Global Tropics Hazards And Benefits Outlook
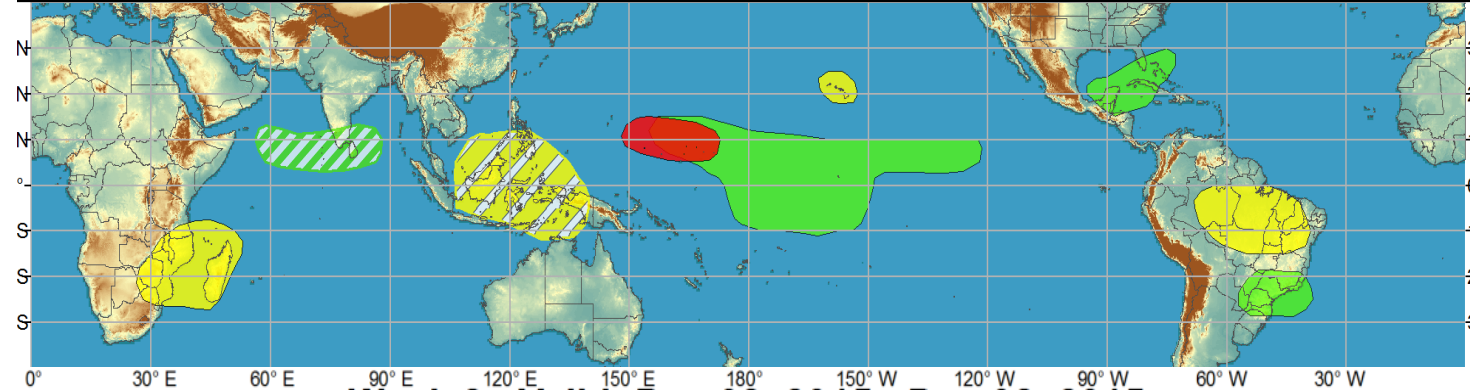## December 8, 2015
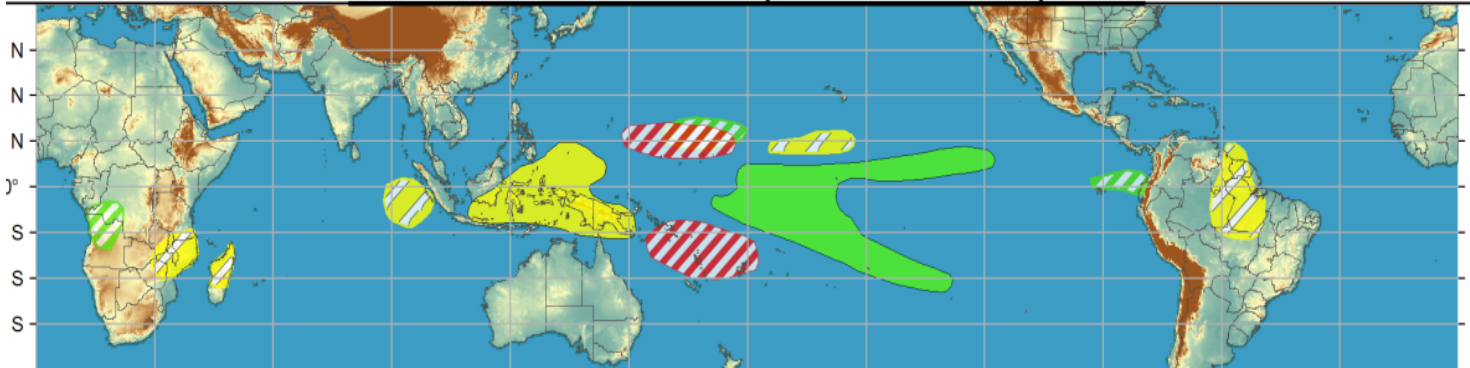
Matthew Rosencrans

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

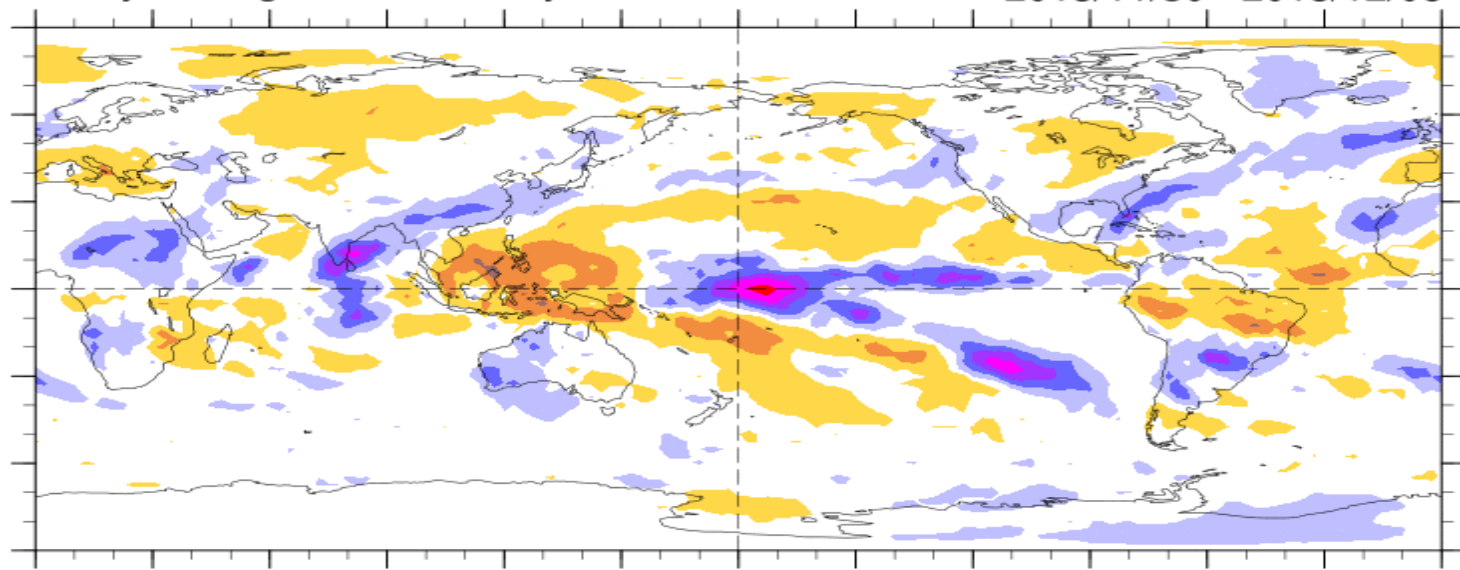Week 1 - Valid: Dec 02, 2015 - Dec 08, 2015

Week 2 - Valid: Dec 02, 2015 - Dec 08, 2015
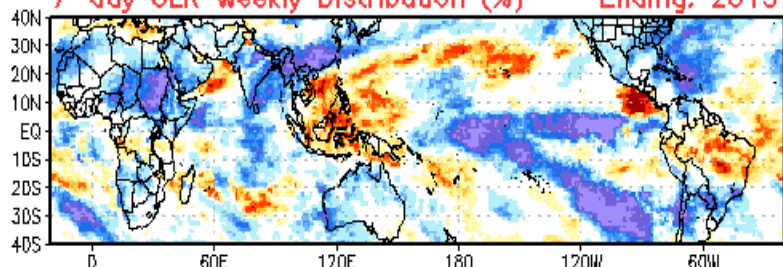
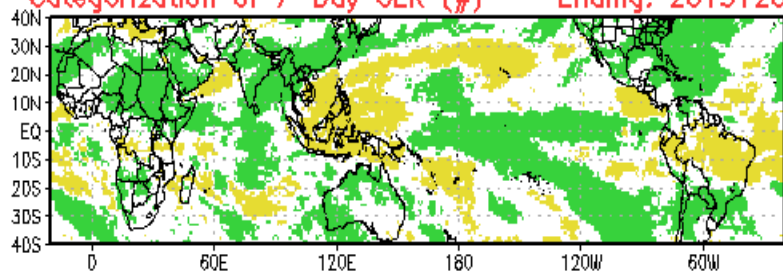7-Day Average OLR Anomaly   2015/11/30 - 2015/12/06

Cool shading
More clouds/rain
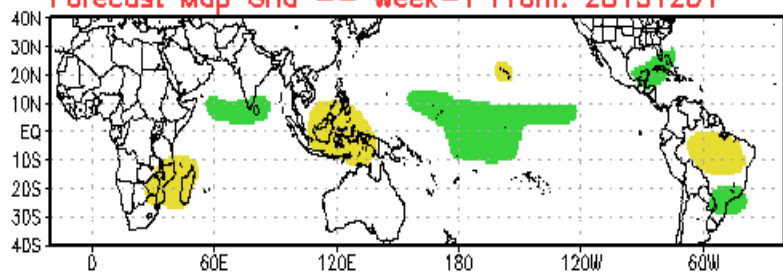
Warm shading
Less clouds/rain

7-day OLR Weekly Distribution (%) -- Ending: 20151208
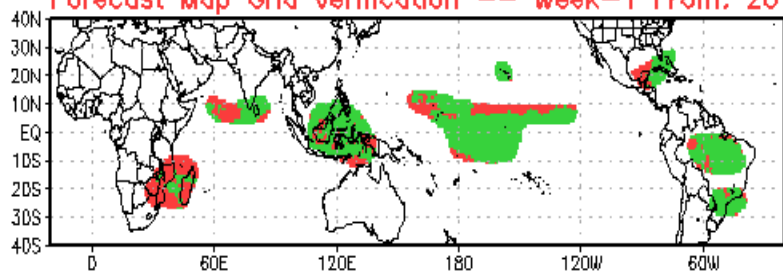
Categorization of 7-Day OLR (#) -- Ending: 20151208

