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

Guyana and Surinam/Northern South America

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

Run the Script

1. On your Cygwin/Linux terminal, change your directory to the **subseaon** folder:

cd subseason

2. Run the script for the area of interest of your group:

bash plot_all.sh 'west' 'east' 'south' 'north'

Where '**west**' and '**east**' are the western and eastern extent of **your area of interest in your group** (in degrees) respectively, while '**south**' and '**north**' are the southern and northern extent.

e.g, a test run for Central America and the Caribbean Region:

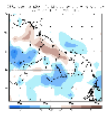
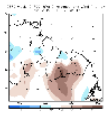
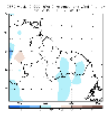
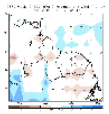
bash plot_all -120 -40 0 35 (example)

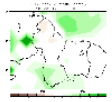
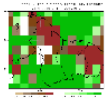
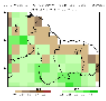
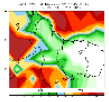
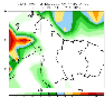
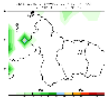
Note: **longitudes** in the **western hemisphere** and **latitudes** in the **southern hemisphere** have negative values.

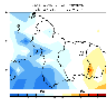
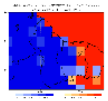
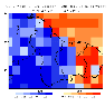
Run Output

Depending on your Internet browser security setting, a webpage with your test run output should popup automatically:

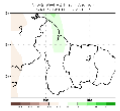
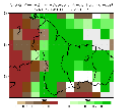
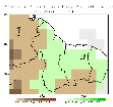
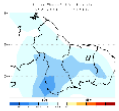
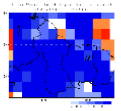
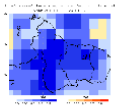
GEFS Week-2 Forecasts

850-hPa Wind	700-hPa Wind	500-hPa Wind	200-hPa Wind
			

Precip Anomaly	Precip Raw Prob.	Precip Calib. Prob.	Precip Prob., >25mm	Precip Prob., >50mm	Precip Prob., >100mm
					

T2m Anomaly	T2m Raw Prob.	T2m Calib. Prob.
		

CFSv2 Week-2 Forecasts

	Precip. Anomaly	Precip. Raw Prob.	precip. Calib Prob	T2m Anomaly	T2m Raw Prob.	T2m Calib Prob
Week 2						

You will use figures from the web page, later during the exercise

Generate a Blank Country Map

- Use the command below to generate a blank country map.

bash blank_map.sh ‘west’ ‘east’ ‘south’ ‘north’

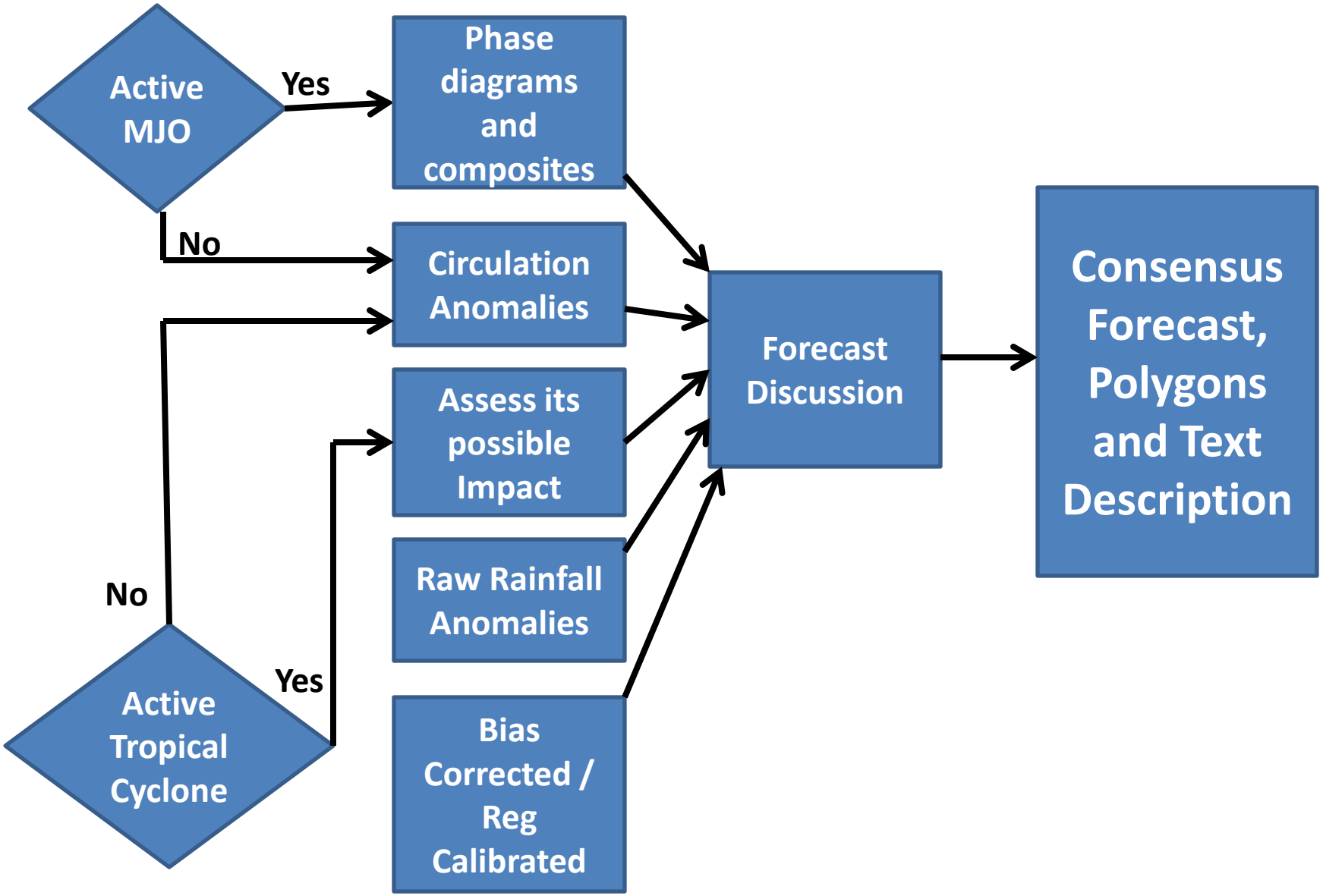
Where ‘**west’** and ‘**east’** are the western and eastern extent of **your area of interest in your group** (in degrees) respectively, while ‘**south’** and ‘**north’** are the southern and northern extent.

