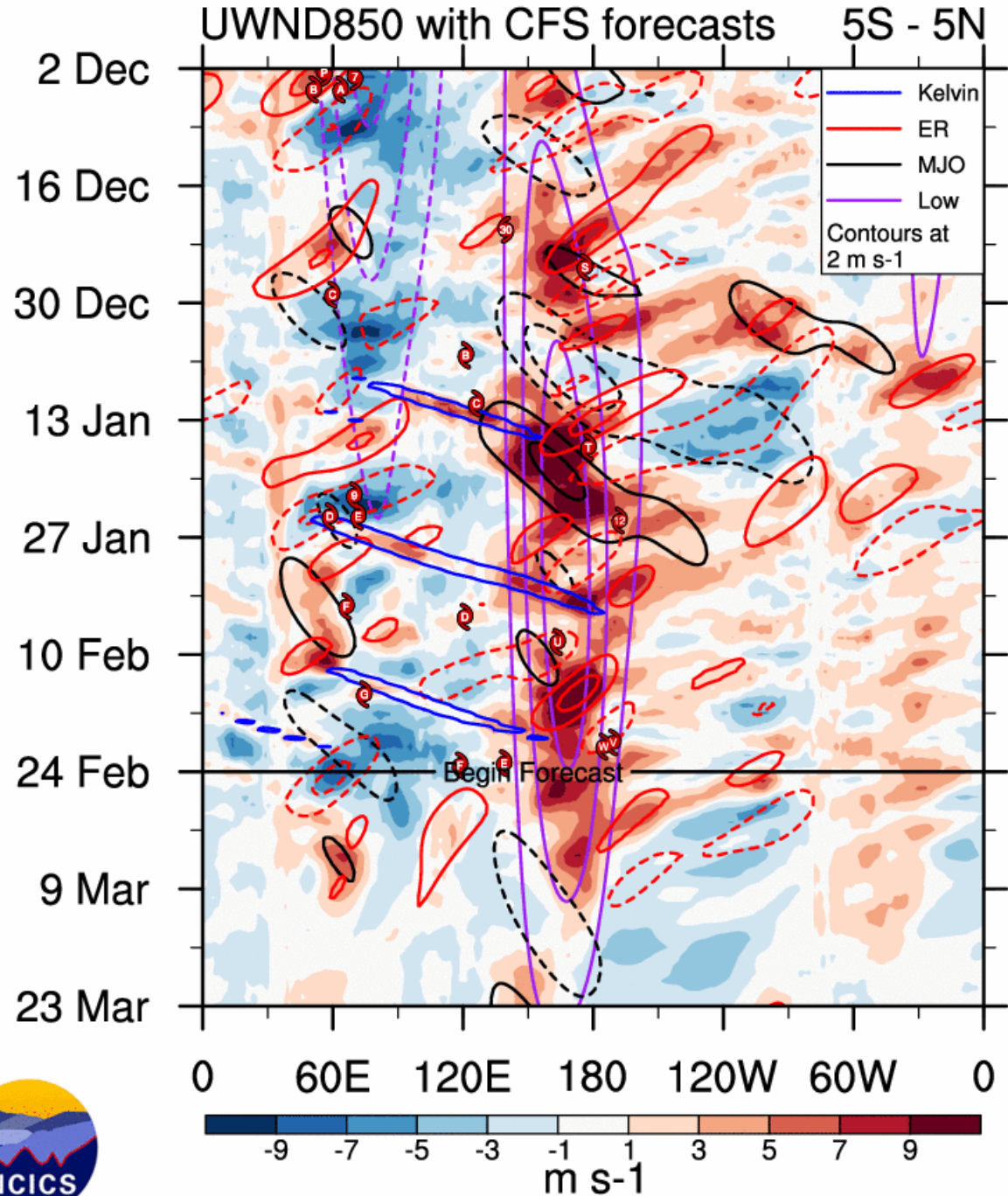
Tue 2020-02-25 1619 UTC

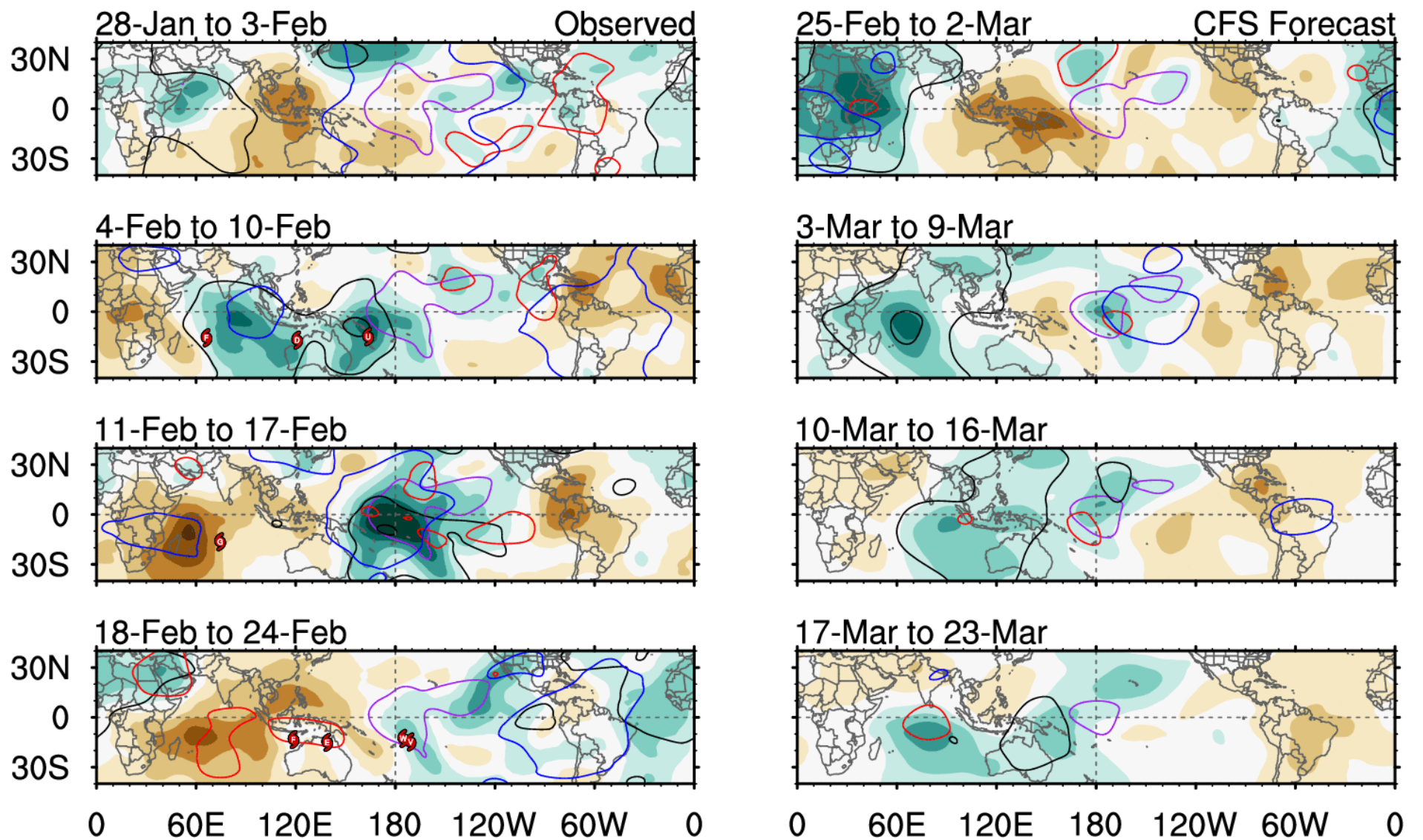
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MJO zonal wind field over the western Indian Ocean.
Rosby and **Kelvin wave** constructively interfere with **MJO** over western Indian Ocean.
Low frequency footprints persist near the Date Line.

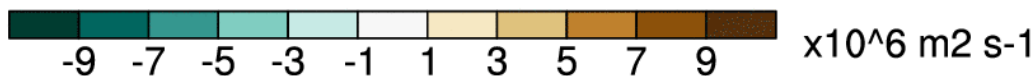
Update from last week:

- westerly wind burst contin along the Date Line.
- Starting to see some impa these persistent westerly anomalies on ocean heat content.





