

Global Tropics Hazards And Benefits Outlook

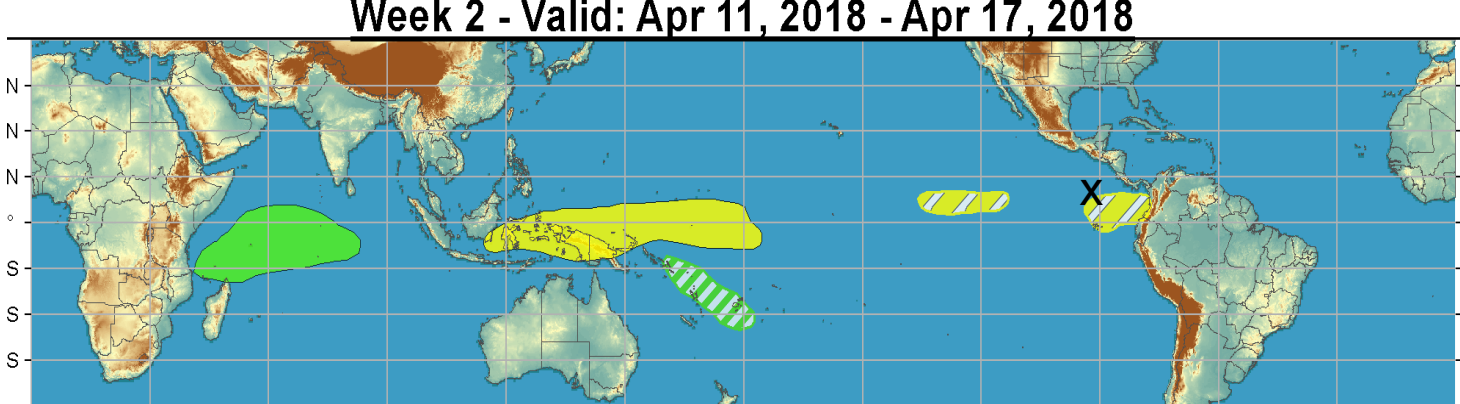
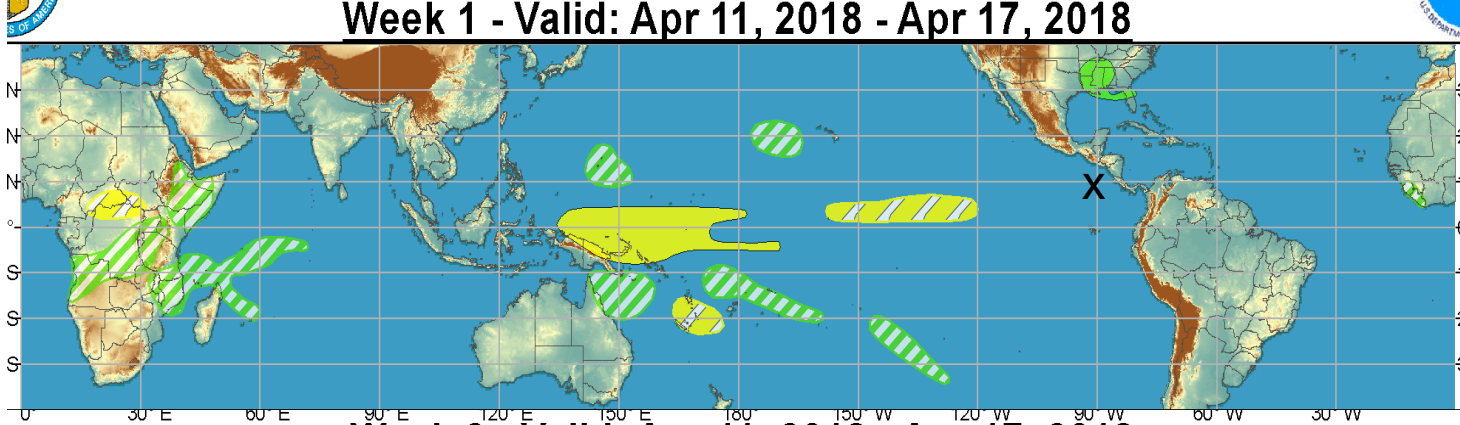
04/17/2018

Kyle MacRitchie

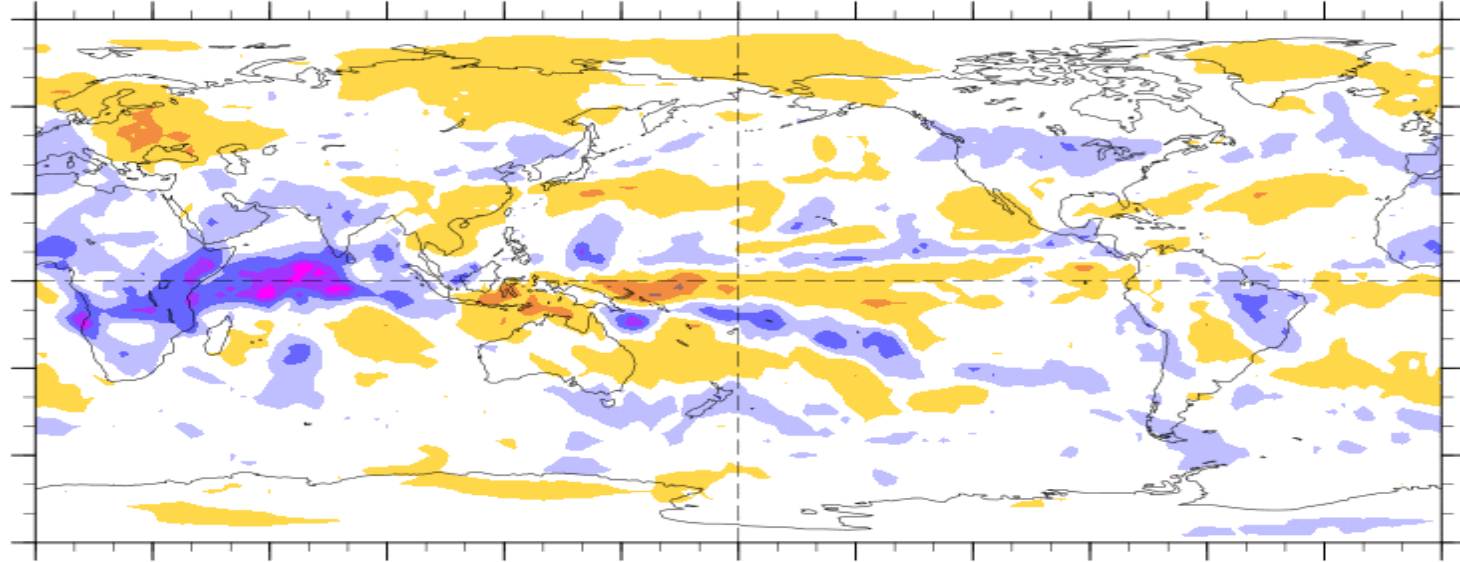
Outline

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

Outlook Review



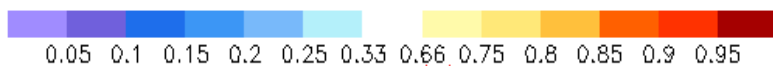
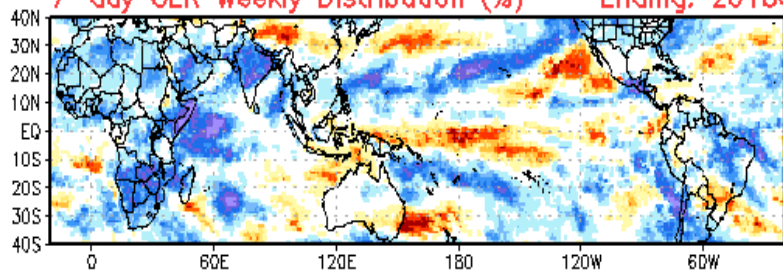
7-Day Average OLR Anomaly 2018/04/09 - 2018/04/15



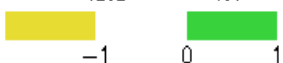
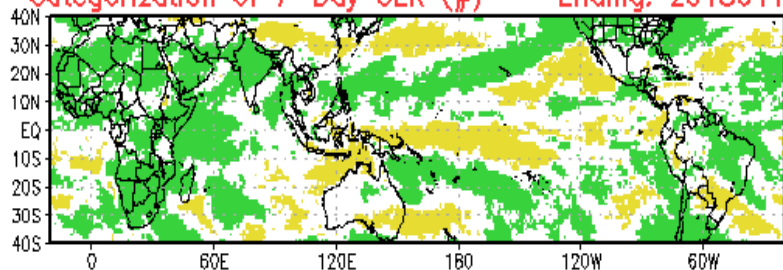
Cool shading
More clouds/rain

Warm shading
Less clouds/rain

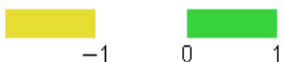
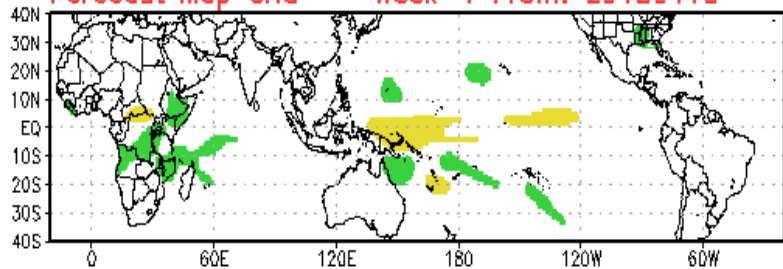
7-day OLR Weekly Distribution (%) -- Ending: 20180417



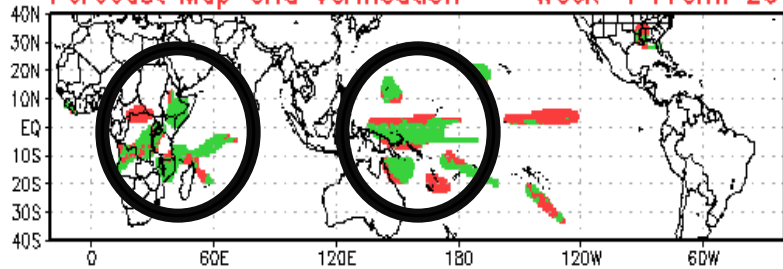
Categorization of 7-Day OLR (#) -- Ending: 20180417



