Global Tropics Hazards And Benefits Outlook

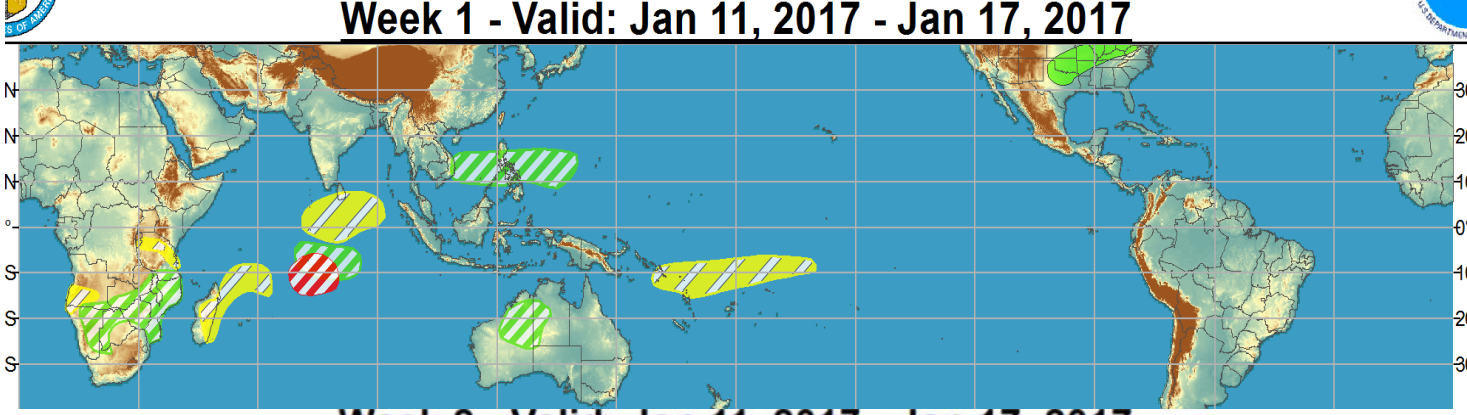
1/17/2017

Dan Harnos

Outline

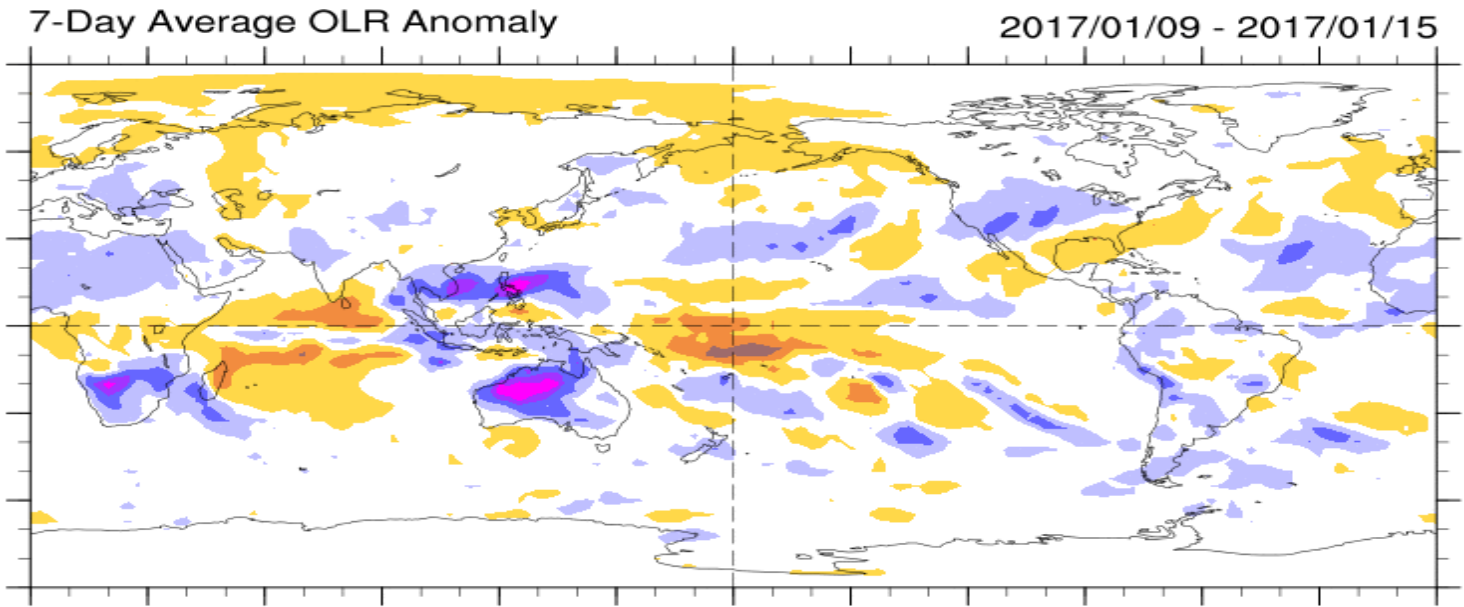
1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts

Outlook Review

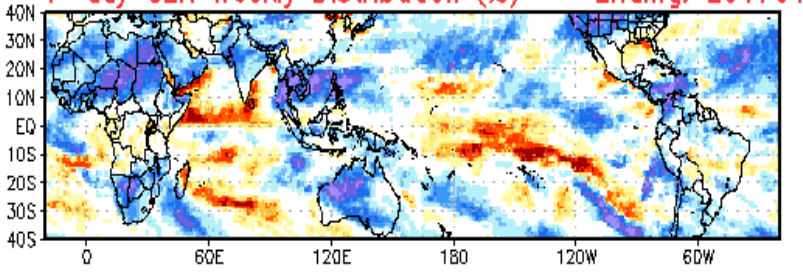


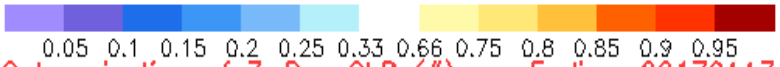
Cool shading
More clouds/rain

Warm shading
Less clouds/rain

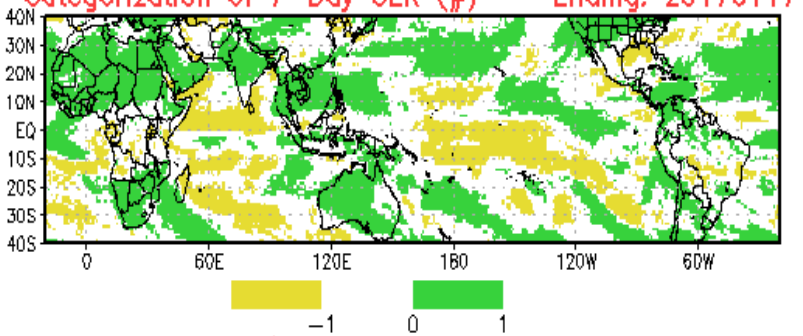


7-day OLR Weekly Distribution (%) -- Ending: 20170117

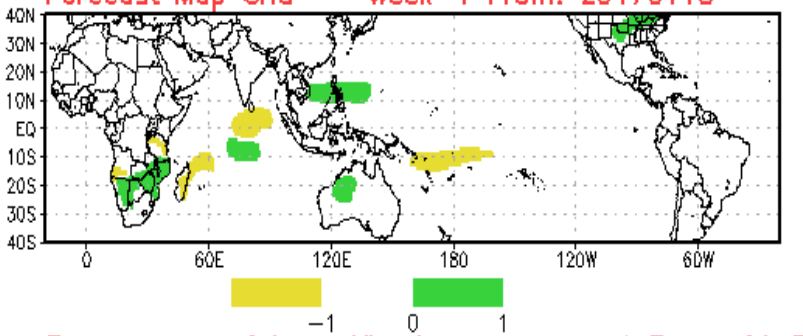




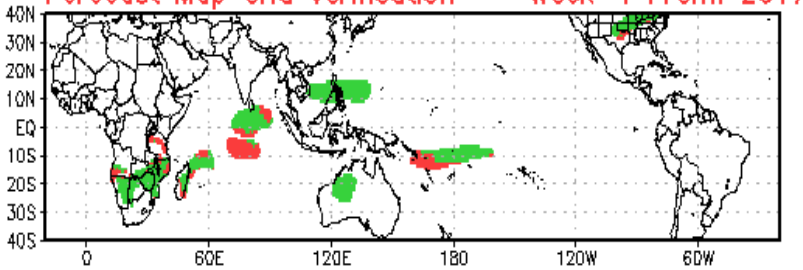
Categorization of 7-Day OLR (#) -- Ending: 20170117



