Forecast for Tropical Areas of Interest
Forecast Synopsis 1600 UTC 19 August 2010
Author: Jason Dunion and Kyle Griffin

Summary:
There are currently four systems of interest in the North Atlantic basin today (Fig. 1). From west to east, these include:

1. PGI27L: is located in the western Caribbean a few hundred km east of the Yucatan peninsula at ~19N 85W. Convection associated with the system continues to be sparse, with only a few areas of -50 to -60 C cloudtops. PGI27L will likely move over Mexico sometime during the morning/early afternoon on Saturday (21 Aug) and is not currently being considered for flights by any agencies.
2. PGI30L: is located at ~21N 36W and is tracking to the WSW. The system is devoid of any deep convection and is unlikely to under genesis in the next 24-48 hr. However, SSTs are continuing to warm along the future track and it continues to be embedded in an area of high TPW (high moisture in the low to mid-levels). This system continues to warrant monitoring and could be of interest to PREDICT (in range starting tomorrow 20 Aug).
3. PGI31L: is located a few hundred km SW of the Cape Verdes (~12N 26W). This system continues to be embedded in high TPW, warm SSTs, low wind shear, and maintain deep convection and the models continue to favor development of this system. It could be in range (near 40W) of the NOAA G-IV and G-V aircraft in ~4 days (Monday 23 Aug) and marginally in range of the P-3s and DC-8 on 24-26 Aug.
4. PGI33L: is located along the African coast at ~10.5N 14.5W just along the African coast. The ECMWF model is currently favoring a solution that merges the vorticity associated with PGI33L with that of PGI31L (and the W-E vorticity strip) to its west, while the GFS appears to be developing PGI31L and not PGI33L to its east

Discussion:
a. Synoptic
At 1200 UTC on 19 Aug, a weak baroclinic zone can be observed sagging southward into the central Gulf of Mexico, with a more prominent frontal zone exiting the east coast of the US with more pronounced upper level support. In the western Caribbean, convection is extensive due to the interaction of PGI27L and a small nearby upper-level low located over the western edge of the Yucatan Peninsula (Figs. 2 & 3). A much larger upper low is positioned near 20N/60W that is interacting with (the pouch formerly known as) PGI32L. The upper low further has a shear axis stretching back to the WNW into the vicinity of the Bahamas, which is further supporting some weak convective signatures in that region (Figs. 2 & 3). Flow in the central and eastern Atlantic is dominated by a sprawling subtropical ridge centered near 25N/35W, underneath of which is a respectable intrusion of drier mid-level mid-latitude air and, farther to the east, some Saharan dust as well (Figs. 4 & 5). Farther south, around 15N, a series of pouches (PGI30L, PGI31L, PGI33L) are all enveloped in a region of higher PW, though PGI30L remains convection-less due to cooler SSTS underneath its more northerly position. PGI31L and PGI33L also have a well-established and broad outflow channel from their positions SW toward the equator. A rigorous AEW is also located at ~10 E over Africa.

b. PGI27L

Several interesting features dominate the map as of 12z 19 Aug. In the western Caribbean, numerous convective showers are associated with the presence of PGI27L. The convection associated with this disturbance is making resurgence this morning, although of a less organized nature than the morning convective bursts observed yesterday (18 Aug). This convection is still being enhanced by the small upper cold low that is retrograding westward about 5-7 degrees west of the pouch for the last two to three days (Fig. 2). This feature is filling/shearing out, but the 30-40 kt WSW upper level winds on the northeast side of the upper-level cold low are still serving to create a nice outflow channel for continued convective activity with PGI27L.

c. PGI30L

PGI31L is located at ~21N 36W and is tracking to the WSW along the southern edge of a deep layer ridge (Fig. 4). The system is devoid of any deep convection and the associated low-level vortcity is less robust and more removed form the center than it was yesterday (Fig. 6a & b) However, SSTs are continuing to warm along the future track and it continues to be embedded in an area of high TPW (high moisture in the low to mid-levels). Pouch analyses indicate that ECMWF and GFS vorticity and OW analyses remain low for the forecast period, though TPW/RH remain high and wind shear remains fairly low (~4-8 m/s, Fig. 7). This system continues to warrant monitoring and could be of interest to PREDICT in the coming days (already in range starting tomorrow 20 Aug). PGI30L is unlikely to under genesis in the next 24-48 hr.

