Global Tropics Hazards And Benefits Outlook

12/12/2017

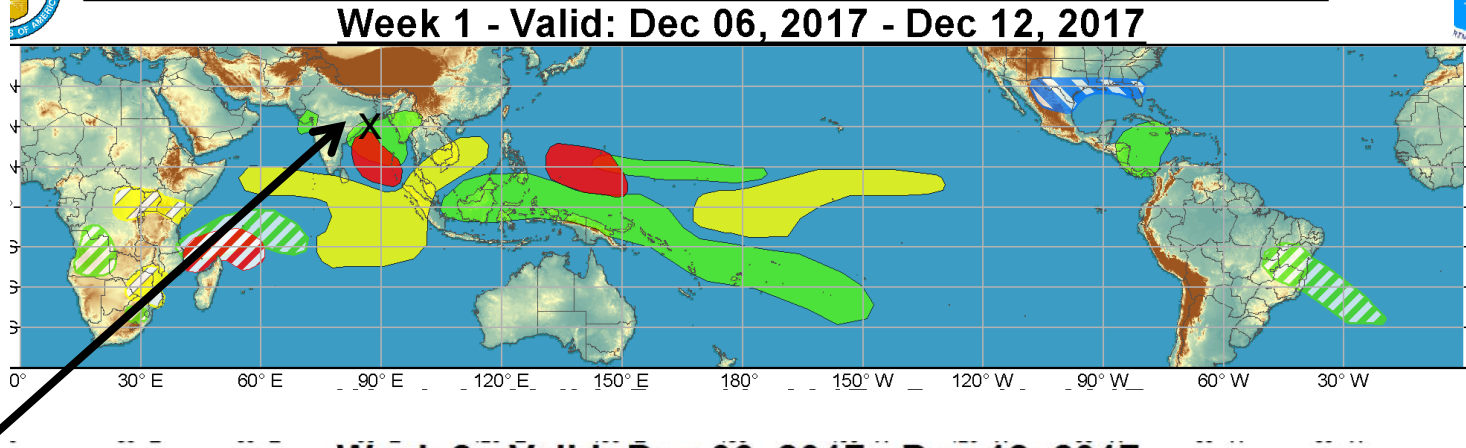
Dan Harnos

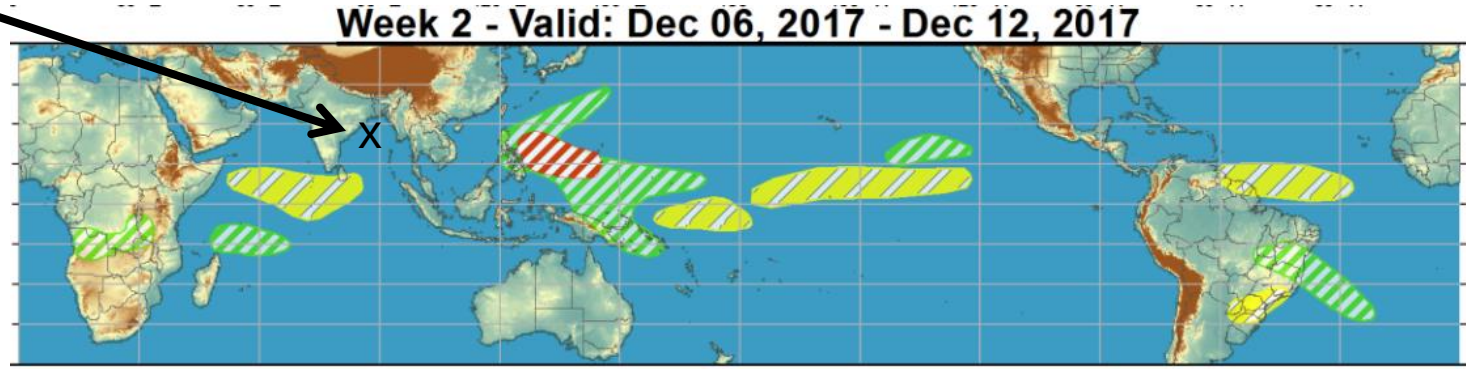
Outline

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

Outlook Review

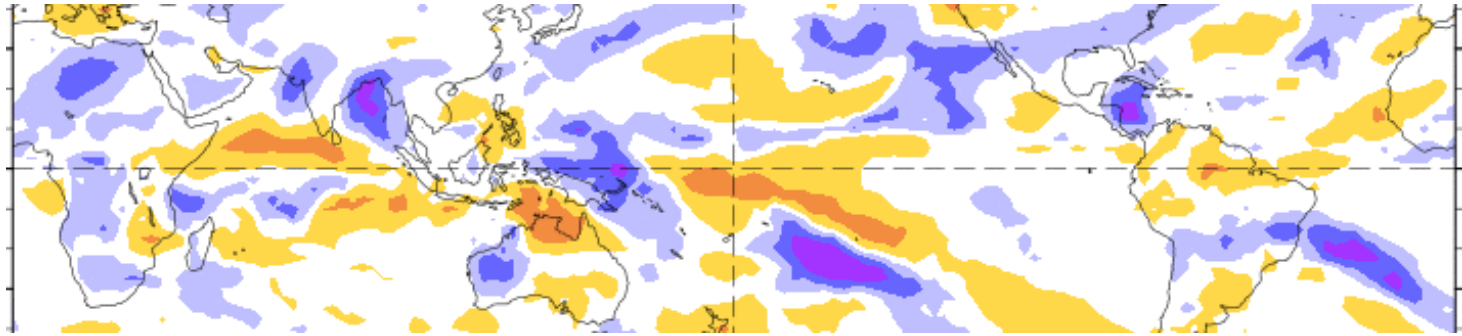
Tropical Storm 4
12/8-12/9
Peak: 35 mph



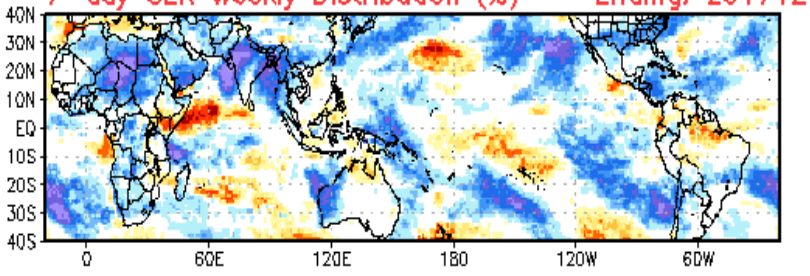


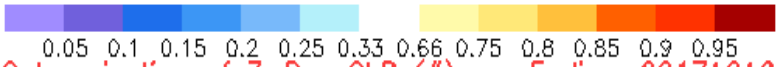
Cool shading
More clouds/rain

Warm shading
Less clouds/rain

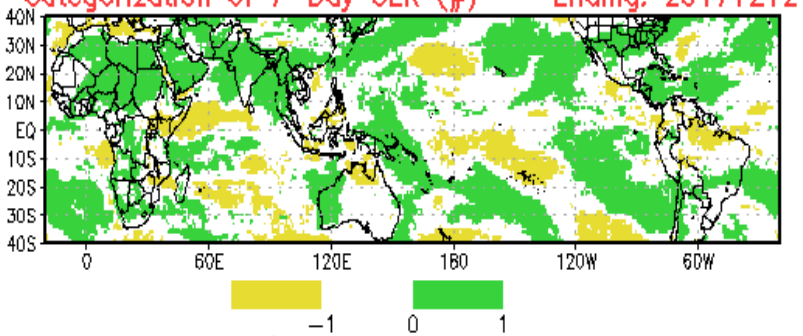


7-day OLR Weekly Distribution (%) -- Ending: 20171212

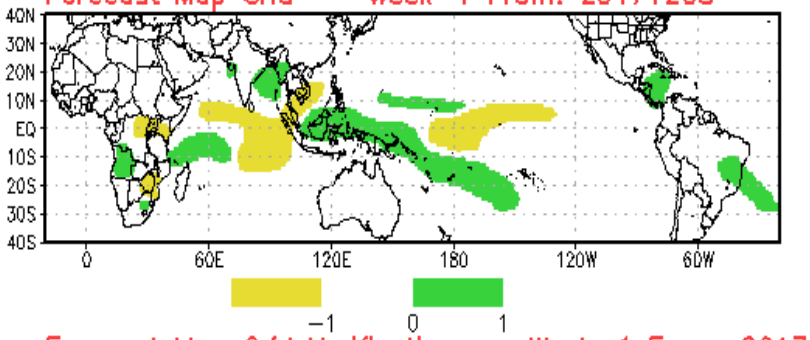




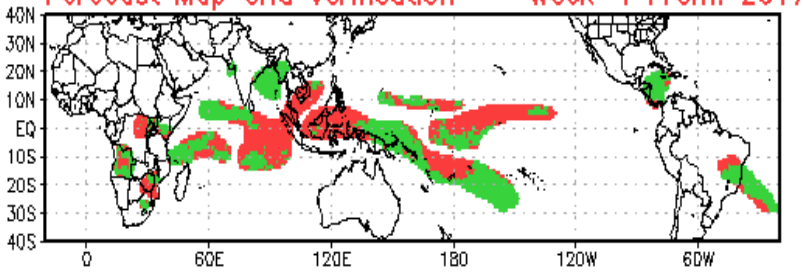
Categorization of 7-Day OLR (#) -- Ending: 20171212