- You may use your file explorer to locate the blank country map
  - For Cygwin users, under

C:/cycgwin64/home/your_user_name/subseason/blank_map.png

- You will use this map to draw forecast polygons, later during the exercise

Week-1/2 Forecast Process

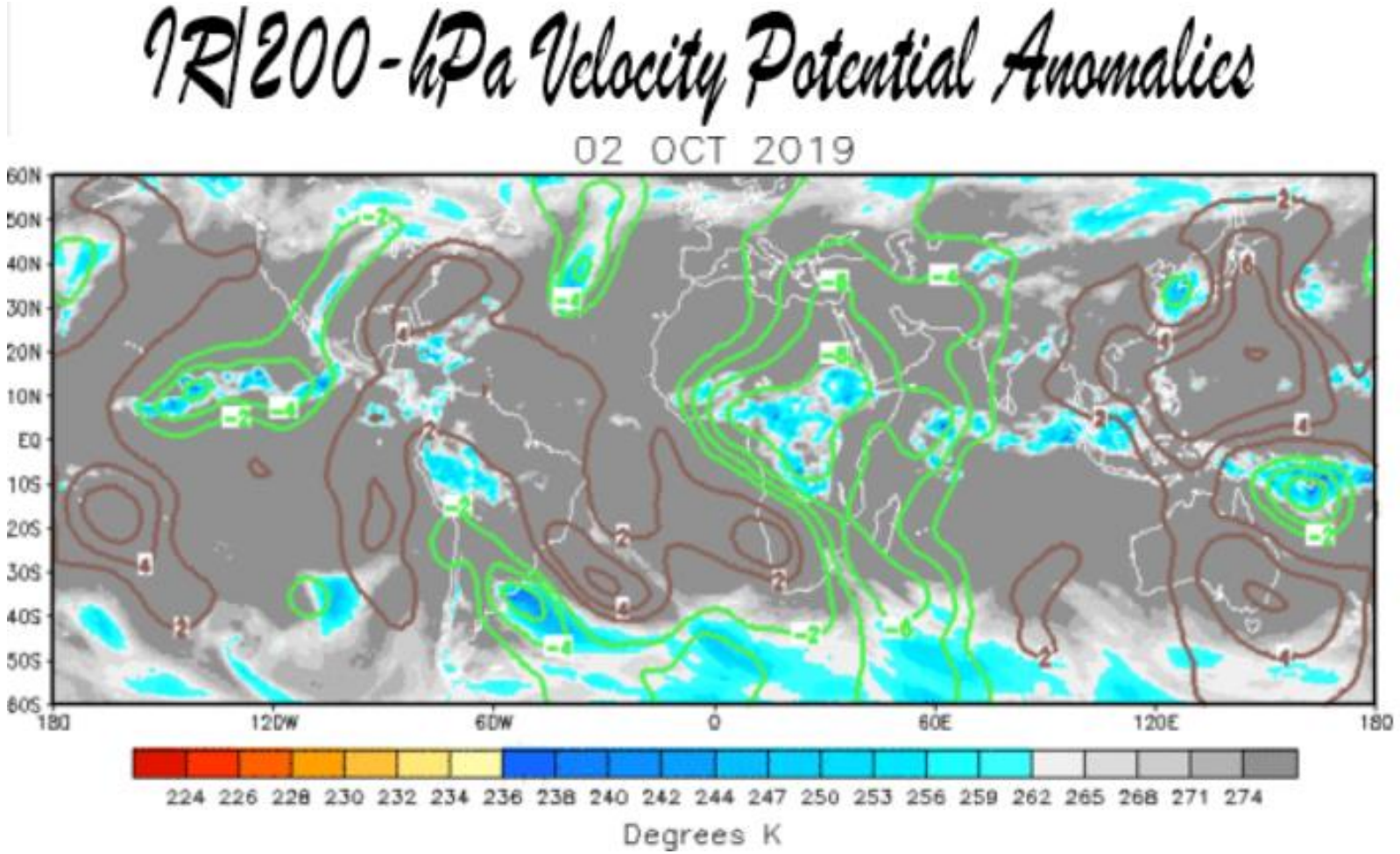


Week-1/2 Forecast Tools

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

200-hPa Velocity Potential Anomaly

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

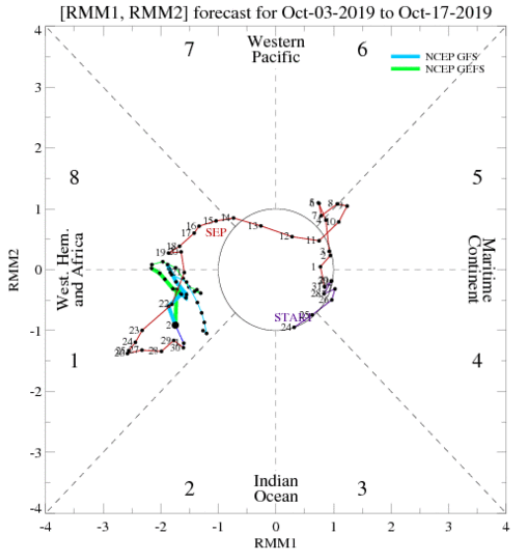


•Green shade indicates areas of upper level divergence and convection or precipitation at surface. Brown contours indicate areas of upper level convergence or subsidence and suppressed precipitation at surface.

