Global Tropics Hazards And Benefits Outlook

1/8/2019

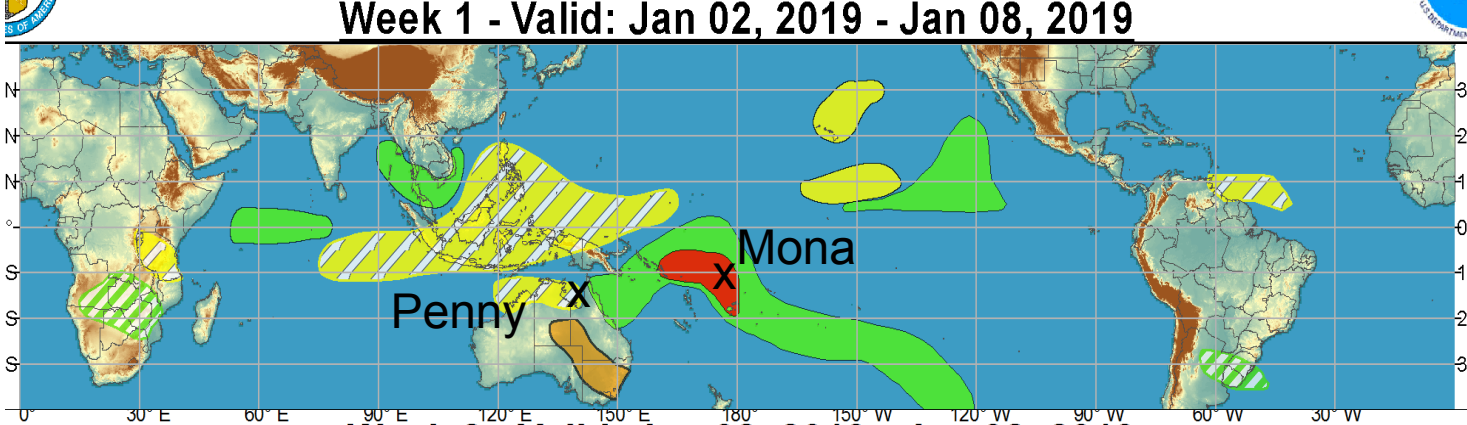
Anthony Artusa

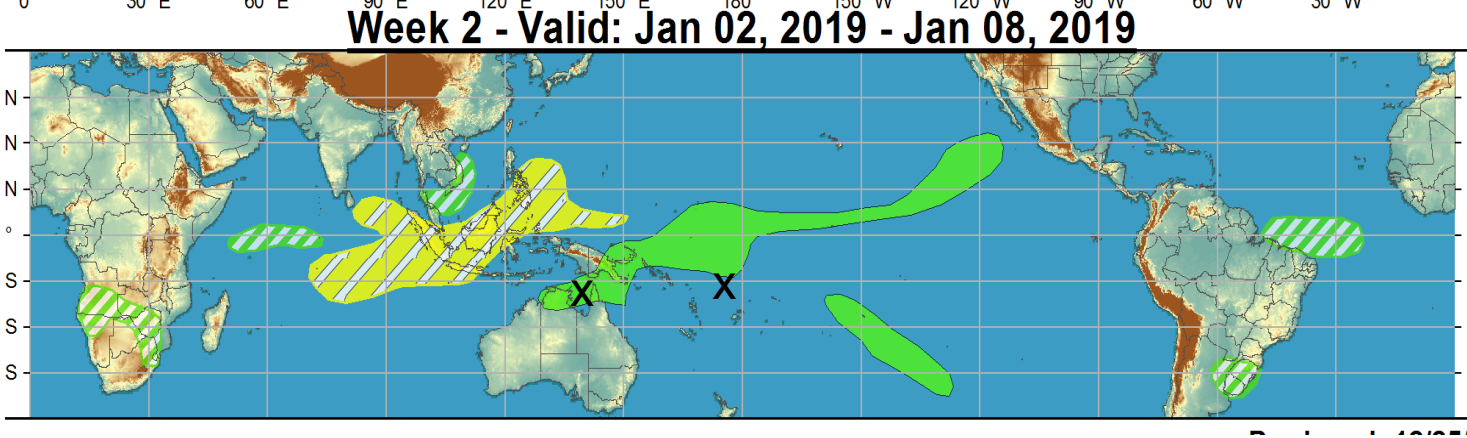
Outline

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

Outlook Review

- **Penny (12/31)**
- **Mona (1/2)**
- **Australian Heat**





Cool shading
More clouds/rain

Warm shading
Less clouds/rain

Synopsis of Climate Modes

ENSO: (13 Dec, 2018 Update)

- ENSO Alert System Status: El Niño Watch

- El Nino is expected to form and continue through Northern Hemisphere winter 2018-19 (~90% chance) and through spring (~60% chance).

MJO and other subseasonal tropical variability:

• The MJO remained of moderate strength, and propagated to Phase 8.

• Dynamical models indicate a weakening of the signal in Week-1, with limited eastward propagation in Phases 8 & 1. For Week-2, a subseasonal signal may re-emerge anywhere from Indian Ocean (ECMWF) to western Pacific (GEFS).

Extratropics:

• The large uncertainty in Week-2 MJO forecasts makes it extremely difficult to discern what, if any, MJO impacts may be felt in the U.S.