Forecast Map Grid -- Week-1 From: 20180410

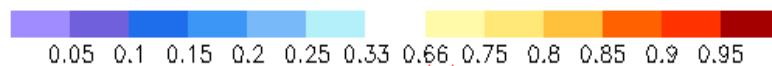
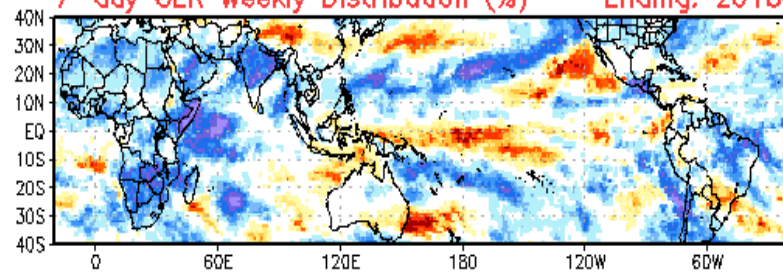


Forecast Map Grid Verification -- Week-1 From: 20180410

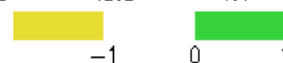
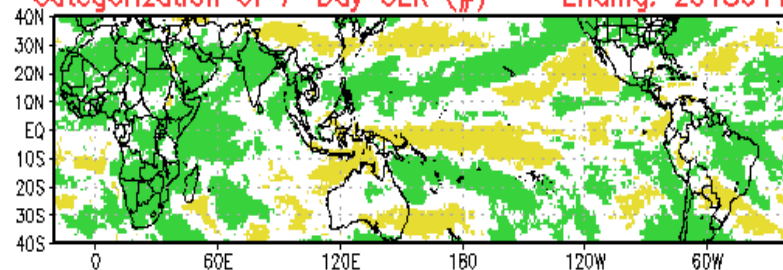


Hit: Green, Miss: Red
Heidke Skill Score: 44.5198

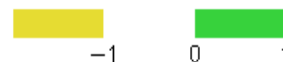
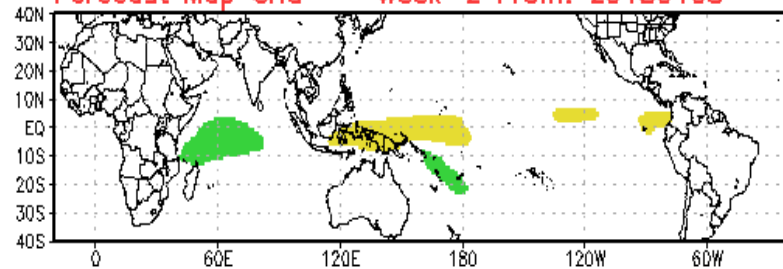
7-day OLR Weekly Distribution (%) -- Ending: 20180417



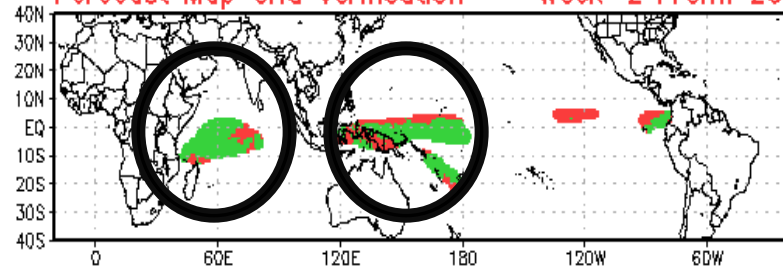
Categorization of 7-Day OLR (#) -- Ending: 20180417



Forecast Map Grid -- Week-2 From: 20180403



Forecast Map Grid Verification -- Week-2 From: 20180403



Hit: Green, Miss: Red
Heidke Skill Score: 47.8354

Synopsis of Climate Modes

ENSO:

- La Niña is expected to transition to ENSO-neutral during April-May, with ENSO-neutral then likely (greater than 50% chance) to continue through the Northern Hemisphere summer 2018. (Updated April 12, 2018)

MJO and other subseasonal tropical variability:

- The MJO is currently in RMM phase 3 over the western Indian Ocean.
- There is also an equatorial Rossby wave in the same region, which is contributing to atmospheric instability and the possibility of tropical cyclone formation.
- All of our model guidance suggests that the MJO will weaken and have an RMM amplitude < 1 by the end of the Week-1 period, though some models weaken the MJO more quickly than others.

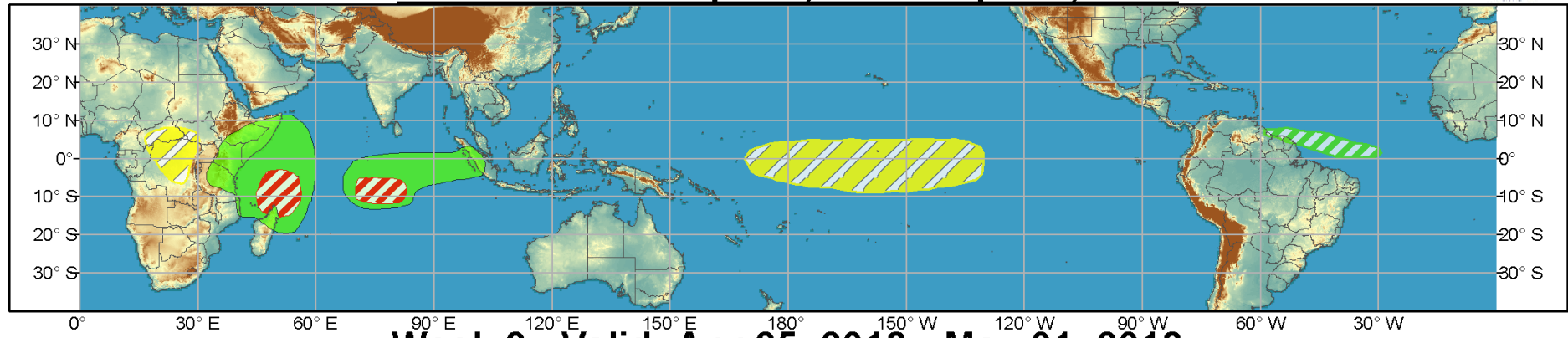
Extratropics:

- The weakening MJO is unlikely to have a discernable impact on the mid-latitudes.
- The mid-latitude jet stream will likely weaken (causing weak teleconnections) as the general circulation spins down and warmer weather takes hold.

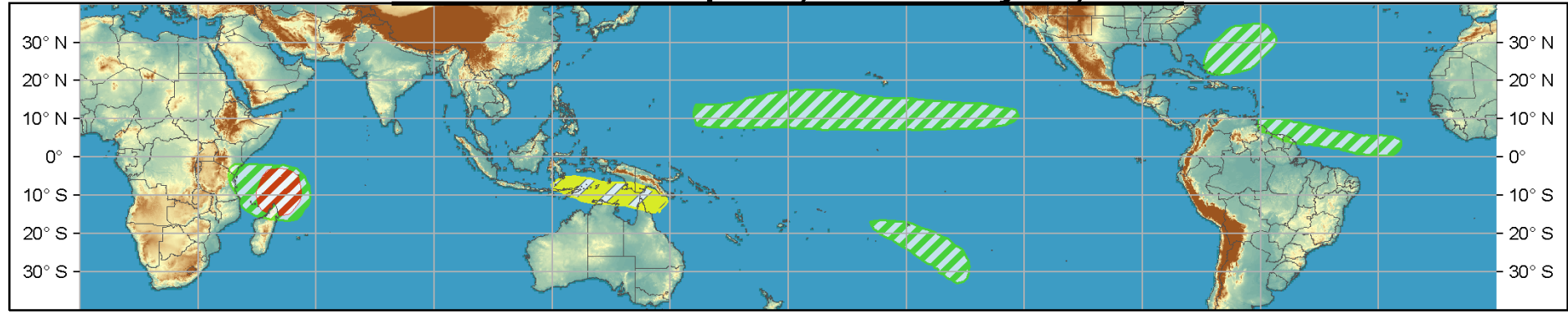


Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Apr 18, 2018 - Apr 24, 2018



Week 2 - Valid: Apr 25, 2018 - May 01, 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.
- Below-normal temperatures** 7-day mean temperatures in the lower third of the historical range.

Produced: 04/17/2018

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.

