

Oceanographic Processes Generated by Hurricanes Ivan, Katrina, and Rita

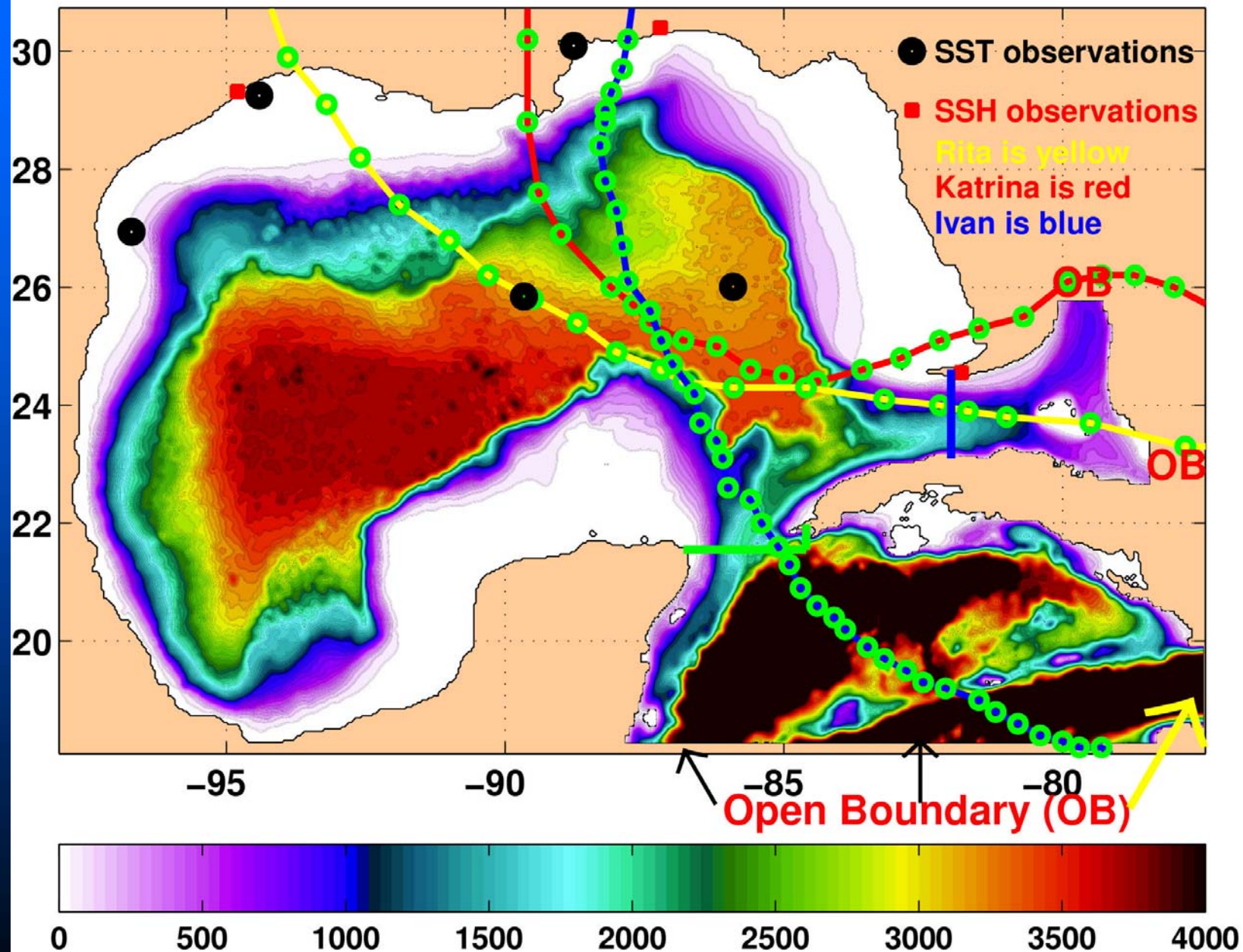
Luis Zamudio¹ & Pat Hogan²

**¹Center for Ocean-Atmospheric Prediction Studies, Florida State
University**

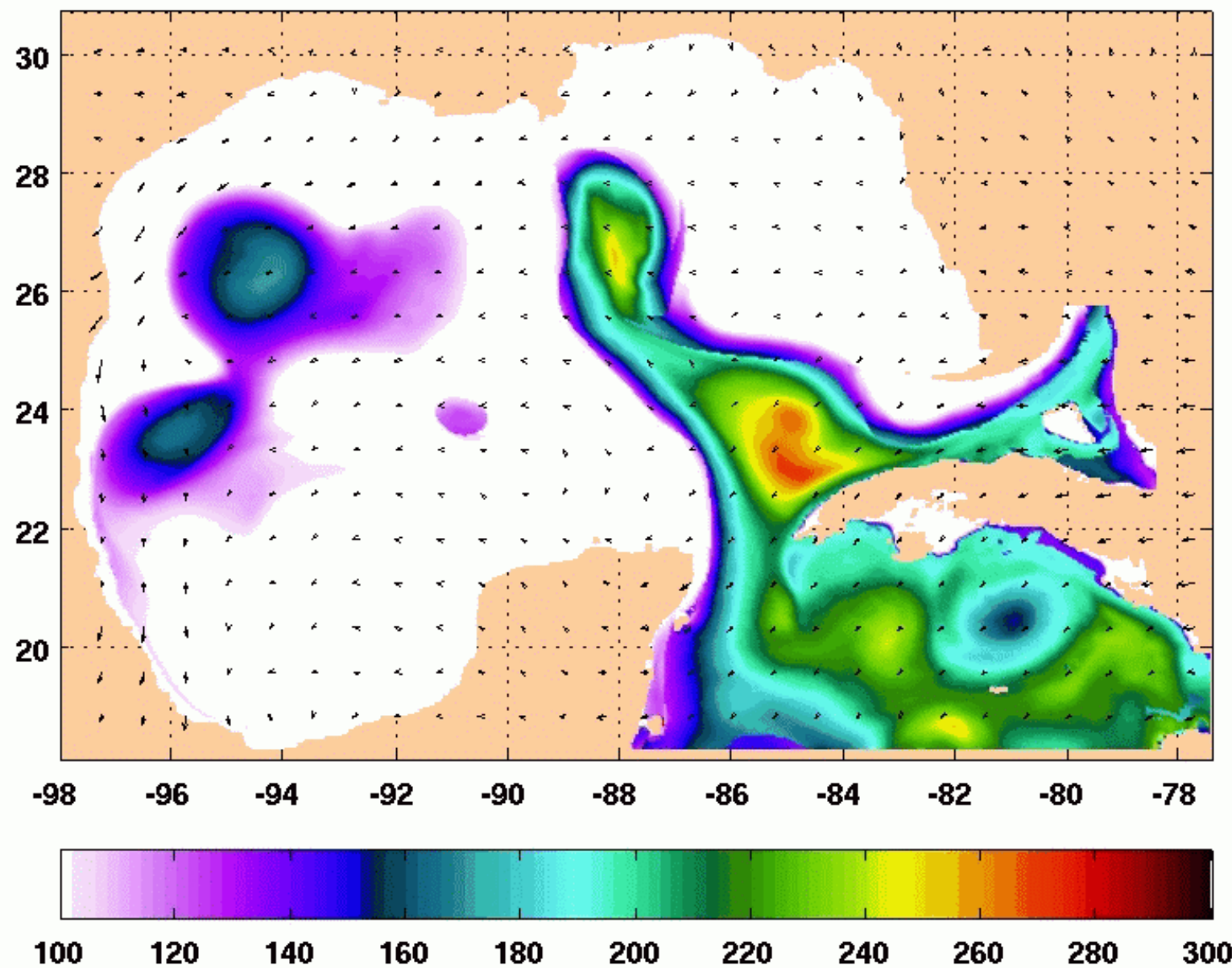
²Naval Research Laboratory, Stennis Space Center, Mississippi

**2008 Ocean Sciences Meeting (March 2-7)
Orlando, Florida.**

1/25° GOM-HYCOM Bottom Topography (m)