Forecast Map Grid -- Week-1 From: 20170110

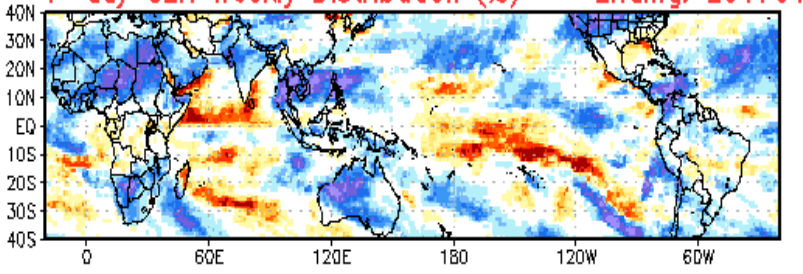


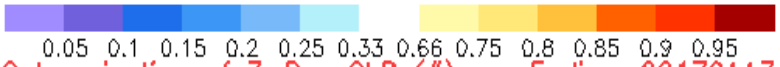
Forecast Map Grid Verification -- Week-1 From: 20170110



Hit: Green, Miss: Red
Heidke Skill Score: 61.3901

7-day OLR Weekly Distribution (%) -- Ending: 20170117





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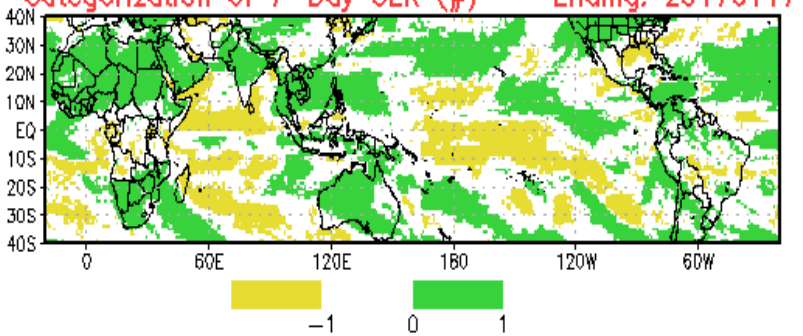
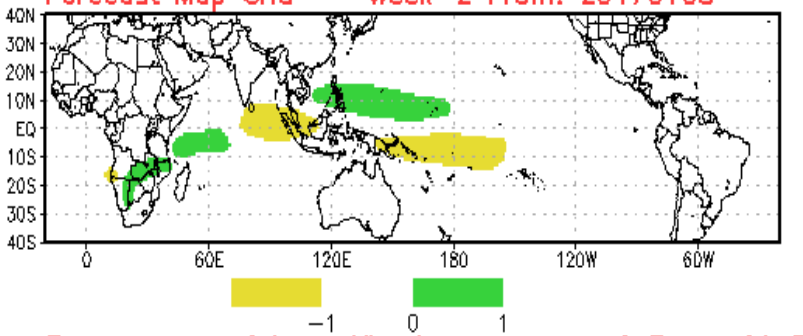
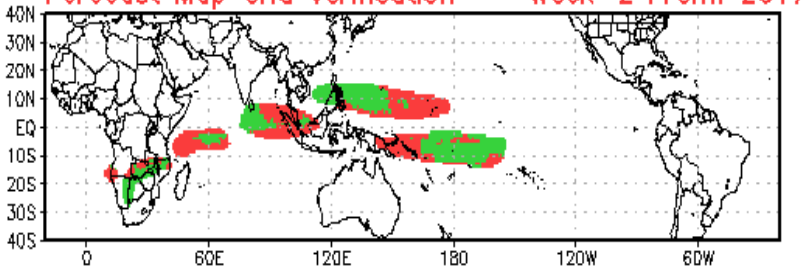


Forecast Map Grid -- Week-2 From: 20170103



Forecast Map Grid Verification -- Week-2 From: 20170103



Hit: Green, Miss: Red
Heidke Skill Score: 21.6573

Synopsis of Climate Modes

ENSO:

- **La Niña Advisory**

La Niña conditions are present, with a transition to ENSO-neutral expected by February. ENSO-neutral conditions favored through the first half of 2017.

MJO and other subseasonal tropical variability:

- MJO present over Western Hemisphere. RMM index has had difficulty tracking the signal, but CPC velocity potential-based index has a continuous signal throughout January.

- Dynamical models indicate a strong MJO event in Phase 8/1 (over the Western Hemisphere and Africa) during Week-1, shifting into Phase 2 (western Indian Ocean) early in Week-2. Whether the signal can shift into Phase 3 (eastern Indian Ocean) late in Week-2 is more uncertain.

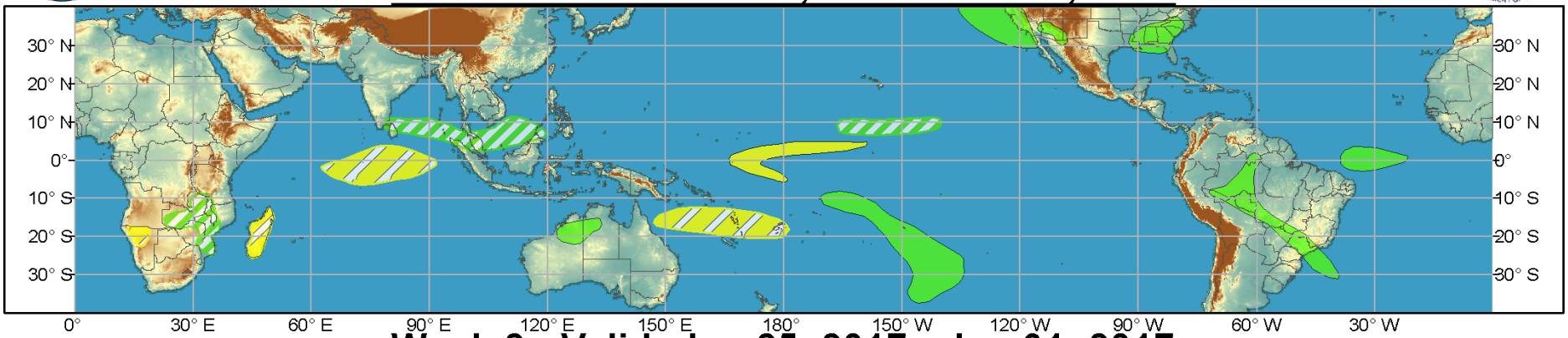
- Low frequency footprint currently being destructively interfered with by the MJO presence, but expected to re-emerge during Week-1 and Week-2.

Extratropics:

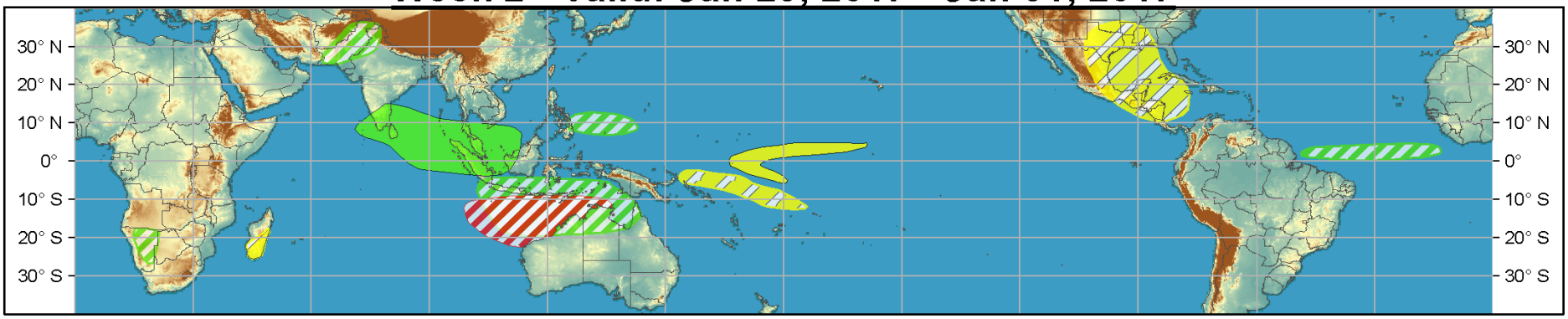
- The MJO in Phase 2 (as anticipated during Week-2) tends to induce a slight tilt towards below-normal temperatures for the Four Corners region. Limited influence of the MJO is otherwise anticipated on the extended U.S. outlooks for temperature or precipitation.

Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Jan 18, 2017 - Jan 24, 2017



Week 2 - Valid: Jan 25, 2017 - Jan 31, 2017



Produced: 01/17/2017

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.
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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.

