

# Global Tropics Hazards And Benefits Outlook

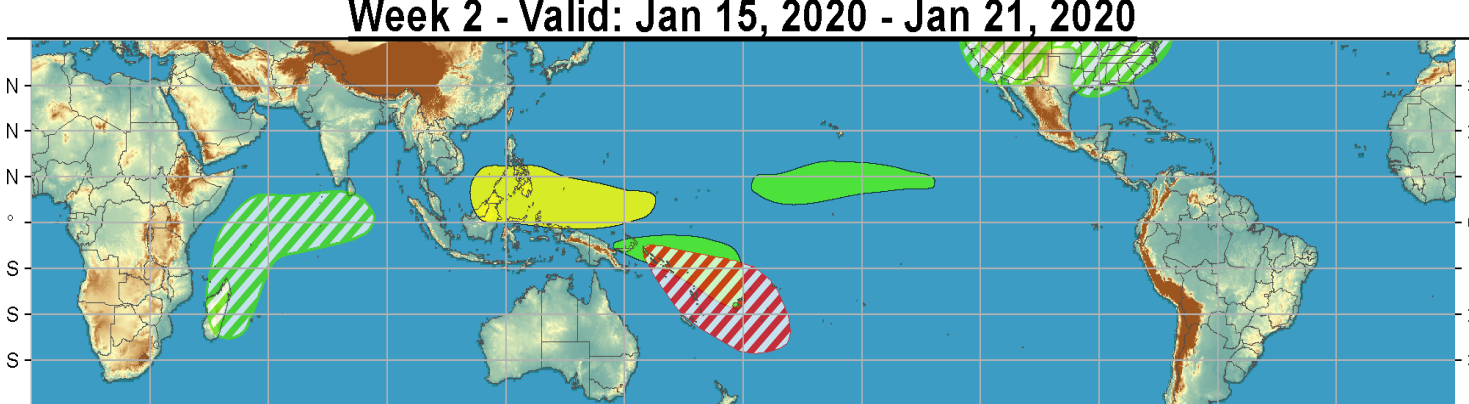
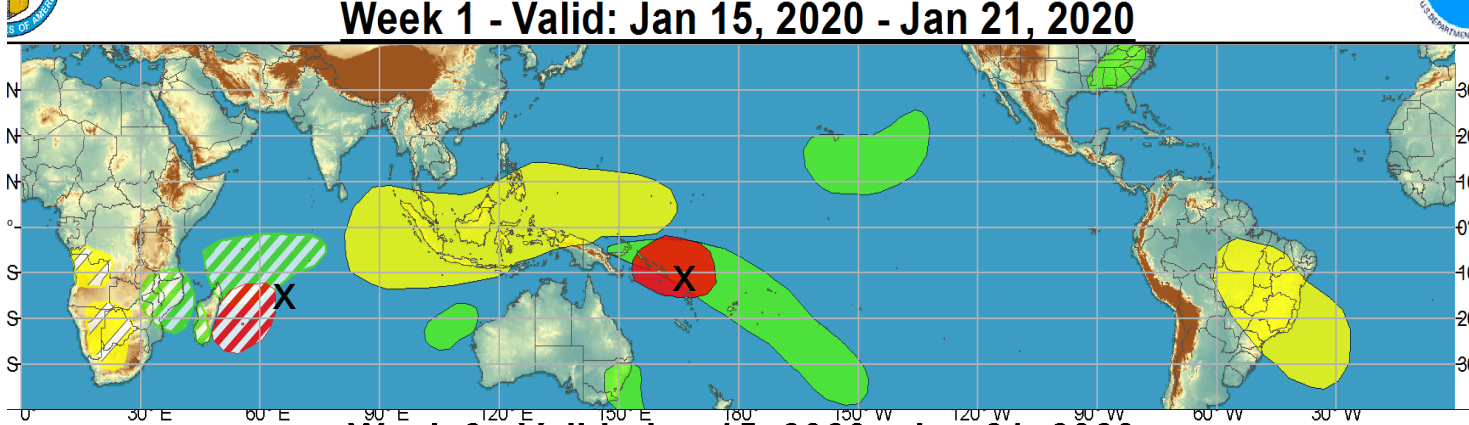
1/21/2020

Brad Pugh

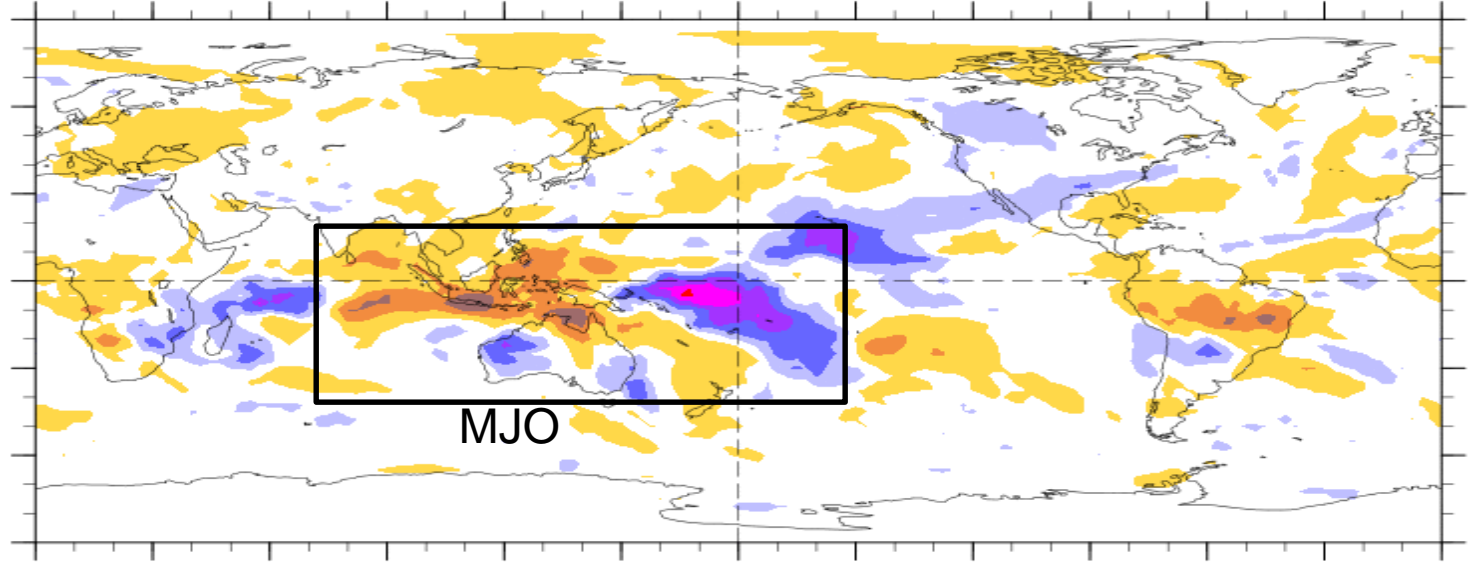
## Outline

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

# Outlook Review



7-Day Average OLR Anomaly 2020/01/13 - 2020/01/19



Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

MJO

# Synopsis of Climate Modes

## **ENSO: (January 9, 2020 Update)**

- ENSO Alert System Status: Not Active
- ENSO-neutral is favored during the Northern Hemisphere spring (~60% chance), continuing through summer 2020 (~50% chance).