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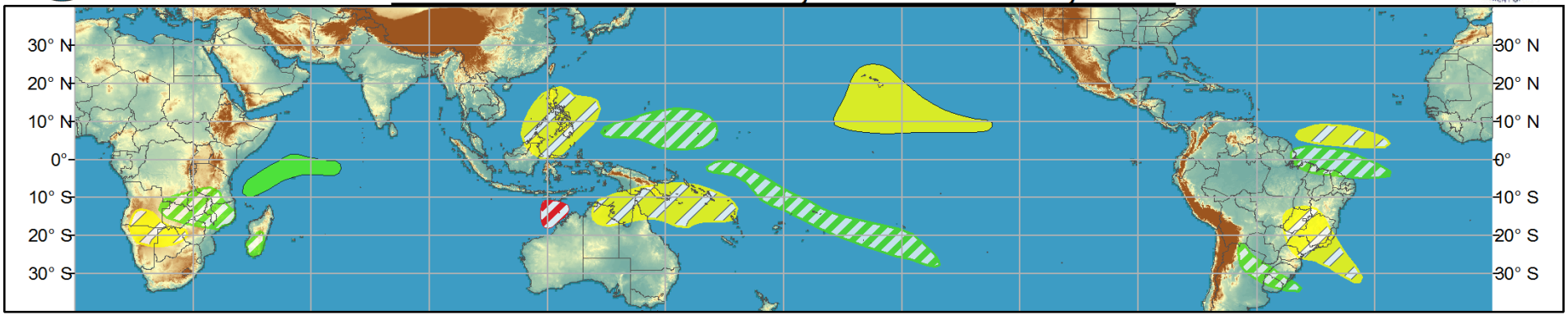
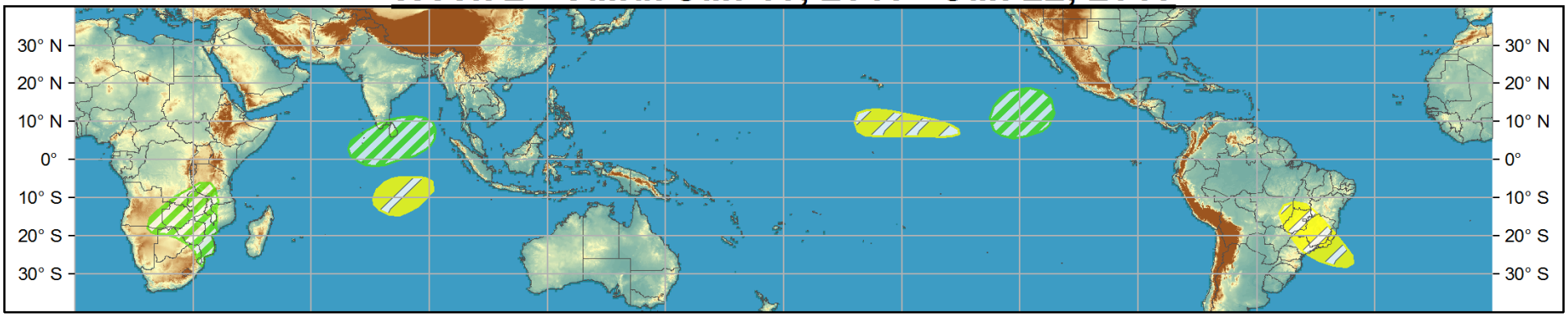
Week 1 - Valid: Jan 09, 2019 - Jan 15, 2019



Week 2 - Valid: Jan 16, 2019 - Jan 22, 2019



Produced: 01/08/2019

Forecaster: Artusa

	Confidence: High	Confidence: Moderate	
Tropical Cyclone Formation			Development of a tropical cyclone (tropical depression - TD, or greater strength).
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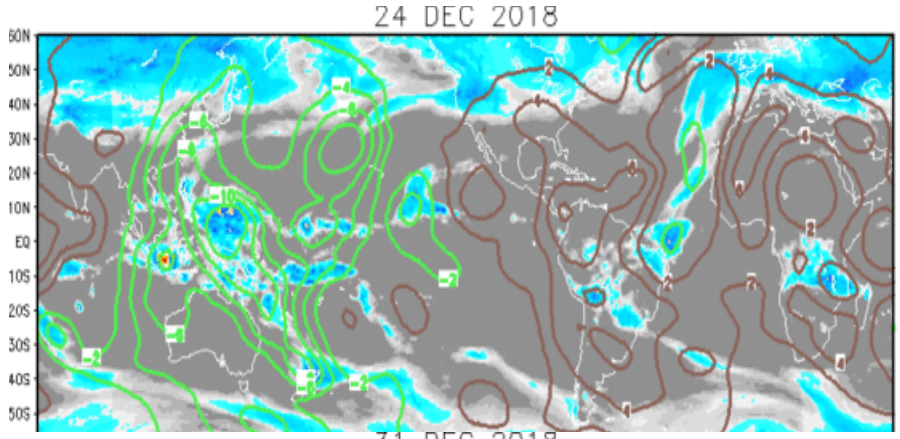
NPS PRAESTANTIA PER SCIENTIAM

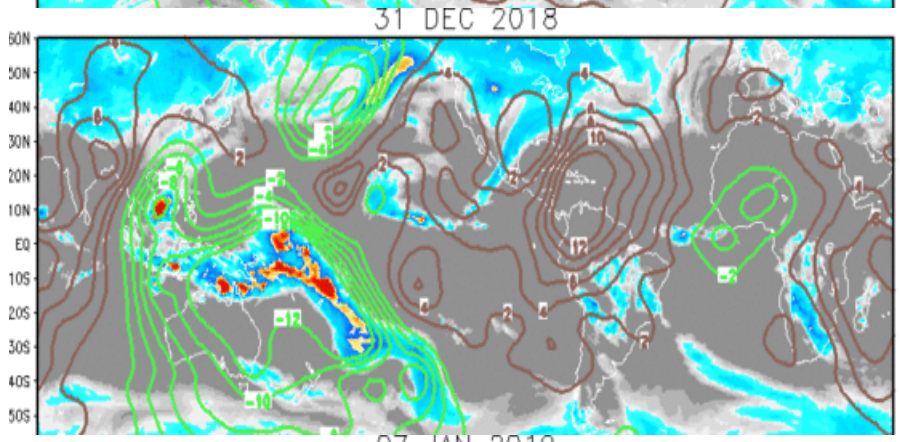
IR Satellite & 200-hpa Velocity Potential Anomalies

Green: Enhanced Divergence Brown: Enhanced Convergence

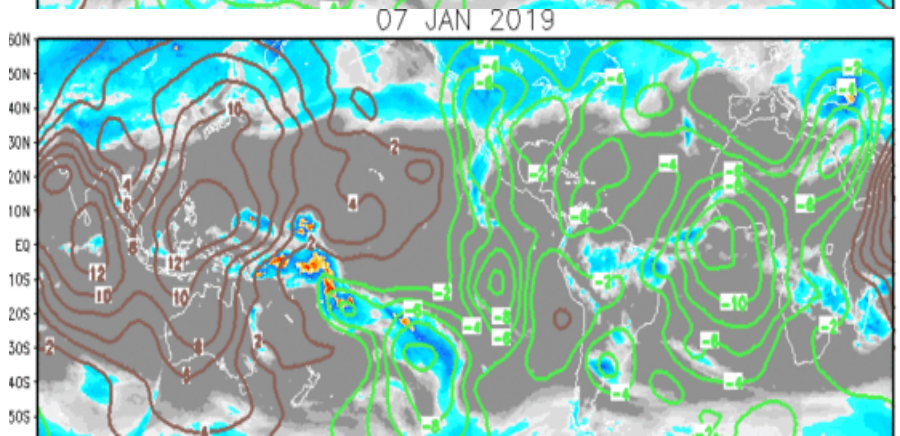
Enhanced Divergence mostly over Eastern Hemisphere; Enhanced Convergence mostly over Western Hemisphere