Wheeler-Hendon Index - Forecasts

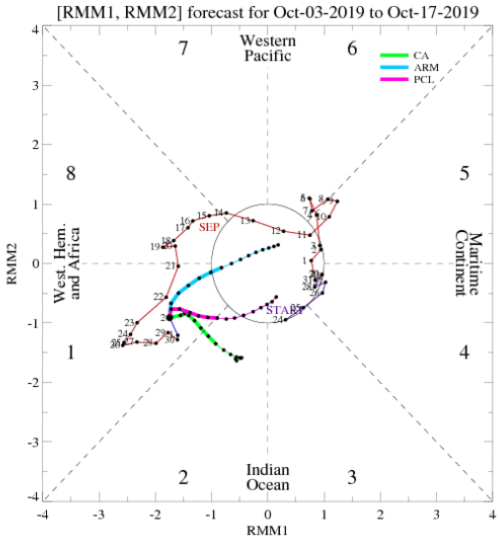
GFS/GEFS

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



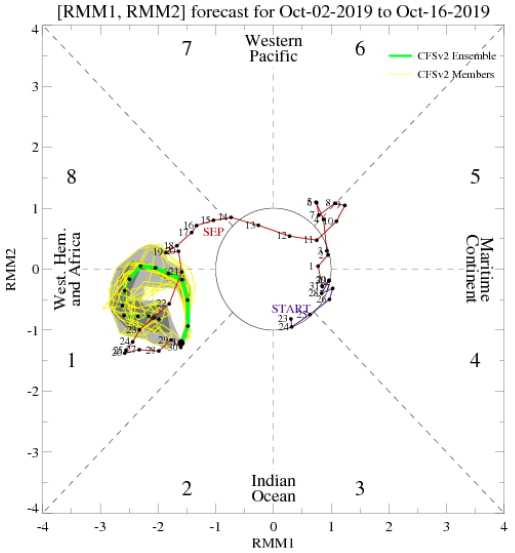
Statistical

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



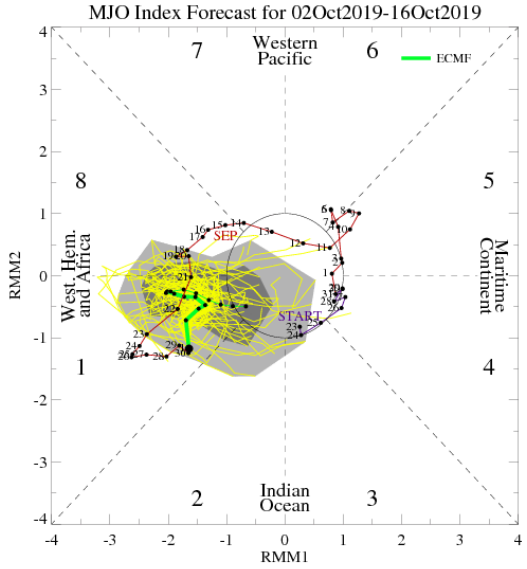
CFSv2

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



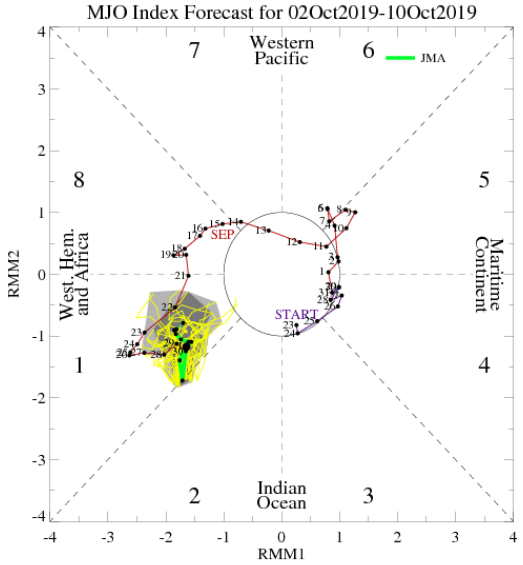
ECMWF

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



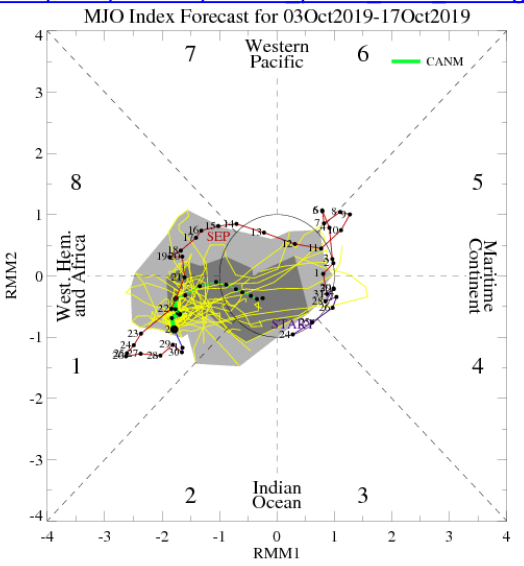
JMAN

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



CMET

