

Global Tropics Hazards And Benefits Outlook

3/19/2019

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

Savannah

3/14-present

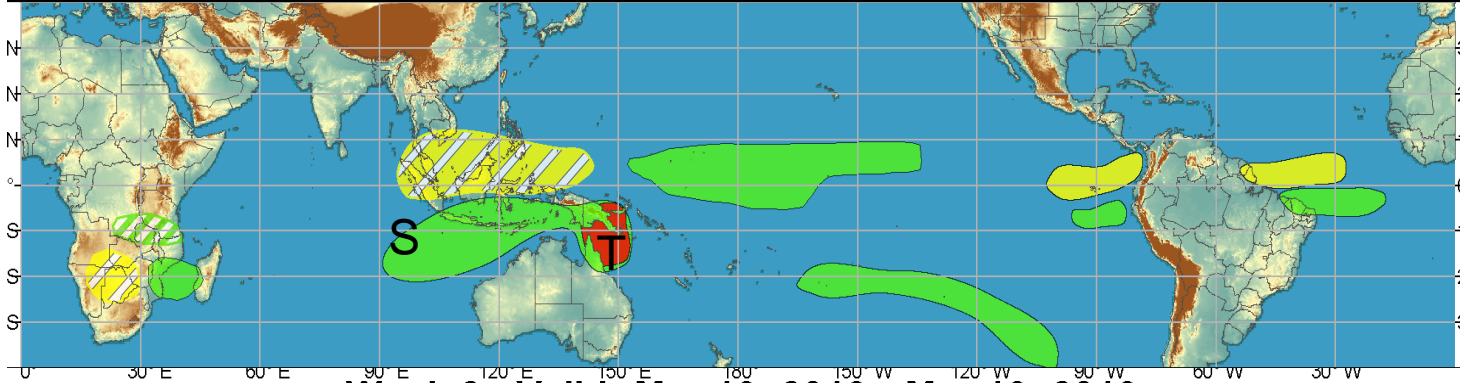
Peak winds: 100 kt

Trevor

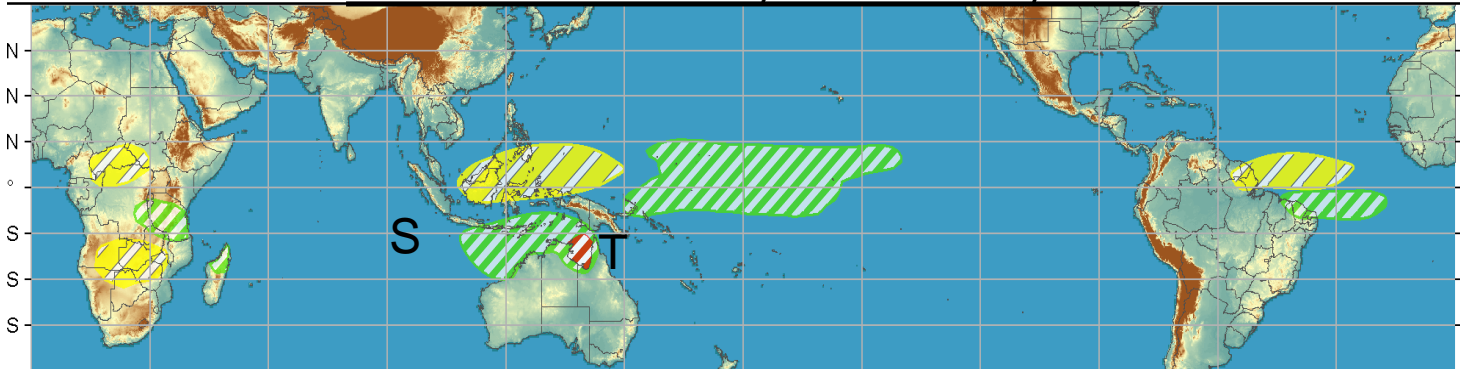
3/17-present

Peak winds: 100 kt

Week 1 - Valid: Mar 13, 2019 - Mar 19, 2019

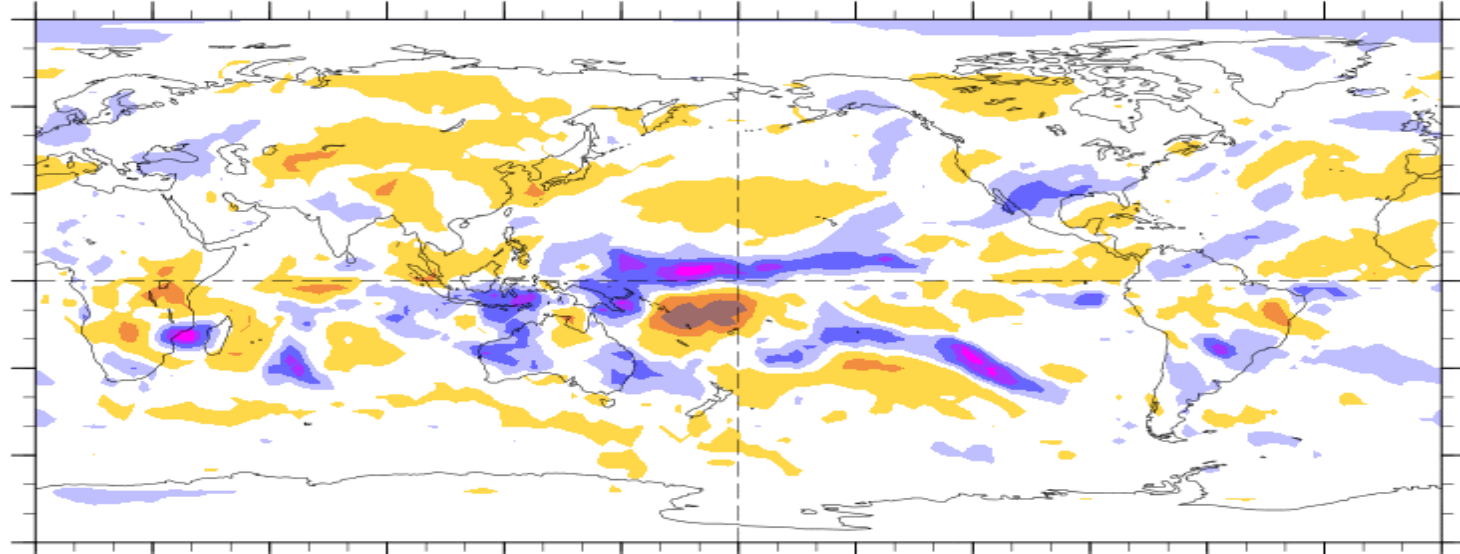


Week 2 - Valid: Mar 13, 2019 - Mar 19, 2019



7-Day Average OLR Anomaly

2019/03/11 - 2019/03/17



Cool shading
More clouds/rain

Warm shading
Less clouds/rain

Synopsis of Climate Modes

El Niño-Southern Oscillation: (March 14th Update)

- ENSO Alert System Status: [El Niño Advisory](#)
- Weak El Niño conditions are likely to continue through the Northern Hemisphere spring 2019 (~80% chance) and summer (~60% chance).

Madden-Julian Oscillation and other subseasonal tropical variability:

- The MJO was over the Maritime Continent during the past 7 days, with mixed signals as to its intensity depending upon the analysis used to define its presence.
- Dynamical models maintain a weak MJO from the real-time multivariate MJO index perspective, but there is reason to believe the MJO will cross the Maritime Continent into the West Pacific late in Week-1 or early in Week-2.