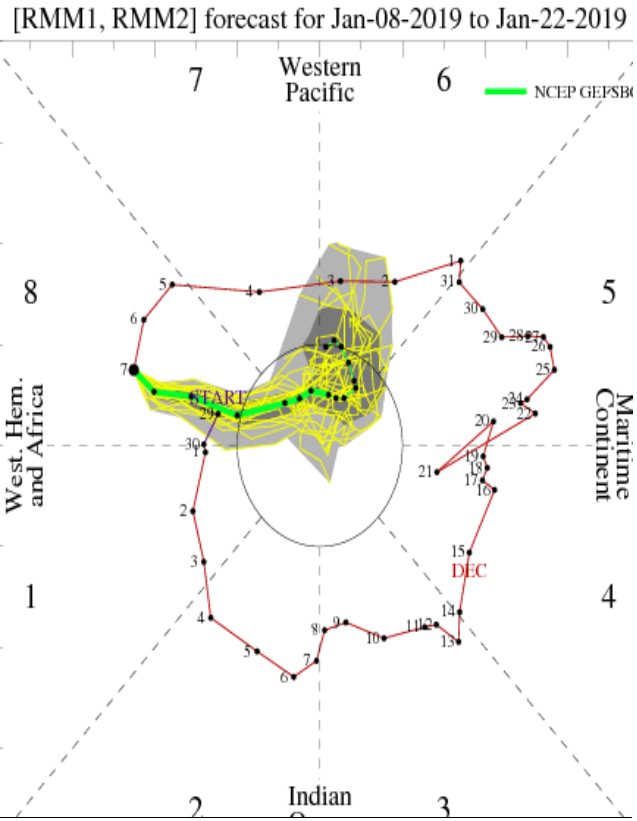
Enhanced Divergence mostly over western and central Pacific, Australia. Active SPCZ.



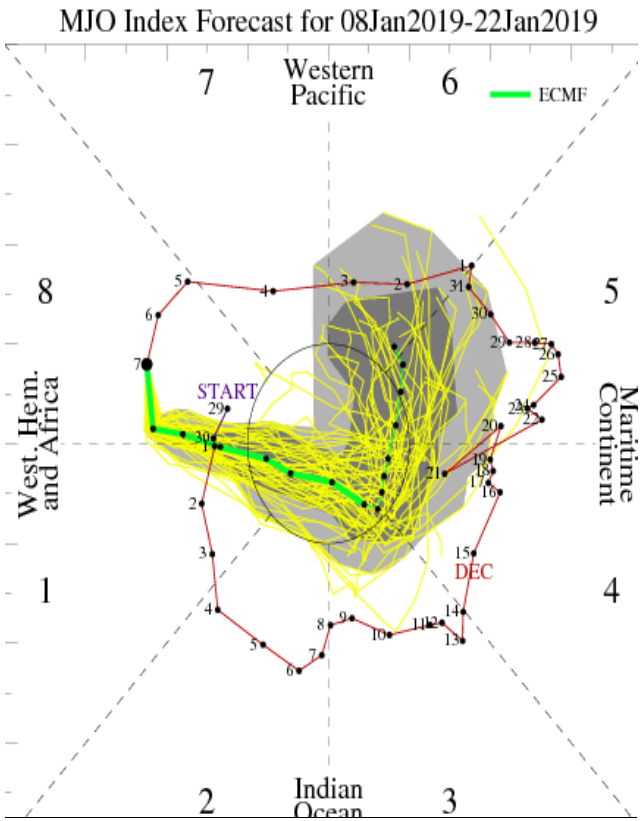
Wave-1 ; Enhanced Divergence now over WH, Enhanced Convergence over EH. Active SPCZ.



