

## **Tropical GRIP Forecast Discussion for September 4, 2010**

Created 1600 UTC September 4, 2010

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### **Summary:**

Today is a Hard Down day at FLL for the DC-8, and the Global Hawk and WB57 are also not flying. After deciding yesterday to forgo a second suitcase deployment to St. Croix to study a possible redevelopment of Ex-Gaston, GRIP is currently focused on the possibility of genesis targets more closely in reach. There are a few interesting features in the Atlantic Basin, however. Hurricane Earl is becoming ever more extra-tropical, there is no more Fiona, Ex-Gaston's convection is looking much better today, TD-11E is expected to transition into the Bay of Campeche in the Gulf of Mexico, and several areas of vorticity off the coast of Africa with the emergence of the latest AEW are keeping the model solutions unclear about any future genesis.

### **Forecast for 1600 UTC 9/04/2010:**

#### **Synoptic Overview:**

The surface map of most of the tropical Atlantic basin shows several features of interest today (**S1**). There is a large mid latitude cold front approaching the US East and Gulf coasts causing a few clouds and showers along its southern boundary but nothing extremely significant (**S2**). The greatest benefit of this system to the southern US is the dry air behind its passage (**S6**). There is also a low pressure center in the East Pacific moving over the Isthmus of Tehuantepec that has been named TD 11-E. 11E is making a transition into the Gulf of Mexico and the 850 hPa signature shows a stretched band of vorticity stretching from the East Pacific to the Gulf of Mexico with this system. At upper levels, diffluence near the system is favorable due to an upper level anticyclone in the central GOM (**C3**), and there is only low shear over the system (**C2**).

TD-Fiona is now just a 1014 hPa low located around 32N/65W moving to the NNE at 13mph and as no reintensification of this system is expected, it is no longer a target. Hurricane Earl is also becoming increasingly extratropical, and will no longer be discussed as it is about to make landfall in Nova Scotia.

The Subtropical High has reformed nicely in the last two days and stretches across the middle Atlantic at about 1020 hPa pressure. This is helping to keep the track of Ex-Gaston/PGI-38L on a westward heading (**S1, S3**). Ex-Gaston is associated with a high TPW region (**S4**) at low levels, and resides in a pocket of good moisture at mid-upper levels, as evidenced by water vapor imagery (**S6**). Shear over the system is low, as well as off the GA/FL coast, over the eastern Caribbean at the center of a broad, strong upper level trough, with high values of shear surrounding that region (**C2**).

In the Eastern Atlantic and West African region, the low level features of interest include PGI-39L, PGI-40L, and PGI-41L (**S1**). The exchange of energy between PGI-39L and PGI-40L is set up in an interesting configuration today (**S7**), consistent with the way the systems were combined even yesterday. However, the track of PGI-40L will

move north and away from the PGI-39L track. At upper levels over Africa (C5), there is an upper level anticyclone over Africa. The TEJ is well established and a very classical wave train pattern has been persistent over the last two weeks exiting Africa. There is a small dust outbreak emerging from extreme northwest Africa (D1), and the GEOS-5 model is predicting that by 09/08/10 there could be a major dust outbreak (D3).

**Features of Interest:**

**Tropical Depression Eleven-E / Bay of Campeche disturbance:**

TD 11-E formed yesterday over the Gulf of Tehuantepec, and has moved northward and inland over the Isthmus of Tehuantepec. Last night's microwave imagery depicted a nice banded structure indicative of an organizing low-level circulation (B1), and this may have been close to becoming a tropical storm just prior to landfall. Water vapor imagery shows favorable upper-level anticyclonic flow over the system, and CIMSS shear analysis (C2) diagnoses low shear of about 5-10 kts. Deep convection has flared up in the past few hours over the Bay of Campeche (B2).

This has emerged in the past day or so as a system of interest due to the fact that some of the models have consistently been bringing it northward over the southwestern Gulf of Mexico. The 06Z GFS has the vorticity center of TD 11-E emerging into the extreme southern Bay of Campeche by later tonight, and then brings it slowly north, and then northwest before making landfall in Mexico by 18Z 9/7. This allows enough time over water (~66 hours) for the GFS to intensify this back to a tropical depression or tropical storm. In contrast, the 00Z ECMWF allows only about 24 hours over water, preventing re-generation. It is worth noting that the GFS is the farthest east of the track guidance (B3), with most models showing substantially less time over water. The NHC gives this a 20% chance of regeneration over the next 48 hours, and due to the likelihood of a short residency time over water, this is reasonable. However, due to the favorable upper-level conditions and very warm sea surface temperatures in the Gulf, any deviation of the track to the right could very well result in regeneration. The system will continue to be monitored.

**Ex-Gaston/PGI-38L:**

Over the past 24 hours (former Tropical Storm) Gaston's structure has notably improved with much greater convective coverage noted in the IR (G1). This convection has weakened slightly this morning, possibly due to diurnal effects, but a low level circulation is still evident. The pouch around the system remains largely intact with some dry air wrapping around the western and southern periphery of the system (S4).

Development prospects look promising with the system moving towards regions of enhanced OHC (G2) and modest shear forecast. The main problem facing short-term redevelopment appears to be impacts from dry air in nearly all quadrants (G3) as well as potential dust wrapping around the south of the system with the drier air. The GEOS-5 shows some dust entering the pouch at low levels around 12Z Sunday that bears monitoring as well (G4). Track forecasts bring the system near St. Croix by the middle of next week, making a suitcase flight and potential operations more difficult (G5).

Nearly all of the models redevelop the system to tropical storm strength in the next 12-24 hours (**G6**). The GFS is not as bullish on its development prospects, however the ECMWF has begun to properly analyze and track the system, despite not having a handle on it yesterday.

**PGI-39L... AL99 and PGI-40L:**

PGI-39L/AL99 continues to be analyzed as an area of low probability for tropical cyclogenesis by the NHC. The invest consists of an elongated trough oriented SW to NE. The center of the invest is being analyzed farther north today, despite little change in the position of the convection (**PG1**).

The ECMWF, GFS, and NOGAPS models have reached a compromise of sorts in today's forecast for AL99. Yesterday there was a clear split between the ECMWF, which brought AL99 almost straight north, and the GFS, which propagated the system directly west. Today, both models indicate a general NW motion (**PG1**). The consensus forecast brings the center of the pouch slowly to the north for the next 12-24 hours before a turn to the WNW. None of the models are suggesting any substantial development of this system for a number of reasons. Though lower than yesterday due to the new analyzed location of the pouch, the shear is moderate (**PG2**), and not predicted to substantially decrease in the near future. The pouch is over higher SST's today, but these values will decrease as it moves to the NW (**PG1**). Finally, there is substantial Saharan Dust to the NW, and as the system moves in this direction, the dry air should act to suppress convection even more (**PG3**). PGI-40L is no longer being analyzed by the ECMWF and NOGAPS. The GFS still initially has a pouch, but dissipates it almost immediately. It is therefore likely that PGI-40L will no longer be tracked.

**PGI-41L:**

The global models are now picking up on a new system, PGI-41L. PGI-41L is located relatively far south, around 7N in the vicinity of Cote D'Ivoire and Ghana (near 0W) (**PG4**). While this system was not being tracked yesterday, there is a surprising consensus in the global models for its forecast. While the exact track still has some uncertainty, the GFS, ECMWF, and NOGAPS all show WNW propagation of an 850mb vorticity center with some potential interaction with various ITCZ vorticity maxes. The degree of this interaction varies among the models and will likely determine the development potential for the system. The GFS shows a large amount of interaction, resulting in the formation of a tropical cyclone. On the other hand, the ECMWF and NOGAPS show a moderately strong wave, but no cyclogenesis within 120 hours. Regardless, the system will remain over land for at least the next 24 hours, and no substantial development is anticipated for the next 48 hours.

