Global Tropics Hazards And Benefits Outlook

1/2/2018

Dan Harnos

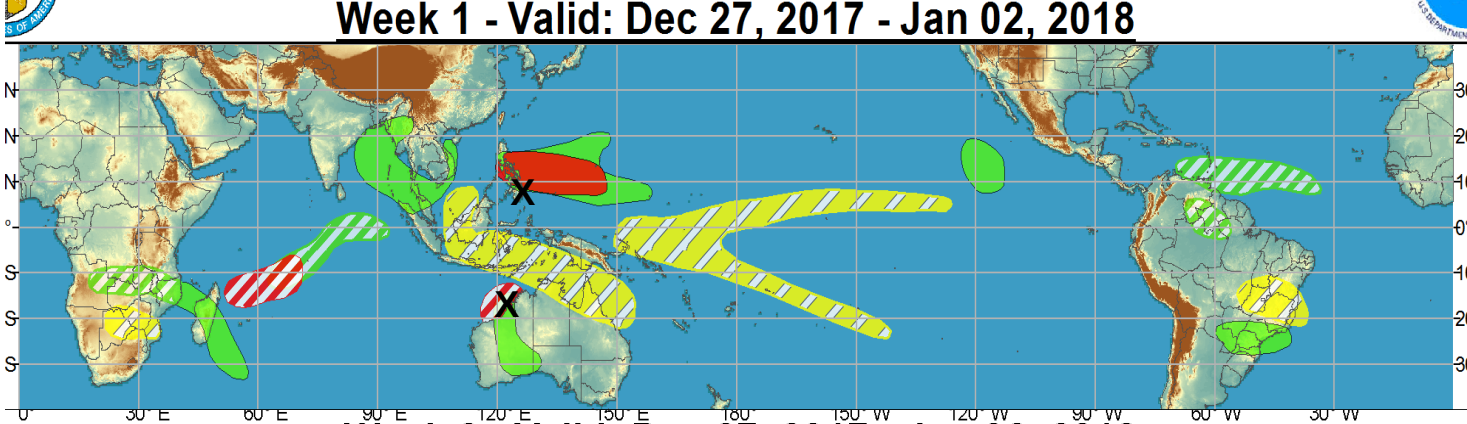
Outline

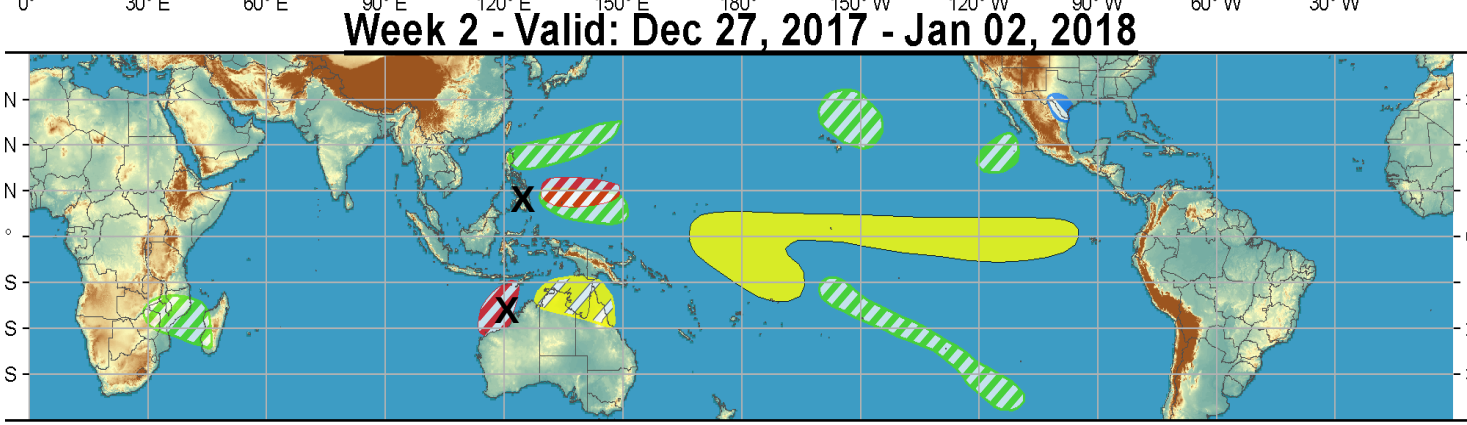
1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts

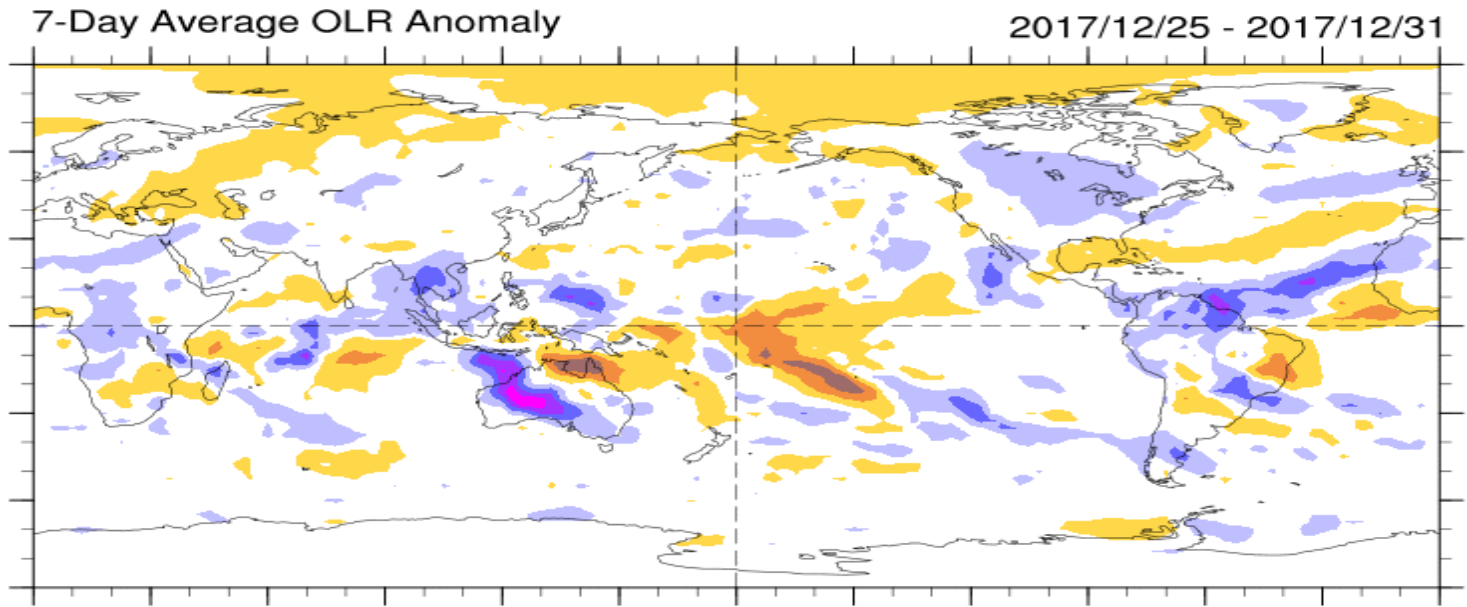
Outlook Review

W. Pac: TD-1
1/1-Present

S. Ind: TS Hilda
12/27-12/28



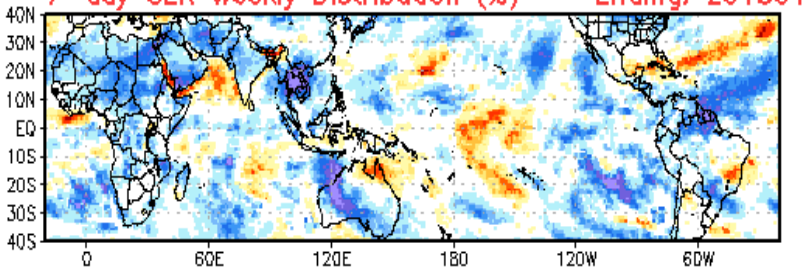


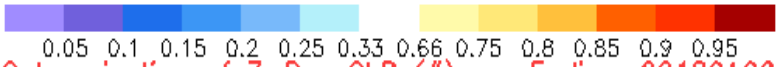


Cool shading
More clouds/rain

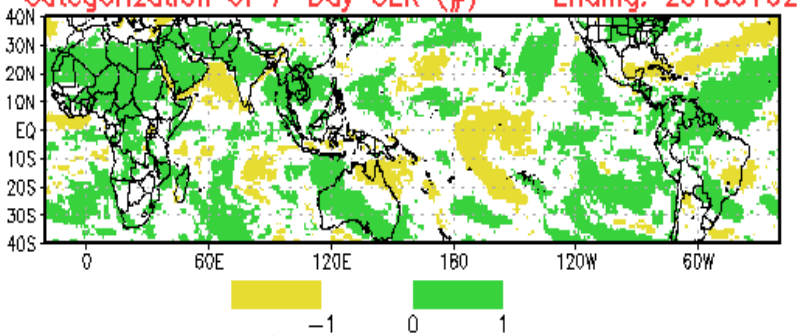
Warm shading
Less clouds/rain

7-day OLR Weekly Distribution (%) -- Ending: 20180102

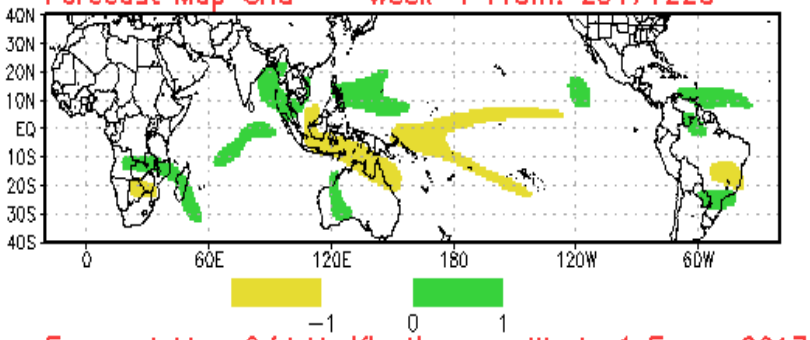




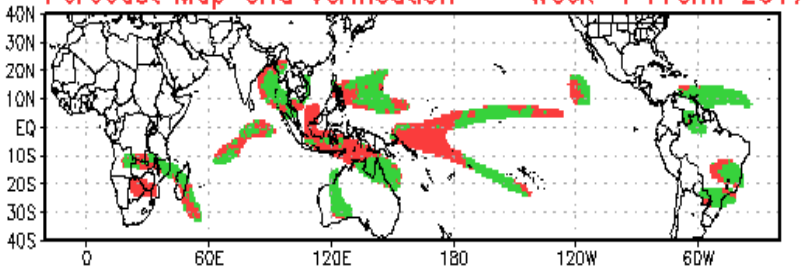
Categorization of 7-Day OLR (#) -- Ending: 20180102



Forecast Map Grid -- Week-1 From: 20171226

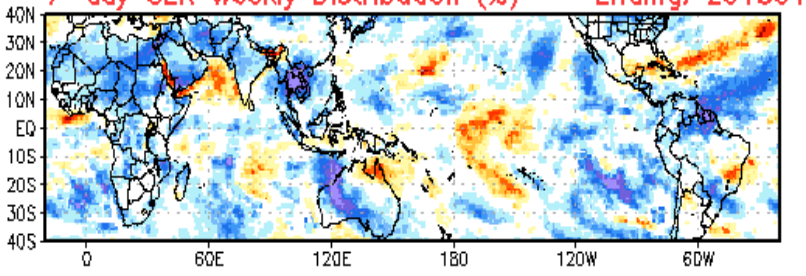


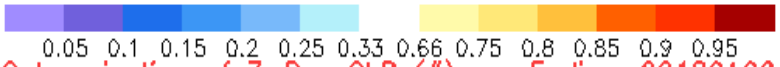
Forecast Map Grid Verification -- Week-1 From: 20171226



Hit: Green, Miss: Red
Heidke Skill Score: 34.7481

7-day OLR Weekly Distribution (%) -- Ending: 20180102





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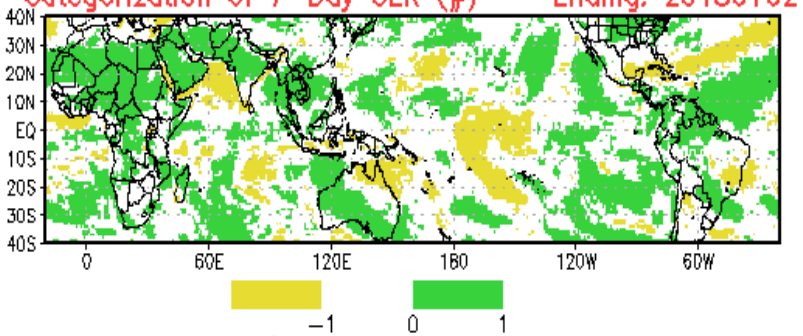
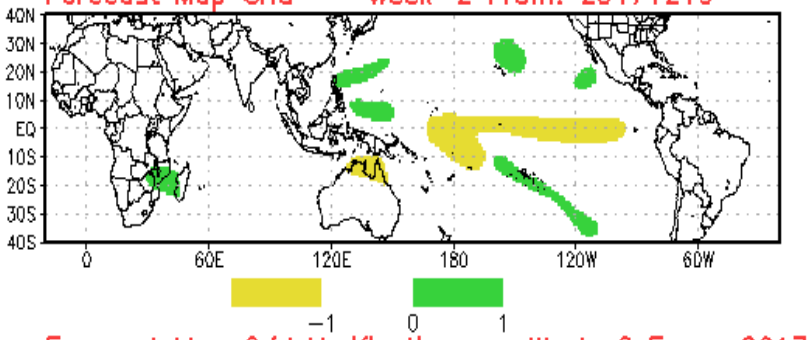
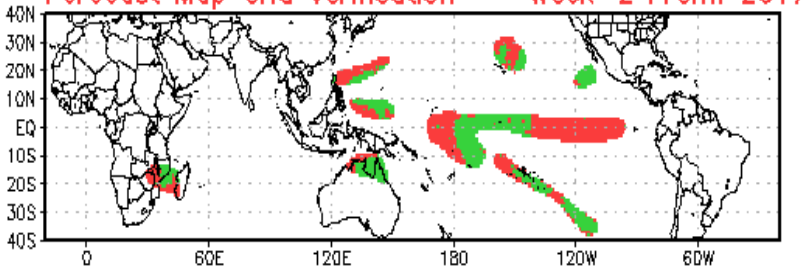


Forecast Map Grid -- Week-2 From: 20171219



Forecast Map Grid Verification -- Week-2 From: 20171219



Hit: Green, Miss: Red
Heidke Skill Score: 18.0477

Synopsis of Climate Modes

ENSO:

- ENSO Alert System Status: **La Niña Advisory**
- La Niña is likely (exceeding ~80%) through the Northern Hemisphere winter 2017-18, with a transition to ENSO-neutral most likely during the mid-to-late spring.

MJO and other subseasonal tropical variability:

• The active phase of the MJO recently crossed Africa and has reached the Indian Ocean.

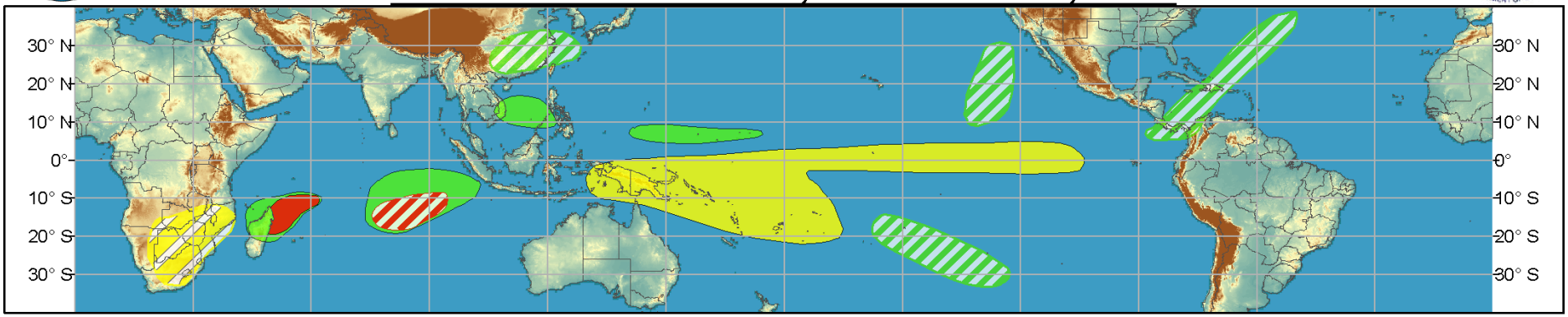
• Dynamical models portray eastward propagation of the MJO envelope across the Indian Ocean the next two weeks, after a brief delay due to equatorial Rossby wave activity near the start of the forecast period.

Extratropics:

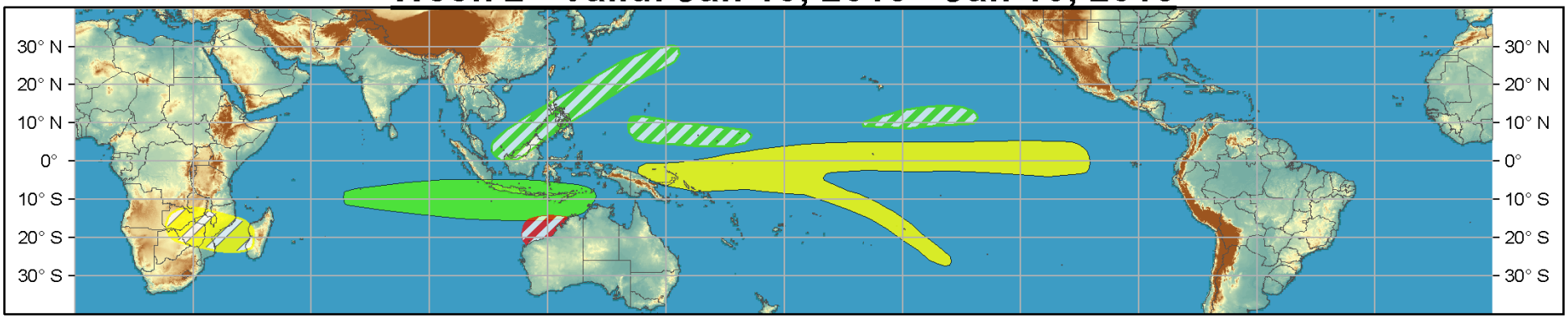
• Robust circulation responses across North America from MJO presence over the Indian Ocean are fairly common during boreal winter. However, dynamical model guidance indicates that the forecast pattern is unlikely to match typical expectations of such a scenario (troughing over Alaska and the West, ridging over the East), suggesting other modes of variability may be driving the observed circulation.

Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Jan 03, 2018 - Jan 09, 2018



Week 2 - Valid: Jan 10, 2018 - Jan 16, 2018



Produced: 01/02/2018

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

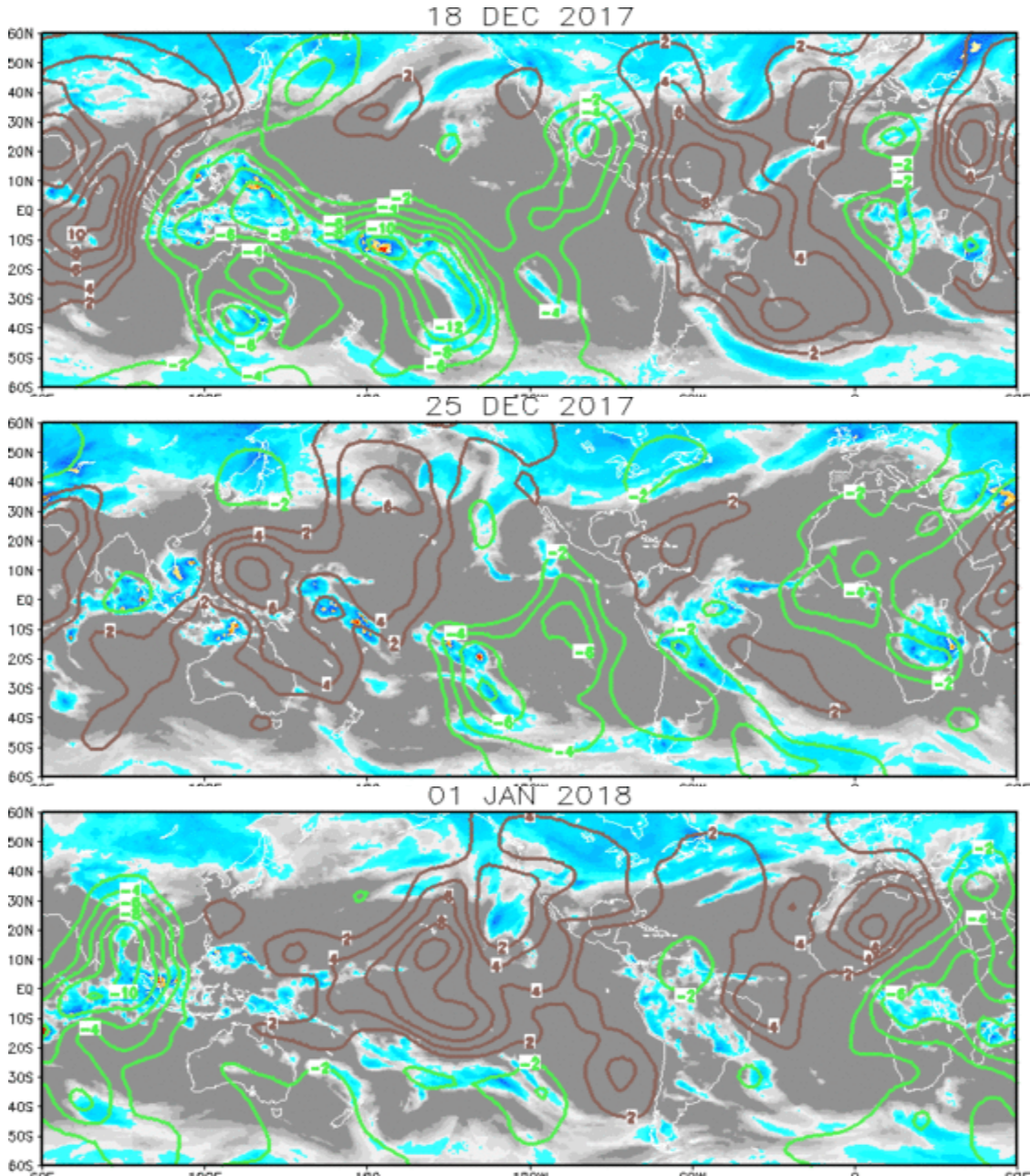
IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence Brown: Enhanced Convergence

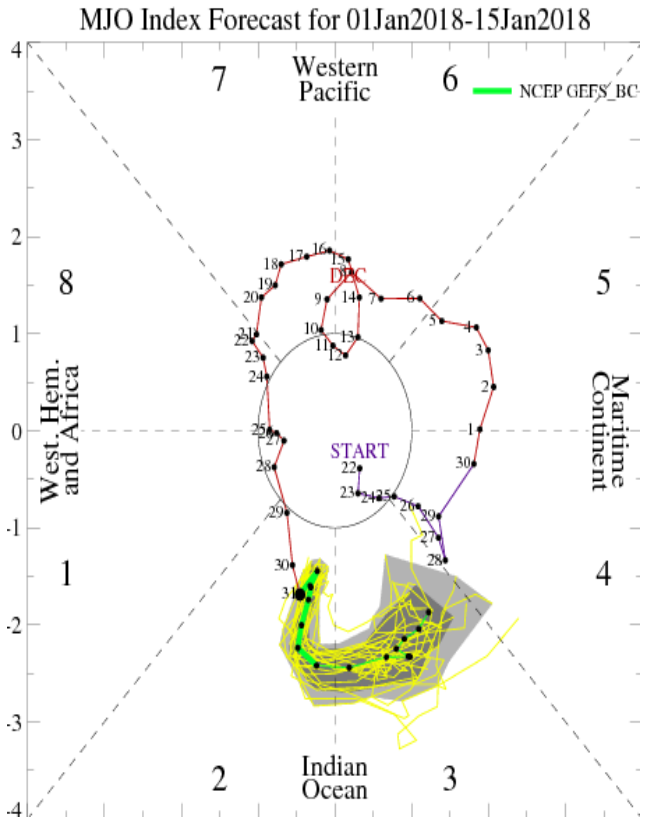
Constructive interference between a Rossby wave and the MJO over the West Pacific yielded a more organized response.

Weaker projection as the MJO traverses the Western Hemisphere and interferes with the base state.

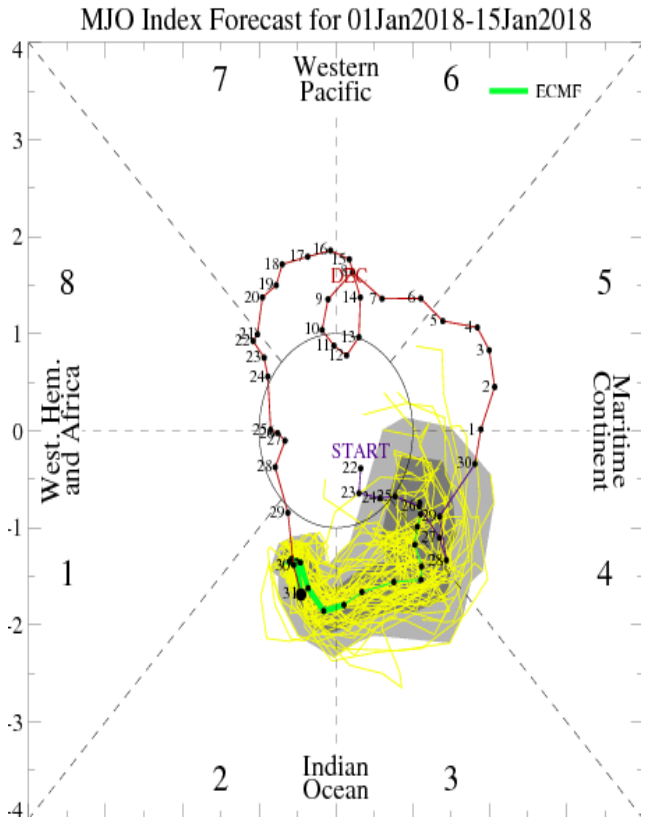
Reversion to wave-1 structure with enhanced convection over Africa and the Indian Ocean.



