

Second WMO RCC-Washington International Training Workshop

**Real-time week-2 extreme
precipitation outlook**

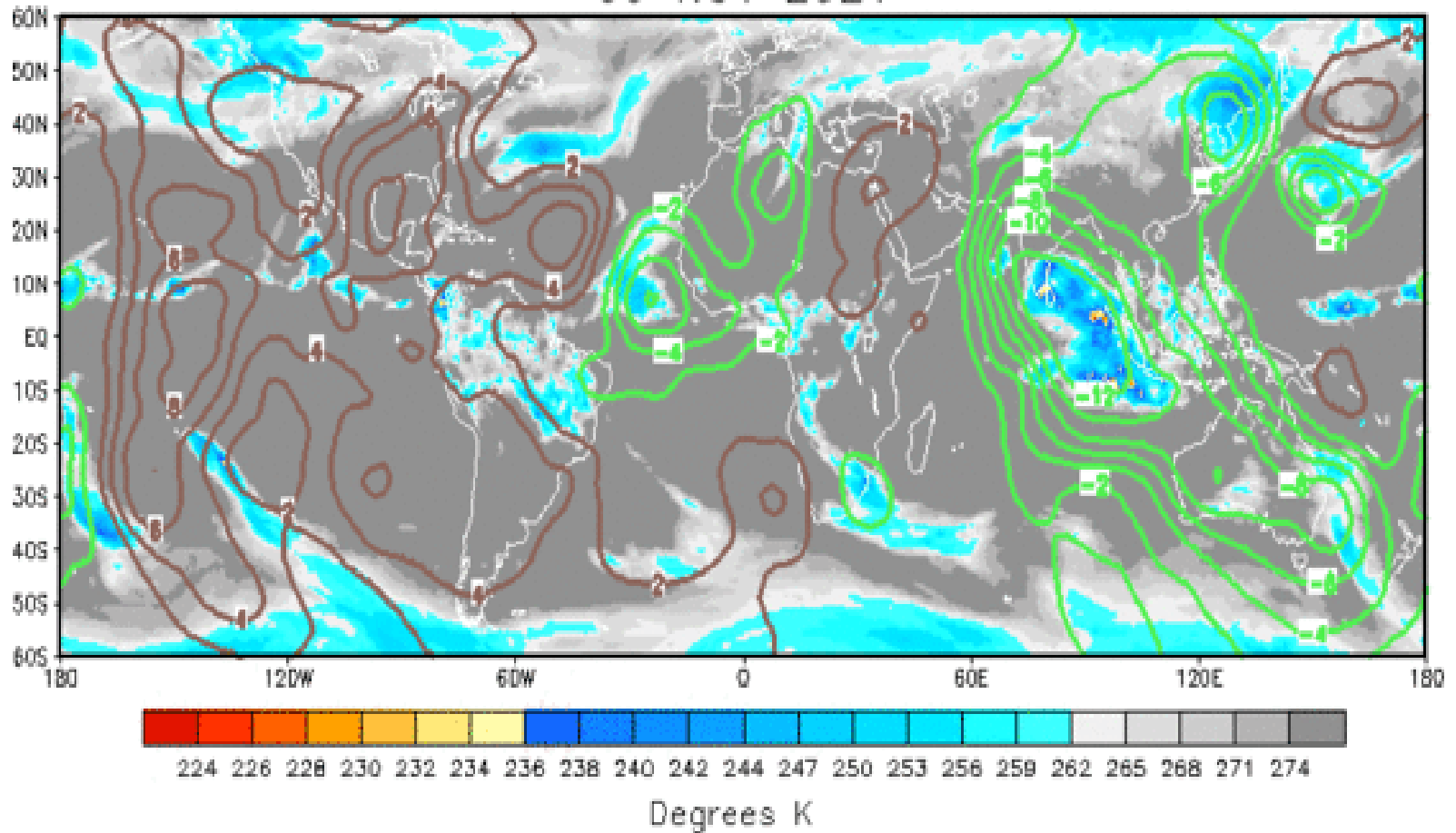
Marie Carmelle V CHERY

Haiti

8 – 10 November 2021

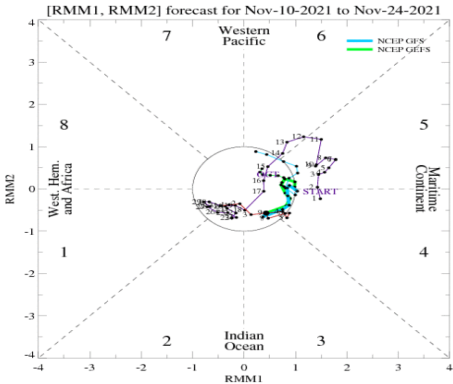
200-hPa Velocity Potential Anomaly

09 NOV 2021

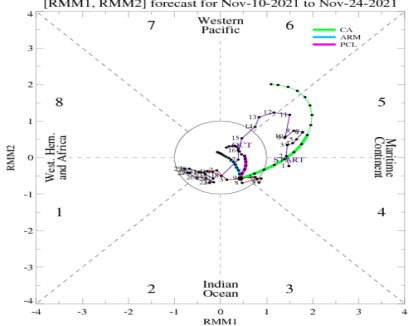


