

NOAA Ocean Prediction Center: HYCOM Evaluation Status

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HYCOM Meeting Dec 6-8 2005 RSMAS

Who are we?

- NOAA National Weather Service (NWS)
 - National Centers for Environmental Prediction (NCEP)
 - Ocean Prediction Center (OPC)

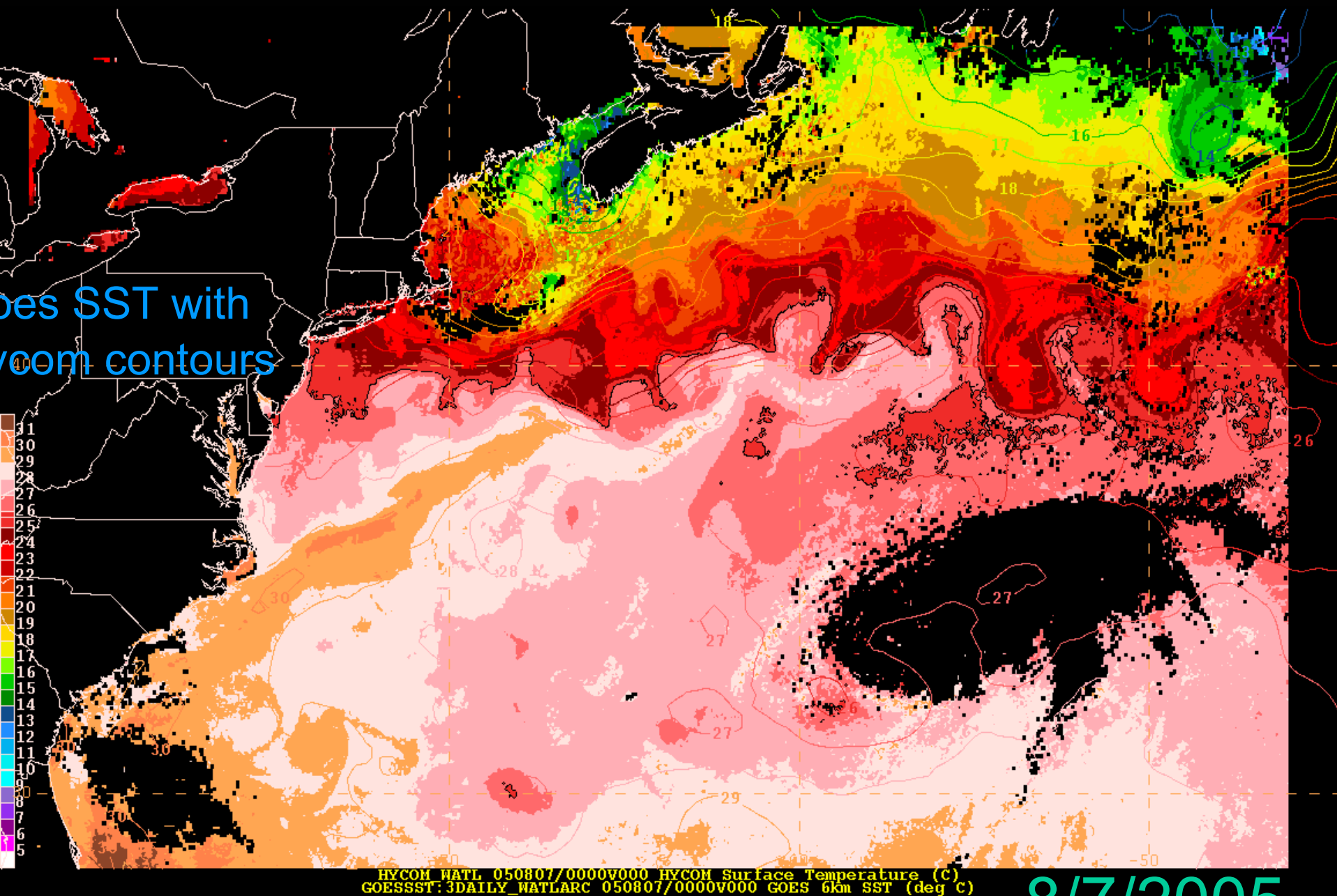
Why do we need Hycom?

- Need to Improve Forecasting of:
 - Waves, Currents and effects of the Wind
 - Significant ocean features like Eddies, and Upwelling zones
 - Location of the Gulf Stream
 - Particle transport (Pollutants, Search and Rescue)

RT_OFS_ATL Evaluation

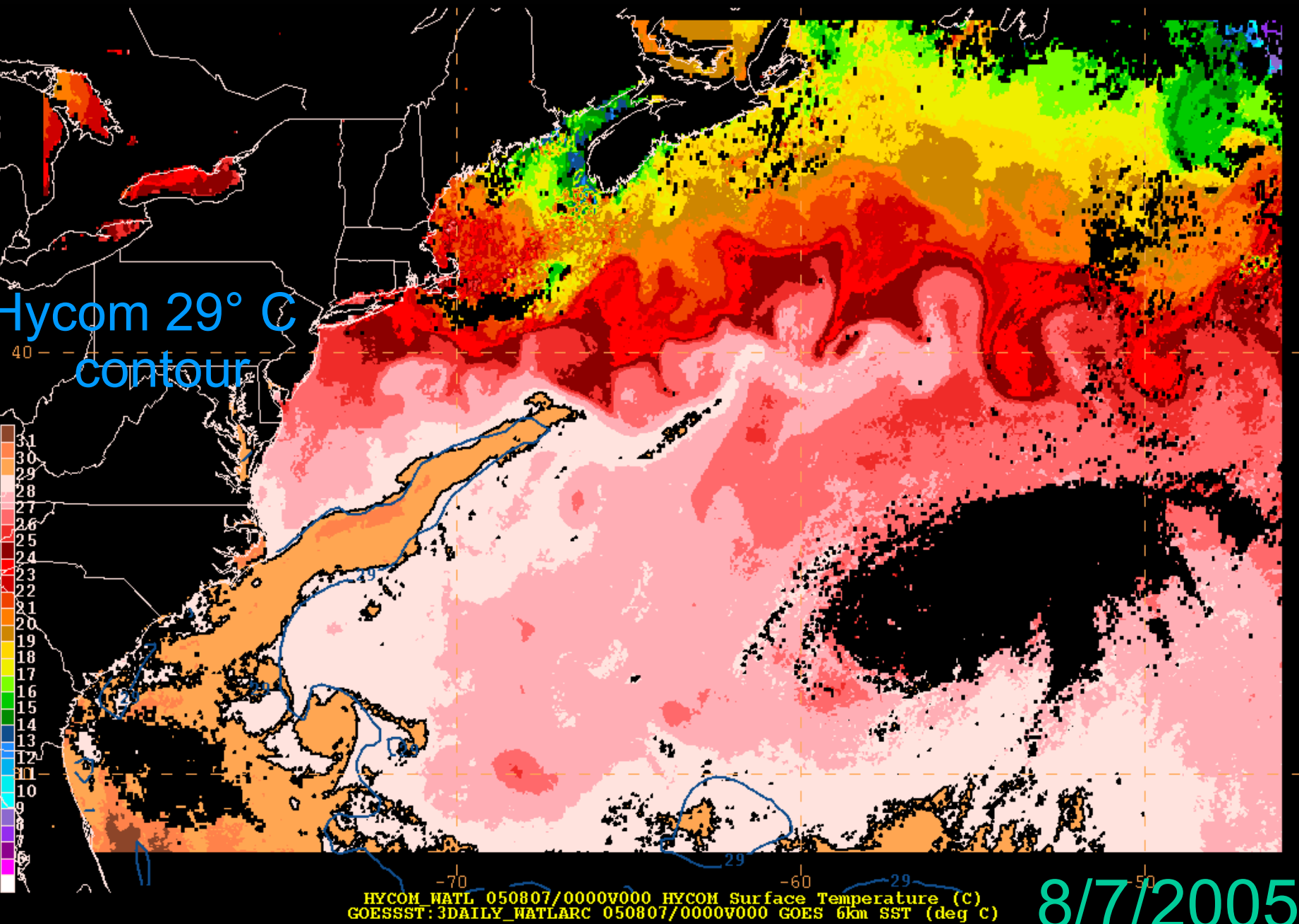
- OPC evaluation of the Real Time Ocean Forecast System (RT_OFS_ATL) = HYCOM for NCEP and the National Centers Advanced Weather Interactive Processing System (N-AWIPS = software)
 - Case studies
 - RT_OFS_ATL vs. GOES SST
 - Gulf Stream
 - RT_OFS_ATL vs. ROFS
 - SST
 - Currents
 - Gulf of Maine

