

TRI-AGENCY FORECAST DISCUSSION FOR JULY 30, 2010

Tropical Areas of Interest Discussion: Created 1800 UTC July 30, 2010

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Summary: The situation in the Atlantic basin has steadily become more interesting over the past couple of days as an active easterly wave train has organized convection in multiple areas from the West Atlantic to East Atlantic. For today's activities, the DC-8 will fly isolated convective cells near 88W in the Gulf of Mexico. On the horizon, four main easterly waves/pouches remain in the basin: PGI-19L (centered near 80W), PGI-20L (centered near 64W), PGI-21L (centered near 20W) and PGI-22L (Invest, 90L, centered near 35W) (1). Two dust outbreaks are observed: one associated with 20L and another with 21L.

Forecast for 1800 UTC 7/30/2010:

There are currently two areas of interest identified by NHC. One associated with PGI-20L (10% chance of development) and another associated with PGI-22L (from now on, 90L) (20% chance of tropical cyclone formation).

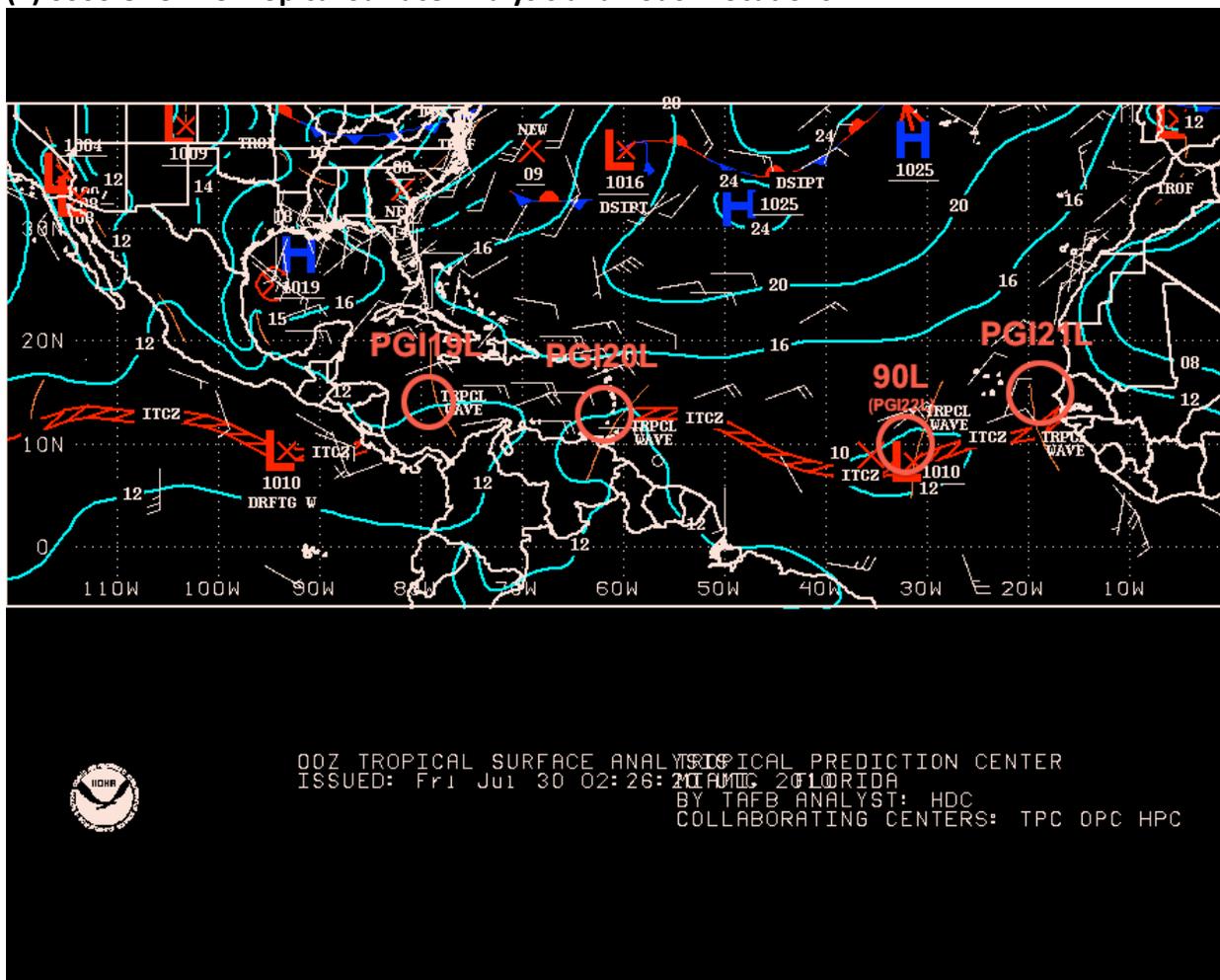
As observed yesterday, although the southeast U.S. has been dominated by ridging, isolated convective cells have formed along a boundary in the Gulf of Mexico (2), and along a stationary frontal boundary east of the Georgia/Florida coastline (3). Considering that the Gulf is expected to retain high TPW already present (4), a similar scenario may play out tomorrow morning. Likewise, the slow movement of the trough in the northeast United States may result in continued convection near 70W, east of the GA/FL coastline, tomorrow.

PGI-19L (centered near 80W) has moved westward toward Central America and remains a weak, disorganized wave with the main convective area west/northwest of the center (3). The upper-level anticyclone (5) identified previously is now centered over the wave; generally suppressed convection near the center may be a consequence of subsidence associated with anticyclone. No identifiable pouch is forecast, and given the steering flow, the wave will make landfall in Central America in the next 24-36 hours.