Forecast Map Grid -- Week-1 From: 20151201

Forecast Map Grid -- Week-2 From: 20151124

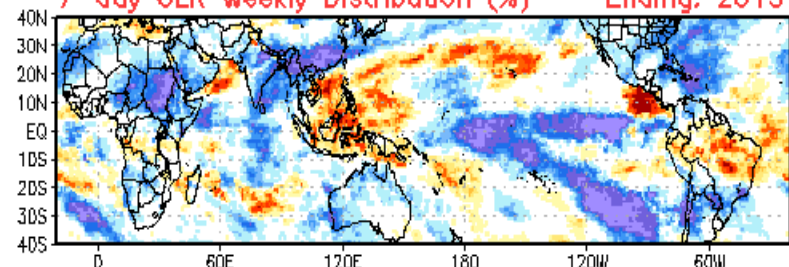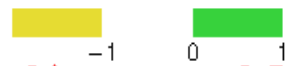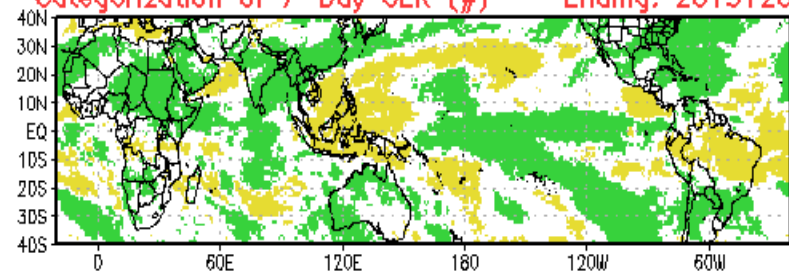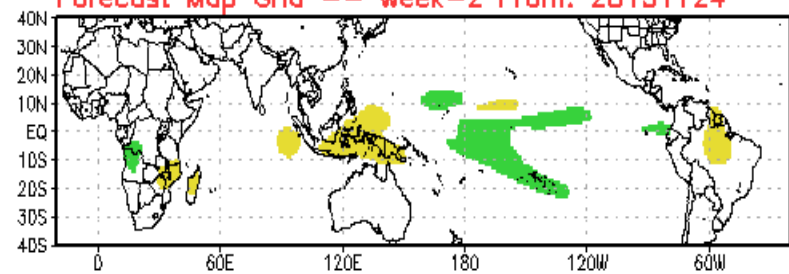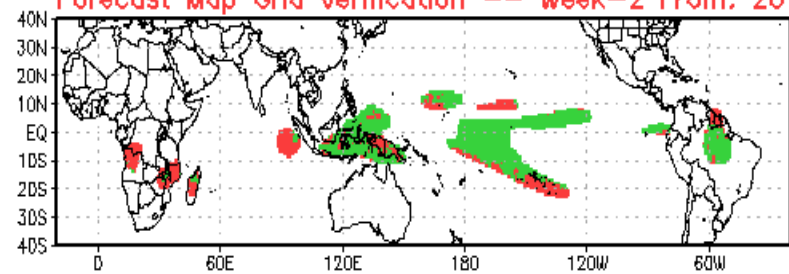Forecast Map Grid Verification -- Week-1 From: 20151201

Forecast Map Grid Verification -- Week-2 From: 20151124

Hit: Green ,Miss: Red
Heidke Skill Score: 55.3702

Hit: Green ,Miss: Red
Heidke Skill Score: 50.1961

Synopsis of Climate Modes

ENSO:
• Current: **El Niño Advisory**
• Nino 3.4 – 2.9C   - Slight tick down.
• Outlook: There is an approximately 95% chance that El Niño will continue through Northern Hemisphere winter 2015-16, gradually weakening through spring 2016.
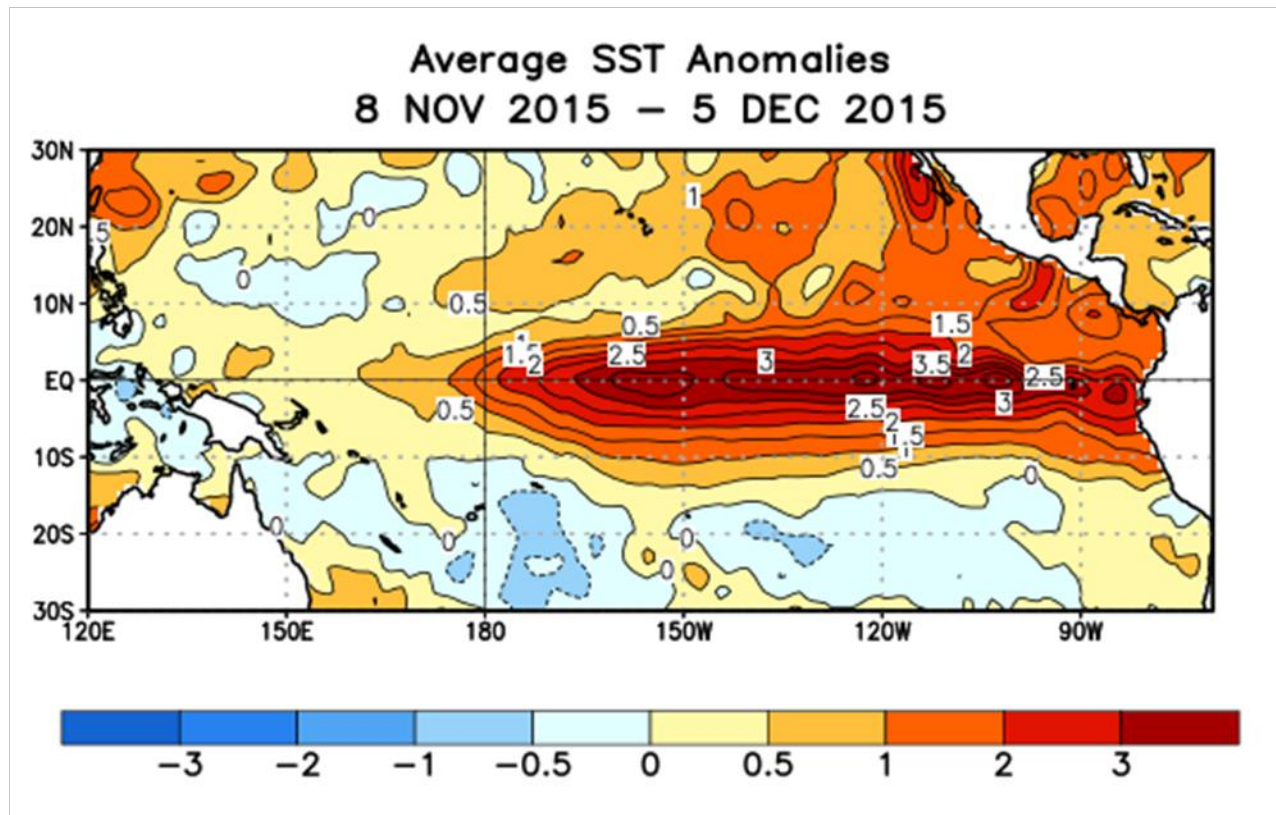
MJO and other subseasonal tropical variability:
• Some MJO indices are indicating a signal over the eastern Indian Ocean, but the signal is not strong nor fully consistent with all variables (lower-level winds and upper-level winds).

• Most dynamical model MJO index forecasts depict some eastward movement and a weakening signal through Week-2, although some maintain a strong signal through at least Week-1.

Extratropics:
• The extended range temperature and precipitation forecasts for the U.S. are not likely to be impacted by the MJO, but more likely impacted by the ongoing El Nino and tropical cyclone activity.

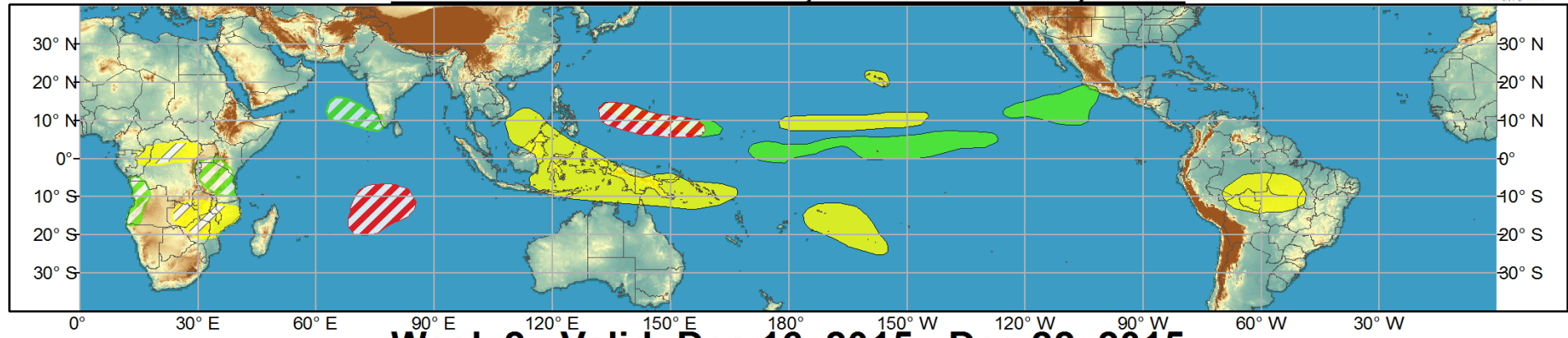# SST Departures (ºC) in the Tropical Pacific During the Last Four Weeks