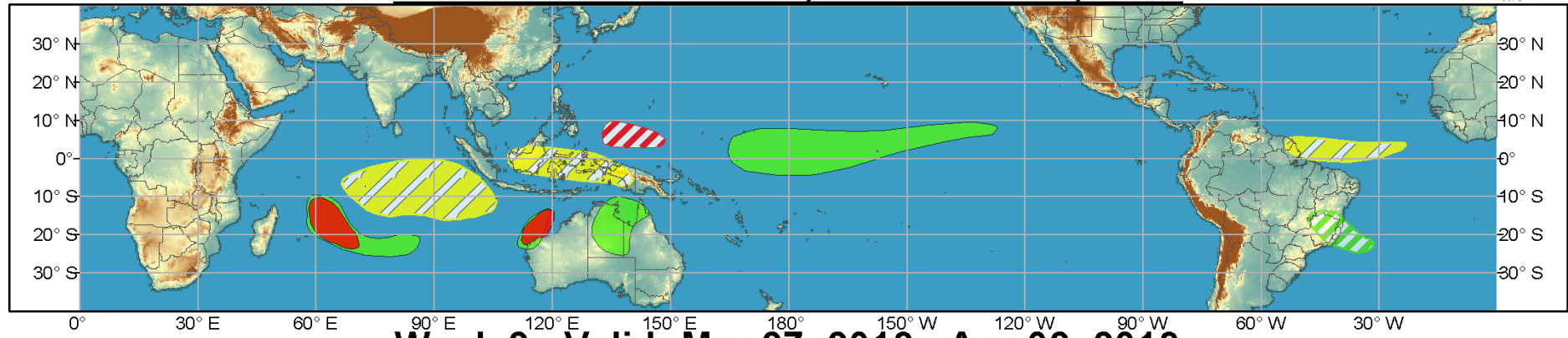
Extratropics:

- Some superposition of the MJO and El Niño is possible during Week-2, which would potentially help to extend the subtropical jet over the Pacific and increase the flow of moisture into the Southwestern U.S.

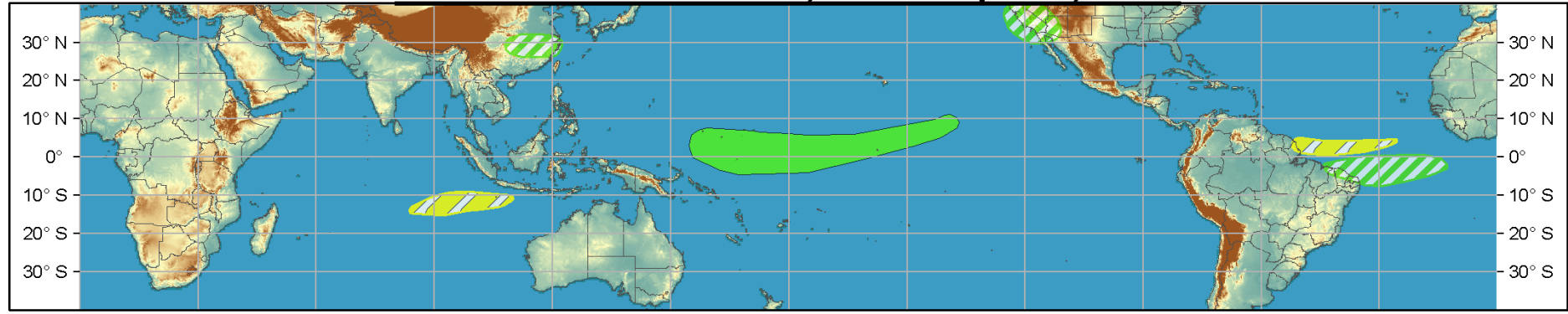


Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Mar 20, 2019 - Mar 26, 2019



Week 2 - Valid: Mar 27, 2019 - Apr 02, 2019



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.
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Produced: 03/19/2019
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.



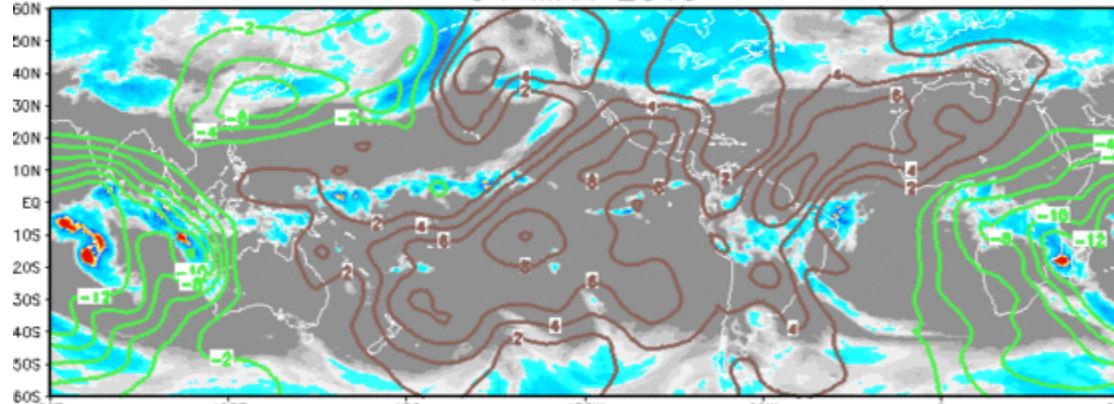
IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence

Brown: Enhanced Convergence

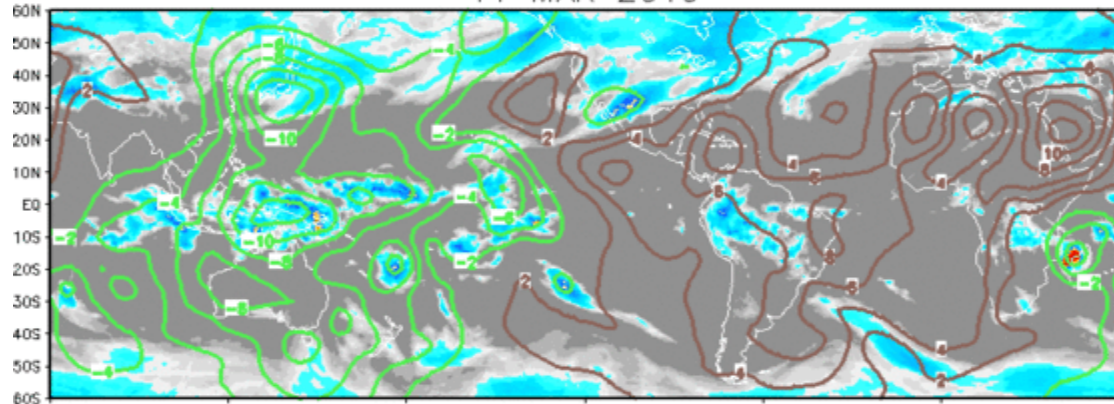
Wave-1 pattern developed as the MJO became more established.

04 MAR 2019



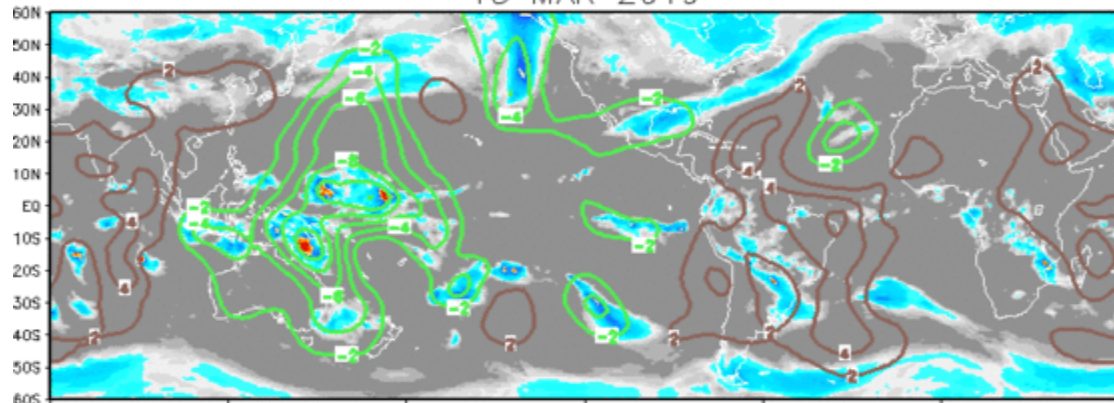
Still a Wave-1 pattern, but the amplitude of the convection over the eastern Indian Ocean weakened as a Kelvin wave emerged into the Pacific.

11 MAR 2019



MJO and El Niño signals begin to blur together, while the Kelvin wave is now apparent over the East Pacific.