RT_OFS_ATL vs. GOES SST

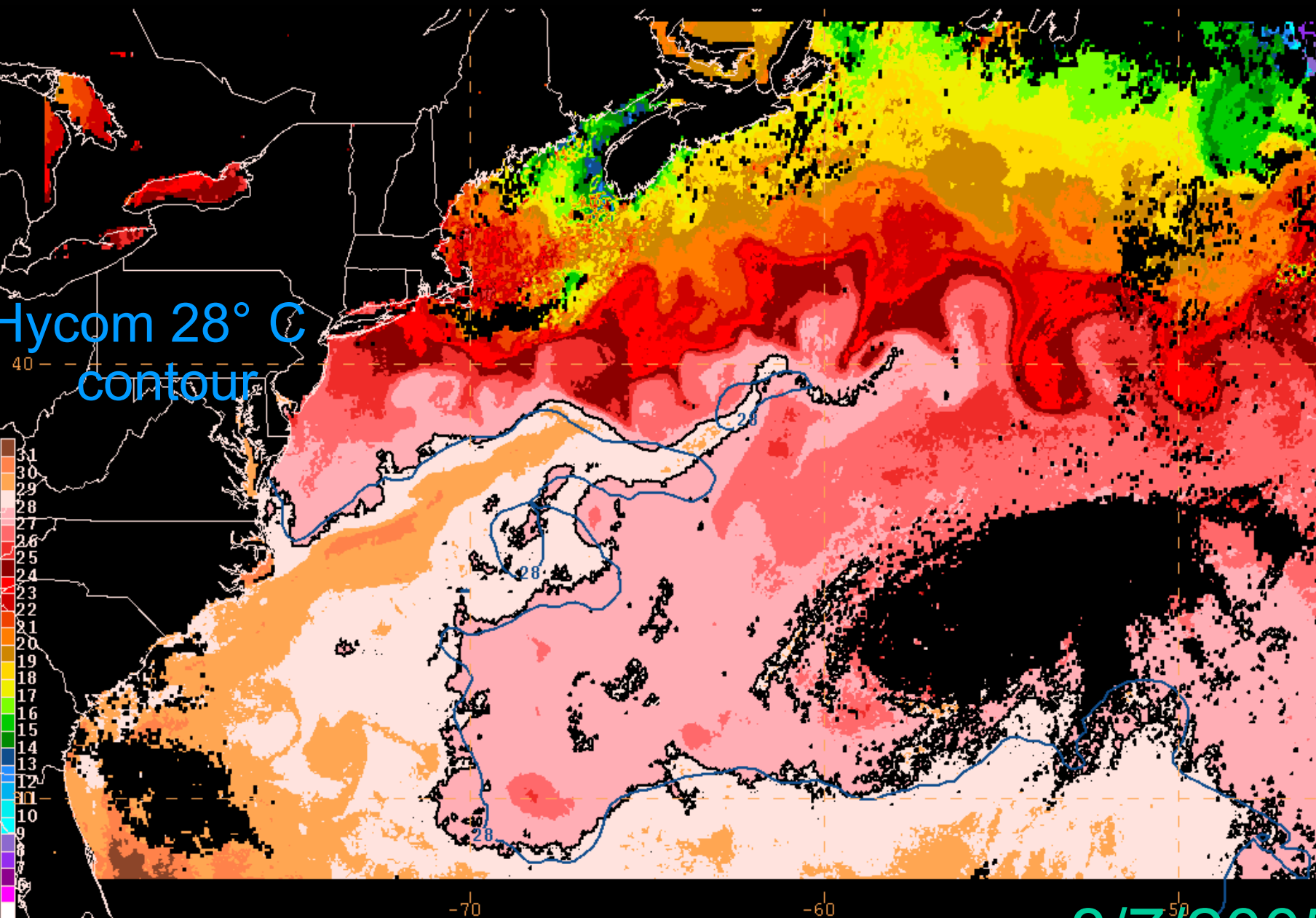


8/7/2005

RT_OFS_ATL vs. GOES SST



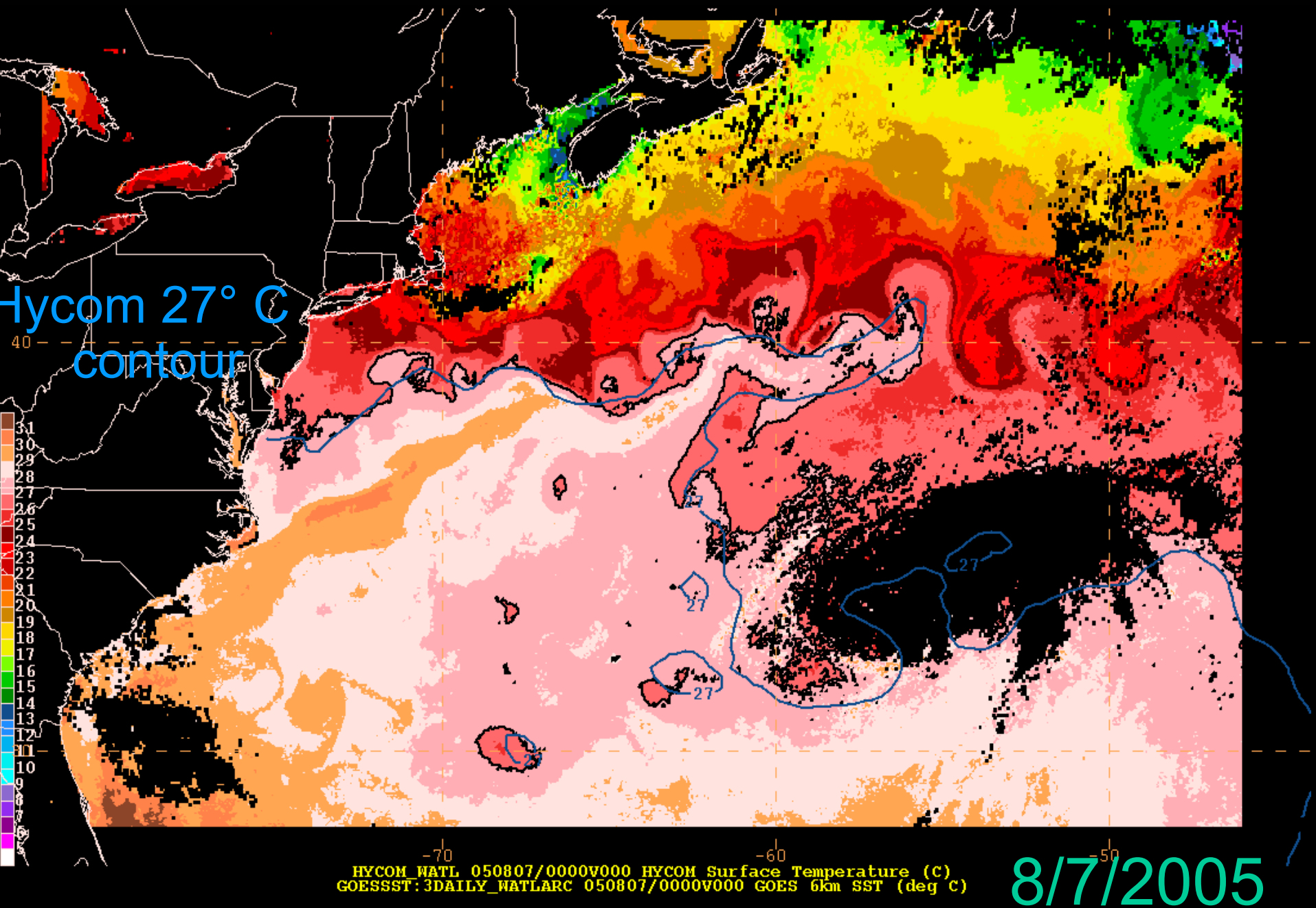
RT_OFS_ATL vs. GOES SST



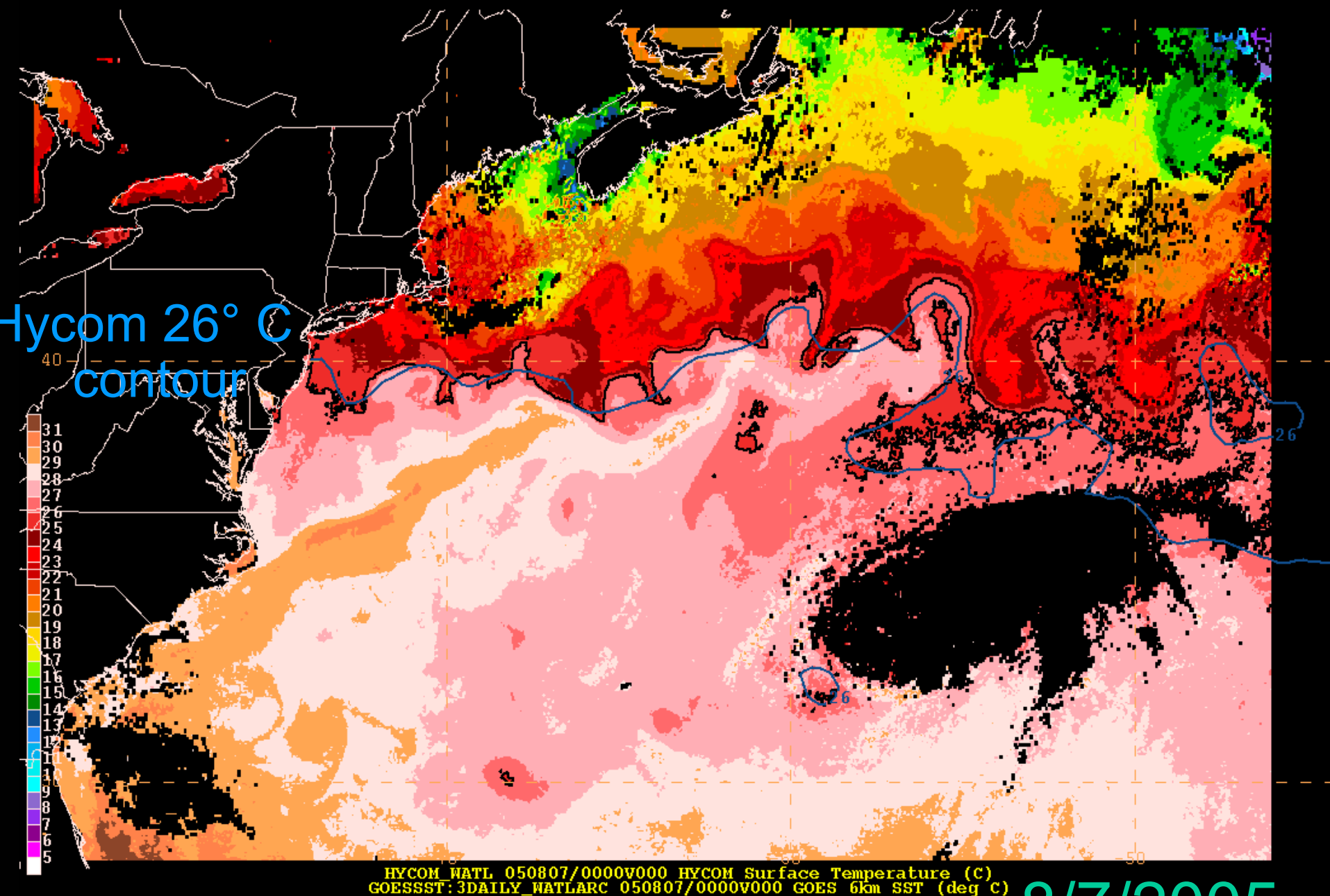
HYCOM WATL 050807/0000V000 HYCOM Surface Temperature (C)
GOESSST:3DAILY_WATLARC 050807/0000V000 GOES 6km SST (deg c)