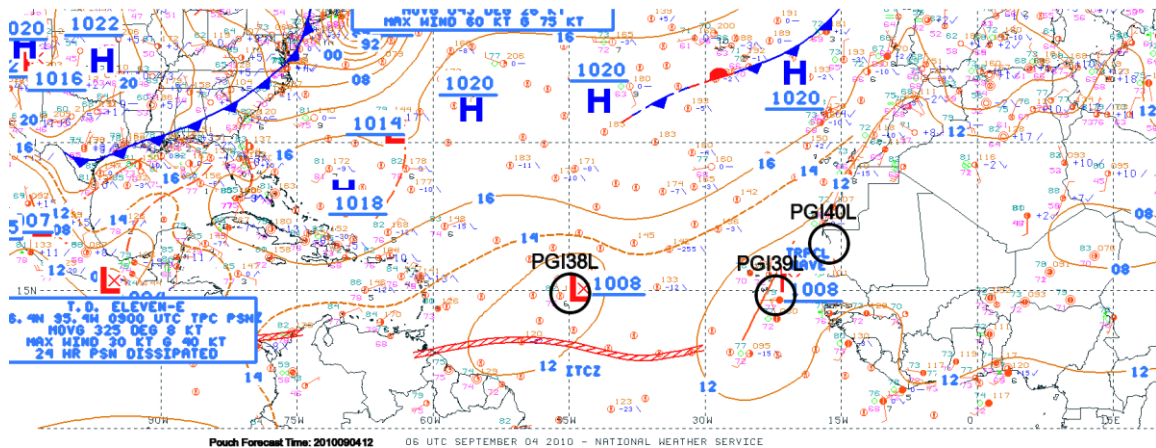
**Dust/SAL Discussion:**

Dry air continues to extend over much of the NE Tropical Atlantic. Water Vapor Imagery indicates that dry air has wrapped completely around Gaston (**S6**). There is also substantial dry air entering the Caribbean, as well as between Gaston and AL99. In the mid to lower troposphere, a combination of the Terra AOT and GOES-5 06Z analysis dry

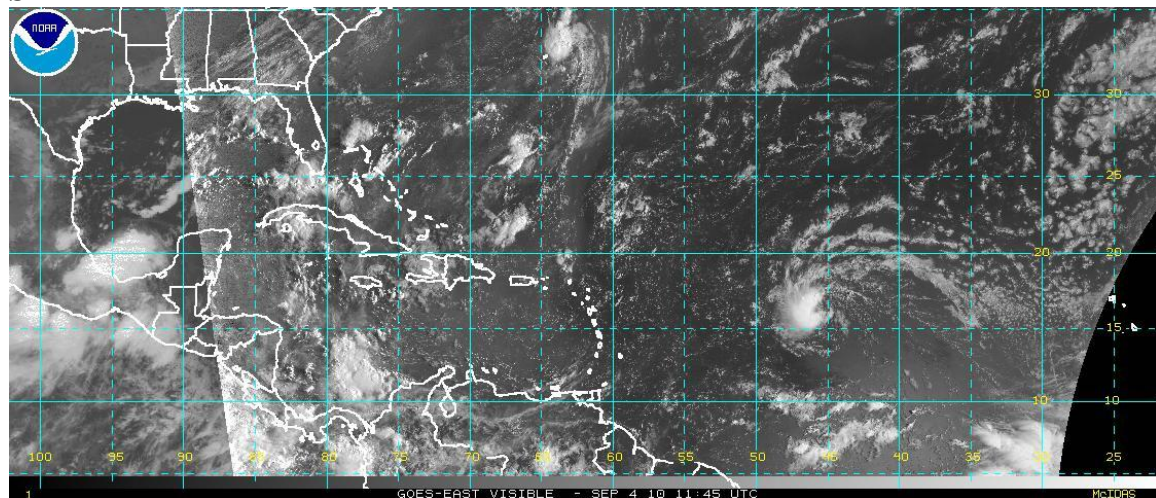
air analysis indicates the presence of aerosols and dry air over the Lesser Antilles extending to 70W in the eastern Caribbean (S5 and D1). Aerosols extend as far north as ex-Fiona, although it is not clear if this is all dust, or a combination of dust and continental dry air. Aerosols are also present to the West, South, and East of ex-Gaston. An AIRS sounding from 0400UTC indicates a very dry layer of air around 600 hPa to the SW of Gaston, indicating that the aerosols may be dust (S2). Furthermore, TPW imagery also indicates that dry air has at least begun to wrap around ex-Gaston (S4). PGI-39L also continues to interact with dust. Dust and dry air is also interacting with PGI-39L, as indicated by the presence of strato-cumulus clouds to the NE of the pouch, as well as high aerosol concentrations. The GOES-5 forecast from yesterday and the previous day was very accurate for today's forecast, which yields a relatively high degree of confidence in its forecast today for the extended outlook. It indicates that the dust in the Atlantic will become less prevalent over the next few days. However, a strong dust outbreak is still forecasted to reach the Atlantic by Wednesday afternoon (D3).