MJO Observation/Forecast



GEFS

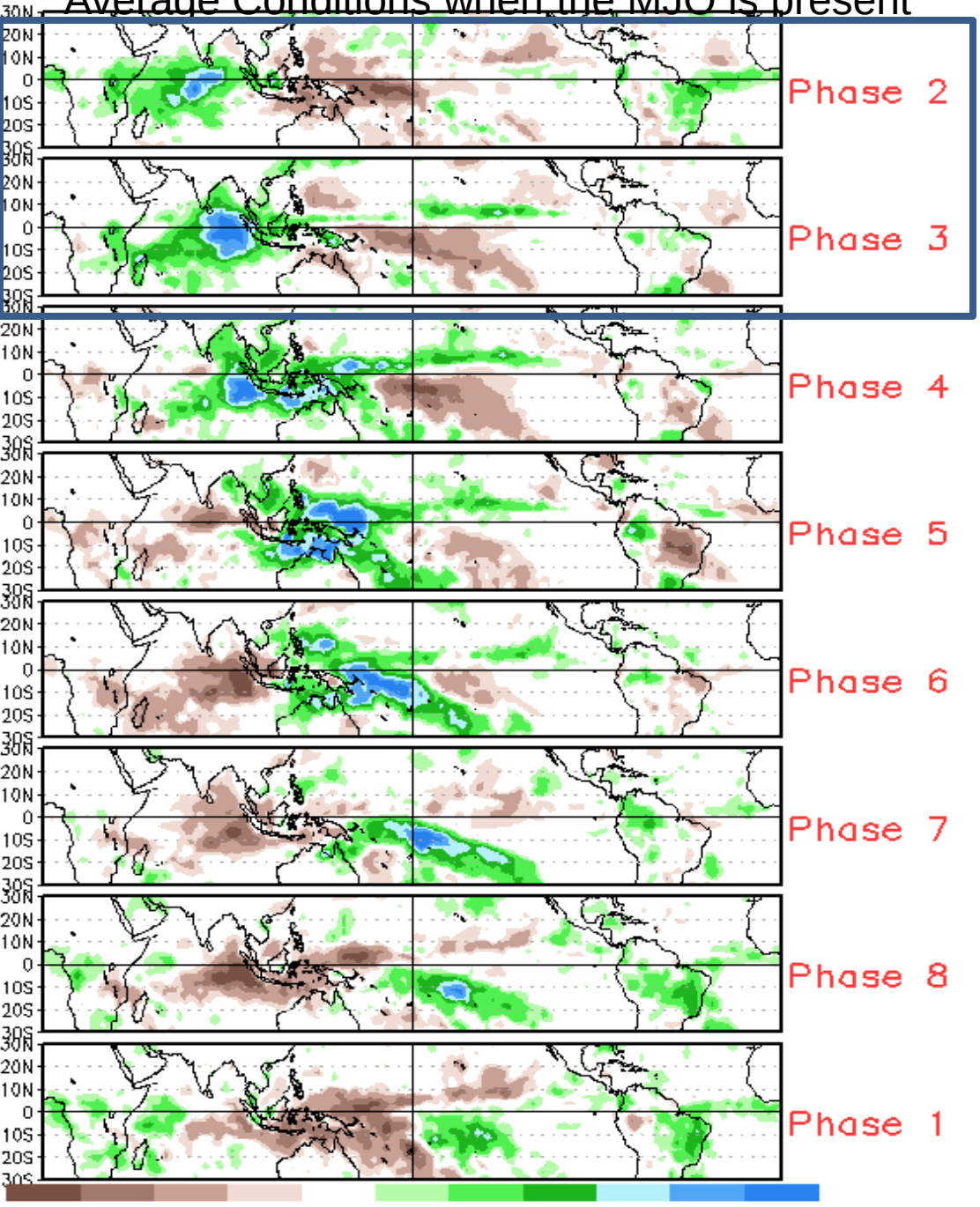


ECMWF

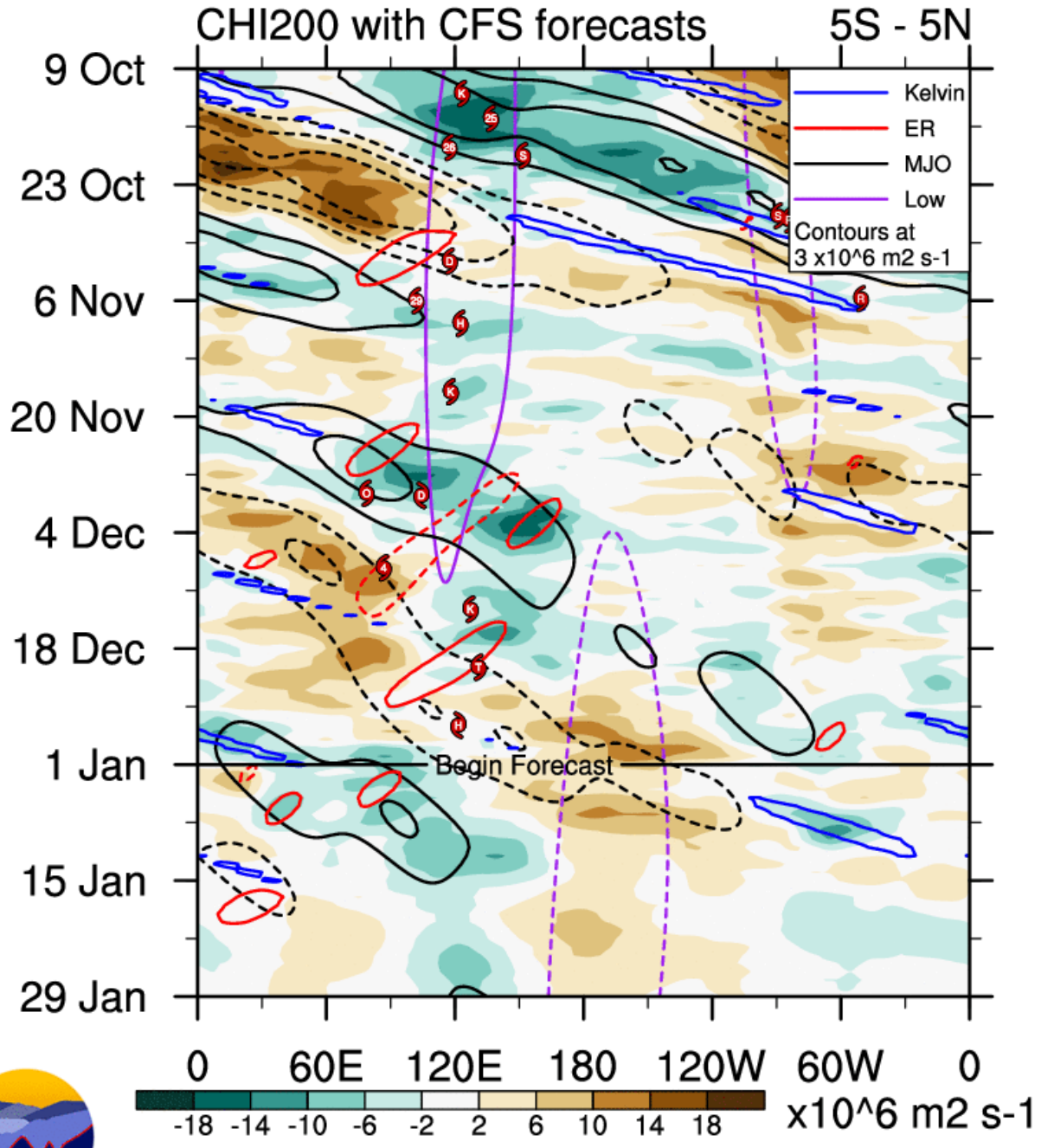
MJO signal forecast to weaken and stagnate initially (tied to Rossby wave activity), before reaching the eastern Indian Ocean during Week-2. The faster ECMWF solution approaches the Maritime Continent.

Note: These are 1-day old.

Average Conditions when the MJO is present



CAVEAT: These panels are representative of robust MJO events.



MJO pushing into the Indian Ocean. **Equatorial Rossby wave activity** is favored near 90W, that would slow the RMM index progression.

Low frequency La Niña footprint remains anchored near the Date Line.