7-day CHI200 with CFS forecasts



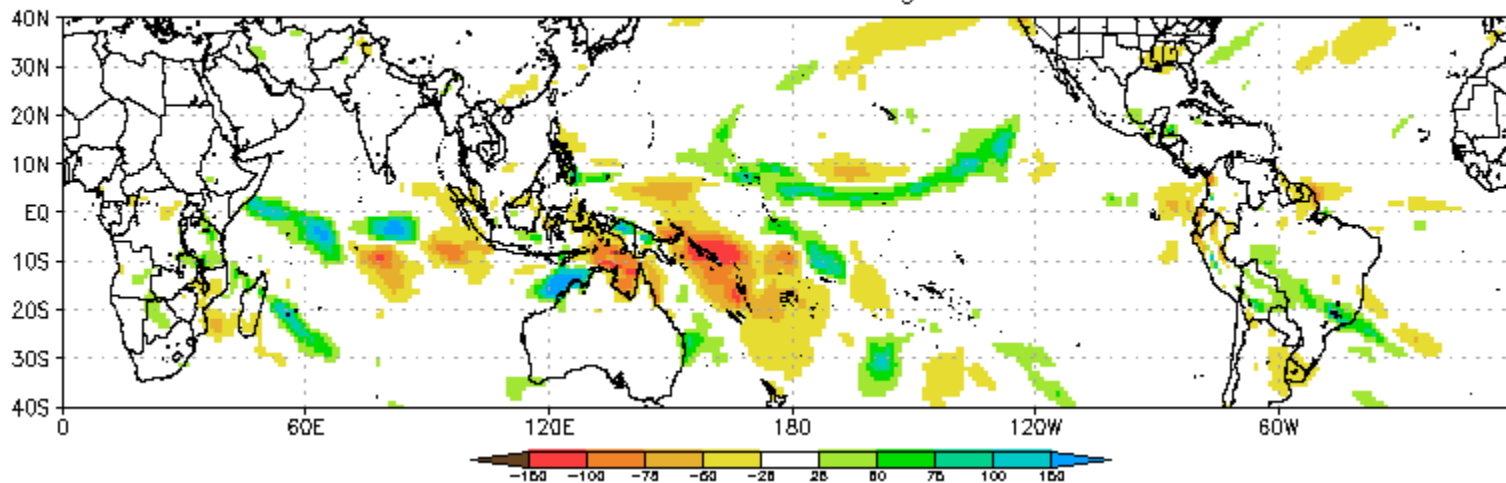
— MJO — Kelvin x2
 — Low — ER

Contours at $-2, -6 \times 10^6 \text{ m}^2 \text{ s}^{-1}$

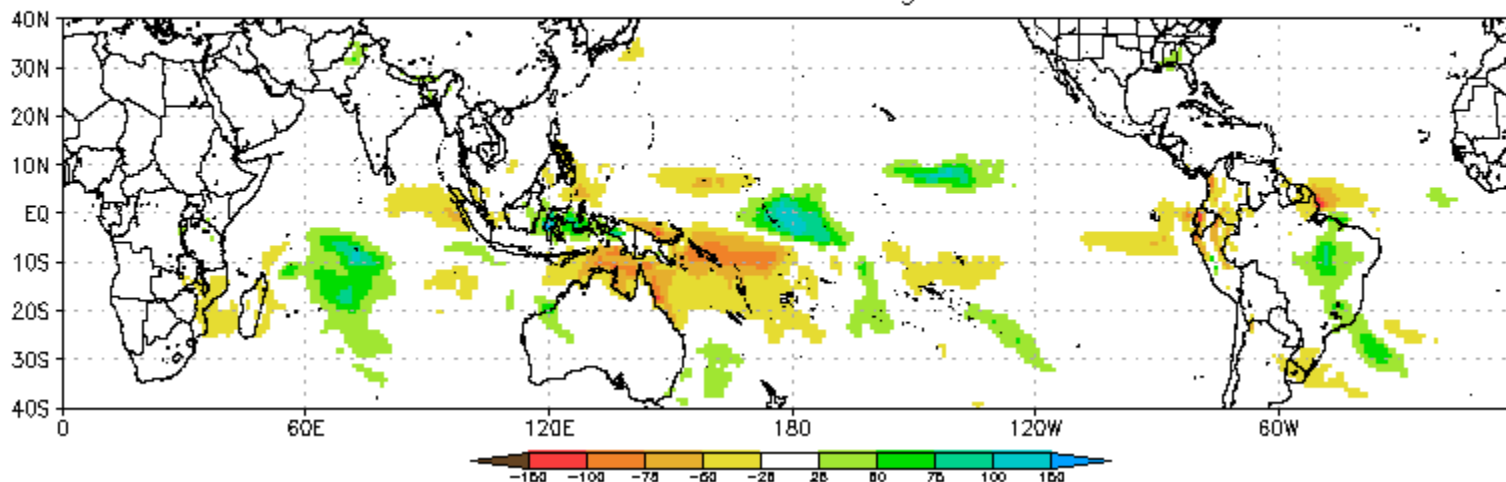
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CFS Precipitation Anomalies (mm) Issued 24Feb2020
Week-1 Forecast Ending 03Mar2020

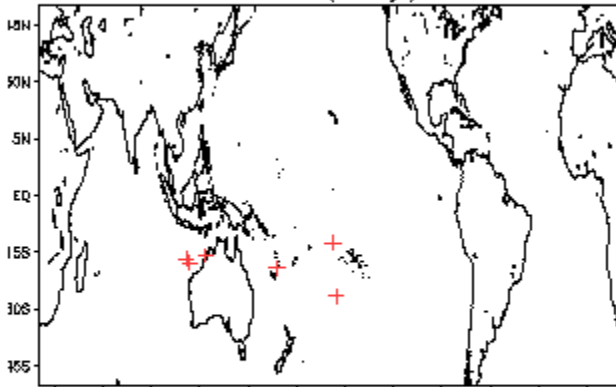


CFS Precipitation Anomalies (mm) Issued 24Feb2020
Week-2 Forecast Ending 10Mar2020

