

Tropical Areas of Interest Discussion for August 16, 2010

Created 1600 UTC August 16, 2010

GRIP Forecast Team: Cerese English, Jon Zawislak, Andrew Martin, and Matt Janiga

Summary: Interest today focuses on whether or not to pursue flight operations with the DC-8 tomorrow into Ex-TD05, which just re-emerged this morning into the Gulf of Mexico off the coast of Panama City, FL. The system's main convection is located to the SW of the center of circulation, which can be seen in both visible imagery and radar this morning. Although the system is not well organized, the models expect this system to perhaps gain a little strength over warm SSTs and relatively high OHC, but most are not forecasting this to gain tropical storm status before the center is supposed to move onshore in Southeastern Louisiana in 24-36 hours. The question is whether or not the DC-8 should investigate this low, because take-off time tomorrow would mean that they would likely miss this center still being over water, and the status of the DC-8's microphysics instruments for an investigation could compromise a mission for those purposes. This system will be monitored closely today and tonight. Elsewhere, PGI-27L is entering the Caribbean, the stationary front is still producing showers over FL and the Bahamas, the SAL outbreak over the central Atlantic continues to progress westward to 52W, and PGI-30L is ramping up to exit Africa today with all of the global models still converging on a solution of cyclogenesis over the next 48+ hours.

Forecast for 1600 UTC 8/16/2010:

Synoptic Overview:

The Atlantic basin has a few interesting features present today (1). The stationary front over the Bahamas yesterday has not moved much but continues to provide scattered showers off the east coast of FL. The rest of the front has limited convection near the tropics (2). The 1014 hPa High in the Gulf of Mexico has moved slightly westward and is working to keep the forecasted track of Ex-TD05 close to the Gulf Coast. Ex-TD05 is expected to be renamed TD05 again today as reconnaissance flights into this invest are scheduled to take place this morning. The system emerged over the Gulf early this morning with most of its convection displaced to the southwest of the center of circulation (3). The ITCZ is fairly zonal across the Atlantic into the Caribbean Sea at 10N. There are three tropical waves extending out of the analyzed ITCZ area (1). The first is located in the Western Caribbean between 10N and 20N at about 84W. This system has good scattered convective cells along it, however no real organization of convection, and just a low-level cyclonic turning to the winds as it is moving onshore in Central America. The second tropical wave is associated with PGI-27L, and it is located just East of the Antilles between 7N/65W and 17N/60W. This wave has an increased amount of deep convection associated with it (2) compared to days prior, and although development of this wave is not expected, it will continue to move westward through the Caribbean at 10-15 kts. There is third tropical wave located between 9N/26W and 22N/23W through the Cape Verde Islands, with no significant deep convection associated with it. The main feature near Africa is PGI-30L (11, 12) which many models still

forecast to undergo cyclogenesis in the next 48+ hours. There is also a significant SAL outbreak that continues to push further west today to about 52W (more below, **8, 9**).

Features of Interest:

PGI-29L/Ex-TD5 is located over the Gulf, south of the Panama City, near 86.3W/29.6N. IR satellite imagery is indicating deep convective activity to the southwest of the center, while visible imagery clearly indicates low-level rotation displaced to the northeast of the deep convection (**3**). The center of circulation is also coincident with the 850 hPa vorticity analysis (**6**) as well as radar and visible imagery. Upper-level cloud track winds and model analysis continues to show an anticyclone with a center near 90W/30N. A consequence of the location of the low-level center relative to the upper-level anticyclone is that the disturbance has 15-20 kt northeasterly wind shear, which has resulted in convective initiation downshear of the center. Given the steering flow, the model consensus is for a brief (~24 hour) stay over water before making a landfall on the southeast L.A. peninsula (**4, 7**). Given its brief residence over water, only TD strength winds are expected; however, some higher resolution models (HWRF) indicate possible TS strength winds before weakening at landfall. The consensus location of the pouch is as follows: 17/0100UTC: 87.8W/29.1N; 17/1300UTC: 89.9W/29.6N; 18/0100UTC: 91.4W/30.5N; 18/1300UTC: 92.3W/31.6N; 19/0100UTC: 93.3W/32.1N.

Dust/SAL discussion:

As of 1200 UTC on 8/16 the SAL outbreak of late last week had completely separated from the African continent. MODIS imagery from the Terra spacecraft showed a region of very high aerosol optical thickness dominating the area from 50W to 30W between 10N and 30N. AOTs reach higher than 1.0 in this region, even though the emission source has been cut off (**9**). Total precipitable water from AMSU (**8**) shows that the SAL region is also very dry, with TPW values between 25-30 mm. Upper level winds from CIMSS analysis suggest convergence aloft and thus sinking motion continuing to dry out the airmass. GEOS-5 forecasts for dust aerosols suggest that dust-laden air from this airmass will be over the greater Antilles by late on the night of 8/18. There is currently a second dust surge leaving the coast of Africa which was noted in the discussion yesterday. This surge is being carried along with the easterly wave that was associated with PGI-28L. The environment near this dust surge carries much more moisture, as evident in the TPW composite (**8**). GEOS-5 forecasts that the dust mass concentrations will dissipate much more quickly in this dust episode than with the previously mentioned SAL outbreak.