## **MJO and other subseasonal tropical variability:**

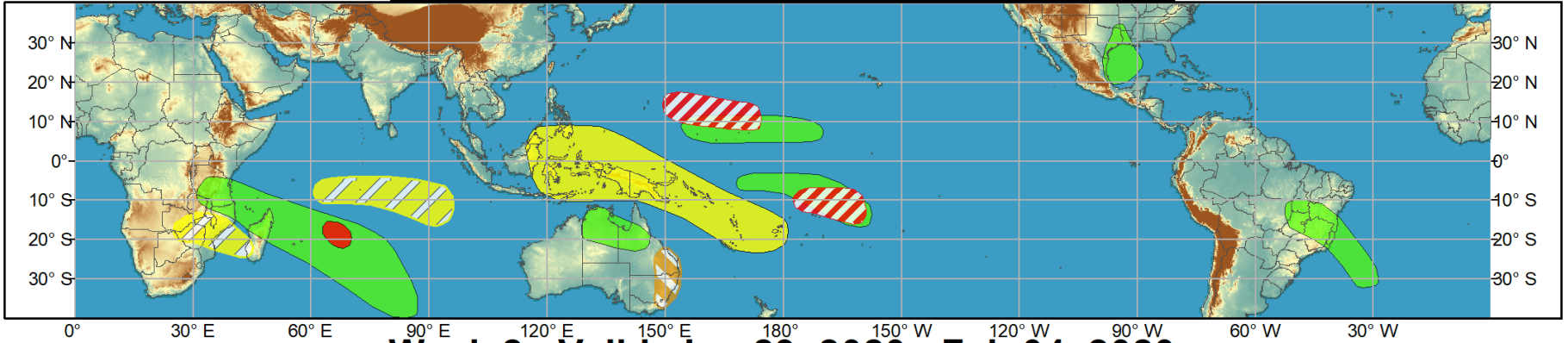
- The Madden-Julian Oscillation (MJO) propagated eastward from the Maritime Continent to the Pacific Ocean during mid-January but there is recent weakening.
- The MJO is forecast to provide less influence on global tropical rainfall during the next two weeks.
- A more stationary pattern of enhanced (suppressed) convection is expected to develop across the Pacific (Maritime Continent).



# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center



## Week 1 - Valid: Jan 22, 2020 - Jan 28, 2020



## Week 2 - Valid: Jan 29, 2020 - Feb 04, 2020



**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.
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- Above-normal temperatures** 7-day mean temperatures in the upper third of the historical range.
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Produced: 01/21/2020  
Forecaster: Pugh

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# IR Satellite & 200-hpa Velocity Potential Anomalies

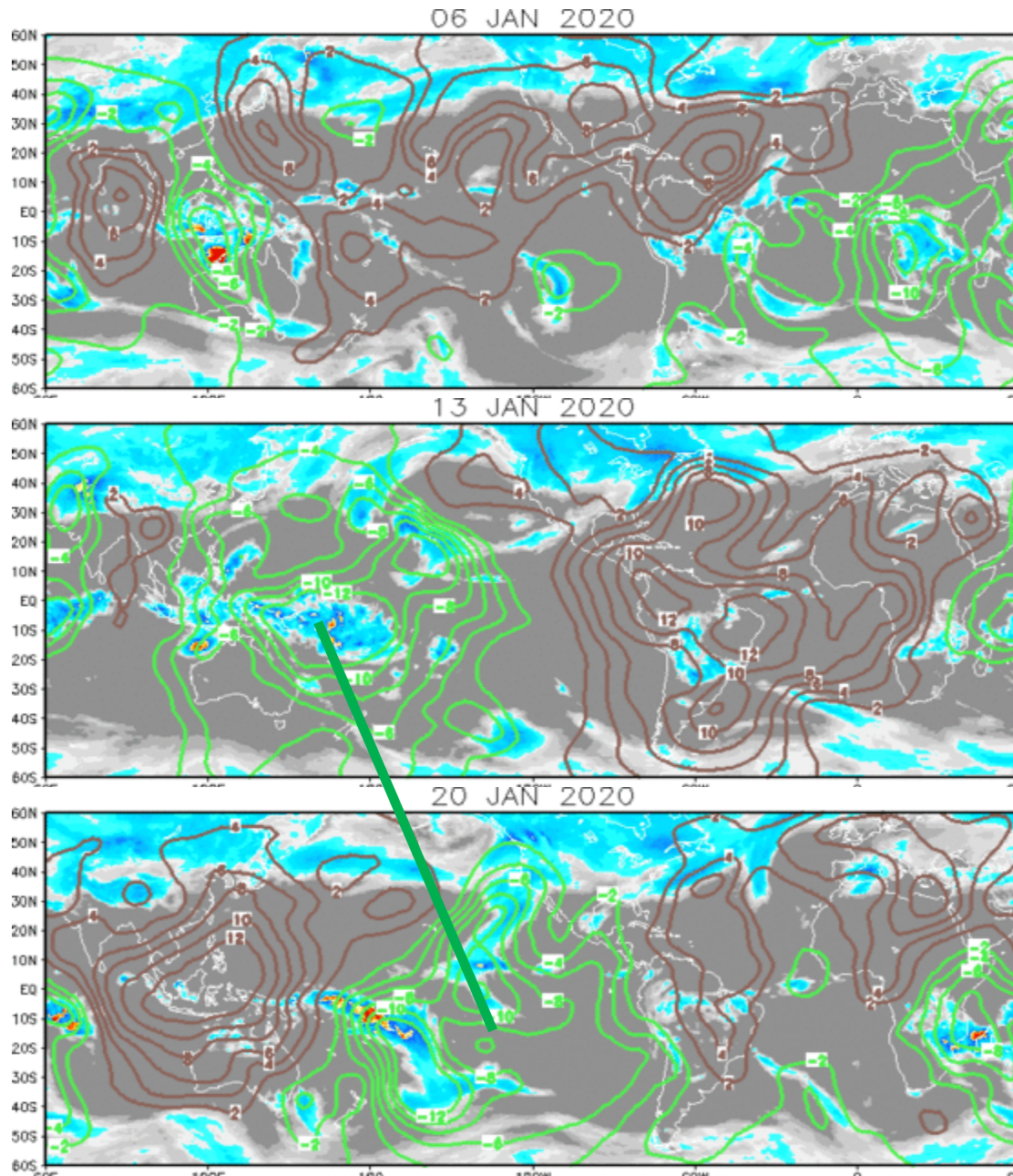
Green: Enhanced Divergence

Brown: Enhanced Convergence

+IOD decayed by early January with rainfall increasing across the Maritime Continent and Australia.

Widespread convection over the Maritime Continent and eastward. Clear Wave-1 pattern, supporting the strong MJO.

