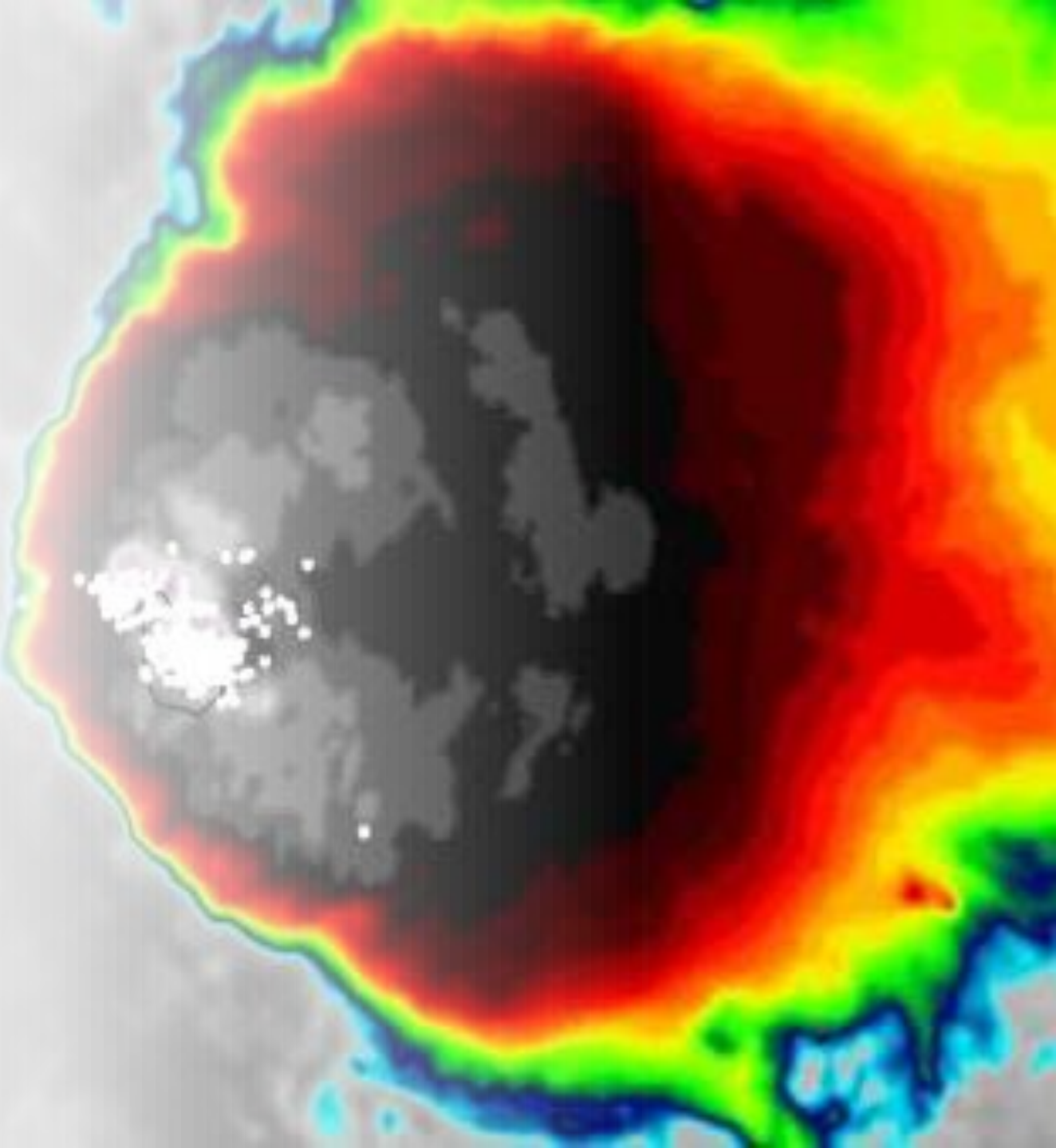
June 17th Severe Weather over Barbados

Kathy-Ann Caesar

Chief Meteorologist - CIMH



Major Weather Event

- At 4:00 UTC, Midnight local time, Tropical Wave 09 neared the Lesser Antilles, a severe thunderstorm producing close to 450 lightning strikes per minute moved across Barbados.
- Records indicate near 16000 strikes in total.
- Wind gusts up to 43 knots were at the Grantley Adams International Airport and torrential rainfall produced flash floods.
- 12 Homes were badly damaged or destroyed, no deaths