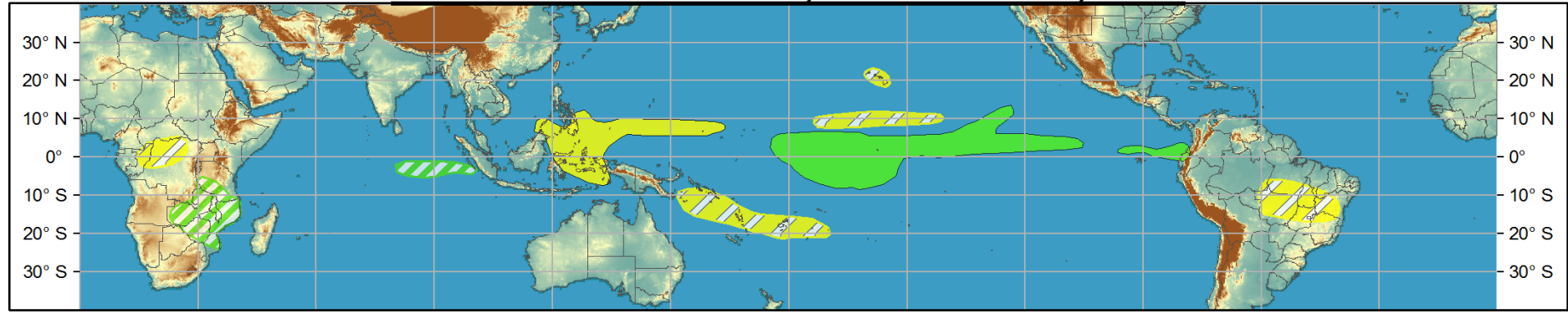During the last four weeks, tropical SSTs were above average across most of the Pacific.

Average SST Anomalies
8 NOV 2015 – 5 DEC 2015

Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Dec 09, 2015 - Dec 15, 2015

Week 2 - Valid: Dec 16, 2015 - Dec 22, 2015

Produced: 12/08/2015

Forecaster: Rosencrans

Confidence

	High	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.
Below-normal temperatures			7-day mean temperatures in the lower third of the historical range.

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.
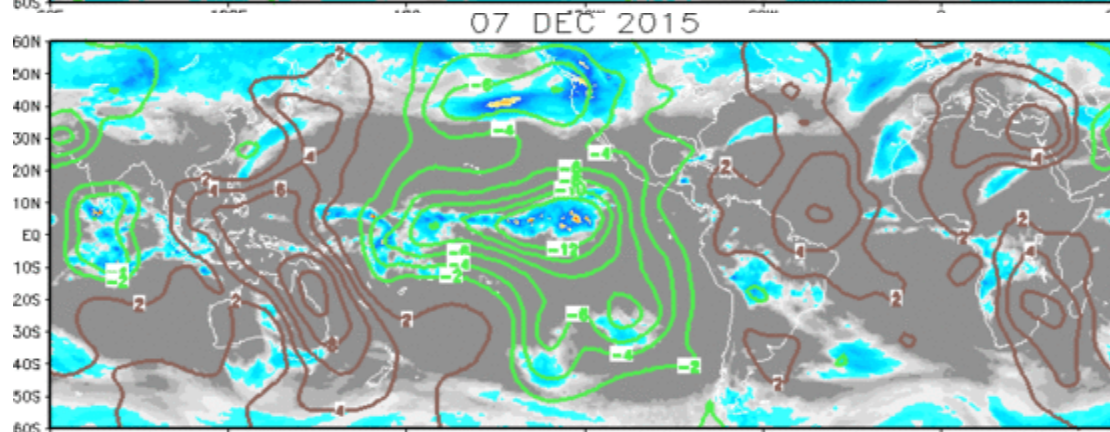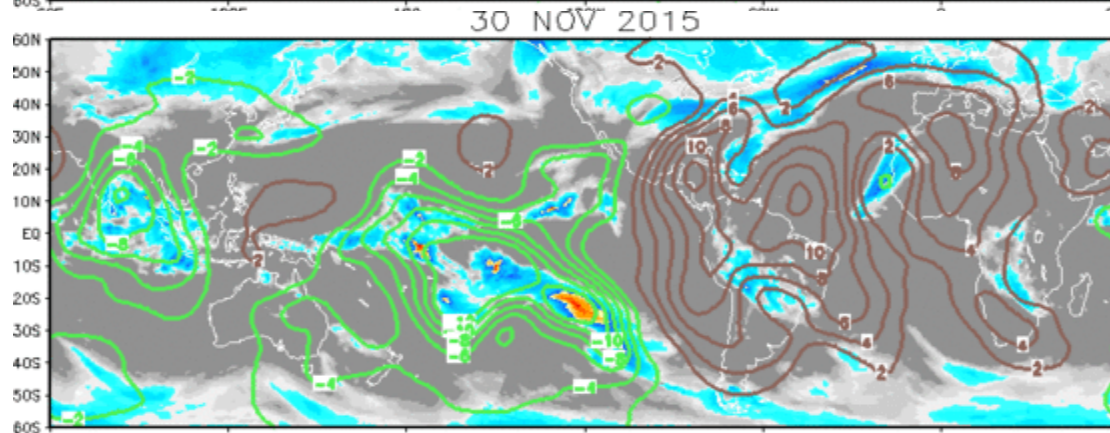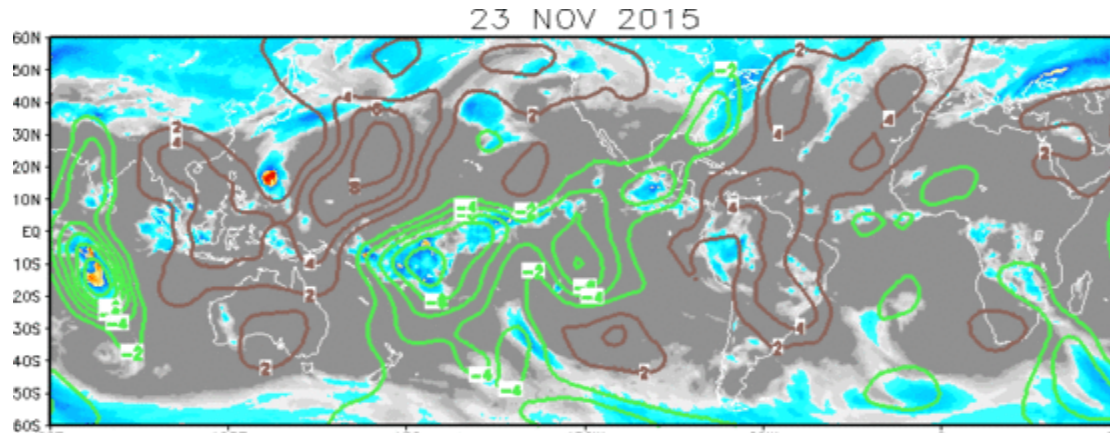
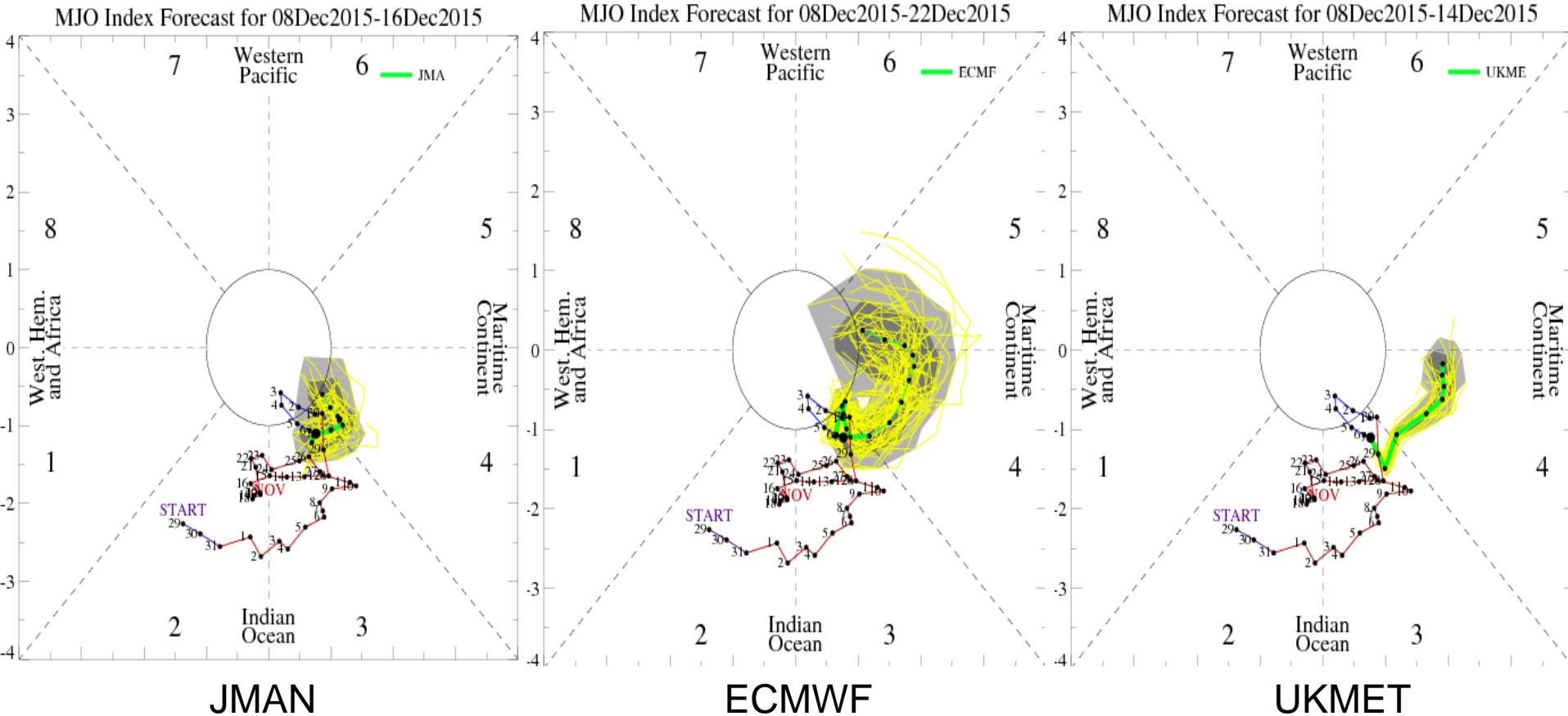# IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence   Brown: Enhanced Convergence

Base state emerged again.