8/7/2005

RT_OFS_ATL vs. GOES SST

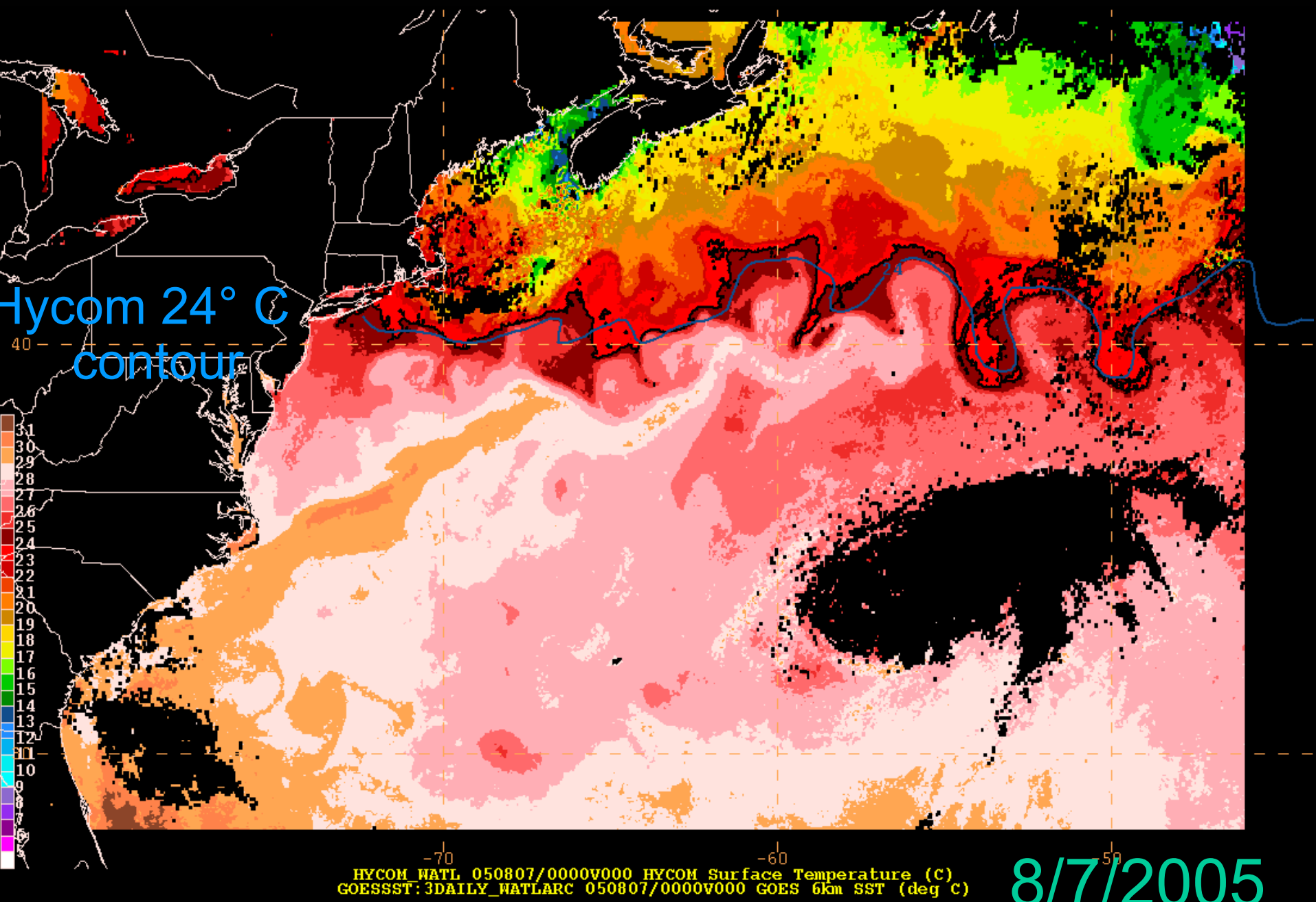


RT_OFS_ATL vs. GOES SST



8/7/2005

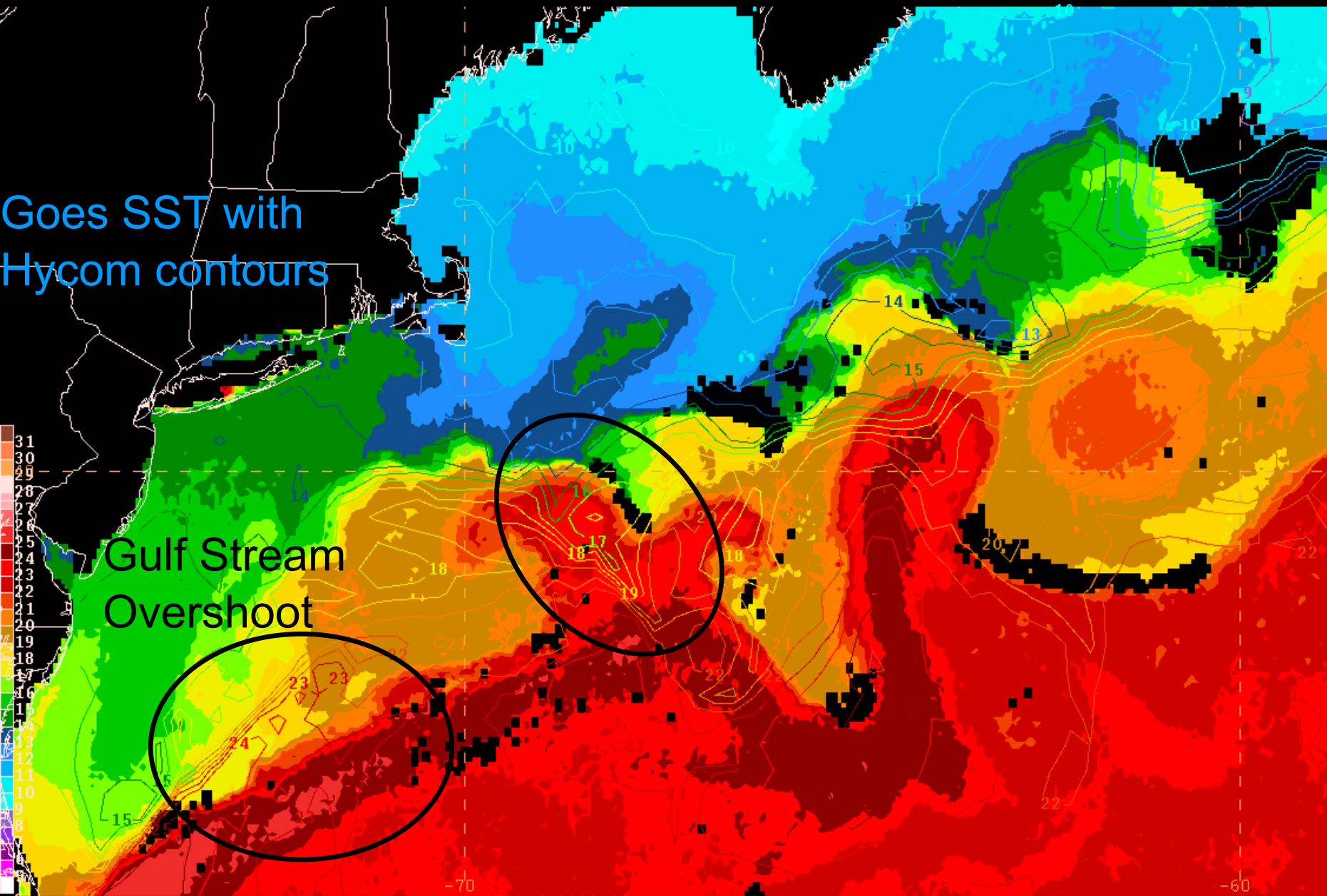
RT_OFS_ATL vs. GOES SST



RT_OFS_ATL vs. GOES SST

Goes SST with
Hycom contours

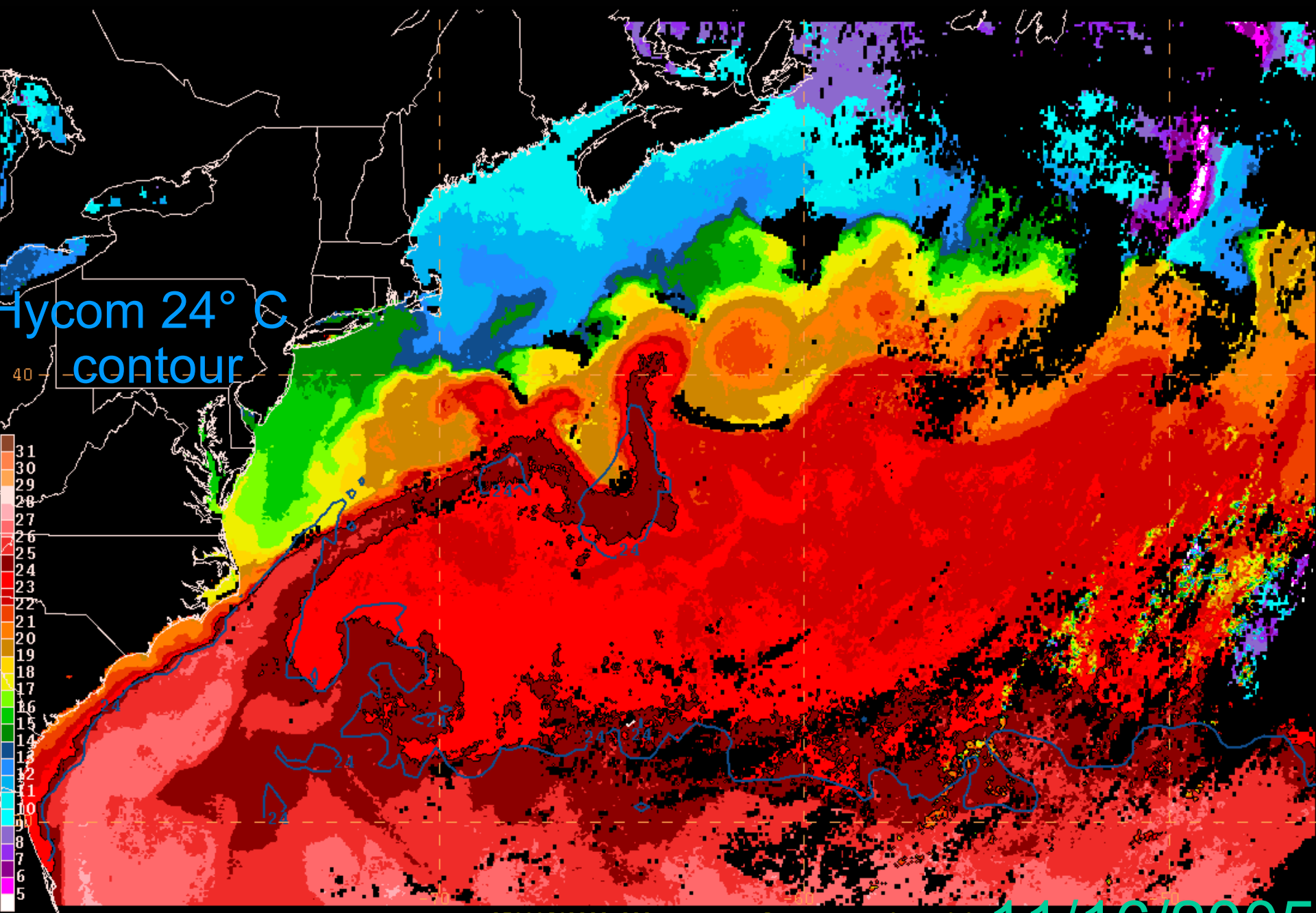
Gulf Stream
Overshoot



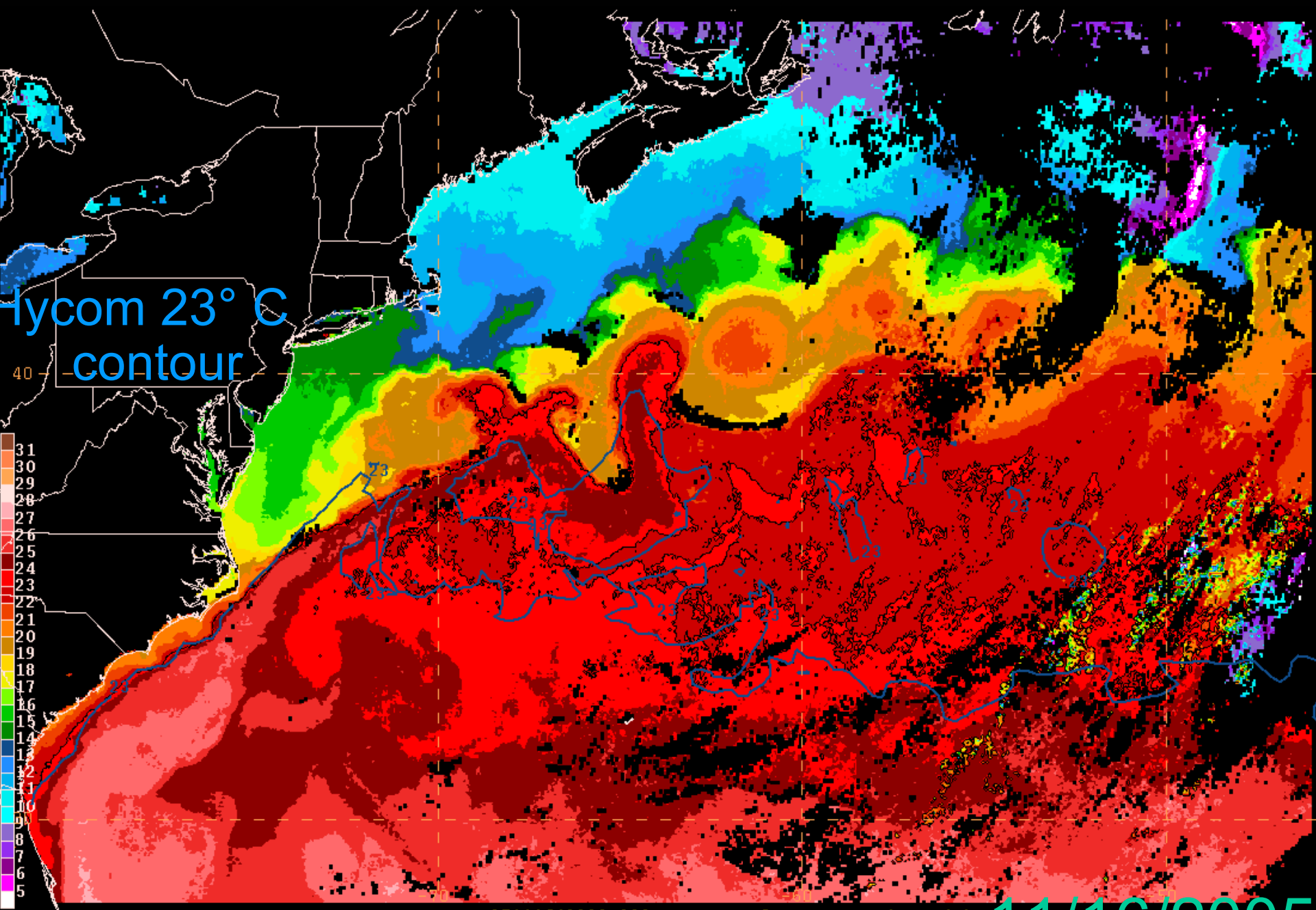
HYCOM WATL 051116/0000V000 HYCOM Surface Temperature (C)
GOES SST: 3DAILY_WATL 051116/0000V000 GOES 6km SST (deg C)

