Global Tropics Hazards And Benefits Outlook

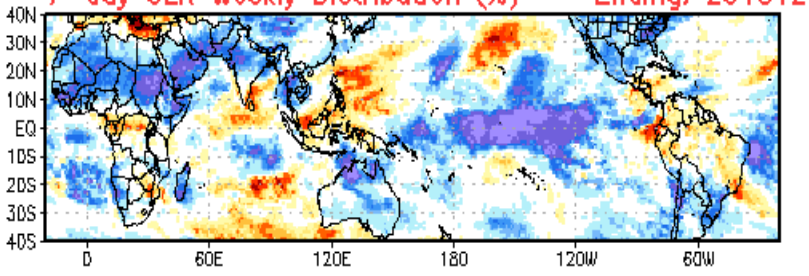
December 29, 2015

Adam Allgood

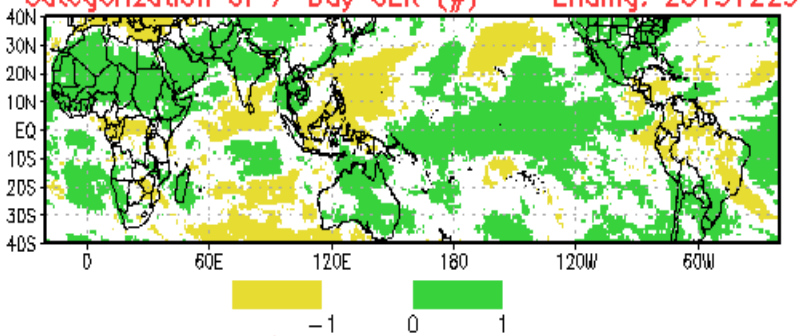
Outline

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

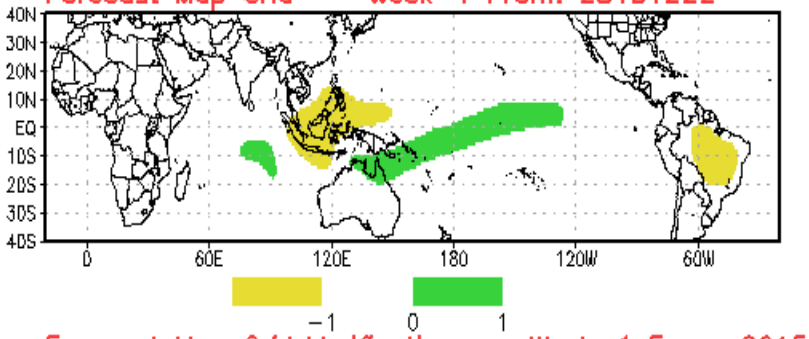
7-day OLR Weekly Distribution (%) -- Ending: 20151229



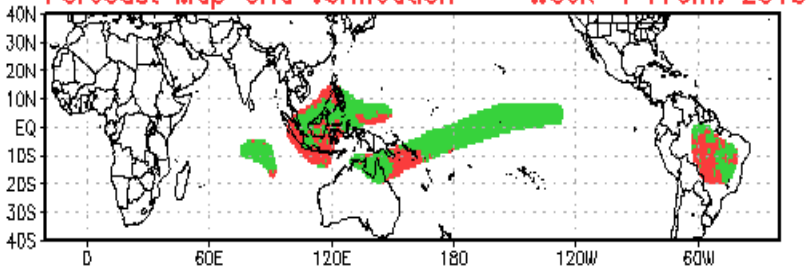
Categorization of 7-Day OLR (#) -- Ending: 20151229



Forecast Map Grid -- Week-1 From: 20151222

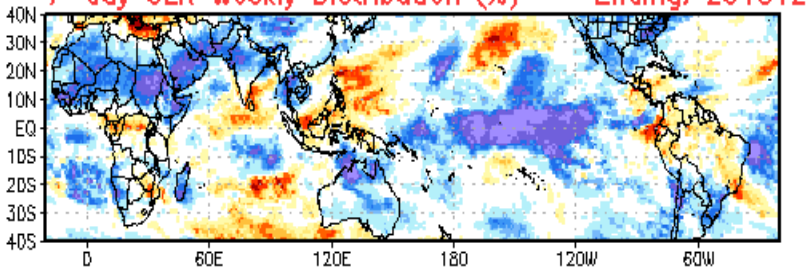


Forecast Map Grid Verification -- Week-1 From: 20151222



Hit: Green, Miss: Red
Heidke Skill Score: 54.0844

7-day OLR Weekly Distribution (%) -- Ending: 20151229



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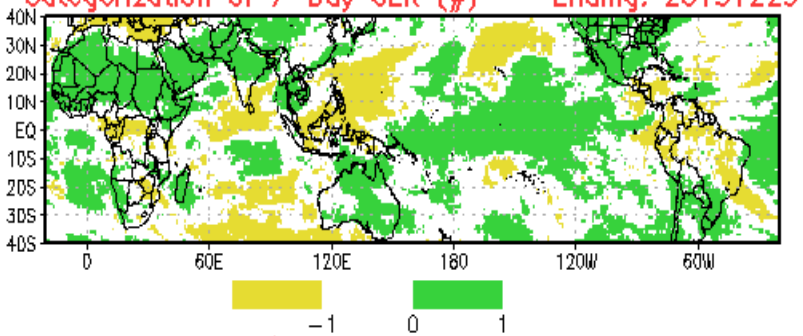
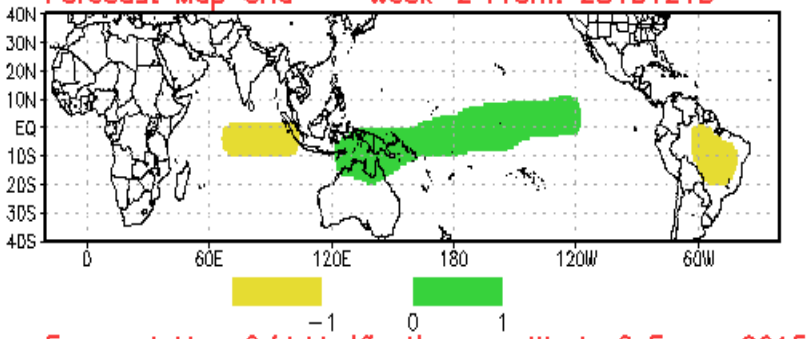
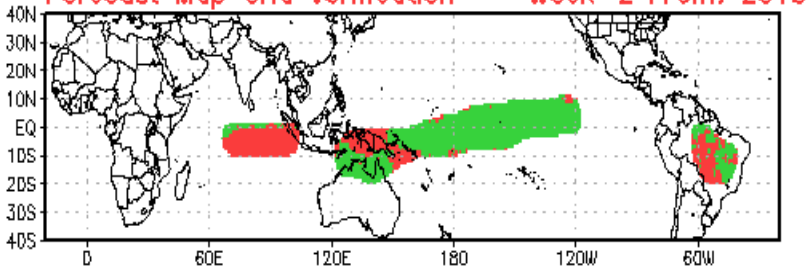


Forecast Map Grid -- Week-2 From: 20151215



Forecast Map Grid Verification -- Week-2 From: 20151215



Hit: Green, Miss: Red
Heidke Skill Score: 49.3339

Synopsis of Climate Modes

ENSO:

• Current: **El Niño Advisory**

• Outlook: El Niño is expected to remain strong through the Northern Hemisphere winter 2015-16, with a transition to ENSO-neutral anticipated during late spring or early summer 2016.

MJO and other subseasonal tropical variability:

• The MJO remained coherent and robust, with the enhanced phase now propagating over the west-central Pacific after rapidly crossing the Maritime Continent.

• Dynamical model MJO index forecasts all support continued eastward propagation of the signal across the Pacific during Week-1. During Week-2, the GFS slows the eastward propagation and amplifies, while the ECMWF depicts the MJO propagating to the Western Hemisphere.

Extratropics:

• The MJO is likely to support a downstream pattern change in the extratropics during the next several weeks, with a transition to positive height anomalies across the Arctic (negative AO). El Niño influence is anticipated to remain prominent as well; however, which may help to counter the MJO response over parts of North America.

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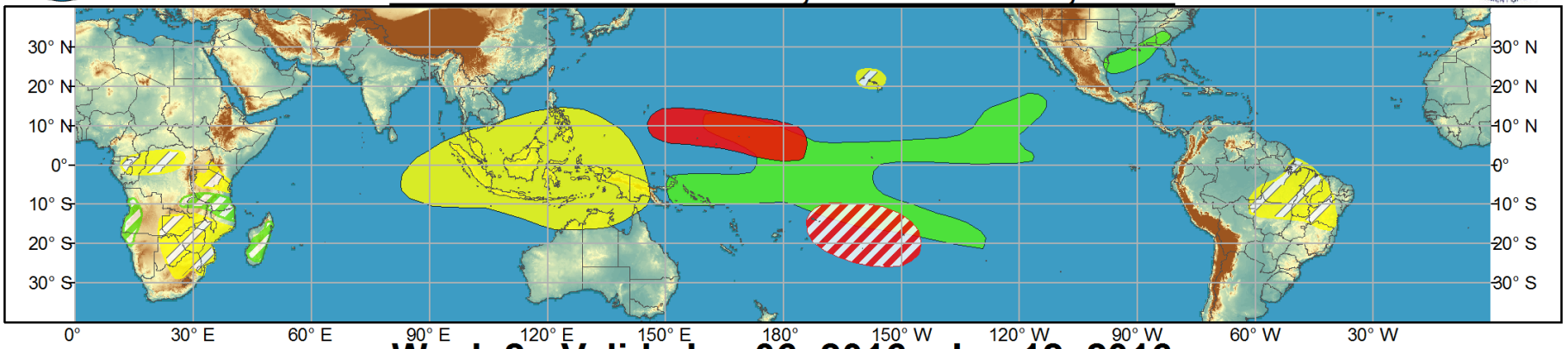
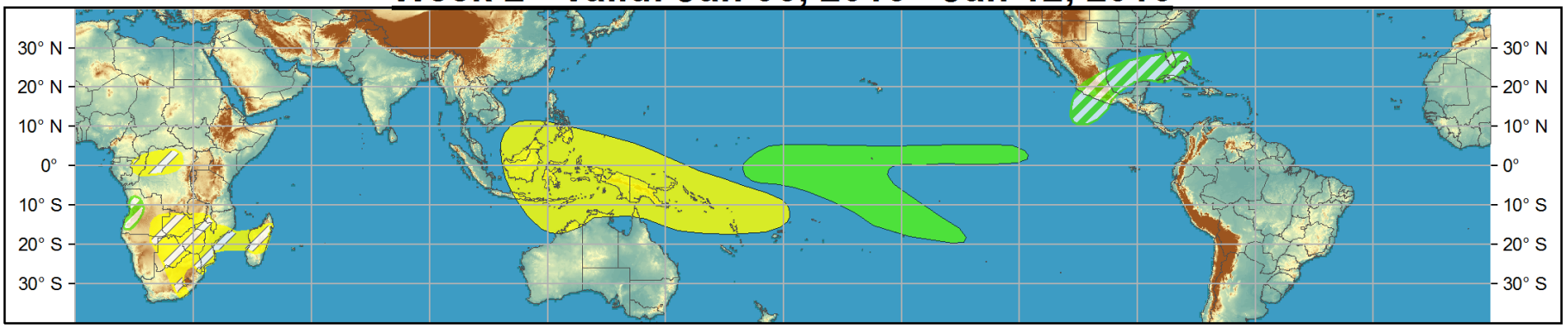
Week 1 - Valid: Dec 30, 2015 - Jan 05, 2016