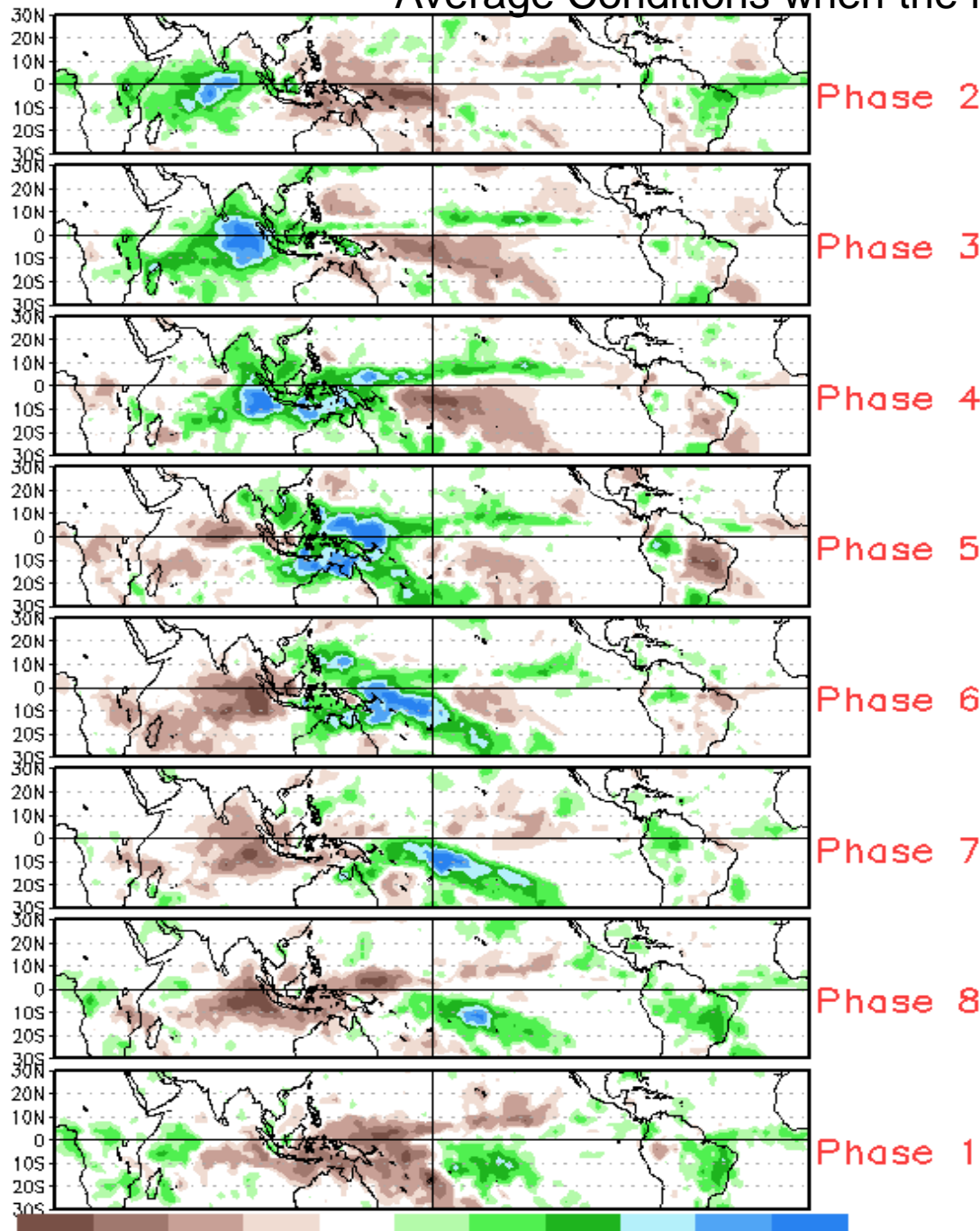Other modes constructively interfering now.

MJO Observation/Forecast

Wheeler-Hendon based analyses of model forecasts indicate an
signal over the Indian Ocean.
Most models depict weakening, although 2 depict a continuing
signal to over the Maritime Continent.

Average Conditions when the MJO is present

Phase 2

Phase 3

Phase 4

Phase 5
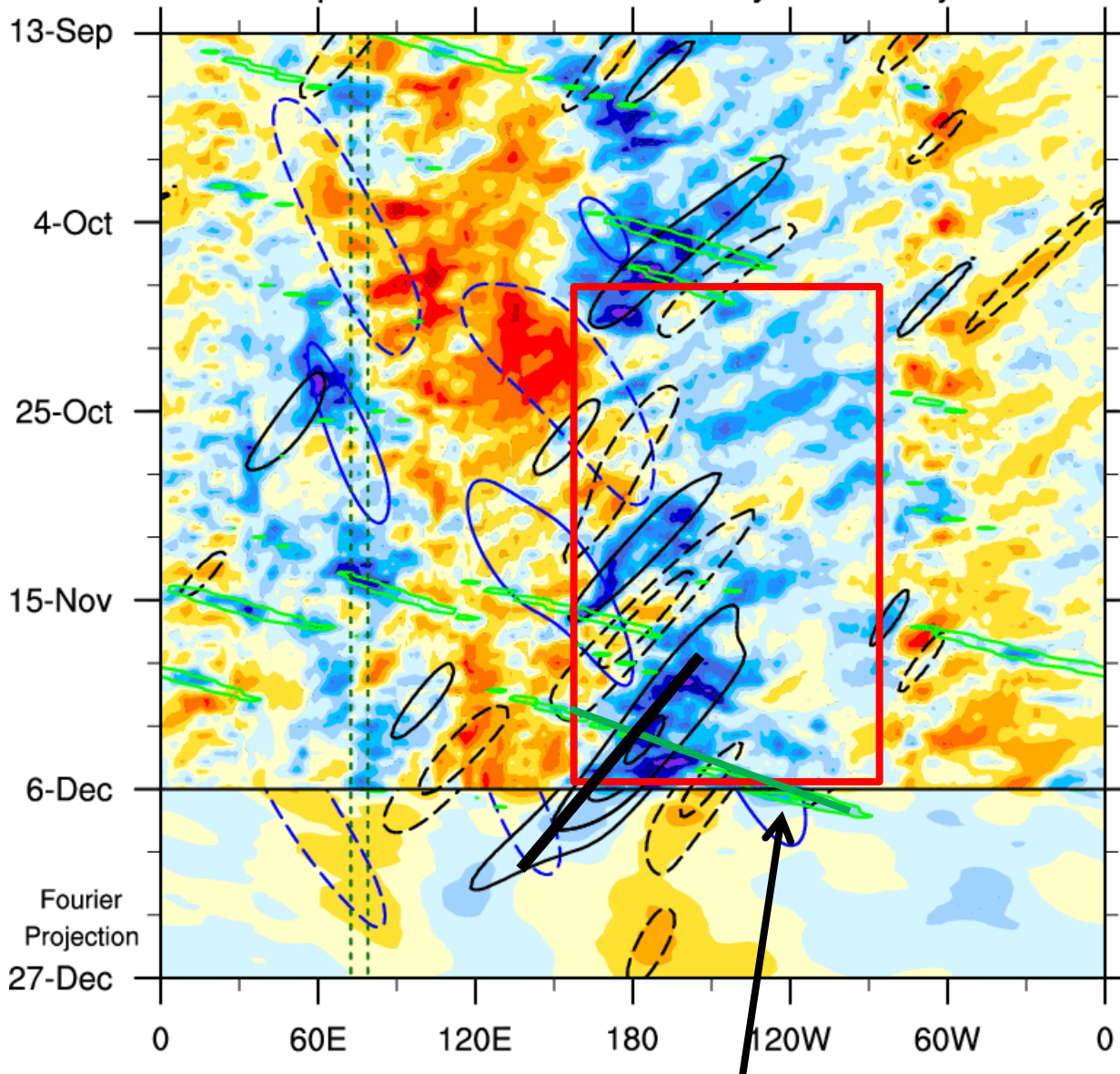
Phase 6

Phase 7

Phase 8

Phase 1

CAVEAT: These panels are representative of robust MJO events, with all phases of ENSO.

Phase 2/3 are difficult to maintain given a strong El Nino.

Observations not globally consistent with Phase 3 outside of the Indian Ocean.