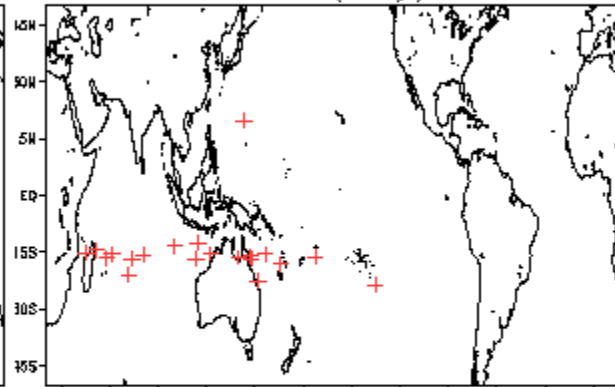


February Tropical Storm Formation by MJO phase

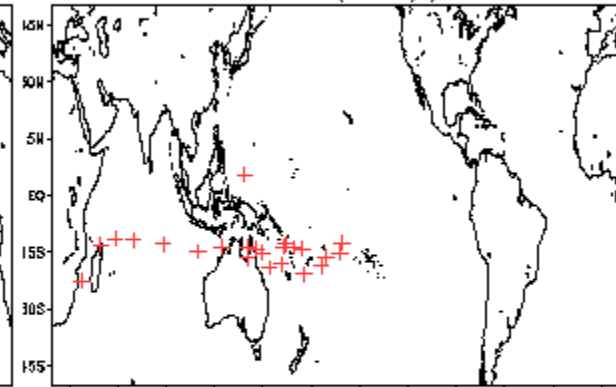
Phase 1 (41 days) 7 storms



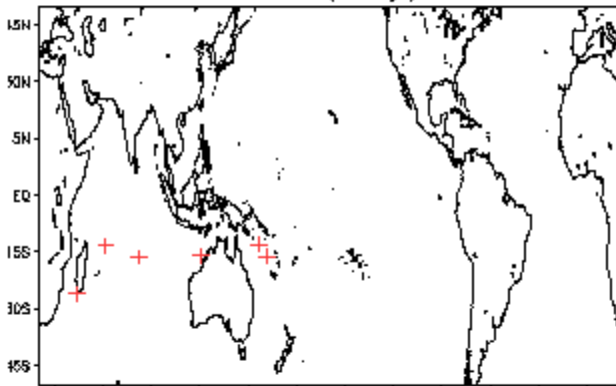
Phase 4 (92 days) 21 storms



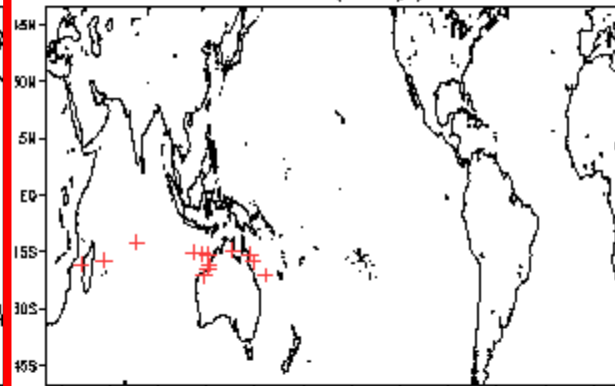
Phase 7 (125 days) 24 storms



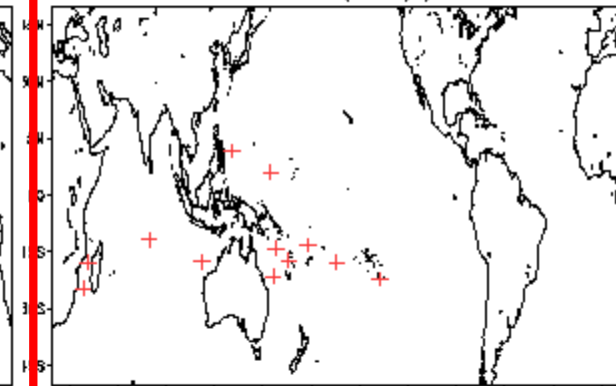
Phase 2 (51 days) 7 storms



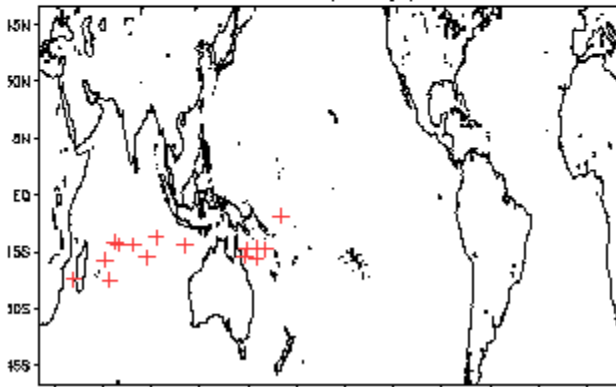
Phase 5 (70 days) 14 storms