Week 2 - Valid: Jan 06, 2016 - Jan 12, 2016



Produced: 12/29/2015

Forecaster: Allgood

	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.
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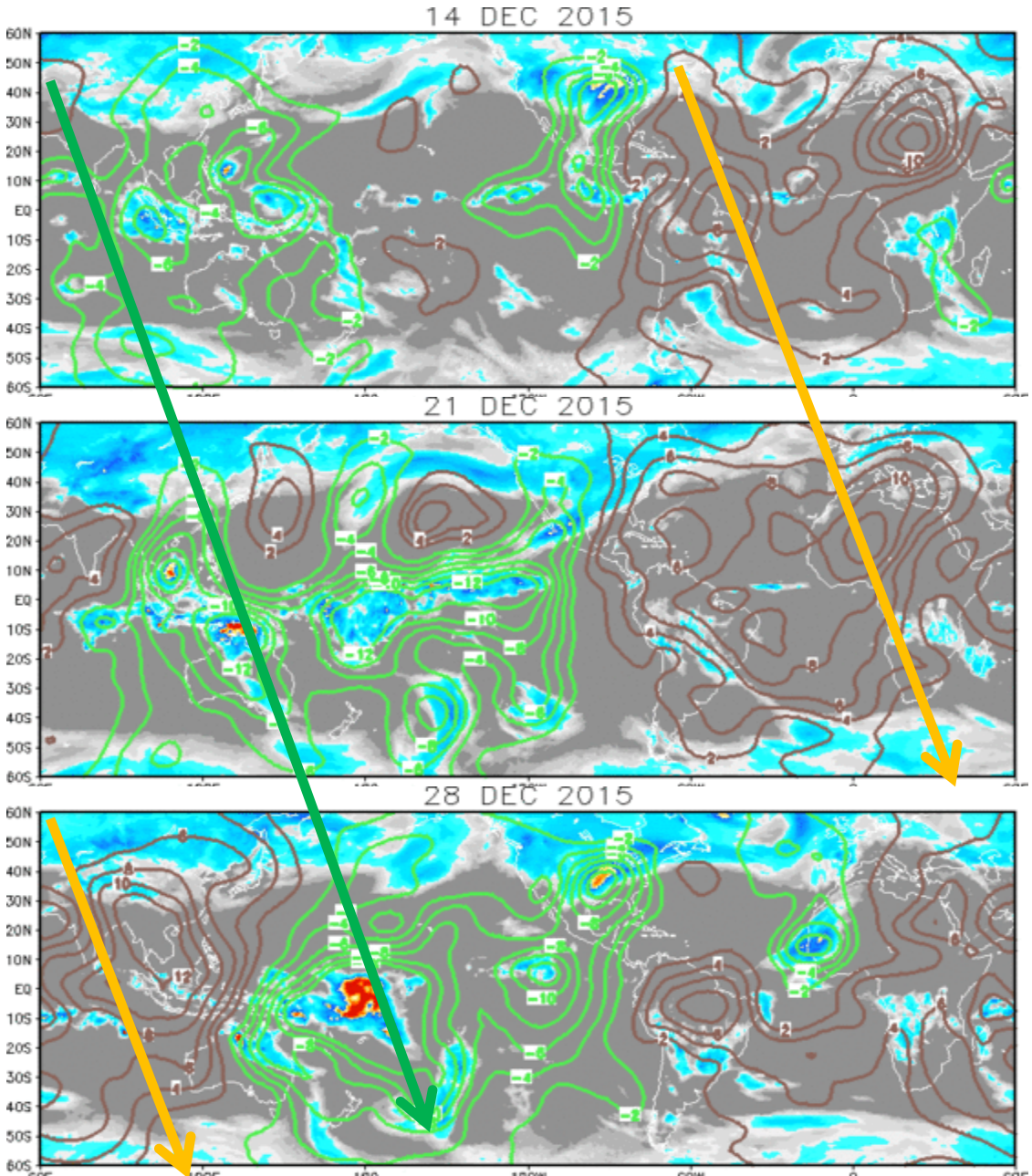
NPS PRAESTANTIA PER SCIENTIAM

IR Satellite & 200-hpa Velocity Potential Anomalies

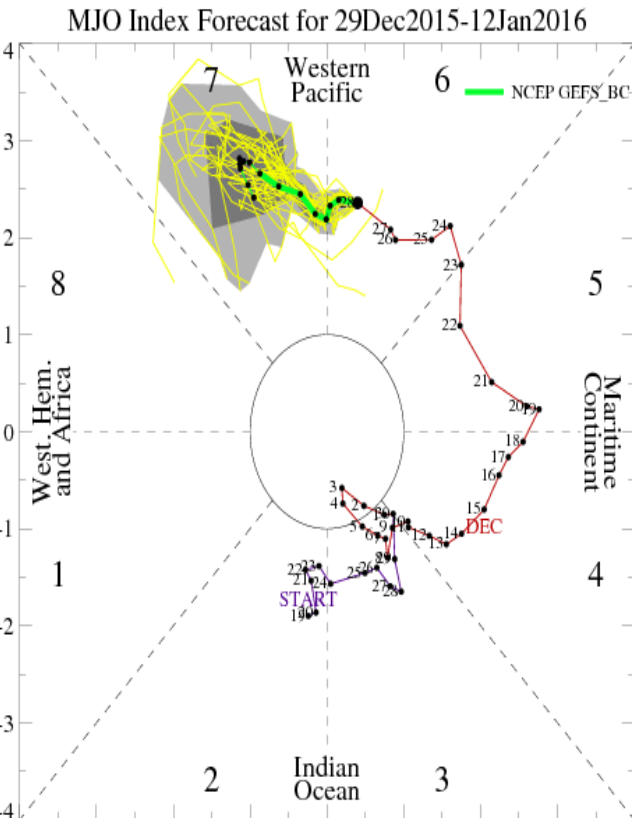
Green: Enhanced Divergence Brown: Enhanced Convergence

MJO propagation is evident in the upper-levels.

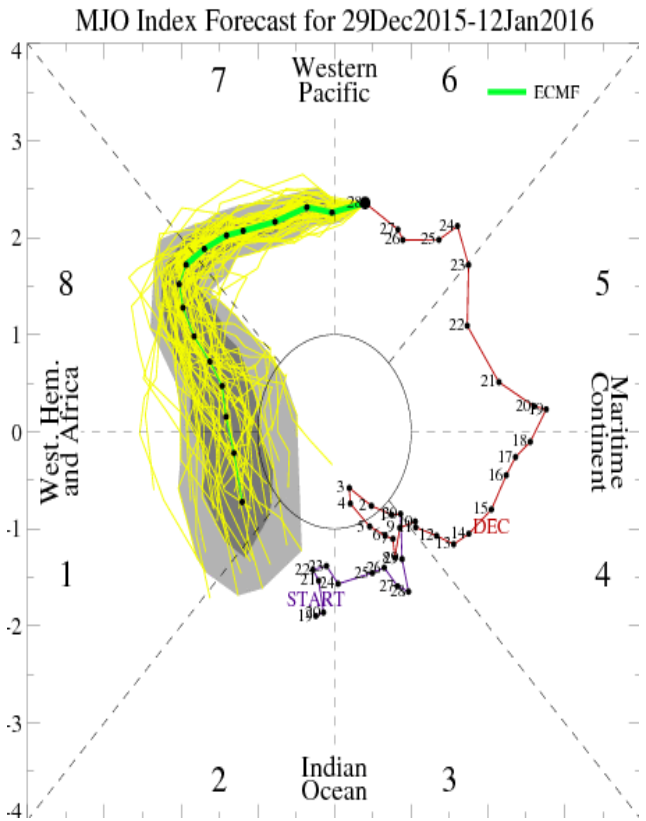
Note destructive interference between MJO and El Niño during mid-December, and constructive interference in late December.



