

Generating Week-2 Real Time Forecasts, Valid 11 – 17 October 2019

Central America: Group#5

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**First WMO RCC-Washington Training Workshop
Washington DC, USA,
30 September 2019 – 4 October 2019**

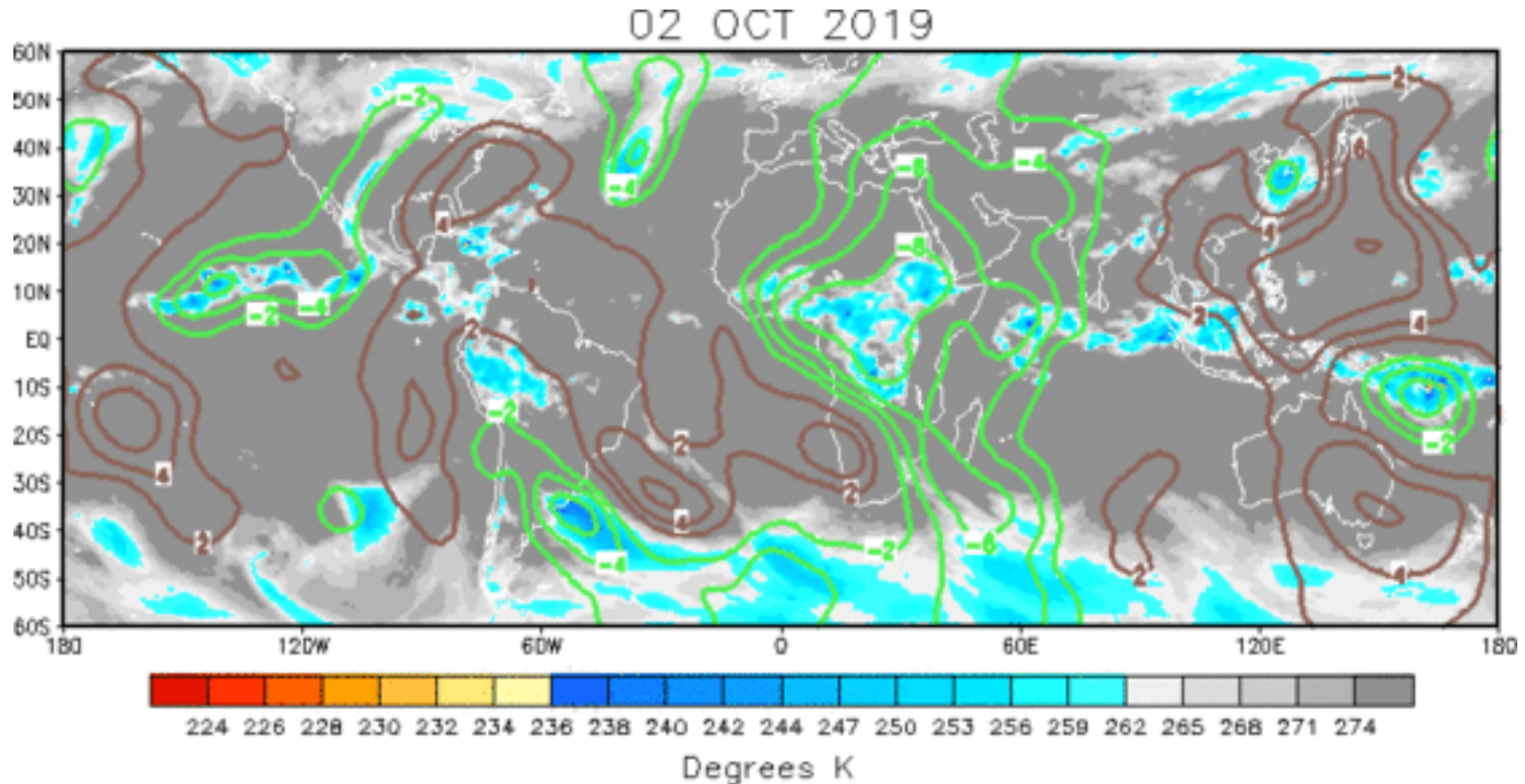
Week-1/2 Forecast Tools

- Active MJO?
- Active tropical cyclone/Hurricane/typhoon activity?
- Significant SST and circulation anomaly patterns?

Forecast tools used: Active MJO?

200-hPa Velocity Potential Anomaly

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/ir_anim_monthly.shtml

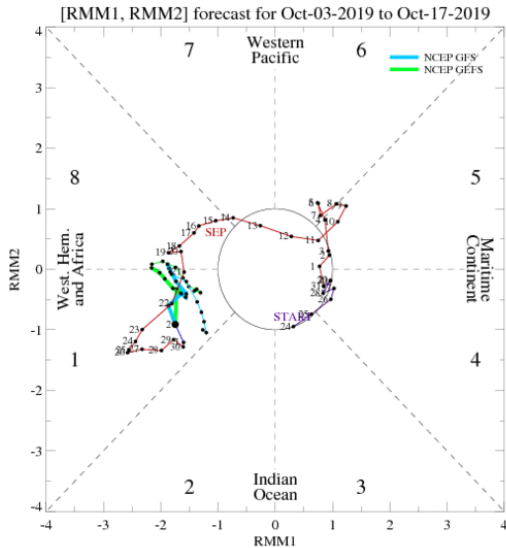


- Green shade indicates areas of upper level divergence and convection or precipitation at surface. Brown contours indicate areas of upper level convergence or subsidence and suppressed precipitation at surface.

