WEATHER AWARENESS

Joe Sienkiewicz, Chief, Ocean Applications Branch
Paul Vukits, Senior Marine Forecaster

NOAA National Weather Service
Ocean Prediction Center

http://www.opc.ncep.noaa.gov/
http://www.facebook.com/OceanPredictionCenter
You just got on the boat.

What do you do with these, and why?
“Shore deadlines too often get in the way of making good nautical decisions.”
“the only schedule that really counts for mariners, ...is the one of weather systems.”

John Rousmaniere
Fastnet, Force 10
NWS / Ocean Prediction Center
mission/responsibility

• Protection of life and property, safety at sea, and enhancement of economic opportunity
  – Issue Warnings and Forecasts

• Partially fulfill U.S. responsibilities with the World Meteorological Organization and Safety of Life at Sea Convention (SOLAS)
  – Global Maritime Distress Safety System *GMDSS*
    (http://www.gmdss.com/)

• Forecast support
  – Government incident response (USCG, NOAA)
  – Government operations (USCG, Navy, NOAA)

• **Science AND service** based organization
Safety of Life At Sea, 1914

http://www.imo.org

- Chapter III – Safety of Navigation
  - Part I – Ice and Derelicts
  - Part II – Meteorological Information
- Chapter V - Radiotelegraphy
NWS Forecast Office Wakefield, VA

Watches, Warnings & Advisories
- Gale Warning
- Small Craft Advisory
- Hazardous Weather Outlook

Last Map Update: Wed, Mar. 25, 2015 at 8:52:04 pm EDT
HAZARDOUS WEATHER CONDITIONS

- Small Craft Advisory in effect from March 26, 06:00 AM EDT until March 27, 06:00 AM EDT

Last Update: 700 PM EDT WED MAR 25 2015

View Nearby Observations

4NM NE RUDEE INLET VA

MARINE ZONE FORECAST

**Synopsis:** A WARM FRONT LIFTS NORTH OF THE WATERS THROUGH THIS EVENING. A STRONG COLD FRONT CROSSES THE WATERS THURSDAY NIGHT. HIGH PRESSURE BUILDS IN FROM THE NORTHWEST OVER THE WEEKEND.

**Tonight**
9 winds 10 to 15 kt. increasing to 15 to 20 kt late. Seas 3 ft with a dominant period of 4 seconds. A slight chance of showers after midnight.

**Thu**
S winds 15 to 20 kt. Seas 4 to 5 ft with a dominant period of 7 seconds. A slight chance of showers until late afternoon.

**Thu Night**
S winds 15 to 20 kt...becoming SW after midnight. Seas 5 to 6 ft. Showers after midnight.

**Fri**
N winds 15 to 20 kt. Seas 4 to 5 ft. Showers.

**Fri Night**
N winds 10 to 15 kt...increasing to 15 to 20 kt after midnight. Seas 3 to 4 ft. Showers likely early in the evening...then a chance of showers in the late evening and early morning.

**Sat**
NW winds 15 to 20 kt. Seas 4 to 5 ft.

**Sat Night**
NW winds 10 to 15 kt...increasing to 15 to 20 kt after midnight. Seas 4 to 5 ft.

**Sun**
N winds 15 to 20 kt. becoming NW 10 to 15 kt in the afternoon. Seas 4 to 5 ft...subsiding to 3 ft in the afternoon.

**Sun Night**
S winds 5 to 10 kt...becoming SW 10 to 15 kt after midnight. Seas 3 to 4 ft.

**Mon**
SW winds 10 to 15 kt. Seas 3 to 4 ft.

ADDITIONAL FORECASTS AND INFORMATION

ZONE AREA FORECAST FOR COASTAL WATERS FROM CAPE CHARLES LIGHT TO VIRGINIA-NORTH CAROLINA BORDER OUT TO 20 NM MINOR EXCITEMENT
Ocean Prediction Center

• Role of forecaster changing
  • Forecaster tools allow
    • Direct interaction with model forecasts
  • Production of forecaster generated grids
    • GRIBs
  • Offshore bulletins from grids
• Potential for growth and new products
http://new.nowcoast.noaa.gov/

preview.weather.gov/graphical/

National Digital Forecast Database
Description

National Digital Forecast Database
Ocean grids (GRIB2)