d. PGI31L & 33L

PGI31L is located a few hundred km SW of the Cape Verdes (~12N 26W). This system continues to be embedded in high TPW, warm SSTs, low wind shear, and maintain deep convection and the models continue to favor development of this system. Low-level vorticity continues to consolidate just east of PGI31L, supporting the ECMWF and GFS solutions that favor this area (as opposed to PGI33L) will be the focus of the forecast TC genesis and TPW values in this areas are exceedingly high (>55 mm, Figs. 8a & b). These models are also continuing to suggest that the mid-Atlantic ridge will be weak enough to allow PGI31L to recurve fairly far east (ECMWF has it crossing ~20N at ~50W). Also, the GFS Model has been quite consistent with its track forecasts for PGI31L over the past 4 cyclones (24 hr, Fig. 9). However, today's and yesterday's 06 UTC tracks have shifted significantly eastward, in response to two mid-latitude cyclones that appear to erode the mid-Atlantic ridge significantly out at the end of the forecast period (~Wed 25 Aug timeframe, Fig. 10). Pouch analyses indicate that vorticity, OW, and moisture remain high through the forecast period, though deep layer vertical shear does jump up to ~12 m/s in the ECMWF beyond 48 hrs. However, the ECMWF fields suggests that this could be related to a combination of outflow related to PGI31/33's convection and a nearby subtropical jet that could be enhancing that outflow. PGI31L could be in range (near 40W) of the NOAA G-IV and G-V aircraft in ~4 days (Monday 23 Aug) and marginally in range of the P-3s and DC-8 on the 24-26 Aug timeframe.

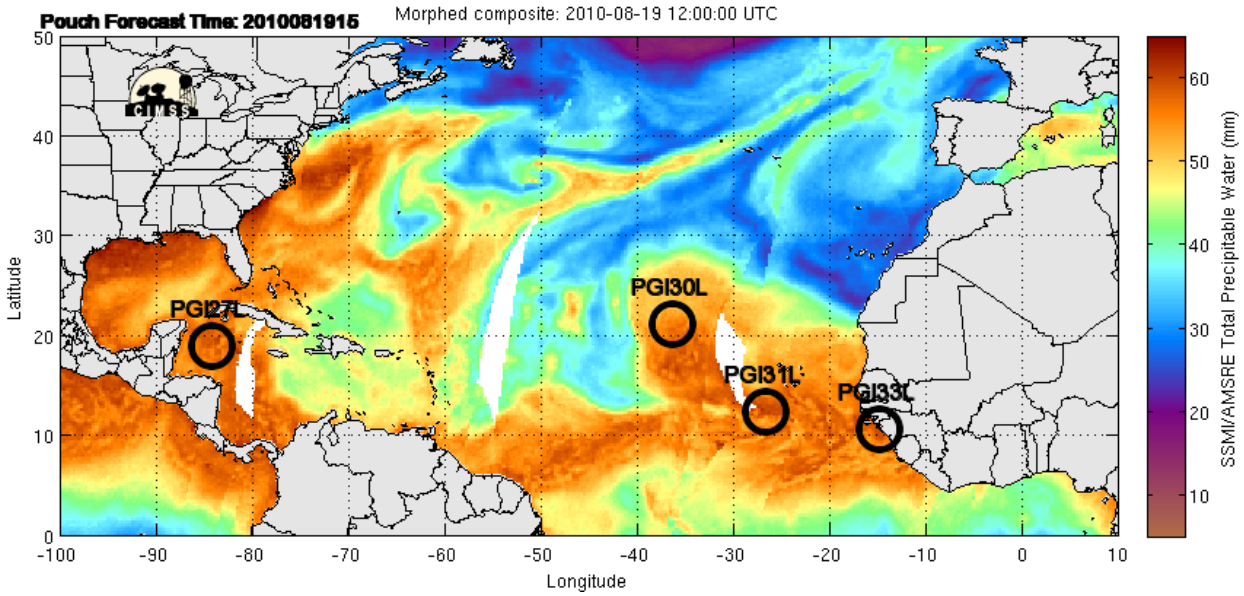
Pouch Forecast Time: 2010081915
Morphed composite: 2010-08-19 12:00:00 UTC
PGI27L
PGI30L
PGI31L
PGI33L
Latitude
Longitude
SSMI/AMSRE Total Precipitable Water (mm)