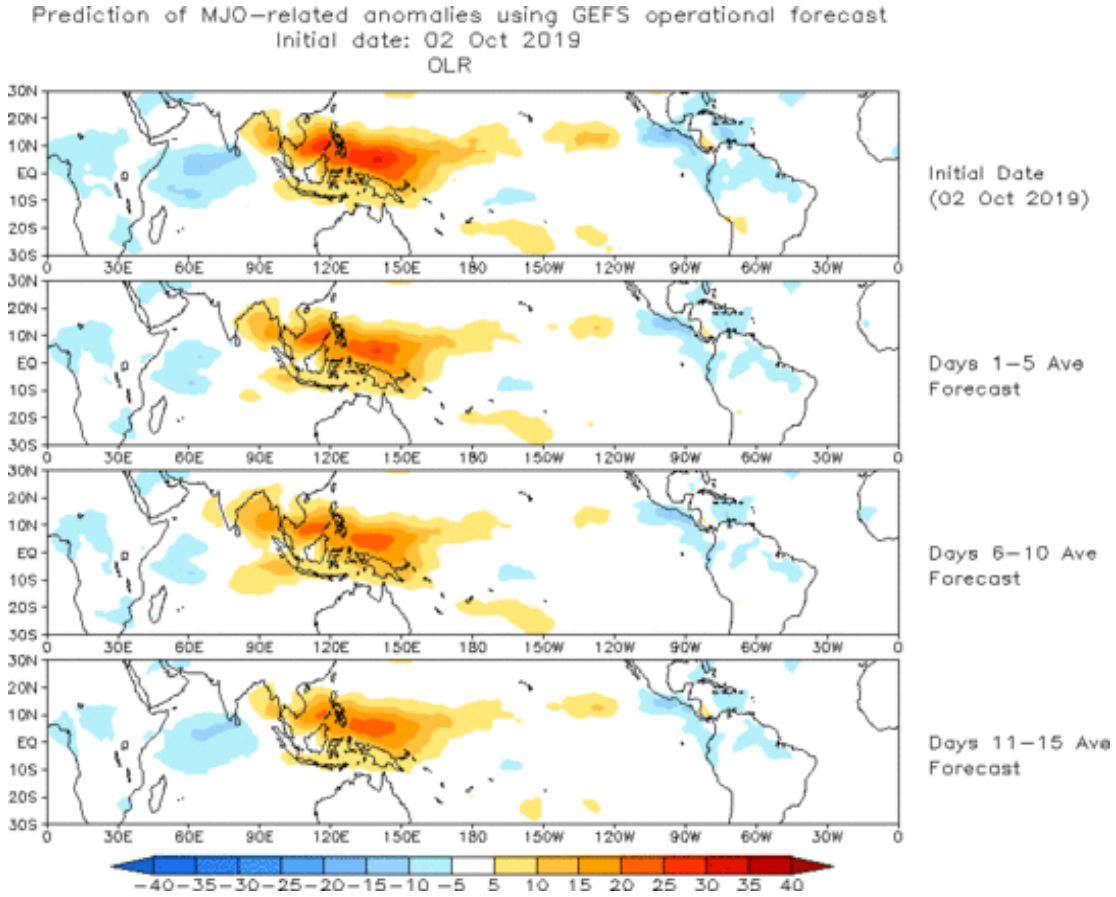
https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/CLIVAR/CANM_phase_20m_small.gif



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

1 - 5 days ave. Forecast

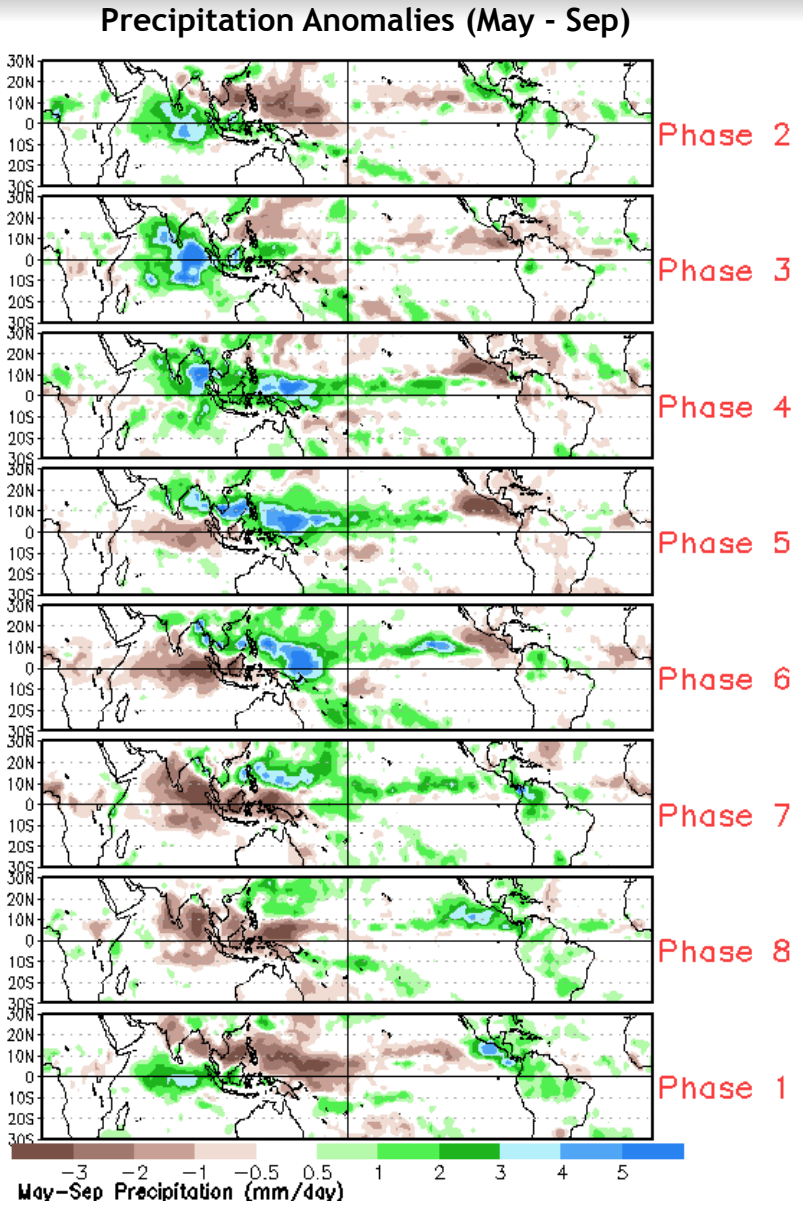
6-10 days ave. Forecast

11-15 days ave. Forecast

MJO Rainfall Composites – Global Tropics

http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/plot_pcp_tvalue_8pan_maysep.gif (May - Sep Season)

http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/plot_pcp_tvalue_8pan_novmar.gif (Nov - Mar Season)