11/16/2005

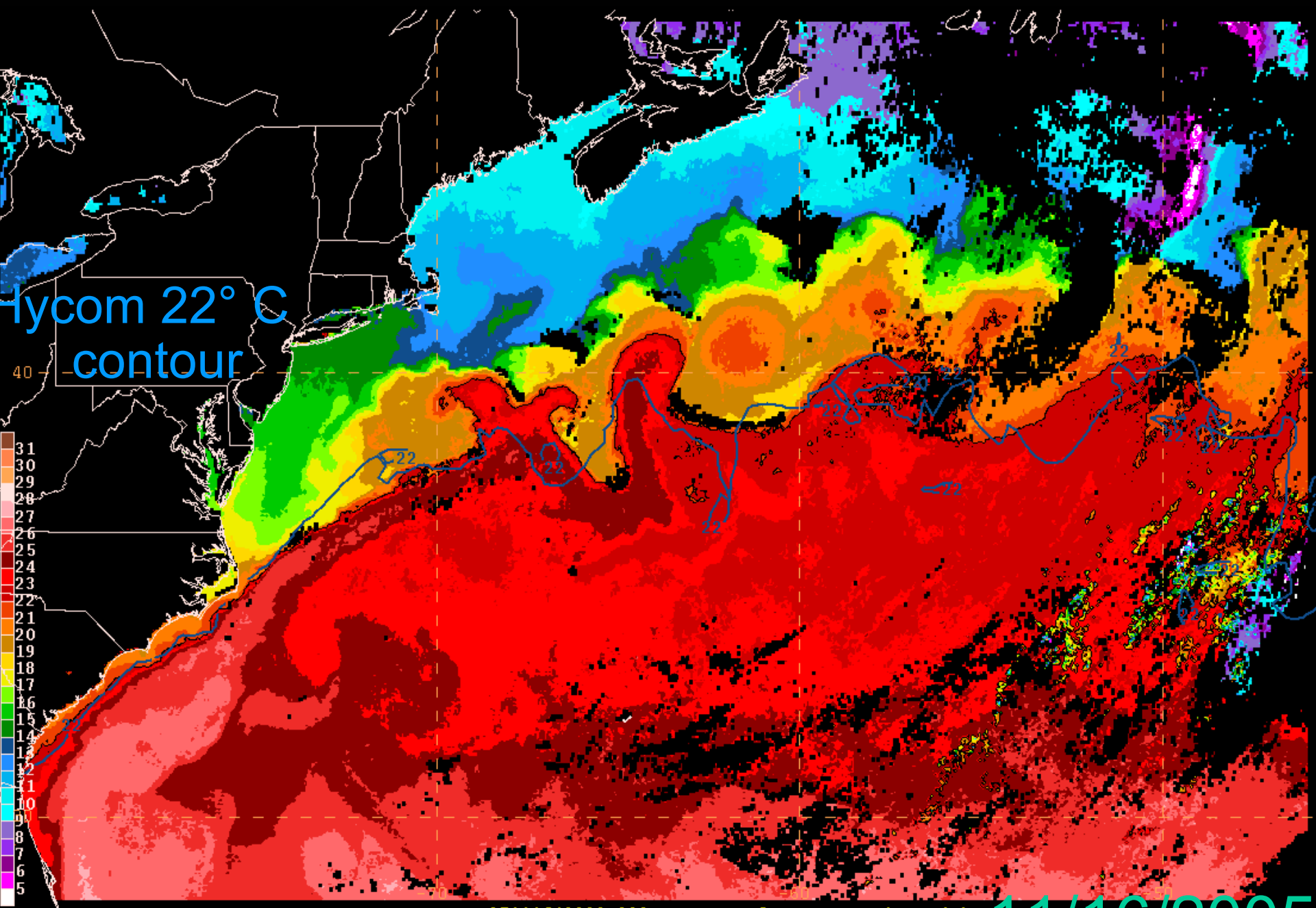
RT_OFS_ATL vs. GOES SST



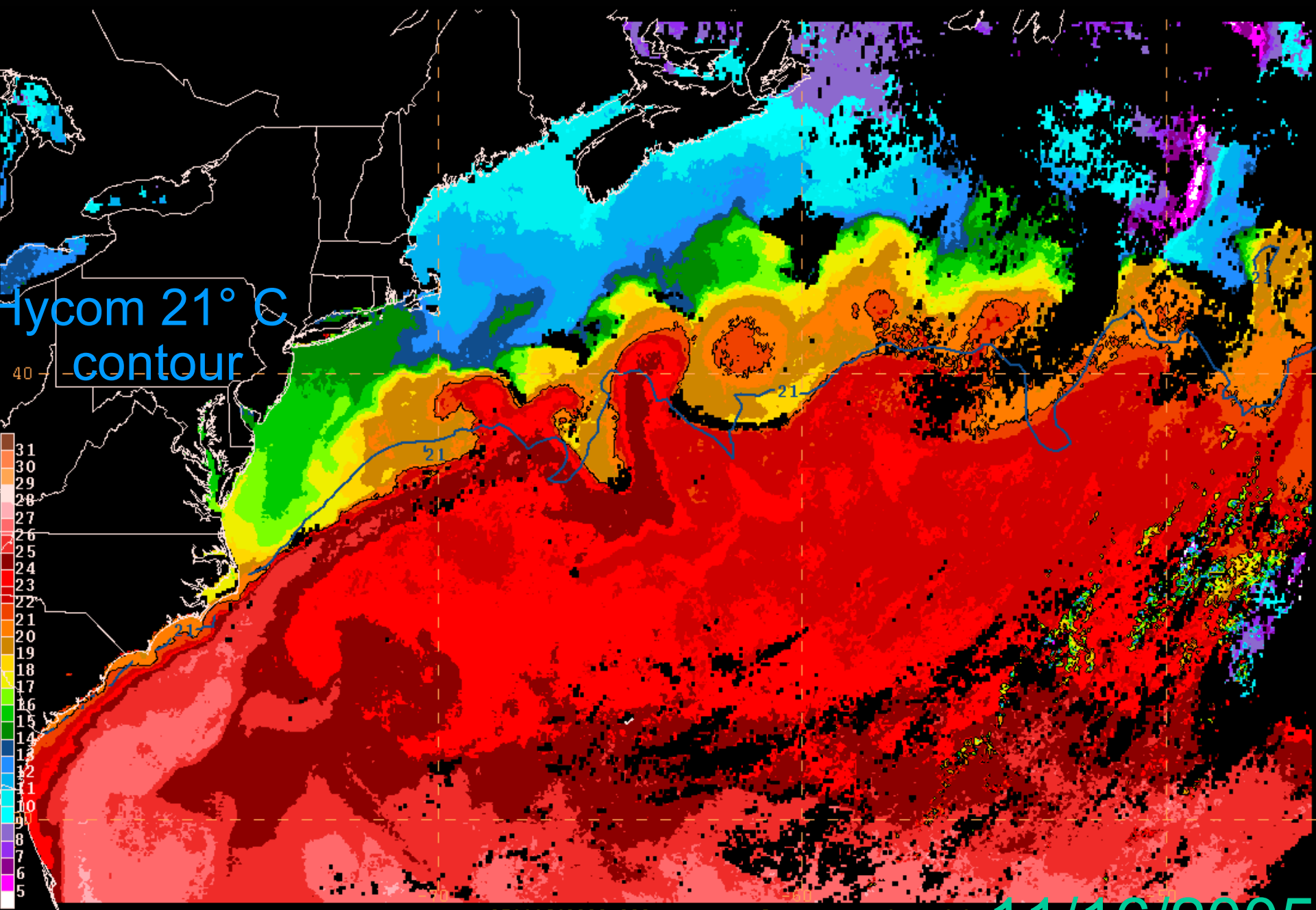
RT_OFS_ATL vs. GOES SST



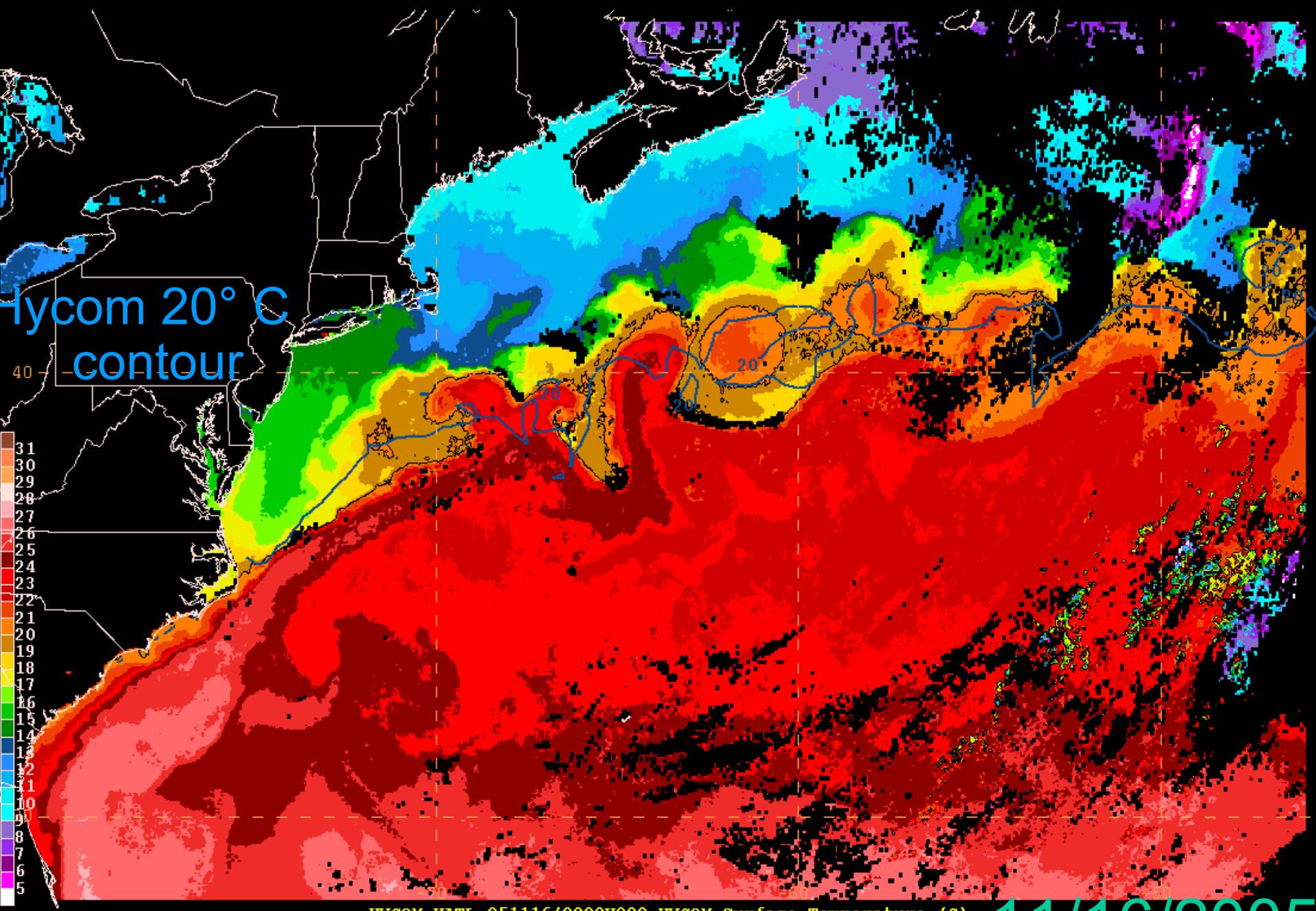
RT_OFS_ATL vs. GOES SST



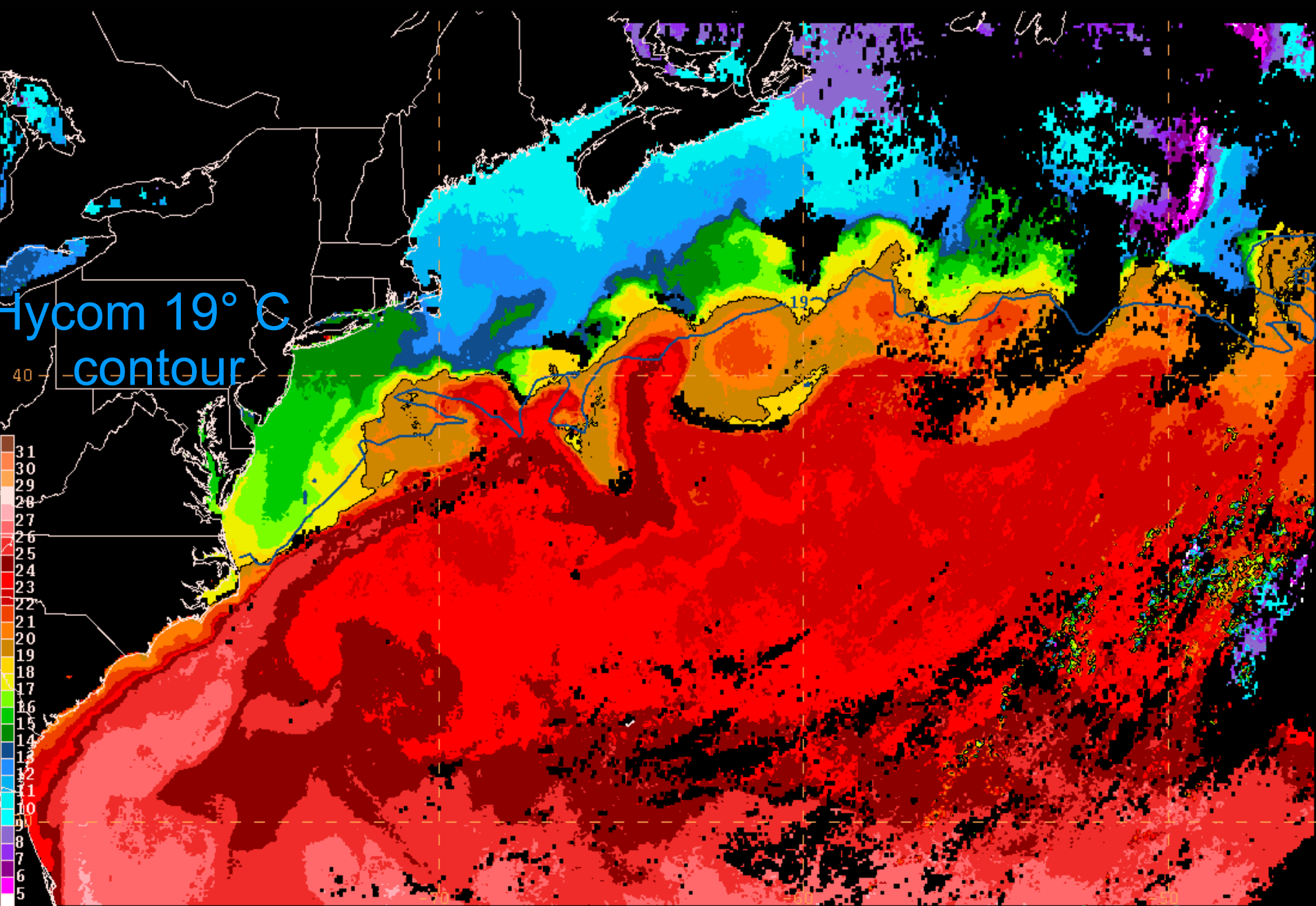
RT_OFS_ATL vs. GOES SST



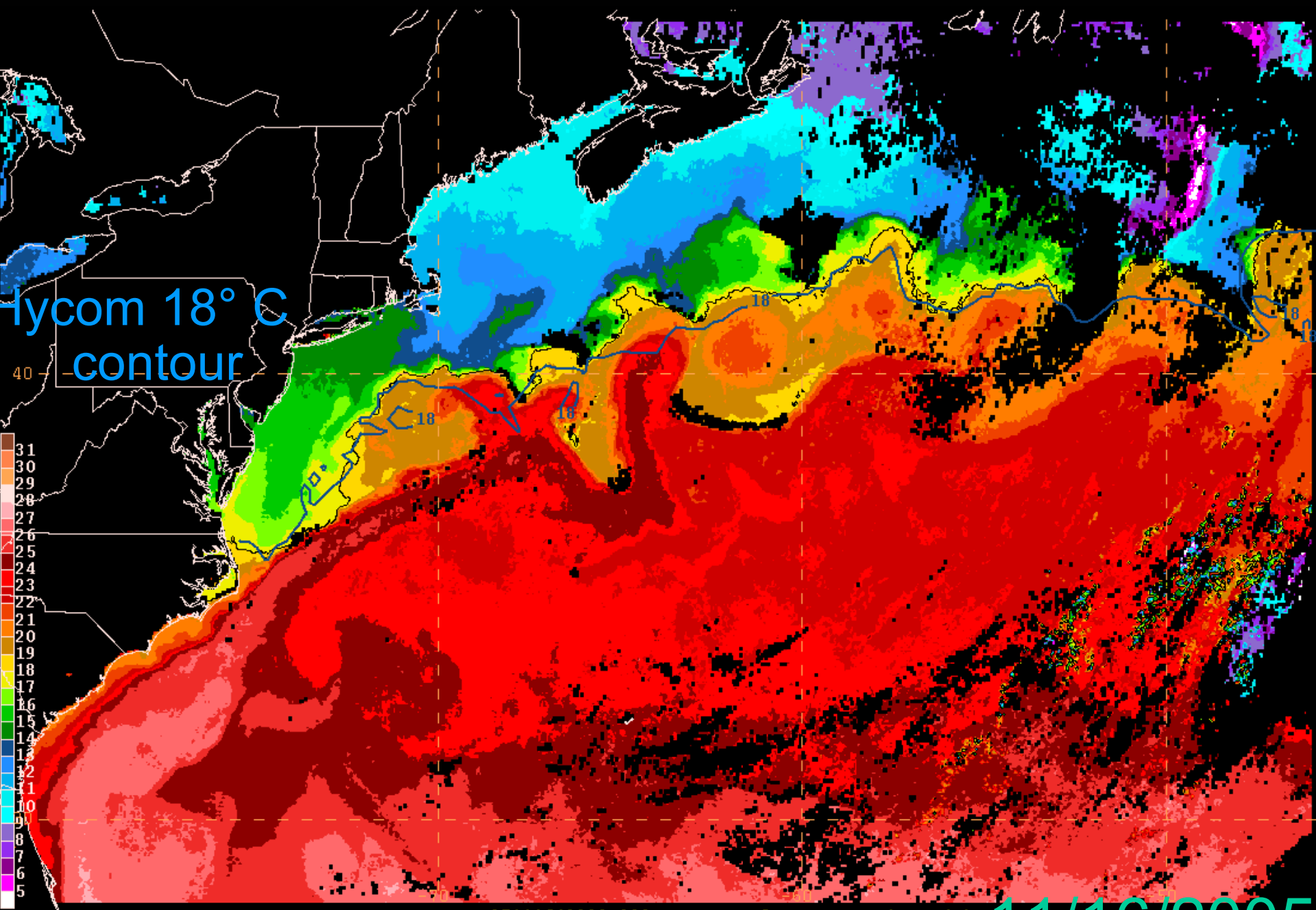
RT_OFS_ATL vs. GOES SST



RT_OFS_ATL vs. GOES SST



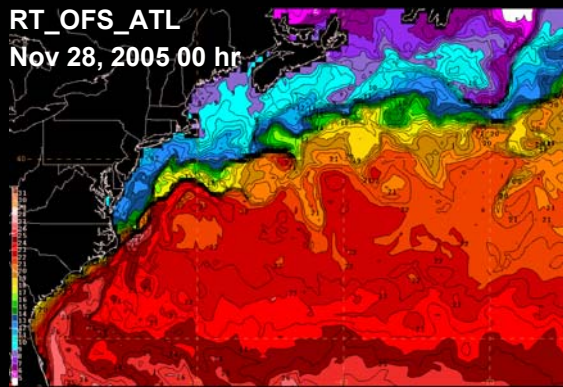
RT_OFS_ATL vs. GOES SST



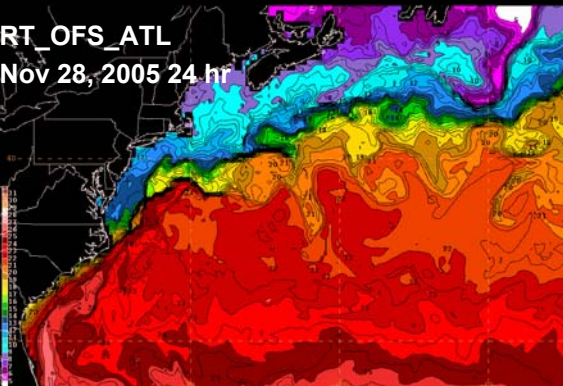
RT_OFS_ATL vs. ROFS

RT_OFS_ATL (HYCOM)

