

**Proprietary**

# **Baron Hurricane Index Atlantic Case Studies**

## **NOAA SBIR Phase II**



# Hurricane Ida

## November 7, 2009

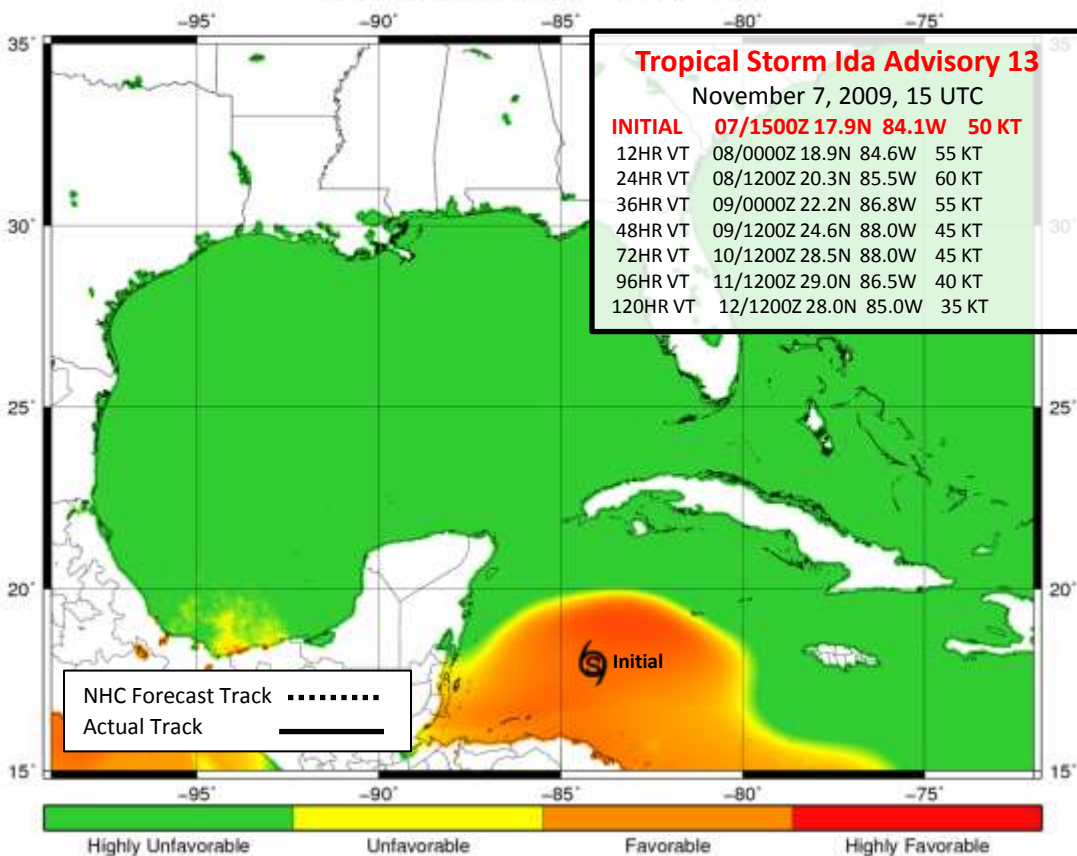
### Advisory 13

Ida at the time of Advisory 31 was a Tropical Storm that was reorganizing after crossing Nicaragua and Honduras. BHI in this region showed “Favorable” to “Highly Favorable” conditions for intensification. Ida quickly redeveloped an eyewall and strengthened to hurricane strength winds, peaking at 90 knots when in the Yucatan Channel. Ida moved into the Gulf and interacted with cooler November waters, and experienced high wind shear. The shear separated the convection from the storm center, and the cool SST prevented it from redeveloping. Ida made landfall as Tropical Storm on the Alabama coast.