Fig. 1

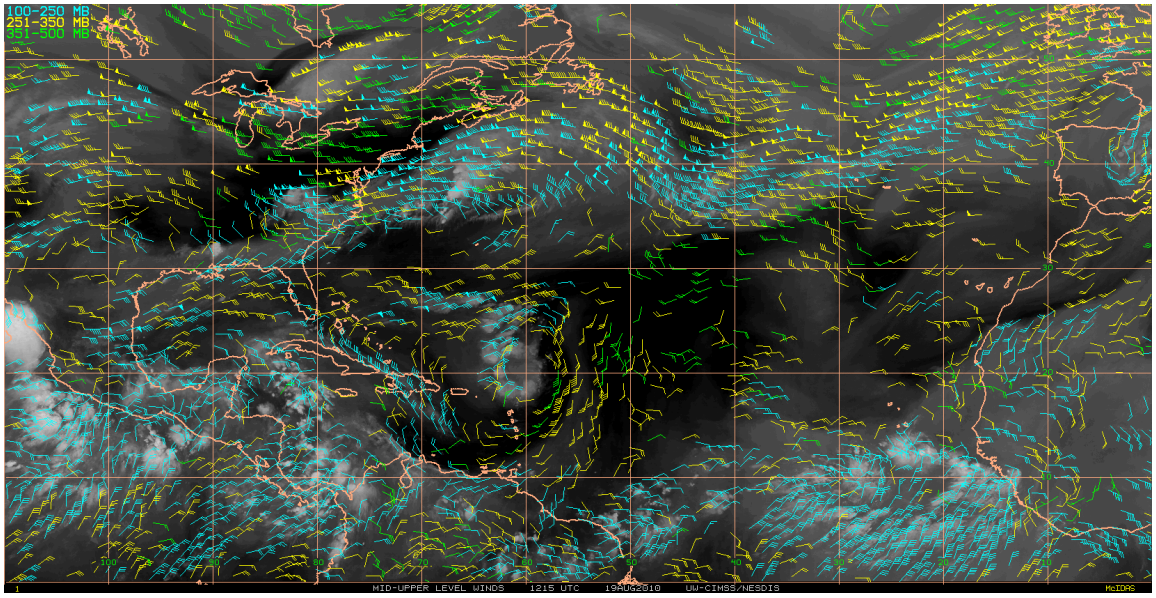
100-250 MB
251-350 MB
351-500 MB
MID-UPPER LEVEL WINDS 1215 UTC 19AUG2010 UW-CIMSS/NESDIS

