Global Tropics Hazards And Benefits Outlook

12/19/2017

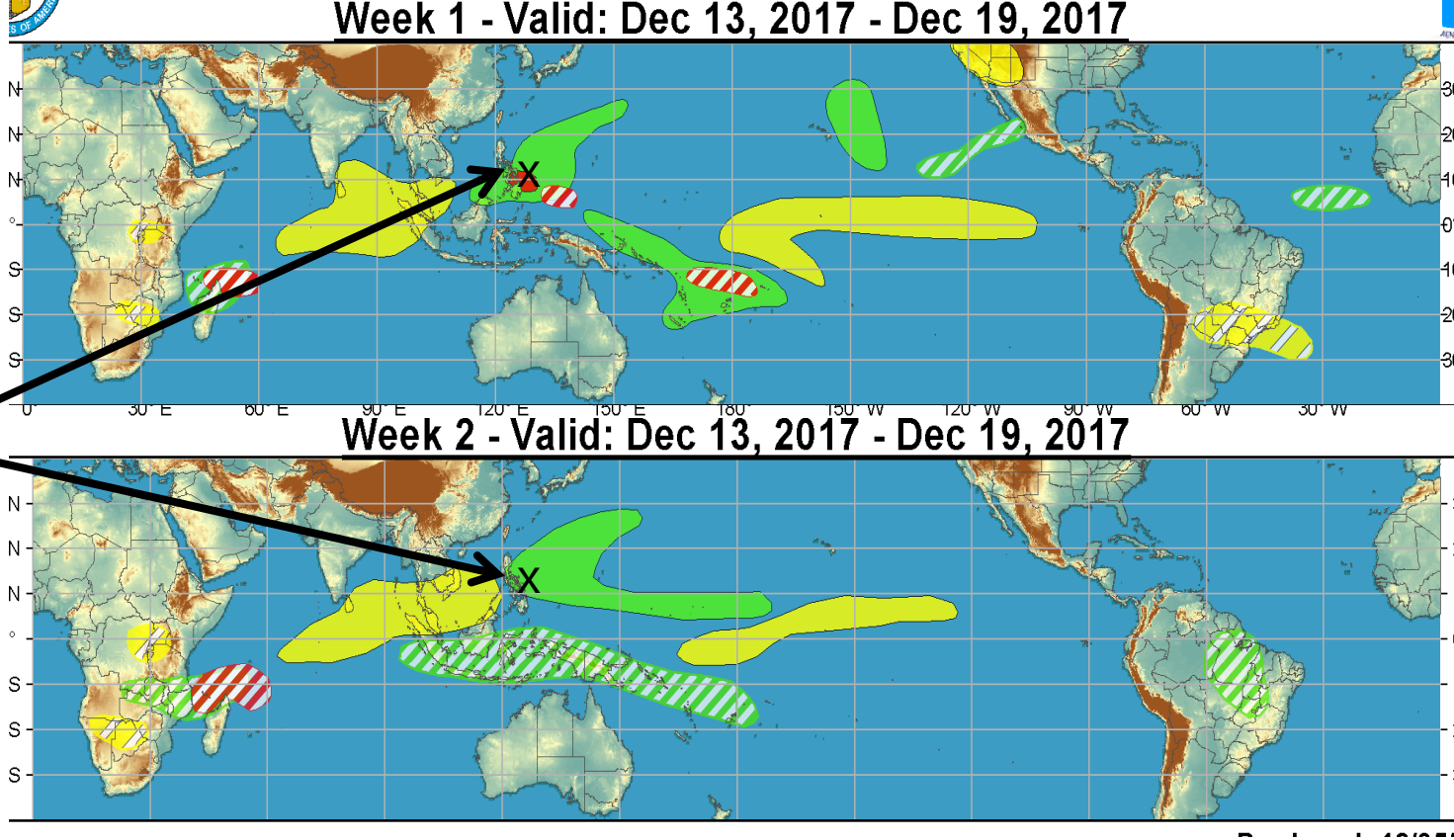
Dan Harnos

Outline

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

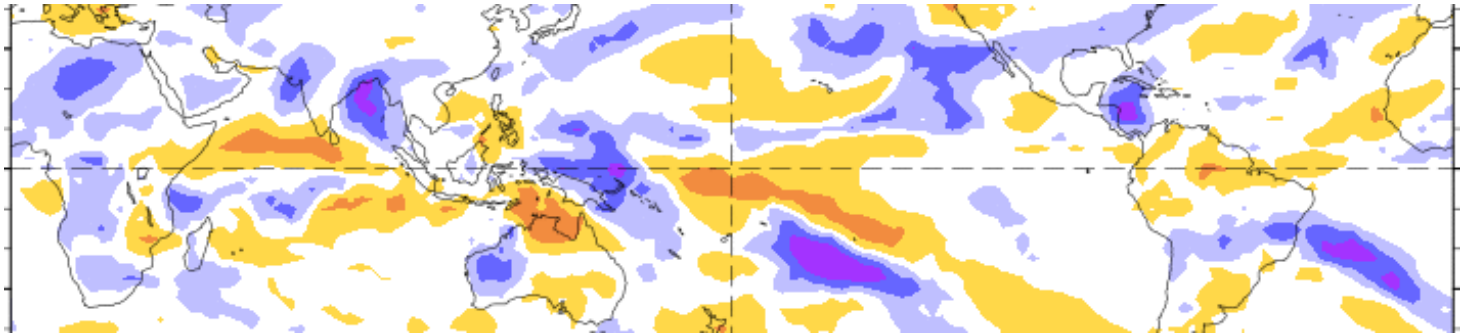
Outlook Review

T.S. Kai-Tak
12/13-present
Peak: 50 kt

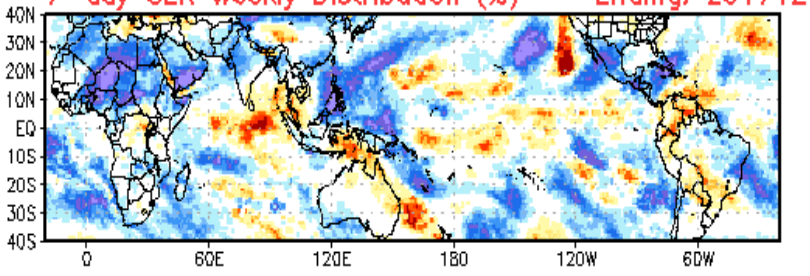


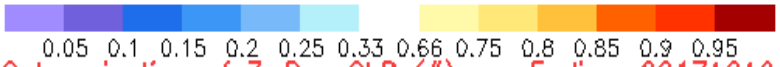
Cool shading
More clouds/rain

Warm shading
Less clouds/rain

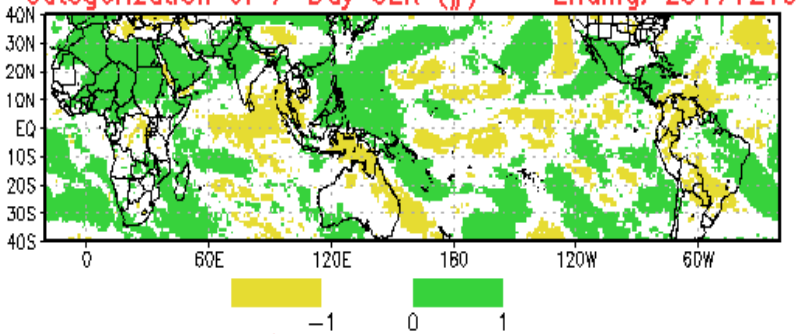


7-day OLR Weekly Distribution (%) -- Ending: 20171219

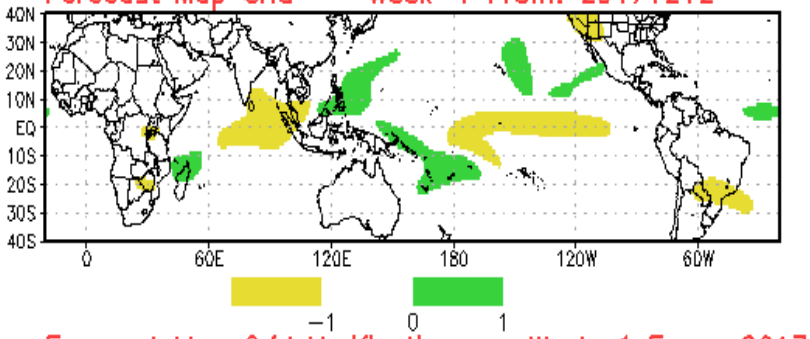




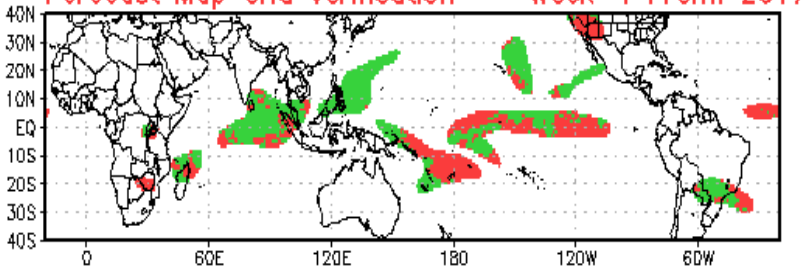
Categorization of 7-Day OLR (#) -- Ending: 20171219