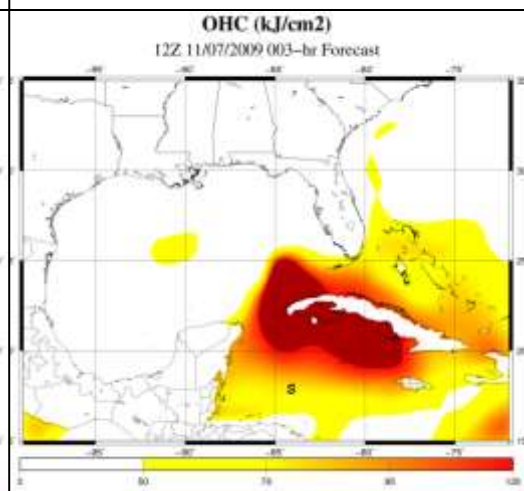
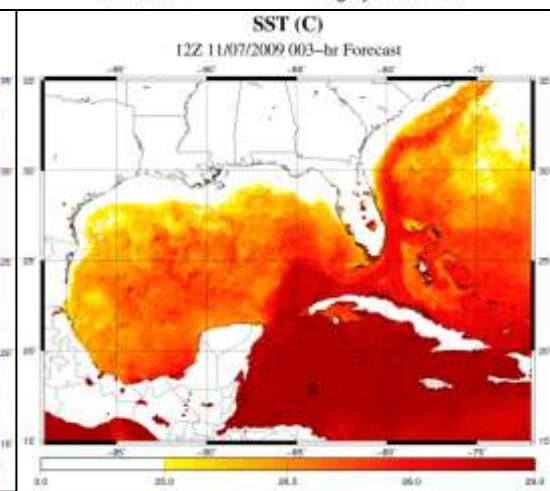
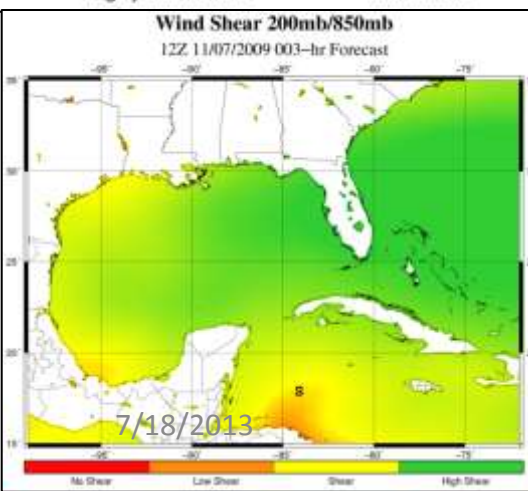
# Baron Hurricane Index

12Z 11/07/2009 003-hr Forecast



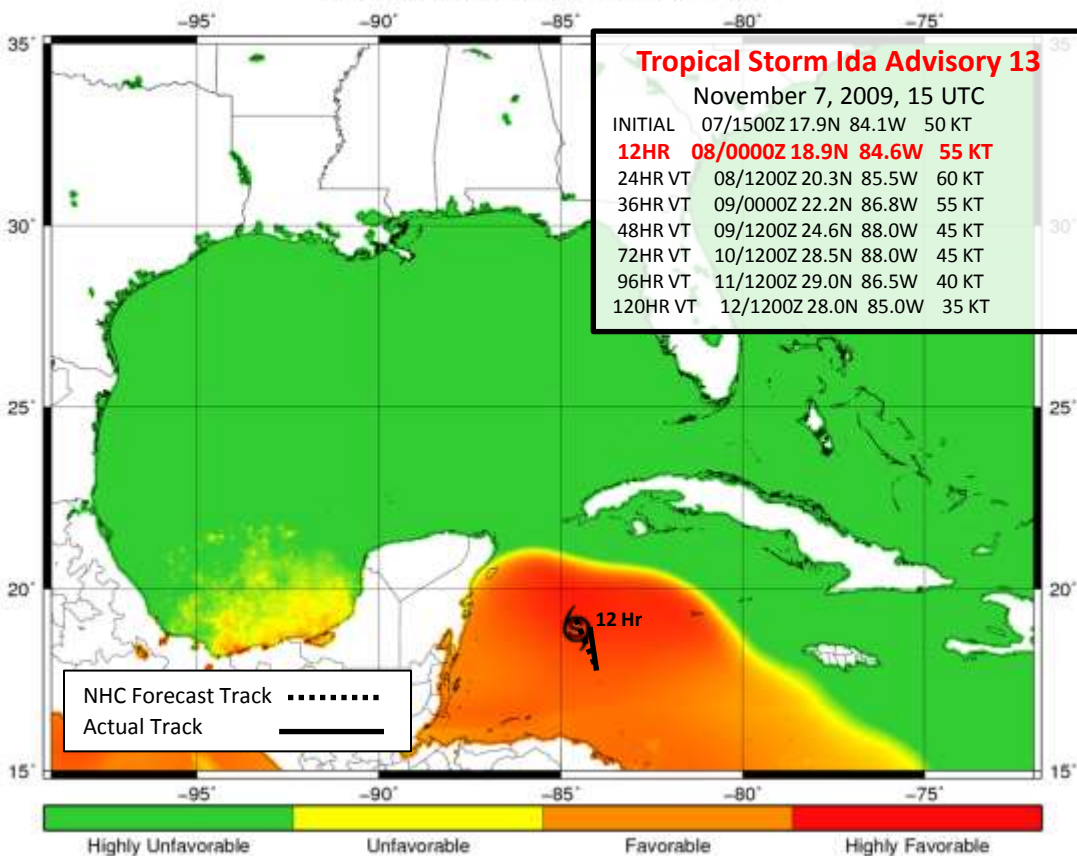
Advisory 13 INITIAL was issued as Tropical Storm Ida's position was in the Caribbean Sea. Wind Shear is considered Moderate, Sea Surface Temp is very high, and Ocean Heat Content is high, indicating favorable conditions for intensification at Ida's current position. Therefore, the BHI shows Ida's environment is "Highly Favorable" for strengthening.  
(NOTE: BHI data is only valid for this single point in time.)

