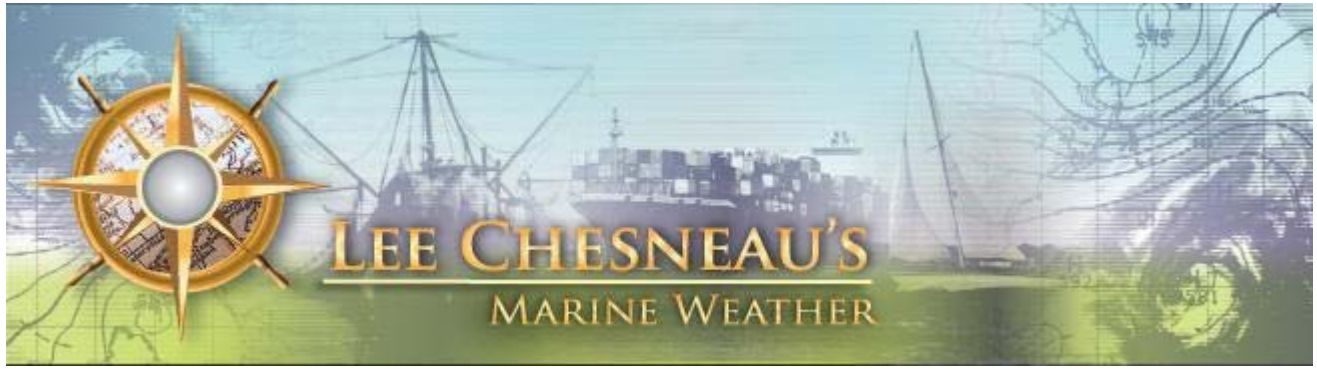


2008 Annapolis MD, Safety at Sea Seminar… On Weather Self Reliance

Lee S Chesneau

Lee Chesneau's Marine Weather

lee@chesneaumarineweather.com

“Expect the Unexpected”

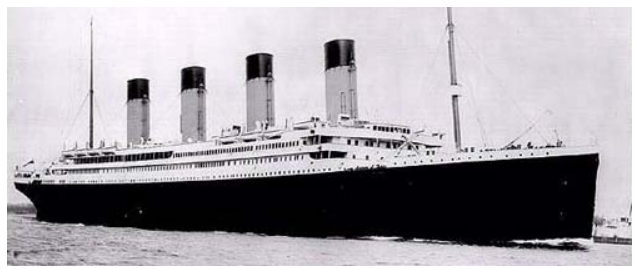
“When anyone asks me how I can best describe my experience of nearly forty years at sea, I merely say uneventful.

Of course there have been winter gales and storms and fog and the like, but in all my experience, I have never been in an accident of any sort worth speaking about. I have seen but one vessel in distress in all my years at sea…

I never saw a wreck and have never been wrecked, nor was I ever in any predicament that threatened to end in disaster of any sort.”

- *from a presentation by E.J. Smith, 1907*

Captain of the *Titanic*



New England to Baltimore Caynyon …GALE WARNING…

NW WINDS INCREASING TO 30 TO 40 KT…SEAS BUILDING TO 15 TO 20 FT…

Did you ever wonder who issues Marine WARNINGS?

NWS Marine Advisories and Warnings

Small Craft Advisory…
20-33 knots/seas 8- 10 feet

Gale…34-47 knots (Force 8/9)

Storm…48-63 knot (Force 10/11)

Hurricane Force…64 knot and higher (Force 12)

PREDICTION

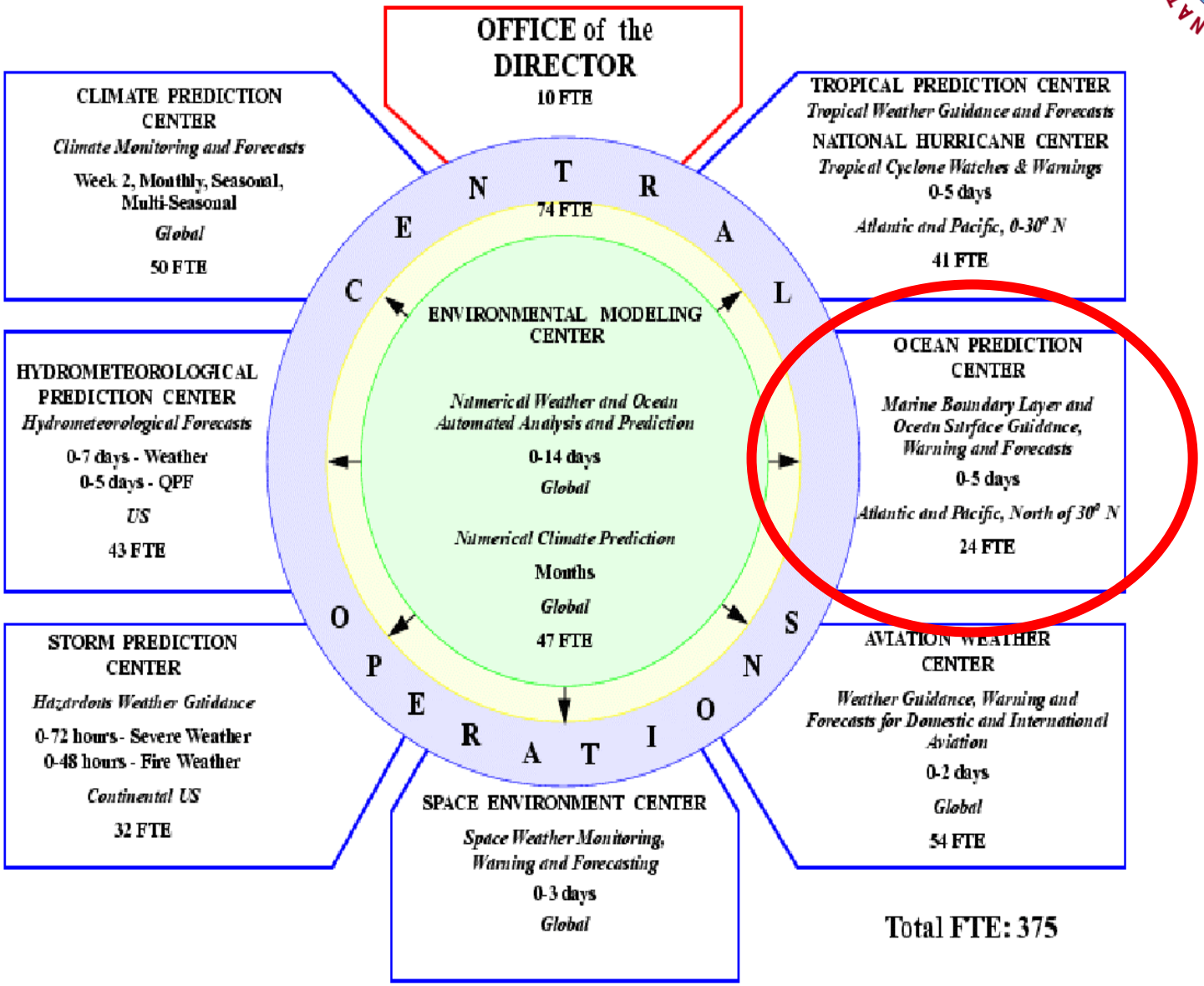
OCEAN

NOAA

CENTER

The Mariner's Weather Lifeline

NATIONAL CENTERS for ENVIRONMENTAL PREDICTION



NCEP -- Where America's climate and weather services begin.

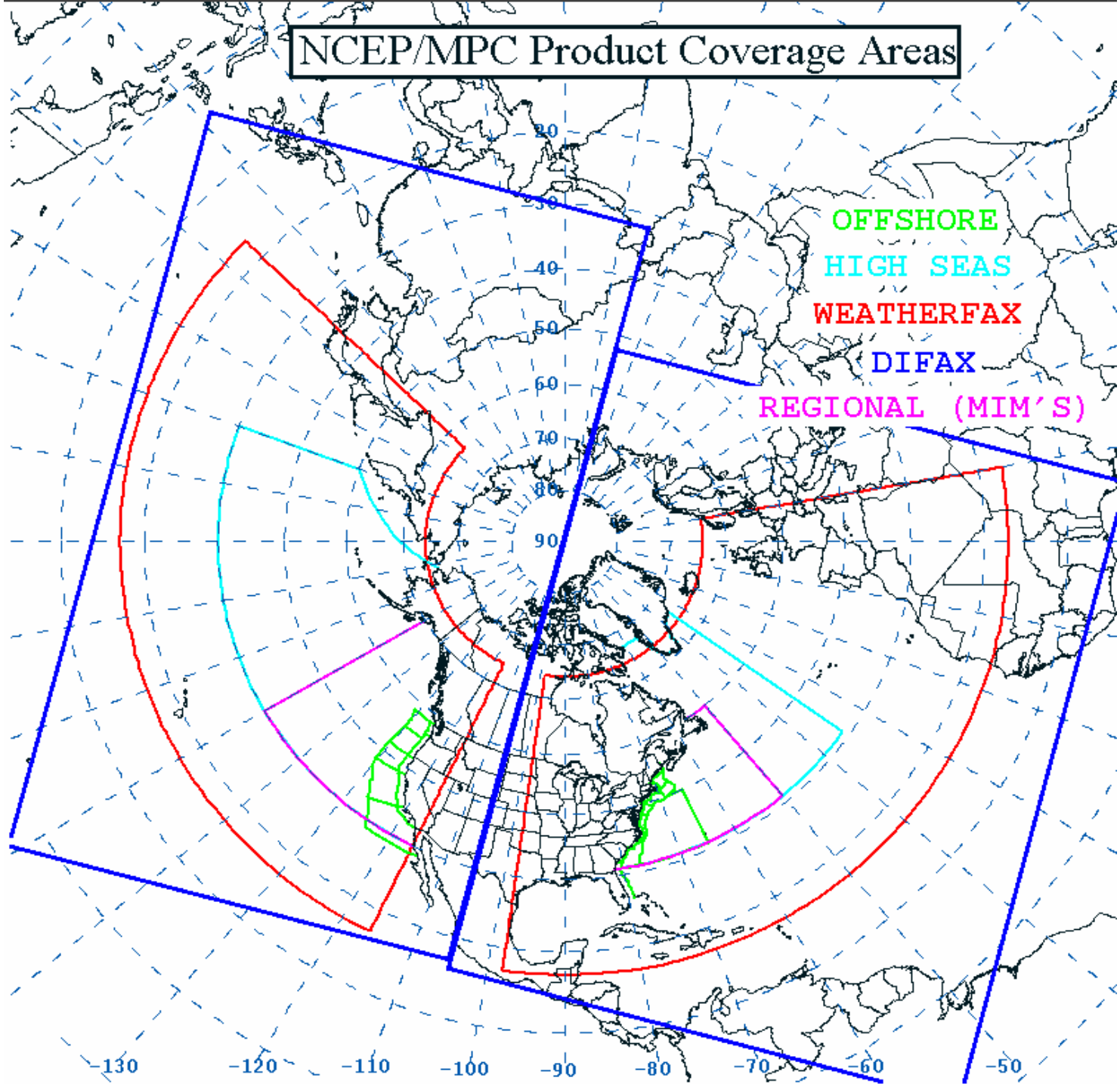
OPC Operations

NWS Ocean Prediction Center ….Responsibilities

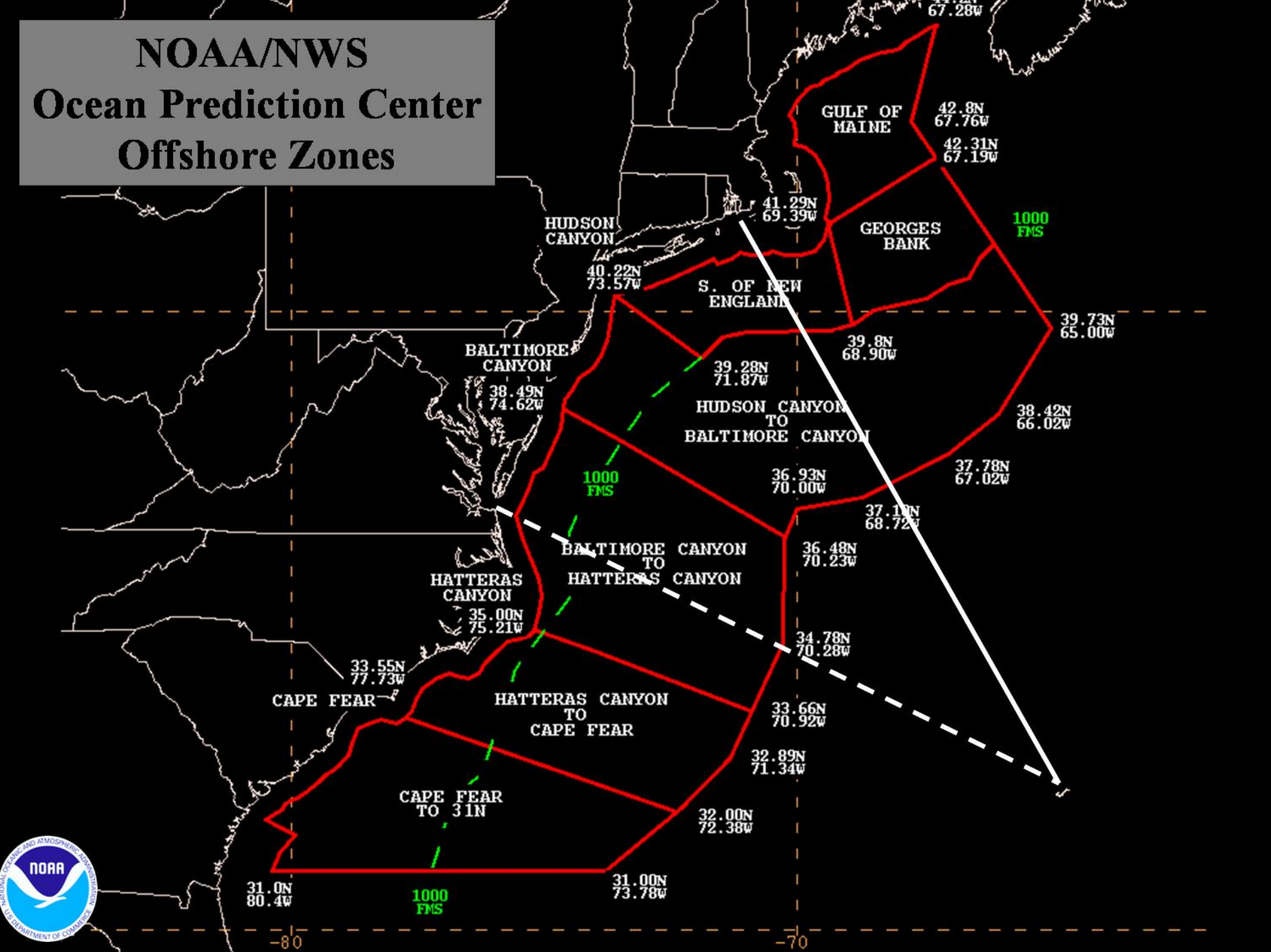
- **Offshore Waters Forecasts**
  - New England Waters
  - Mid-Atlantic
  - Washington and Oregon
  - California and Northern Mexican
- **High Seas Text and WWV Boulder Voice**
  - North Pacific and North Atlantic
- **Weather Fax Products**
  - North Pacific and North Atlantic
  - Surface, 500 Mb, Sea State analyses
  - Surface and 500 Mb Forecasts to 5 days

GALE WARNING **STORM WARNING**

HURRICANE FORCE


NCEP/MPC Product Coverage Areas
OFFSHORE
HIGH SEAS
WEATHERFAX
DIFAX
REGIONAL (MIM'S)
20
30
40
50
60
70
80
90
-130
-120
-110
-100
-90
-80
-70
-60
-50

NOAA/NWS
Ocean Prediction Center
Offshore Zones



Marine Forecasts in Text Fomat

```
OFFSHORE WATERS FORECAST
NWS OCEAN PREDICTION CENTER WASHINGTON DC
400 AM EDT WED MAR 14 2007

NEW ENGLAND CONTINENTAL SHELF AND SLOPE WATERS FROM 25 NM
OFFSHORE TO THE HAGUE LINE...EXCEPT TO 1000 FMS S OF NEW ENGLAND

ANZ080-141430-
400 AM EDT WED MAR 14 2007

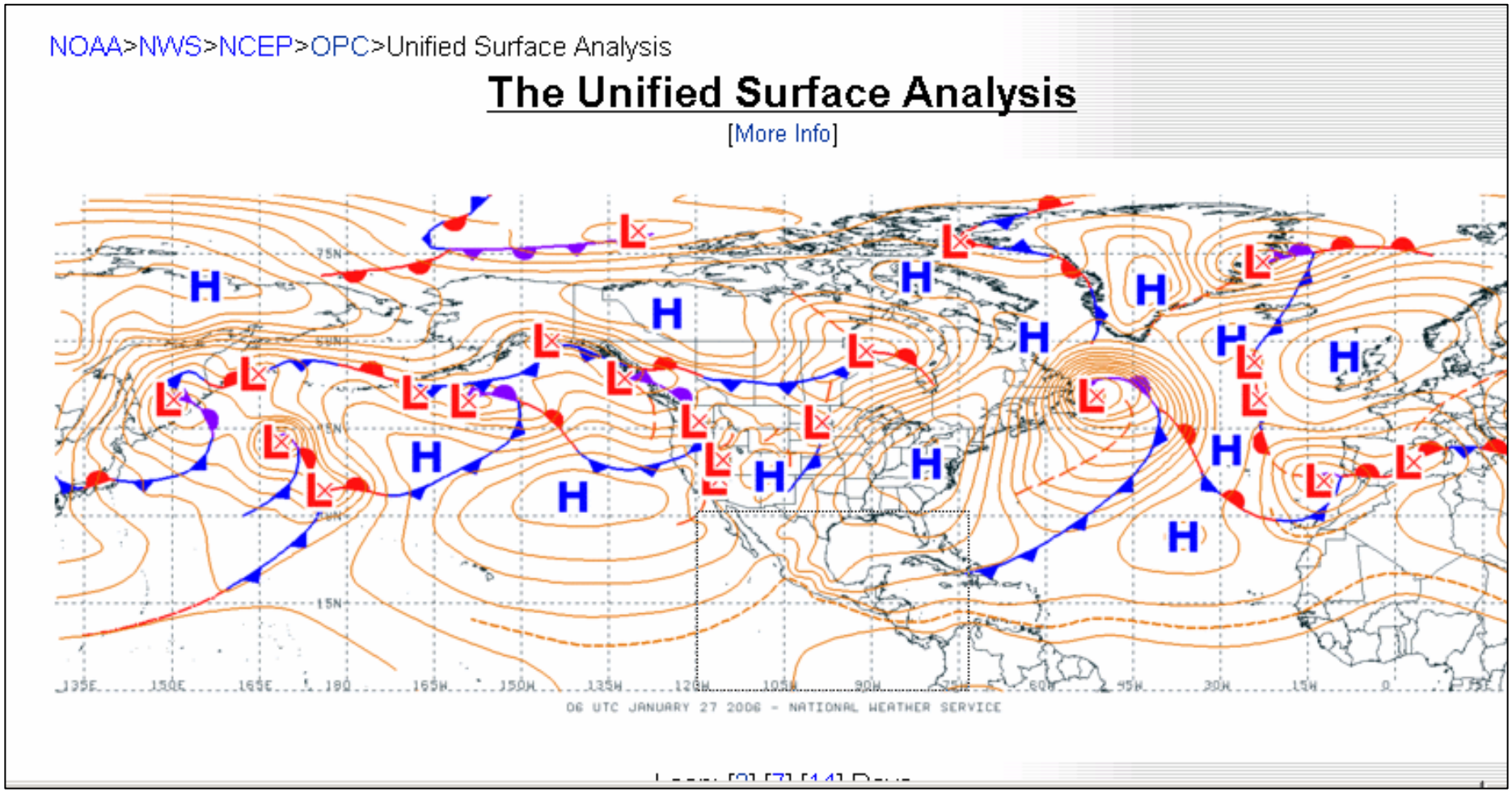
.SYNOPSIS FOR NEW ENGLAND WATERS...A COLD FRONT WILL APPROACH
THE WATERS FROM THE NW TODAY AND TONIGHT...AND MOVE SE ACROSS THE
WATERS THU. THE FRONT WILL STALL S OF THE AREA THU NIGHT INTO
FRI. A LOW OVER VIRGINIA EARLY FRI WILL INTENSIFY AND MOVE NE
LATE FRI INTO SAT...WHILE LIFTING THE FRONT N AS A WARM FRONT.
THE LOW PRES SYSTEM WILL MOVE NE OF THE AREA LATE SAT. HIGH PRES
WILL BUILD SLOWLY E TOWARD THE WATERS SUN.
$$

ANZ081-141430-
GULF OF MAINE TO THE HAGUE LINE
400 AM EDT WED MAR 14 2007

...GALE FORCE WINDS EXPECTED FRI AND SAT...

.TODAY...SW WINDS 20 TO 30 KT. SEAS 7 TO 10 FT...BUILDING TO 9 TO
13 FT...HIGHEST N. SCATTERED SHOWERS AND PATCHY FOG. VSBY 1 TO 3
NM.
.TONIGHT...SW WINDS 20 TO 30 KT EARLY...BECOMING SW TO W 15 TO 20
KT LATE. SEAS SUBSIDING TO 7 TO 11 FT LATE...HIGHEST NE.
SCATTERED TO NUMEROUS SHOWERS WITH PATCHY FOG. VSBY 1 TO 3 NM.
.THU...WINDS BECOMING N TO NE 20 TO 25 KT. SEAS SUBSIDING TO 6 TO
9 FT...HIGHEST E. SHOWERS CHANGING TO RAIN.
.THU NIGHT...N TO NE WINDS 20 TO 25 KT. SEAS 6 TO 10 FT...HIGHEST
E. AREAS OF RAIN.
.FRI...NE WINDS INCREASING TO 25 TO 35 KT LATE. SEAS BUILDING TO
```

Weather in Graphics Form



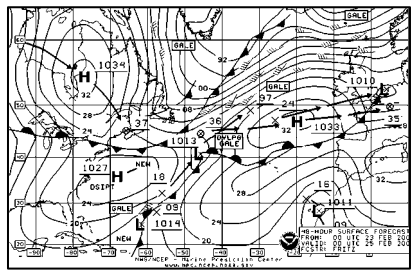
What Does a Forecaster Do?

THE HUMAN INTELLIGENCE FORECAST PROCESS

Observations

WARNINGS/

FORECASTS



Numerical

Model

Forecasts/GRIB

INTERPRET DATA

& ADD EXPERIENCE

& KNOWLEDGE

GALE WARNING

Forecasting Tools

NUMERICAL FORECAST MODELS

WE HAVE ACCESS TO ATMOSPHERIC AND OCEAN
WAVE FORECAST MODELS FROM AROUND THE GLOBE!