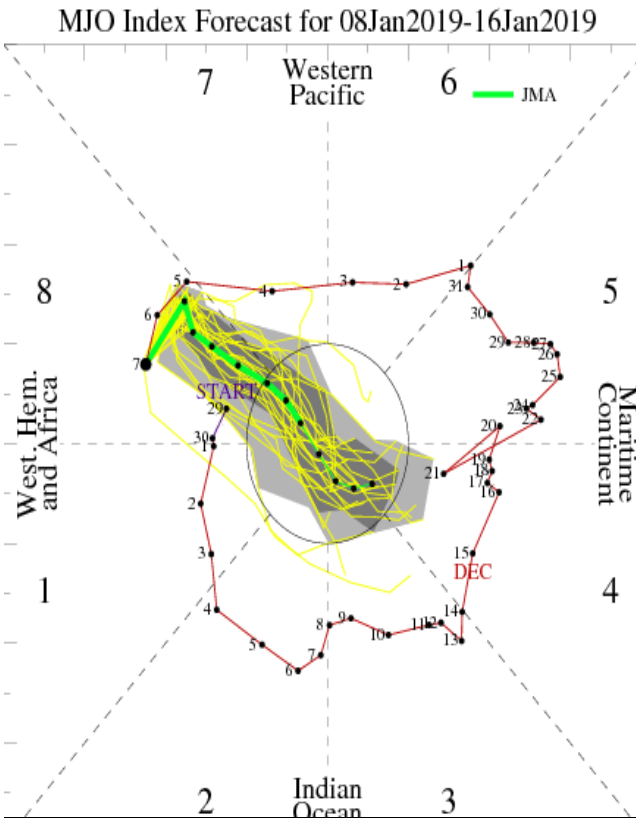
MJO Observation/Forecast



GEFS



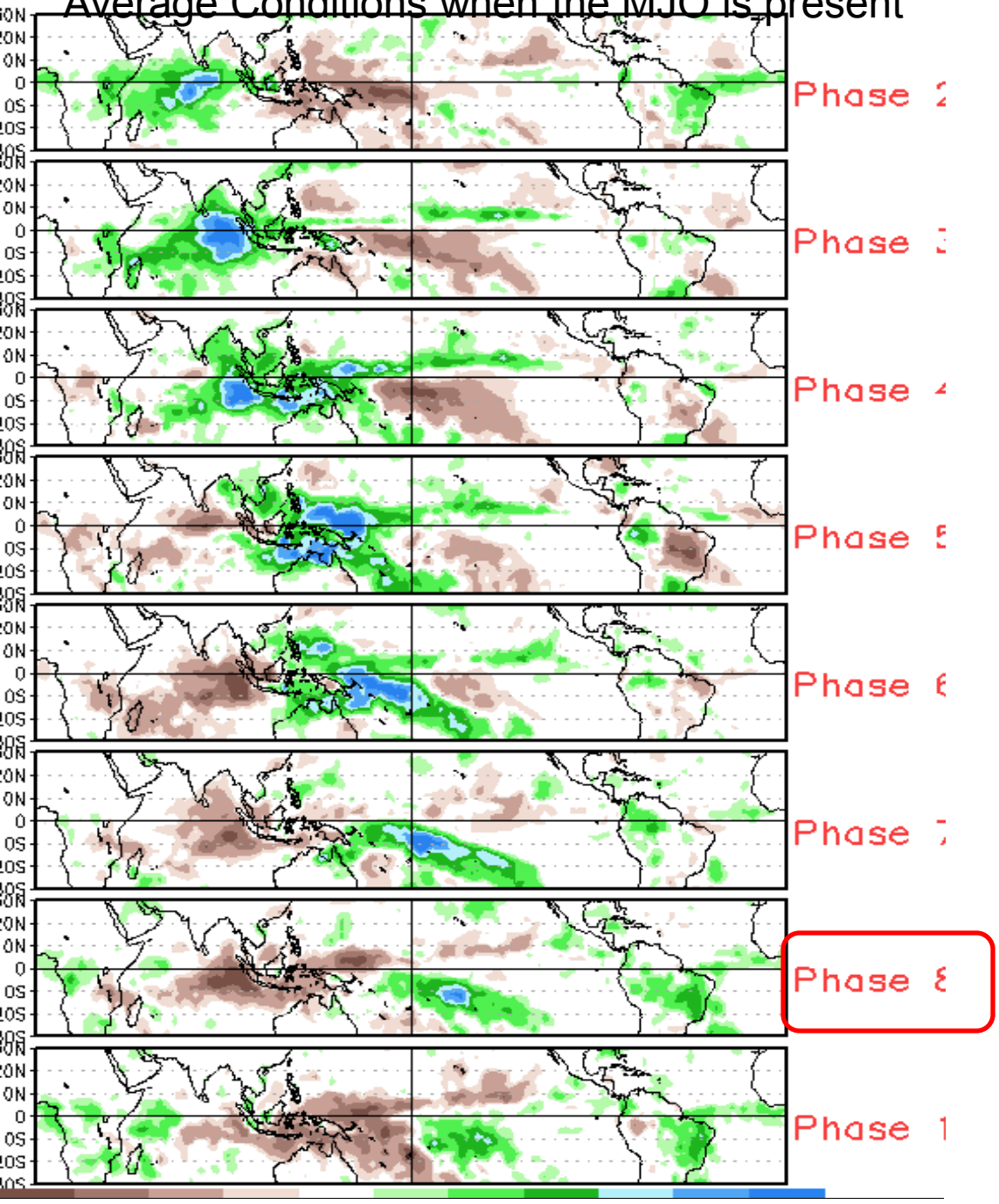
ECMWF



JMA

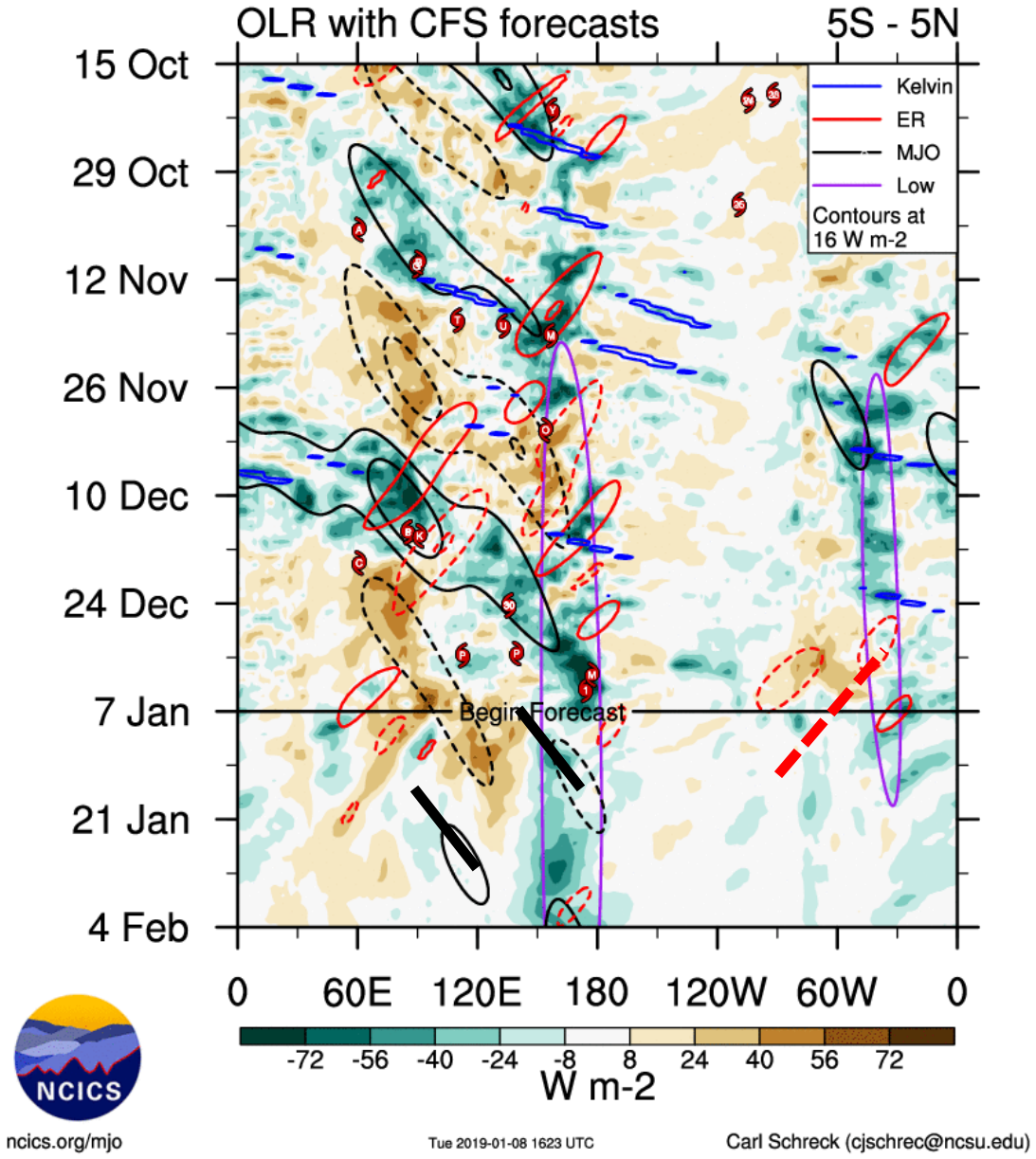
Wheeler-Hendon based analyses of model forecasts indicate limited eastward propagation in Phases 8 & 1 accompanied by rapid deamplification of signal in Week-1. Much more uncertain Week-2. Re-emerging signal anywhere from Indian Ocean (ECMWF) to western Pacific (GEFS). Favoring ECMWF as it has been performing better with this MJO event.