Wheeler-Hendon Index – Forecasts

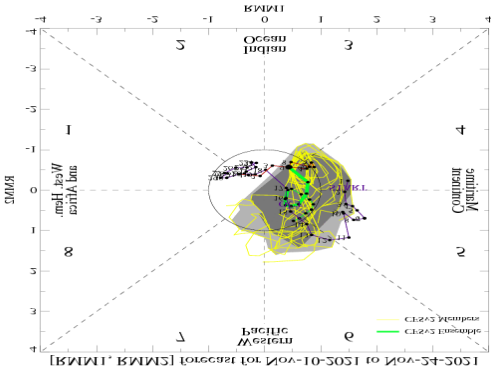
GEFS



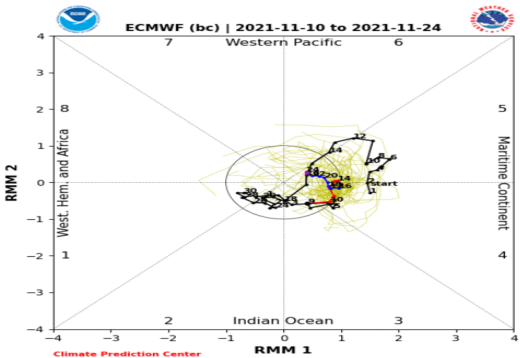
Statistical



CFSv2



ECMWF

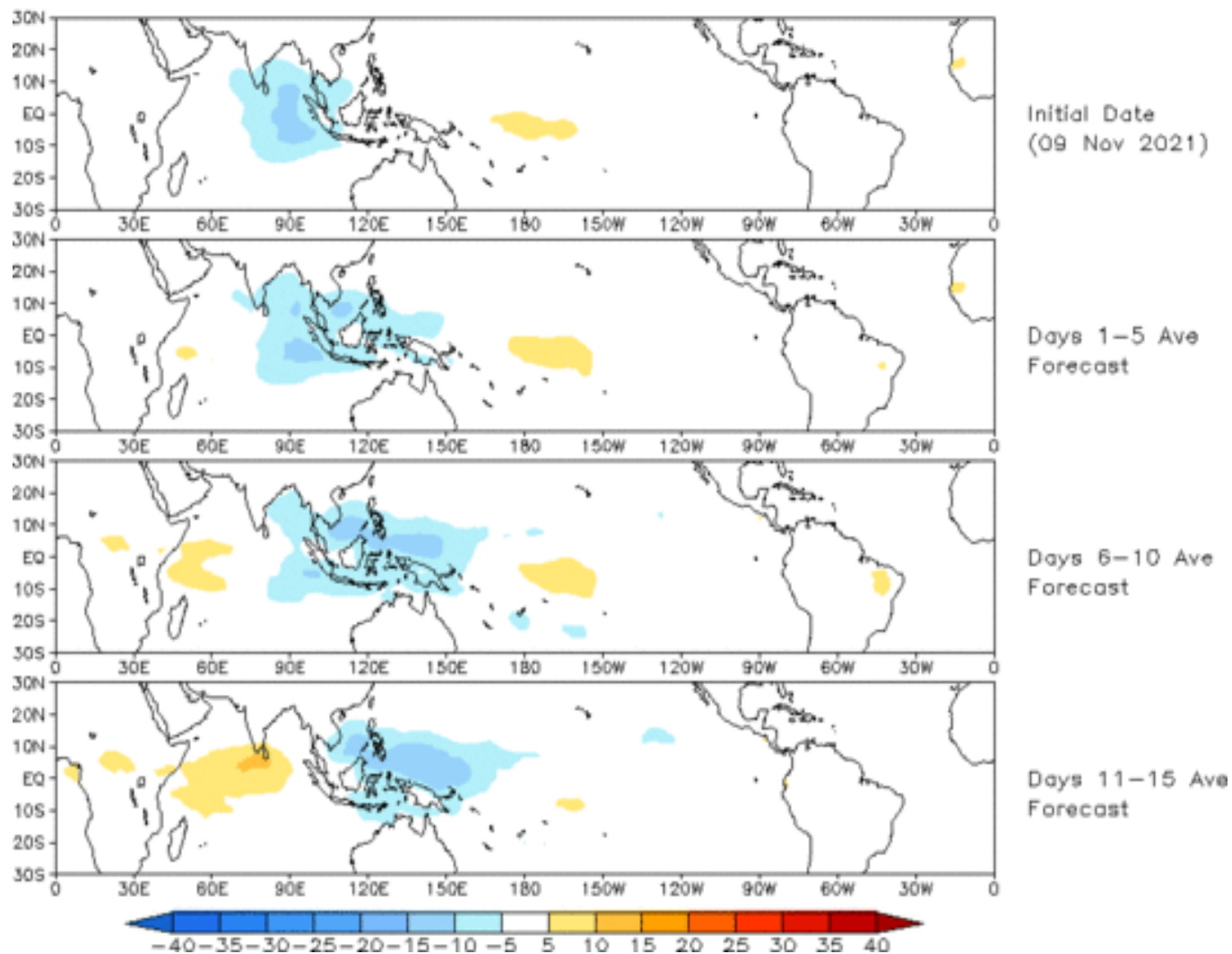


Evolution of MJO-related Anomalies

Prediction of MJO-related anomalies using GEFS operational forecast

