Global Tropics Hazards And Benefits Outlook

12/3/2019

Dan Harnos

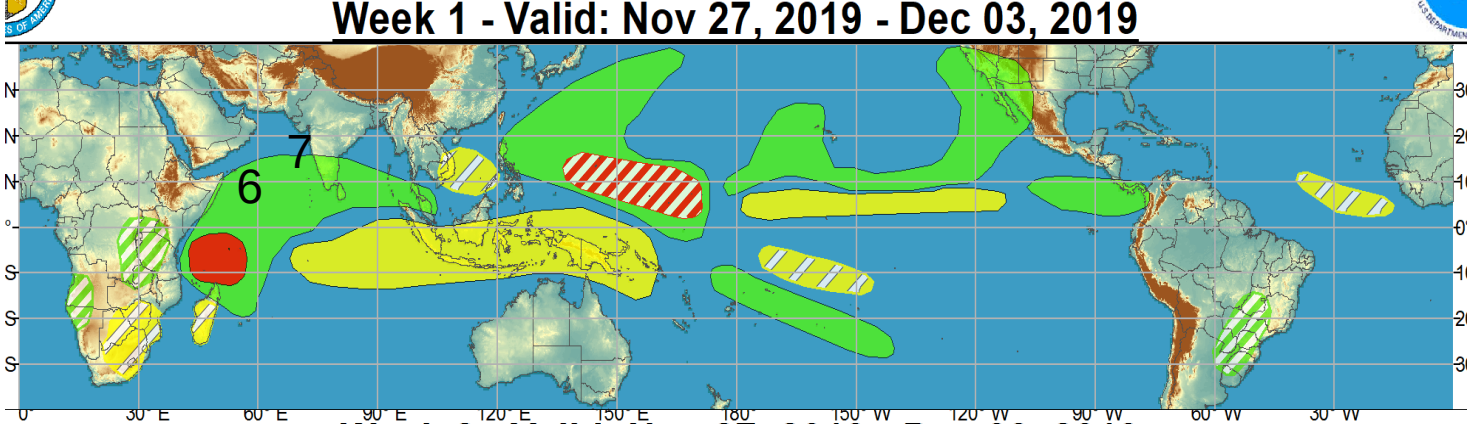
Outline

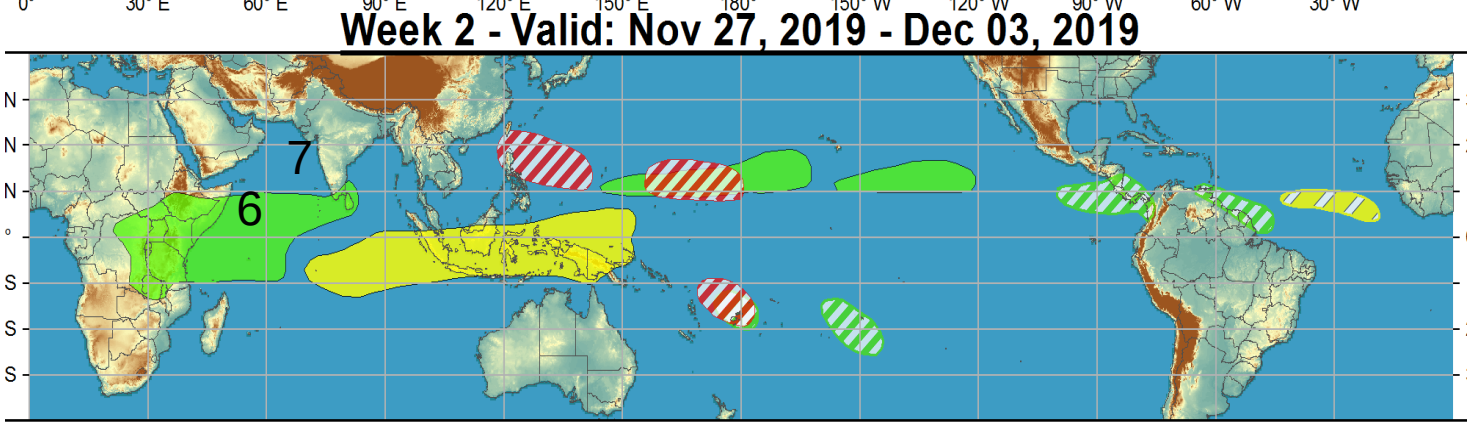
1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts

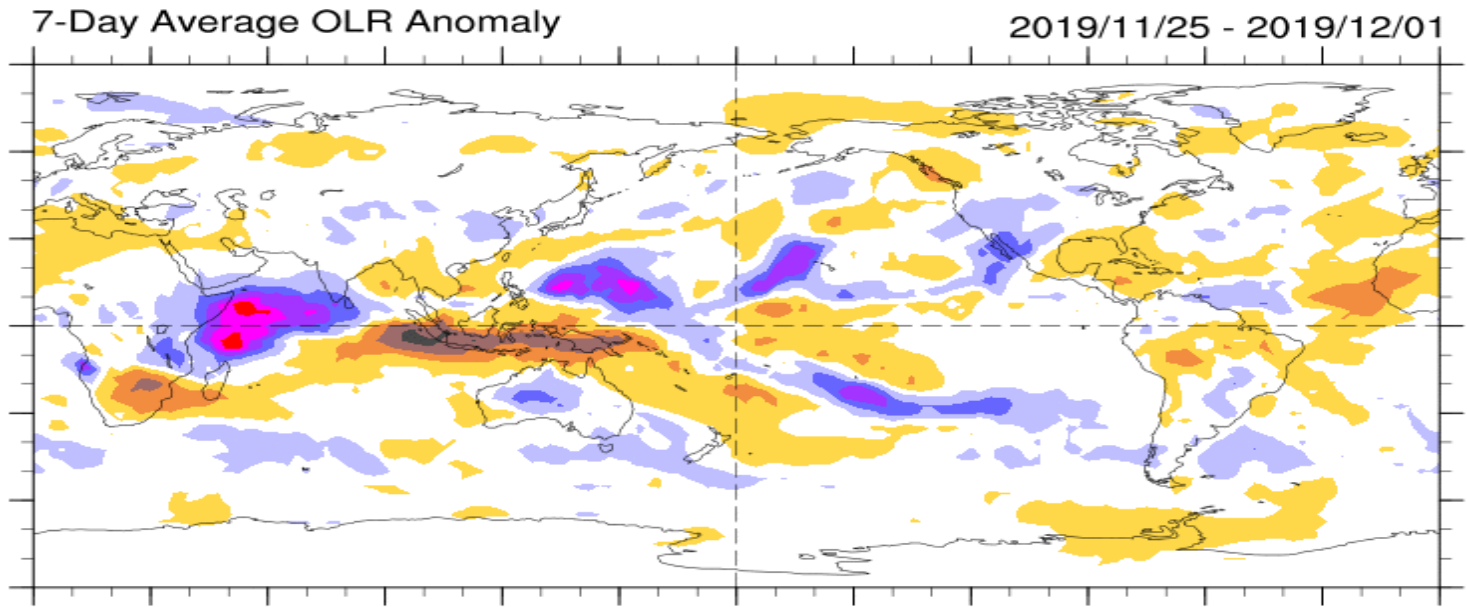
Outlook Review

Two Tropical Cyclones formed on Dec. 3:

- Tropical Storm 6
- Tropical Storm 7







Cool shading
More clouds/rain

Warm shading
Less clouds/rain

Synopsis of Climate Modes

ENSO: (November 14, 2019 Update – *next is scheduled for December 12*)

- ENSO Alert System Status: None

- ENSO-neutral is favored during the Northern Hemisphere winter 2019-20 (~70% chance), continuing through spring 2020 (60 to 65% chance).

MJO and other subseasonal tropical variability:

• The MJO has continued to slow and weaken during the past week and is currently situated in Phase-2 within the unit circle in RMM space.