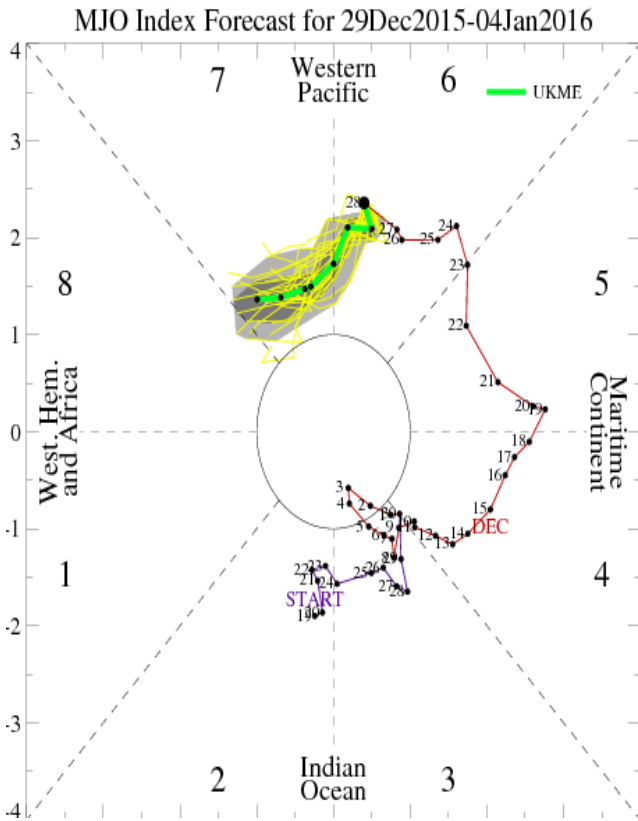
MJO Observation/Forecast



JMAN



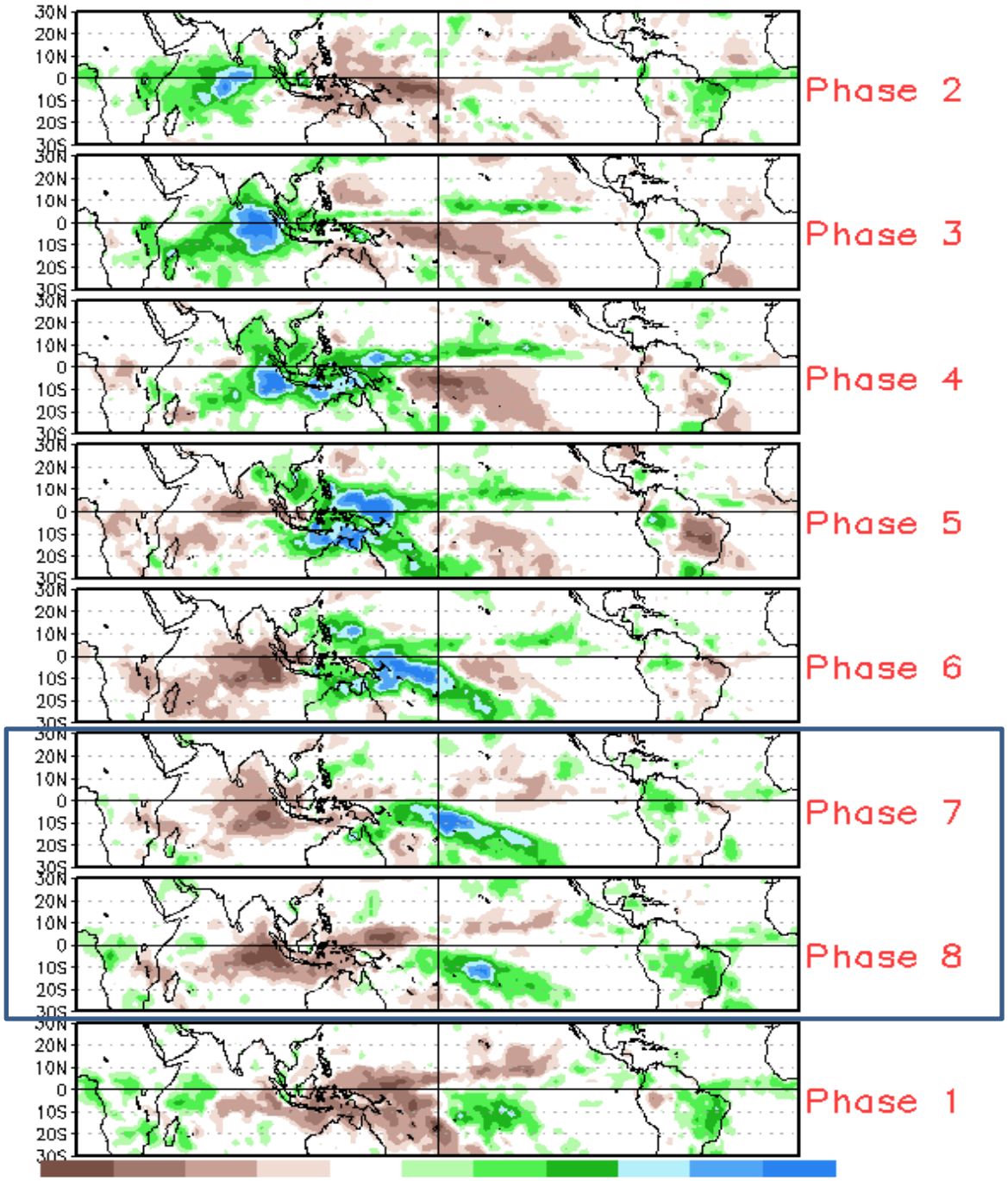
ECMWF



UKMET

- All three models depict eastward propagation of the MJO during Week-1
- The GFS slows the propagation during Week-2, with a strong projection in Phase-7 (central Pacific)
- The ECMWF continues a robust eastward propagation across the Western Hemisphere during Week-2.

