"Harvey"- 17th/18th August, 2017 The Barbados Experience

CMC57-Antigua

13th -17th November, 2017

Sonia Nurse

Barbados Meteorological Services

E-mail: antoin.nurse@gmail.com

Synopsis of “Harvey”

- August 13th : originated as an area of low pressure within the African Monsoon trough:

  center 12°N ° 30°W
- Low separated from trough on 14th August and moved to 14N 40W by midday on 15th.
- 30 to 35kt upper-level winds provided moderate easterly shear which displaced the convection to the west of center of circulation.
- Dry mid-level air also inhibited convection.

The system continued to struggle against these two inhibiting factors as it tracked slightly south of west.

Severe Wx Warning issued for B'dos at 4:00p.m on 16th Aug

On 17th August, 2017, the NHC in Miami Florida issued a Potential Tropical Cyclone #9 Advisory.

Summary of the 11AM position.

LOCATION...13.1N 55.1W

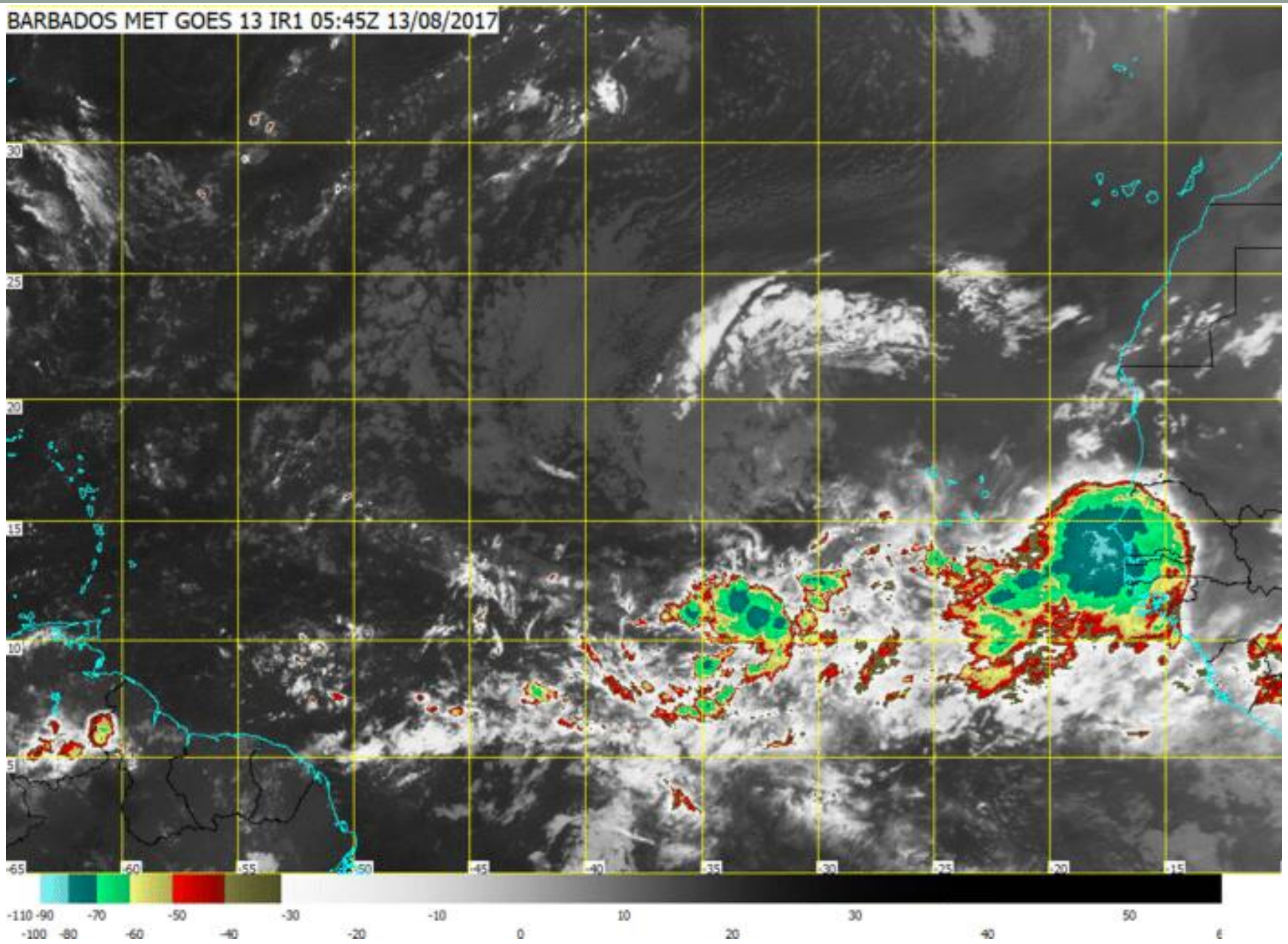
ABOUT 295 MI...475 KM E OF BARBADOS