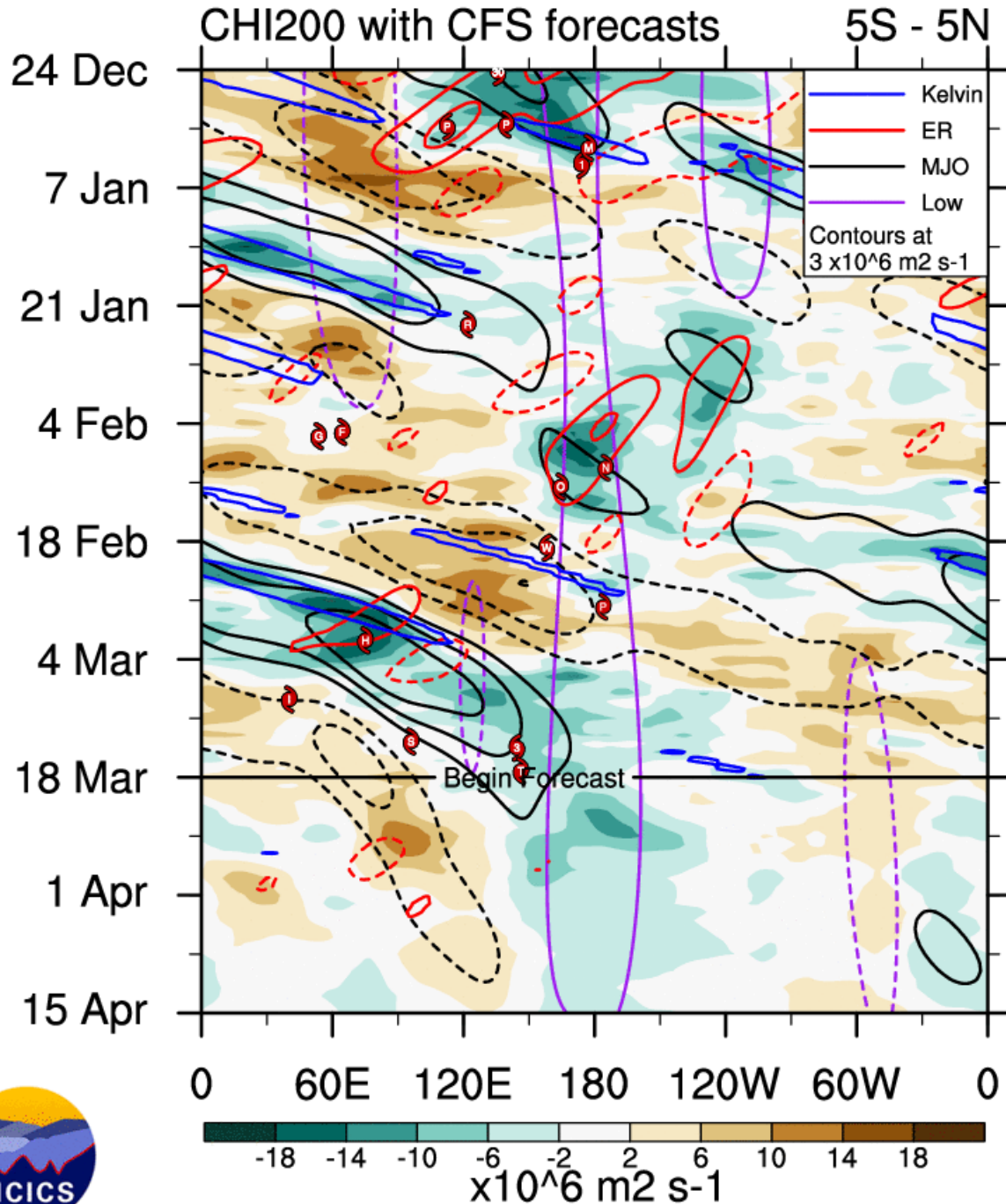
18 MAR 2019



The **low frequency** state has favored enhanced convection near the Date Line since 2018.

The **MJO** is over the Maritime Continent, and becomes harder to discern from the **low frequency** state over the next 2 weeks.

The aforementioned **Kelvin wave** is over the Western hemisphere, nearly 180° out of phase with the **MJO**.

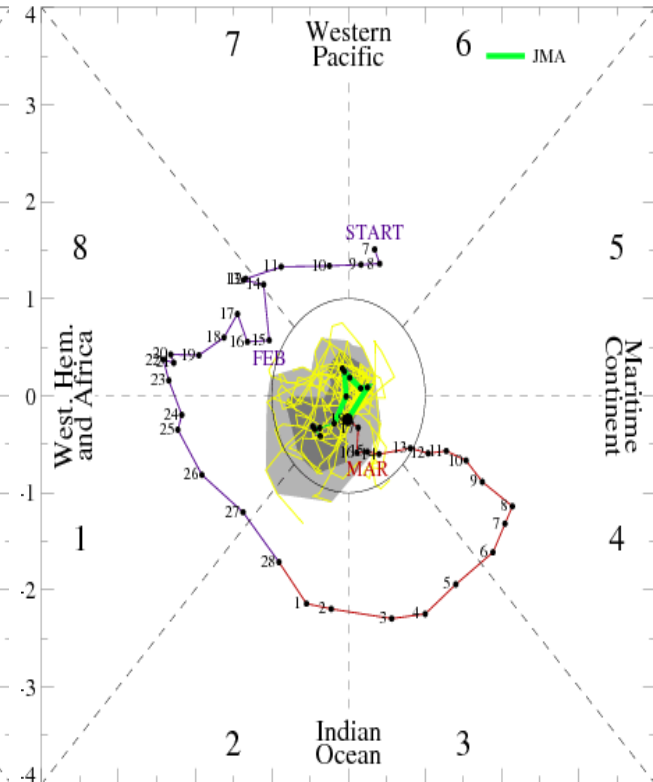
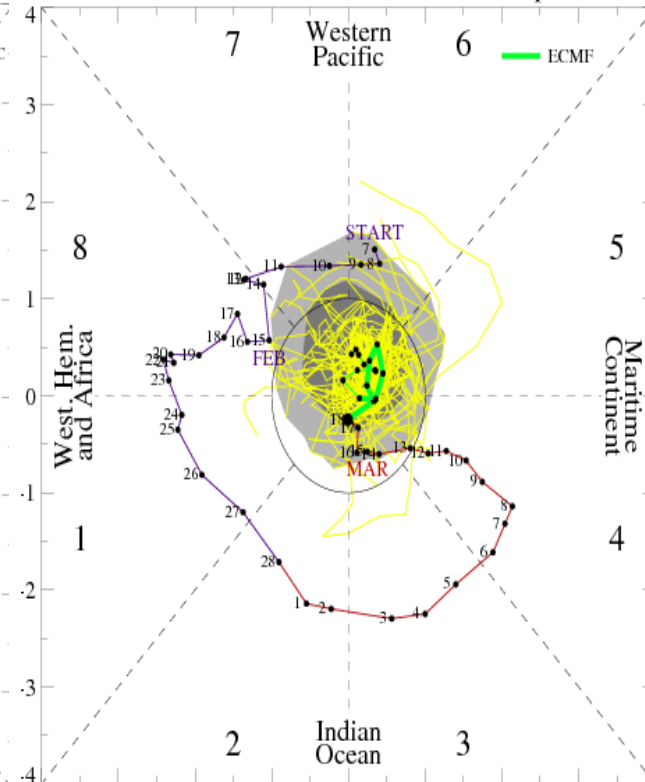
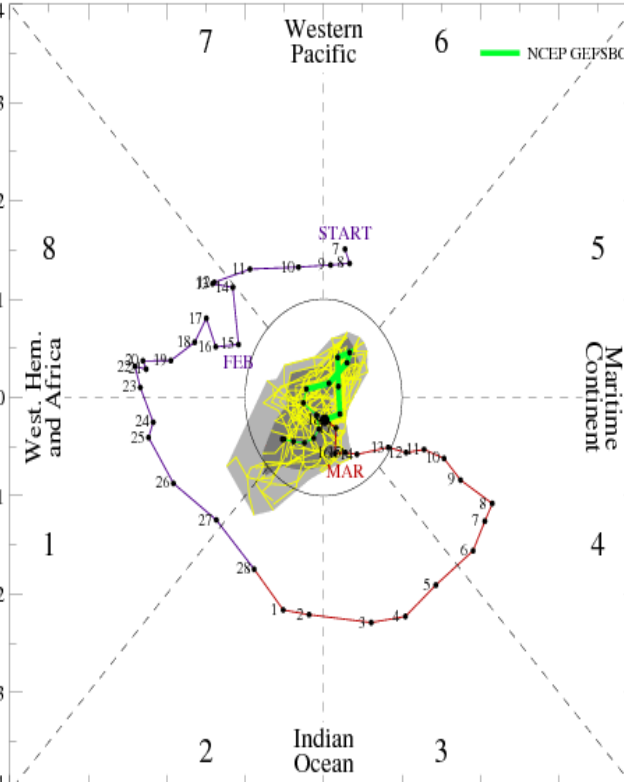