Display Time: Sat, Mar 28, 2015 2:00 pm (EDT)
National Digital Forecast Database
Ocean grids (GRIB2)

http://new.nowcoast.noaa.gov/

Display Time: Sat, Mar 28, 2015 2:00 pm (EDT)
**Surface Charts**

Analysis, 24, 48, 96 HR Forecasts

**Fronts**
**Observations**
**Isobars**

Pressure Centers L, H
L – rising air converging
H - sinking air diverging

24 hr forecast position/intensity

**WARNINGS**

Fronts – warm, cold, occluded
boundaries between air of different temperature
- Pressure trough
- Wind shift
- Weather (rain, clouds)

Global average sea level pressure

1013.2 millibars

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**Atlantic Surface Analysis**

Issued: 14:48 UTC 13 Mar 2014
Valid: 12:00 UTC 13 Mar 2014
FCSTR: Kosier
Sources: DPC NHC NCEP

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(Map details showing various pressure centers, wind speeds, and fronts)
Atlantic Analysis

http://www.opc.ncep.noaa.gov/shtml/atlsch.shtml

Atlantic Graphical Forecasts

http://www.vos.noaa.gov/MWL/dec_08/milibar_chart.shtml
Pacific Analysis

http://www.opc.ncep.noaa.gov/shtml/pacsch.shtml

Pacific Forecasts

http://www.vos.noaa.gov/MWL/dec_08/milibar_chart.shtml
Types of THUNDERSTORMS

Single Cell Storm

Multicell cluster storm

Multicell line storm

Supercell storm

INCREASING

• Shear
  • Wind direction and speed with height
  • Separate up and down draft

• Instability
  • Potential
  • Fuel

• Organization
  • Structure

• Lifespan
  • Minutes to hours

• Severity
  • Minor damage
  • Catastrophic

https://www.meted.ucar.edu/
http://www.nssl.noaa.gov/education/svrwx101/
http://www.srh.noaa.gov/oun/?n=stormspotting-basics
http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/svr/home.rxml
WATCH - the risk of a hazardous weather event has increased significantly, but its occurrence, location, and/or timing is still uncertain. It is intended to provide enough lead time so that those who need to set their plans in motion can do so.

Tornado Severe Thunderstorm

WARNING - hazardous weather is occurring, is imminent, or has a very high probability of occurring. A warning is used for conditions posing a threat to life and property.

Tornado Severe Thunderstorm

Local Weather Forecast Office
1652 UTC 25 Dec 2012
155 US Doppler Radars
5 min scan (full volume)
CUMULUS CLOUDS
Cumulonimbus

MATURING
GROWING
GROWING
GROWING
NEW
MAMMATUS

GREEN TINGE – potential for HAIL
THUNDERSTORM TIPS

Know the forecast!
NOAA WX Radio, weather.gov
Fronts, troughs, boundaries

Watch the sky!!! ACT EARLY!!!!

Smart phone, laptop (NWS radar), Satellite Radio
Beware of false sense of security!

Gulf Stream
Flow parallel to the Stream
Maximum activity at night
AM Radio, Radar (rain clutter/sea clutter)

Squall Drill?
Hurricane "Danielle"

Tropical Storm "Earl"

Tropical Wave became T.S. Fiona Aug. 30th

Wave over Africa

Tropical Storms and Hurricanes

http://www.nhc.noaa.gov/
Average Atlantic Hurricane Season
9.8 named storms
5.8 Hurricanes

2014  8 “named” storms
     4 Hurricanes

A Slightly Below Average Season

www.nhc.noaa.gov
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End of 2003 Season

PEAK
Sep 10

http://www.nhc.noaa.gov/climo/
Dealing with Hurricane Season

• Know the climatology…formation areas and favored tracks
  http://www.nhc.noaa.gov/pastprofile.shtml

• Know where to receive latest information, continue to monitor!!!
  http://www.weather.gov

• We continue to get better at forecasting track and formation!
  http://www.nhc.noaa.gov/verification/figs/OFCL_ATL_trk_error_trend.gif

• Intensity still a big challenge!!!
  http://www.nhc.noaa.gov/verification/figs/OFCL_ATL_int_error_trend.gif

• Have seen more cyclones later in season…

• Hurricanes are just as dangerous in the northern latitudes
  • They move faster and are more efficient wave producers
Before departing
• Departure time may be the single most important decision.
• Know the forecast…and update!
• Monitor the weather via Internet….same products…get in rhythm
• Private weather routing service?
• Know your limitations (criteria)!

Underway
• Monitor the weather…
  • watch keeping/navigation
  • wind speed and/or direction changes, barometer, seas
  • know what to anticipate
• Is the weather evolving as planned?
  If not…determine and redefine options

• KNOW THE CURRENT FORECAST!!!
  • Weatherfax, SSB, NOAA WX RADIO, ftpmail, etc…