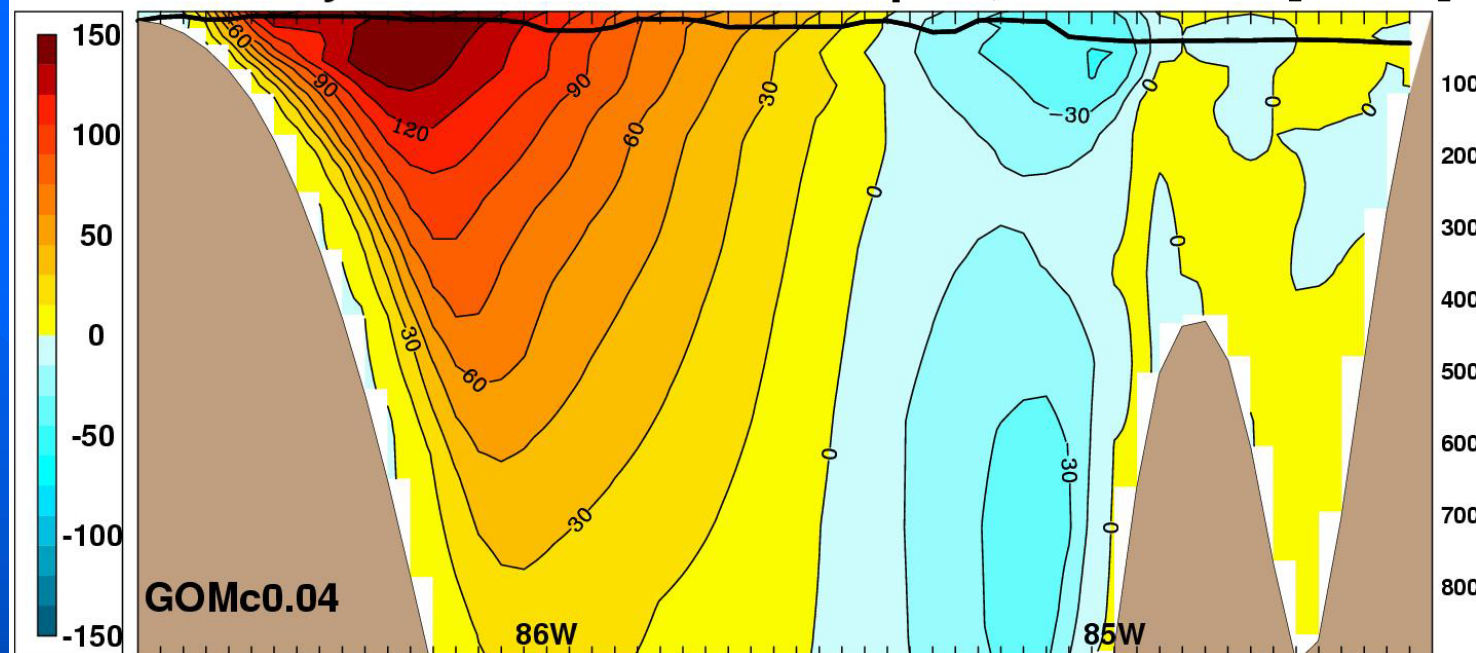


HYCOM 1/25° GOM-023 (1° NOGAPS WIND) Thermocline (20° C) Depth (M) for 2004-254-00