Forecast Map Grid -- Week-1 From: 20171212

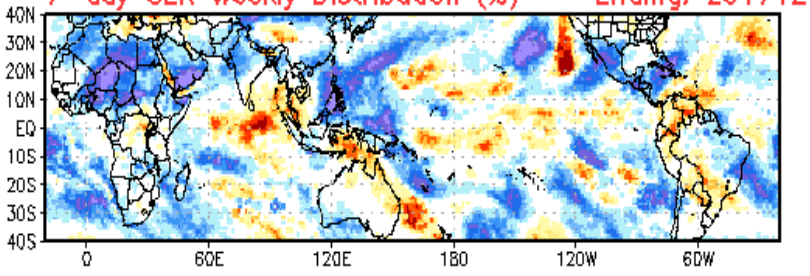


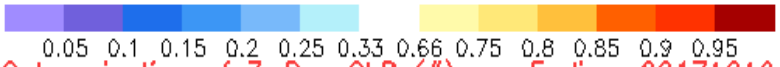
Forecast Map Grid Verification -- Week-1 From: 20171212



Hit: Green, Miss: Red
Heidke Skill Score: 35.4435

7-day OLR Weekly Distribution (%) -- Ending: 20171219





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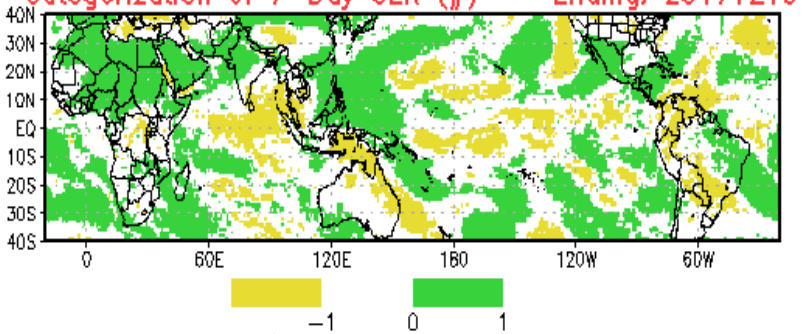
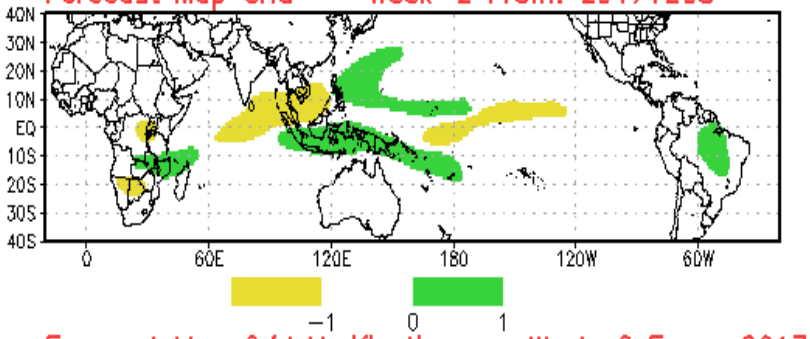
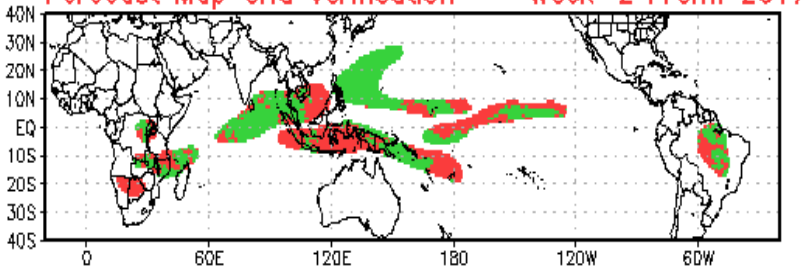


Forecast Map Grid -- Week-2 From: 20171205



Forecast Map Grid Verification -- Week-2 From: 20171205



Hit: Green, Miss: Red
Heidke Skill Score: 30.7387

Synopsis of Climate Modes

ENSO:

- ENSO Alert System Status: **La Niña Advisory**
- La Niña conditions are predicted to continue (exceeding 80% chance) through the Northern Hemisphere winter 2017-18, with a transition to ENSO-neutral most likely in mid-to-late spring.

MJO and other subseasonal tropical variability:

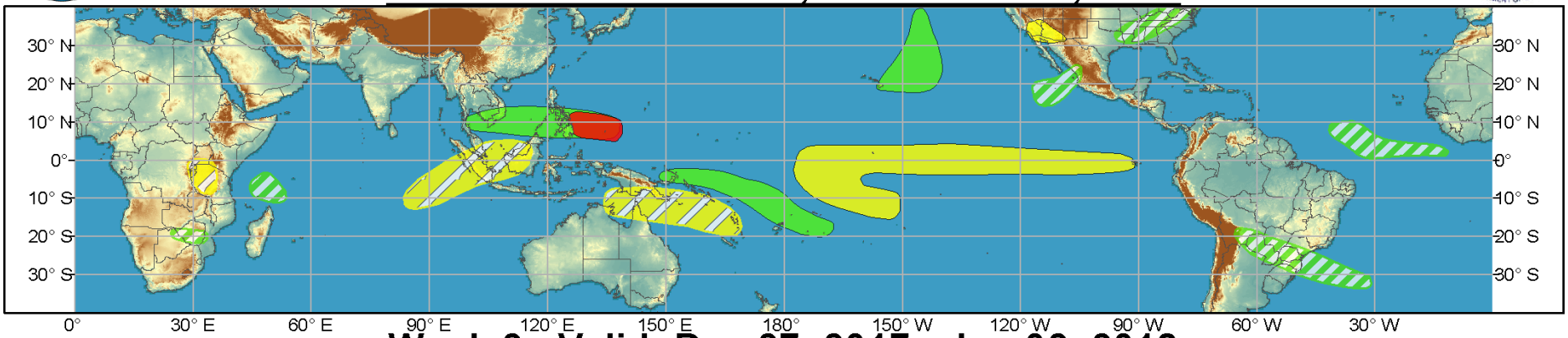
- An active MJO continues near the Date Line.
- The RMM index has been interfered with by multiple modes of variability over the past week, including equatorial Rossby wave activity and the building La Niña event.
- The GEFS weakens the MJO signal over the next two weeks while crossing the Western Hemisphere, while ECMWF ensemble members are split between an active/inactive MJO. All models hint at the MJO re-emerging over the Indian Ocean beyond the outlook period.

Extratropics:

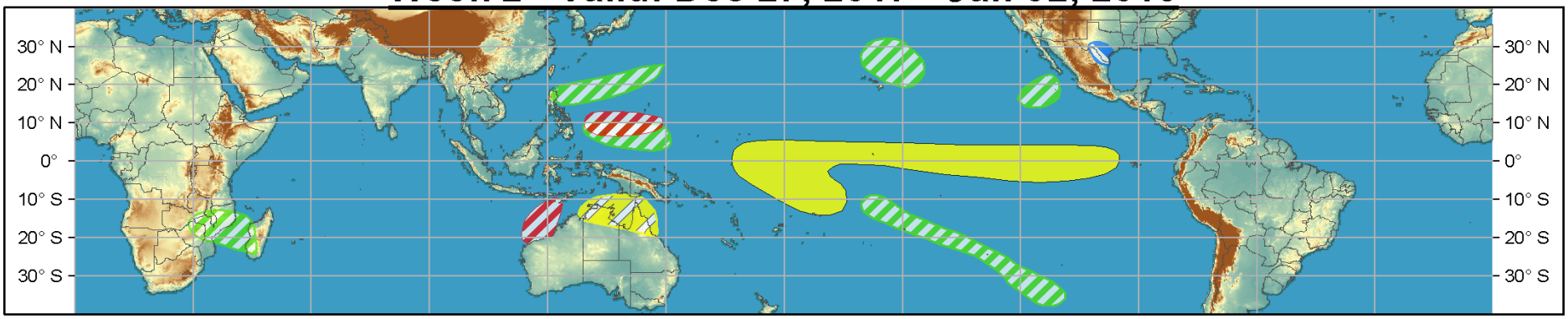
- Lagged MJO forcing from Phase-7 (from last week) favors a surge of cold air down the Great Plains over the next 2-weeks that appears consistent with dynamical model forecasts.
- Impacts as the MJO gets into Phase-8 or 1 are more muted over North America.

Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Dec 20, 2017 - Dec 26, 2017



Week 2 - Valid: Dec 27, 2017 - Jan 02, 2018



Produced: 12/19/2017

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.
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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.

中央氣象局 Central Weather Bureau

UNIVERSITY AT ALBANY State University of New York

EARTH SYSTEM SCIENCE INTERDISCIPLINARY CENTER ESSIC UNIVERSITY OF MARYLAND

Australian Government Bureau of Meteorology

cics.nc

NPS PRAESTANTIA PER SCIENTIAM

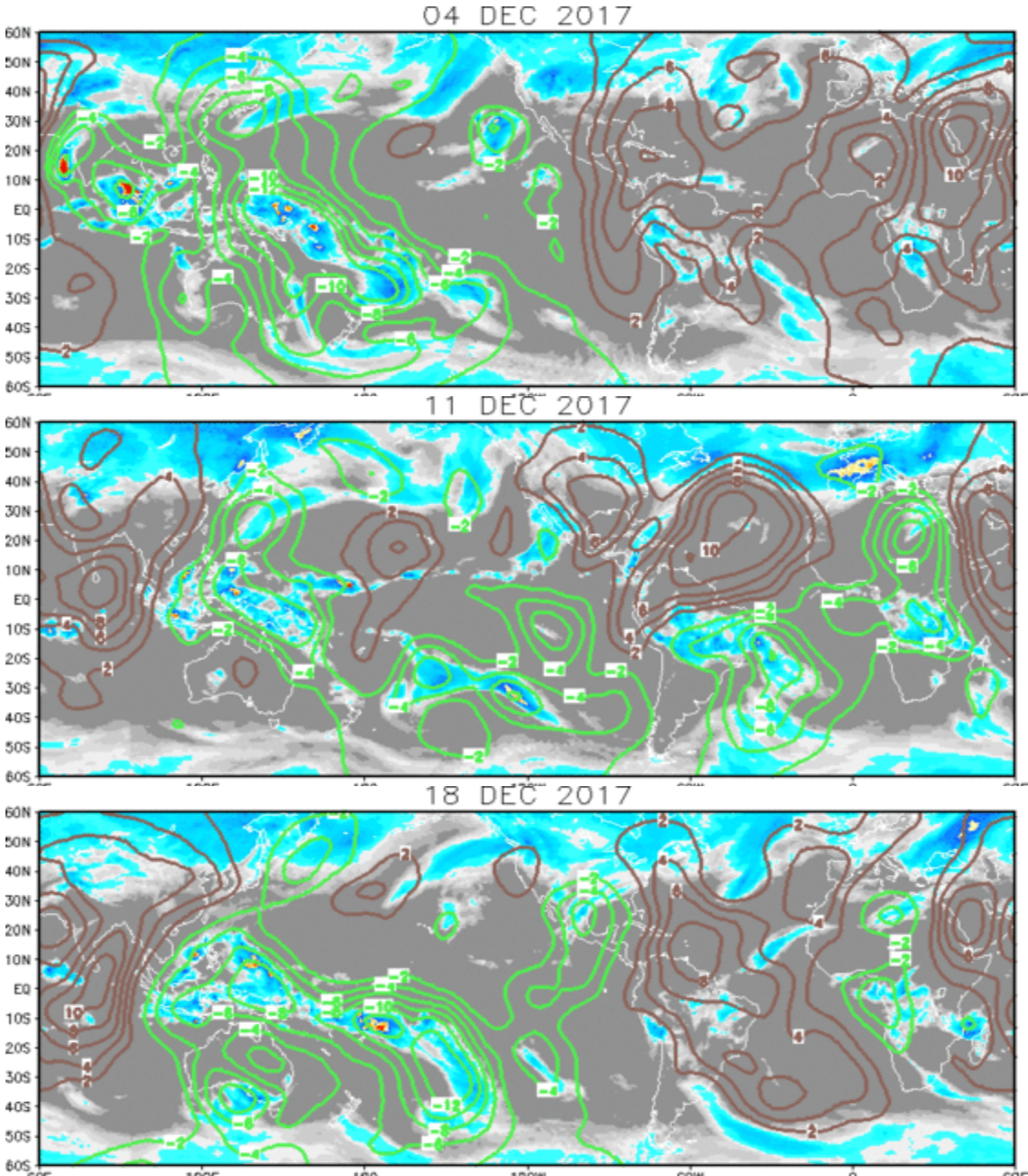
IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence Brown: Enhanced Convergence

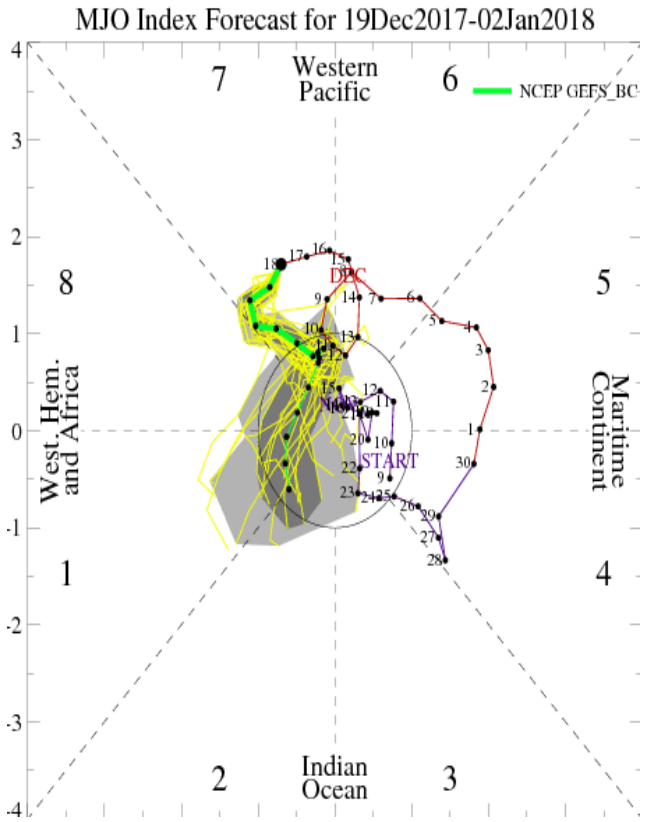
Strong Wave-1 pattern indicative of enhanced MJO phase over the Maritime Continent.

Destructive interference evident with low-frequency state, as convection is suppressed near the Date Line.

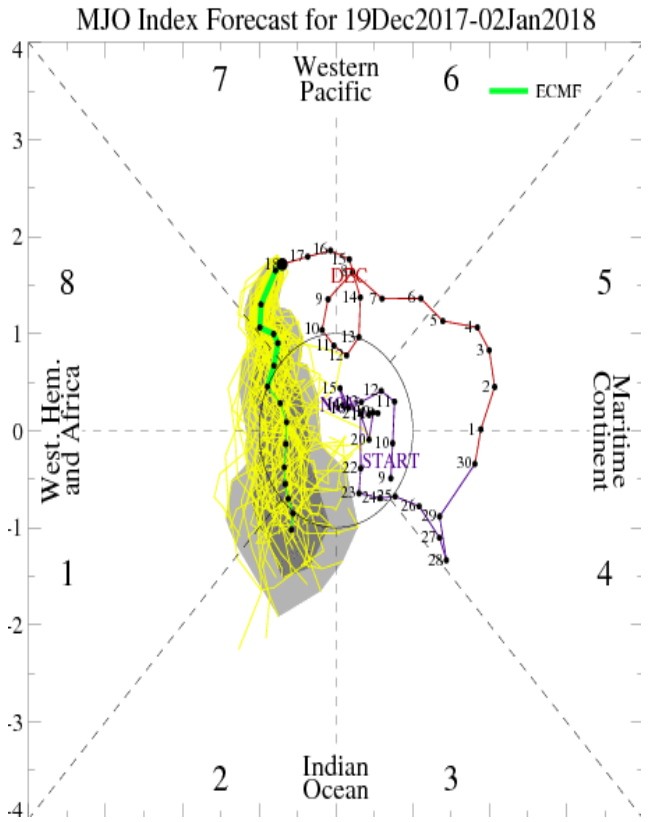
Generally a wave-1 pattern with enhanced (supressed) convection in the Pacific (Atlantic and Indian Ocean).