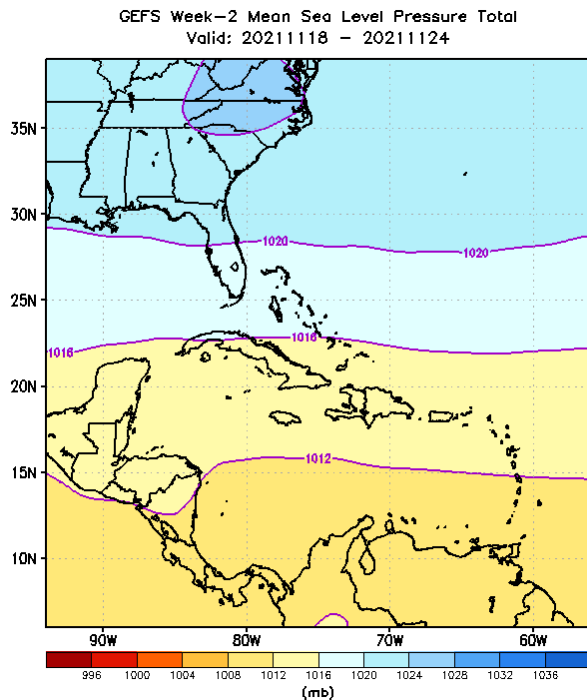
Initial date: 09 Nov 2021

OLR

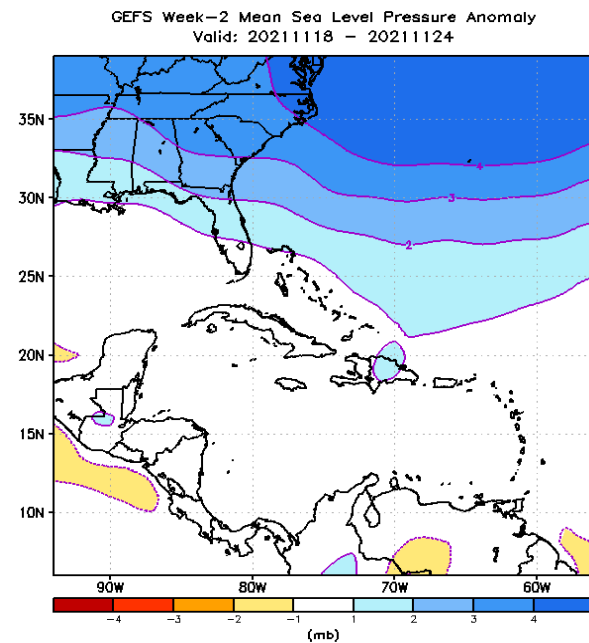


Mean Sea Level Pressure

Total



Anomaly

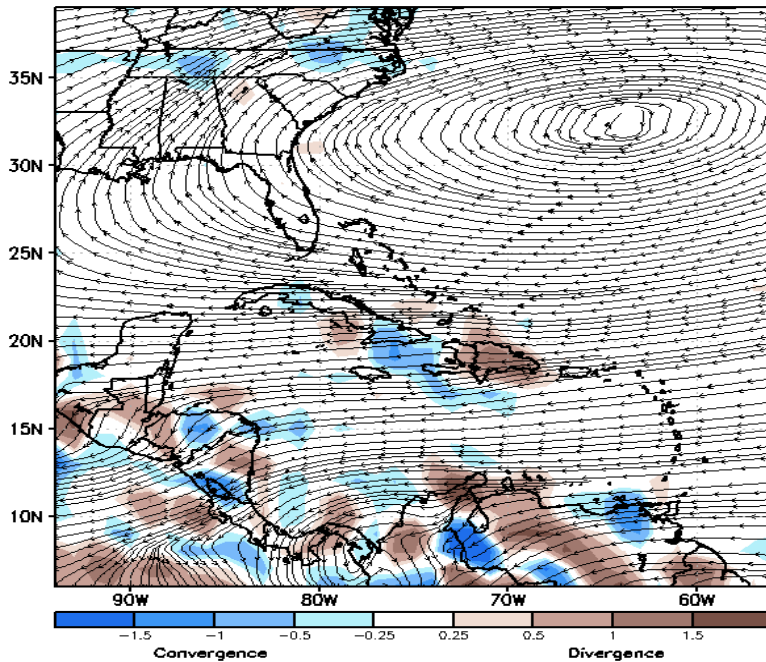


A deep mean sea level pressure anomaly, associated with Hurricane in the Caribbean Sea and the neighboring areas