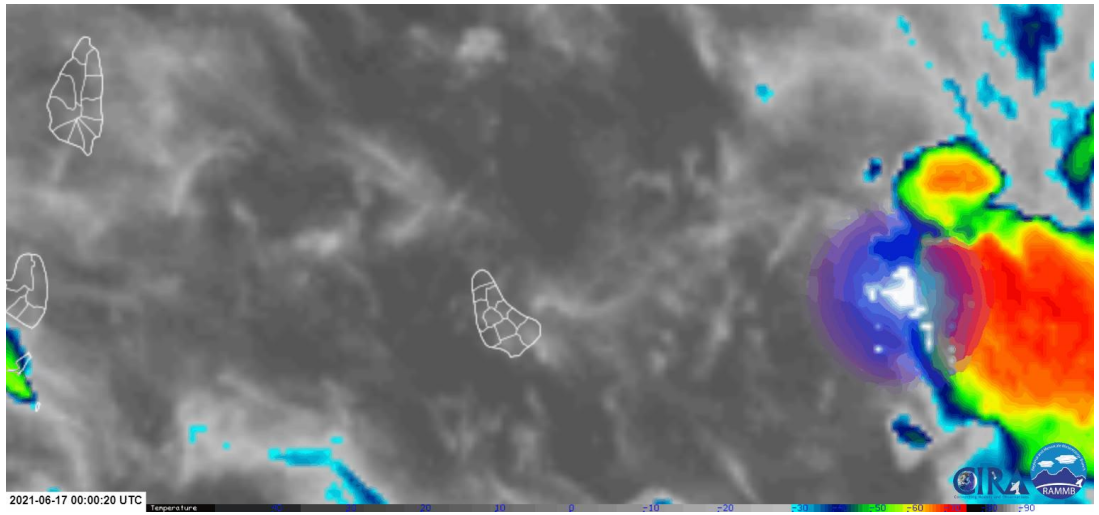
Over 16000 Lightning Strikes

TTWeatherCenter
@TTWeatherCenter

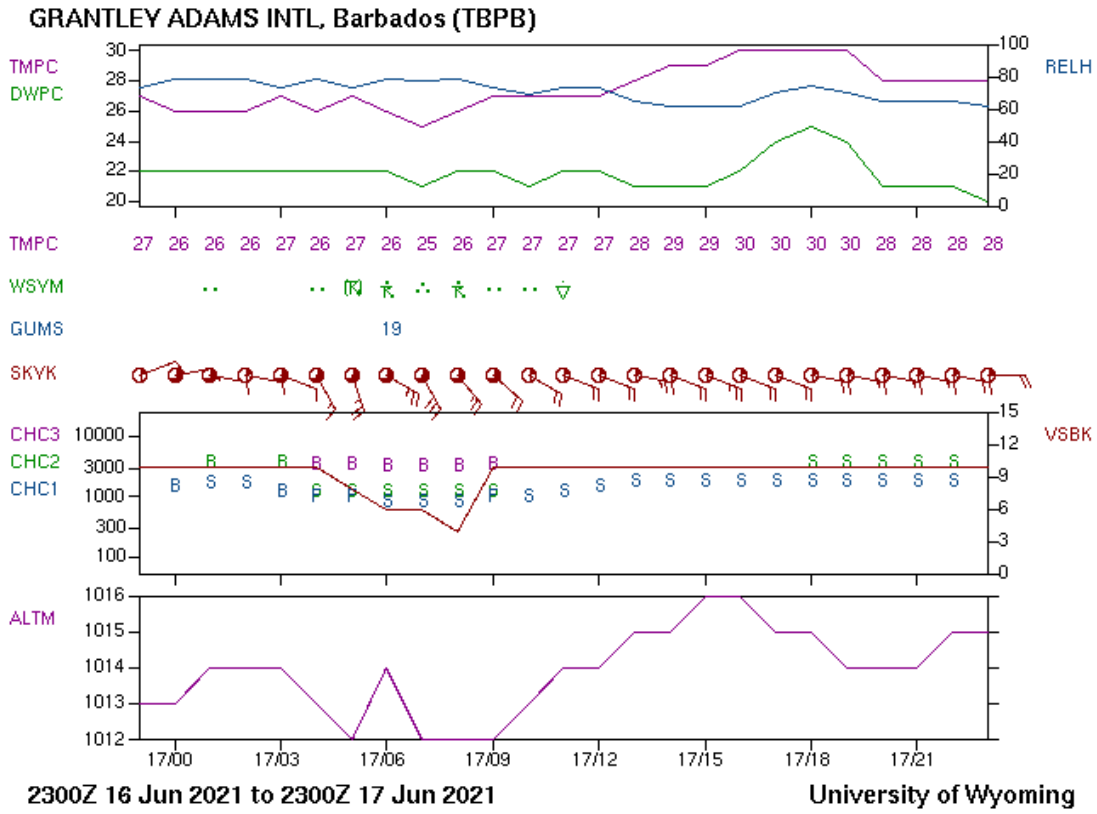
As of 2:09 AM, the severe thunderstorm in Barbados has averaged 490 lightning strikes per minute, with an incredible 46,290 lightning strokes detected in the past 60 minutes.