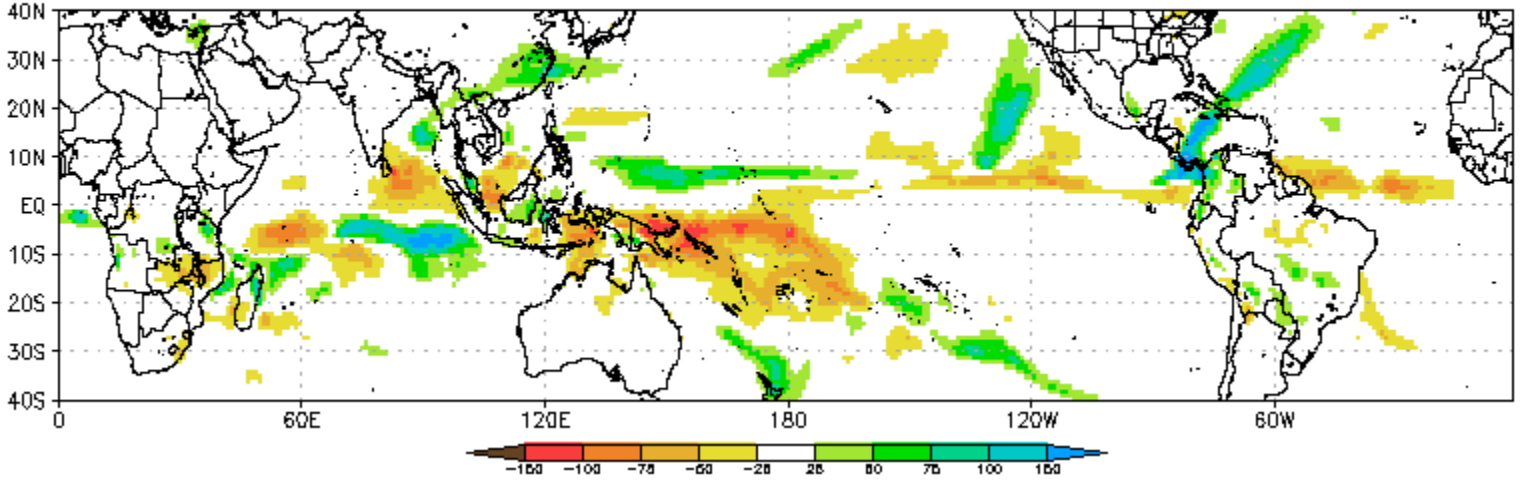
NCICS

ncics.org/mjo

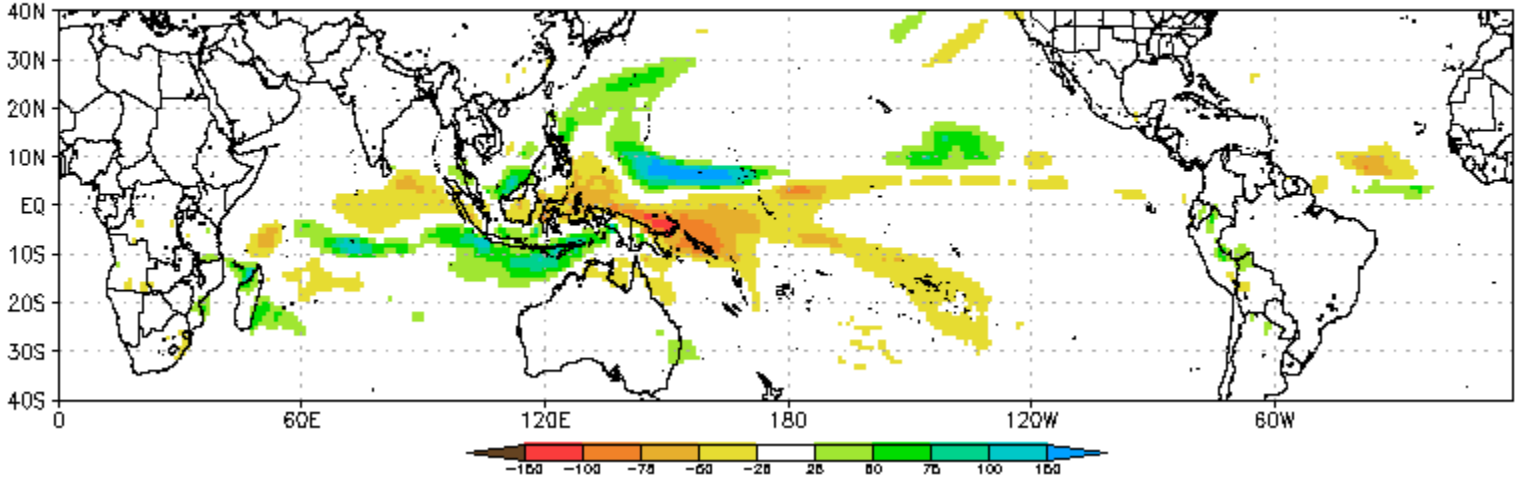
Tue 2018-01-02 1113 UTC

Carl Schreck (cjschrec@ncsu.edu)

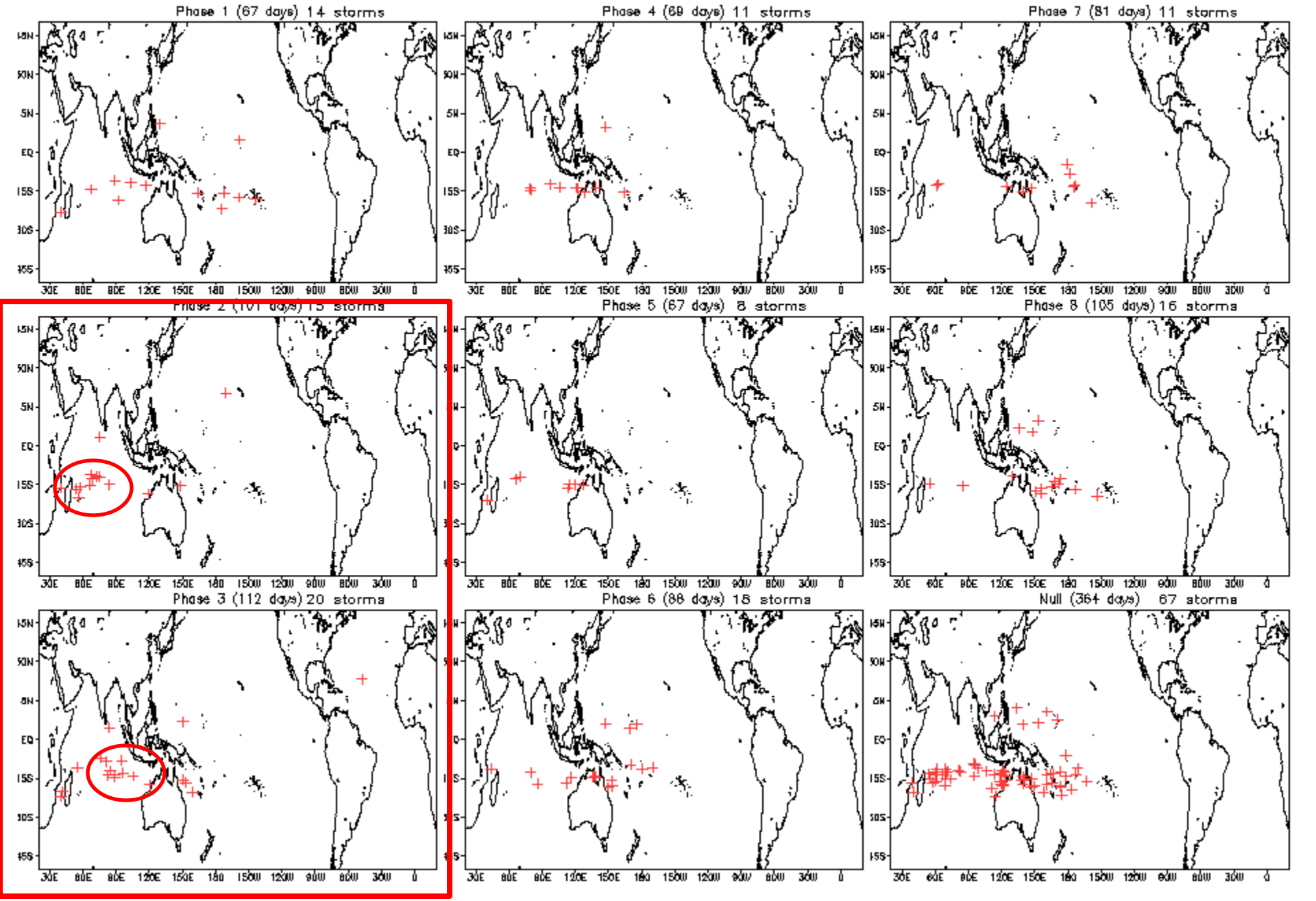
CFS Precipitation Anomalies (mm) Issued 01Jan2018
Week-1 Forecast Ending 09Jan2018