Wheeler-Hendon Index - Forecasts

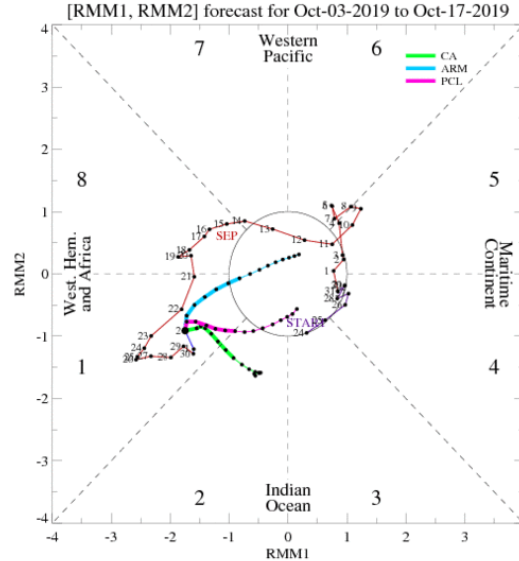
GFS/GEFS

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/combphase_noCFSfull.gif



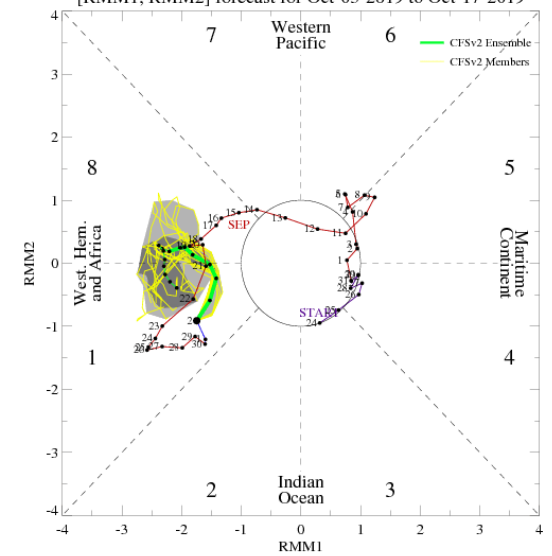
Statistical

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/statphase_full.gif



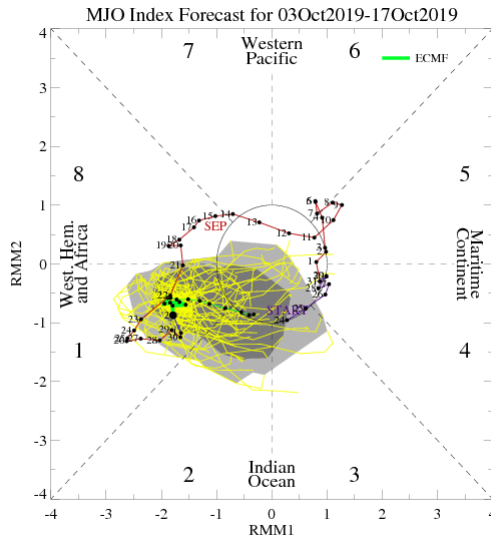
CFSv2

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/CLIVAR/CFSv2_comb_small.gif



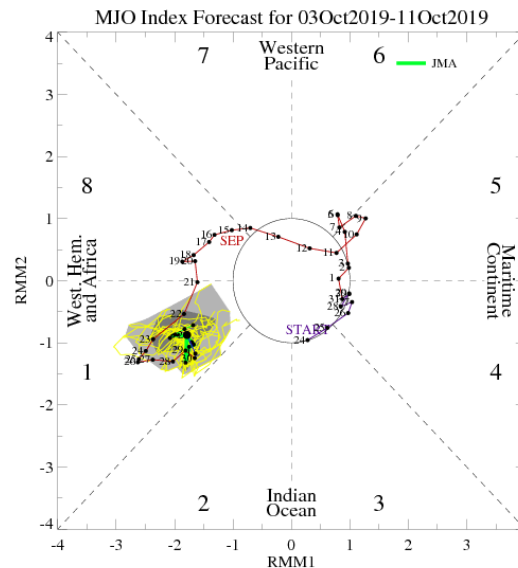
ECMWF

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/CLIVAR/ECMF_phase_MANOM_51m_small.gif



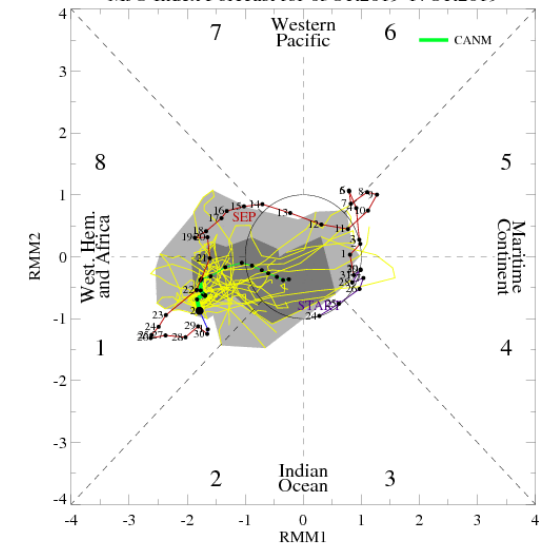
JMAN

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/CLIVAR/JMAN_phase_51m_small.gif



CMET

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/CLIVAR/CANM_phase_20m_small.gif