PGI-27L:

Convective activity increased dramatically ahead of the wave axis near PGI-27L this morning. PGI-27L is located in a region with moderate (greater than 10 knots) westerly shear. (See CIMSS multi-product 4 km view with SWIR, pouch tracking, 850 hPa vorticity and ship observations; **10**) Visible GOES imagery and CIMSS low-level wind analysis show little evidence of a cyclonic circulation within the wave, however there is a weak vorticity maximum analyzed by CIMSS at 850 hPa (**6**) south of the current pouch location and recent ship observations in the area suggest a weak low pressure area there. The most dramatic change in the system since yesterday is the increase in moisture at all

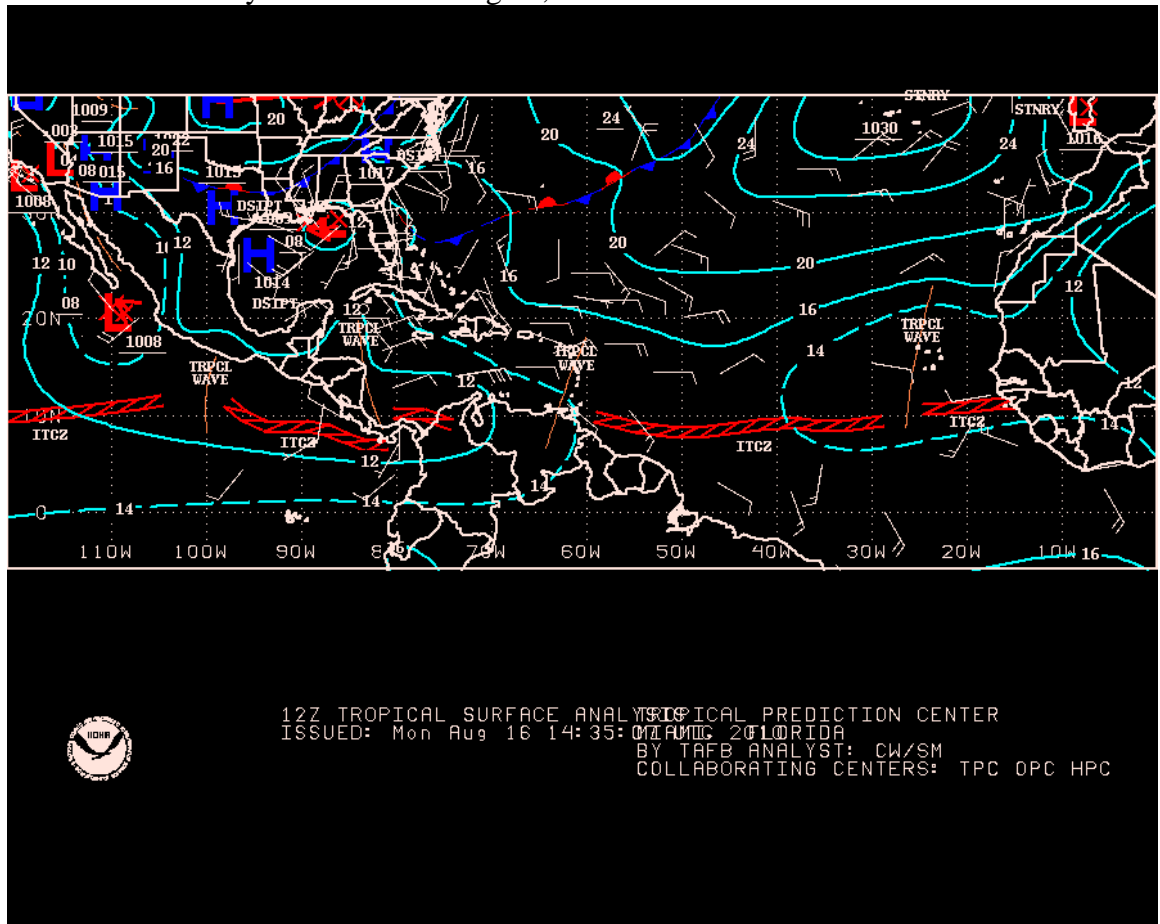
levels. A sounding at 0000 UTC from the Grantley Adams upper air site on Barbados shows near saturated dew points up to above 500 hPa (not shown). MODIS AOT also shows that the minor dust loading previously noticed in this system has abated, likely due to rainout from the increased shower activity (9). Global models track a vortex at 700 hPa for PGI-27L beyond 96 hours. The forecast tracks are in very good agreement, taking the system nearly straight west across the central Caribbean. Little development of Okuba-Weiss is forecast, while the models do forecast a slow increase in relative humidity values. However, due to the increased convective activity, the environment within PGI-27L will likely moisten much more rapidly than the models predict. Development of a depression is not expected within the next 48 hours but the system should be monitored for sustained convection and any possible convective organization.