Fig. 2

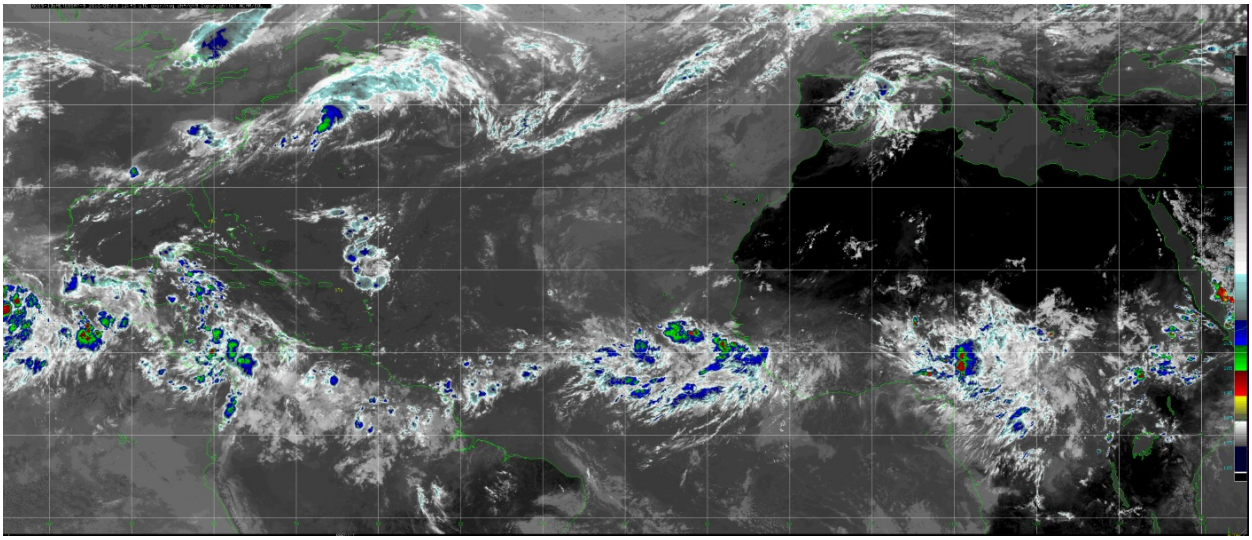

Fig. 3

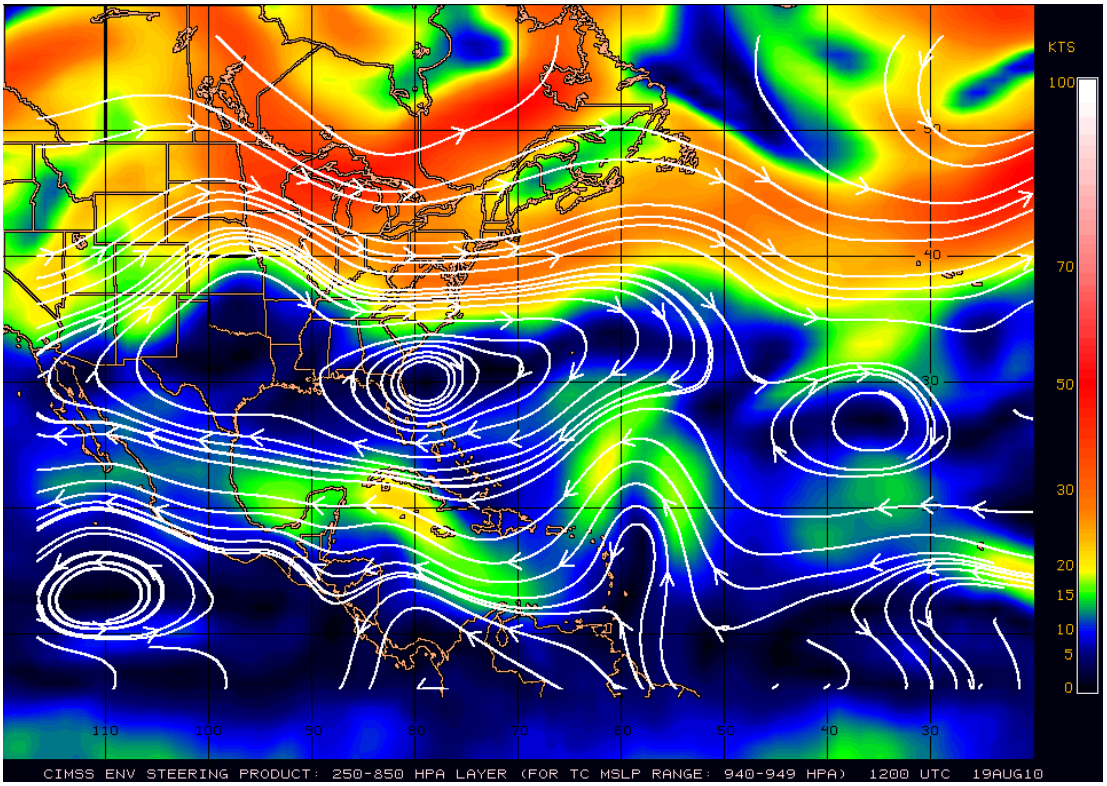
KTS
100
70
50
30
20
15
10
5
0
110
100
90
80
70
60
50
40
30
CIMSS ENV STEERING PRODUCT: 250-850 HPA LAYER (FOR TC MSLP RANGE: 940-949 HPA) 1200 UTC 19AUG10

Fig. 4

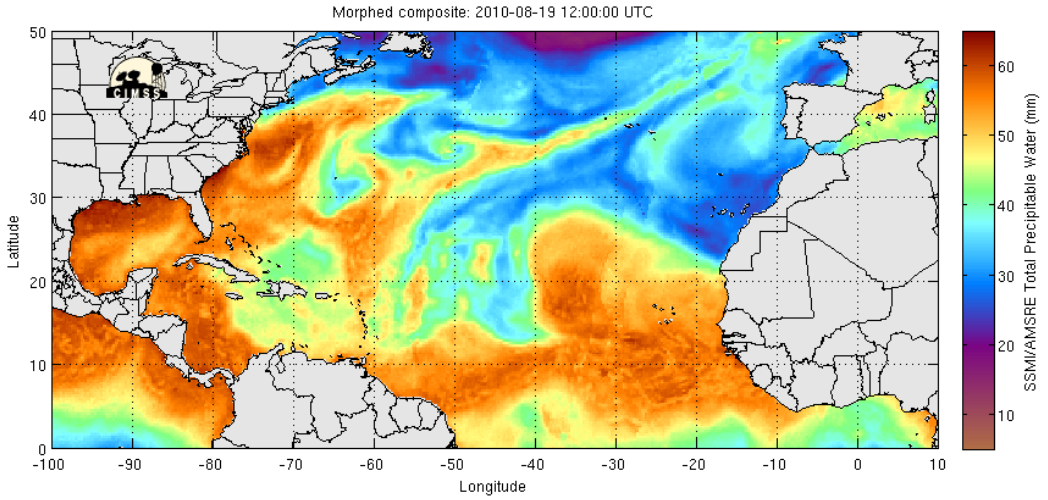
Morphed composite: 2010-08-19 12:00:00 UTC
Latitude
Longitude
SSMI/AMSRE Total Precipitable Water (mm)