Evolution of MJO-related anomalies

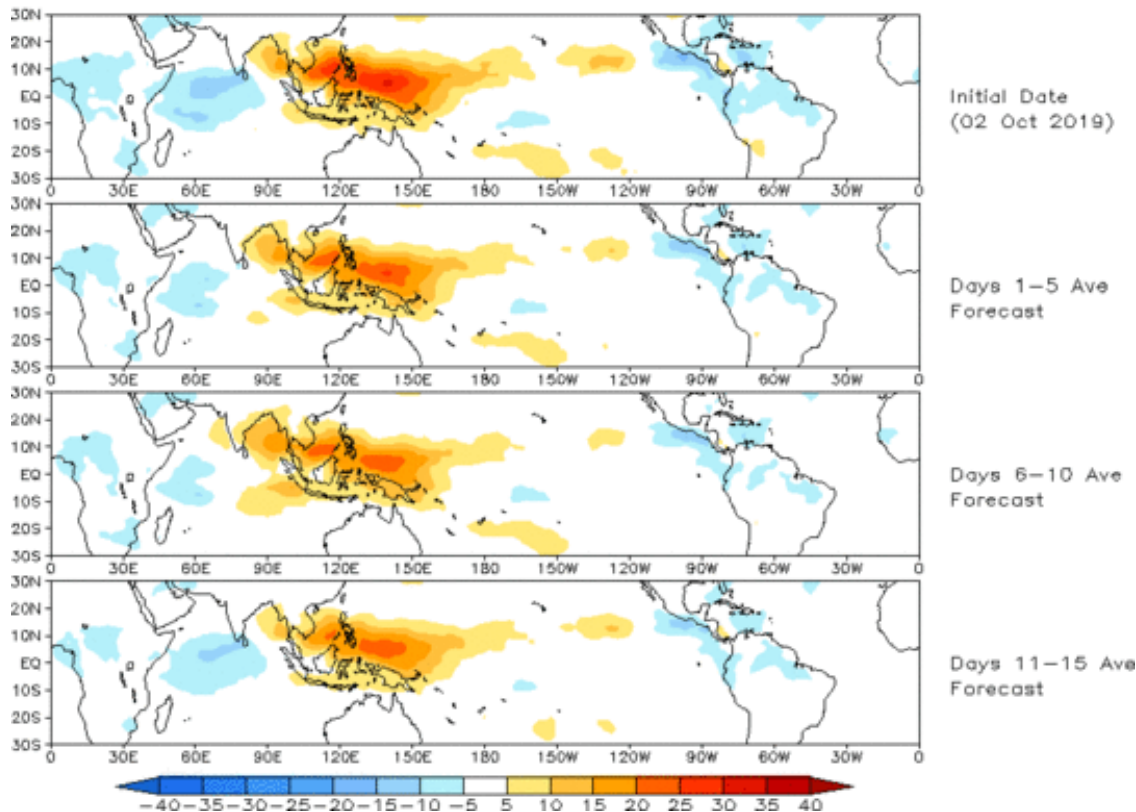
Initial date: 2 October 2019

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/spatial_olrmap_full.gif

Red shade indicate areas of suppressed convection

Blue shade indicate areas of enhanced convection

Prediction of MJO-related anomalies using GEFS operational forecast
Initial date: 02 Oct 2019
OLR

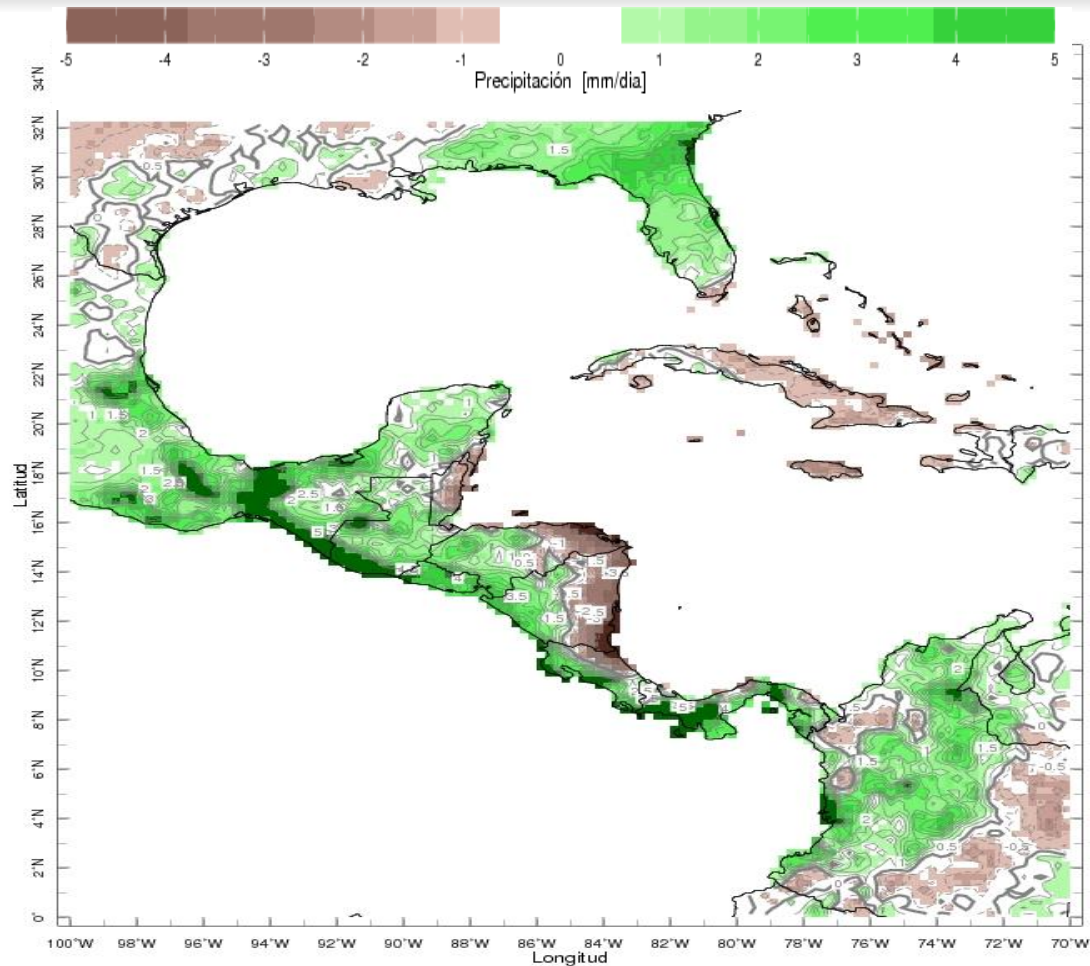


1 - 5 days ave. Forecast

6-10 days ave. Forecast

11-15 days ave. Forecast

Regional Climate Pattern for Phase 1 MJO



Fase 1 de la MJO (Oct-Nov 1981-2010)

http://datoteca.ole2.org/maproom/Sala_de_Mapas/SubEstacional-Map-3/index.html.es?bbox=bb%3A-100%3A0%3A-70%3A35%3Abb®ion=bb%3A-100%3A0%3A-70%3A35%3Abb&seasonStart=Oct&seasonEnd=Nov&Fase=1

Week2, MJO Contribution?

- Do the MJO predictions suggest enhanced/suppressed rainfall over your country?
- Answer: The current and predicted phase of the MJO favors above normal rainfall, especially over the Pacific side of Central America.

Any Tropical Cyclone Activity?