Enhanced convection shifted east across the Pacific. Suppressed convection return to the Maritime Continent. *But the Wave-1 pattern became Wave-2.*

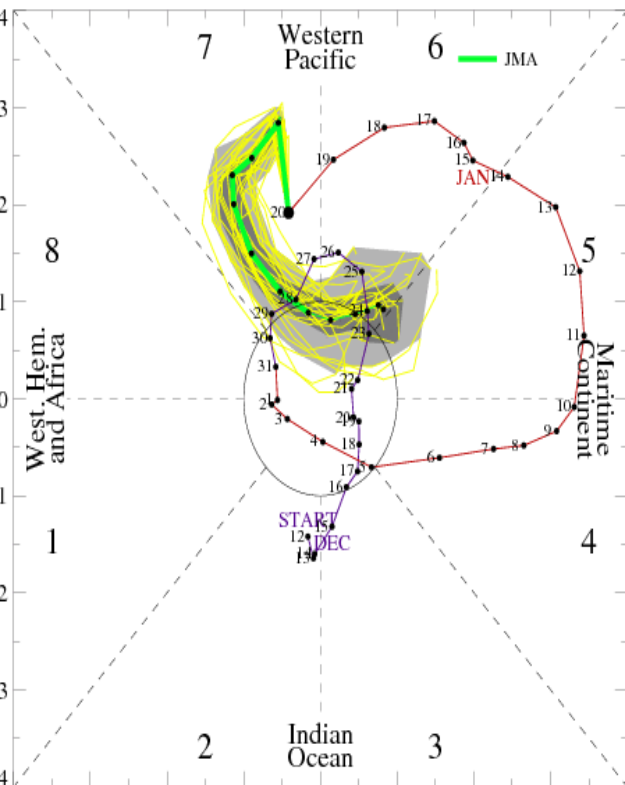
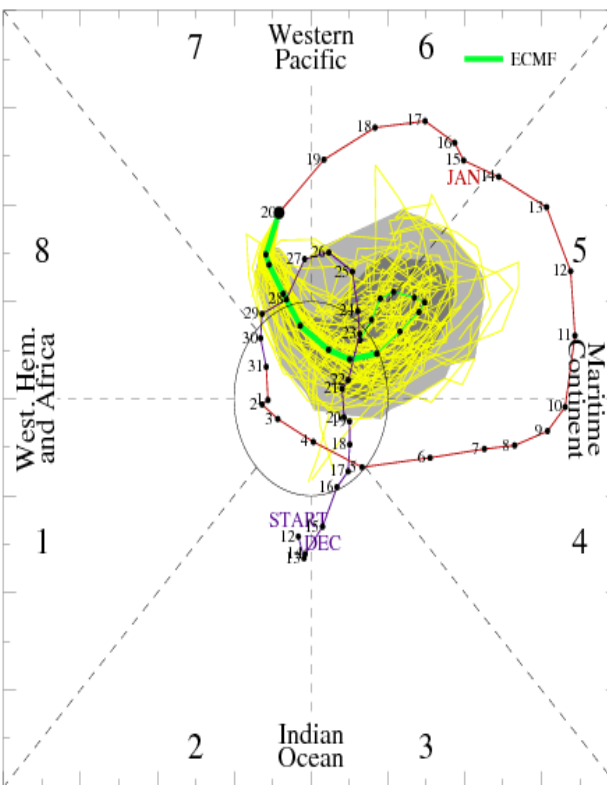
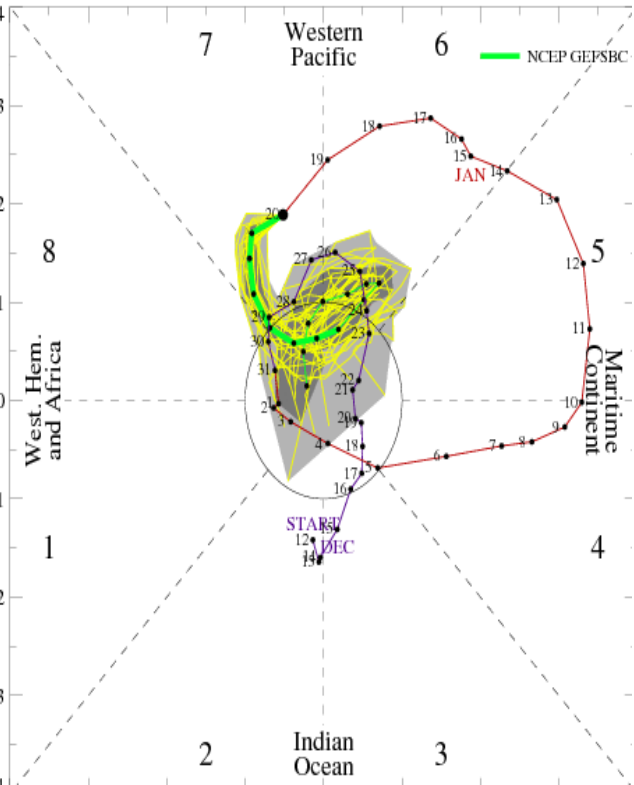


# MJO Observation/Forecast

[RMM1, RMM2] forecast for Jan-21-2020 to Feb-04-2020

MJO Index Forecast for 21Jan2020-04Feb2020

MJO Index Forecast for 21Jan2020-29Jan2020



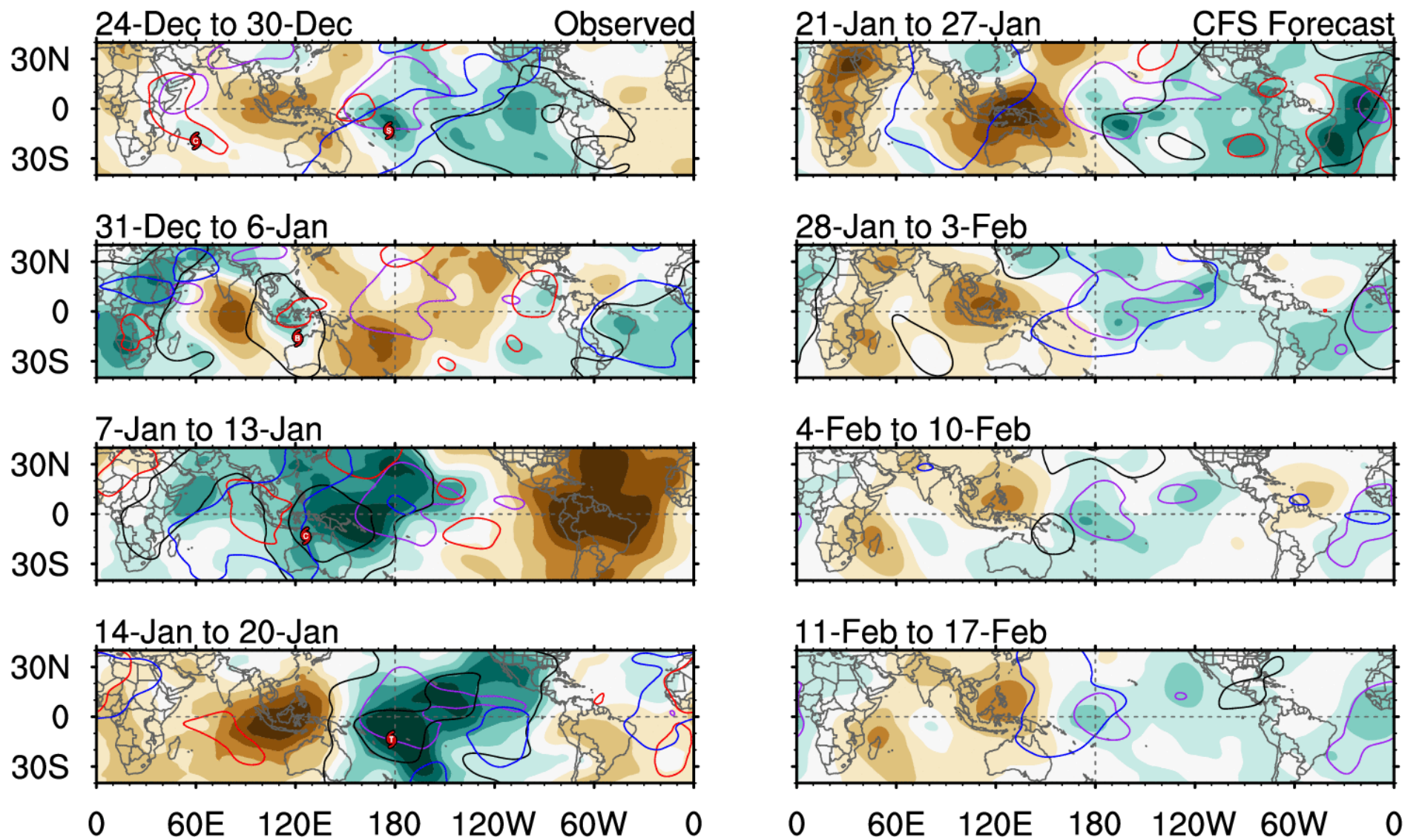
GEFS

ECMWF

JMA

Amplitude of the MJO forecast to decrease during Week-1.