## Images used in discussion:

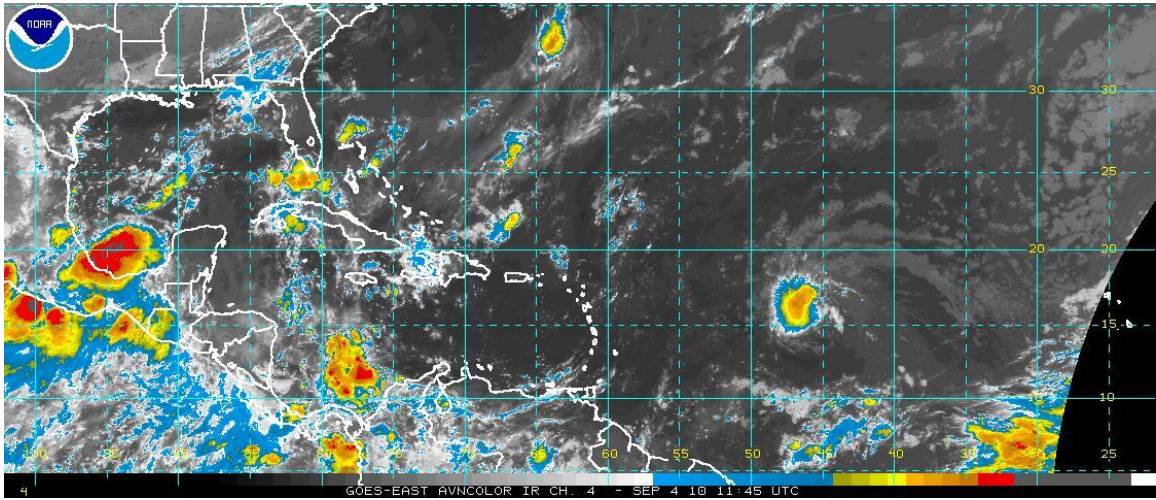
S1



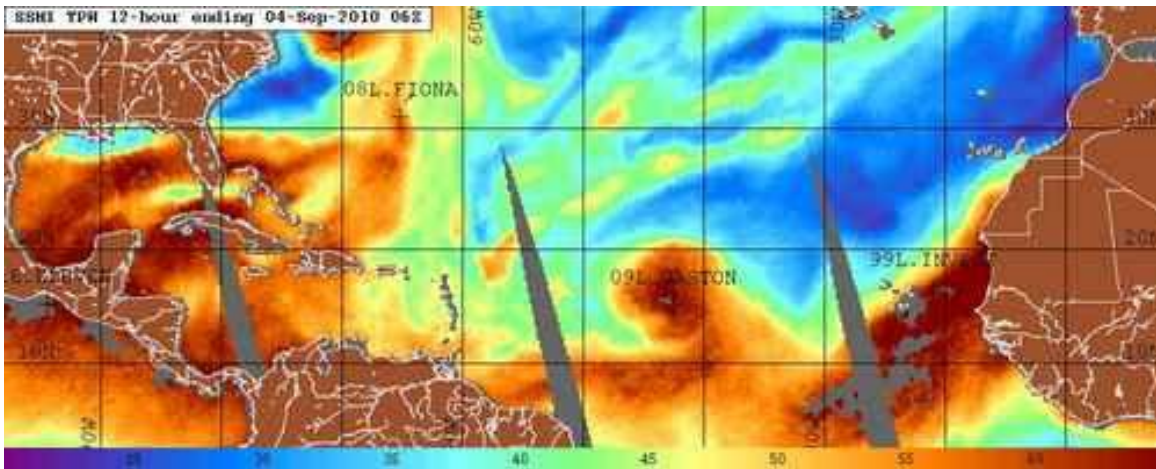
S2



S3

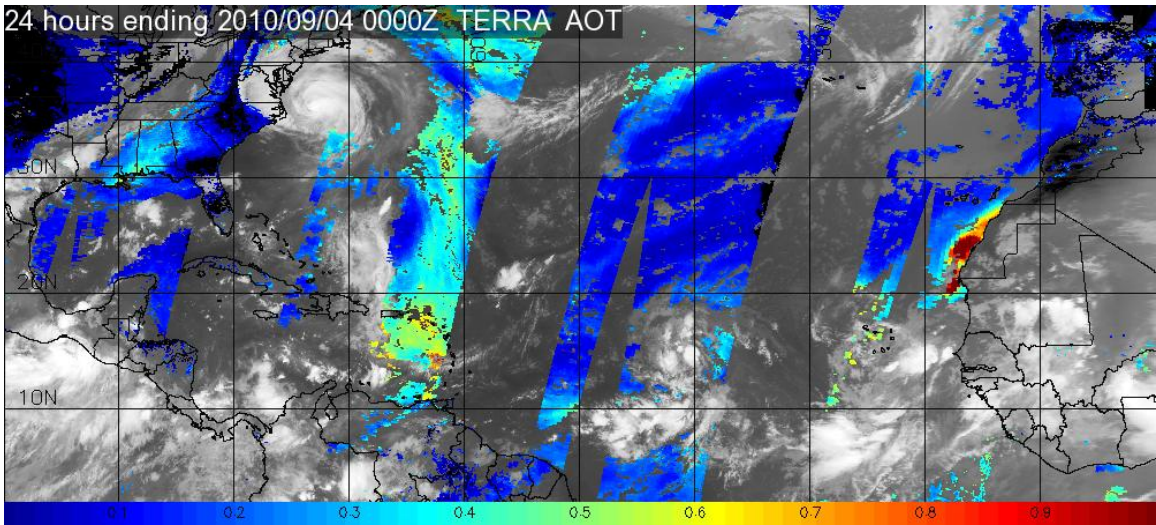


S4

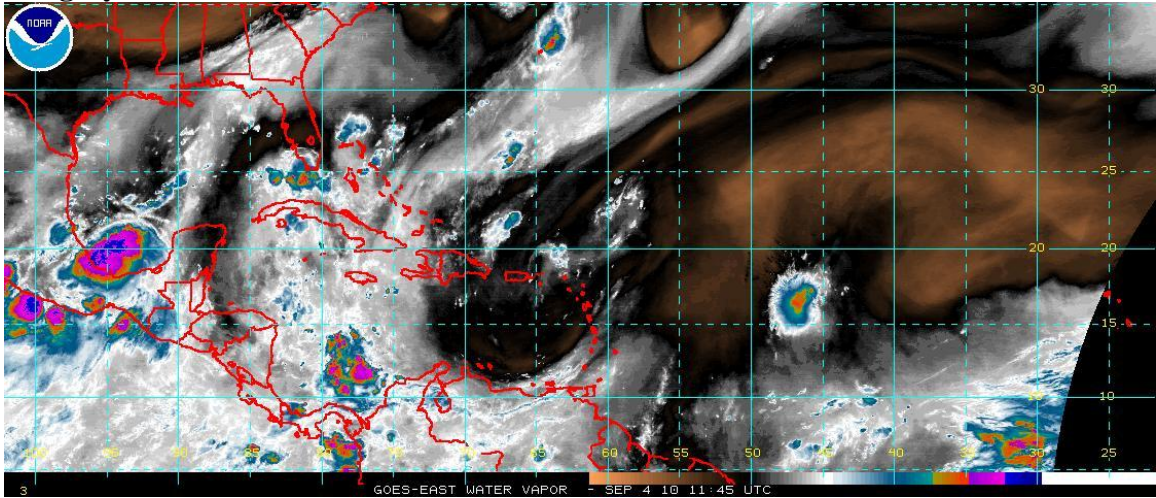


S5 AOT from JPL: Terra:

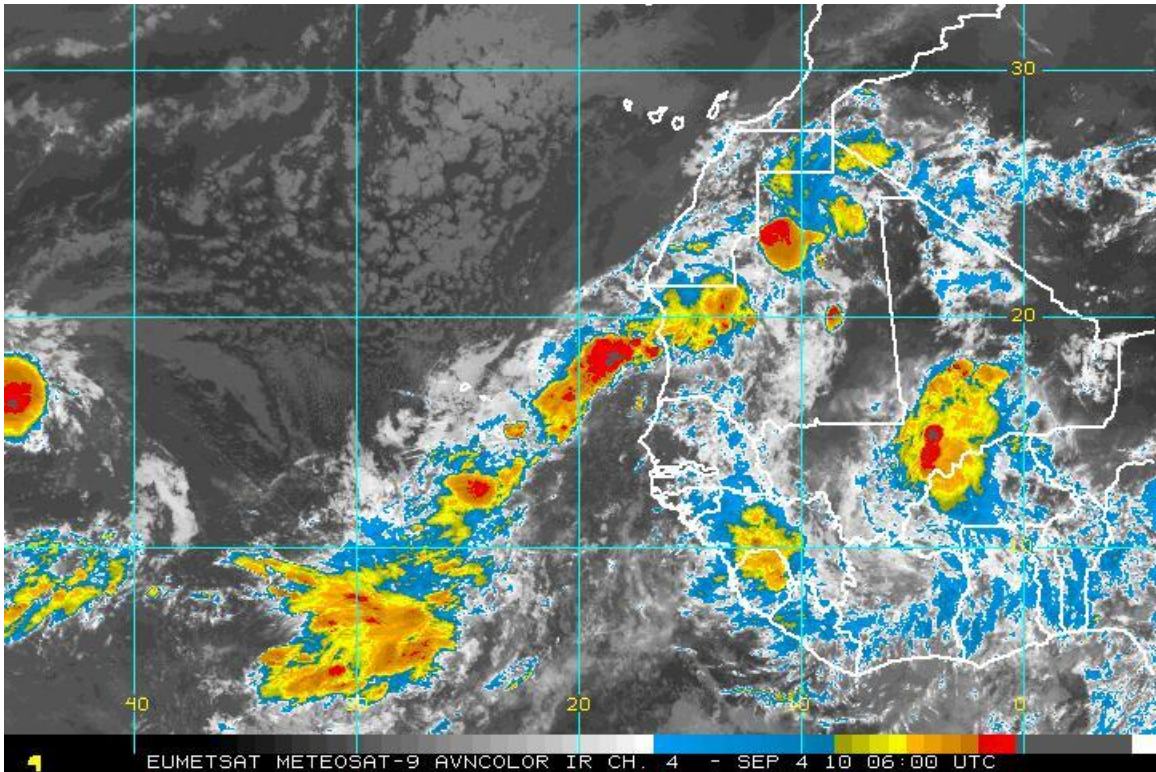
24 hours ending 2010/09/04 0000Z TERRA AOT