U.S. NATIONAL CENTER FOR ENVIRONMENTAL PREDICTION

ENVIRONMENT CANADA

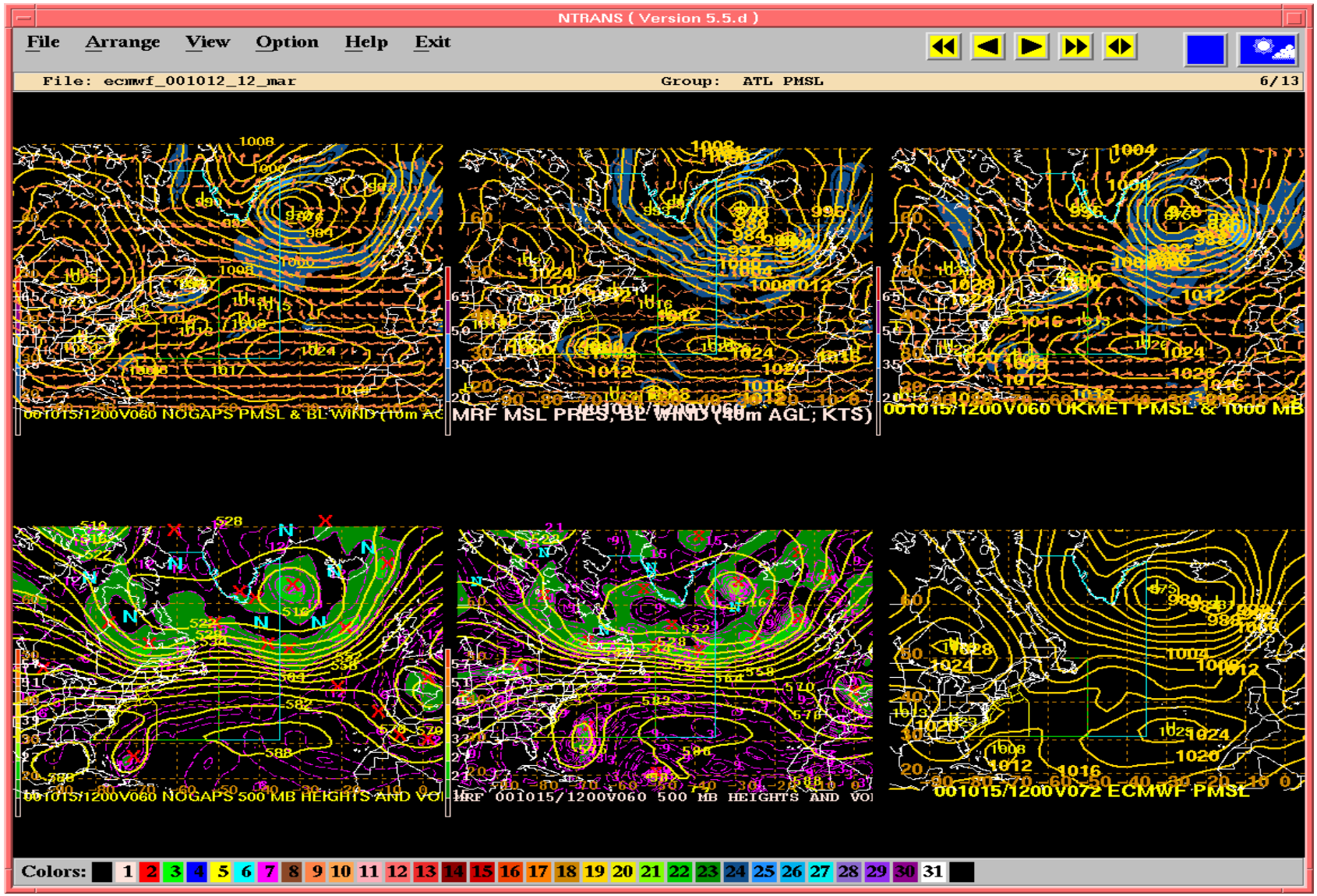
U.S. NAVY

U.K. MET OFFICE

EUROPEAN CENTER FOR MEDIUM RANGE FORECASTING

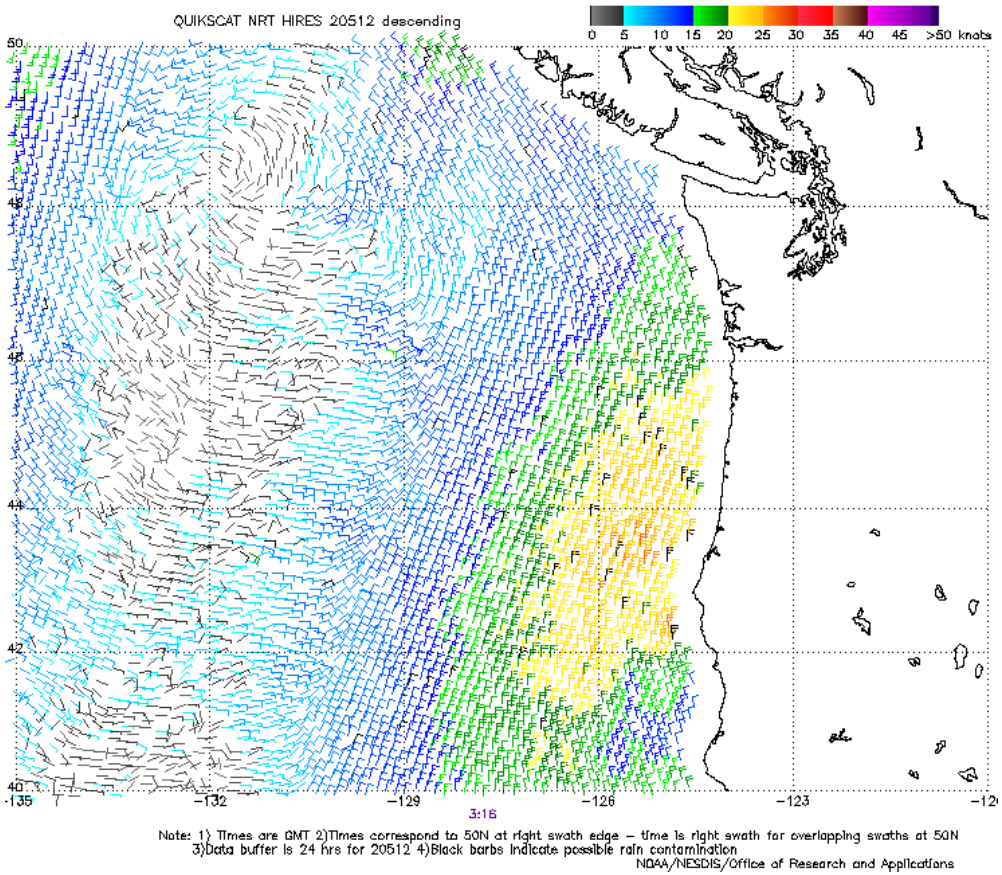
UNIVERSITIES

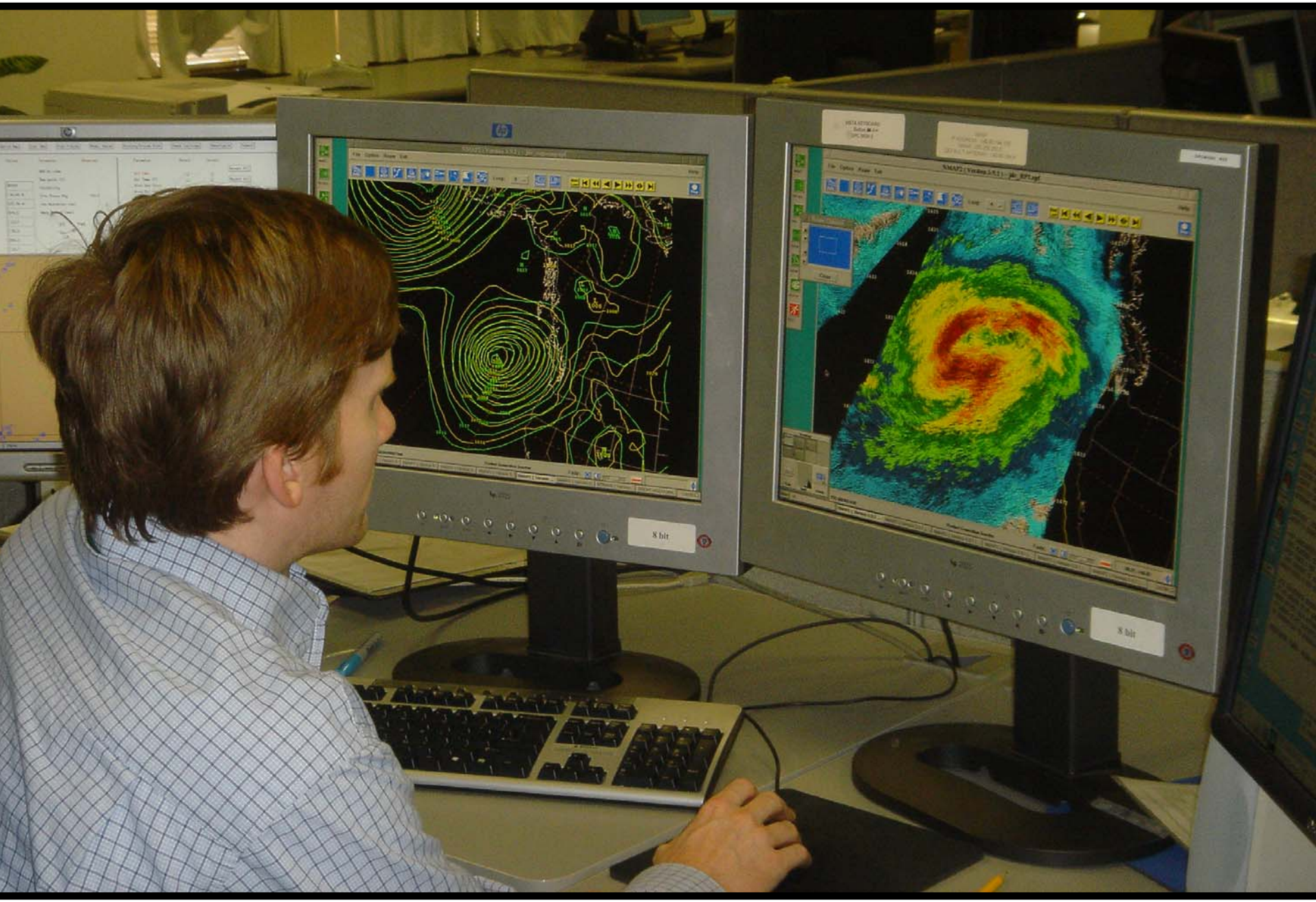
Forecasters View and Compare Multiple Models



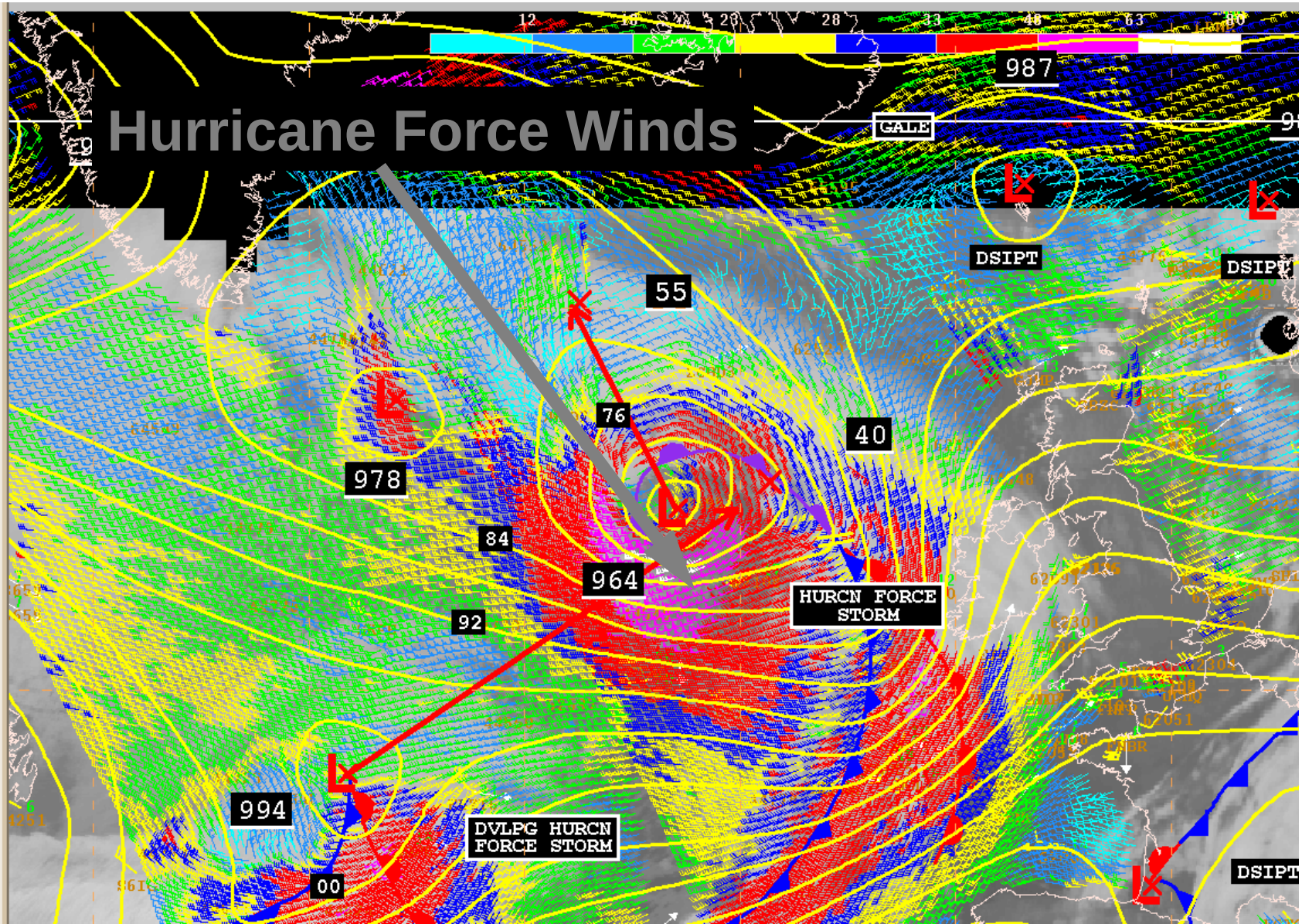
OPC Forecasters Use QuikSCAT Derived Winds To:

Determine warning criteria, accurately place surface features and diagnose initial conditions

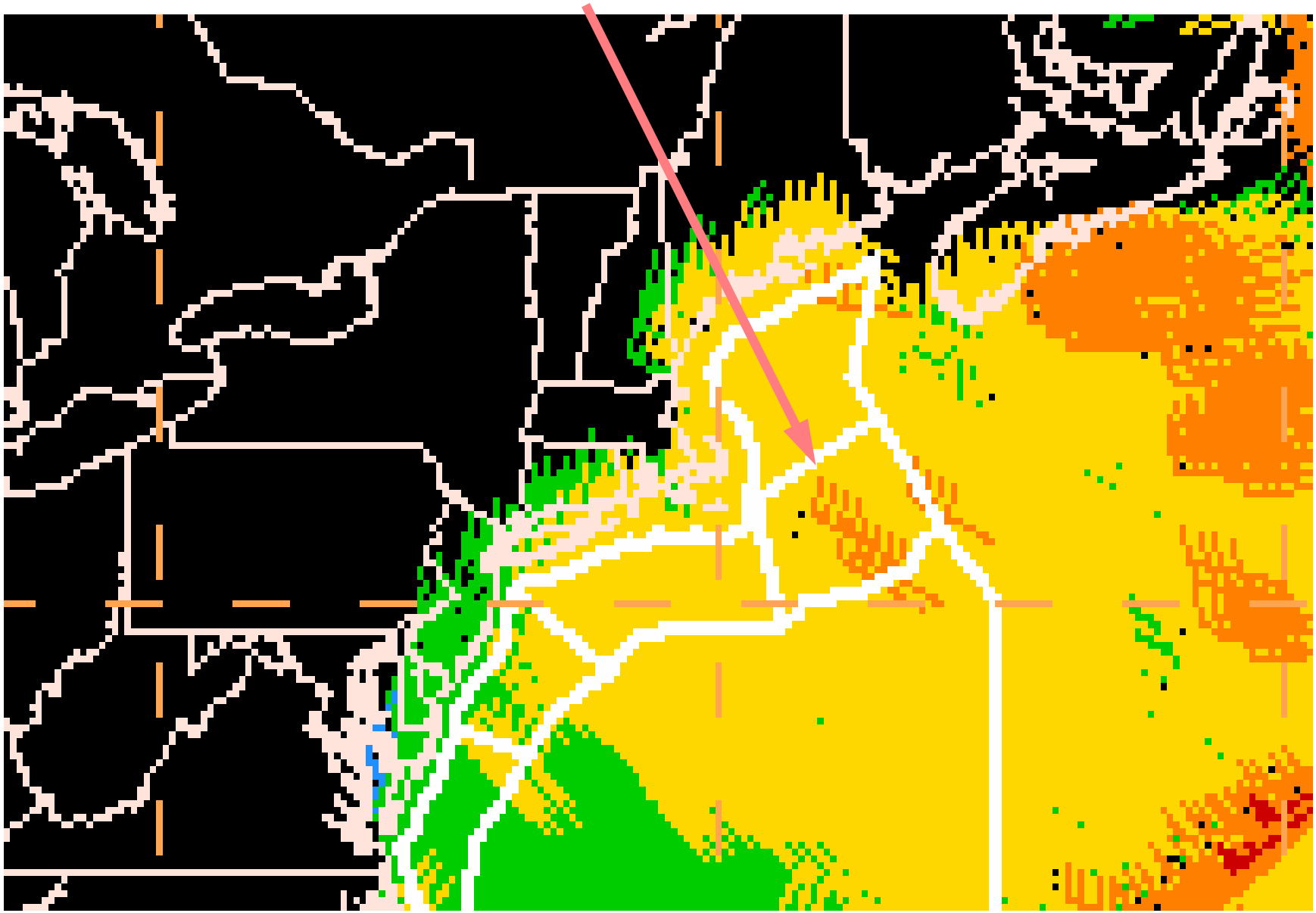



8 bit
8 bit

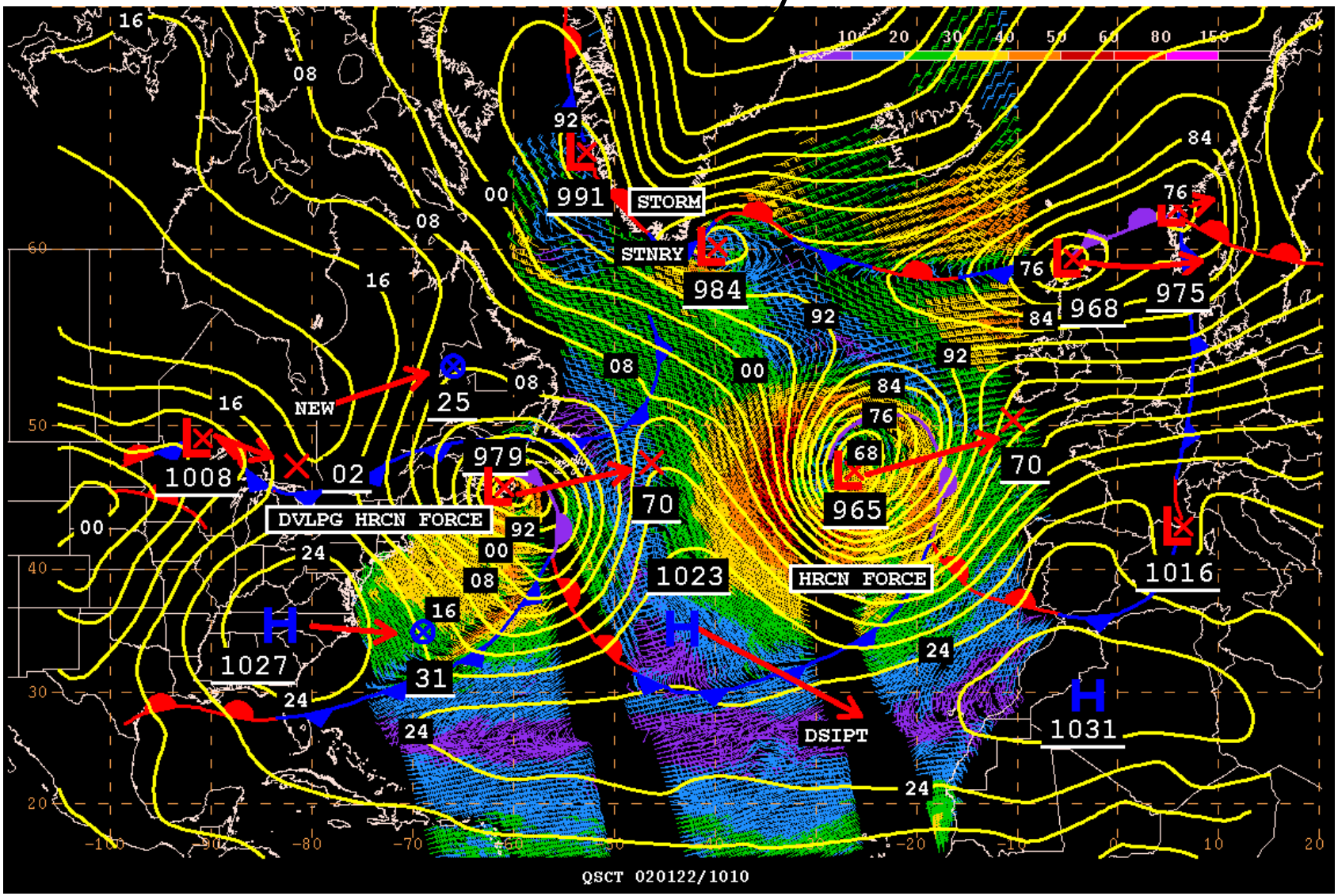
….Such as Hurricane Force Wind Warnings



QuikSCAT - Pinpoints Warnings…



QuikSCAT Overlaid with Atlantic Surface Analysis

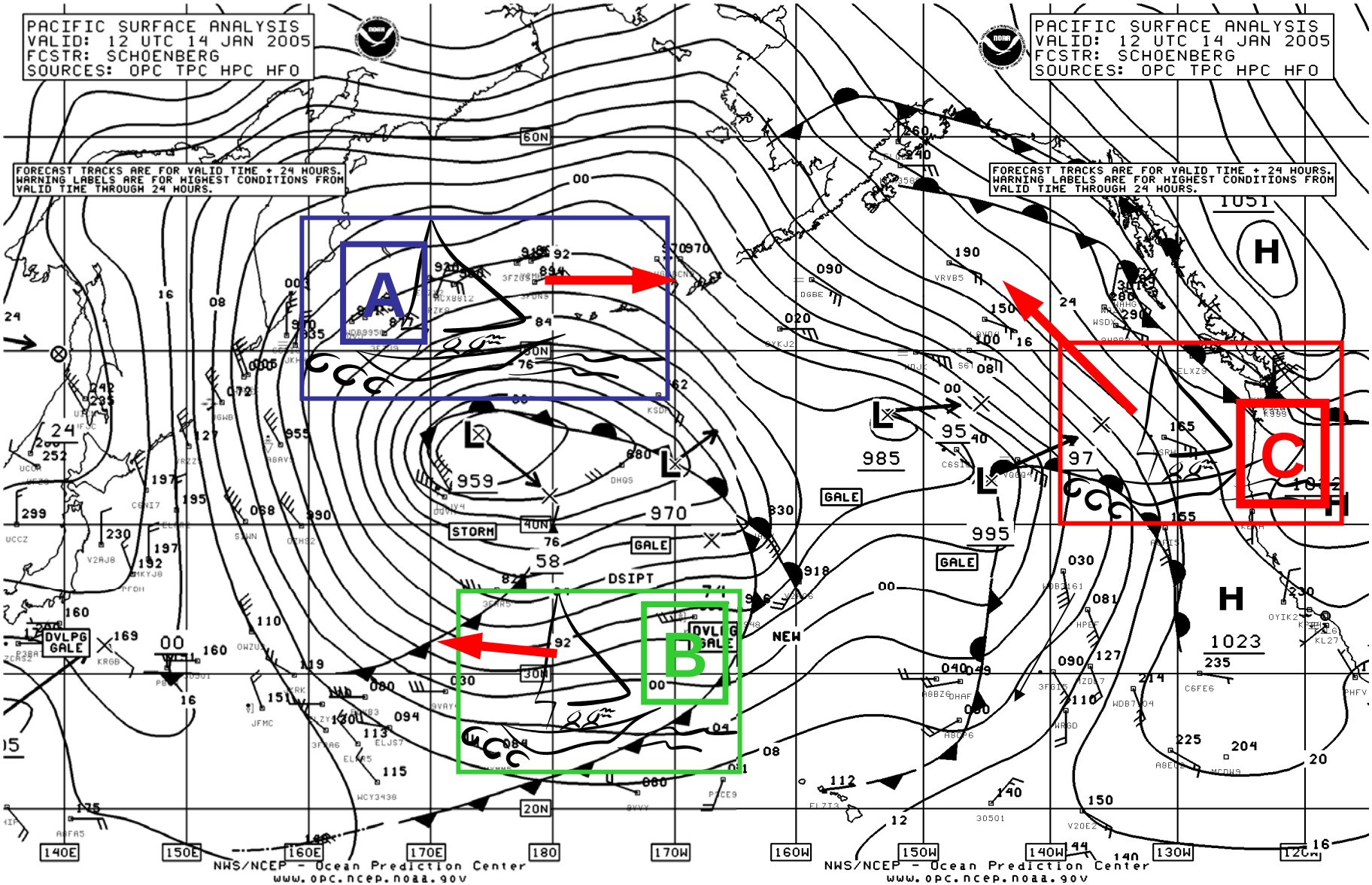


OPC Has Its Own Briefings and Quality Control Forecast Efforts!!