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EARTH SYSTEM SCIENCE INTERDISCIPLINARY CENTER ESSIC UNIVERSITY OF MARYLAND

Australian Government Bureau of Meteorology

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NPS PRAESTANTIA PER SCIENTIAM

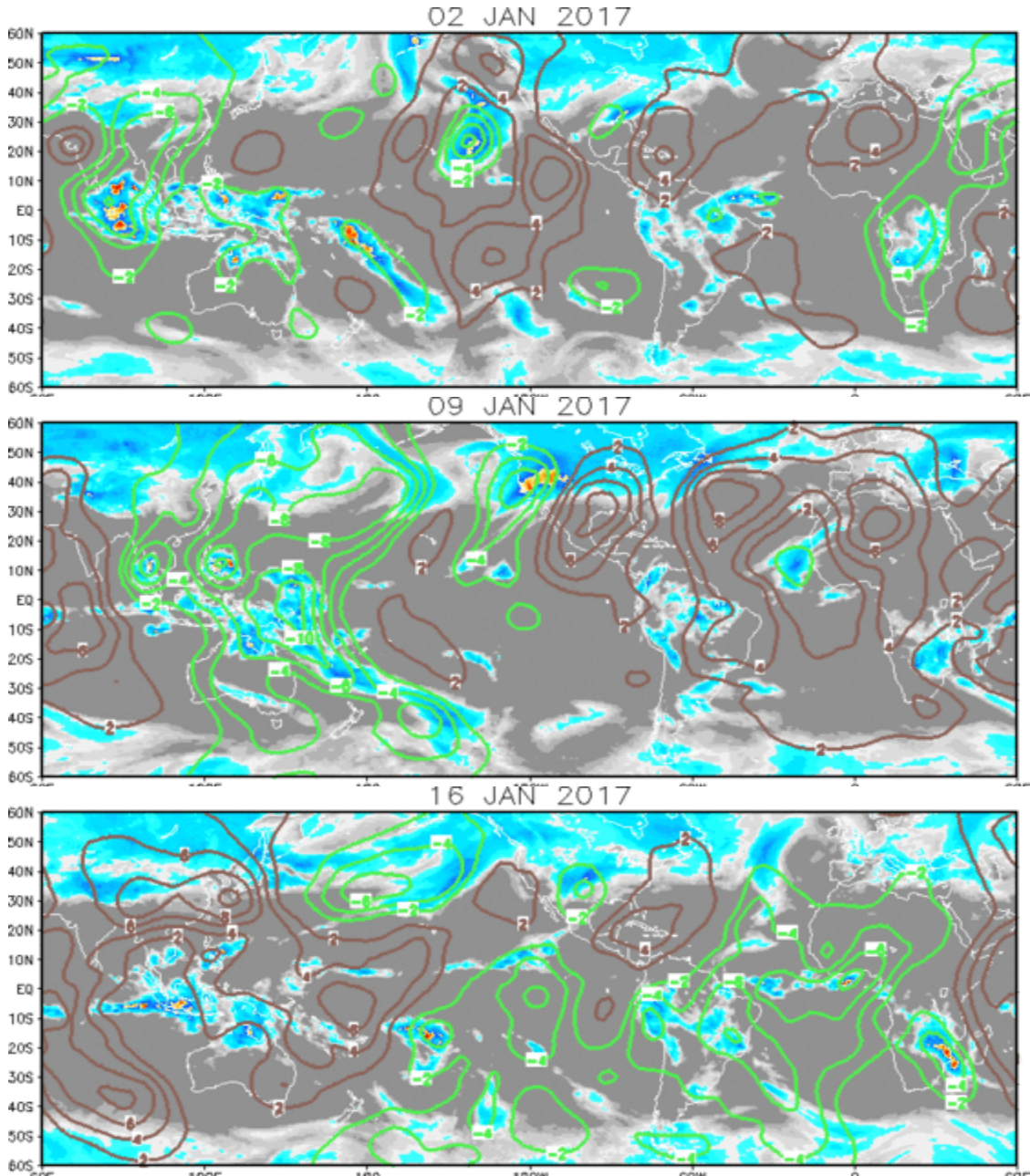
IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence Brown: Enhanced Convergence

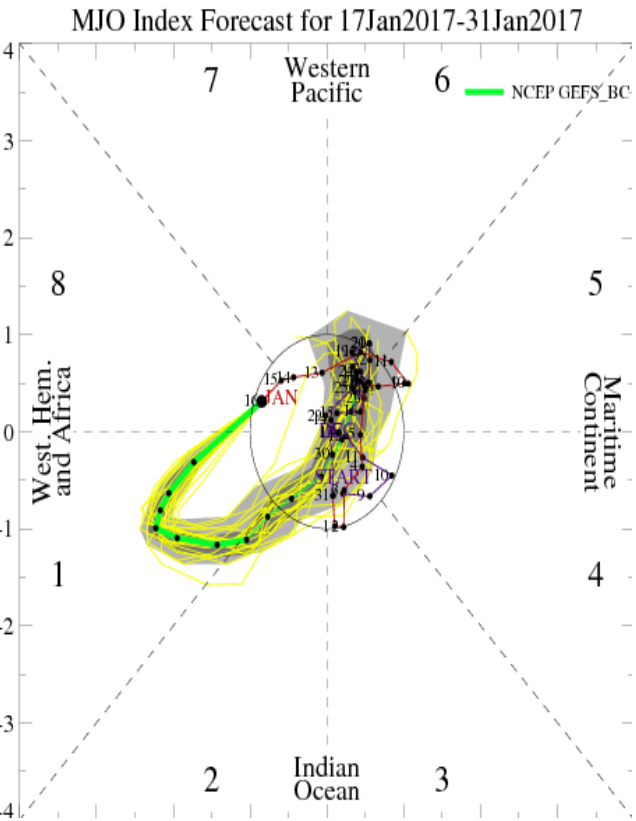
Higher frequency pattern, with enhancement over Africa and the eastern Indian Ocean/Maritime Continent.

Somewhat of a wave-1 pattern with enhanced convection over the Maritime Continent and West Pacific.

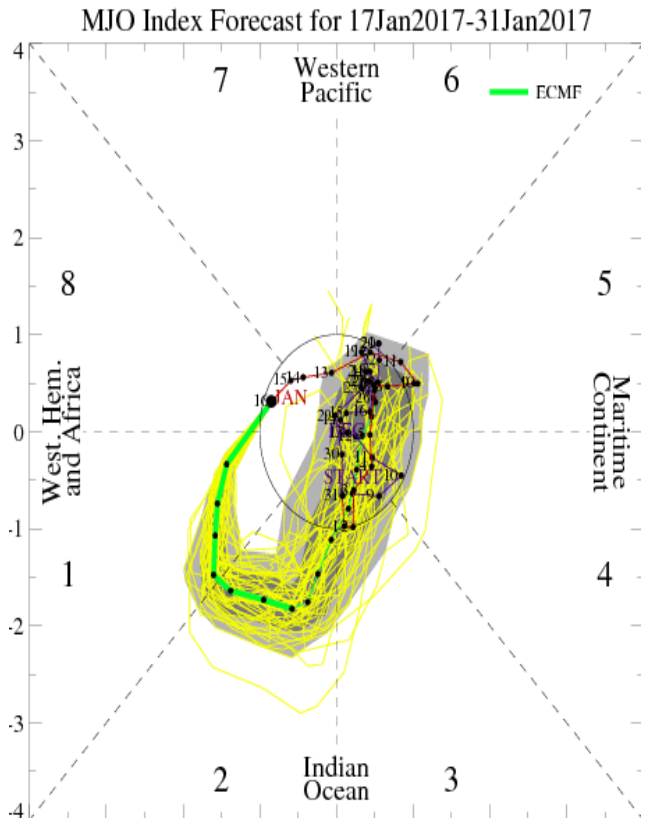
General wave-1 pattern with enhanced divergence over the East Pacific, Atlantic, and Africa.