# S6 Water Vapor Imagery

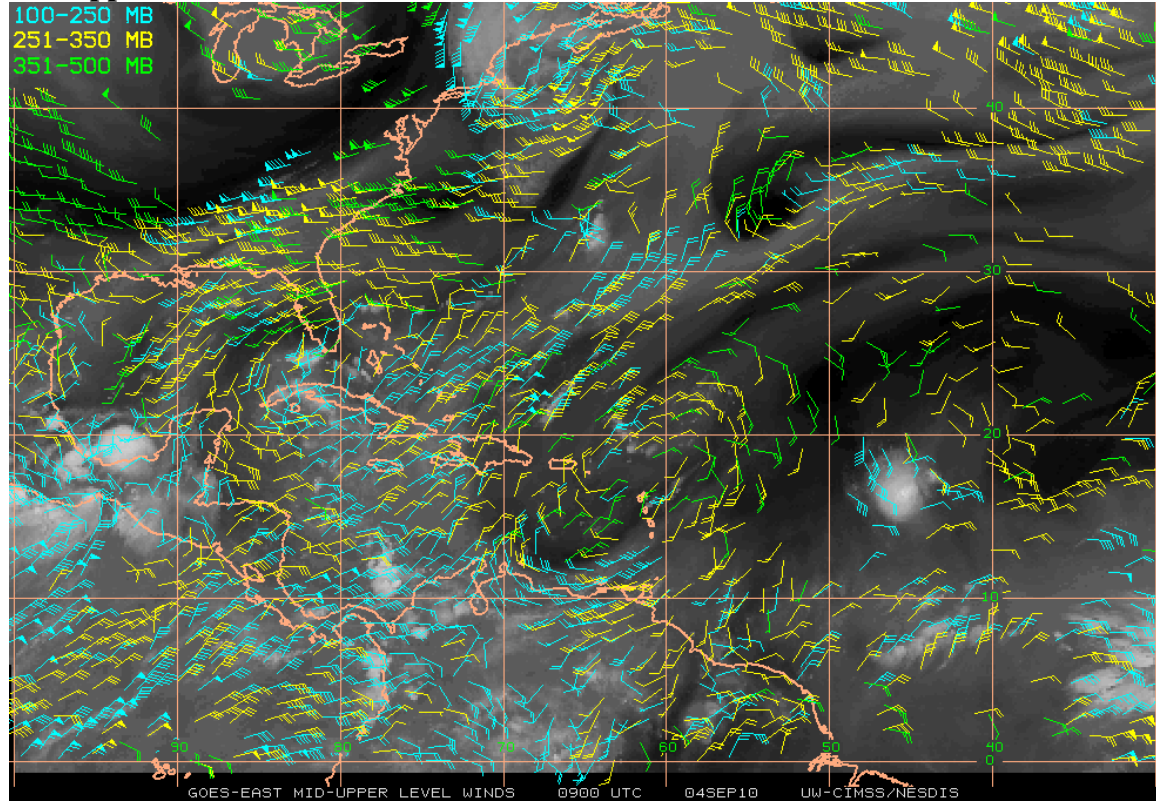


S7

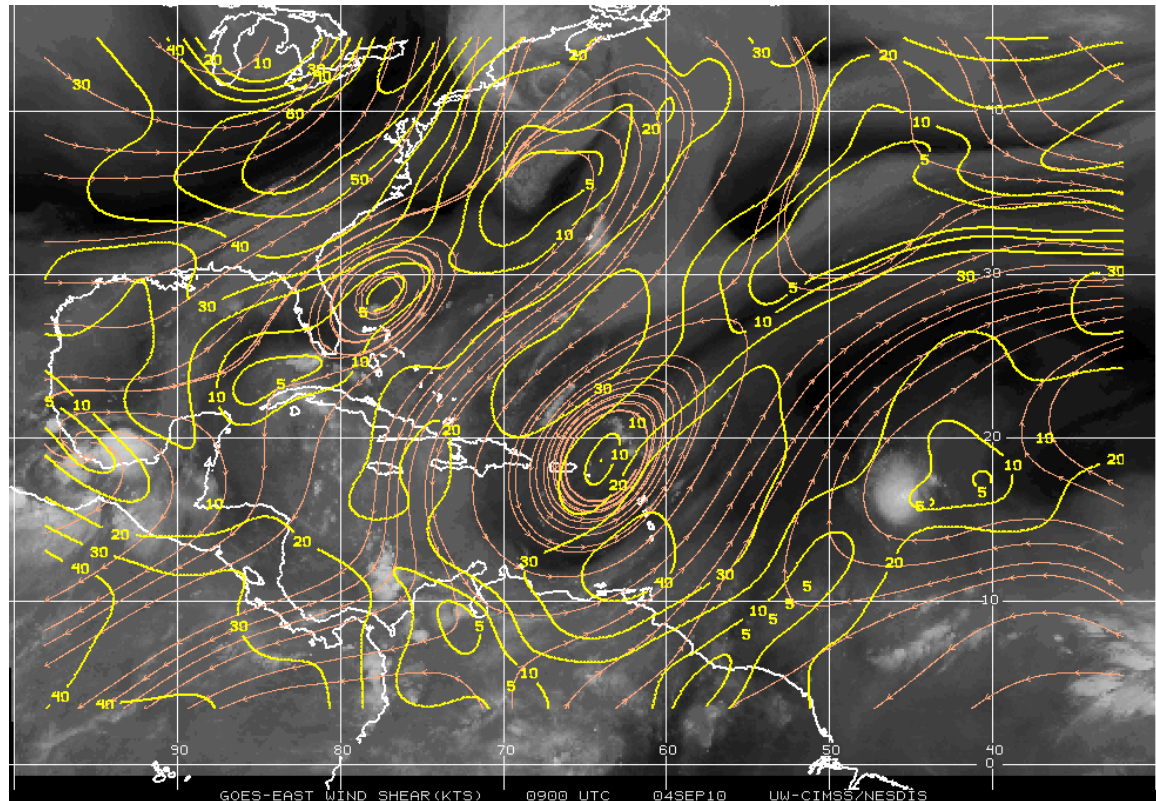


## CIMSS Analyses:

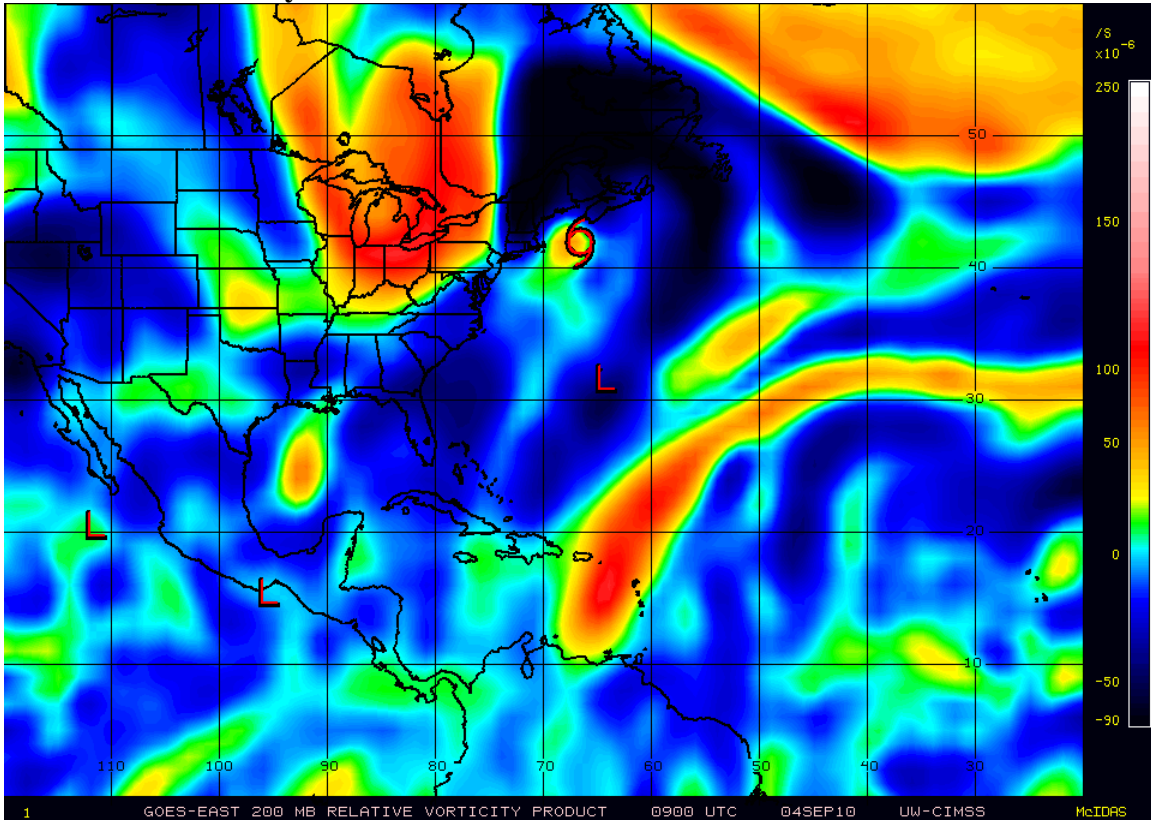
### C1- Upper Level Winds



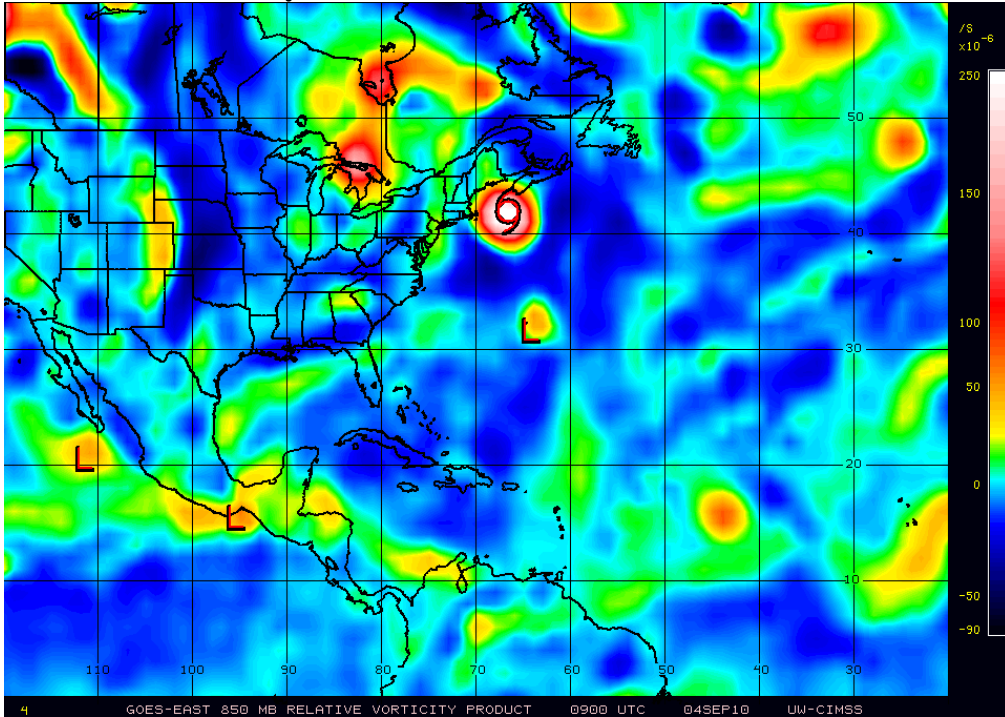
### C2- Wind Shear



### C3- 200 hPa Vorticity

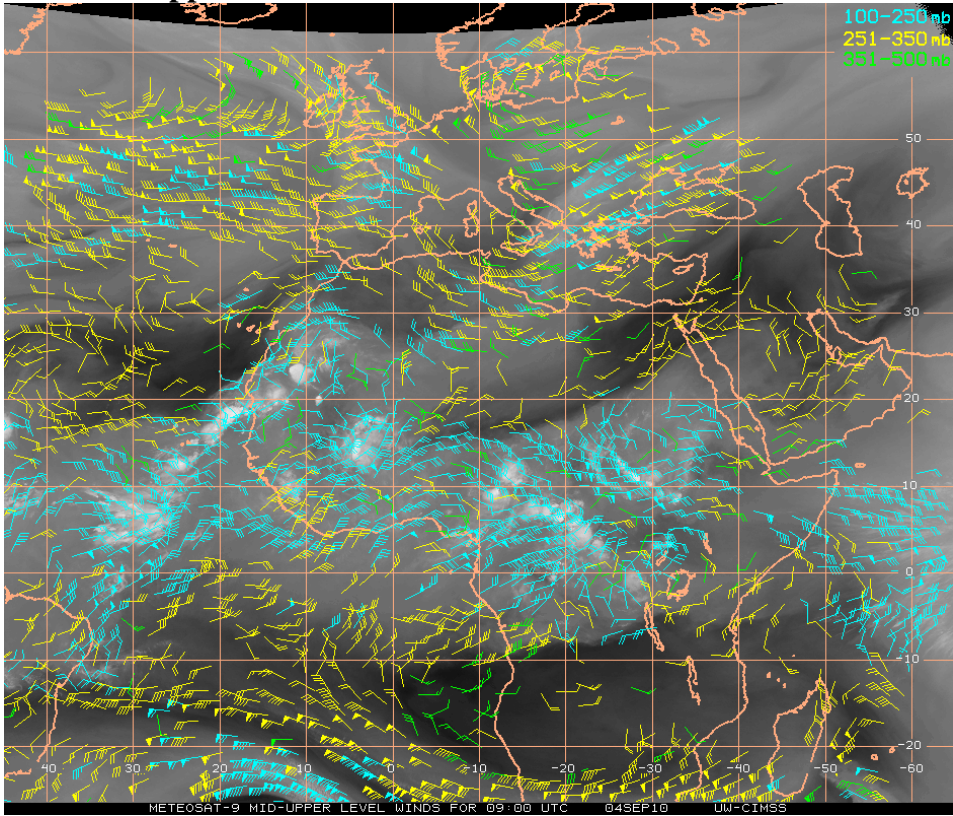


