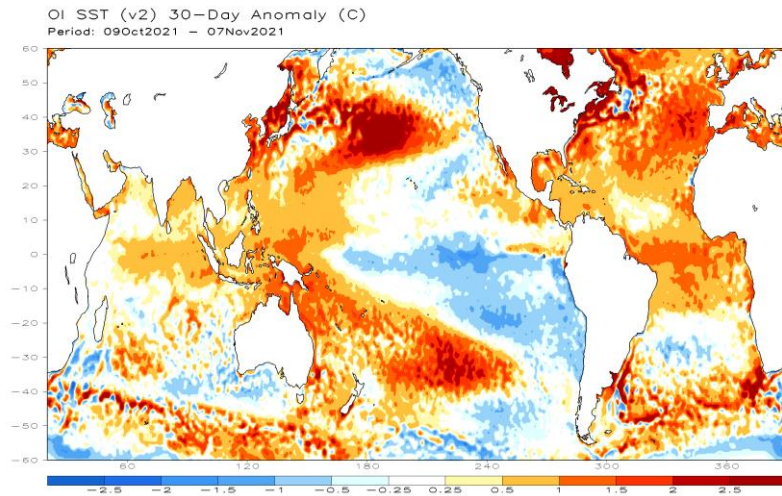


# **Second WMO RCC-Washington International Training Workshop**

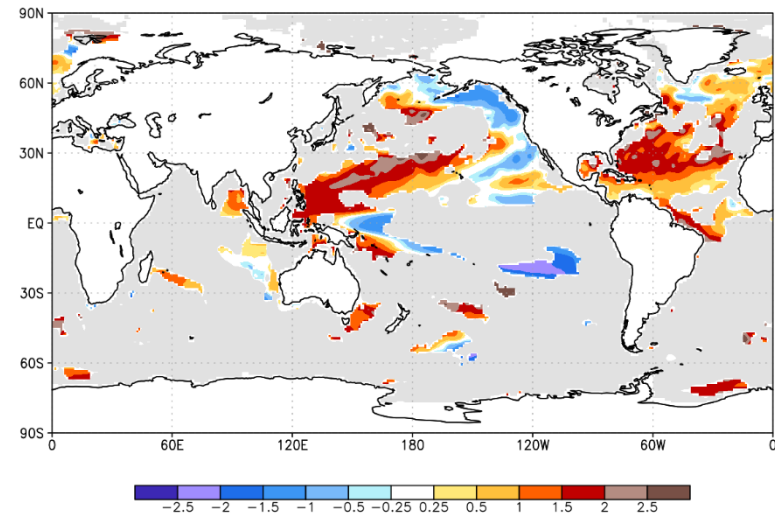
## **Real-time week-2 extreme temperature outlook**

8 – 10 November 2021

# 30-day SST anomalies



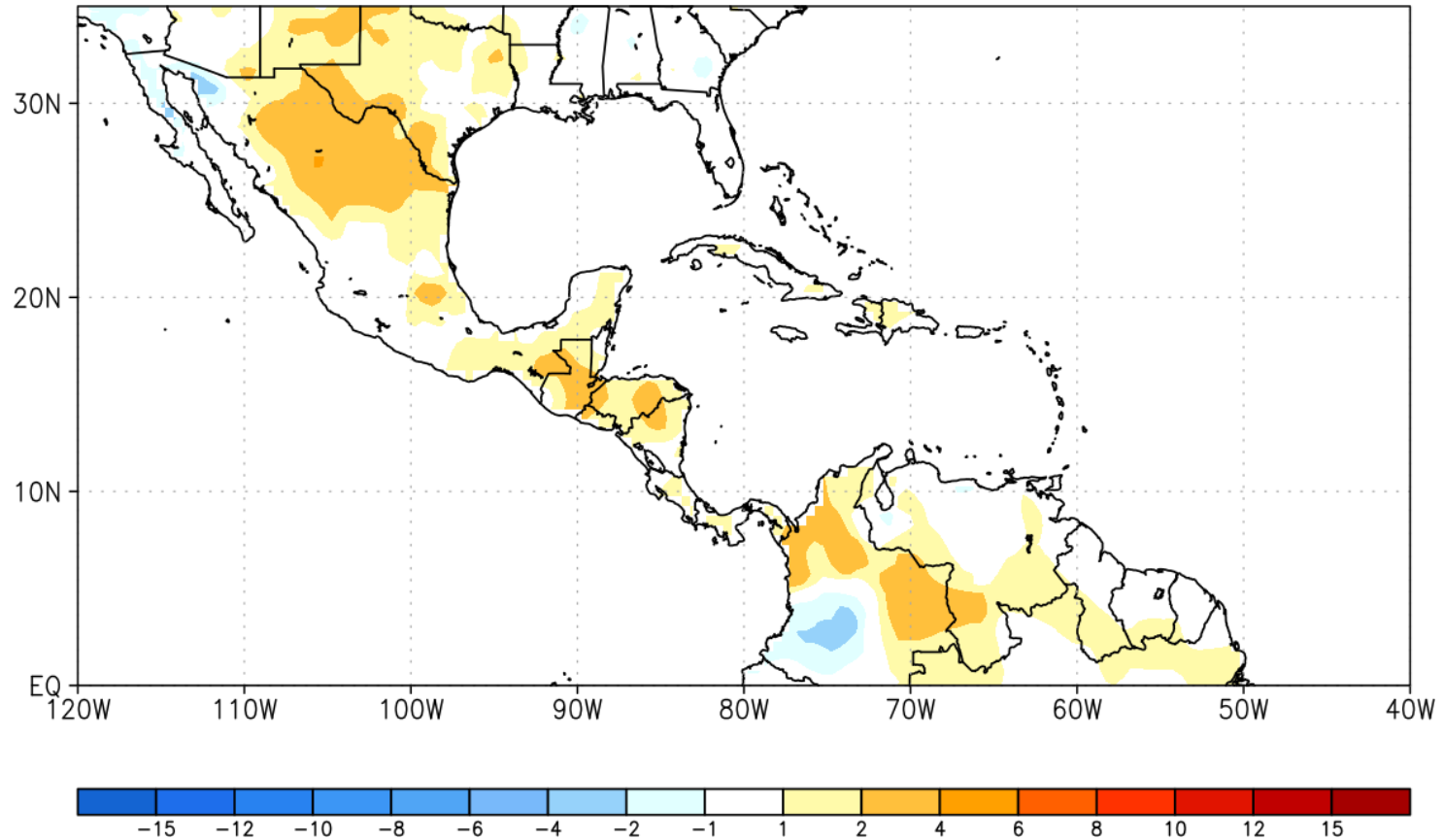
NMME SST Skill Masked Std.Anomalies (corr < 0.3 masked in grey)  
Dec2021-Feb2022 November2021 initial conditions



La Niña conditions in the Pacific → typically increases cloudiness and decreases chance for extreme temperature, but may increase moisture content near surface;  
~1C warm anomalies all around the Caribbean → typically increases moisture content and temperature near surface

# 30-day Tmax anomalies (CPC Global Daily Gridded Tmax)

CPC Global Daily Gridded 30-day Maximum Temperature Anomaly (°C)  
Valid: 09 Oct 2021 – 07 Nov 2021

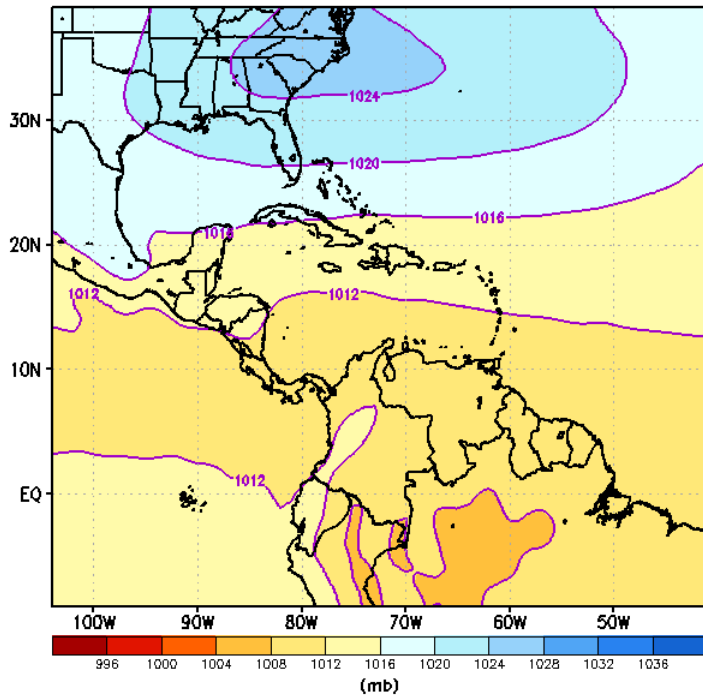


Southern Guianas, Belize, Hispaniola and parts of Cuba >1C anomalously warm.