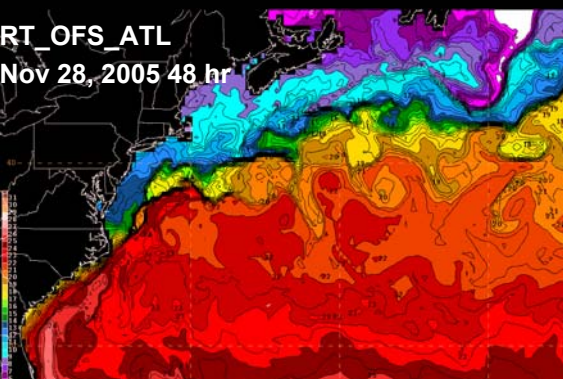
RT_OFS_ATL
Nov 28, 2005 00 hr



RT_OFS_ATL
Nov 28, 2005 24 hr

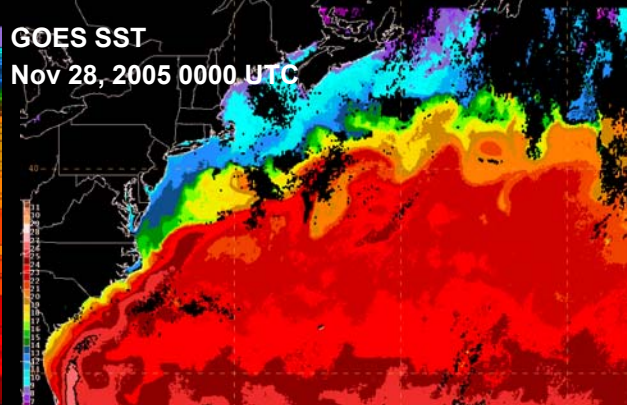


RT_OFS_ATL
Nov 28, 2005 48 hr

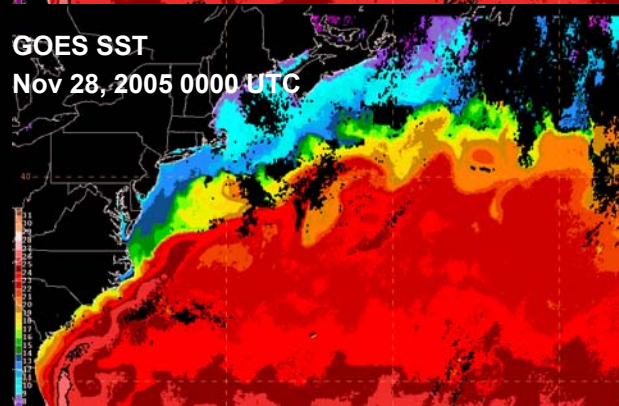


GOES SST

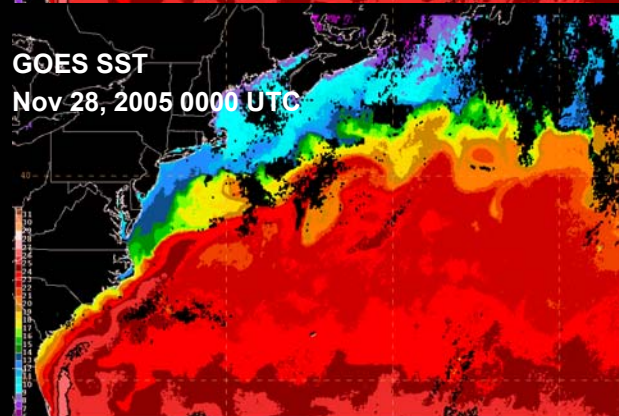
GOES SST
Nov 28, 2005 0000 UTC



GOES SST
Nov 28, 2005 0000 UTC

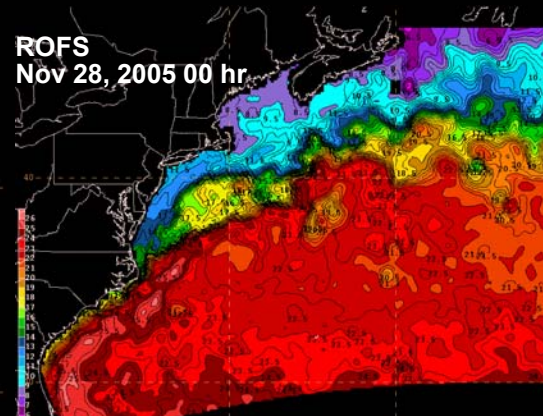


GOES SST
Nov 28, 2005 0000 UTC

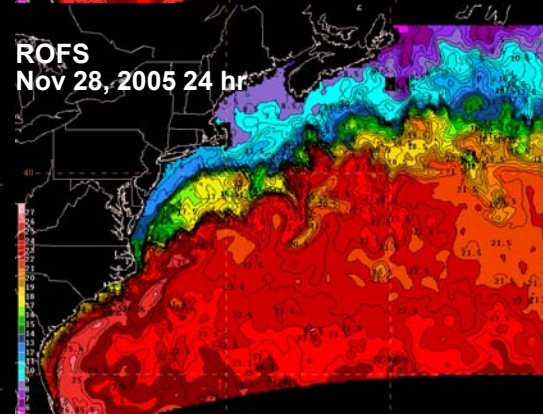


ROFS

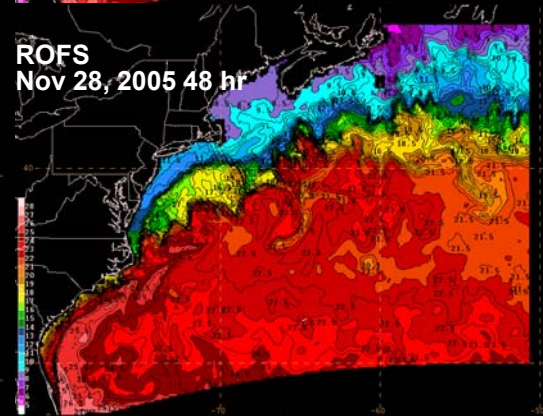
ROFS
Nov 28, 2005 00 hr



ROFS
Nov 28, 2005 24 hr

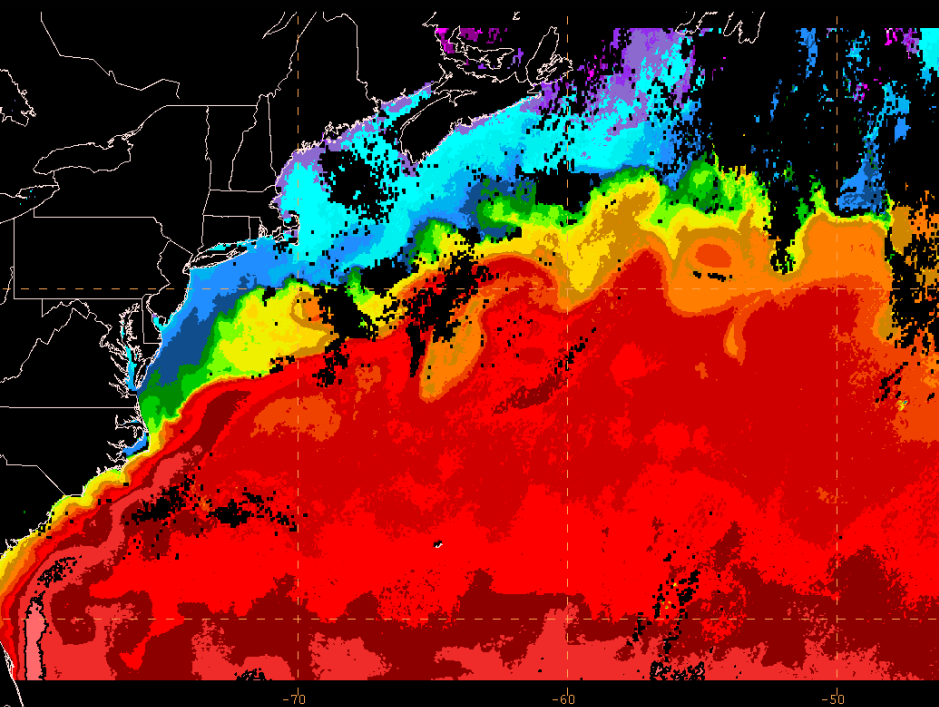


ROFS
Nov 28, 2005 48 hr



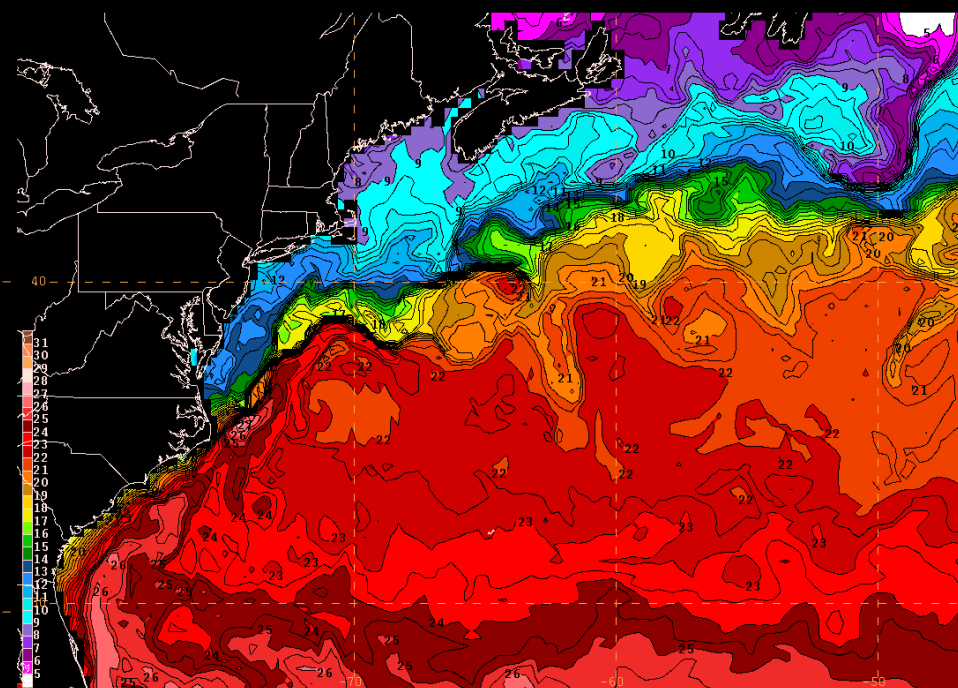
RT_OFS_ATL vs. ROFS

GOES SST
Nov 28, 2005 0000 UTC



GOES SST: 3DAILY_MATL 051128/0000V000 GOES 6km SST (deg C)

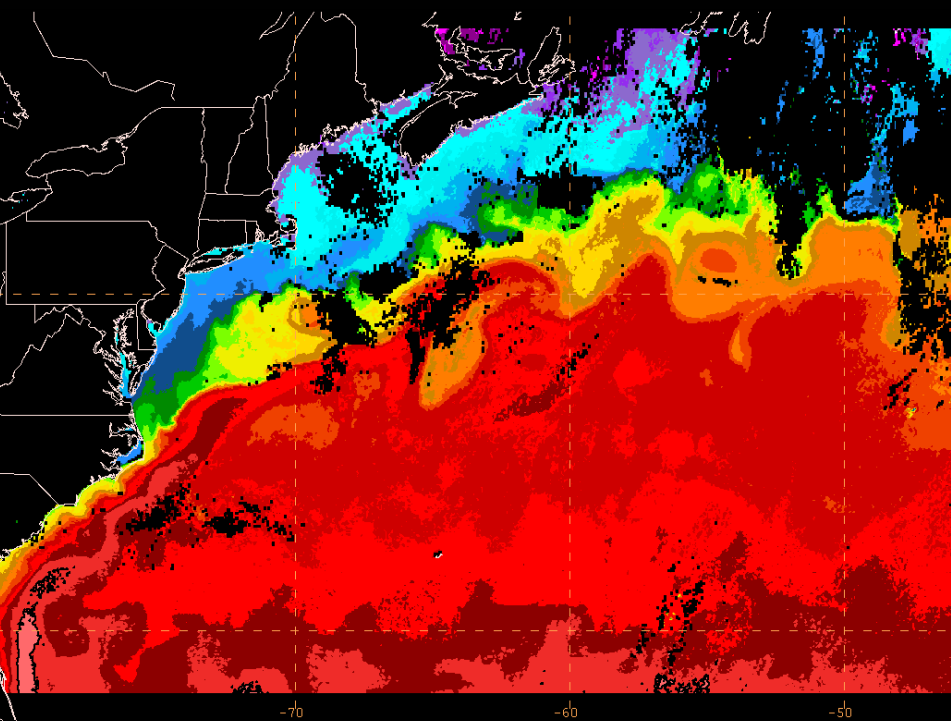
HYCOM
Nov 28, 2005 00 hr



HYCOM_MATL 051128/0000V000 HYCOM Surface Temperature (C)

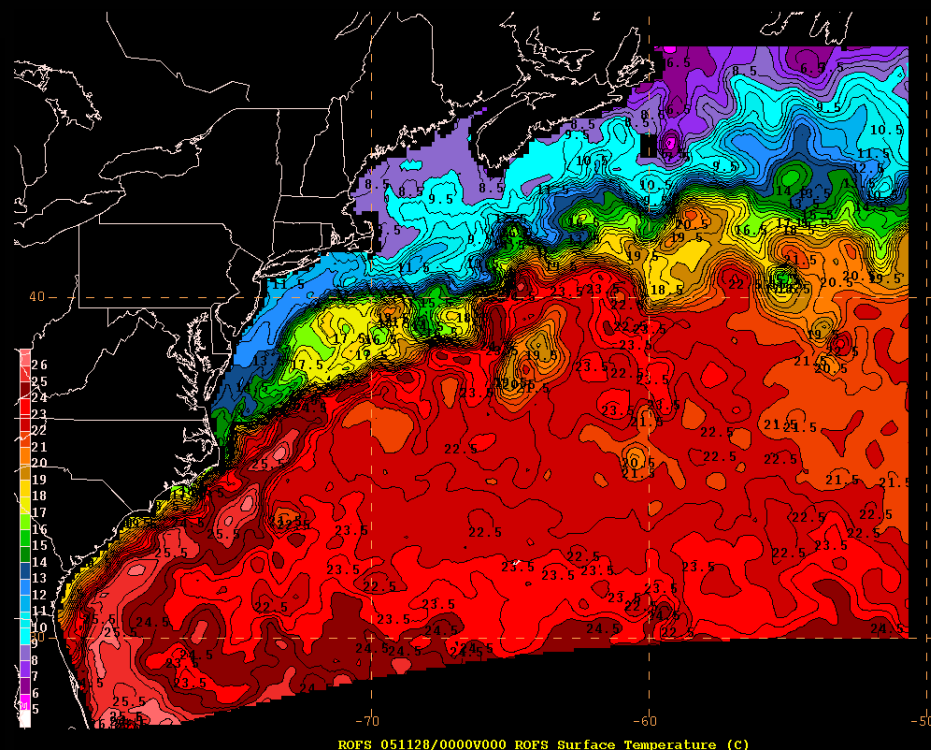
RT_OFS_ATL vs. ROFS

GOES SST
Nov 28, 2005 0000 UTC



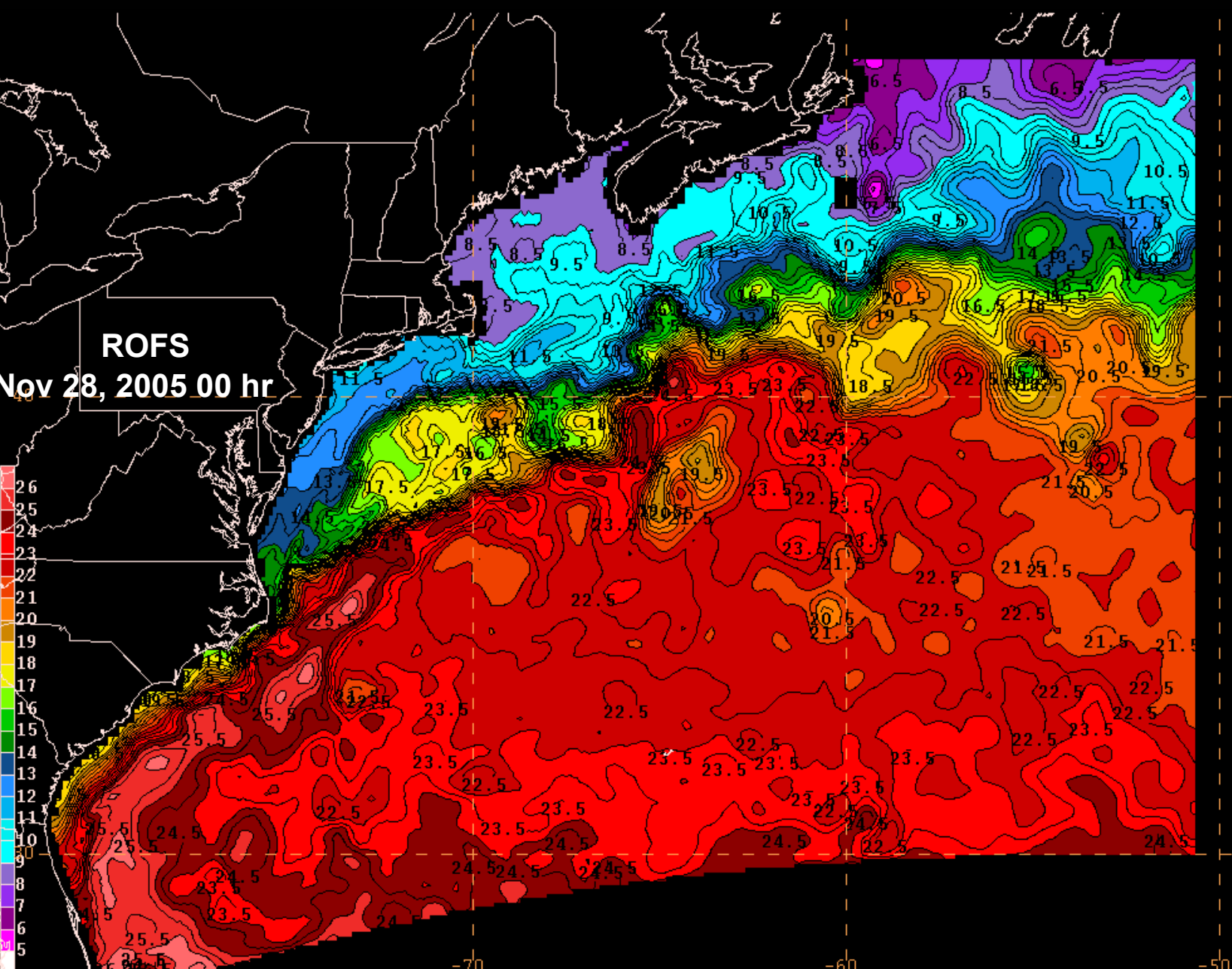
GOES SST:3DAILY_NATL 051128/0000V000 GOES 6km SST (deg C)

