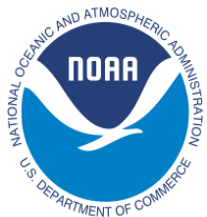


Madden-Julian Oscillation: Recent Evolution, Current Status and Predictions



Update prepared by the Climate Prediction Center
NWS / NCEP / CPC
9 February 2026

Overview

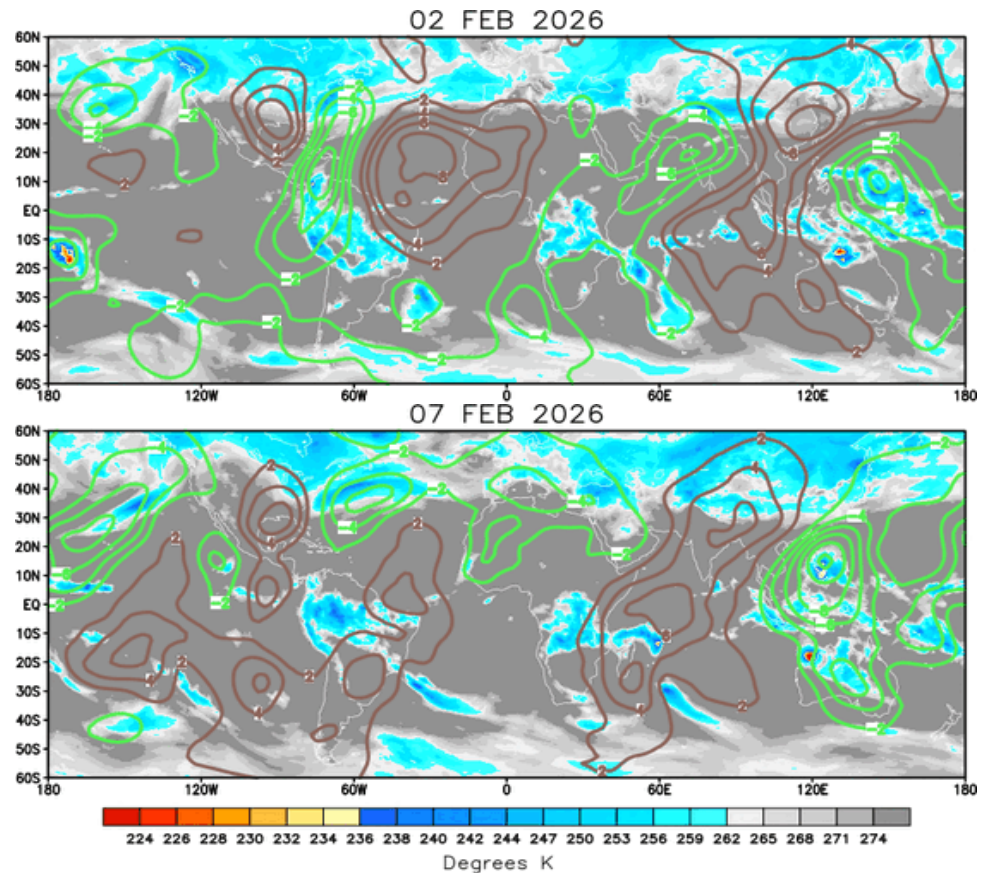
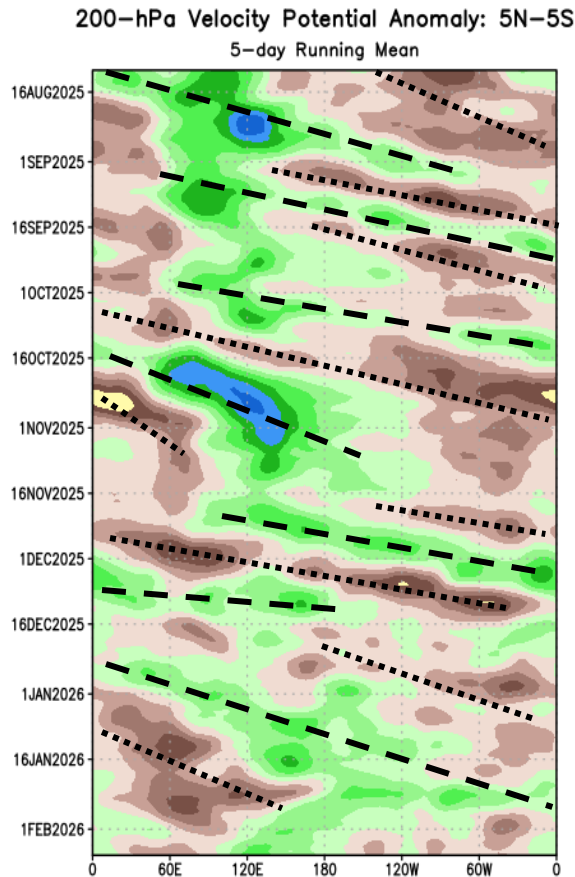
- Following the weakening of the MJO over the Western Hemisphere due to deconstructive interference with a Rossby Wave, the MJO signal has continued to propagate eastward into the Indian Ocean (IO).
- During the next two weeks, the MJO is predicted to strengthen over the IO and continue propagating eastward into the Maritime Continent (Phase 4). This strengthening is due in part to a switch to constructive interference with additional Rossby Wave activity.
- By Week-3, the models begin to diverge with the ECMWF predicting a retreat of the RMM signal back to the center of the unit circle and the GEFS and CFS keeping a more robust signal continuing across the Maritime Continent into the Western Pacific (Phases 5 and 6).
- Tropical cyclone development during the next 2-3 weeks is most likely over the southern IO, to the northwest of Australia, and possibly over the Bay of Bengal and the western North Pacific, southeast of the Philippines.

A discussion of potential impacts for the global tropics and those related to the U.S. are updated on Tuesday at:
<http://www.cpc.ncep.noaa.gov/products/precip/CWlink/ghazards/index.php>

200-hPa Velocity Potential Anomalies

Green shades: Anomalous divergence (favorable for precipitation)