Average Conditions when the MJO is present

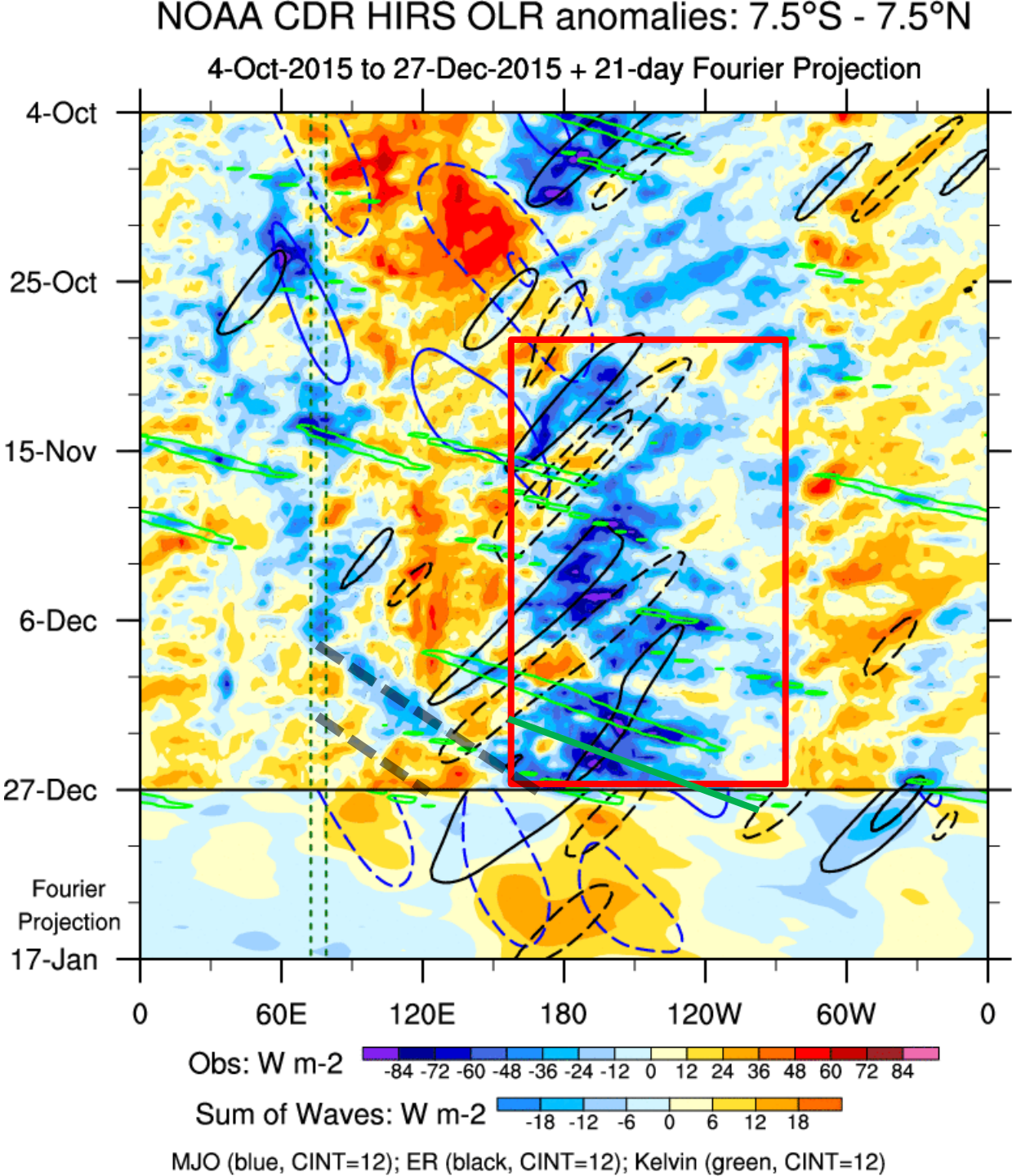


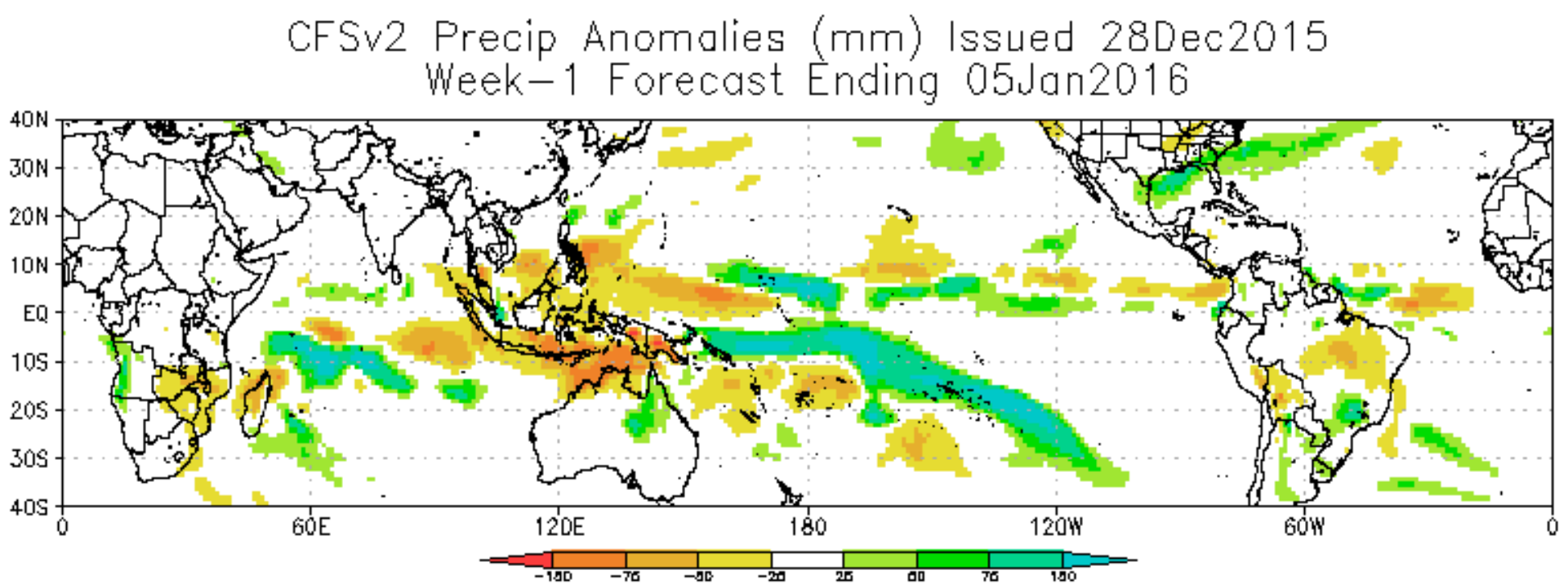
CAVEAT: These panels are representative of robust MJO events.

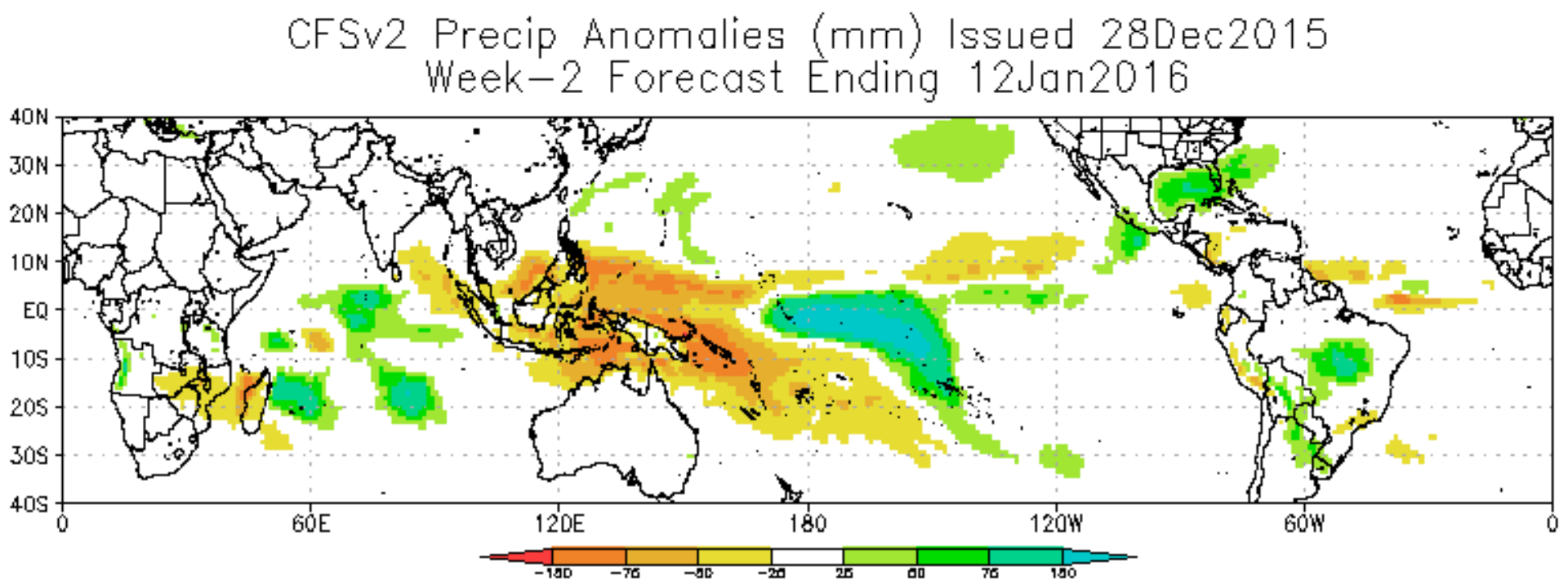
Climate anomalies associated with ENSO differ from these composites.

Low frequency ENSO state continues to dominate the pattern.

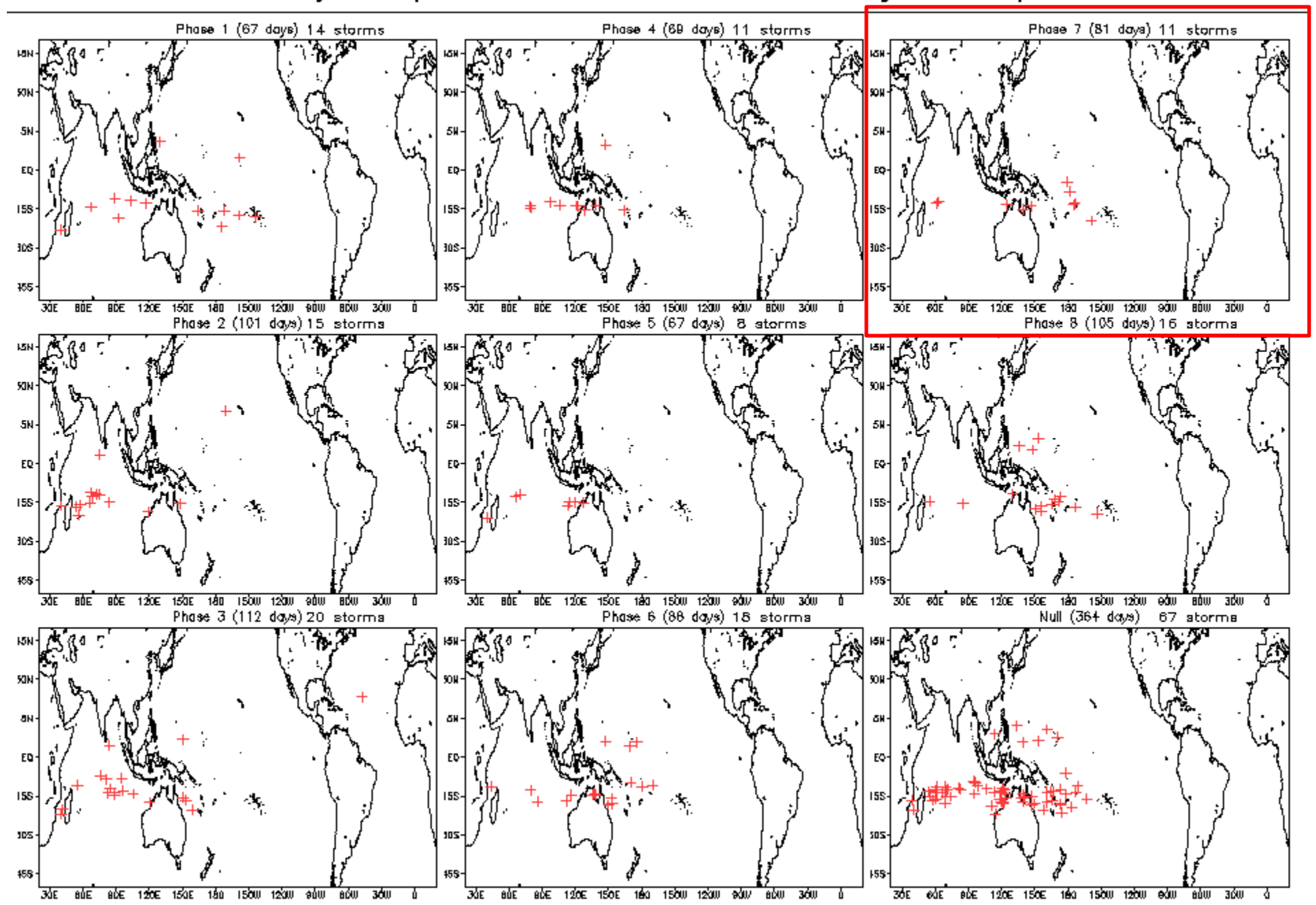
MJO signal is apparent in the OLR field (dashed lines)