Average Conditions when the MJO is present

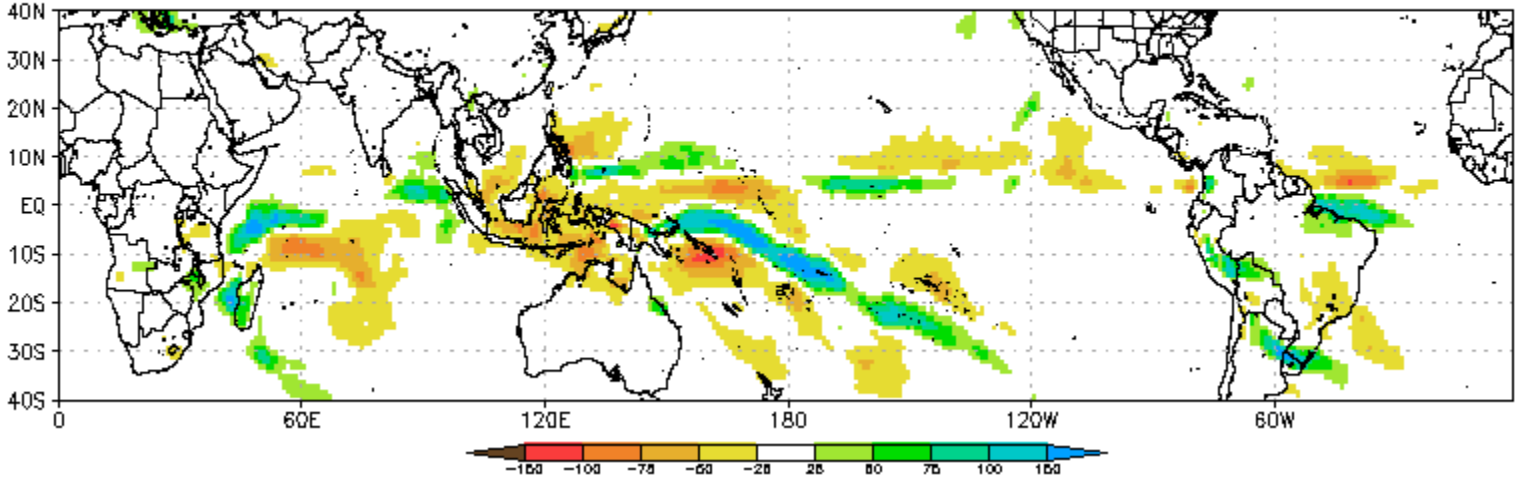


CAVEAT: These panels are representative of robust MJO events.

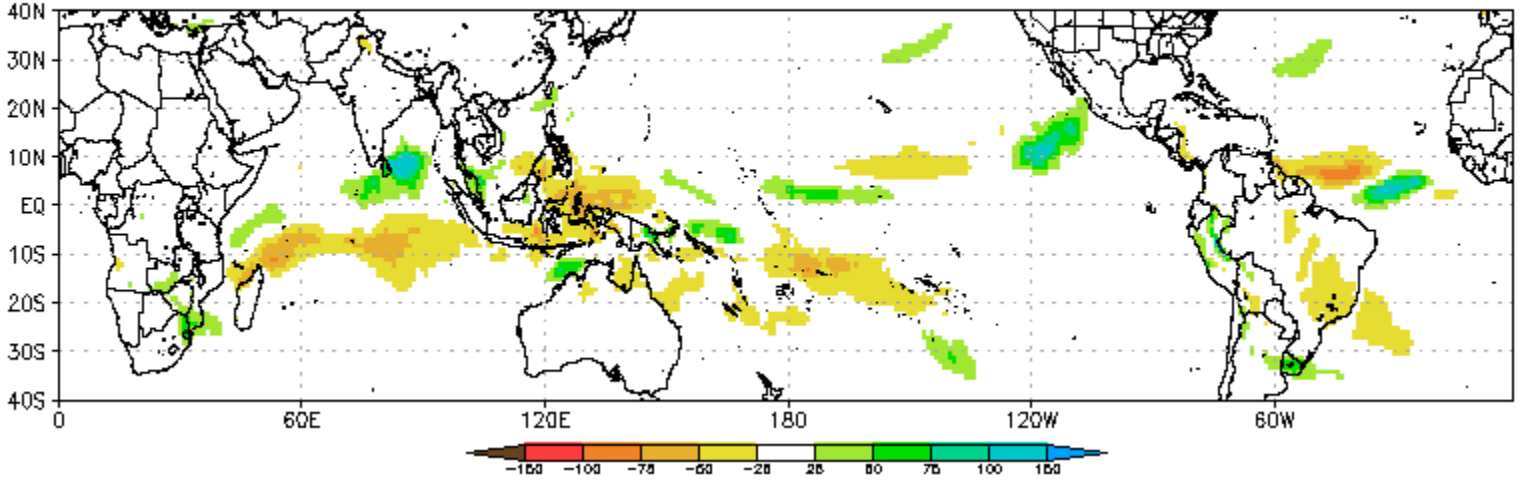
MJO, Rossby wave &
Low-frequency pattern