• Dynamical models consistently bring the MJO eastward over the next two weeks, but differ in how quickly this occurs and how strong the event will be.

• If the MJO pushes eastward it would destructively interfere with the ongoing positive phase of the Indian Ocean Dipole and reduce forecast confidence related to impacts.

Extratropics:

• The typical lagged response to the MJO crossing the Indian Ocean is troughing (ridging) building over the West (East), although dynamical models do not support such an evolution. The Indian Ocean Dipole event may be interfering with the typical circulation response, thus limiting confidence in any extratropical impacts.

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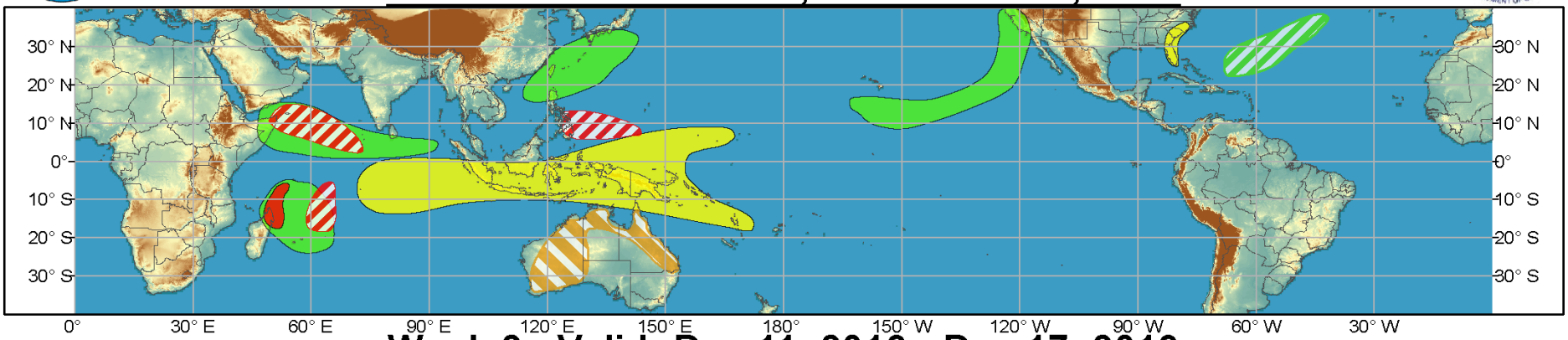
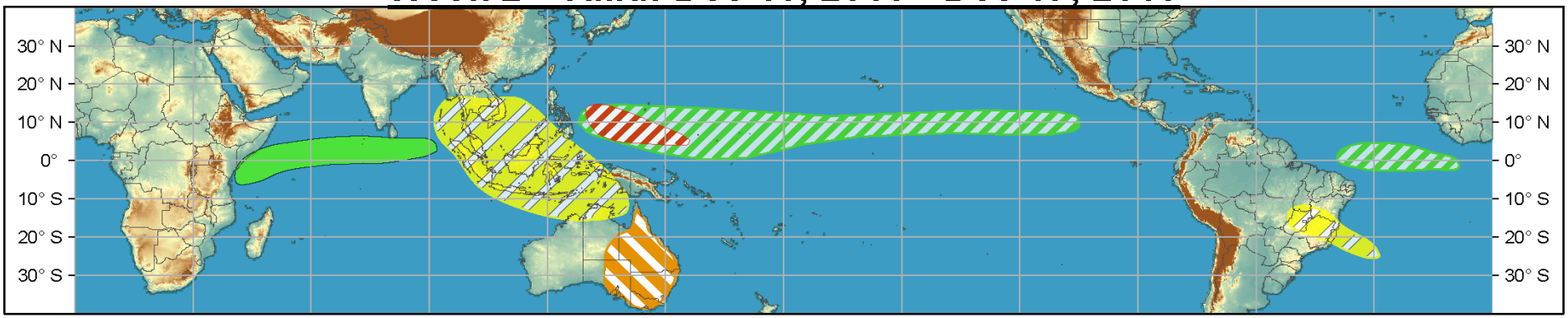
Week 1 - Valid: Dec 04, 2019 - Dec 10, 2019



Week 2 - Valid: Dec 11, 2019 - Dec 17, 2019



Produced: 12/03/2019

Forecaster: 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

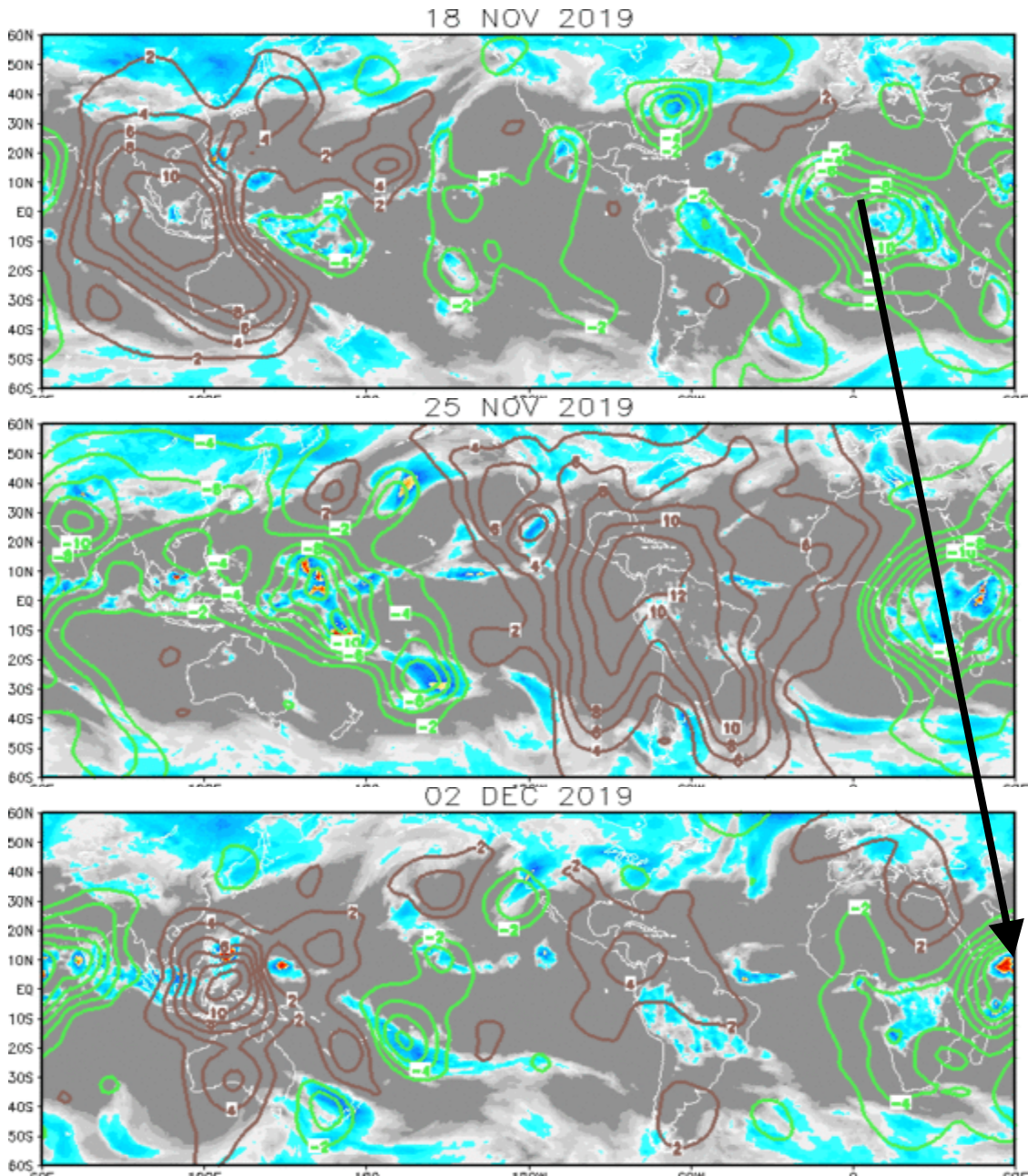
IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence Brown: Enhanced Convergence