Fig. 5

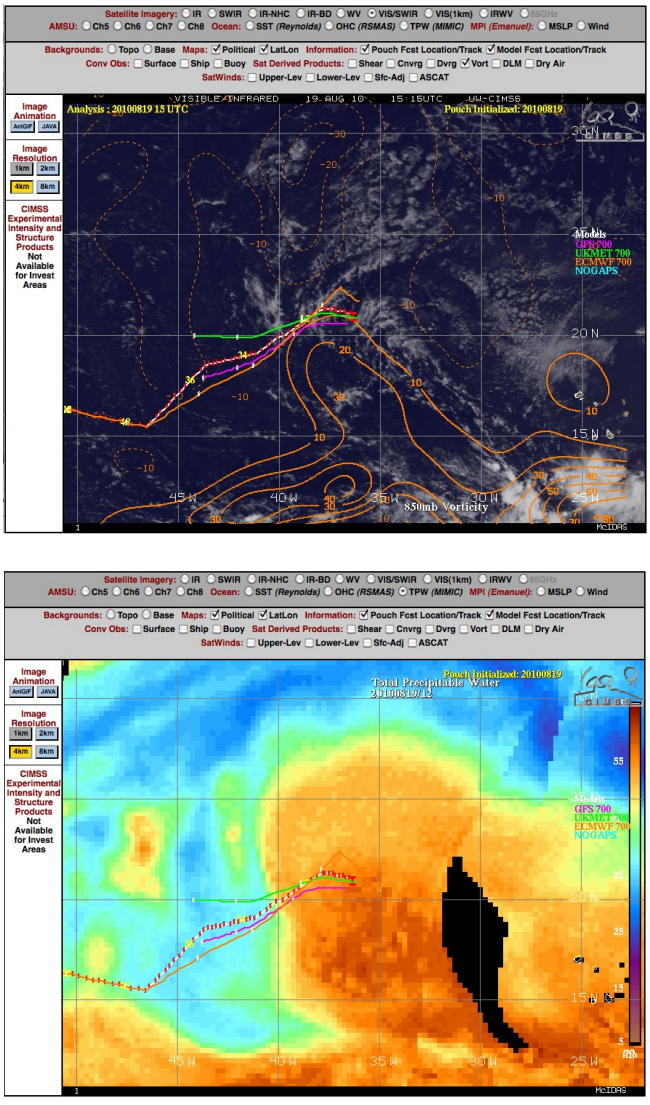
Satellite Imagery:
AMSU:
Backgrounds:
Conv Obs:
SatWinds:
Image Animation
Image Resolution
CIMSS Experimental Intensity and Structure Products Not Available for Invest Areas
Analysis : 20100819 15 UTC
Pouch Initialized: 20100819
Models
GFS 700
UKMET 700
ECMWF 700
NOGAPS
850mb Vorticity
Total Precipitable Water
20100819/12