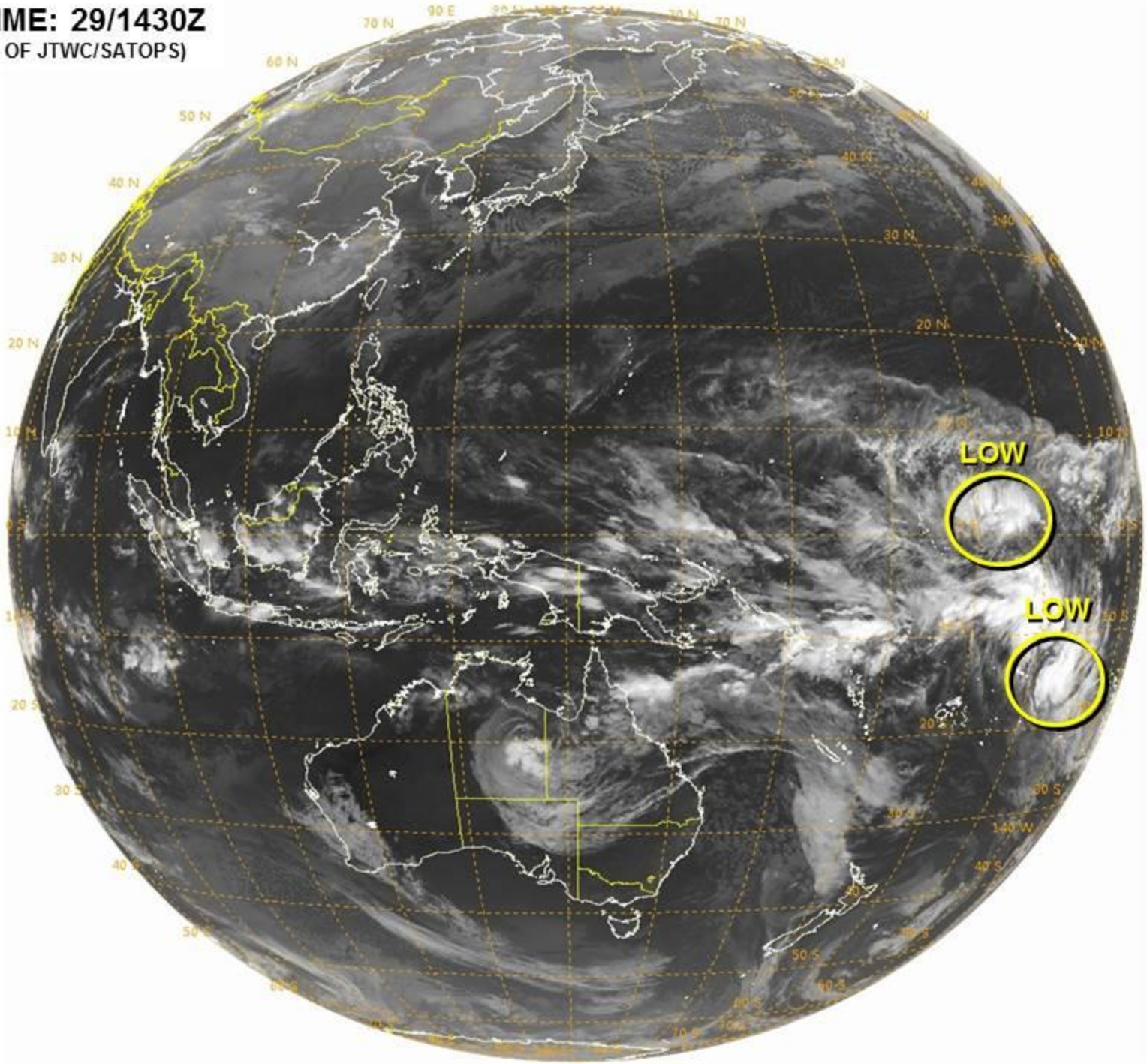

CFSv2 Precip Anomalies (mm) Issued 28Dec2015
Week-1 Forecast Ending 05Jan2016
40N
30N
20N
10N
EQ
10S
20S
30S
40S
0
60E
120E
180
120W
60W
0
-150
-75
-50
-25
25
50
75
150


CFSv2 Precip Anomalies (mm) Issued 28Dec2015
Week-2 Forecast Ending 12Jan2016
40N
30N
20N
10N
EQ
10S
20S
30S
40S
0
60E
120E
180
120W
60W
0
-150
-75
-50
-25
25
50
75
150

January Tropical Storm Formation by MJO phase

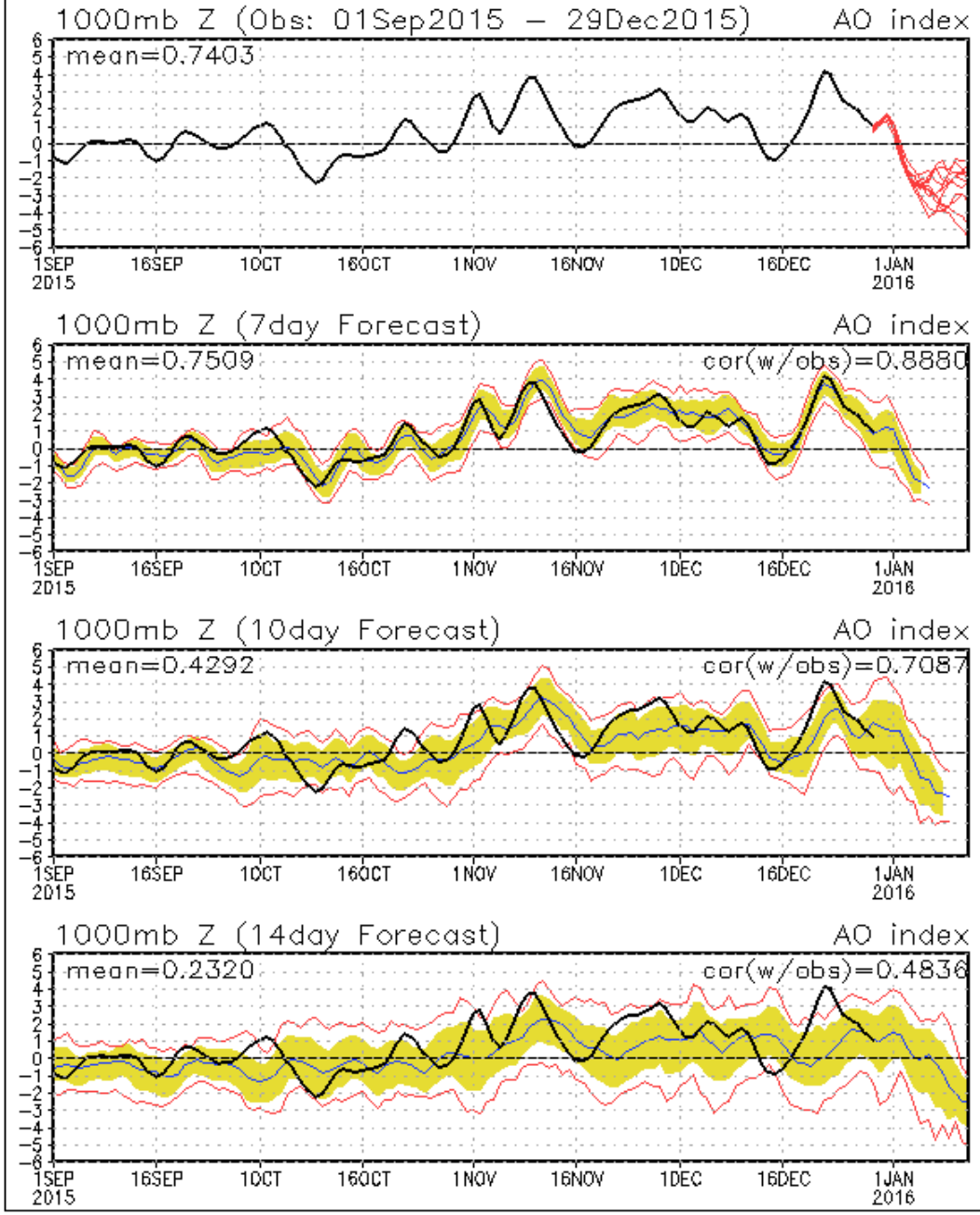


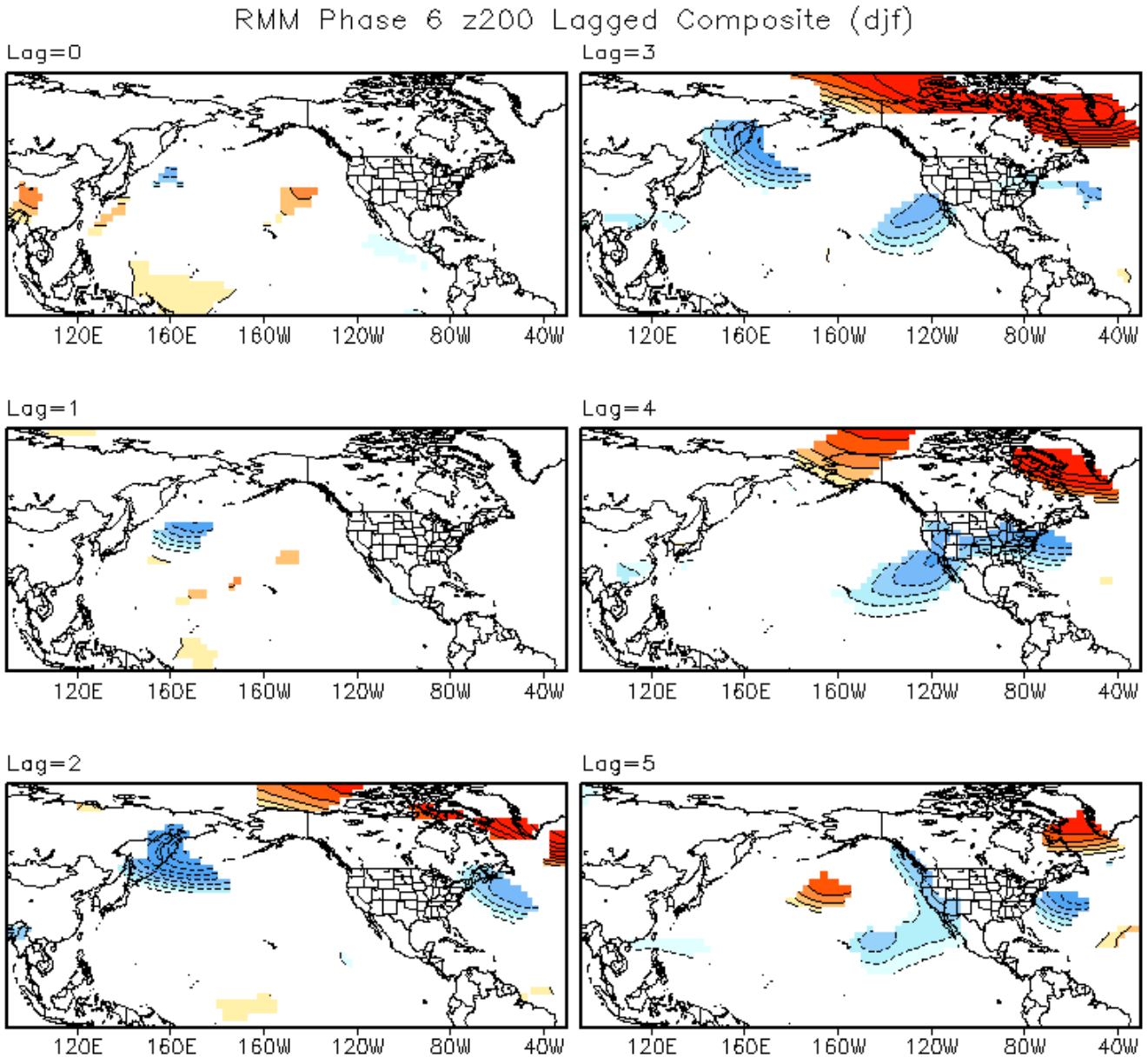
VALID TIME: 29/1430Z
(PRODUCT OF JTWC/SATOPS)