PGI30L:

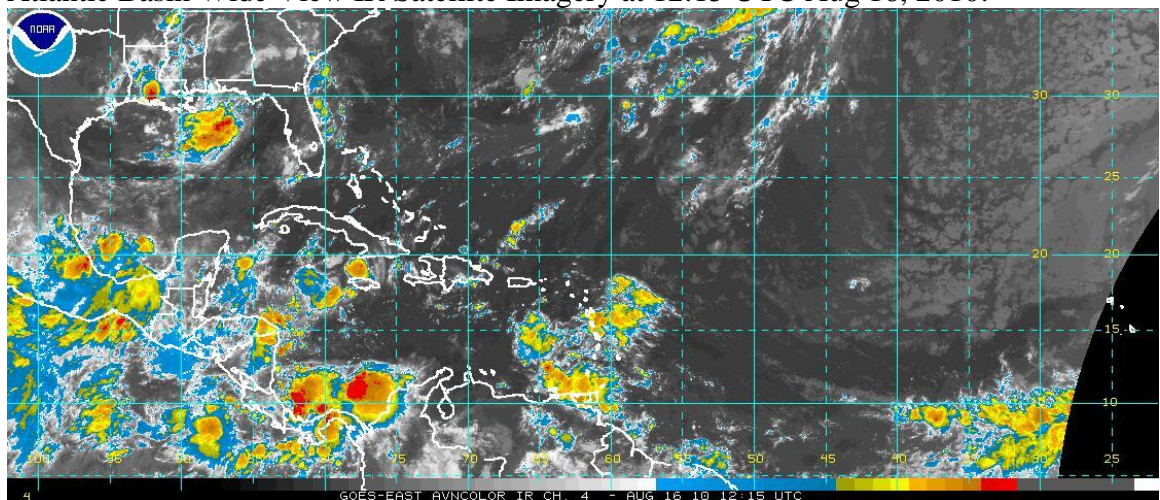
A hovmoller diagram of the 700 hPa vorticity shows a weak, sometimes-difficult-to-track disturbance forming at 8/11 0000 UTC at 30E and moving westwards until the present. The current analyzed pouch position is 13N/14W (5, 12). A broad area of enhanced vorticity and low pressure (1012 hPa) is currently centered over Senegal (13N/15W). Convection is currently enhanced over the Atlantic ITCZ and in a convective burst located at 17.5N/17.5W. The convective burst to the north (11) is located in an environment of favorable upper-level divergence associated with a secondary 200 hPa anticyclone which has been building the last 24 hr and is currently located at 23N/20W. This system is currently experiencing deep layer SE flow of approximately 10kts associated with a redeveloping mid-level Saharan heat low anticyclone and Azores high which will continue to steer this system to the west. This disturbance is embedded in a zonal strip of vorticity located to the east of a broad 700 hPa trough centered at 22N/25N (partly associated with the deformed strip of vorticity remnant of PGI28L) which extends from a 700 hPa cyclone currently located in the ITCZ located at 10N/30W. Possible tropical cyclogenesis will depend on the interaction of the mid-level vorticity over Africa and the Atlantic ITCZ. The 0600 UTC run of the GFS suggests a merging of these two vorticity maxima at 8/18 0600 UTC at 15N/25W. The ECMWF run at 0000 UTC suggests a more delayed merger of these two vortices at 8/21 0000 UTC at 16N/34W. Considerable uncertainty exists in the timing and location of tropical cyclogenesis associated with the timing and processes which occur during the merger of these two vortices. The amount and position of convection may also depend on the latitude of the track of PGI30L as the 27 degrees SST contour is roughly located along the consensus track of the system between 15-17N. PGI30L will be in a favorable shear environment as the upper-level anticyclone is forecast to break off and track westward with PGI28L. The GFS has a tropical cyclone reaching 60W on 8/24.

Static Images used in discussion:

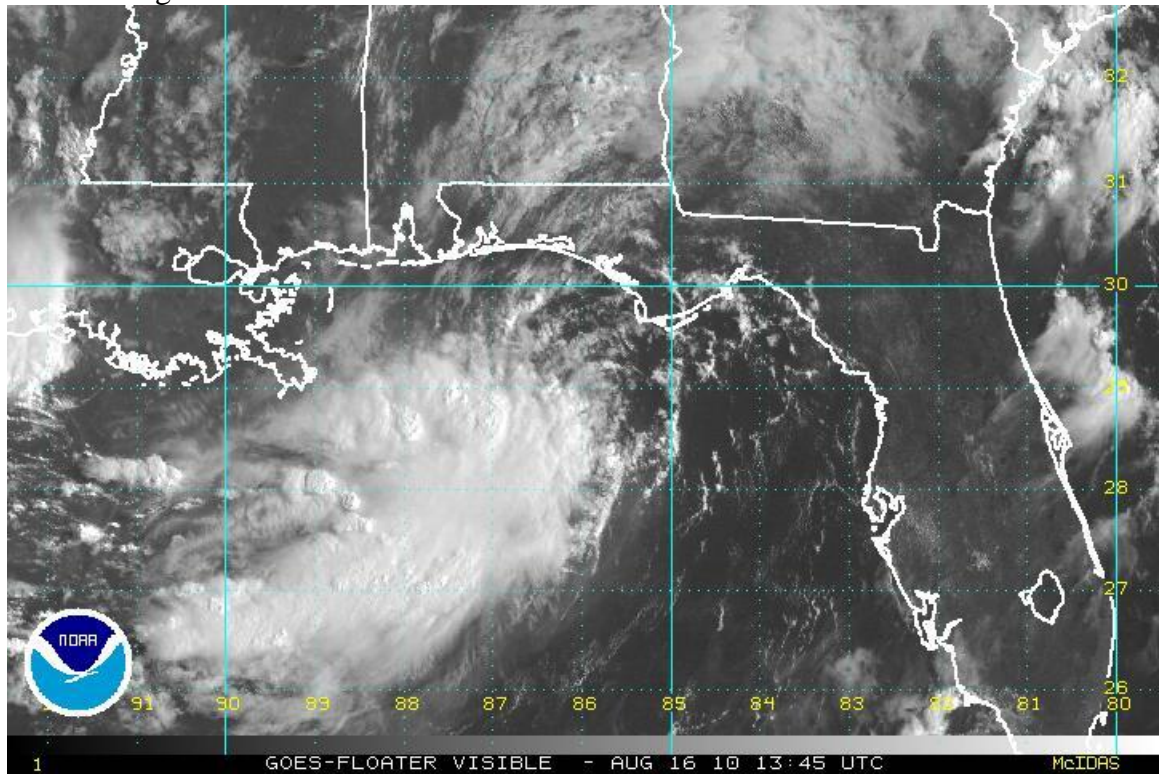
1) OPC Surface Analysis 1200 UTC Aug 15, 2010:



2) Atlantic Basin Wide View IR Satellite Imagery at 12:15 UTC Aug 16, 2010:



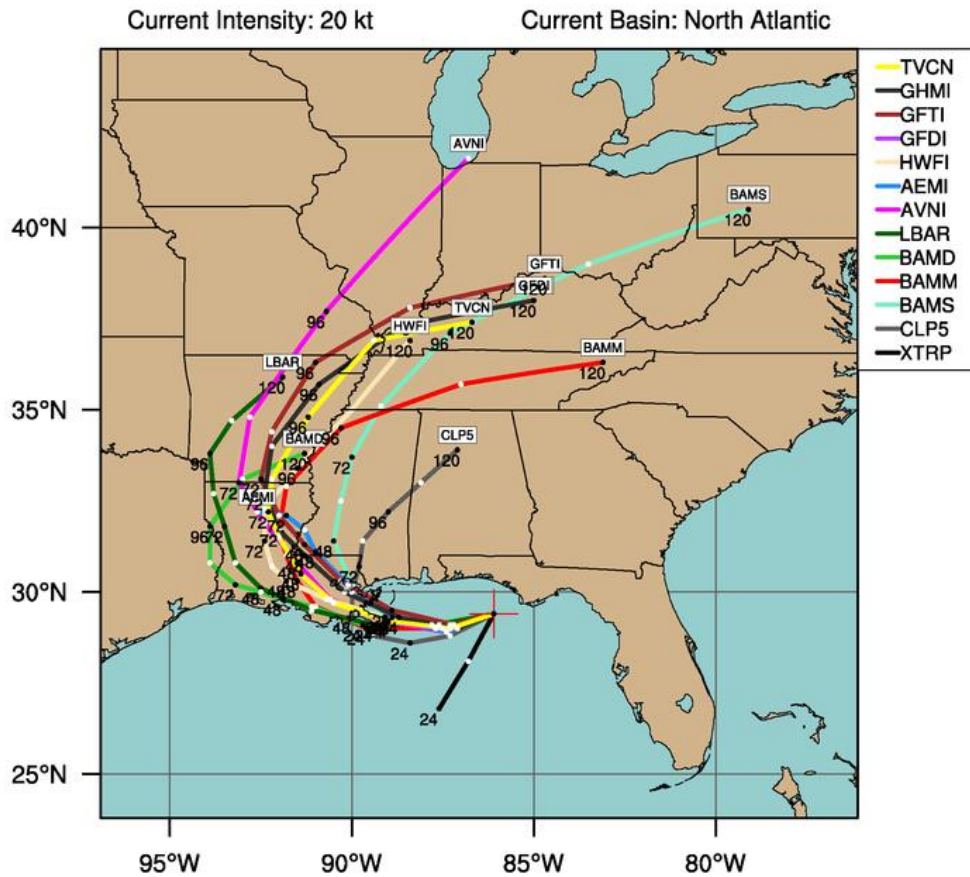
3) Visible image for PGI-29L/Ex-TD05 from GOES at 13:45 UTC:



- 4) Early cycle guidance for Ex-TD05 from the CSU Operational Model Guidance Site for the 1200 UTC Aug 16, 2010 run:

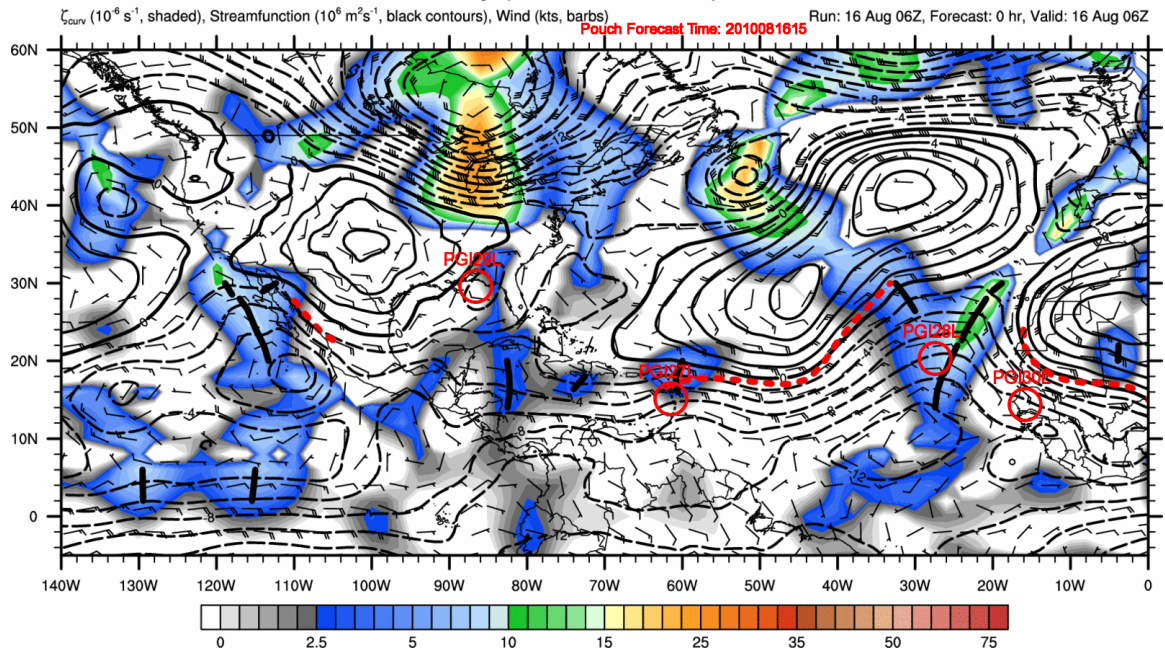
LOW FIVE (AL05)

Early-cycle track guidance valid 1200 UTC, 16 August 2010

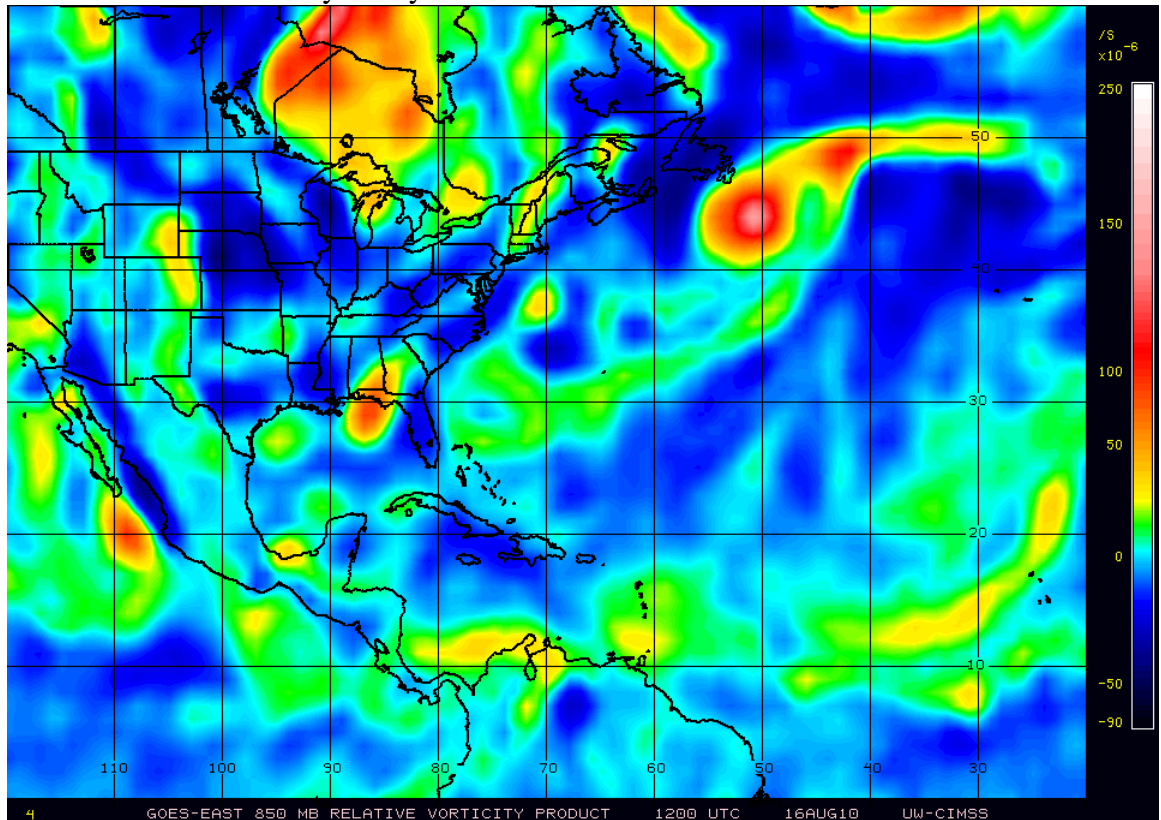


This plot does not display official storm information. Use for information purposes only.
DO NOT USE FOR LIFE AND DEATH DECISIONS!