Enhanced convection remaining nearly stationary across the Pacific during the next two weeks.



# 7-day CHI200 with CFS forecasts



— MJO      — Kelvin x2  
 — Low      — ER

Contours at  $-2, -6 \times 10^6 \text{ m}^2 \text{ s}^{-1}$

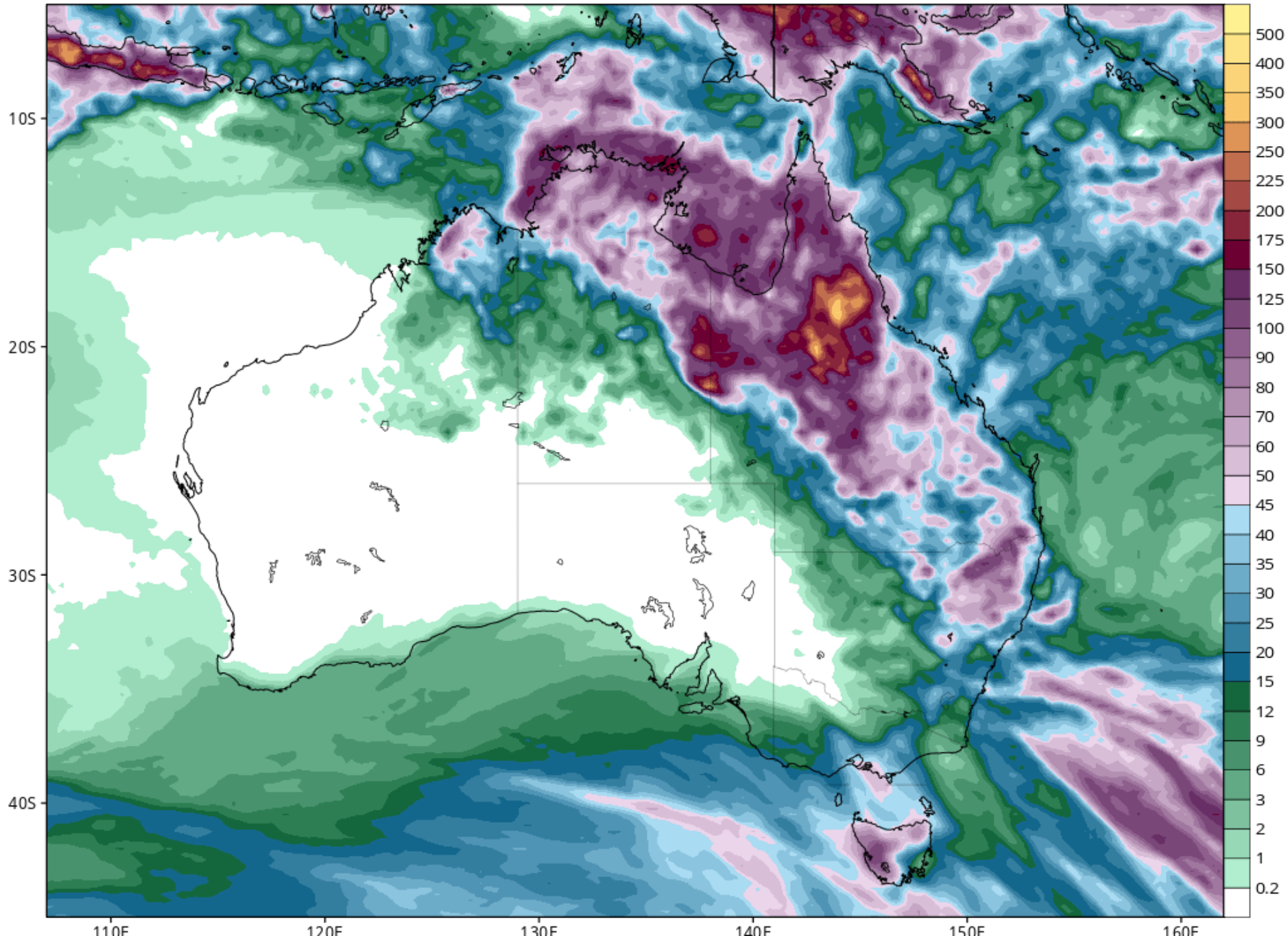
Carl Schreck

carl\_schreck@ncsu.edu

# GFS Total Accumulated Precipitation (mm) from 12z21Jan2020 