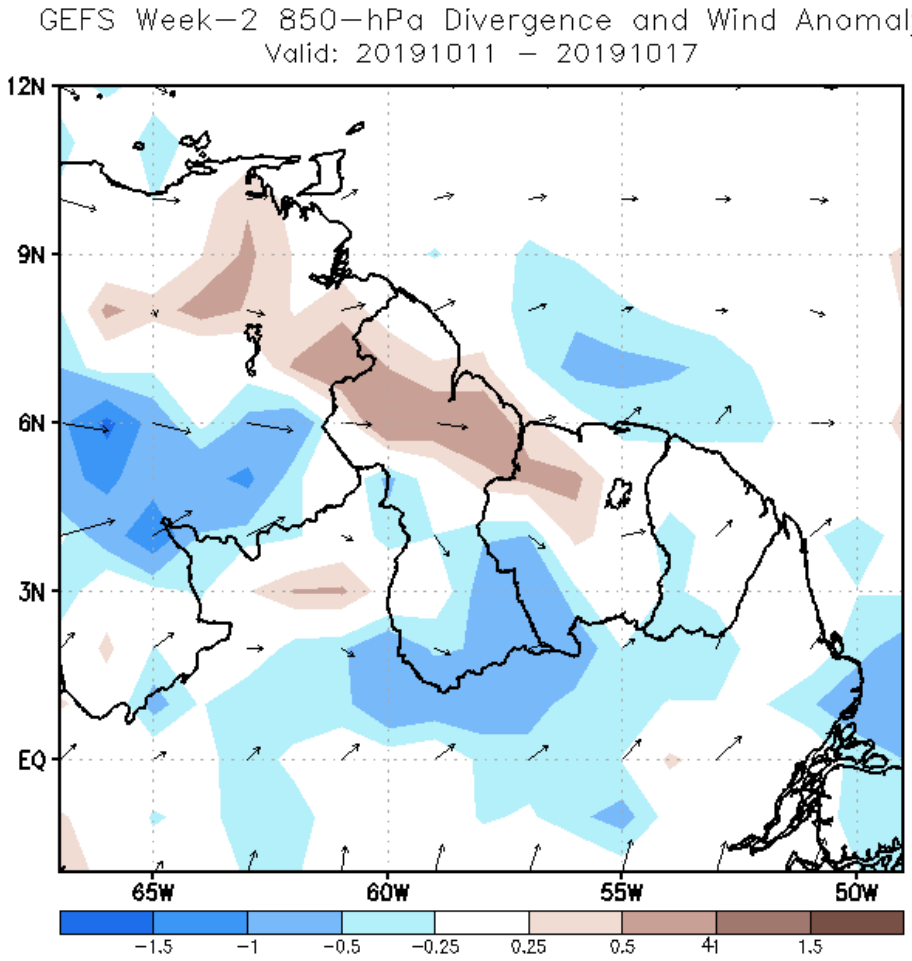


Week2, MJO Contribution?

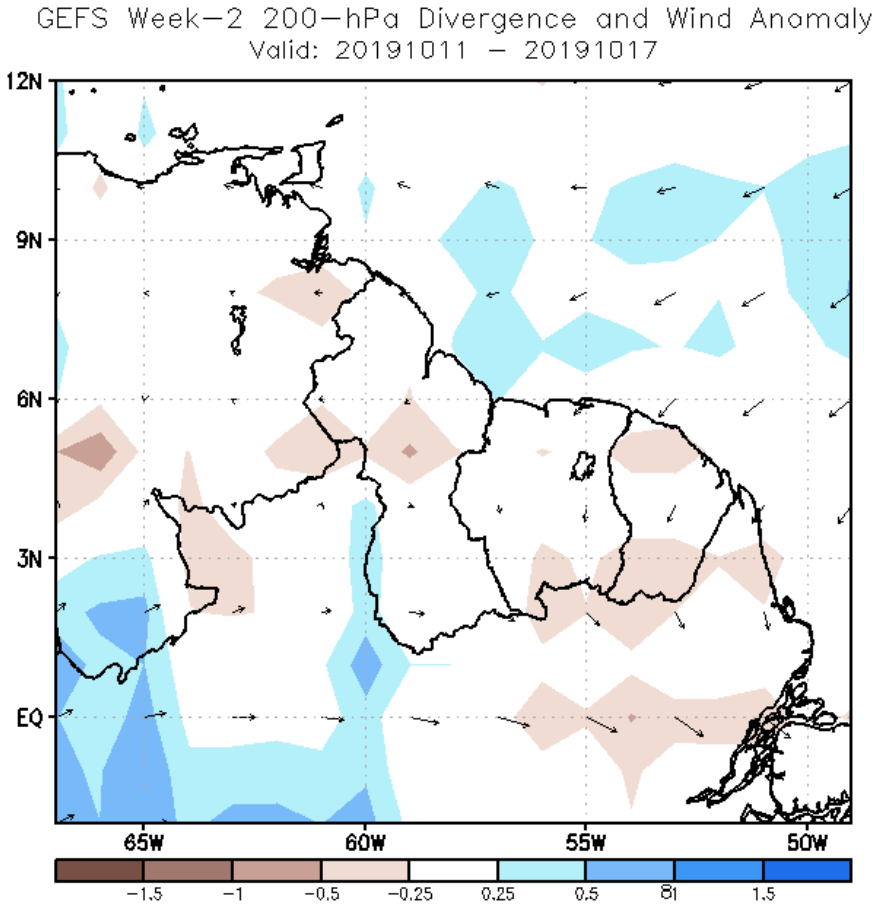
- Do the MJO predictions suggest enhanced/suppressed rainfall over your country? Enhanced

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

850-hPa or 700-hPa



200-hPa



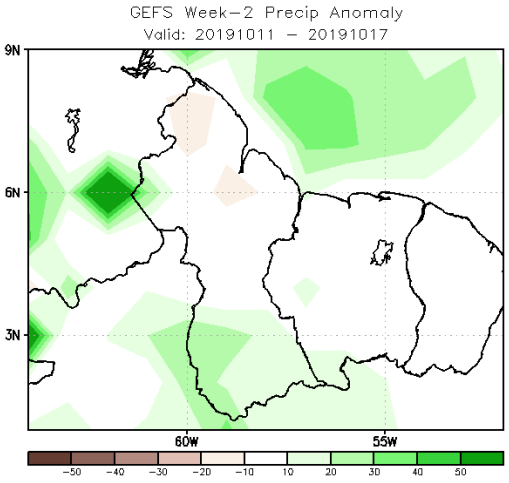
NCEP GEFS/CFSv2, Precip forecasts for Week-2, Valid: 11 - 17 October, 2019