Pop Weather Quiz

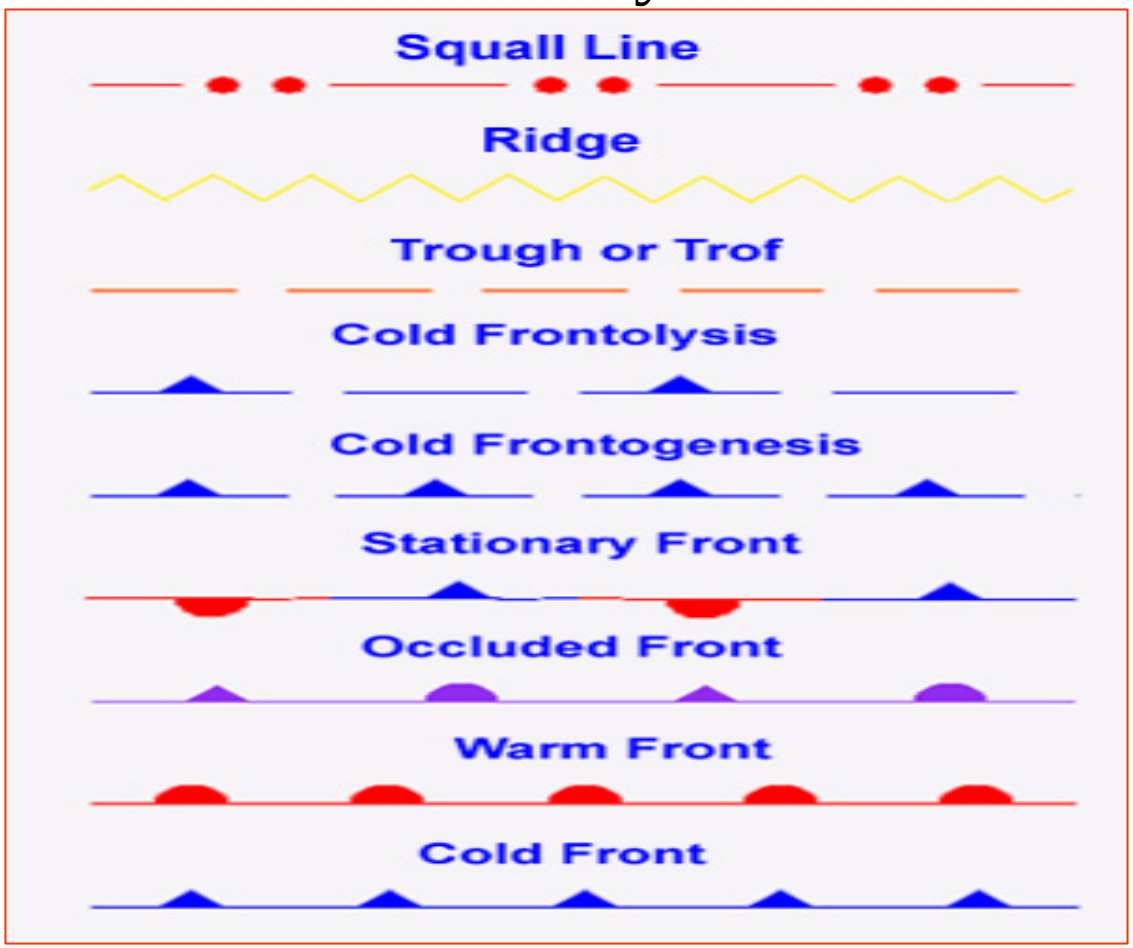
Lets challenge you with where your marine weather forecast and self reliant skills are!

1. Can You Read This Chart?
2. Which One of These Sail Boats Is Going The Right Way?



Review of Frontal Weather Systems

Graphical depiction of fronts including frontogenesis and frontolysis

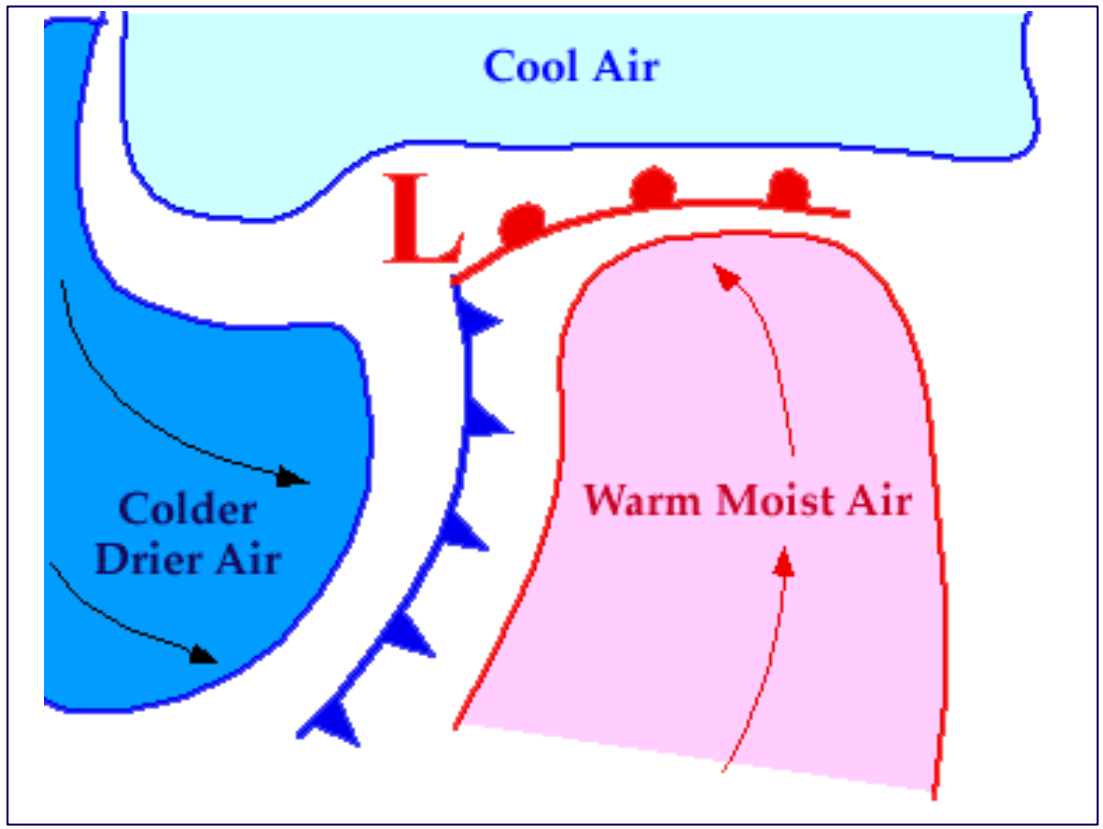


www.opc.ncep.noaa.go
v

Frontal Weather Systems

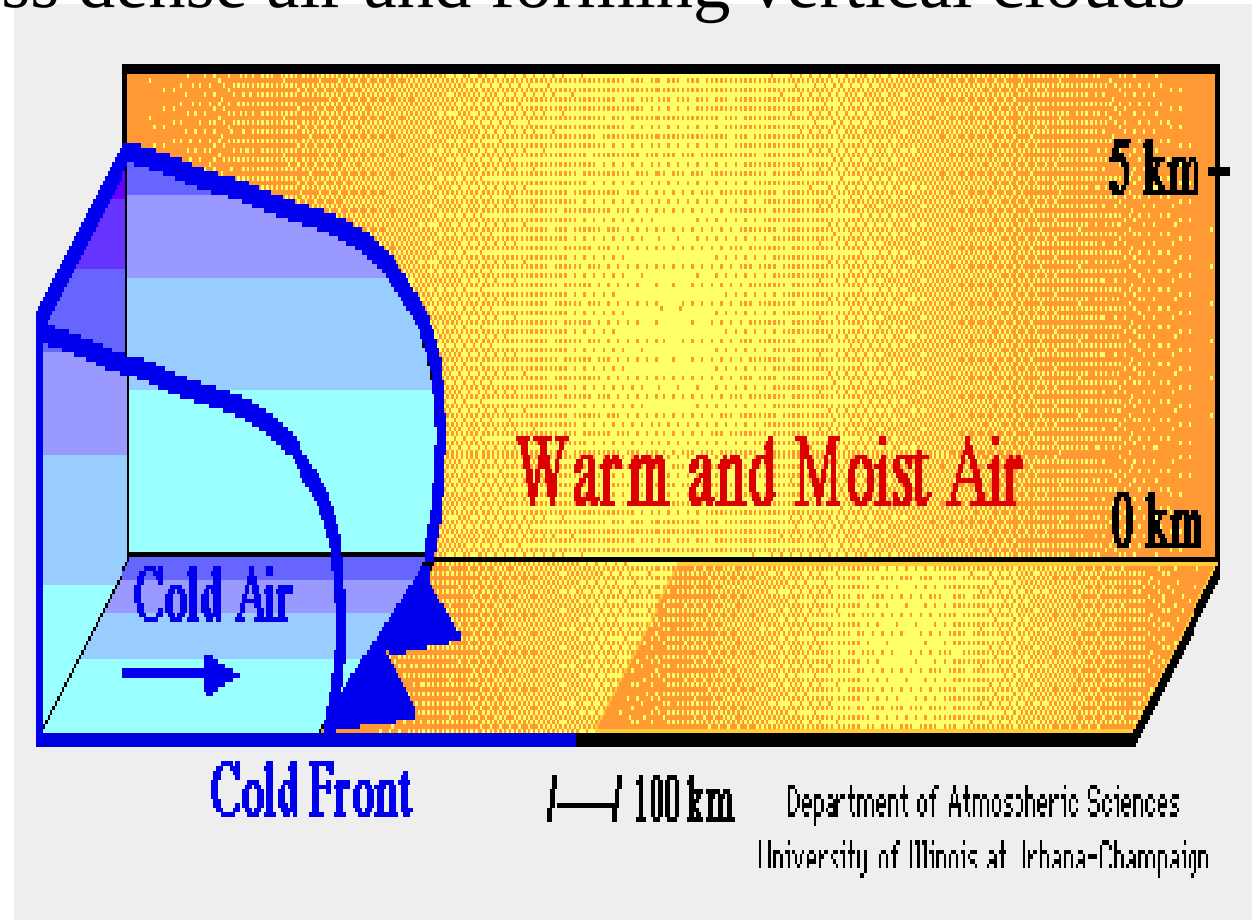
- Warm air mass rising precedes the passage of a cold front
- Cold air masses follows cold frontal passages

Top-down view of a Mid-latitude Low with a warm and cold front in its early stages of development

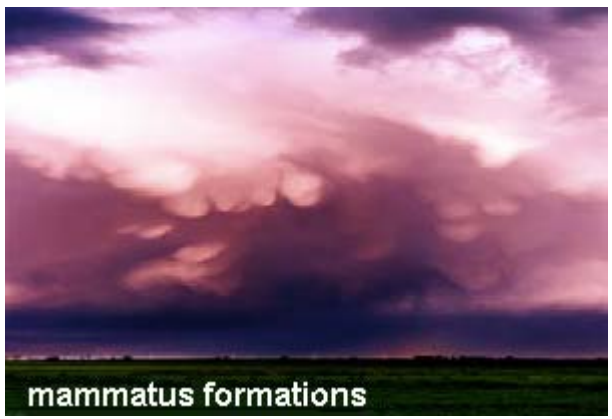


Frontal Weather Systems

An animated cold front depicting cold denser air displacing warm less dense air and forming vertical clouds

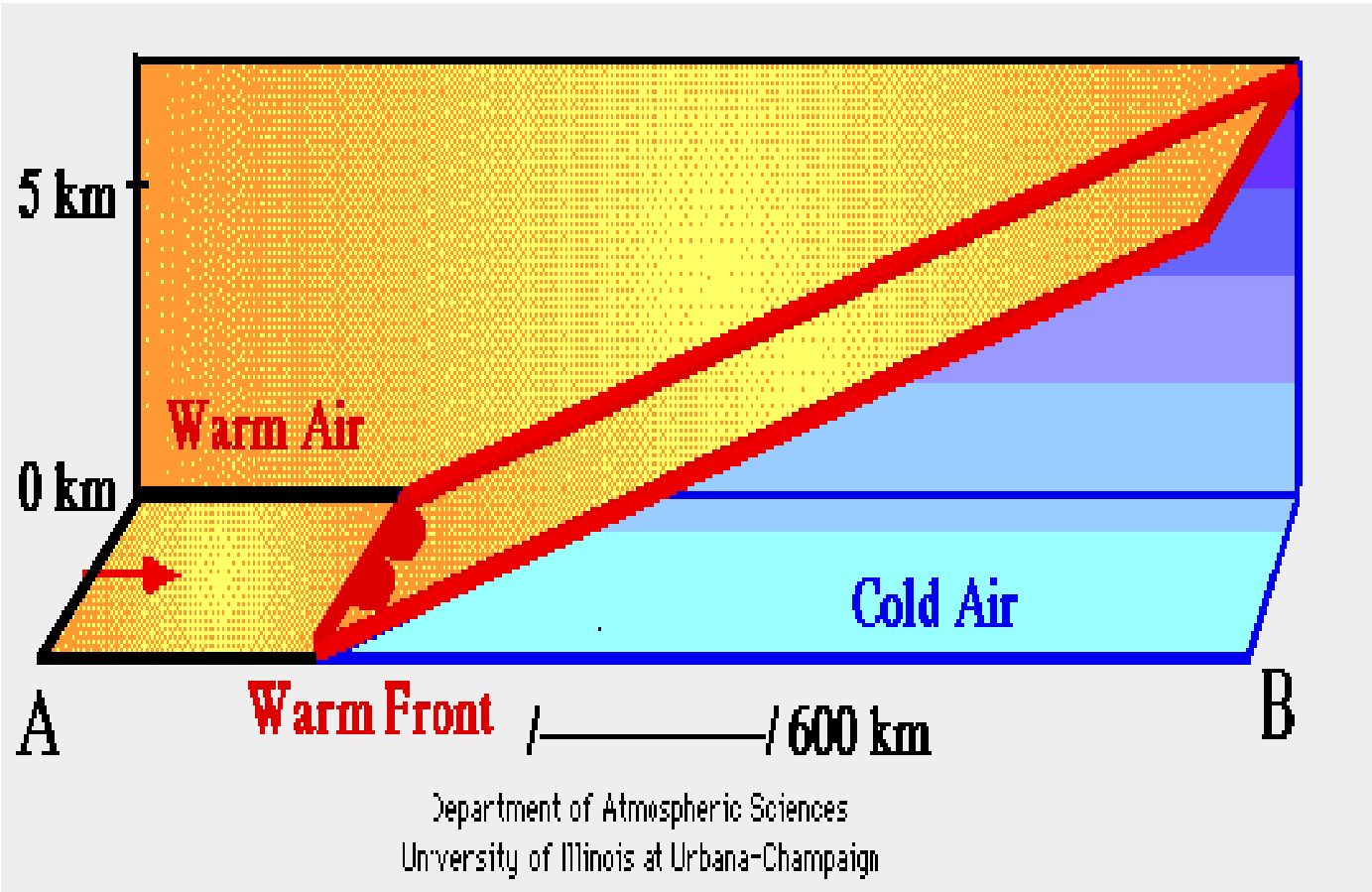


Vertical Clouds:
Cumulus and Cumulonimbus
before the passing of the Cold Front!!



Frontal Weather Systems

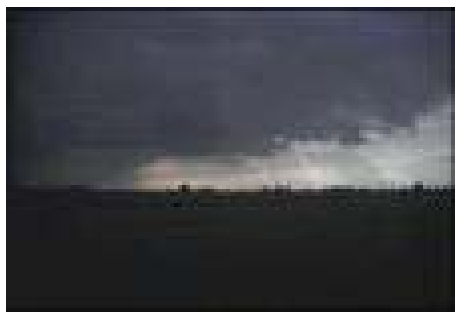
An animated warm front depicting warm less denser air riding over cold dense air and forming layered clouds
Poor visibility and steady precipitation



High Clouds
Cirrus, Cirrostratus, & Cirrocumulus
The first indication of a Warm Front!

Clouds that are not continuous or increasing indicate that stormy weather is passing south of you

Middle Clouds
Altostratus, Altocumulus



Nimbostratus with rain& fog!

Low Clouds
Nimbostratus, Fractostratus not necessarily with a Warm Front

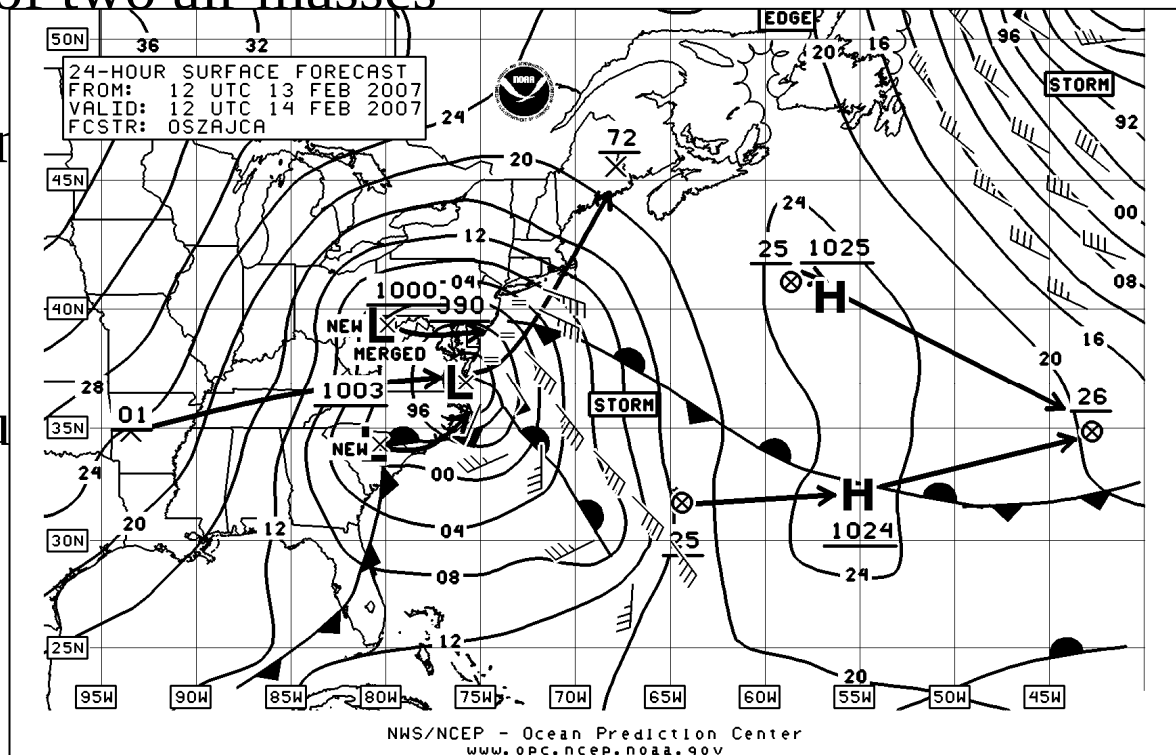
Fronts

- A synoptic scale feature associated with a mid-latitude Low

- An extension of the parent Low where isobars are "kinked" along the front and pointed away from the low center

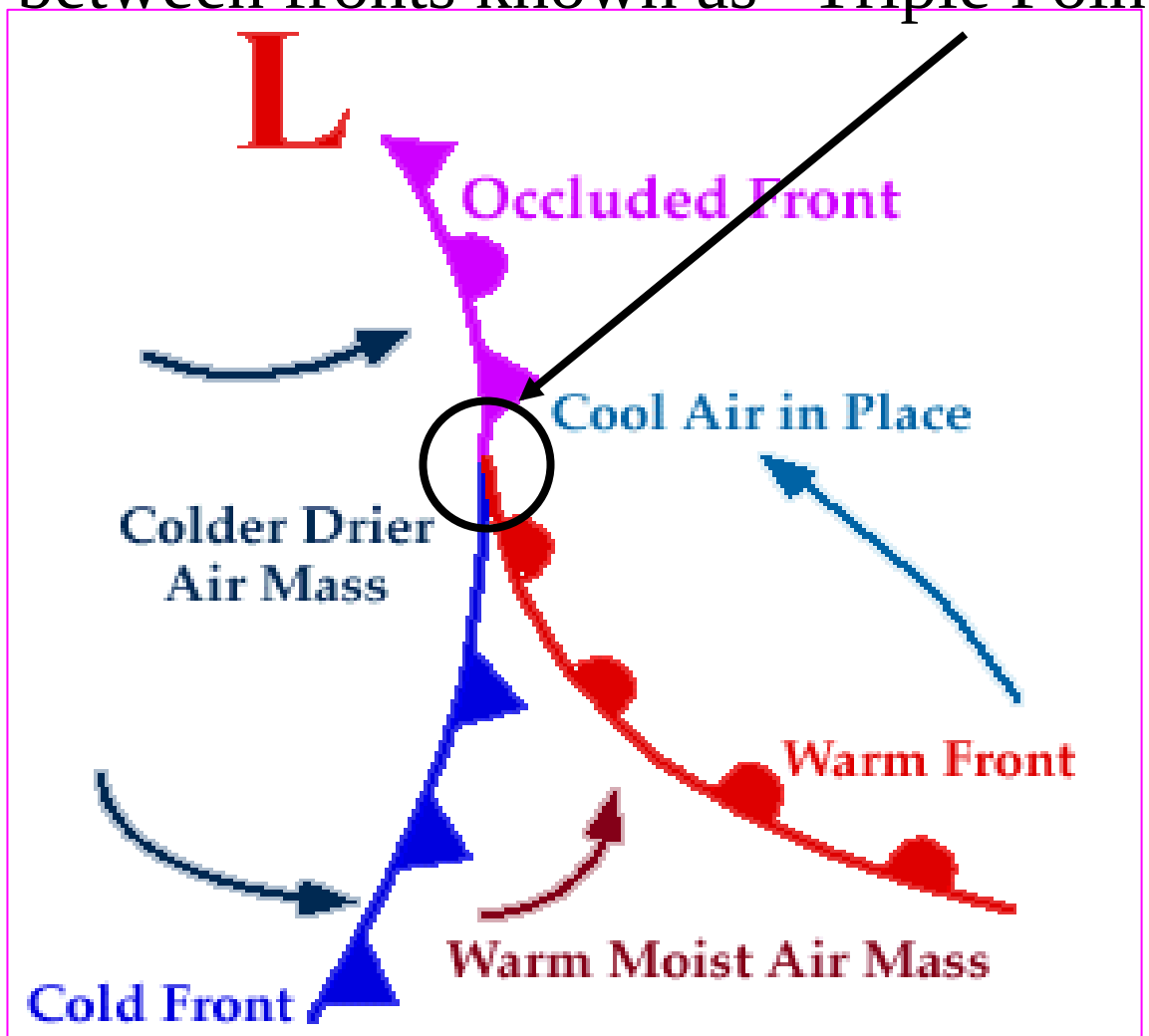
- A lot happens at the front…
  - Separation and mixing of two air masses
  - Pressure minimum
  - Clouds and precipitation
  - Wind shifts

Why is this important to you and your vessel ?