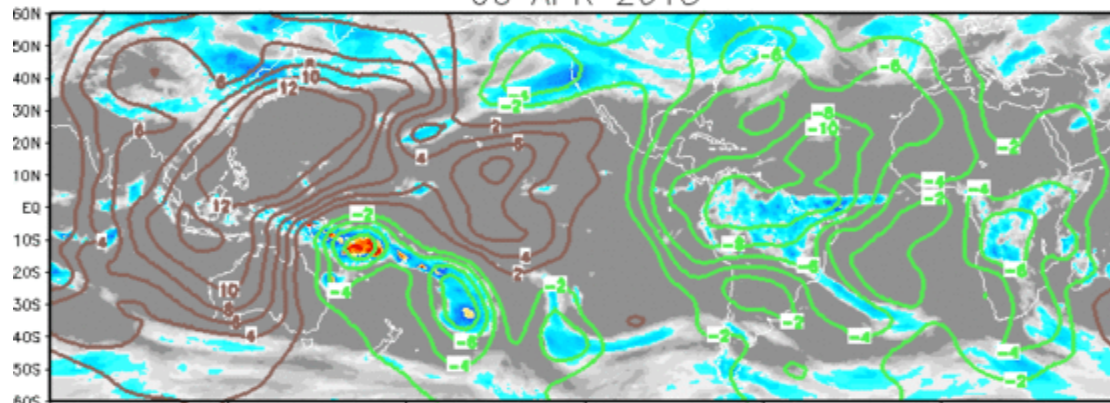


IR Satellite & 200-hpa Velocity Potential Anomalies

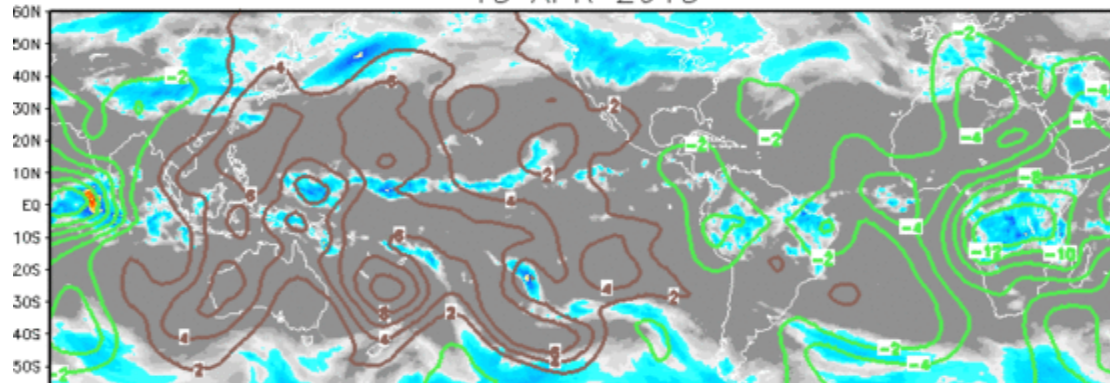
Green: Enhanced Divergence

Brown: Enhanced Convergence

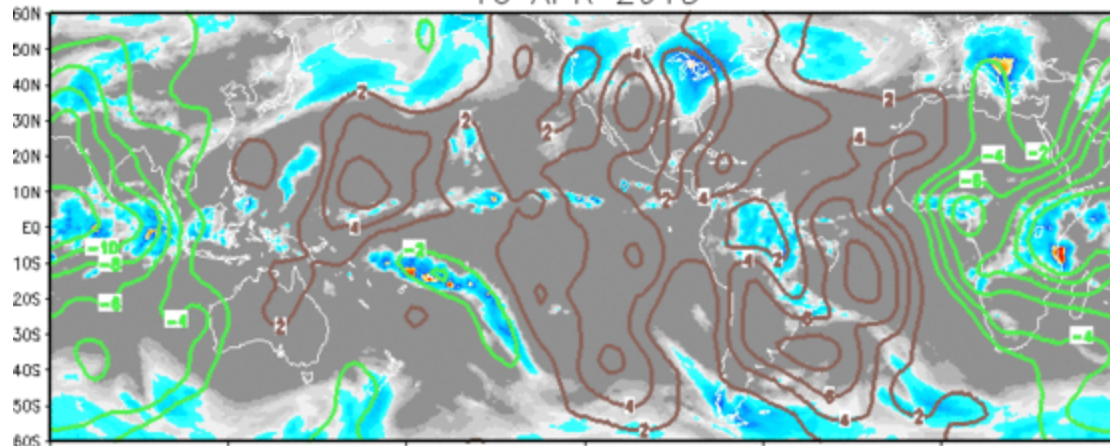
06 APR 2018



13 APR 2018



16 APR 2018

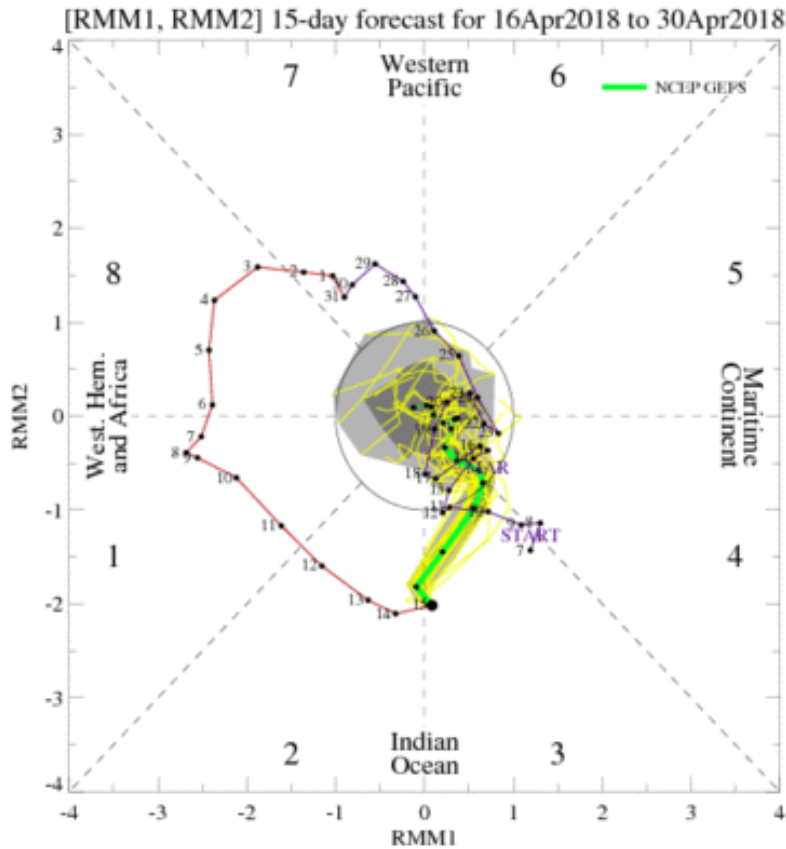


Wave-1 pattern with some noise caused by TC activity.

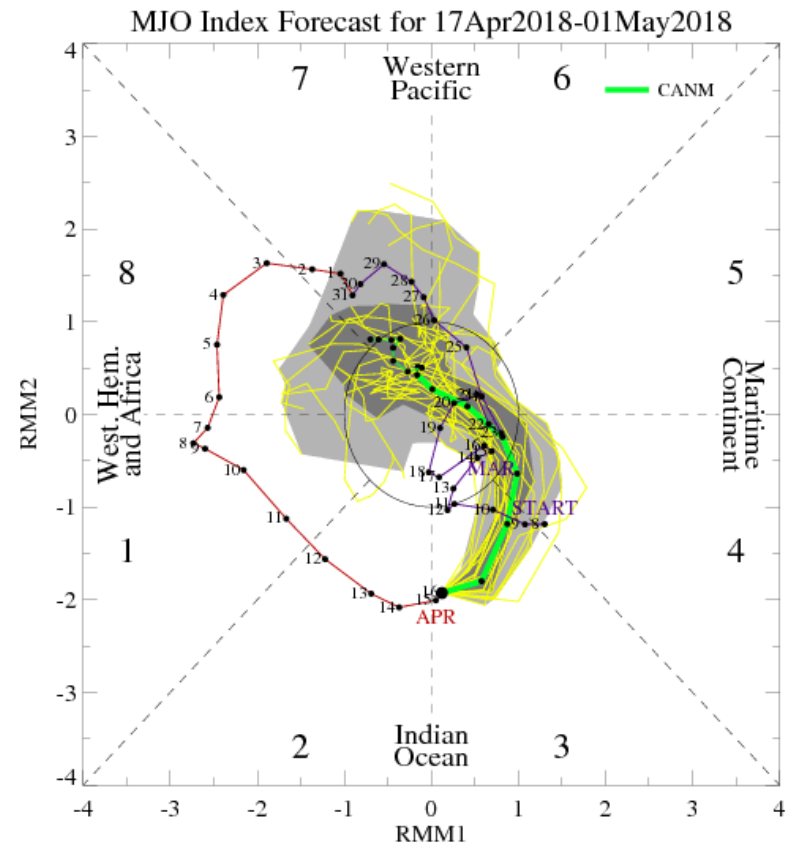
A stronger Wave-1 pattern dominated by the MJO.

Still a strong Wave-1 pattern, but this is likely to weaken over the next week.