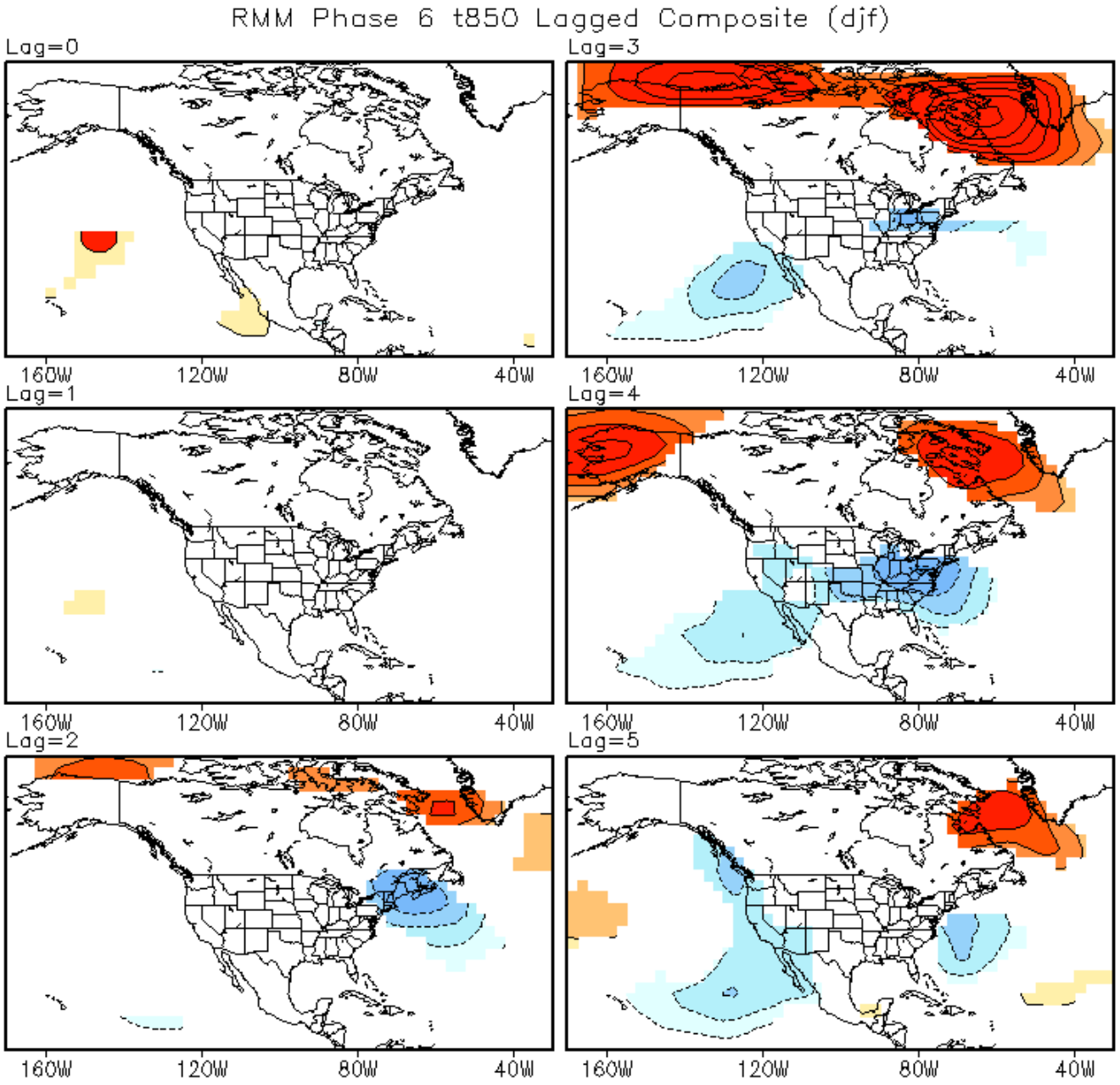
Connections to U.S. Impacts

AO: Observed & ENSM forecasts

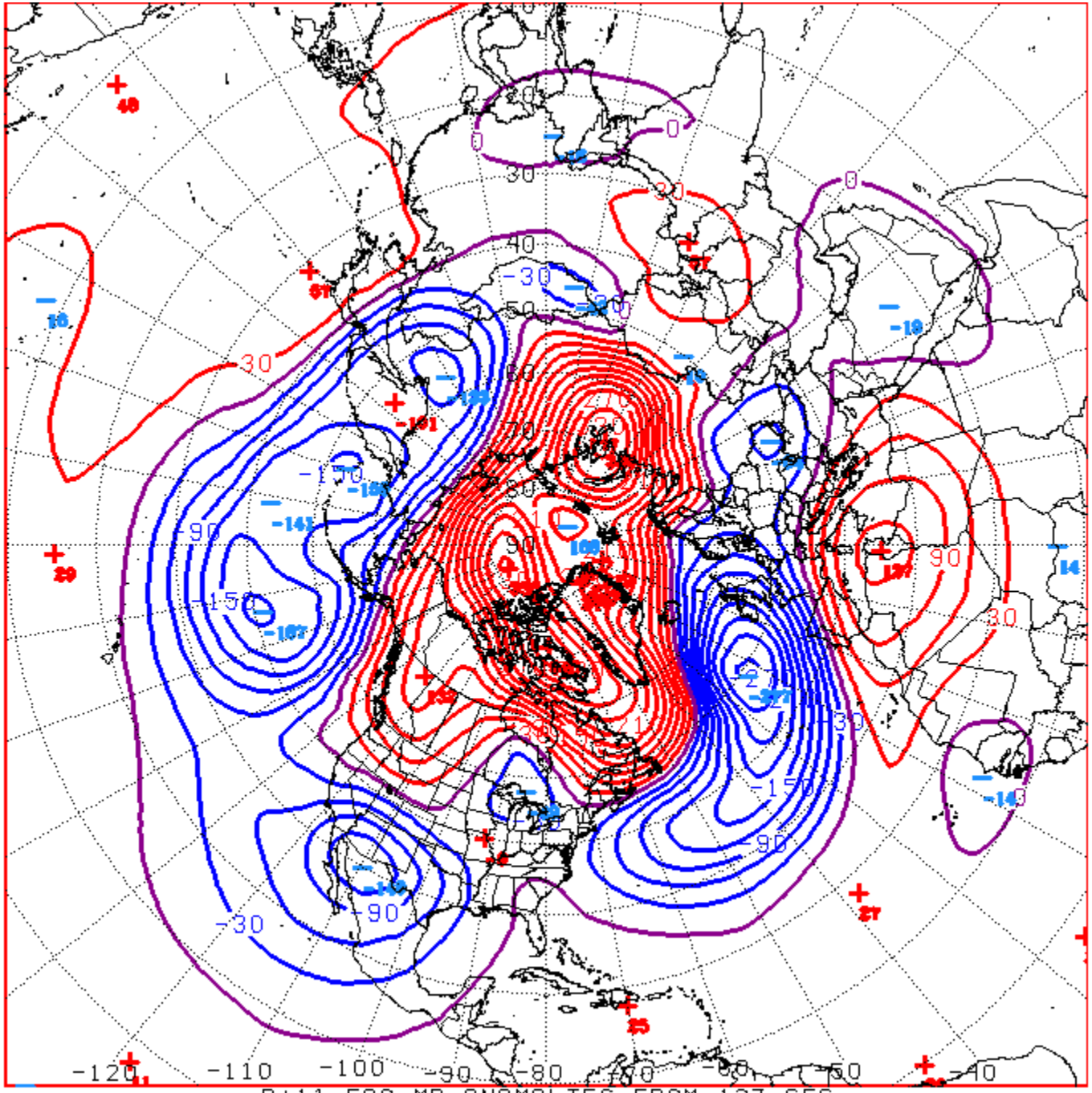




Phase-6 MJO events have a strong lagged response in the extratropics.