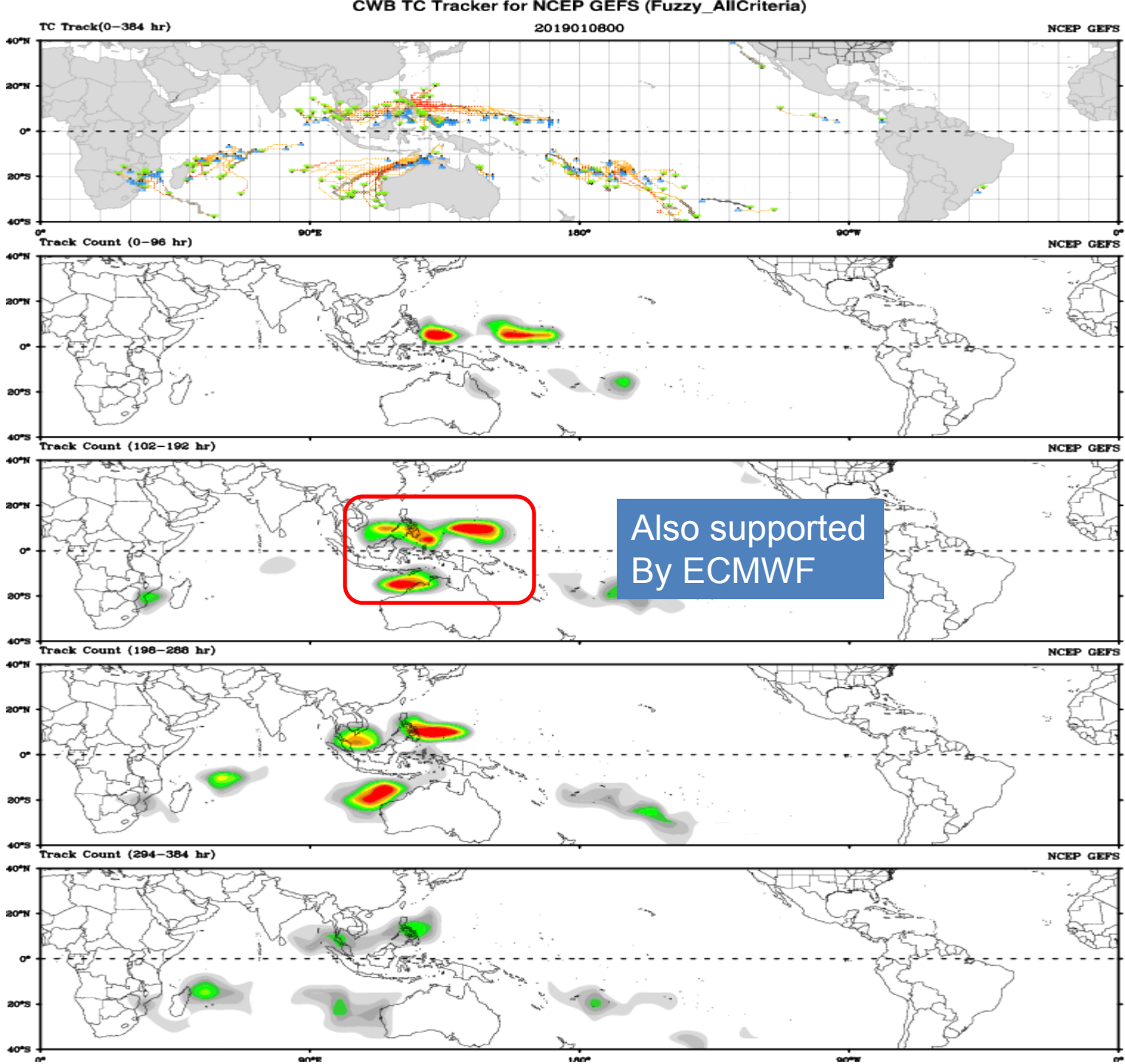


CFS Precipitation Anomalies (mm) Issued 07Jan2019
Week-1 Forecast Ending 15Jan2019



CFS Precipitation Anomalies (mm) Issued 07Jan2019
Week-2 Forecast Ending 22Jan2019