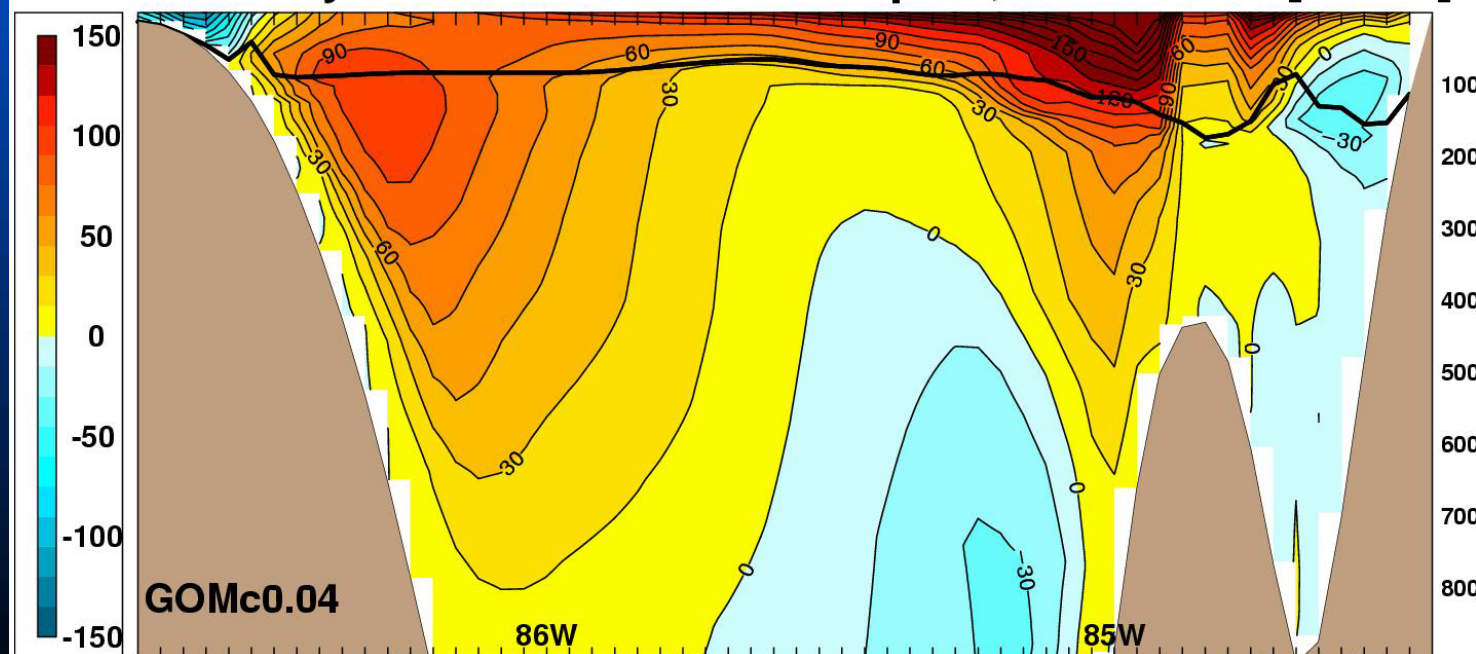


Y
U
C
A
T
A
N

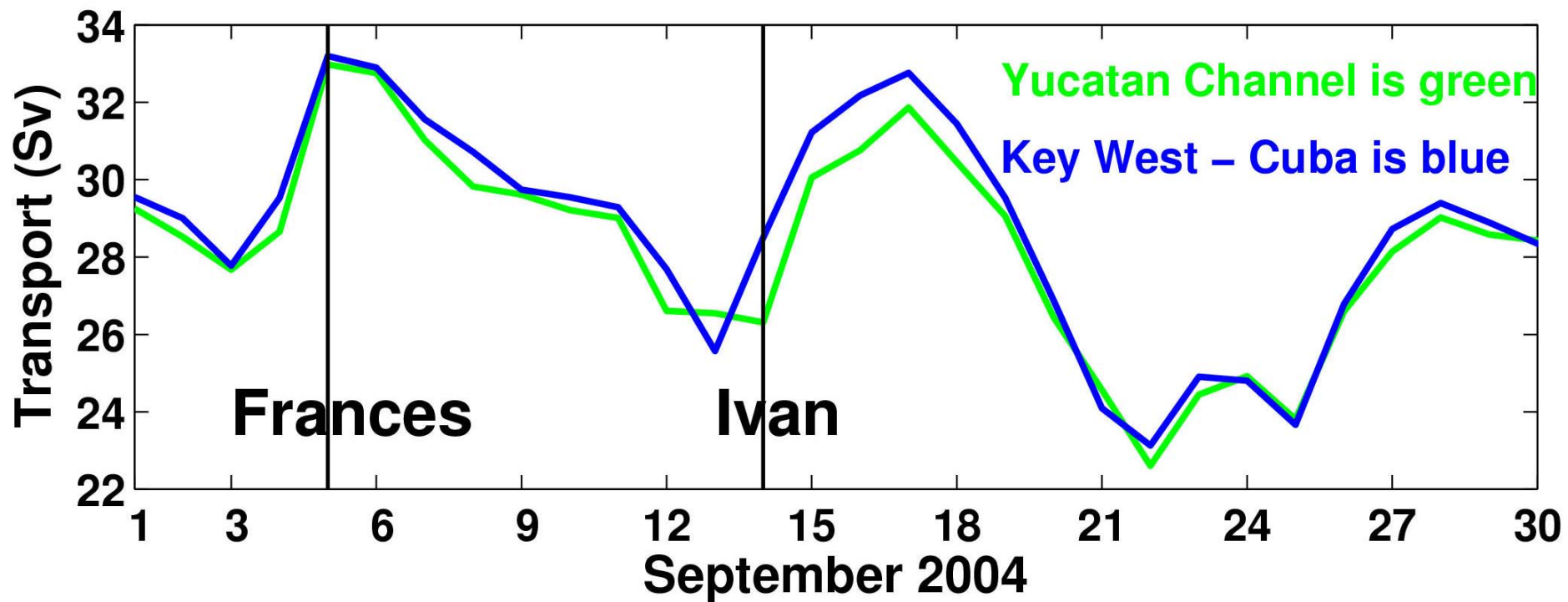
v-velocity zonal sec. 21.81n Sep 09, 2004 00Z [02.3H]



v-velocity zonal sec. 21.81n Sep 14, 2004 09Z [02.3H]

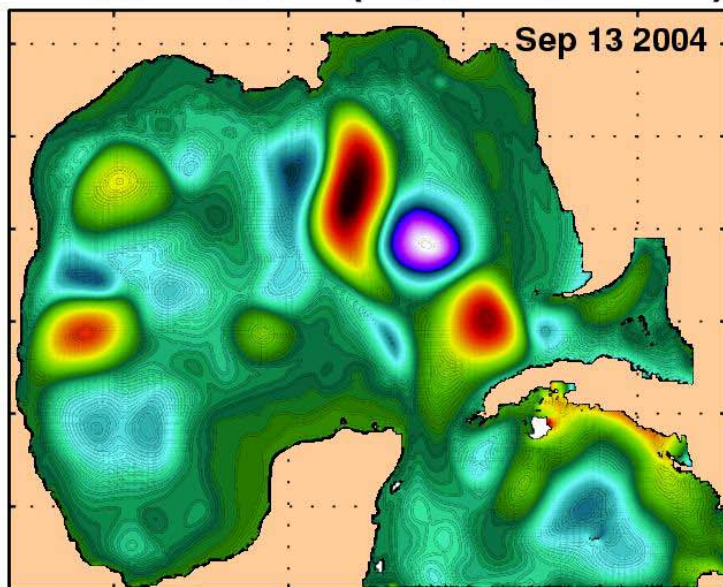


C
H
A
N
N
E
L

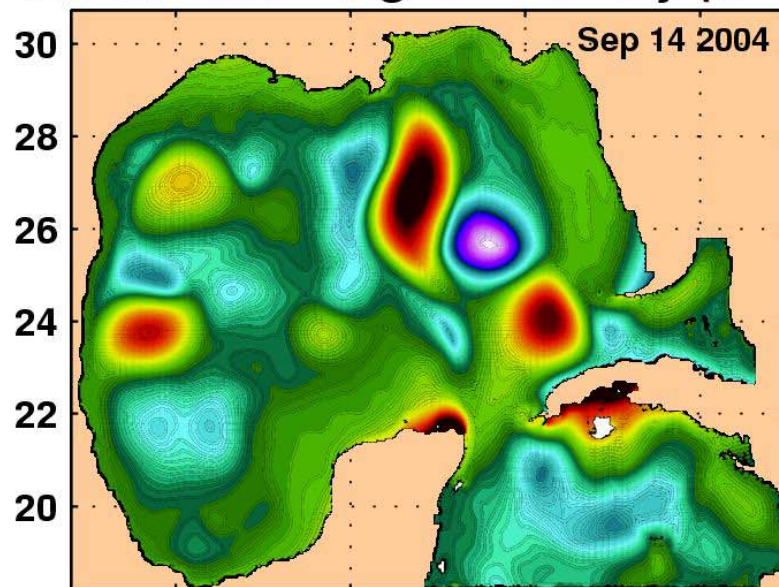


HYCOM-GOM (NOGAPS WIND)

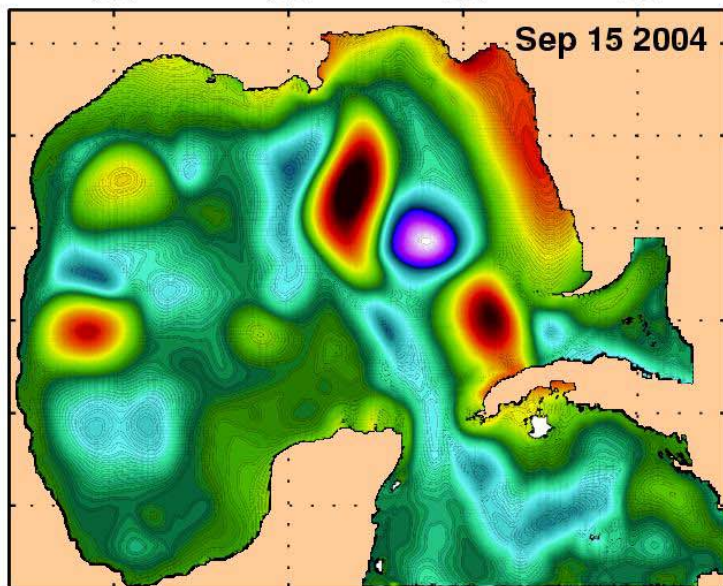
Sea Surface Height Anomaly (CM)