MJO Observation/Forecast

[RMM1, RMM2] forecast for Mar-19-2019 to Apr-02-2019

MJO Index Forecast for 19Mar2019-02Apr2019

MJO Index Forecast for 19Mar2019-27Mar2019



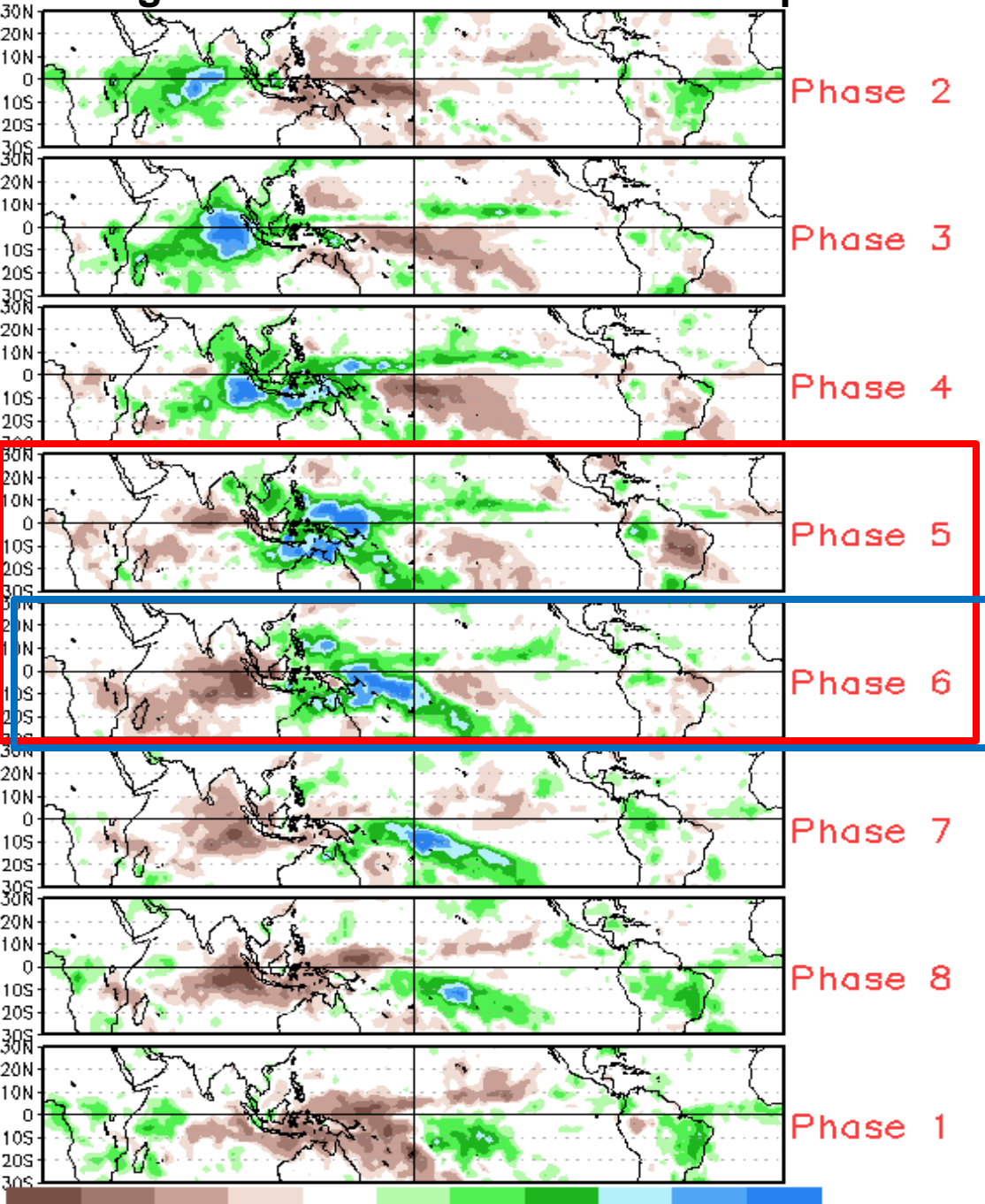
GEFS

ECMWF

JMA

All major dynamical models support continued weakness of the MJO, with some eastward propagation over the next two weeks.