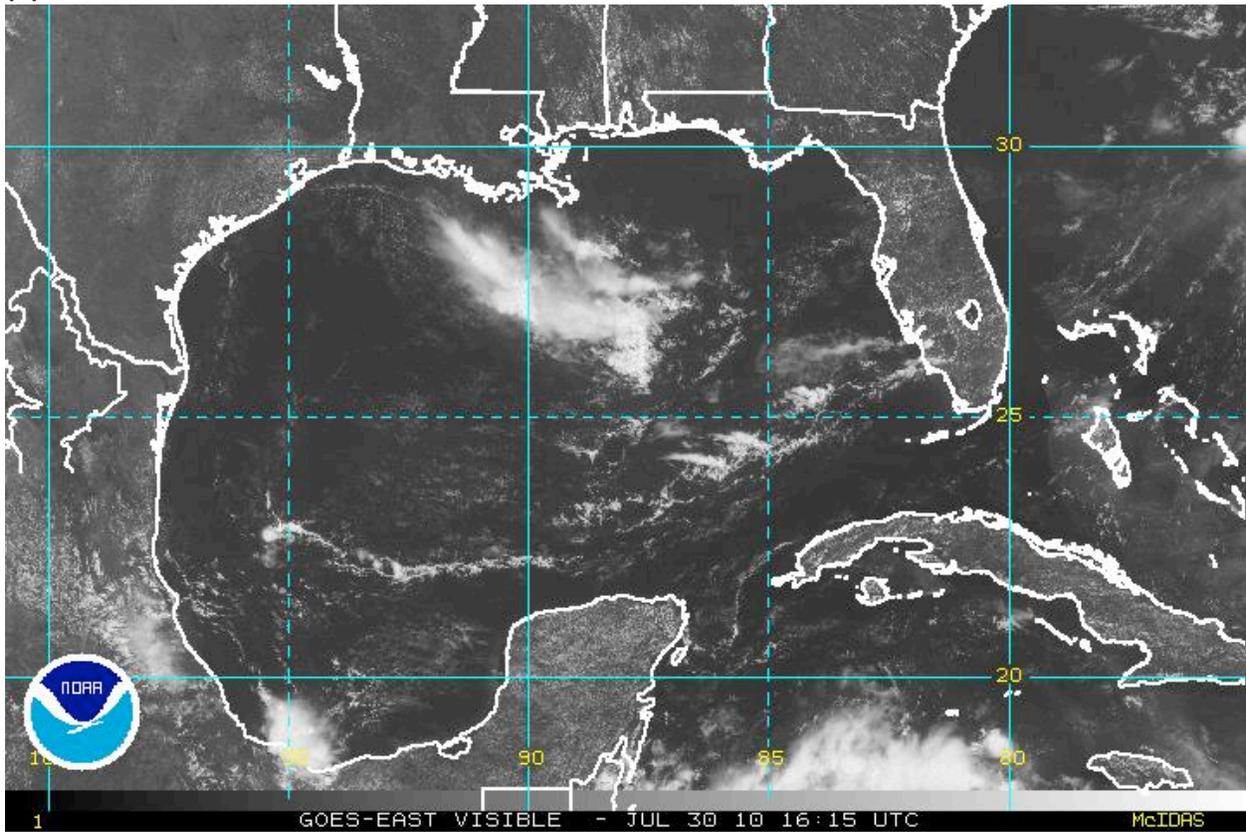
PGI-20L (centered near 64W) continues to show impressive convective bursts overnight (3), albeit west of the pouch. A sharp gradient between convection and dry, subsiding air to the north exists, and this may in part be due to the presence of strong, deep vertical wind shear. A 35-40 kt easterly jet is observed at 700 hPa north of the wave (6), while 200 hPa winds are westerly at 25 knots (as well as a peak of 40 kt at 300 hPa) (5). The harsh environmental wind shear is due in part to an upper-level, north-south elongated low to the northeast of the Antilles (25N/58W) (5). As has been observed in the previous days, convection and dust seem to be co-located (evidence in a CALIPSO overpass from yesterday [7]), despite what the SAL analysis is showing (8). There is a consensus among the ECMWF and GFS forecasts for a continued westward track, remaining at a low-latitude, and little-to-no intensification (see ECMWF pouch forecast locations [9]).

Invest 90L (PGI-22L, centered near 35W) continued to initiate convective bursts overnight; although the deep convection has recently (since 0000 UTC) been dissipating (10). A mid-level center, presumably from a previous mid-level convective vortex, is apparent in the satellite loop. PGI-21L (centered near 20W) exited West Africa overnight and has shown a well-defined mid-level wave trough (11), while widespread deep convection has initiated to the south and southeast of the pouch (10, 11); tops are getting blown downwind from the 40 kt 200 hPa easterly jet. The track of both 90L and PGI-21L is still a bit uncertain. The ECMWF shows a meandering track for 90L (12) before PGI-21L temporarily merges with 90L (13), kicking the 90L pouch westward; PGI-21L will, however, maintain a faster westward phase speed, thus leaving 90L in it's wake. ECMWF also indicates steady intensification of 90L (12). In contrast, the GFS is less optimistic and does not persist 90L. For PGI-21L, the GFS forecasts the pouch to moves southwestward. Overall, the situation in the East Atlantic is still a bit confusing, and hopefully as one of 90L and PGI-21L (or both) organize, a better picture will emerge over the next couple of days.