NOAA CDR HIRS OLR anomalies: 7.5°S - 7.5°N

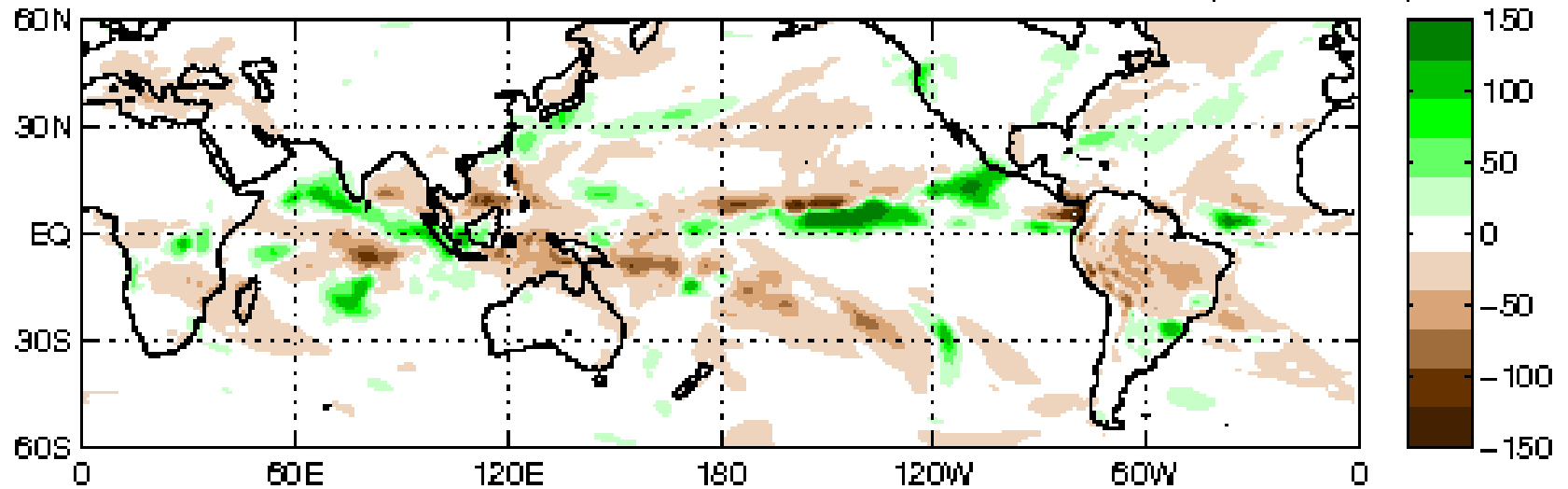13-Sep-2015 to 6-Dec-2015 + 21-day Fourier Projection

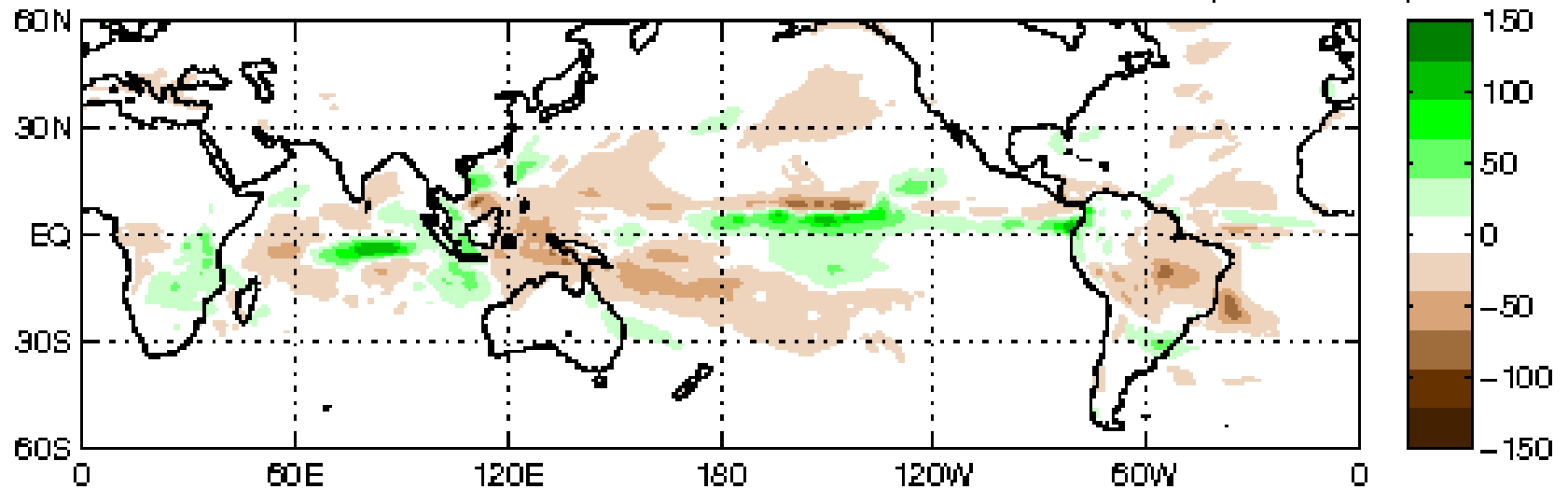Low frequency likely to dominate pattern.

Rossby Wave and Kelvin wave recently aligned with El Nino. Not going to remain so, but ENSO likely the strongest signal.

Kelvin wave over East Pacific

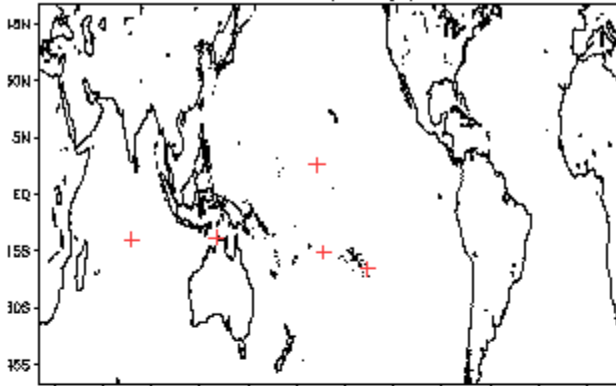CFS: Anom. PREC Week: 1: 09-Dec-2015 to 15-Dec-2015 (mm/week)

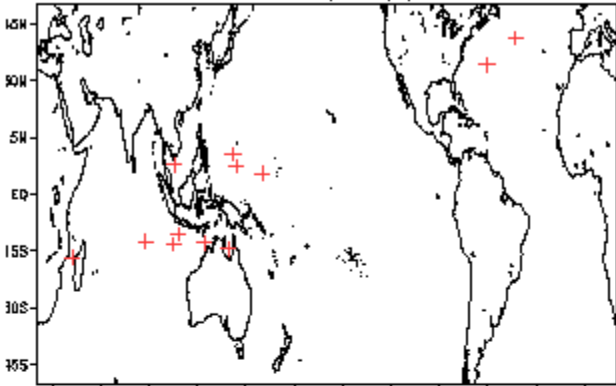CFS: Anom. PREC Week: 2: 16-Dec-2015 to 22-Dec-2015 (mm/week)

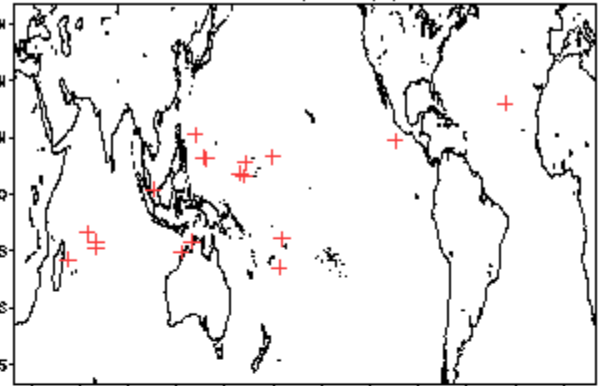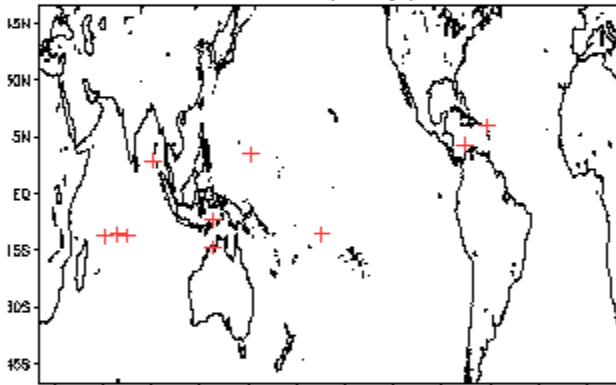# December Tropical Storm Formation by MJO phase