Average Conditions when the MJO is present

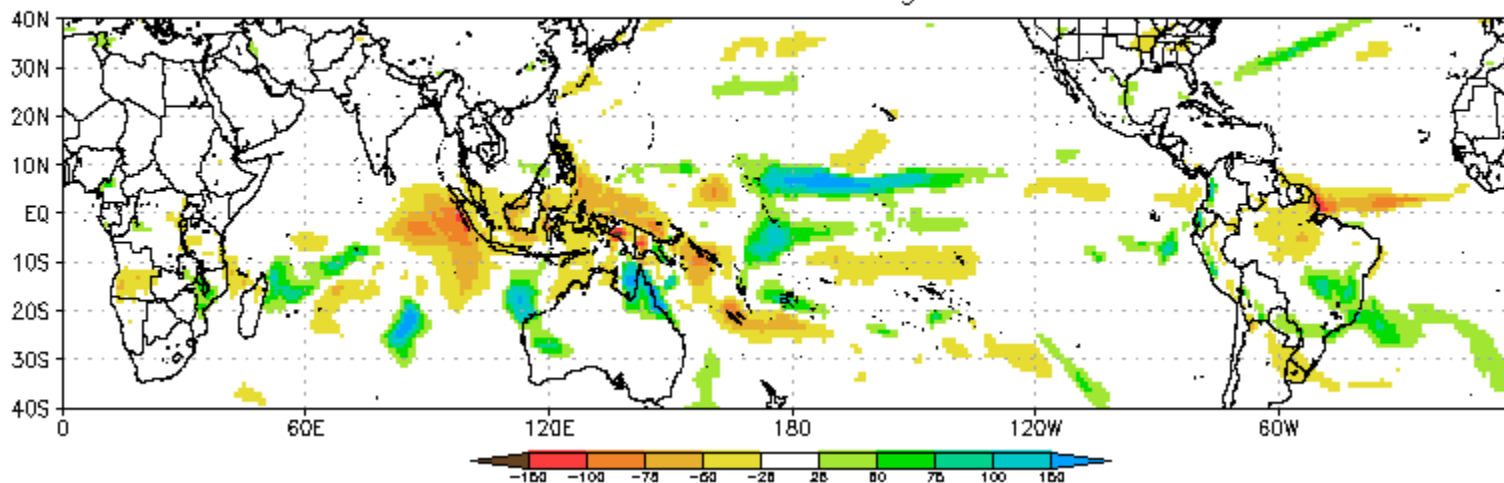


Week-1: Phases 5/6

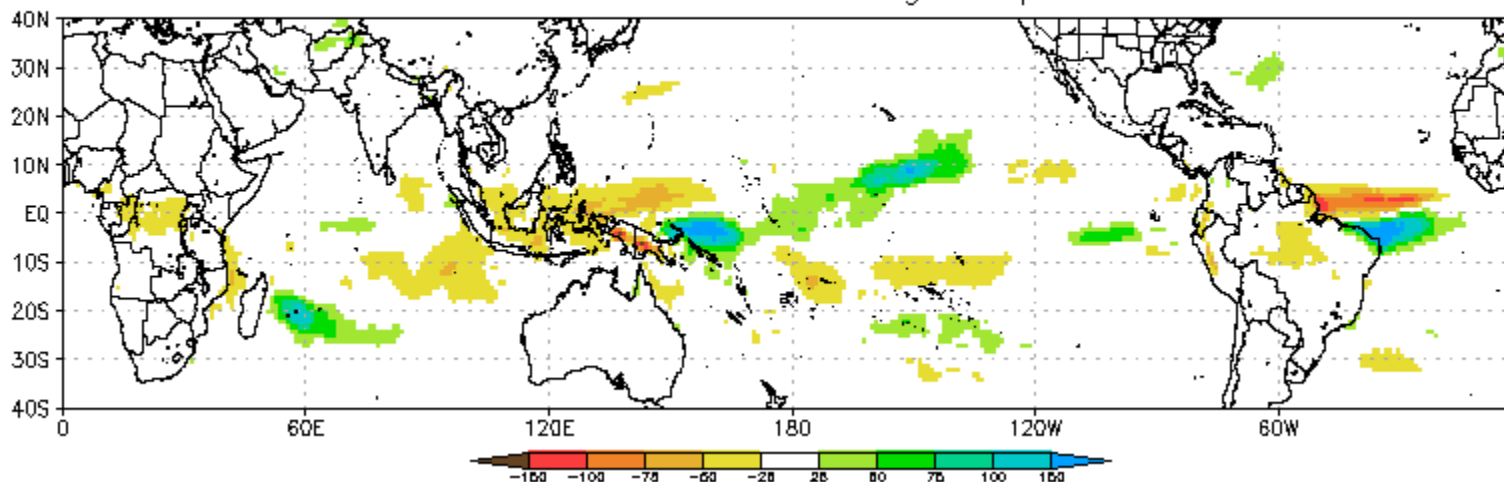
Week-2: Phase 6

CAVEAT: These panels are representative of ***robust*** MJO events.

CFS Precipitation Anomalies (mm) Issued 18Mar2019
Week-1 Forecast Ending 26Mar2019



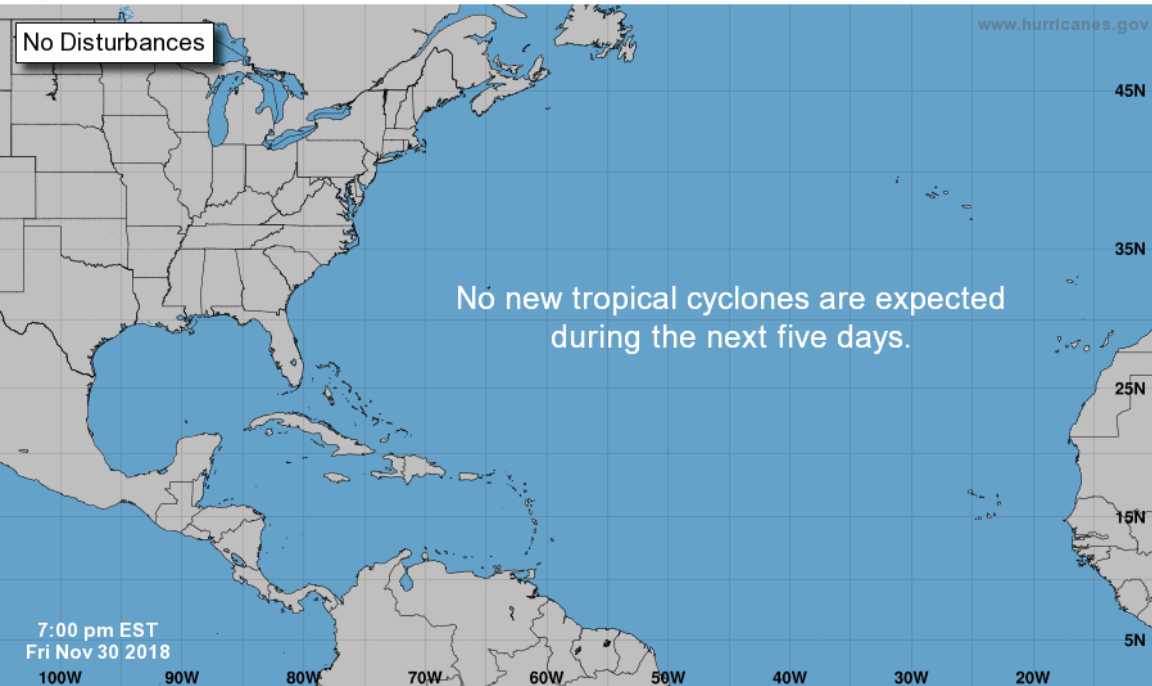
CFS Precipitation Anomalies (mm) Issued 18Mar2019
Week-2 Forecast Ending 02Apr2019





Five-Day Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida



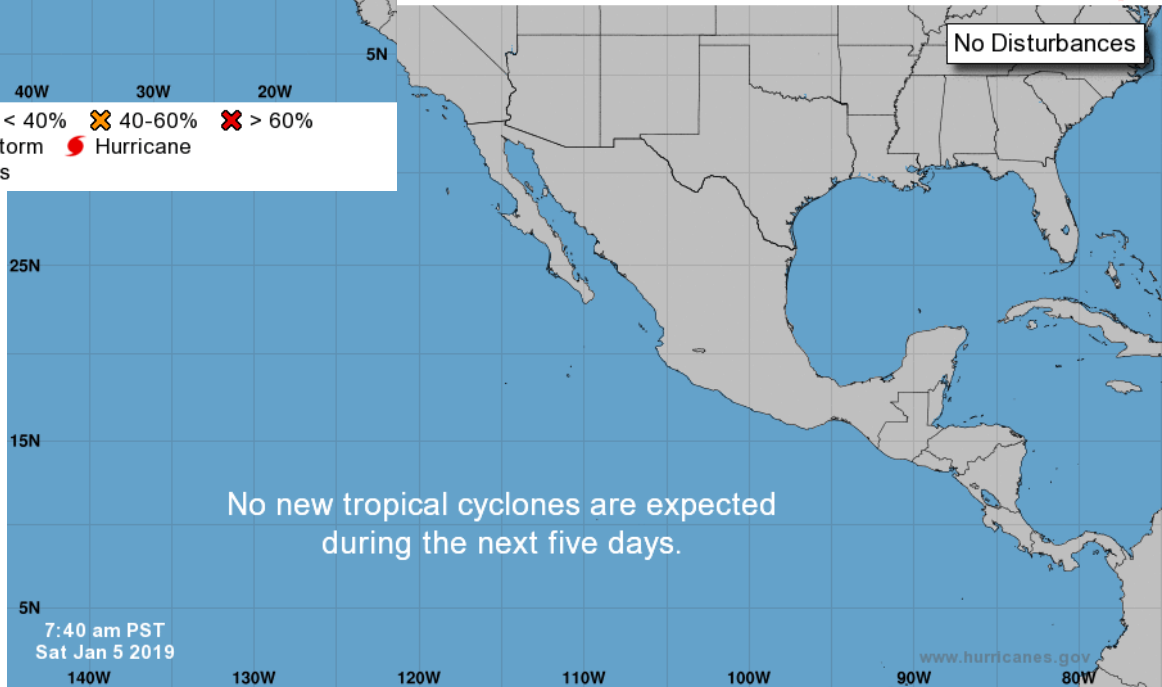
Current Disturbances and Five-Day Cyclone Formation Chance: < 40% 40-60% > 60%

Tropical or Sub-Tropical Cyclone: Depression Storm Hurricane

Post-Tropical Cyclone or Remnants

Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida



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

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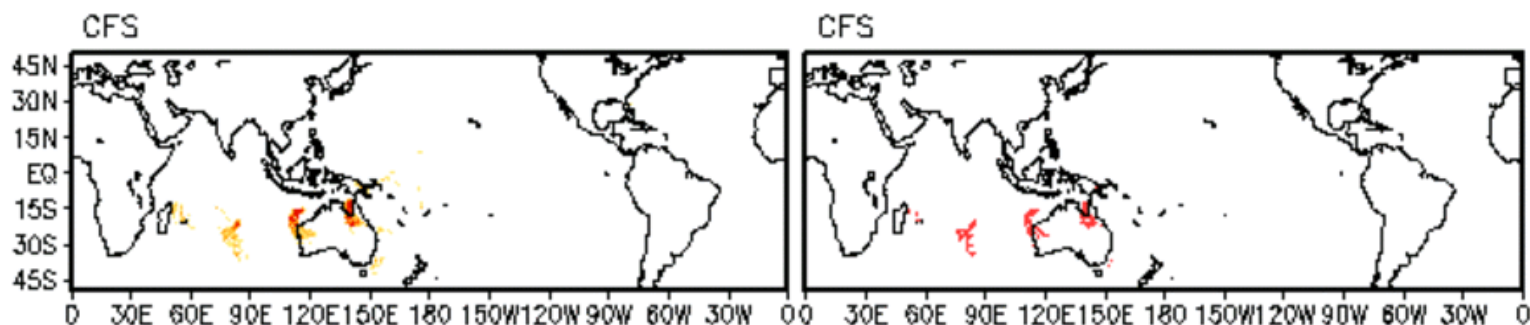
Post-Tropical Cyclone or Remnants