ACTUAL: Ida is currently a Tropical Storm with winds of 50 knots.



# Baron Hurricane Index

12Z 11/07/2009 012-hr Forecast

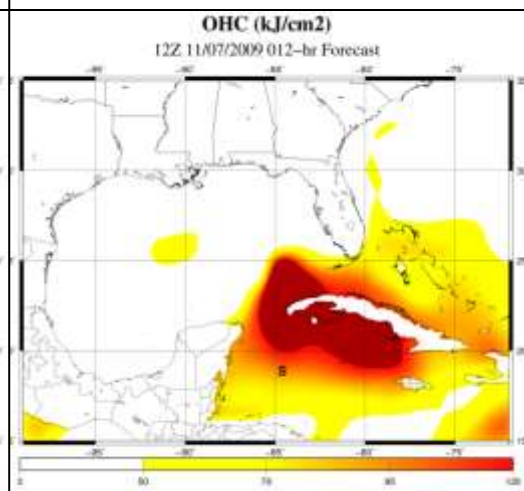
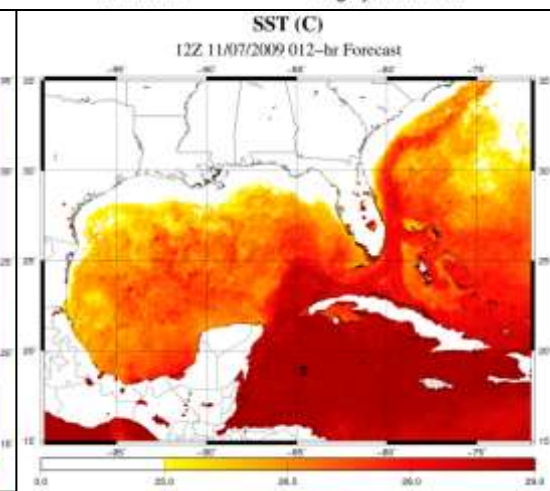
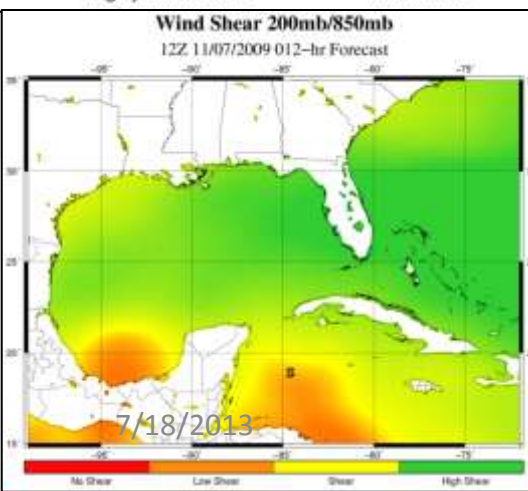


FORECAST: Advisory 13 12HR is a FORECAST for Ida's position and strength at 00z on 11/8/09.

Once again, all three products, Wind Shear, Sea Surface Temp, and Ocean Heat Content indicate favorable conditions. Therefore, BHI algorithm indicates that Ida is in an environment "Highly Favorable" for strengthening.