ROFS
Nov 28, 2005 00 hr

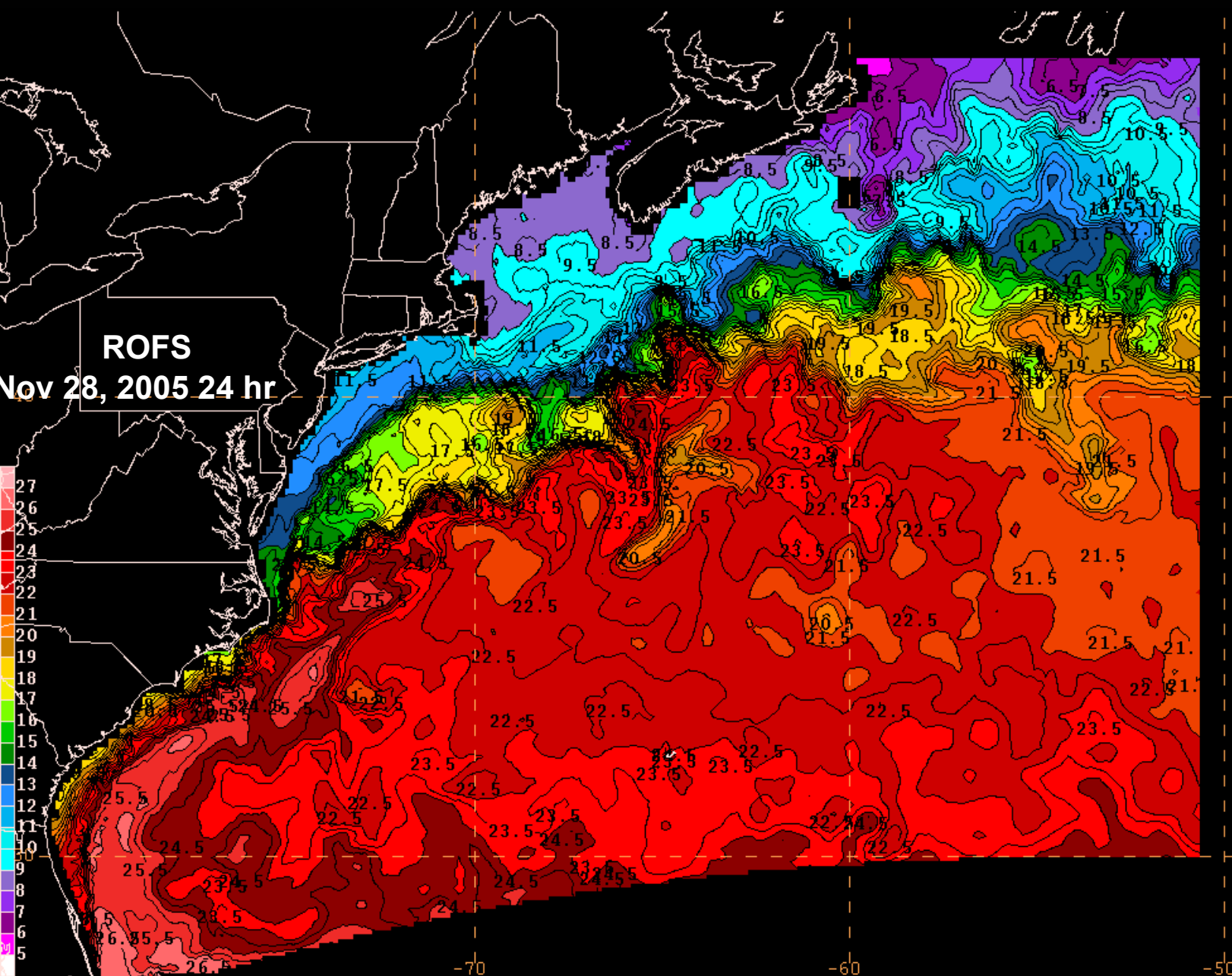


ROFS 051128/0000V000 ROFS Surface Temperature (C)