850-hPa Wind

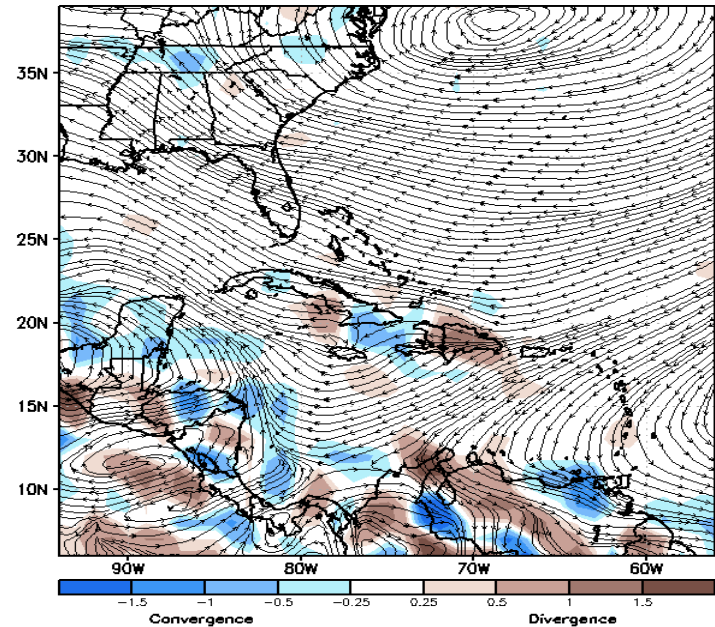
Total

GEFS Week-2 850-hPa Divergence and Wind Total
Valid: 20211118 - 20211124



Anomaly

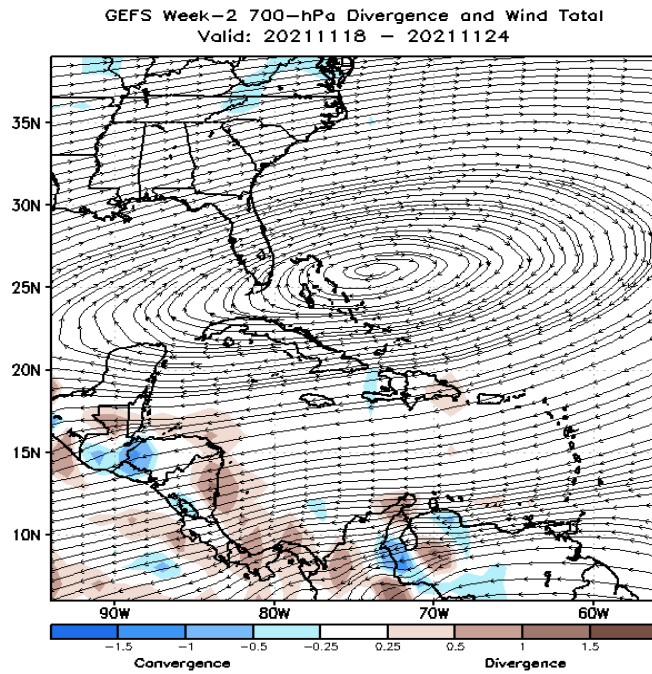
GEFS Week-2 850-hPa Divergence and Wind Anomaly
Valid: 20211118 - 20211124



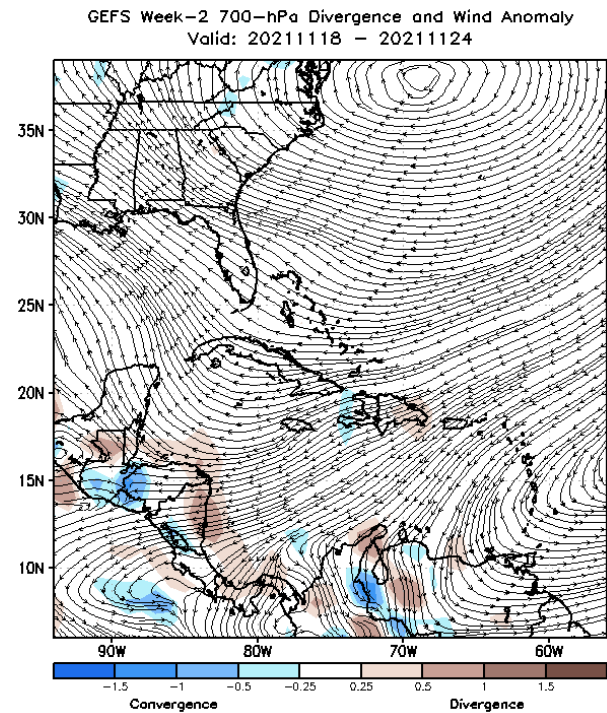
A deep cyclonic circulation anomaly, associated with Hurricane in the Caribbean Sea particularly in Cuba, Haiti, Dominican Republic and the neighboring areas.