MAXIMUM SUSTAINED WINDS...35 MPH...55 KM/H

MOVEMENT...W OR 270 DEGREES AT 17

MPH...28 KM/H

MINIMUM CENTRAL PRESSURE...1008 MB...29.77 INCHES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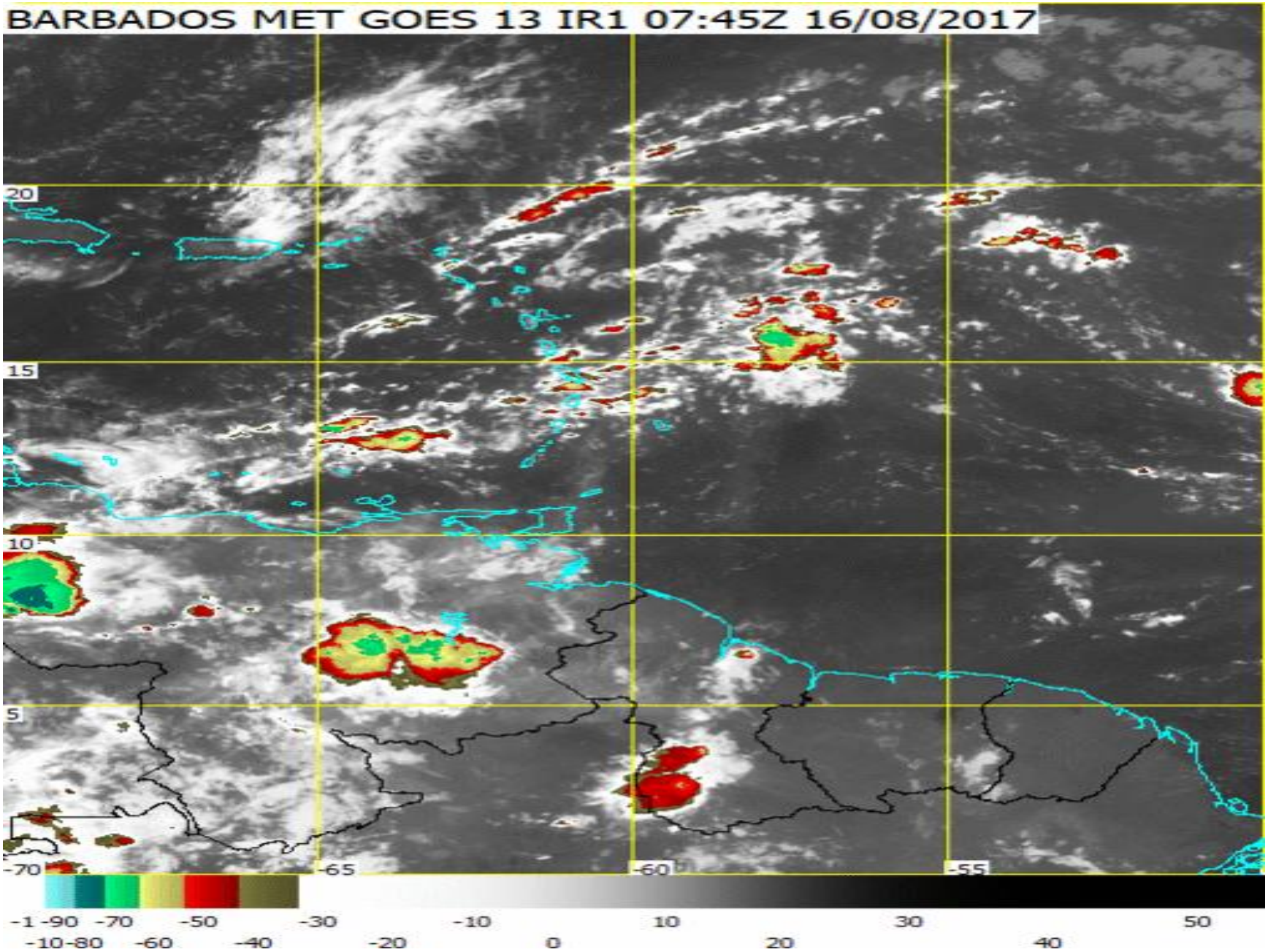
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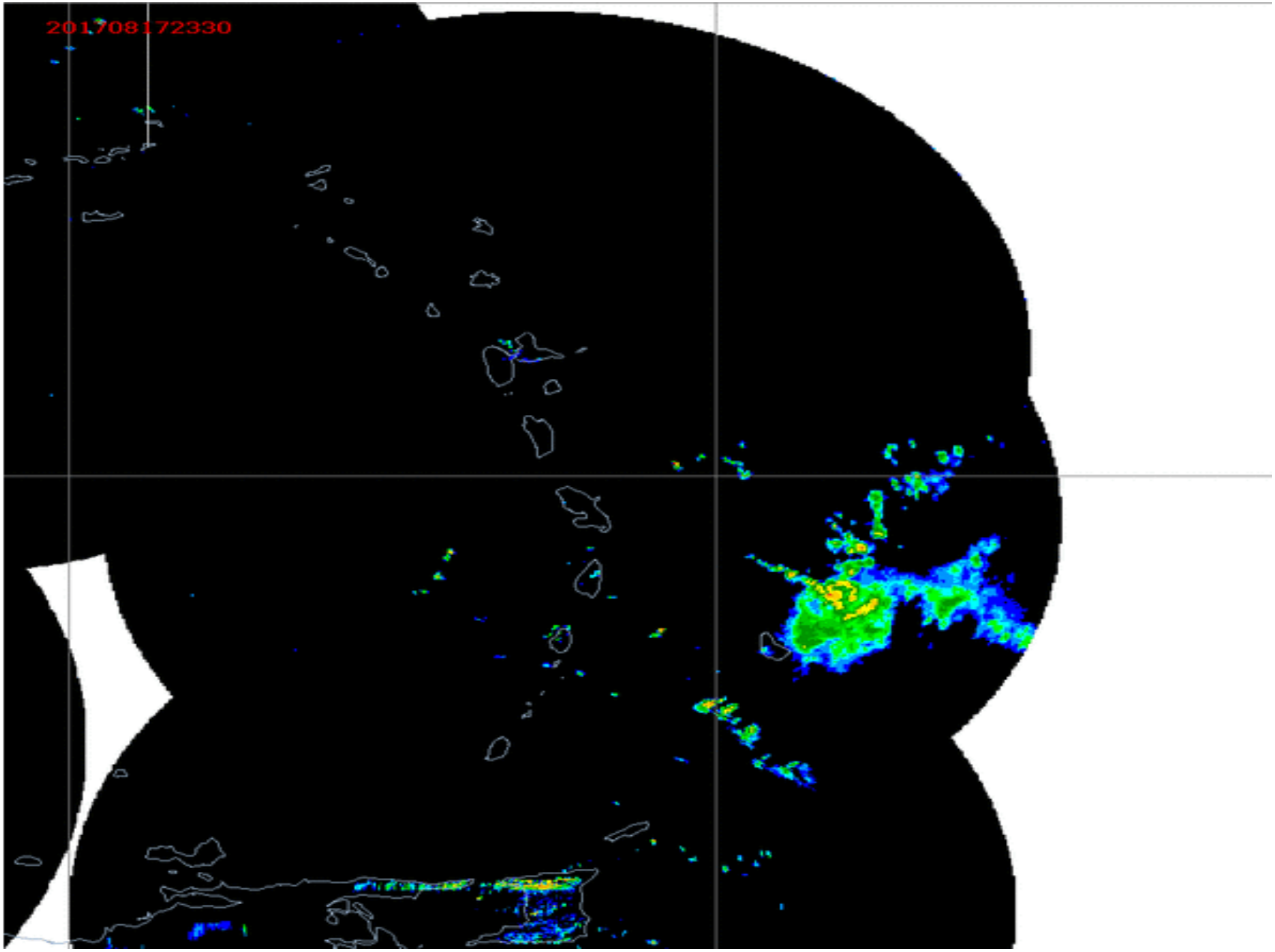
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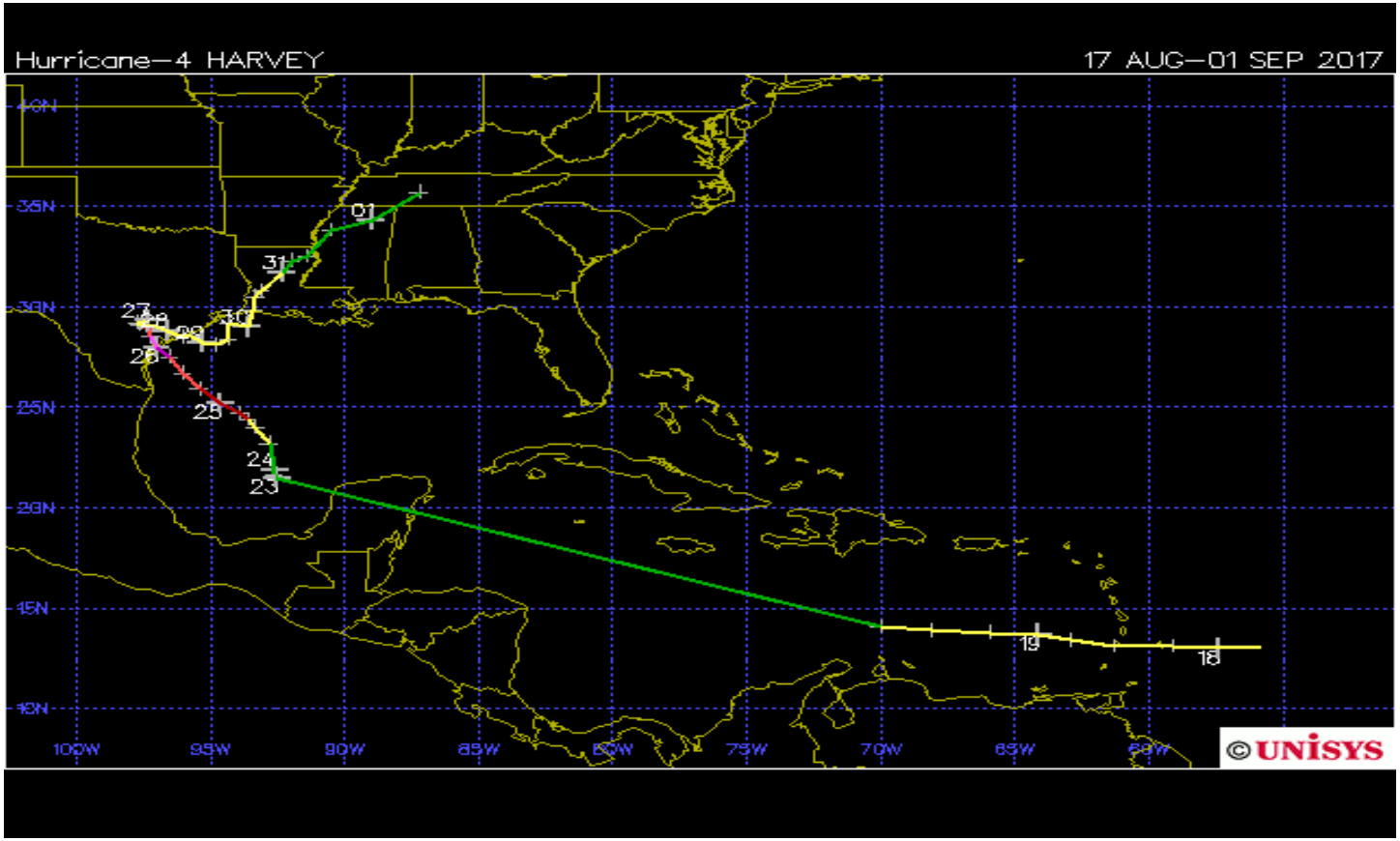
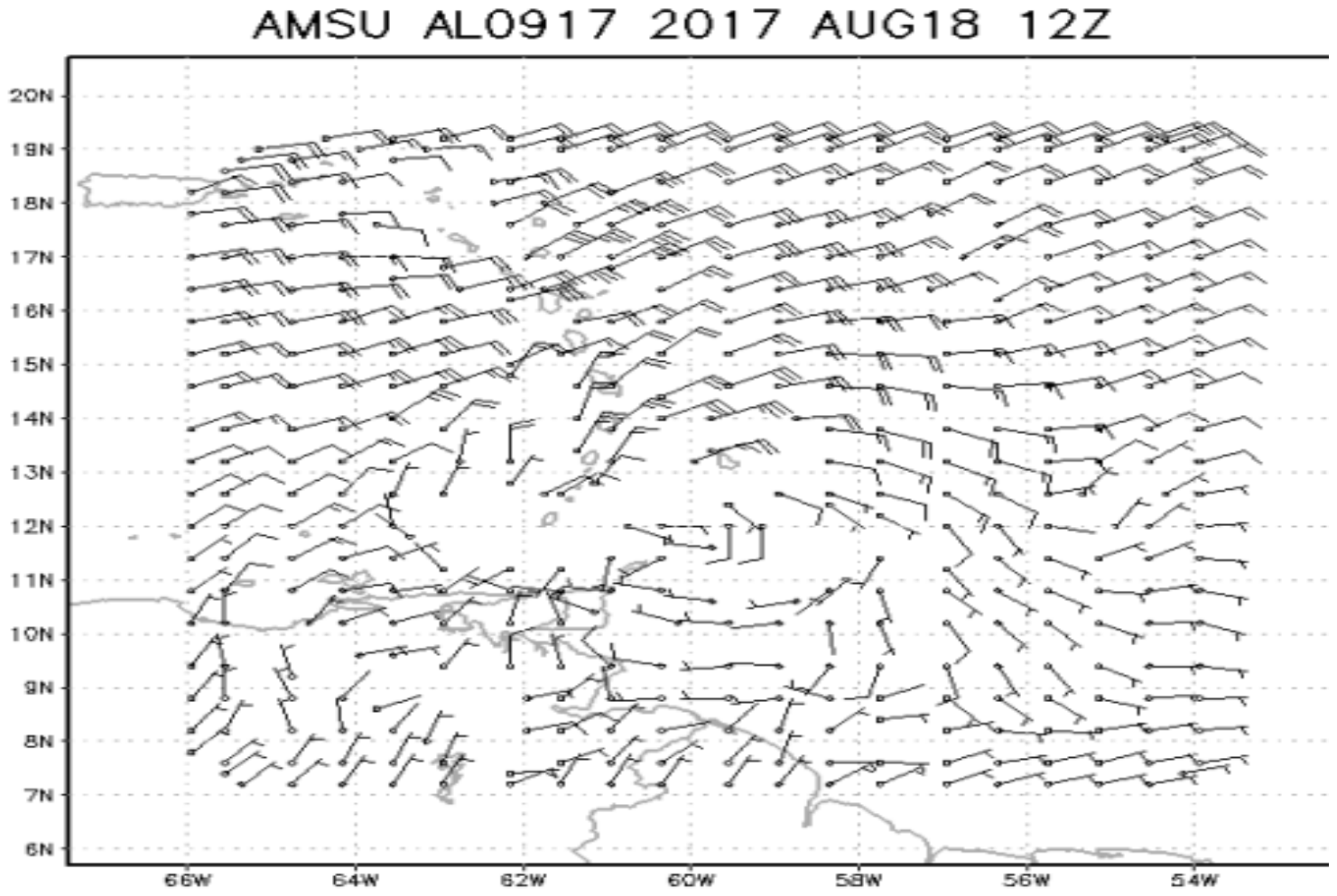
Harvey's Track