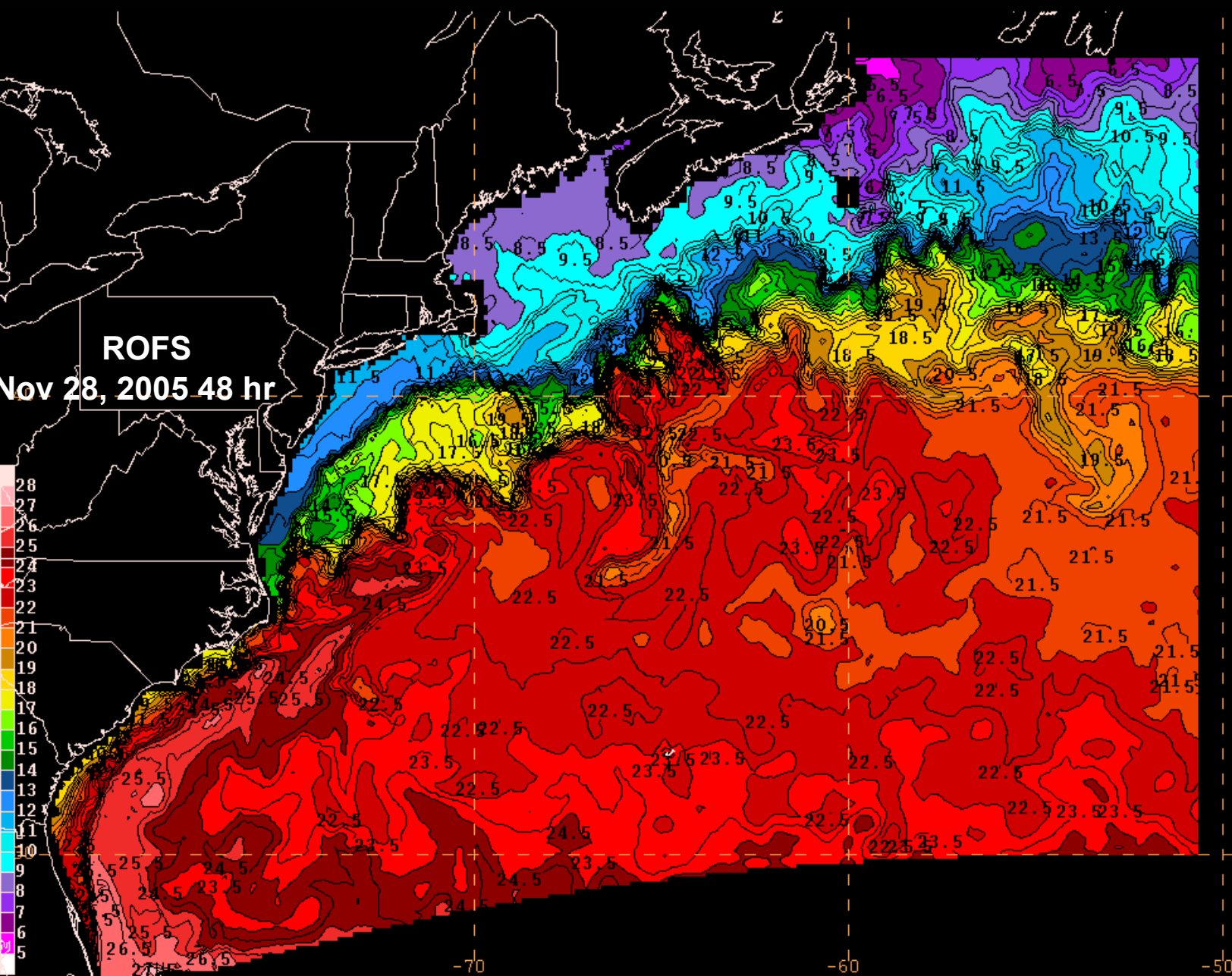
RT_OFS_ATL vs. ROFS



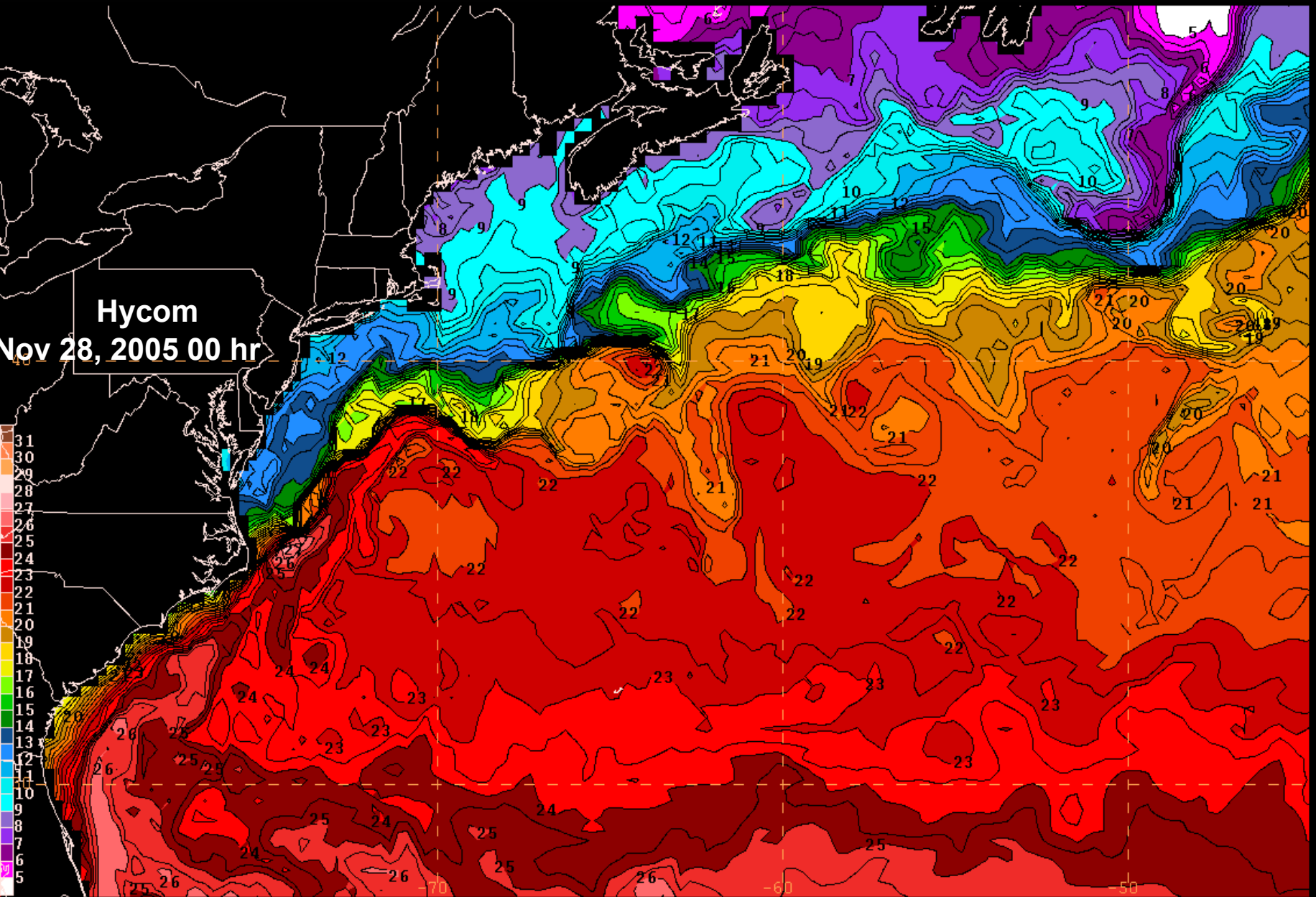
RT_OFS_ATL vs. ROFS



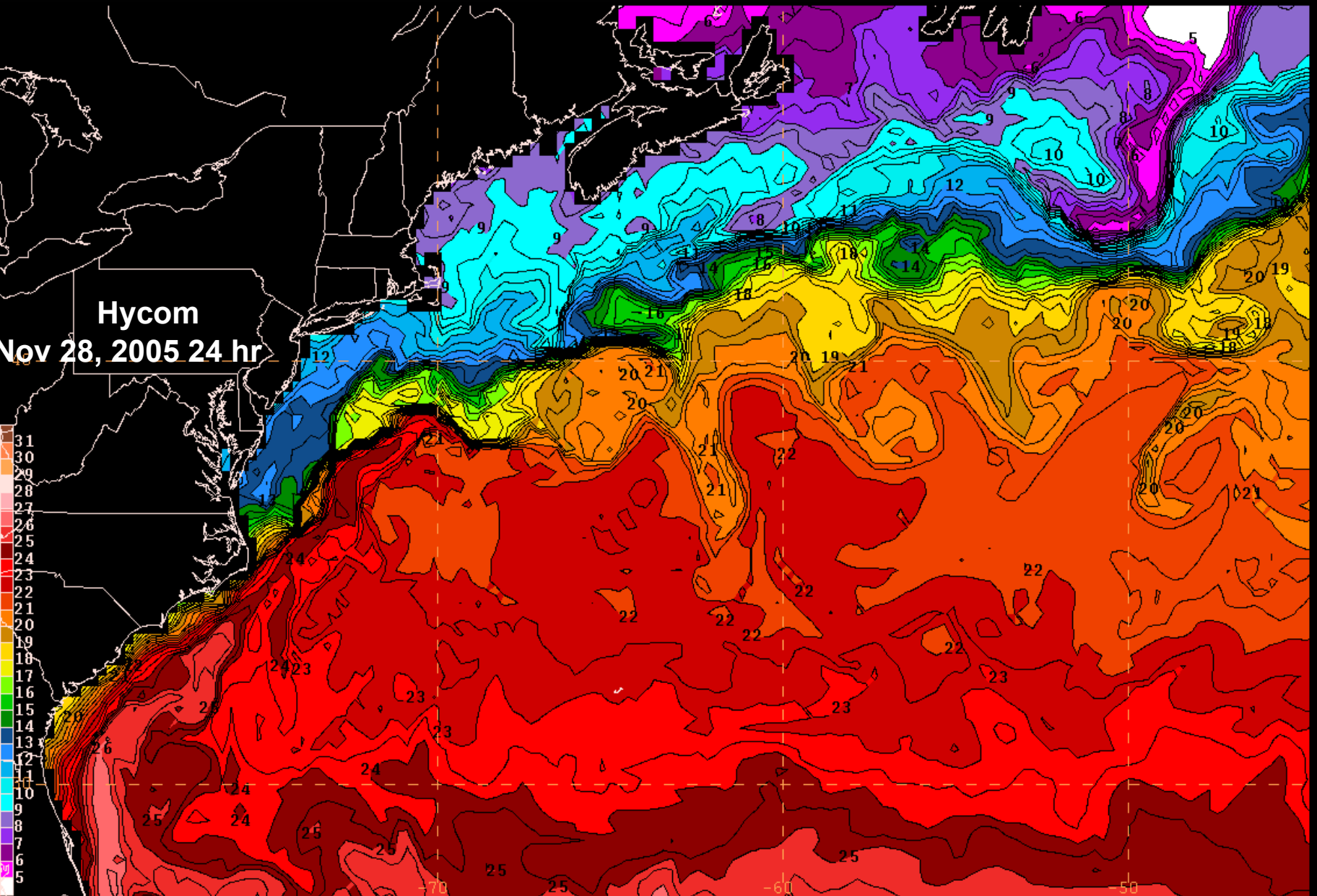
RT_OFS_ATL vs. ROFS



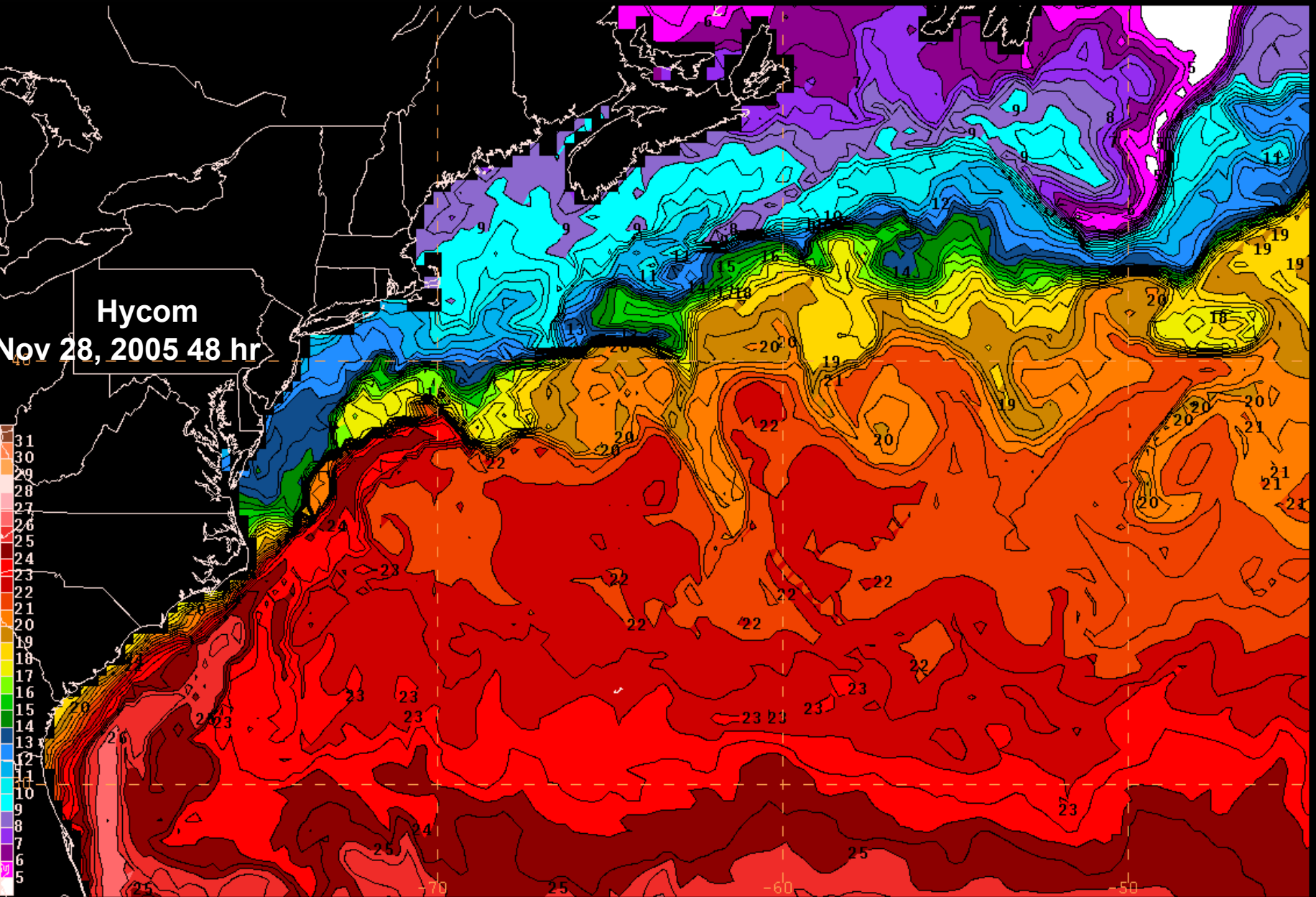
RT_OFS_ATL vs. ROFS



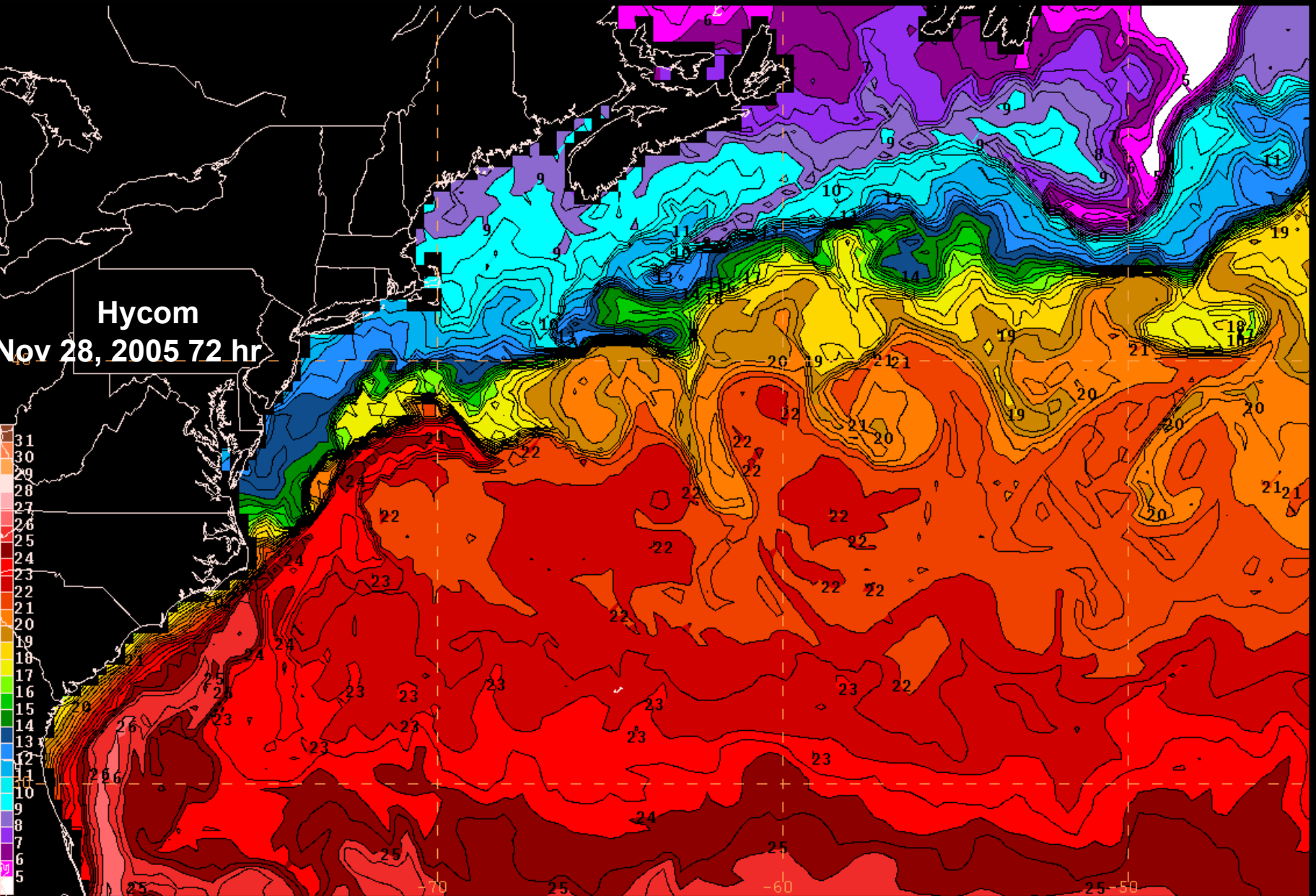
RT_OFS_ATL vs. ROFS



RT_OFS_ATL vs. ROFS



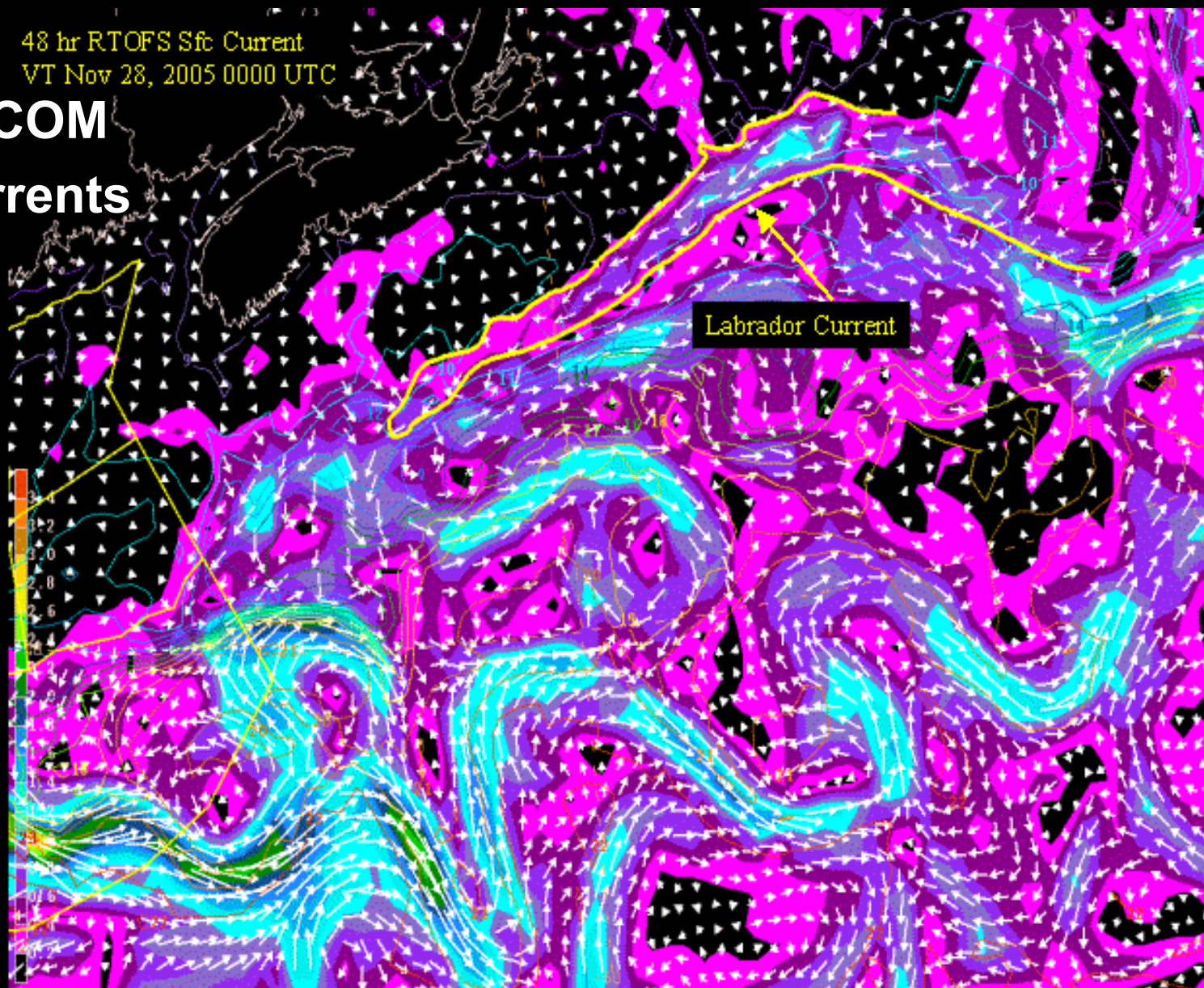
RT_OFS_ATL vs. ROFS



RT_OFS_ATL vs. ROFS

HYCOM Currents

48 hr RTOFS Sfc Current
VT Nov 28, 2005 0000 UTC

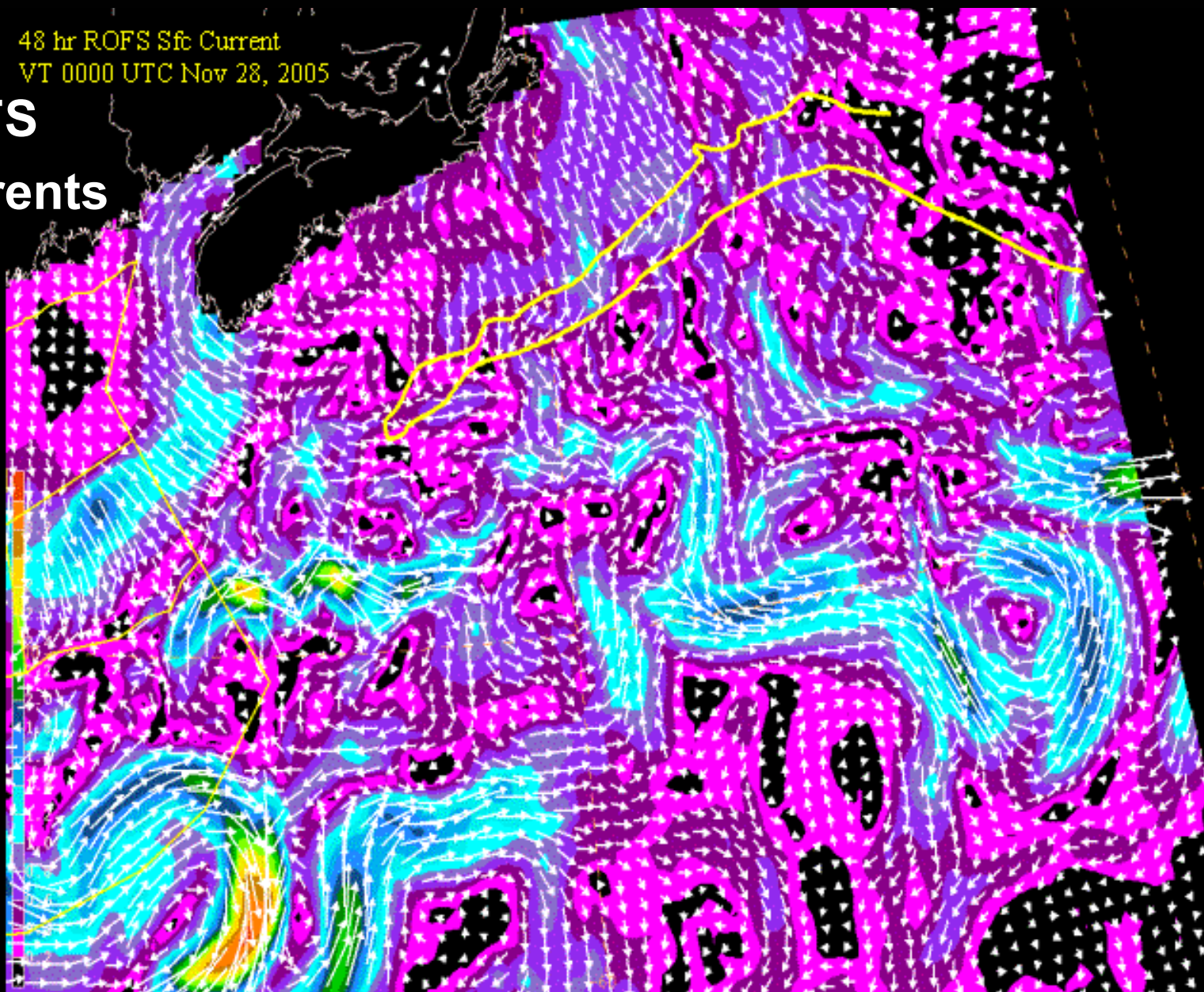


HYCOM NATL 051128/0000V048 HYCOM Surface Temperature (C)
HYCOM NATL 051128/0000V048 HYCOM Surface Currents (KTs)