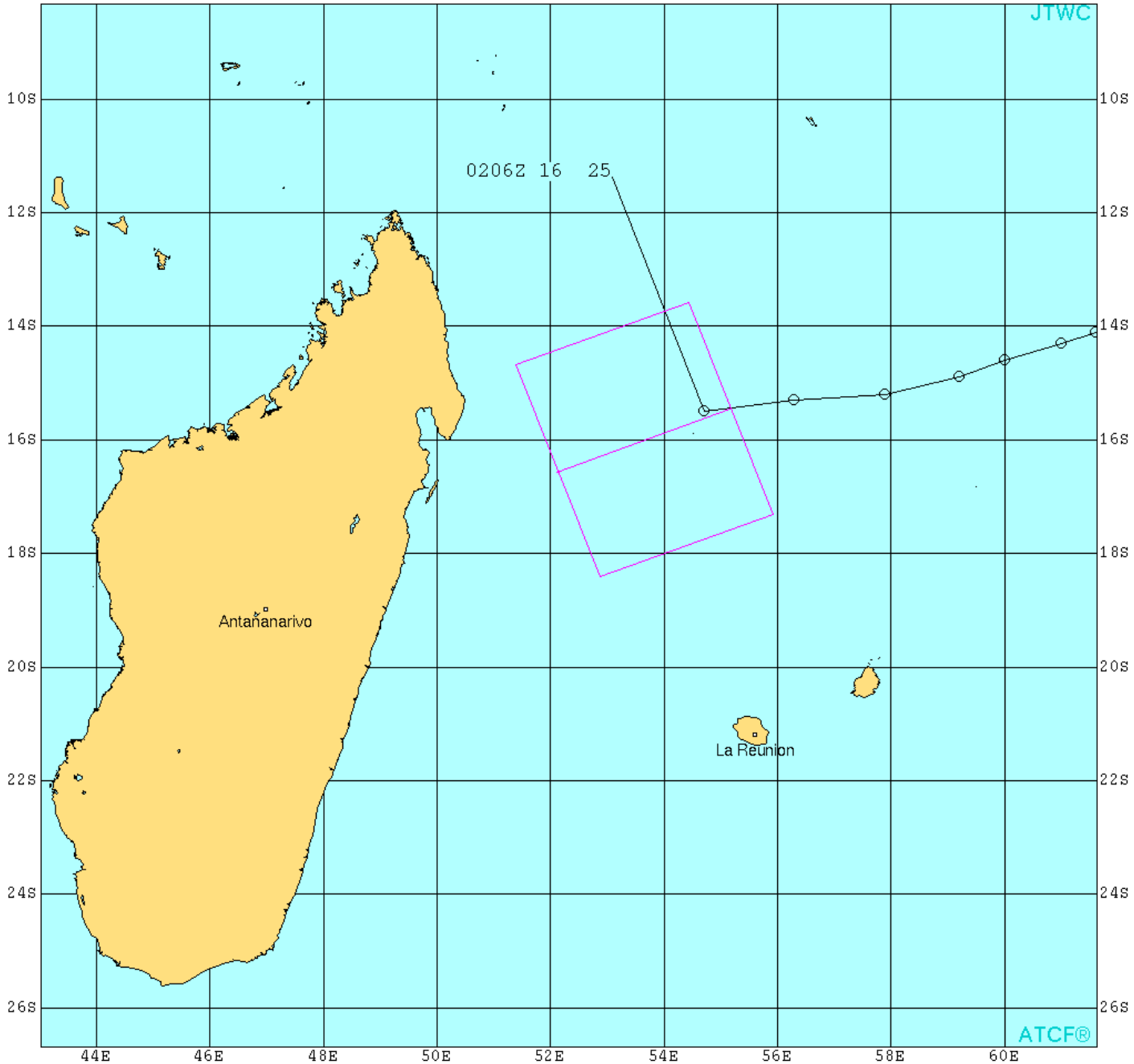


CFS Precipitation Anomalies (mm) Issued 01Jan2018
Week-2 Forecast Ending 16Jan2018

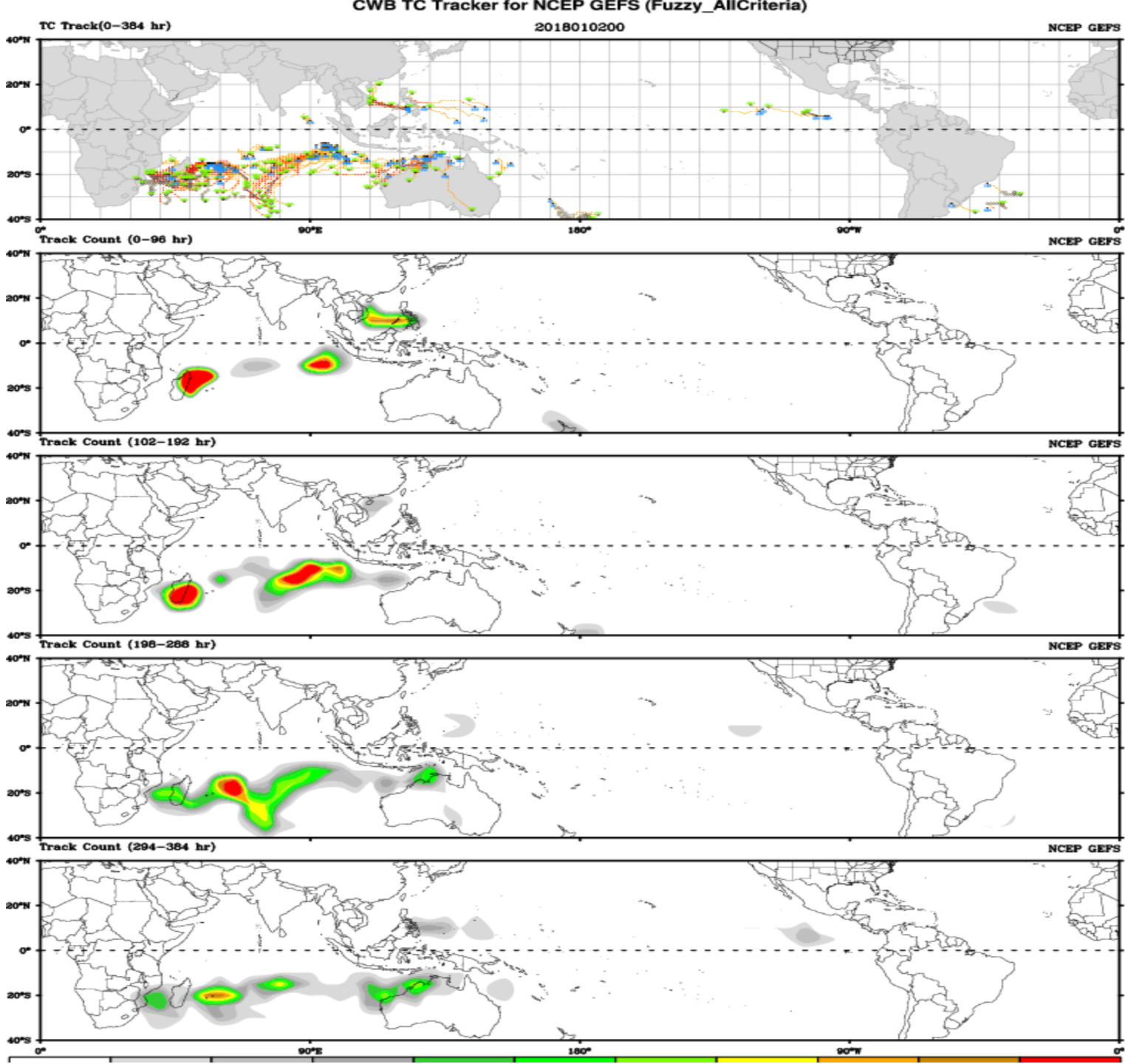


January Tropical Storm Formation by MJO phase





TROPICAL CYCLONE FORMATION ALERT
WTXS21 PGTW 020930
020600Z POSITION: NEAR 15.5S 54.7E
MOVING WESTWARD AT 16 KNOTS
MAXIMUM SUSTAINED WINDS: 23 TO 28 KNOTS