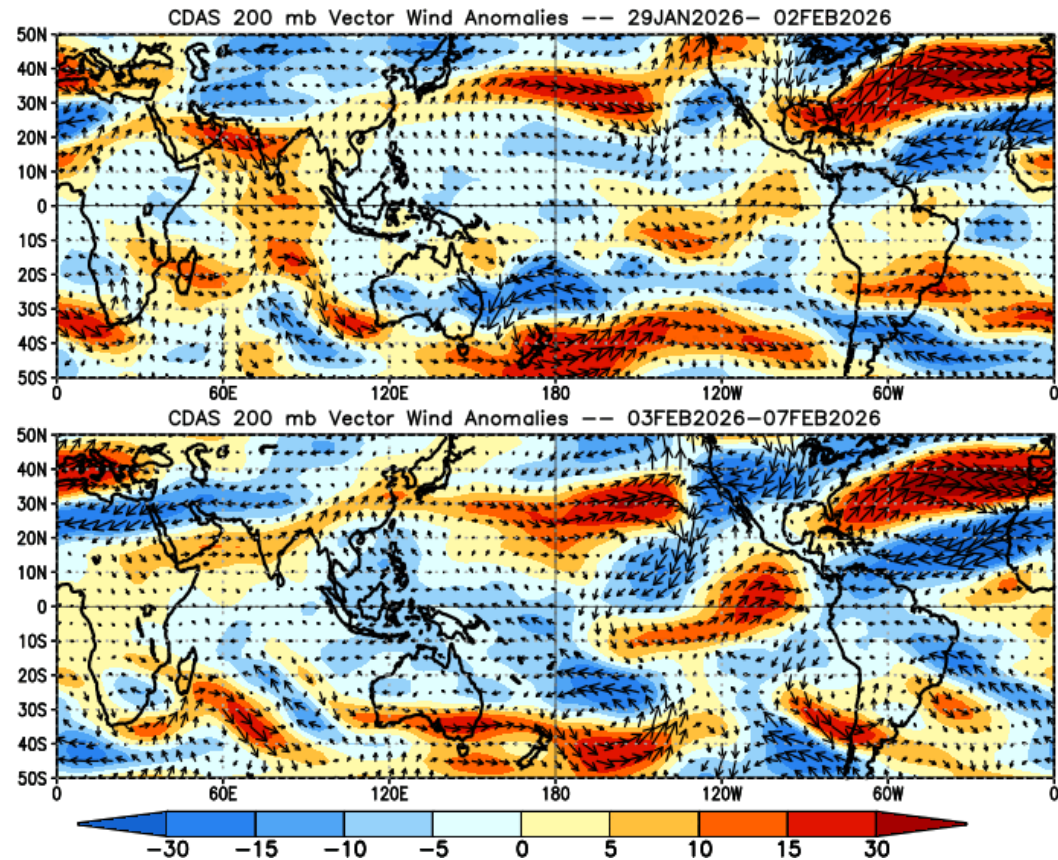
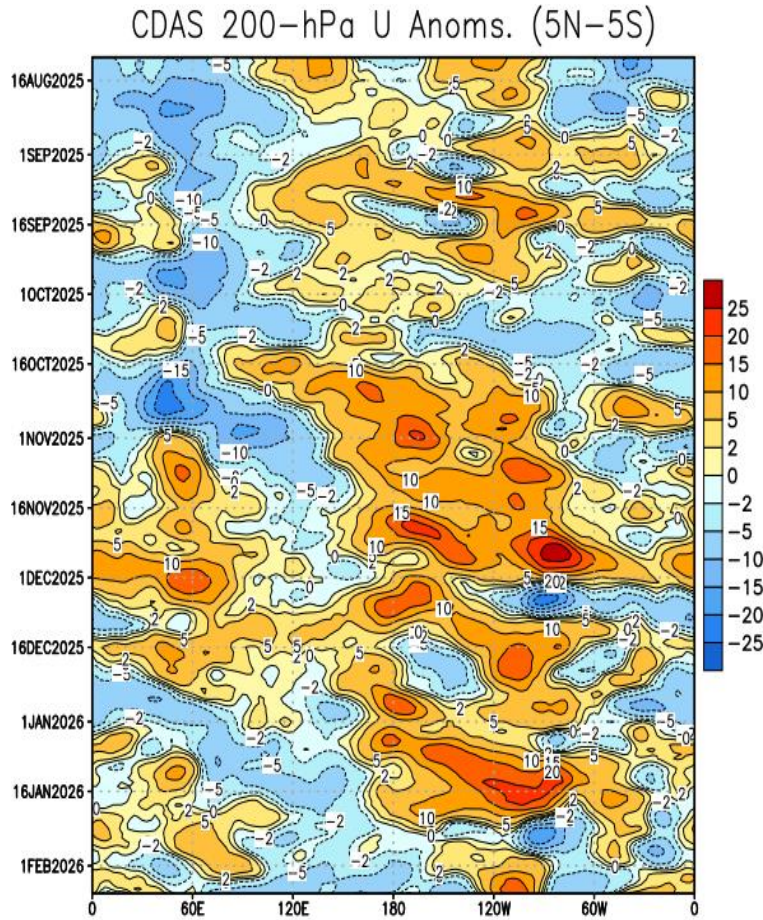
Brown shades: Anomalous convergence (unfavorable for precipitation)



- At the start of February, a strong Equatorial Rossby Wave caused the wave-1 pattern seen in January to become disorganized and split into a more wave-2 pattern.
- This more chaotic pattern has remained in place for much of the past week but is starting to become a bit more organized, with enhanced divergence over the Maritime Continent.