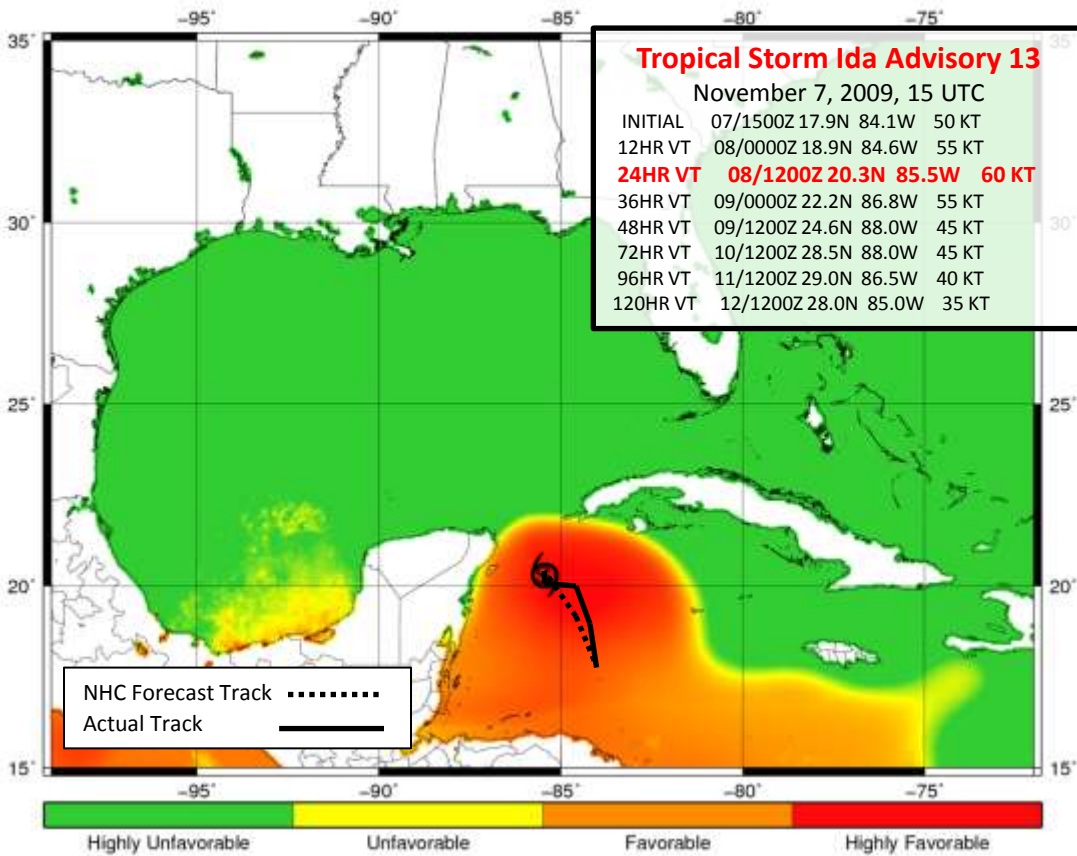
(NOTE: BHI data is only valid for this single point in time.)

ACTUAL: Ida continued to strengthen to 70 knots from 55 knots previously.



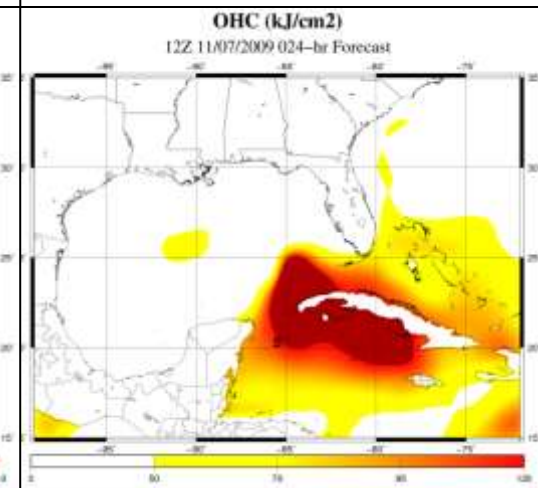
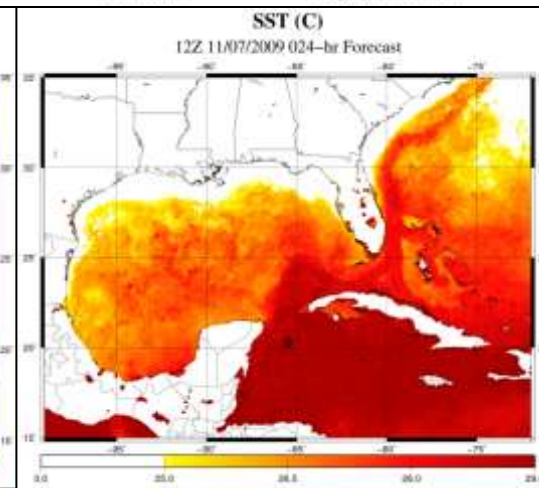
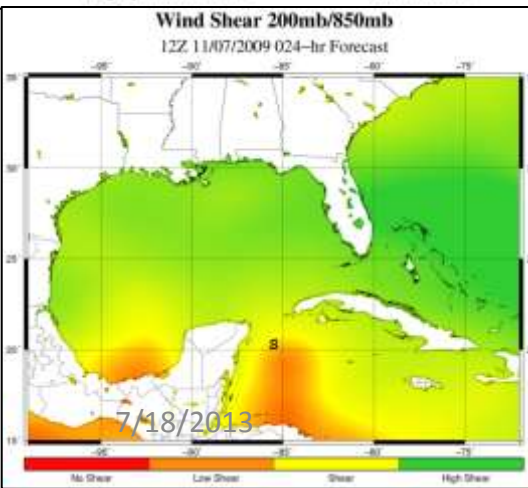
# Baron Hurricane Index

