J.M. Sienkiewicz (OPC) and J.A. Morgan (I.M. Systems Group, Inc.)

HYCOM Meeting, Oct. 27-29, 2004, RSMAS, Miami, FL
Ocean Prediction Center

- Responsibility, Motivation, Mission
  - Operational forecast center
  - Wind and waves
- Forecasting and Analyses to 5 Days
  - High Seas and Offshore Zones
  - Weather Fax Products
  - Storm, Gale, Hurricane Warnings
Ocean Prediction Center
The Gulf Stream: Data

Wind Speed (m/s)
32.5 25 17.5 15 12.5 10

North Wall

Mar 21, 2003
The Gulf Stream: GFS 10m Winds

30 day bias (knots) of 10m GFS winds vs. QuikSCAT Neutral to moderately unstable MABL
Current Status: SST

- GOES (6km resolution), Infrared

Full Composite: GOES 6km 5day SST (deg C) 10/15-20/2004
Future SST Products

- **POES (1km or 4km), Advanced Very High Resolution Radiometer (AVHRR)**
- **MODIS (1km), Moderate Resolution Imaging Spectroradiometer (MODIS), NASA AQUA/TERRA**
- **TMI (30 km), TRMM's Microwave Imager (TMI), NASA Tropical Rainfall Measuring Mission (TRMM )**
- **Mixed GOES/POES, IR/Microwave products**
Current Status: Models

- Accurate forecast model fields are needed for the protection of life and property at sea and the enhancement of economic opportunity

- Comparison of HYCOM (NCEP AOFS) output to:
  - Observational data
  - NCEP Regional Ocean Forecast System (ROFS)
  - NCEP Global Forecast System (GFS)
  - Eta
## Current Status: Model SST

### MODEL SEA SURFACE TEMPERATURE: COMPARISON and EVALUATION

**Experimental Product**

Displaying data for **October 21, 2004**. Click on thumbnail for larger image.

<table>
<thead>
<tr>
<th>Region</th>
<th>GoesSST Model</th>
<th>ROFS Model</th>
<th>GFS Model</th>
<th>ETA Model</th>
<th>HYCOM Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Regions</td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
<tr>
<td>US Atlantic</td>
<td><img src="image6.png" alt="Image" /></td>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
<td><img src="image9.png" alt="Image" /></td>
<td><img src="image10.png" alt="Image" /></td>
</tr>
<tr>
<td>Mid Atlantic</td>
<td><img src="image11.png" alt="Image" /></td>
<td><img src="image12.png" alt="Image" /></td>
<td><img src="image13.png" alt="Image" /></td>
<td><img src="image14.png" alt="Image" /></td>
<td><img src="image15.png" alt="Image" /></td>
</tr>
<tr>
<td>Caribbean Sea</td>
<td><img src="image16.png" alt="Image" /></td>
<td><img src="image17.png" alt="Image" /></td>
<td><img src="image18.png" alt="Image" /></td>
<td><img src="image19.png" alt="Image" /></td>
<td><img src="image20.png" alt="Image" /></td>
</tr>
</tbody>
</table>
Ocean Features

- Location and strength of persistent ocean features
  - Currents
  - Fronts
  - Eddies and Jets
  - Case Study: The Gulf Stream
24 hr ROFS SST
00 hr ROFS Current (knots)
24 hr ROFS Current (knots)
48 hr ROFS Current (knots)
NAOFS Evaluation

- For the evaluation, we are developing a variety of products including N-AWIPS fields and web-based image comparisons; these will aid in examining ocean features across multiple datasets.

- The OPC hopes to use the NAOFS output fields to improve existing forecasts of winds and waves, and as a basis for an expanding suite of oceanographic products.
Summary

- Status – Tooling up for evaluation
  - GOES SST (starting place)
  - Additional SST fields (microwave, POES)
- ROFS data assimilation
  - Very positive with AVHRR and GOES SSTs
- NAOFS focus initially on features
  - Analyses
  - Forecasts
- joseph.sienkiewicz@noaa.gov
- Jessica.morgan@noaa.gov
- www.opc.ncep.noaa.gov/sst/goessst.html