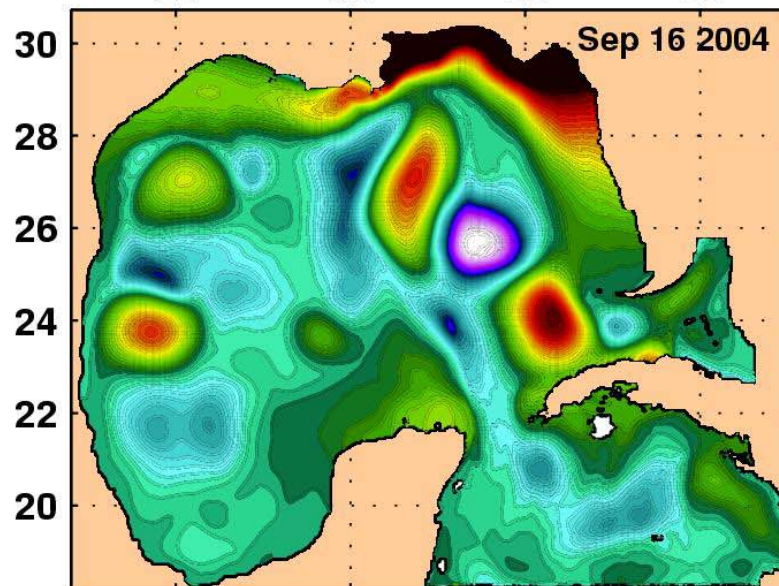
-95 -90 -85 -80



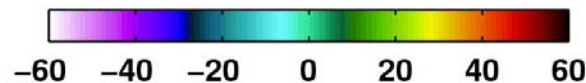
-95 -90 -85 -80



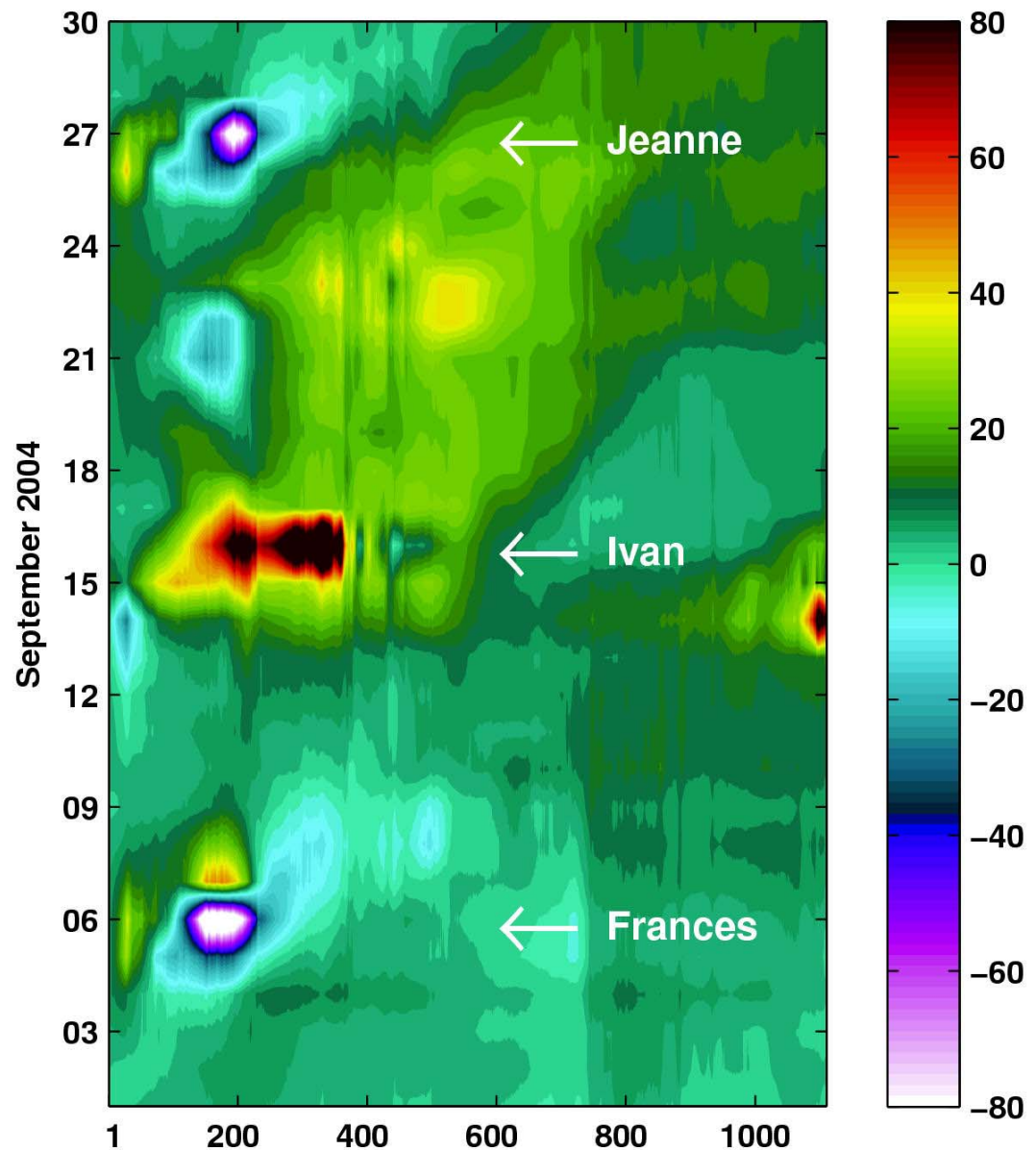
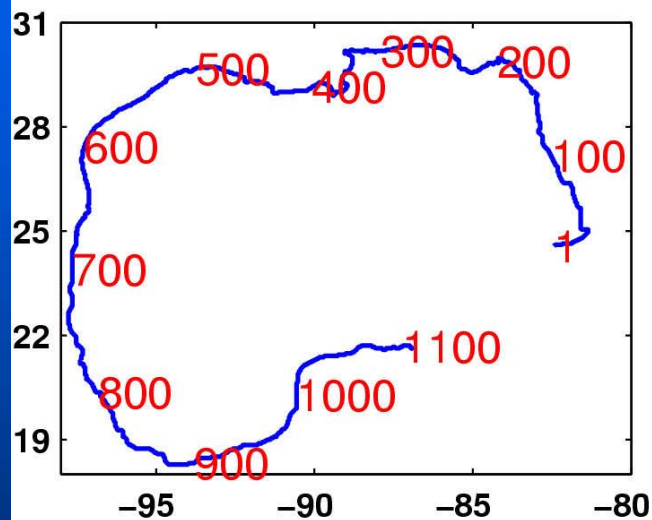
Sep 15 2004



Sep 16 2004



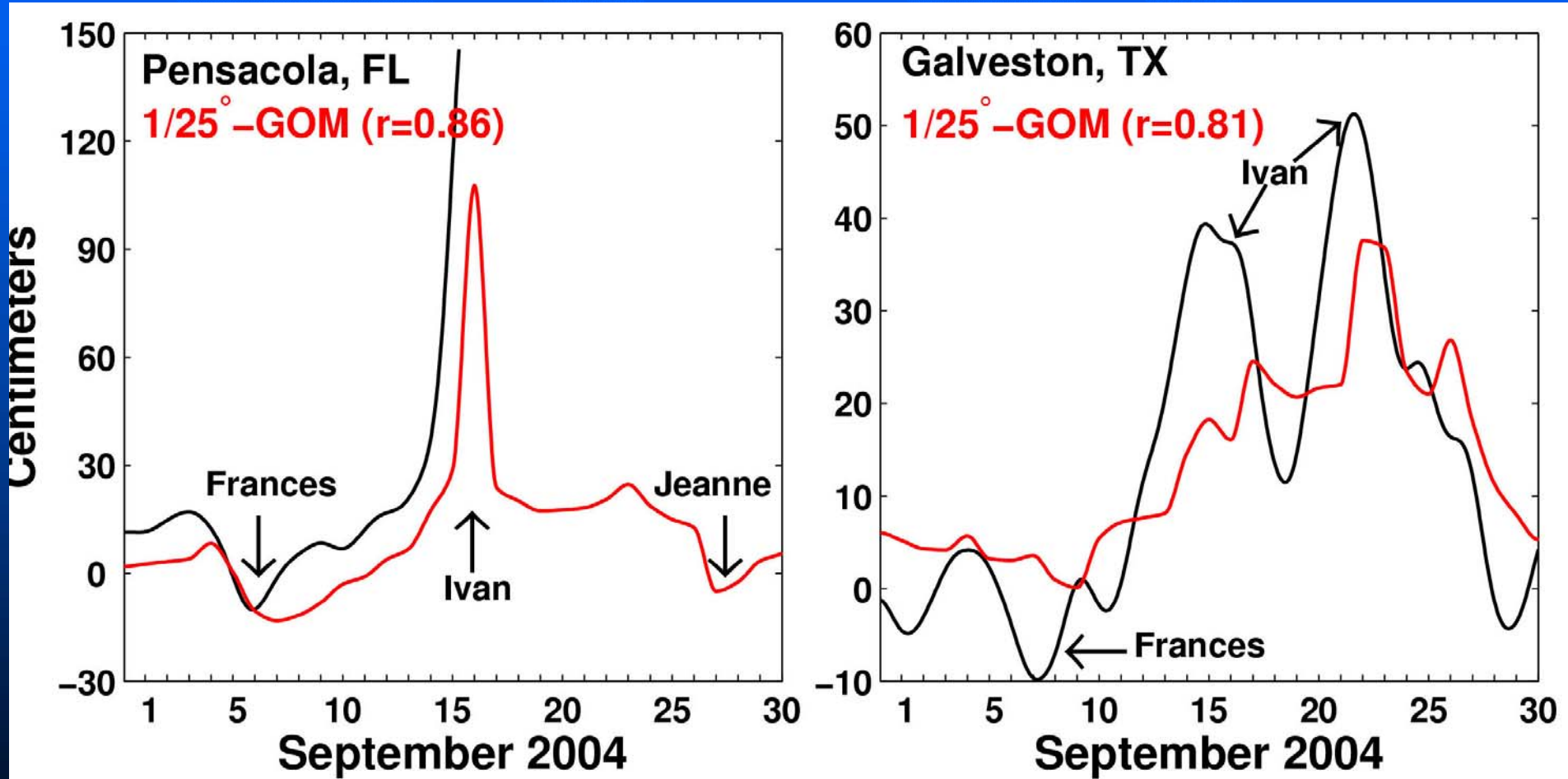
Along Coast Sea Surface Height (cm)



