

# Global Tropics Hazards And Benefits Outlook

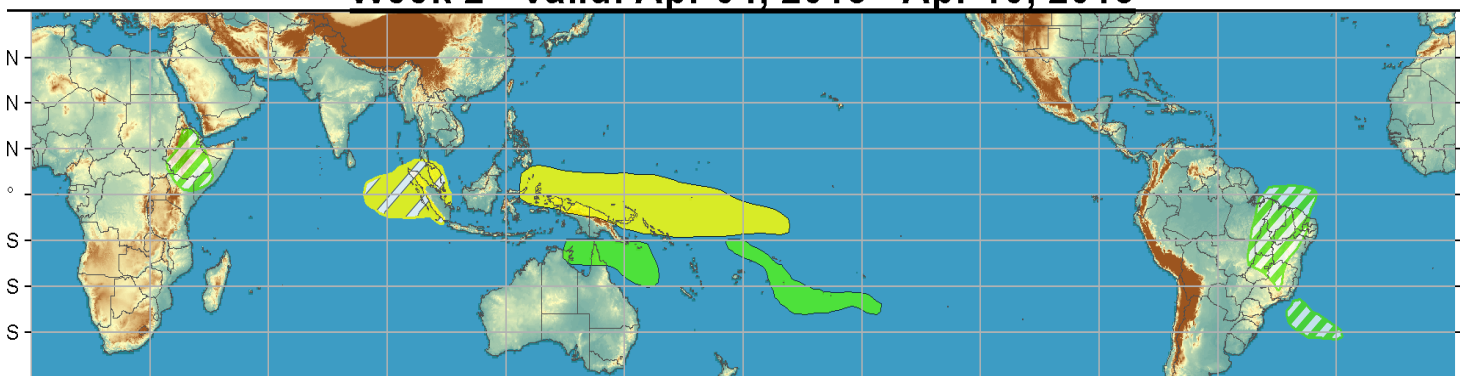
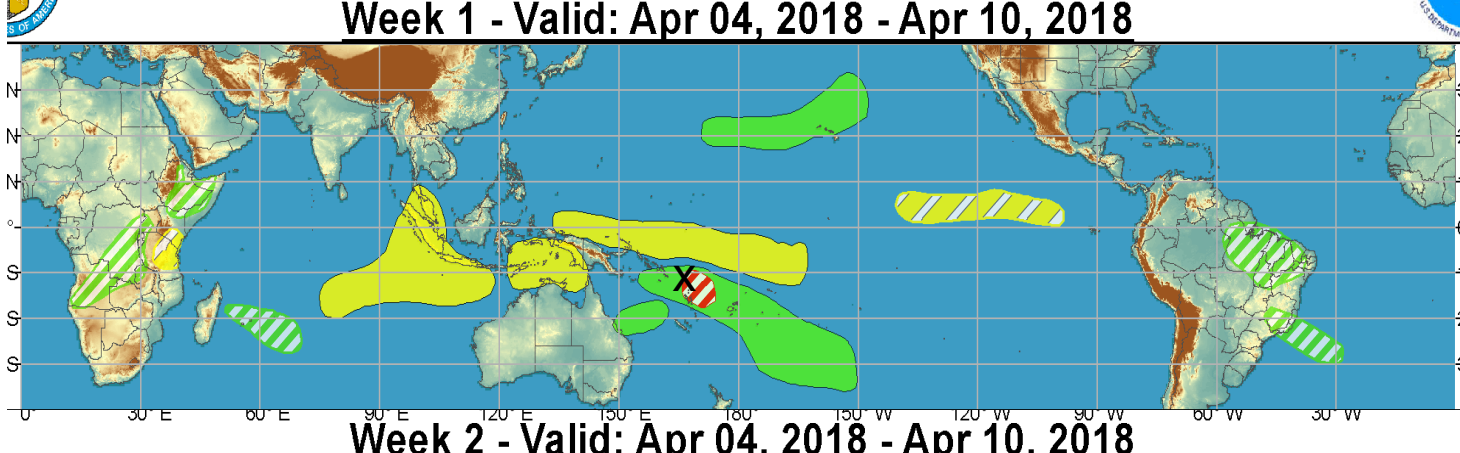
4/10/2018