MJO Observation/Forecast



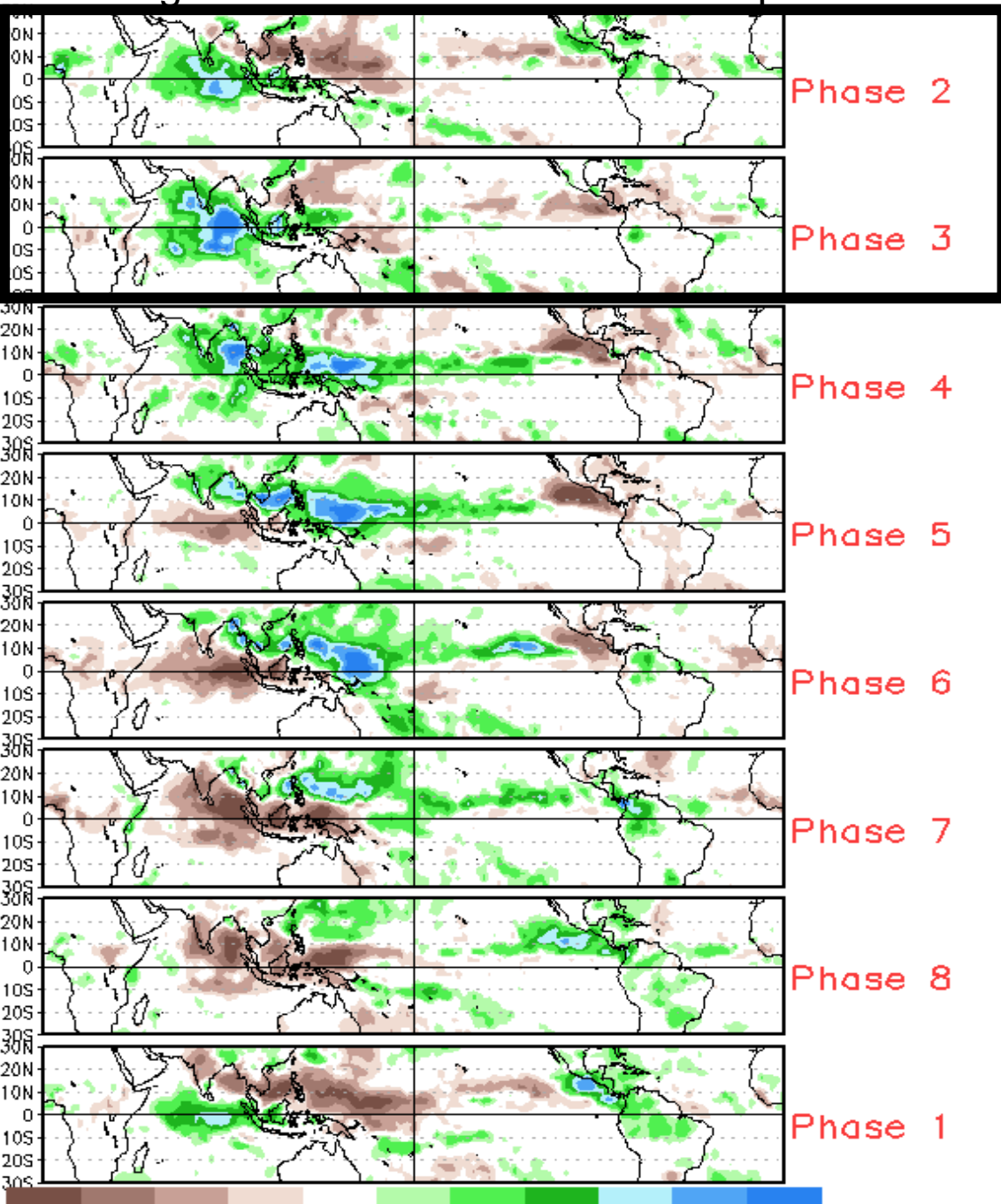
GEFS



CANM

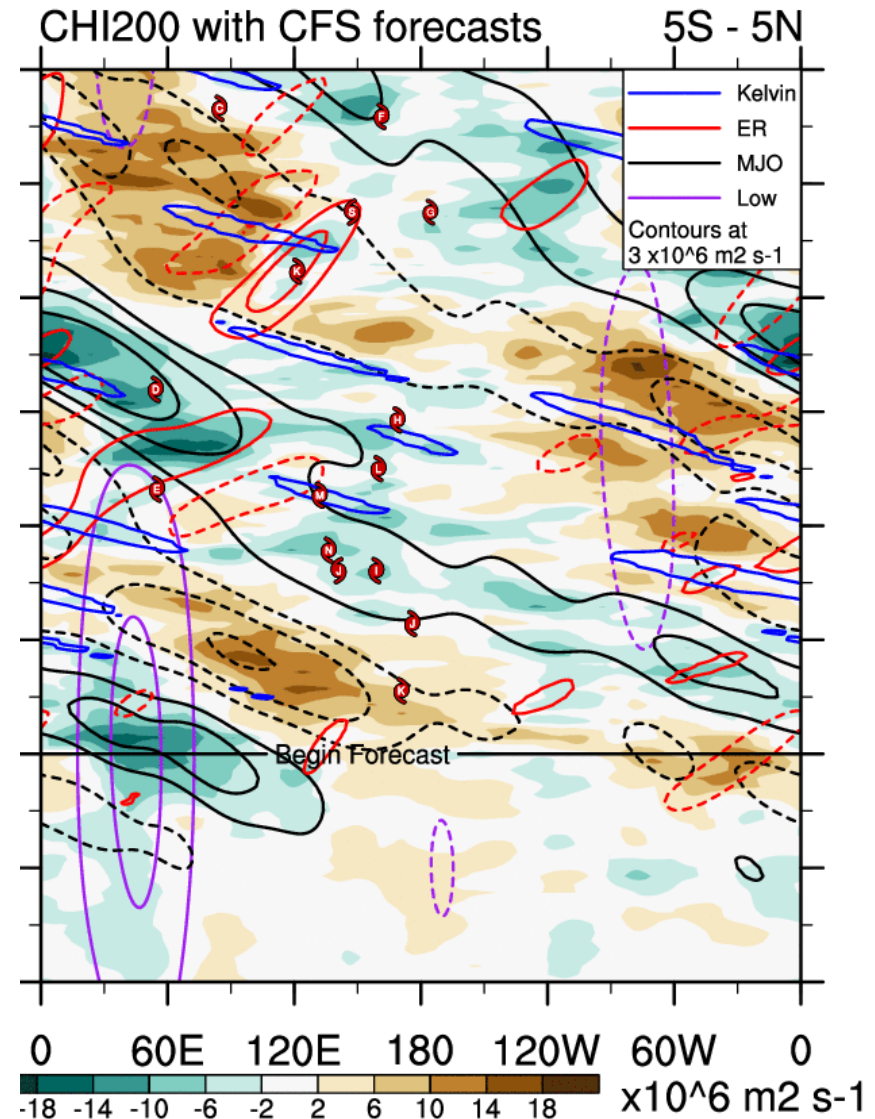
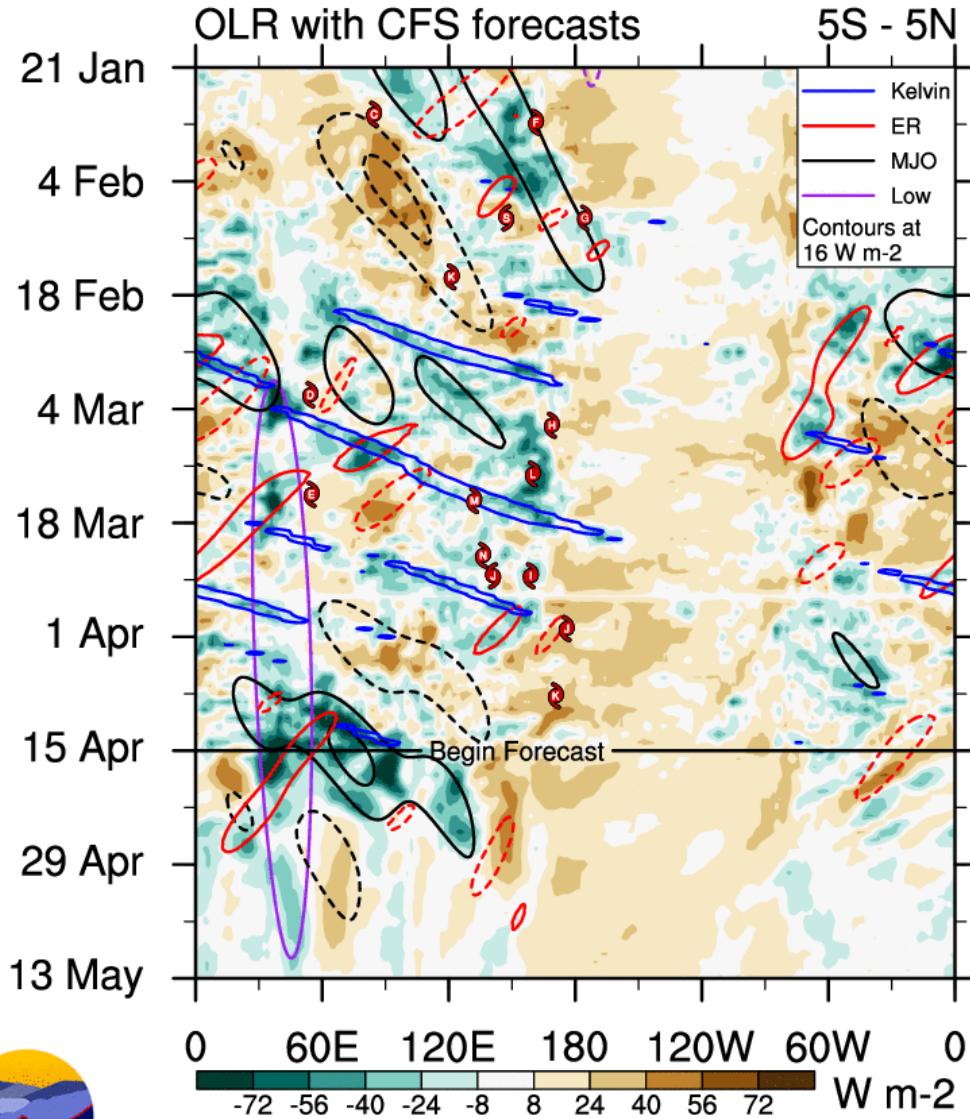
Wheeler-Hendon RMM diagrams from the GEFS and CANM models show that the MJO is forecast to weaken.

Average Conditions when the MJO is present



Week-1: Phases 2 to 3
Week-2: inactive

CAVEAT: These panels are representative of robust MJO events.



Mon 2018-04-16 1511 UTC

Carl Schreck (cjschrec@ncsu.edu)

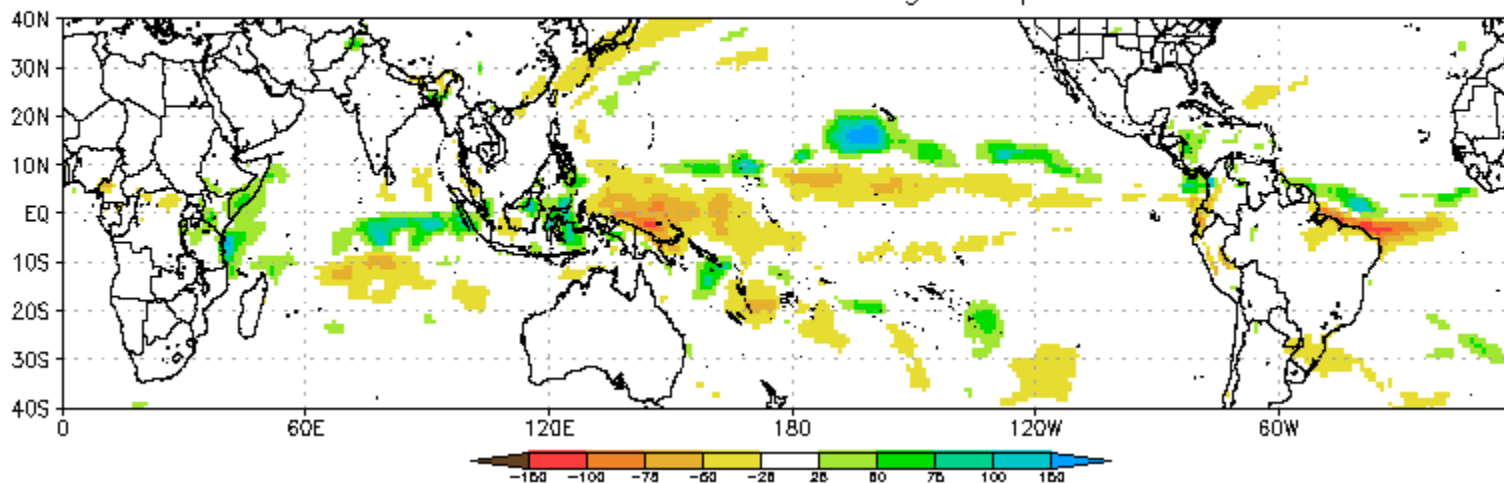
Tue 2018-04-17 1023 UTC

Carl Schreck (cjschrec@ncsu.edu)

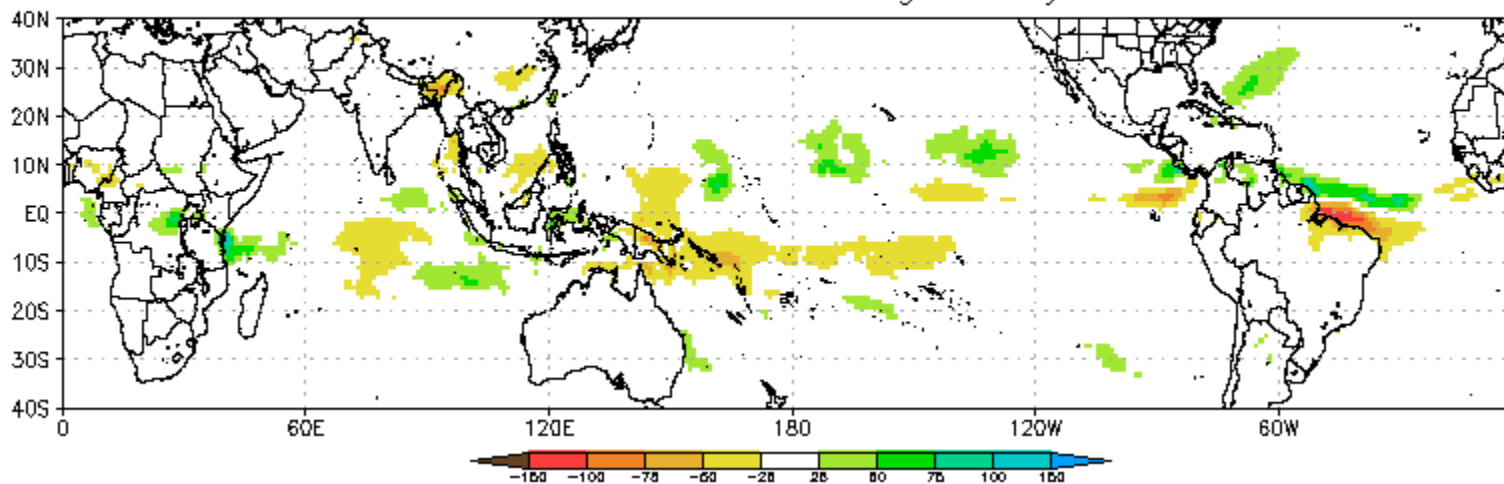
MJO forecast to weaken during Week-1

Equatorial Rossby wave forecast to move through Indian Ocean during Week-1

CFS Precipitation Anomalies (mm) Issued 16Apr2018
Week-1 Forecast Ending 24Apr2018