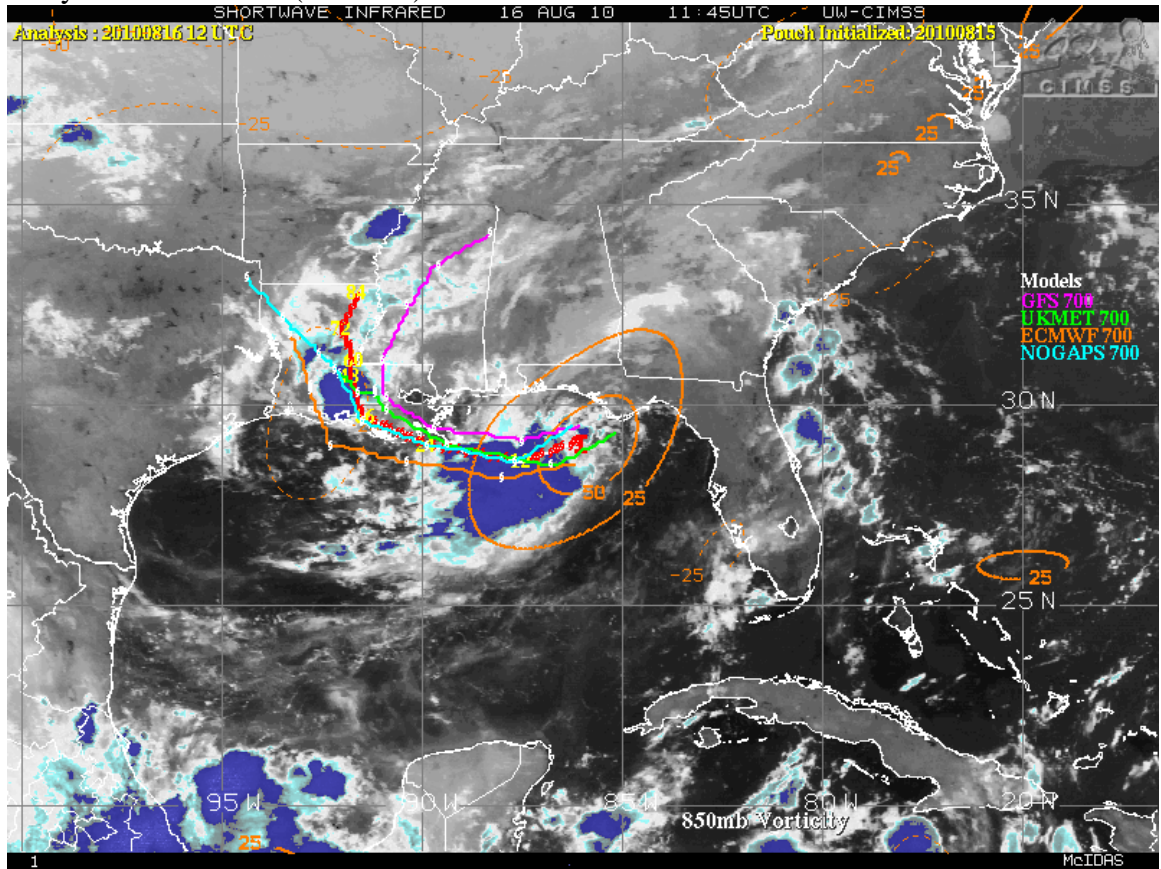
- 5) Montgomery Site Pouch Tracking 0000 UTC Aug 16, 2010. Locations of pouch identified on 700 hPa surface by Curvature vorticity, streamfunction, and winds.



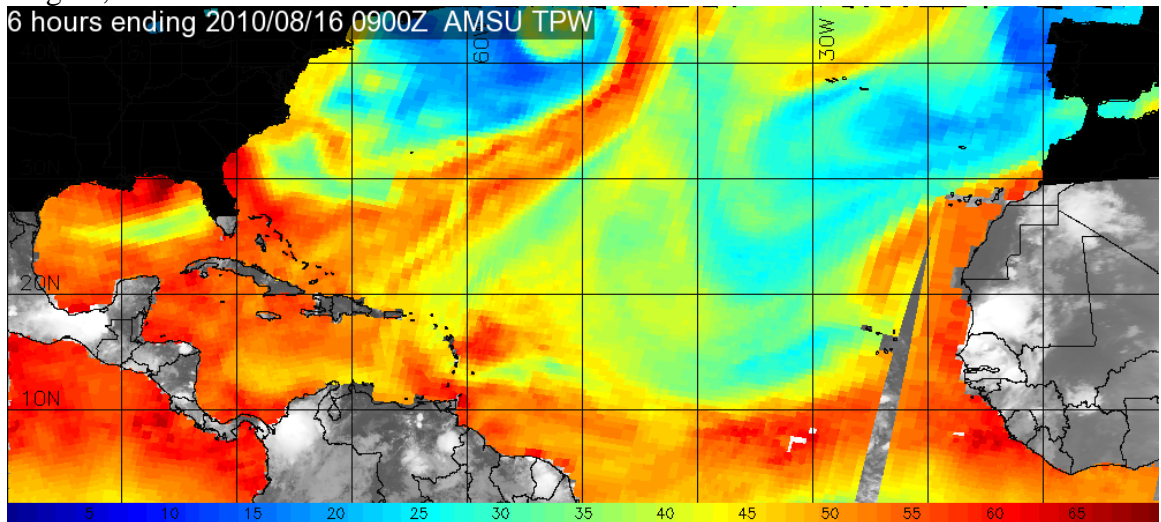
- 6) CIMSS 850 hPa Vorticity Analysis at 1200 UTC:



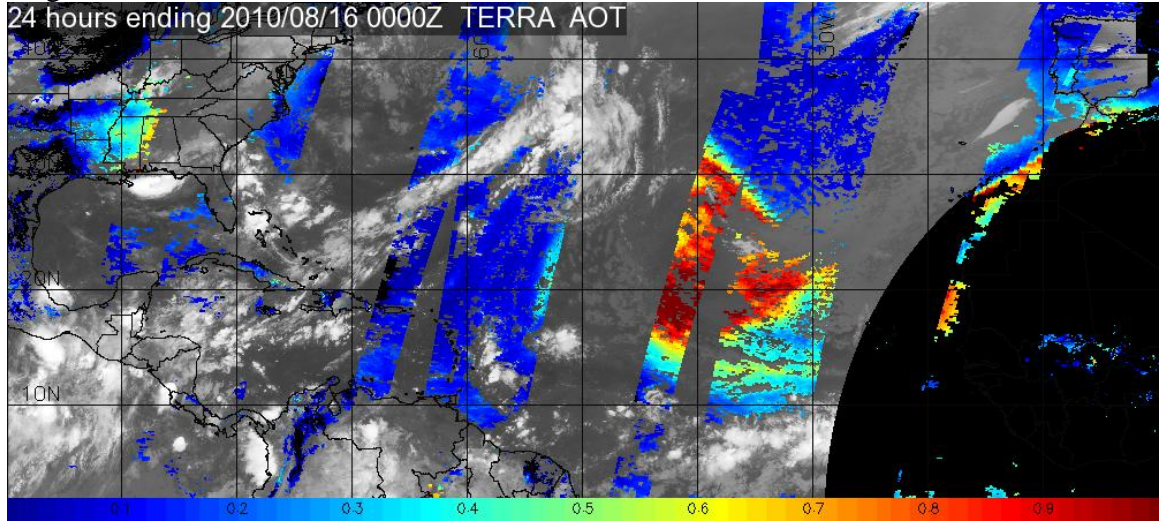
- 7) Model Consensus Pouch Forecast for PGI-29L(initialized 0000 UTC Aug 16, 2010) overlain with Shortwave IR Imagery (11:45 UTC) and 850 hPa vorticity analysis from CIMSS (contours) at 1200 UTC:



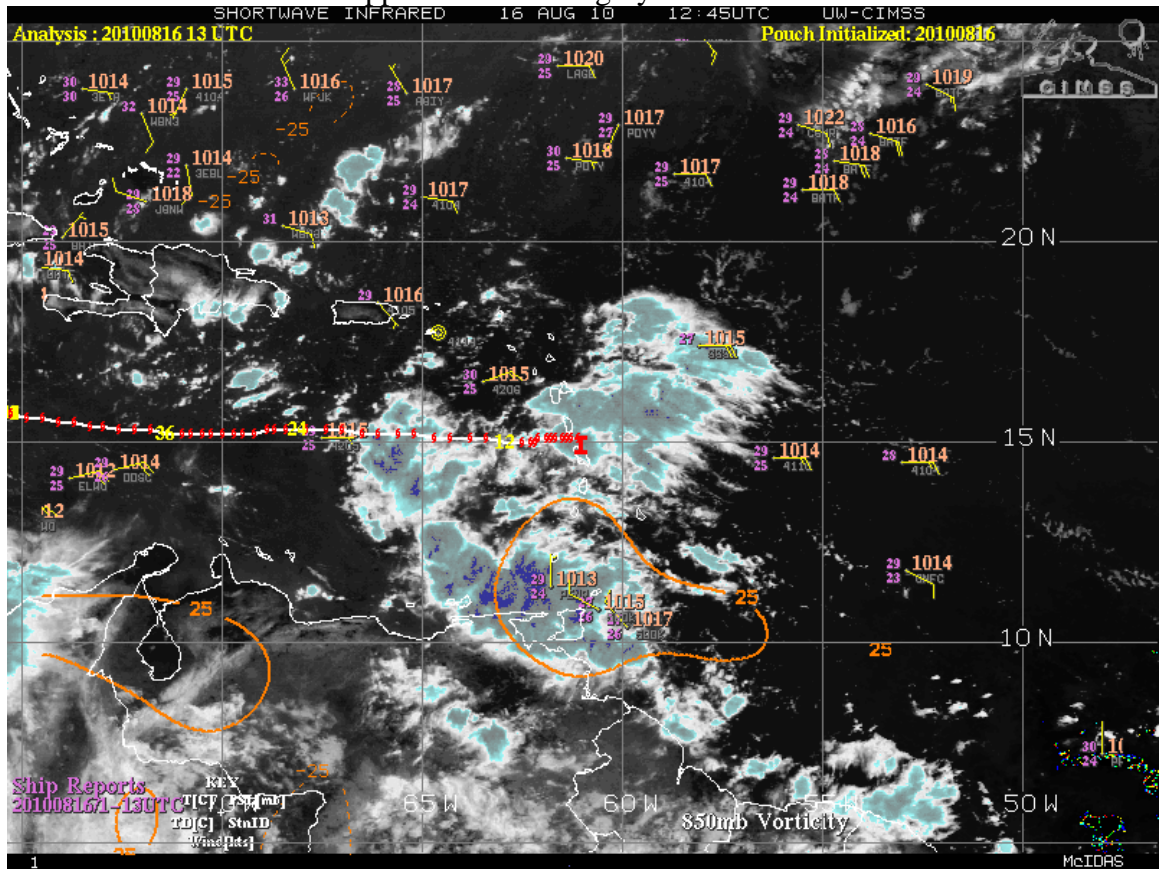
- 8) AMSU TPW 6-hr Composite Imagery from JPL "SGRIP" site ending 0900 UTC Aug 16, 2010