Anthony Artusa

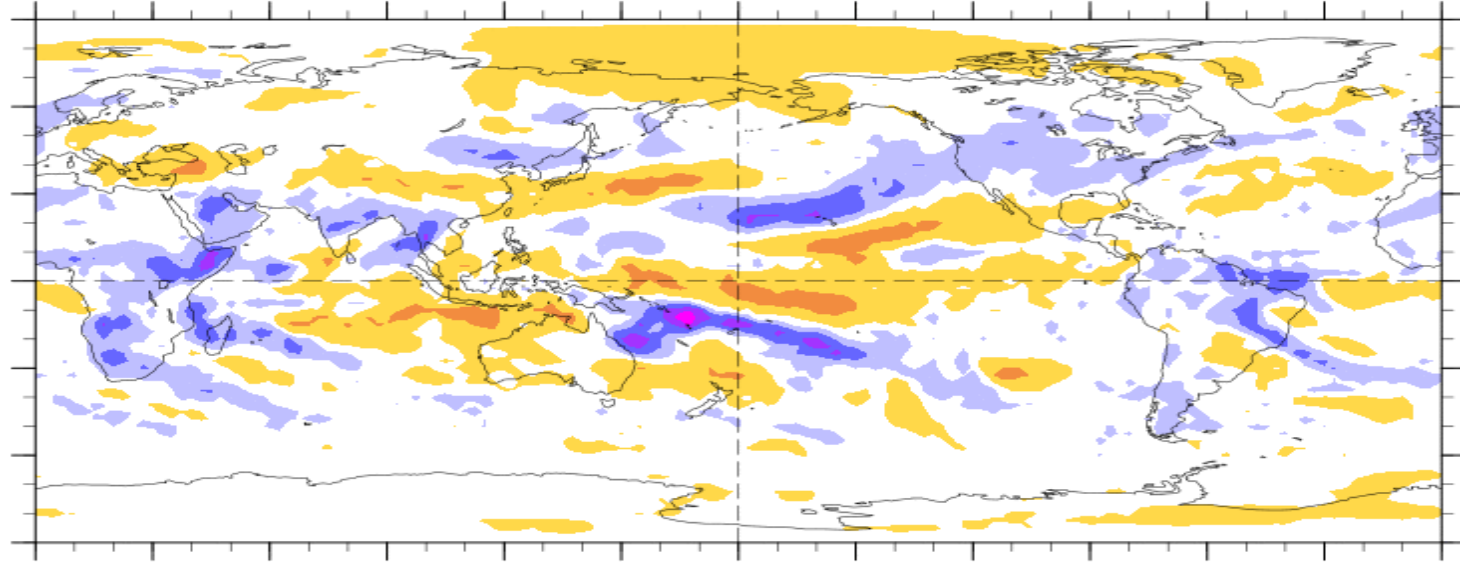
## Outline

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

# Outlook Review



7-Day Average OLR Anomaly 2018/04/02 - 2018/04/08

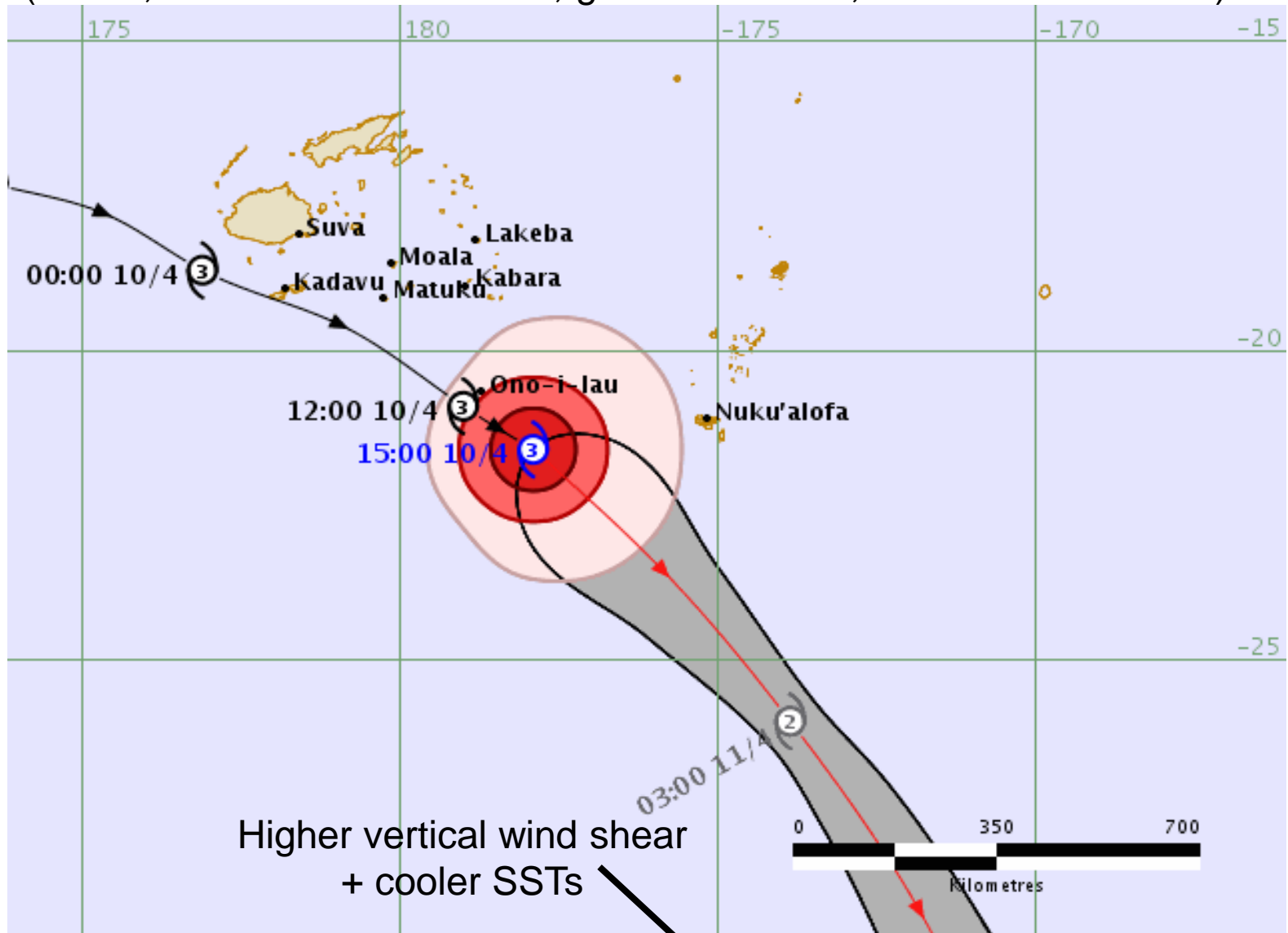


Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

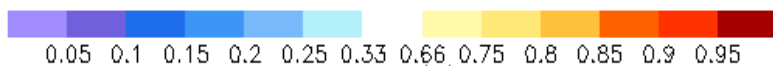
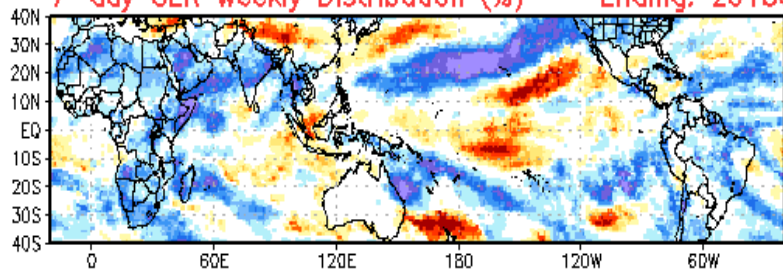
# Severe TC Keni passing Fiji

(at 12z, JTWC has 85 kt winds, gusts to 105 kts; serious flood issues)

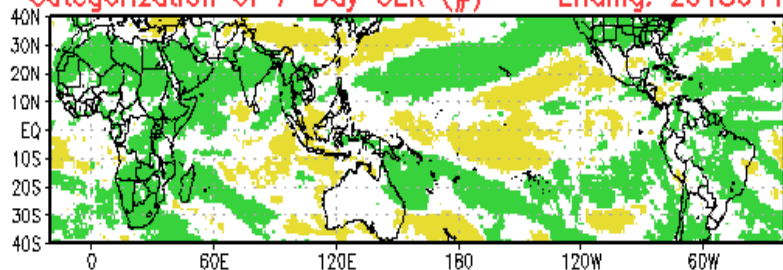


- RSMC Nadi TC Warning Centre (Fiji)
- TC Warning #32 issued 1524 UTC Tue 10 Apr 2018

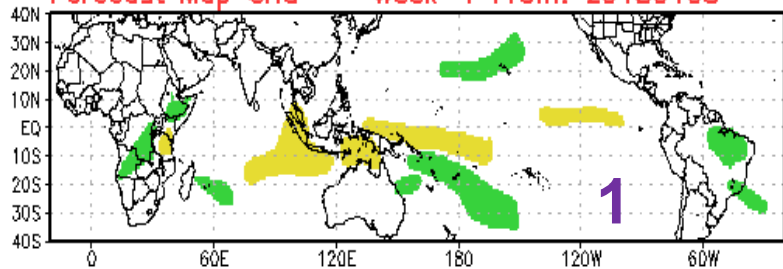
7-day OLR Weekly Distribution (%) -- Ending: 20180410



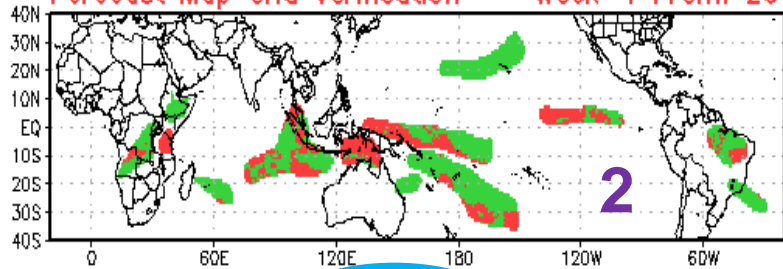
Categorization of 7-Day OLR (#) -- Ending: 20180410



Forecast Map Grid -- Week-1 From: 20180403

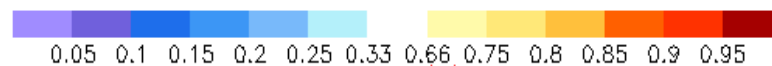
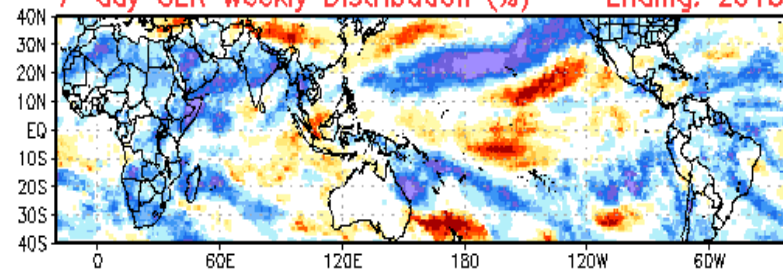


Forecast Map Grid Verification -- Week-1 From: 20180403

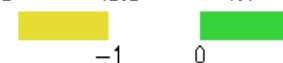
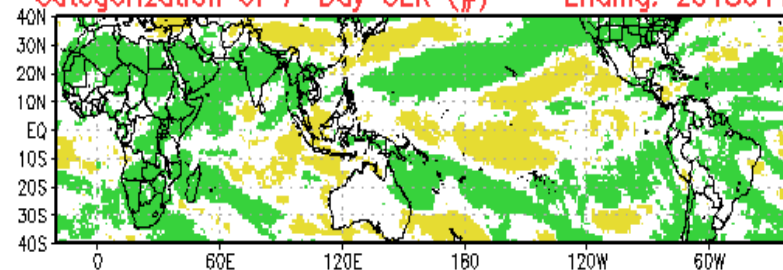


Hit: Green, Miss: Red  
Heidke Skill Score: 47.7006

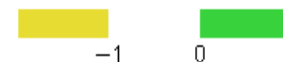
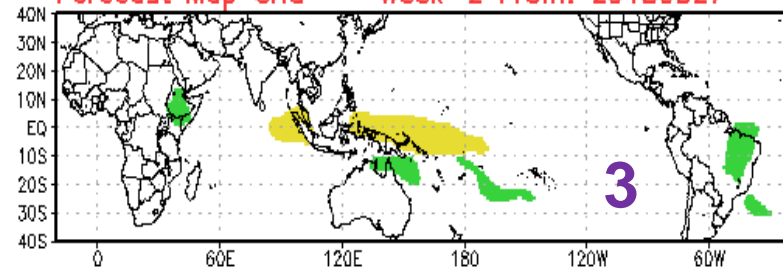
7-day OLR Weekly Distribution (%) -- Ending: 20180410



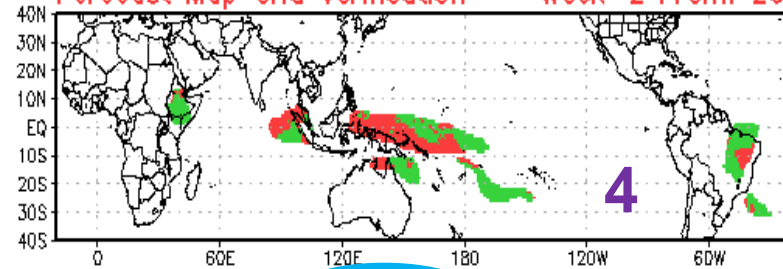
Categorization of 7-Day OLR (#) -- Ending: 20180410



Forecast Map Grid -- Week-2 From: 20180327



Forecast Map Grid Verification -- Week-2 From: 20180327



Hit: Green, Miss: Red  
Heidke Skill Score: 35.2073

# Synopsis of Climate Modes

## **ENSO:**

- A transition from La Nina to ENSO-neutral is most likely (~55% chance) during the March-May season, with neutral conditions likely to continue into the second half of the year.