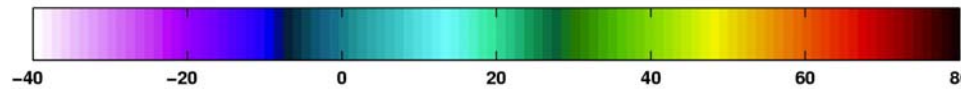
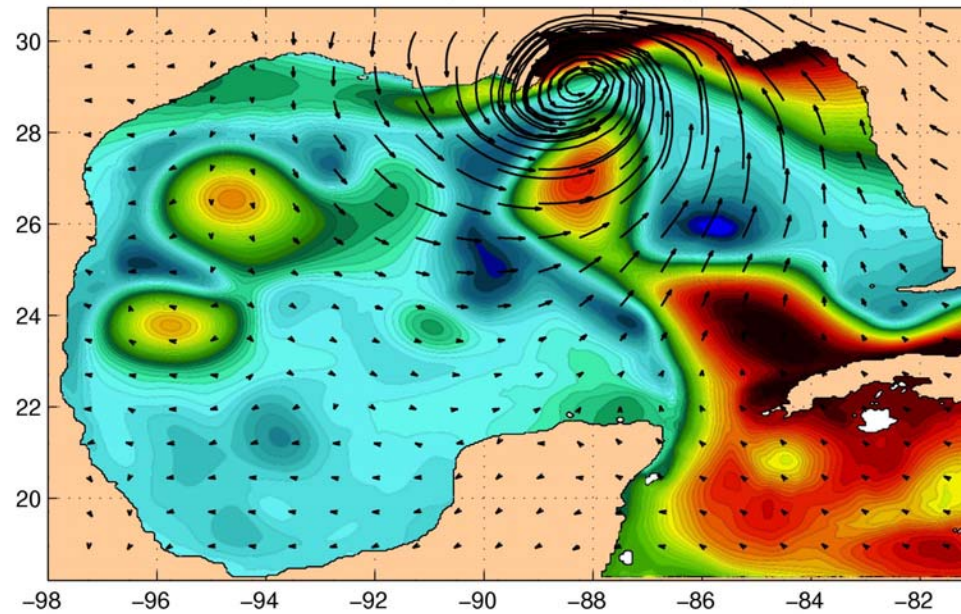
SEA SURFACE HEIGHT

Observed is black

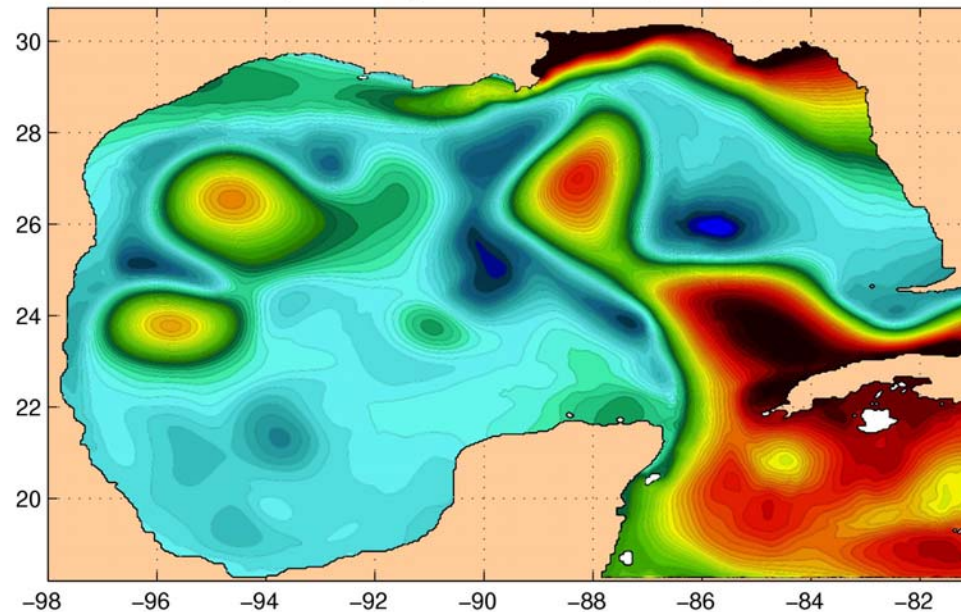
Modeled is red



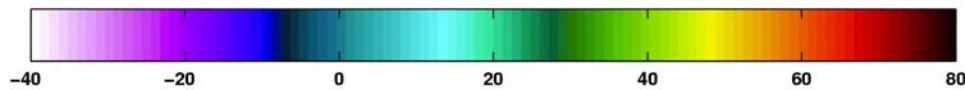
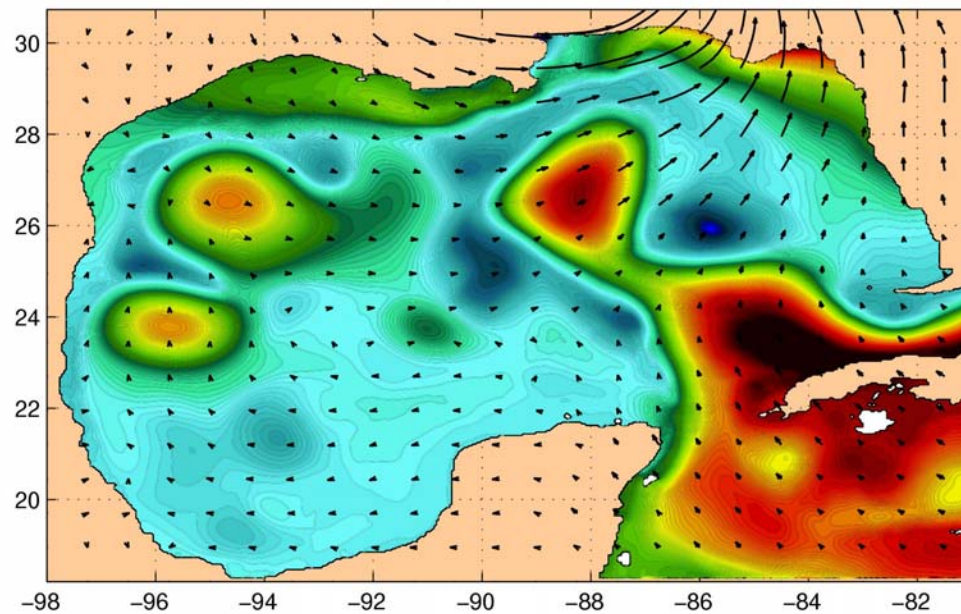
HYCOM-GOM-023 (NOGAPS WIND) Sea Surface Height (CM) for 2004-260-00