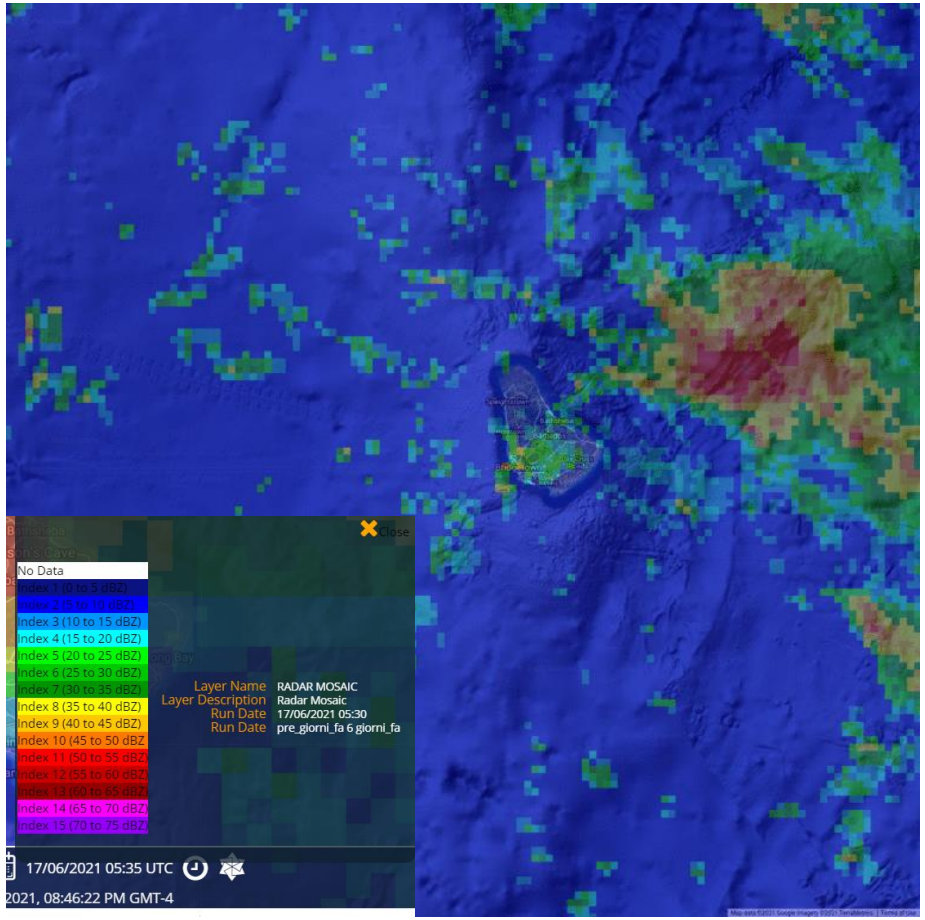
ttweathercenter.com/2021/06/17/bar...

```
490 strokes per minute
   2773 strokes in past 5 mins. (avg. 554.6/min.)
   6375 strokes in past 10 mins. (avg. 637.5/min.)
   15,009 strokes in past 20 mins. (avg. 750.5/min.)
   24,482 strokes in past 30 mins. (avg. 816.1/min.)
   46,290 strokes in past 60 mins. (avg. 771.5/min.)
```