Forecast Map Grid -- Week-1 From: 20171205

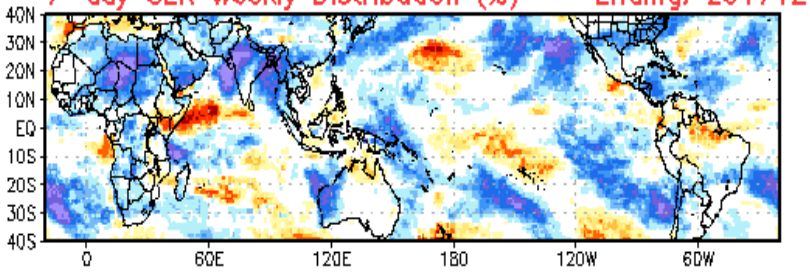


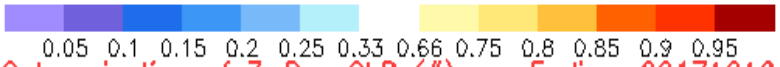
Forecast Map Grid Verification -- Week-1 From: 20171205



Hit: Green, Miss: Red
Heidke Skill Score: 24.8651

7-day OLR Weekly Distribution (%) -- Ending: 20171212





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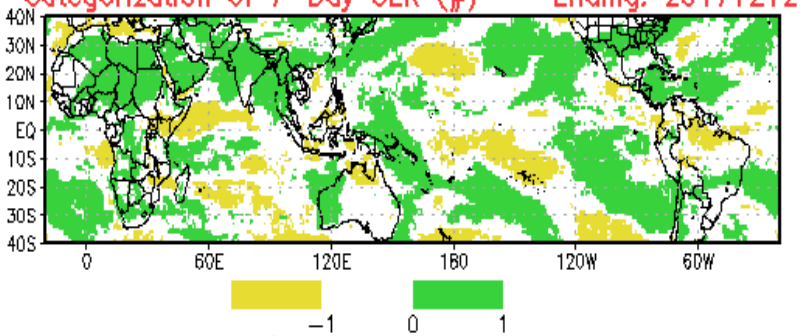
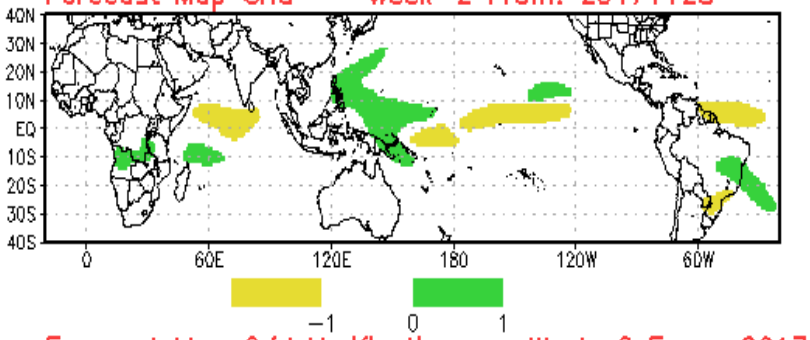
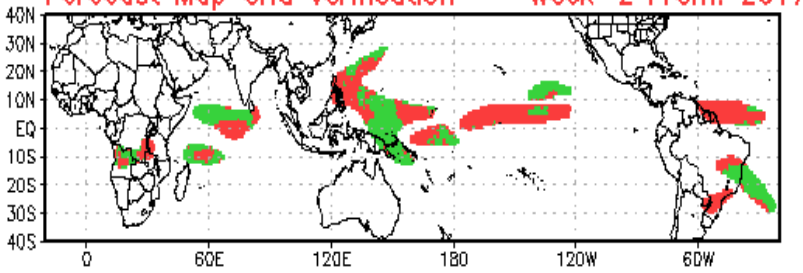


Forecast Map Grid -- Week-2 From: 20171128



Forecast Map Grid Verification -- Week-2 From: 20171128



Hit: Green, Miss: Red
Heidke Skill Score: 15.5844

Synopsis of Climate Modes

ENSO:

- ENSO Alert System Status: **La Niña Advisory**
- La Niña conditions are predicted to continue (~65-75% chance) at least through the Northern Hemisphere winter 2017-18.

MJO and other subseasonal tropical variability:

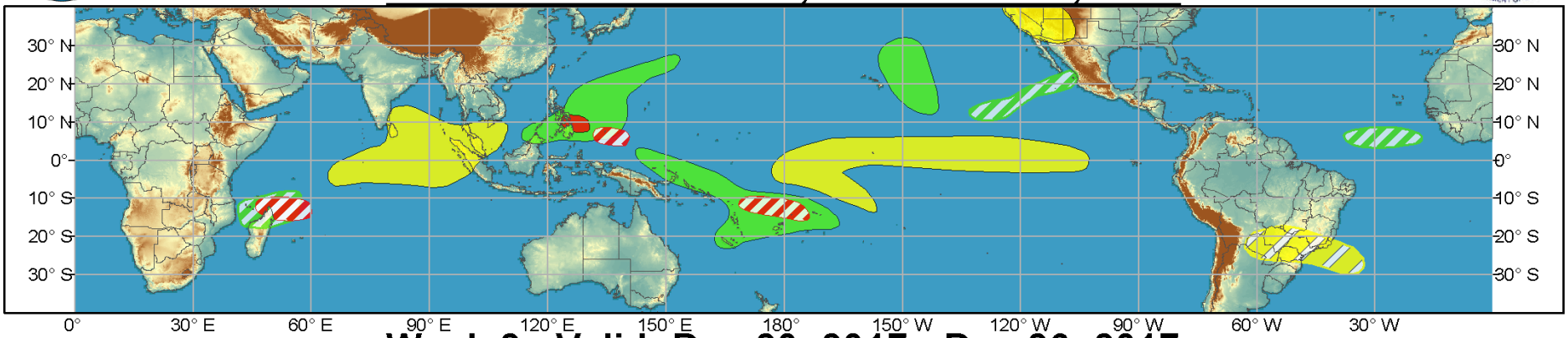
- An active MJO is ongoing over the West Pacific.
- The RMM index has weakened recently, which appears tied to competing modes of variability (Rossby wave in Pacific, developing La Niña, Kelvin wave over Africa).
- The GEFS appears to overplay the other modes of variability, supporting an atypical stationary signal over Phase 6/7 the next two weeks, while the ECMWF brings the signal from Phase 7 in Week-1 into Phase 8 in Week-2 before decaying.
- Destructive interference of the active MJO envelope and La Niña background state is possible, limiting some confidence.

Extratropics:

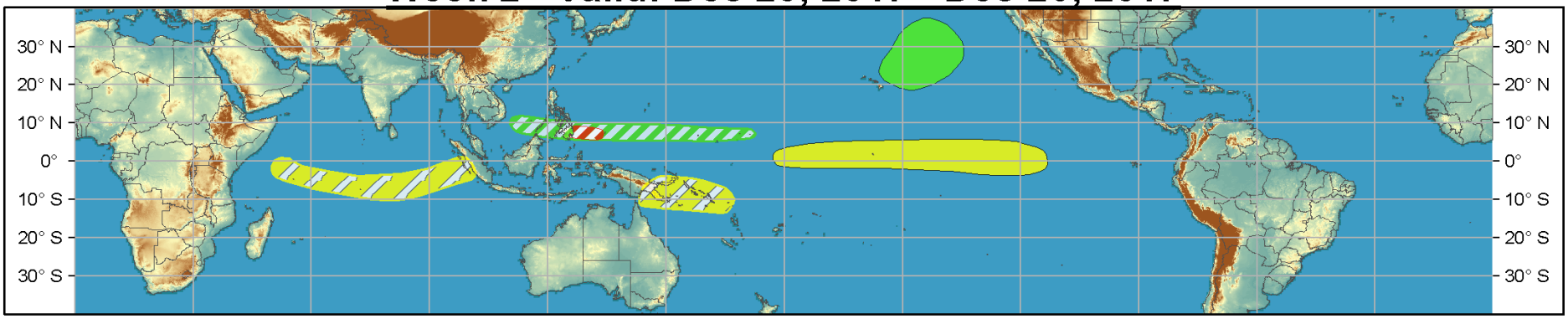
- Lagged MJO forcing from Phase-7 favors anomalous dryness over the southwestern U.S. and cold air spilling into the Northern Plains and Great Lakes.
- Impacts as the MJO gets into Phase-8 are more muted over North America, with further influence possibly limited by destructive interference with La Niña.

Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Dec 13, 2017 - Dec 19, 2017



Week 2 - Valid: Dec 20, 2017 - Dec 26, 2017



Produced: 12/12/2017

Forecaster: D.Harnos

	Confidence: High	Confidence: 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.