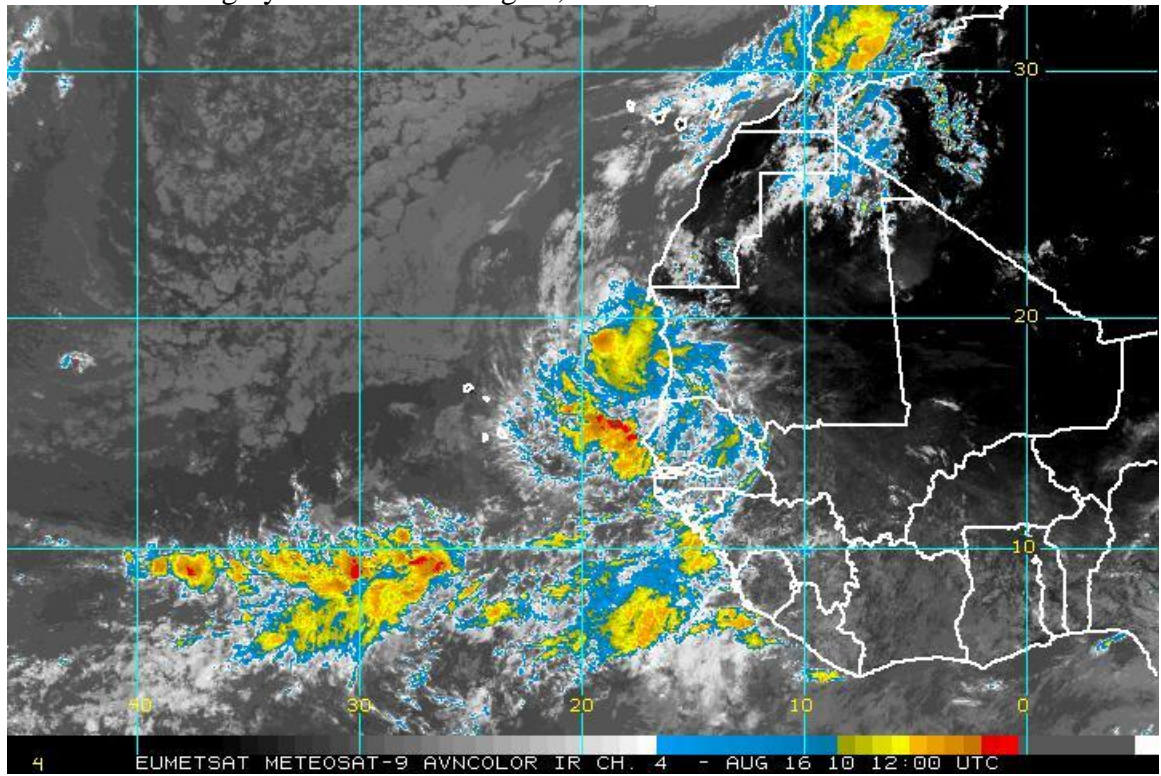
- 9) TERRA AOT 24-hr composite imagery from JPL "SGRIP" site ending 0000 UTC Aug 16, 2010



- 10) PGI-27L CIMSS Predict Support- SW IR imagery with 850 hPa



11) Meteosat IR Imagery at 1200 UTC Aug 16, 2010:



- 12) CIMSS Predict Support Site image of PGI-30L on Meteosat IR image from 12:30 UTC Aug 16, 2010 with ship and buoy observations and forecast consensus track positions (from pouch position the day before) and 850 hPa Vorticity Analysis at 1200 UTC Aug 16, 2010.