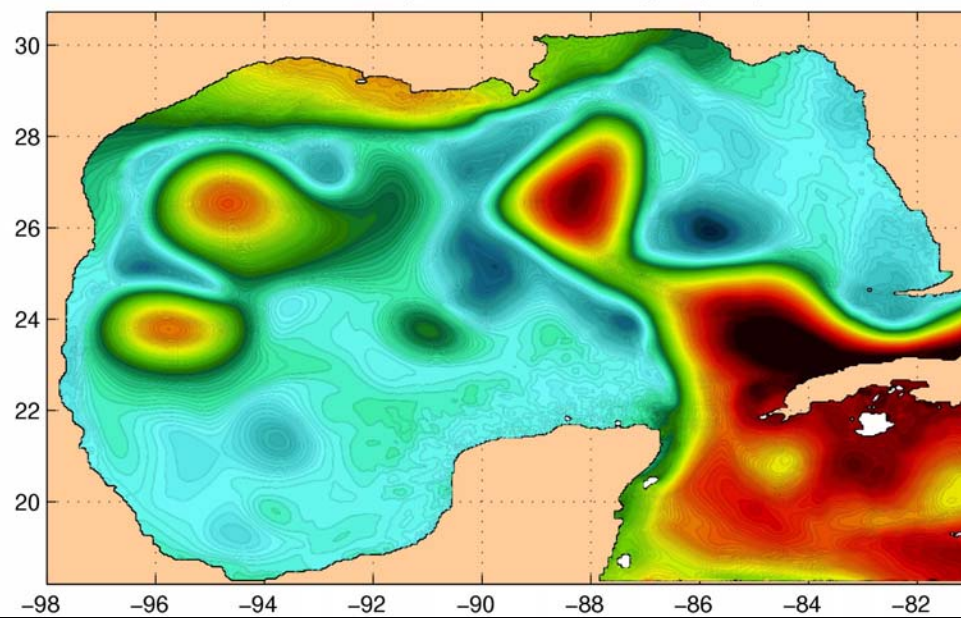
HYCOM-GOM-042 (NO WIND) Sea Surface Height (CM) for 2004-260-00