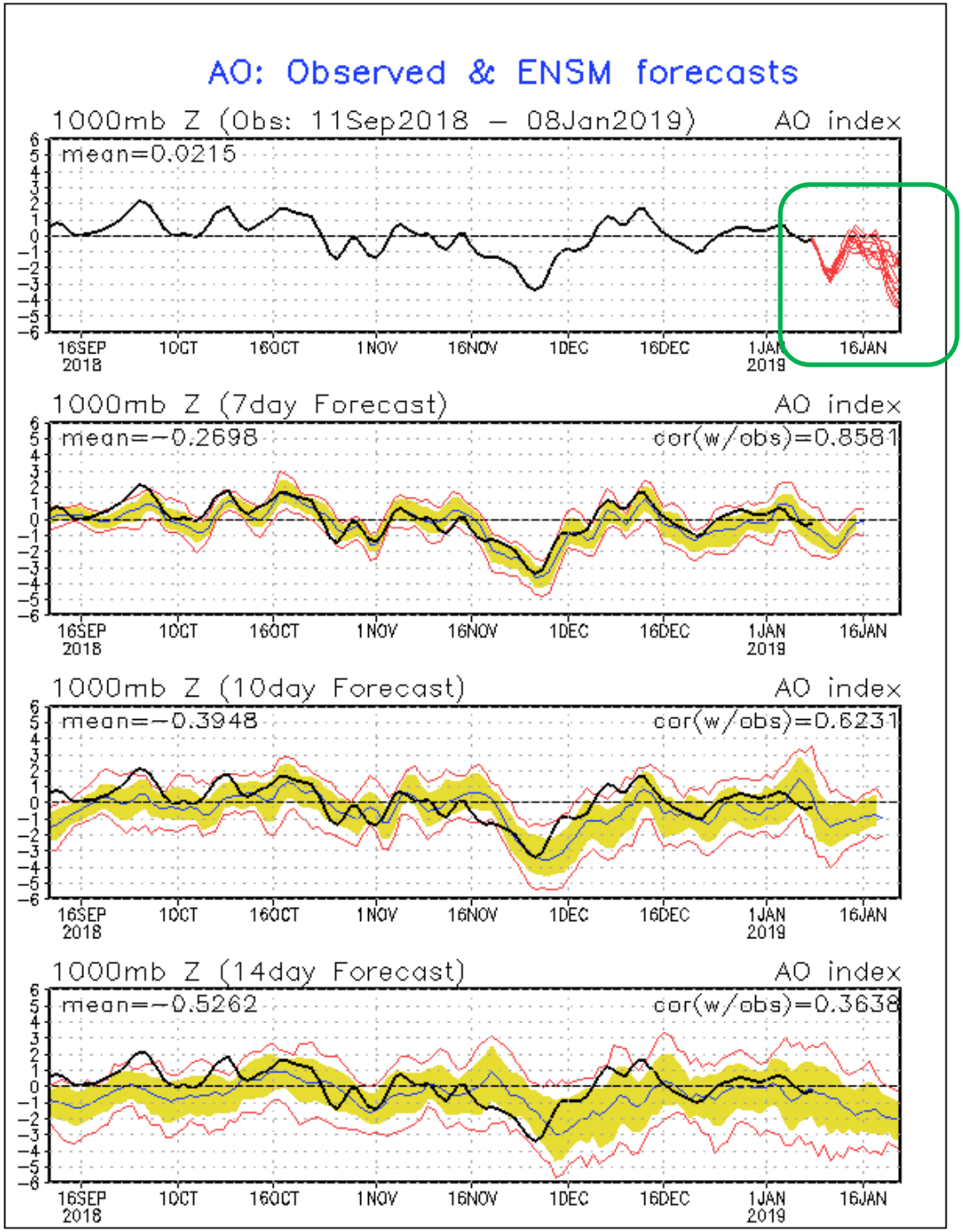
Days 1-4

Day 5-8

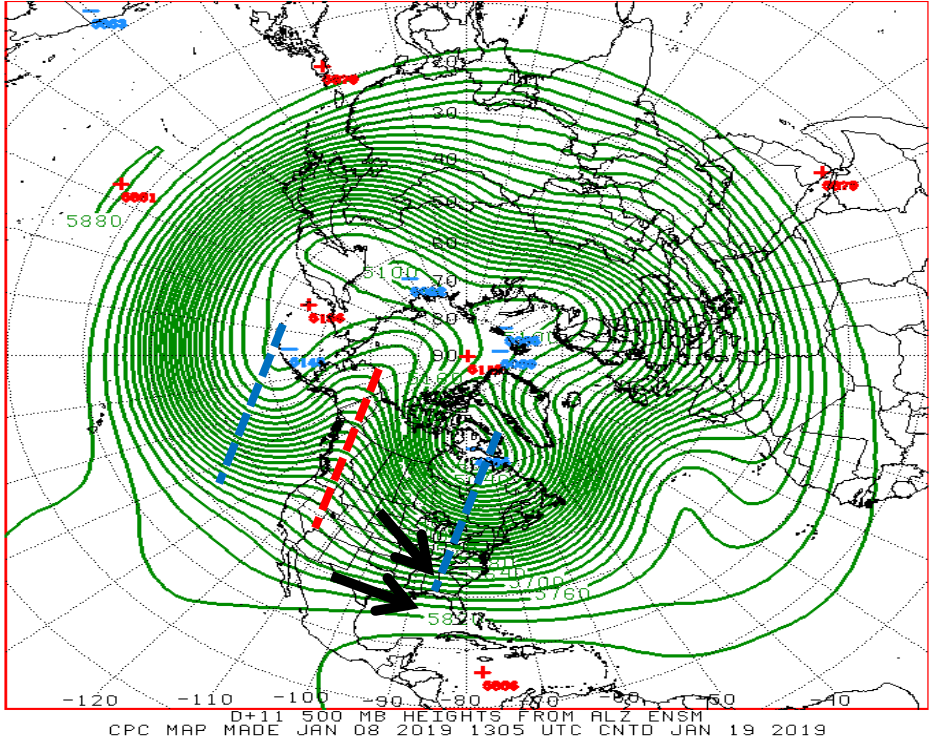
Day 9-12

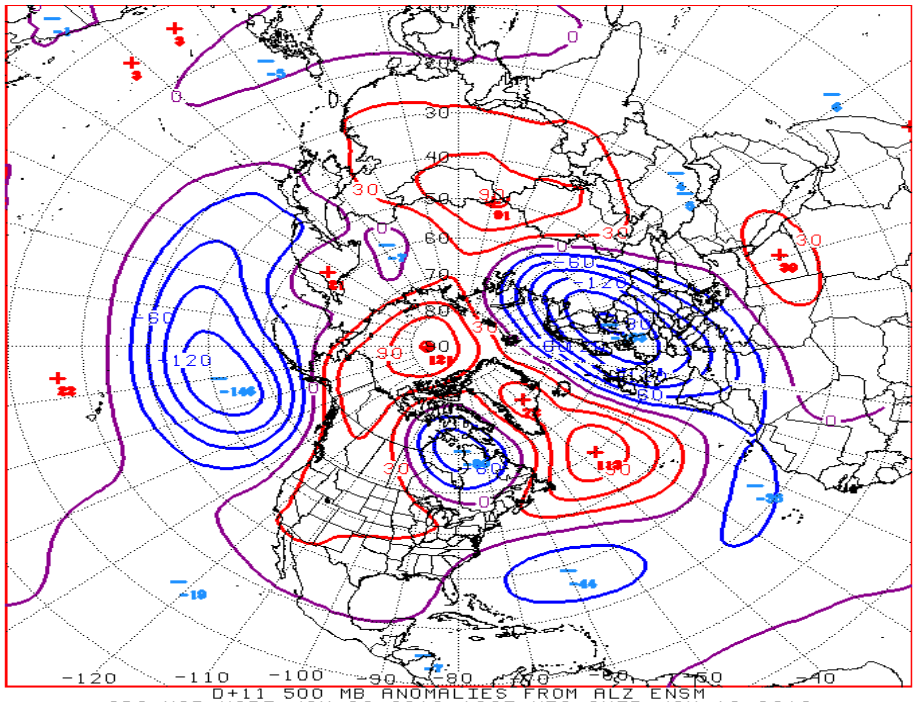
Day 13-15

Connections to U.S. Impacts

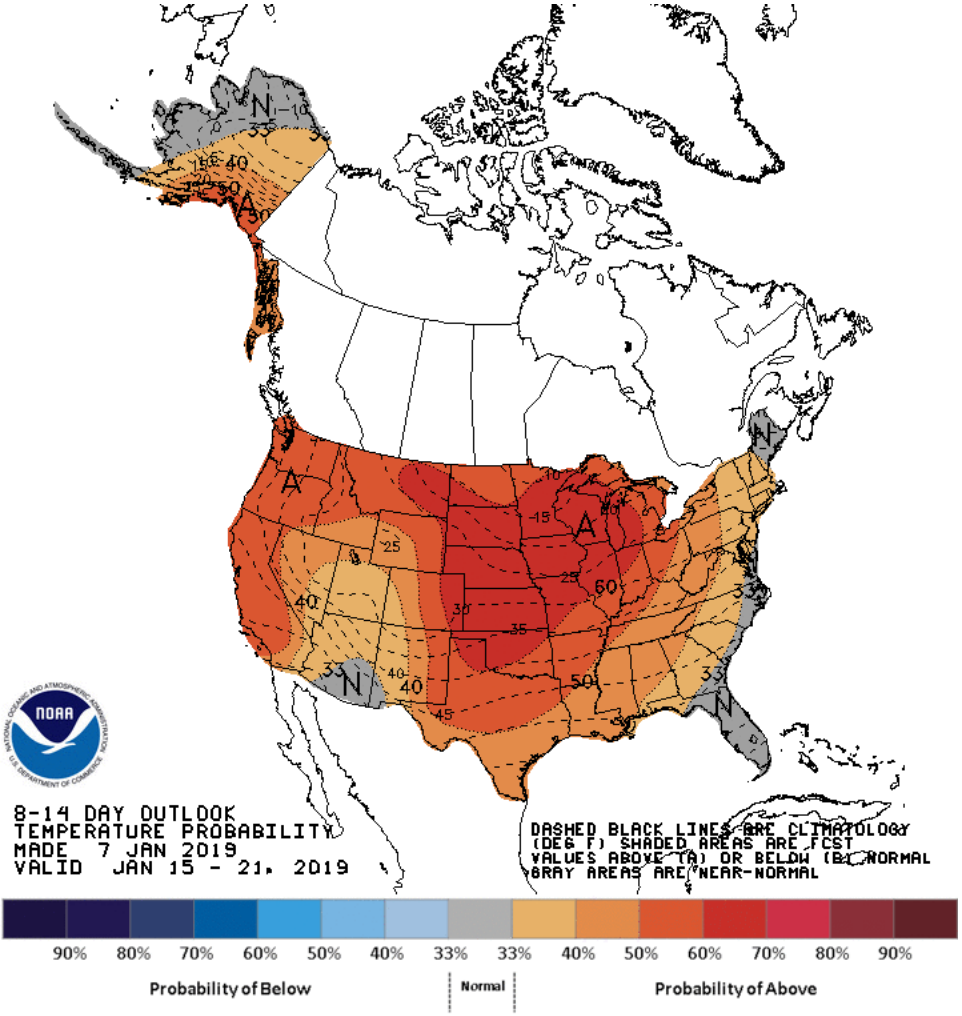

AO: Observed & ENSM forecasts
1000mb Z (Obs: 11Sep2018 – 08Jan2019)
AO index
mean=0.0215
1000mb Z (7day Forecast)
AO index
mean=−0.2698
cor(w/obs)=0.8581
1000mb Z (10day Forecast)
AO index
mean=−0.3948
cor(w/obs)=0.6231
1000mb Z (14day Forecast)
AO index
mean=−0.5262
cor(w/obs)=0.3638
16SEP 2018
1OCT
16OCT
1NOV
16NOV
1DEC
16DEC
1JAN 2019
16JAN