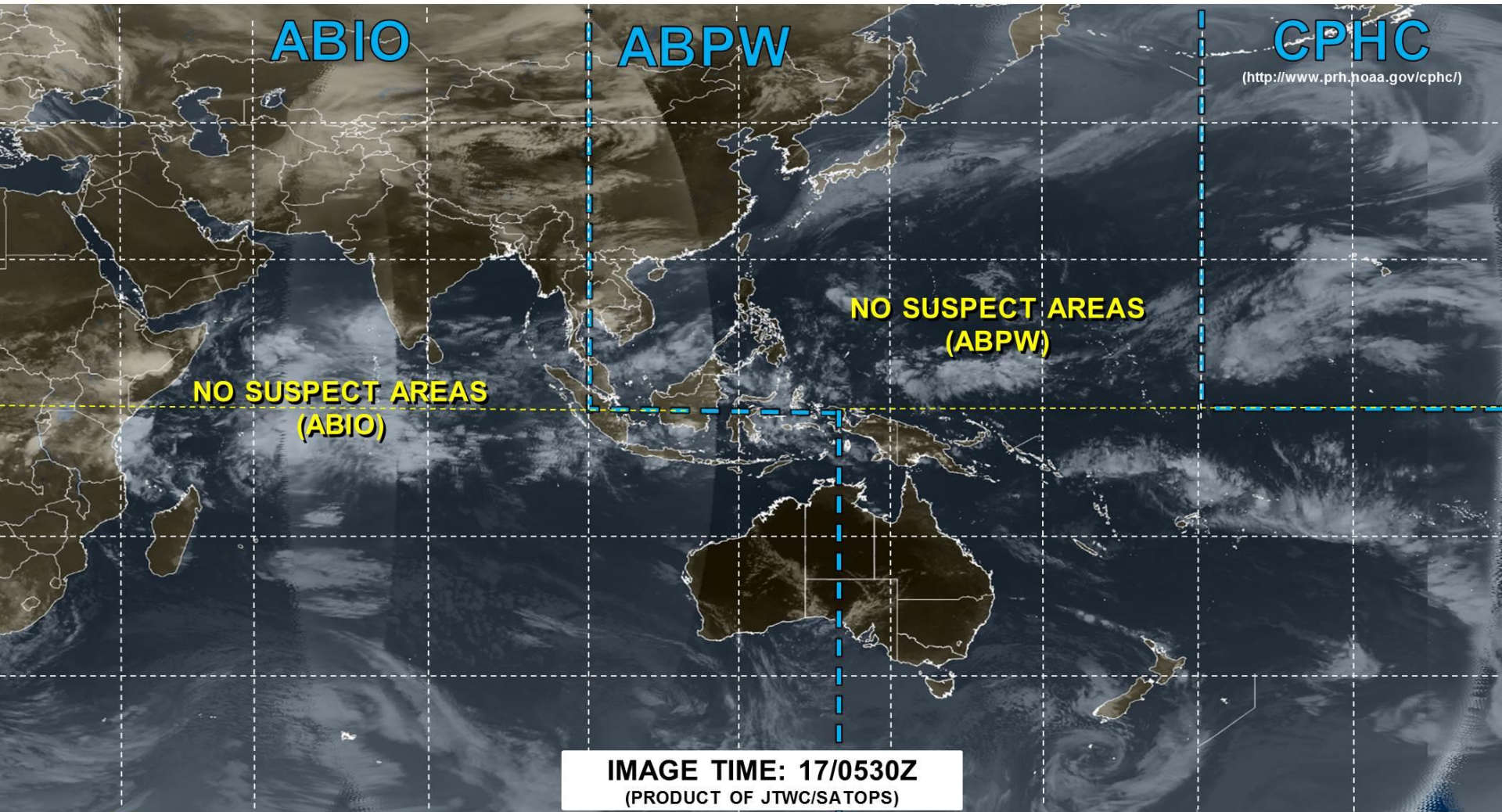


CFS Precipitation Anomalies (mm) Issued 16Apr2018
Week-2 Forecast Ending 01May2018





JOINT TYPHOON WARNING CENTER



LOW

TC formation unlikely within 24 hours

MEDIUM

TC development likely, but expected to occur beyond 24 hours

HIGH

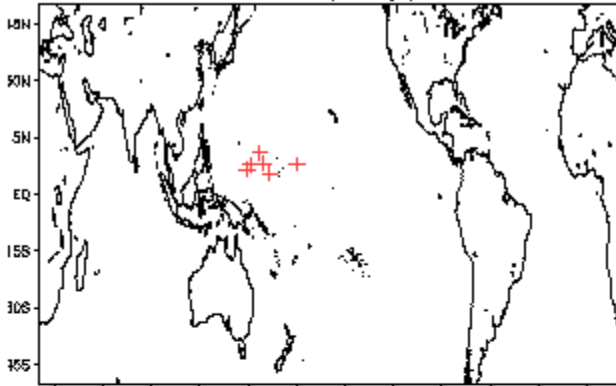
TC development likely within 24 hours (Reference TCFA)



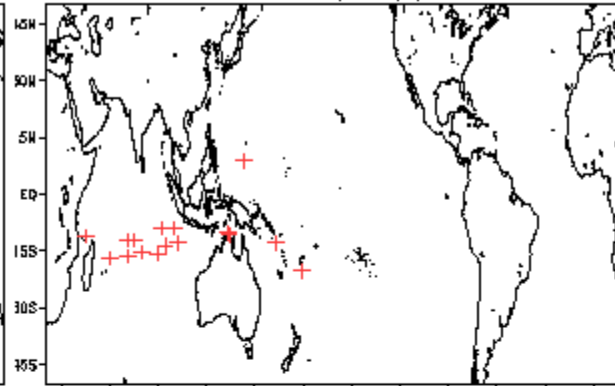
Tropical Cyclone (Reference Warning)