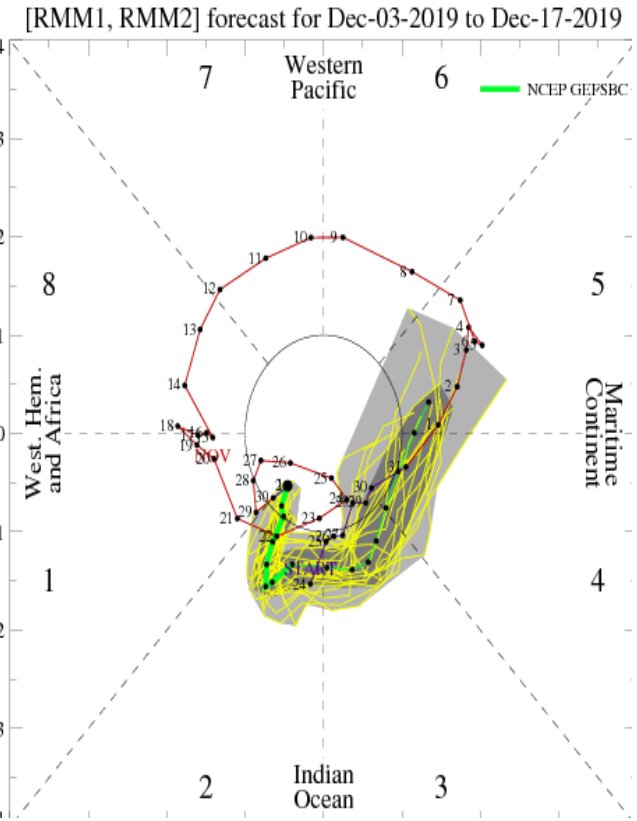
A strong upper-level footprint exists as the MJO rapidly crossed western Hemisphere.

Enhanced convection again appears anchored over Africa. Weakening UL convergence associated with Rossby wave (TC) activity over Maritime Continent.

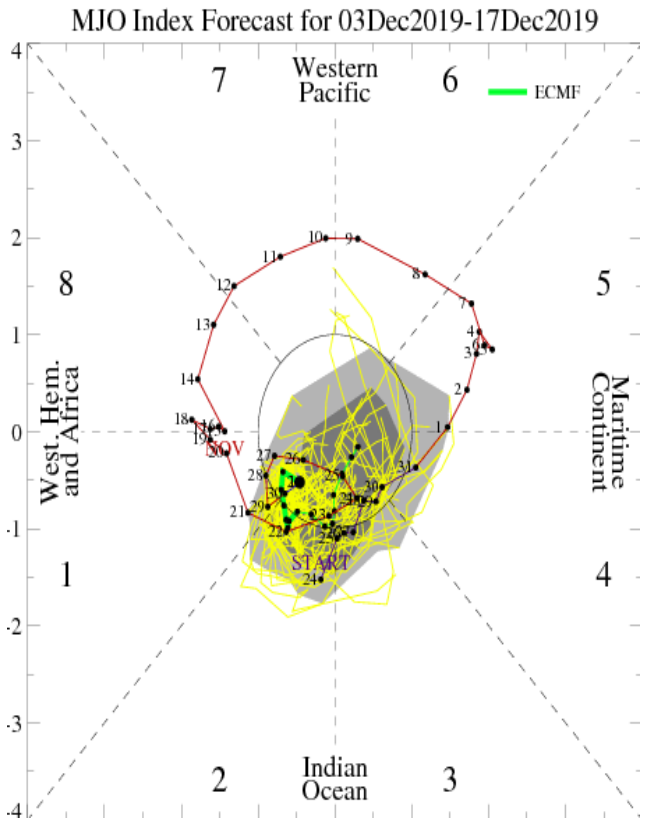
Upper level convergence returns to the Maritime Continent while the enhanced upper level divergence continues its slow eastward propagation.