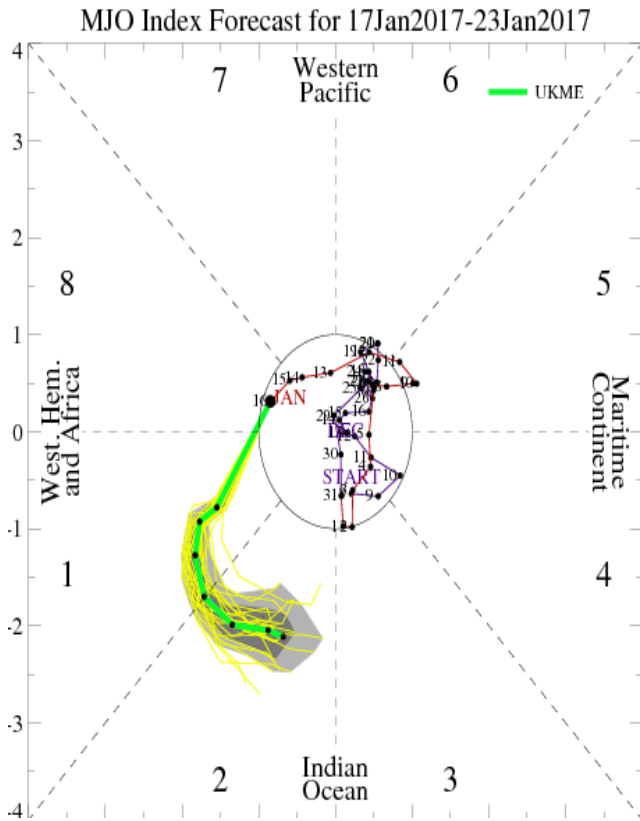
MJO Observation/Forecast



GEFS



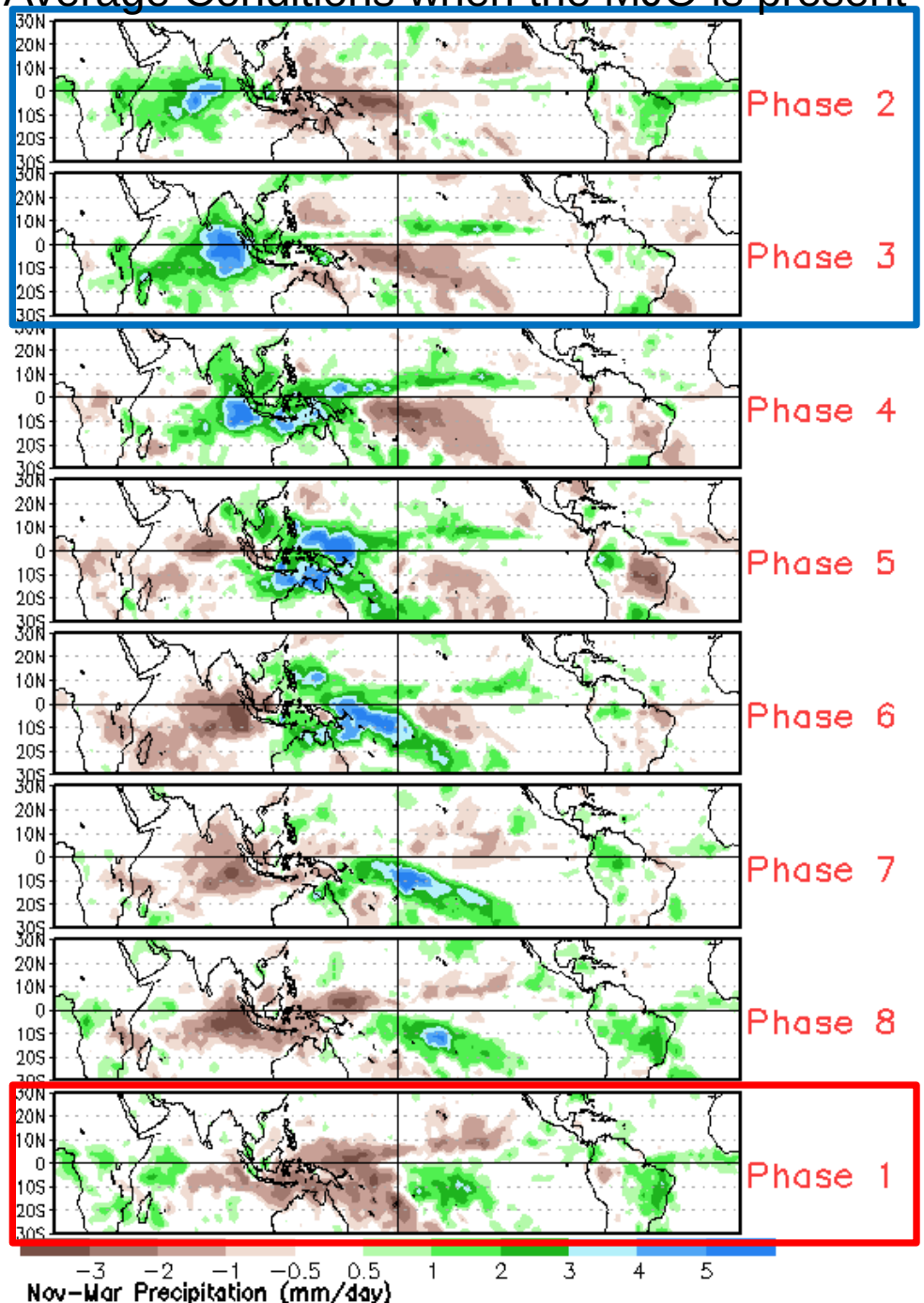
ECMWF



UKMET

- Wheeler-Hendon based analyses of model forecasts indicate a building signal over the Western Hemisphere during Week-1, becoming a strong MJO event.
- Moderation of the signal is favored in Week-2, as the signal propagates into the western Indian Ocean.
- Continued propagation to the eastern Indian Ocean late in Week-2 not supported by ensemble means, but appears tied to different phase speeds among the ensemble members. Robust MJO signal may continue in Phase 3 despite the ensemble mean forecasts of weakening.