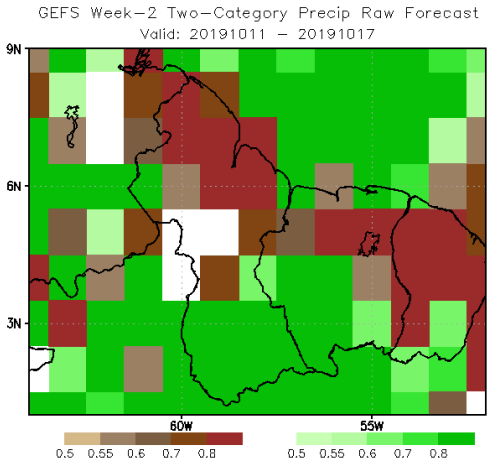
Ensemble Mean Anomaly

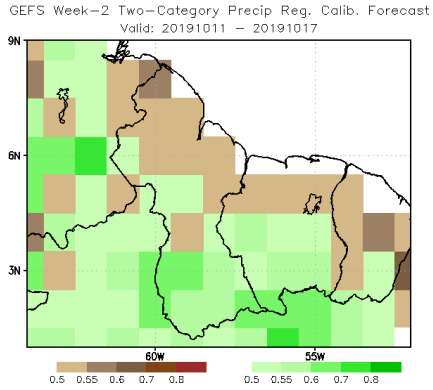
Two-category Probabilistic Forecast - Raw

Two-category Probabilistic Forecast – Reg - Calibrated

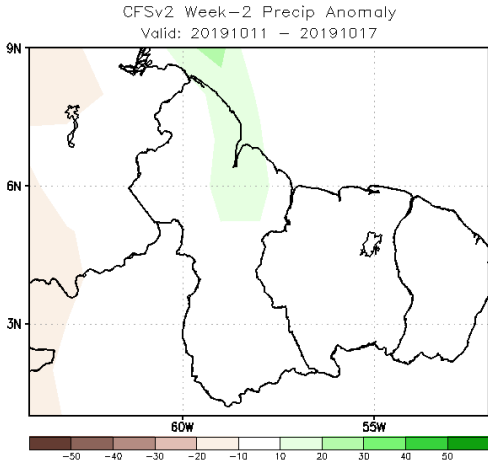
GEFS

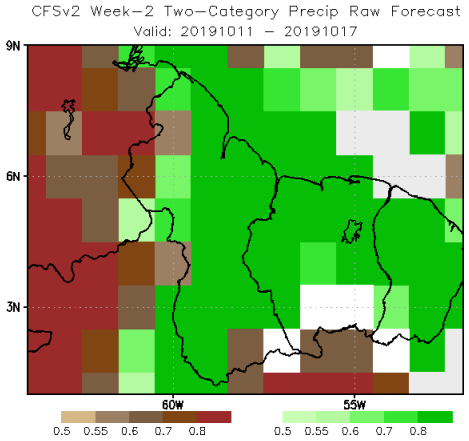


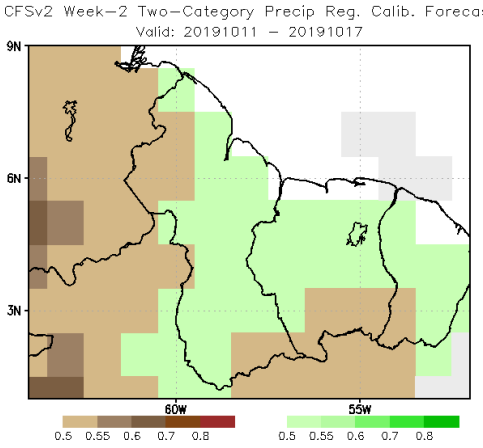




CFSv2







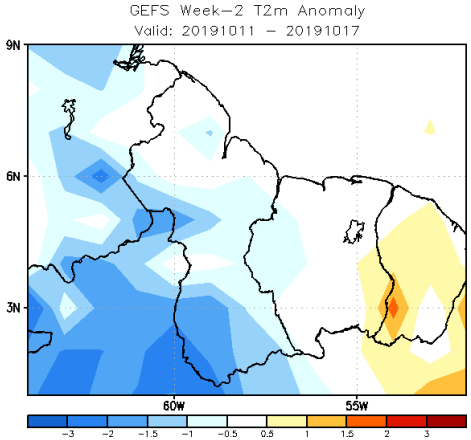
NCEP GEFS/CFSv2, 2m Temp. forecasts for Week-2, Valid: 11 - 17 October, 2019

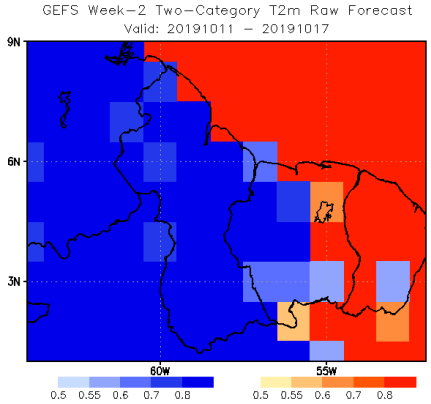
Ensemble Mean Anomaly

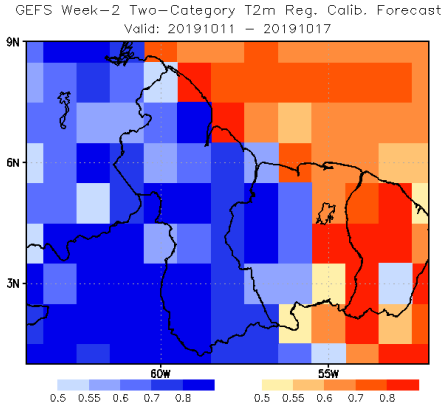
Two-category Probabilistic Forecast - Raw