### C4- 850 hPa Vorticity



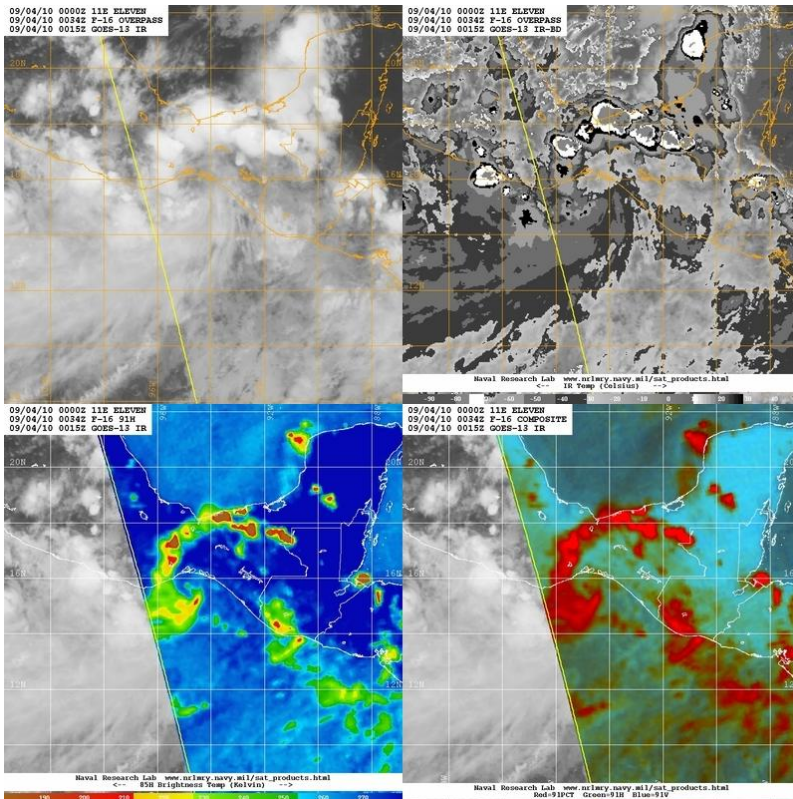


### C5 Africa Upper Level Winds:

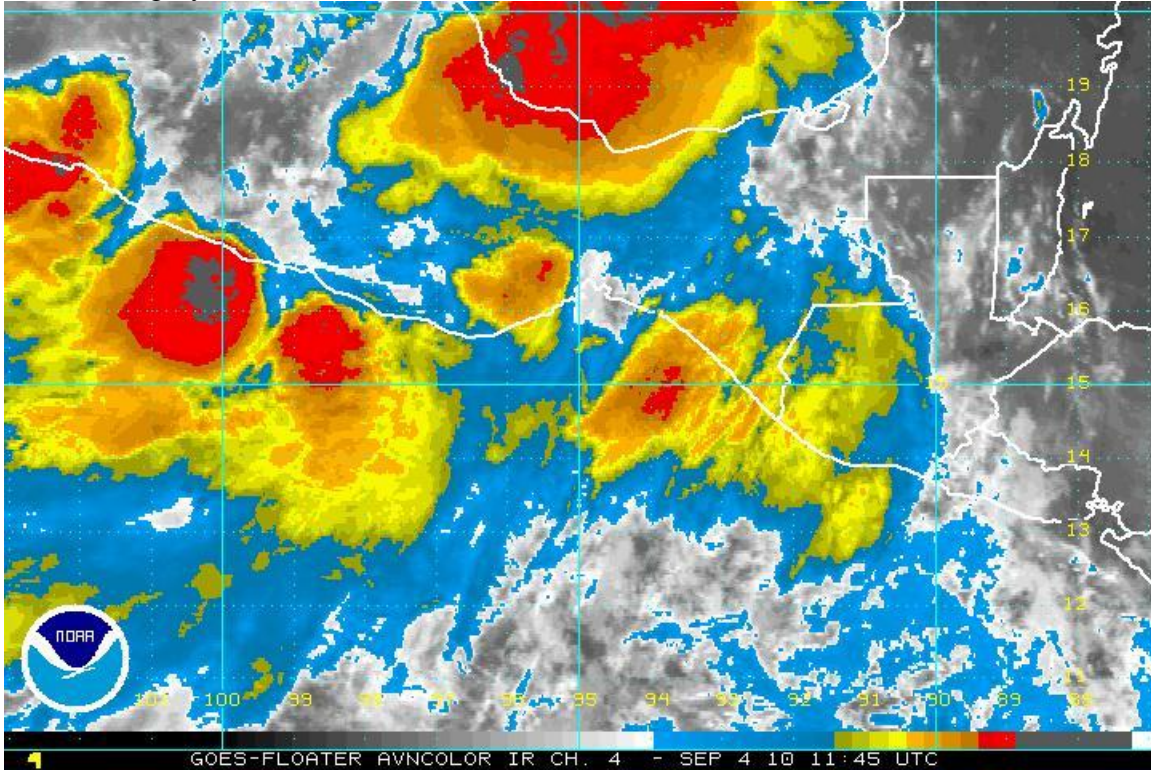


### Bay of Campeche disturbance/TD 11-E:

#### B1: SSMIS 0034 UTC 9/4



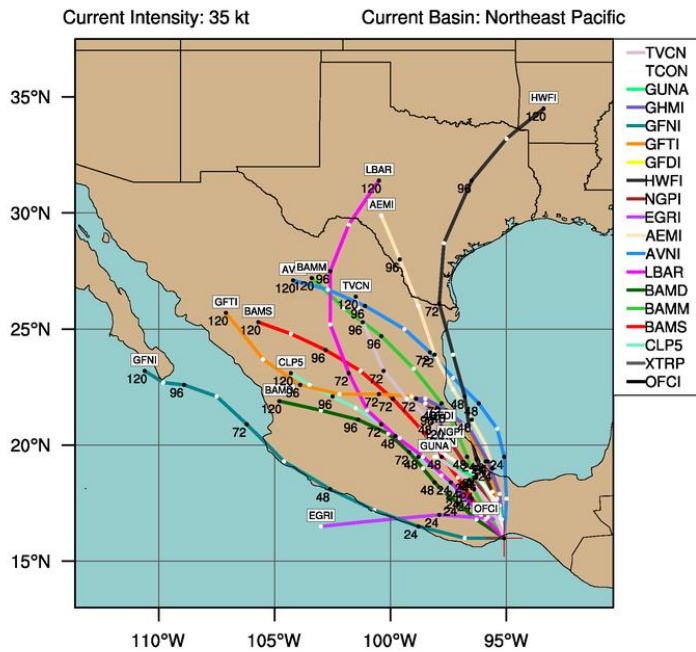
B2: IR Imagery 1145 UTC 9/4:



B3:

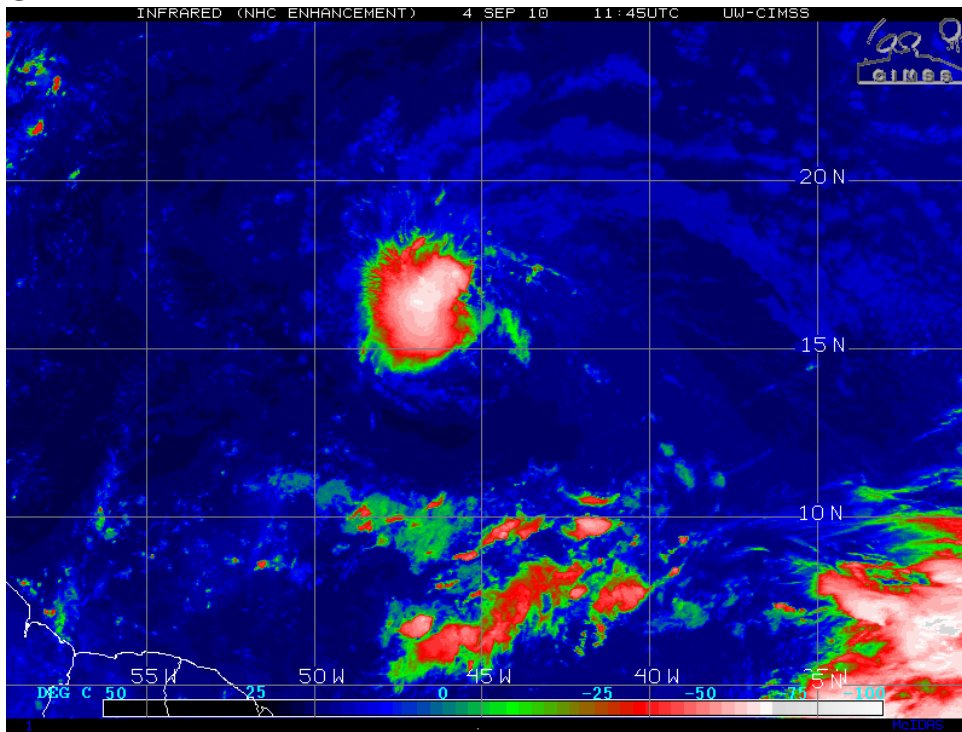
## TROPICAL STORM ELEVEN (EP11)

Early-cycle track guidance valid 0600 UTC, 04 September 2010

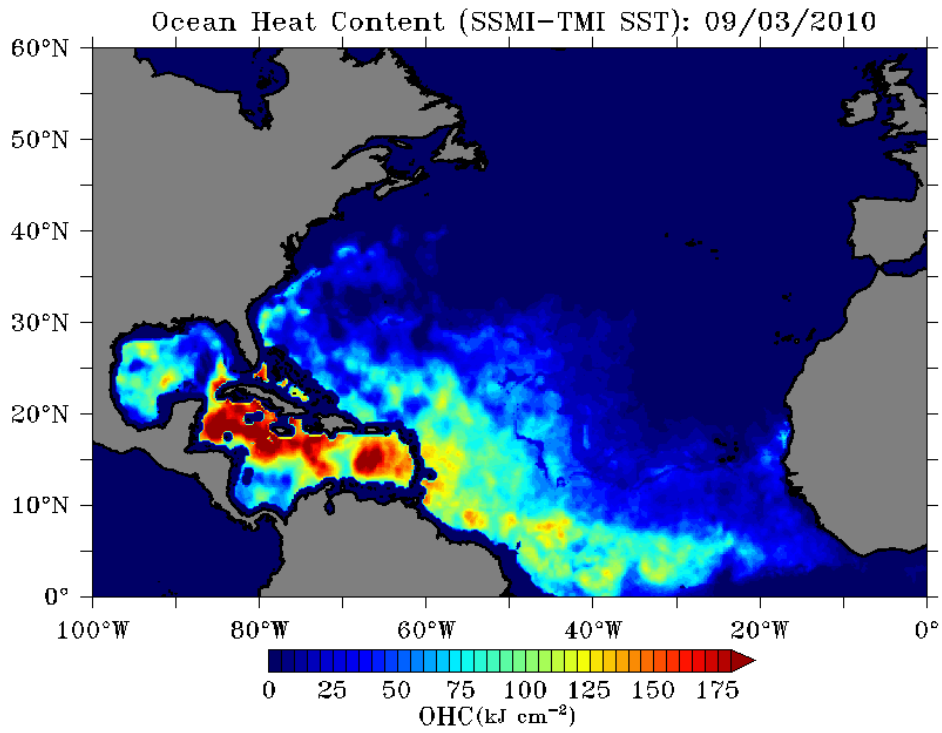


This plot does not display official storm information. Use for information purposes only.  
DO NOT USE FOR LIFE AND DEATH DECISIONS!