Average Conditions when the MJO is present

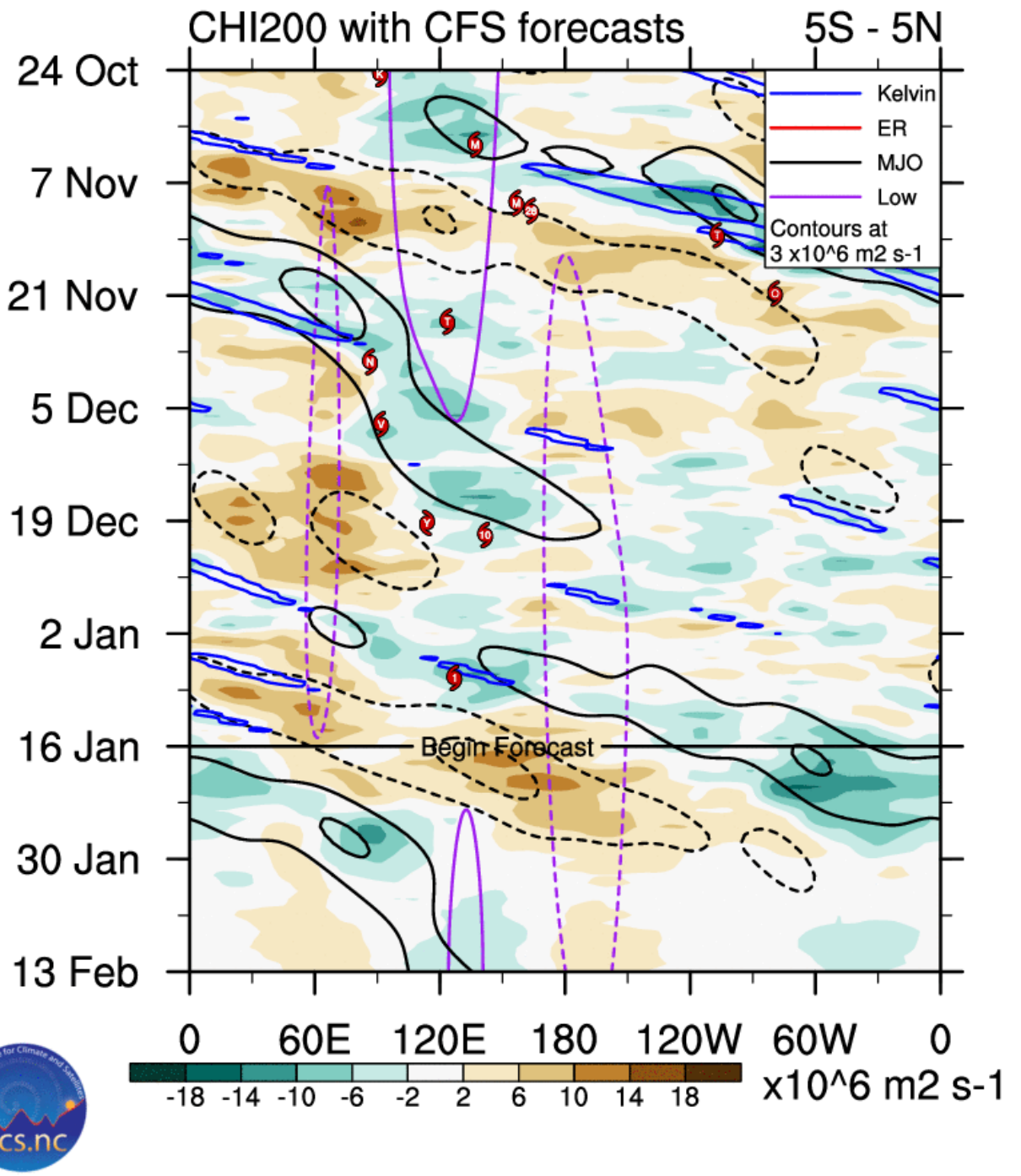


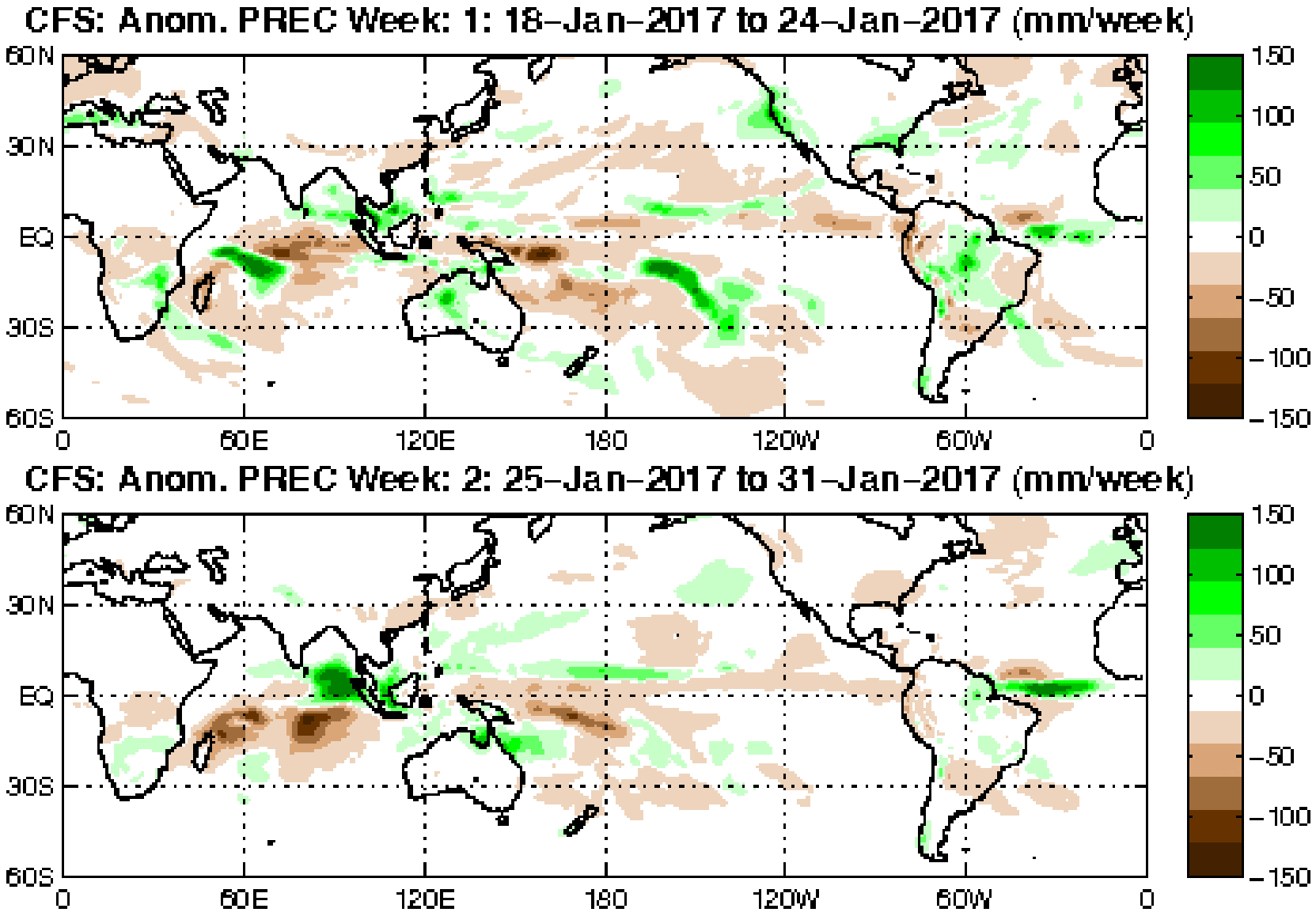
Week-1 associated with above-average rains in South Pacific, Brazil, and Africa. Below-average rains for Maritime Continent and West Pacific.

Week-2 associated with enhanced rainfall for Indian Ocean and western Maritime Continent. Suppressed rains favored east of New Guinea and the Philippines.

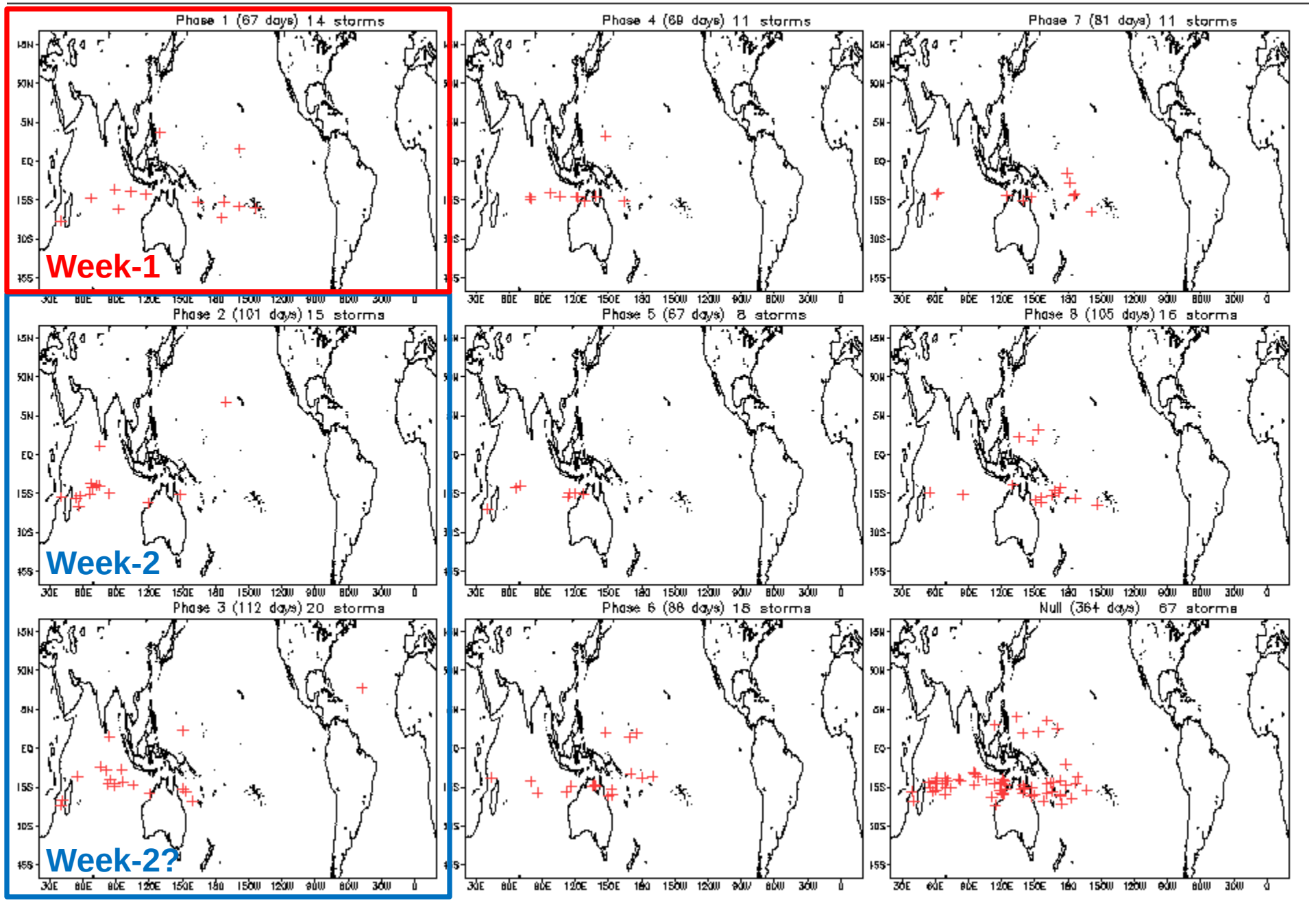
CAVEAT: These panels are representative of robust MJO events.