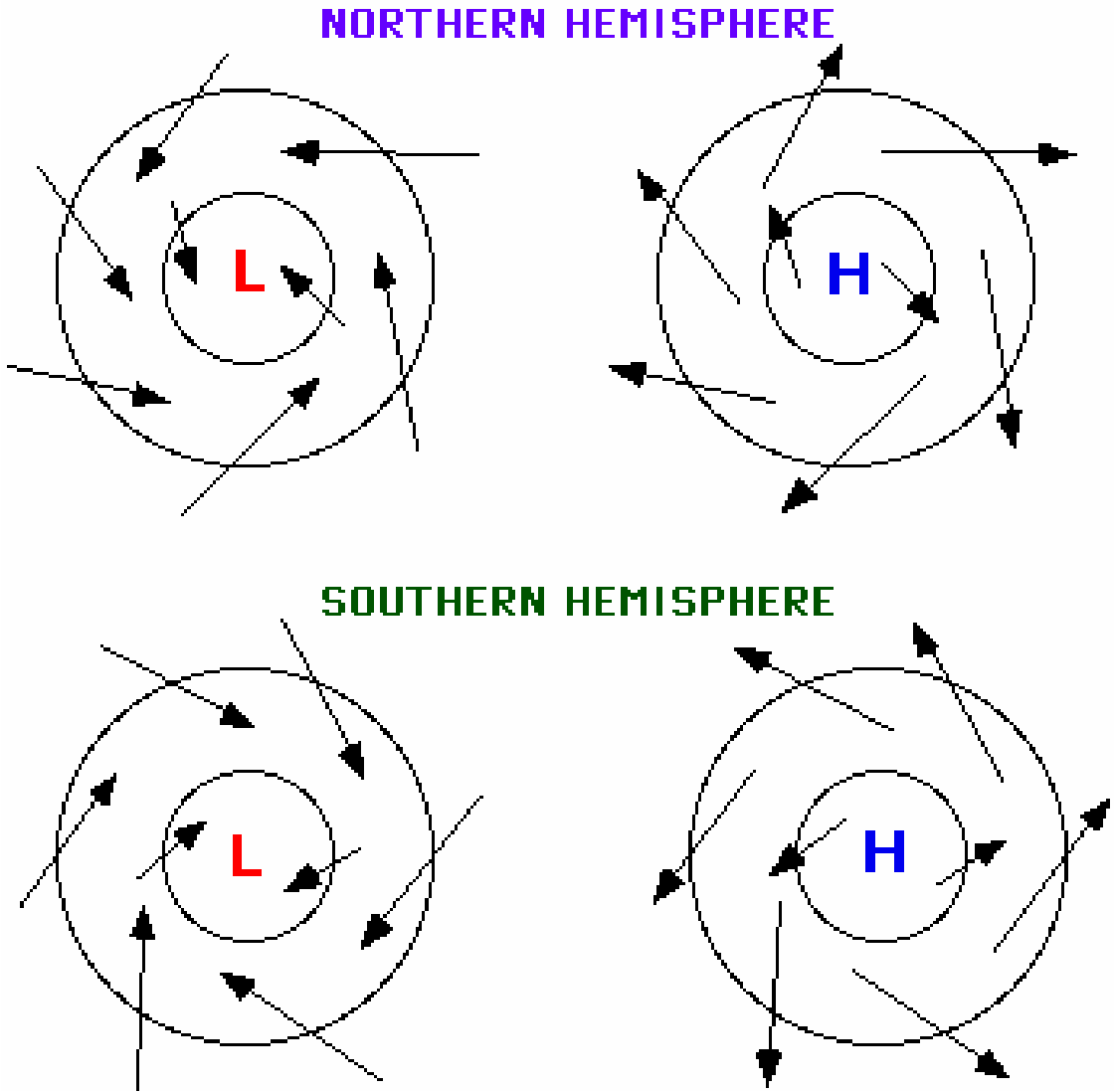


Frontal Weather Systems

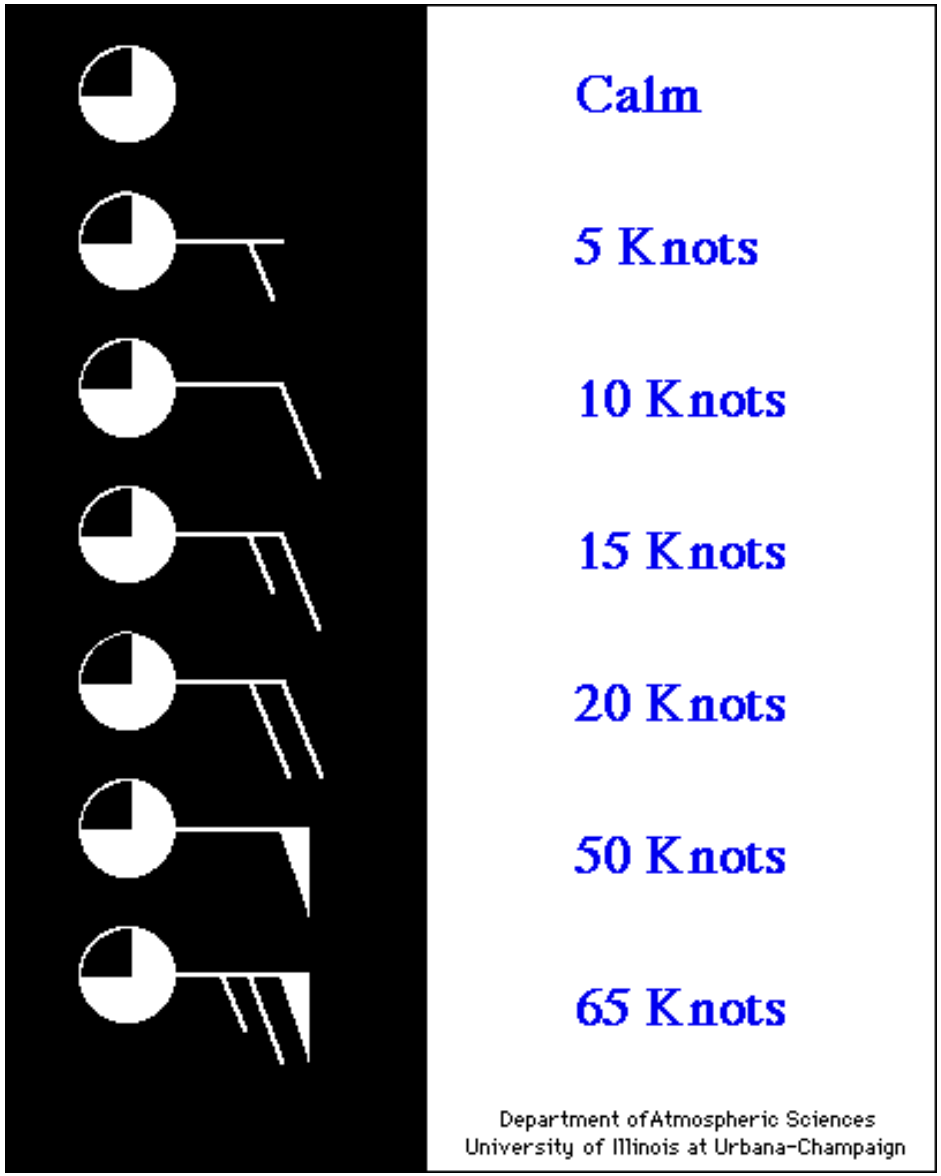
- Schematic view of a mature Low Pressure System
- Occluded warm and cold front depicted
- Note junction between fronts known as “Triple Point”



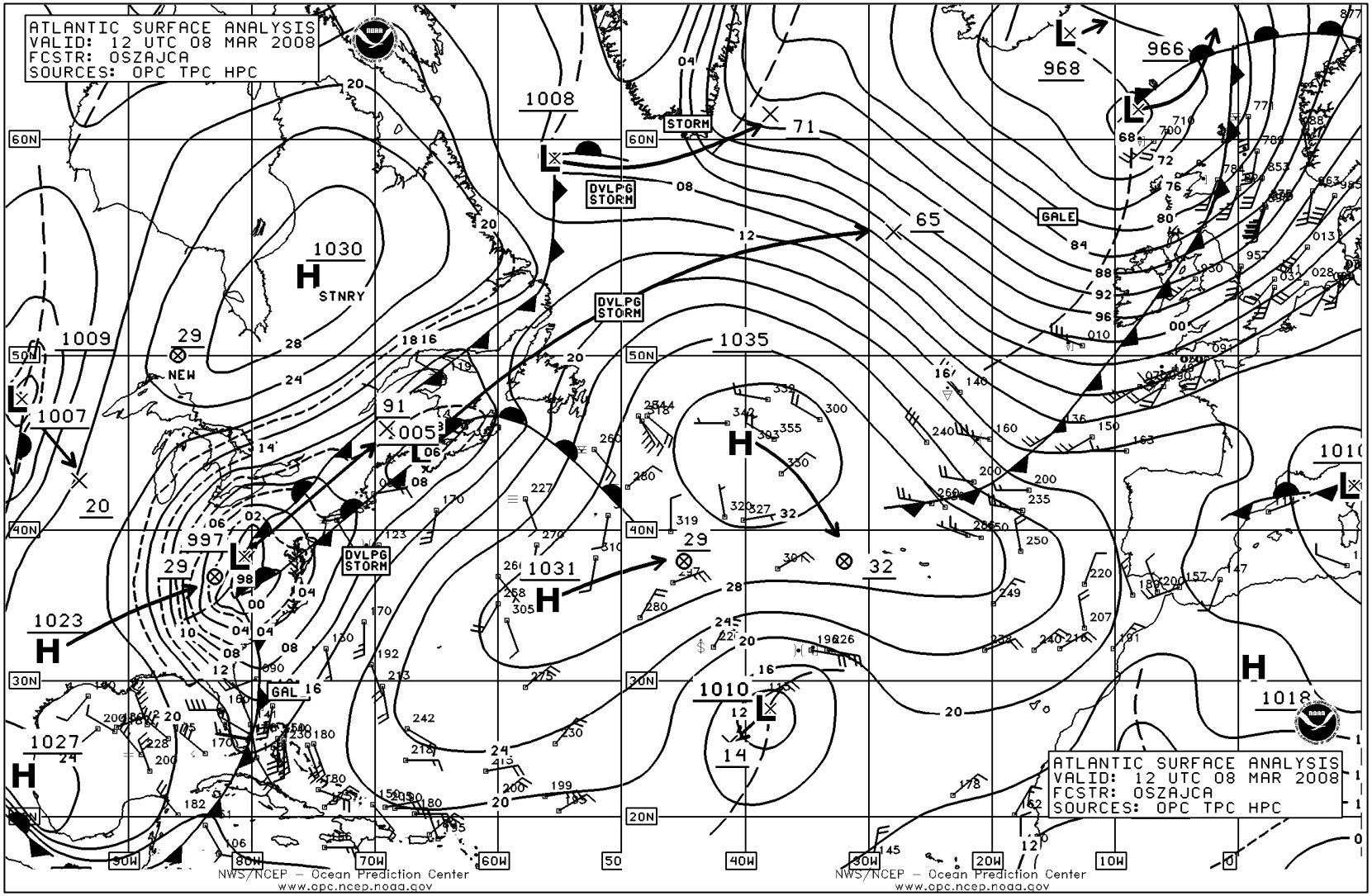
Pressure & Wind Flow Around Lows & Highs



Standardized Wind Field



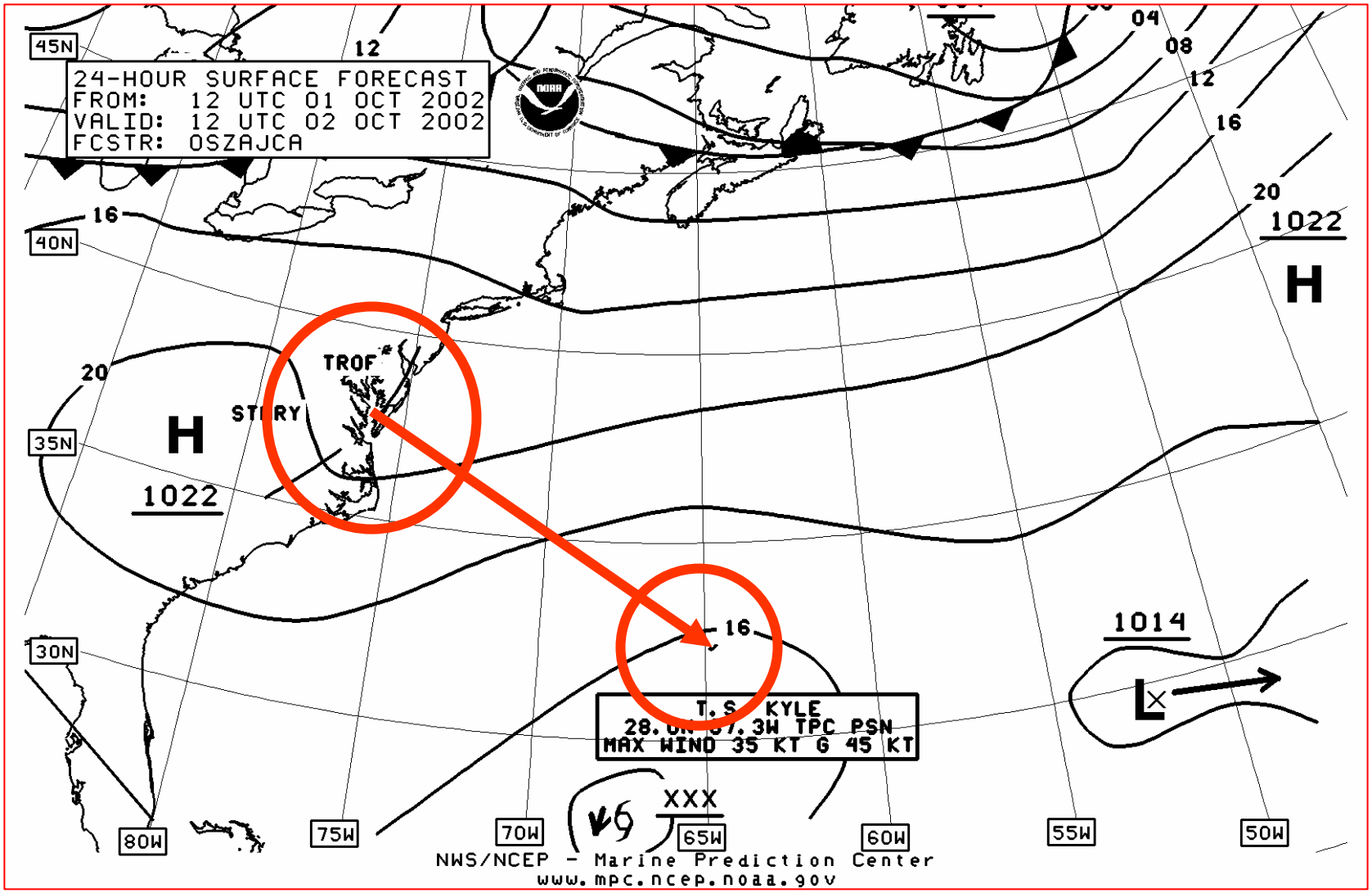
Surface Analysis



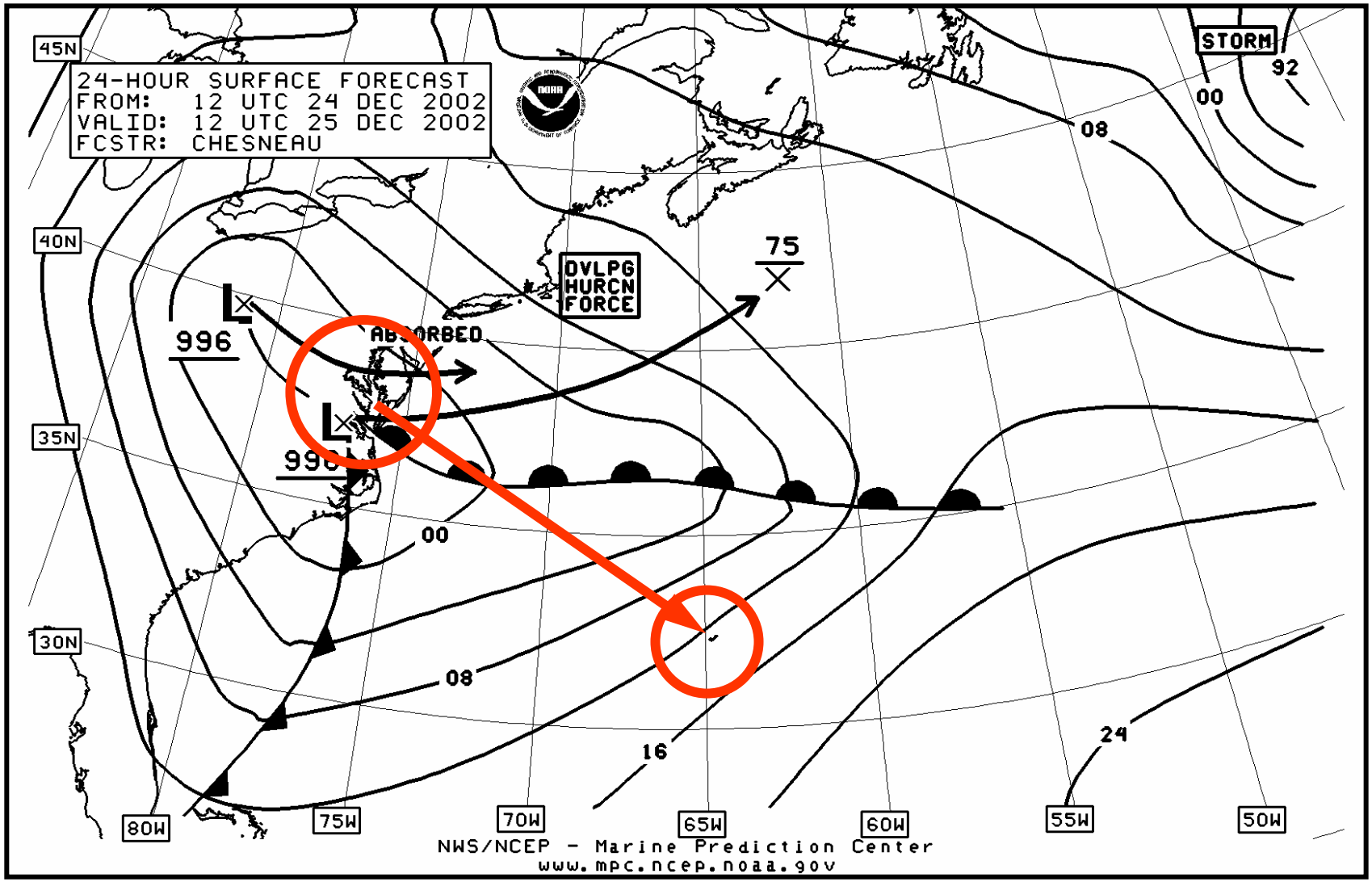
Another Scenario, Different Coast…

- If you were planning a day of sailing in the Chesapeake Bay or perhaps en-route to Bermuda from Annapolis, which of the following weather forecast would impress you the most to reconsider your plans….

Would it be this?