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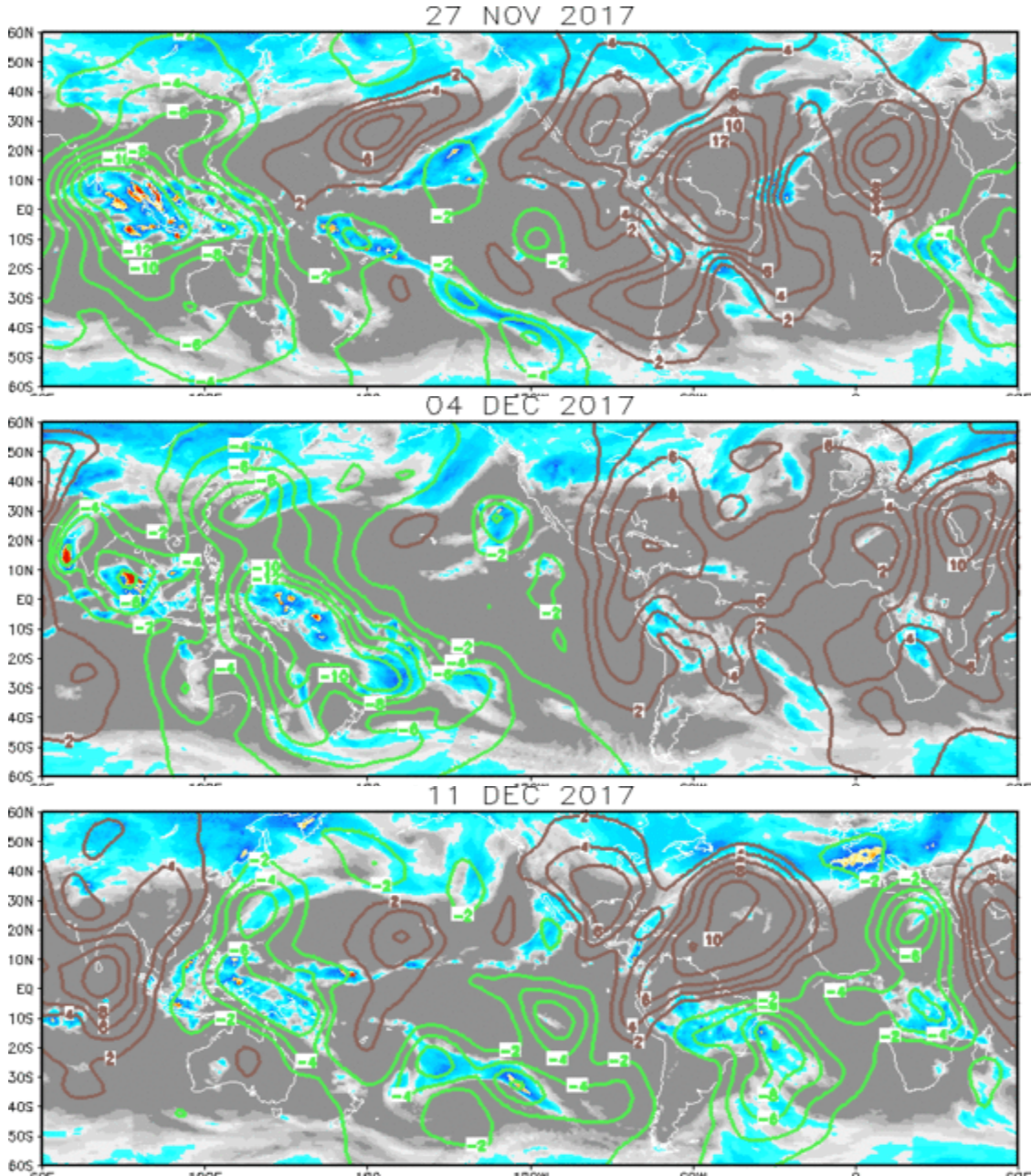
IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence Brown: Enhanced Convergence

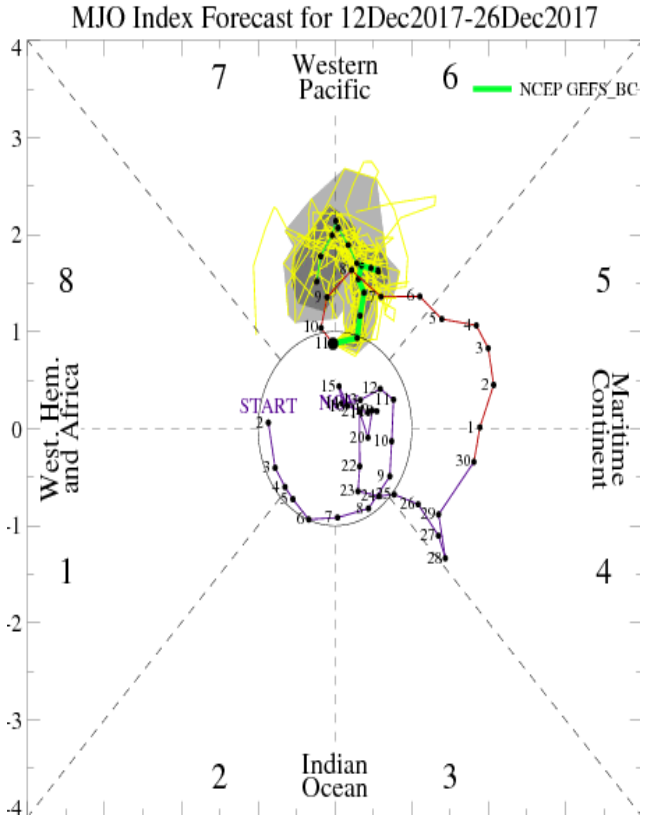
Strong Wave-1 pattern indicative of enhanced MJO phase over the eastern Indian Ocean and western Maritime Continent.

Some eastward propagation consistent with ongoing MJO activity.

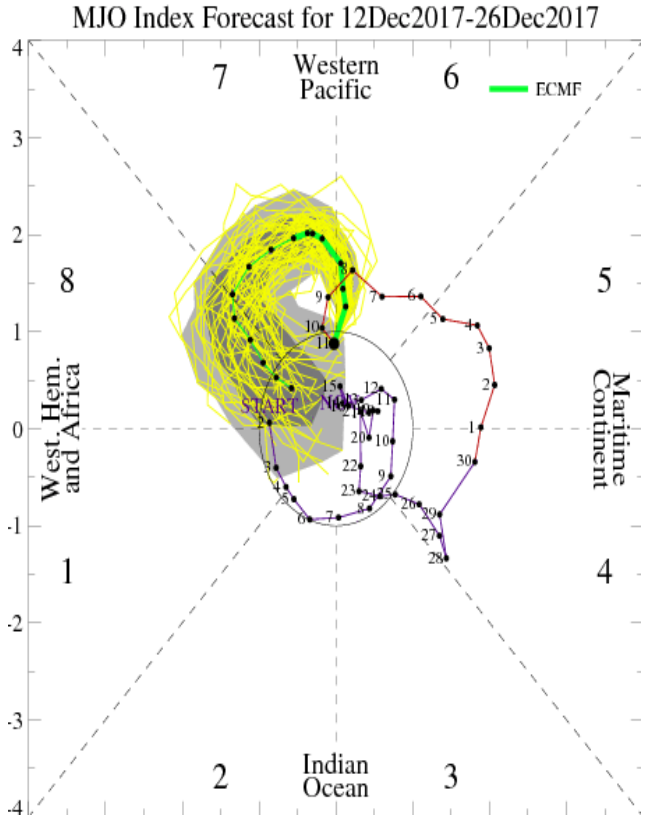
Eastward propagation continues to be noted, but some destructive interference from low frequency state is noted.



MJO Observation/Forecast



GEFS

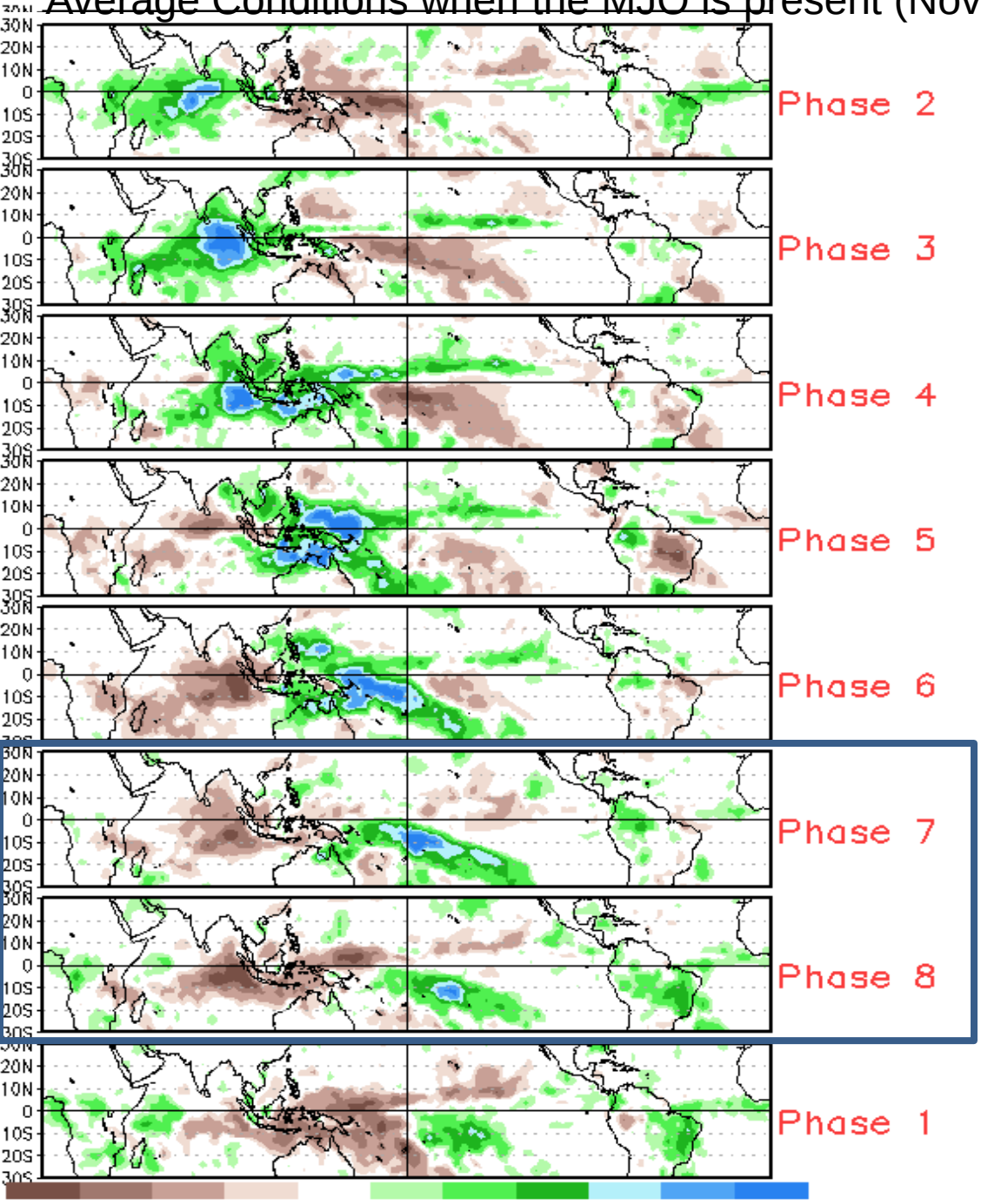


ECMWF

The GEFS has trouble isolating the MJO envelope from other modes of tropical variability, likely overdoing the equatorial Rossby wave signature over the Pacific during the next two weeks.