to 12z29Jan2020

Init: 12z Jan 21 2020 Forecast Hour: [192] valid at 12z Wed, Jan 29 2020

TROPICALTIDBITS.COM



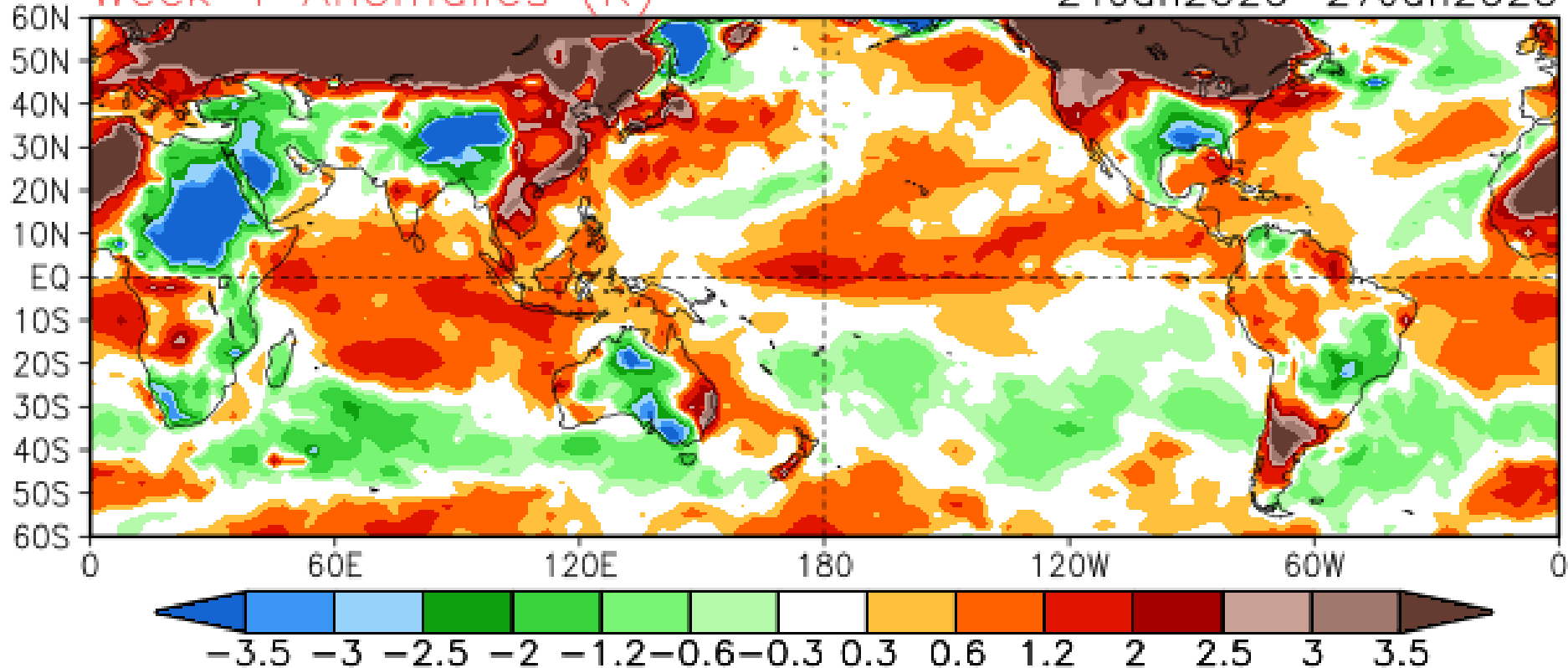


# CFSv2 Weeks 1 & 2 Tsfc

16 Member Ensemble Mean Forecast from 20Jan2020

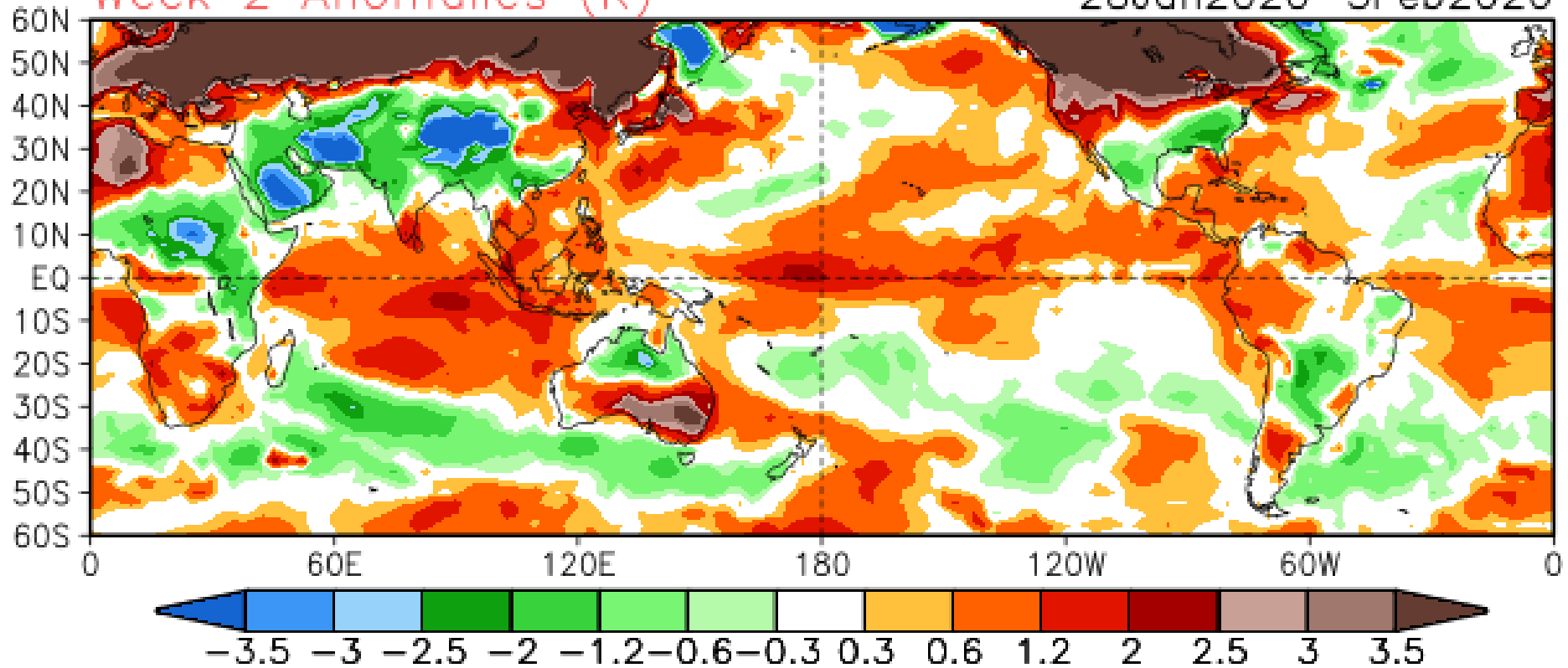
Week 1 Anomalies (K)

21Jan2020–27Jan2020



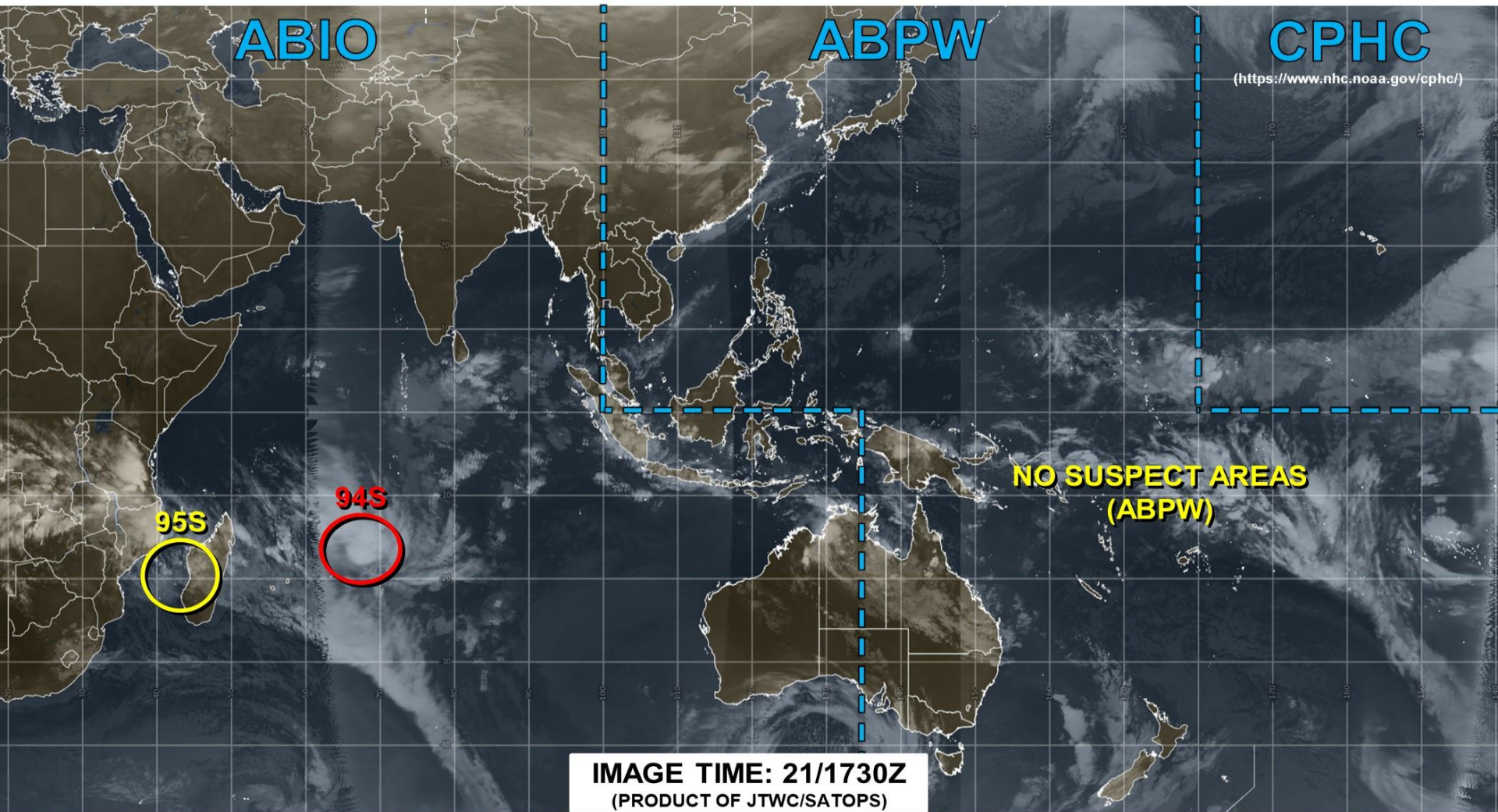
Week 2 Anomalies (K)