Week 2 - Valid: Oct 09, 2019 - Oct 15, 2019

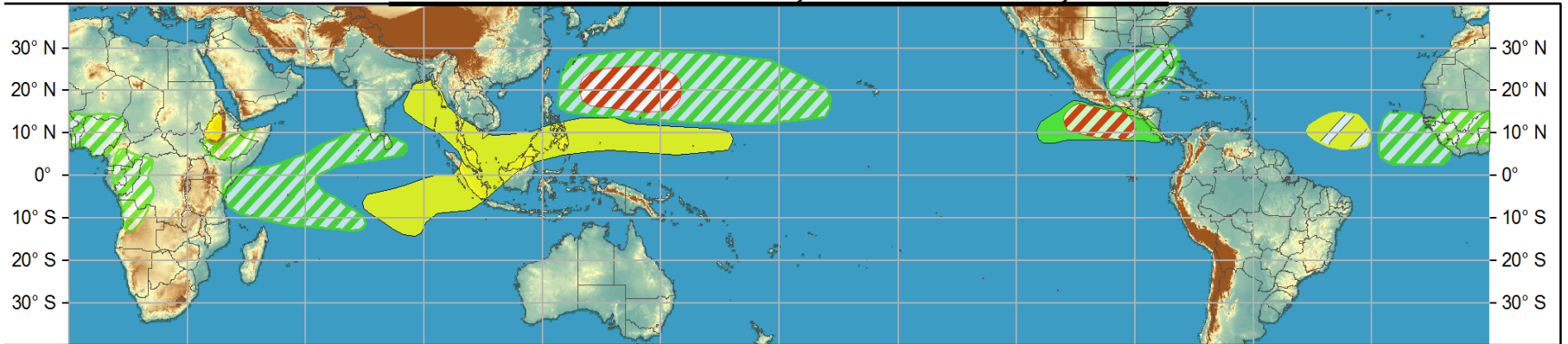
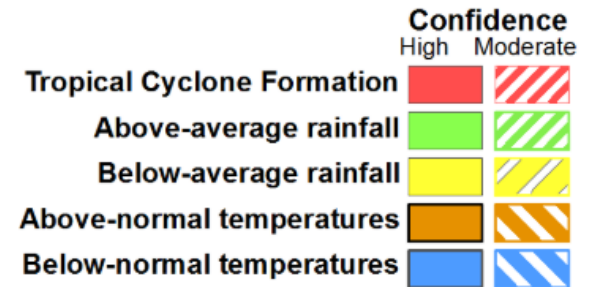


Image credit:

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/ghazard/s/images/gth_full.png

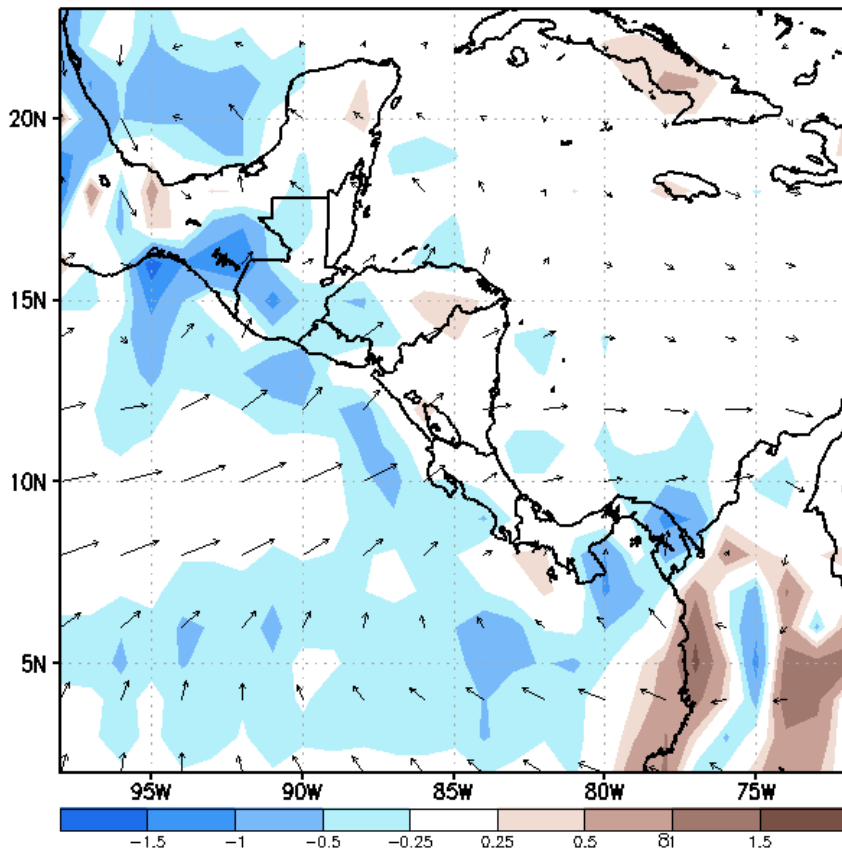


- Global tropics hazards and benefits outlook from the Climate Prediction Center suggests an increase chance of tropical cyclone activity for the Pacific side of Central America while the Caribbean side is likely to remain quiet.

NCEP GEFS Wind and Divergence Anomaly Forecast Week-2, Valid: 11 - 17 October, 2019