The ECMWF appears to have a better handle on the MJO envelope, bringing it from Phase 7 in Week-1 to Phase 8 during Week-2.

Average Conditions when the MJO is present (Nov-Mar)

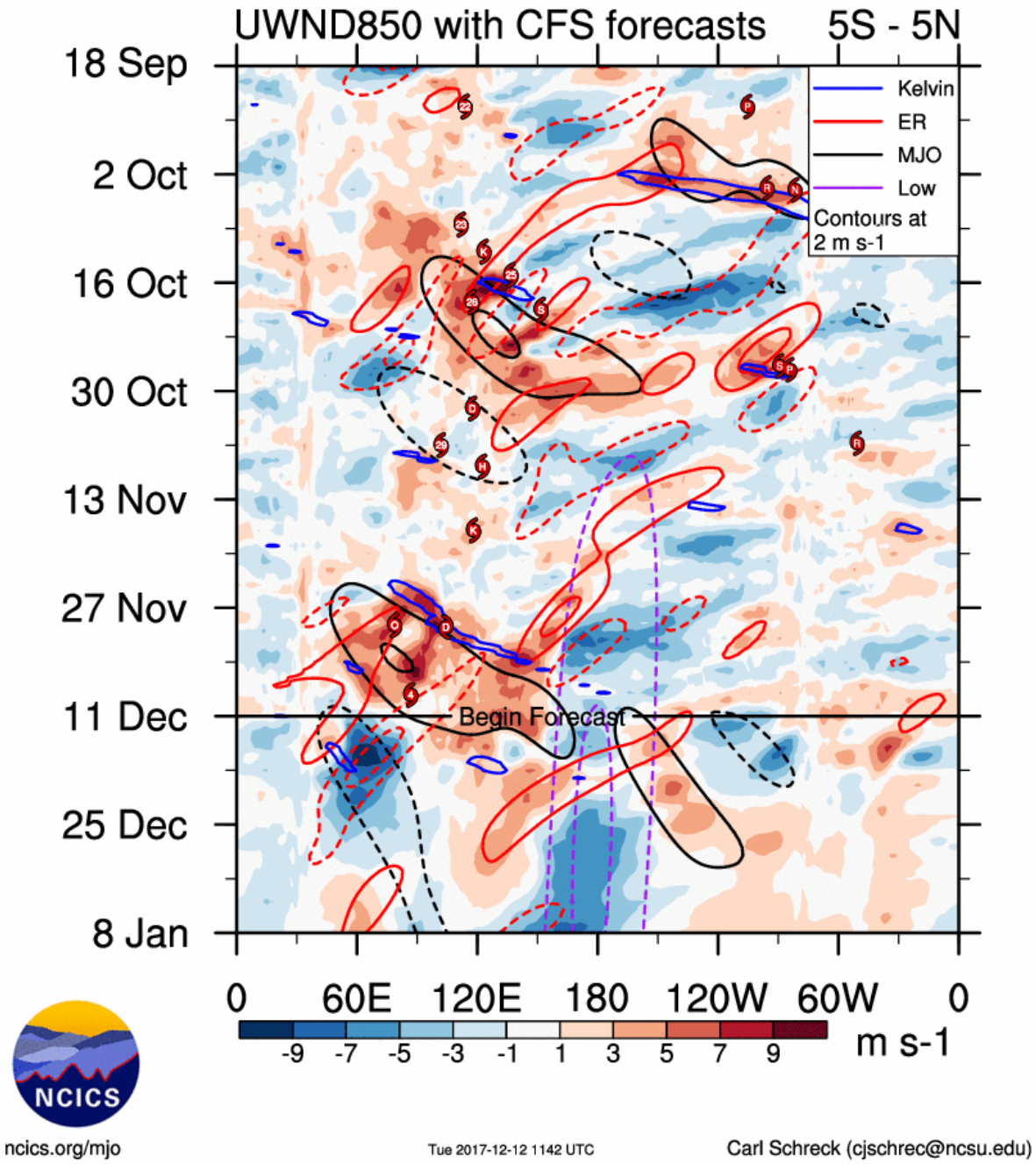


CAVEAT: These panels are representative of robust MJO events.

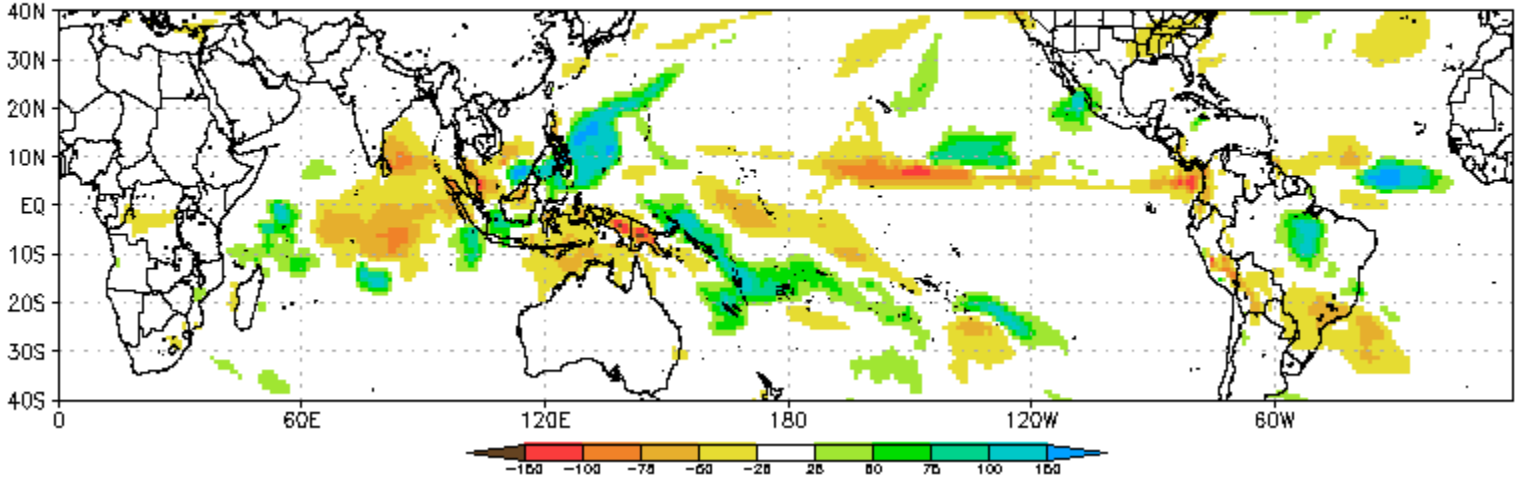
Active **MJO** present over the West Pacific, approaching **low frequency** La Niña region of suppressed convection and anomalous low-level easterlies.

Rossby wave activity over the Pacific that is forecast to near region of **MJO** and **low frequency** influences.

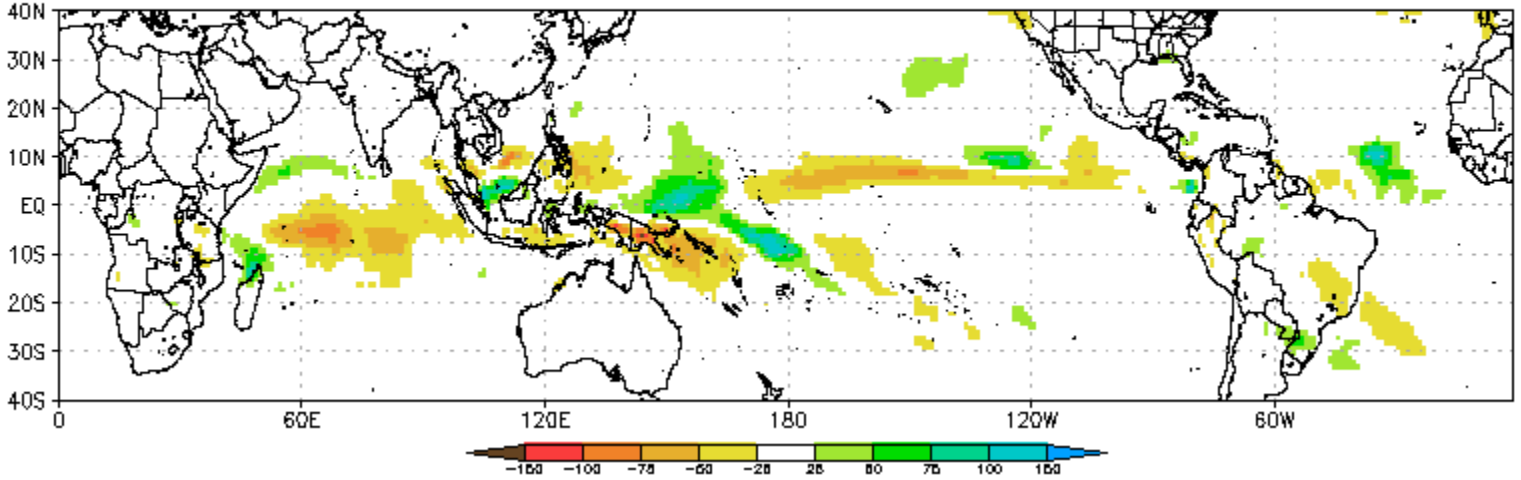
A **Kelvin wave** is present over Africa (not showing up well 850-hPa zonal wind).