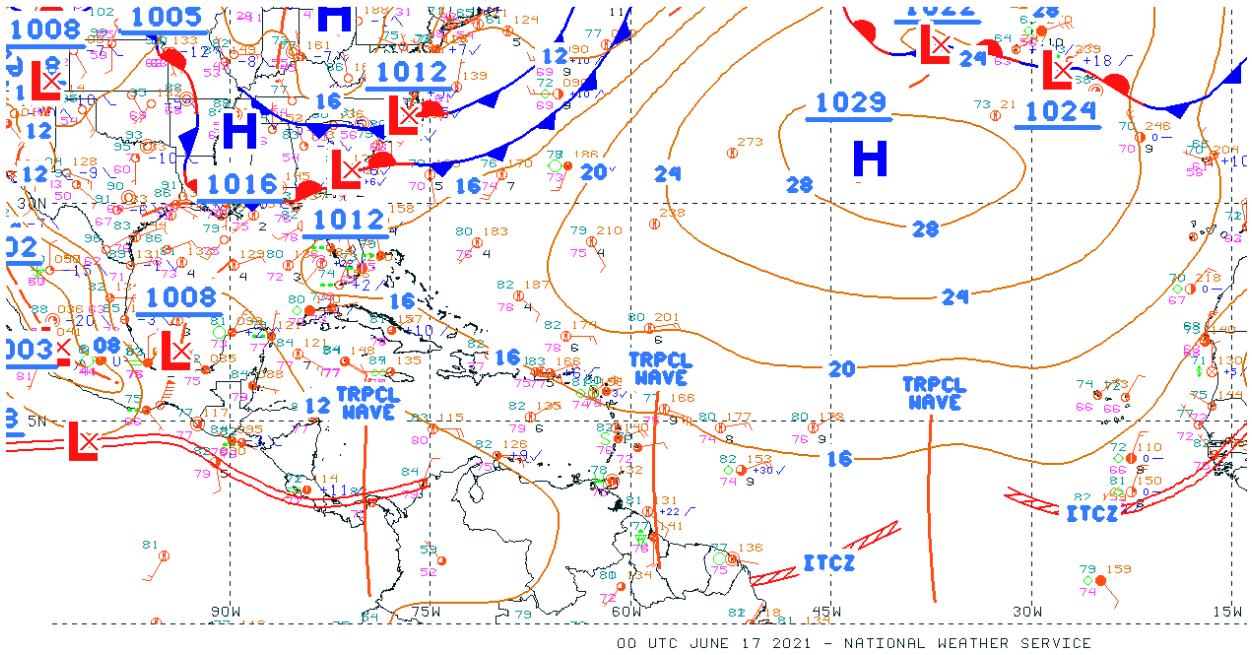
Observations and Radar loop



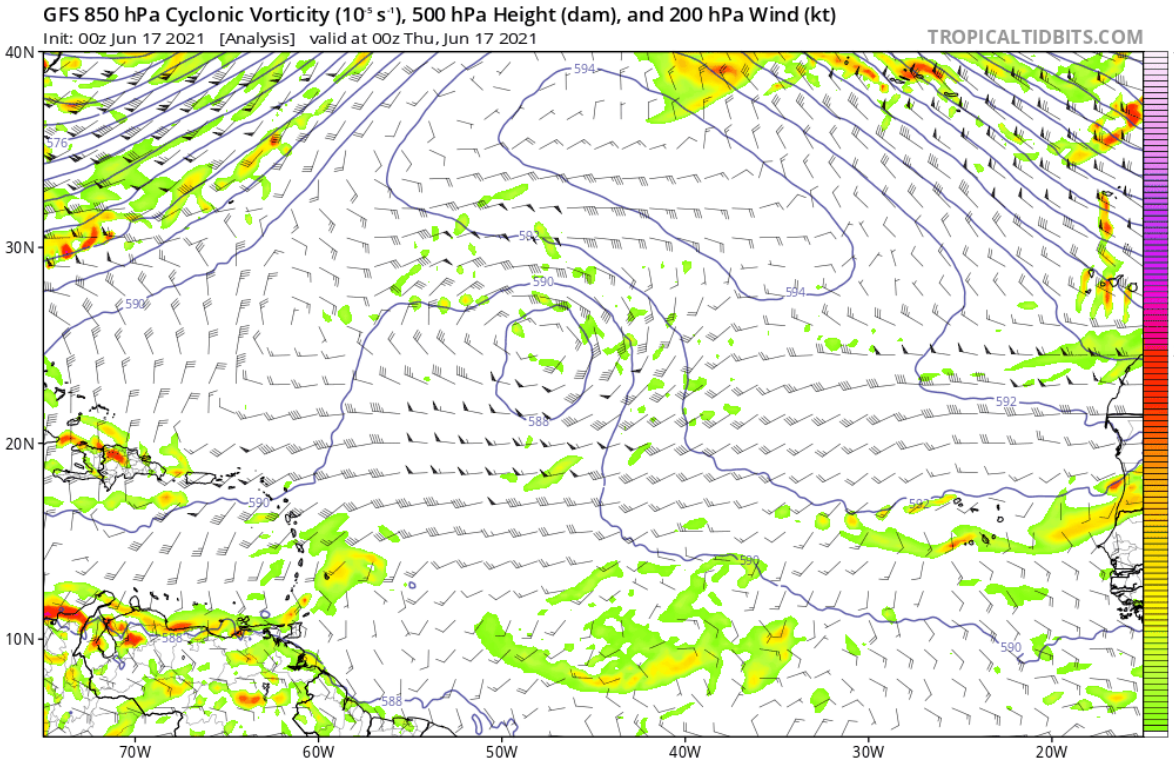


AWS obs indicate westerly winds up 40 kts – signs of a rotation on the ground