28Jan2020–3Feb2020





# JOINT TYPHOON WARNING CENTER



**LOW** TC development unlikely within 24 hours

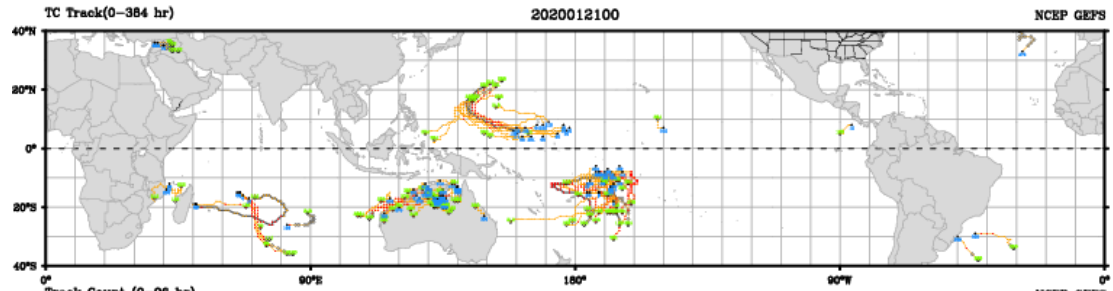
**MEDIUM** TC development likely, but expected to occur beyond 24 hours

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

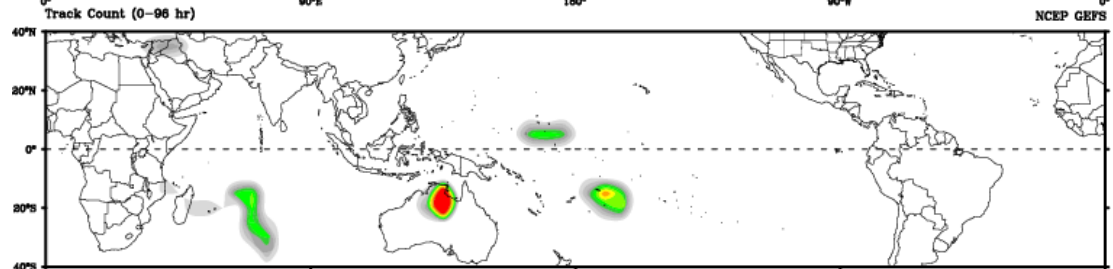
**SUB TROPICAL** Monitoring for potential transition to TC. Invest color denotes tropical transition probability



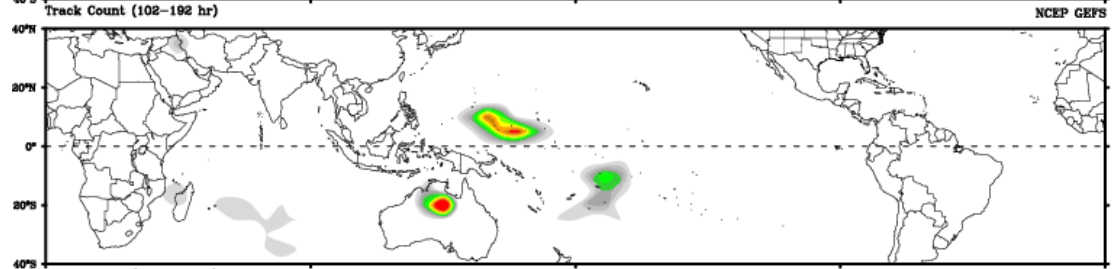
CWB TC Tracker for NCEP GEFS (Fuzzy\_AllCriteria)