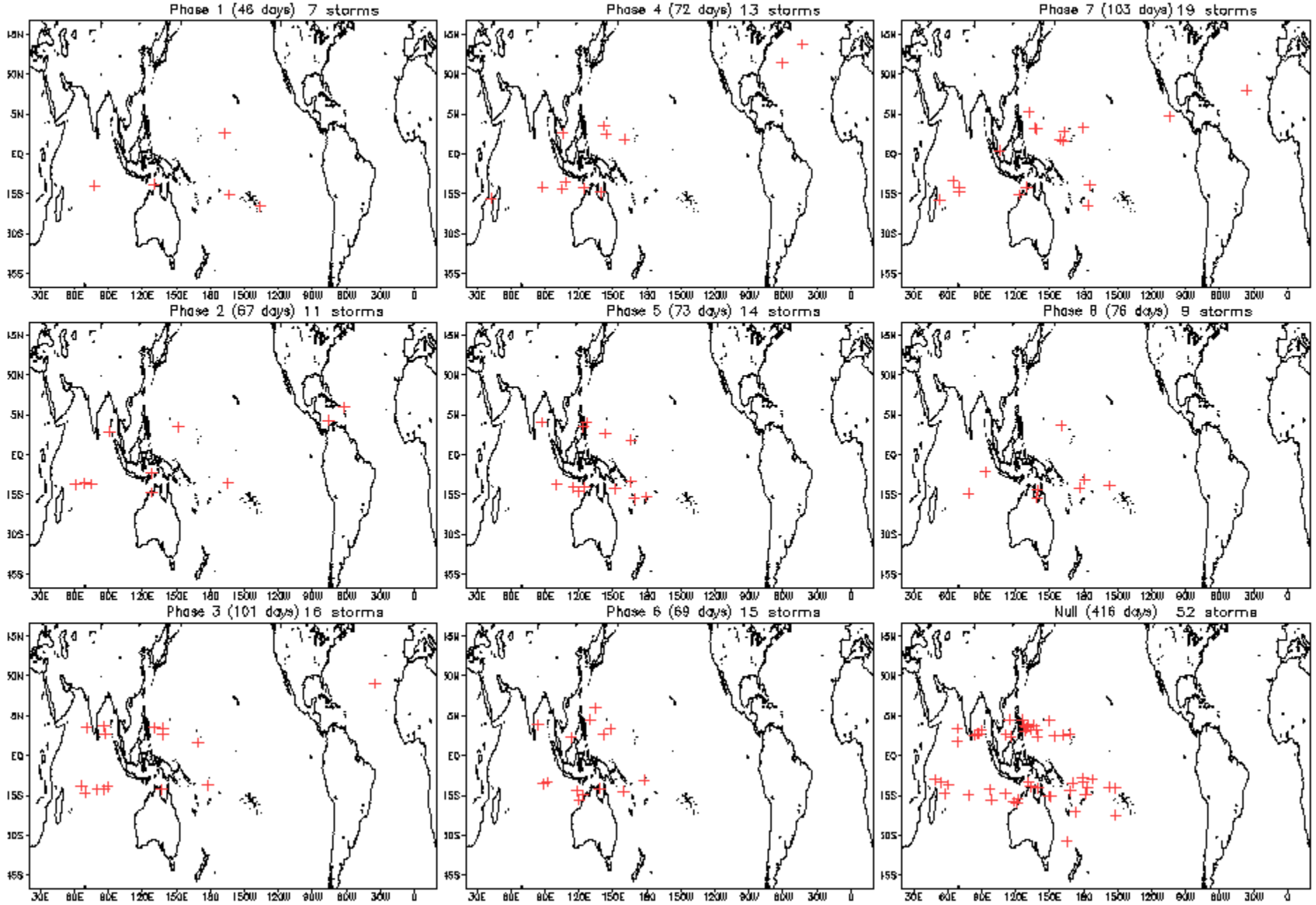
CFS Precipitation Anomalies (mm) Issued 11Dec2017
Week-1 Forecast Ending 19Dec2017



CFS Precipitation Anomalies (mm) Issued 11Dec2017
Week-2 Forecast Ending 26Dec2017



December Tropical Storm Formation by MJO phase



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 Remnants

Graphical Tropical Weather Outlook

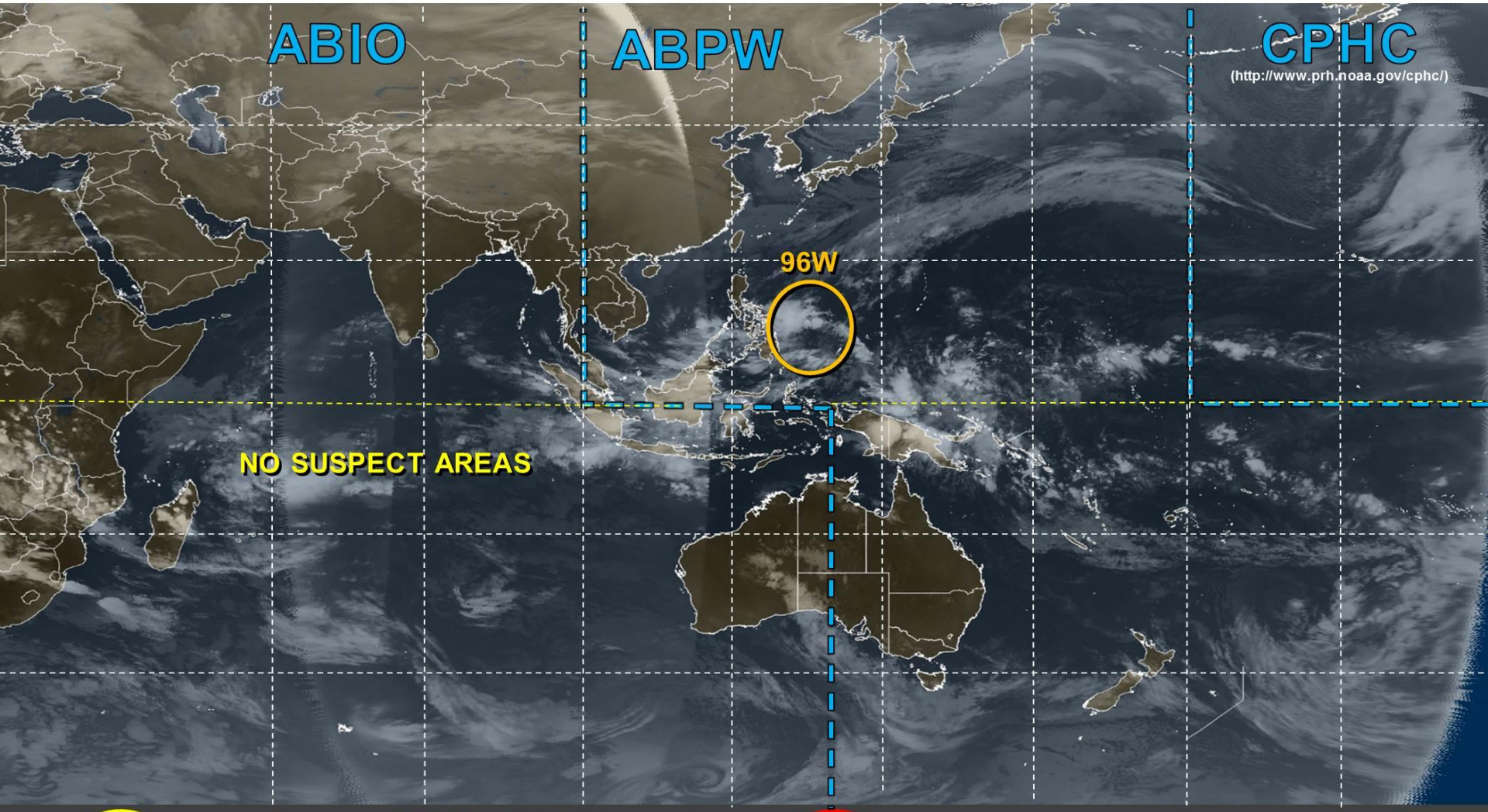
ional Hurricane Center Miami, Florida

Current Disturbances and Five-Day Cyclone Formation Chance: < 40% 40-60% > 60%
Tropical or Sub-Tropical Cyclone: Depression Storm Hurricane
Post-Tropical Cyclone Remnants

Tropical Cyclone Development Potential

IMAGE TIME 12/1645Z

(PRODUCT OF JTWC/SATOPS)