April Tropical Storm Formation by MJO phase

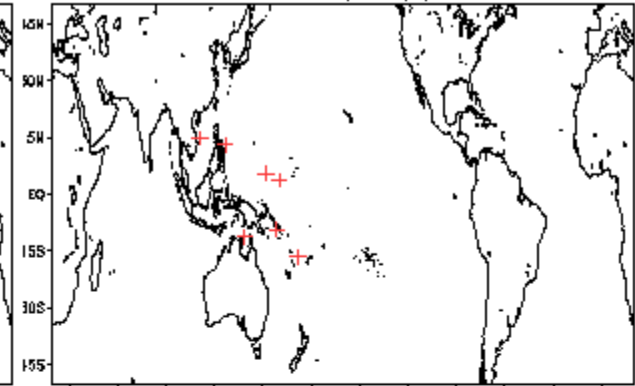
Phase 1 (70 days) 7 storms



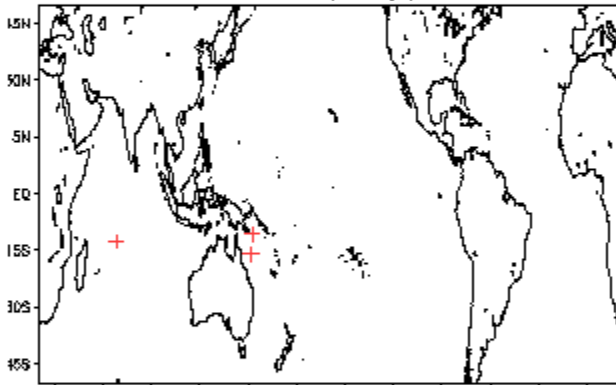
Phase 4 (95 days) 17 storms



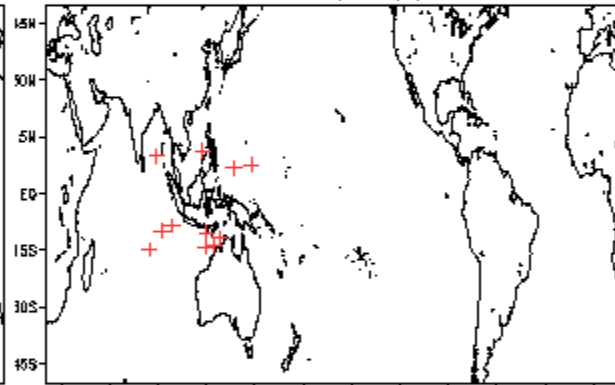
Phase 7 (87 days) 8 storms



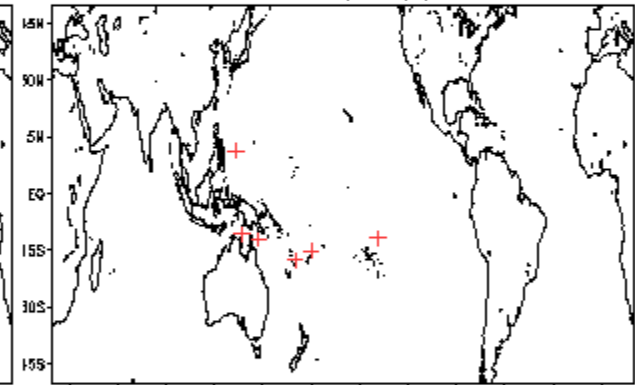
Phase 2 (65 days) 4 storms



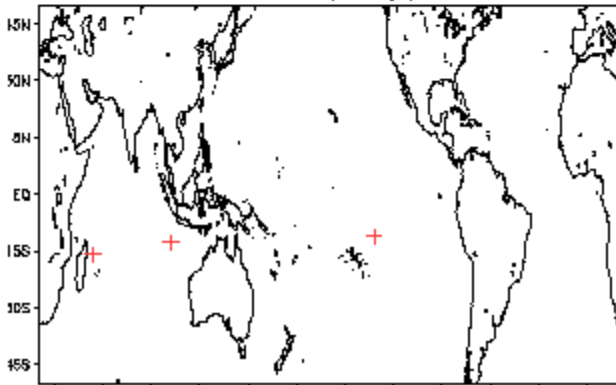
Phase 5 (77 days) 12 storms



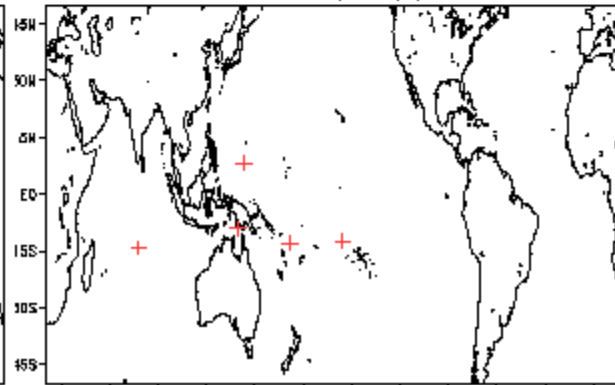
Phase 8 (75 days) 7 storms



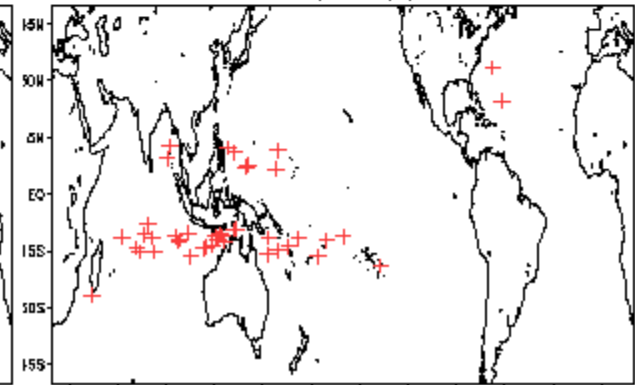
Phase 3 (68 days) 4 storms

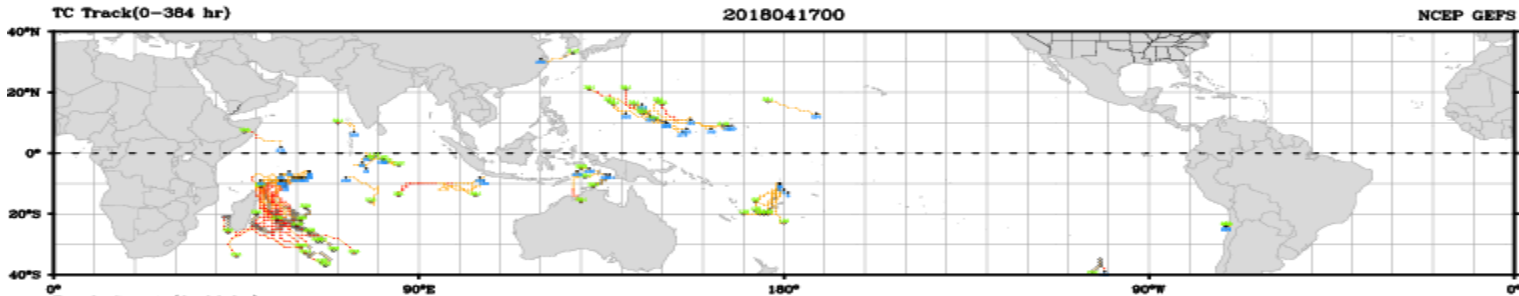


Phase 6 (65 days) 8 storms

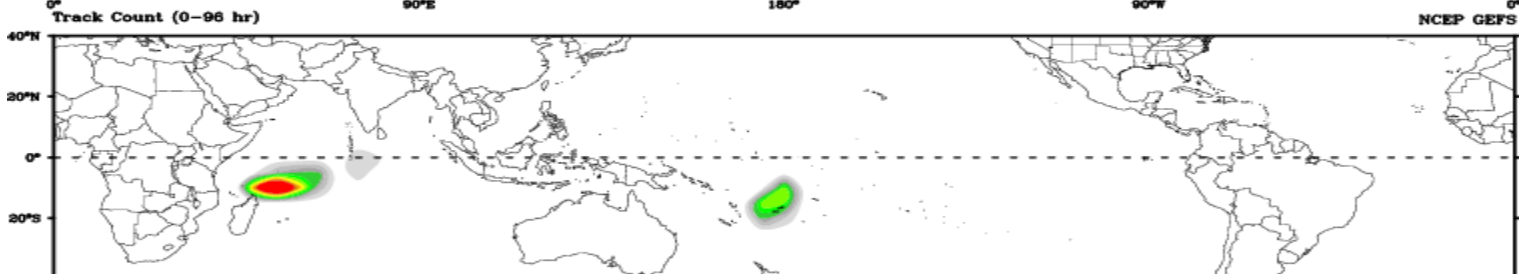


Null (388 days) 43 storms

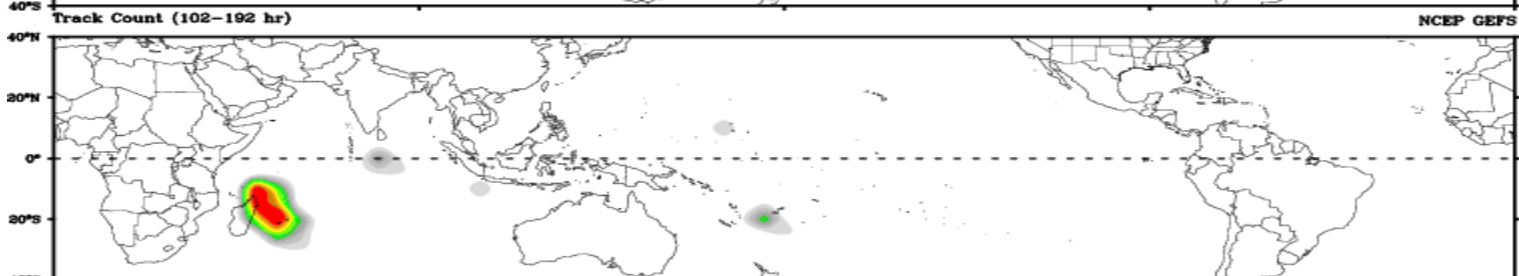




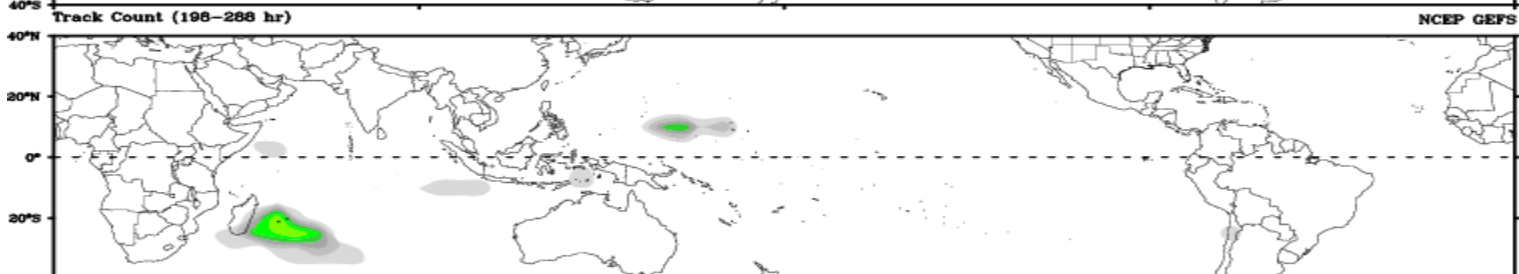
Days 1-4



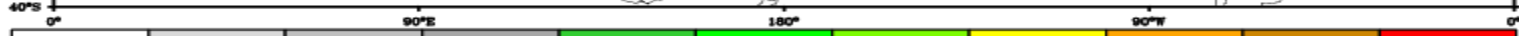
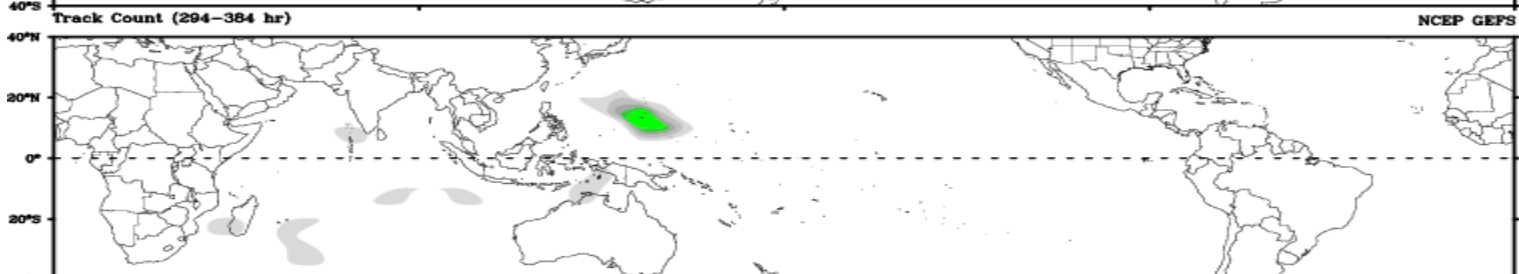
Day 5-8