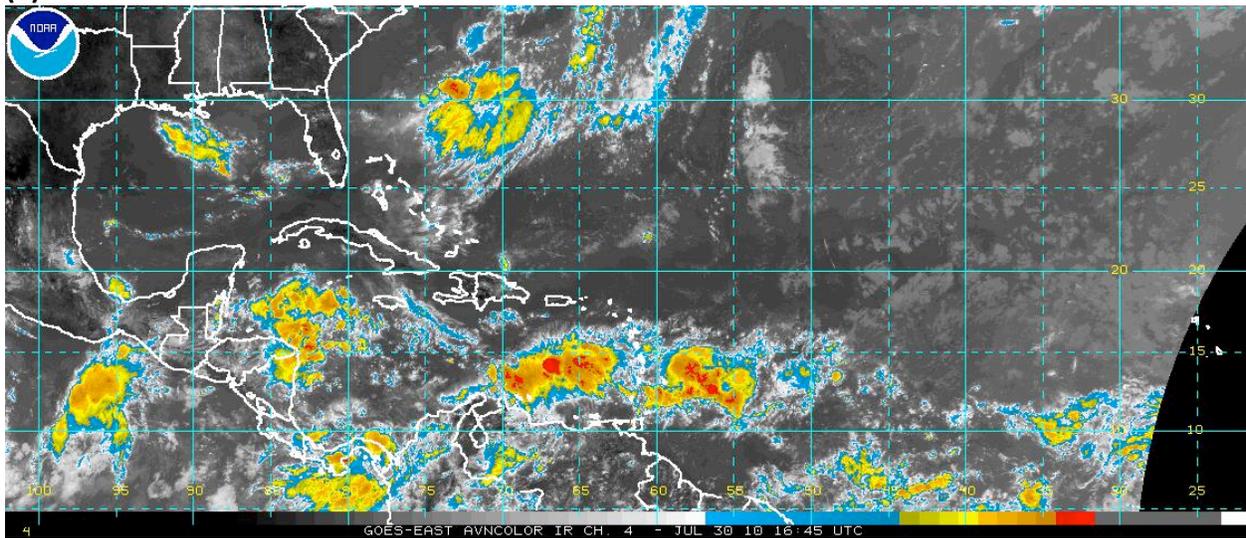
(1) 0000 UTC TPC Tropical Surface Analysis and Pouch Locations