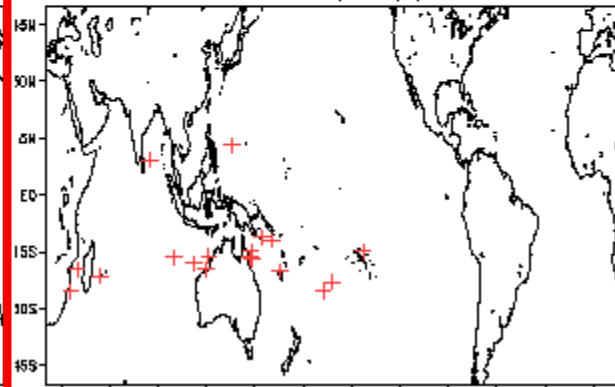
Phase 8 (84 days) 13 storms



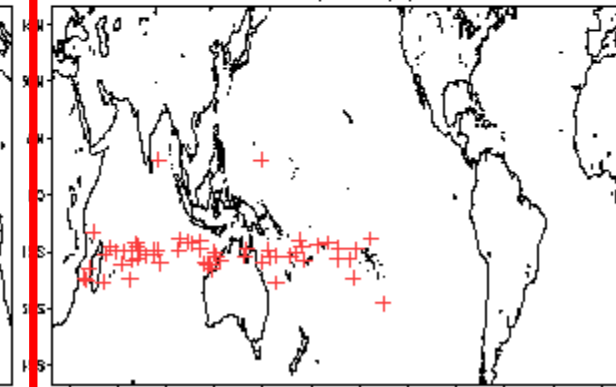
Phase 3 (89 days) 16 storms

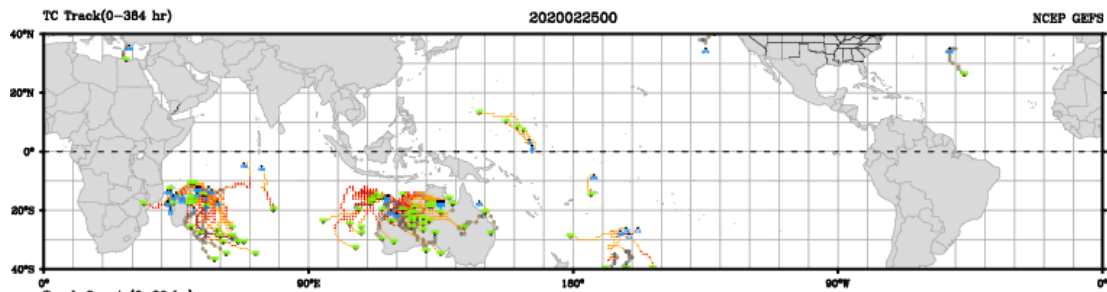


Phase 6 (92 days) 19 storms

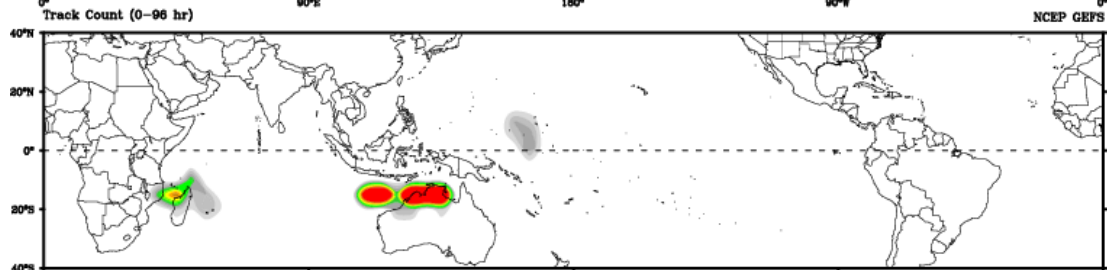


Null (308 days) 60 storms

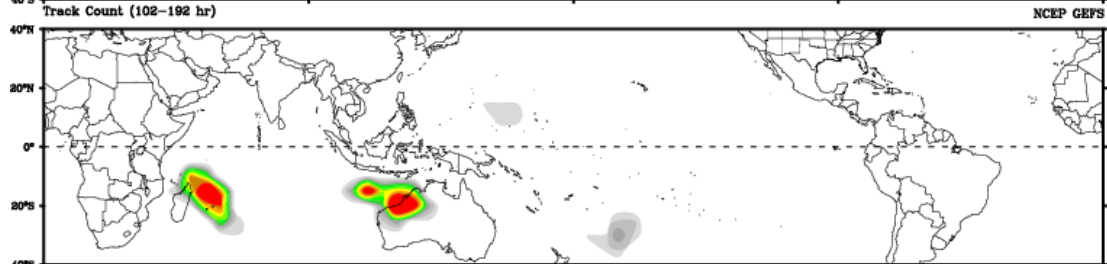




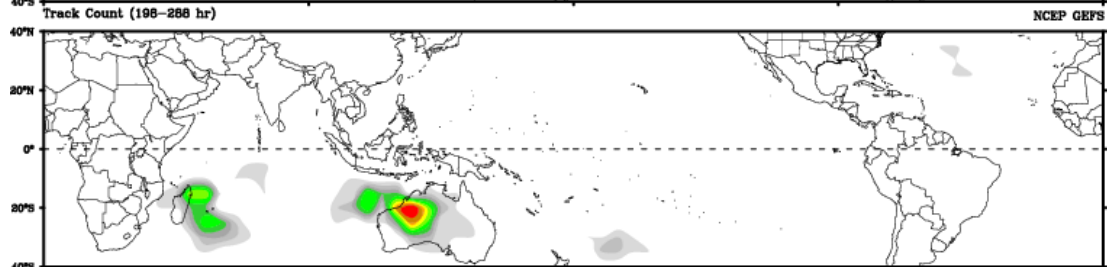
Days 1-4



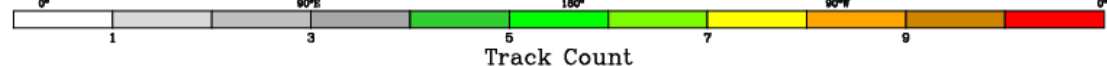
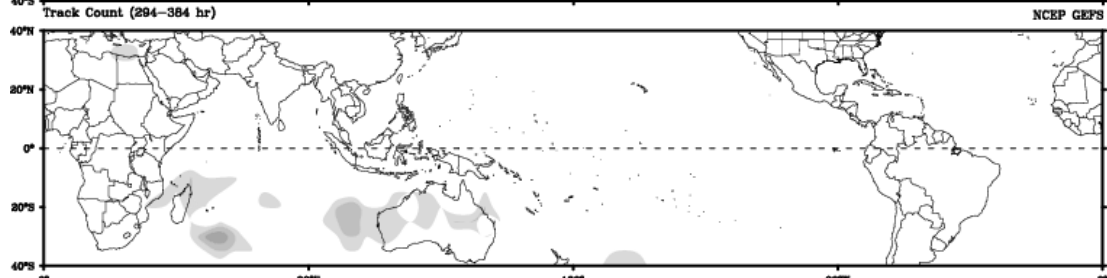
Day 5-8