# Mean Sea Level Pressure

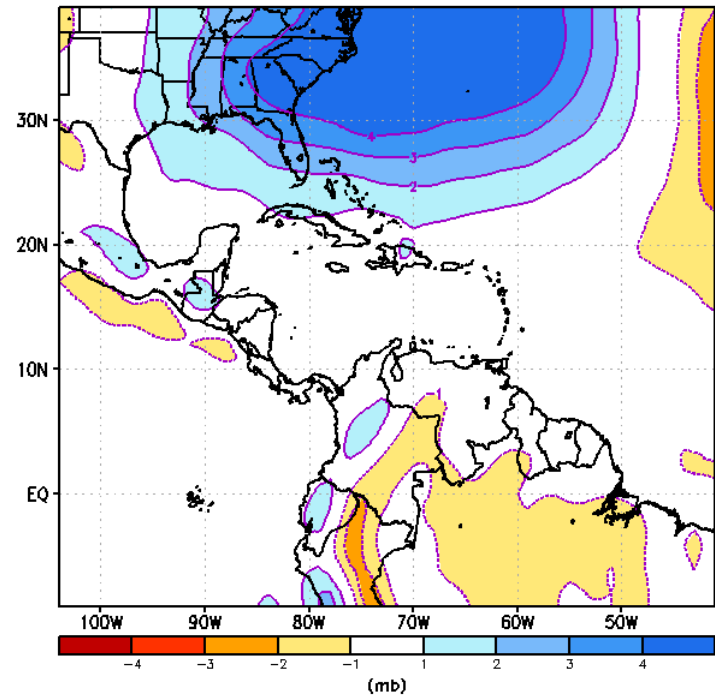
## Total

GEFS Week-2 Mean Sea Level Pressure Total  
Valid: 20210820 - 20211123



## Anomaly

GEFS Week-2 Mean Sea Level Pressure Anomaly  
Valid: 20210820 - 20211123

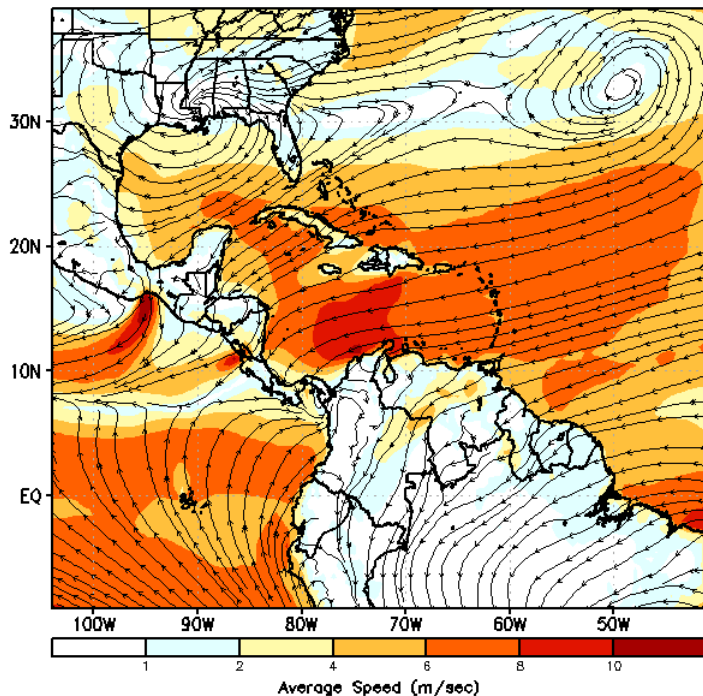


Increased subsidence over far northern Caribbean

# 10m Wind

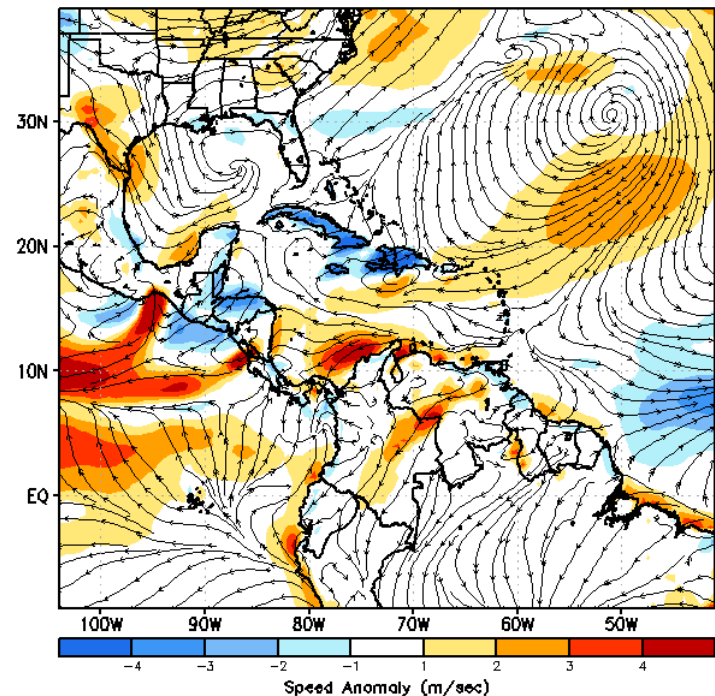
## Total

GEFS Week-2 10m Wind Speed Total  
Valid: 20210820 - 20211123



## Anomaly

GEFS Week-2 10m Wind Speed Anomaly  
Valid: 20210820 - 20211123

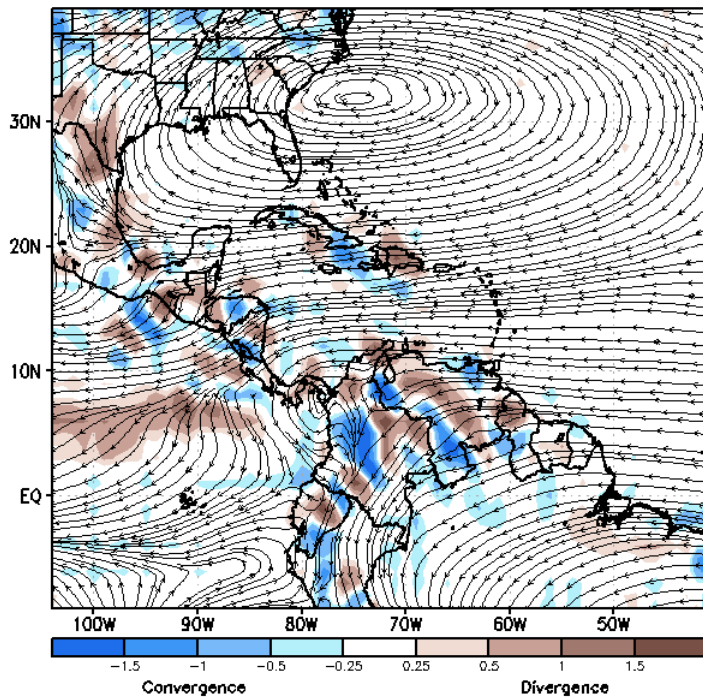


- Enhanced anticyclonic flow over Leeward Islands, reduced wind speeds over Greater Antilles
- ➔ reduced mixing of lower troposphere over Greater Antilles possibly enhancing surface heat;
- anomalous cyclonic flow over Belize vs. enhanced near-surface winds over ABC Islands
- ➔ strengthened Caribbean Low-Level Jet