HYCOM-GOM-023 (NOGAPS WIND) Sea Surface Height (CM) for 2004-260-15

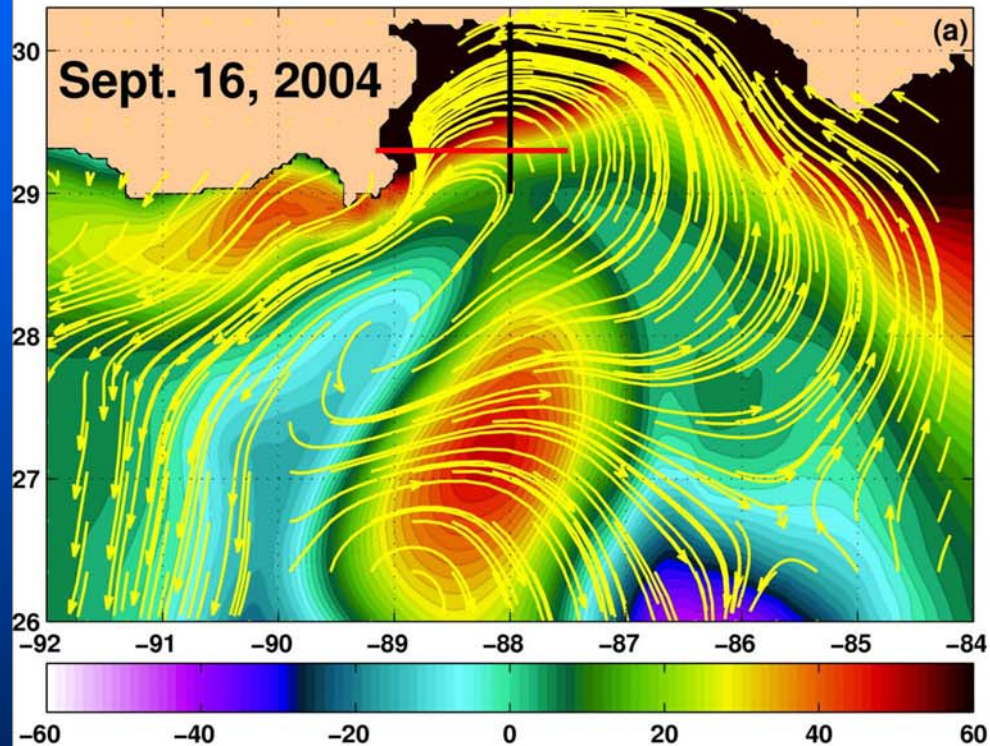


HYCOM-GOM-042 (NO WIND) Sea Surface Height (CM) for 2004-260-15

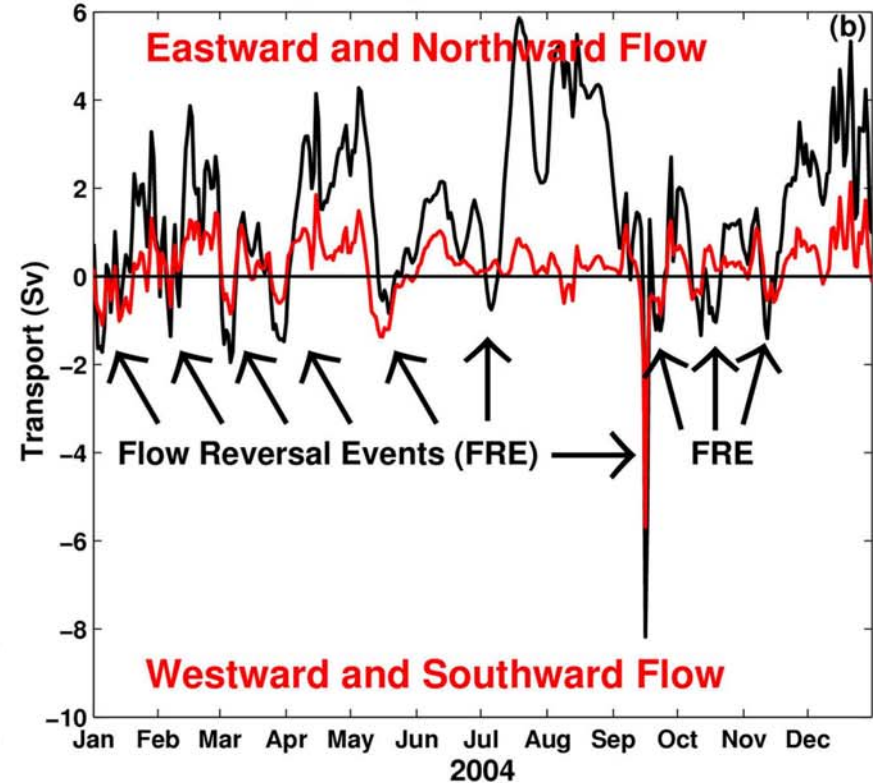


Flow Reversal Events along the Northern Gulf of Mexico

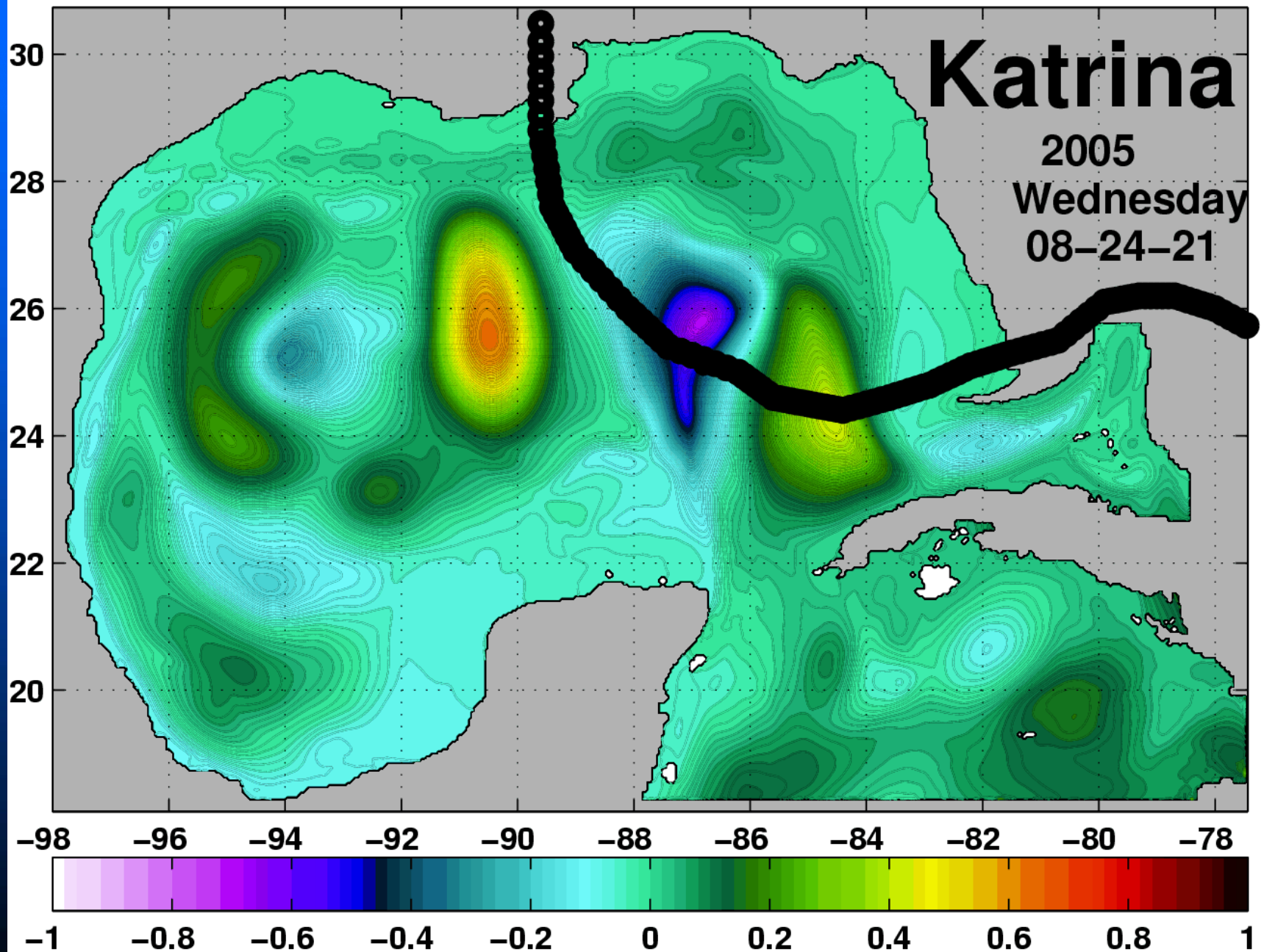
SSH and Currents during the flow reversal event generated by H. Ivan



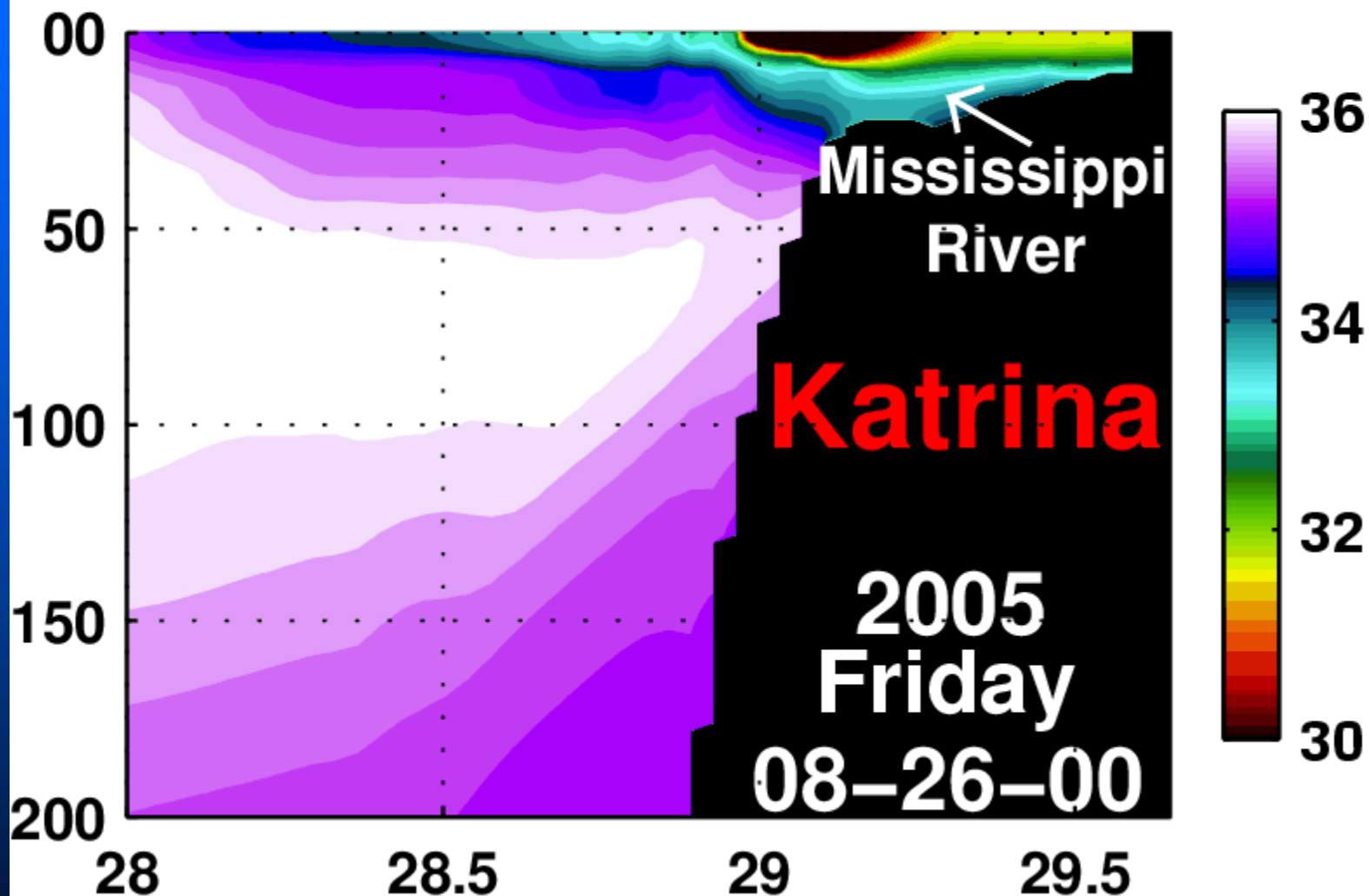
Transport along the black and red sections



HYCOM-GOM-052 (NOGAPS WIND) Sea Surface Height (M)