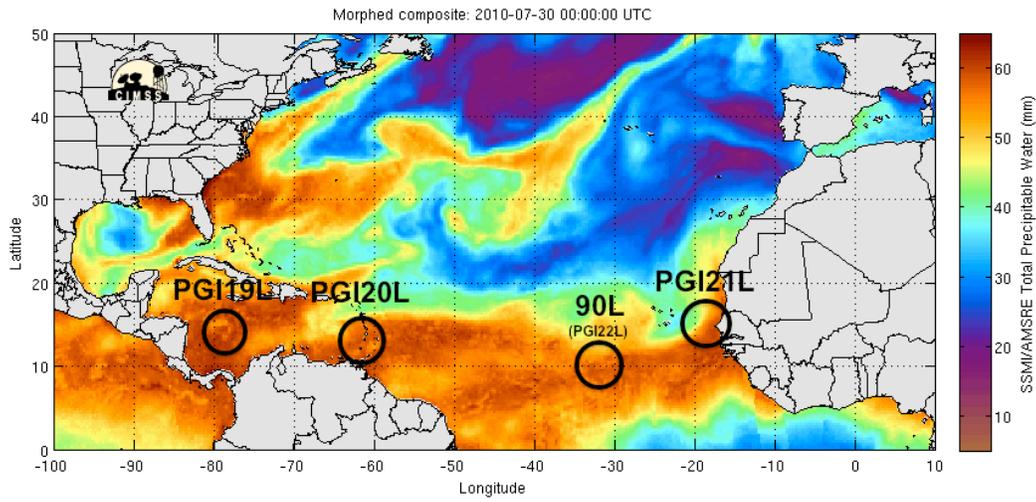
(2) 1615 UTC Gulf of Mexico Visible



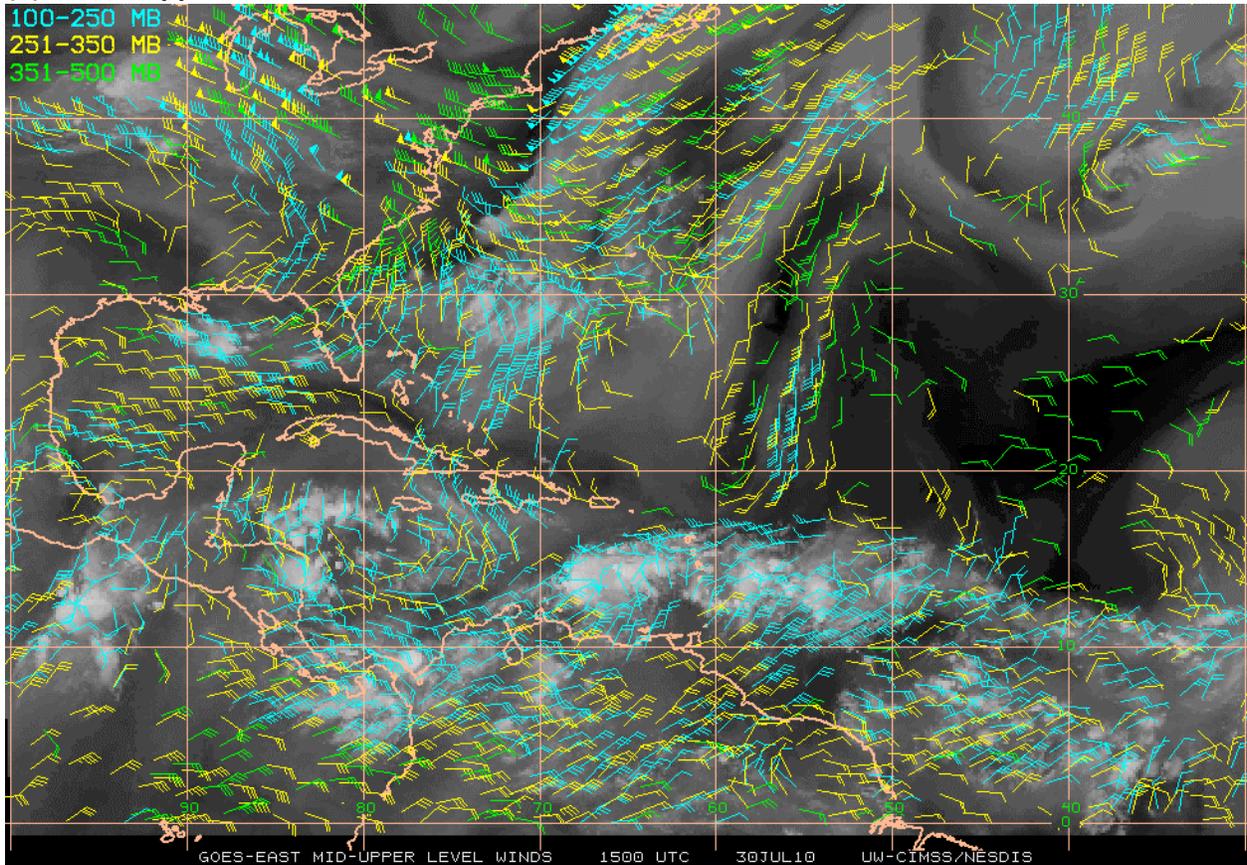
(3) 1645 UTC Atlantic Wide View IR



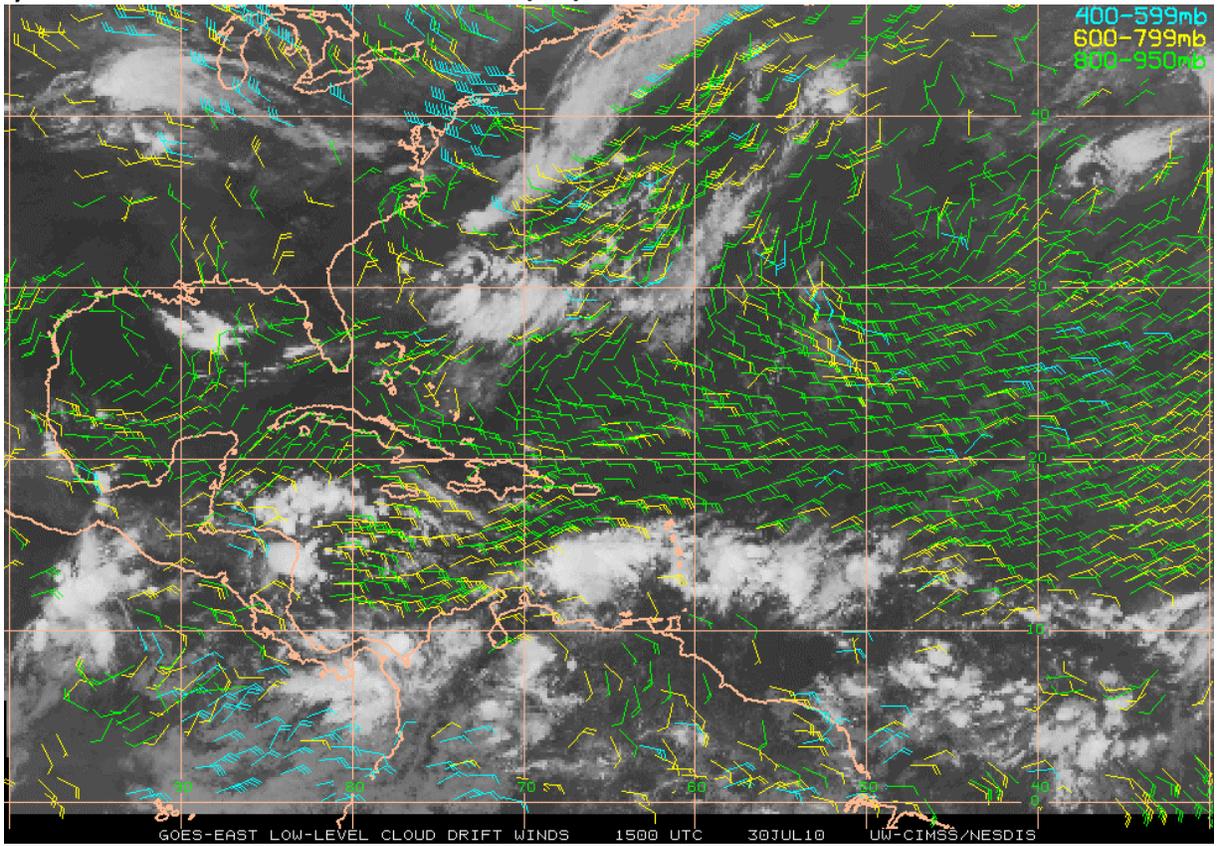
(4) Morphed Composite TPW 0000 UTC 7/30/10



(5) CIMSS Upper-Level Winds 1500 UTC 7/30/10

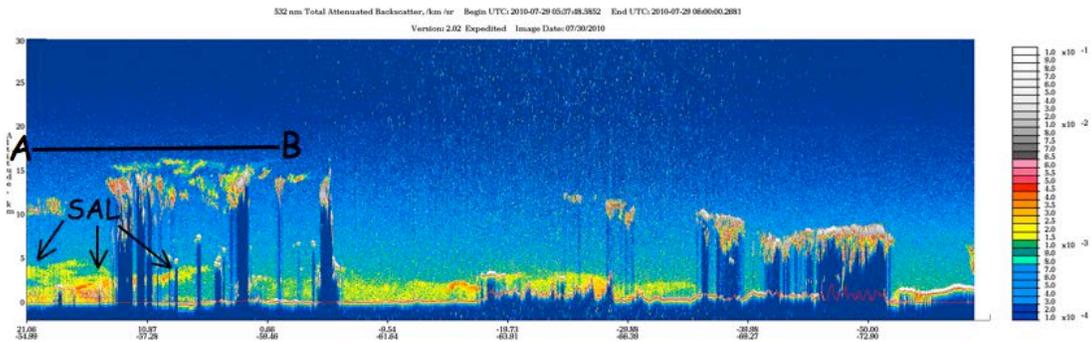
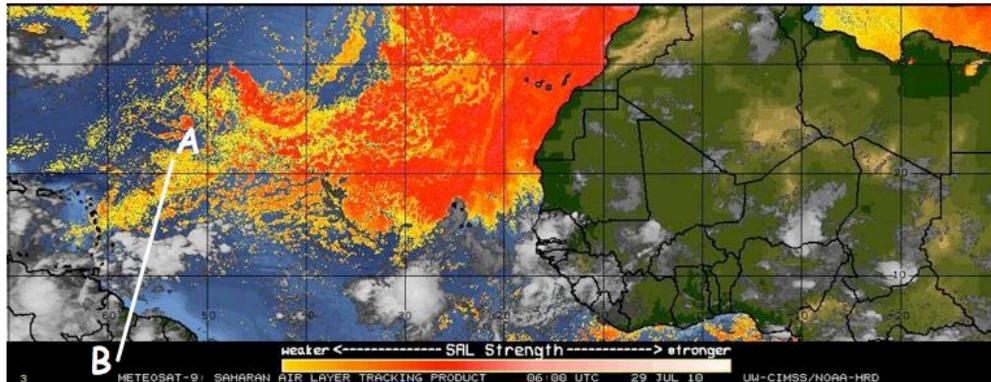