# 850-hPa Wind

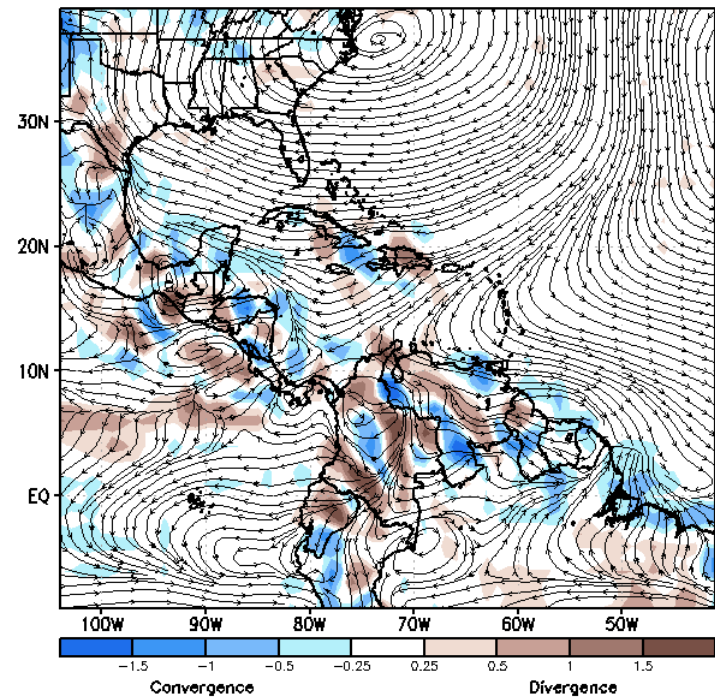
## Total

GEFS Week-2 850-hPa Divergence and Wind Total  
Valid: 20210820 - 20211123



## Anomaly

GEFS Week-2 850-hPa Divergence and Wind Anomaly  
Valid: 20210820 - 20211123

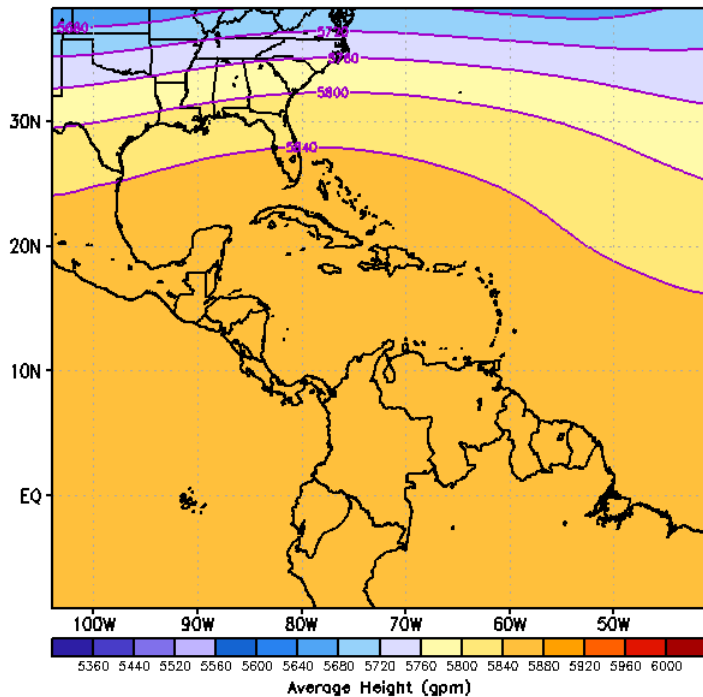


some low level convergence over central Guyana, far southeast Cuba and far southwest Haiti;  
some low level divergence over NW Guyana, the remainder of Hispaniola and south-central Cuba.

# 500-hPa Height

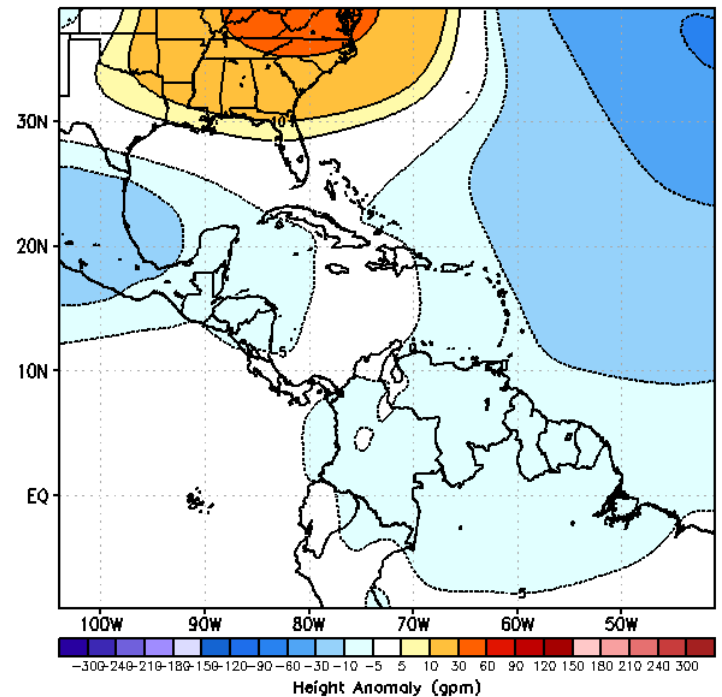
## Total

GEFS Week-2 500-hPa Geo-Potential Height Total  
Valid: 20210820 - 20211123



## Anomaly

GEFS Week-2 500-hPa Geo-Potential Height Anomaly  
Valid: 20210820 - 20211123

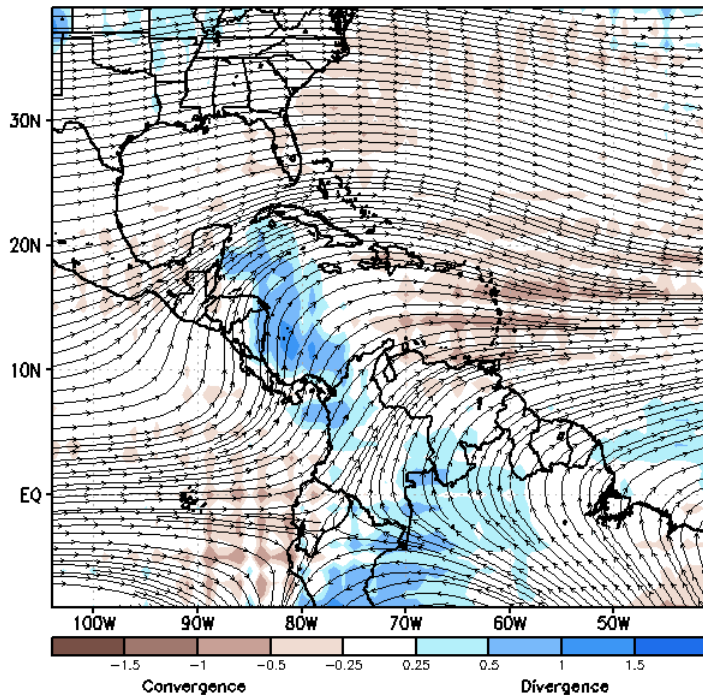


Slightly reduced mid-level geopotential height in most areas → no heat dome forecasted

# 200-hPa Wind

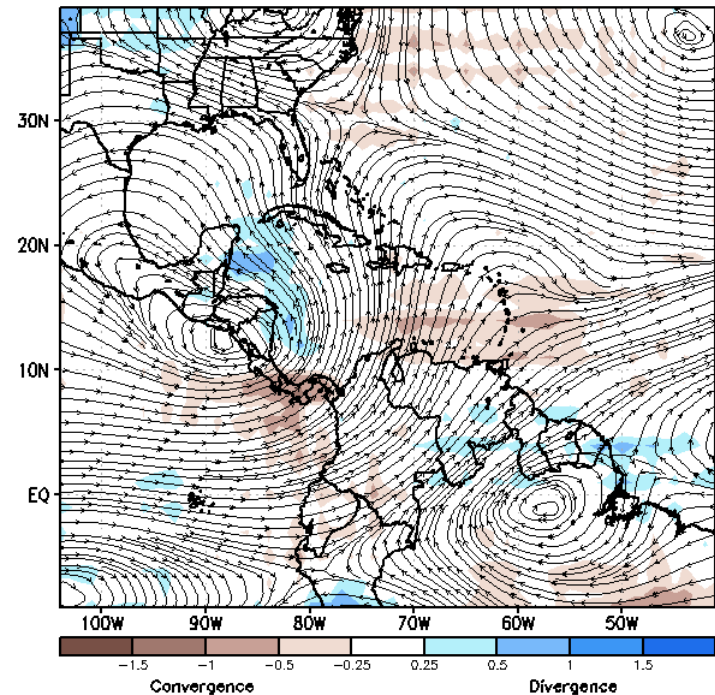
## Total

GEFS Week-2 200-hPa Divergence and Wind Total  
Valid: 20210820 - 20211123



## Anomaly

GEFS Week-2 200-hPa Divergence and Wind Anomaly  
Valid: 20210820 - 20211123



upper level convergence dominates over eastern and southern Caribbean

➔ enhanced upper level subsidence, reduced depth of convection,  
potentially increased sunshine;