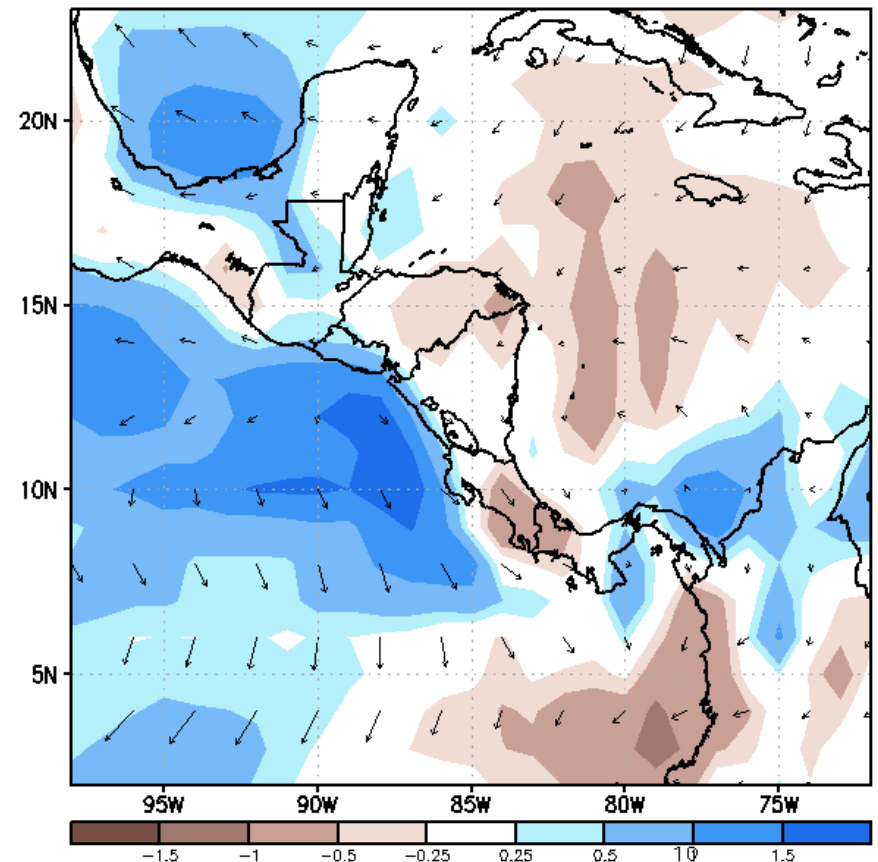
850-hPa

GEFS Week-2 850-hPa Divergence and Wind Anomaly
Valid: 20191011 - 20191017



200-hPa

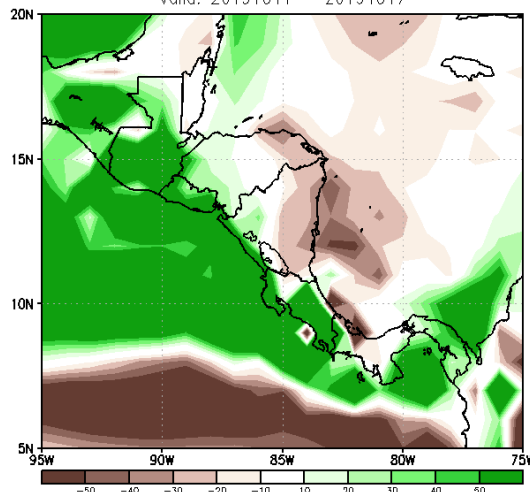
GEFS Week-2 200-hPa Divergence and Wind Anomaly
Valid: 20191011 - 20191017



NCEP GEFS/CFSv2, Precip forecasts for Week-2, Valid: 11 - 17 October, 2019

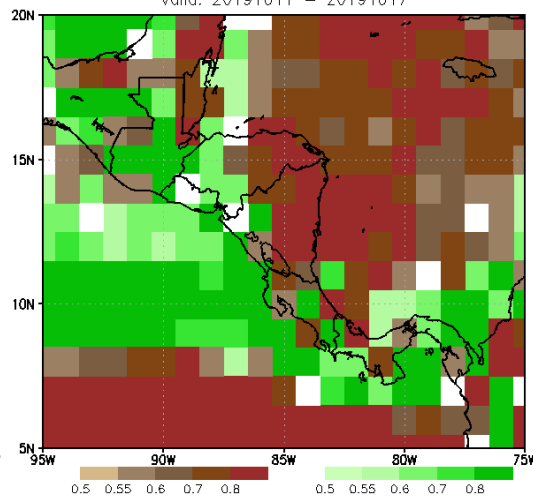
Ensemble Mean Anomaly

GEFS Week-2 Precip Anomaly
Valid: 20191011 - 20191017



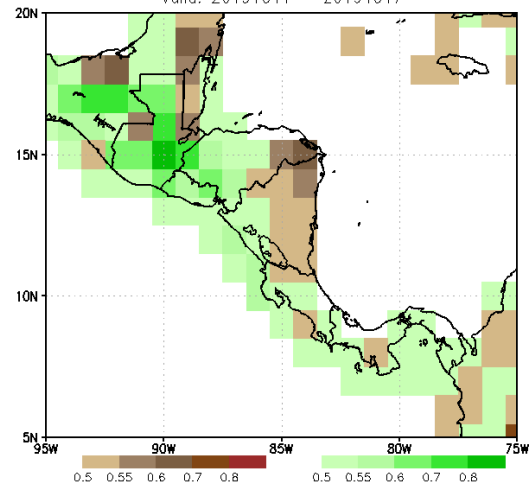
Two-category Probabilistic Forecast - Raw

GEFS Week-2 Two-Category Precip Raw Forecast
Valid: 20191011 - 20191017



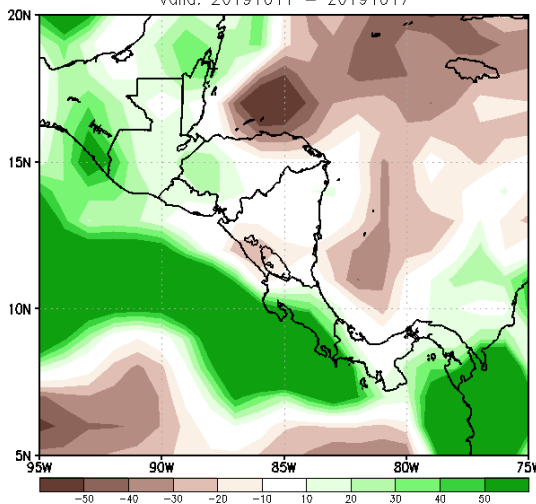
Two-category Probabilistic Forecast - Reg - Calibrated

GEFS Week-2 Two-Category Precip Reg. Calib. Forecast
Valid: 20191011 - 20191017

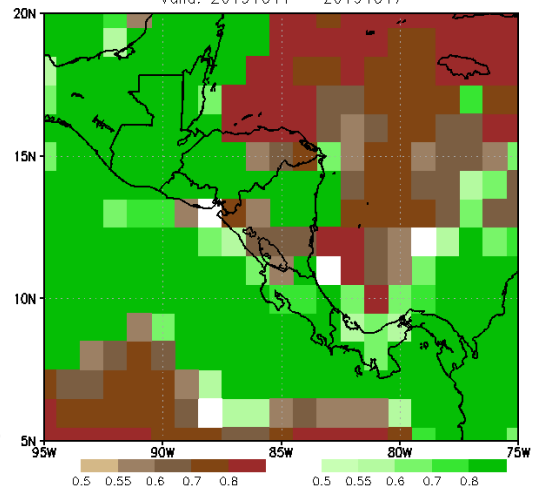


GEFS

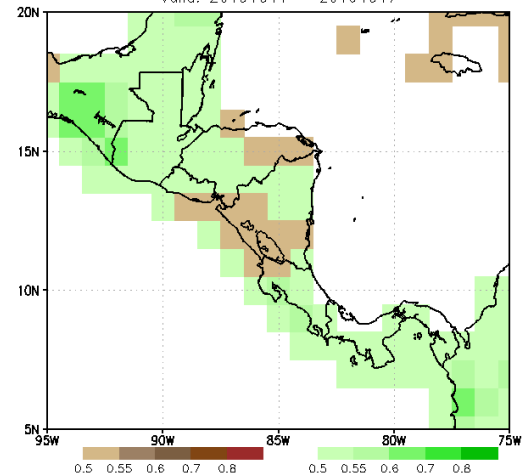
CFSv2 Week-2 Precip Anomaly
Valid: 20191011 - 20191017