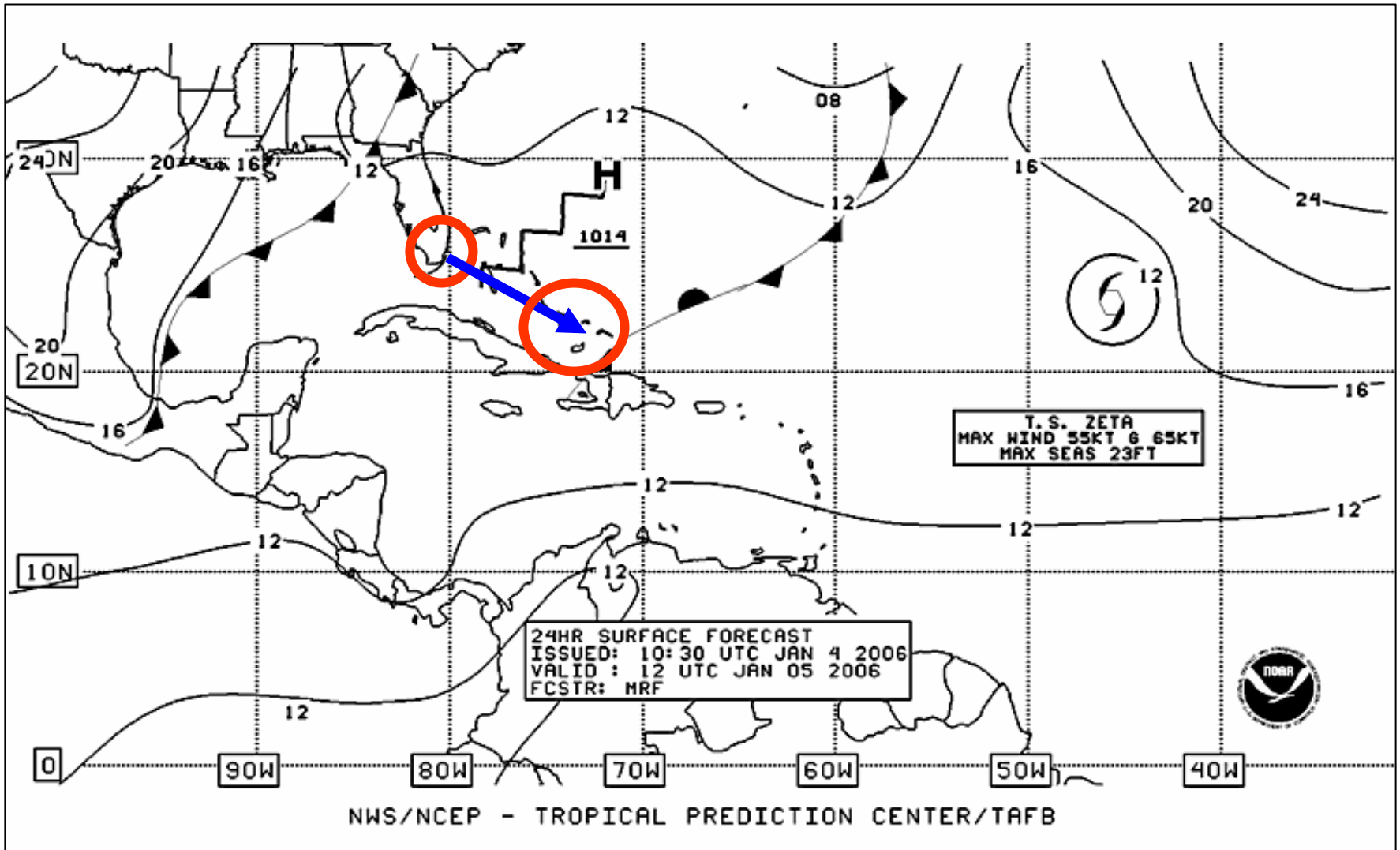
Or would it be this?



…Do You Know Either Event Can Cause This?....

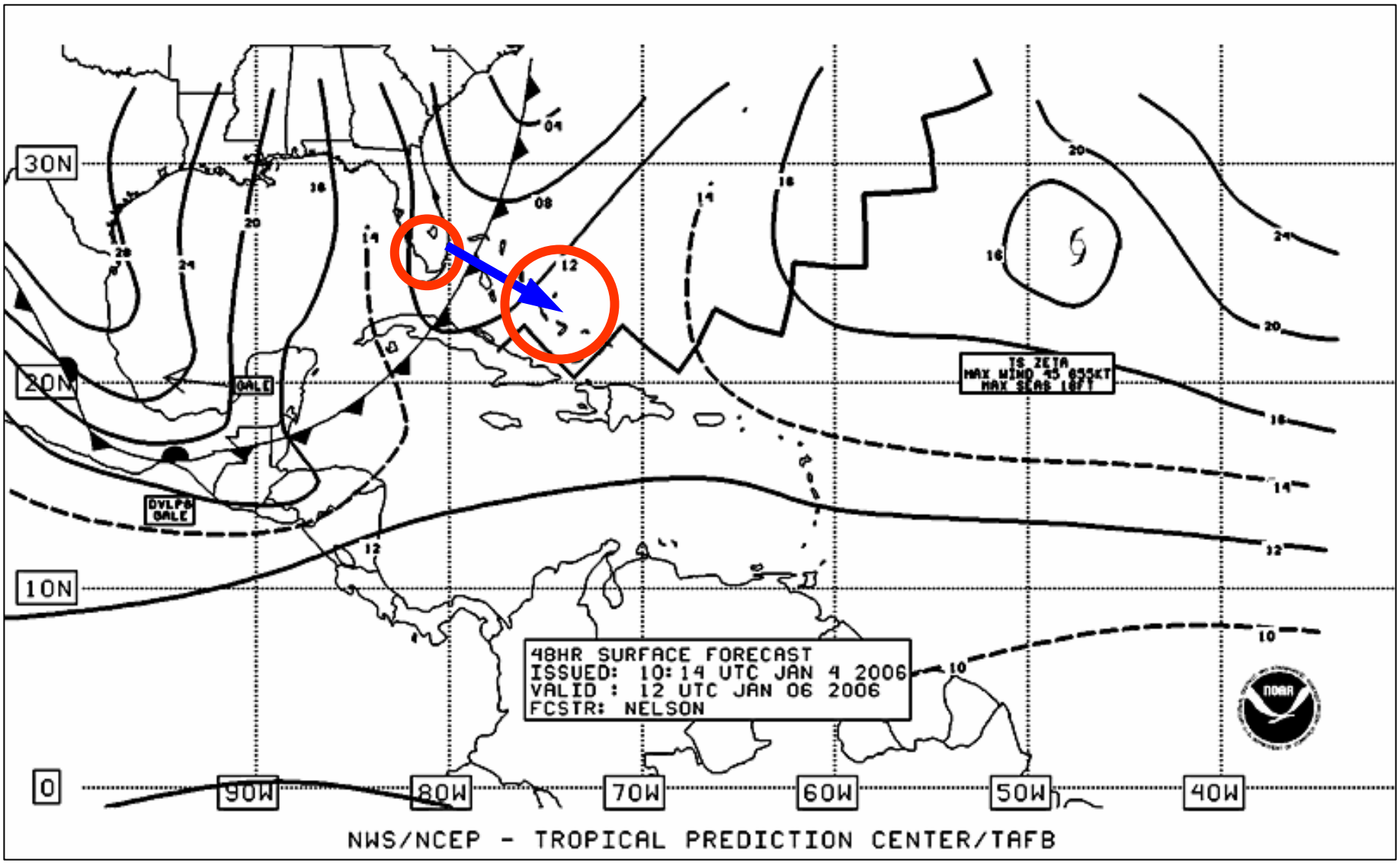
…For An Up Close and Personal Encounter!!

Yet Another Scenario…You Are Planning to Leave from Palm Beach to the Bahamas 1200 UTC Jan 6th…What Is Your Weather on Departure?



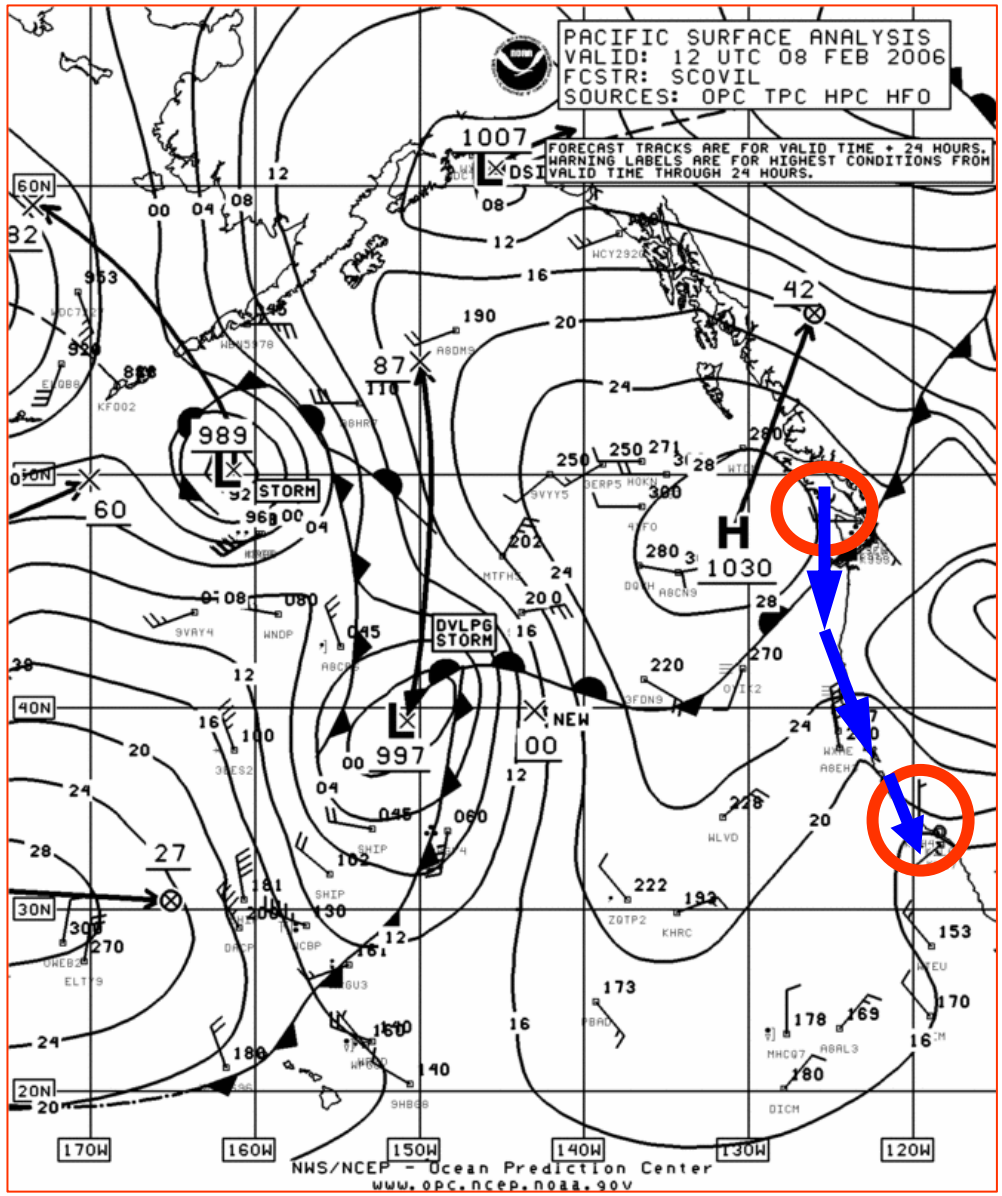
If U R Thinking Along These Lines You R right!

Weather for 12 UTC January 6th Departure From Palm Beach to the Bahamas…Is This a Good Idea?

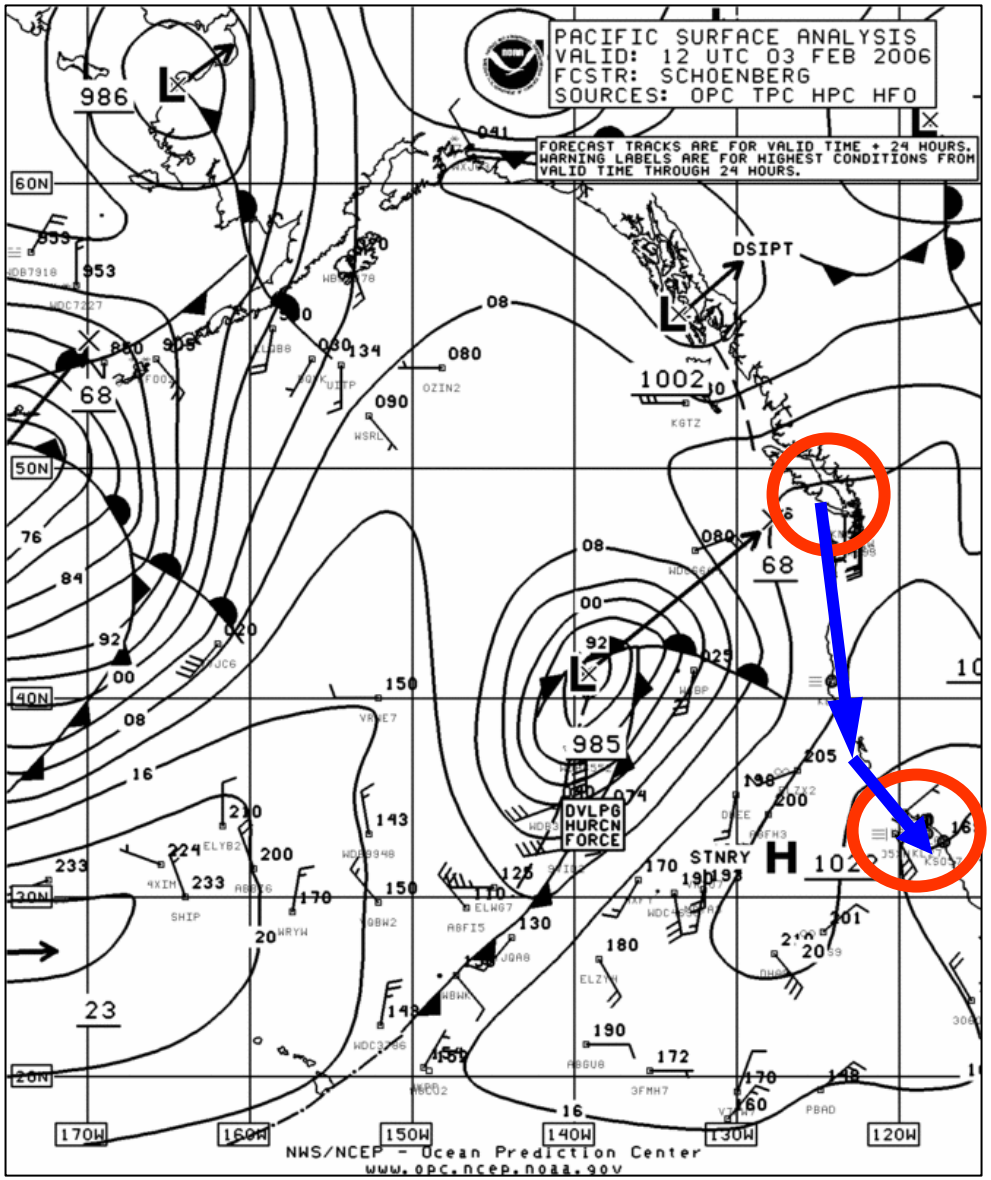


If You Said No,
Is It Because U Had This in Mind?
Wind Against Current In the Gulf Stream?

Another Scenario…Is This a Good time to Depart Tatoosh Island for LA?

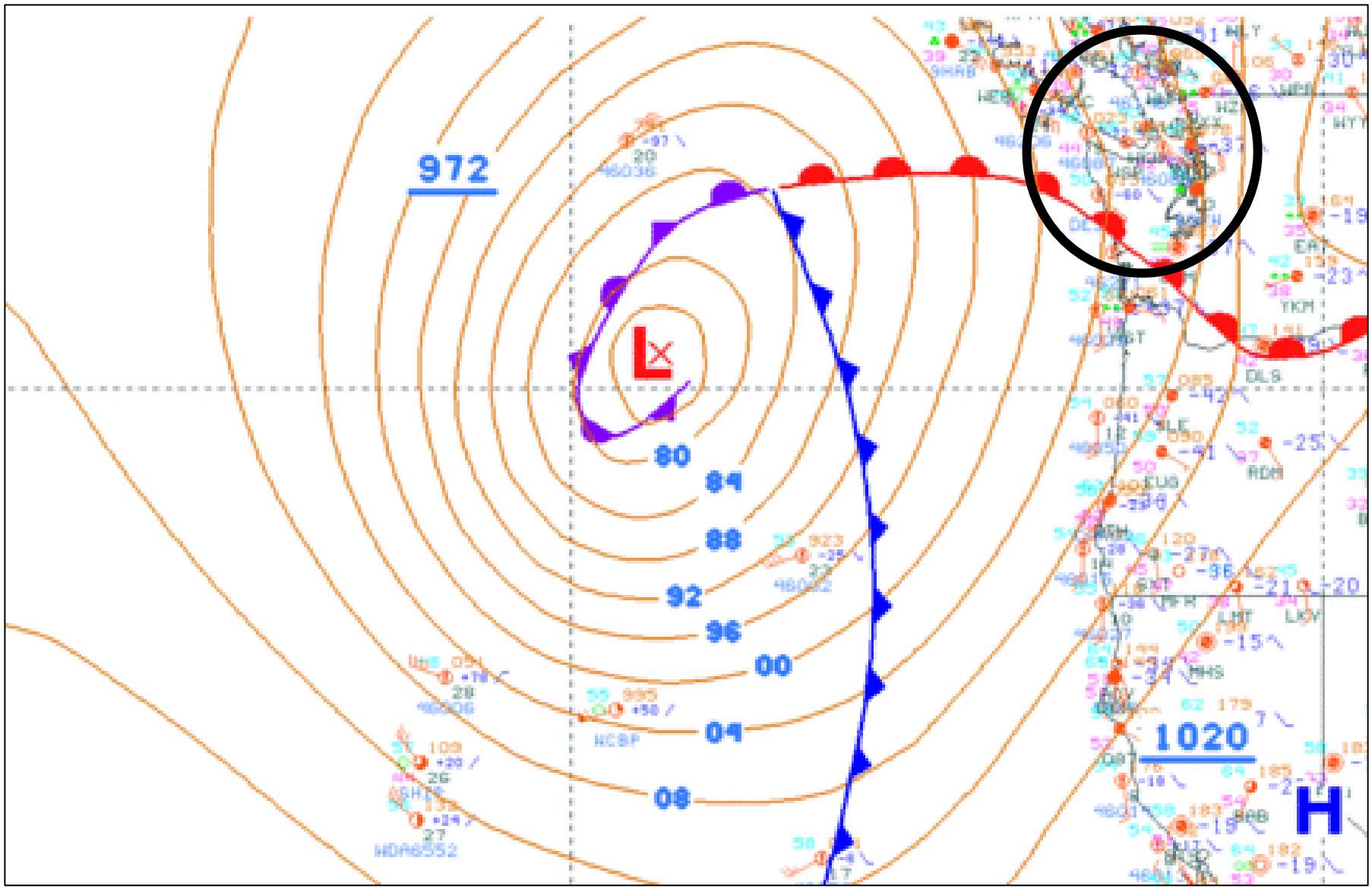


…How about this?

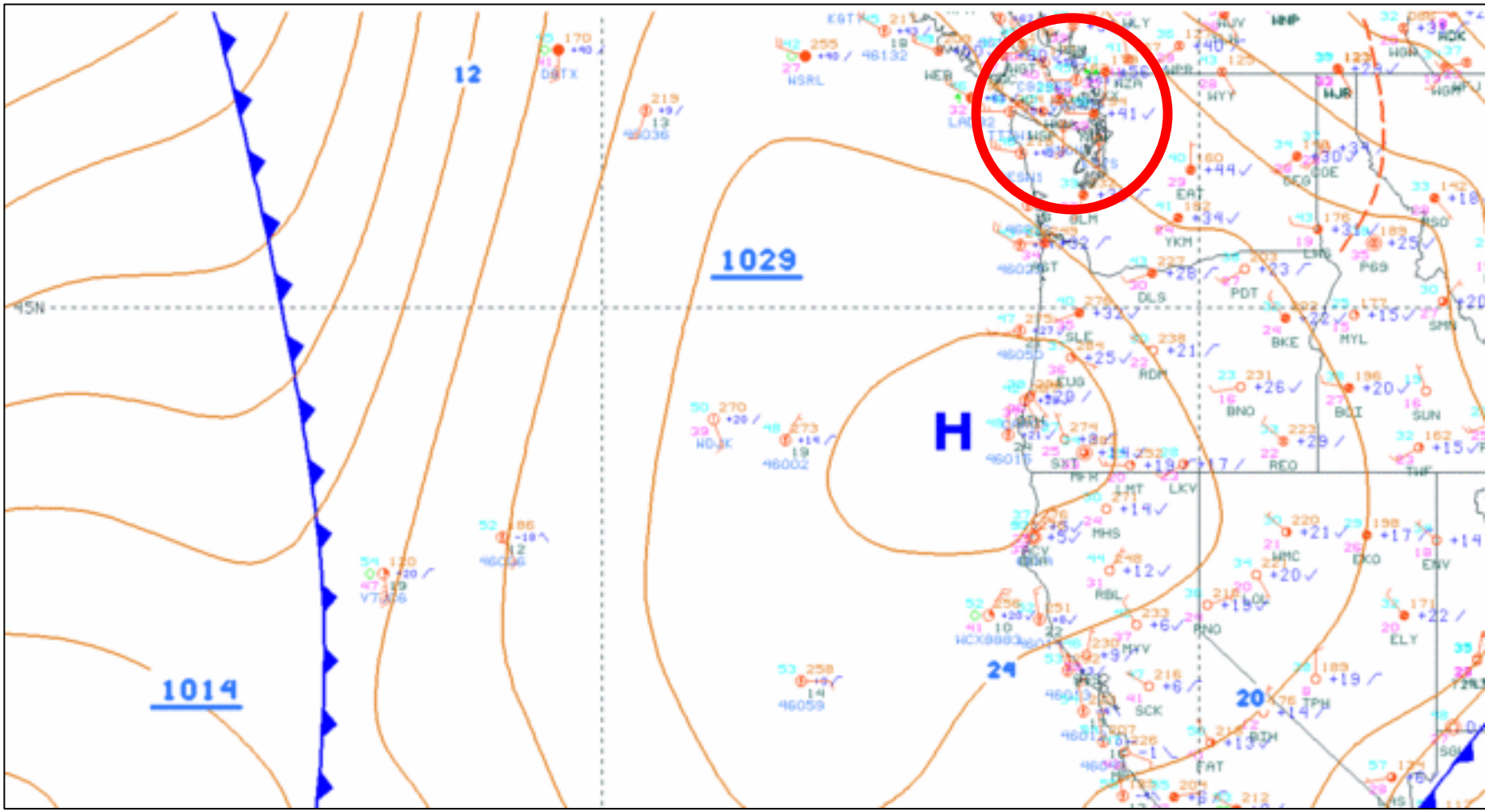


Which Surface Map Scenario Would Suggest Rain and Fog, Poor Visibility for the Puget Sound?