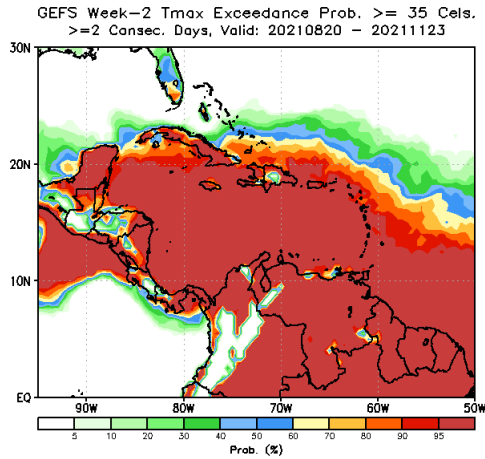
upper level divergence over far western Caribbean

➔ enhanced upper level convection, potentially reduced sunshine

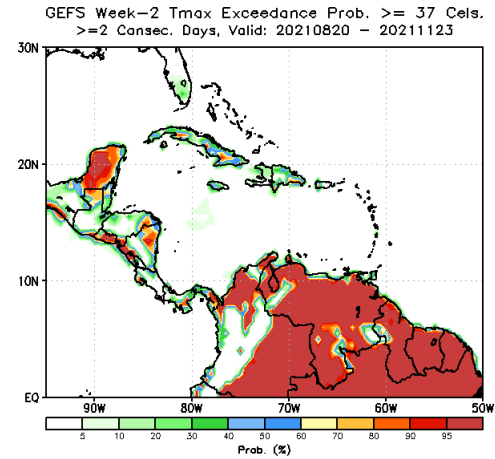


# Tmax Exceedance Probability for at least 2 Consecutive Days

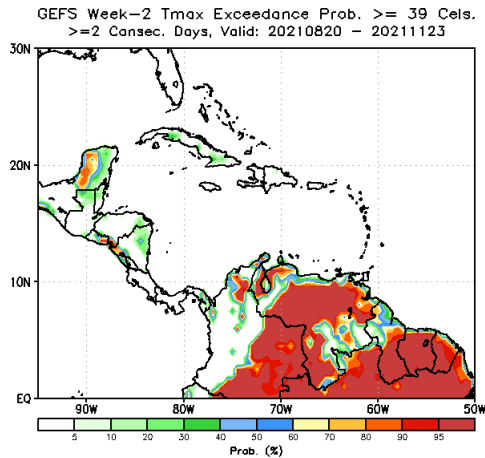
## $\geq 35^{\circ}\text{C}$



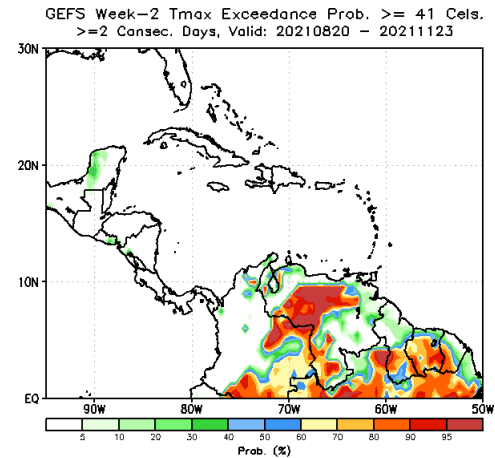
## $\geq 37^{\circ}\text{C}$



## $\geq 39^{\circ}\text{C}$

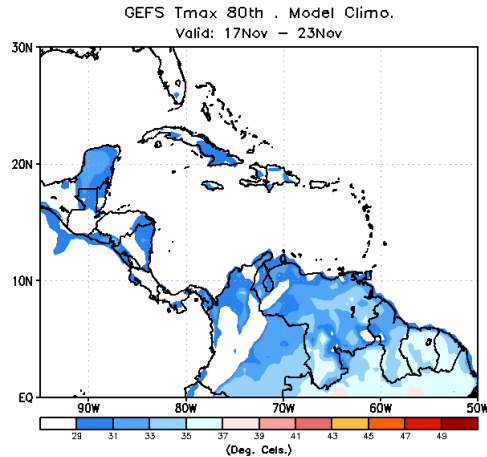


## $\geq 41^{\circ}\text{C}$

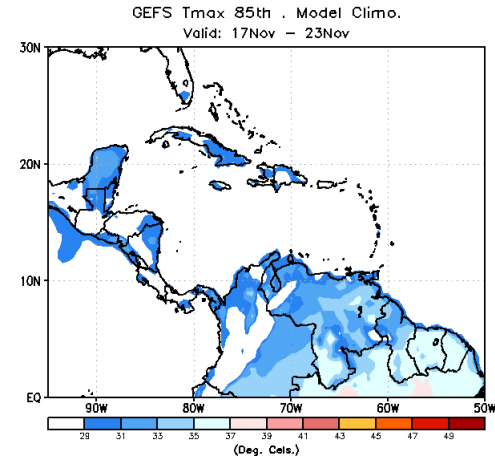


# Tmax Percentile Climatology

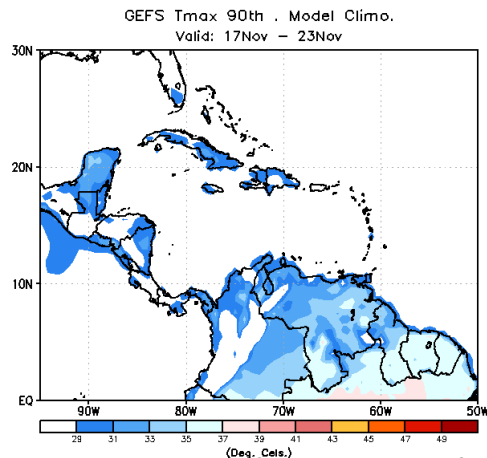
## 80<sup>th</sup> percentile



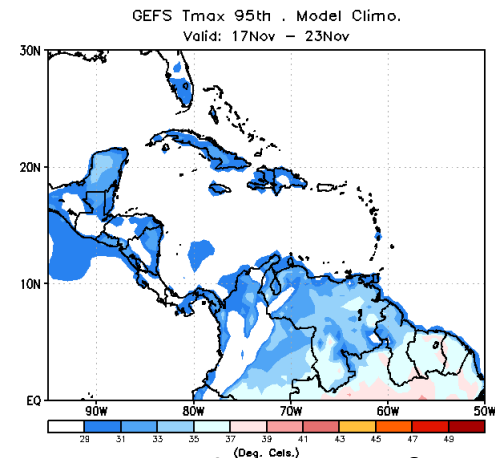
## 85<sup>th</sup> percentile



## 90<sup>th</sup> percentile



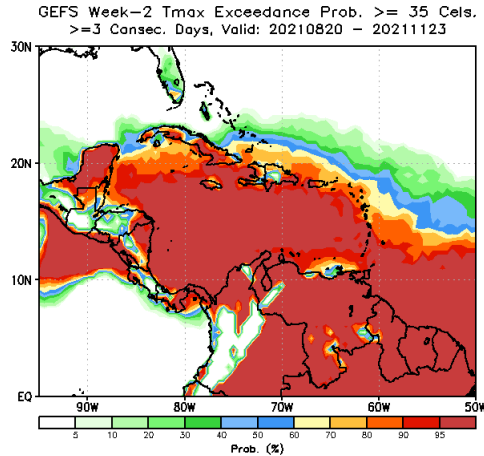
## 95<sup>th</sup> percentile



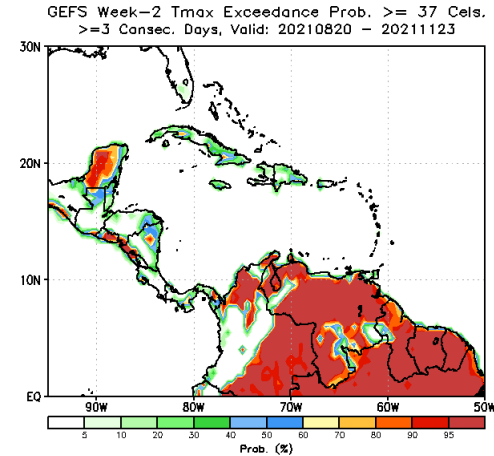
SW Guianas only area with Tmaxes above 35C at this time of year;  
Excessive heat usually subsides after September in the north, after October in the east  
and in late-November in the coastal Guianas, but remains in the S parts of the Guianas.