(6) CIMSS Lower-Level Winds 1500 UTC 7/30/10

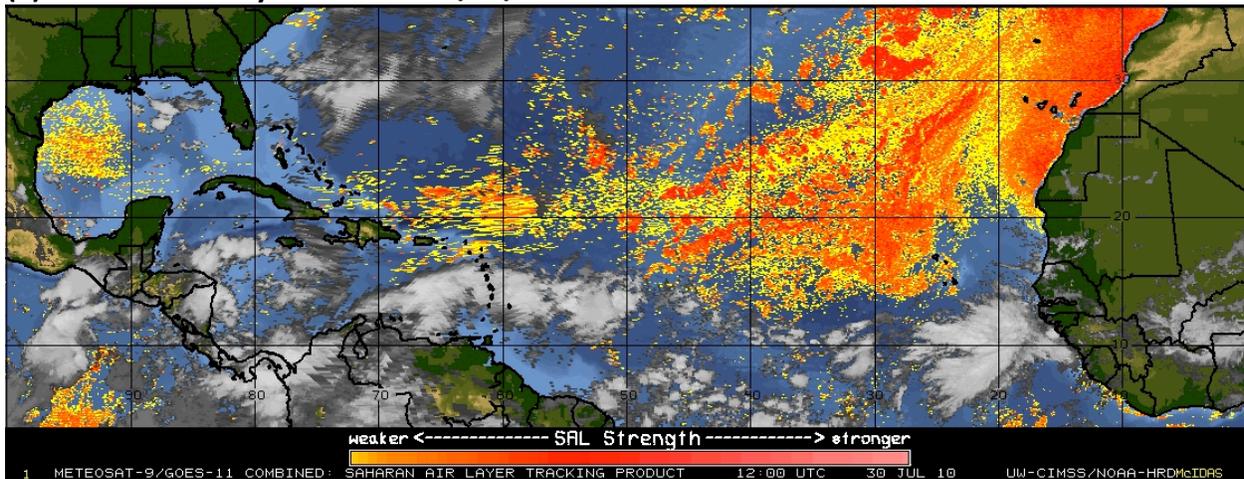


(7) CALIPSO overpass and cross-section (7/29/10) (courtesy Jason Dunion)

CALIPSO: 29 July 2010 0600 UTC



(8) CIMSS SAL Analysis 1200 UTC 7/30/10

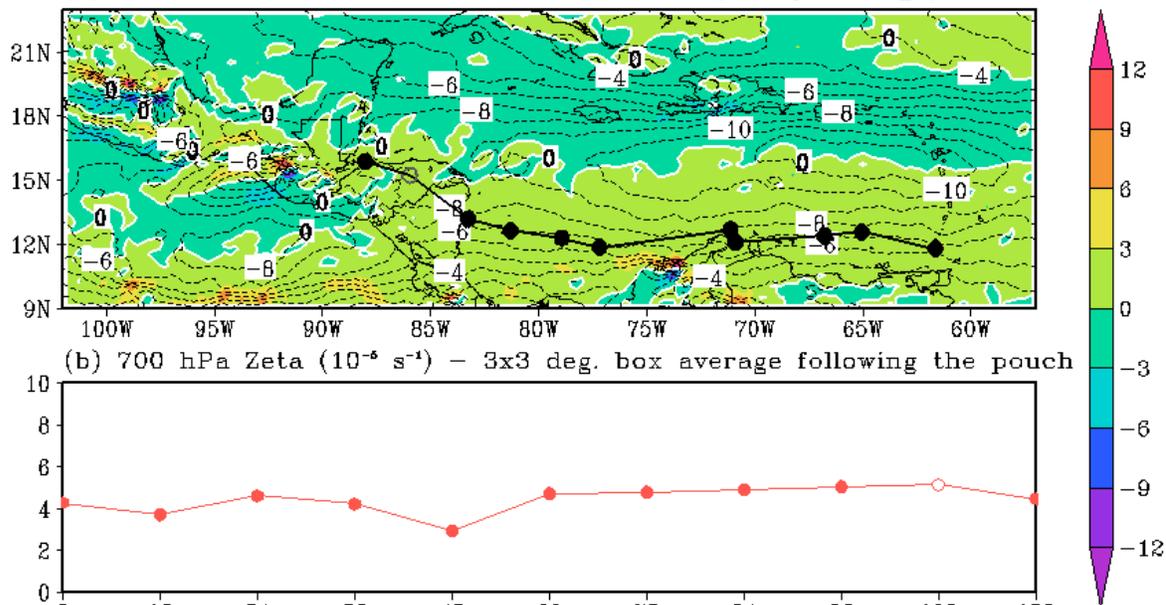


(9) 0000 UTC 7/30/10 ECMWF Pouch Forecast (PGI-20L)