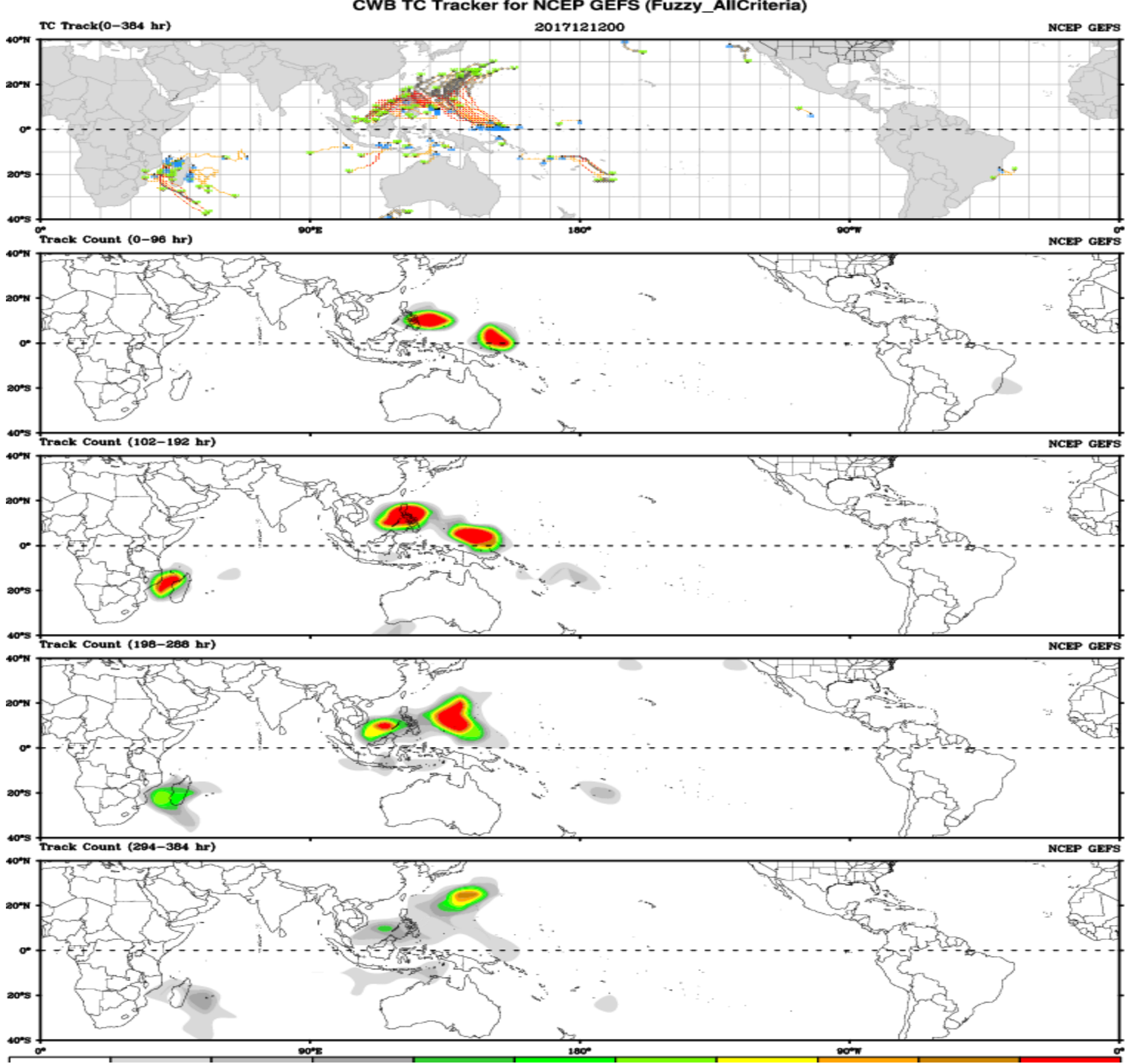


LOW — TC formation unlikely within 24 hours

MEDIUM — TC development likely, but expected to occur beyond 24 hours

HIGH — TC development likely within 24 hours (Reference TCFA)

Tropical Cyclone (Reference Warning)

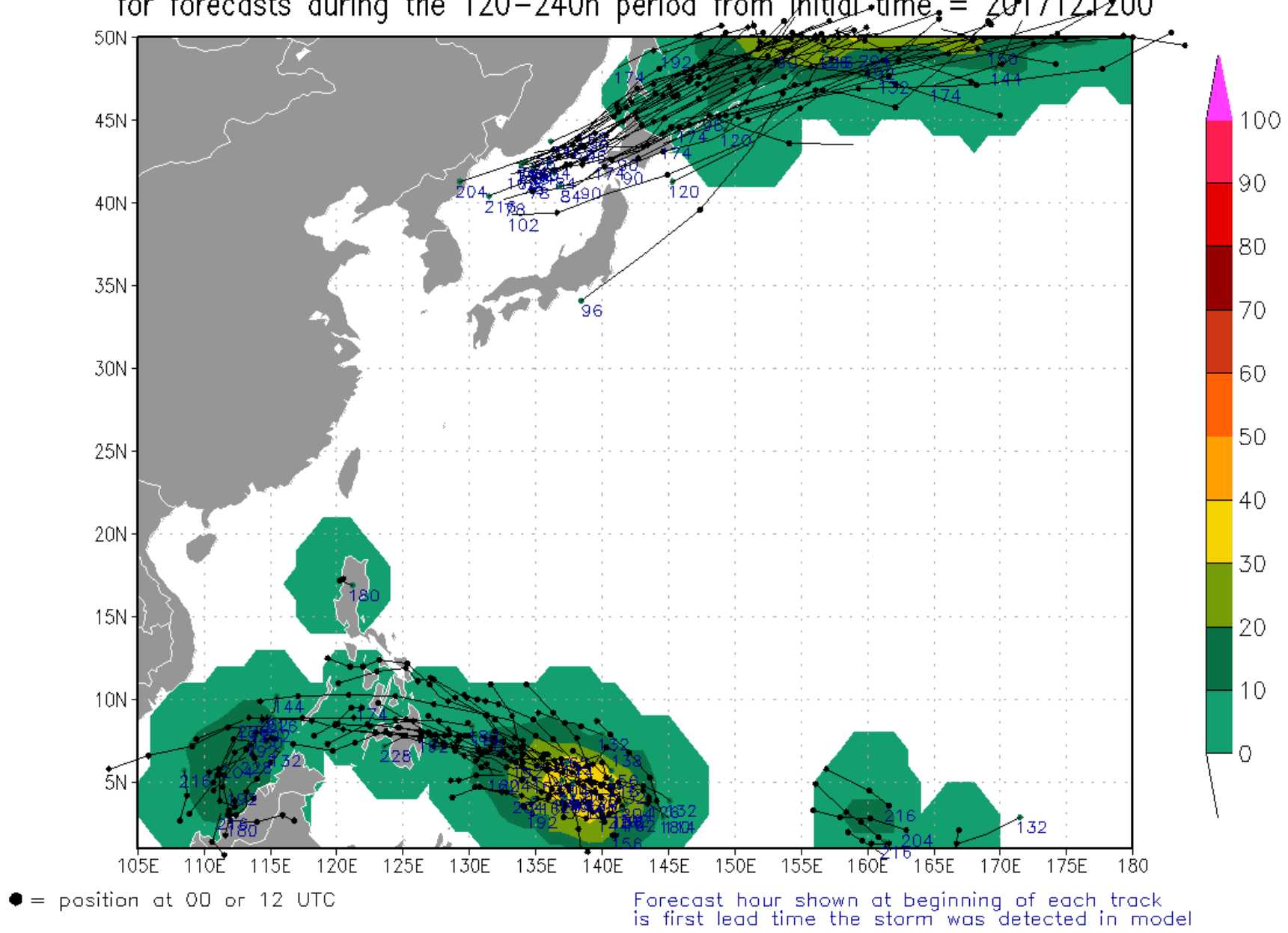


Days 1-4

Day 5-8

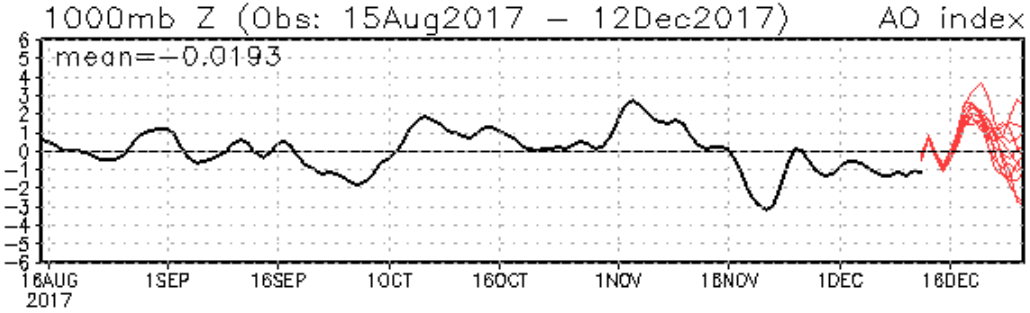
Day 9-12

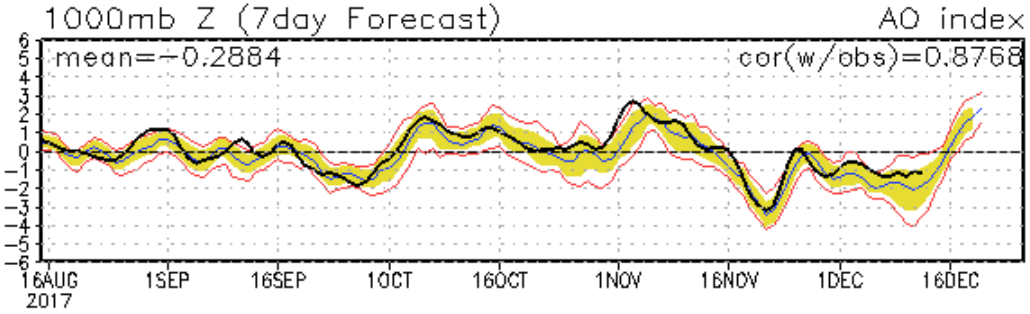
Day 13-15

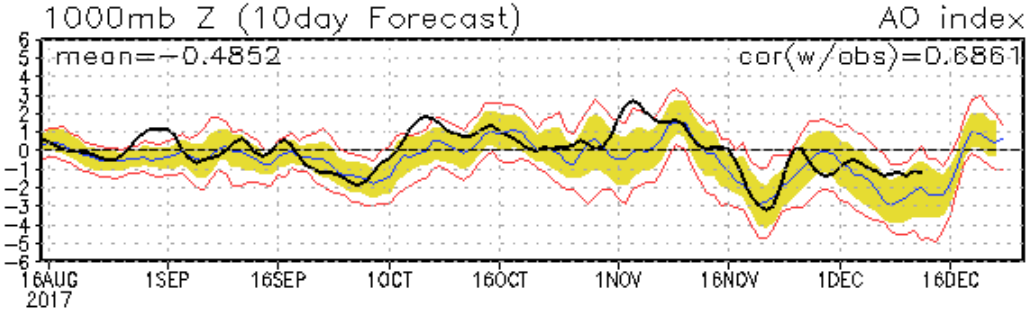

ECMWF Ensemble-based Probability (%) of TC genesis
for forecasts during the 120-240h period from initial time = 2017121200
50N
45N
40N
35N
30N
25N
20N
15N
10N
5N
105E
110E
115E
120E
125E
130E
135E
140E
145E
150E
155E
160E
165E
170E
175E
180
100
90
80
70
60
50
40
30
20
10
0
● = position at 00 or 12 UTC
Forecast hour shown at beginning of each track
is first lead time the storm was detected in model