200-hPa Wind Anomalies

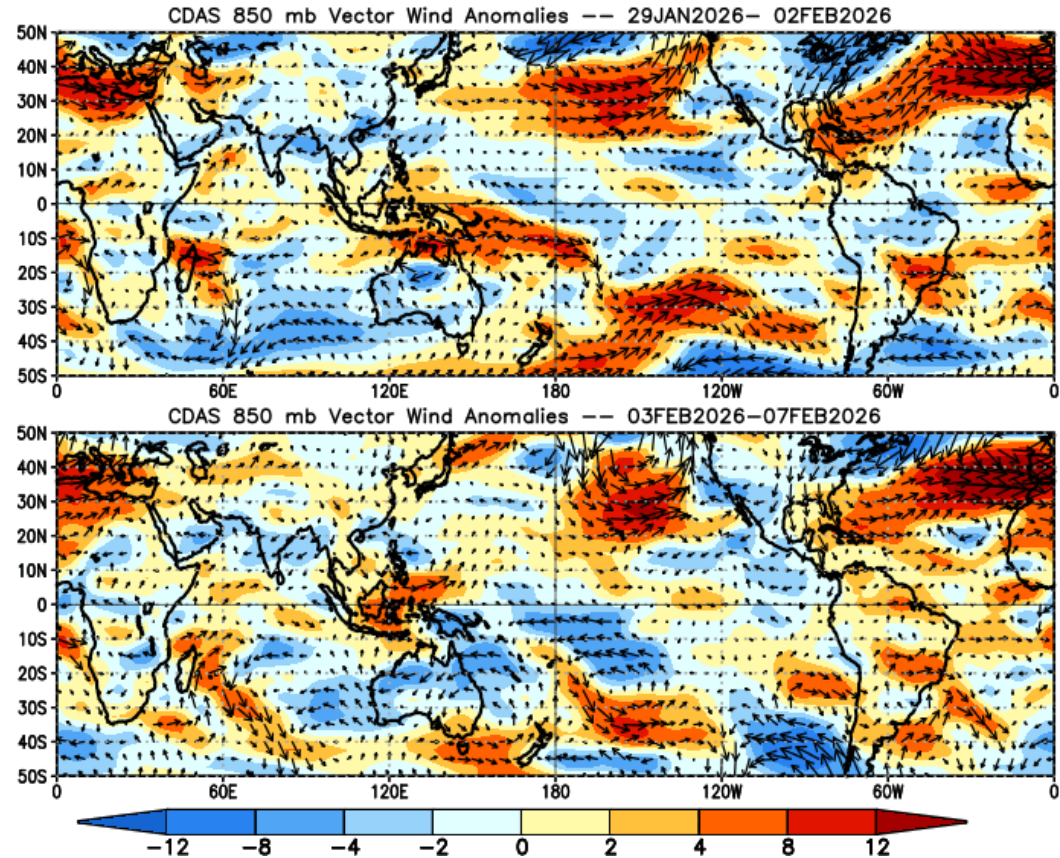
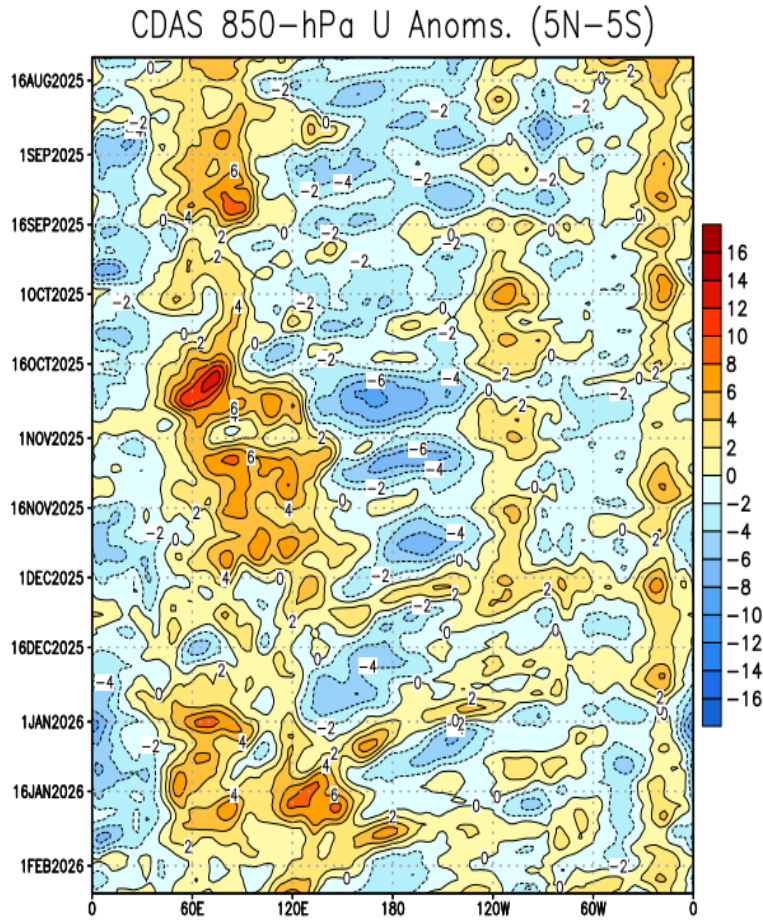
Shading denotes the zonal wind anomaly. **Blue shades:** Anomalous easterlies. **Red shades:** Anomalous westerlies.



- The enhanced upper-level westerlies that persisted across the Indian Ocean over the past few weeks have switched to easterlies which now stretch into the central Pacific.
- The anomalous upper-level westerlies have strengthened over the eastern Pacific, off the coast of central America.
- Over the U.S., the upper-level jet stream continues to be interrupted by easterlies from Canada dominating the country.

850-hPa Wind Anomalies

Shading denotes the zonal wind anomaly. **Blue shades: Anomalous easterlies.** **Red shades: Anomalous westerlies.**

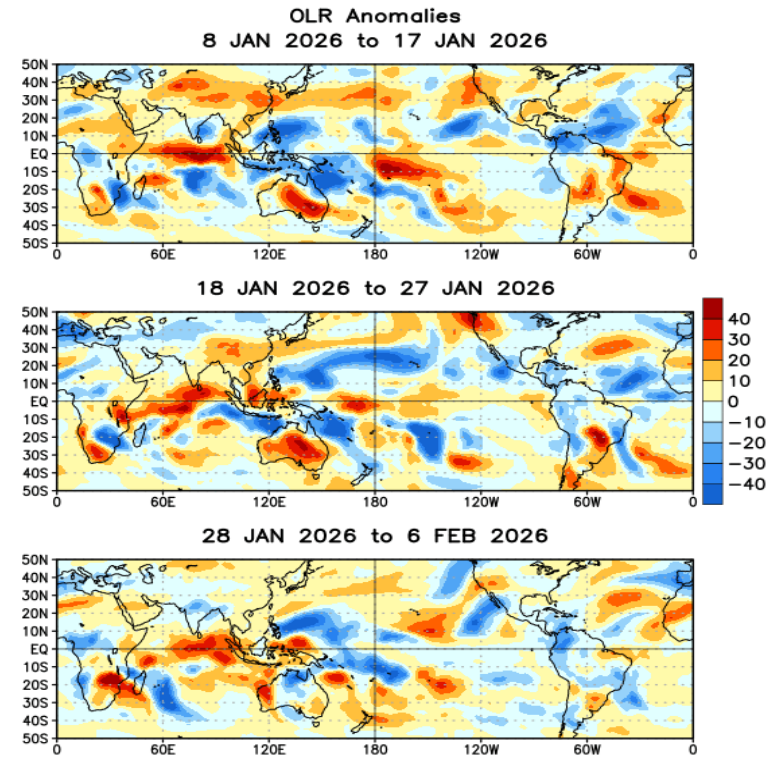
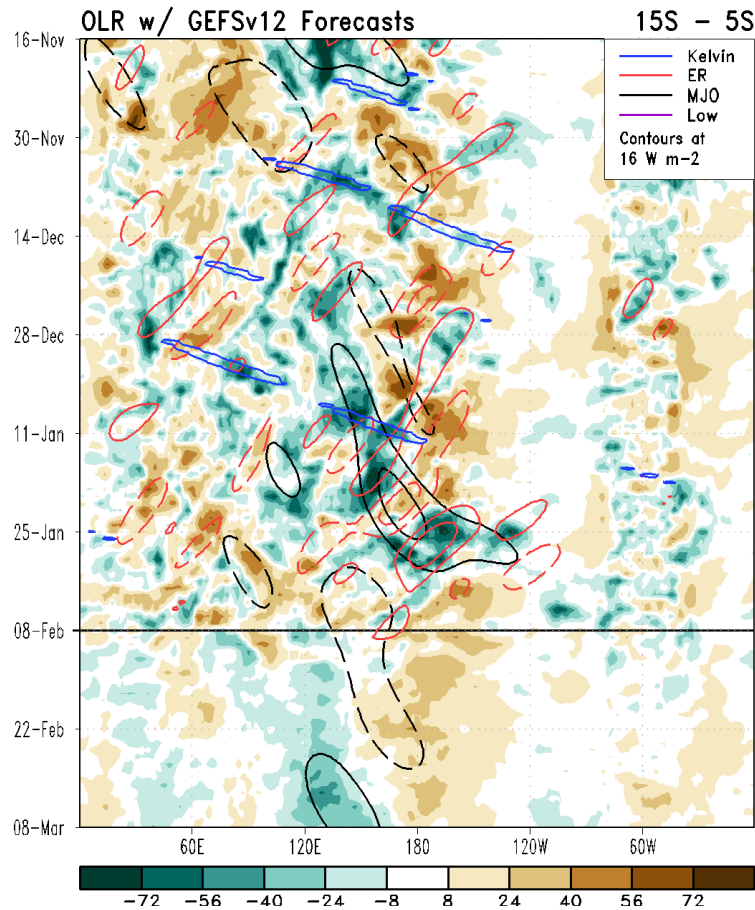


- The lower-level wind patterns became rather noisy in early February.
- Enhanced trades have strengthened across the Equatorial Pacific, now reaching from the Date Line to the Maritime Continent.
- The strong northerly flow from Canada that resulted in anomalously cold temperatures over much of the eastern U.S. has begun to weaken with warmer temperatures expected over the next week.