Day 9-12



Day 13-15

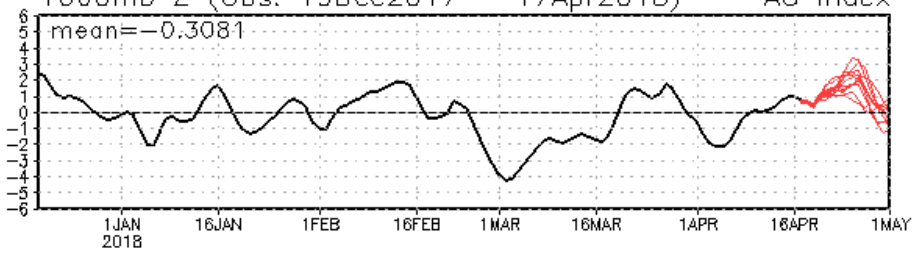


Connections to U.S. Impacts

AO: Observed & ENSM forecasts

1000mb Z (Obs: 19Dec2017 – 17Apr2018) AO index

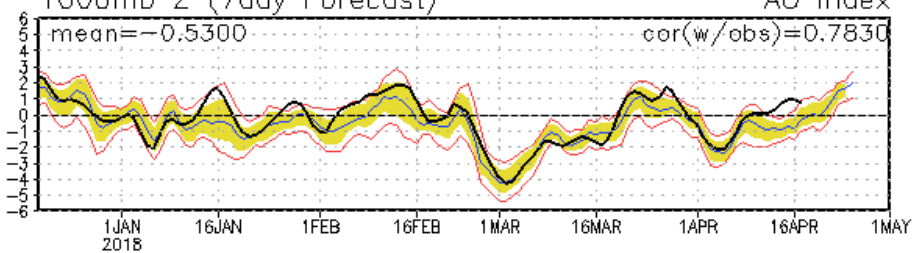
mean=-0.3081



1000mb Z (7day Forecast) AO index

mean=-0.5300

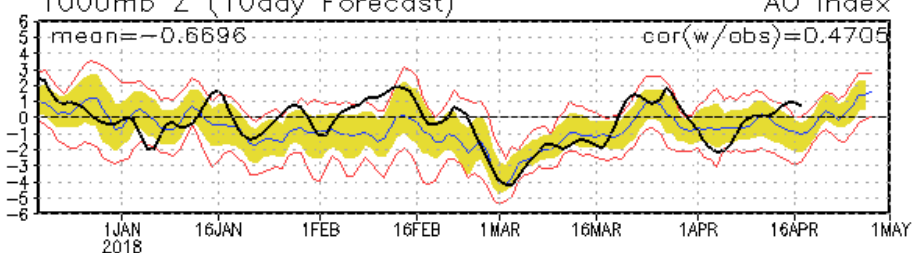
cor(w/obs)=0.7830



1000mb Z (10day Forecast) AO index

mean=-0.6696

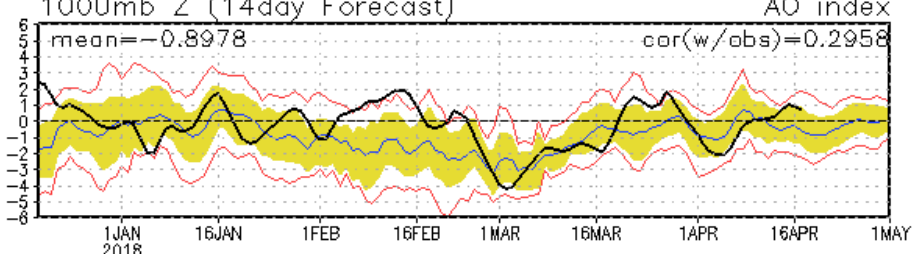
cor(w/obs)=0.4705



1000mb Z (14day Forecast) AO index

mean=-0.8978

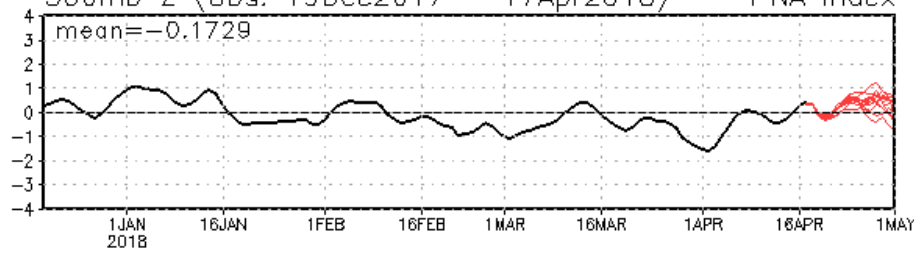
cor(w/obs)=0.2958



PNA: Observed & ENSM forecasts

500mb Z (Obs: 19Dec2017 – 17Apr2018) PNA index

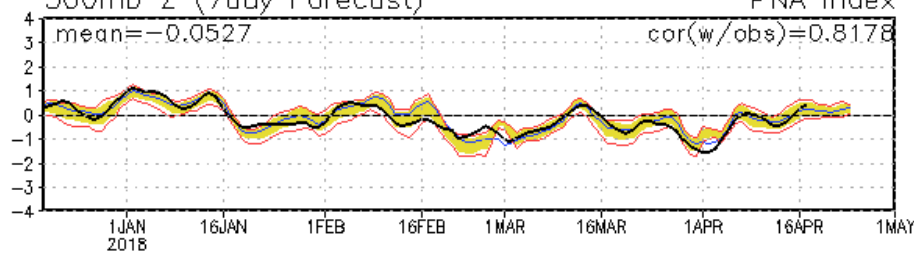
mean=-0.1729



500mb Z (7day Forecast) PNA index

mean=-0.0527

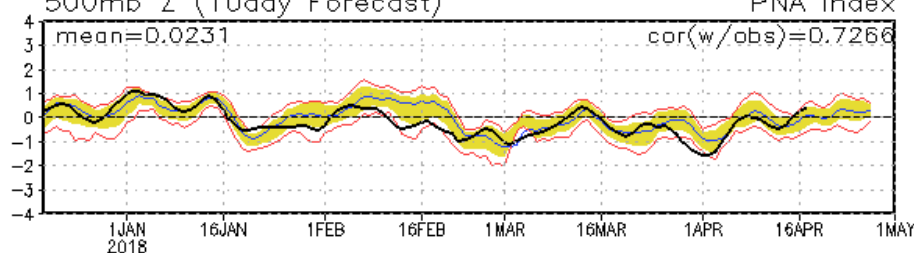
cor(w/obs)=0.8178



500mb Z (10day Forecast) PNA index

mean=0.0231

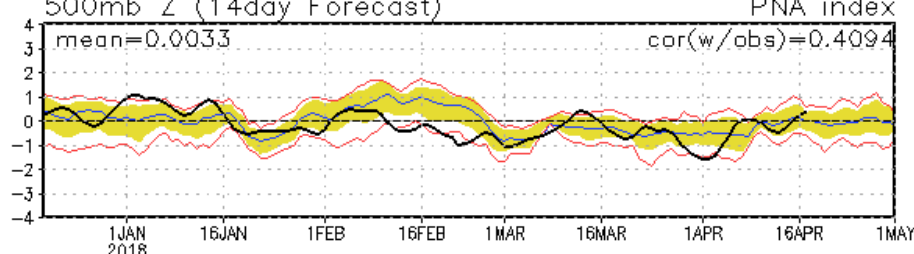