# Tmax Exceedance Probability for at least 3 Consecutive Days

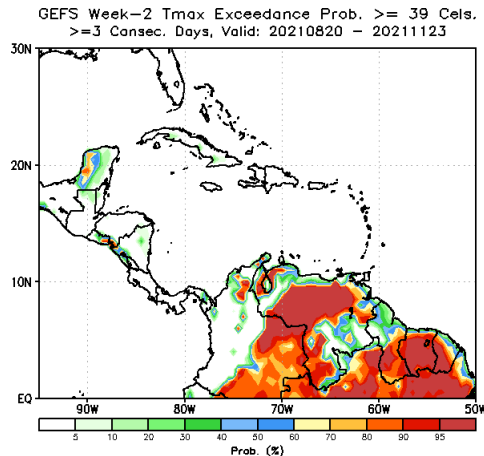
## $\geq 35\text{ }^{\circ}\text{C}$



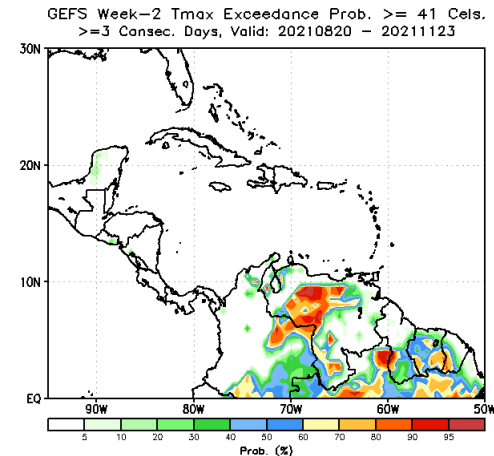
## $\geq 37\text{ }^{\circ}\text{C}$



## $\geq 39\text{ }^{\circ}\text{C}$



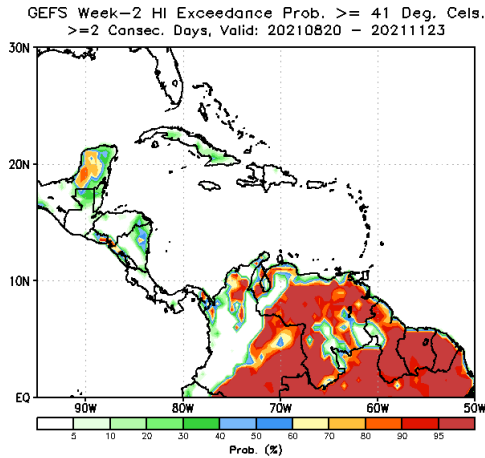
## $\geq 41\text{ }^{\circ}\text{C}$



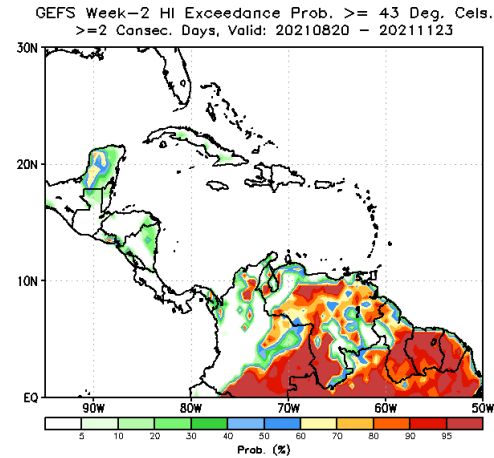
Strong warm mean bias  $\sim 5\text{-}7\text{C}$  over Caribbean and coastal Guianas in GEFS but not sure about possible variance bias  $\rightarrow$  Hard to use if not bias corrected or if not provided with anomalies

# HI Exceedance Probability for at least 2 Consecutive Days

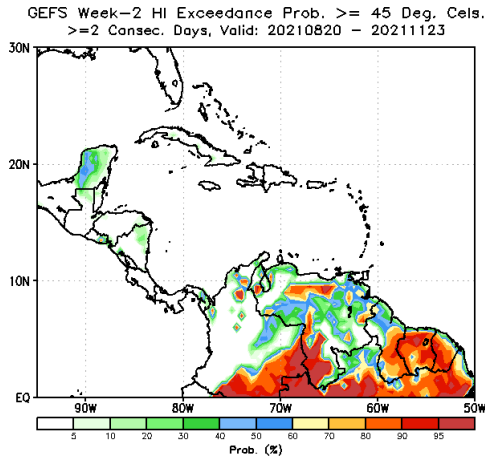
$\geq 41^{\circ}\text{C}$



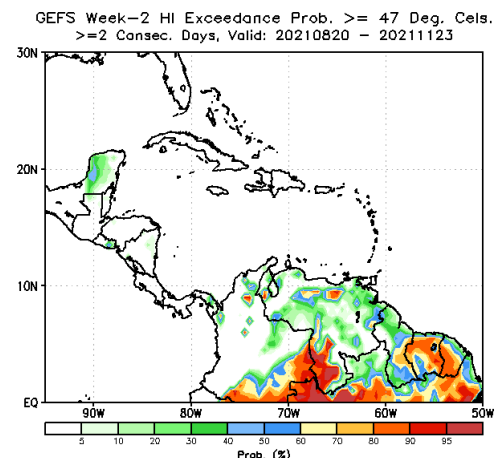
$\geq 43^{\circ}\text{C}$



$\geq 45^{\circ}\text{C}$



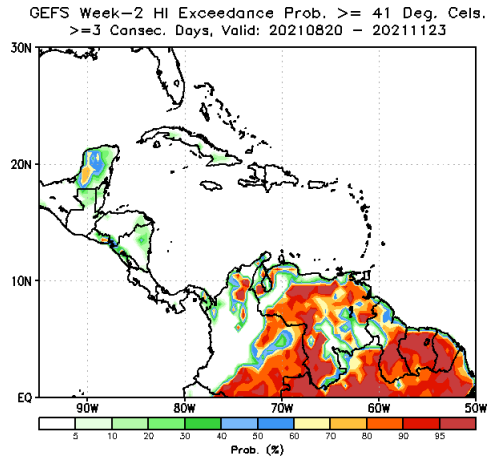
$\geq 47^{\circ}\text{C}$



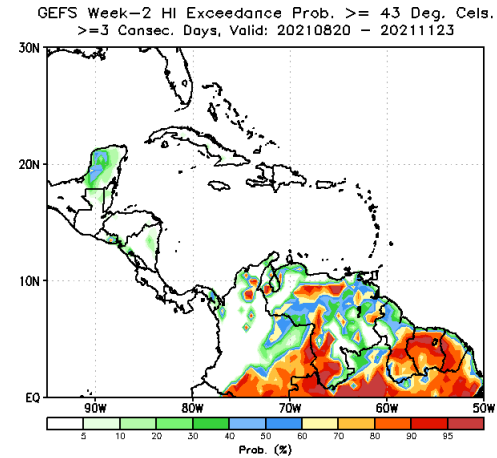
Guianas likely subject to excessive humid heat, except in mountainous areas.