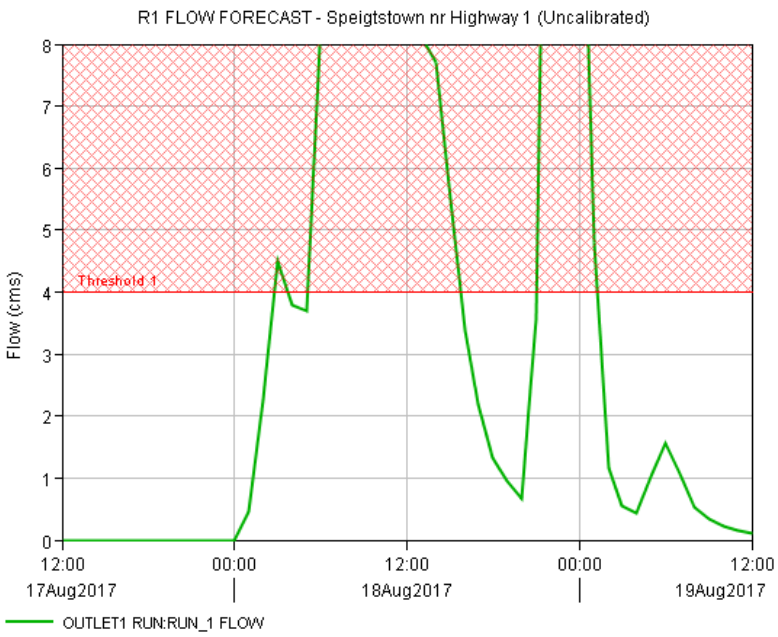


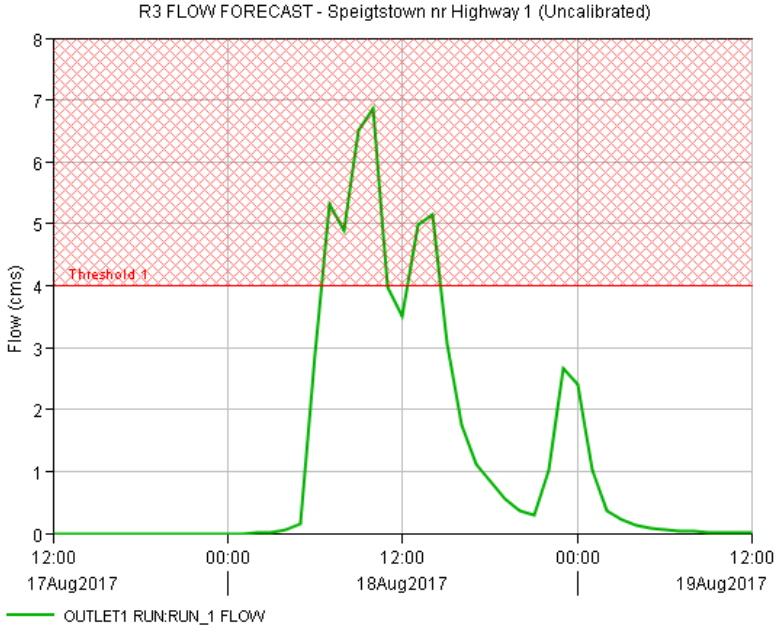
- BMS after consultation with the NHC and DEM issued tropical storm warnings for Barbados, St. Vincent and the Grenadines and Dominica on 17th August, 2017 at 11 a.m.
- Guidance did not suggest that the moderate wind shear would slacken to allow any kind of significant strengthening.
- Detailed expert analysis and experience from the BMS Meteorologist highlighted concerns about the rainfall accumulations as being the major destructive element.
- In terms of wind speeds the wind field near the center and to the south of the center remained weak and dynamical modeling and current environmental evidence concluded that Storm force winds would not play a significant role.
- However, due to the close proximity of where the cyclones center was forecast to pass, any reformation or deviation of the storm's center by 60nm south could have easily placed Barbados well within the area of strongest winds.

http://www.ssd.noaa.gov/PS/TROP/mtcswa.html

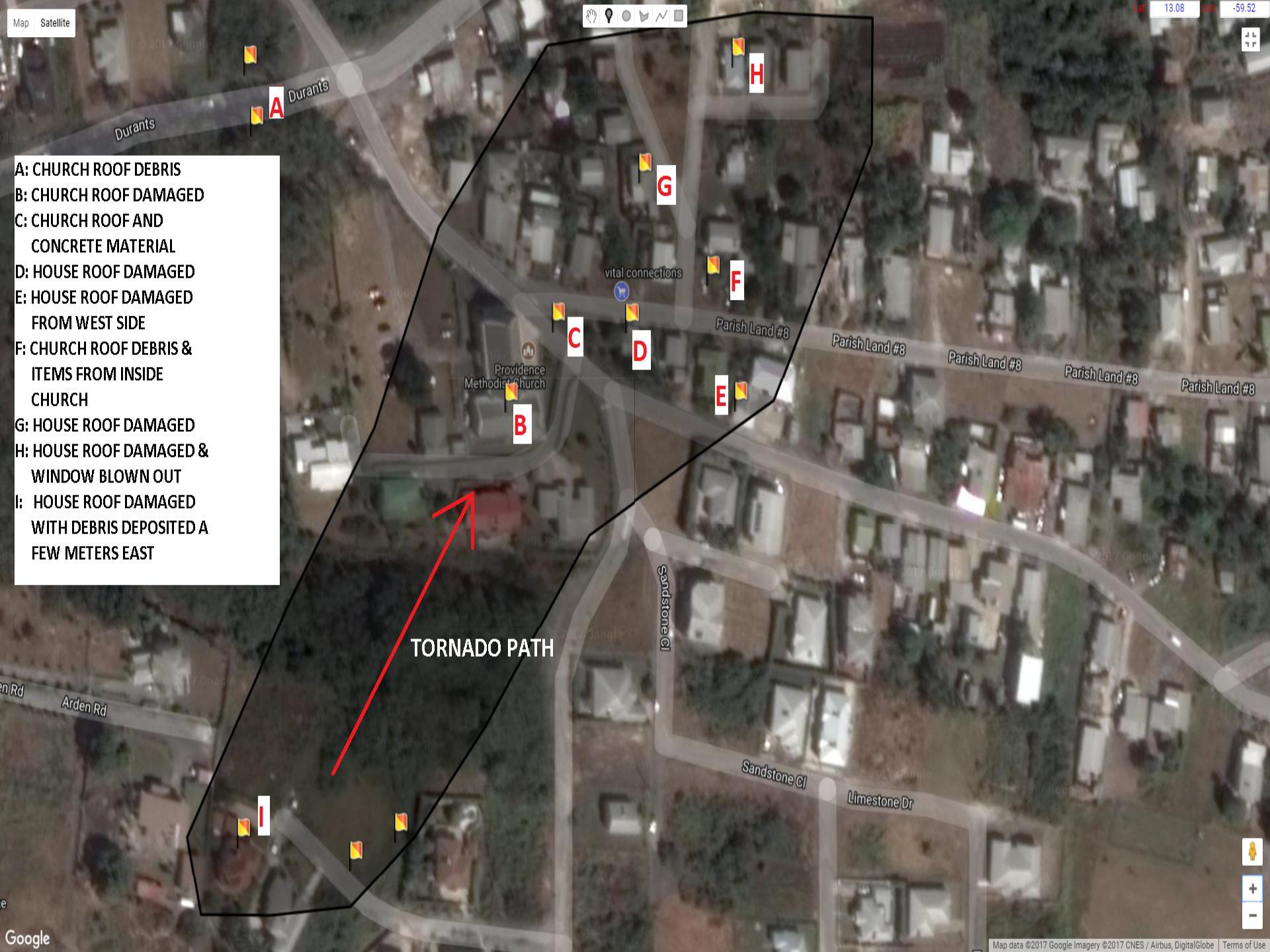


affp.cimh.edu.bb





- By nightfall of the same day, Barbados was feeling the effects of Tropical Storm Harvey but only in terms of precipitation.
- Severe thunderstorm activity started from around 11PM and lasted until 7AM LST.
- BMS Radar composite products shows significant echo events from these convective storms.
- One such convective episode resulted in what appears to be a weak tornadic event. This occurred around 06UTC as seen in the radar composite animation provided.
- It resulted in significant damage to a Church and a few homes within meters of each other about 2KM west of the airport at Providence, Christ Church..
- While no significant wind speeds were recorded by any of the automatic weather stations across the island, our records show a wind-gust occurring around this time which may also have been associated either downdraft associated with the ongoing thunderstorms or tornadic activity.