Storm Track Density Distribution, IC=20190318

Week 1 Forecast: 0320-0326

TRACK DENSITY

FILTERED

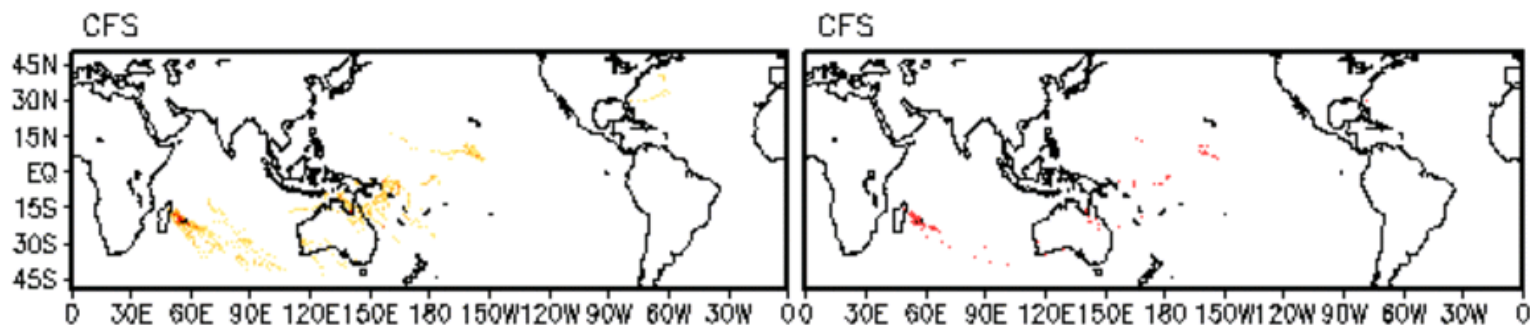


Storm Track Density Distribution, IC=20190318

Week 2 Forecast: 0327-0402

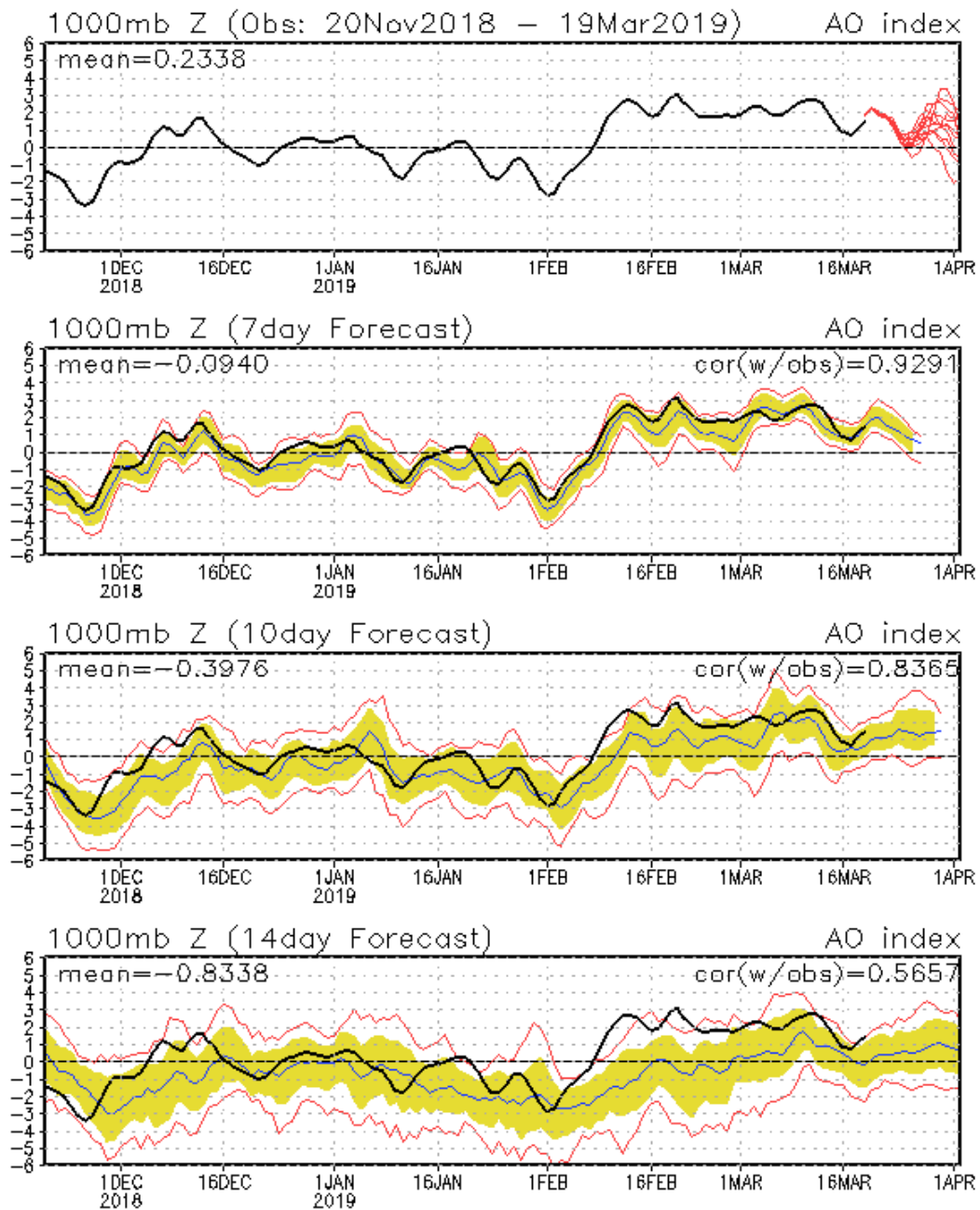
TRACK DENSITY

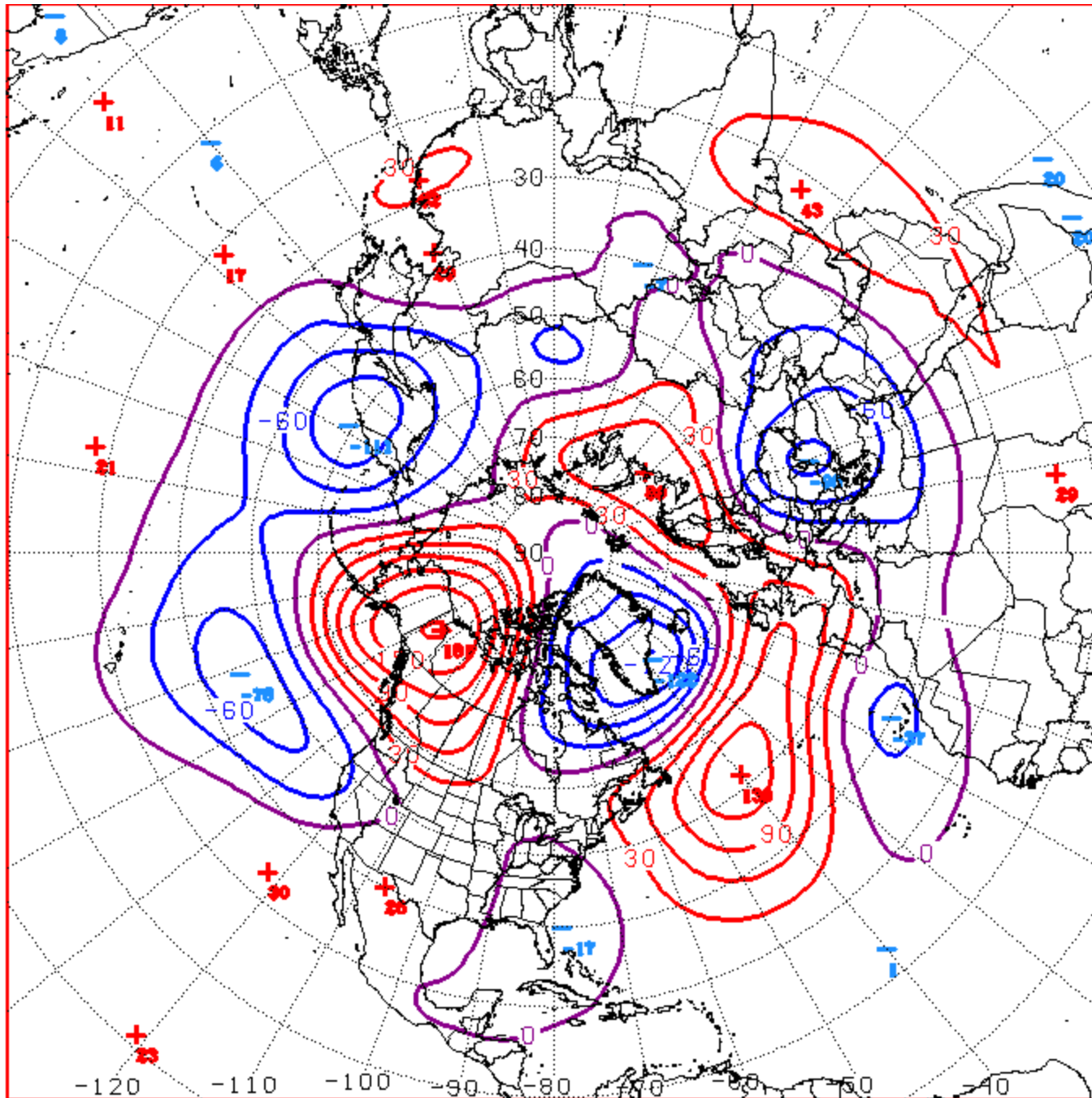
FILTERED



Connections to U.S. Impacts

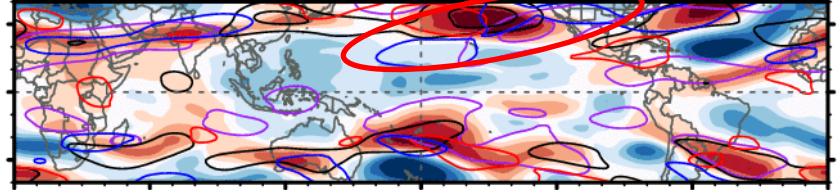
AO: Observed & ENSM forecasts



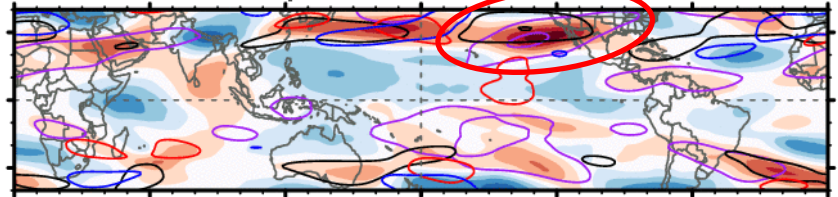


D+11 500 MB ANOMALIES FROM 00Z ECMM
CPC MAP MADE MAR 19 2019 0956 UTC CNTD MAR 30 2019

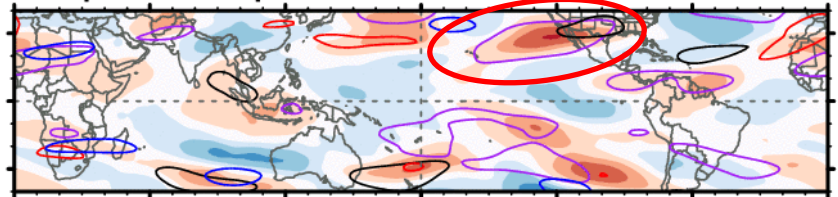