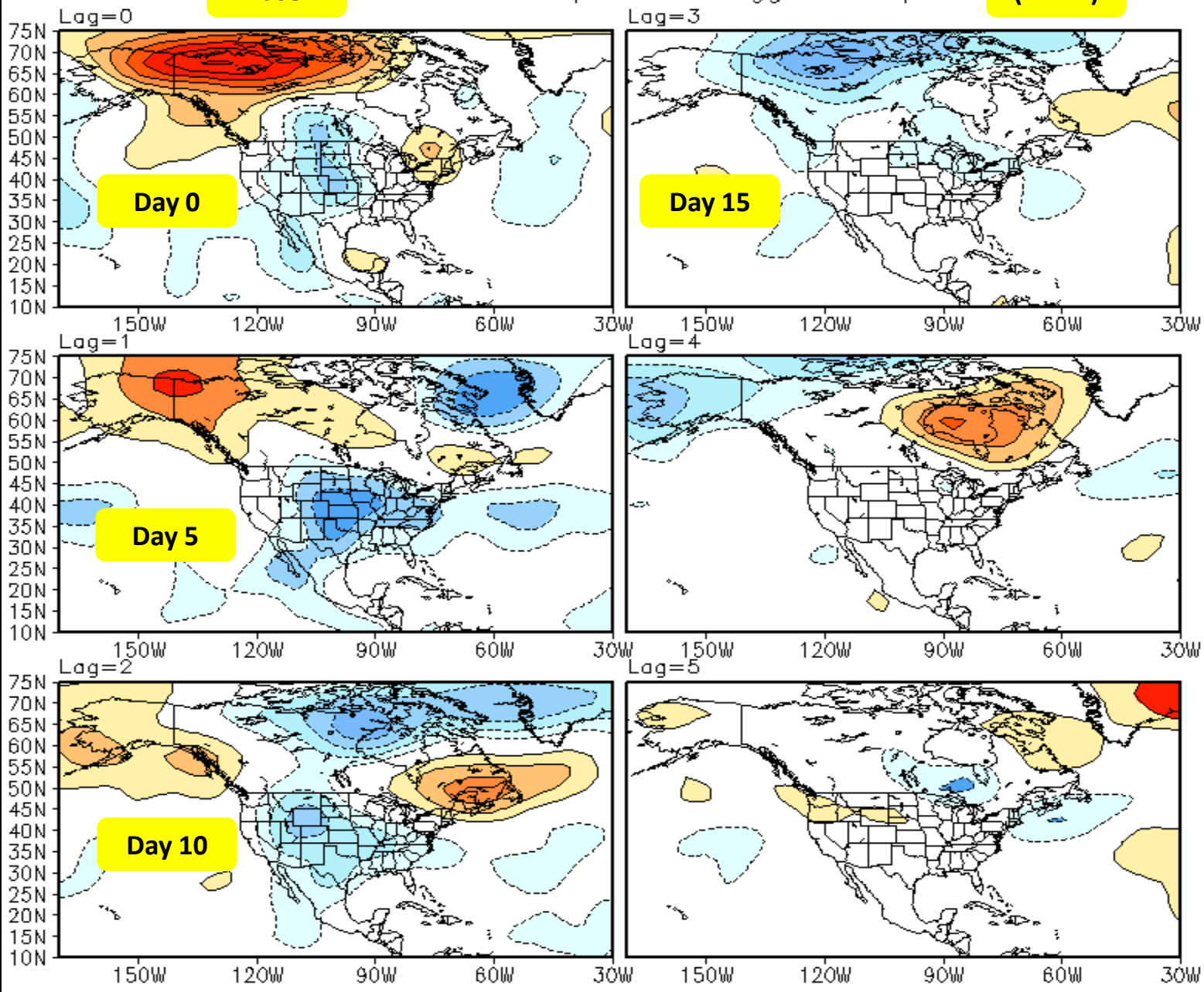
## **MJO and other subseasonal tropical variability:**

- An amplified MJO propagated across the Western Hemisphere and into Africa during the past week.
- Most dynamical models (except the CFS) predict the MJO signal will continue its rapid eastward propagation across Africa and the western Indian Ocean during Week-1 (consistent with Kelvin wave phase speeds); then weaken rapidly into the unit circle over the eastern Indian Ocean during Week-2. However, the CFS predicts a brief westward motion before resuming eastward propagation in phase 1, maintaining moderate amplitude throughout the two-week period.

## **Extratropics:**

- MJO is likely to have a small effect on the extended range temperature and precipitation forecasts for the U.S. (lagged impacts from Phase 1 are small over North America in the 5-15 day time period.)

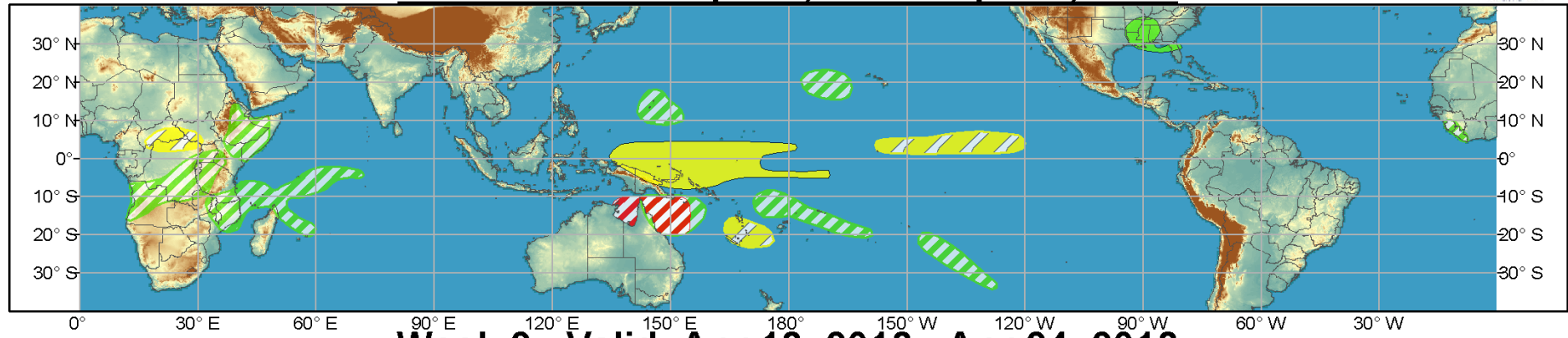
RMM Phase 1 850-hPa Temperature Lagged Composite (MAM)



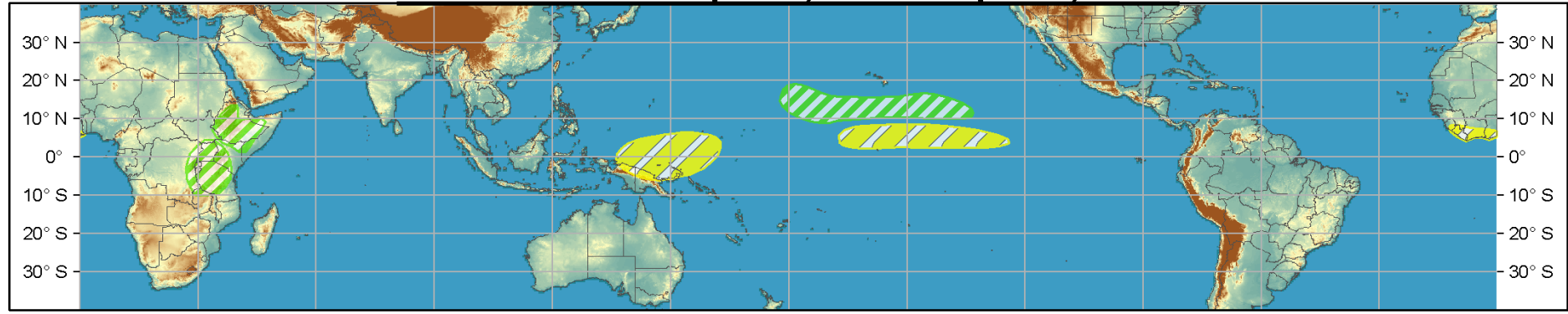


# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

## Week 1 - Valid: Apr 11, 2018 - Apr 17, 2018



## Week 2 - Valid: Apr 18, 2018 - Apr 24, 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.
- 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: 04/10/2018  
Forecaster: Artusa