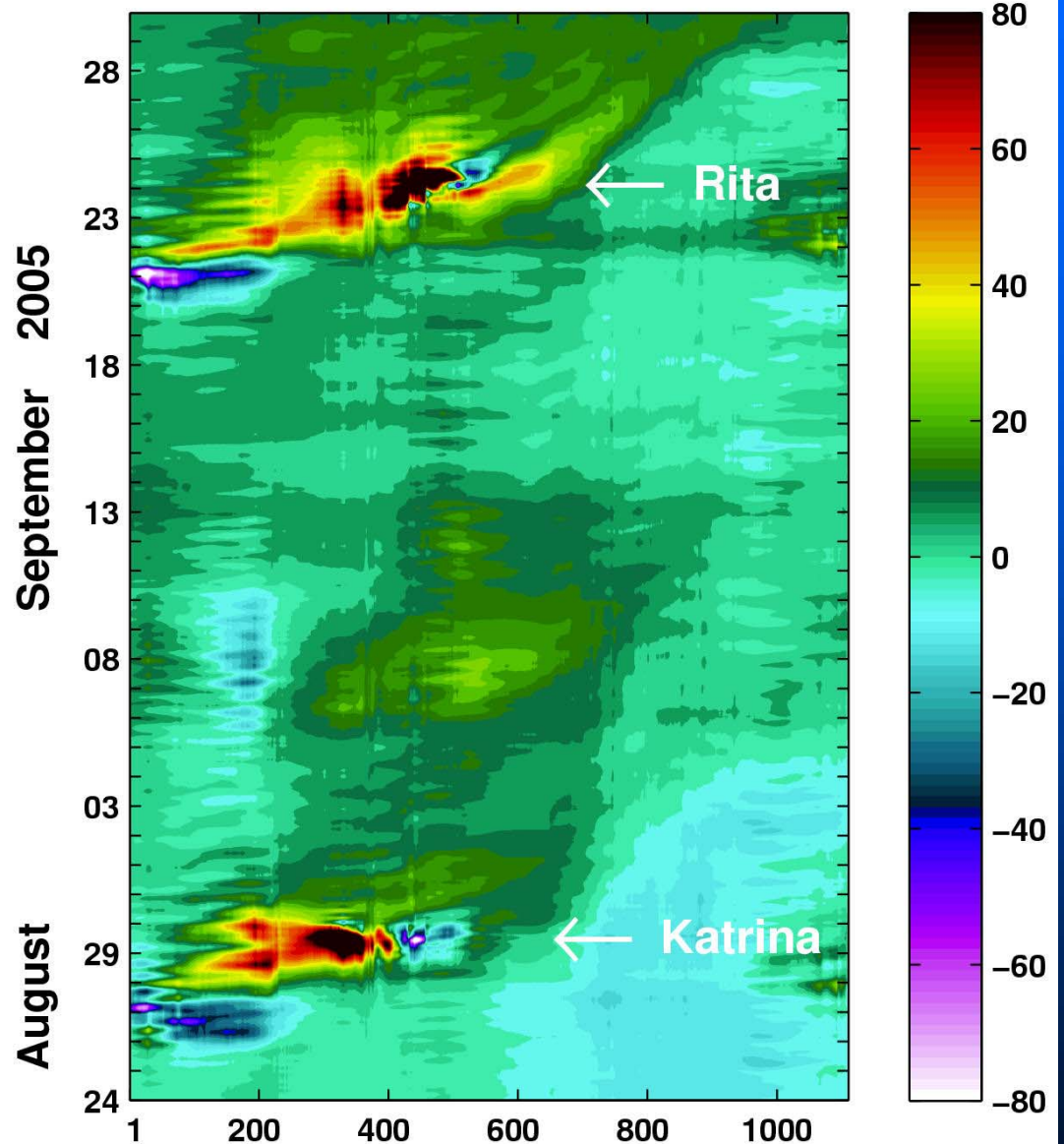
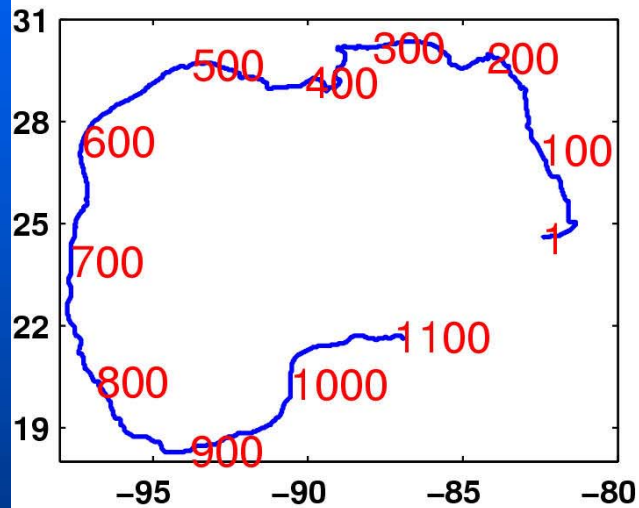


HYCOM-GOM-052 Salinity (PSU)

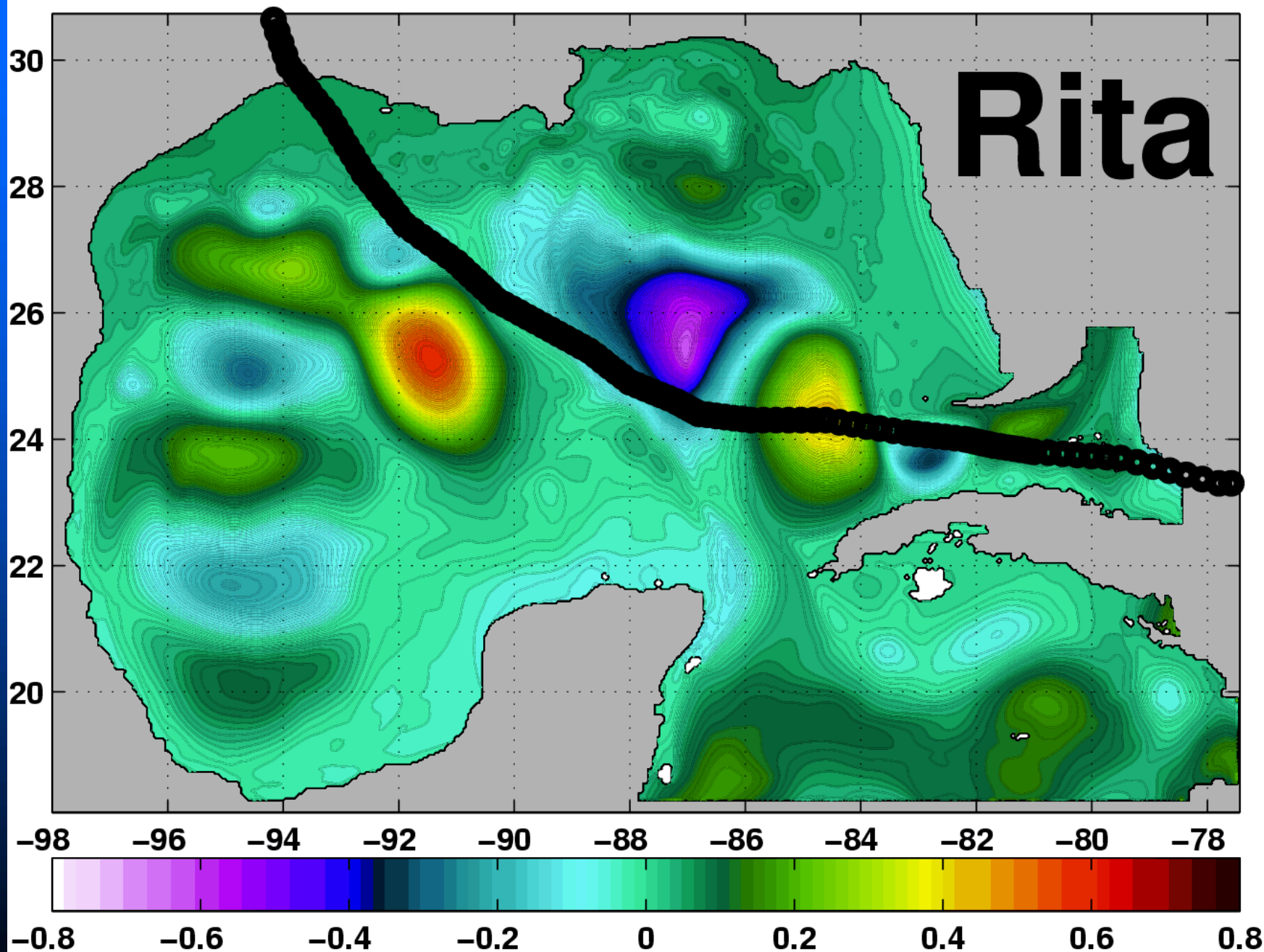


Latitude

Along Coast Sea Surface Height (cm)



HYCOM-GOM-052 (NOGAPS WIND) Sea Surface Height (M) for 2005-263-00



Summary

- Hurricane Ivan generated a coastal wave along the Cuba Island.
- Hurricanes Ivan, Katrina, and Rita generated coastal waves along the coast of the Gulf of Mexico, but these waves were subsequently greatly weakened by Ivan's, Katrina's, and Rita's eastward winds.
- Zamudio, L., and P. J. Hogan (2008), Nesting the Gulf of Mexico in Atlantic HYCOM: Oceanographic Processes Generated by Hurricane Ivan. Ocean Modelling, doi:10.1016/j.ocemod.2007.12.002, 21(3-4), 106-125.