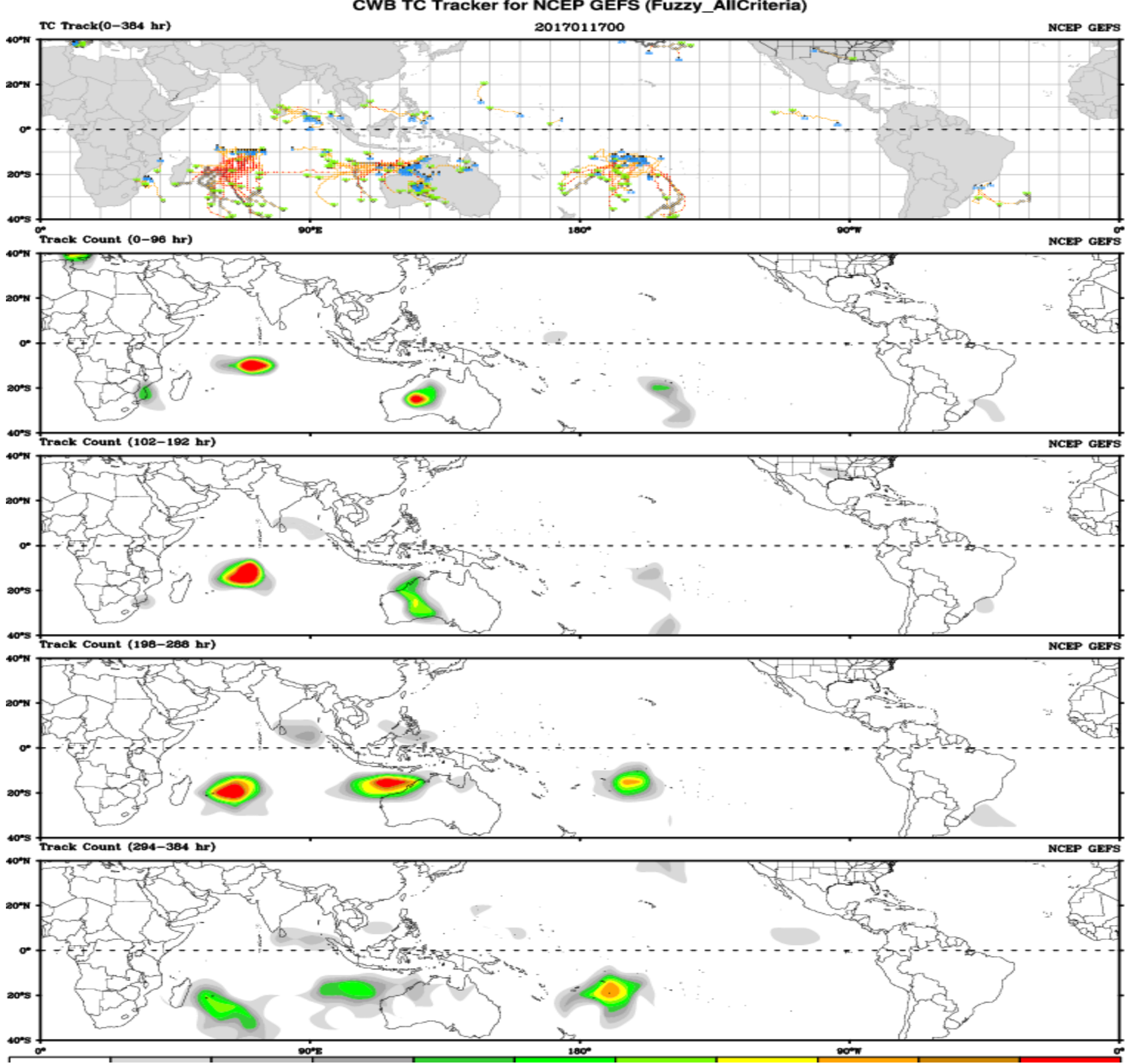
MJO presence across Western Hemisphere, with suppressed phase destructively interfering with **low frequency** convection over Maritime Continent.




CFS: Anom. PREC Week: 1: 18-Jan-2017 to 24-Jan-2017 (mm/week)
60N
30N
EQ
30S
60S
0
60E
120E
180
120W
60W
0
150
100
50
0
-50
-100
-150
CFS: Anom. PREC Week: 2: 25-Jan-2017 to 31-Jan-2017 (mm/week)
60N
30N
EQ
30S
60S
0
60E
120E
180
120W
60W
0
150
100
50
0
-50
-100
-150