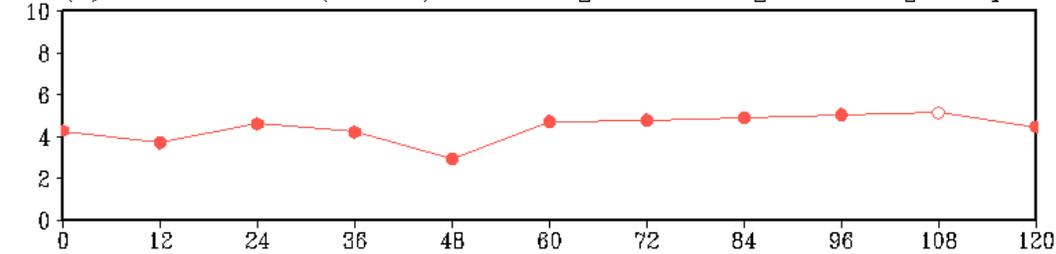
PGI20L: 5-Day Forecast Based on ecmwf

Initialized at 2010073000

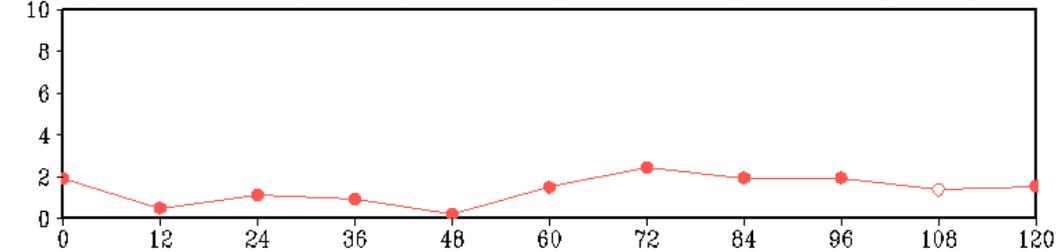
(a) Track of the Pouch, 700 hPa U and Zeta (5-day average)



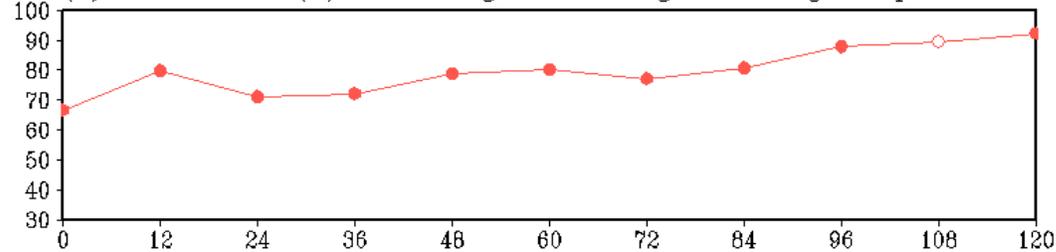
(b) 700 hPa Zeta (10^{-6} s^{-1}) - 3x3 deg. box average following the pouch



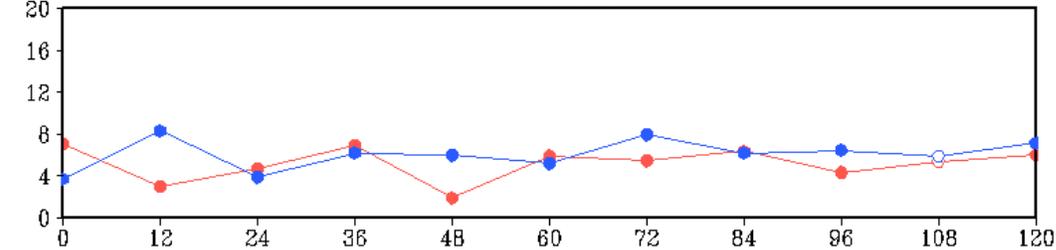
(c) 700 hPa OW (10^{-8} s^{-2}) - 3x3 deg. box average following the pouch



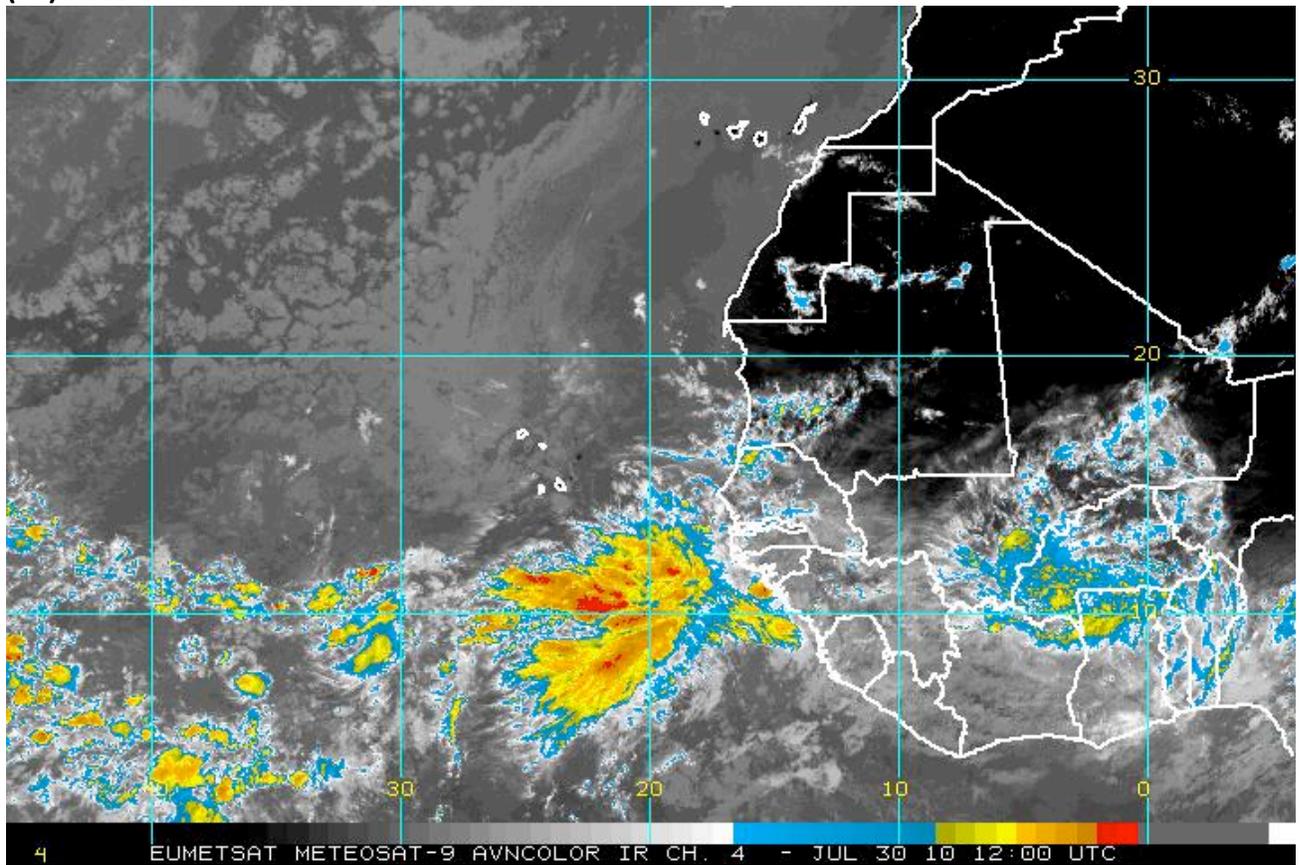
(d) 700 hPa RH (%) - 3x3 deg. box average following the pouch