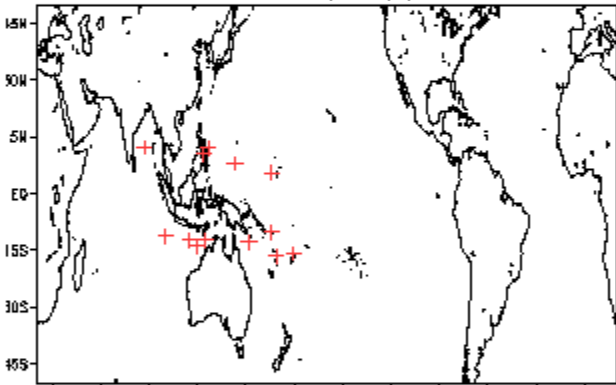Phase 1 (46 days) 7 storms
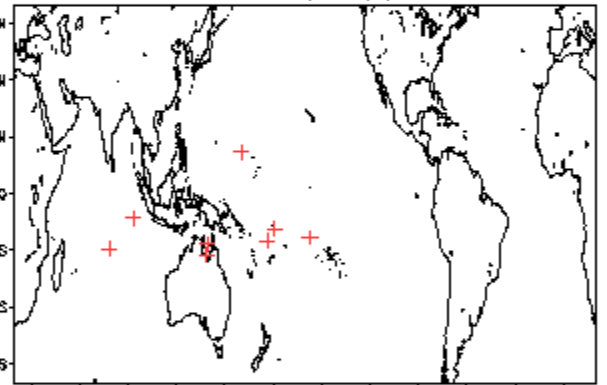Phase 4 (72 days) 13 storms
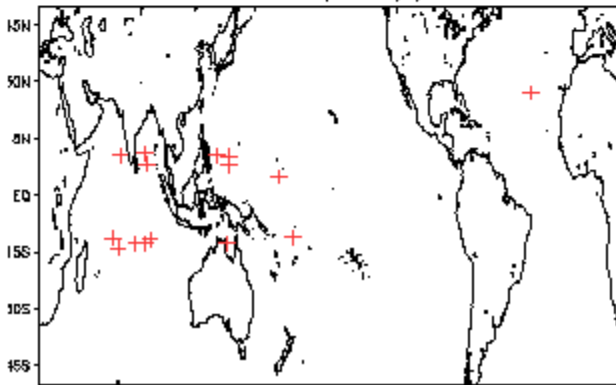Phase 7 (103 days) 19 storms
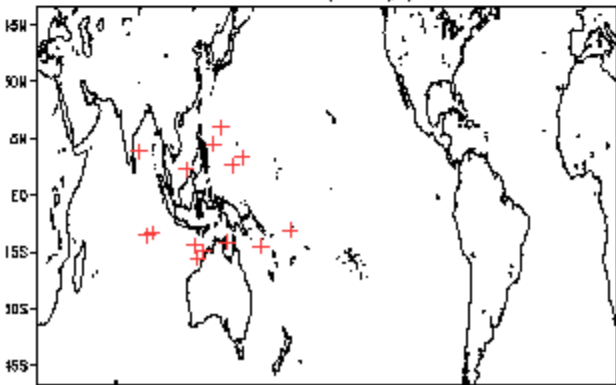Phase 2 (67 days) 11 storms
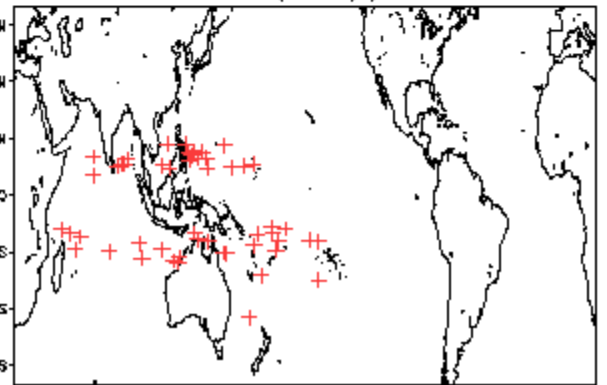Phase 5 (73 days) 14 storms
Phase 8 (76 days) 9 storms
Phase 3 (101 days) 16 storms
Phase 6 (69 days) 15 storms
Null (416 days) 52 storms

Five-Day Graphical Tropical Weather Outlook
National Hurricane Center Miami, Florida

www.hurricanes.gov

No Disturbances

Graphical Tropical Weather Outlooks

No new tropical cyclones are expected during the next five days.

7:00 pm EST
Mon Nov 30 2015

Tropical Cyclone Formation Potential for the Five-Day Period Ending at 7:00 pm EST Sat Dec 5 2015
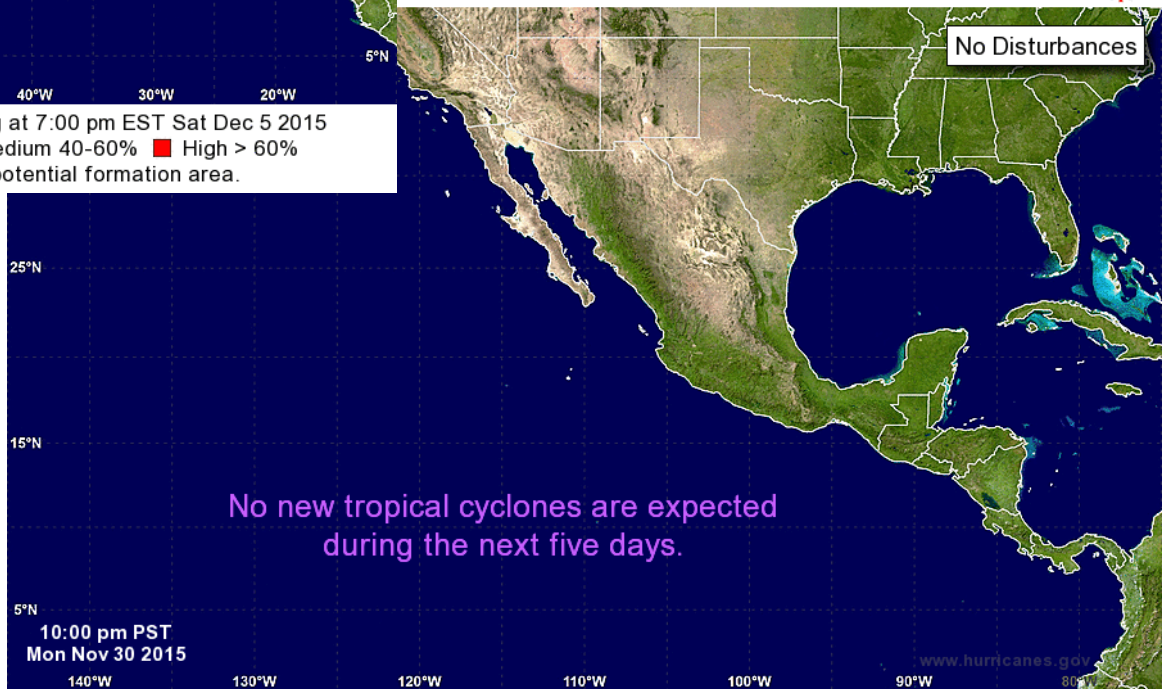Chance of Cyclone Formation in Five Days: ☐ Low < 40% ☐ Medium 40-60% ☐ High > 60%
X indicates current disturbance location; shading indicates potential formation area.

Graphical Tropical Weather Outlook
ional Hurricane Center Miami, Florida

No Disturbances

No new tropical cyclones are expected
during the next five days.

10:00 pm PST
Mon Nov 30 2015

www.hurricanes.gov

Tropical Cyclone Formation Potential for the Five-Day Period Ending at 10:00 pm PST Sat Dec 5 2015
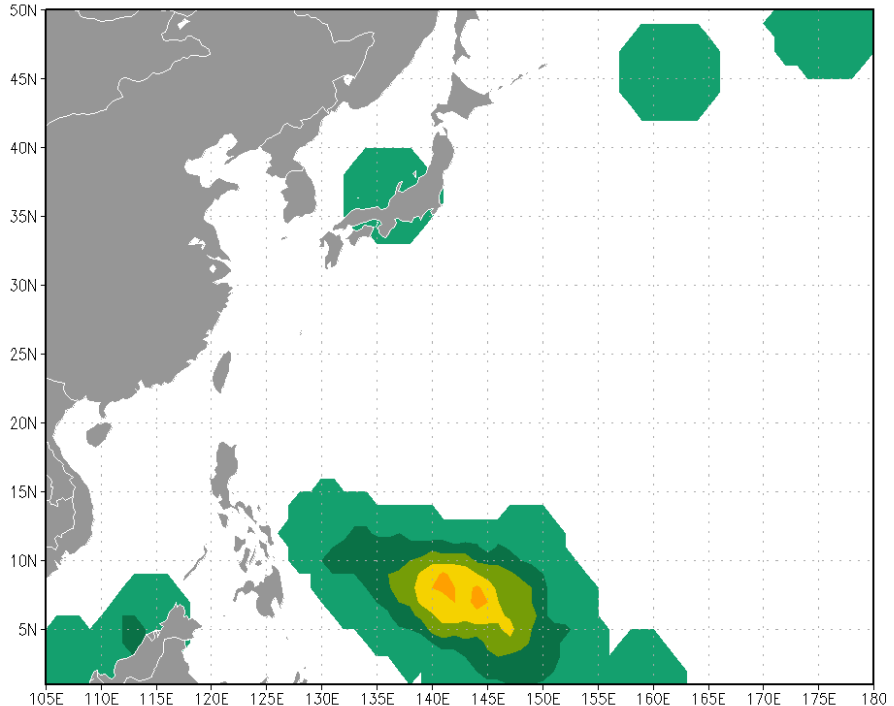Chance of Cyclone Formation in Five Days: ☐ Low < 40% ☐ Medium 40-60% ☐ High > 60%
X indicates current disturbance location; shading indicates potential formation area.