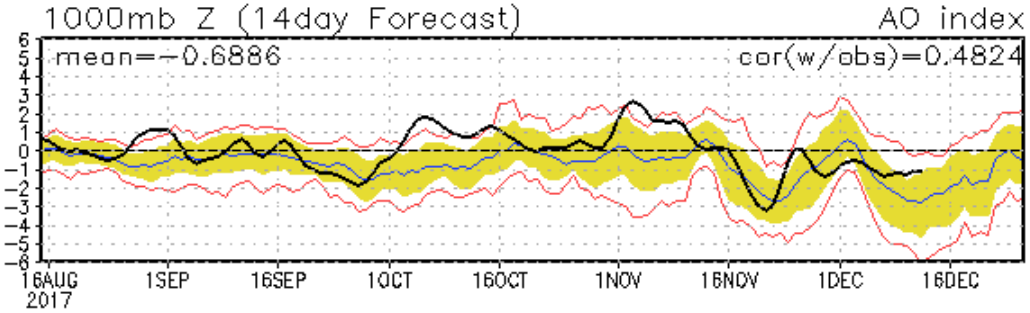
Connections to U.S. Impacts

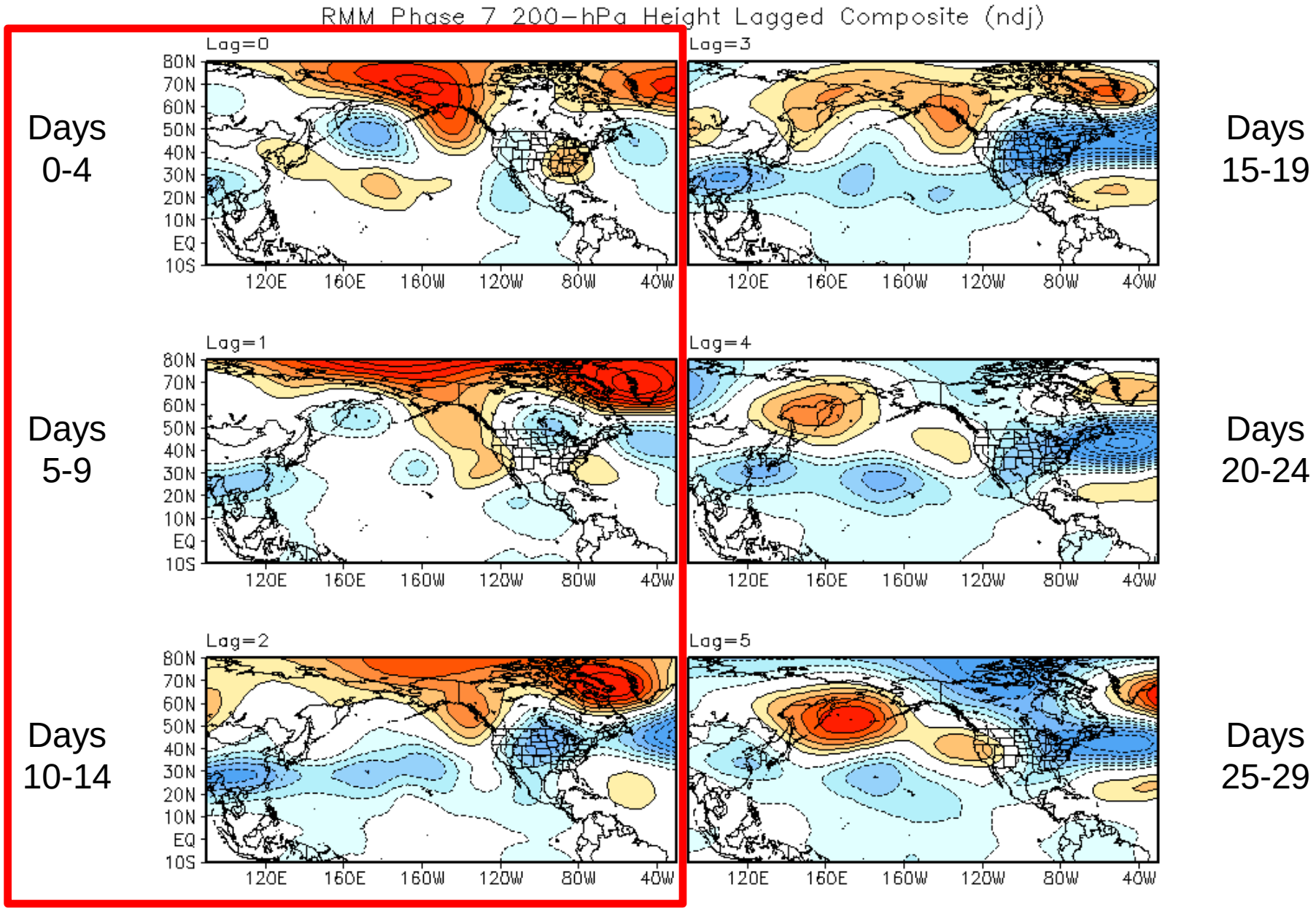
AO: Observed & ENSM forecasts

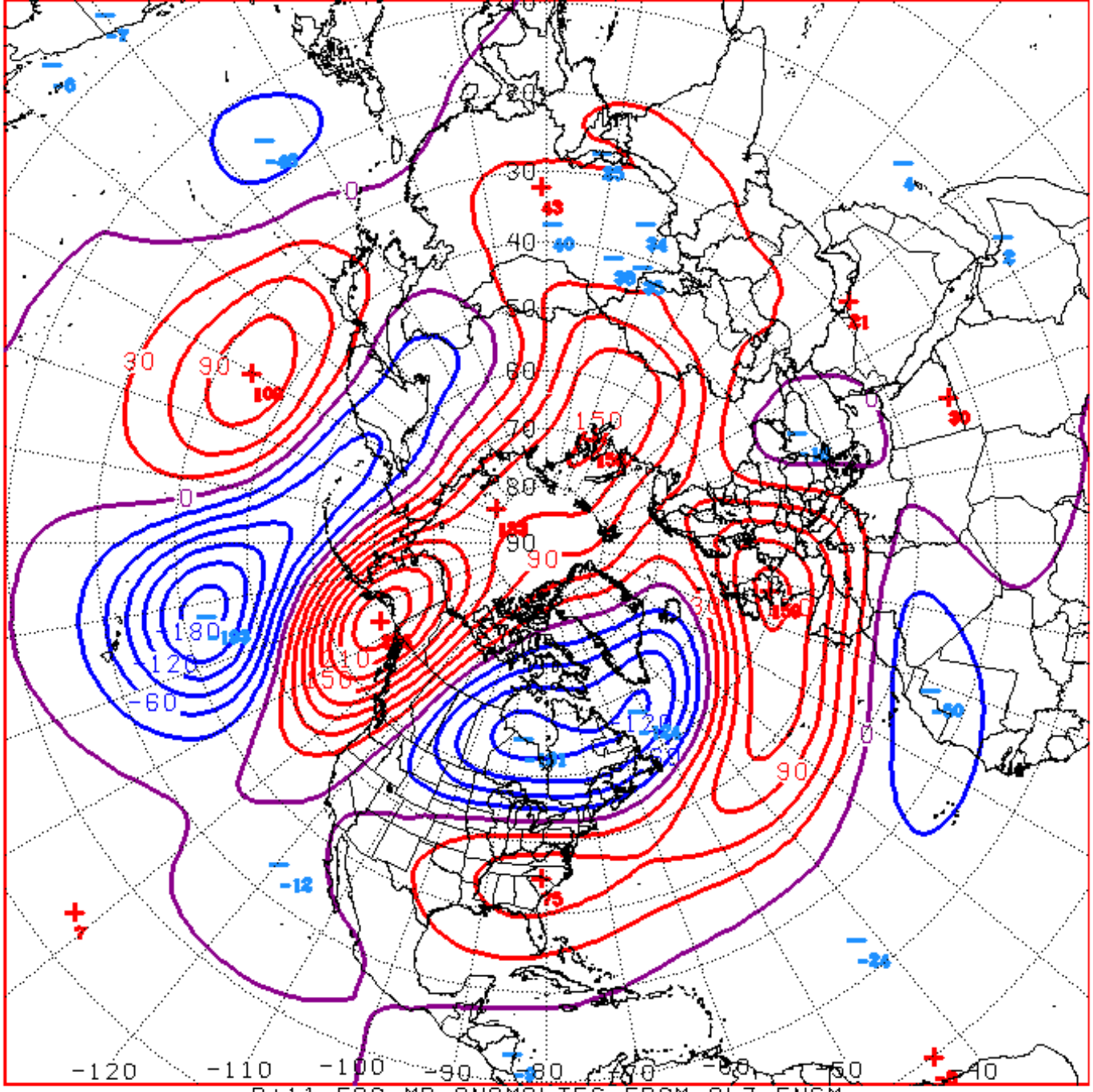






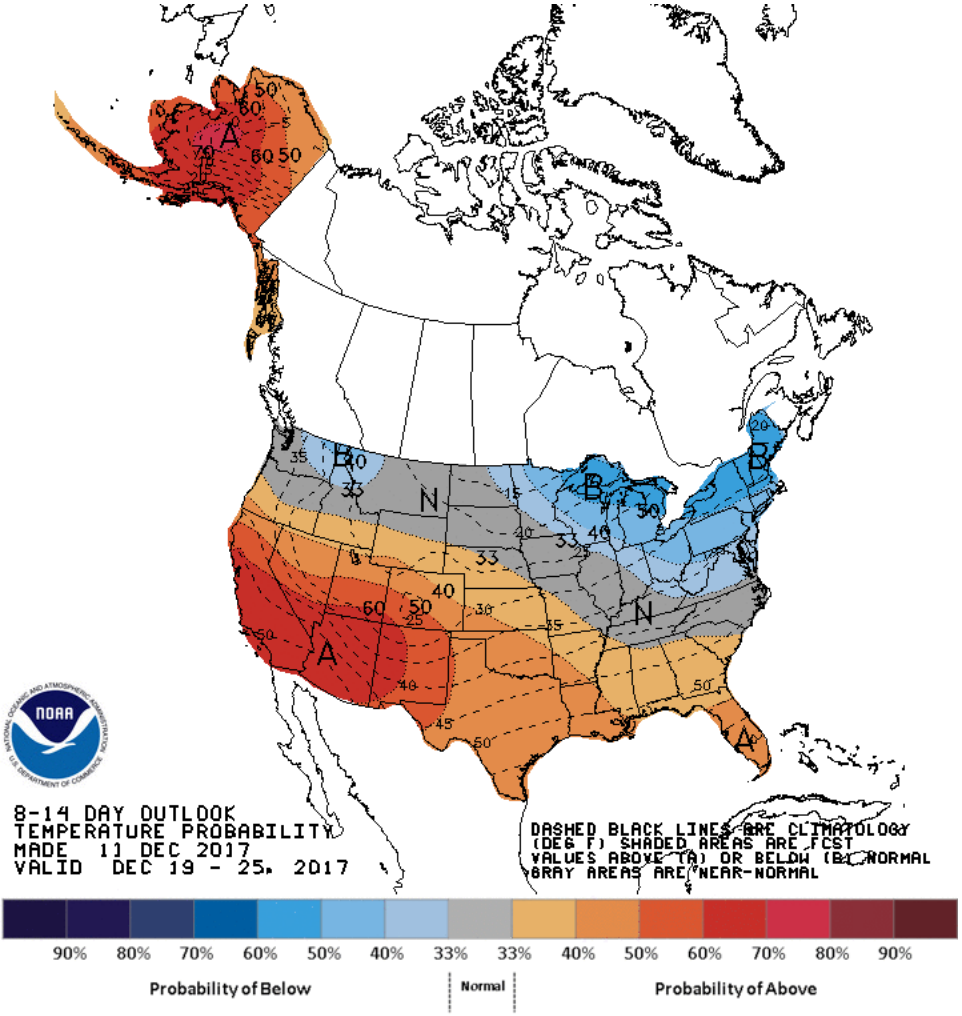


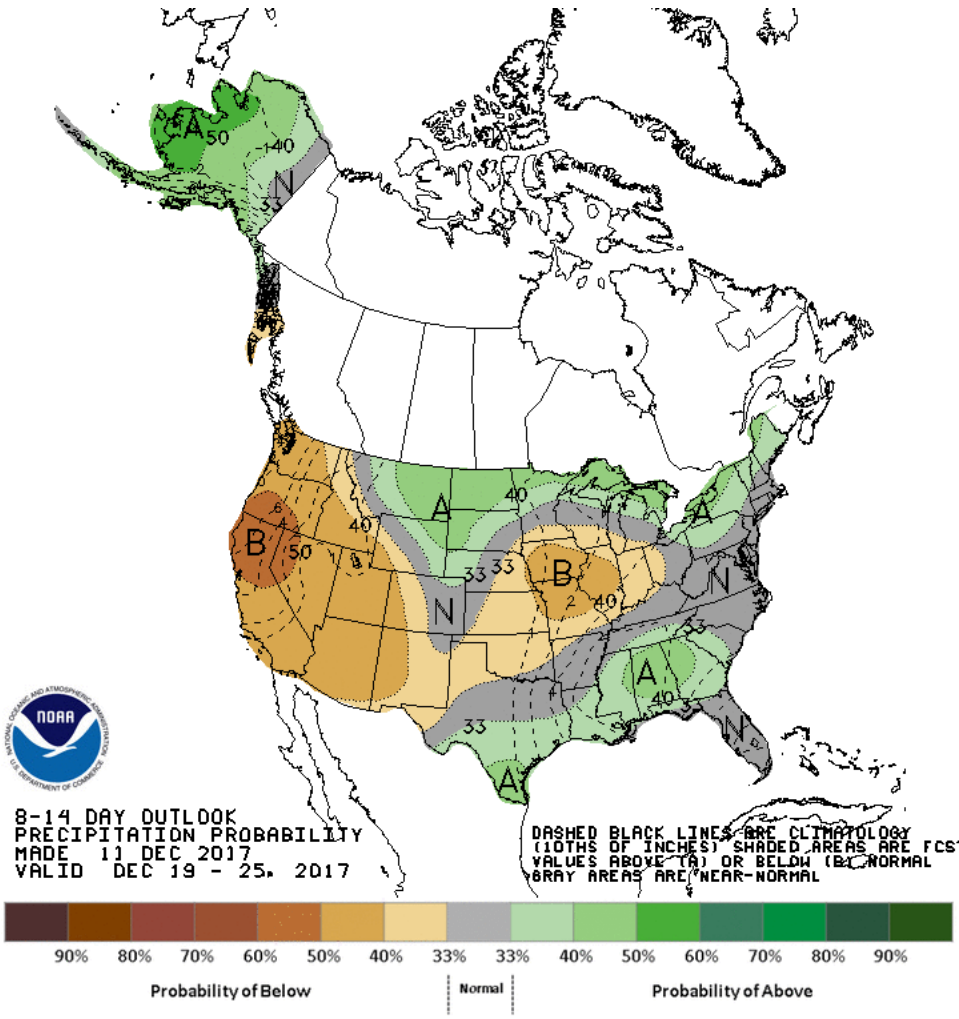

RMM Phase 7 200-hPa Height Lagged Composite (ndj)
Lag=0
Lag=3
Lag=1
Lag=4
Lag=2
Lag=5
80N
70N
60N
50N
40N
30N
20N
10N
EQ
10S
120E
160E
160W
120W
80W
40W
Days 0-4
Days 15-19
Days 5-9
Days 20-24
Days 10-14
Days 25-29