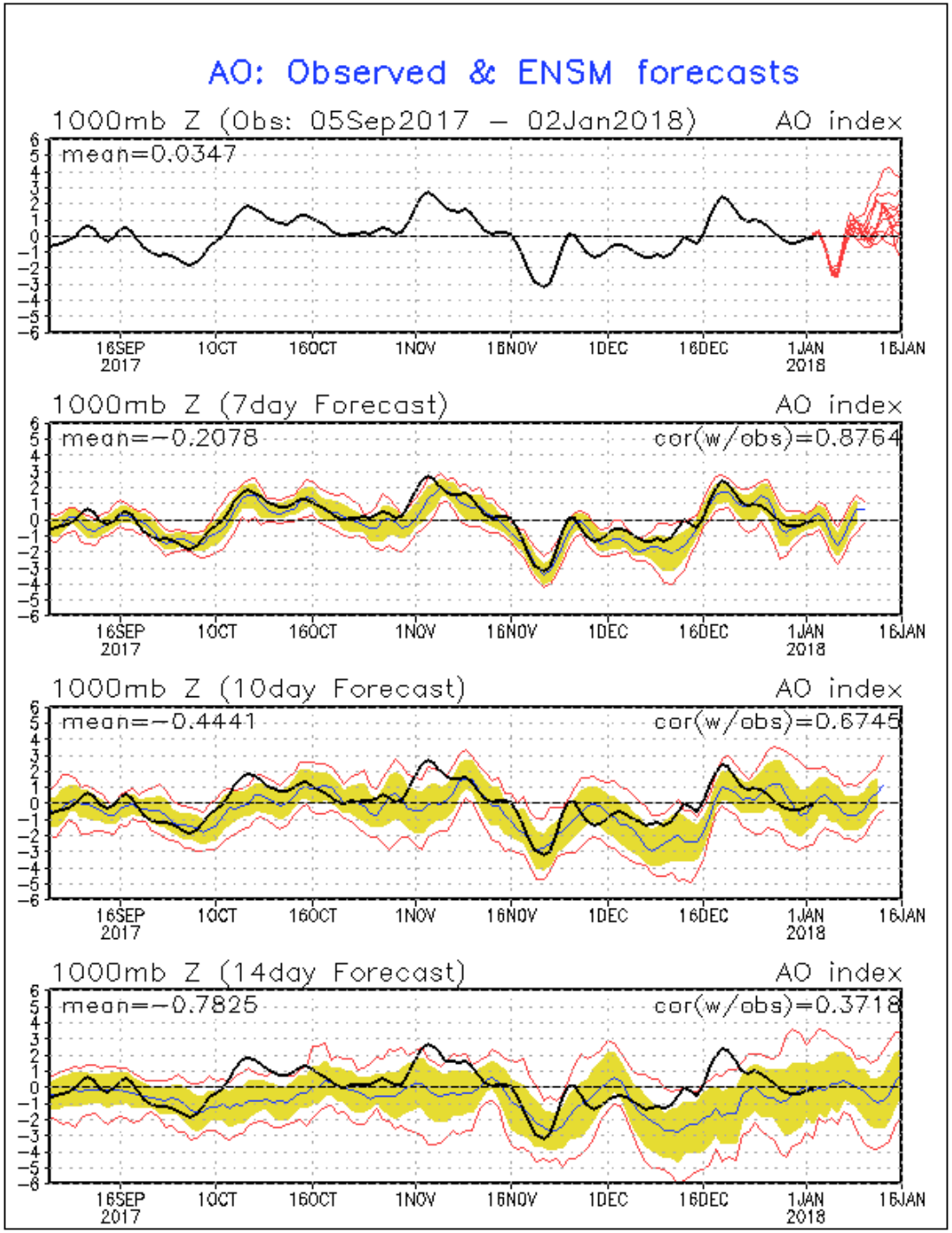
Days 1-4

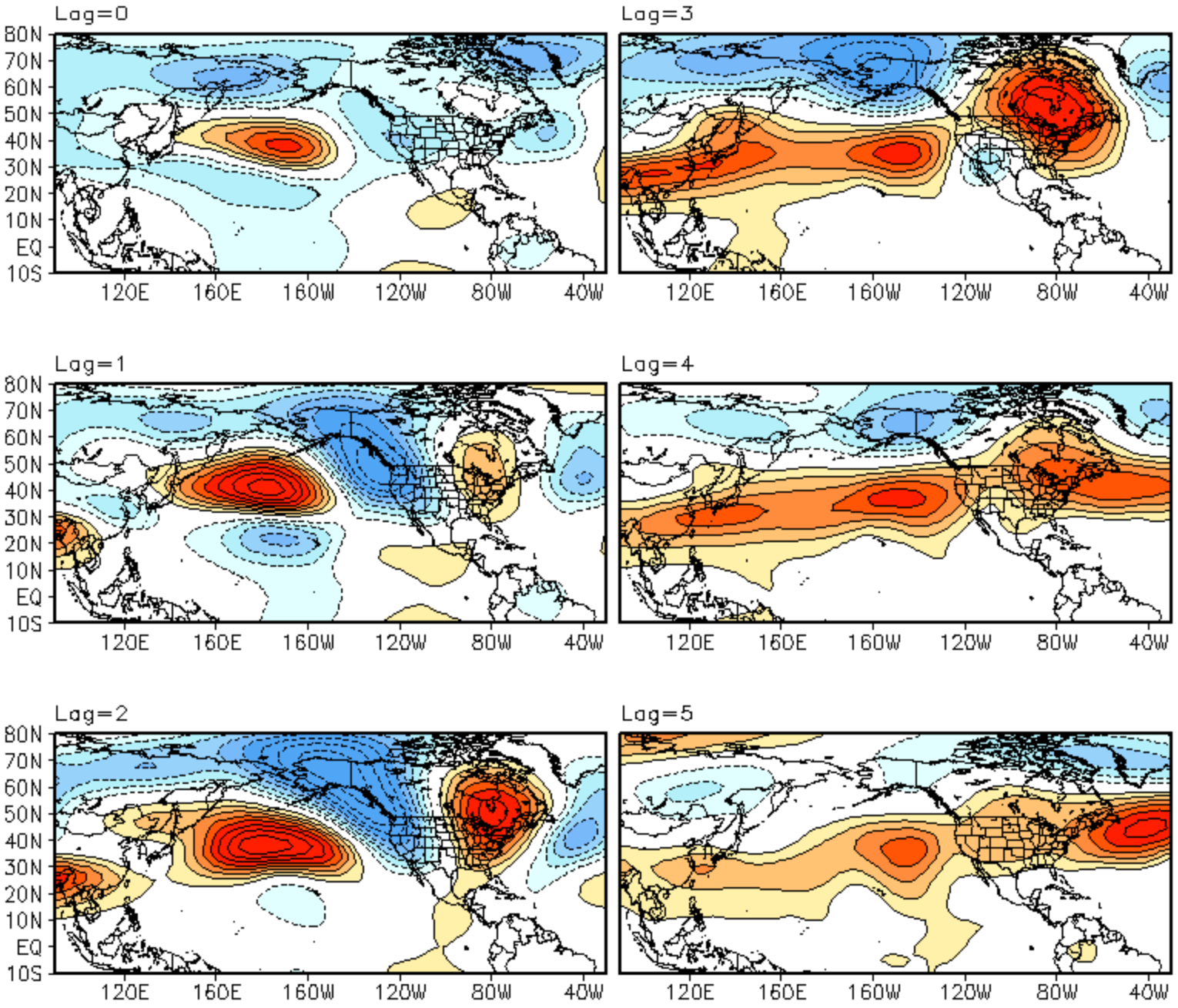
Day 5-8

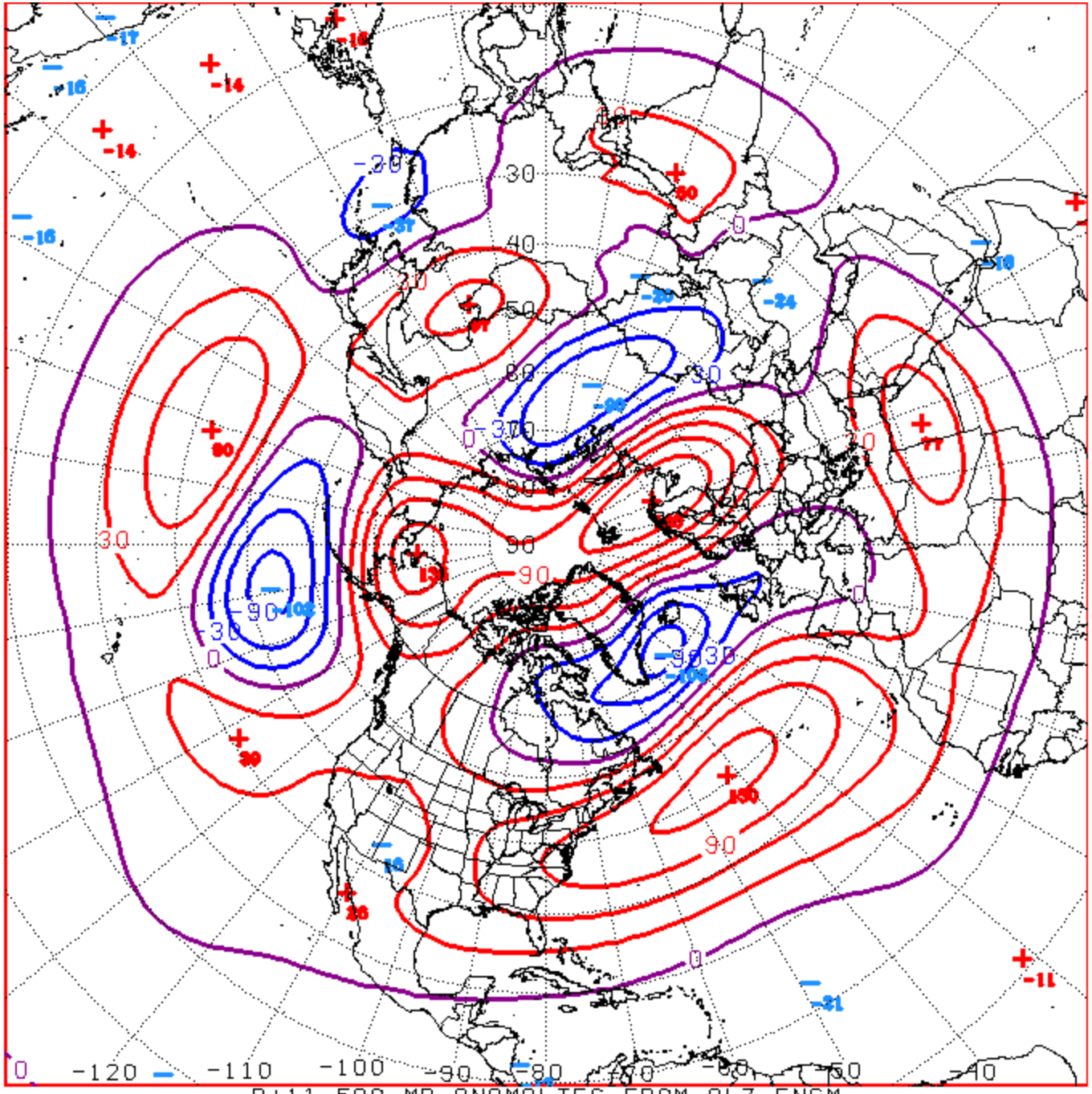
Day 9-12

Day 13-15

Connections to U.S. Impacts

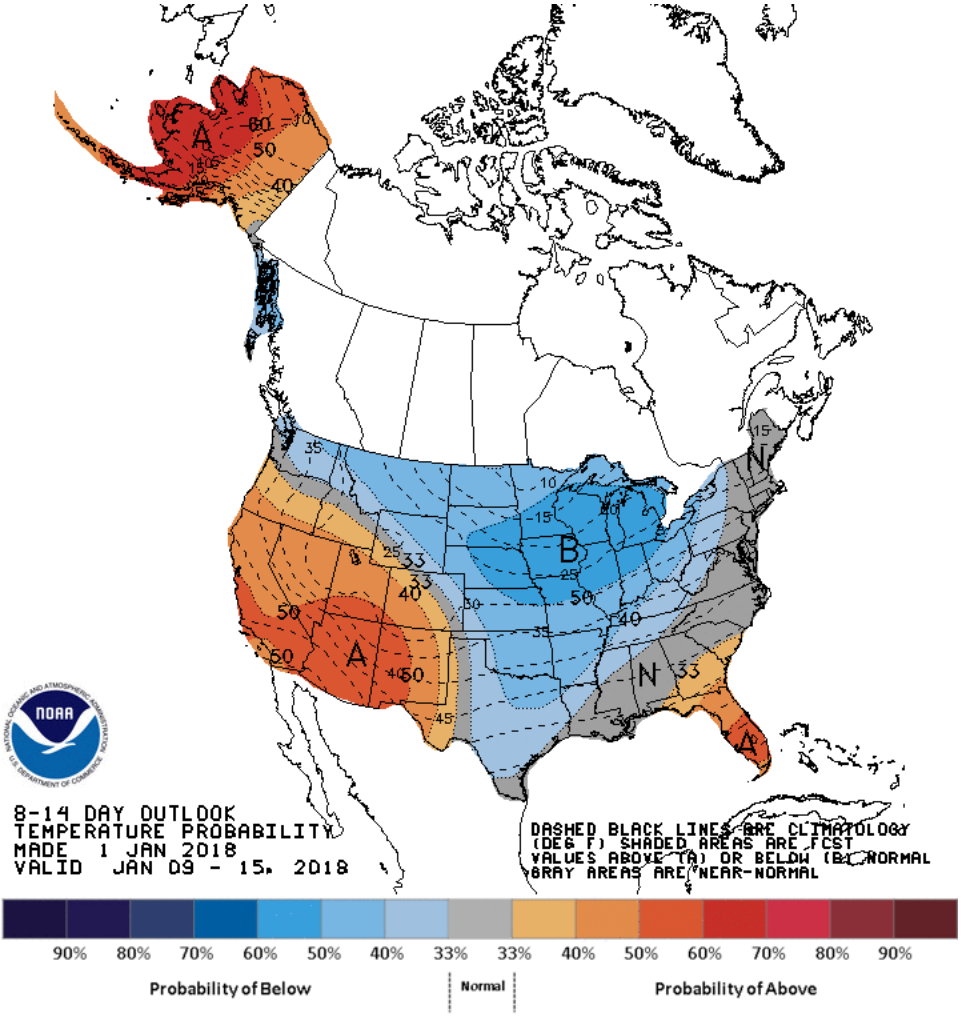

AO: Observed & ENSM forecasts
1000mb Z (Obs: 05Sep2017 – 02Jan2018)
AO index
mean=0.0347
1000mb Z (7day Forecast)
AO index
mean=−0.2078
cor(w/obs)=0.8764
1000mb Z (10day Forecast)
AO index
mean=−0.4441
cor(w/obs)=0.6745
1000mb Z (14day Forecast)
AO index
mean=−0.7825
cor(w/obs)=0.3718
16SEP 2017
1OCT
16OCT
1NOV
16NOV
1DEC
16DEC
1JAN 2018
16JAN

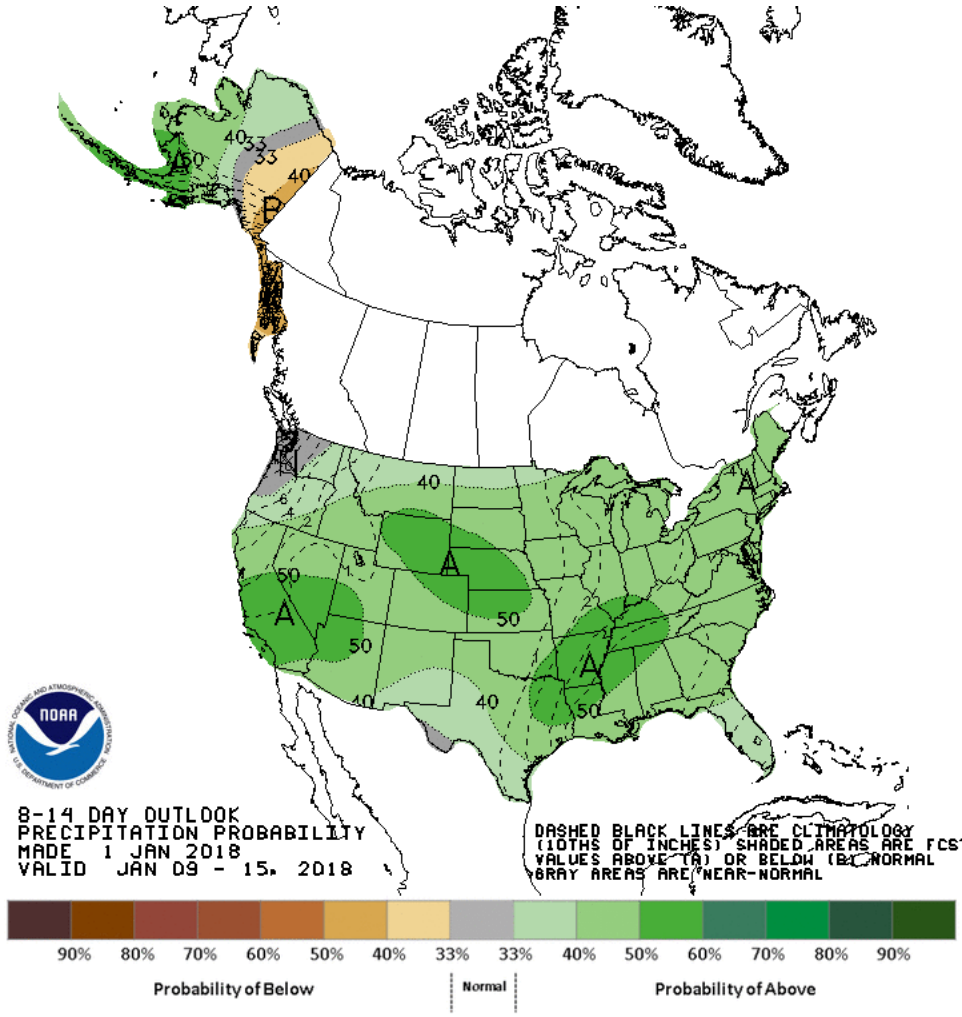