Two-category Probabilistic Forecast – Reg - Calibrated

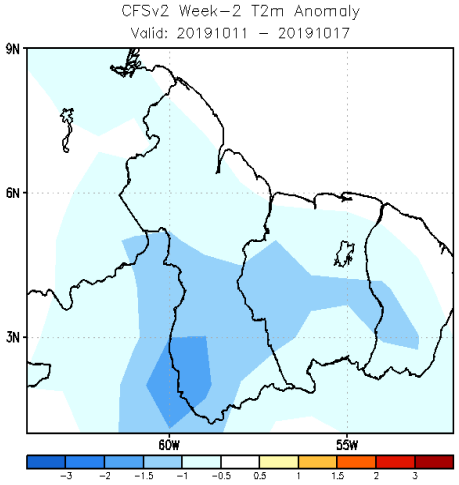
GEFS

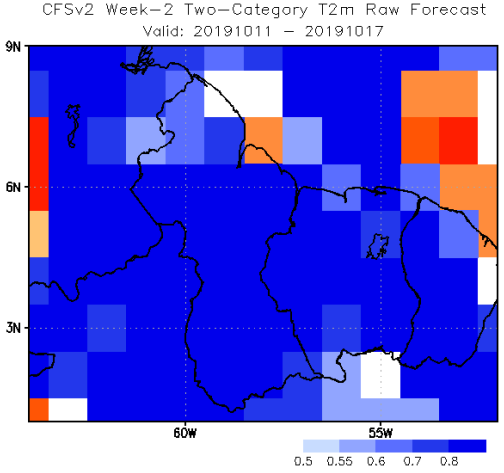


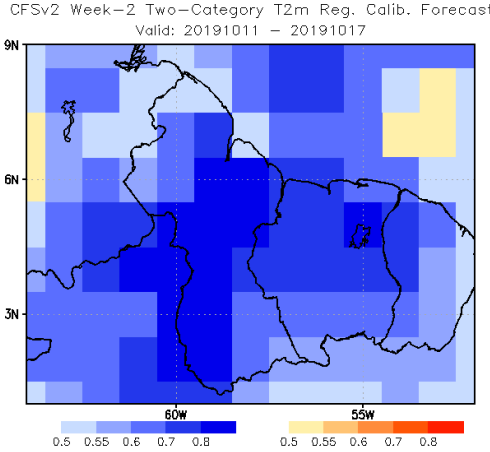




CFSv2

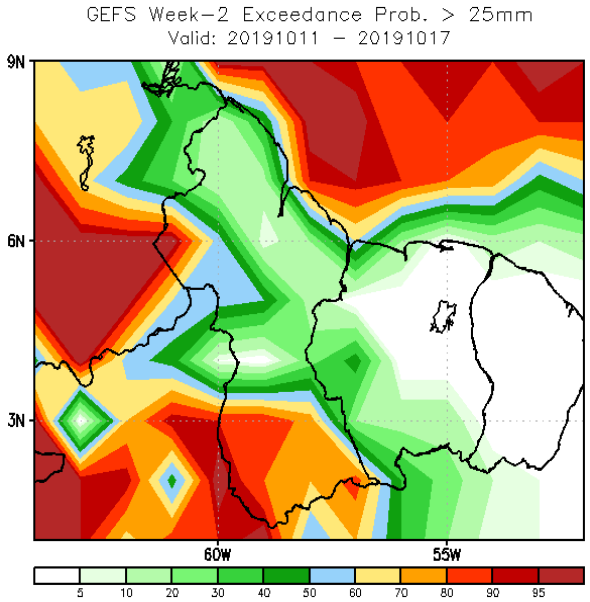




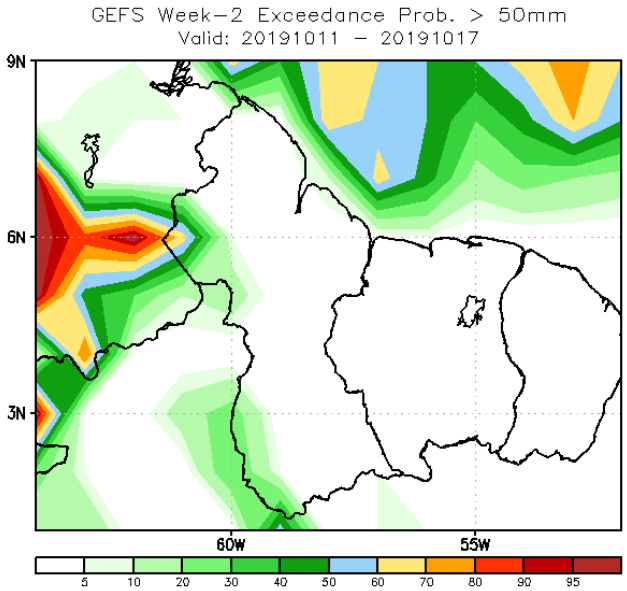


GEFS Week-2 Exceedance Probability, Valid: 11 - 17 October, 2019

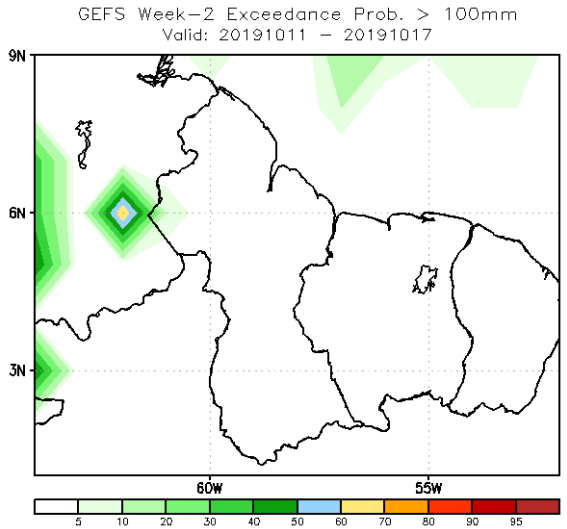
>25mm



>50mm



>100mm



Week-2 Rainfall, Convergence of Evidence?