Ensemble-based Probability (%) of TC genesis
using these global ensembles: ECMWF
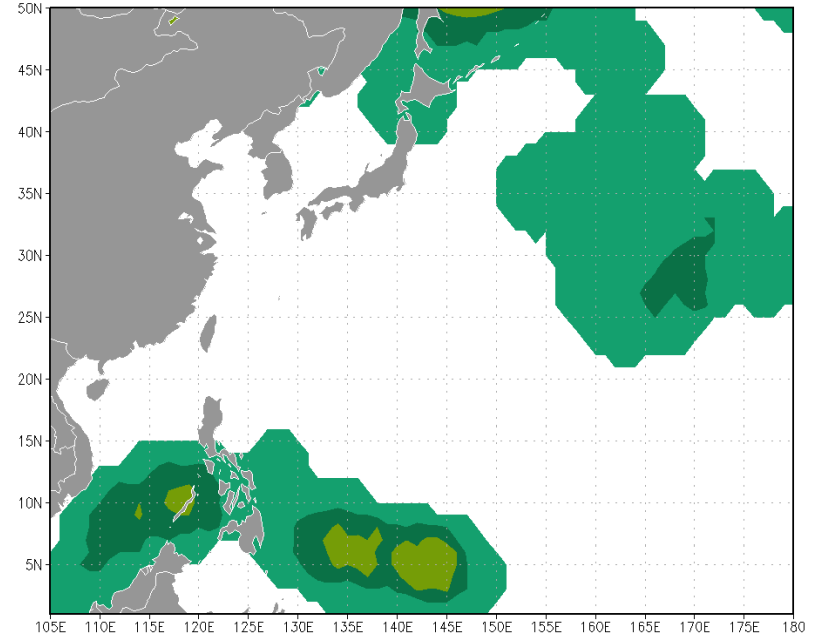For forecasts during the 00-120h period from initial time = 2015120800

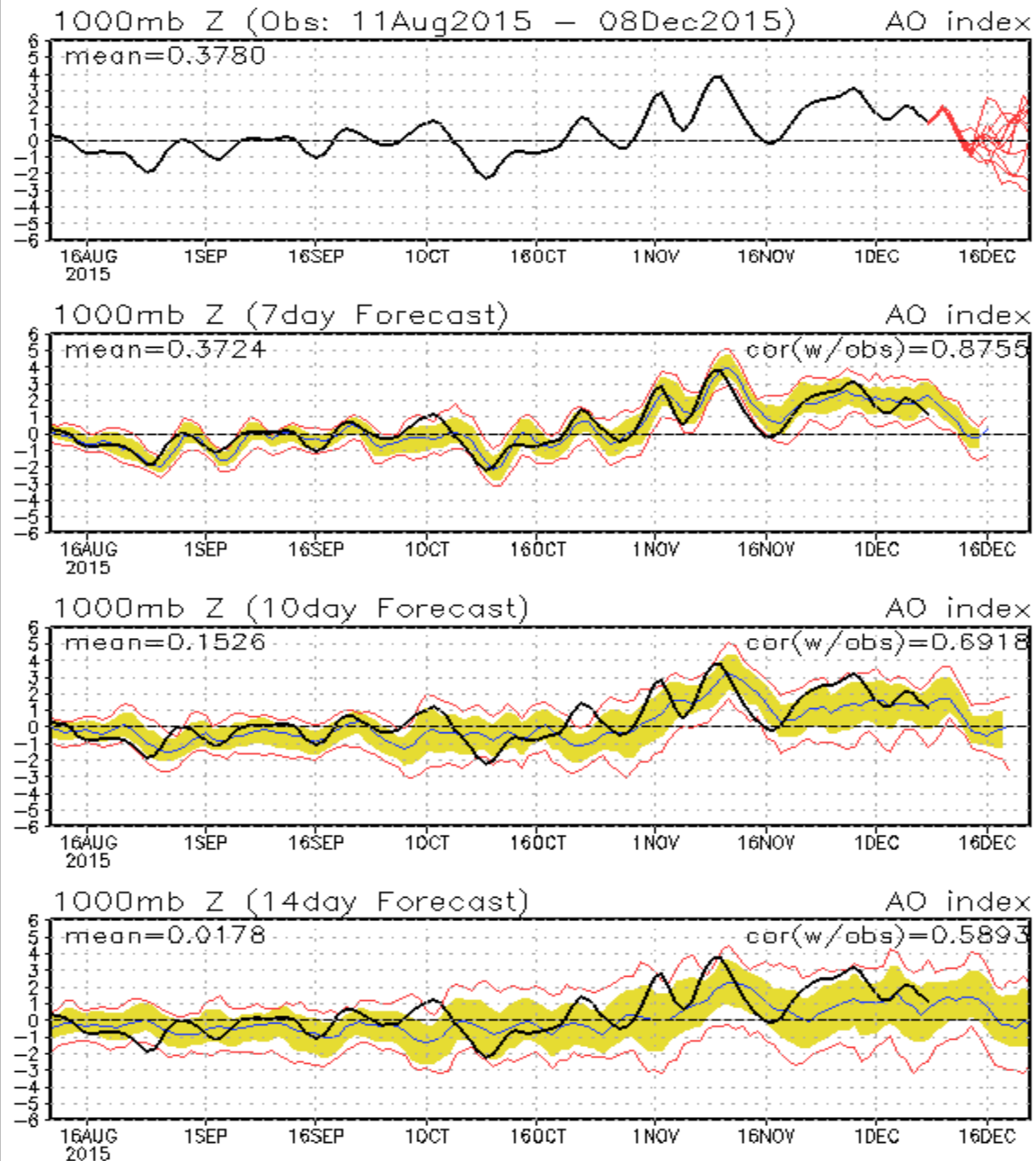Ensemble-based Probability (%) of TC genesis
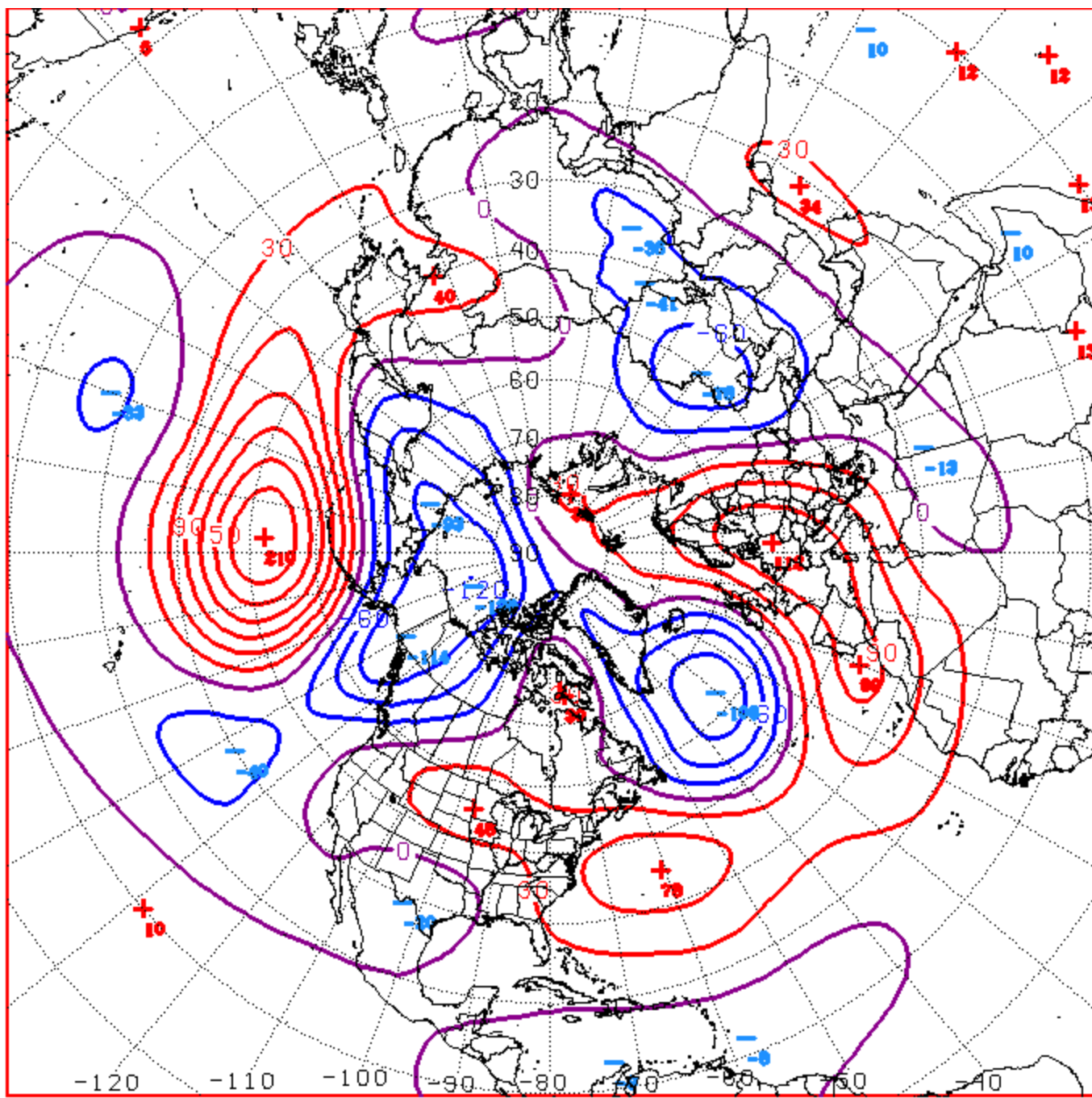using these global ensembles: ECMWF
For forecasts during the 120-240h period from initial time = 2015120800