# HI Exceedance Probability for at least 3 Consecutive Days

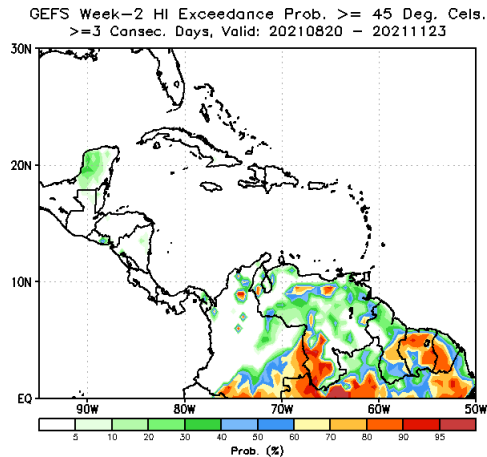
**$\geq 41^{\circ}\text{C}$**



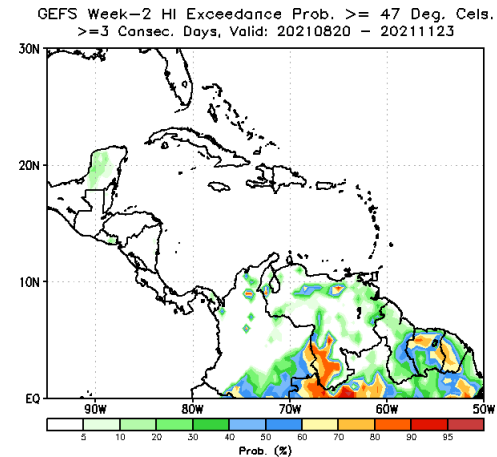
**$\geq 43^{\circ}\text{C}$**



**$\geq 45^{\circ}\text{C}$**

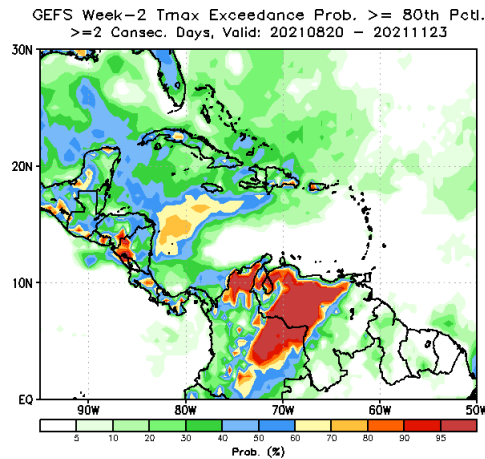


**$\geq 47^{\circ}\text{C}$**

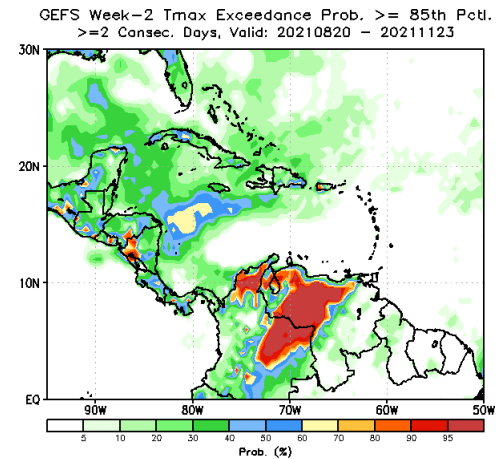


# Tmax Exceedance Probability with respect to Percentiles for at least 2 Consecutive Days

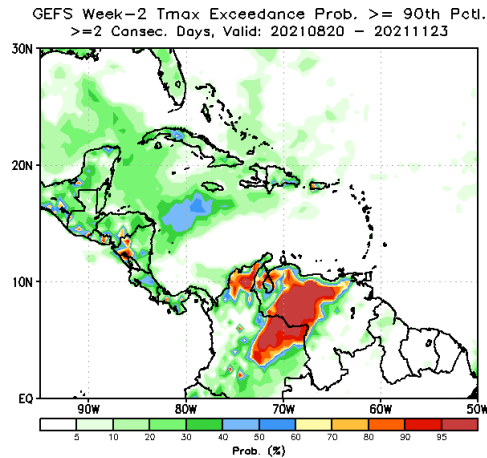
## $\geq 80^{\text{th}}$ percentile



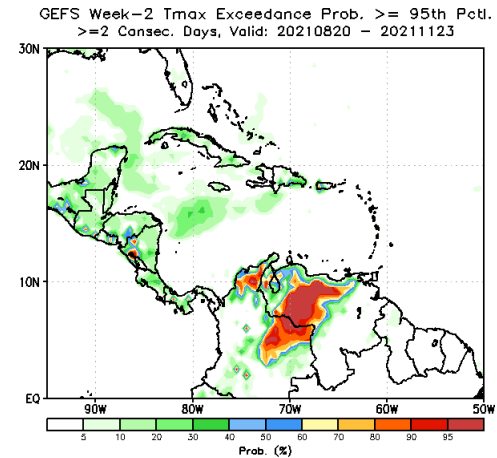
## $\geq 85^{\text{th}}$ percentile



## $\geq 90^{\text{th}}$ percentile



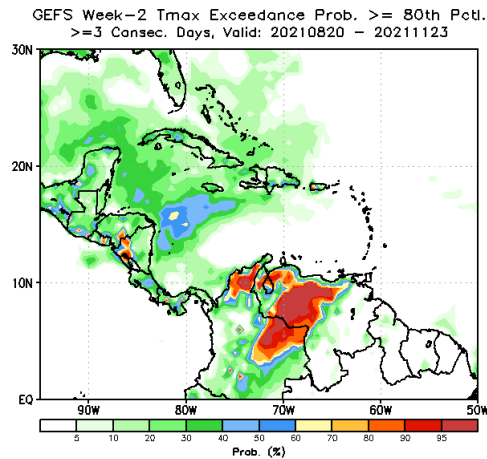
## $\geq 95^{\text{th}}$ percentile



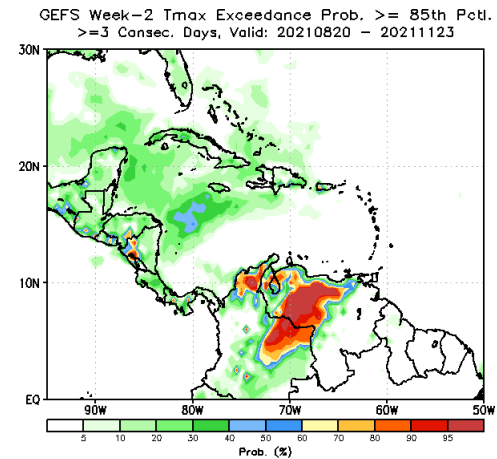
Potentially moderately high Tmaxes over Jamaica and excessively high Tmaxes over ABC Is.

# Tmax Exceedance Probability with respect to Percentiles for at least 3 Consecutive Days

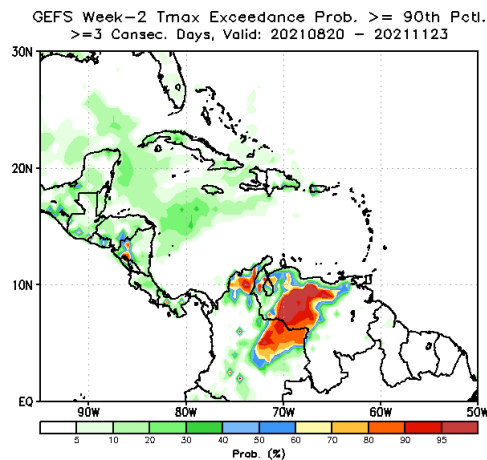
## $\geq 80^{\text{th}}$ percentile



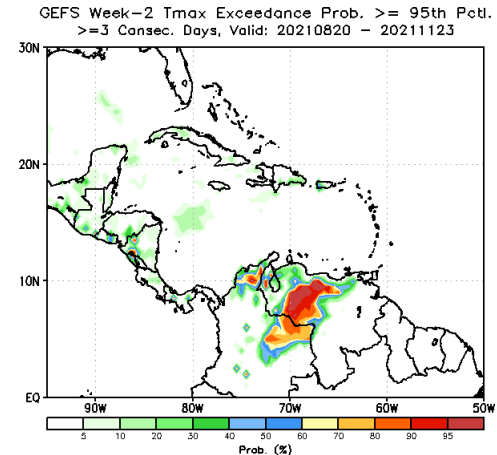
## $\geq 85^{\text{th}}$ percentile



## $\geq 90^{\text{th}}$ percentile



## $\geq 95^{\text{th}}$ percentile

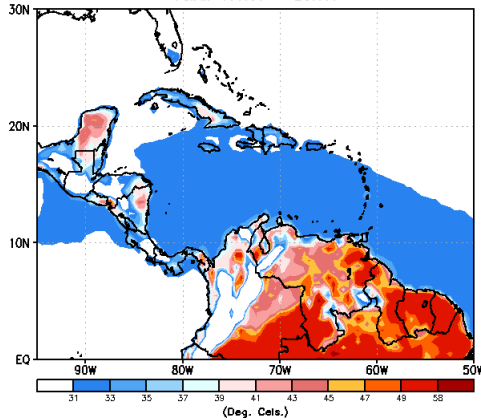


Potentially moderately high Tmaxes over Jamaica and excessively high Tmaxes over ABC Is.