January Tropical Storm Formation by MJO phase





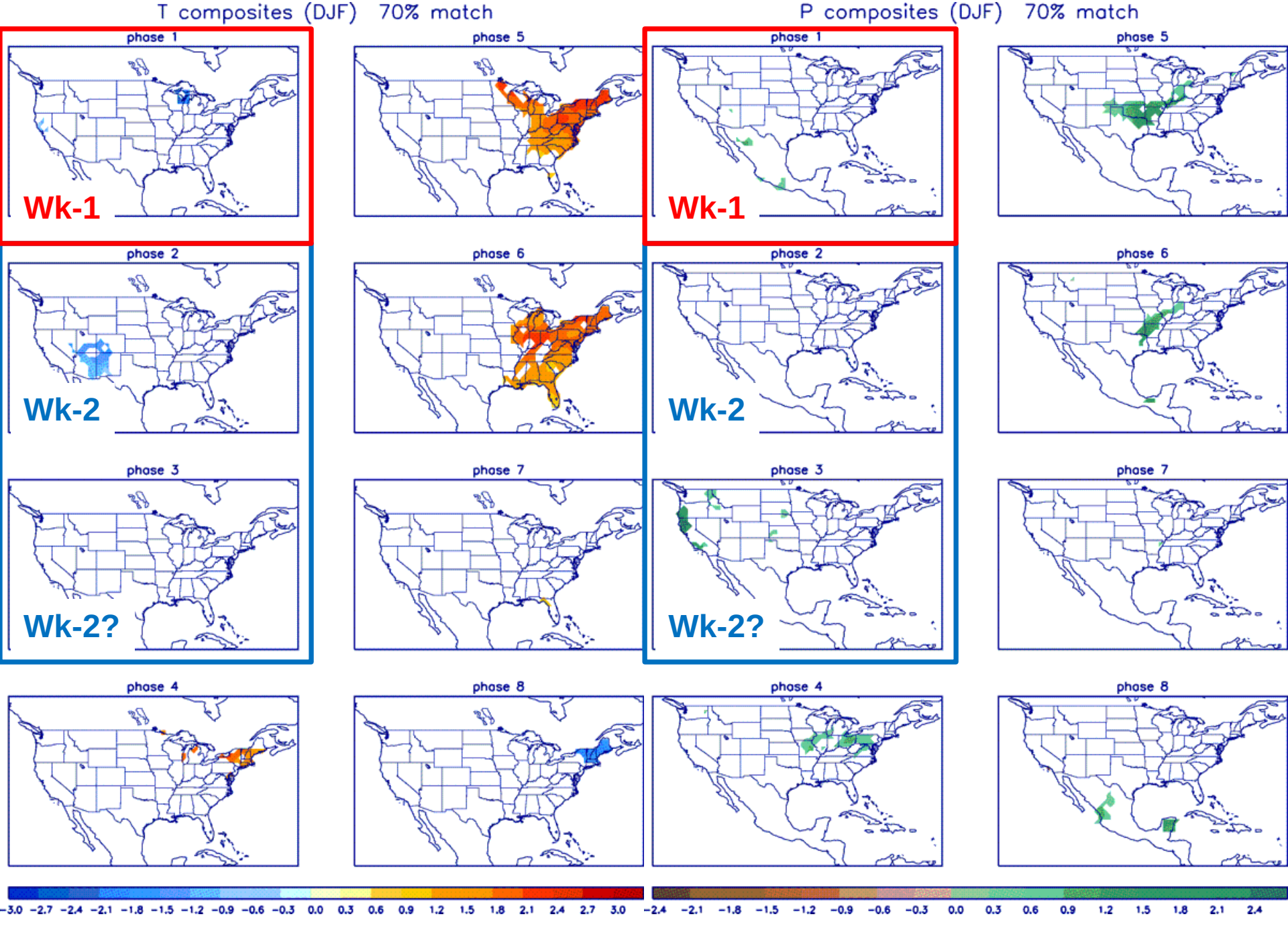
Days 1-4

Day 5-8

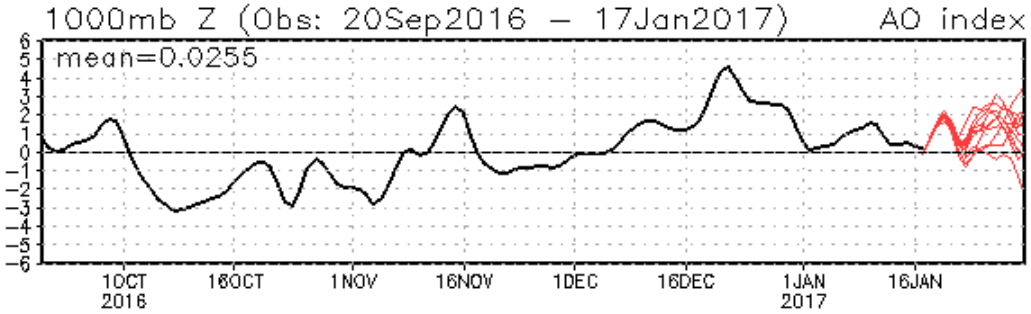
Day 9-12

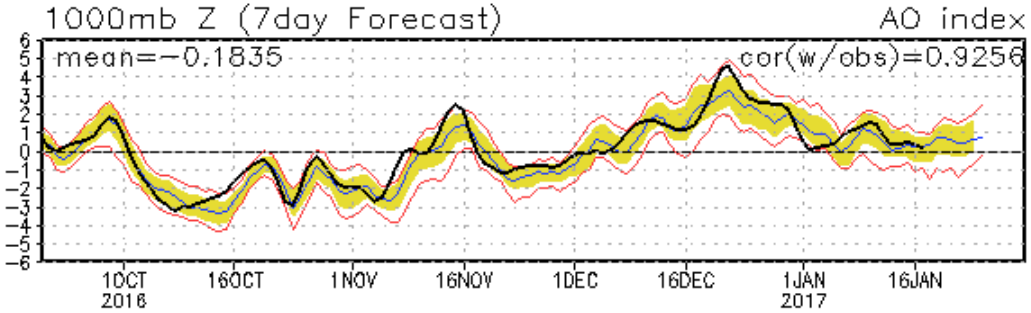
Day 13-15

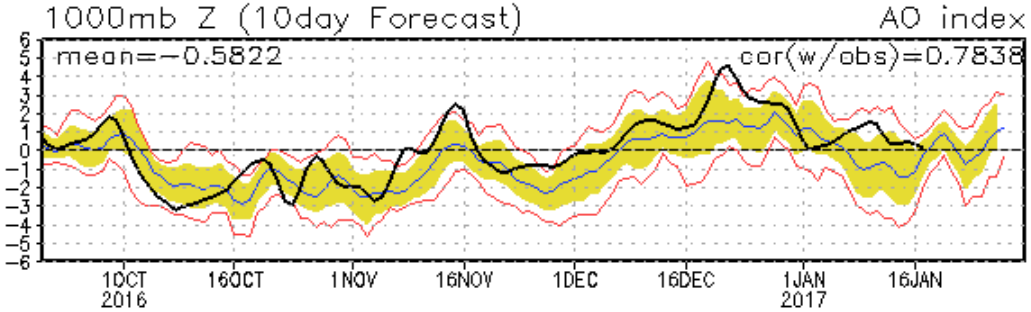
Connections to U.S. Impacts

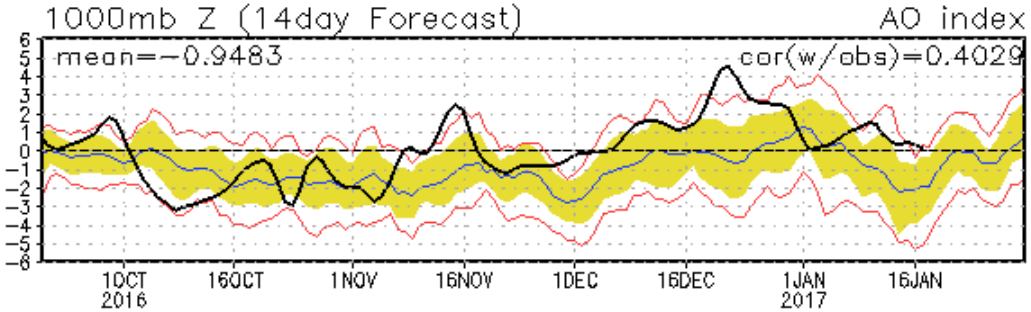

T composites (DJF) 70% match
P composites (DJF) 70% match
phase 1
phase 5
phase 2
phase 6
phase 3
phase 7
phase 4
phase 8
Wk-1
Wk-2
Wk-2?
Wk-1
Wk-2
Wk-2?
-3.0 -2.7 -2.4 -2.1 -1.8 -1.5 -1.2 -0.9 -0.6 -0.3 0.0 0.3 0.6 0.9 1.2 1.5 1.8 2.1 2.4 2.7 3.0
-2.4 -2.1 -1.8 -1.5 -1.2 -0.9 -0.6 -0.3 0.0 0.3 0.6 0.9 1.2 1.5 1.8 2.1 2.4