CFSv2 Week-2 Two-Category Precip Raw Forecast
Valid: 20191011 - 20191017



CFSv2 Week-2 Two-Category Precip Reg. Calib. Forecast
Valid: 20191011 - 20191017



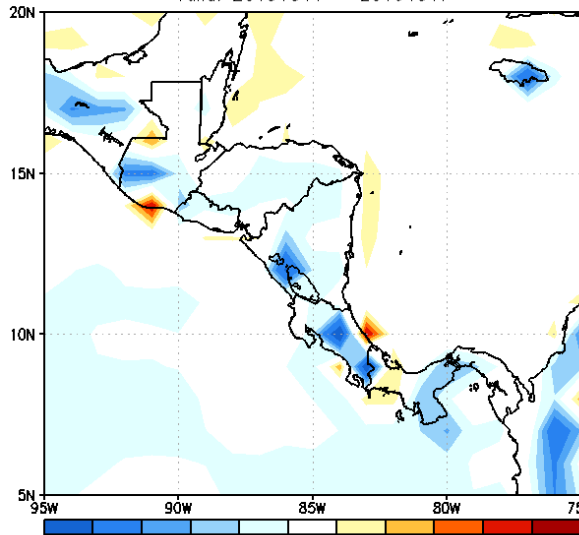
CFSv2

NCEP GEFS/CFSv2, 2m Temp. forecasts for Week-2,

Valid: 11 - 17 October, 2019

Ensemble Mean Anomaly

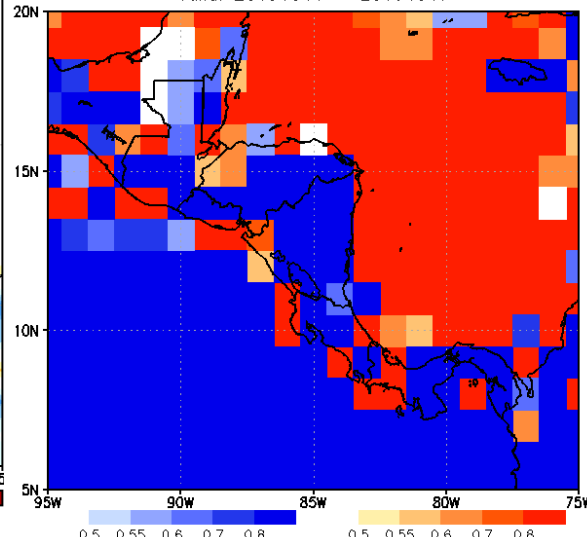
GEFS Week-2 T2m Anomaly
Valid: 20191011 - 20191017



GEFS

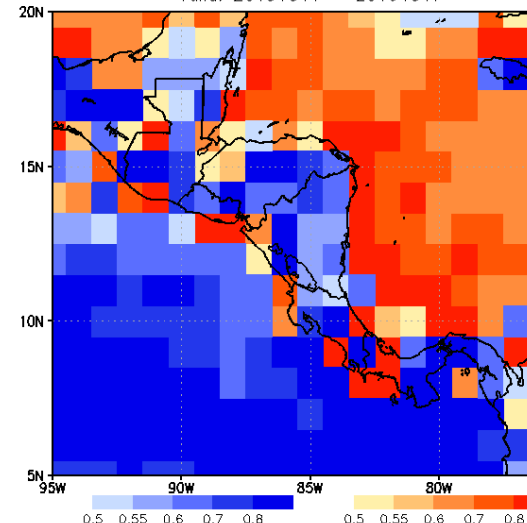
Two-category Probabilistic Forecast - Raw