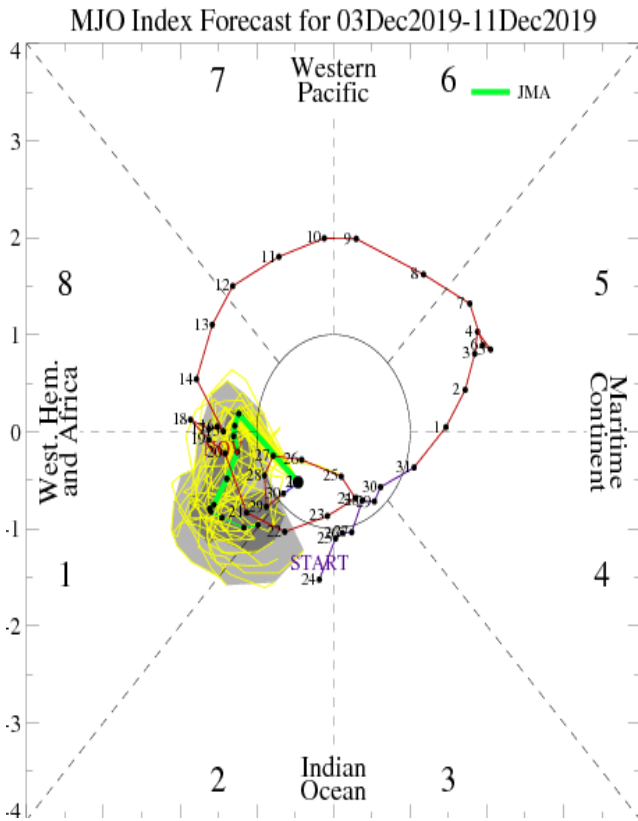
MJO Observation/Forecast



GEFS



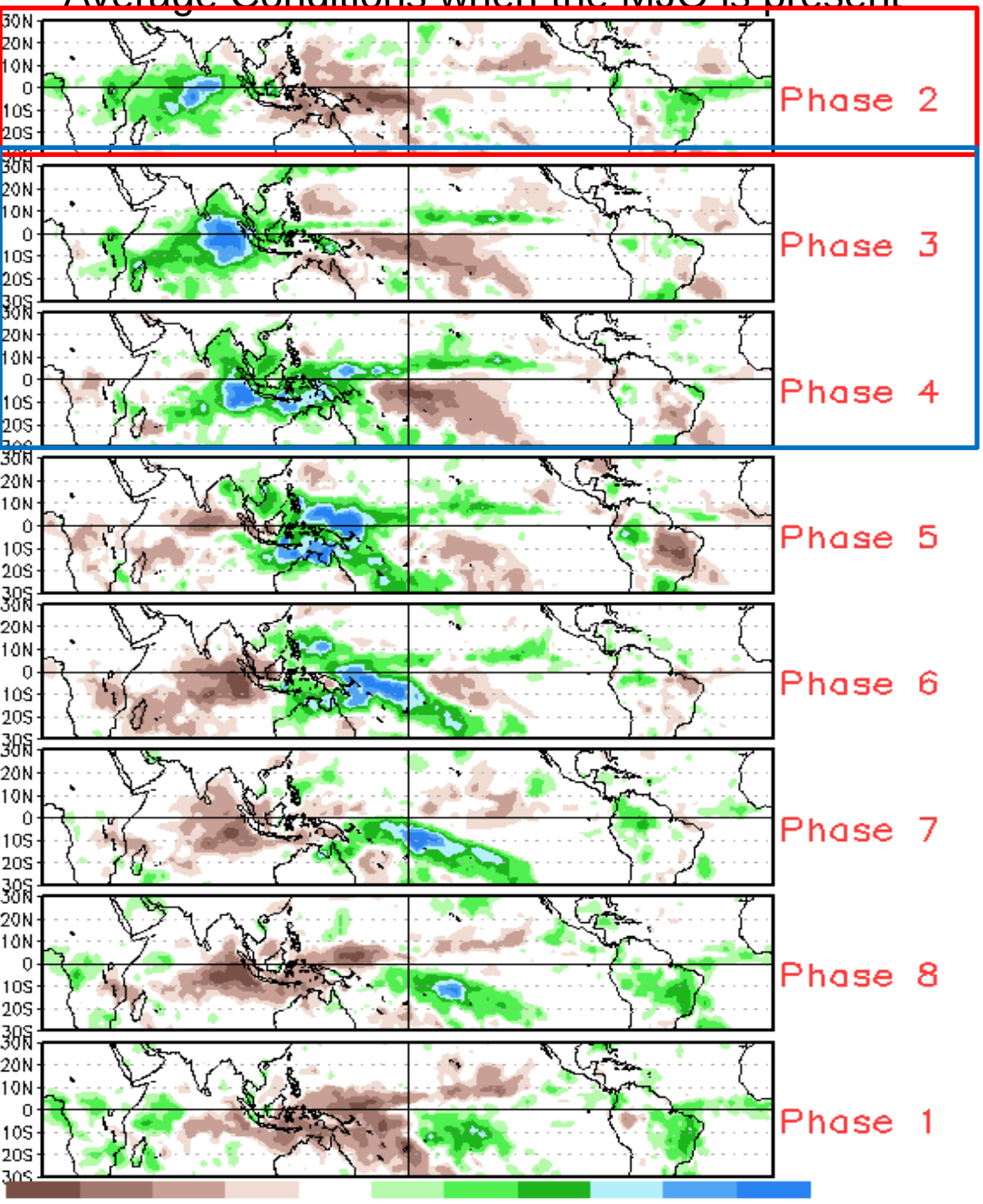
ECMWF



JMA

- Models strengthen the MJO during the next week, but vary in their treatments.
  - GEFS: Highest amplitude and fastest eastward progression.
  - ECMWF: Eastward progression but slower and with a weaker signal.
  - JMA: Westward propagation (emphasizing TCs/equatorial Rossby waves).

Average Conditions when the MJO is present



Week-1: Phase 2

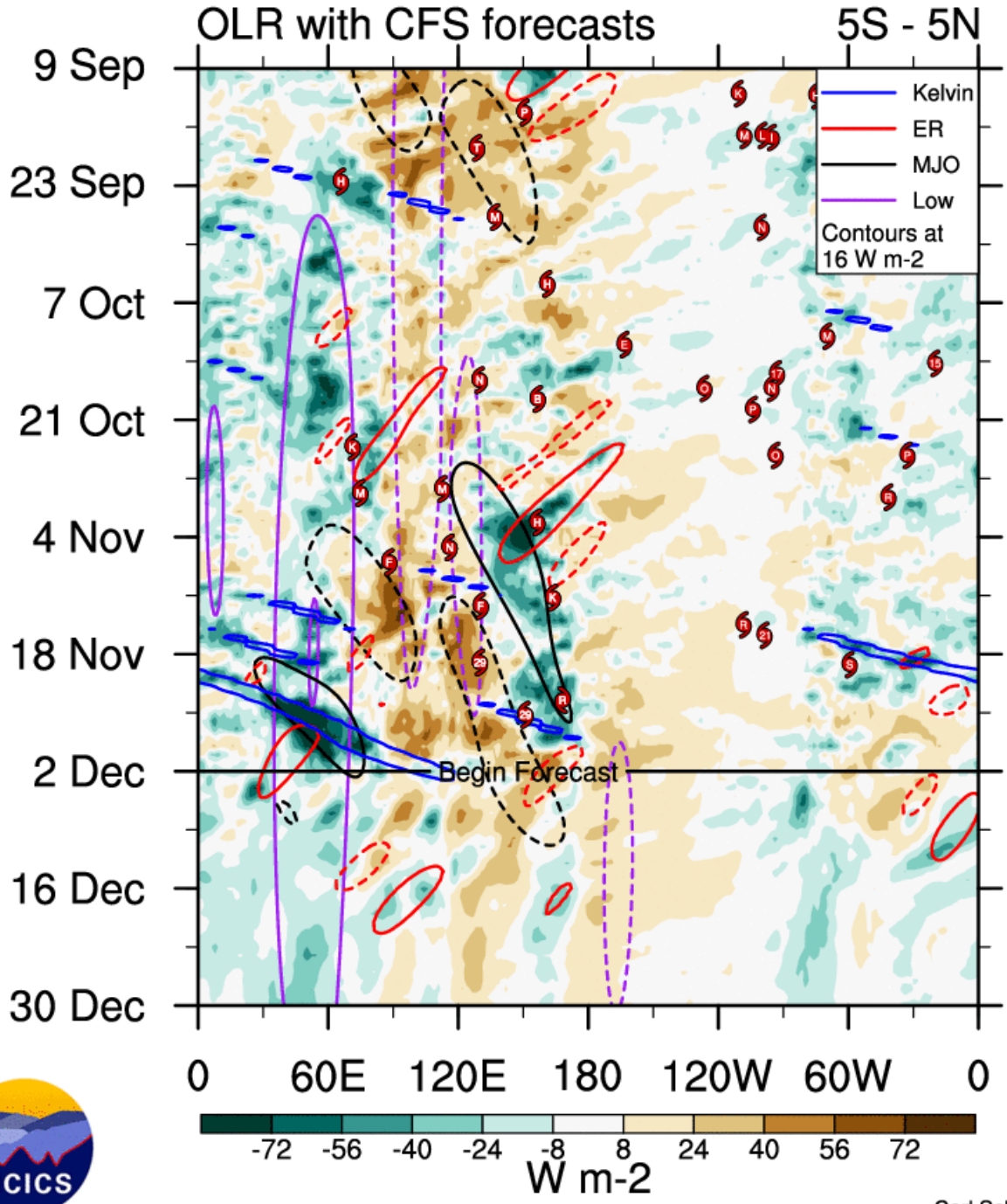
Week-2: Phase 3/4

CAVEAT: These panels are representative of robust MJO events.

IOD signal strongly apparent in equatorial cloudiness.

The MJO briefly disrupted the persistent IOD in late October, and the next 2 weeks could see something similar occur.

Forecast Rossby wave activity across the Eastern Hemisphere is likely to further complicate the situation.