12Z 11/07/2009 024-hr Forecast



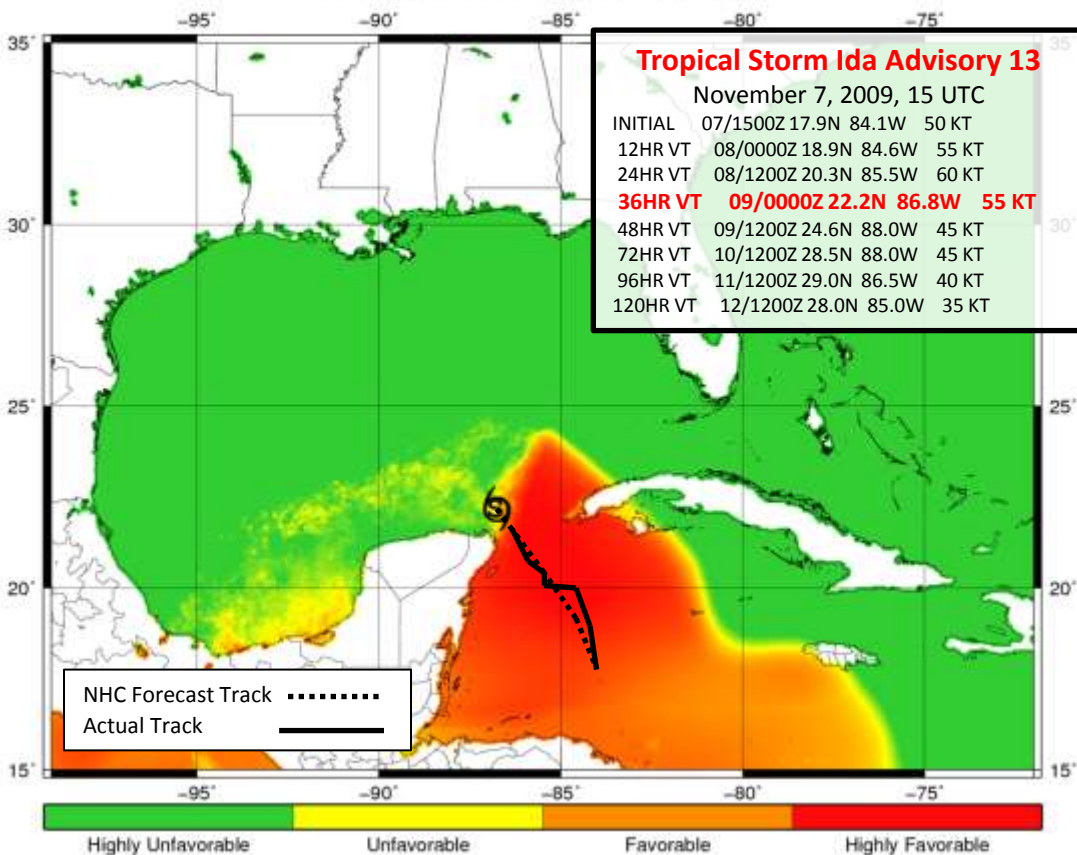
FORECAST: Advisory 13 24HR is a FORECAST for Ida's position and strength at 12z on 11/8/09. Here, all three products, Wind Shear, Sea Surface Temp, and Ocean Heat Content indicate favorable conditions. However, Shear is beginning to strengthen ahead of the storm, but not enough to make the BHI unfavorable. Therefore, BHI algorithm indicates that Ida is in an environment "Highly Favorable" for strengthening, and entering an area that is "Favorable". (NOTE: BHI data is only valid for this single point in time.)