GEFS Week-2 Two-Category T2m Raw Forecast
Valid: 20191011 - 20191017

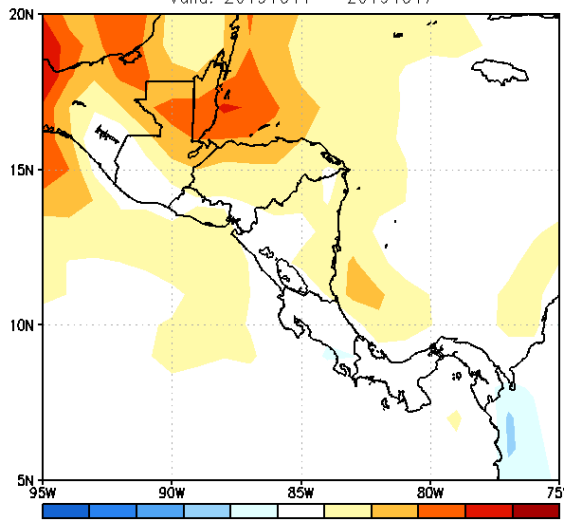


Two-category Probabilistic Forecast - Reg - Calibrated

GEFS Week-2 Two-Category T2m Reg. Calib. For
Valid: 20191011 - 20191017

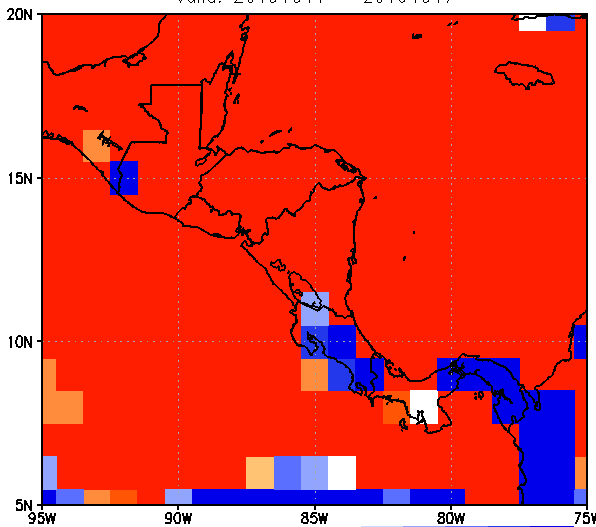


CFSv2 Week-2 T2m Anomaly
Valid: 20191011 - 20191017

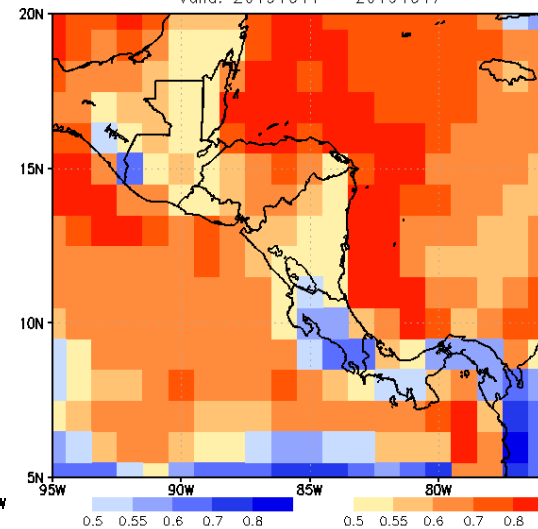


CFSv2

CFSv2 Week-2 Two-Category T2m Raw Forecast
Valid: 20191011 - 20191017



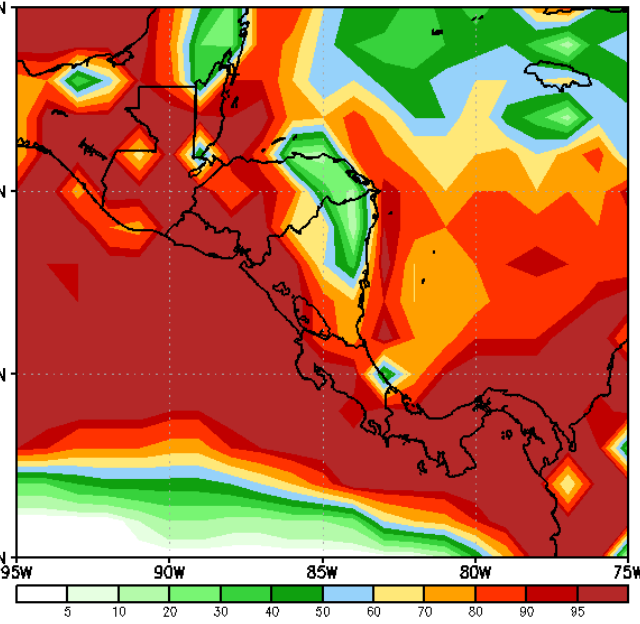
CFSv2 Week-2 Two-Category T2m Reg. Calib. For
Valid: 20191011 - 20191017



GEFS Week-2 Exceedance Probability, Valid: 11 - 17 October, 2019

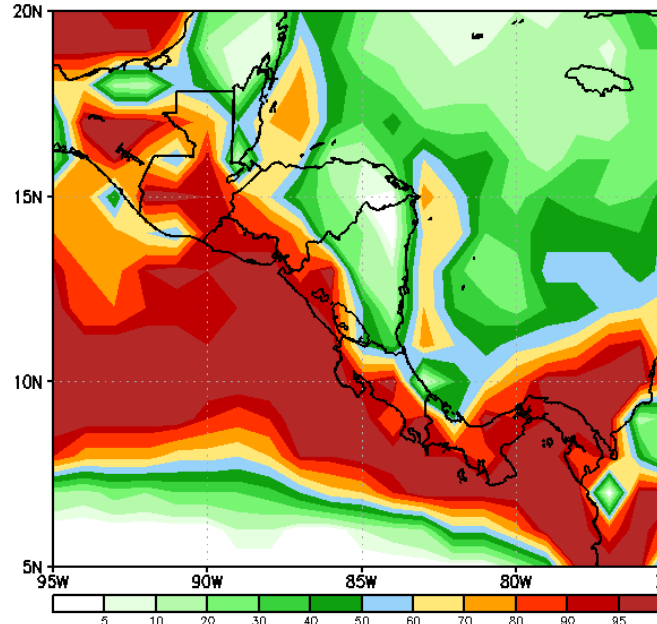
>25mm

GEFS Week-2 Exceedance Prob. > 25mm
Valid: 20191011 - 20191017



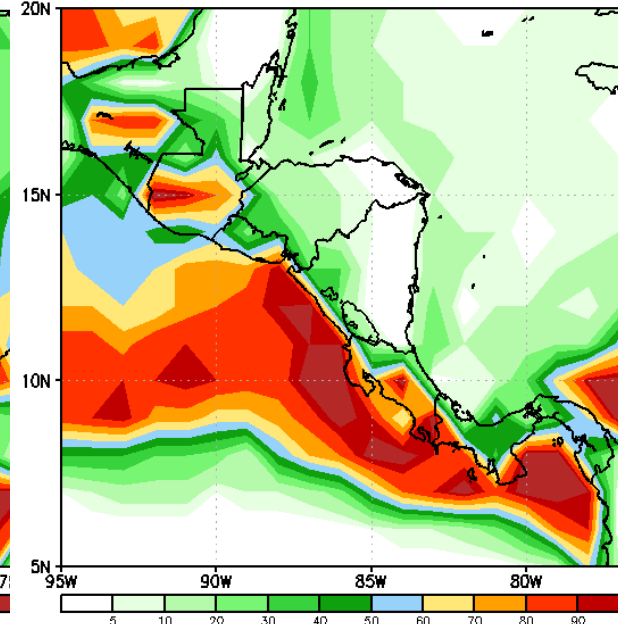
>50mm

GEFS Week-2 Exceedance Prob. > 50mm
Valid: 20191011 - 20191017



>100mm

GEFS Week-2 Exceedance Prob. > 100mm
Valid: 20191011 - 20191017



Week-2 **Rainfall**, Convergence of Evidence?

- **Wet**

- MJO ->
- Lower/upper-level wind/divergence anomalies ->
- Rainfall Model Guidance ->
- Exceedance Probability ->

- **Dry**

- MJO ->
- Lower/upper-level wind/divergence anomalies ->
- Rainfall Model Guidance ->
- Exceedance Probability ->

Week-2 **2m Temp.**, Convergence of Evidence?

- **Cool**

- MJO?