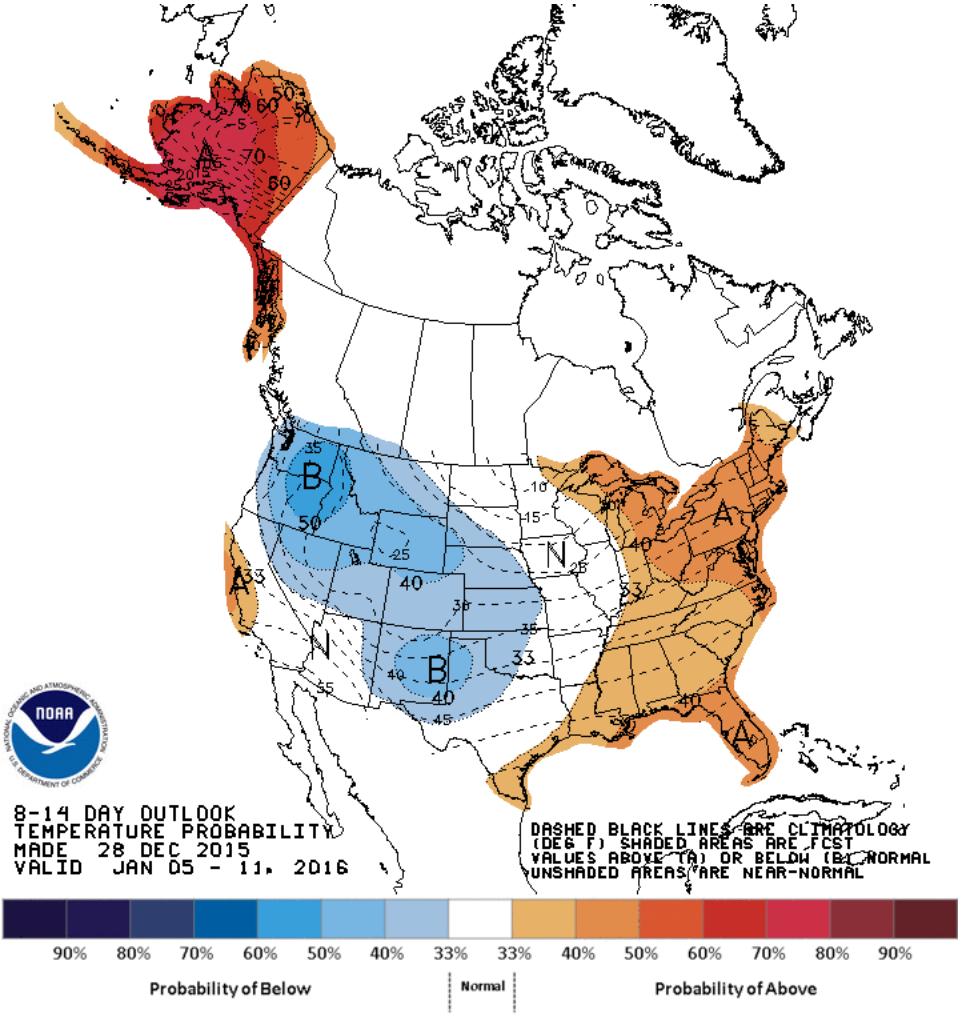


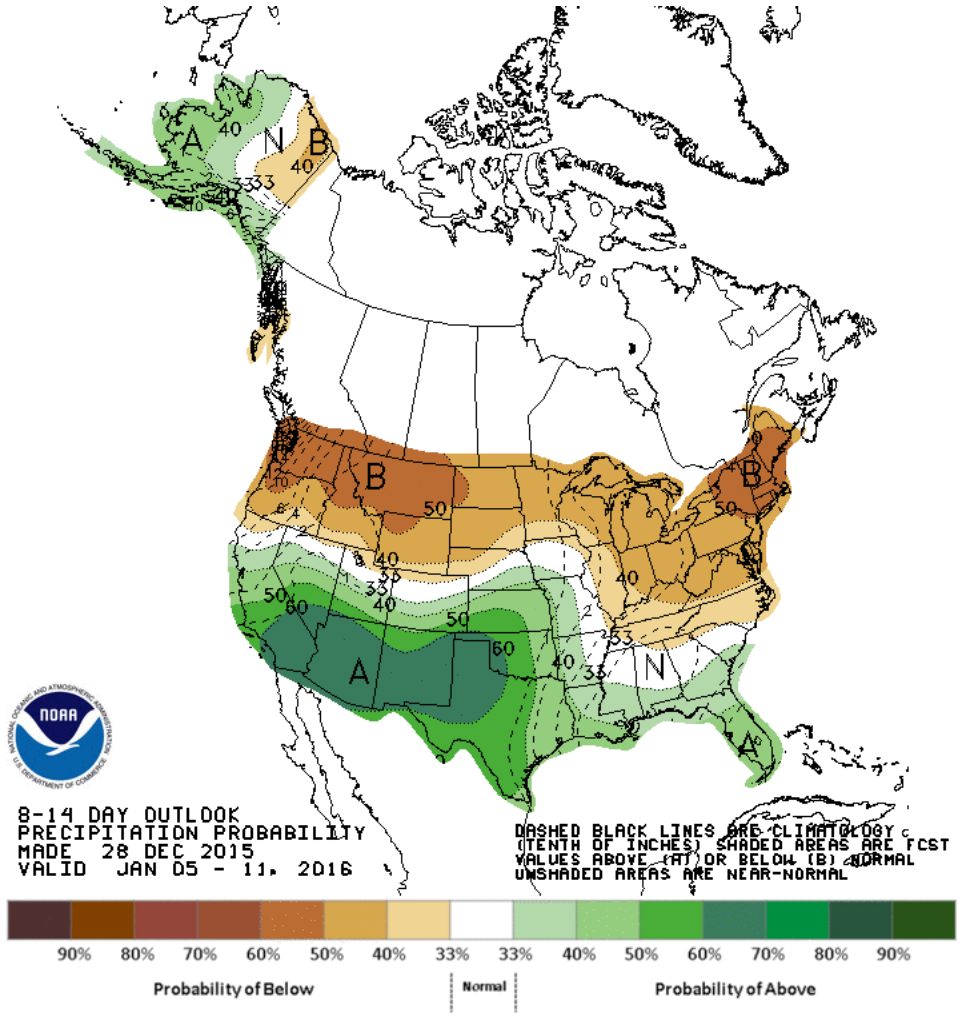
The canonical response to a Phase-6 Boreal winter MJO event favors below normal temperatures across the eastern CONUS during the Week 2/3 period.



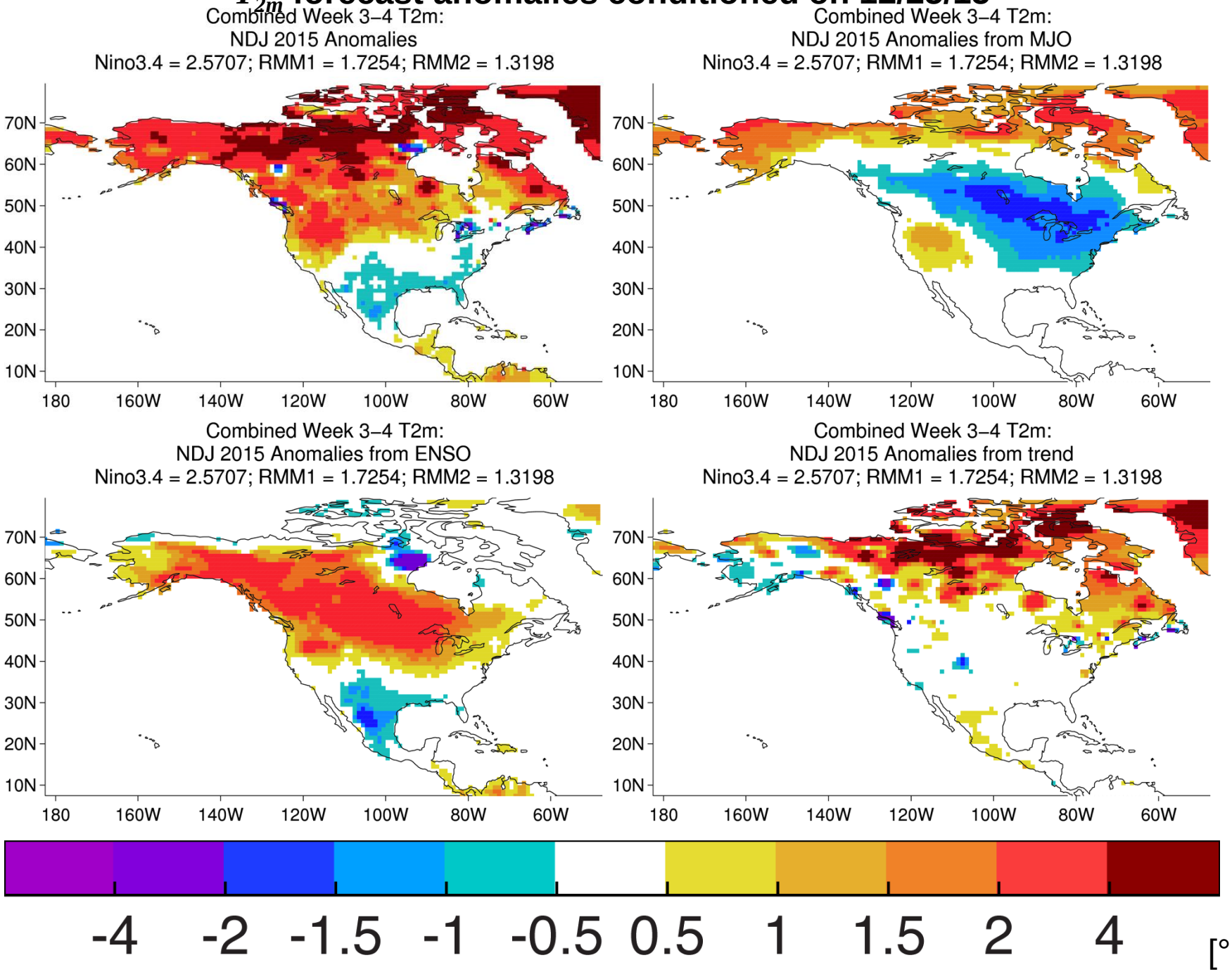
D+11 500 MB ANOMALIES FROM 12Z GFS
CPC MAP MADE DEC 29 2015 1704 UTC CNTD JAN 09 2016