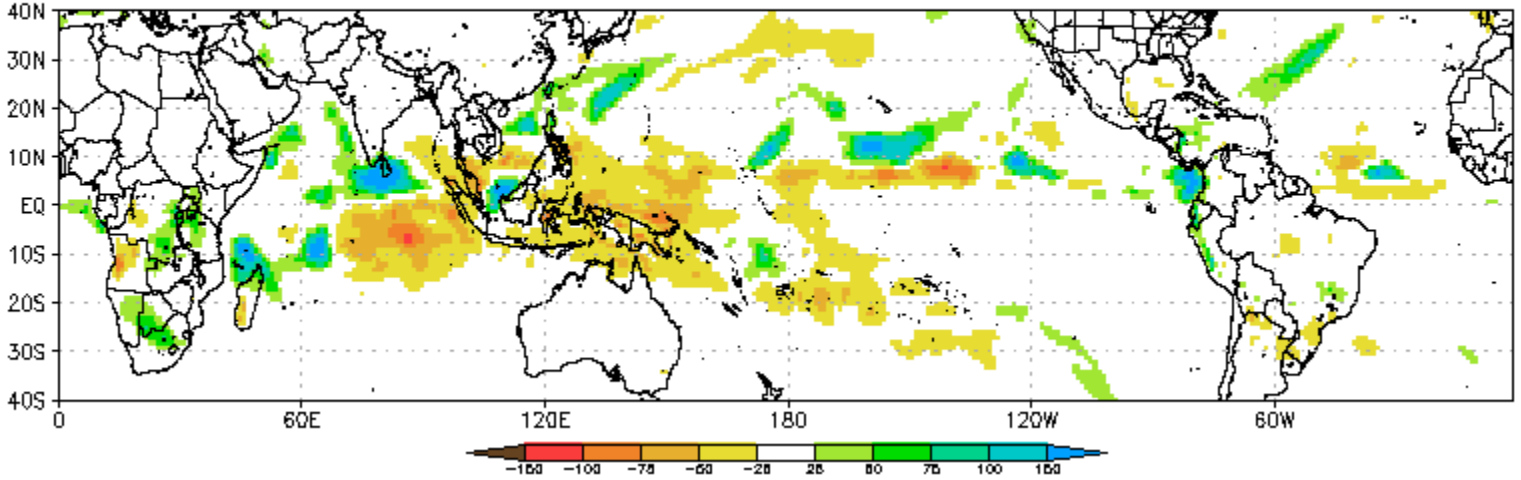
NCICS

ncics.org/mjo

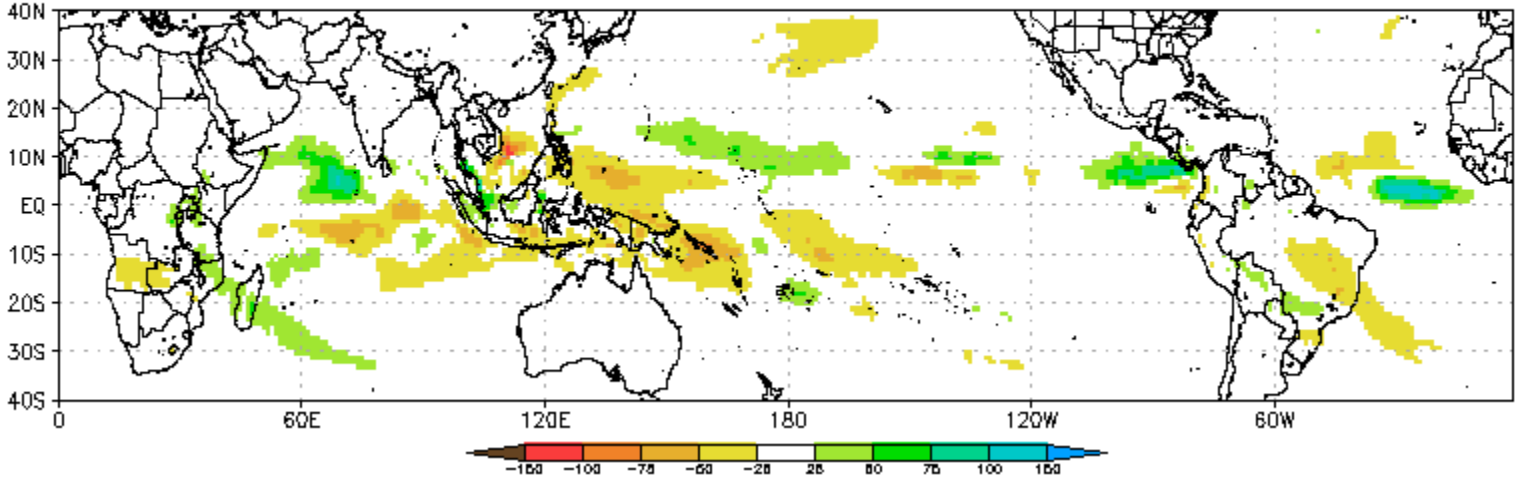
Tue 2019-12-03 1611 UTC

Carl Schreck
carl_schreck@ncsu.edu

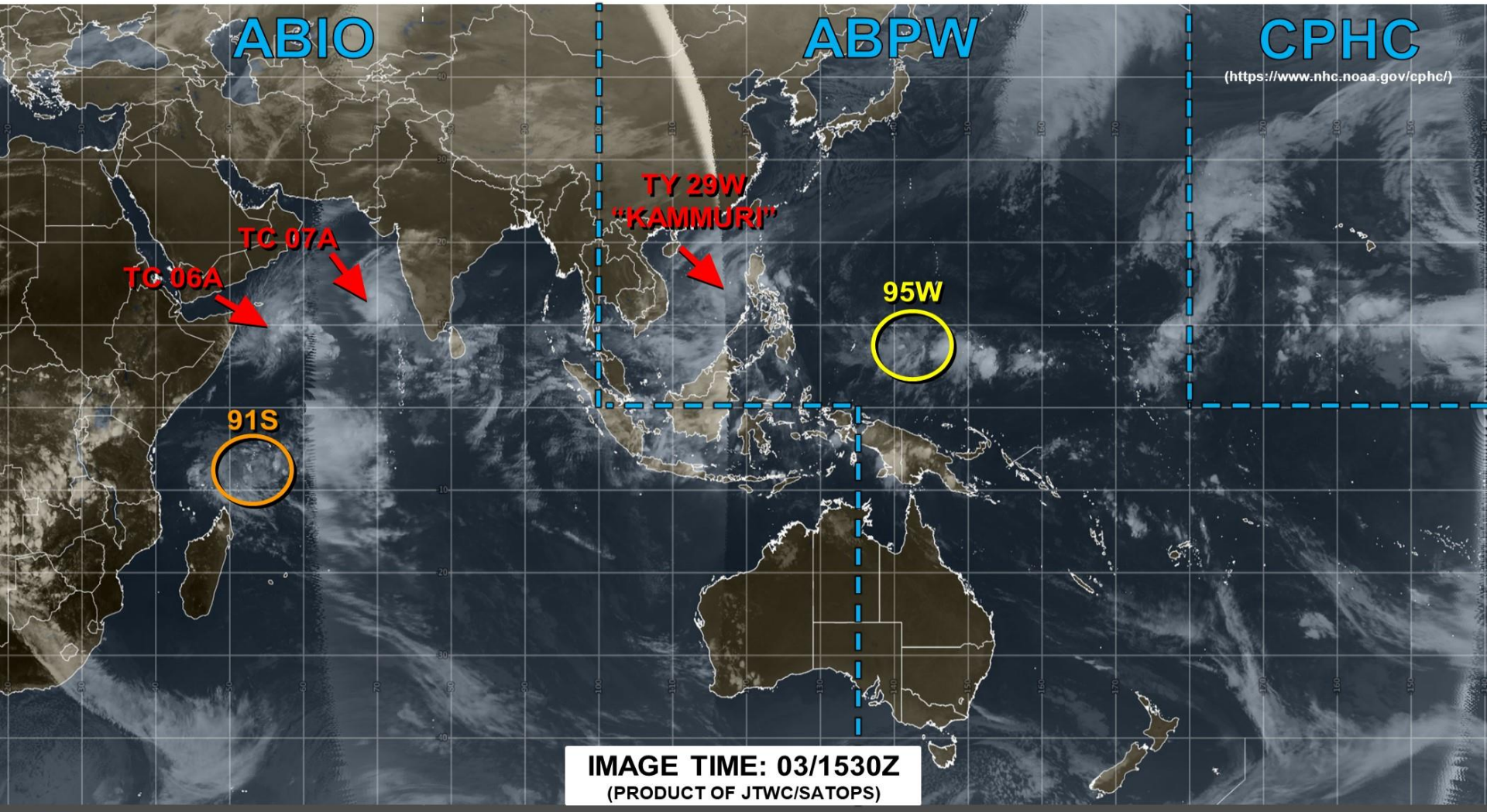
CFS Precipitation Anomalies (mm) Issued 02Dec2019
Week-1 Forecast Ending 10Dec2019