ACTUAL: Ida continued to strengthen from 70 knots to 85 knots.



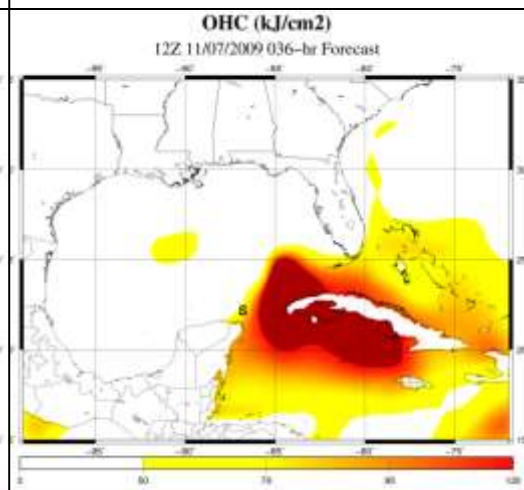
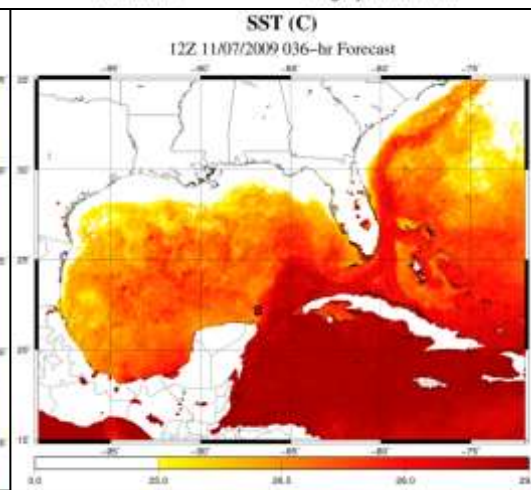
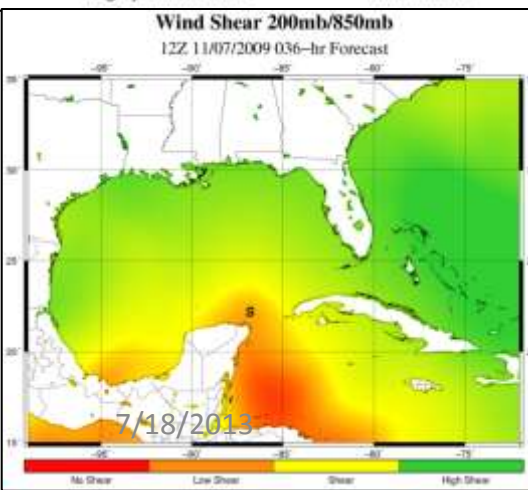
# Baron Hurricane Index