Week 2 – Temperature and Precipitation

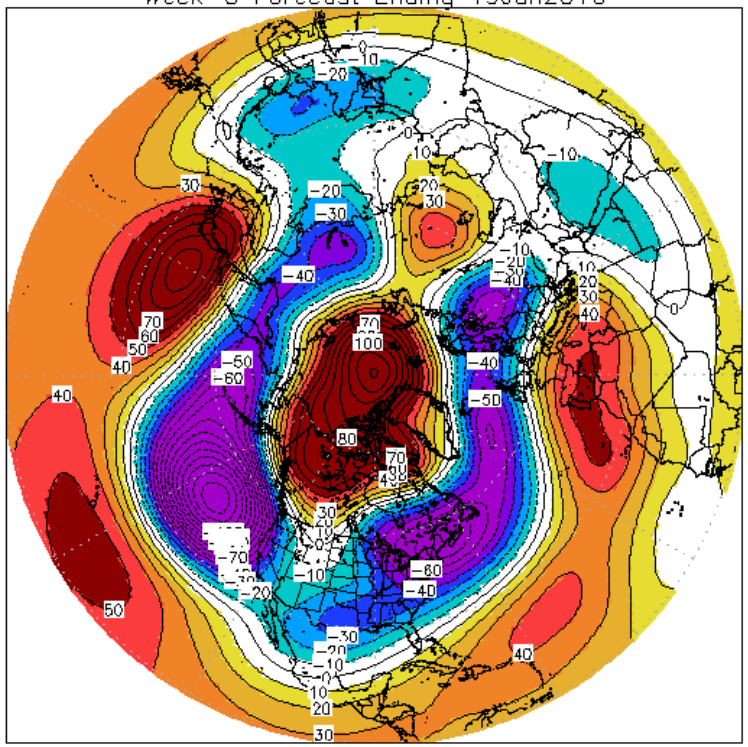




T_{2m} forecast anomalies conditioned on 12/25/15



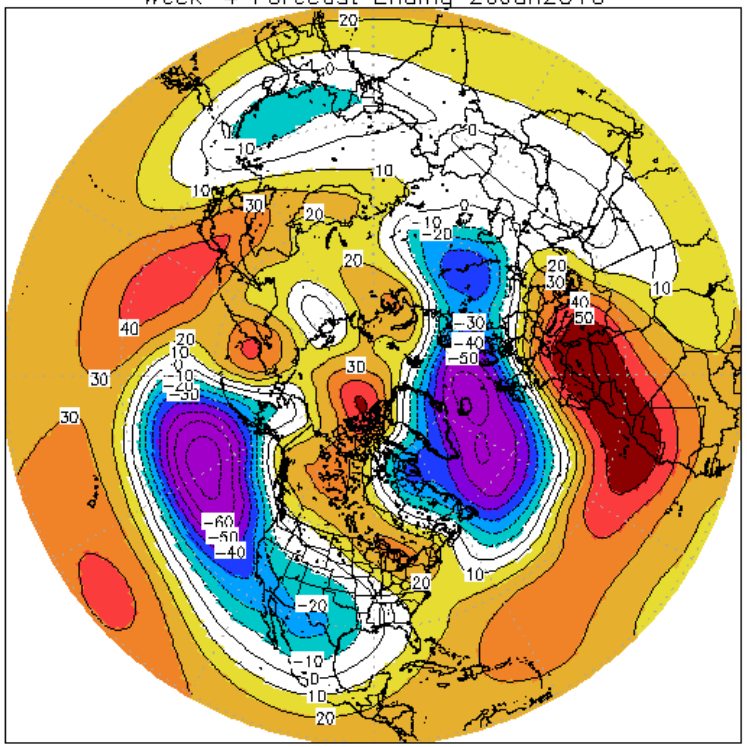
CFS 500hPa Height Anomalies Issued 28Dec2015
Week-3 Forecast Ending 19Jan2016



(meters)

−50 −40 −30 −20 −10 10 20 30 40 50

CFS 500hPa Height Anomalies Issued 28Dec2015
Week-4 Forecast Ending 26Jan2016



(meters)

−50 −40 −30 −20 −10 10 20 30 40 50

CFS 2m Temperature Anomalies Issued 28Dec2015
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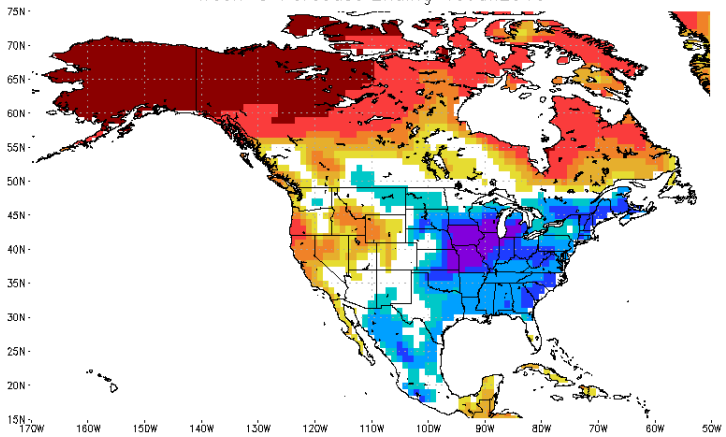
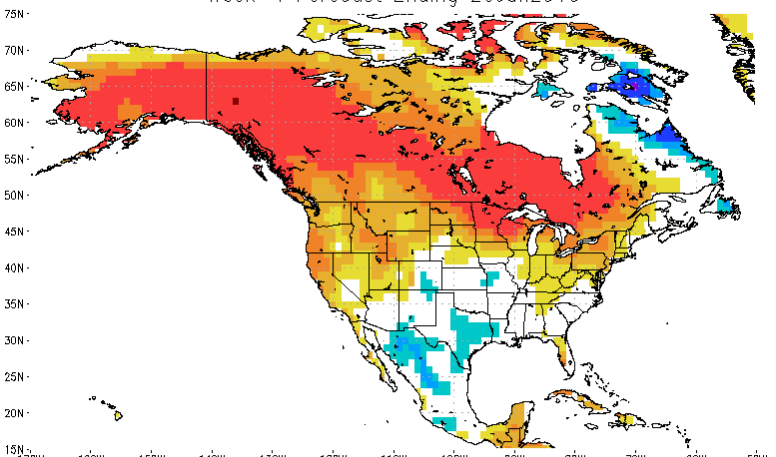


(degrees C)

−4 −2 −1.5 −1 −0.5 0.5 1 1.5 2 4

CFS 2m Temperature Anomalies Issued 28Dec2015
Week-4 Forecast Ending 26Jan2016



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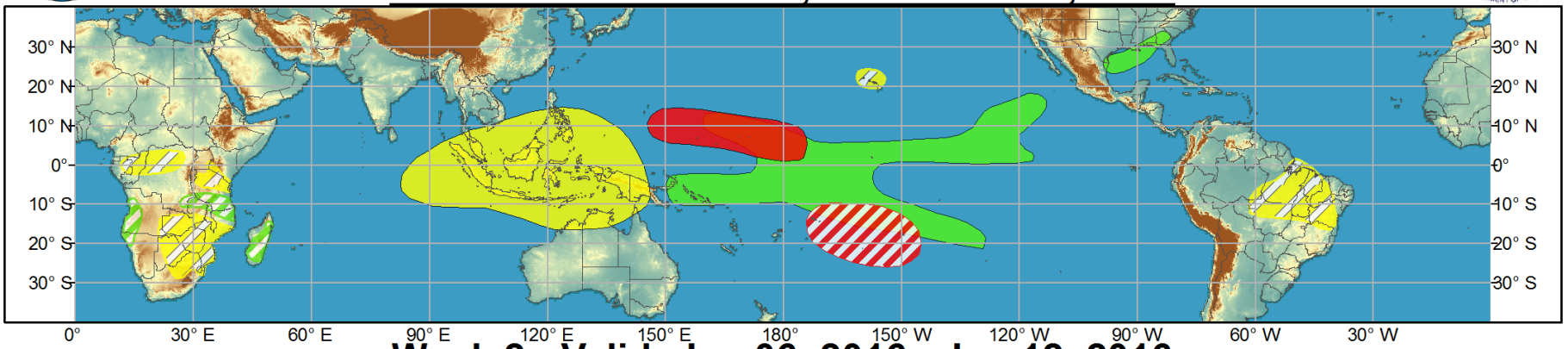

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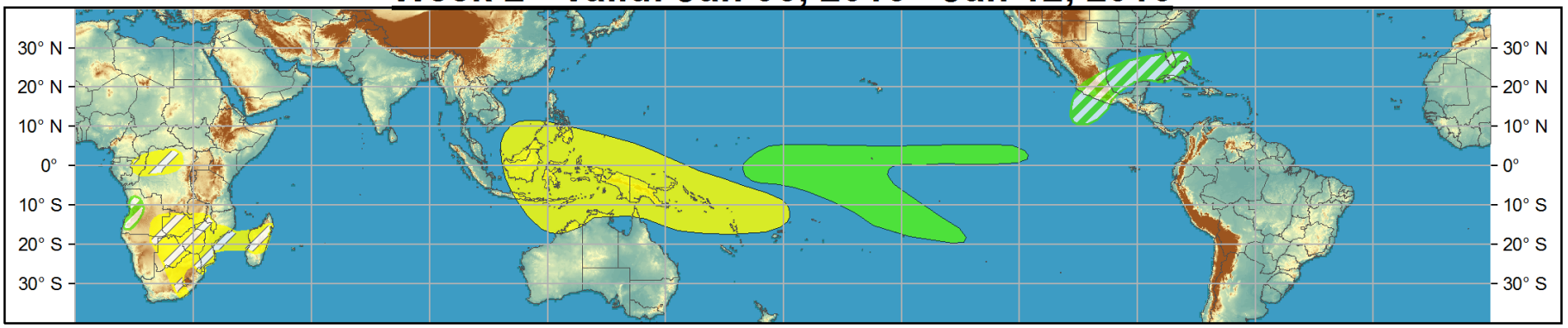

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