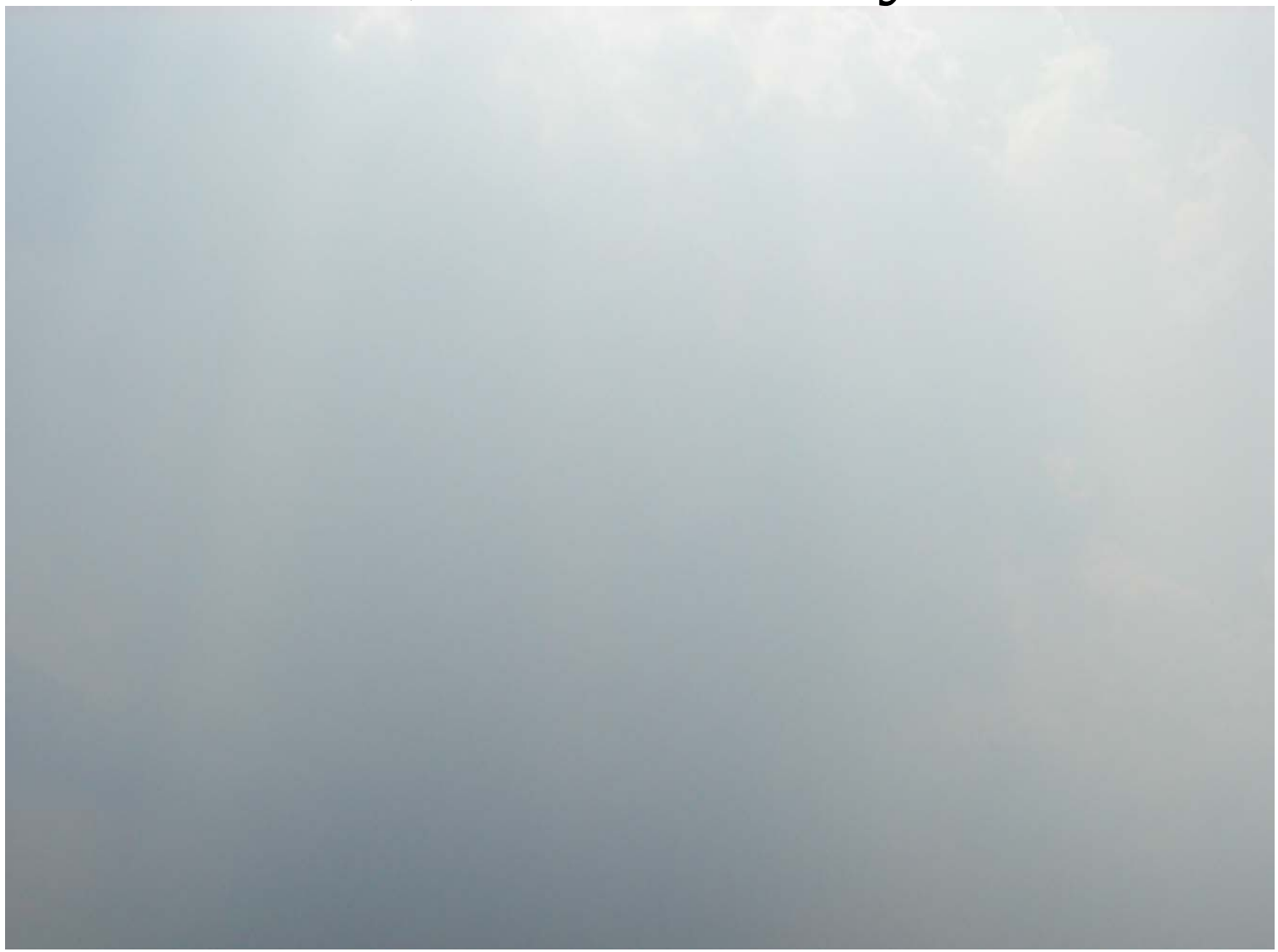
…Would It Be This?



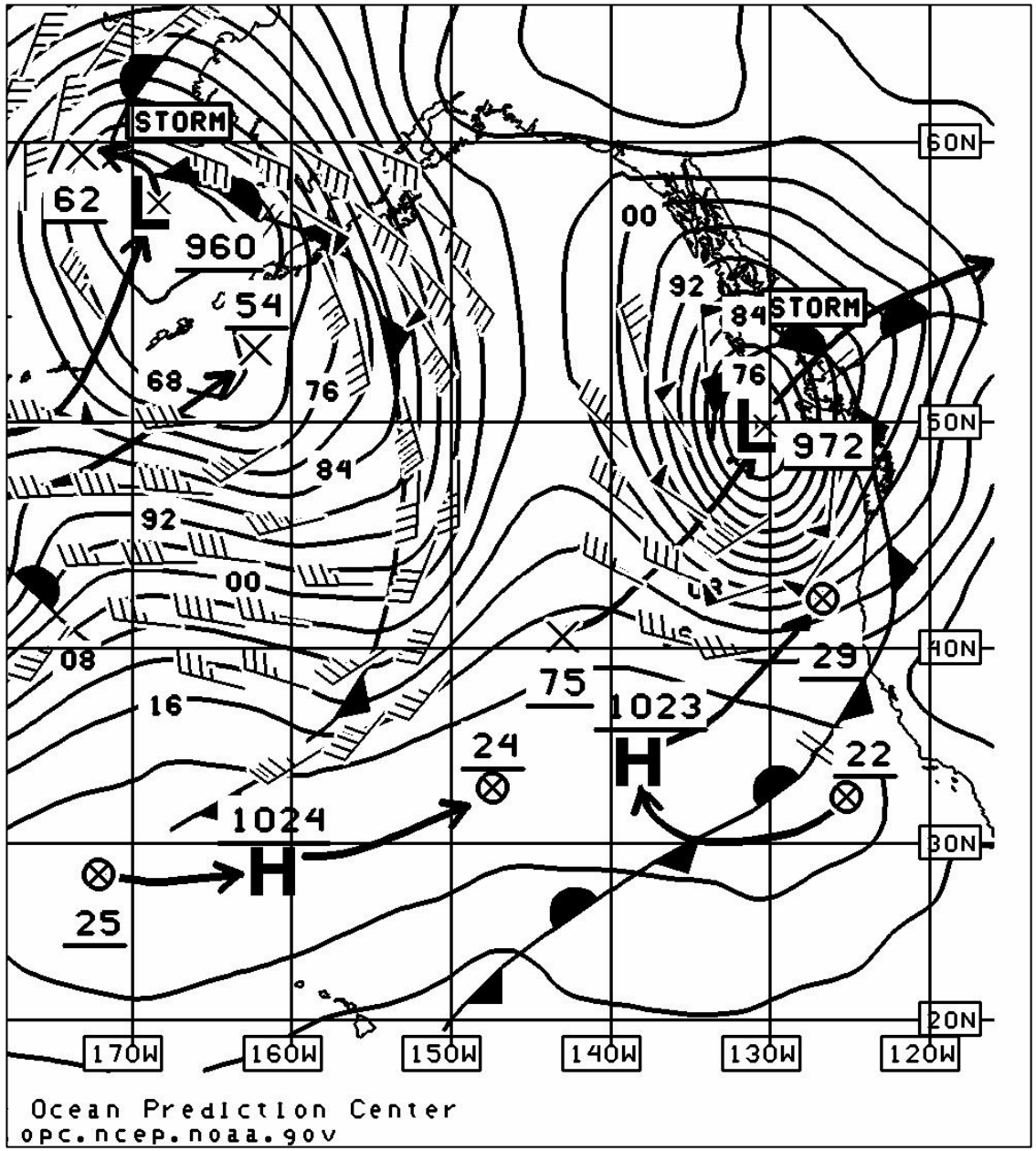
Or Would It Be This?



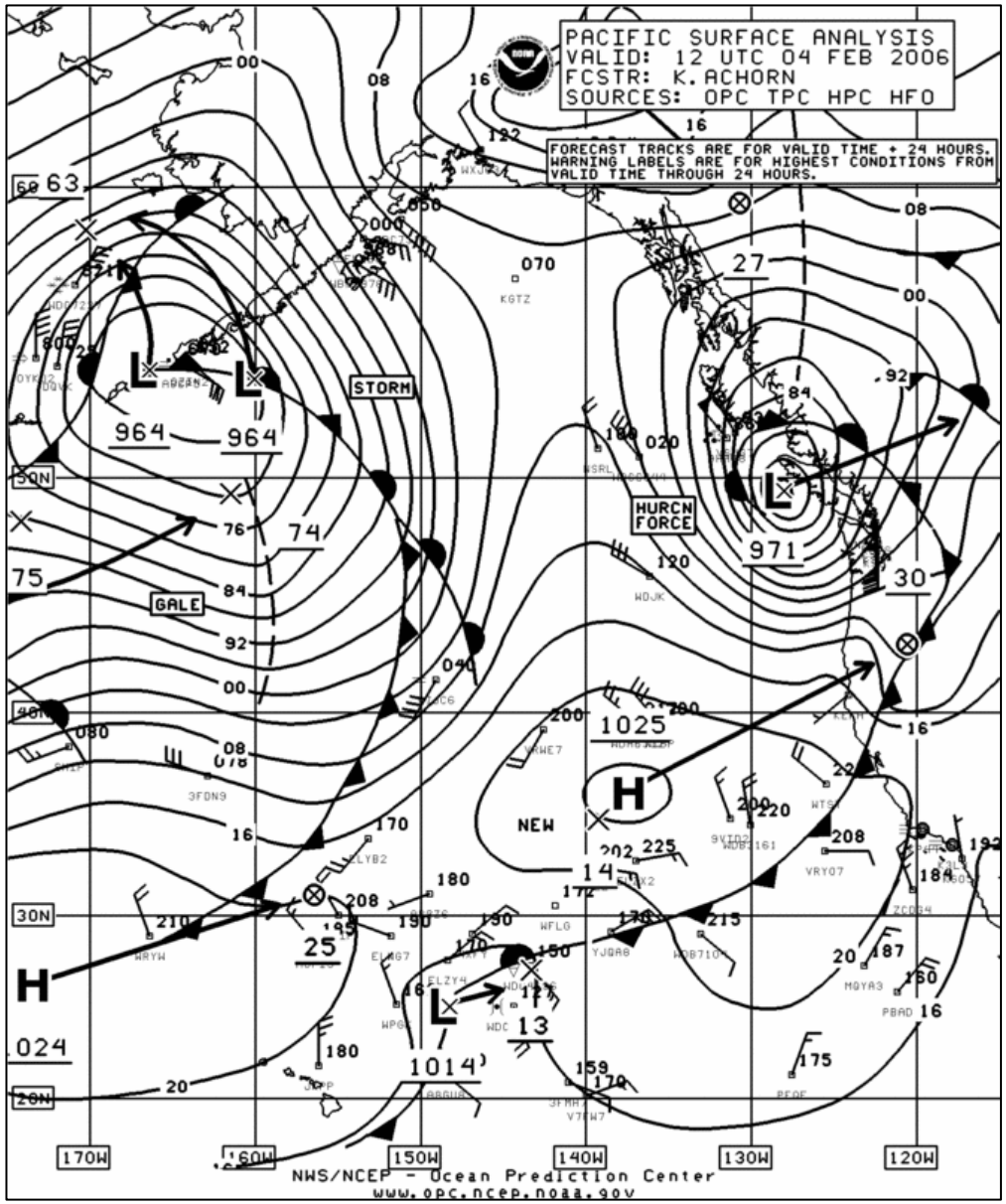
The First Scenario is Obvious…the Second, Worse a Day Later!



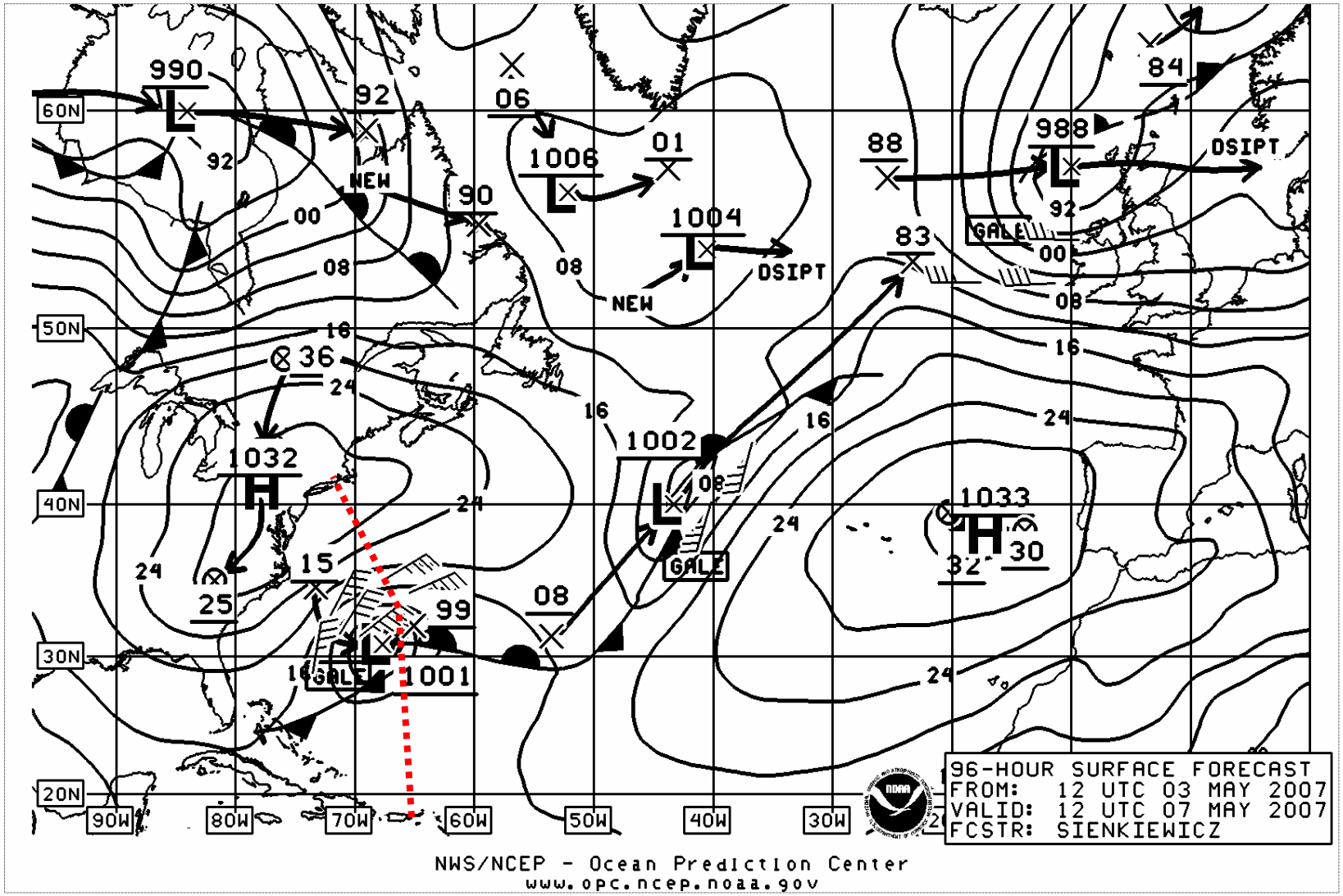
Is This a Good 96 Hour Surface Forecast?



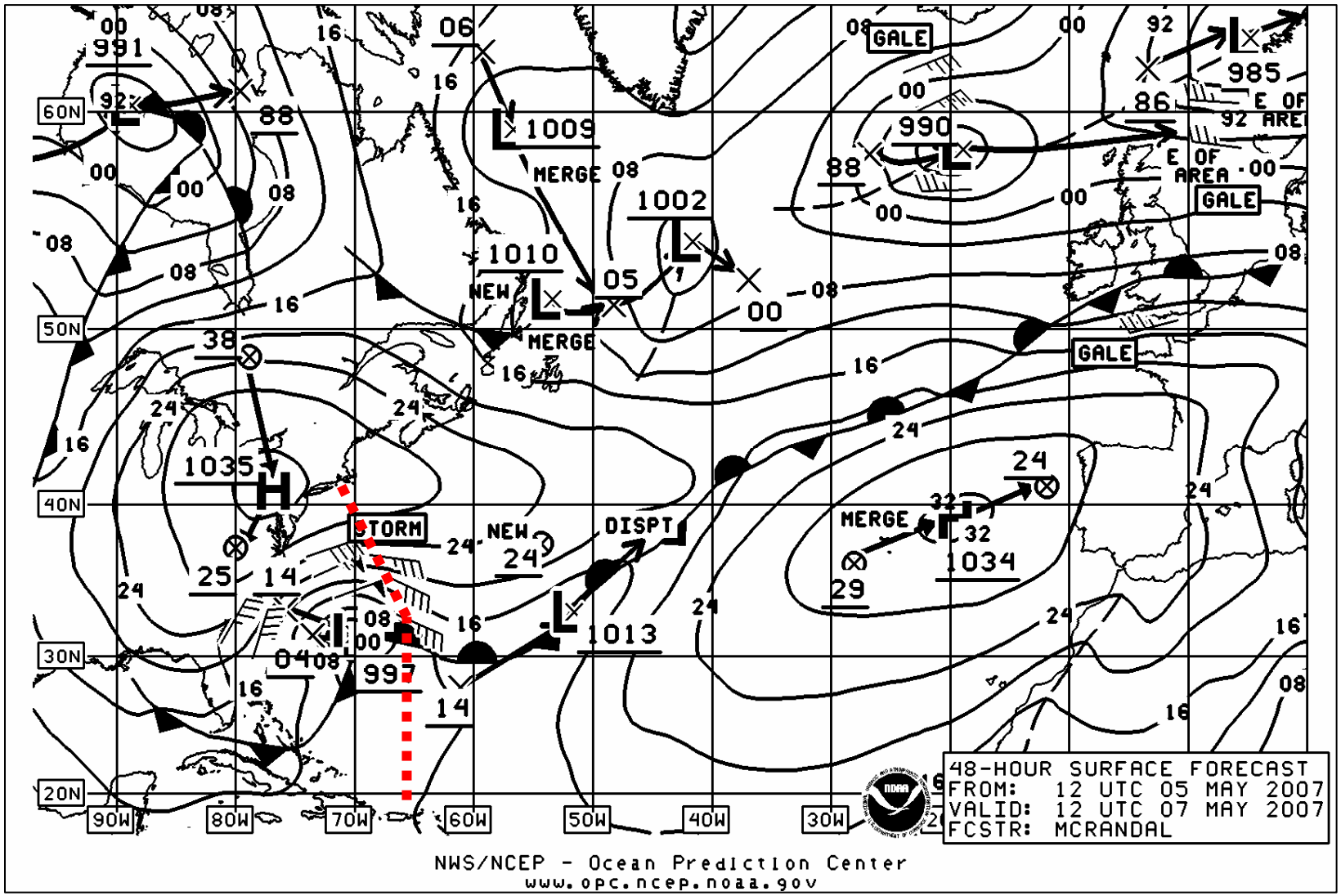
…Which Validates This Analysis Four Days Later?