Fig. 6a & b

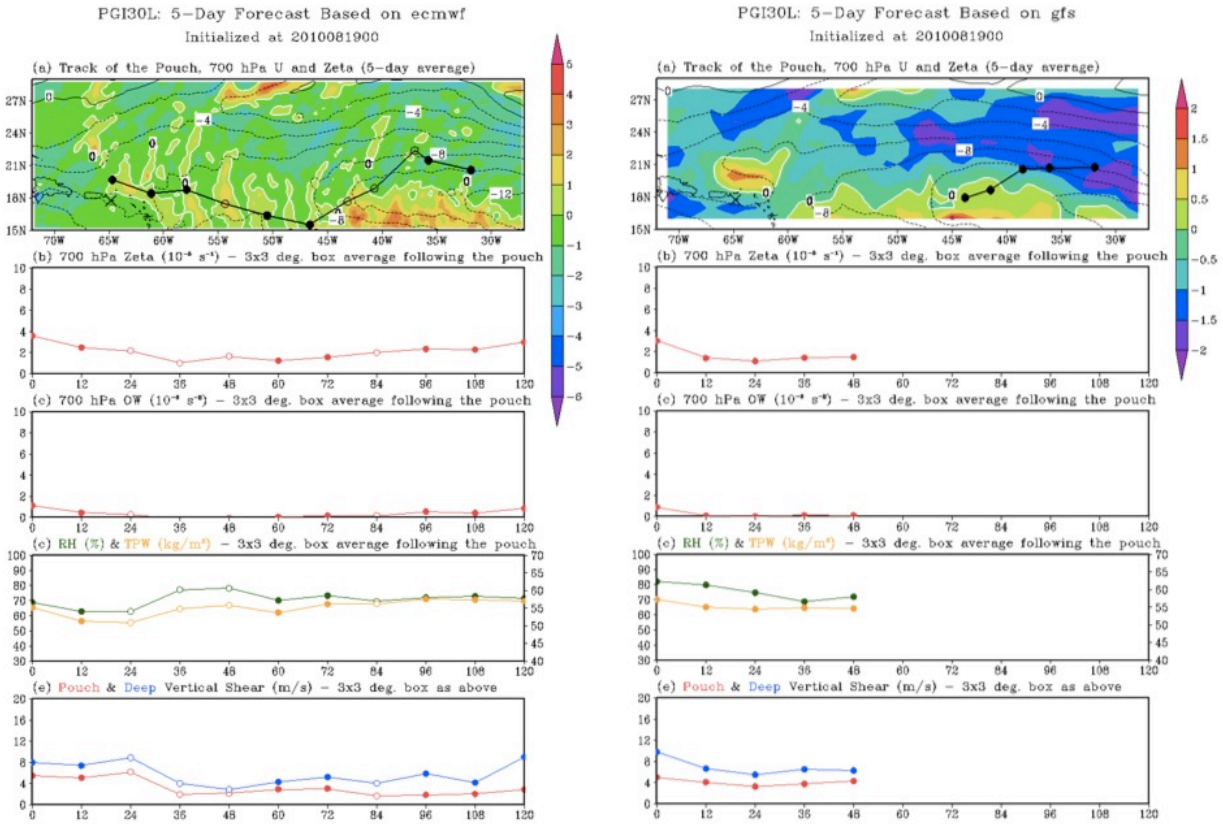
PGI30L: 5-Day Forecast Based on ecmwf
Initialized at 2010081900
(a) Track of the Pouch, 700 hPa U and Zeta (5-day average)
(b) 700 hPa Zeta (10⁻⁵ s⁻¹) - 3x3 deg. box average following the pouch
(c) 700 hPa OW (10⁻⁵ s⁻²) - 3x3 deg. box average following the pouch
(e) RH (%) & TPW (kg/m²) - 3x3 deg. box average following the pouch
(e) Pouch & Deep Vertical Shear (m/s) - 3x3 deg. box as above
PGI30L: 5-Day Forecast Based on gfs
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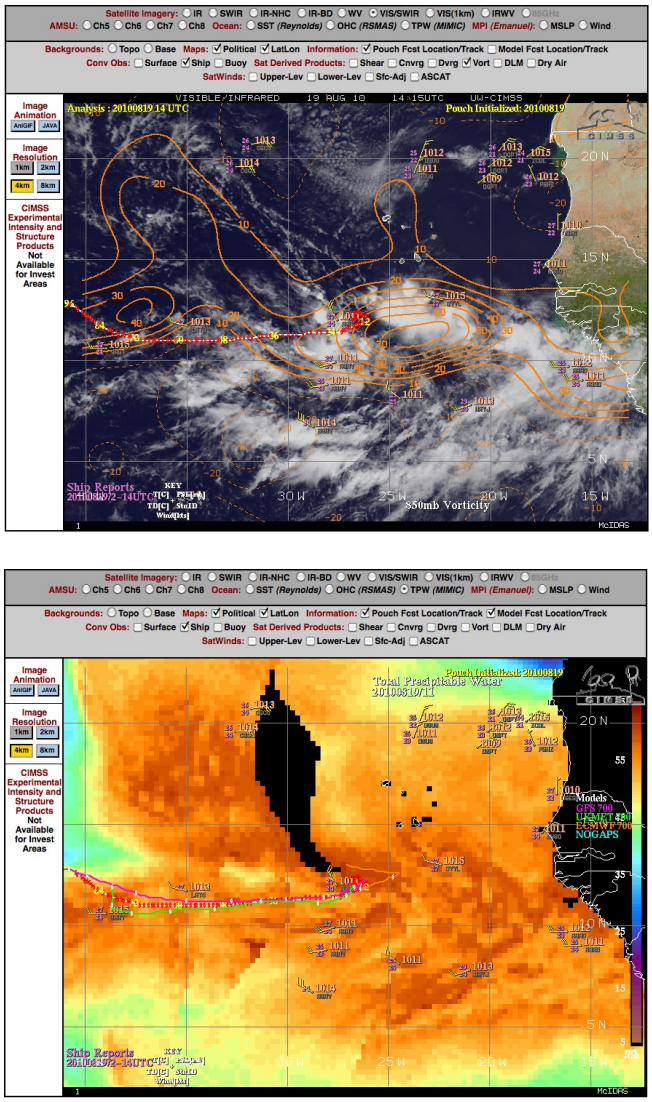
Fig. 7