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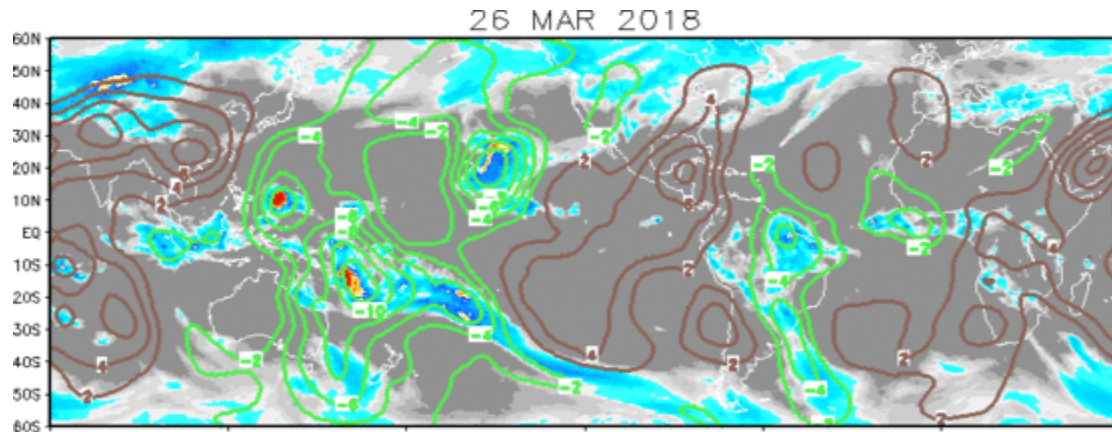


# IR Satellite & 200-hpa Velocity Potential Anomalies

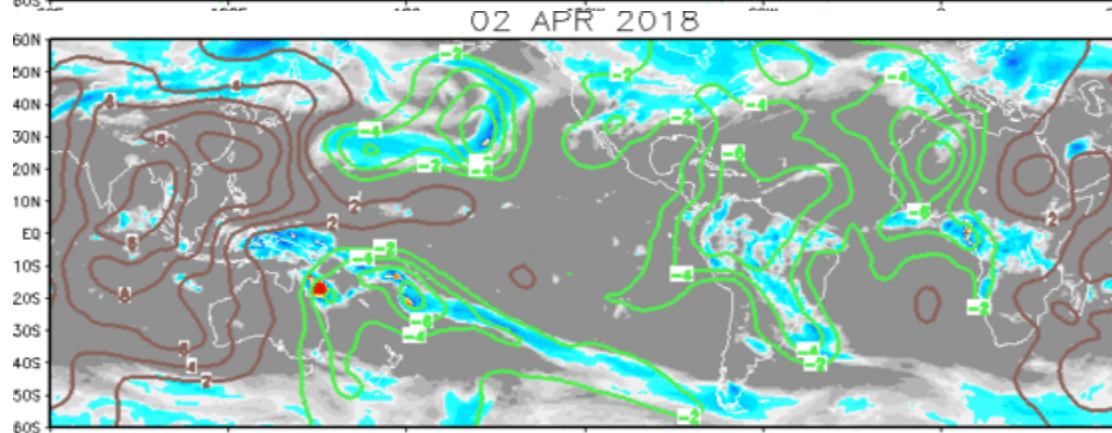
Green: Enhanced Divergence

Brown: Enhanced Convergence

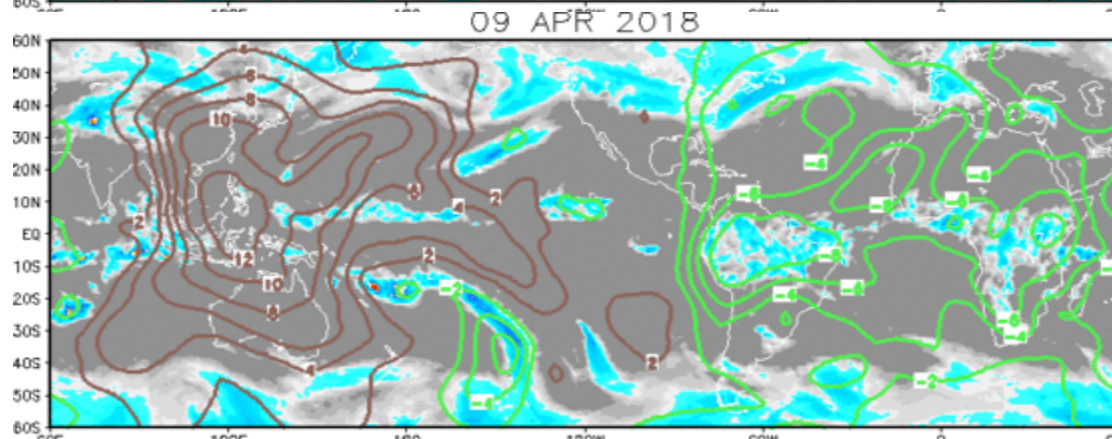
Wave-2 not projecting onto MJO.  
Enhanced Divergence (associated with enhanced convection) over the western Pacific & South America.



Wave-1 with an MJO projection.  
Enhanced DIV over W-Hemisphere;  
enhanced CON over E-Hemisphere

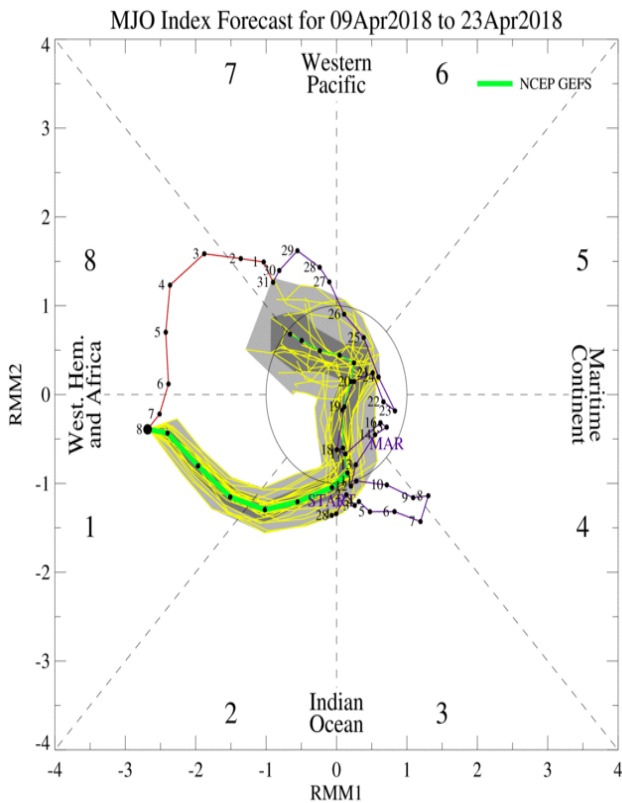


Wave-1 with a moderate MJO projection.  
Enhanced DIV (~90W to 90E).  
Enhanced CON elsewhere