MJO Observation/Forecast



GEFS

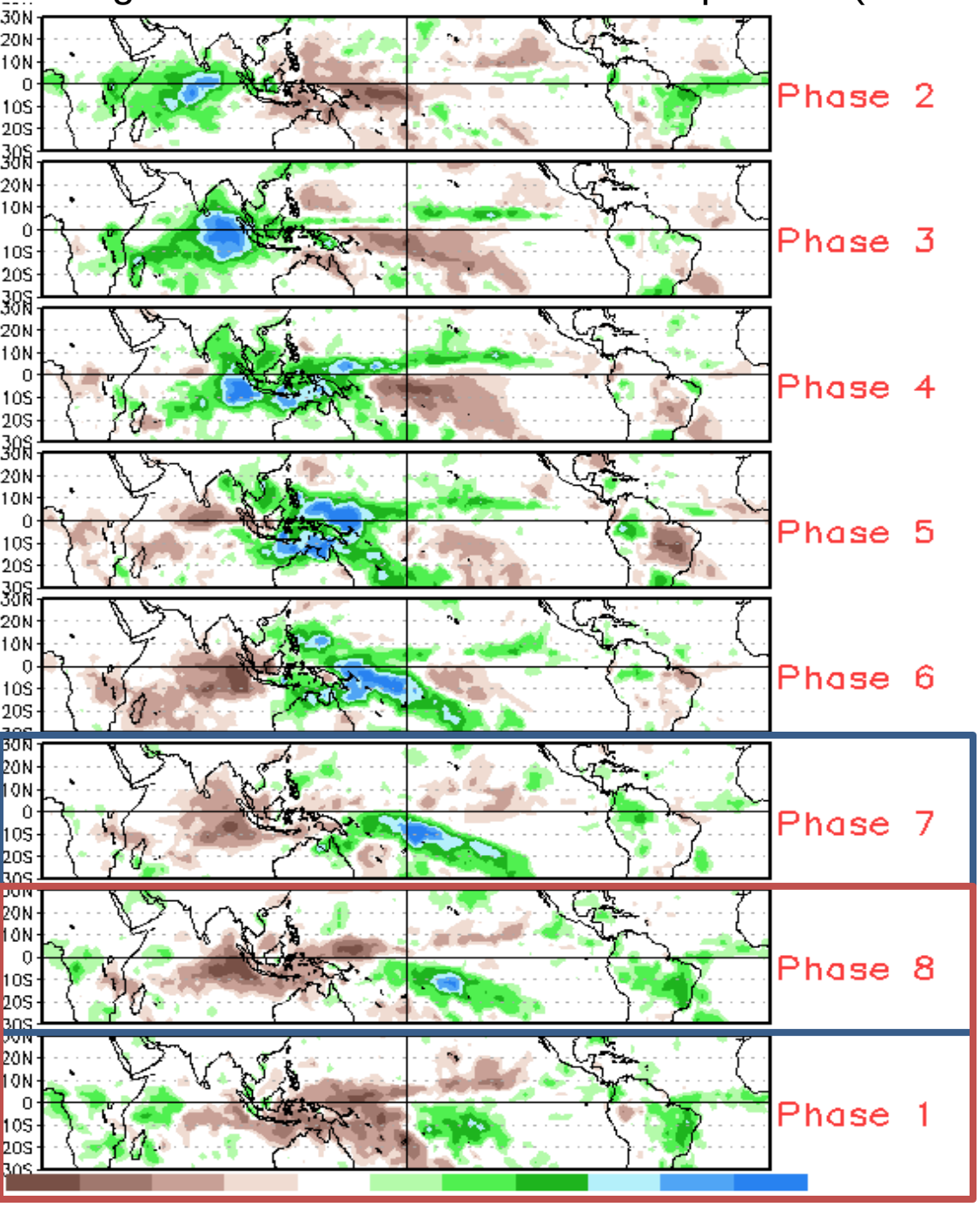


ECMWF

The two ensemble forecasts are fairly similar with the GEFS being weaker and slower than the ECMWF forecast.

Some caution has to be taken given the low-frequency state impact, with enhanced convection over the Maritime Continent from La Niña potentially biasing the signal towards Phases 4/5 (away from 8/1).

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



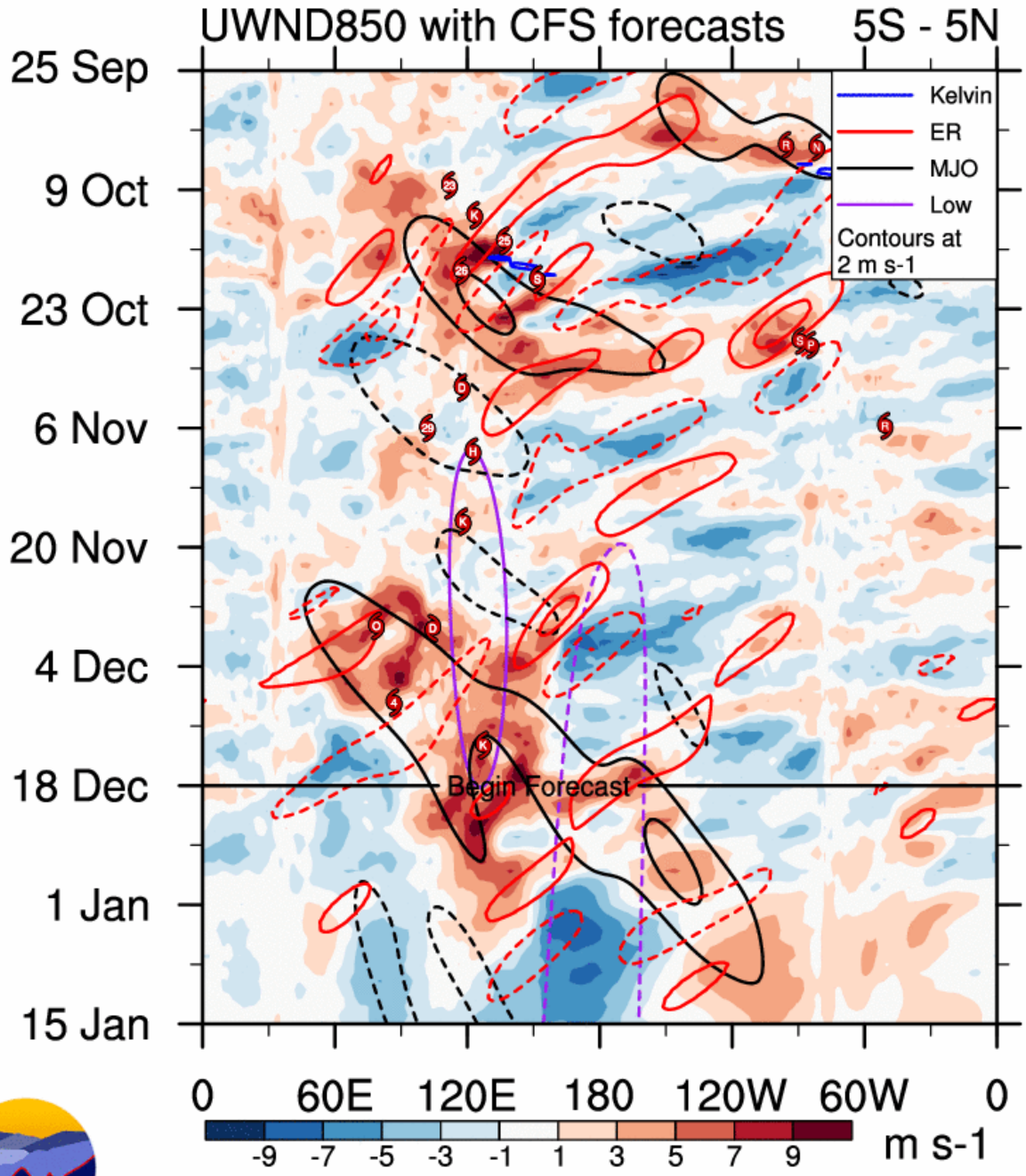
Week-1

Week-2

CAVEAT: These panels are representative of robust MJO events.

The active **MJO** is present near the Date Line, in vicinity of **low frequency** La Niña region of anomalous easterlies. Also present here is an active **equatorial Rossby wave**.

The **MJO** is anticipated to continue into the Western Hemisphere over the course of the outlook.