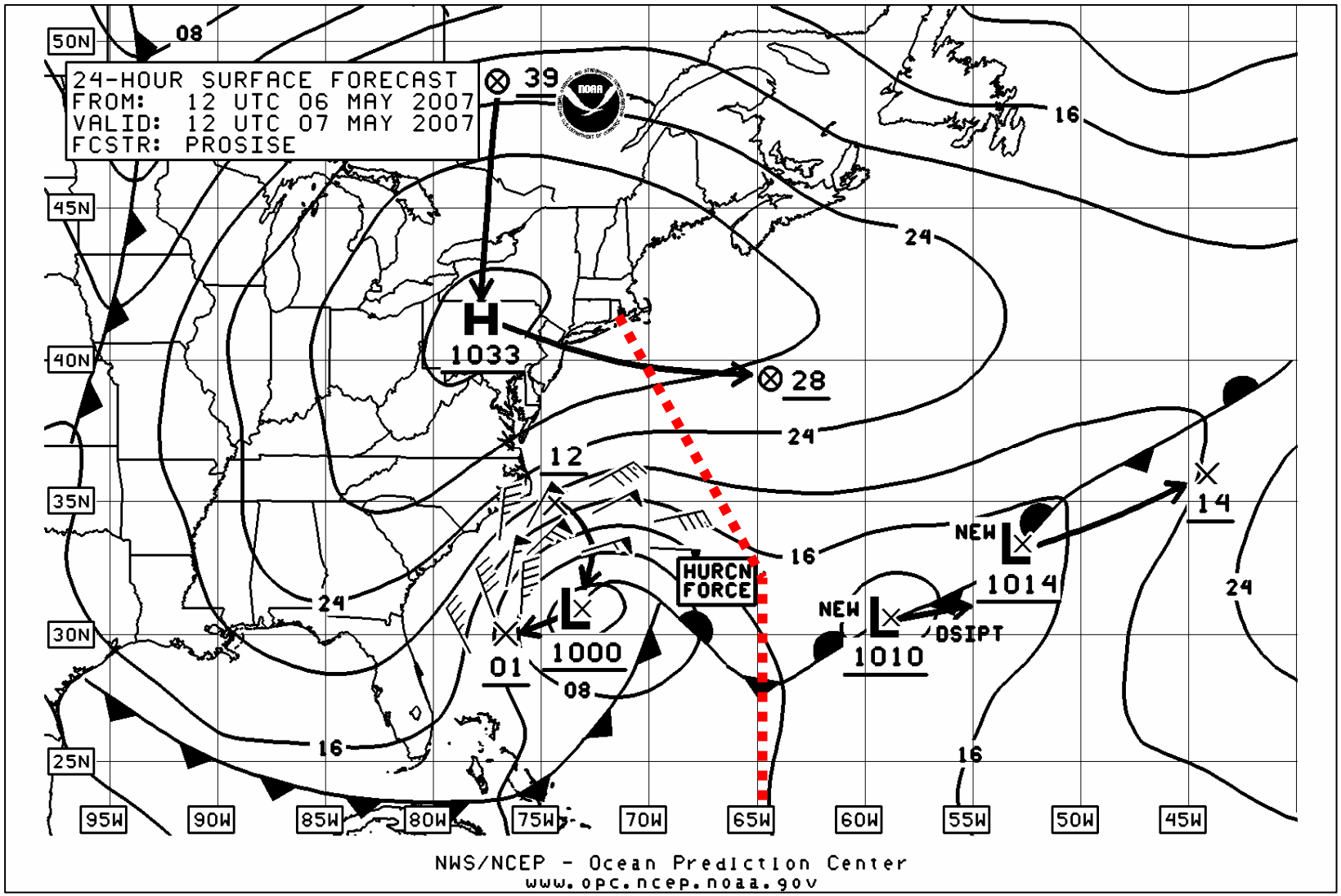
96 Hour Surface Forecast



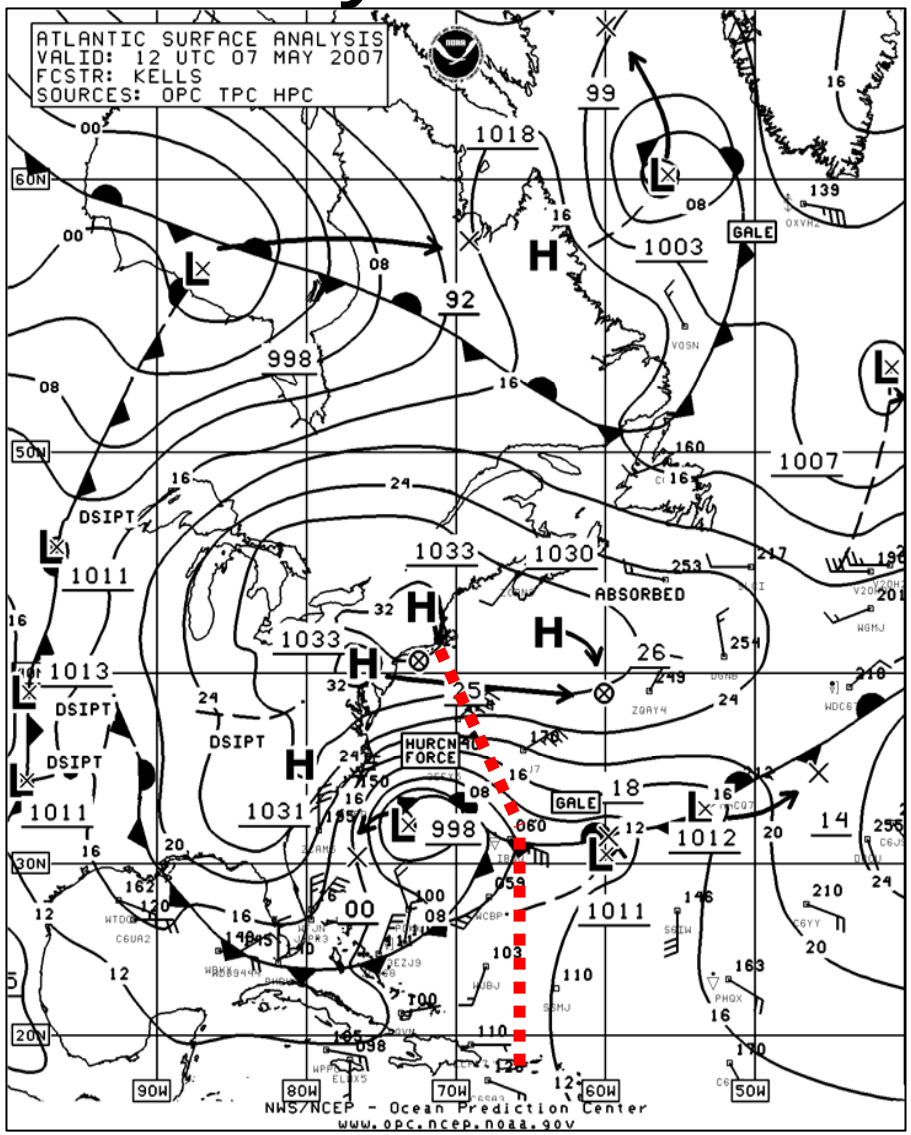
48 Hour Surface Forecast



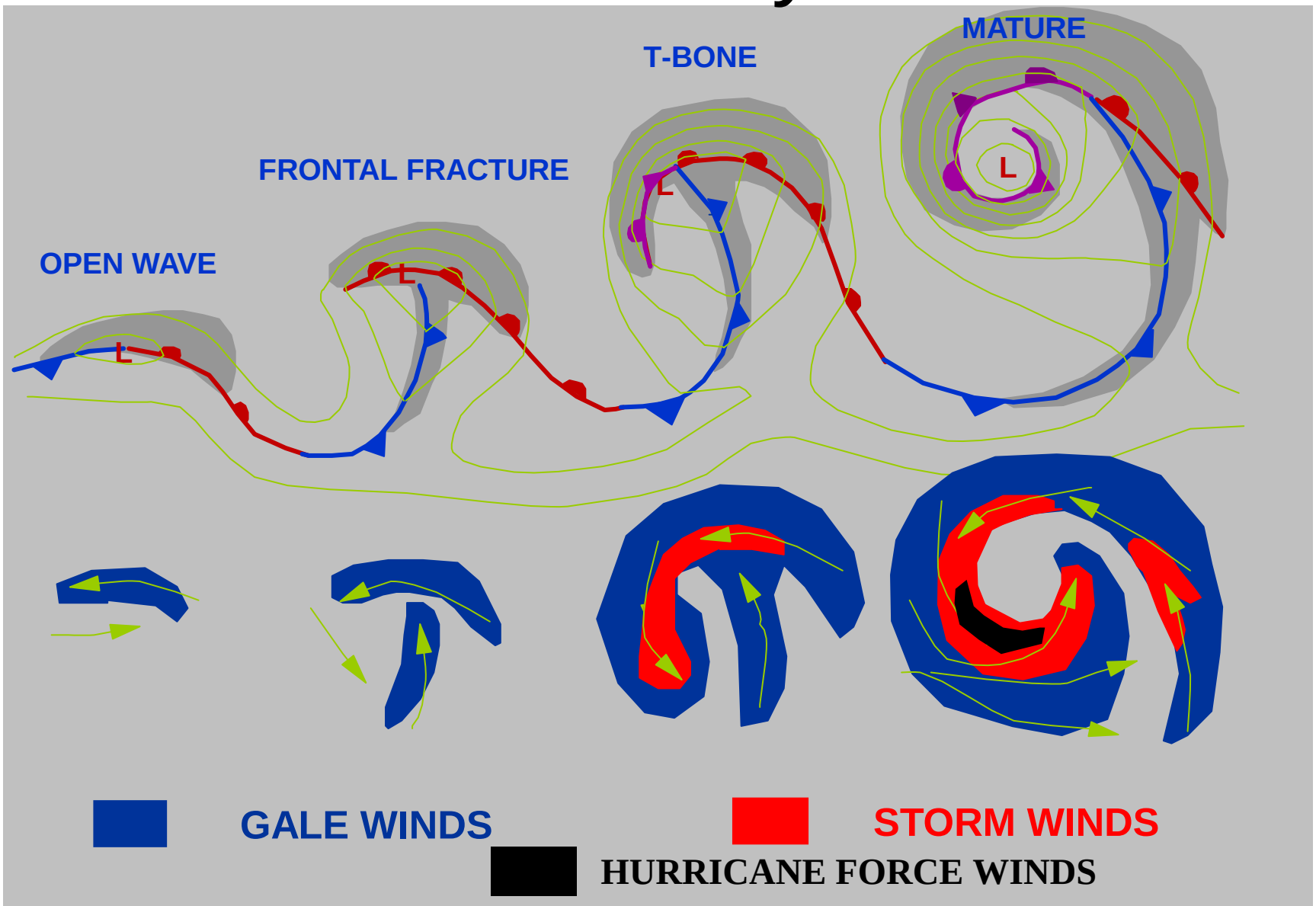
24 Hour Surface Forecast



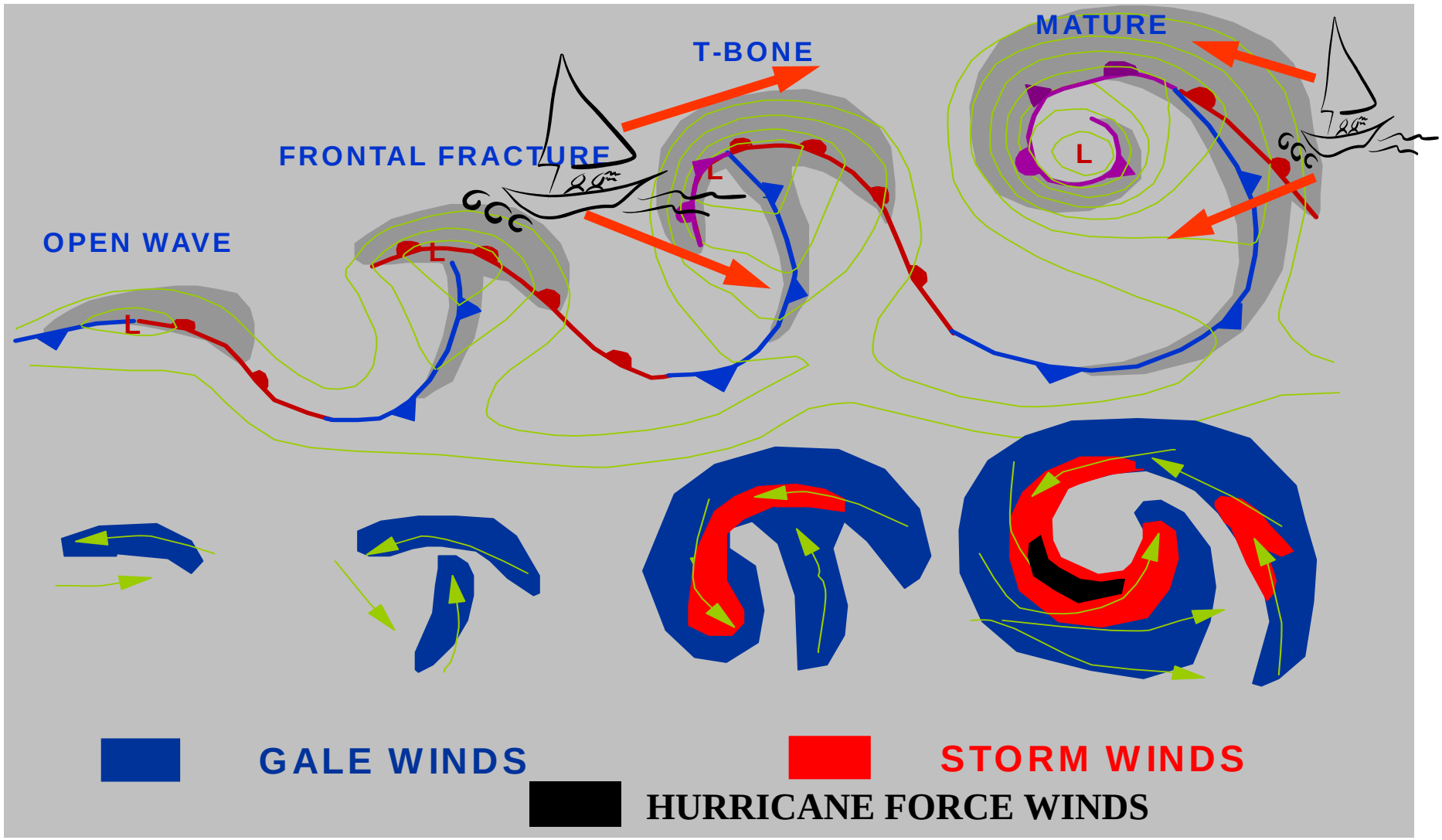
Surface Analysis VT 12 UTC 07 May 2008



OPC tracks the weather forecasts out to 5 days…

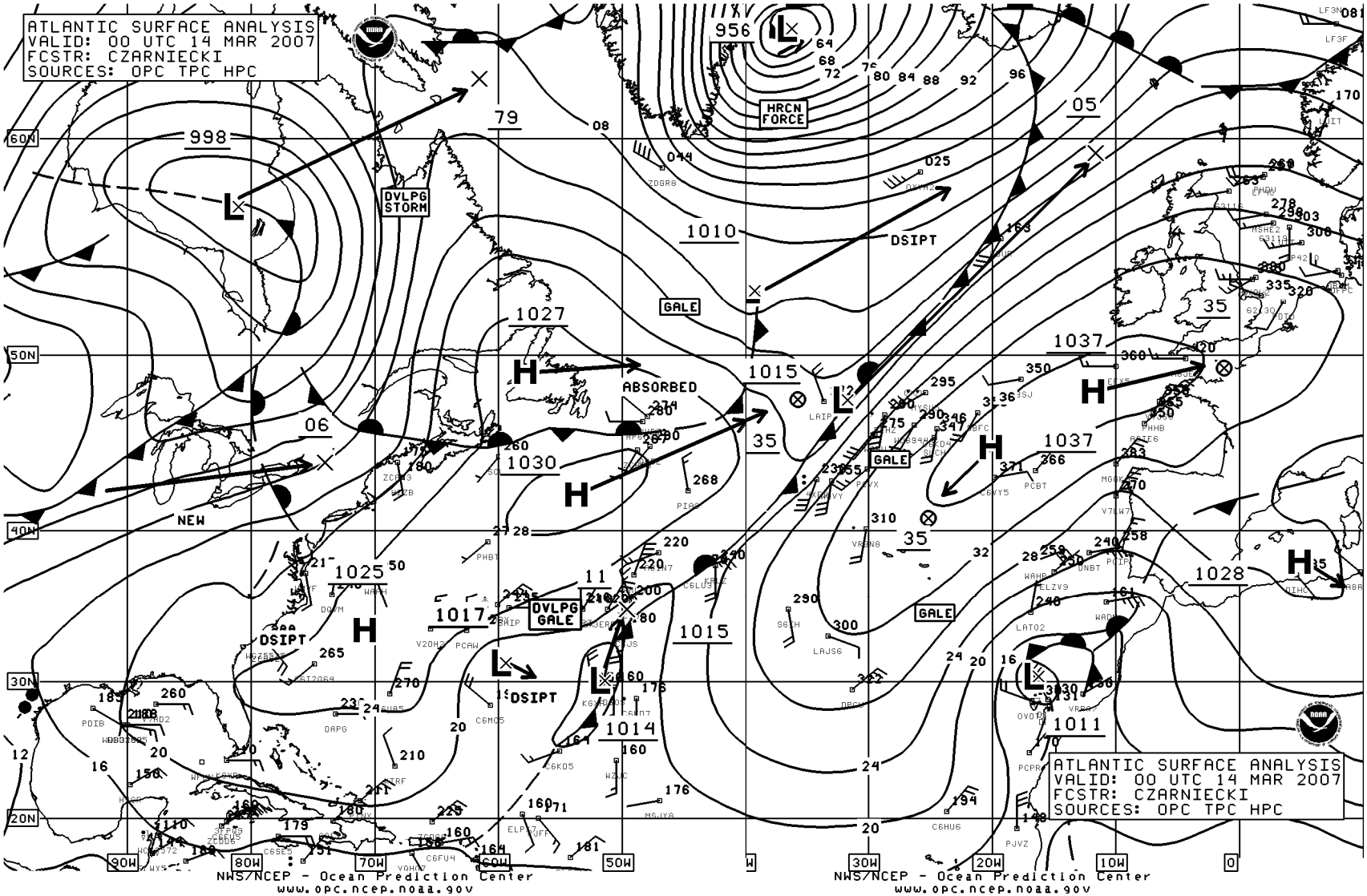


…in order to determine where should your boat be…day one through 5!

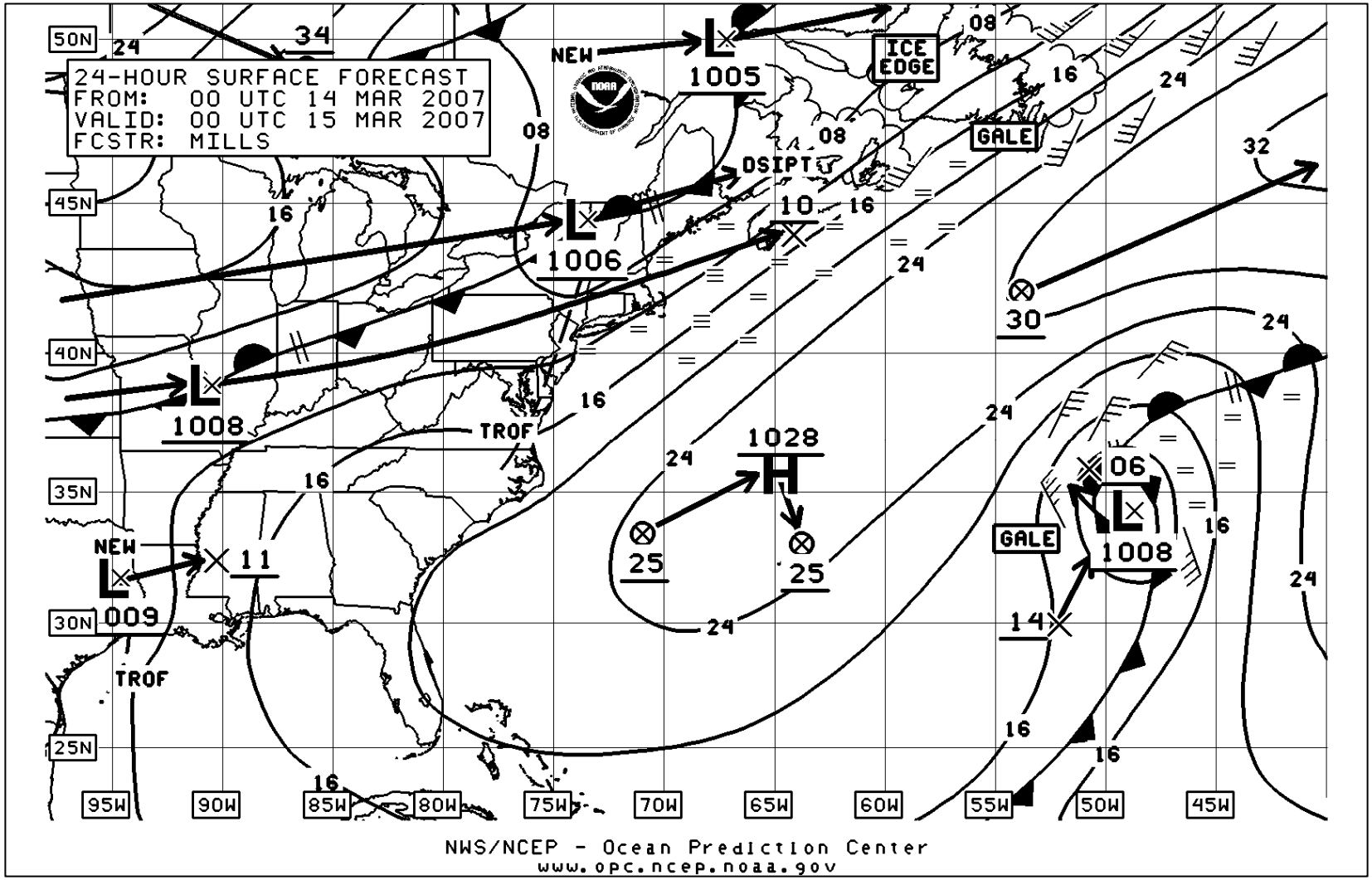


“From” and “Valid”…is EASY!!!

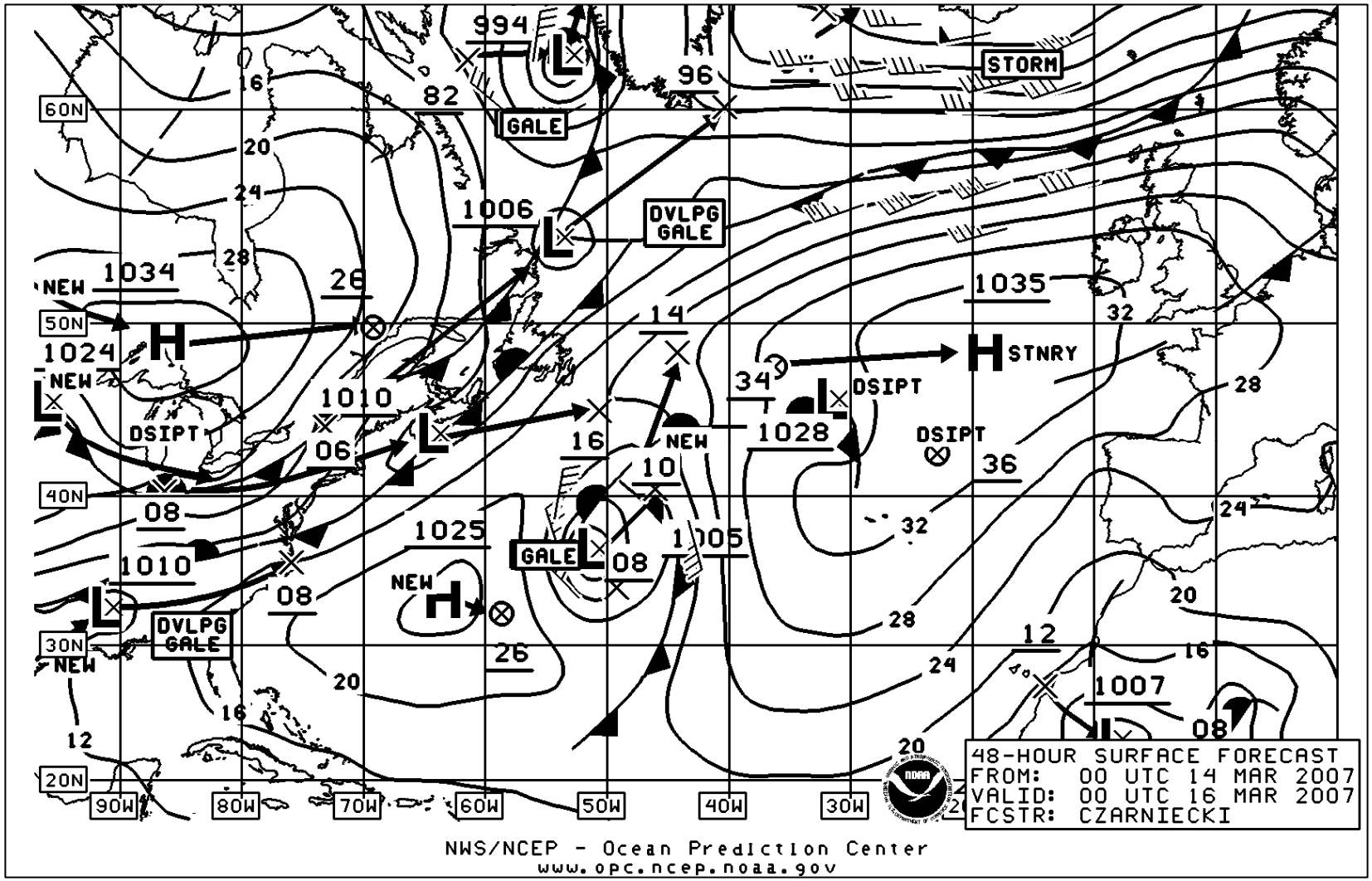
From the 4 surface analyses charts each day…