Satellite Imagery: IR SWIR IR-NHC IR-BD WV VIS/SWIR VIS(1km) IRWV
AMSU: Ch5 Ch6 Ch7 Ch8 Ocean: SST (Reynolds) OHC (RSMAS) TPW (MIMIC) MPI (Emanuel): MSLP Wind
Backgrounds: Topo Base Maps: Political LatLon Information: Pouch Fcst Location/Track Model Fcst Location/Track
Conv Obs: Surface Ship Buoy Sat Derived Products: Shear Cnvrg Dvrg Vort DLM Dry Air
SatWinds: Upper-Lev Lower-Lev Sfc-Adj ASCAT
Image Animation
Image Resolution
CIMSS Experimental Intensity and Structure Products Not Available for Invest Areas
VISIBLE/INFRARED 19 AUG 10 14:15UTC UW-CIMSS
Analysis : 20100819 14 UTC
Pouch Initialized: 20100819
Ship Reports
850mb Vorticity
McIDAS

Satellite Imagery: IR SWIR IR-NHC IR-BD WV VIS/SWIR VIS(1km) IRWV
AMSU: Ch5 Ch6 Ch7 Ch8 Ocean: SST (Reynolds) OHC (RSMAS) TPW (MIMIC) MPI (Emanuel): MSLP Wind
Backgrounds: Topo Base Maps: Political LatLon Information: Pouch Fcst Location/Track Model Fcst Location/Track
Conv Obs: Surface Ship Buoy Sat Derived Products: Shear Cnvrg Dvrg Vort DLM Dry Air
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Pouch Initialized: 20100819
Total Precipitable Water
Models
GFS 700
NOGAPS
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McIDAS

Fig. 8

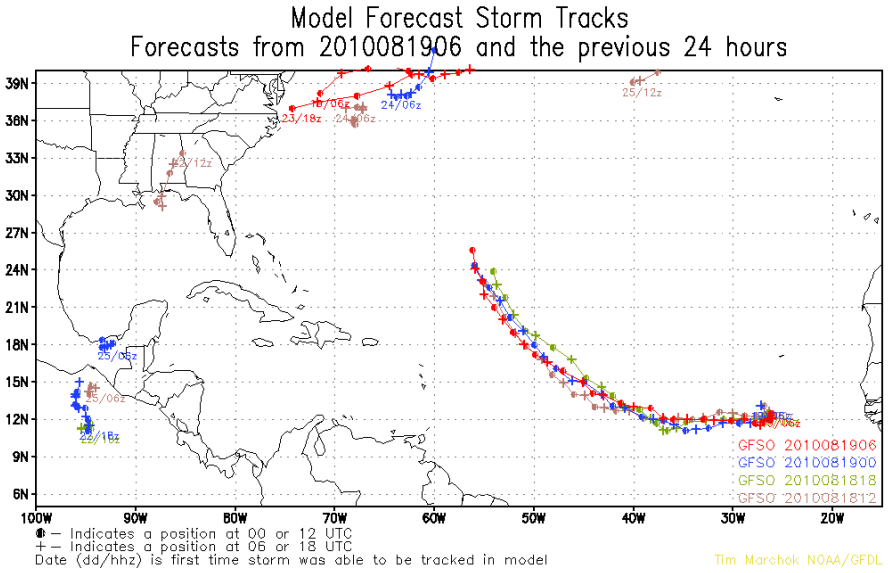
Model Forecast Storm Tracks
Forecasts from 2010081906 and the previous 24 hours
39N
36N
33N
30N
27N
24N
21N
18N
15N
12N
9N
6N
100W
90W
80W
70W
60W
50W
40W
30W
20W
GFSO 2010081906
GFSO 2010081900
GFSO 2010081818
GFSO 2010081812
Indicates a position at 00 or 12 UTC
Indicates a position at 06 or 18 UTC
Date (dd/hhz) is first time storm was able to be tracked in model
Tim Marchok NOAA/GFDL