Outgoing Longwave Radiation (OLR) Anomalies

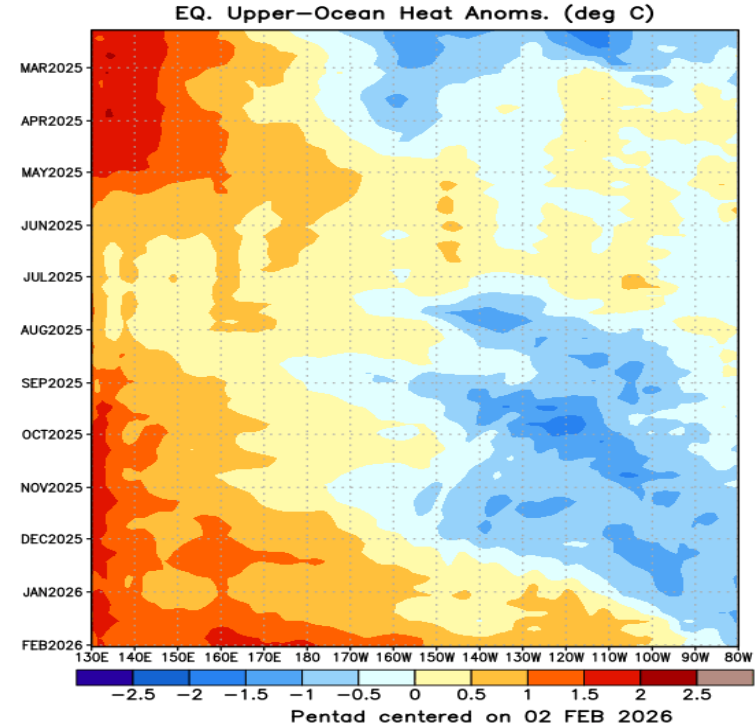
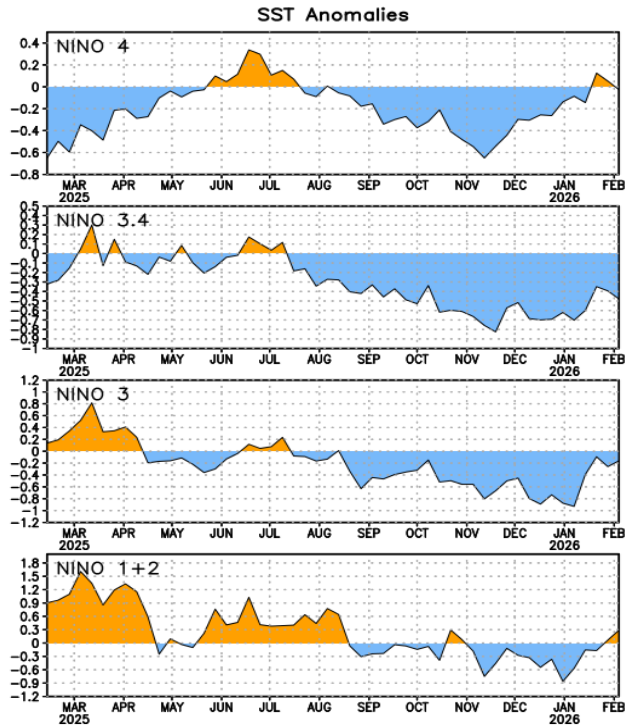
Green shades: Anomalous convection (wetness)

Brown shades: Anomalous subsidence (dryness)



- After the passage of the strong MJO in mid-January, dryness returned to the central Pacific and is forecasted to continue over the next few weeks.
- Strong Rossby Wave activity brought wetness to the Northwest Pacific (TC Penha), while dryness remained over much of the southern Indian Ocean except for the rainfall associated with TC Fytia near Madagascar.
- Over the Maritime Continent, the dryness over the past week should switch to enhanced rainfall as the MJO reorganizes over the region.

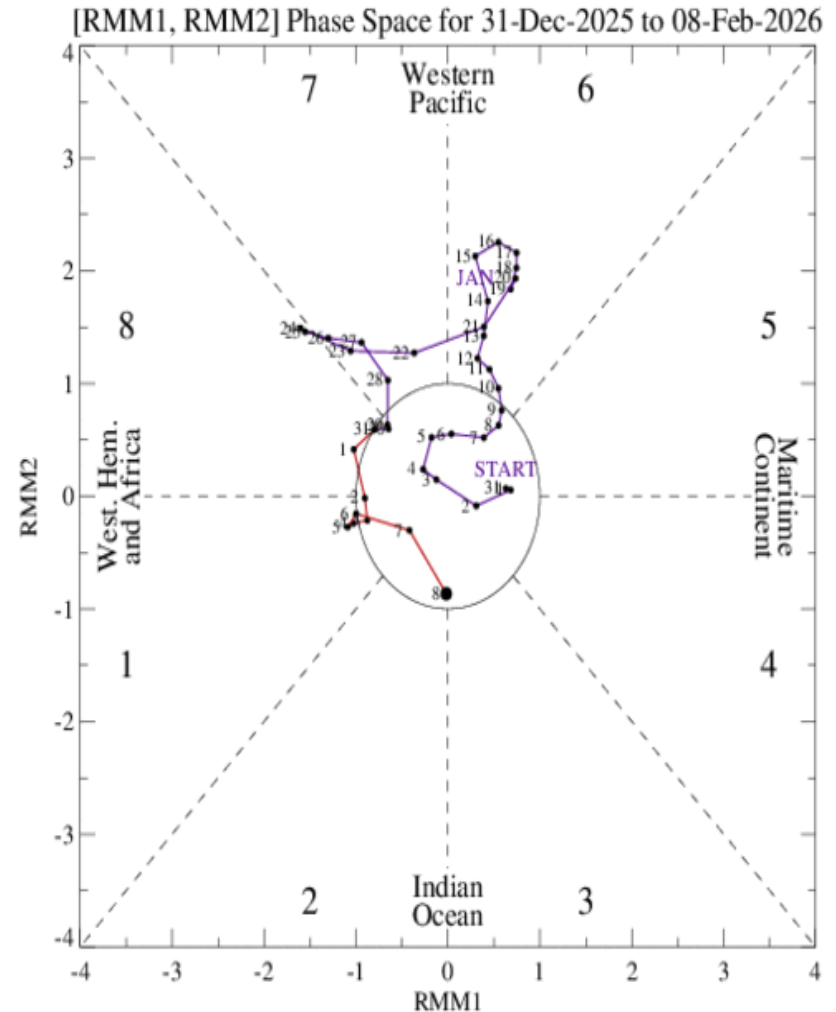
SSTs and Weekly Heat Content Evolution in the Equatorial Pacific



- Surface warming has decreased in the central Pacific and anomalies hover near the zero line in most NINO regions; NINO 1&2 has switched to positive anomalies for the first time since October.
- Positive subsurface heat content anomalies have continued to expand across nearly all of the Pacific to about 90°W. Anomalies over 1°C now stretch past 155°W.