Day 9-12

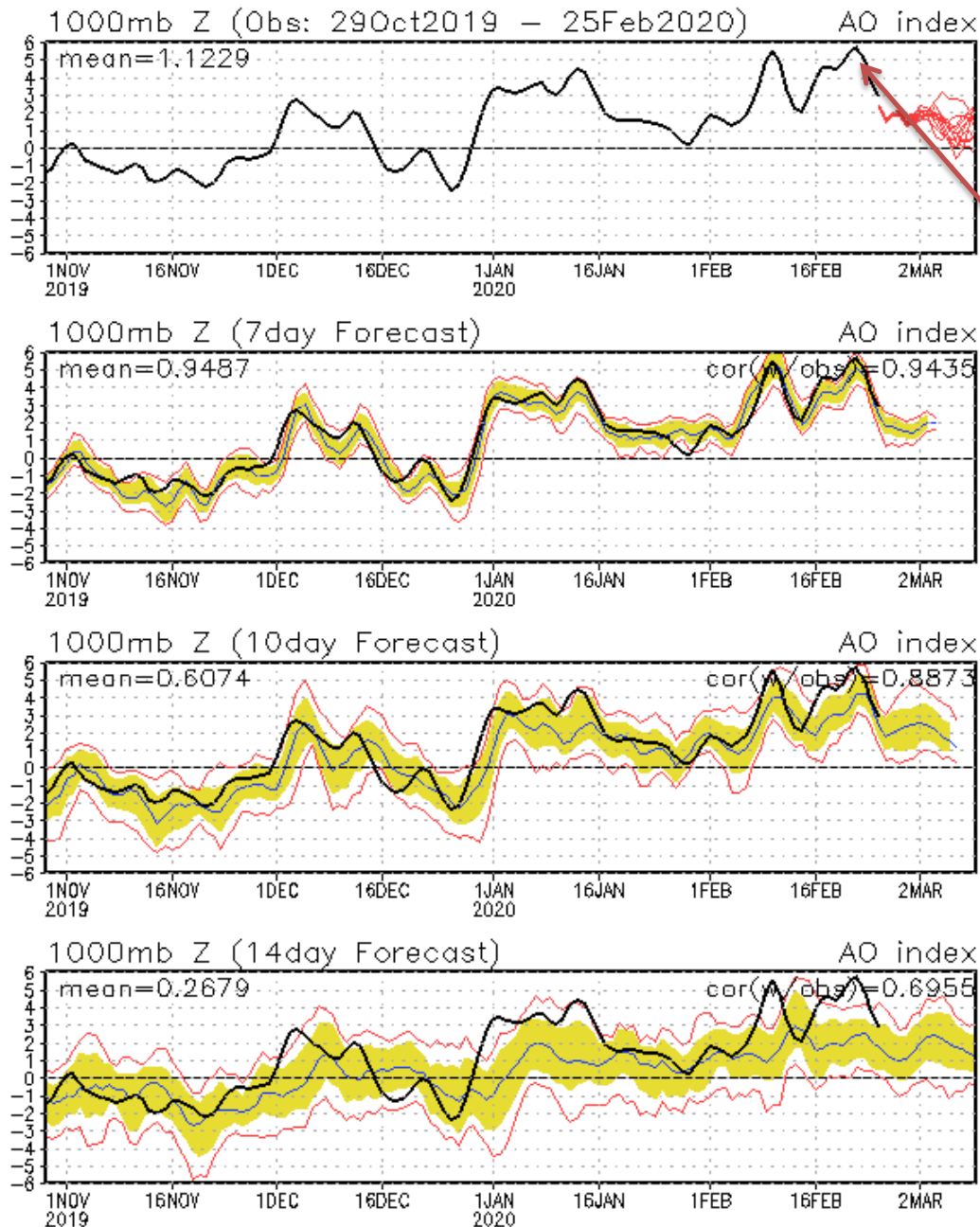


Day 13-15

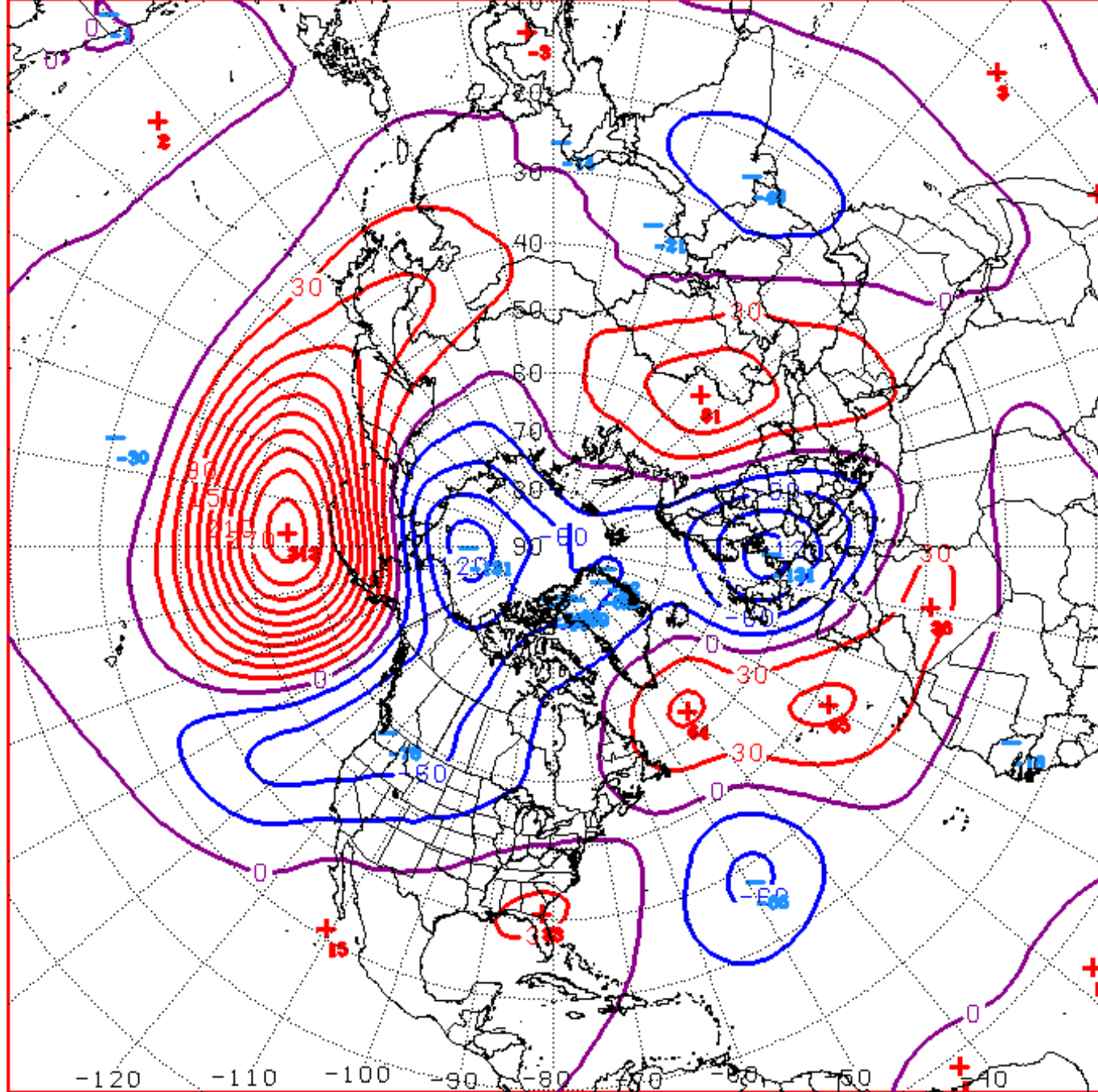


Connections to U.S. Impacts

AO: Observed & ENSM forecasts

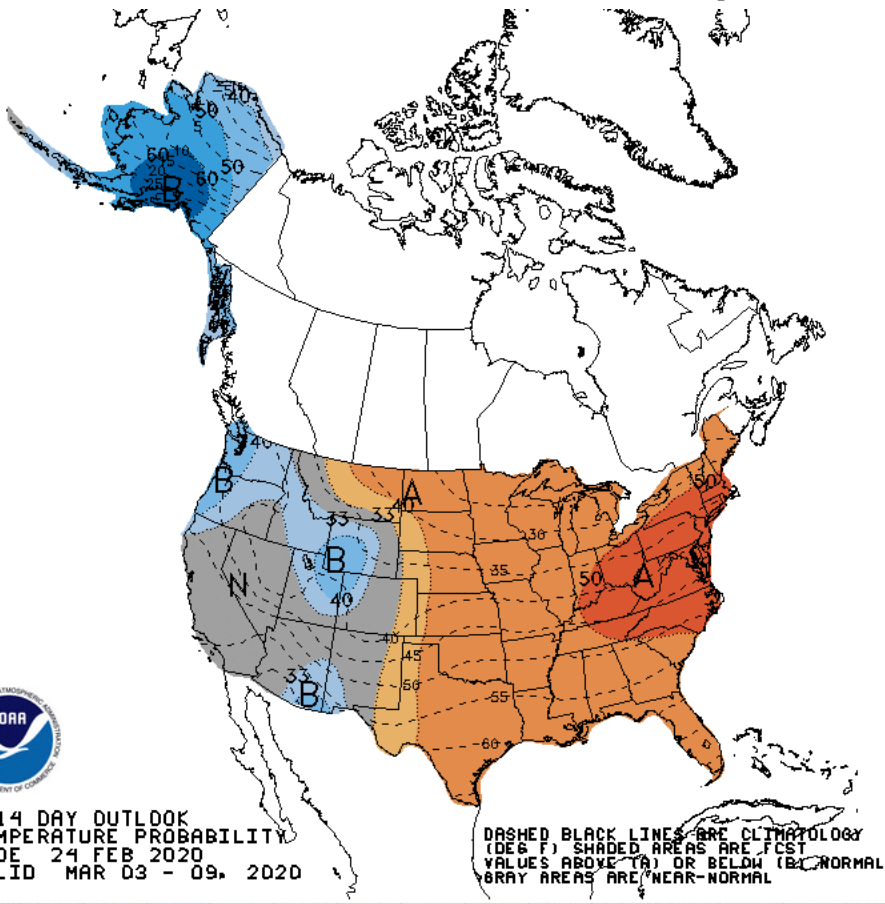