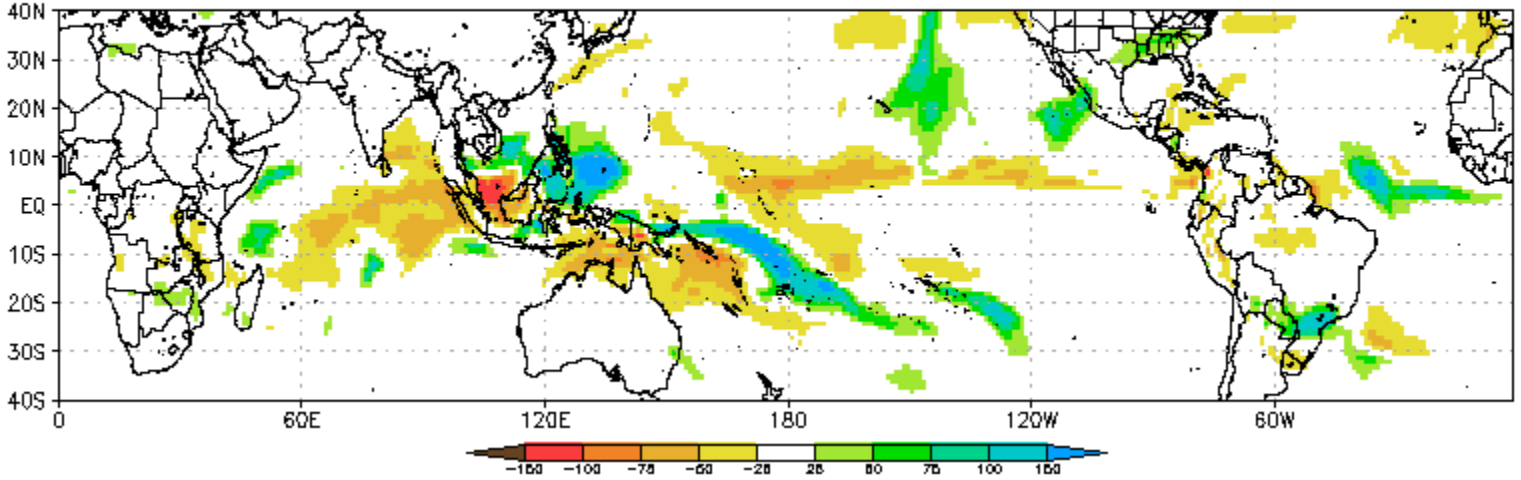
NCICS

ncics.org/mjo

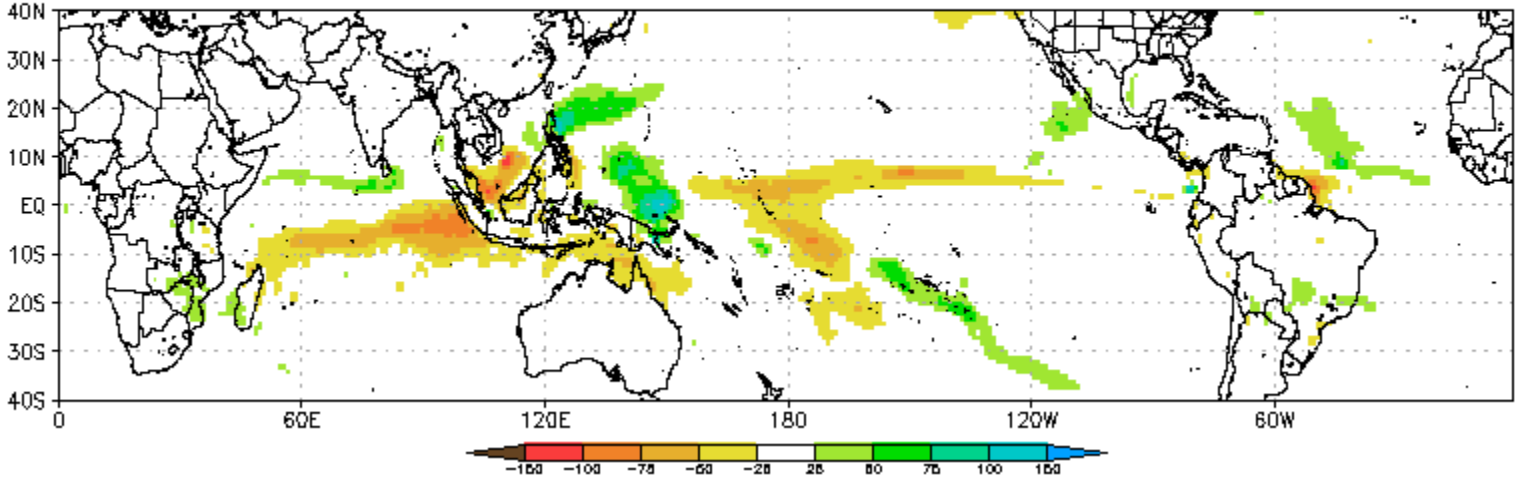
Tue 2017-12-19 1114 UTC

Carl Schreck (cjschrec@ncsu.edu)

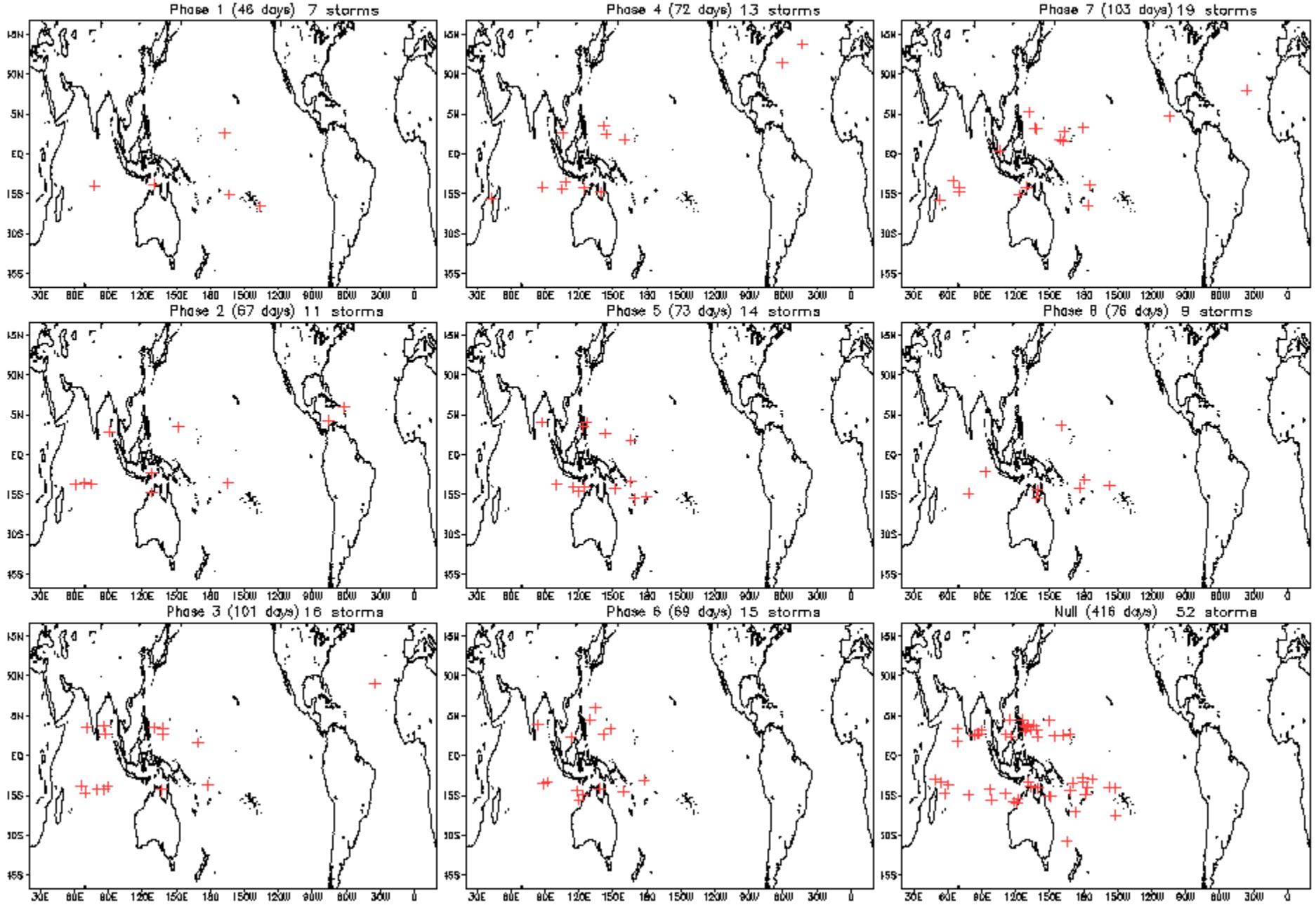
CFS Precipitation Anomalies (mm) Issued 18Dec2017
Week-1 Forecast Ending 26Dec2017



CFS Precipitation Anomalies (mm) Issued 18Dec2017
Week-2 Forecast Ending 02Jan2018



