

Southeastern Marine Weather Portal

NWS and COOS Working Together
for the Benefit of the Marine
Community

Charlton Galvarino, Second Creek Consulting, LLC;
UNC-Wilmington : Coastal GeoTools 2009

Marine Weather Portal



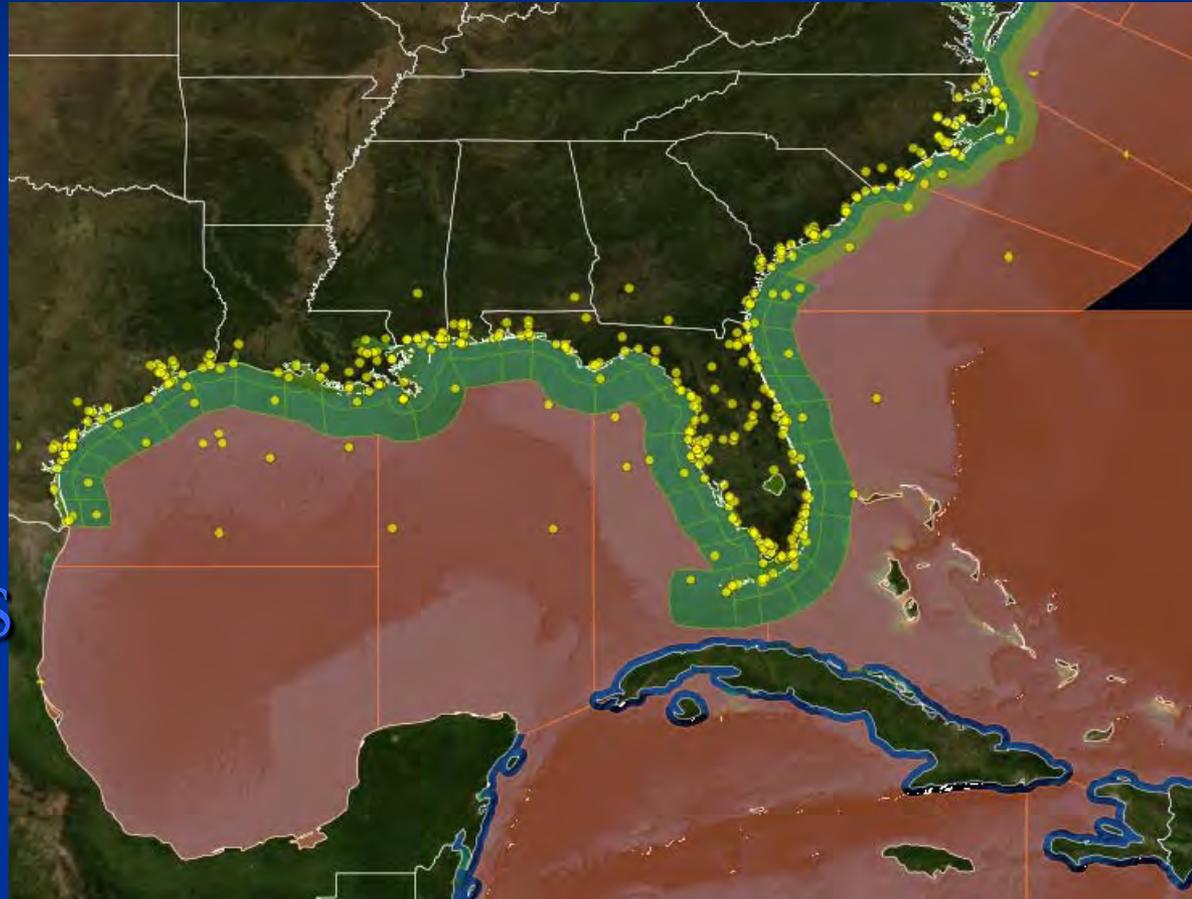
NWS forecasters on a familiarization trip with the ILM USCG Auxiliary

- User driven need & end user focus
(Carolina Marine Advisory Committee - CMAC)
- One stop marine weather resource
- Provides standardized format for all NWS offices
- Cross cutting opportunity for ocean observing programs, NWS, and other partners

CMAC: was formed by the NWS in Wilmington to enhance marine weather services through feedback provided by partners in the local marine community.

Geographic Evolution

- “Carolinas Coast”
 - Nearshore marine zones
 - Offshore marine zones
 - Met/ocean observations
- Southeast coastal US
- Marine Weather Portal



Style, Hazards & Observations

Click on the map below for the latest forecast.