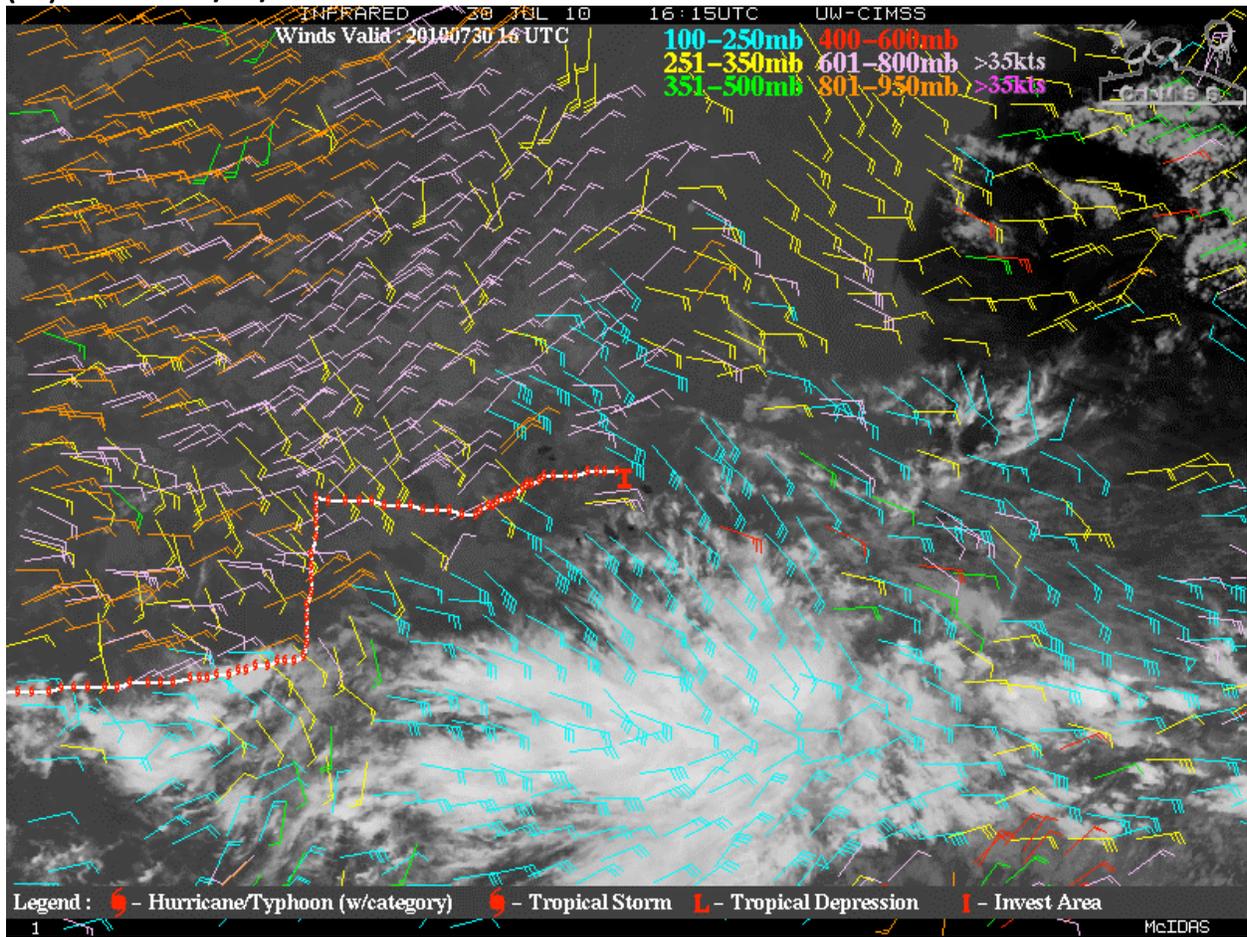
(e) Pouch & Deep Vertical Shear (m/s) - 3x3 deg. box as above