CFS Precipitation Anomalies (mm) Issued 02Dec2019
Week-2 Forecast Ending 17Dec2019



JOINT TYPHOON WARNING CENTER



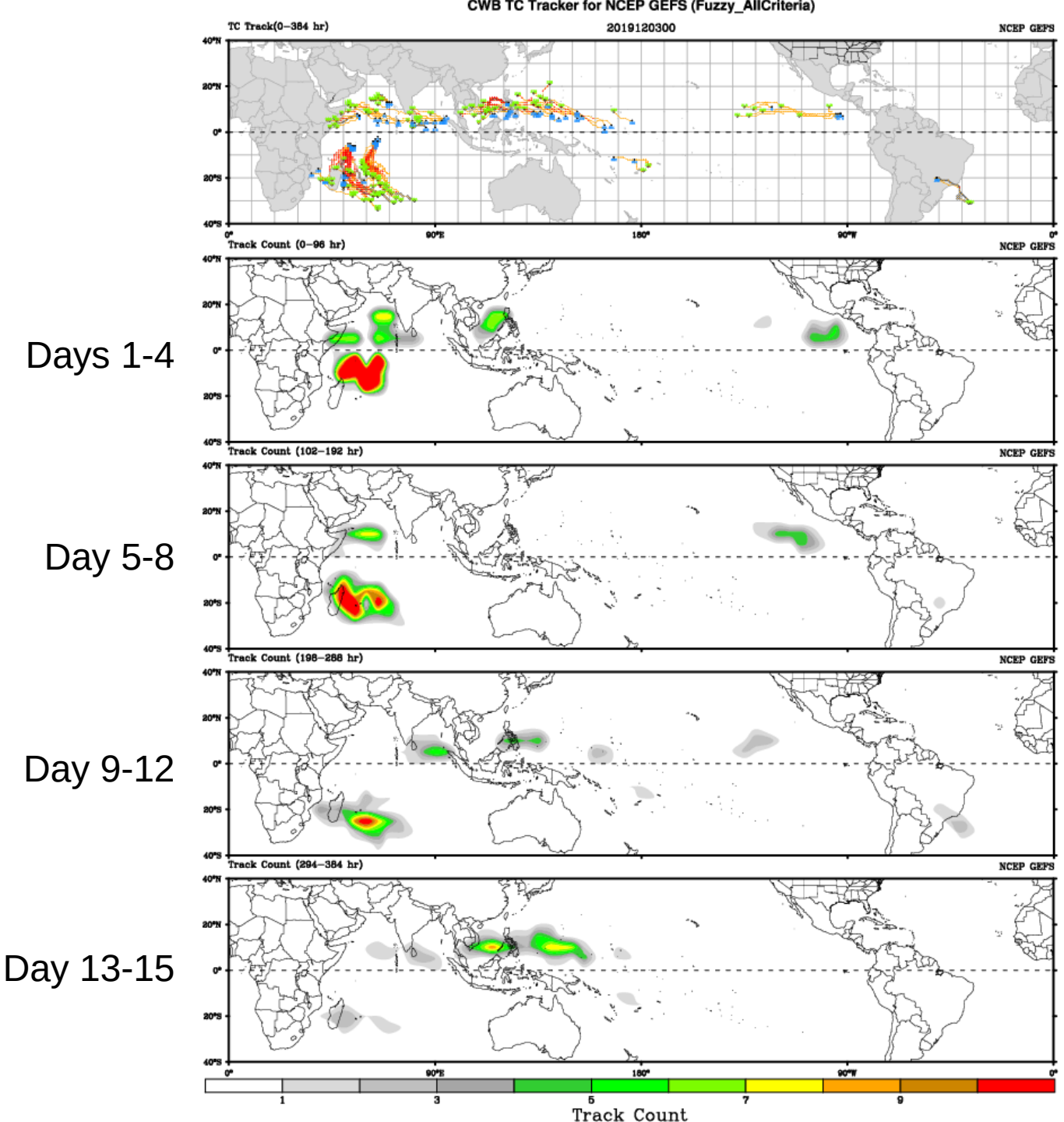
LOW — TC development unlikely within 24 hours

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

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

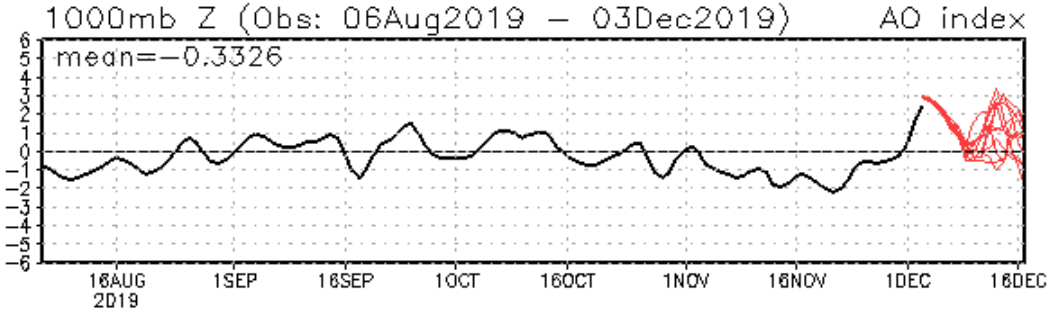
SUB TROPICAL — Monitoring for potential transition to TC. Invest color denotes tropical transition probability

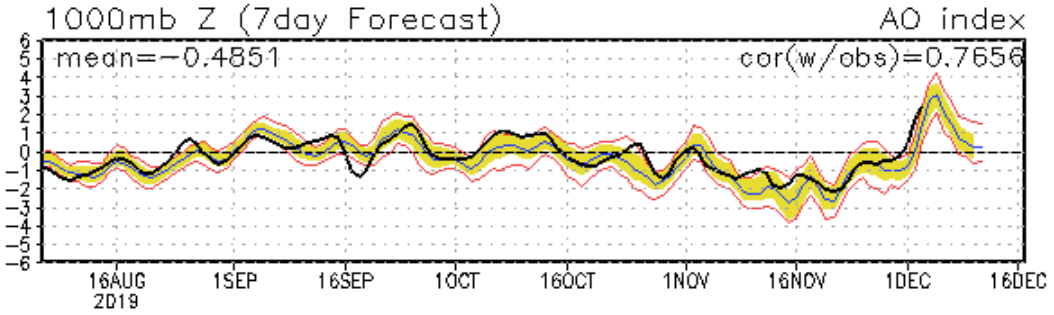
Tropical Cyclone (Reference Warning)

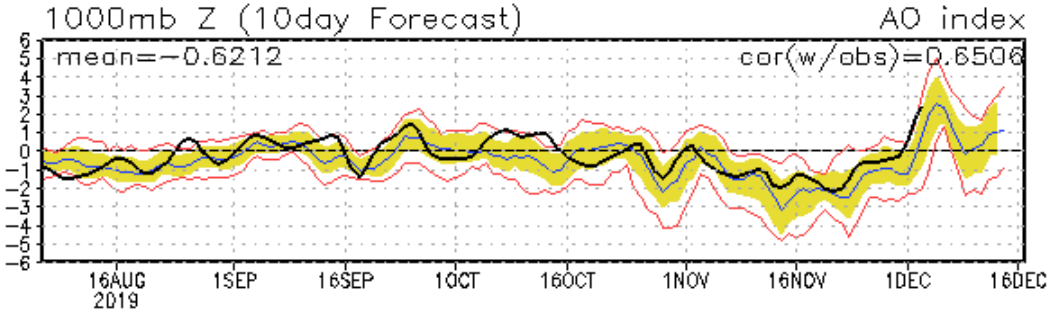

CWB TC Tracker for NCEP GEFS (Fuzzy_AllCriteria)
TC Track(0–384 hr)
2019120300
NCEP GEFS
Track Count (0–96 hr)
Track Count (102–192 hr)
Track Count (198–288 hr)
Track Count (294–384 hr)
Days 1-4
Day 5-8
Day 9-12
Day 13-15
1
3
5
7
9
Track Count