RMM Phase 2 200-hPa Height Lagged Composite (djf)
Lag=0
Lag=3
Lag=1
Lag=4
Lag=2
Lag=5
80N
70N
60N
50N
40N
30N
20N
10N
EQ
10S
120E
160E
160W
120W
80W
40W



D+11 500 MB ANOMALIES FROM ALZ ENSM
CPC MAP MADE JAN 02 2018 1302 UTC CNTD JAN 13 2018

Week 2 – Temperature and Precipitation





Today: Likely warmer out west,
as models favor more ridging.

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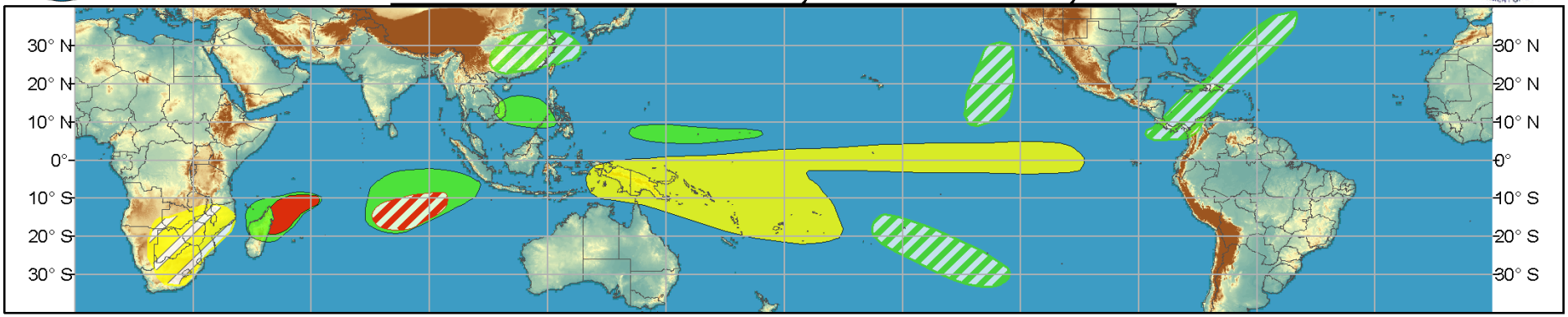

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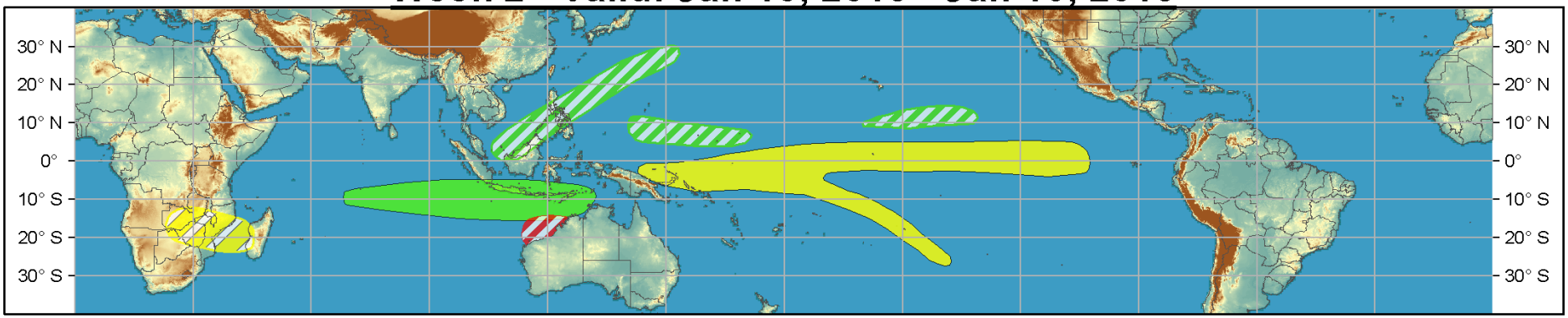

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