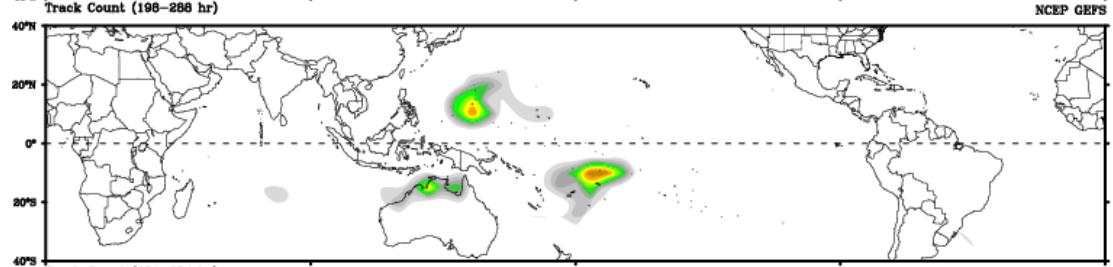
Days 1-4



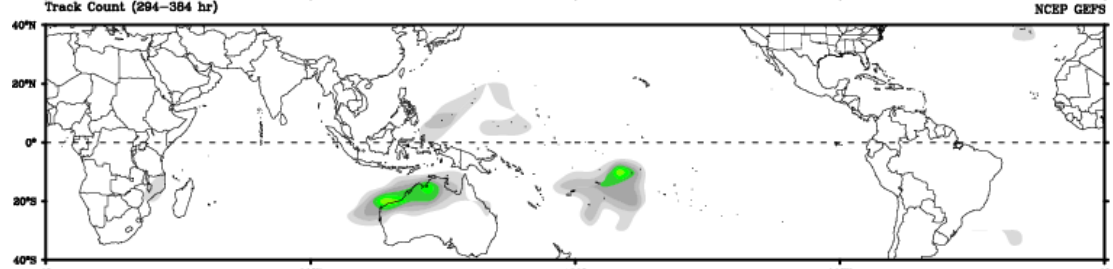
Day 5-8



Day 9-12

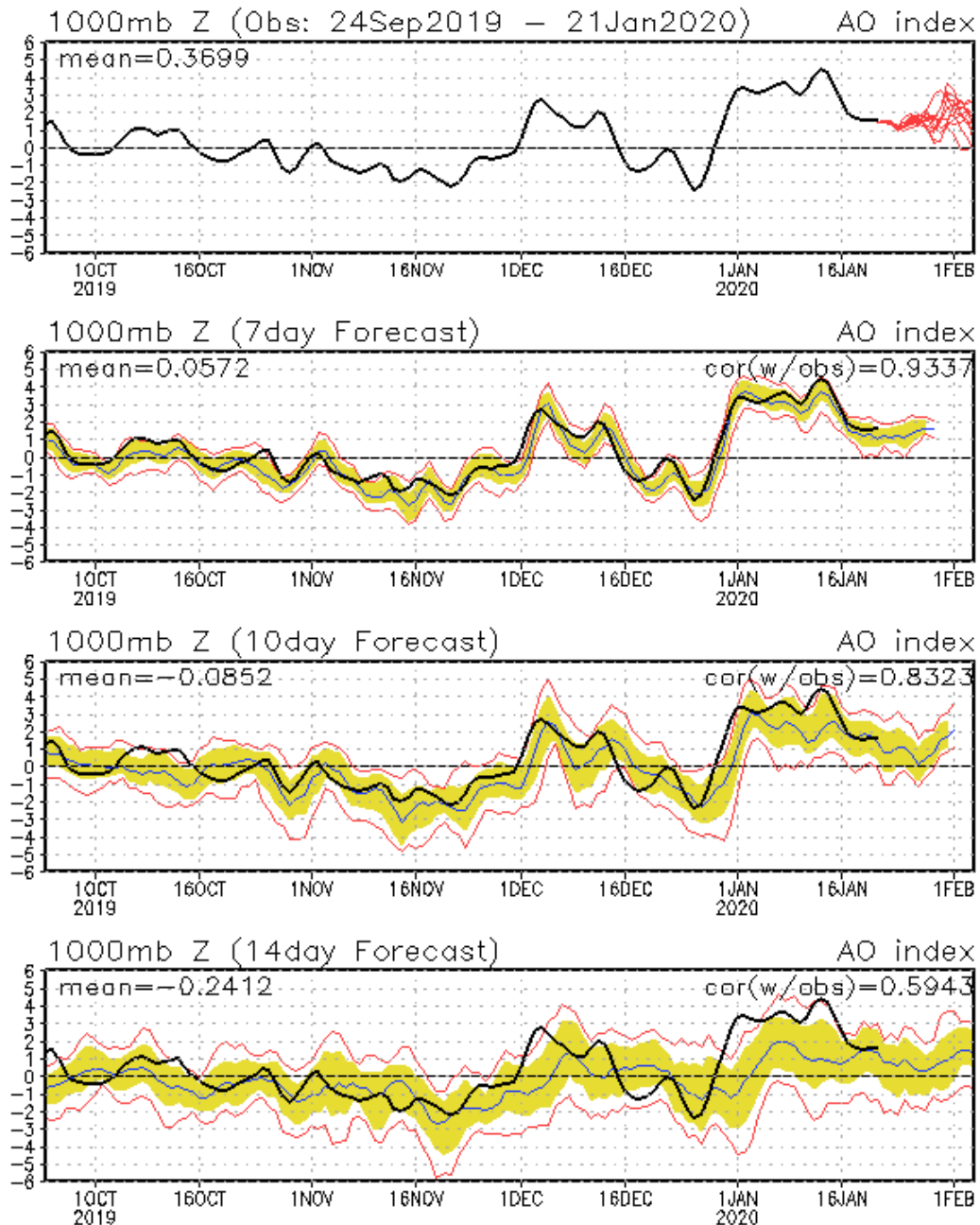


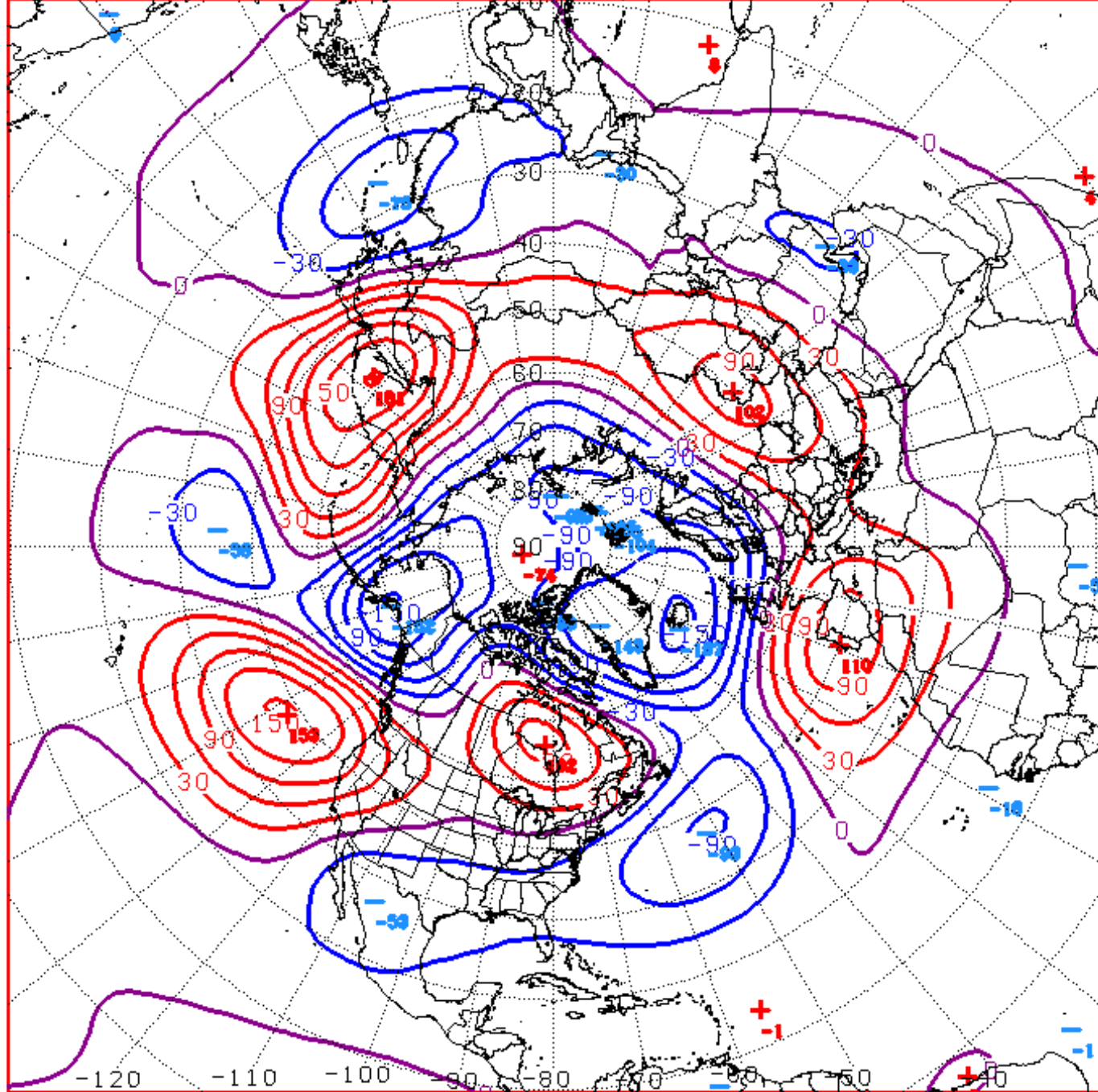
Day 13-15



# Connections to U.S. Impacts

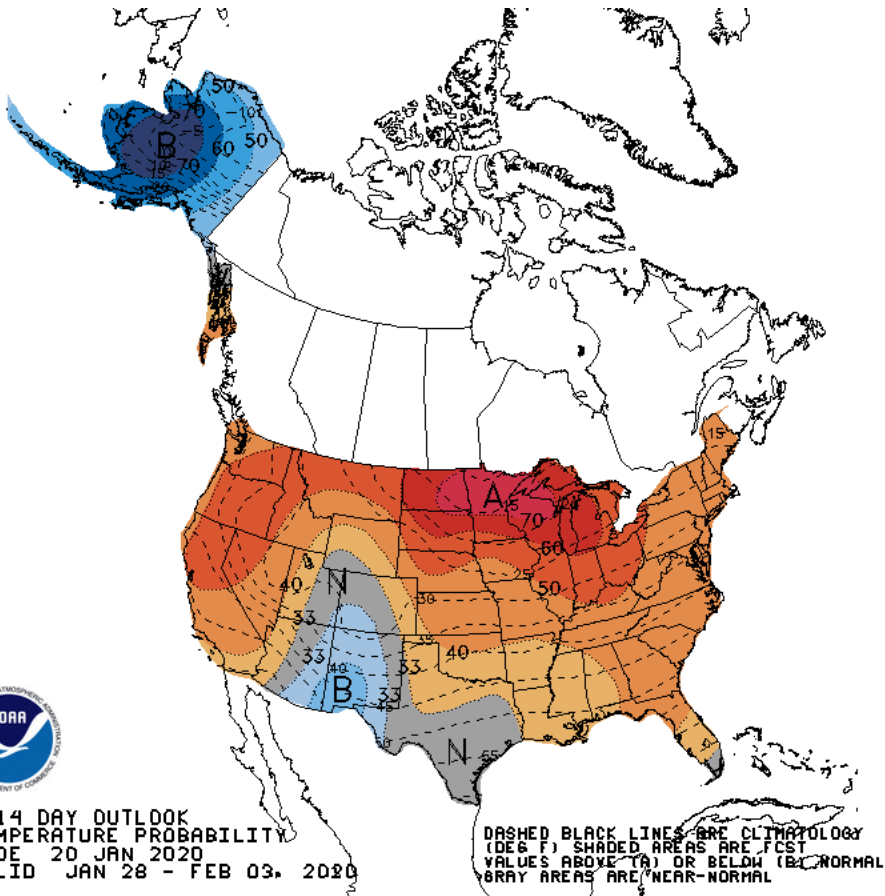
## AO: Observed & ENSM forecasts





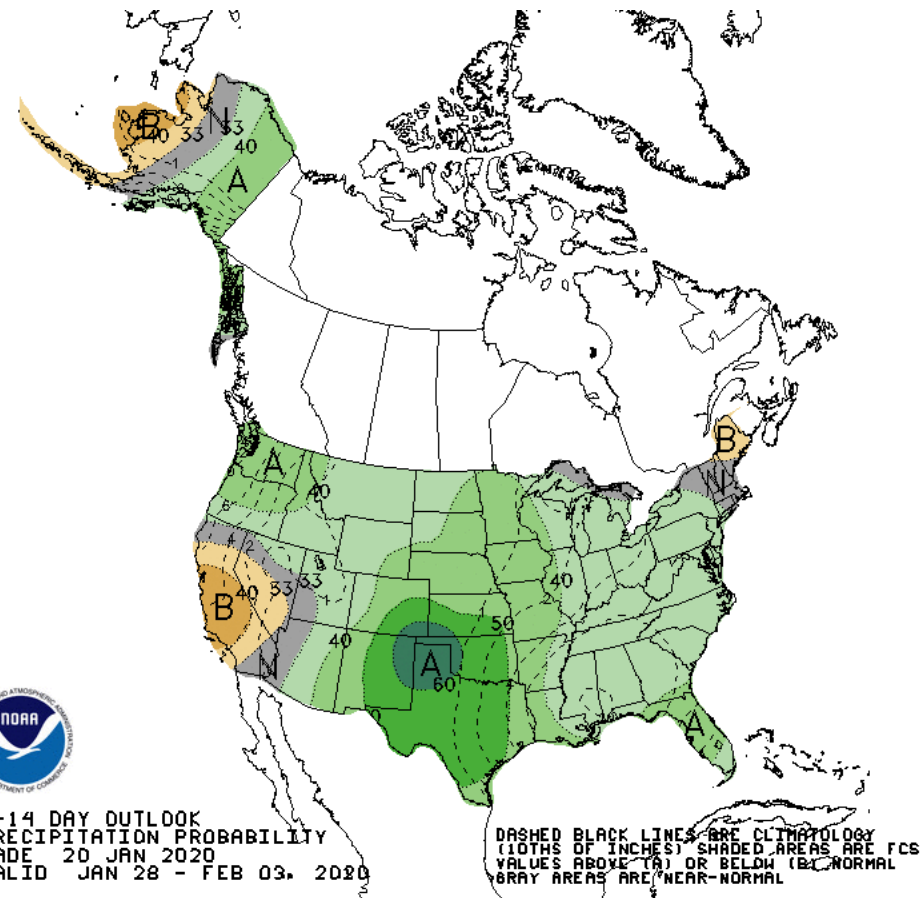
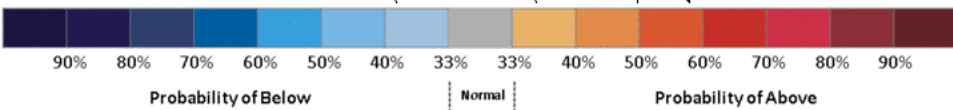
D+11 500 MB ANOMALIES FROM ALZ ENSM  
CPC MAP MADE JAN 21 2020 1338 UTC CNTD FEB 01 2020

# Week 2 – Temperature and Precipitation



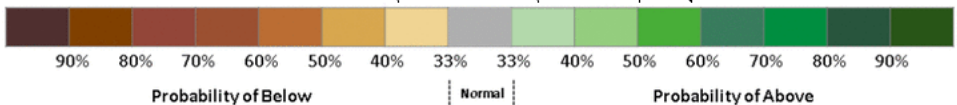
8-14 DAY OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 20 JAN 2020  