(10) 1200 UTC METEOSAT East Atlantic IR



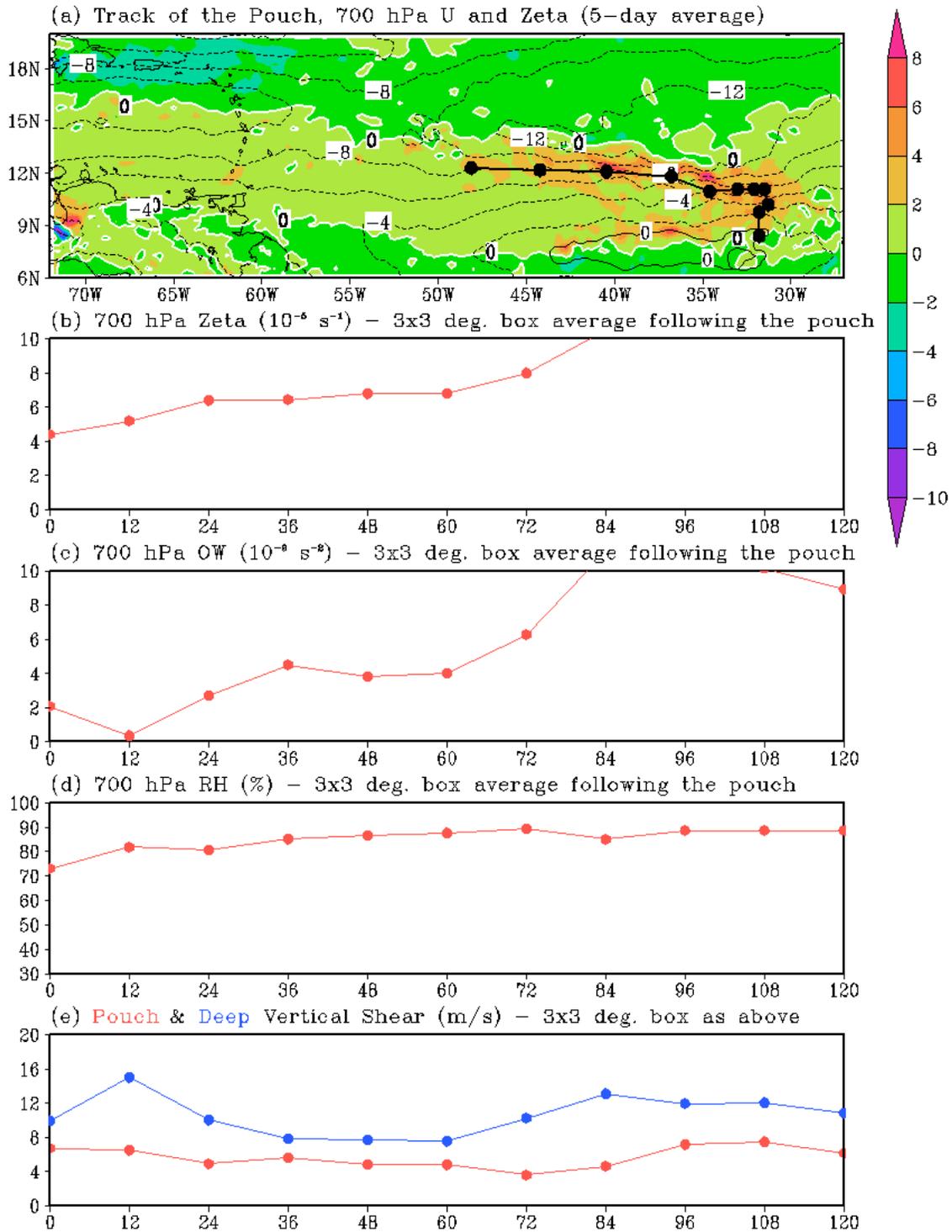
(11) 1615 UTC 7/30/10 Consensus Track PGI-21L + IR



(12) 0000 UTC 7/30/10 ECMWF Pouch Forecast (90L)

PGI22L: 5-Day Forecast Based on ecmwf

Initialized at 2010073000



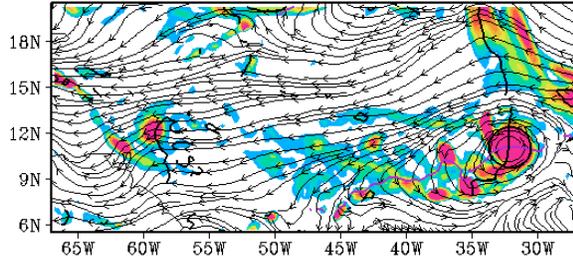
(13) ECMWF 90L forecast valid 0000 UTC 8/1/10

PGI22L: 2010073000 (48h ECMWF valid at 00Z01AUG2010)

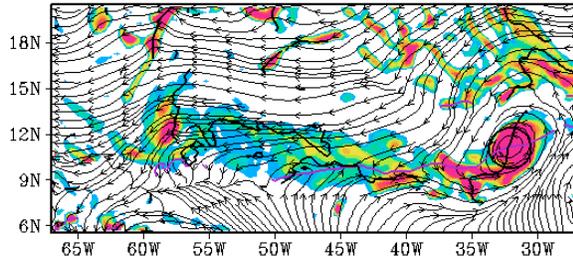
Level Tracked: 700 hPa

Comoving ($C_p = -1.5$ m/s)

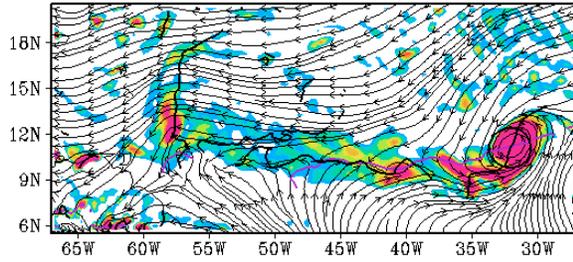
700 hPa Streamlines and Zeta (10^{-6} s^{-1})



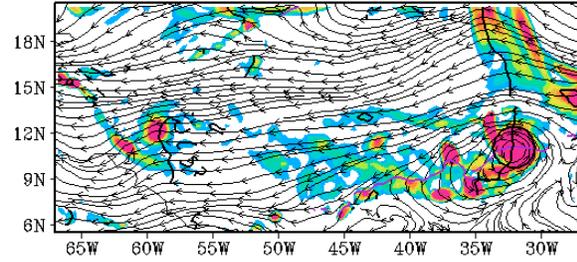
850 hPa Streamlines and Zeta (10^{-6} s^{-1})



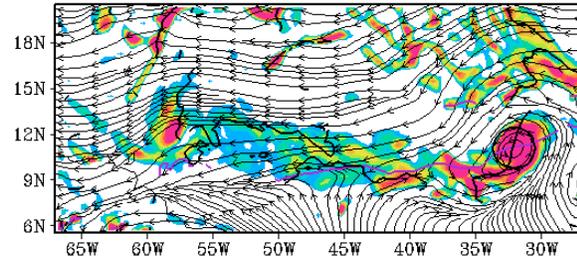
925 hPa Streamlines and Zeta (10^{-6} s^{-1})



Earth-relative ($C_p = 0$ m/s)
700 hPa Streamlines and Zeta (10^{-6} s^{-1})



850 hPa Streamlines and Zeta (10^{-6} s^{-1})



925 hPa Streamlines and Zeta (10^{-6} s^{-1})