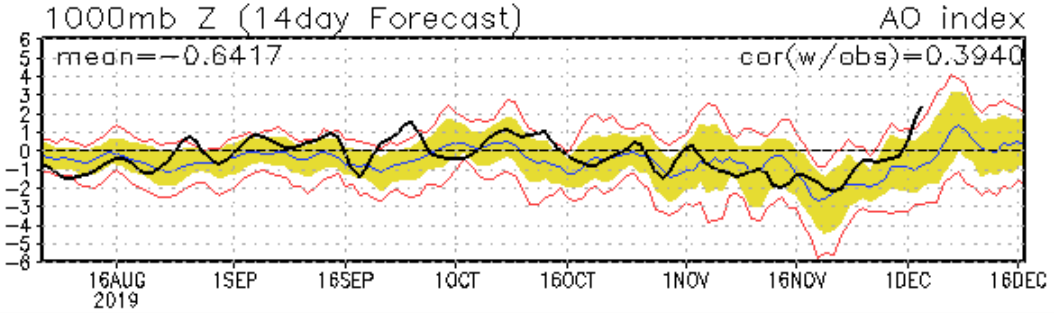
Connections to U.S. Impacts

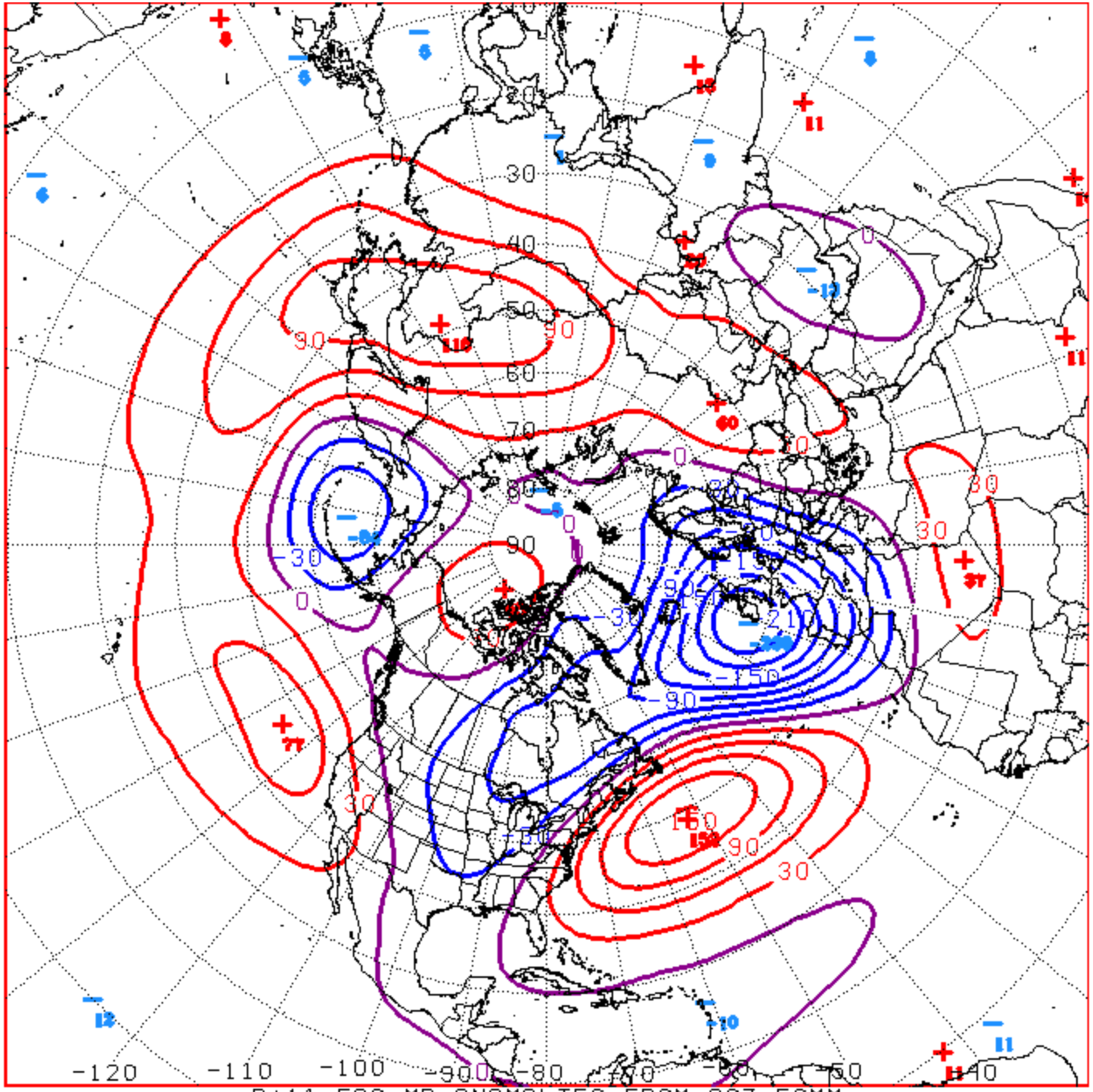
AO: Observed & ENSM forecasts







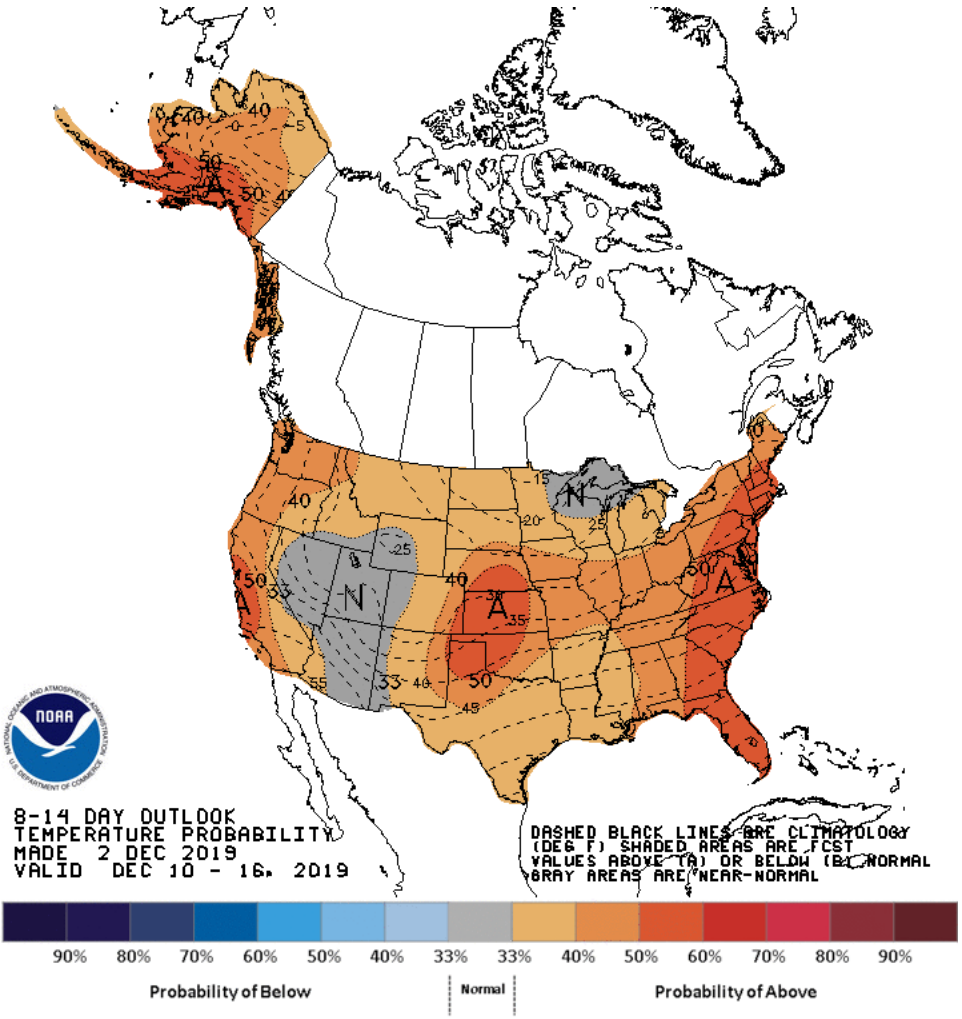




D+11 500 MB ANOMALIES FROM 00Z ECMM
CPC MAP MADE DEC 03 2019 1026 UTC CNTD DEC 14 2019

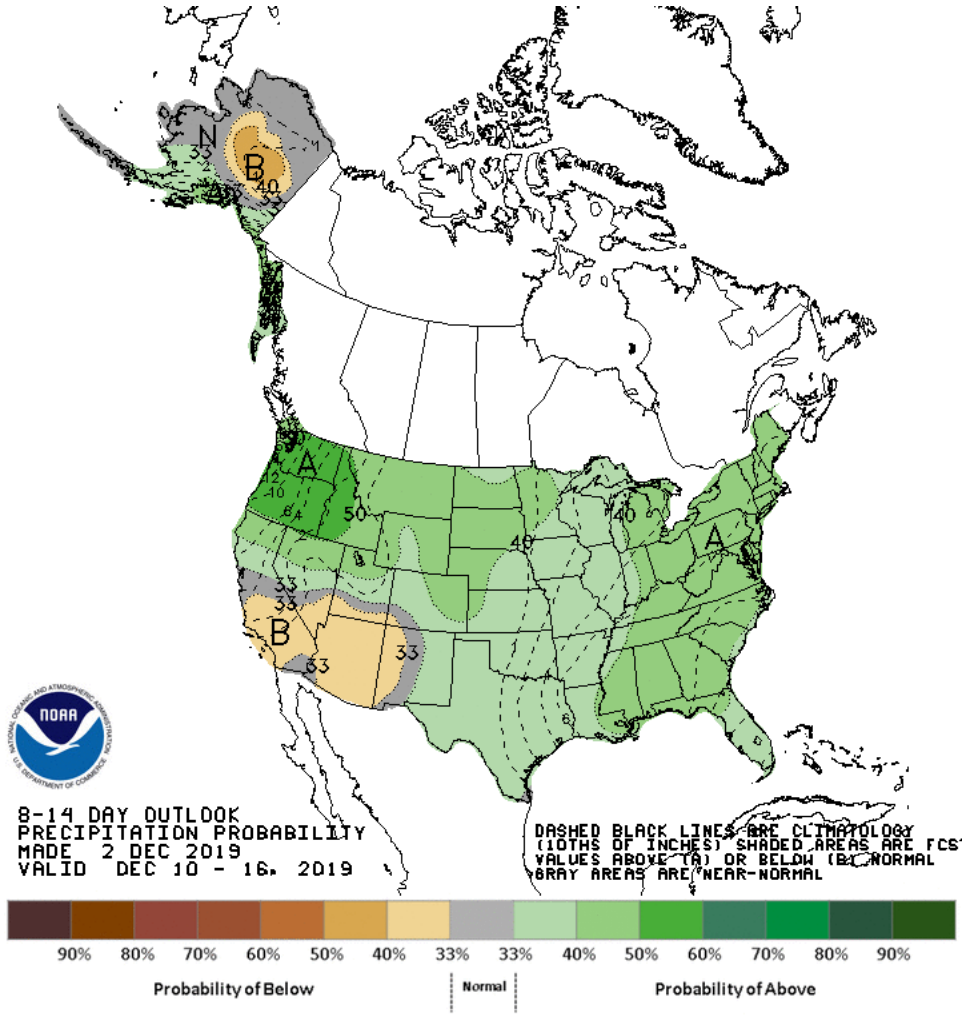
Week 2 – Temperature and Precipitation

Big changes likely today, as Central U.S. troughing appears more robust than yesterday's guidance.