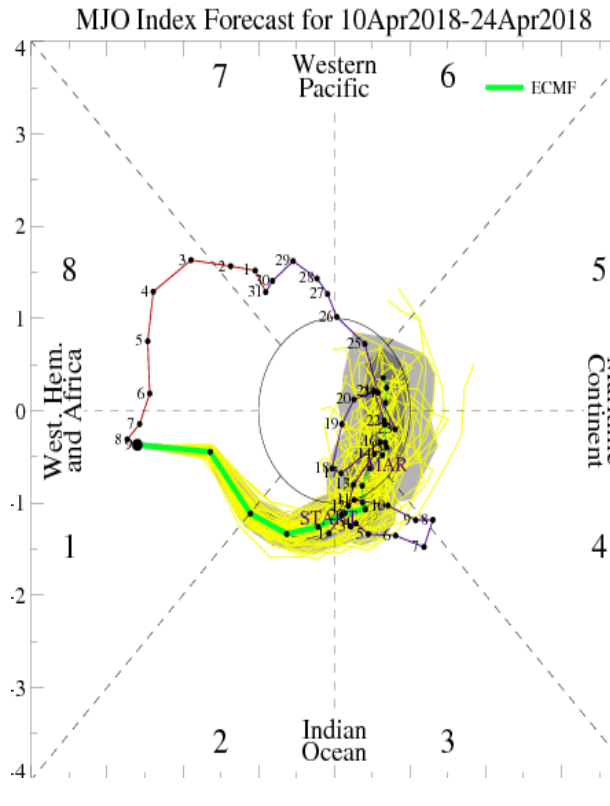




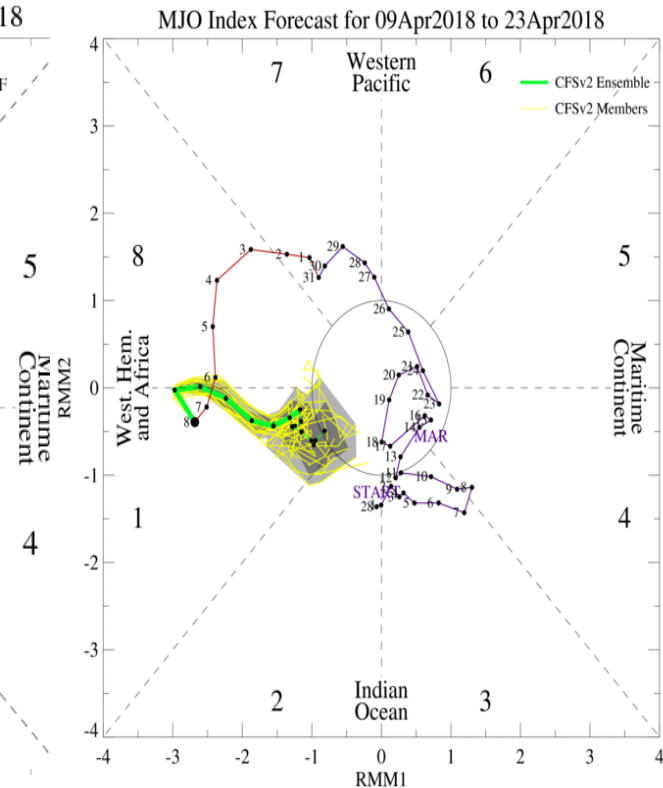
# MJO Observation/Forecast



GEFS



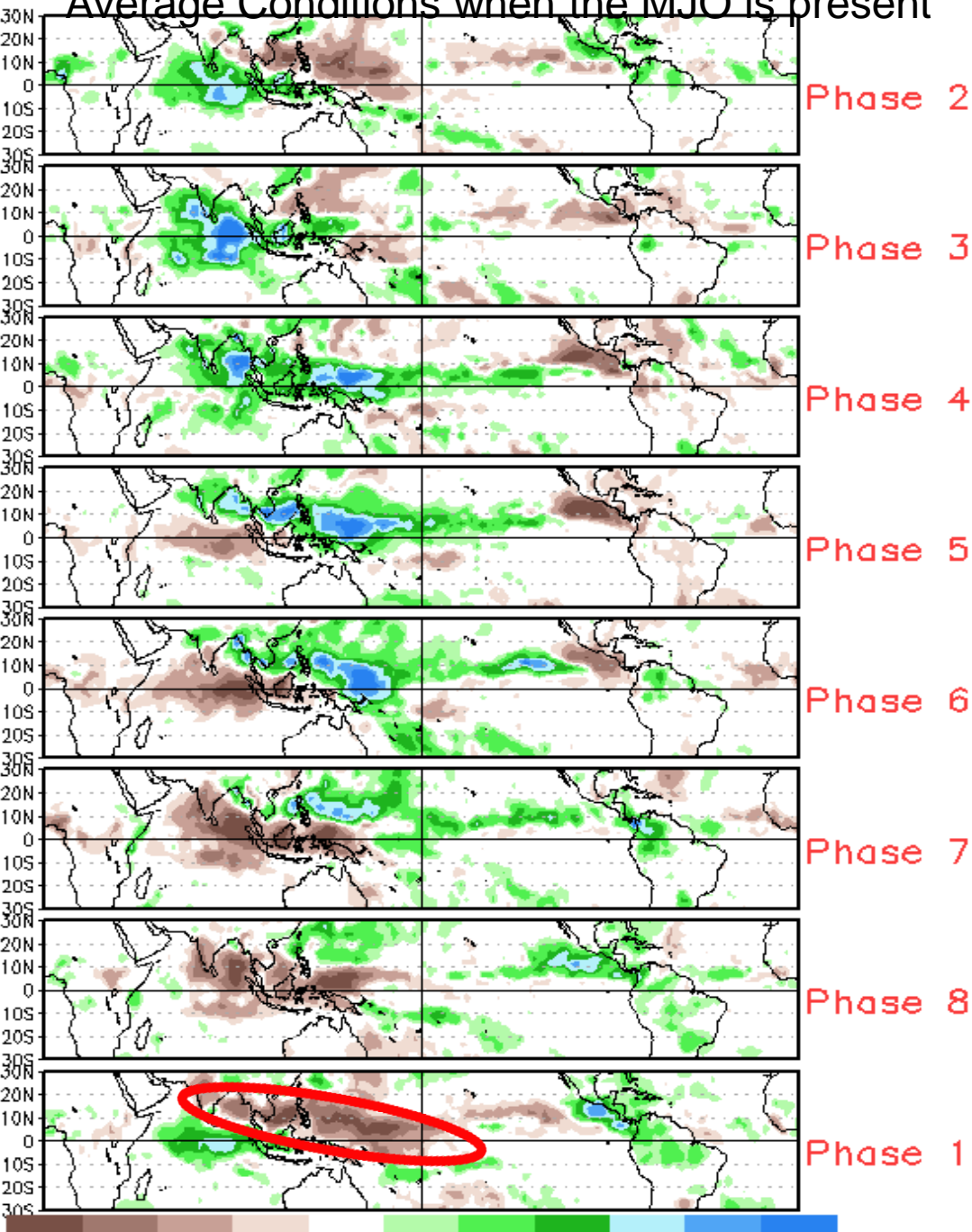
ECMWF



CFS

Wheeler-Hendon based analyses of model forecasts indicate rapid propagation to the east over phases 1,2 (GEFS & ECMWF) during Week-1, with rapid weakening in phases 2,3 (Week-2). The CFS begins with modest retrogression, before assuming some eastward propagation and weakening rapidly in phase 1 (during the two-week period).

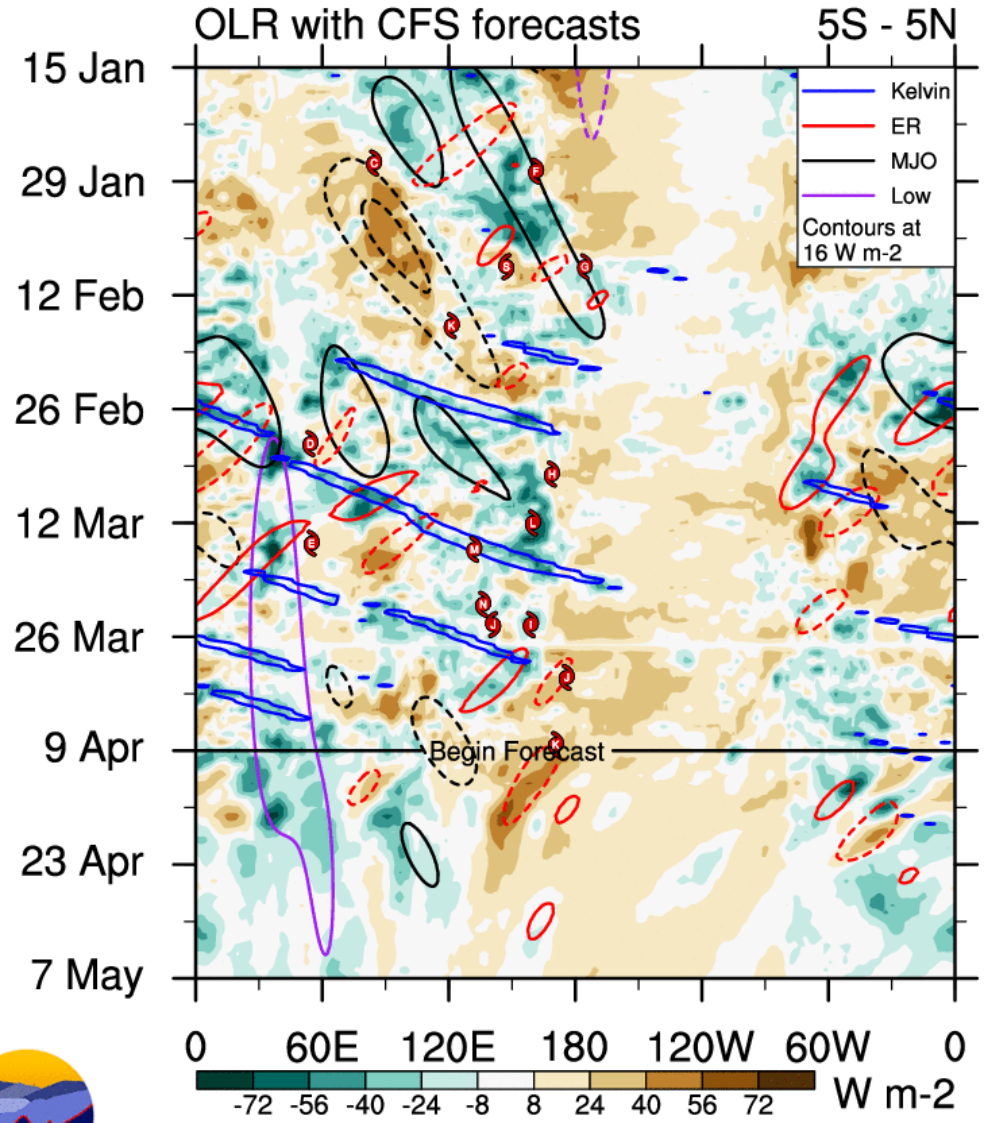
# Average Conditions when the MJO is present



CAVEAT: These panels are representative of robust MJO events.