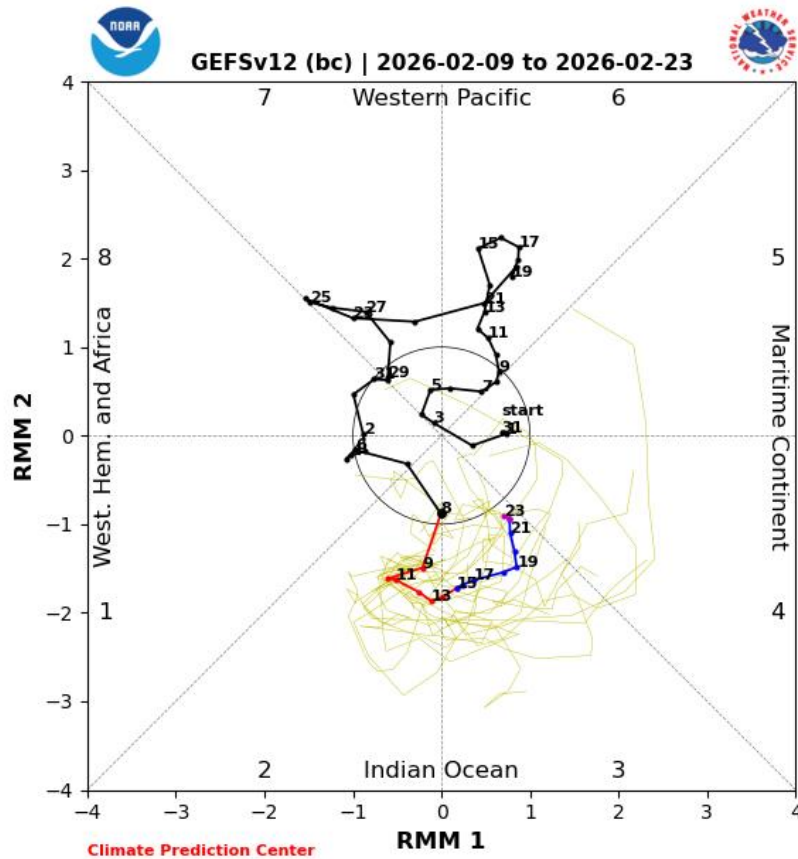
MJO Index: Recent Evolution

- At the end of January, the active MJO signal quickly weakened and entered the unit circle as it passed into the Western Hemisphere.
- This was tied to destructive interference with an Equatorial Rossby Wave that propagated westward across the Pacific.
- Although weakened, the MJO signal continued to propagate eastward into the Indian Ocean over the past week.

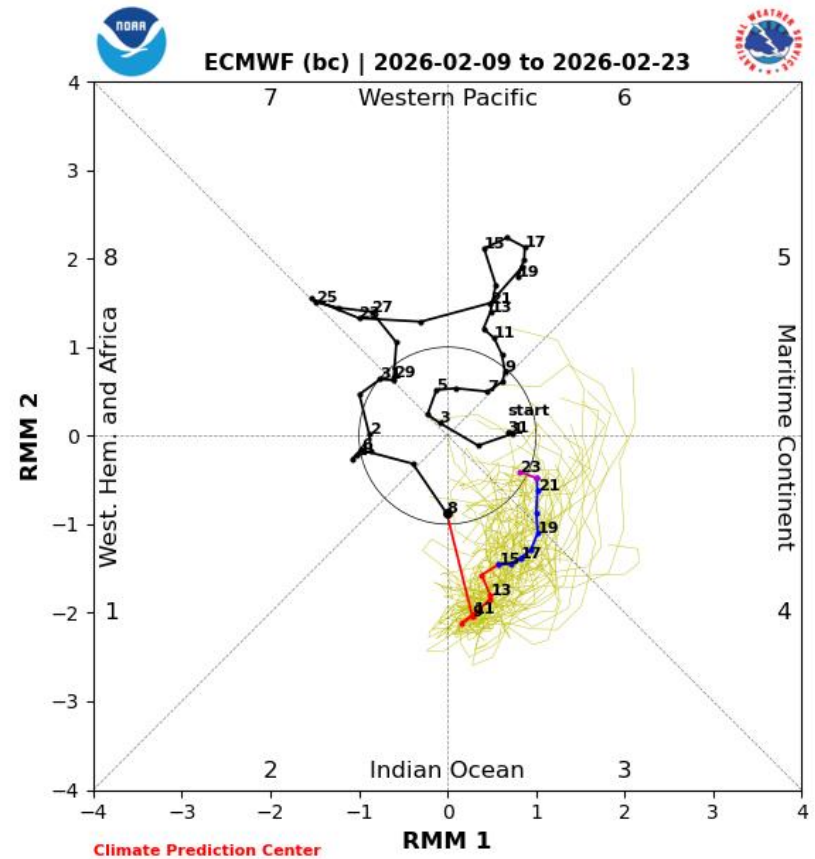


For more information on the RMM index and how to interpret its forecast please see:
https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/CPC_MJOinformation.pdf