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%
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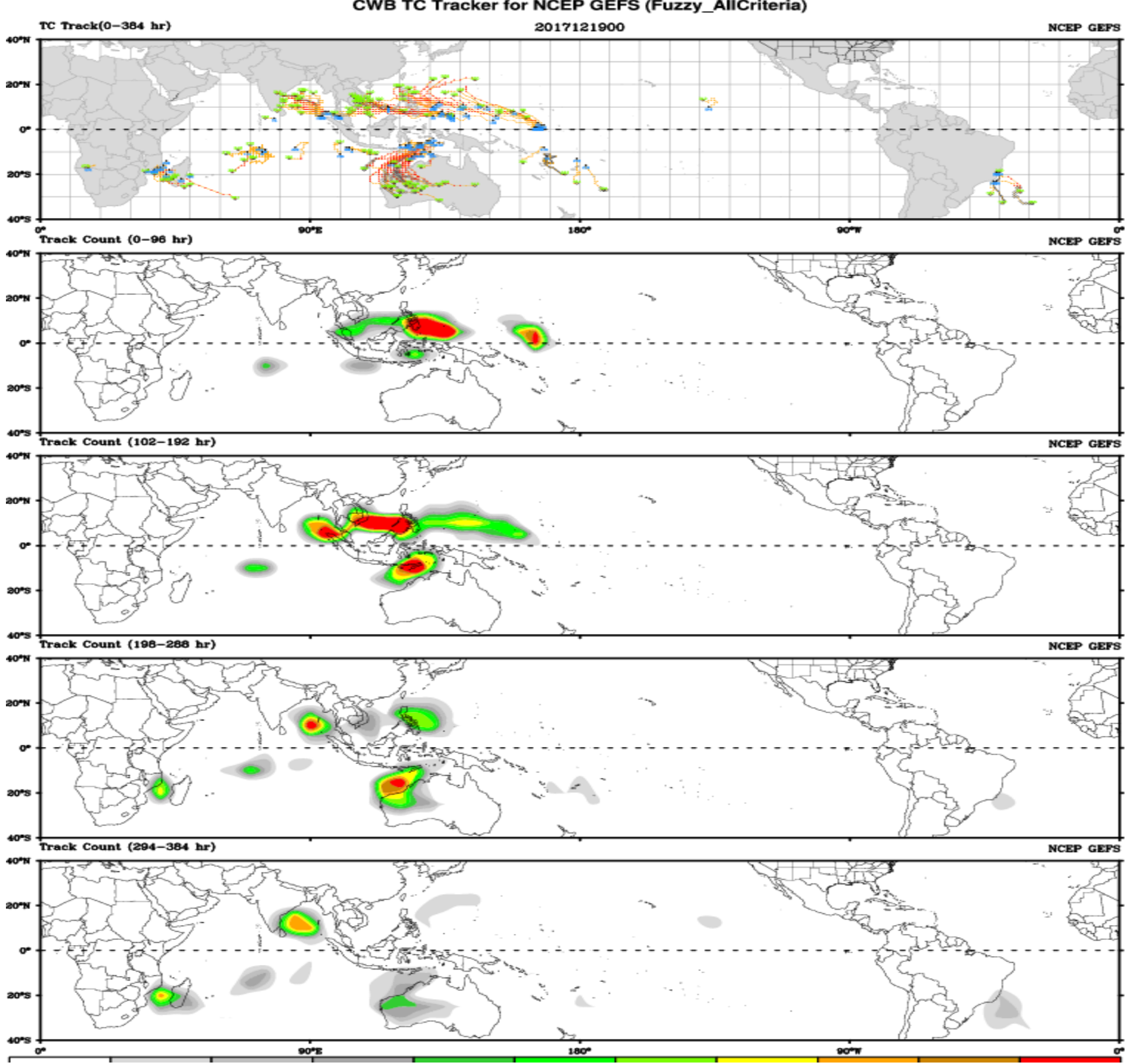