Temperature: Below-normal temperatures favored across much of Central CONUS.

Precipitation: Wetter across northern tier and Pacific Northwest.



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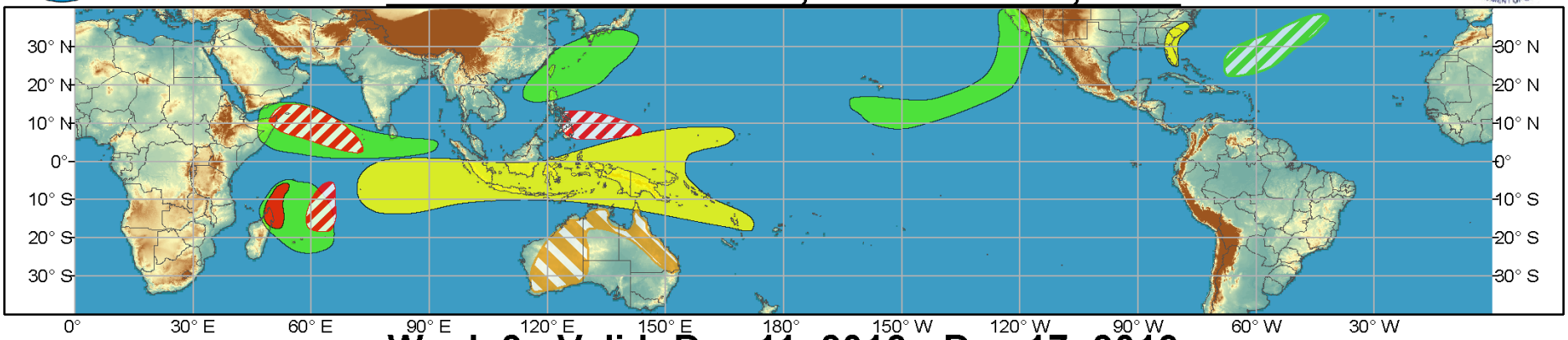

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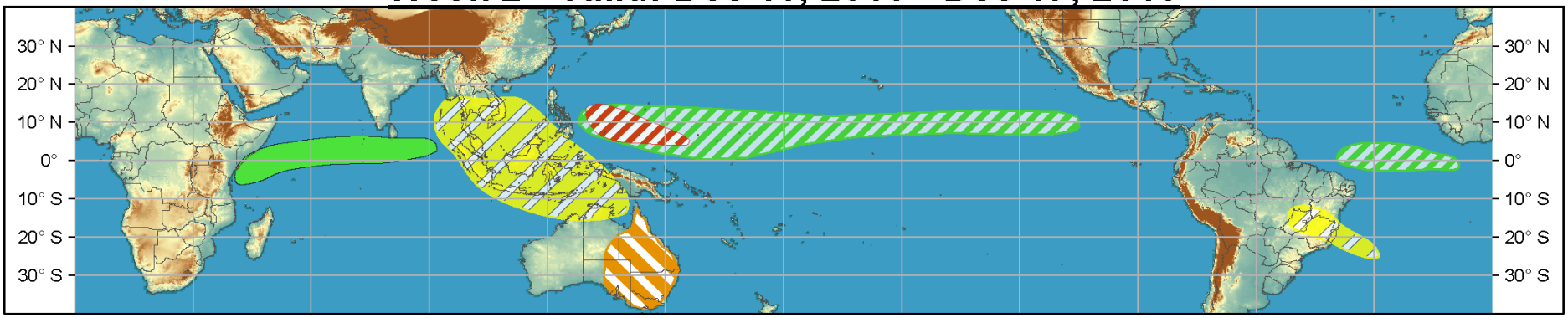

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NPS PRAESTANTIA PER SCIENTIAM