**MJO, Rossby wave** and **Kelvin wave** having an influence

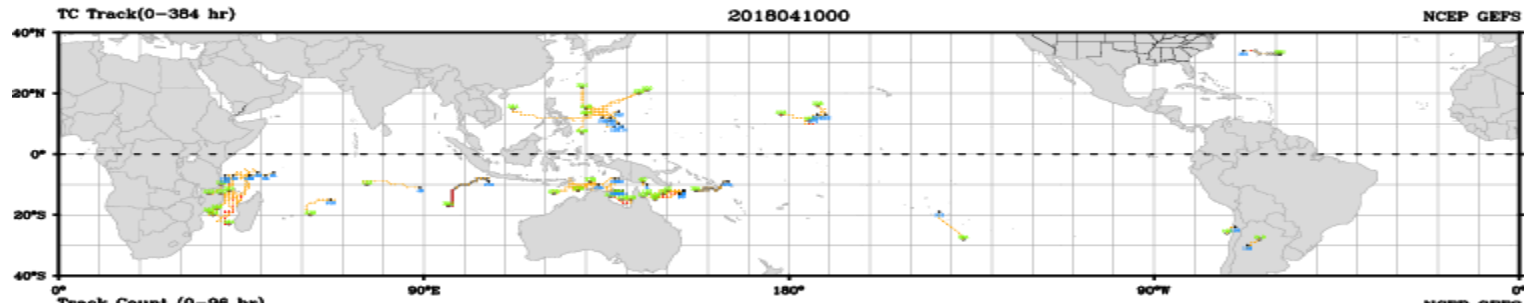
**Low-frequency component (wet)** in western Indian Ocean (60E)



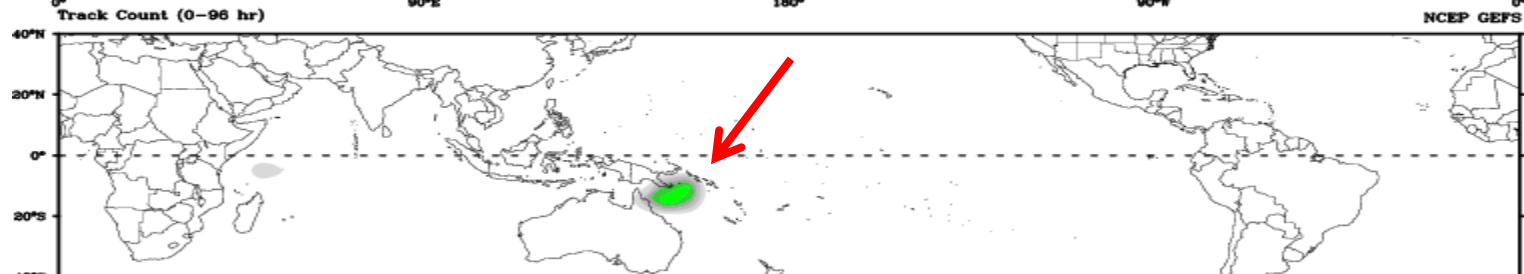
[ncics.org/mjo](http://ncics.org/mjo)

Tue 2018-04-10 1525 UTC

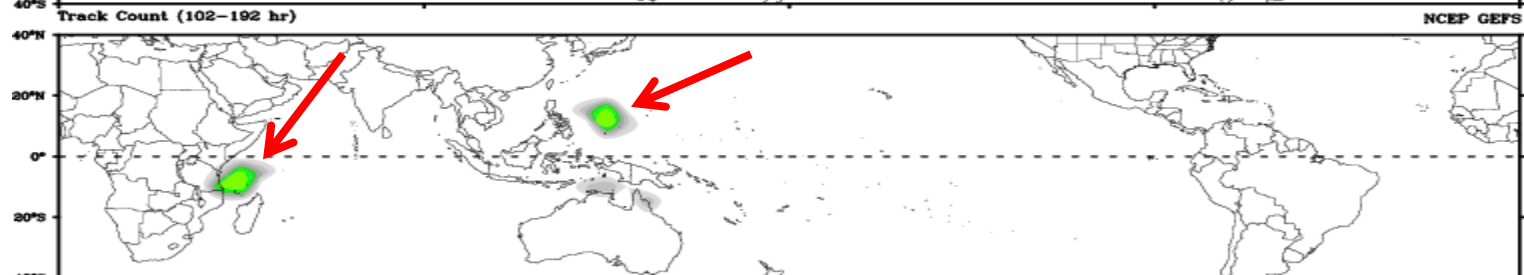
Carl Schreck (cjschrec@ncsu.edu)



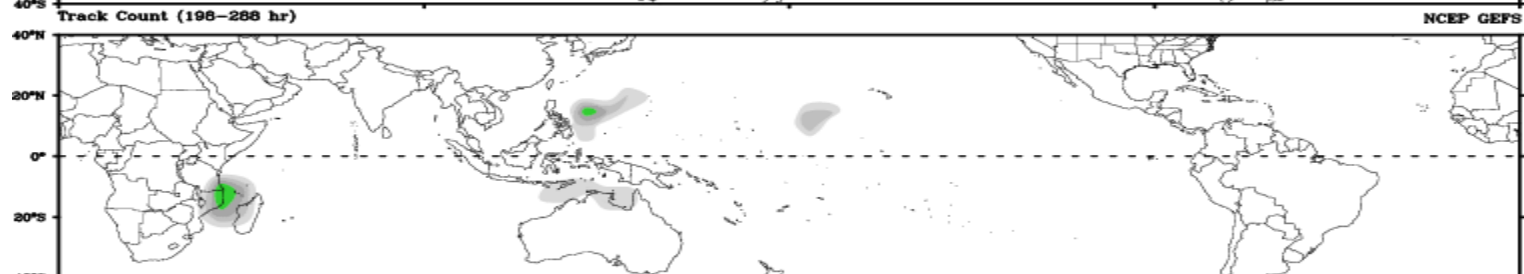
Days 1-4



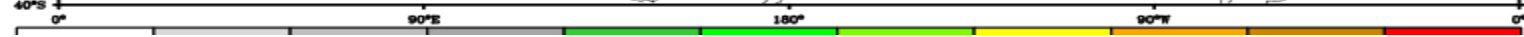
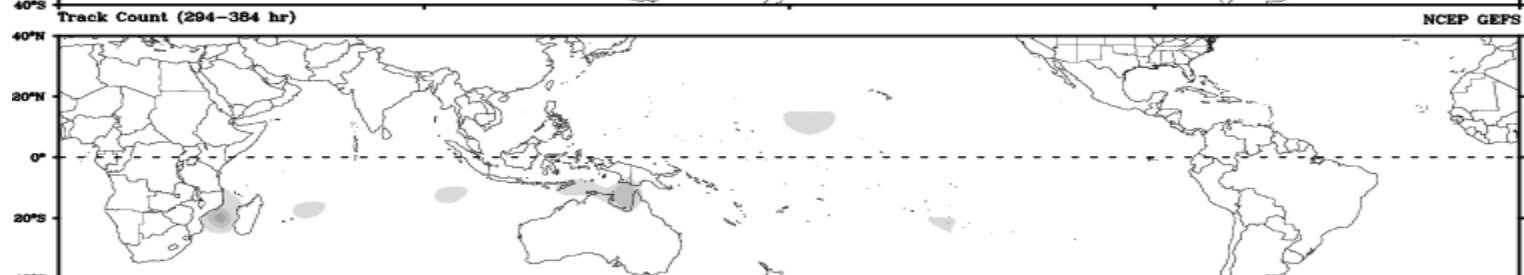
Day 5-8