A: CHURCH ROOF DEBRIS
B: CHURCH ROOF DAMAGED
C: CHURCH ROOF AND CONCRETE MATERIAL
D: HOUSE ROOF DAMAGED
E: HOUSE ROOF DAMAGED FROM WEST SIDE
F: CHURCH ROOF DEBRIS & ITEMS FROM INSIDE CHURCH
G: HOUSE ROOF DAMAGED
H: HOUSE ROOF DAMAGED & WINDOW BLOWN OUT
I: HOUSE ROOF DAMAGED WITH DEBRIS DEPOSITED A FEW METERS EAST
TORNADO PATH
Durants
Parish Land #8
Sandstone Cl
Limestone Dr
Arden Rd
vital connections
Providence Methodist Church
Google

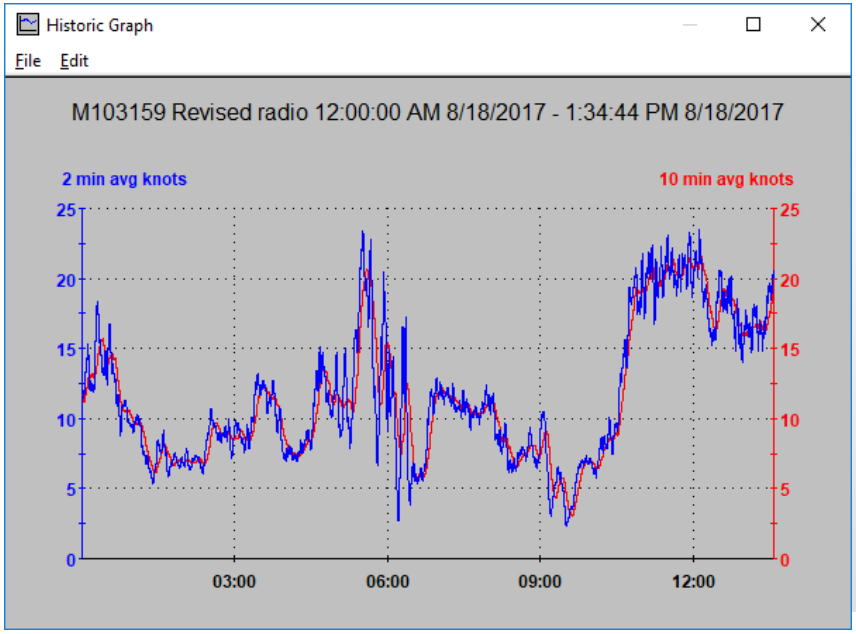
Detailed investigation of the debris field revealed a wide spread scattering of roof objects in some cases as far as 130m. Reports from some residents were that a sudden strong wind started and lasted only a few seconds and quickly died off.

The lowest MSL pressure recorded at the BMS was 1006MB, which occurred around 06UTC and lasted for roughly 3 hours. Also the steady fall of pressure before the cyclone event followed by the slow increase after the center passed indicated that the center of Harvey was broad and elongated due to the moderate easterly shear.

It is also possible that because of the broad and elongated center that weak vortices could have developed within the broad center. Most of the precipitation quickly ended after 7AM even though the center passed only a couple of hours before. This was again due to the easterly shear displacing the convection mainly to the west of the center of the storm.

	Maximum Sustained Wind			Maximum Wind Gust			Calm	Total Rainfall	Minimum SL Pressure	
Station	Direction	Velocity. (km/h) 10 min/2 min	Time UTC	Direction	Velocity (km/h)	Time UTC	Time UTC	(mm)	Pressure (hPa)	Time UTC
78954	180/180	41/43	12:05	165	50	11:20	N/A	113.6	1006.0	04 to 06

Figure 1: 2 Minutaaaaaaaaaaaaaaaaaae anaaaaxxd 10 Minutec zz ccz 00:00 UTC and 13:34 UTC.



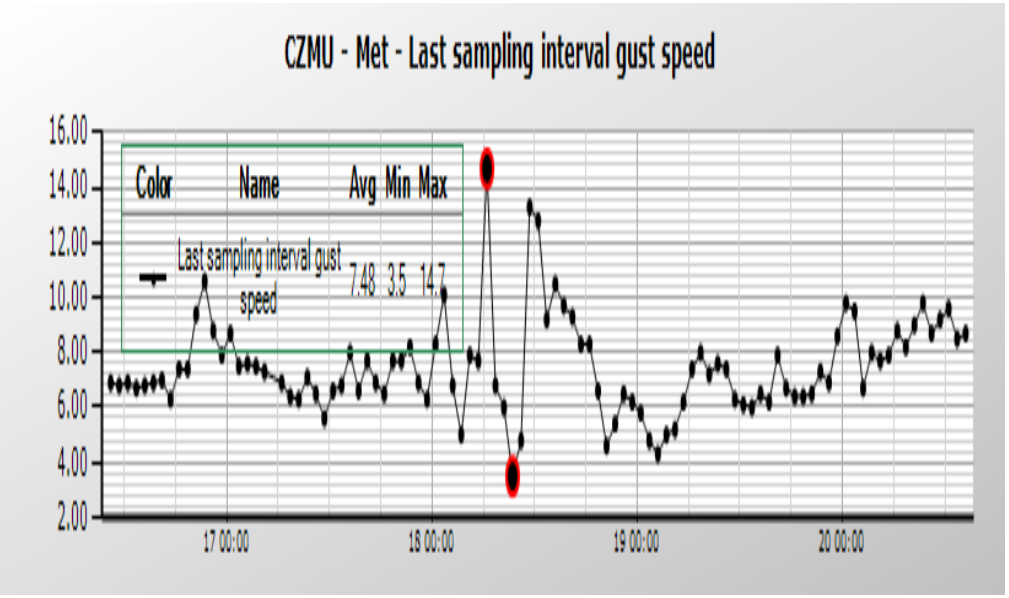


Figure 2: 2 minute and 10 minute average wind direction between 00:00 UTC and 13:34 UTC.