# HI Percentile Climatology

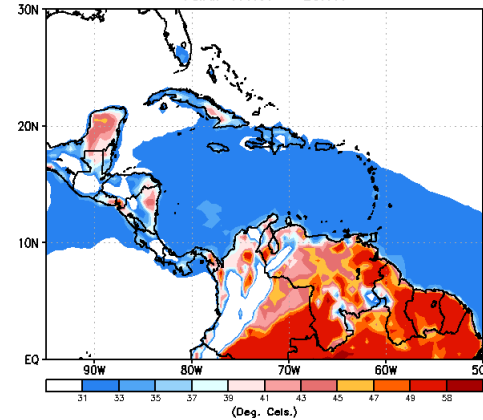
## 80<sup>th</sup> percentile

GEFS HI 80th . Model Climo.  
Valid: 17Nov - 23Nov



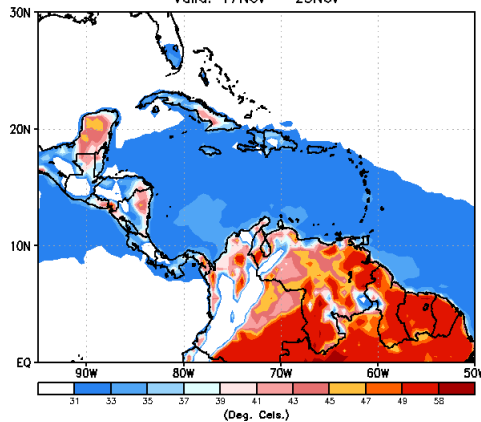
## 85<sup>th</sup> percentile

GEFS HI 85th . Model Climo.  
Valid: 17Nov - 23Nov



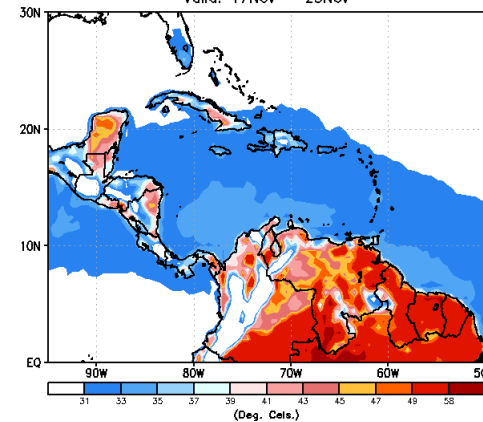
## 90<sup>th</sup> percentile

GEFS HI 90th . Model Climo.  
Valid: 17Nov - 23Nov



## 95<sup>th</sup> percentile

GEFS HI 95th . Model Climo.  
Valid: 17Nov - 23Nov

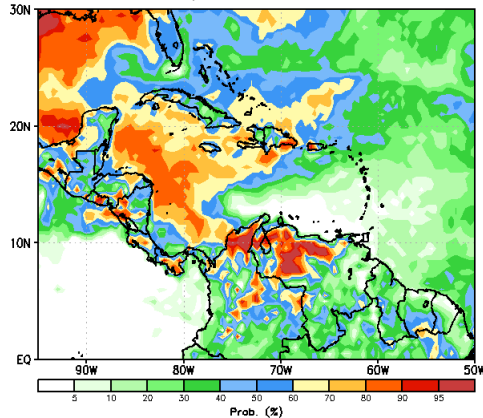




# HI Exceedance Probability with respect to Percentiles for at least 2 Consecutive Days

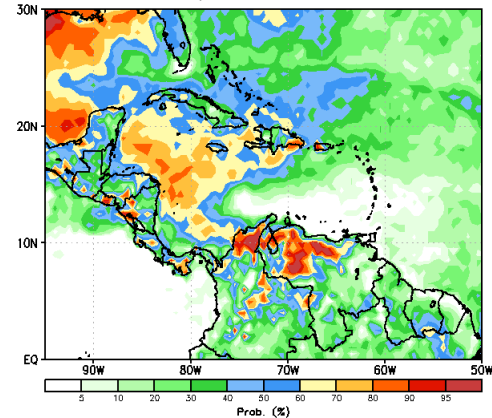
## $\geq 80^{\text{th}}$ percentile

GEFS Week-2 HI Exceedance Prob.  $\geq 80^{\text{th}}$  Pctl.  
>=2 Consec. Days, Valid: 20210820 - 20211123



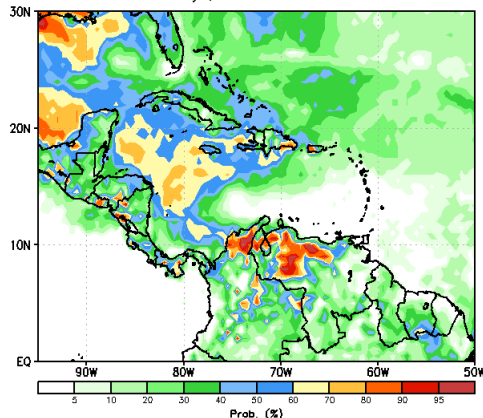
## $\geq 85^{\text{th}}$ percentile

GEFS Week-2 HI Exceedance Prob.  $\geq 85^{\text{th}}$  Pctl.  
>=2 Consec. Days, Valid: 20210820 - 20211123



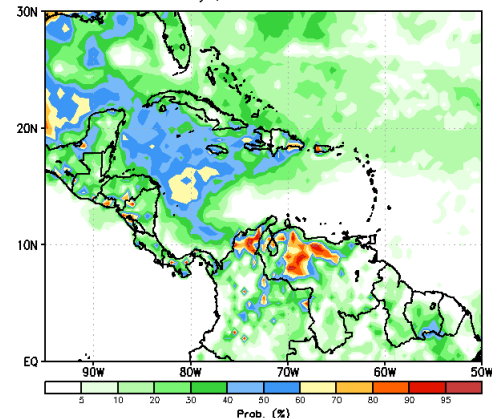
## $\geq 90^{\text{th}}$ percentile

GEFS Week-2 HI Exceedance Prob.  $\geq 90^{\text{th}}$  Pctl.  
>=2 Consec. Days, Valid: 20210820 - 20211123



## $\geq 95^{\text{th}}$ percentile

GEFS Week-2 HI Exceedance Prob.  $\geq 95^{\text{th}}$  Pctl.  
>=2 Consec. Days, Valid: 20210820 - 20211123

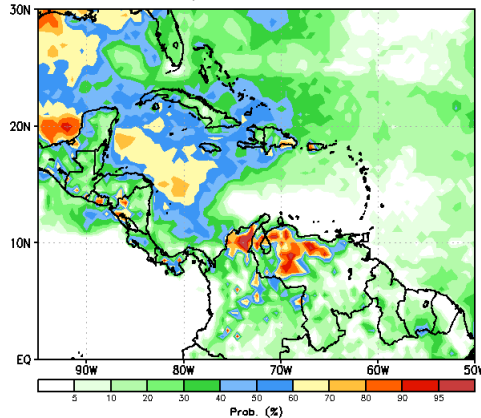


Potentially moderately high HIs over Jamaica, Hispaniola and S Guianas;  
potentially excessively high HI over ABC Is.