700-hPa Wind

Total



Anomaly

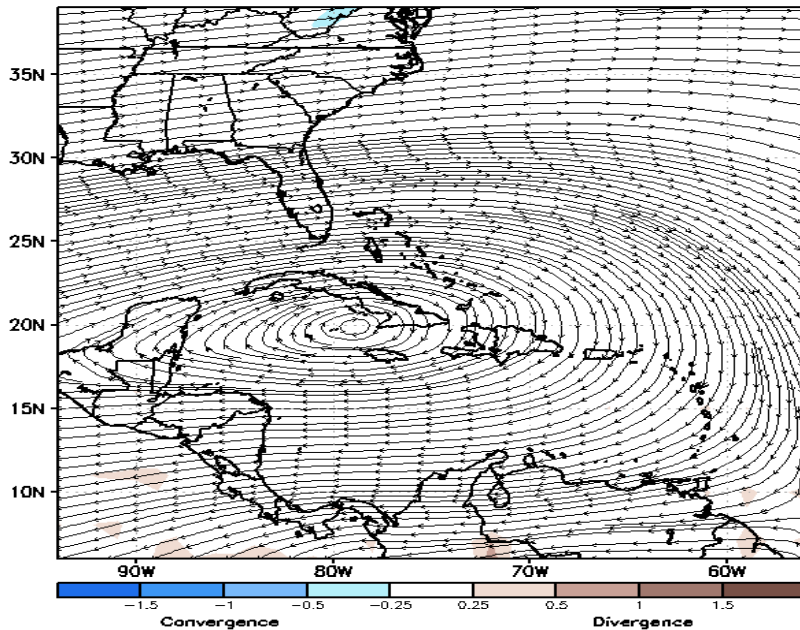


The cyclonic circulation anomaly is evident at 700-hPa

500-hPa Wind

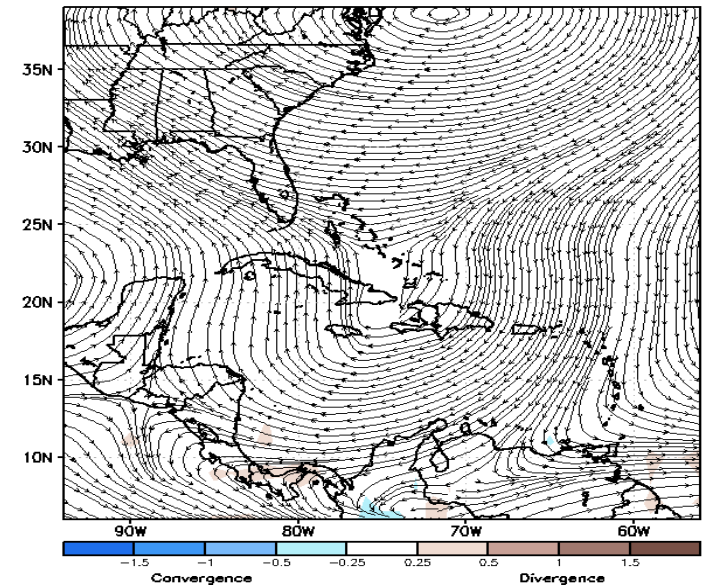
Total

GEFS Week-2 500-hPa Divergence and Wind Total
Valid: 20211118 - 20211124



Anomaly

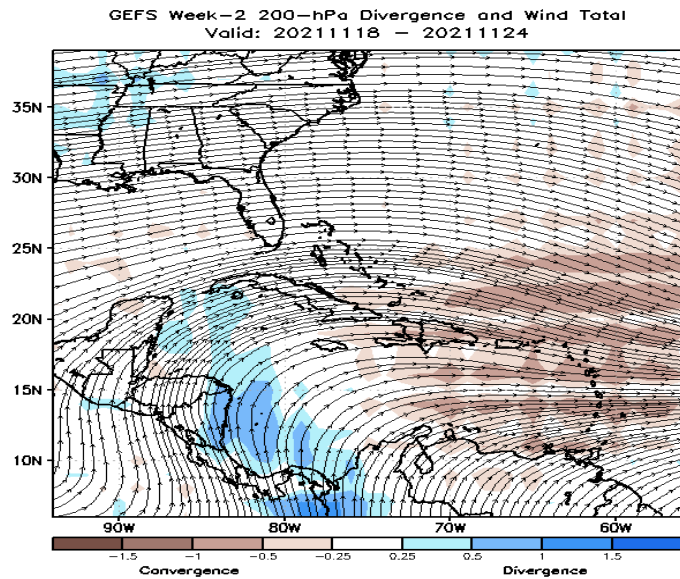
GEFS Week-2 500-hPa Divergence and Wind Anomaly
Valid: 20211118 - 20211124



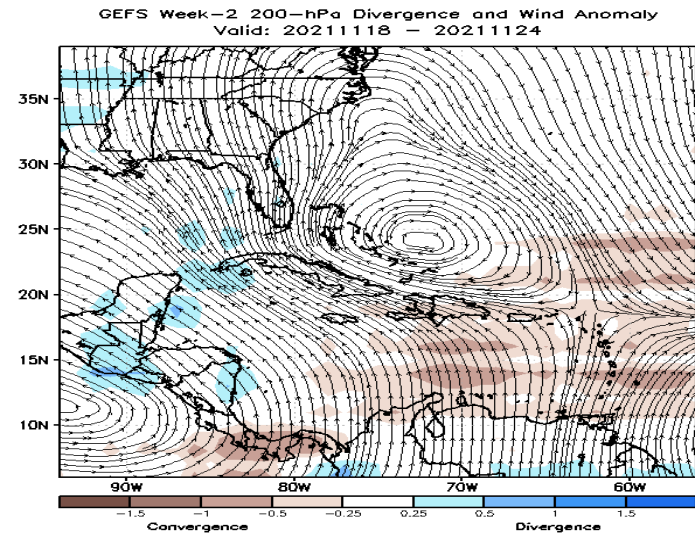
The cyclonic circulation anomaly is evident at 500-hPa level as well

200-hPa Wind

Total



Anomaly

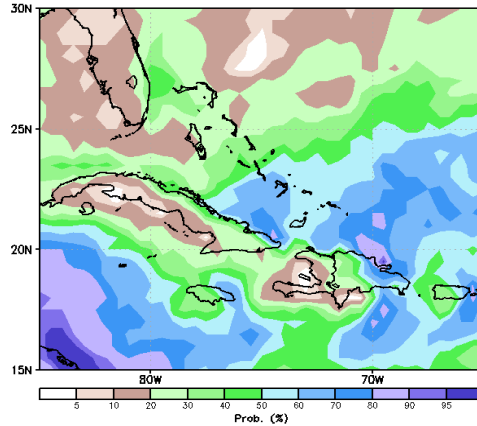


A strong upper-level divergence and anti-cyclonic anomaly is evident in the Caribbean Sea region and the neighboring areas