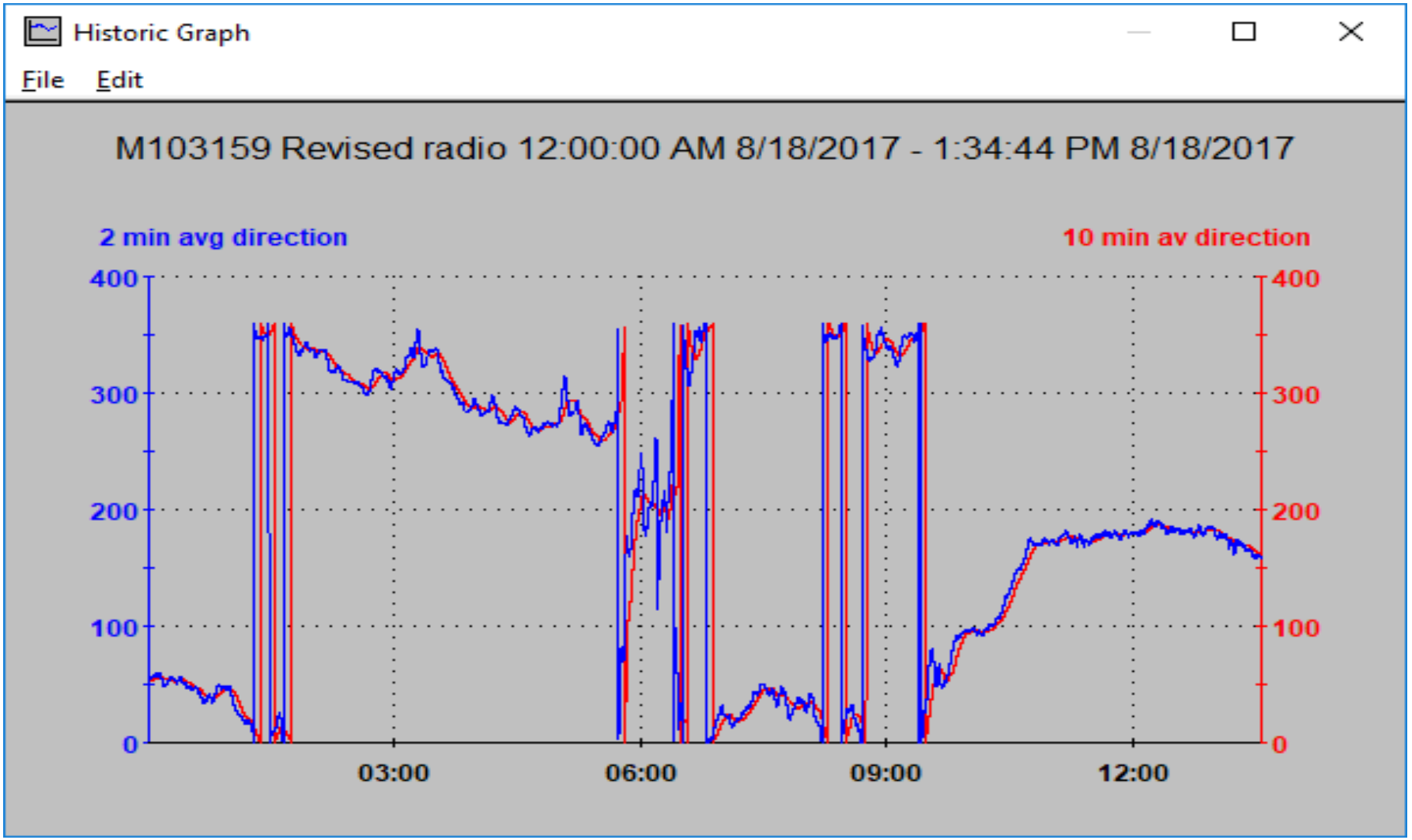


Figure 3: Wind Gusts (measured in Knots) between 00:00 UTC and 13:34 UTC.

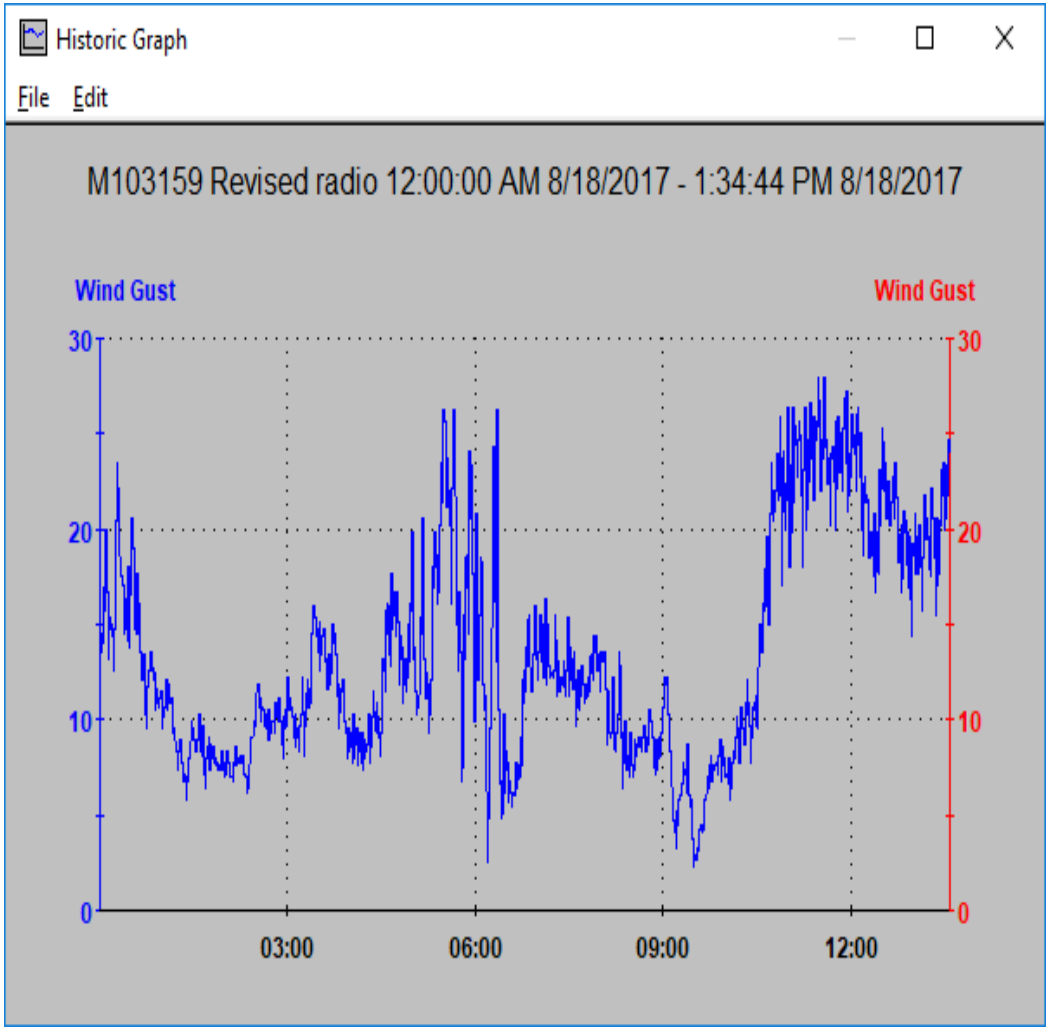
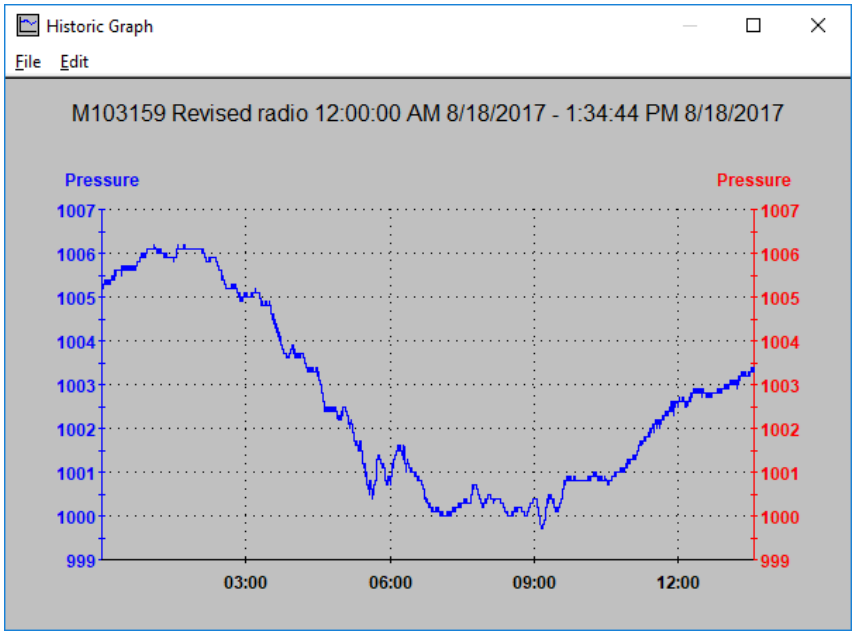


Figure 4: Station level pressure (mb) between 00:00 UTC and 13:34 UTC. Station elevation 51m above mean sea level.