MCC formed on Tropical Wave

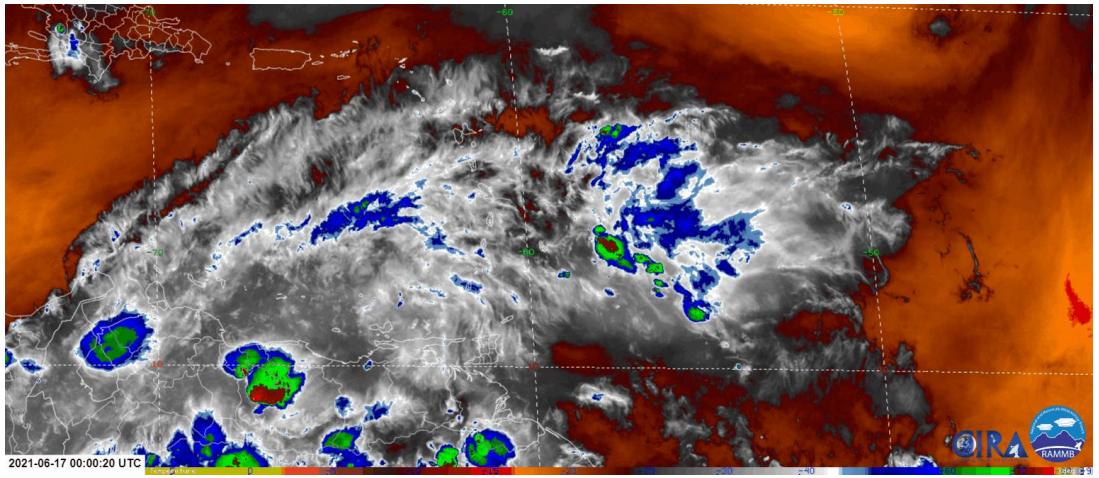


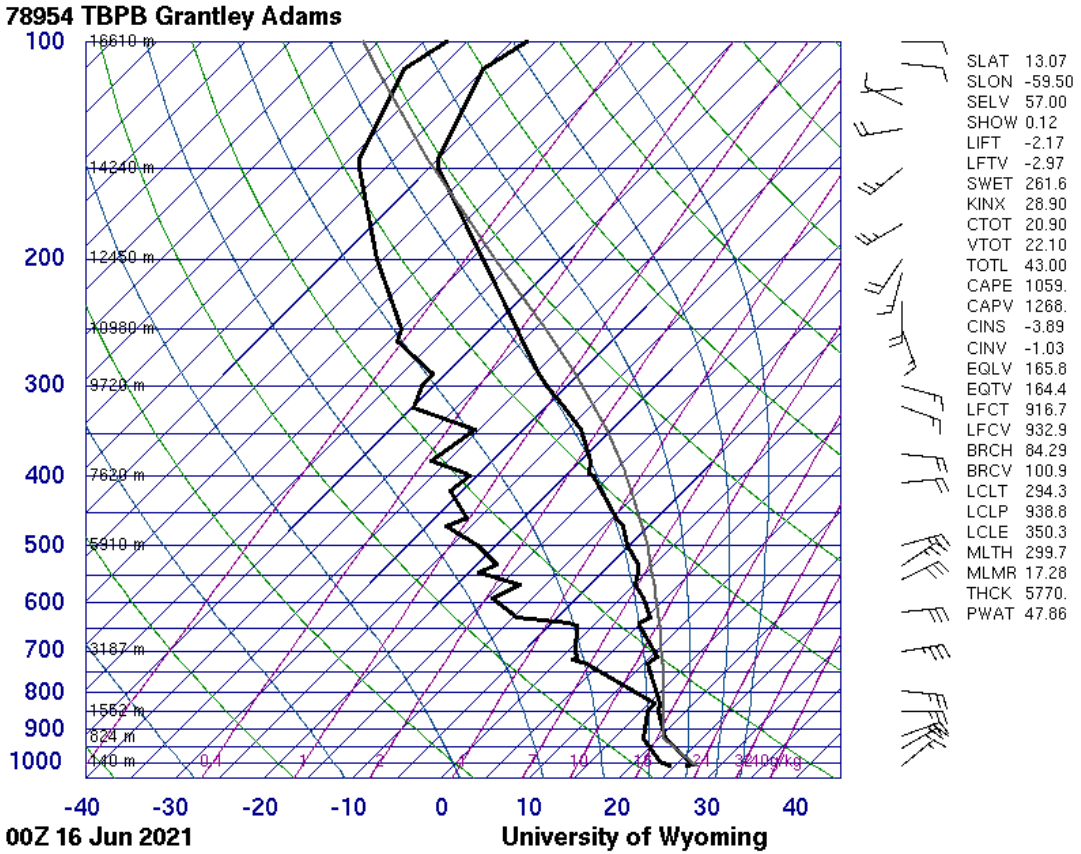
0000 UTC Surface analysis -17th June 2021