Precipitation Exceedance Probability

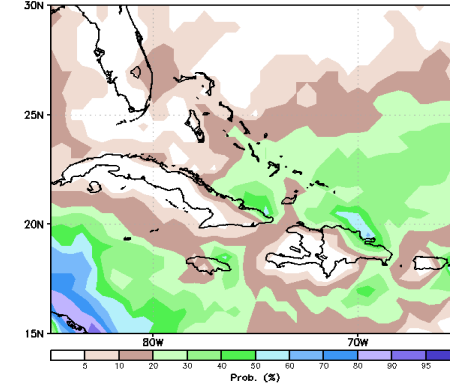
$\geq 25\text{mm}$

GEFS Week-2 Exceedance Prob. $\geq 25\text{mm}$
Valid: 20211118 - 20211124



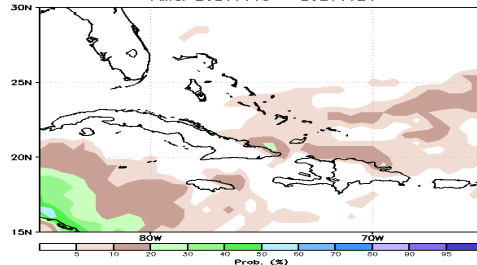
$\geq 50\text{mm}$

GEFS Week-2 Exceedance Prob. $\geq 50\text{mm}$
Valid: 20211118 - 20211124



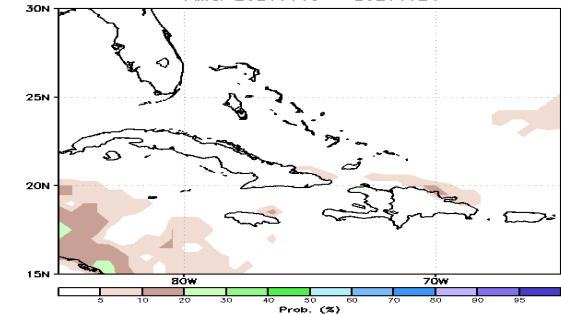
$\geq 100\text{mm}$

GEFS Week-2 Exceedance Prob. $\geq 100\text{mm}$
Valid: 20211118 - 20211124



$\geq 150\text{mm}$

GEFS Week-2 Exceedance Prob. $\geq 150\text{mm}$
Valid: 20211118 - 20211124

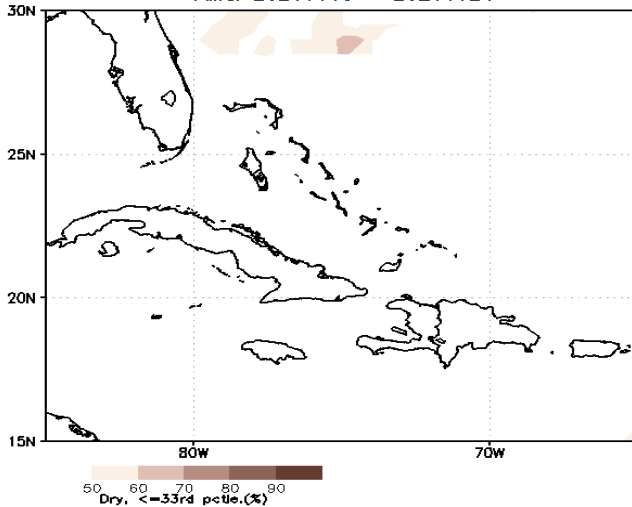


High exceedance probability ($\geq 25\text{mm}$) over many places in the Caribbean. Dominican Republic, Bahamas and other places.

Precipitation Exceedance Probability ($\leq 33^{\text{rd}}$ & $\geq 67^{\text{th}}$ percentiles)

$\leq 33^{\text{rd}}$ & $\geq 67^{\text{th}}$ percentiles

GEFS Week-2 Exceedance Probability ($\leq 33^{\text{rd}}/\geq 67^{\text{th}}$ Pctl.)
Valid: 20211118 - 20211124

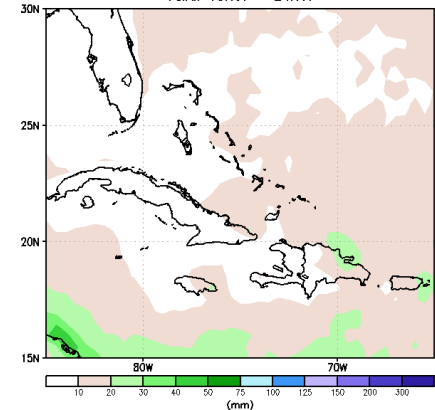


High exceedance probability ($\geq 67^{\text{th}}$ percentile) over many places in the Caribbean cubas, Haiti, in the northern west part of Cuba.

- Drier condition ($\leq 33^{\text{rd}}$ percentile) is likely over portions of the Caribbean islands Bahamas, a portion of republic Dominican and in the southern part of these islands.

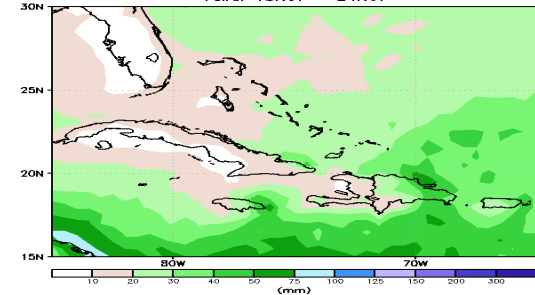
33rd percentile climo

GEFS 33rd . Model Climo.
Valid: 18Nov - 24Nov



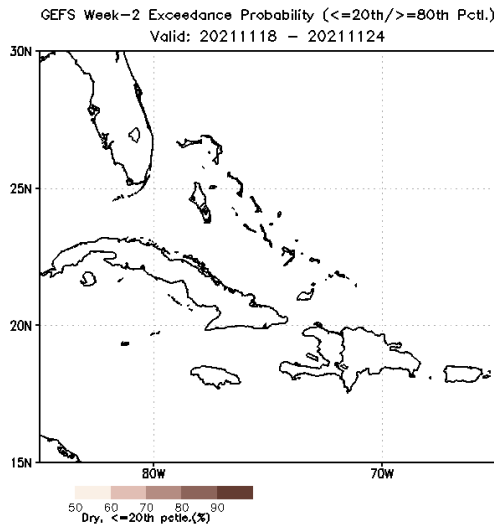
67th percentile climo

GEFS 67th . Model Climo.
Valid: 18Nov - 24Nov



Precipitation Exceedance Probability ($\leq 20^{\text{th}}$ & $\geq 80^{\text{th}}$ percentiles)