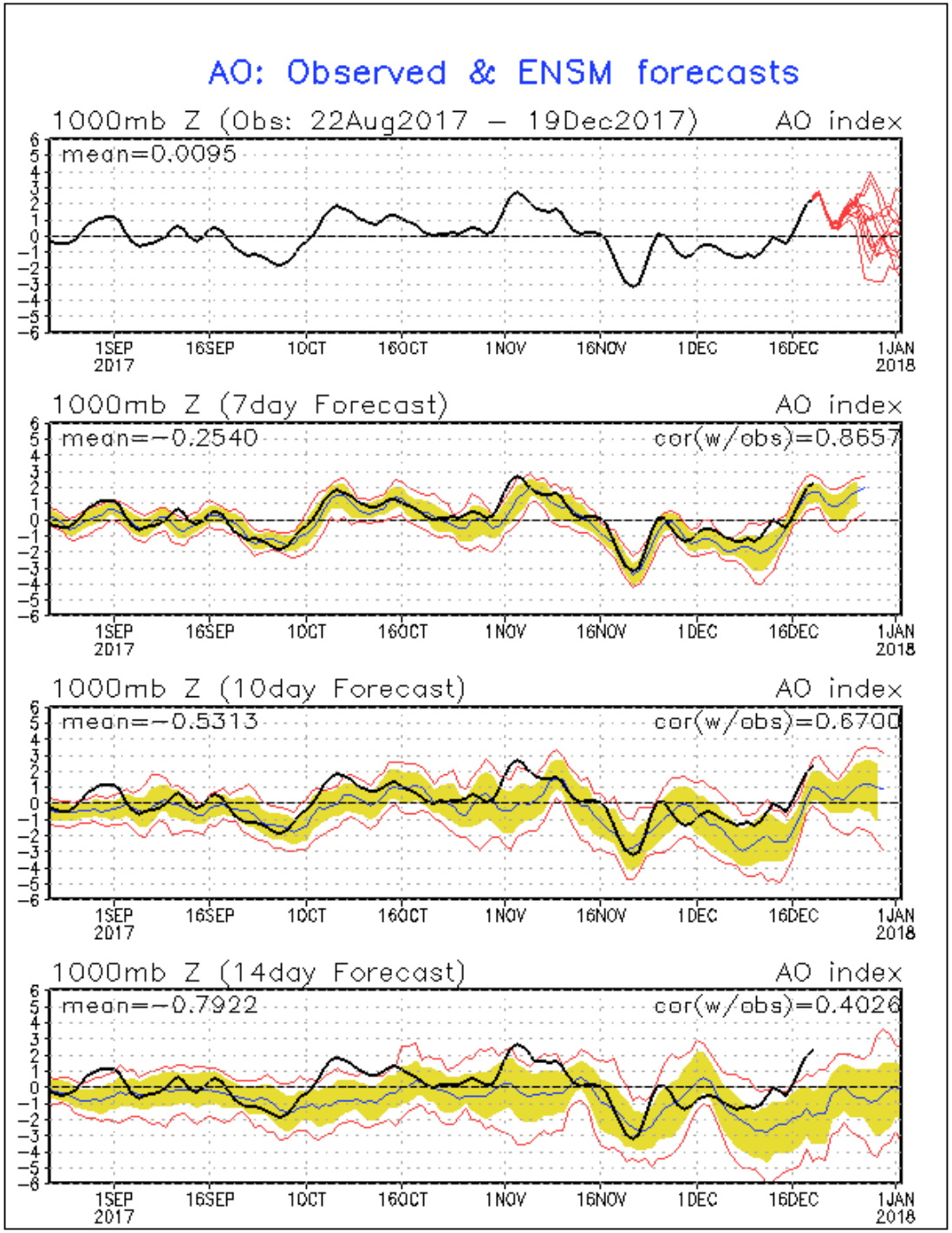
Days 1-4

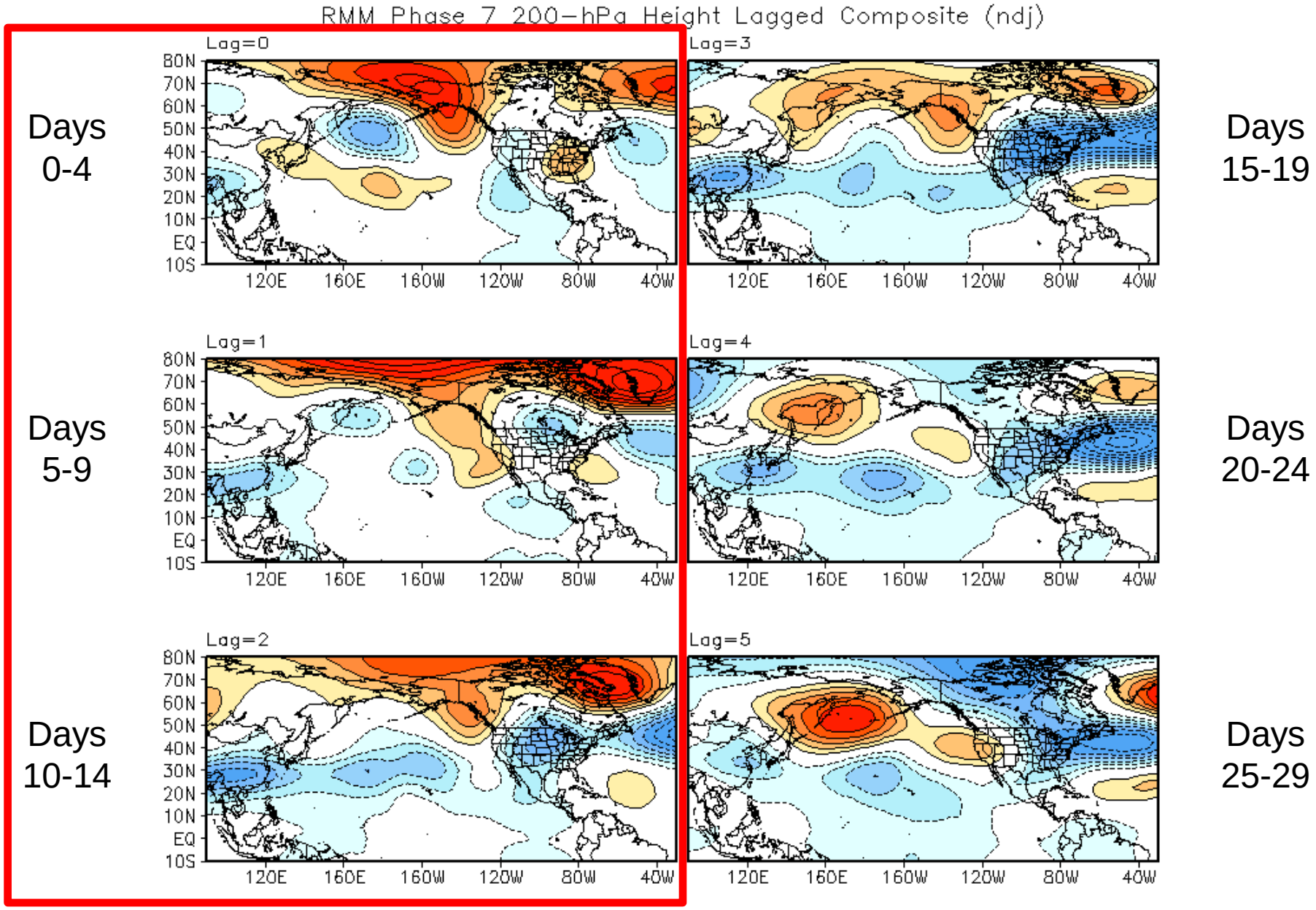
Day 5-8

Day 9-12

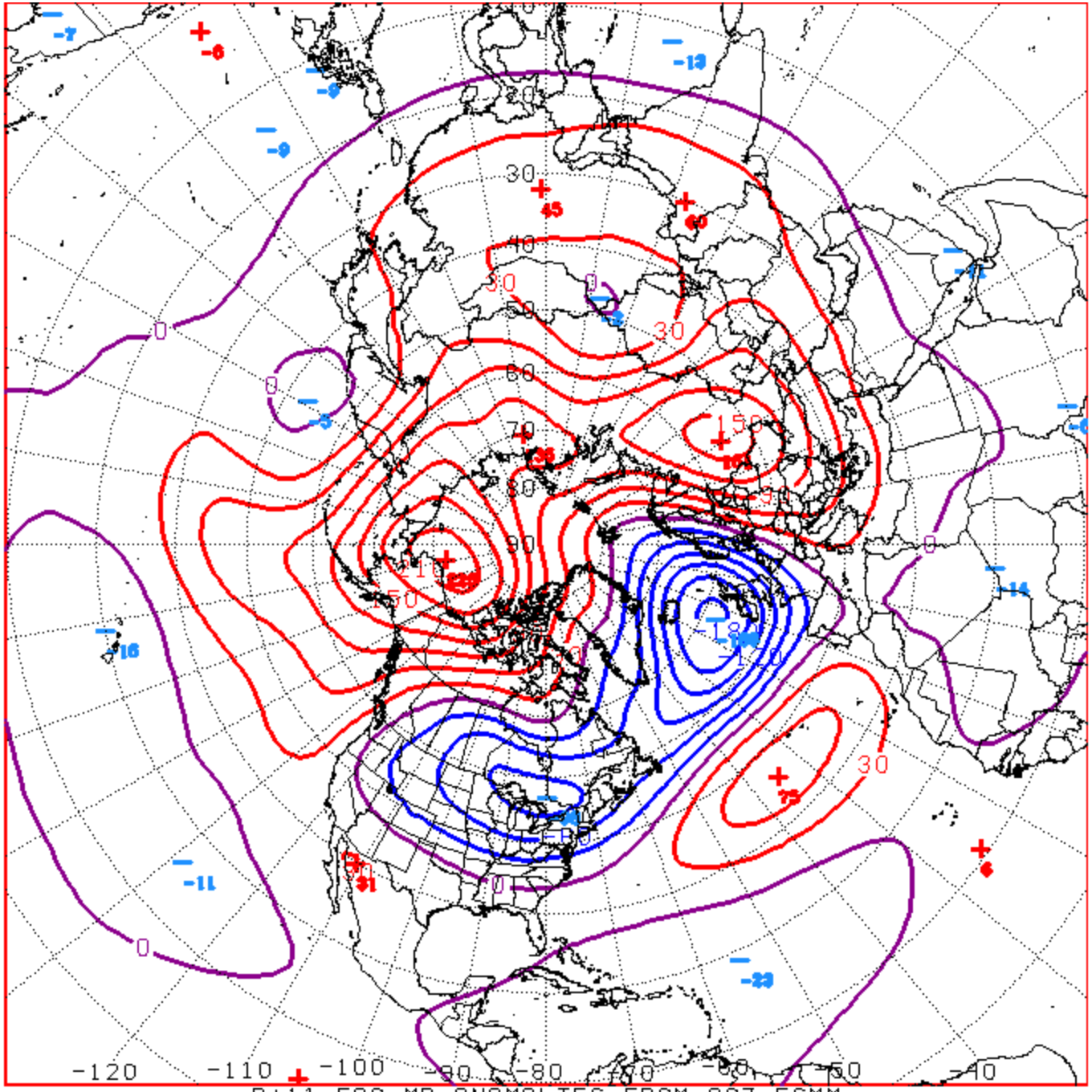
Day 13-15

Connections to U.S. Impacts


AO: Observed & ENSM forecasts
1000mb Z (Obs: 22Aug2017 – 19Dec2017)
AO index
mean=0.0095
1000mb Z (7day Forecast)
AO index
mean=−0.2540
cor(w/obs)=0.8657
1000mb Z (10day Forecast)
AO index
mean=−0.5313
cor(w/obs)=0.6700
1000mb Z (14day Forecast)
AO index
mean=−0.7922
cor(w/obs)=0.4026
1SEP 2017
16SEP
1OCT
16OCT
1NOV
16NOV
1DEC
16DEC
1JAN 2018