19-Mar to 25-Mar CFS Forecast



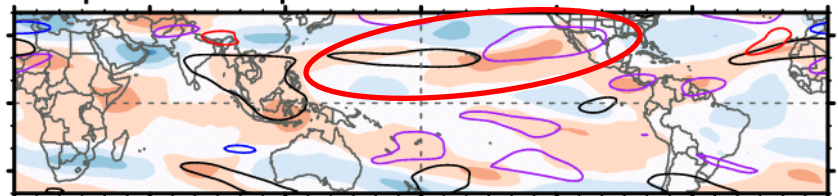
26-Mar to 1-Apr



2-Apr to 8-Apr



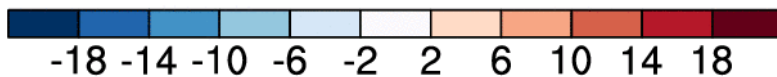
9-Apr to 15-Apr



0 60E 120E 180 120W 60W 0

Note the low frequency contour (**purple line**) over the Northeast Pacific throughout, associated with anomalous westerlies.

The MJO contour (**black line**), also associated with anomalous westerlies, is offshore in Week-1 and intersects the Pacific Coast during Week-2.



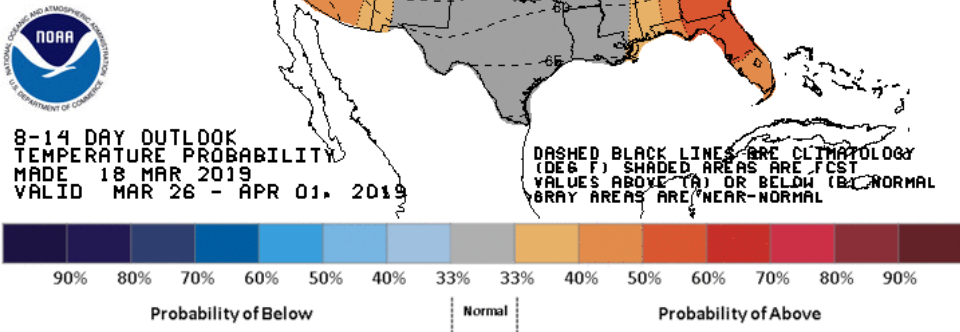
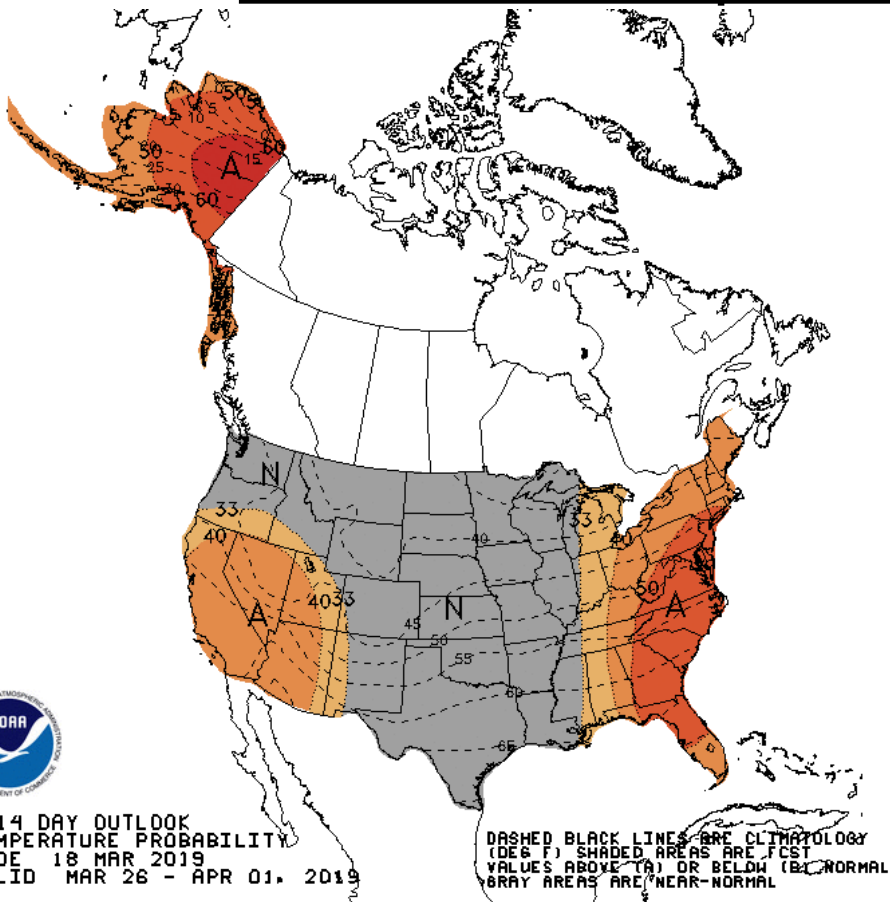
m s-1