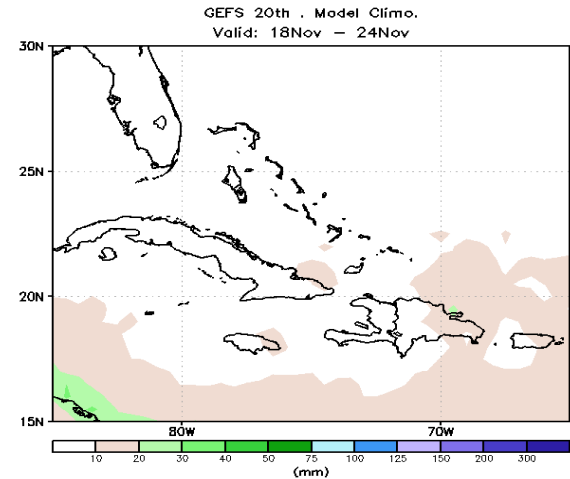
$\leq 20^{\text{th}}$ & $\geq 80^{\text{th}}$ percentiles



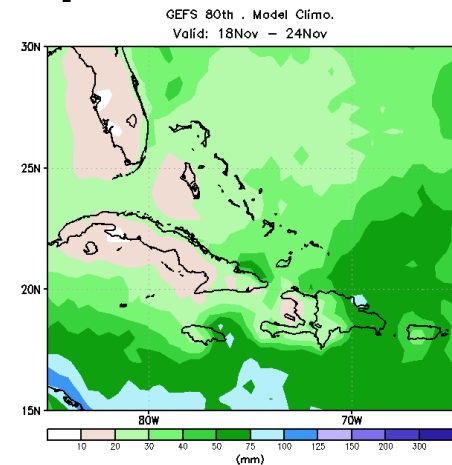
High exceedance probability ($\geq 80^{\text{th}}$ percentile) over almost many places in the Caribbean Dominican Republic, Bahamas, Haiti in the southern part also.

- Drier condition ($\leq 20^{\text{th}}$ percentile) is likely over of portions of the Caribbean Bahamas, Dominican Republic, in the southern part of the Caribbean islands.

20th percentile climo



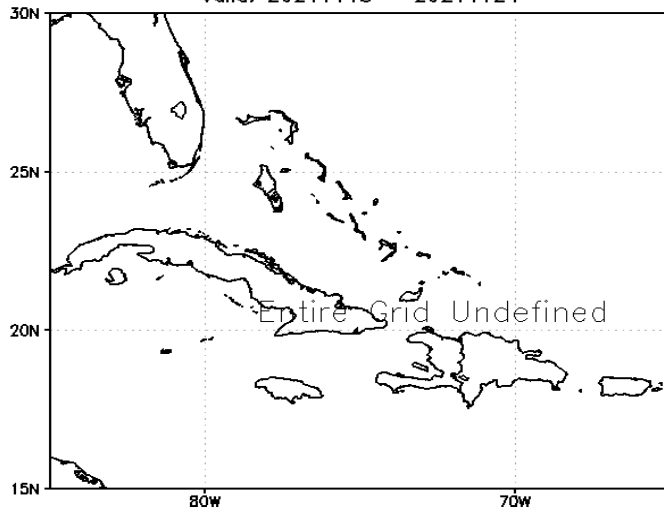
80th percentile climo



Precipitation Exceedance Probability ($\leq 10^{\text{th}}$ & $\geq 90^{\text{th}}$ percentiles)

$\leq 10^{\text{th}}$ & $\geq 90^{\text{th}}$ percentiles

GEFS Week-2 Exceedance Probability ($\leq 10^{\text{th}}$ / $\geq 90^{\text{th}}$ Pctl.)
Valid: 20211118 - 20211124



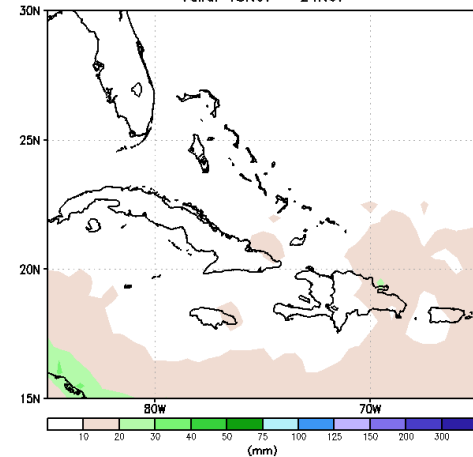
Dry $\leq 10^{\text{th}}$ pctle.(%)

Wet. $\geq 90^{\text{th}}$ pctle.(%)

High exceedance probability ($\geq 90^{\text{th}}$ percentile) over much of places in the Caribbean.