MJO Index: Forecast Evolution



GEFS Forecast



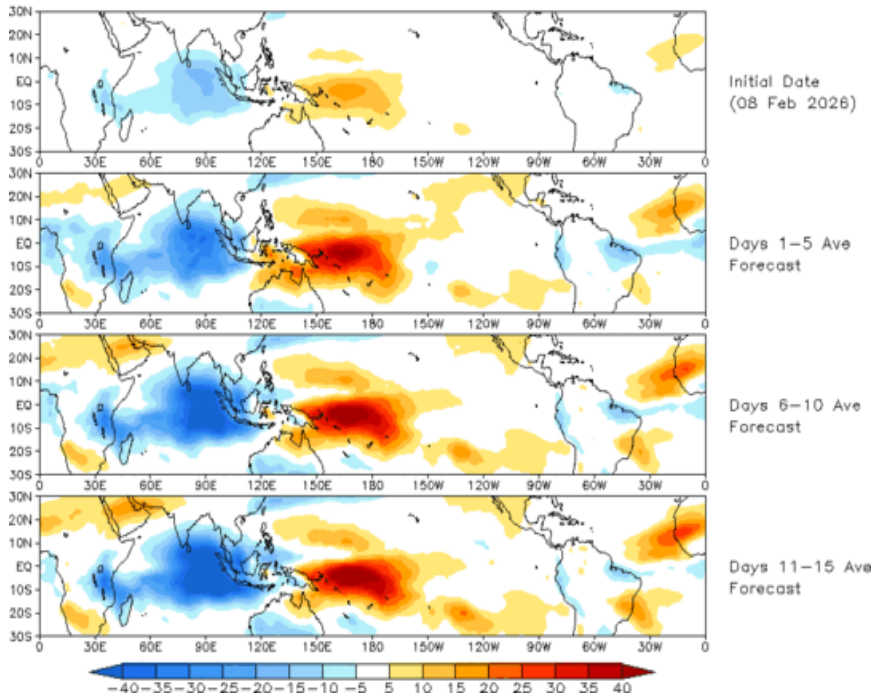
ECMWF Forecast

- The GEFS and ECMWF both depict a re-strengthening MJO signal over the Indian Ocean (Phases 2 and 3) during the next 2 weeks due in part to constructive interference with a passing Rossby Wave.
- During Week-3, the models differ greatly, with the ECMWF retreating to the center of the unit circle, and the GEFS and CFS showing an active MJO signal propagating across the Maritime Continent and entering the Western Pacific (not shown).

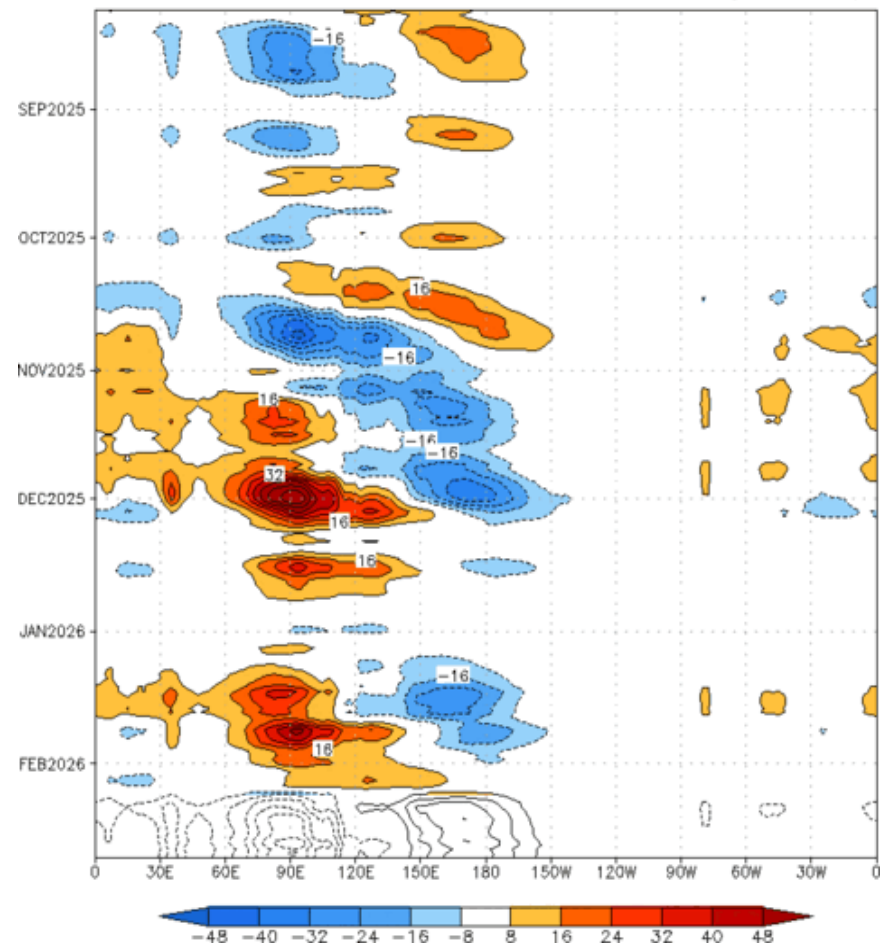
MJO: GEFS Forecast Evolution

Figures below show MJO associated OLR anomalies only (reconstructed from RMM1 and RMM2) and do not include contributions from other modes (*i.e.*, ENSO, monsoons, etc.)

Prediction of MJO-related anomalies using GEFS operational forecast
Initial date: 08 Feb 2026
OLR



Reconstructed anomaly field associated with the MJO using RMM1 & RMM2
OLR [7.5°S,7.5°N] (cont:4Wm⁻²) Period:09–Aug–2025 to 08–Feb–2026
The unfilled contours are GEFS forecast reconstructed anomaly for 15 days

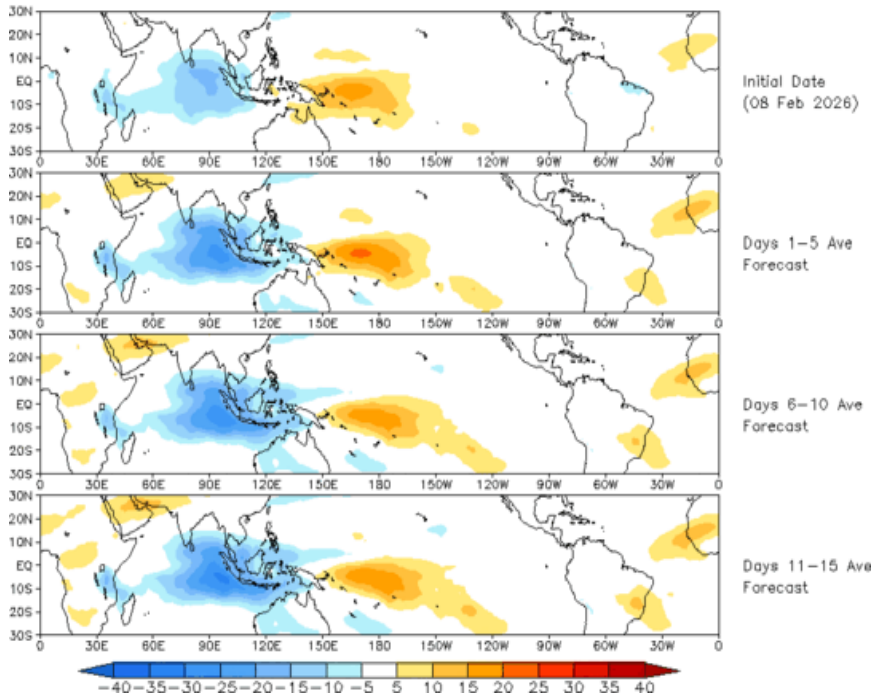


- The GEFS RMM-based OLR tool depicts negative (positive) OLR anomalies remaining stagnant but strengthening over the eastern Indian Ocean (Western Pacific) during the next two weeks.