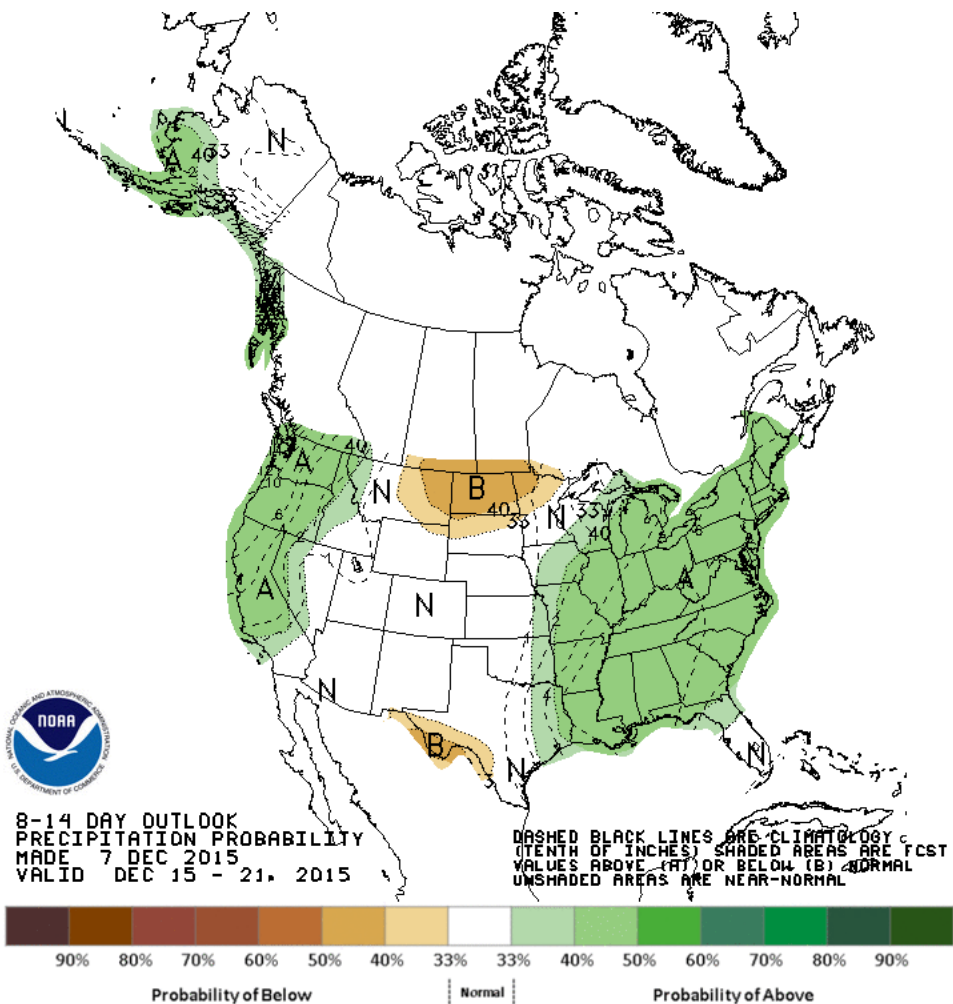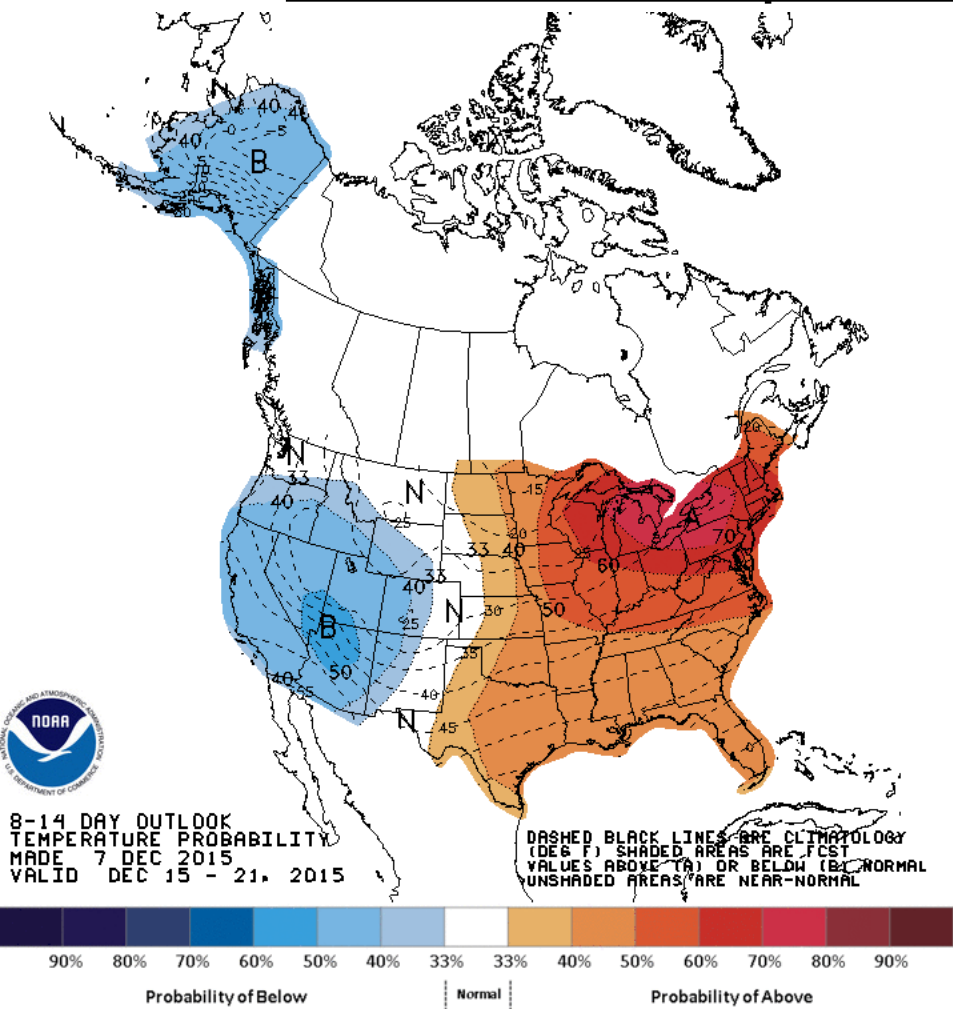# Connections to U.S. Impacts

AO: Observed & ENSM forecasts

D+11 500 MB ANOMALIES FROM 00Z ECMM
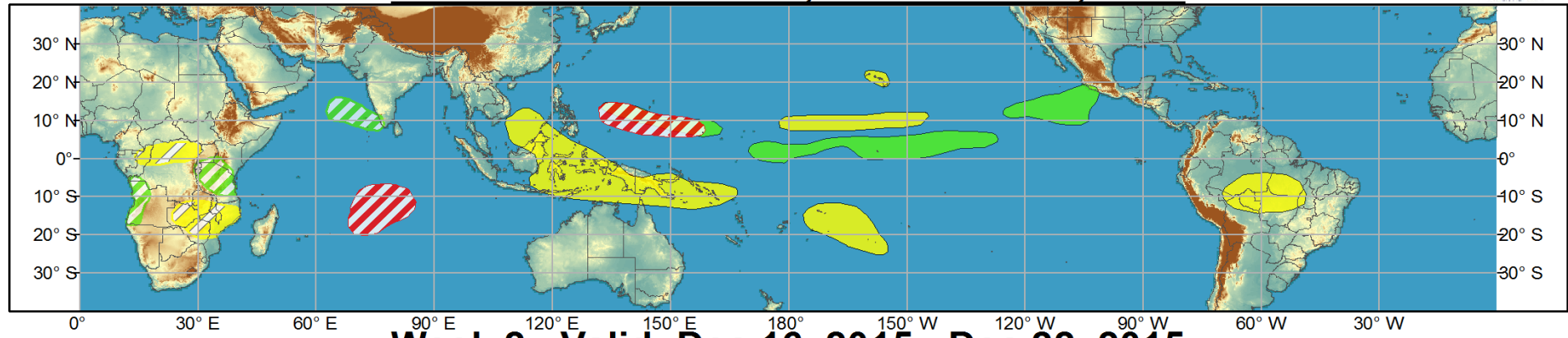CPC MAP MADE DEC 08 2015 1007 UTC CNTD DEC 19 2015

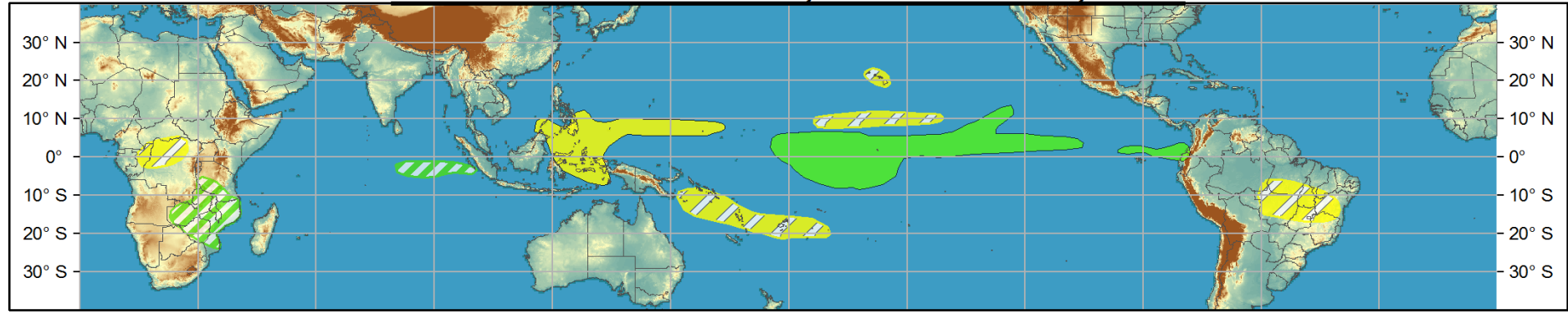# Week 2 – Temperature and Precipitation

Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Dec 09, 2015 - Dec 15, 2015

Week 2 - Valid: Dec 16, 2015 - Dec 22, 2015

Produced: 12/08/2015
Forecaster: Rosencrans

Confidence
	High	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.
Below-normal temperatures			7-day mean temperatures in the lower third of the historical range.

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.