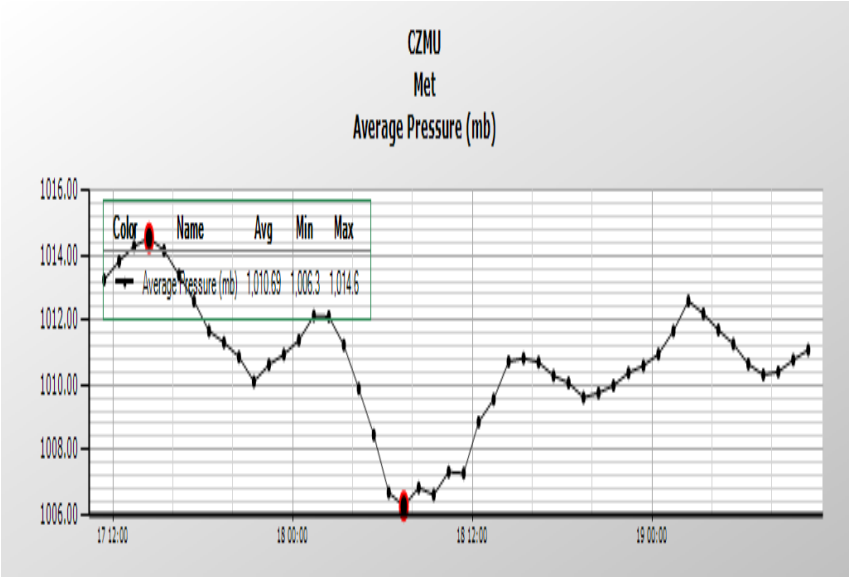
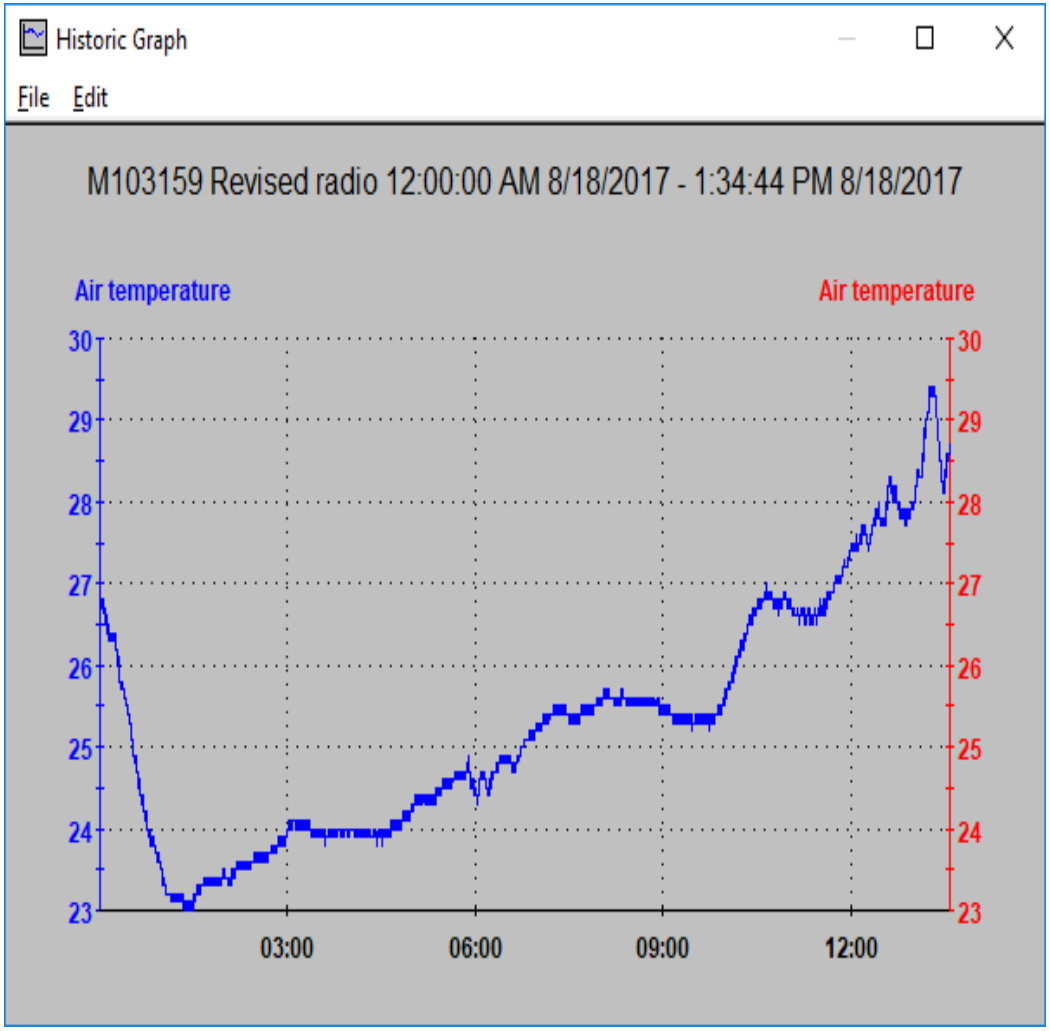
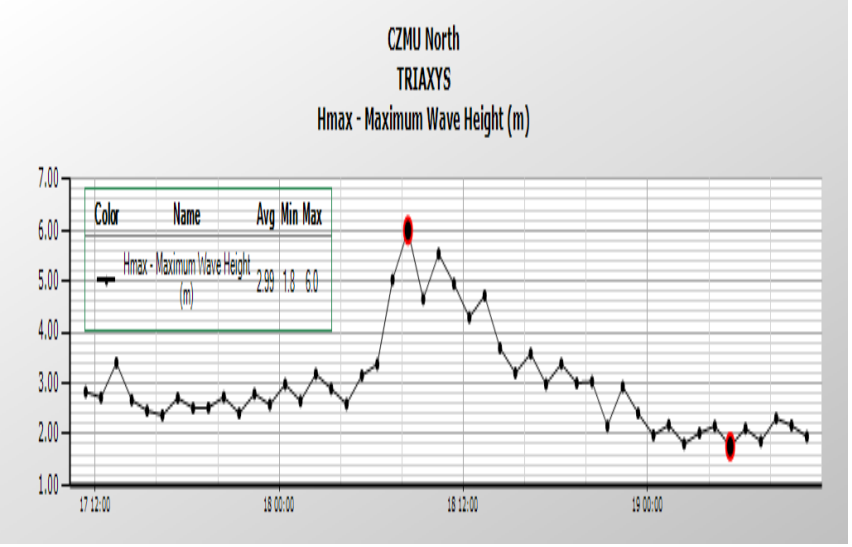


Figure 5: Air Temperature (measured in Degrees Celsius) between 00:00 UTC and 13:34 UTC.