Fig. 9

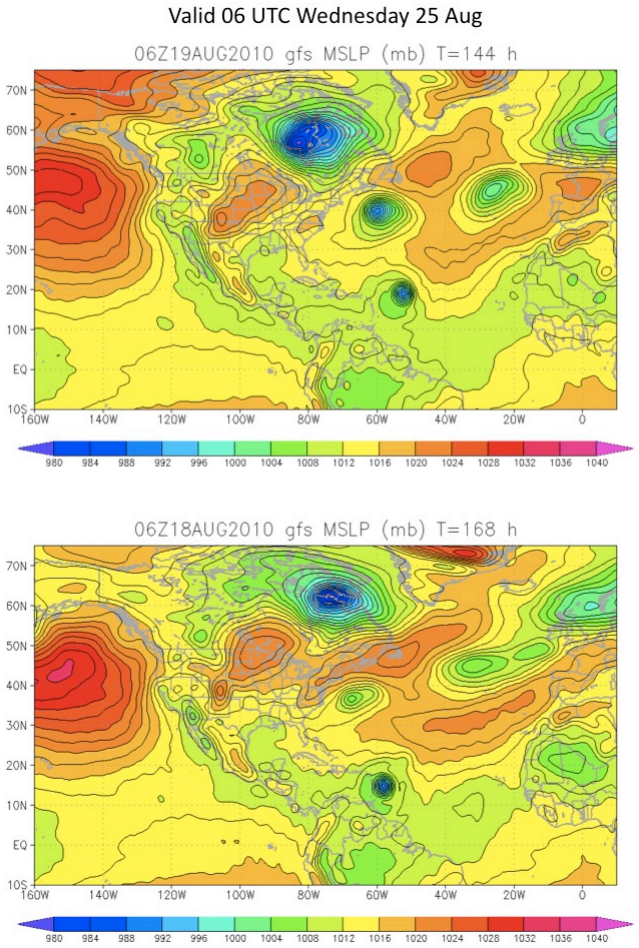
Valid 06 UTC Wednesday 25 Aug
06Z19AUG2010 gfs MSLP (mb) T=144 h
06Z18AUG2010 gfs MSLP (mb) T=168 h
70N
60N
50N
40N
30N
20N
10N
EQ
10S
160W
140W
120W
100W
80W
60W
40W
20W
0
980
984
988
992
996
1000
1004
1008
1012
1016
1020
1024
1028
1032
1036
1040

Fig. 10

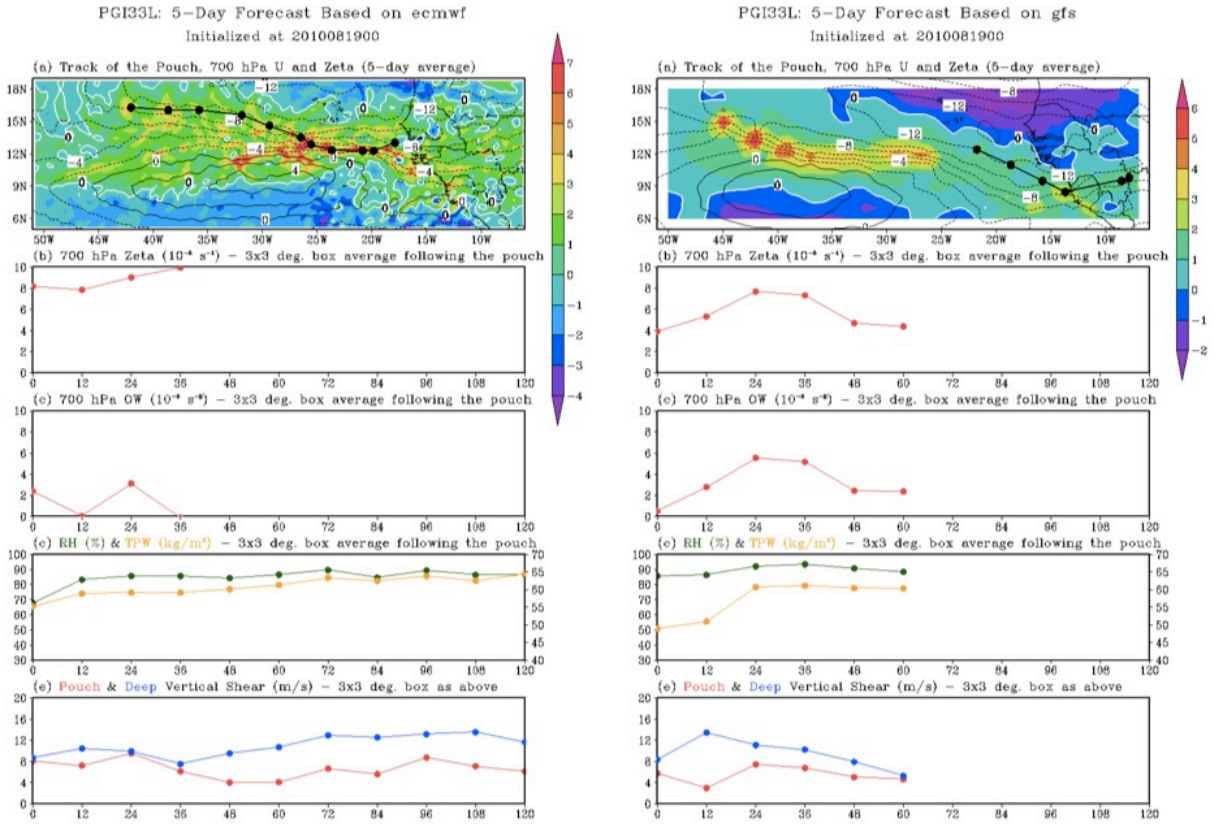
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Fig. 11