12Z 11/07/2009 036-hr Forecast



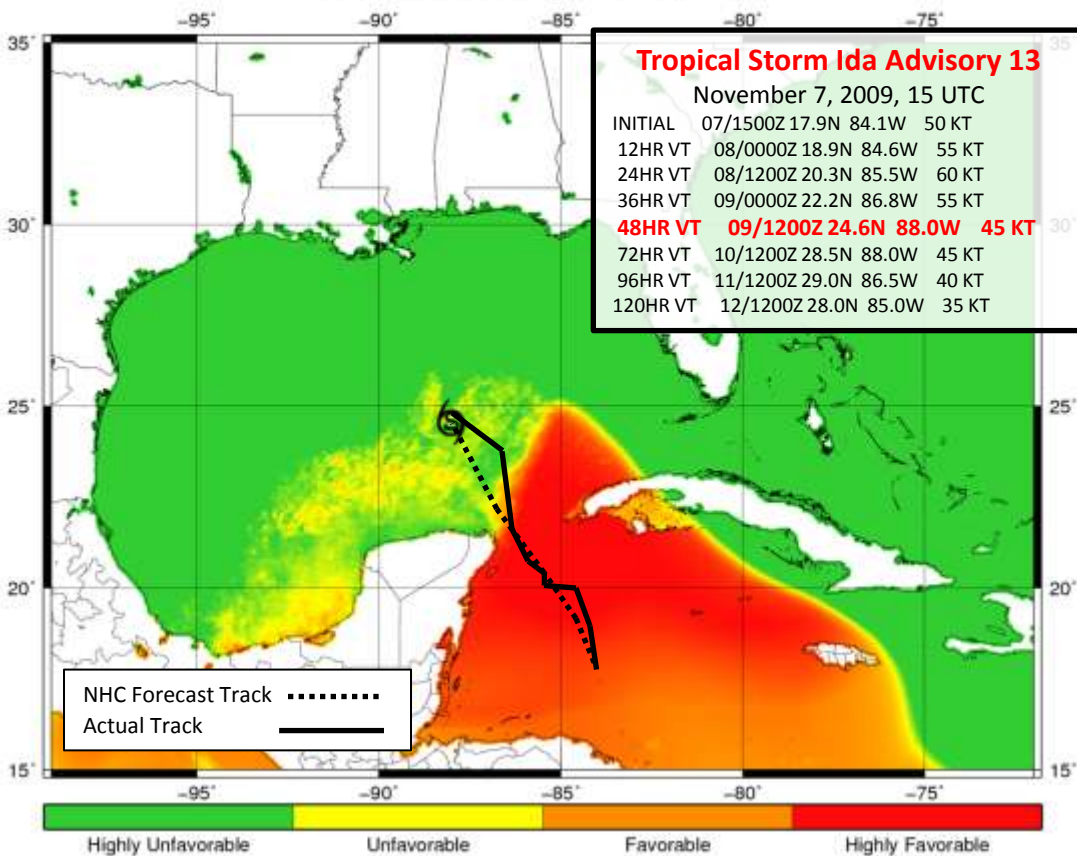
FORECAST: Advisory 13 36HR is a FORECAST for Ida's position and strength at 00z on 11/9/09. Here Wind Shear is still indicating Highly Favorable to Favorable conditions, but the Sea Surface Temp and Ocean Heat Content are at a transition point to cooler water. Therefore, BHI algorithm indicates that Ida is still mostly in an environment "Favorable" for strengthening, and entering an area that is "Unfavorable". (NOTE: BHI data is only valid for this single point in time.)

ACTUAL: Ida continued to strengthen from 85 to 90 knots. Ida reached its peak intensity here before moving into "Highly Unfavorable" conditions.



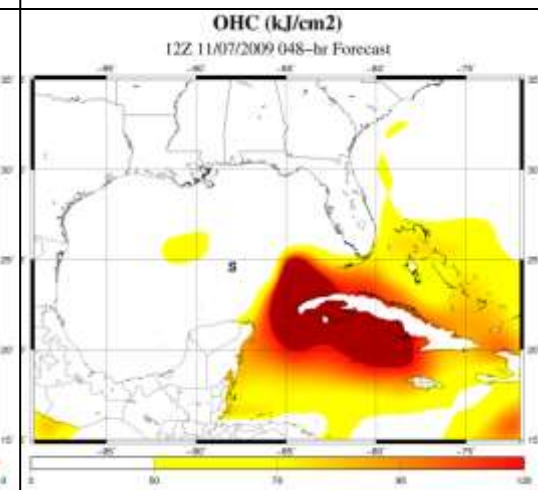
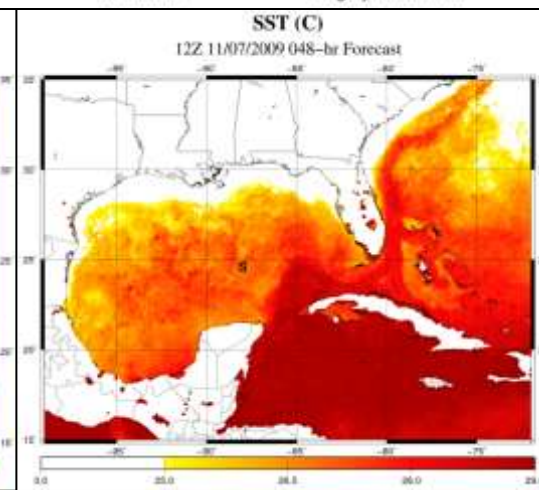
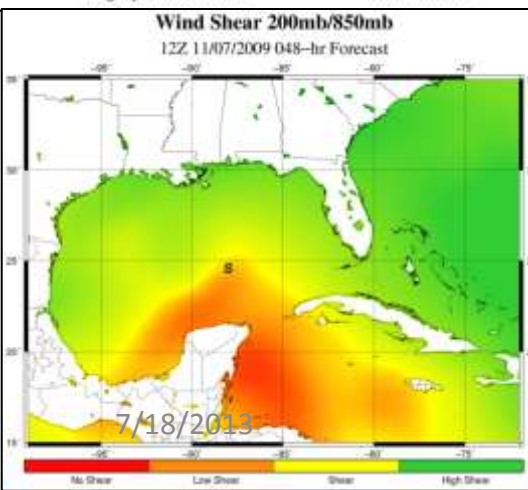
# Baron Hurricane Index