Highest daily value on record = 6.34



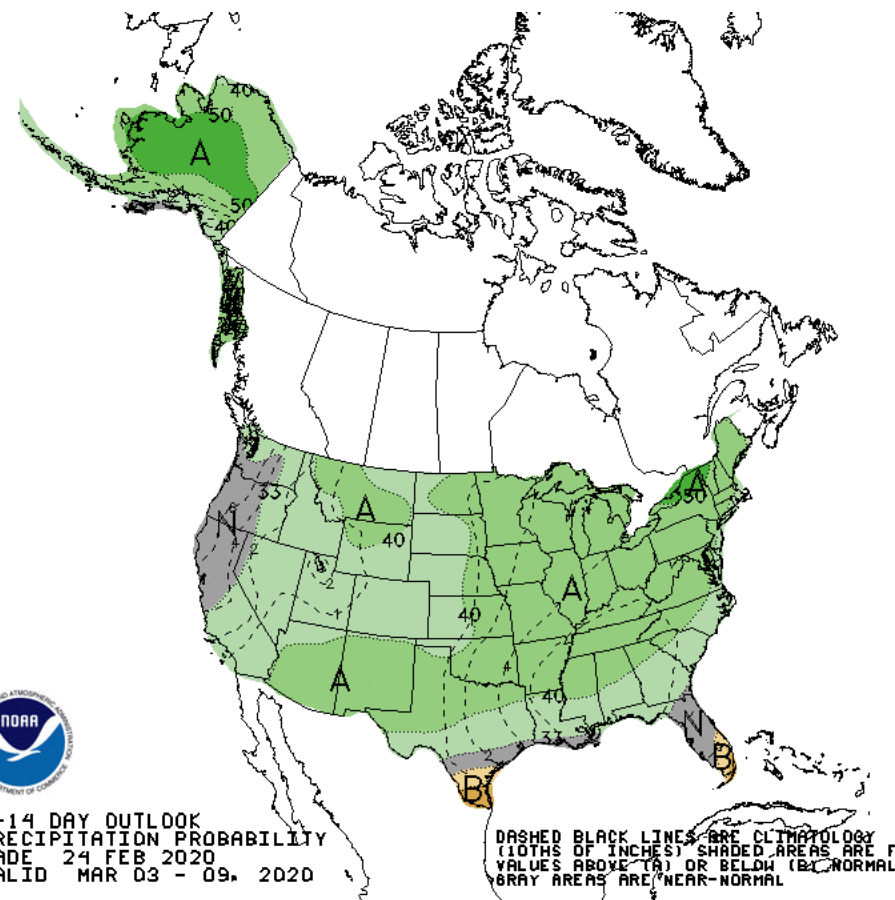
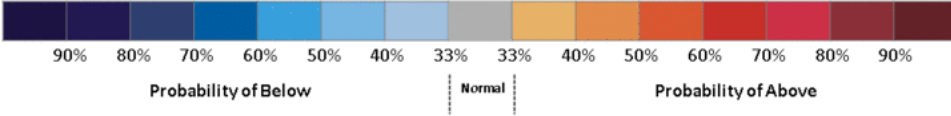
D+11 500 MB ANOMALIES FROM ALZ ENSM
CPC MAP MADE FEB 25 2020 1327 UTC CNTD MAR 07 2020