cor(w/obs)=0.7266

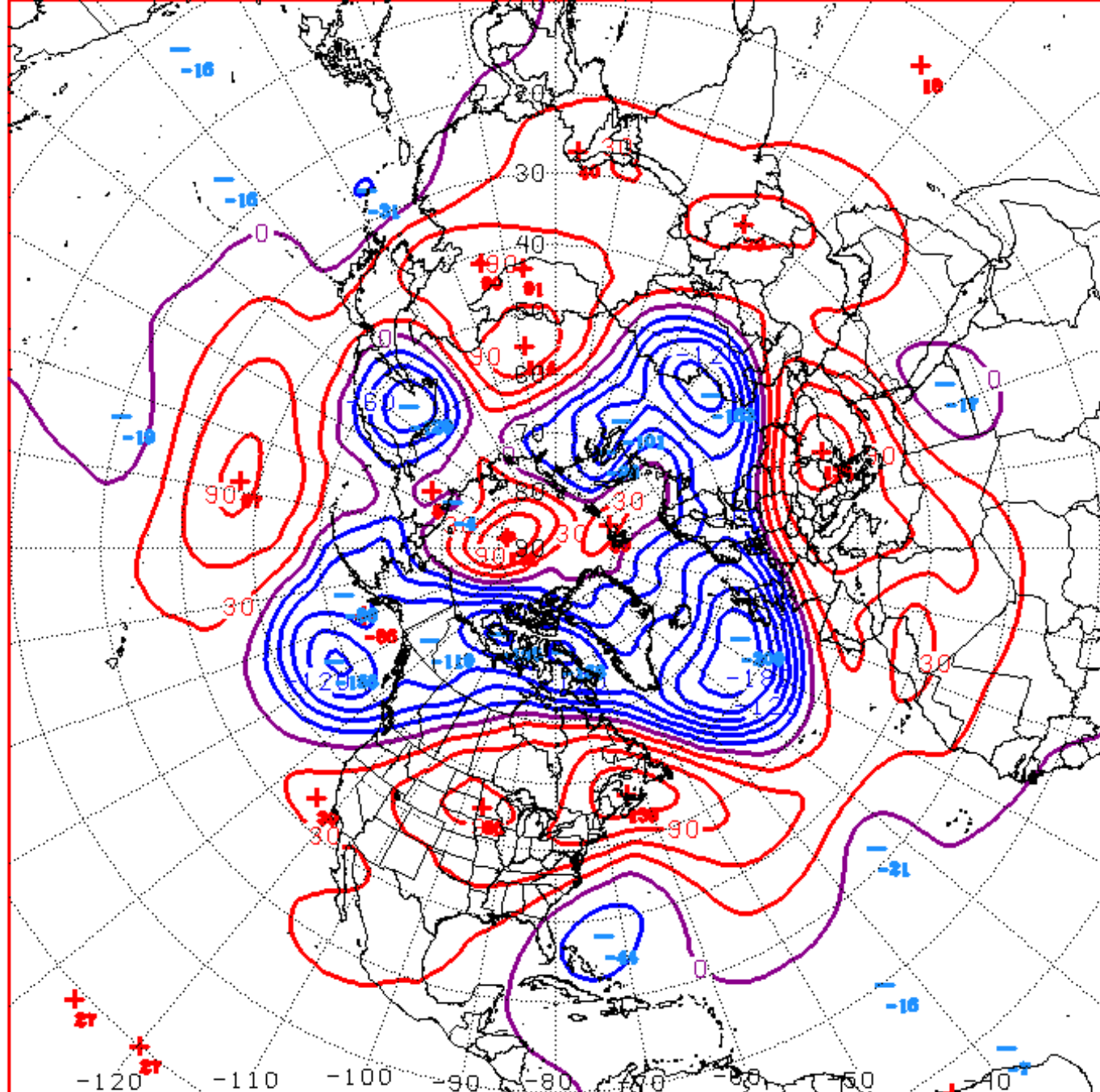


500mb Z (14day Forecast) PNA index

mean=0.0033

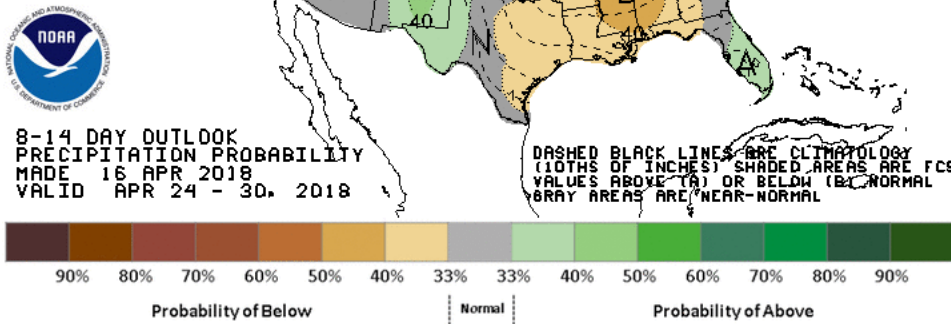
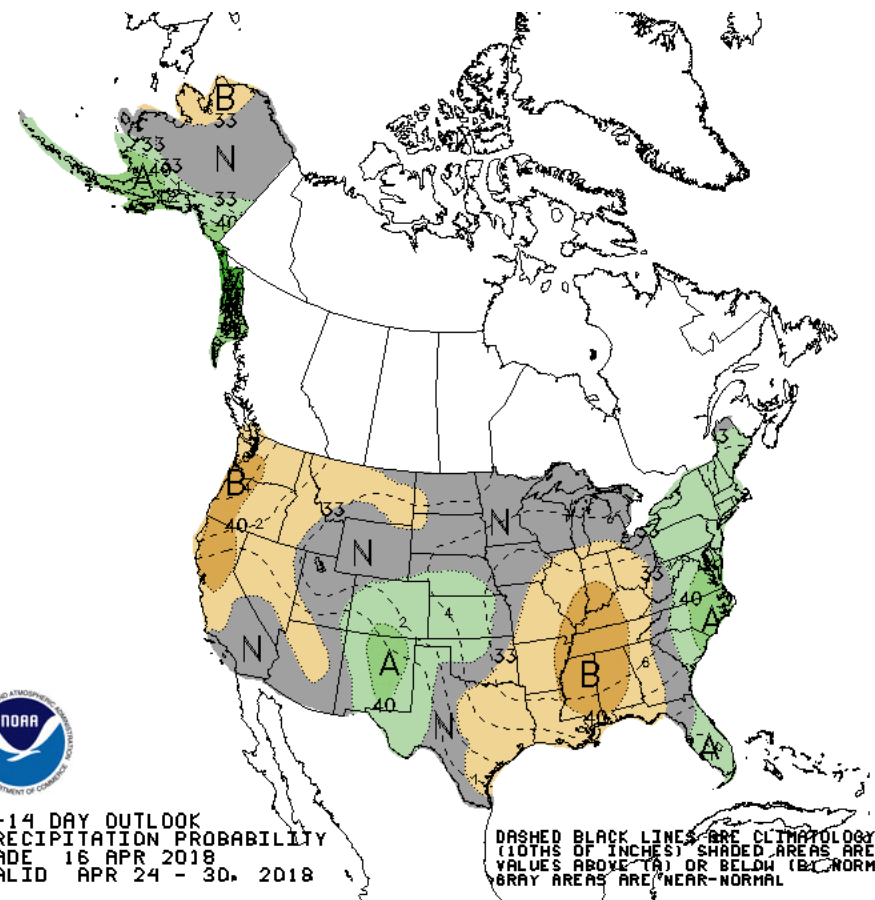
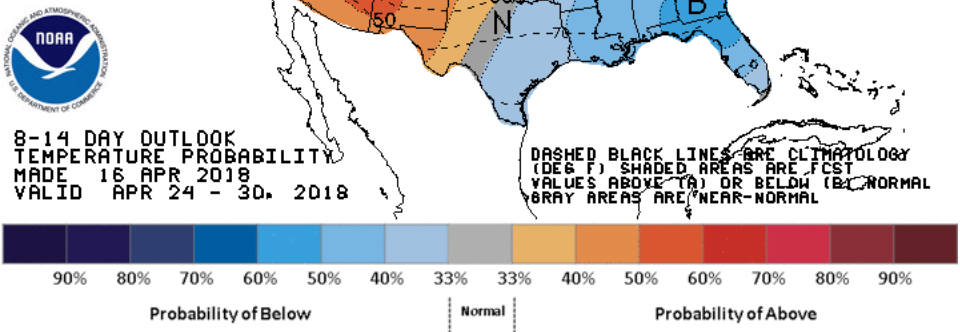
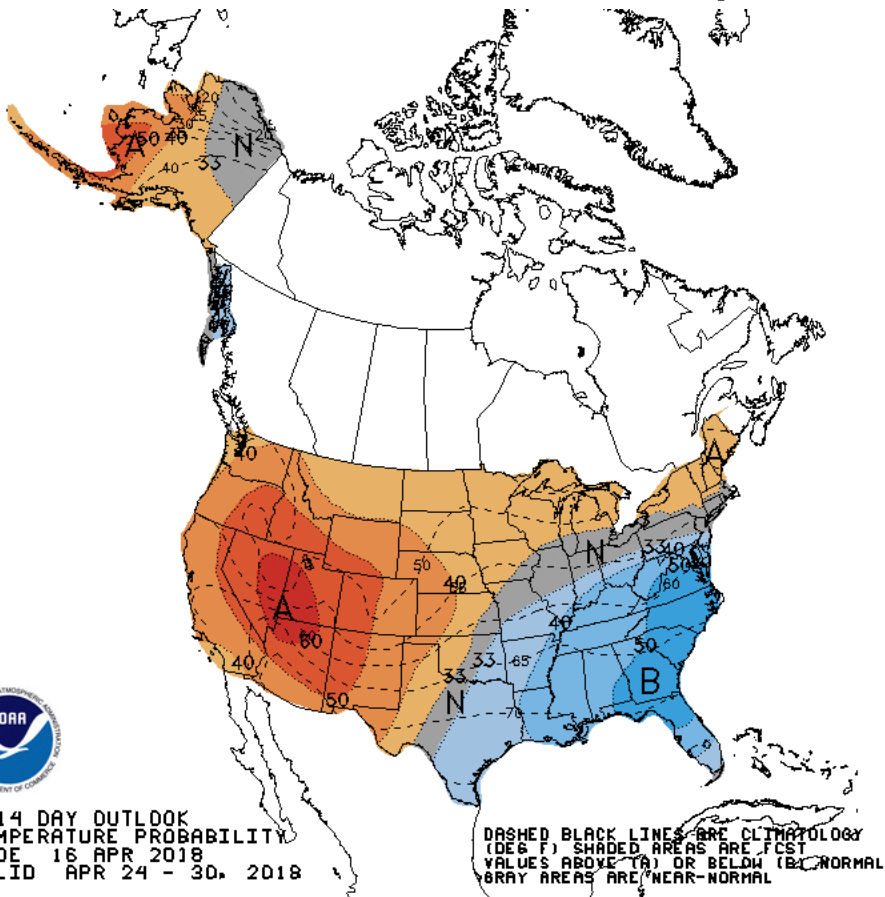
cor(w/obs)=0.4094





D+11 500 MB ANOMALIES FROM 06Z GFS
CPC MAP MADE APR 17 2018 1104 UTC CNTD APR 28 2018

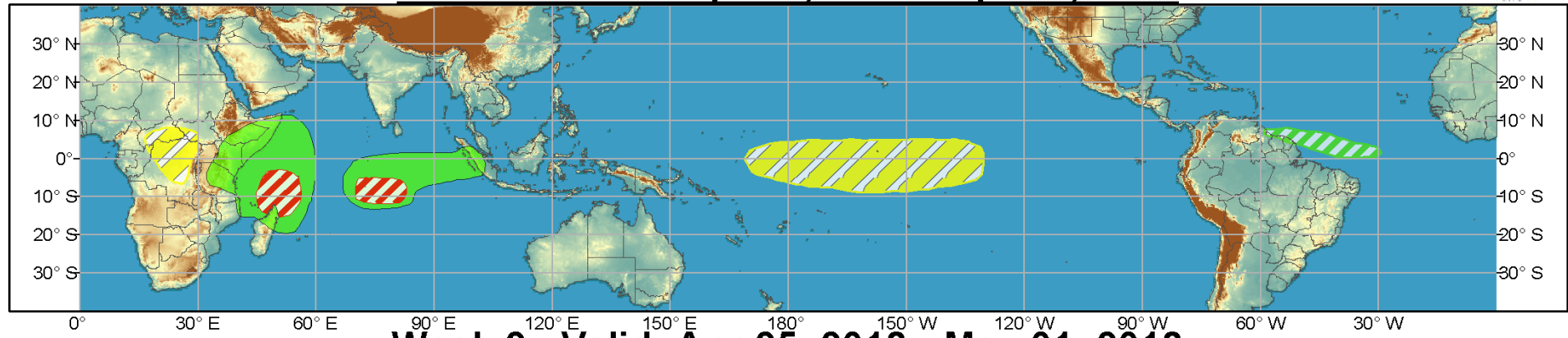
Week 2 – Temperature and Precipitation



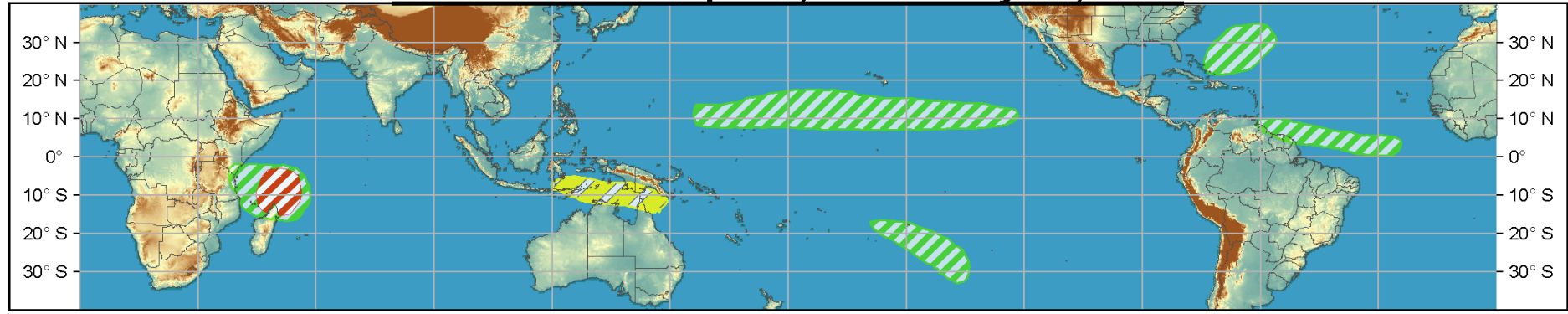


Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Apr 18, 2018 - Apr 24, 2018



Week 2 - Valid: Apr 25, 2018 - May 01, 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.
- Below-normal temperatures** 7-day mean temperatures in the lower third of the historical range.

Produced: 04/17/2018

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.