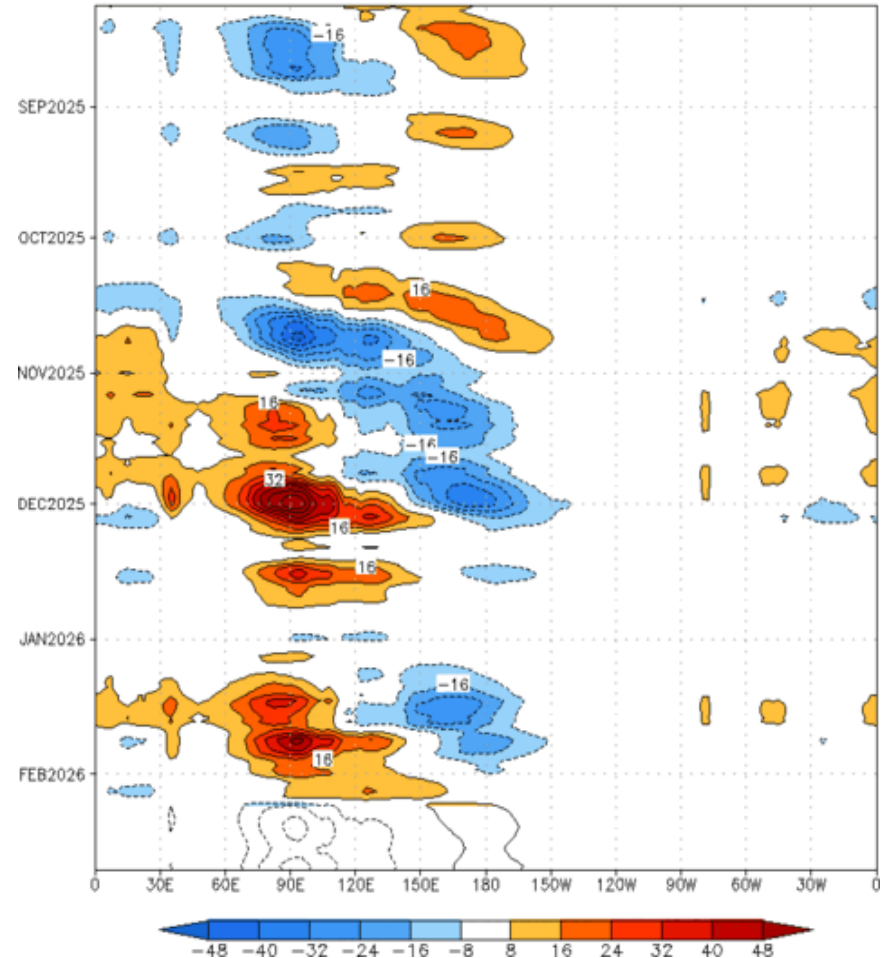
MJO: Constructed Analog Forecast Evolution

Figures below show MJO associated OLR anomalies only (reconstructed from RMM1 and RMM2) and do not include contributions from other modes (*i.e.*, ENSO, monsoons, etc.)

OLR prediction of MJO-related anomalies using CA model reconstruction by RMM1 & RMM2 (08 Feb 2026)



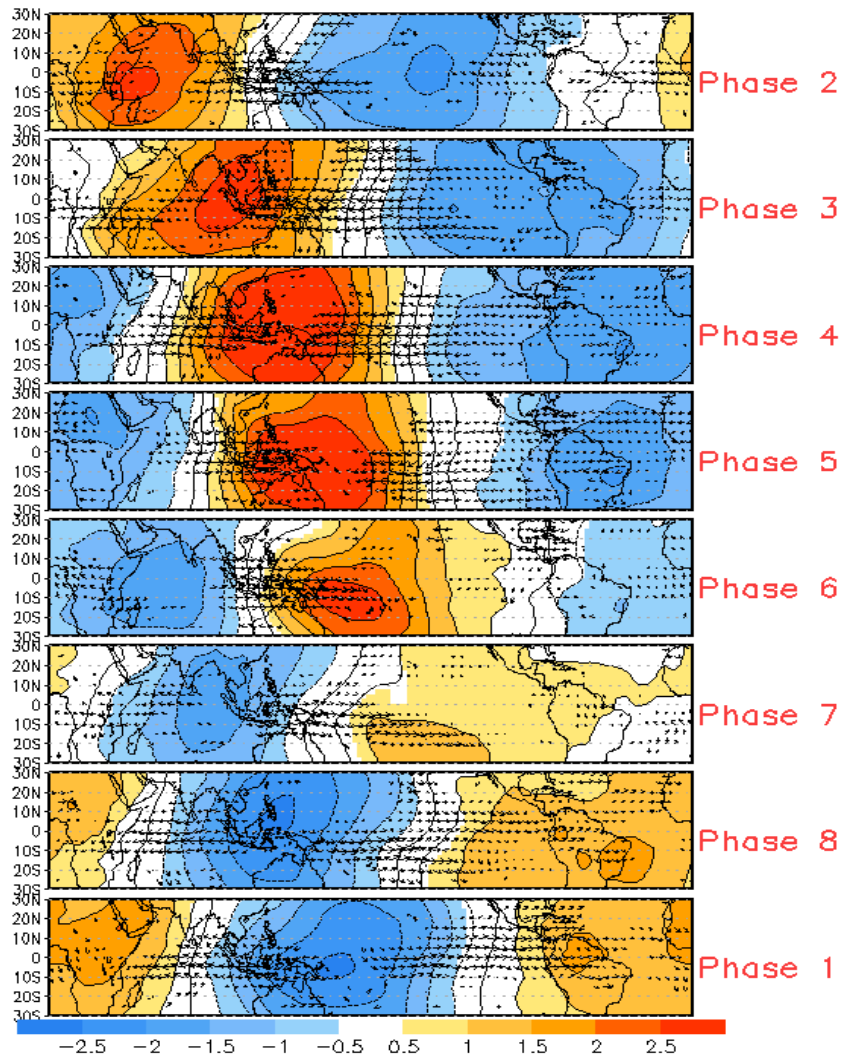
Reconstructed anomaly field associated with the MJO using RMM1 & RMM2 OLR [7.5°S,7.5°N] (cint:4Wm⁻²) Period:09-Aug-2025 to 08-Feb-2026
The unfilled contours are CA forecast reconstructed anomaly for 15 days