Week 2 – Temperature and Precipitation



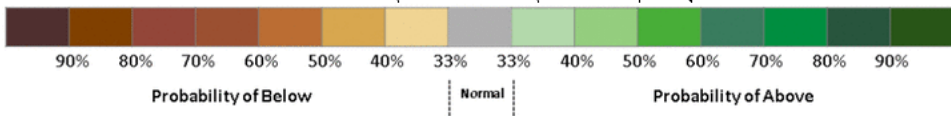
8-14 DAY OUTLOOK
TEMPERATURE PROBABILITY
MADE 24 FEB 2020
VALID MAR 03 - 09, 2020

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 24 FEB 2020
VALID MAR 03 - 09, 2020

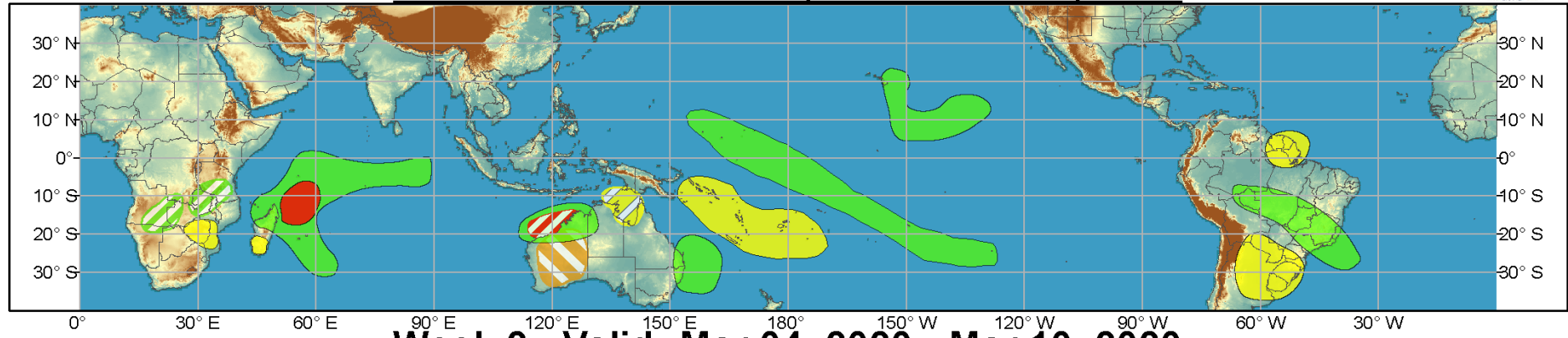
DASHED BLACK LINES ARE CLIMATOLOGY (TENTHS OF INCHES). SHADED AREAS ARE FCST VALUES ABOVE (A) OR BELOW (B) NORMAL. GRAY AREAS ARE NEAR-NORMAL.



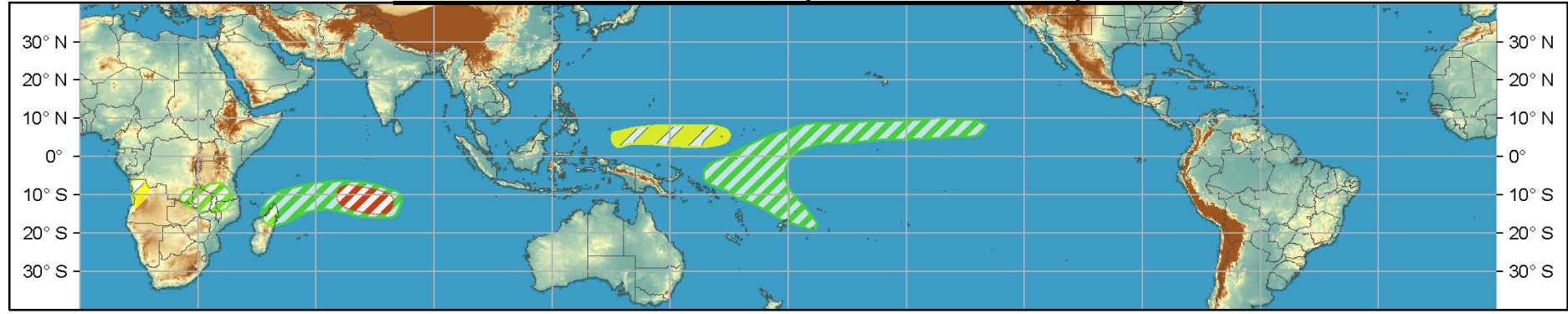


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