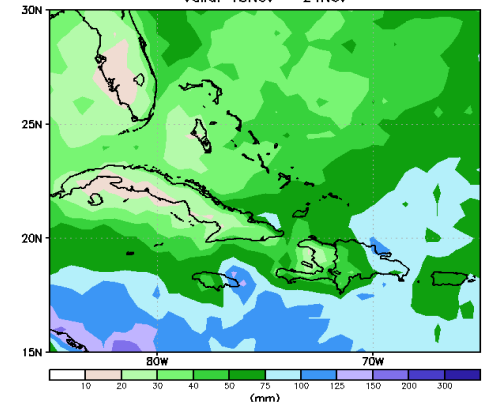
10th percentile climo

GEFS 10th . Model Climo.
Valid: 18Nov - 24Nov



90th percentile climo

GEFS 90th . Model Climo.
Valid: 18Nov - 24Nov

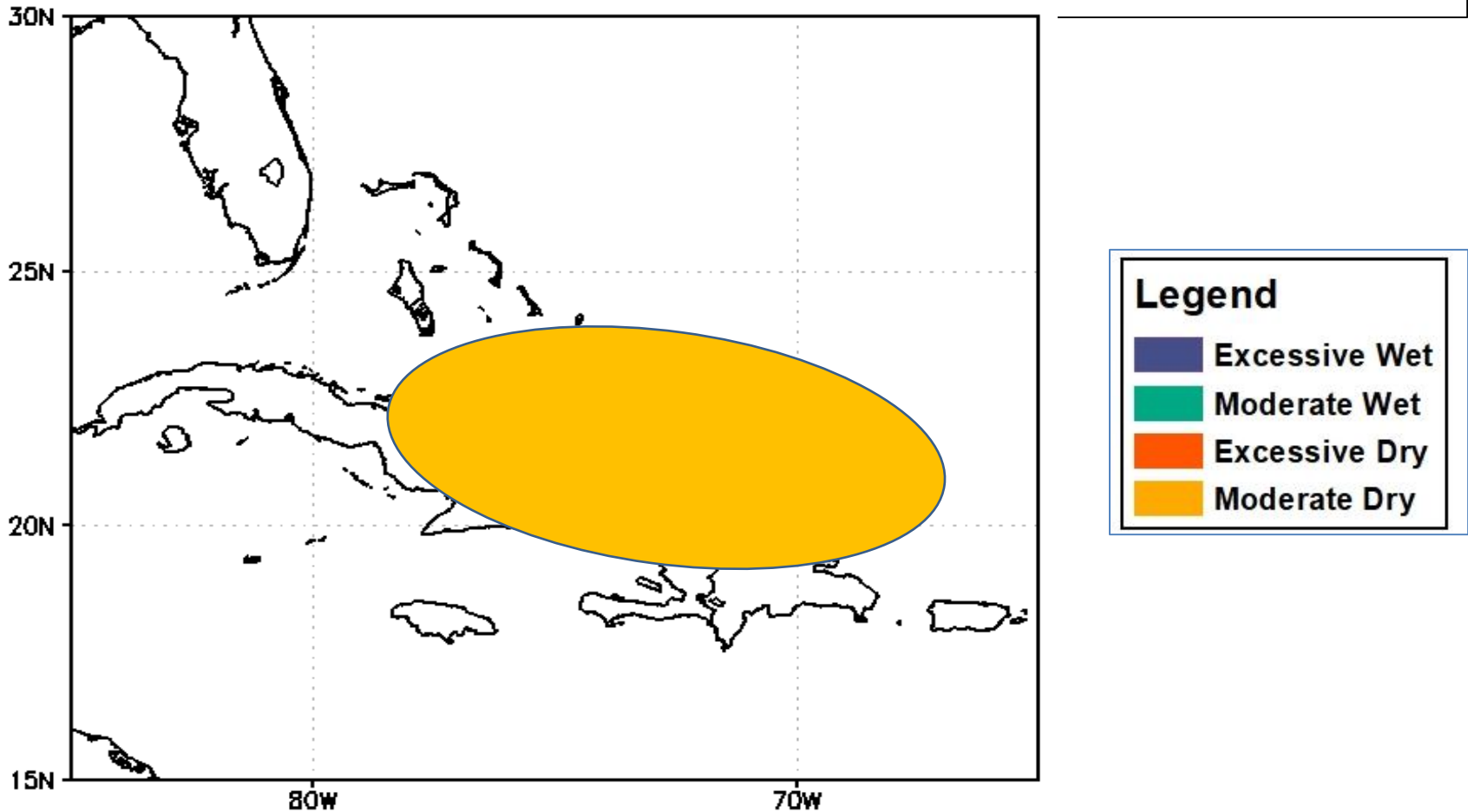


Summary

Convergence of evidences

- MJO => Not active
- Hurricane => Likely to enhance precip in the Caribbean Sea and the neighboring areas.
- Large Scale Circulation patterns => Strong lower and mid-level cyclonic circulation and convergence, combined with strong upper-level divergence in the region.
- Exceedance probability forecasts = > higher probability of exceedance for >=67th, 80th and 90th percentiles.
- Models suggest higher probabilities for precip to be below the 33rd percentile over parts of Bahamas, Dominican Republic, in the southern part of these islands.

Extreme Precipitation Outlooks



Model precip forecasts suggest an increased chance for the precip to exceed the 67th percentile over many places, with pocket areas of high exceedance probabilities in excess of the 90th percentile.

2. Model forecast suggest an increased chance for moderate dryness over Bahamas, Dominican Republic in the southern part of the Caribbean.