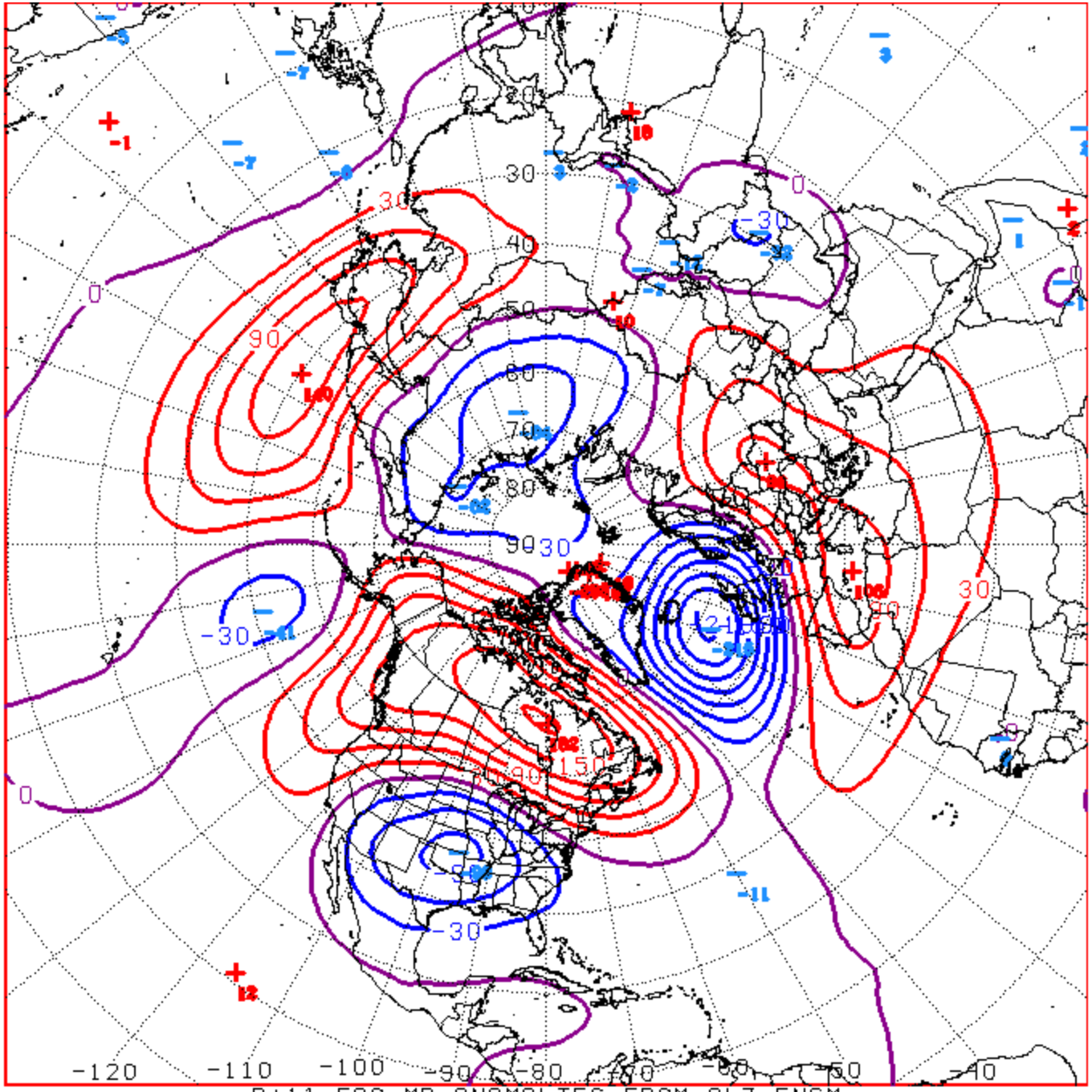
AO: Observed & ENSM forecasts





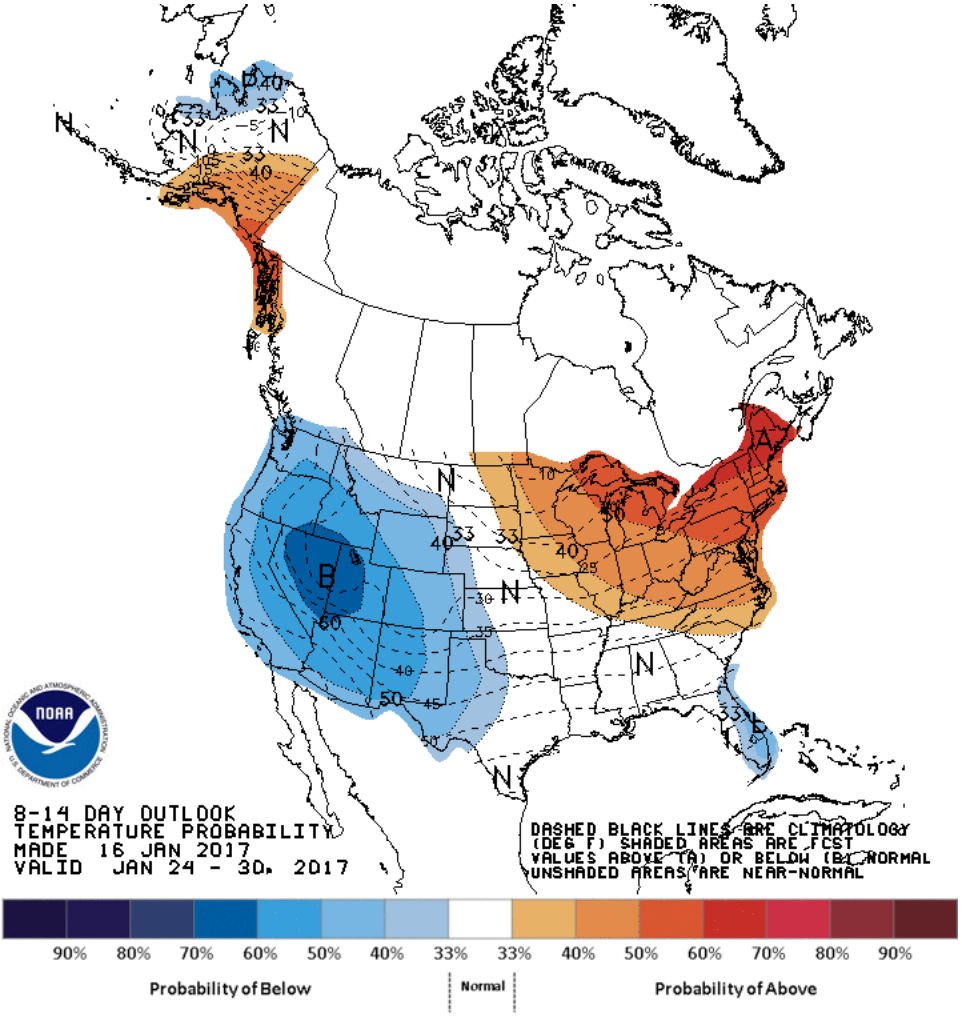






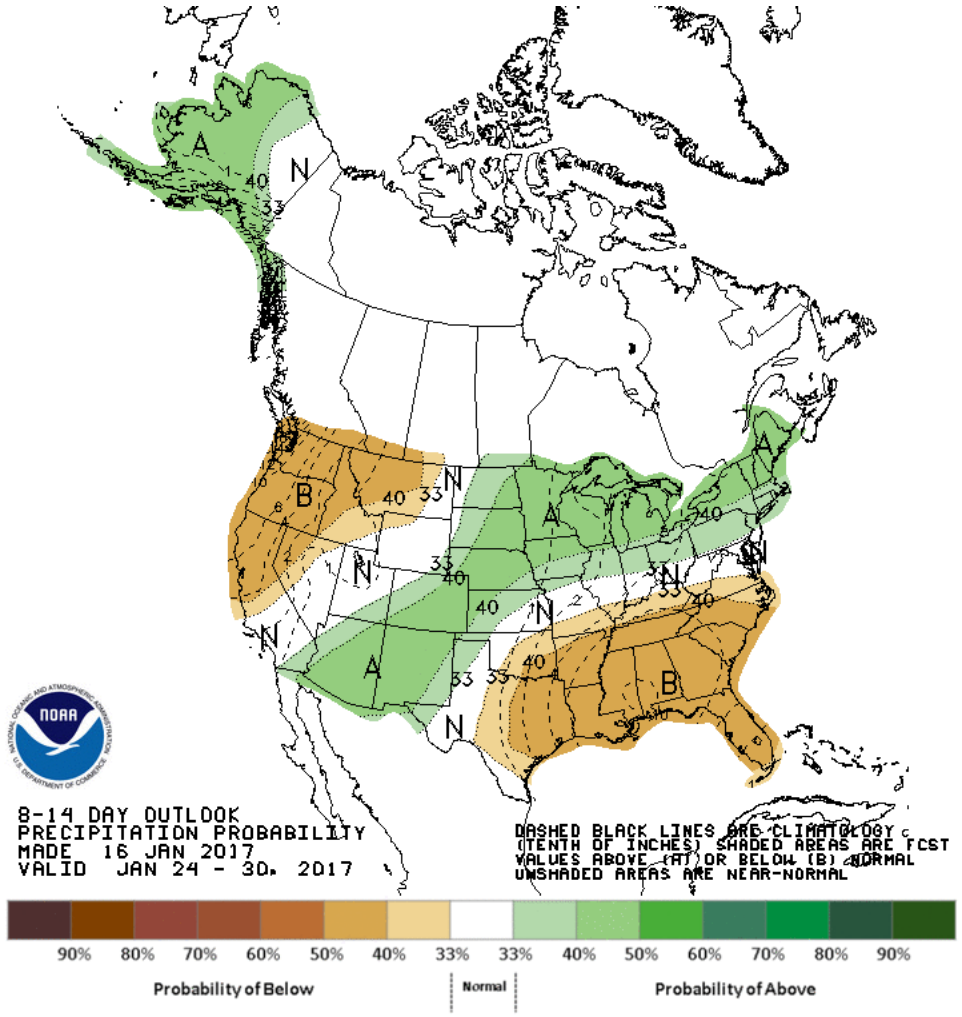
D+11 500 MB ANOMALIES FROM ALZ ENSM
CPC MAP MADE JAN 17 2017 1339 UTC CNTD JAN 28 2017

Week 2 – Temperature and Precipitation



- Warmer over AK today.
  - Cooler along Gulf?

- Transition in SW towards dry from the wet 6-10 day period.



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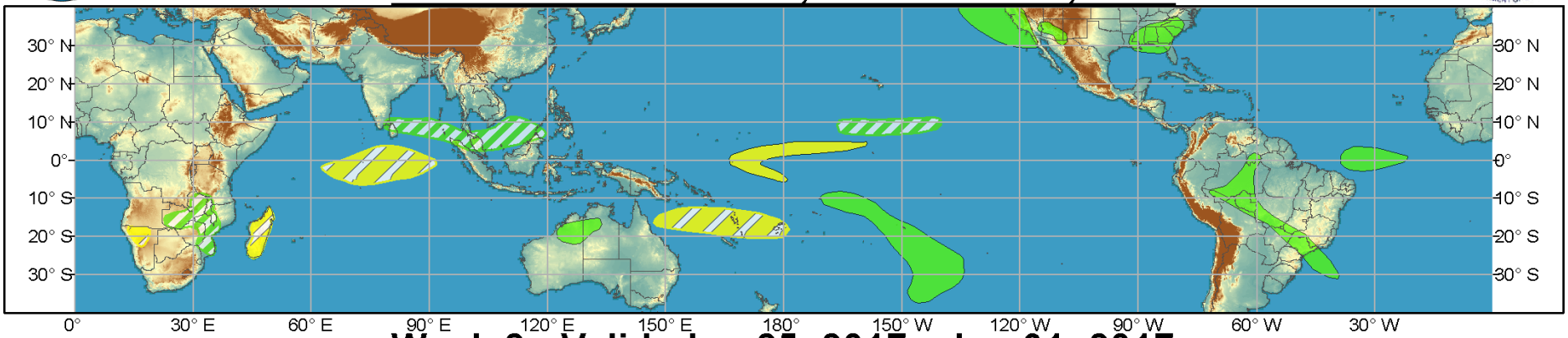

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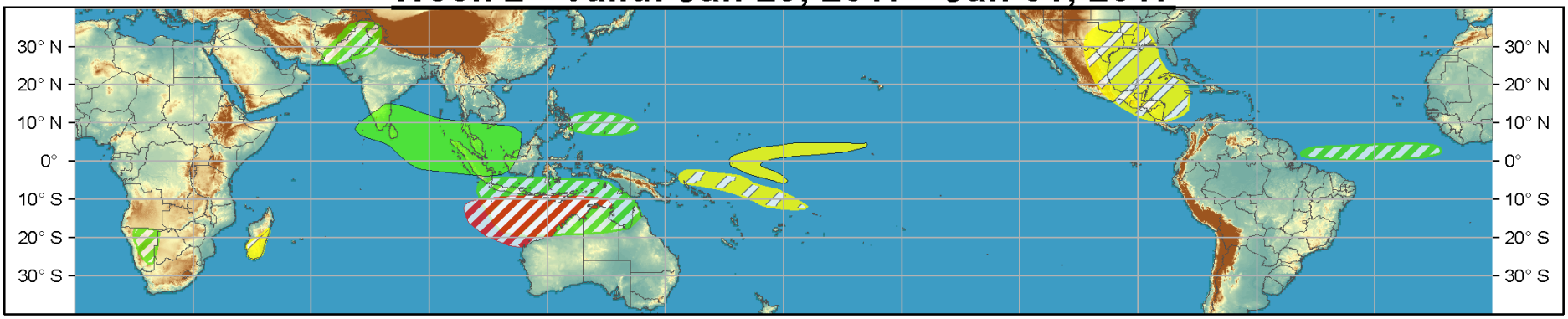

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