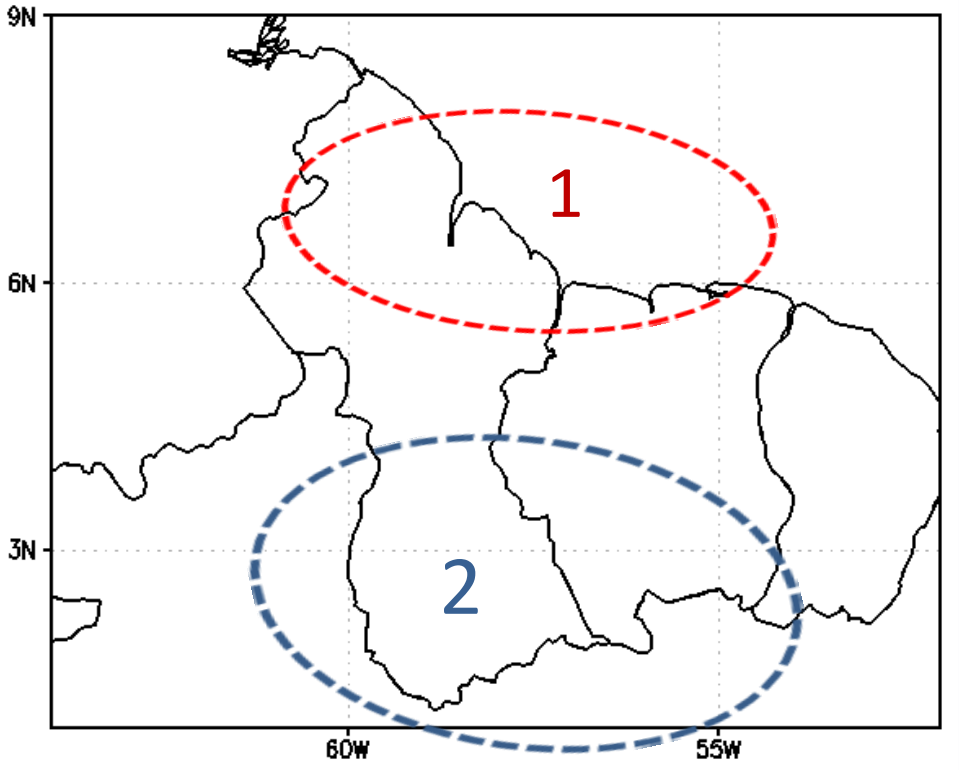
- **Wet**
  - MJO -> yes
  - Lower/upper-level wind/divergence anomalies -> yes
  - Rainfall Model Guidance -> yes
  - Exceedance Probability ->yes

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

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

- **Cool**
  - MJO?
  - Lower/upper-level wind/divergence anomalies ->
  - 2m Temperature Model Guidance -> yes
- **Warm**
  - MJO?
  - Lower/upper-level wind/divergence anomalies ->
  - 2m Temperature Model Guidance -> yes

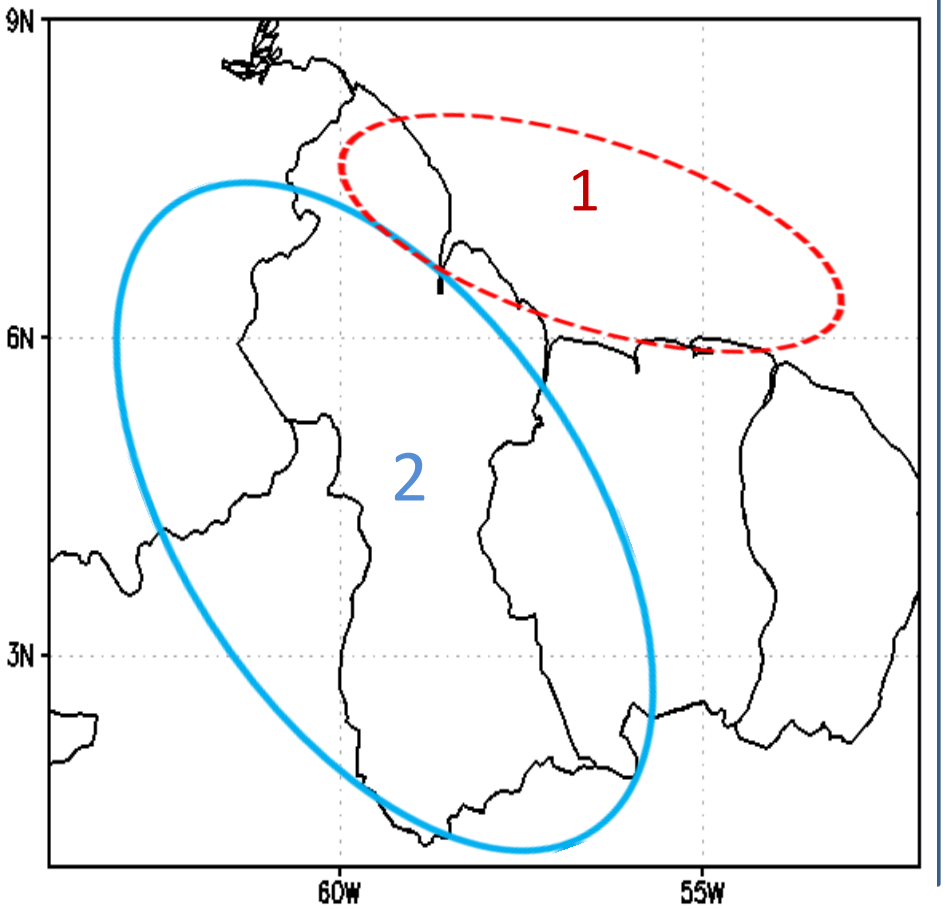
Week-2 Rainfall Outlook, 11 – 17 October 2019



1. **Forecast:** Reason (Below-average). The forecast MJO suggest suppressed rainfall in coastal and northern Guianas. Lower level divergence and upper level convergence anomalies also suggest suppressed rainfall.

2. **Forecast:** Reason(Above- average). The forecast MJO suggest enhanced rainfall in southern Guianas. Lower level convergence and upper level divergence anomalies also suggest enhanced rainfall.

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



1. Both models output are in agreement for above-average temperature (moderate probability) for coastal Guianas

2. Both models output are in agreement for below-average temperature (high probability) for central and southern Guianas.