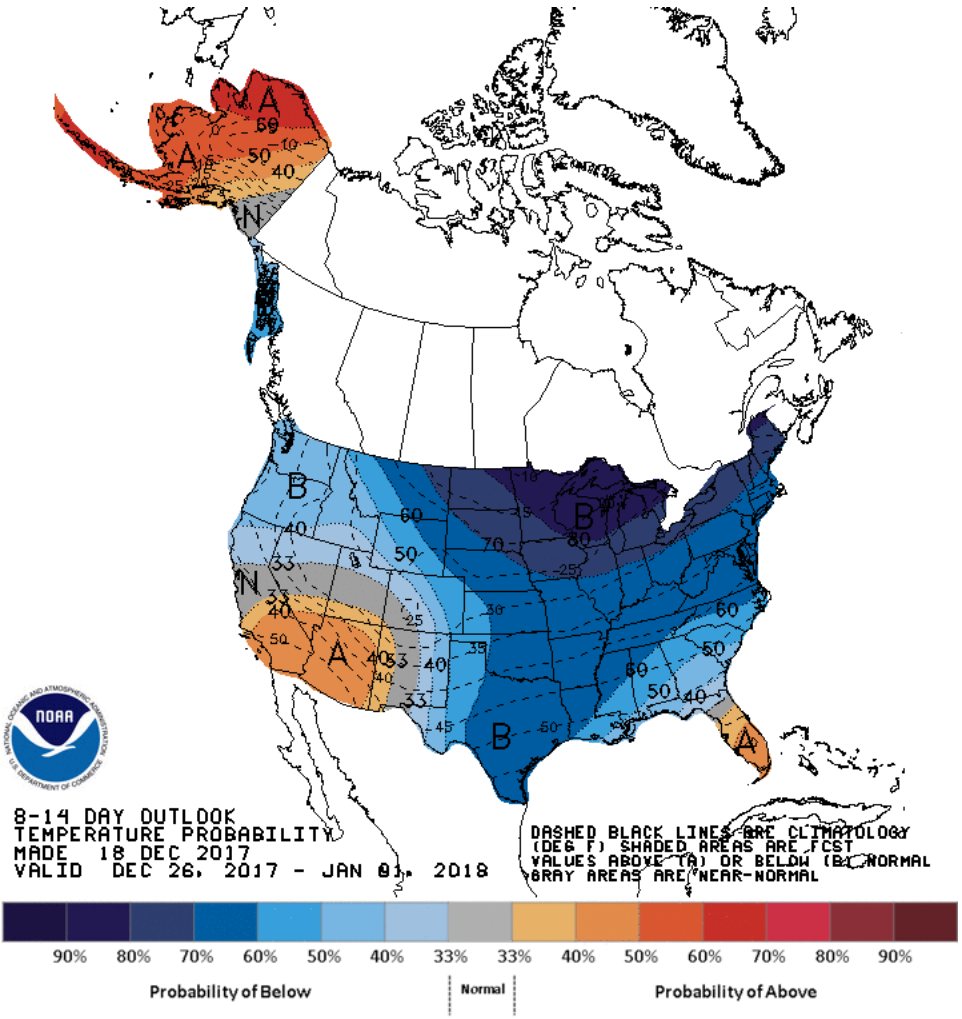


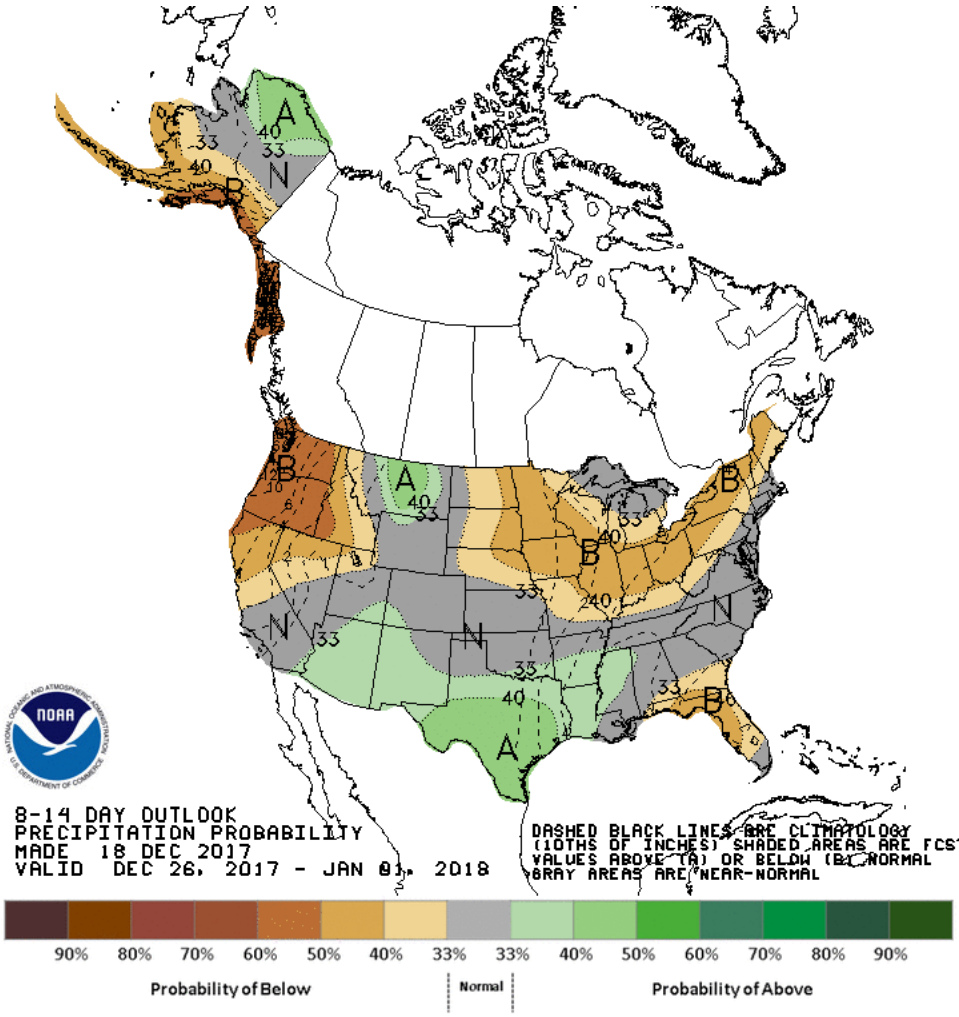
(Recycled from last week)



D+11 500 MB ANOMALIES FROM 00Z ECMM
CPC MAP MADE DEC 19 2017 0939 UTC CNTD DEC 30 2017

Week 2 – Temperature and Precipitation





Today: likely to be slightly wetter in the Rockies and across the East; temperature likely to remain similar to yesterday.

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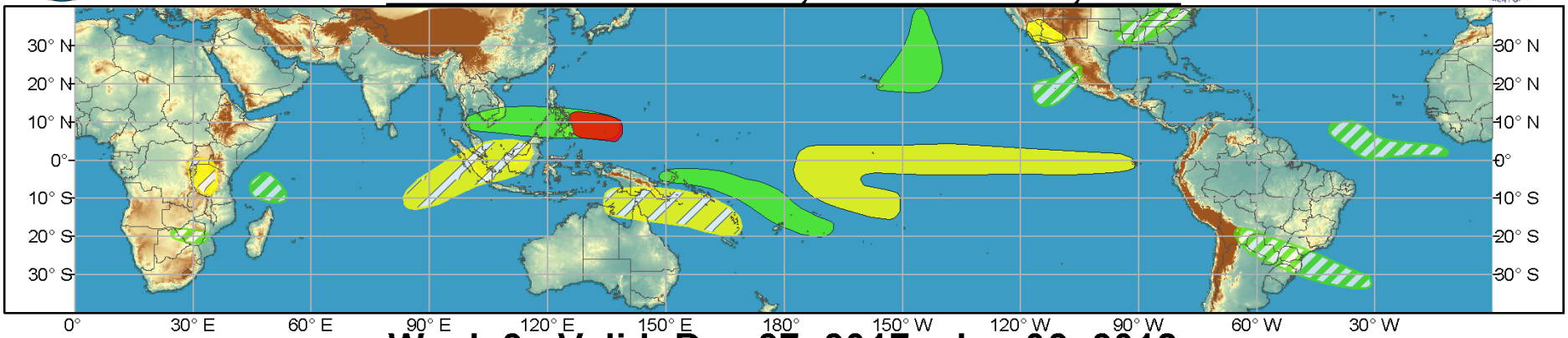

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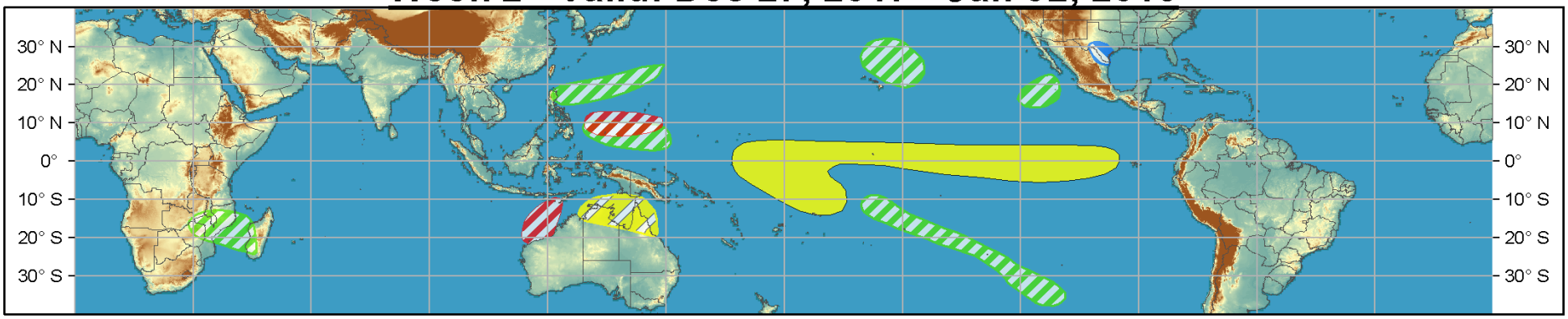

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NPS PRAESTANTIA PER SCIENTIAM