CZMU North
TRIAXYS
Hmax - Maximum Wave Height (m)
Color
Name
Avg
Min
Max
Hmax - Maximum Wave Height (m)
2.99
1.8
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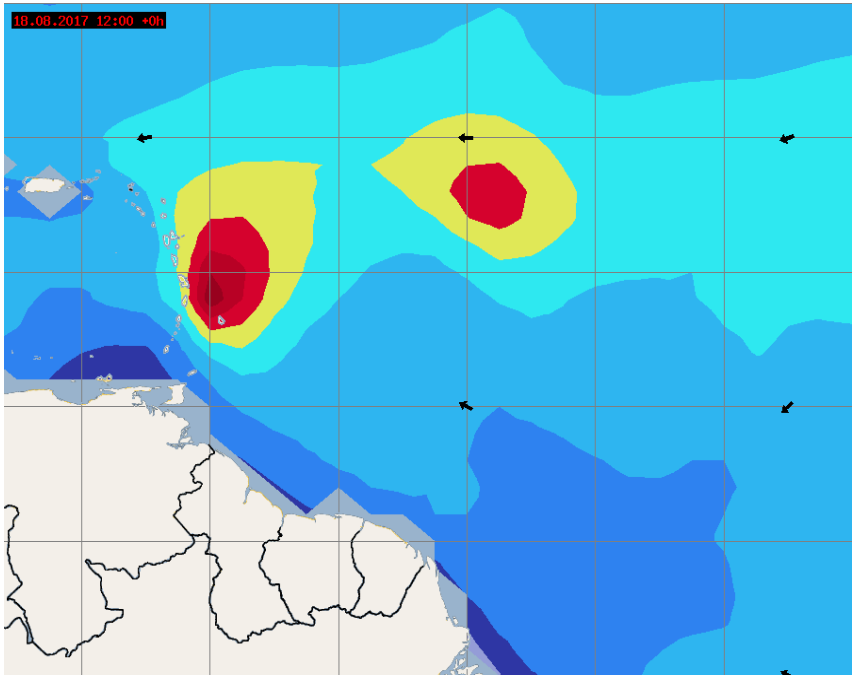
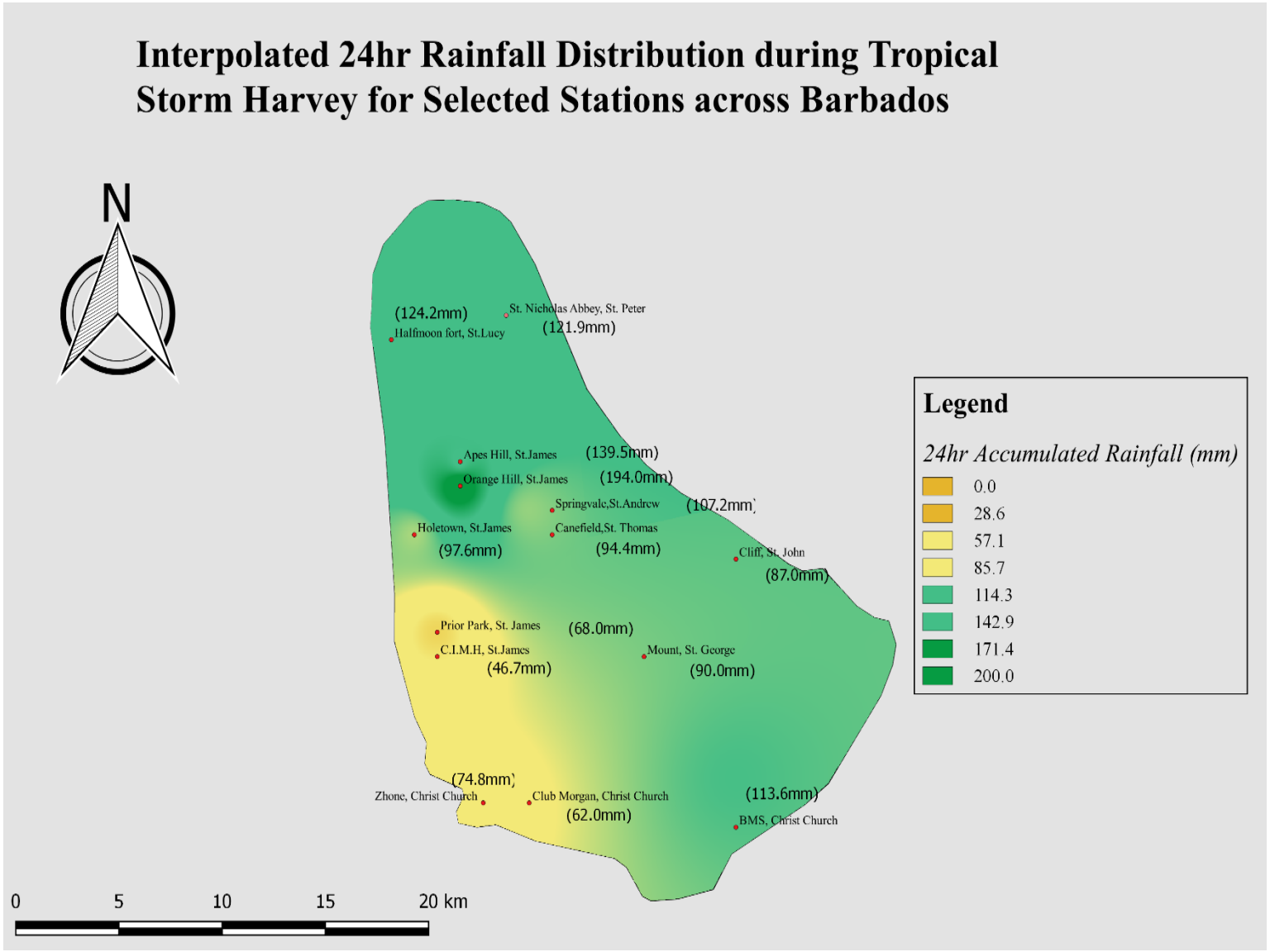

18.08.2017 12:00 +0h

Figure 6: Interpolated Rainfall Distribution for selected stations across Barbados during tropical Storm Harvey, 17th August 2017. Ms. Tia Browne, Meteorologist (Ag).

Tia Browne: Meteorologist



Total Rainfall for 6:00P.M 17th August to 6:00a.m 18th August, 2017

Stations	Parish	Rainfall (mm)
Halfmoon Fort	St. Lucy	124.2
St. Nicholas Abbey	St. Peter	121.9
Springvale	St. Andrew	107.2
Apes Hill	St. James	139.5
Orange Hill	St. James	194.0
Canefield	St. James	94.4
Holetown	St. James	97.6
Prior Park	St. James	68.0
C.I.M.H	St. James	46.7
Zhores	St.John	74.8
BMS	Christ Church	113.6
Club Morgan	Christ Church	62.0
Mount	St. George	90.0
Cliff	St. John	87.0

Impacts

- Winds left residents throughout Barbados without electricity, with a majority of outages occurring in Christ Church, Saint Joseph, Saint Lucy, and Saint Michael.
- Flooding washed one house off its foundation, while water entered some houses, forcing some people to evacuate.
- Bridges in Saint Andrew and Saint Joseph were damaged.
- Additionally, a fuel depot in Speightstown was flooded.
- Winds de-roofed a church.[

https://youtu.be/_N23axxcE4M

- THANK YOU!!!