0000UTC initialized prog on 17th June 2021
850 hPa –vorticity; 500 hPA\a, heights and 200 hPA winds

Upper air support

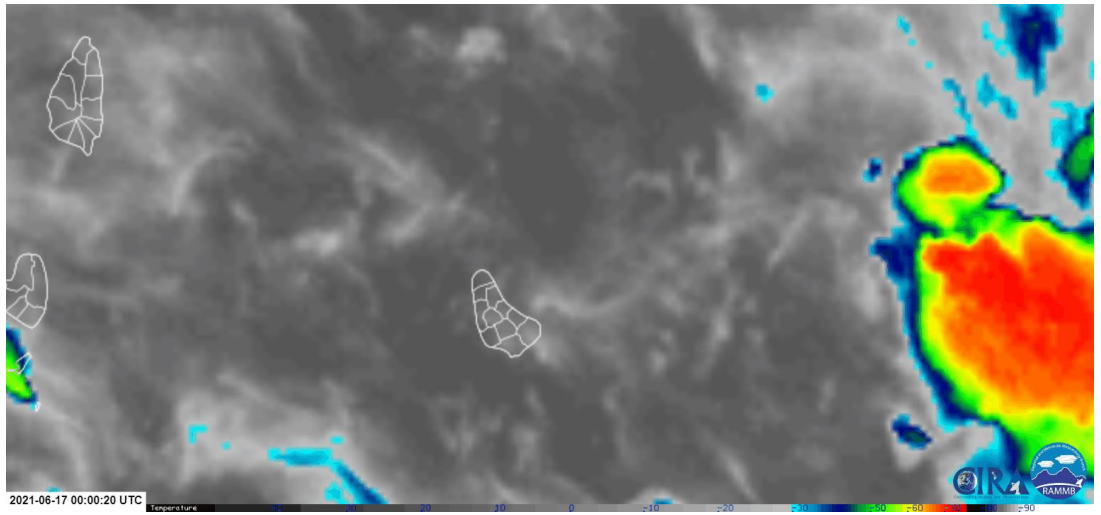




1. Strong low-level jet
2. Some dry, cold air intrusion in the mid levels
3. Possible right-entrance dynamics
4. Weak PVA aloft

MCC formed on Tropical Wave

- The enhanced-V is a pattern seen on satellite infrared images of thunderstorms;
- A thunderstorm anvil exhibits a V-shaped region of colder cloud tops extending downwind from the thunderstorm updraft.
- The enhanced-V indicates a very strong updraft, and therefore a higher potential for severe weather.
- The V-shape results from advection by the strong winds near the tropopause.
- Studies (e.g. McCann, 1981) have demonstrated the value of real-time satellite data in detecting and monitoring severe thunderstorms using the enhanced-V.
- Median lead time is approximately 30 minutes.



McCann, D.W., 1981: The enhanced-V, a satellite observable severe storm signature. IN:United States National Oceanic and Atmospheric Administration, National Weather Service, Wash., DC., Technical Memorandum (NOAA TM NWS NSSFC-4), March 1981. 31 p., 33, 5-257