12Z 11/07/2009 048-hr Forecast



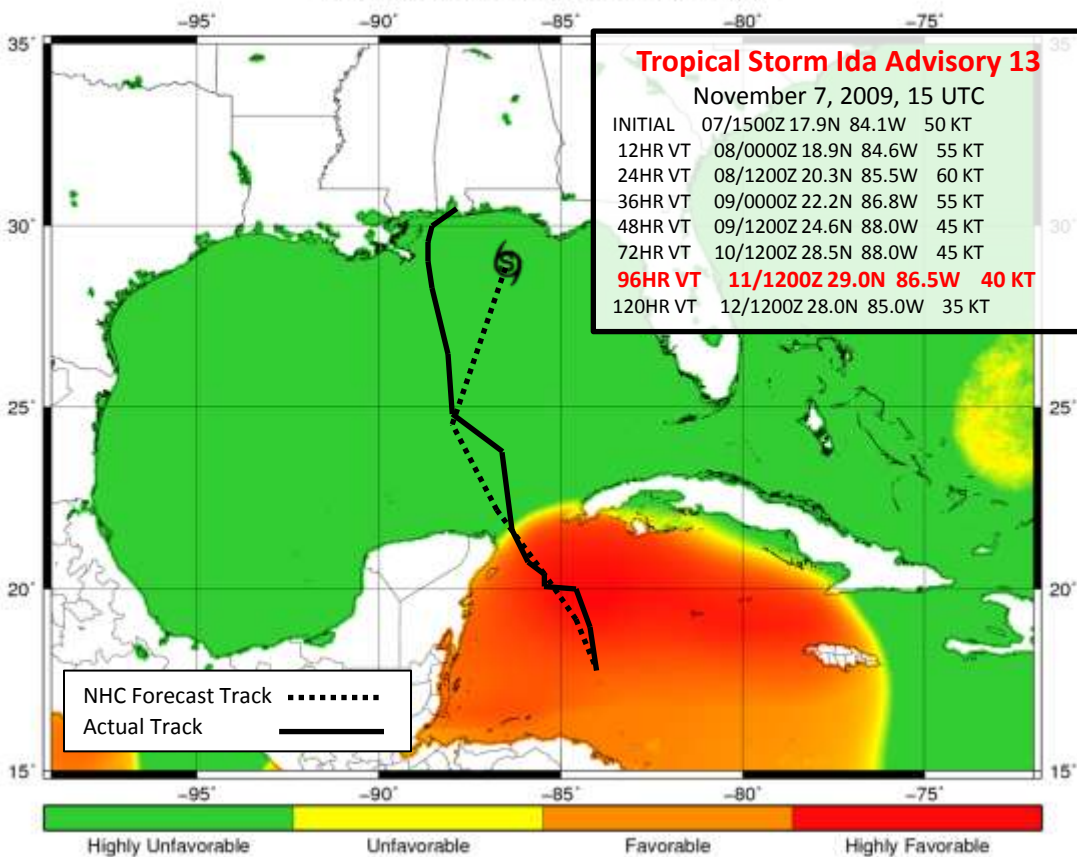
FORECAST: Advisory 13 48HR is a FORECAST for Ida's position and strength at 12z on 11/9/09. Low to moderate Wind Shear continues to signal Favorable conditions for Ida, however the Sea Surface Temps are low, and the Ocean Heat Content is mostly not existent. Ida is forecast to be in "Unfavorable" to "Highly Unfavorable" conditions for intensification due to low SST and no OHC, even though the Wind Shear is still low enough to support strengthening. (NOTE: BHI data is only valid for this single point in time.)

ACTUAL: By 48 hours, Ida had weakened from a 90 knot hurricane 12 hours ago, to a 60 knot Tropical Storm.



# Baron Hurricane Index

12Z 11/07/2009 096-hr Forecast



FORECAST: Advisory 13 96HR is a FORECAST for Ida's position and strength at 12z on 11/11/09. High Wind Shear has developed in the Northern Gulf, along with cool SST and no Ocean Heat Content. Ida is forecast to be in predominantly "Highly Unfavorable" conditions for intensification for the past 2 days now. (NOTE: BHI data is only valid for this single point in time.)

ACTUAL: Ida moved inland the day before and was dissipated by this time. It had steadily weakened moving through the Gulf.