Day 9-12

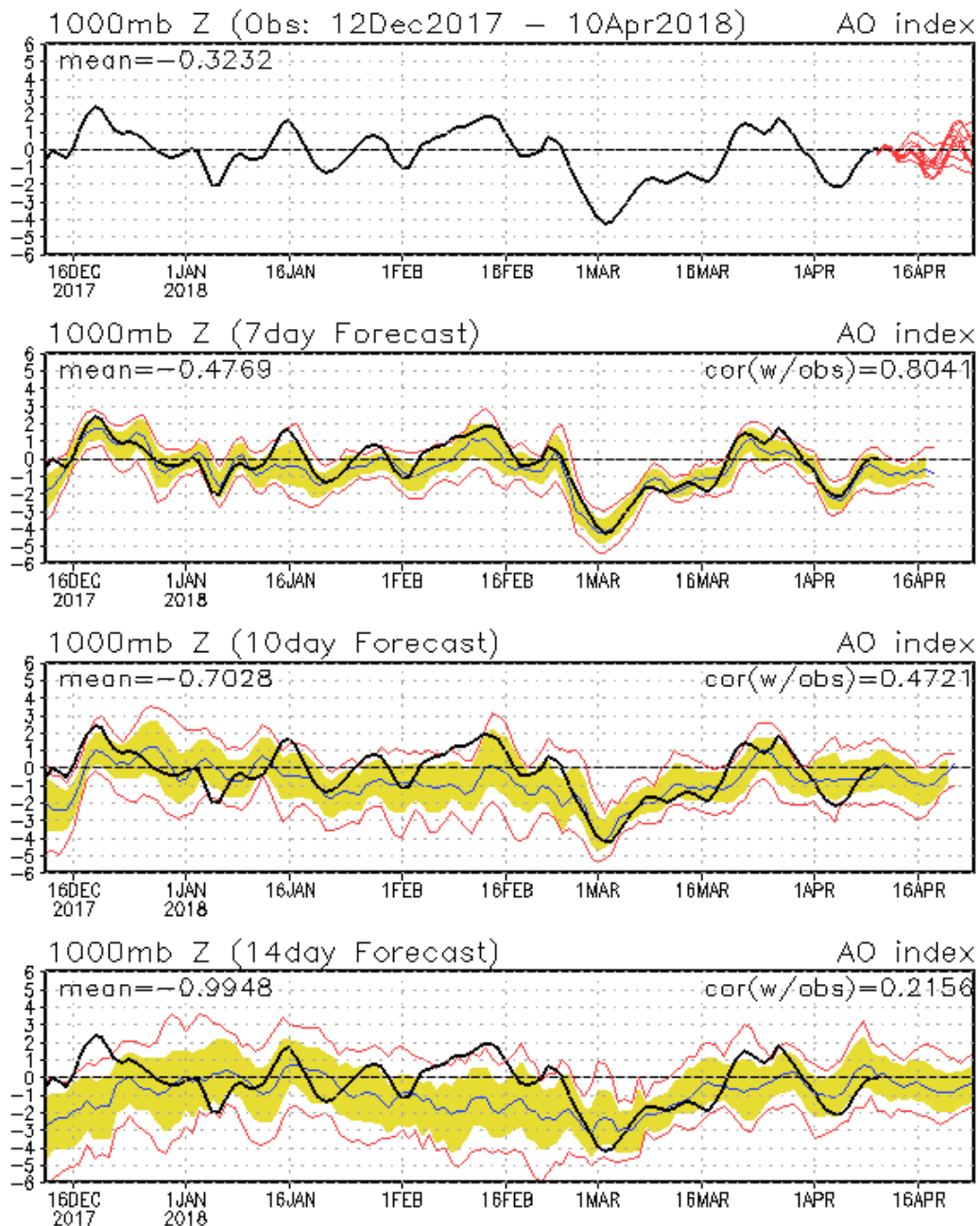


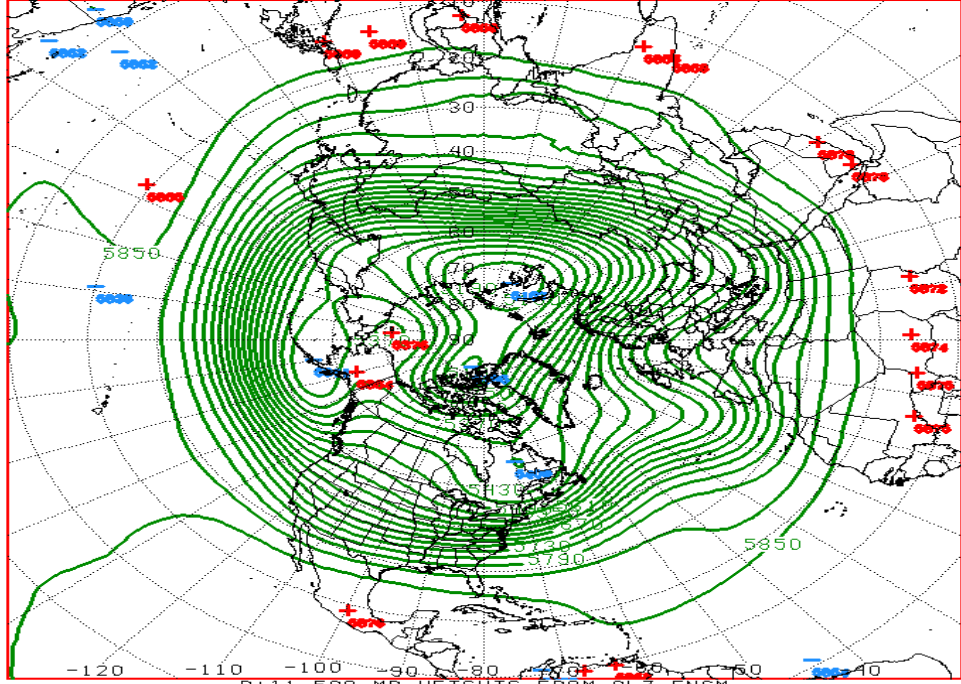
Day 13-15



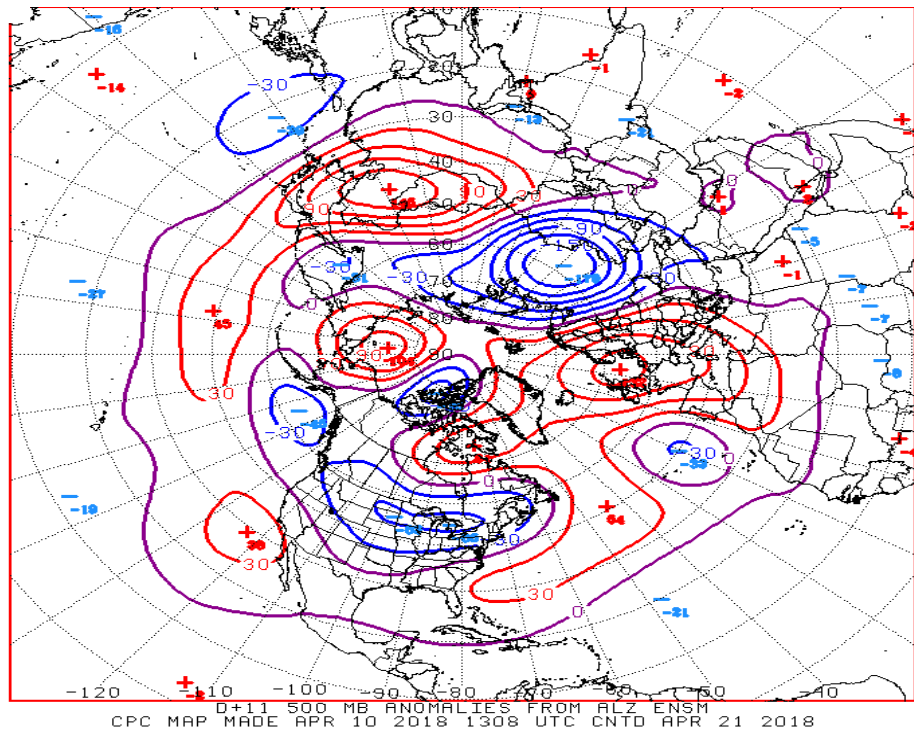
# Connections to U.S. Impacts

## AO: Observed & ENSM forecasts





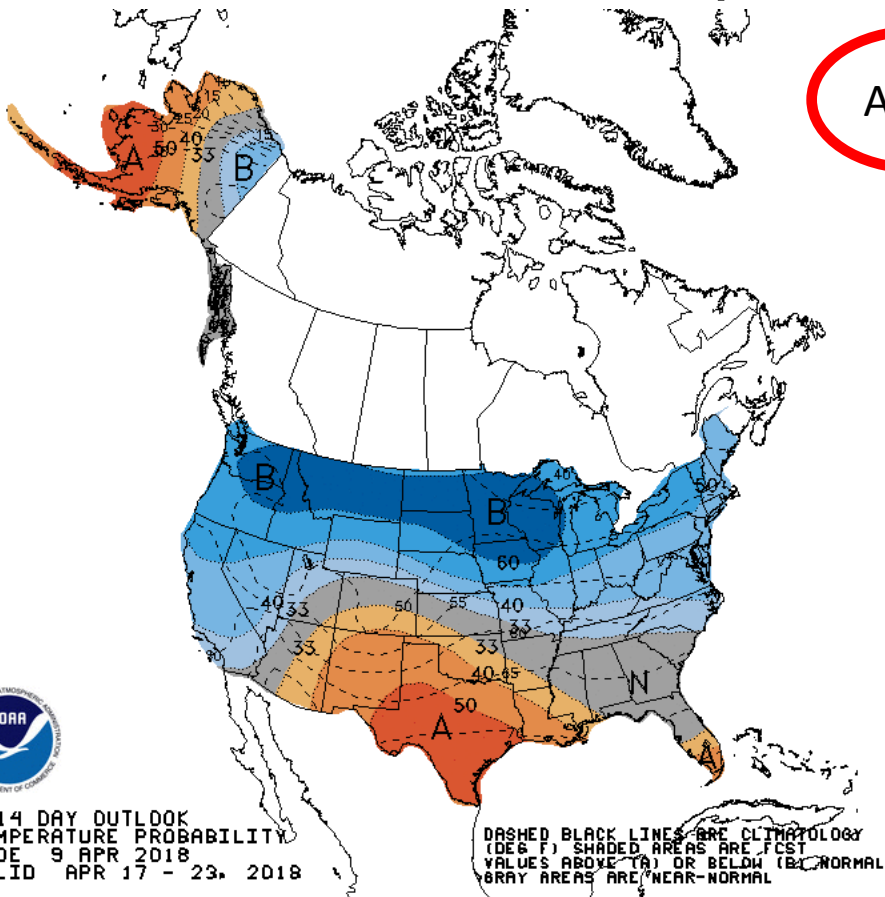
Week-2 500-hPa Height Anomalies  
(from GFS Super-ensemble mean)



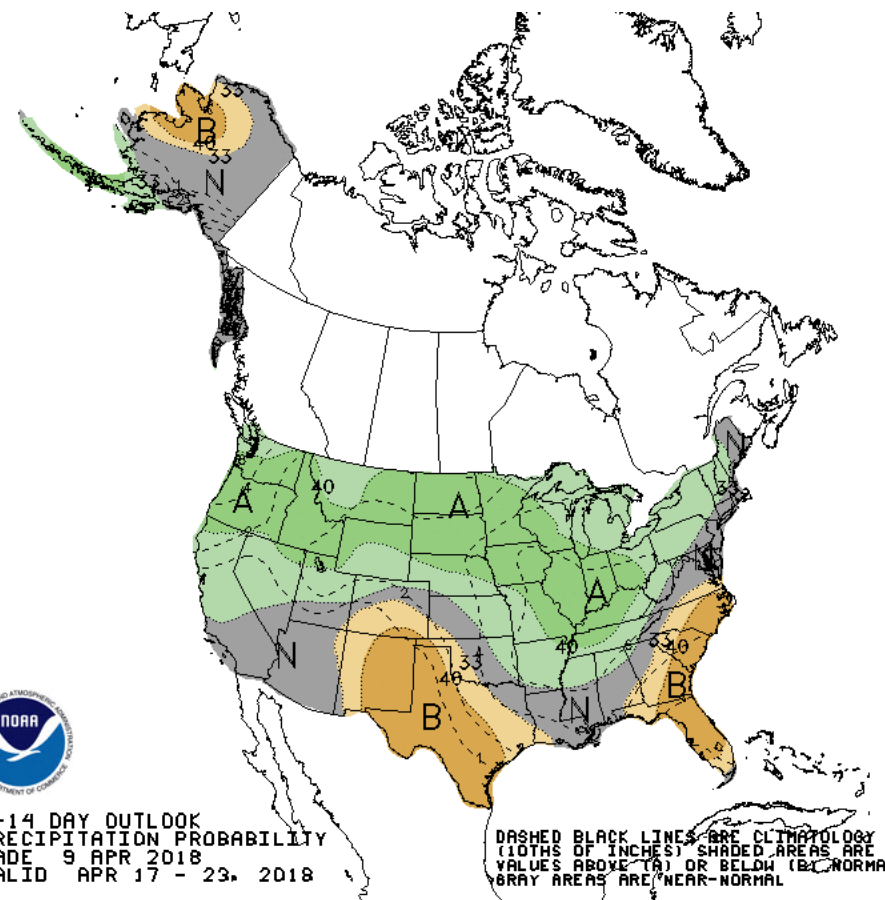
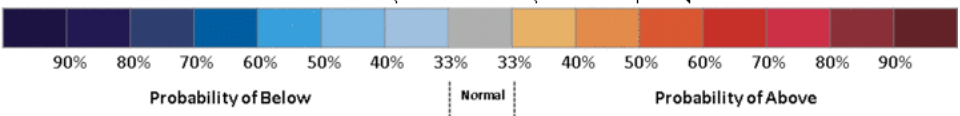
Week-2 500-hPa Heights  