# HI Exceedance Probability with respect to Percentiles for at least 3 Consecutive Days

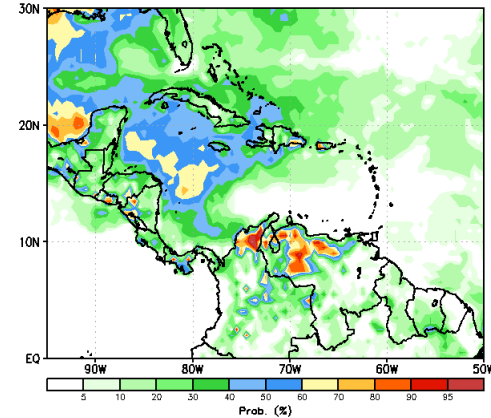
## $\geq 80^{\text{th}}$ percentile

GEFS Week-2 HI Exceedance Prob.  $\geq 80^{\text{th}}$  Pctl.  
 $>=3$  Consec. Days, Valid: 20210820 - 20211123



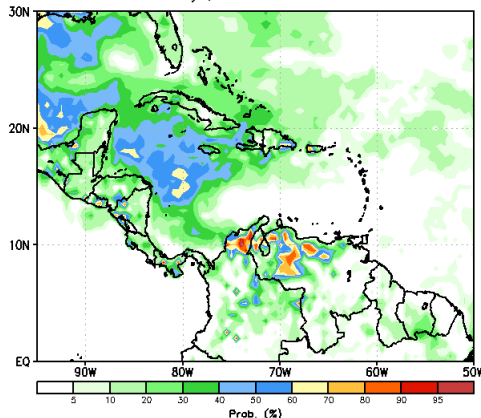
## $\geq 85^{\text{th}}$ percentile

GEFS Week-2 HI Exceedance Prob.  $\geq 85^{\text{th}}$  Pctl.  
 $>=3$  Consec. Days, Valid: 20210820 - 20211123



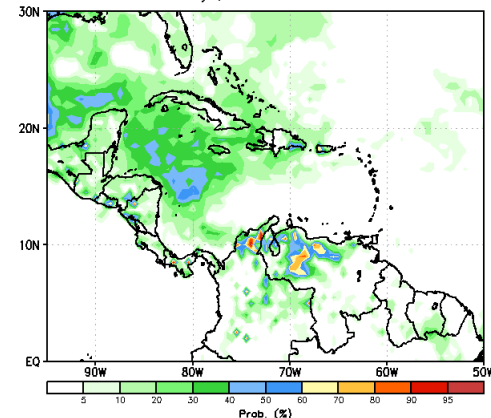
## $\geq 90^{\text{th}}$ percentile

GEFS Week-2 HI Exceedance Prob.  $\geq 90^{\text{th}}$  Pctl.  
 $>=3$  Consec. Days, Valid: 20210820 - 20211123



## $\geq 95^{\text{th}}$ percentile

GEFS Week-2 HI Exceedance Prob.  $\geq 95^{\text{th}}$  Pctl.  
 $>=3$  Consec. Days, Valid: 20210820 - 20211123

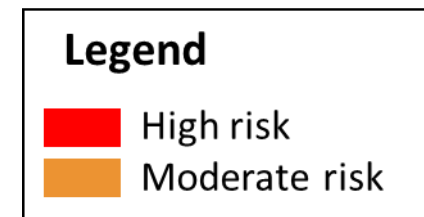
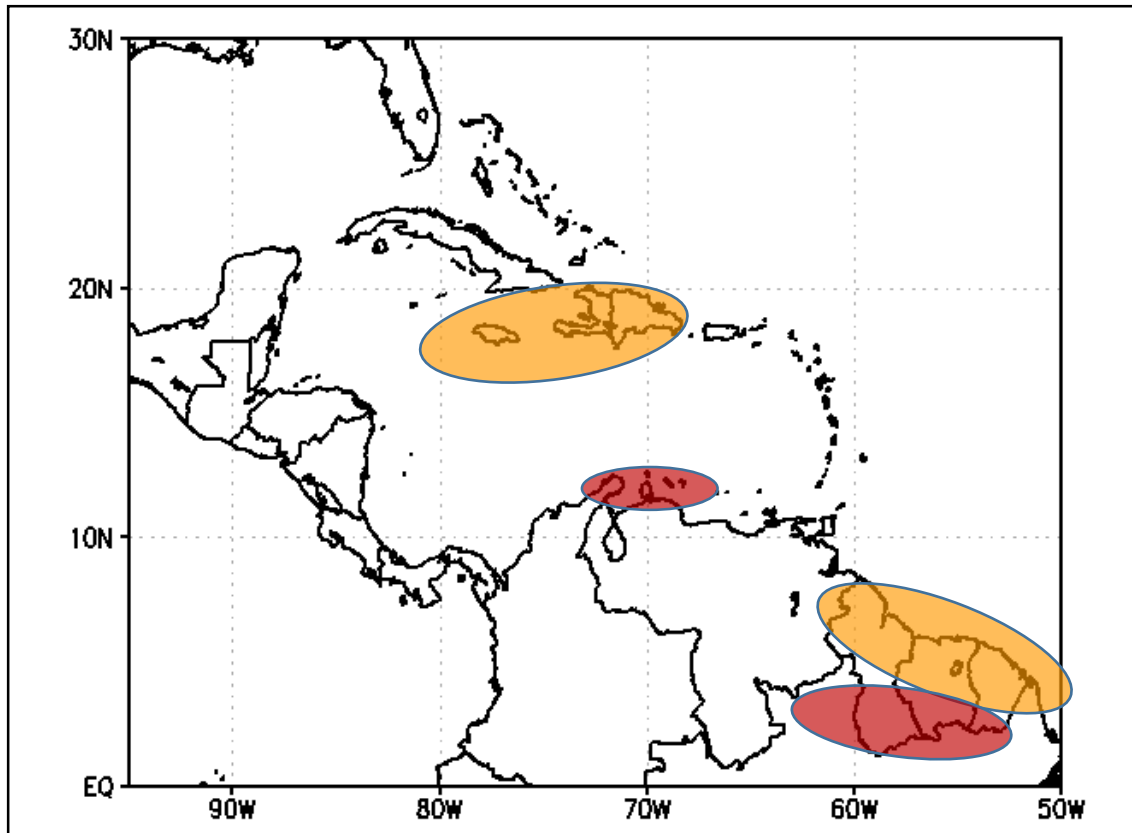


Potentially moderately high HIs over Jamaica, Hispaniola and S Guianas;  
potentially excessively high HI over ABC Is.

# Summary

- **Monitoring + Global FCST guidance:**
  - **La Niña conditions** → atmosphere more conducive to deep convection, increased cloudiness and tempered Tmax
  - **Warm SST anomalies around the Caribbean**  
→ increases moisture content and temperature near surface, reflected in recent anomalously warm Tmaxes in Belize, S Guianas, Hispaniola.
- **Week 2 FCST guidance:**
  - Increased low level subsidence over far northern Caribbean → promoting increased insolation
  - Enhanced anticyclonic flow over Leeward Islands, reduced wind speeds over Greater Antilles → reduced mixing of lower troposphere over Greater Antilles possibly enhancing surface heat;
  - Enhanced near-surface winds over ABC Islands → strengthened Caribbean Low-Level Jet, increased insolation
  - upper level convergence dominates over eastern and southern Caribbean  
→ enhanced upper level subsidence, reduced depth of convection, potentially increased sunshine;
  - upper level divergence over far western Caribbean  
→ enhanced upper level convection, potentially reduced sunshine
- **Week 2 Heat FCST:**
  - **Potentially moderate humid heat over Jamaica, Hispaniola and northern Guianas.**
  - **Potentially excessive humid heat over ABC Is. and southern Guianas.**

# Excessive Heat Outlook



- 1. Seasonable continuation of excessive heat in southern Guianas and moderate humid heat in northern Guianas during from 17 to 23 Nov 2021.**
- 2. Excessive heat possible in ABC Islands associated with reduced cloudiness as the CLLJ is enhanced.**
- 3. Possible moderate heat in Jamaica and Hispaniola due to high SSTs (and potentially enhanced subsidence over Hispaniola).**