- Lower/upper-level wind/divergence anomalies ->

- 2m Temperature Model Guidance ->

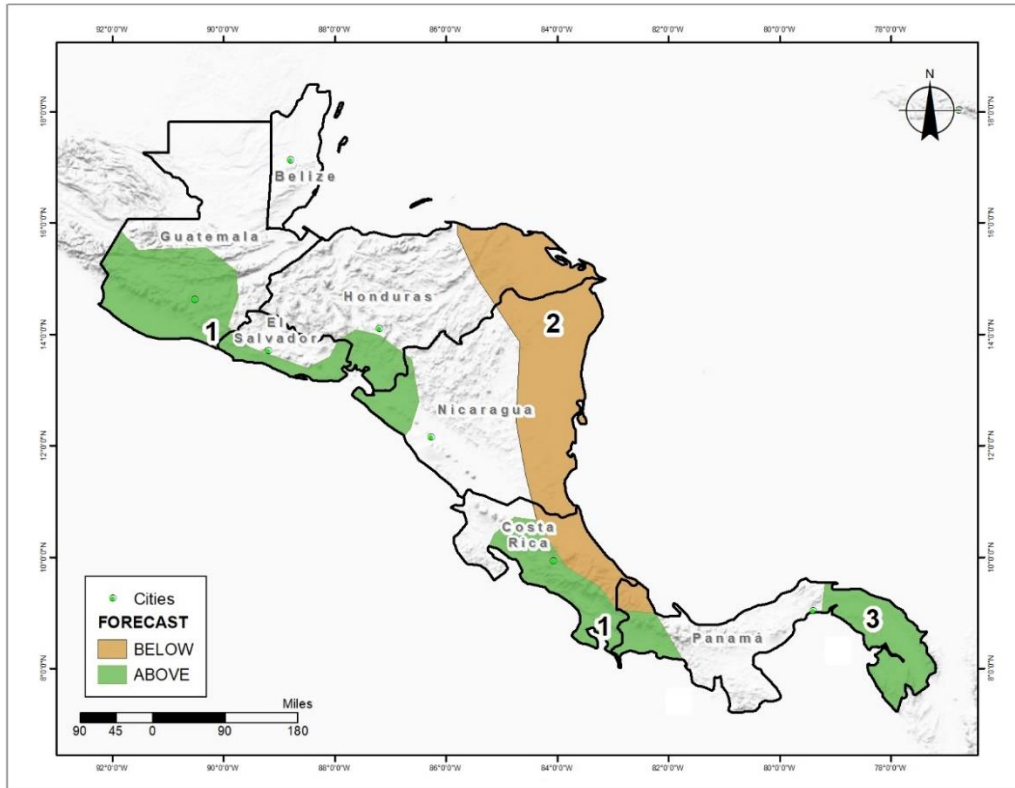
- **Warm**

- MJO?

- Lower/upper-level wind/divergence anomalies ->

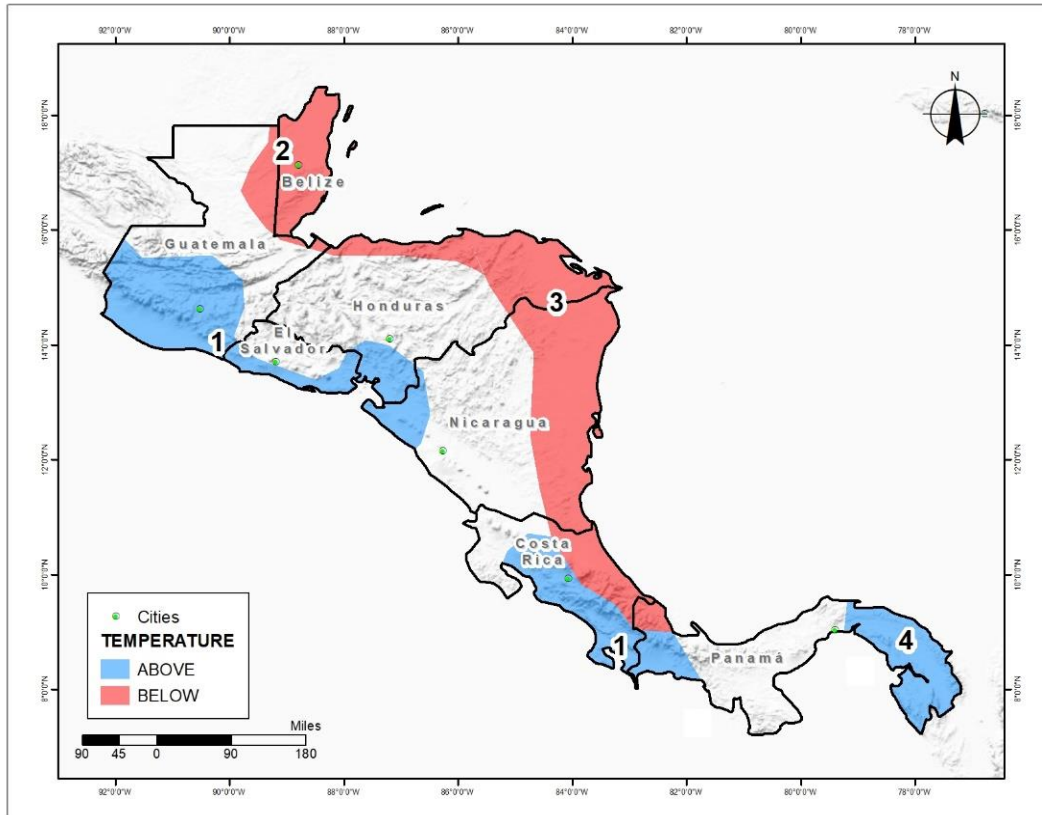
- 2m Temperature Model Guidance ->

Week-2 Rainfall Outlook, 11 – 17 October 2019



1. Above normal rainfall expected over the Pacific coast of Guatemala, El Salvador and Costa Rica. Moist on shore flow in the low levels. Convergent in the low levels and divergent at upper levels. Active MJO pattern with storminess likely over the EPAC region.
2. Below normal rainfall expected over eastern Honduras, Nicaragua and Costa Rica. Anomalous offshore flow in the low levels coupled with low level divergence and upper level convergence.
3. Above normal rainfall expected over eastern Panama. Active ITCZ along with moist low level flow and divergent upper level pattern.

Week-2, 2m Temp Outlook, 11 – 17 October 2019



1. Below normal temperatures expected over s'rn Guatemala, El Salvador and Pacific coast of Costa Rica due mainly to increase cloudiness and precipitation.
2. Above normal temperature expected over Belize and parts of Peten in Guatemala due anomalous s'yly flow in the low levs leading to adiabatic compression.
3. Above normal temperatures expected over n'rn Honduras and e'rn Nicaragua and Caribbean Coast of Costa Rica due to below normal rains and more solar isolation.
4. Below normal temperature due to more rain and cloudiness from an active ITCZ.

Thank You!!!

Questions or Comments?