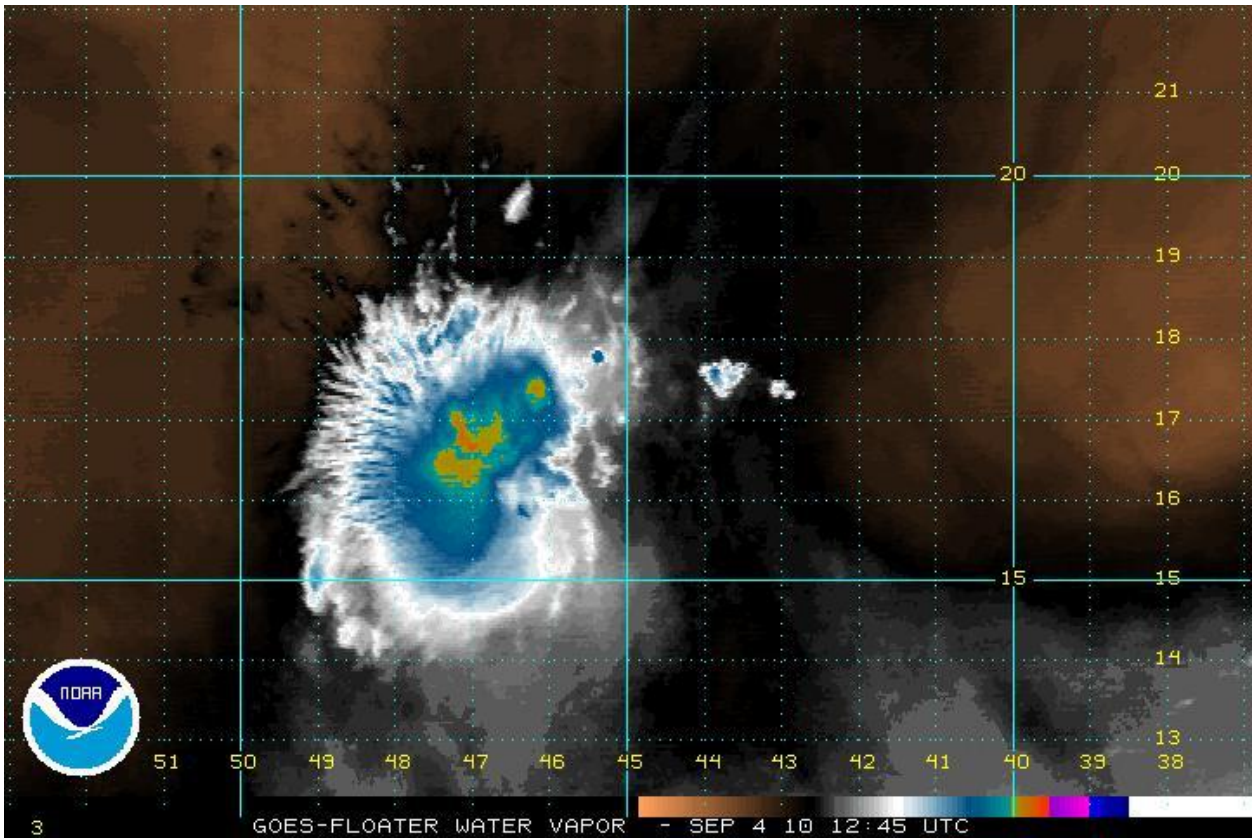
**G1**



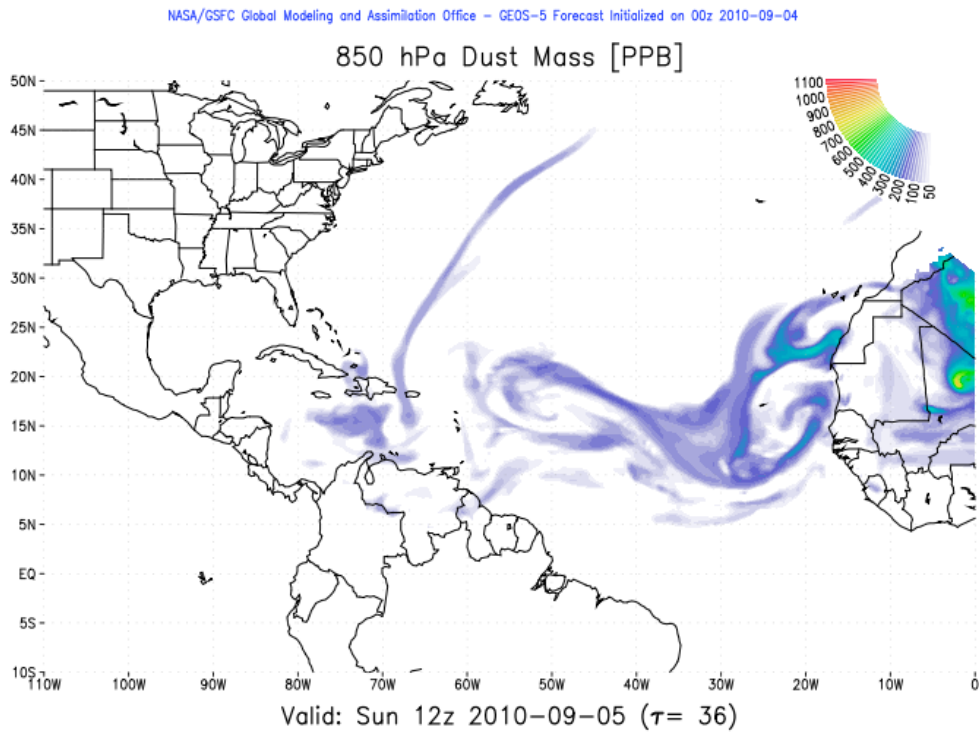
**G2**



G3



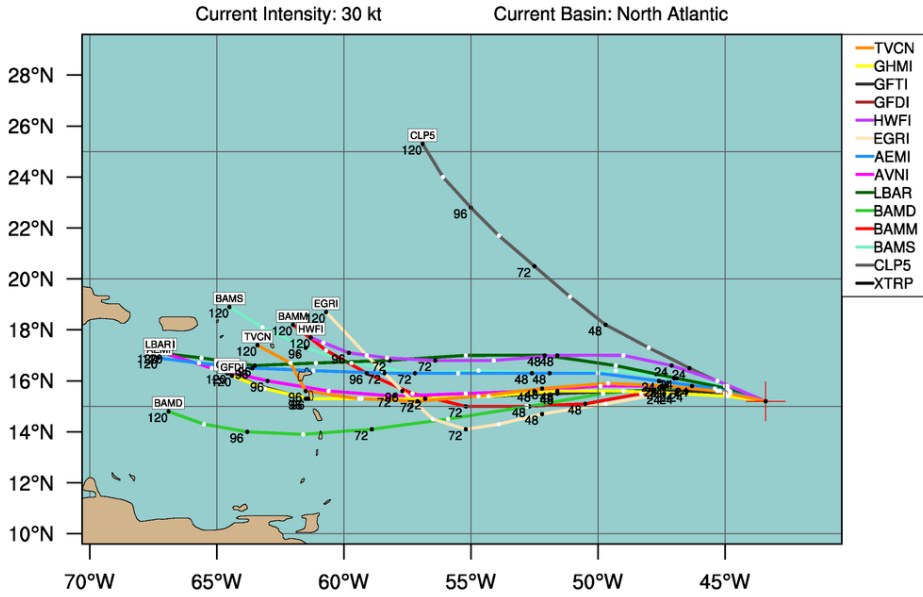
G4



G5

## LOW GASTON (AL09)

Early-cycle track guidance valid 0600 UTC, 04 September 2010

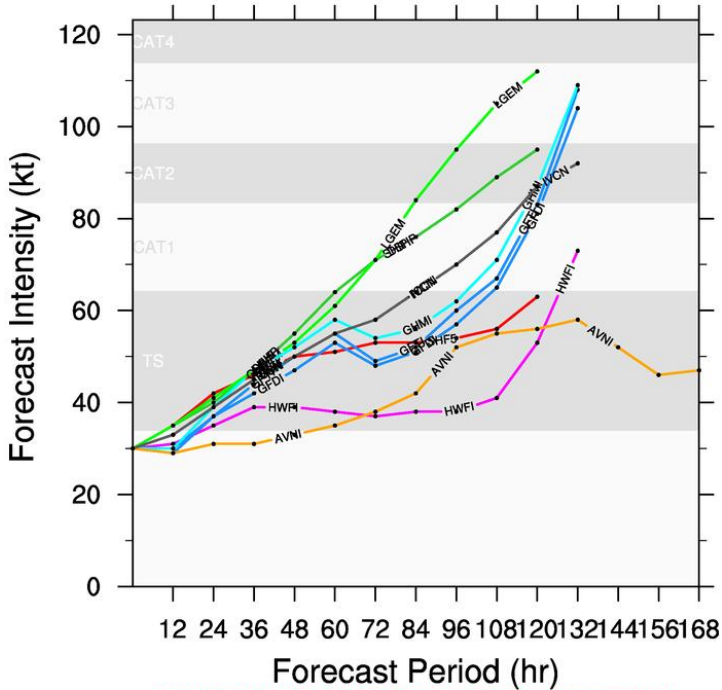


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G6

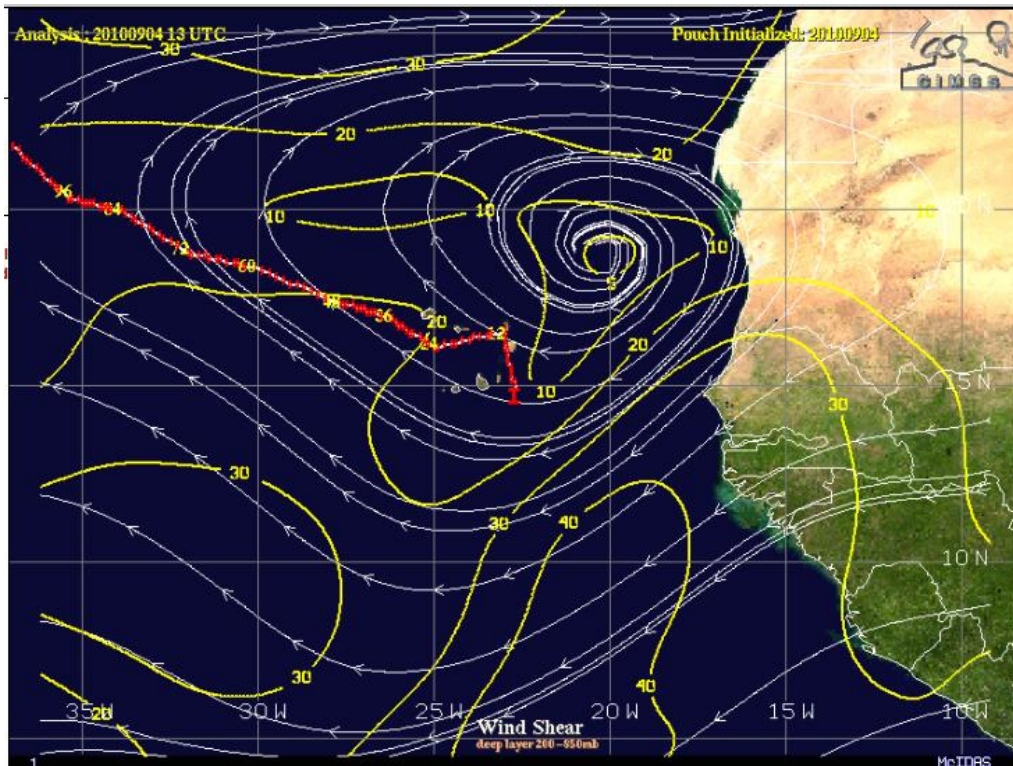
## LOW GASTON (AL09)