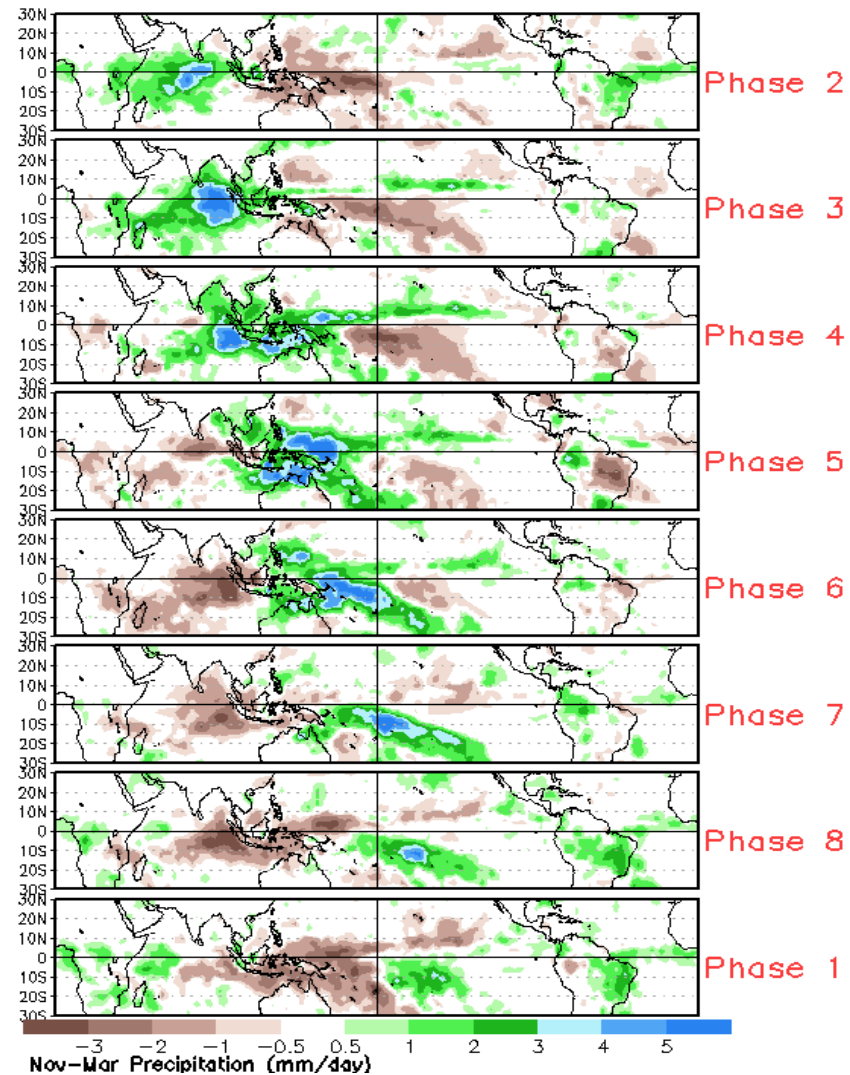
- The constructed analog tool is in fairly good agreement with the GEFS, but with less strengthening and some slight eastward propagation.

MJO: Tropical Composite Maps by RMM Phase

850-hPa Velocity Potential and Wind Anomalies



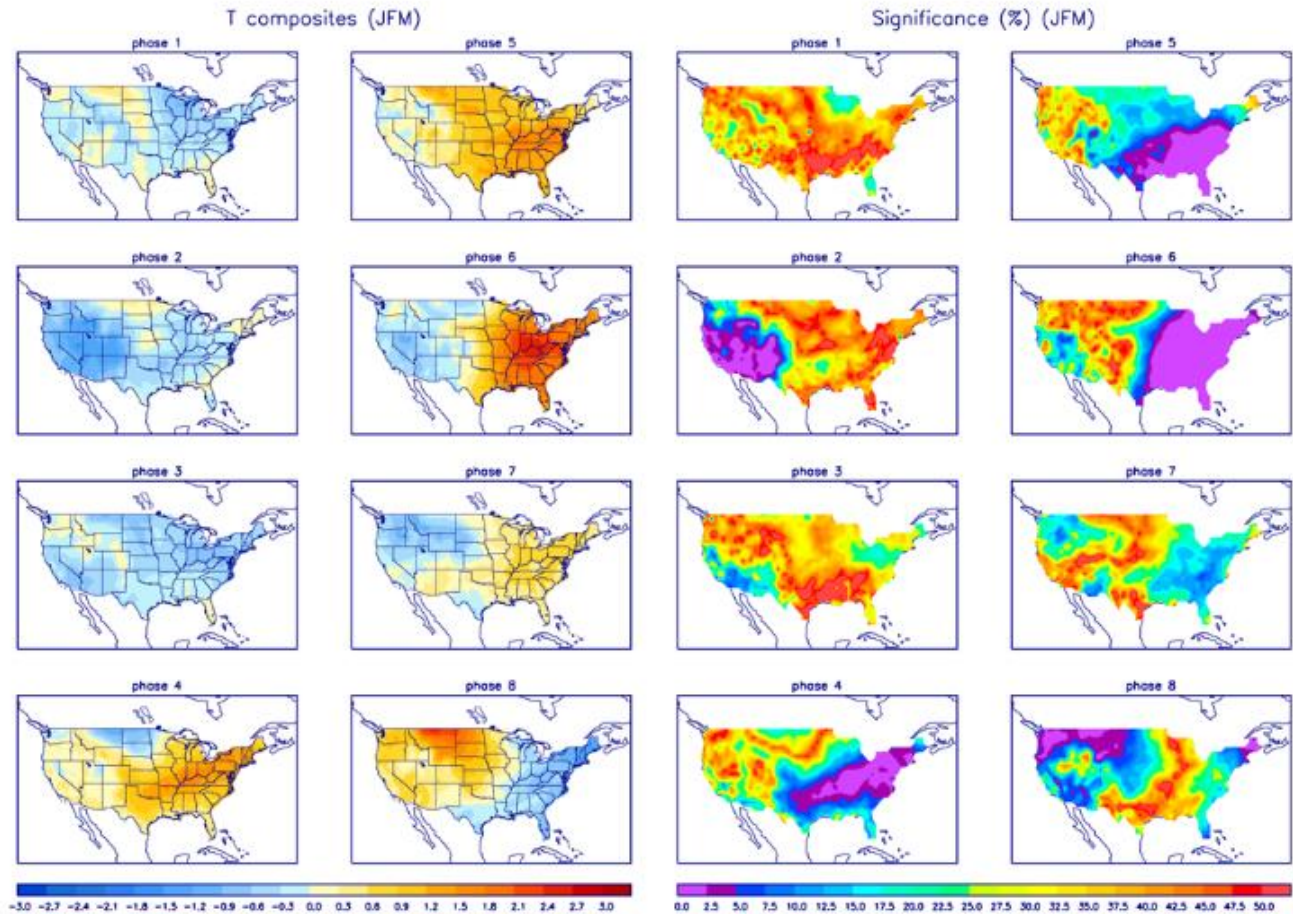
Precipitation Anomalies



MJO: CONUS Composite Maps by RMM Phase - Temperature

Left hand side plots show temperature anomalies by MJO phase for MJO events that have occurred over the three month period in the historical record. Blue (red) shades show negative (positive) anomalies respectively.

Right hand side plots show a measure of significance for the left hand side anomalies. Purple shades indicate areas in which the anomalies are significant at the 95% or better confidence level.



MJO: CONUS Composite Maps by RMM Phase - Precipitation

Left hand side plots show precipitation anomalies by MJO phase for MJO events that have occurred over the three month period in the historical record. Brown (green) shades show negative (positive) anomalies respectively.

Right hand side plots show a measure of significance for the left hand side anomalies. Purple shades indicate areas in which the anomalies are significant at the 95% or better confidence level.