— MJO — Kelvin x2
— Low — ER
Contours at 4, 12 m s-1

7-day UWND200 with CFS forecasts

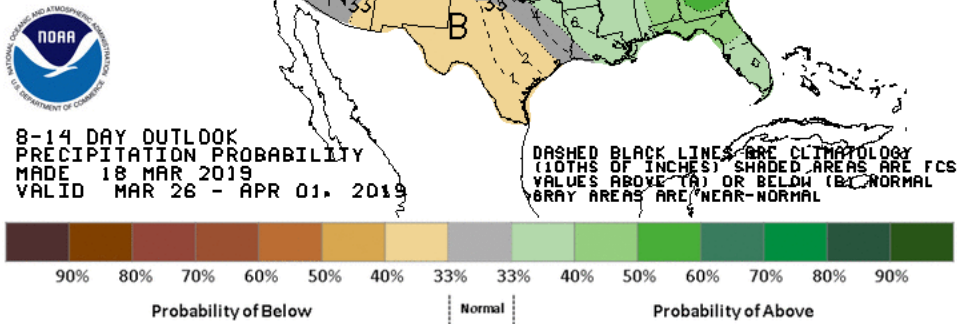
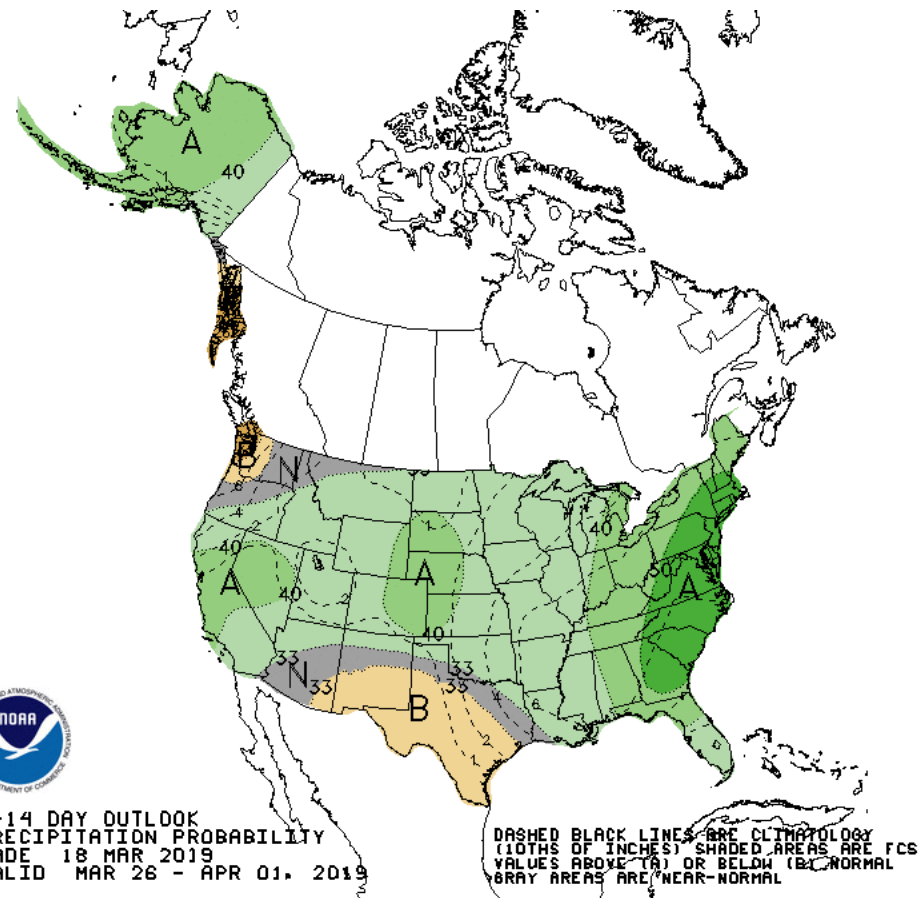


Week 2 – Temperature and Precipitation



Fairly low confidence with the current pattern reflected in low probabilities.

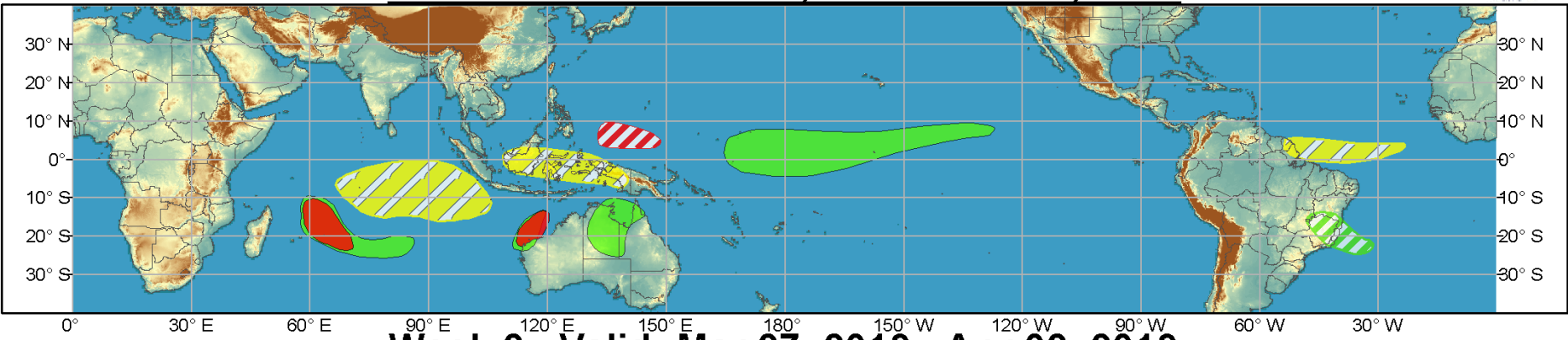
Changes likely day-to-day.



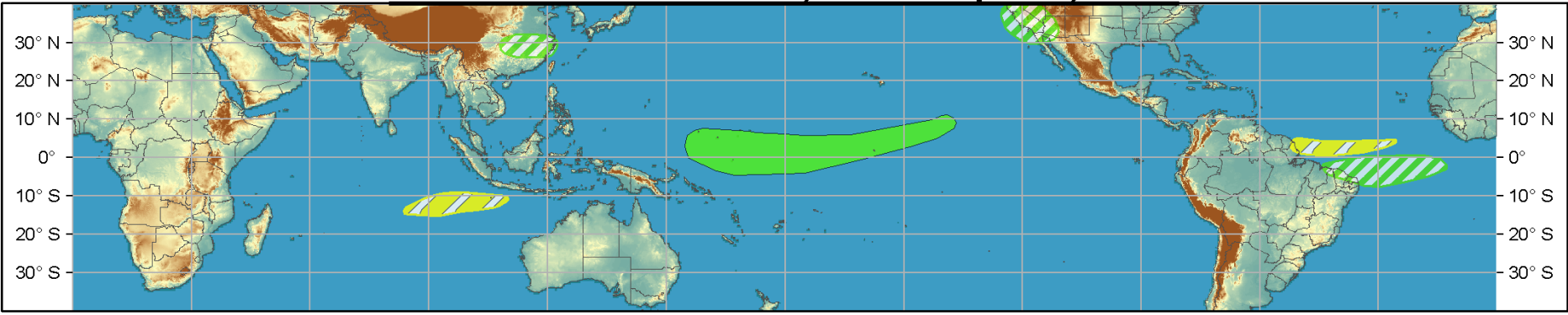


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