Early-cycle intensity guidance  
valid 0600 UTC, 04 September 2010

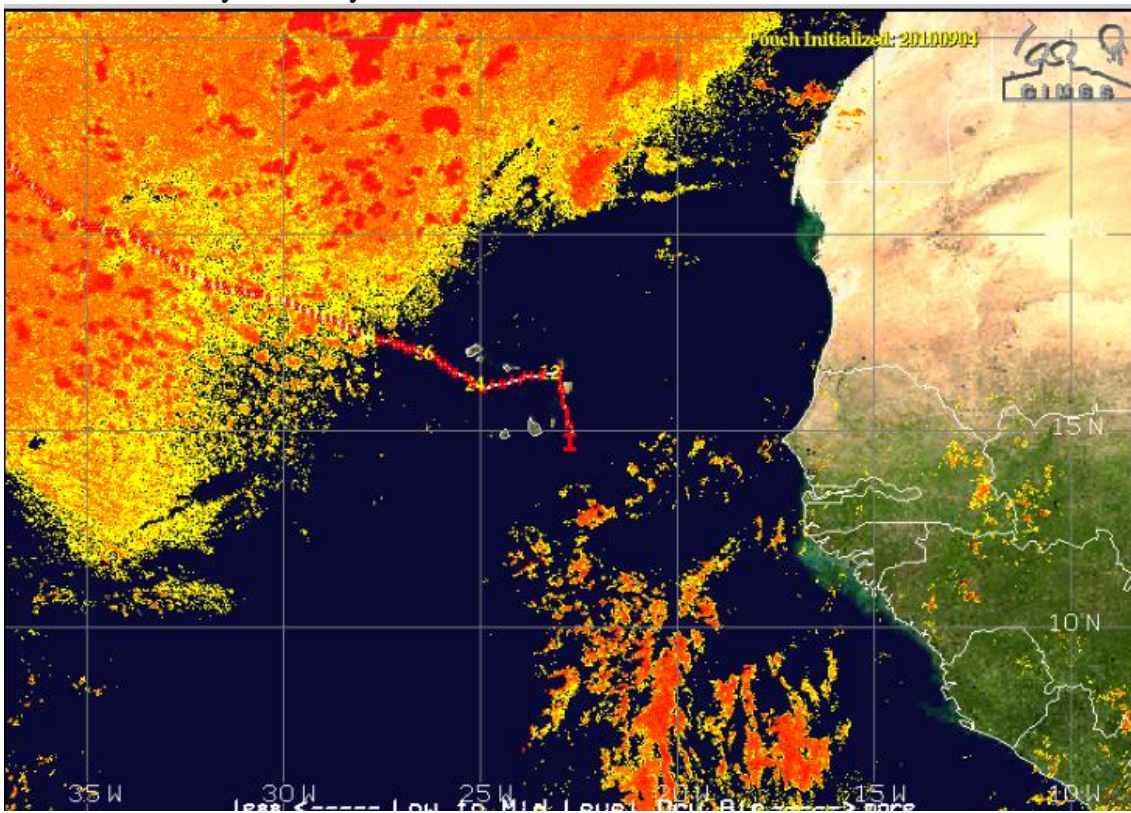


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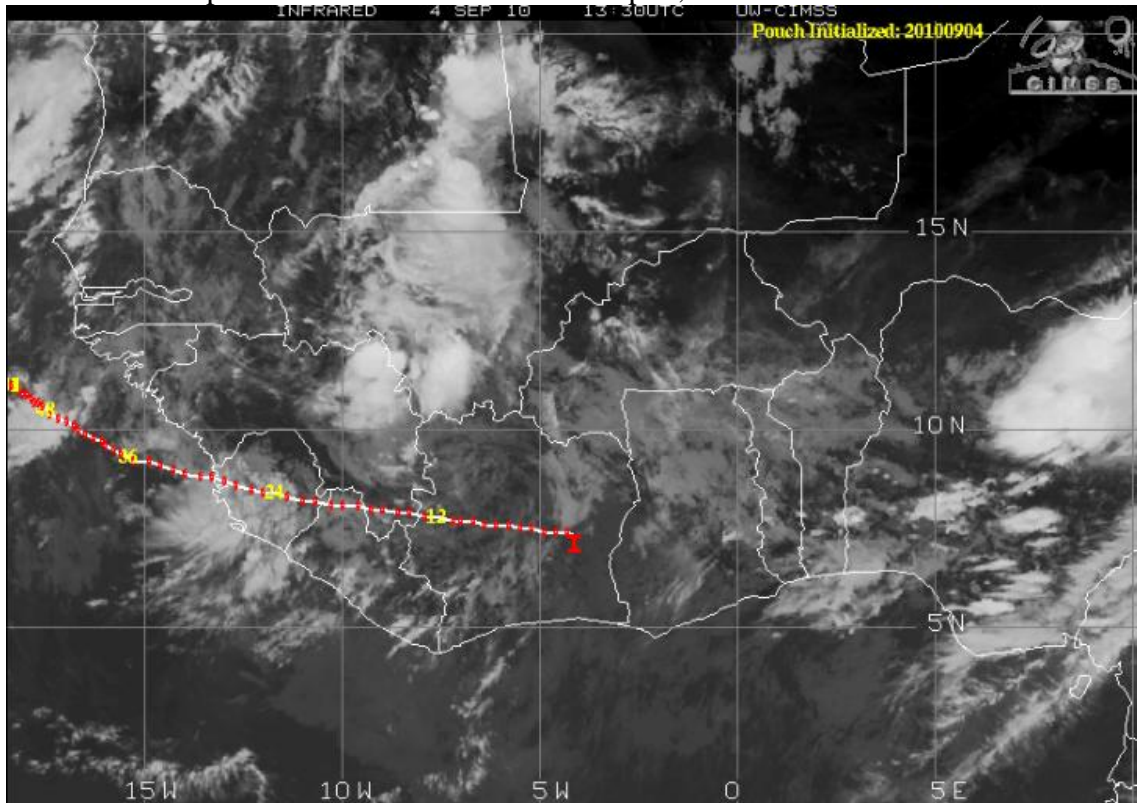




PG3 CIMMS Dry Air analysis

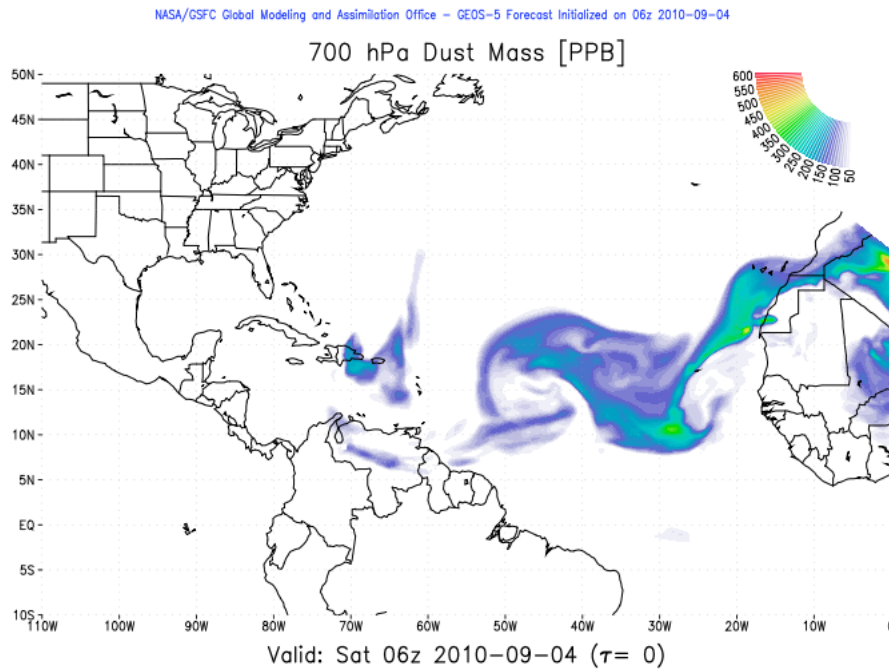


**PG4- PGI-41L position and track 13:30 UTC Sept 4, 2010:**



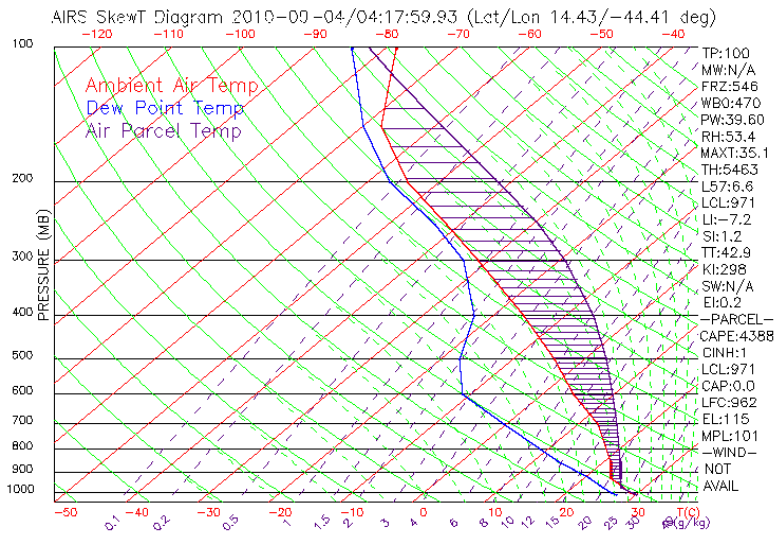
**Dust:**

**D1: GOES-5 0600UTC 700mb Dust Analysis**



**D2: 0418UTC AIRS sounding at 14.43N,44.41 W**





**D3: GOES-5 114 hour forecast for 700mb dust, valid 18Z 2010-09-08**

NASA/GSFC Global Modeling and Assimilation Office - GEOS-5 Forecast Initialized on 00z 2010-09-04