VALID JAN 28 - FEB 03, 2020

DASHED BLACK LINES ARE CLIMATOLOGY (DEG F). SHADED AREAS ARE FCST VALUES ABOVE (A) OR BELOW (B) NORMAL. GRAY AREAS ARE NEAR-NORMAL.



8-14 DAY OUTLOOK  
PRECIPITATION PROBABILITY  
MADE 20 JAN 2020  
VALID JAN 28 - FEB 03, 2020

DASHED BLACK LINES ARE CLIMATOLOGY (TENTHS OF INCHES). SHADED AREAS ARE FCST VALUES ABOVE (A) OR BELOW (B) NORMAL. GRAY AREAS ARE NEAR-NORMAL.



- Near record cold in Alaska
- Above normal temps for most of CONUS
- Wet pattern with enhanced Pacific flow and active southern stream

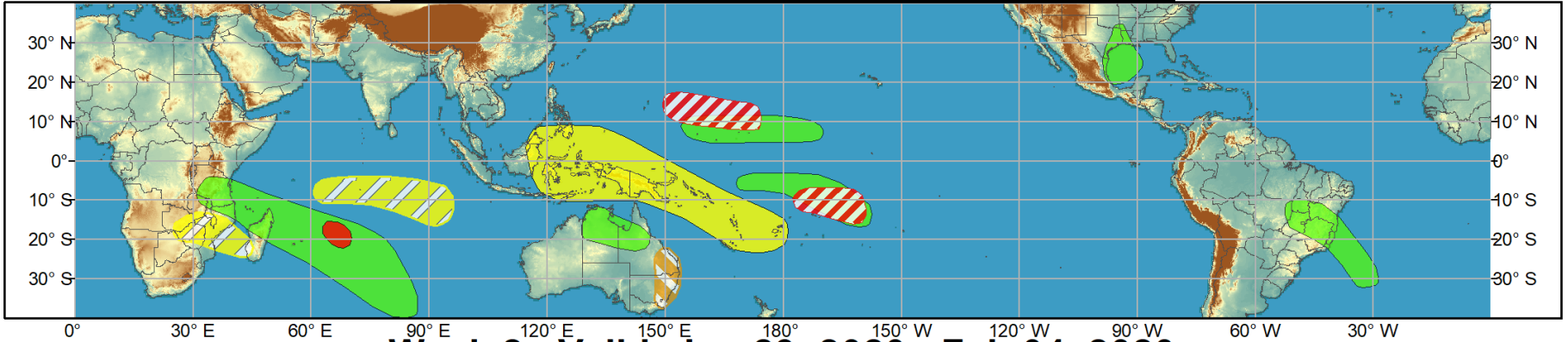




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