D+11 500 MB ANOMALIES FROM ALZ ENSM
CPC MAP MADE DEC 12 2017 1307 UTC CNTD DEC 23 2017

Week 2 – Temperature and Precipitation





Today: likely to be colder across northern tier, wetter in the east relative to yesterday due to the trough axis shifted further west.

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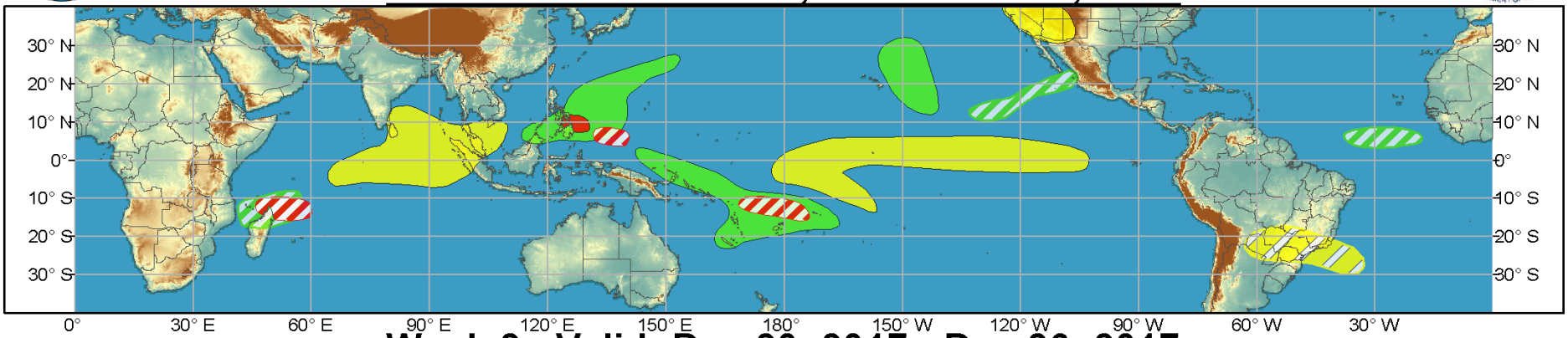

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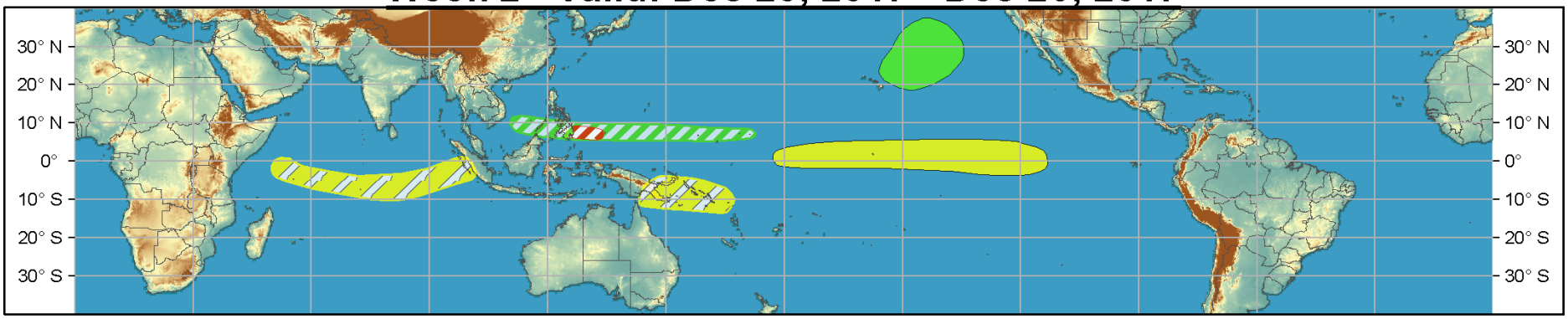

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