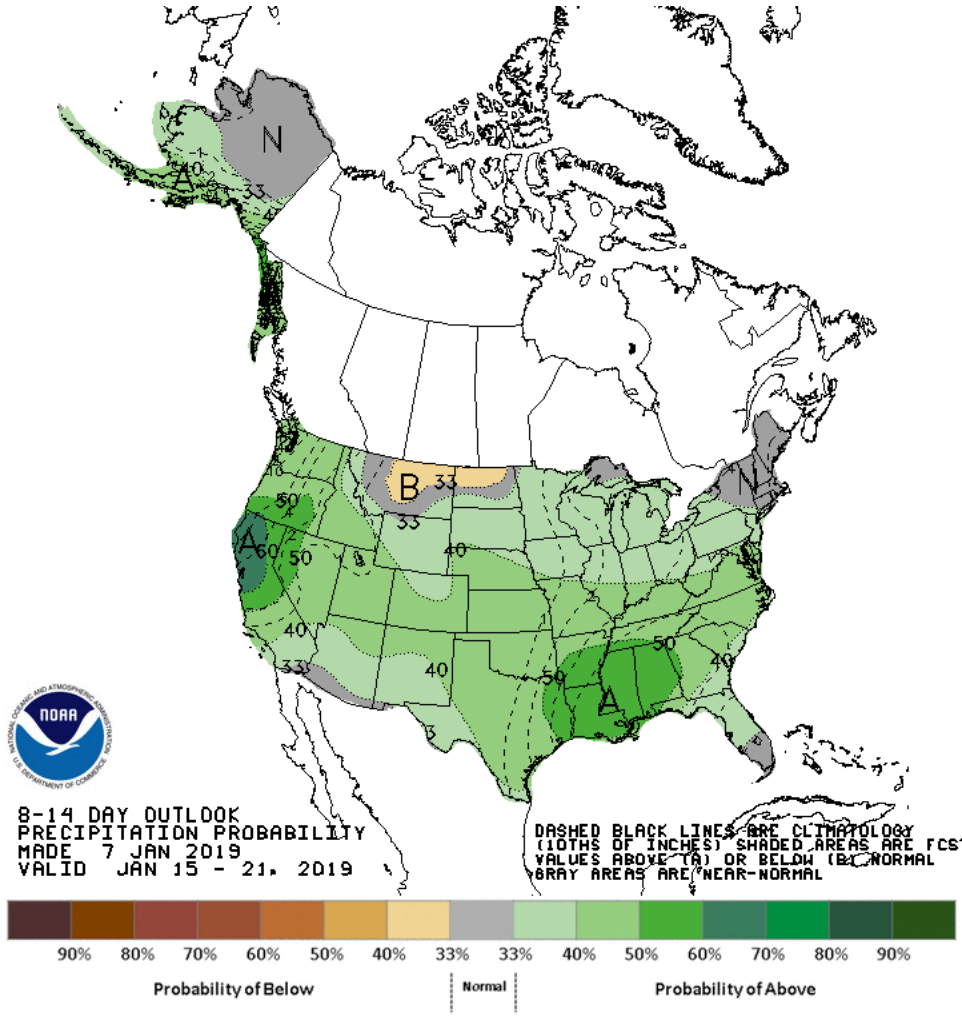
Week-2
GFS SuperEnsemble Mean





Week 2 – Temperature and Precipitation





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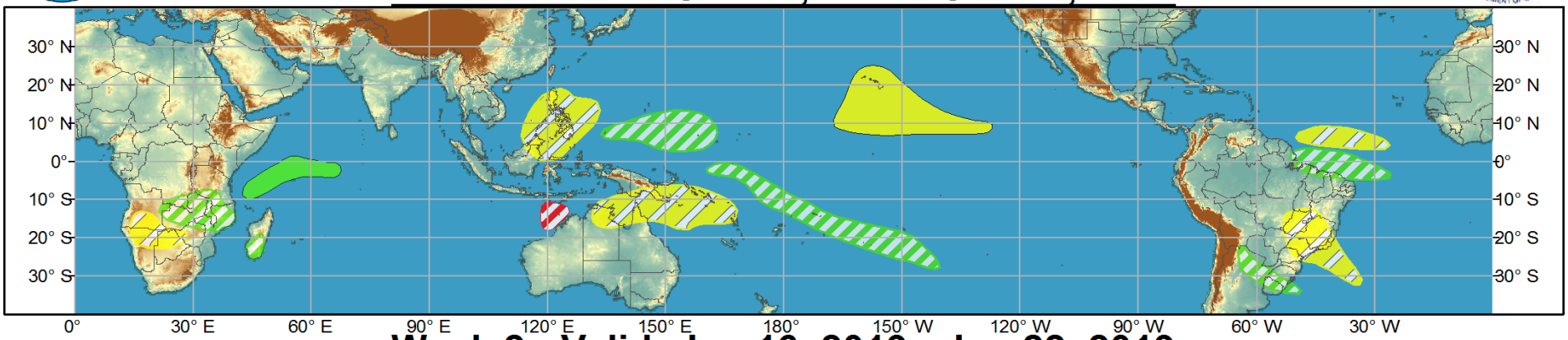

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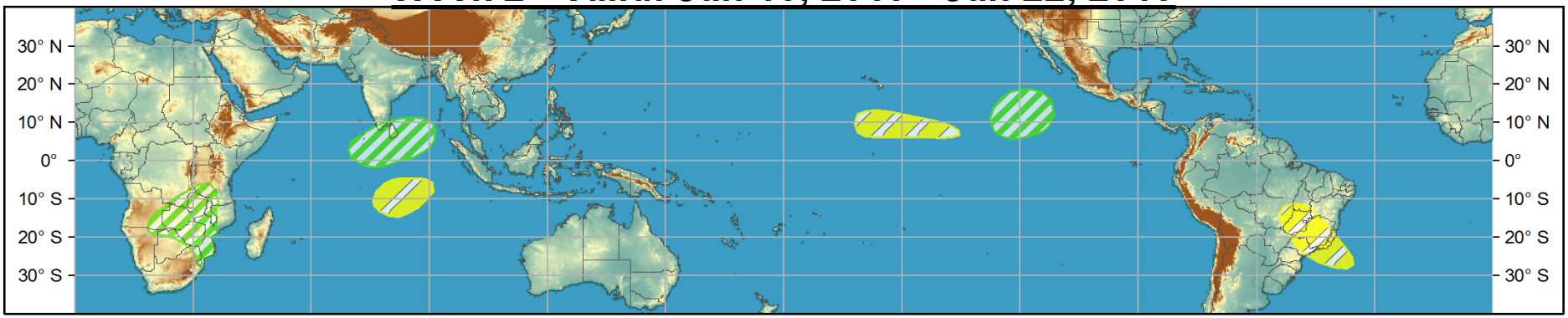

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