(from GFS Super-ensemble mean)

# Week 2 – Temperature and Precipitation

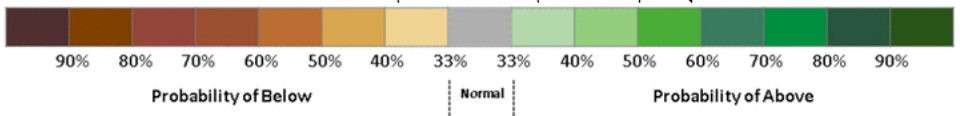
Apr 9



8-14 DAY OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 9 APR 2018  
VALID APR 17 - 23, 2018



8-14 DAY OUTLOOK  
PRECIPITATION PROBABILITY  
MADE 9 APR 2018  
VALID APR 17 - 23, 2018

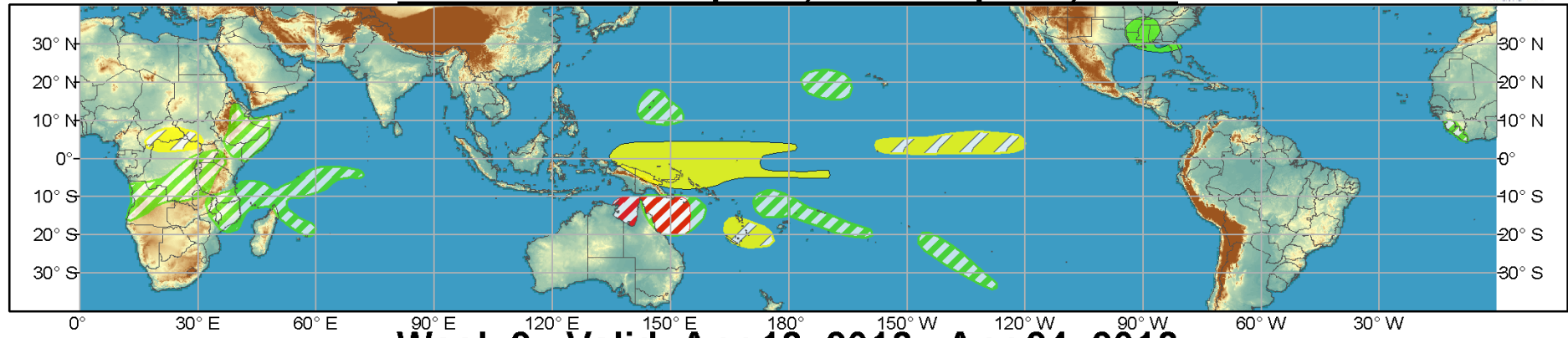




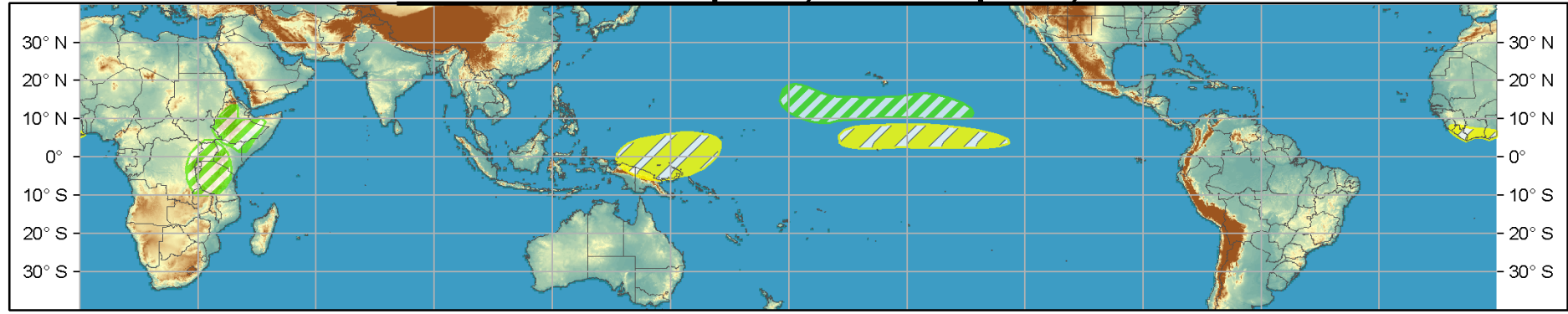


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