En Español

Read watches, warnings & advisories.

Tropical Storm Warning

■ Context-centric
sensitive
observations

Observations Forecast 29°58'12" N 80°28'12" W

Background Map: Hazards Sea Surface Temp. Radar Radar Loop Wind & Air Pressure Bathymetry

Map Locations: Cities Coastal Locations No labels

Read watches, warnings & advisories.
NOAA Weather Radio live stream
● observation site
▲ water level station

NDBC Station 41012 - St. Augustine FL
Small craft advisory

Surface conditions as of 8:50 pm EST on 3/3

Air Temperature	47.3 deg F
Wind From Direction	NNE (20 deg from N)
Wind Speed	17.9 mph (15.6 knots)
Wind Gust	22.4 mph (19.4 knots)
Air Pressure	1028.8 mb
Significant Wave Height	6.23 feet
Sea Surface Temperature	64.9 deg F

Small craft advisory

observations for that location.

Radar Radar Loop Wind & Air Pressure Bathymetry

Read watches, warnings & advisories.
NOAA Weather Radio live stream
● observation site
▲ water level station

Hurricane warning	Tornado warning	Tropical storm warning	Tropical storm watch
Small craft advisory	Hurricane statement		

Select a term from the list for more information.

Oceanographic and Meteorological get info about... Hazards get info about...

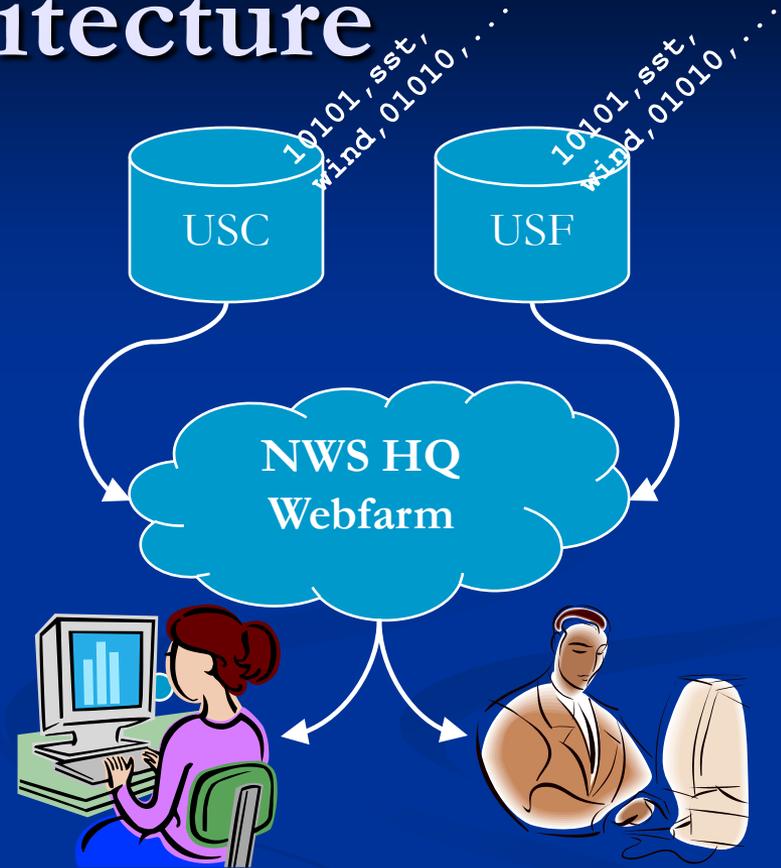
General Architecture

- Servers at USC and USF

- Collect data
- Collect hazards
- Create maps
- Package information as HTML and PNG

- Webfarm at NWS HQ

- Pulls packaged information from USC and USF
- Serves the data & maps as webpages to the public