RT_OFS_ATL vs. ROFS

48 hr ROFS Sfc Current
VT 0000 UTC Nov 28, 2005

ROFS
Currents

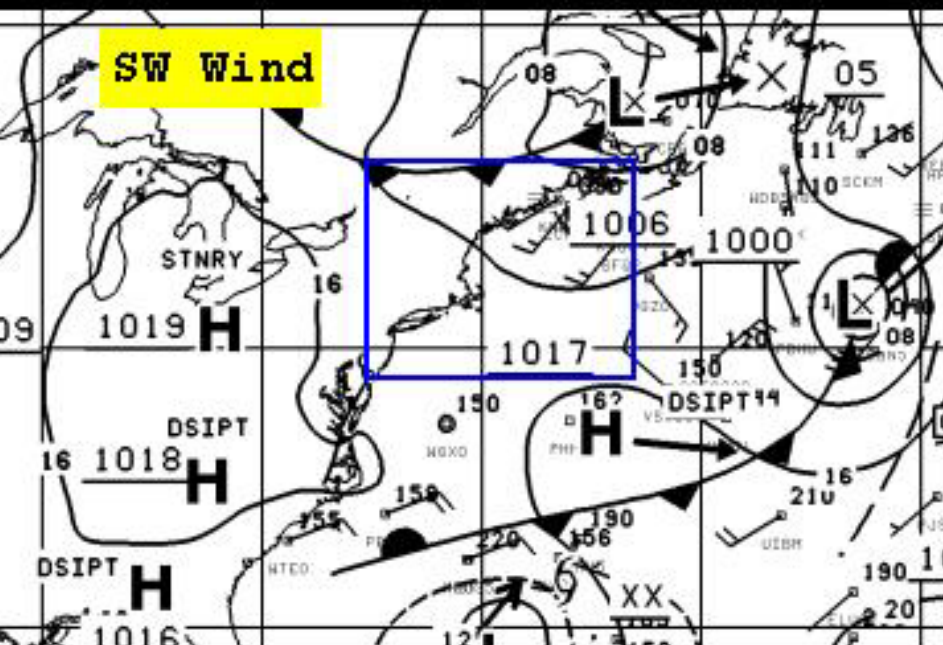


Case: Gulf of Maine

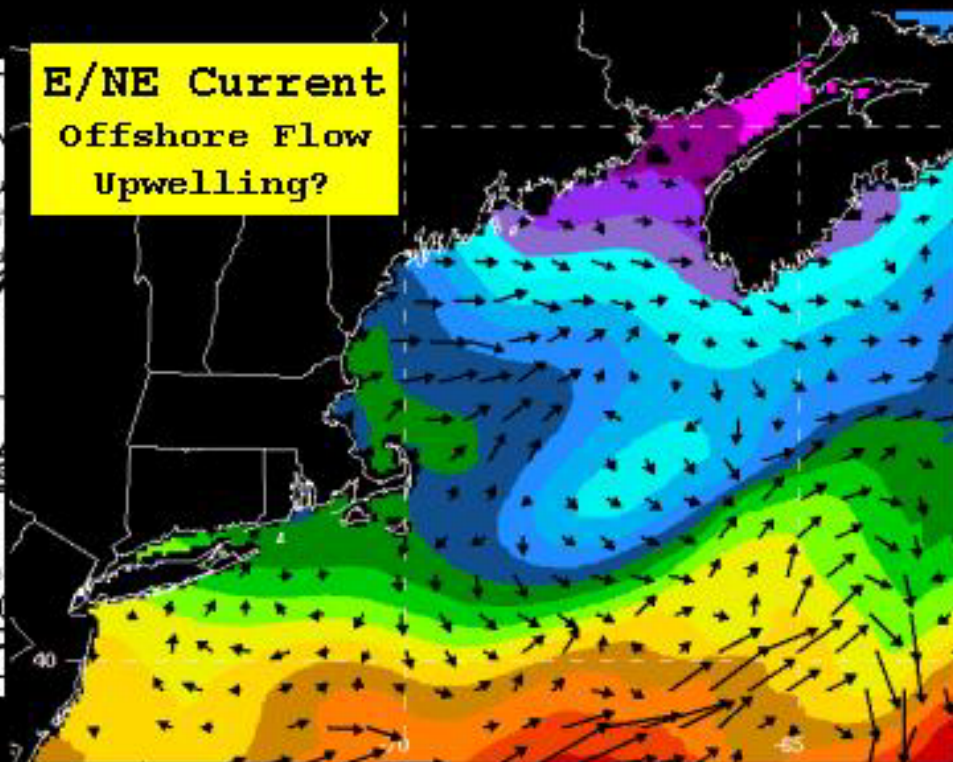
August 3, 2005 – OPC Surface Analysis and
HYCOM SST and Current Analysis (F000)



HYCOM: Model SST (deg C) and Current (knots) 050803/0000V000



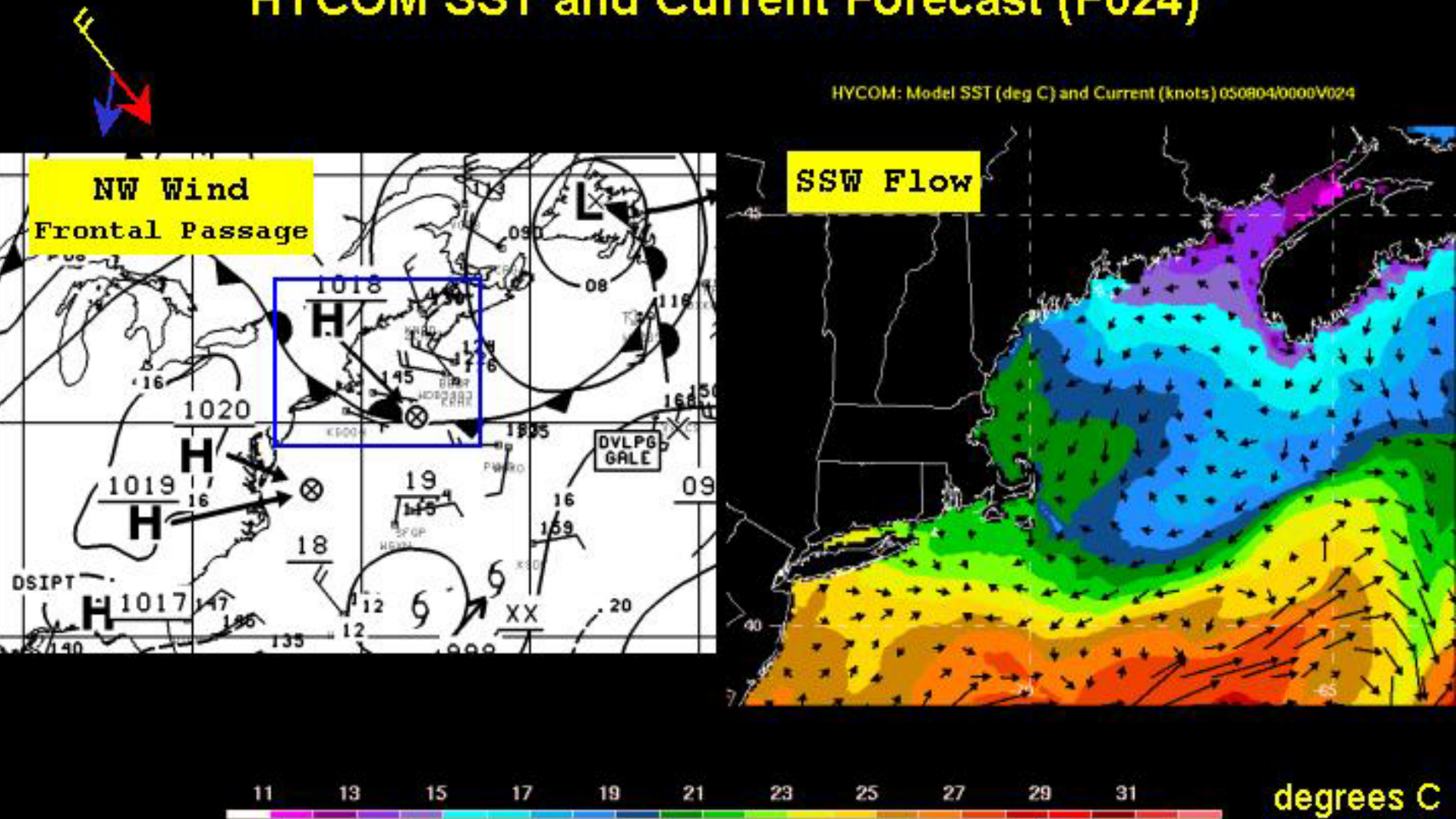
E/NE Current
Offshore Flow
Upwelling?



degrees C

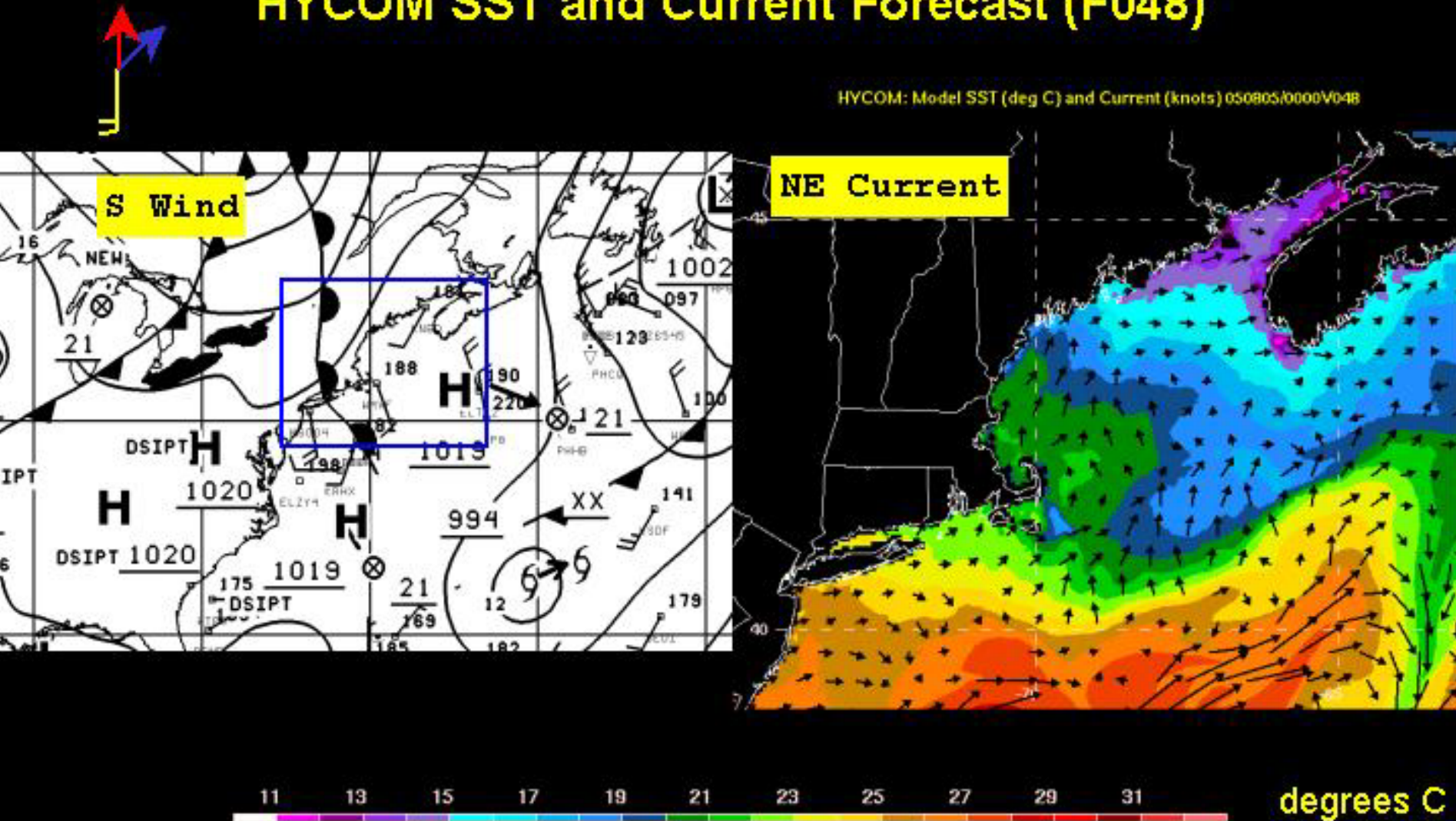
Case: Gulf of Maine

August 4, 2005 – OPC Surface Analysis and
HYCOM SST and Current Forecast (F024)



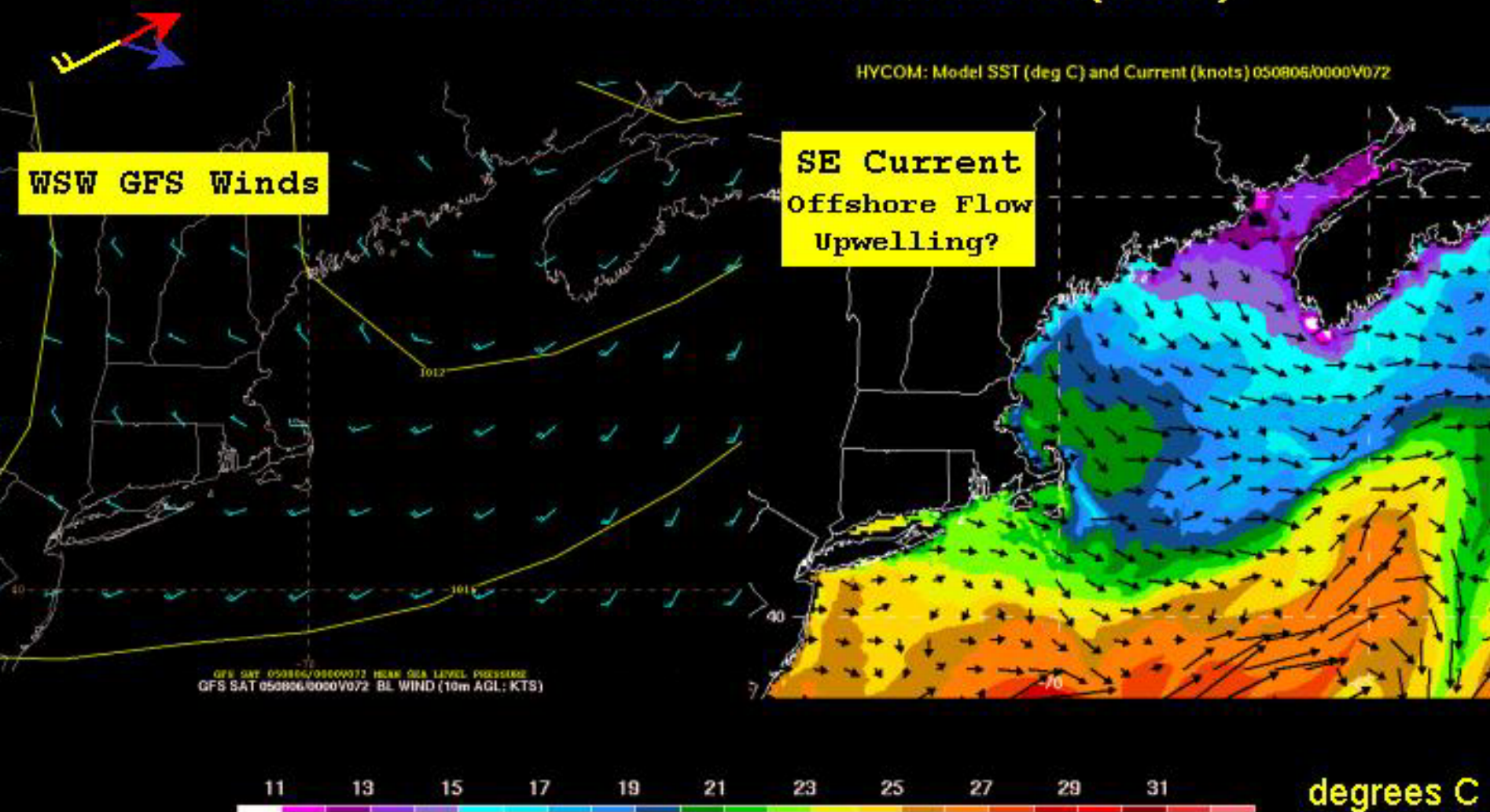
Case: Gulf of Maine

August 5, 2005 – OPC Surface Analysis and
HYCOM SST and Current Forecast (F048)



Case: Gulf of Maine

August 6, 2005 – OPC Surface Analysis and
HYCOM SST and Current Forecast (F072)



Conclusions

- HYCOM initial state doesn't depict all of the significant features in GOES SST
 - Data Assimilation is evolving
- HYCOM overshoots the Gulf Stream north of Cape Hatteras
- Ocean features in Hycom are more stable over time than in ROFS
- Hycom predicts more realistic currents than ROFS
- Hycom will help improve the forecasting of ocean weather by the OPC

Future goals

- Implementation of RT_OFS_ATL for OPC forecasters
- Continue comparing RT_OFS_ATL with ROFS and with GOES SST
- Develop Matlab tools to evaluate the RT_OFS_ATL against GOES SST, AVHR SST, Buoy data, and other data