Data Crunching at USC & USF

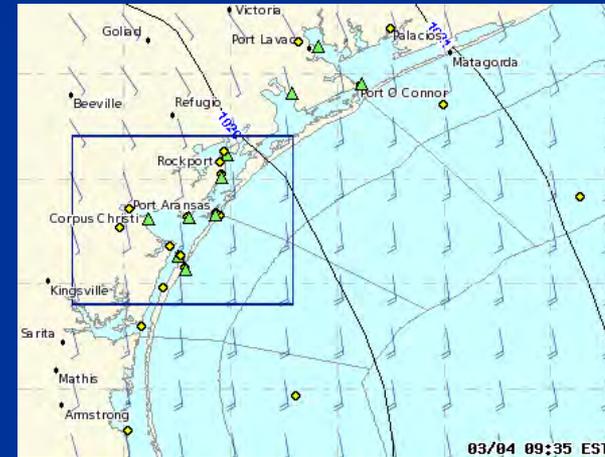
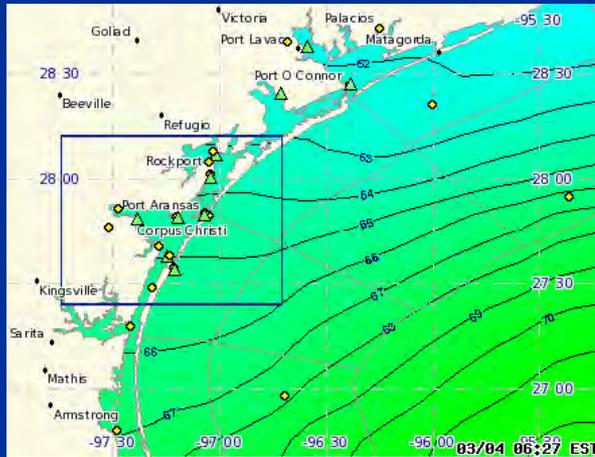
- Meteorological and ocean observations
 - Collect data from federal providers
 - NDBC : web scraping (includes RA's and other OOSes)
 - NWS : Perl module (web scraping)
 - USGS : web scraping
 - NOS : SOAP services
 - Store in a database (PostgreSQL / PostGIS)
- Hazard & warnings
 - Collect from several places (screen scraping)
 - Rue the days of teletypes!

```
GMZ270-275-012300-  
/O.EXT.KCRP.SC.Y.0022.000000T0000Z-090301T2300Z/  
WATERS BAFFIN BAY TO PORT ARANSAS 20 TO 60 NM-  
WATERS PORT ARANSAS TO MATAGORDA SHIP CHANNEL 20 TO 60 NM-  
309 PM CST SUN MAR 1 2009
```

```
...SMALL CRAFT ADVISORY NOW IN EFFECT UNTIL 5 PM CST THIS  
AFTERNOON...
```

More Data Crunching at USC & USF

- Fetch and decode GRIB forecast products (sea surface temperature, winds, air pressure).



- Fetch offshore text forecasts.
- Visualize many maps at many scales in many regions.
- Create observation HTML ‘stub’ tables of in-situ measurements. Is an observation inside a hazard? PostGIS has the answer.

NDBC Station 41012 - St. Augustine FL	
Small craft advisory	
Surface conditions as of 8:50 pm EST on 3/3	
Air Temperature	47.3 deg F
Wind From Direction	NNE (20 deg from N)
Wind Speed	17.9 mph (15.8 knots)
Wind Gust	22.4 mph (19.4 knots)
Air Pressure	1028.8 mb
Significant Wave Height	6.23 feet
Sea Surface Temperature	64.9 deg F

What's Under the Hood

- Data storage
 - PostgreSQL database
 - PostGIS spatial engine
- Visualization
 - UMN MapServer
 - U Hawaii GMT, ImageMagick, Gnuplot
- Data exchange protocols
 - WMS
 - KML
 - HTML

What Works

- Having fixed views: areas and scales.
- Precache everything. And serve the bare minimum only on demand.
- Having a limited number of paths to retrieving observation, model, and forecast data.
- Leaving the web load pressure to NWS HQ.
- Having redundancy between USF and USC.
- Interfacing with other NWS products (point forecast).
- Having a group of committed users and WFO staff.

What Could Be Better

- Hazard / warning fetching and parsing isn't foolproof.
- The addition of new areas and observations requires finesse.
- No content management system in place for WFO's to manage their own portlet.
- User experience.

What Is in the Works

- Keep up with the Joneses: migrate the interface toward Google Maps for better or worse.
- Move toward virtualization and packaging.
- Further geographic expansion: breaking down geographic and linguistic boundaries.
- Enabling portal-like deployments for other NOAA offices.

Urban Legend?

- Website is <http://forecast.weather.gov/mwp/>.
- For more information:
 - Charlton Galvarino
charlton@2creek.com
(803) 233-6205
Second Creek Consulting, LLC