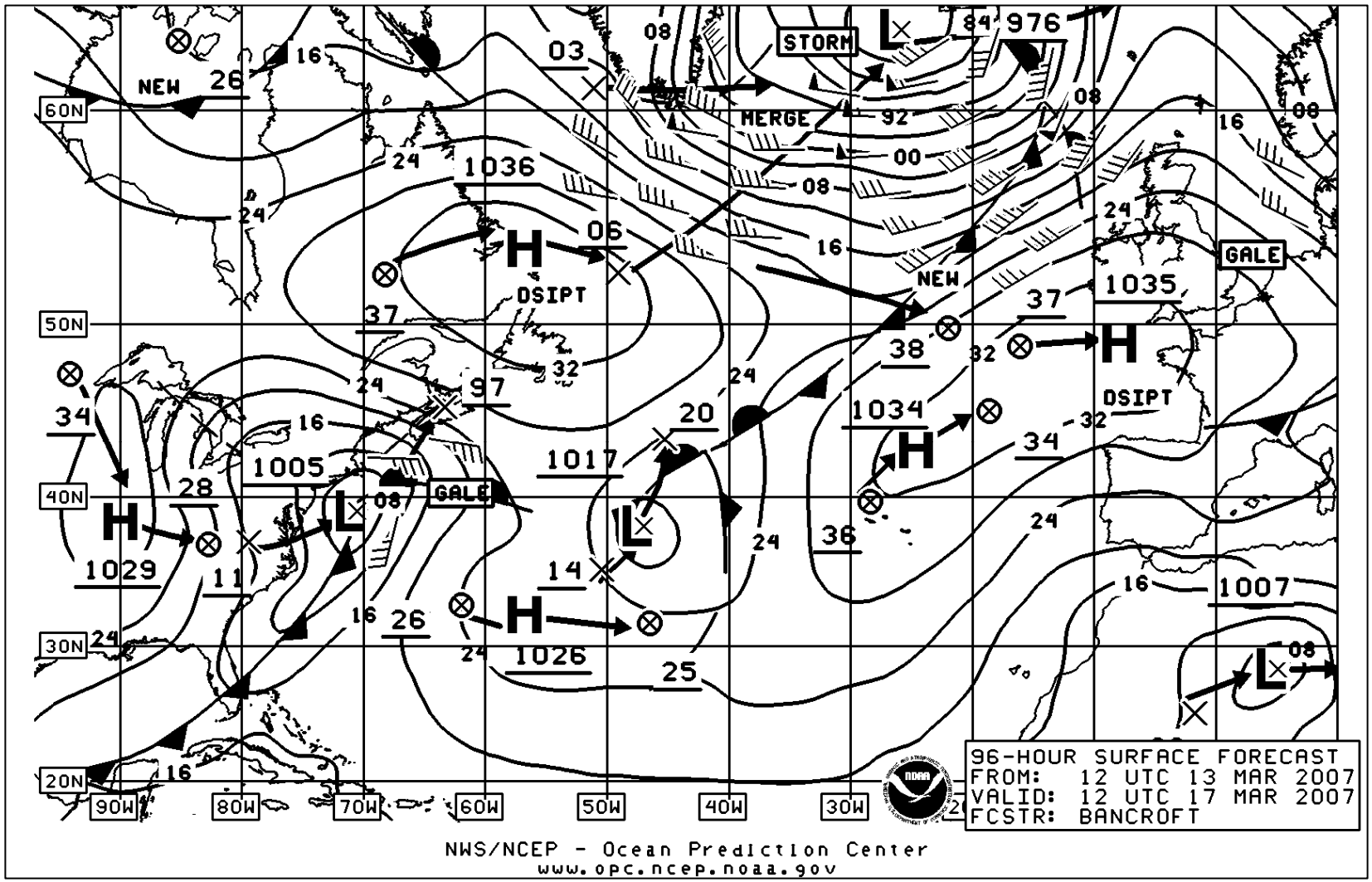
2 regional 24 hour surface pressure forecasts each day…



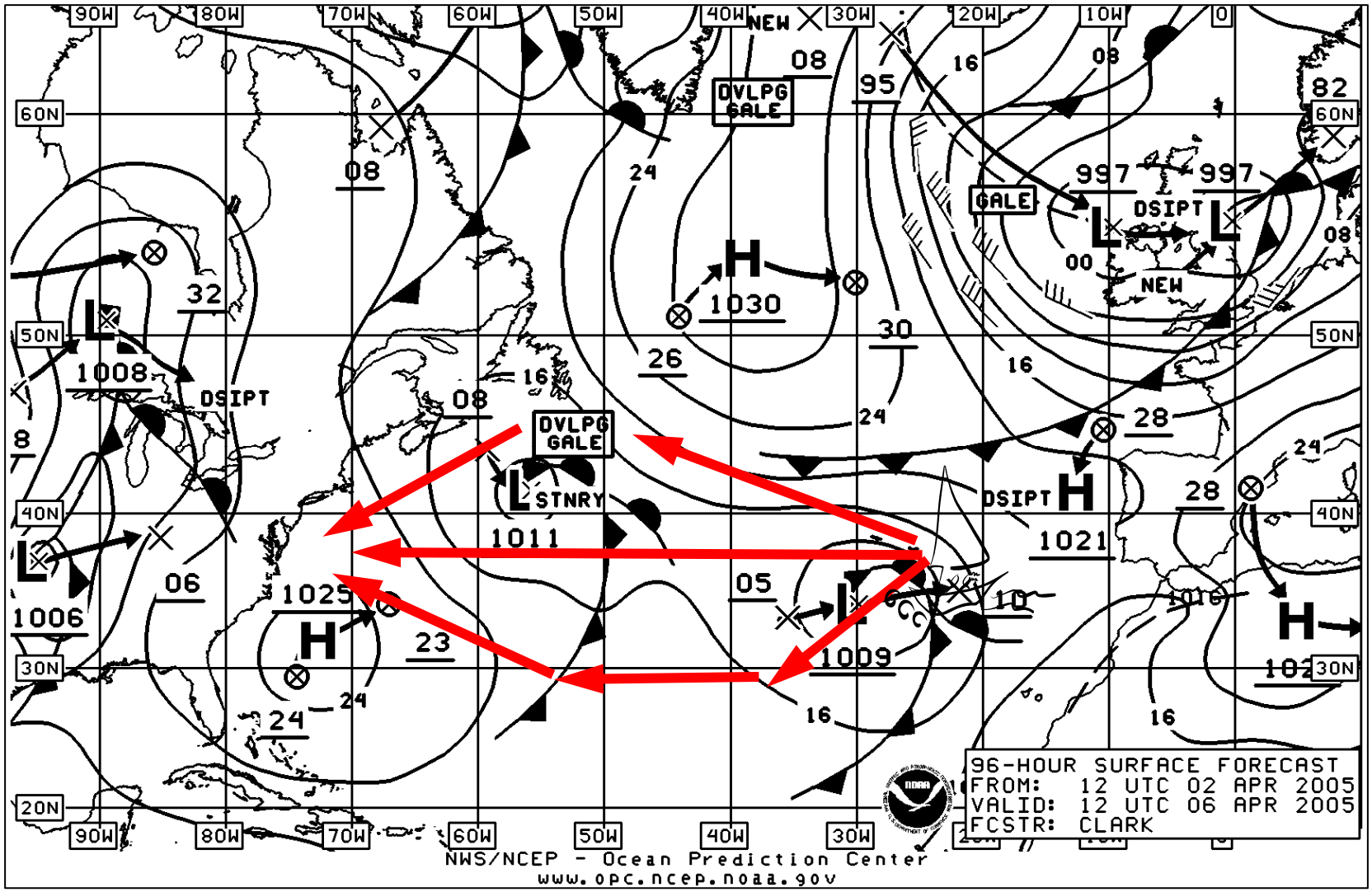
2 full ocean 48 hour surface pressure forecast each day



To the One Lone 96 Hour Surface Pressure Forecast Once a Day!



So one can make a decision based on a based forecasts through 96 Hours…as to which route is optimum?



OPC's Chart Reading Requires Familiarization of Product Symbols and Legend Interpretation

GRAPHICAL PRODUCTS LEGEND (01 OCT 2002)

H → ⊗ 30
1024
24HR HIGH PRES MOVMT AND PRES IN MBS
HIGH PRES CENTER WITH PRES IN MBS

L × → × 99
996
24HR LOW PRES MOVMT AND PRES IN MBS
LOW PRES CENTER WITH PRES IN MBS

COLD FRONT
WARM FRONT
STNRY FRONT
OCCLUDED FRONT
RIDGE
TROF
HURCN
TRPCL STORM
TRPCL WAVE

MODERATE ICING
HEAVY ICING

WIND BARBS:

= 5 KT
= 10 KT
= 15 KT
= 20 KT
= 25 KT
= 35 KT
= 50 KT
= 60 KT
= 65 KT
= 75 KT
= 100 KT
= 110 KT
= 120 KT

TEXT ABBREVIATIONS:

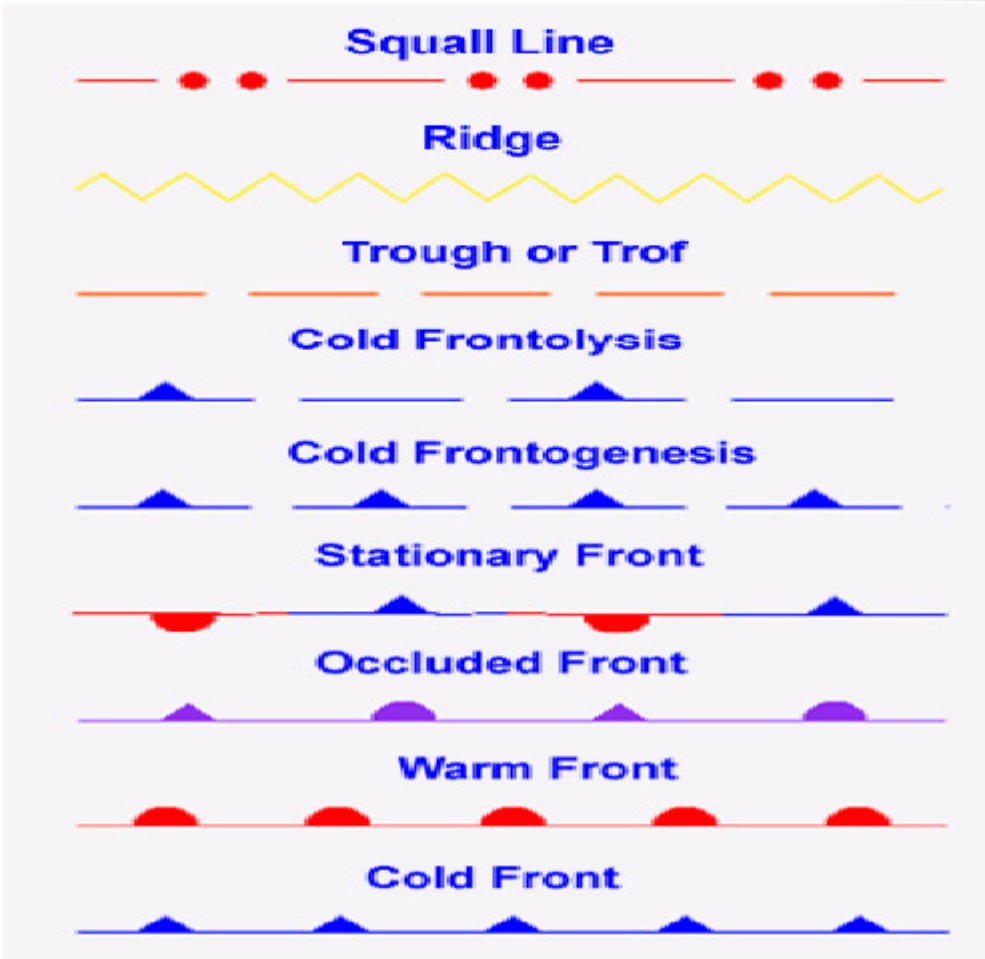
GALE = 34-47 KT
STORM = 48-63 KT
HURCN => 64 KT
KT = KNOTS, G = GUSTS
HR = HOUR
MBS = MILLIBARS
PRES = PRESSURE
HURCN = HURRICANE
DSIPT = DISSIPATED
STNRY = STATIONARY
WKNG = WEAKENING
RPDLY = RAPIDLY
FRMG = FORMING
MOVG = MOVING
TROF = TROUGH
INLD = INLAND
TRPCL = TROPICAL
DVLPG = DEVELOPING
COMB = COMBINING
DCRS = DECREASING
INCR = INCREASING
INTSFYG = INTENSIFYING
PSN = POSITION

NOTE: WHEN APPROPRIATE THIS CHART MAY BE REPLACED WITH A BULLETIN DETAILING RADIOFAX PROGRAM CHANGES

NWS/NCEP - Marine Prediction Center

OPC Product Legend

Terminology and Weather Symbols



Cold front

-The leading edge of a relatively colder air mass which separates two air masses in which the gradients of temperature and moisture are maximized. In the northern hemisphere winds ahead of the front will be southwest and shift into the northwest with frontal passage.

Frontogenesis

-The formation of a front occurs when two adjacent air masses with different densities and temperatures meet and strengthen the discontinuity between the air masses. It occurs most frequently over continental land areas such as over the Eastern US when the air mass moves out over the ocean. It is the opposite of frontolysis.

Frontolysis

-The weakening or dissipation of a front occurs when two adjacent air masses lose contrasting properties such as the density and temperature. It is the opposite of frontogenesis.

Occluded front

- The union of two fronts, formed as a cold front overtakes a warm front or quasi-stationary front refers to a cold front occlusion. When a warm front overtakes a cold front or quasi-stationary front the process is termed a warm front occlusion. These processes lead to the dissipation of the front in which there is no gradient in temperature and moisture.

Ridge

- an elongated area of relatively high pressure that is typically associated with a anti-cyclonic wind shift.

Stationary front

- A front that has not moved appreciably from its previous analyzed position.

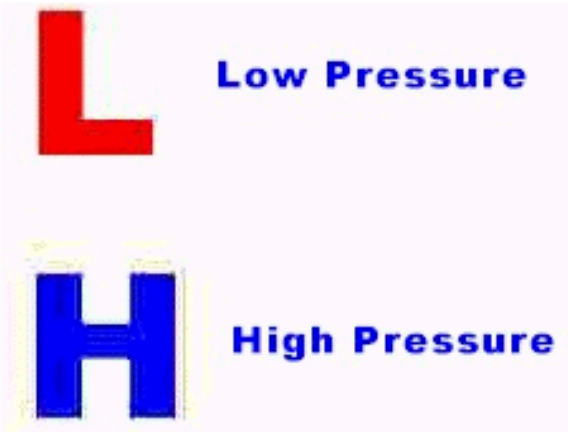
Trough

- [Trof], an elongated area of relatively low pressure that is typically associated with a cyclonic wind shift.

Warm front

- The leading edge of a relatively warmer surface air mass which separates two distinctly different air masses. The gradients of temperature and moisture are maximized in the frontal zone. Ahead of a typical warm front in the northern hemisphere, winds are from the southeast and behind the front winds will shift to the southwest.

LOW & HIGH PRESSURE SYSTEMS AND MISCELLANEOUS KEY TERMS USED



Low pressure with a number such as 99 means 999 mb and with 03 means 1003 mb. High pressure with a number such as 25 means 1025 mb.

Extratropical low

- A low pressure center which refers to a migratory frontal cyclone of middle and higher latitudes. Tropical cyclones occasionally evolve into extratropical lows losing tropical characteristics and become associated with frontal discontinuity.

Low pressure

- An area of low pressure identified with counterclockwise circulation in the northern hemisphere and clockwise in the southern hemisphere. Also, defined as a cyclone.

High pressure

- An area of higher pressure identified with a clockwise circulation in the northern hemisphere and a counterclockwise circulation in the southern hemisphere. Also, defined as an anticyclone.

New

- The term "NEW" may be used in lieu of a forecast track position of a high or low pressure center when the center is expected to form by a specific time. For example, a surface analysis may depict a 24-hour position of a new low pressure center with an "X" at the 24-hour position followed by the term "NEW", the date and time in UTC which indicates the low is expected to form by 24 hours.

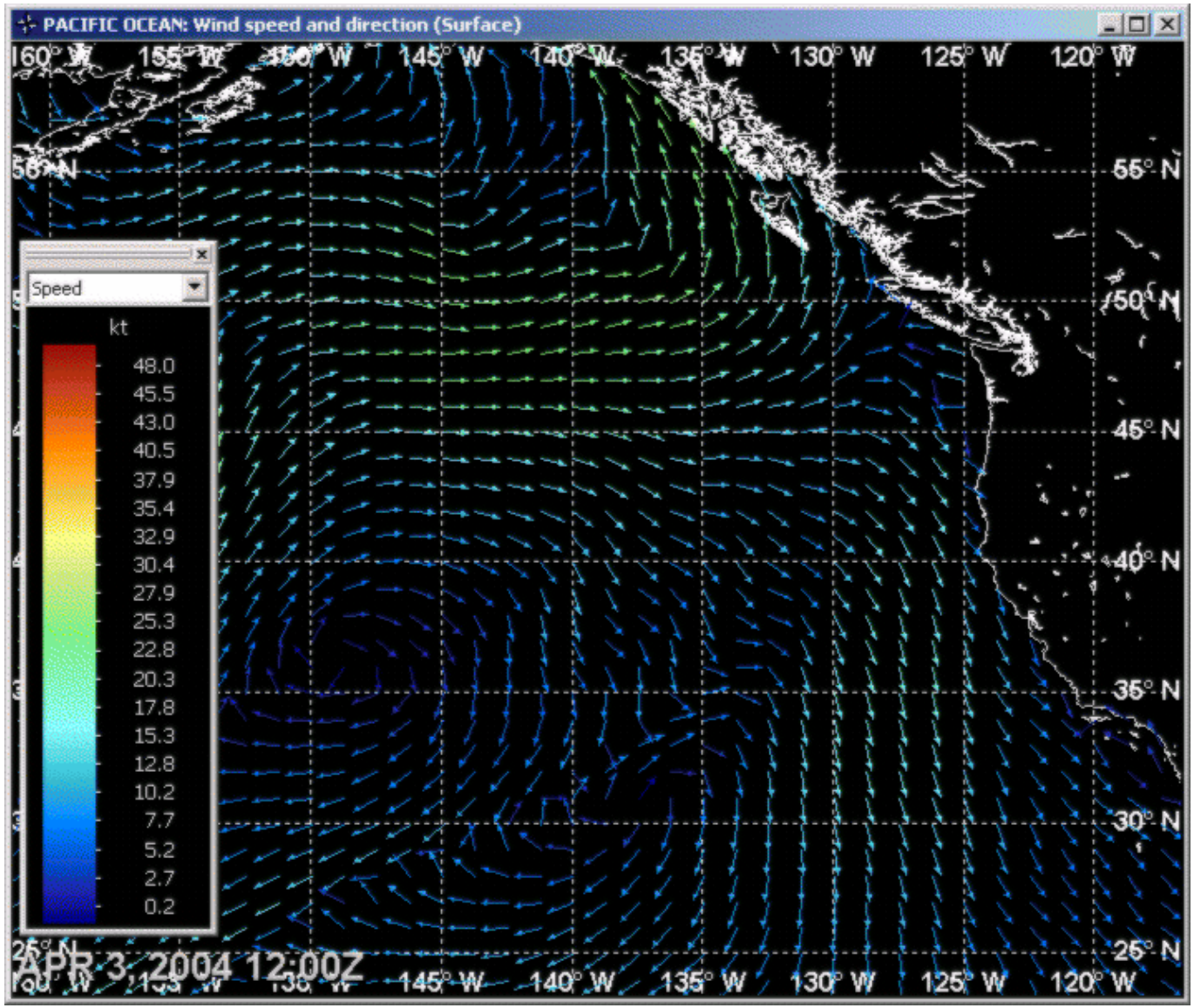
Rapidly intensifying

- Indicates an expected rapid intensification of a cyclone with surface pressure expected to fall by at least 24 millibar (mb) within 24 hours.

Station plot

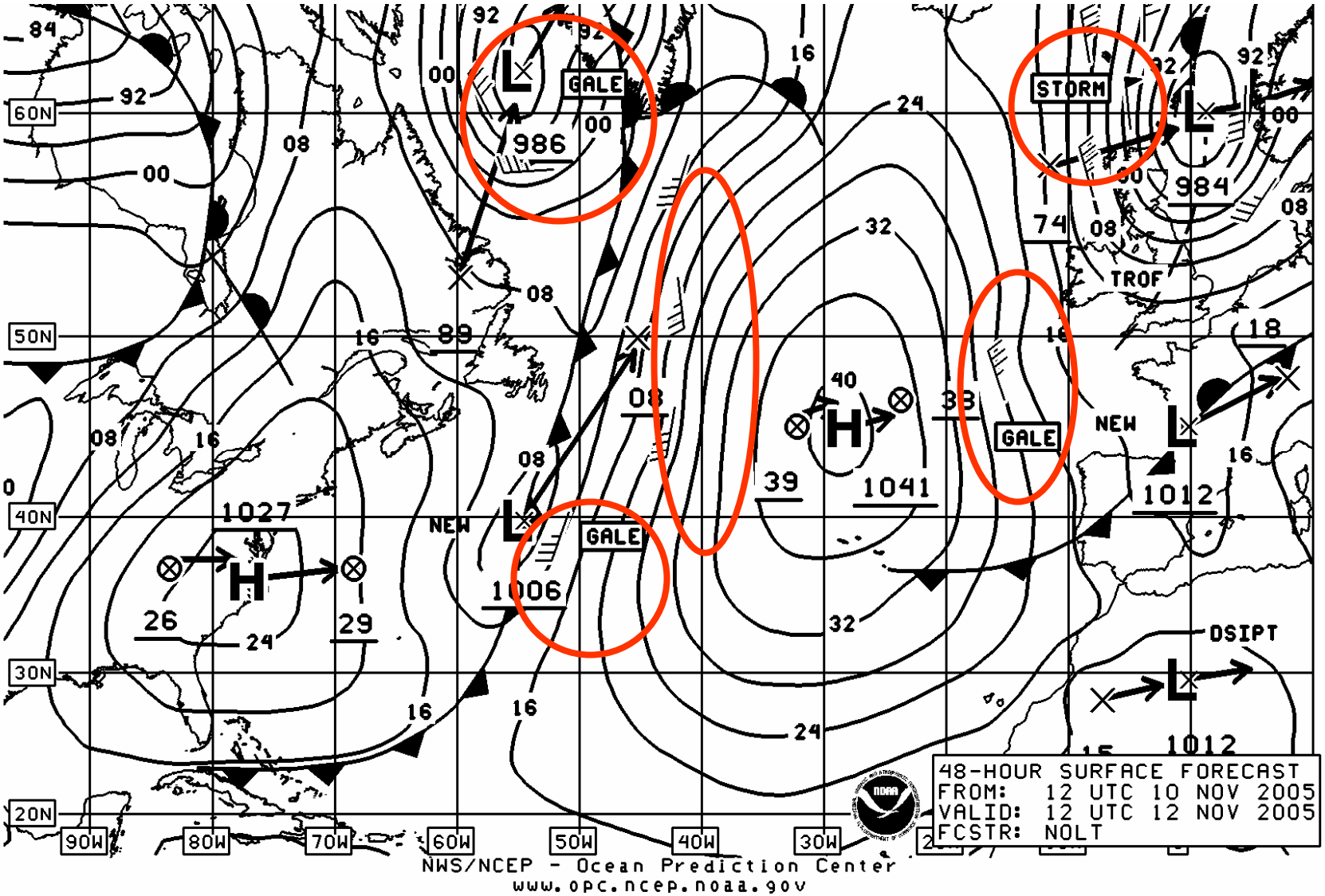
Click for information on *coding* used with the surface preliminary analysis or for a list of "present weather" symbols.

Gridded Binary Data (GRIB files)…What about them?

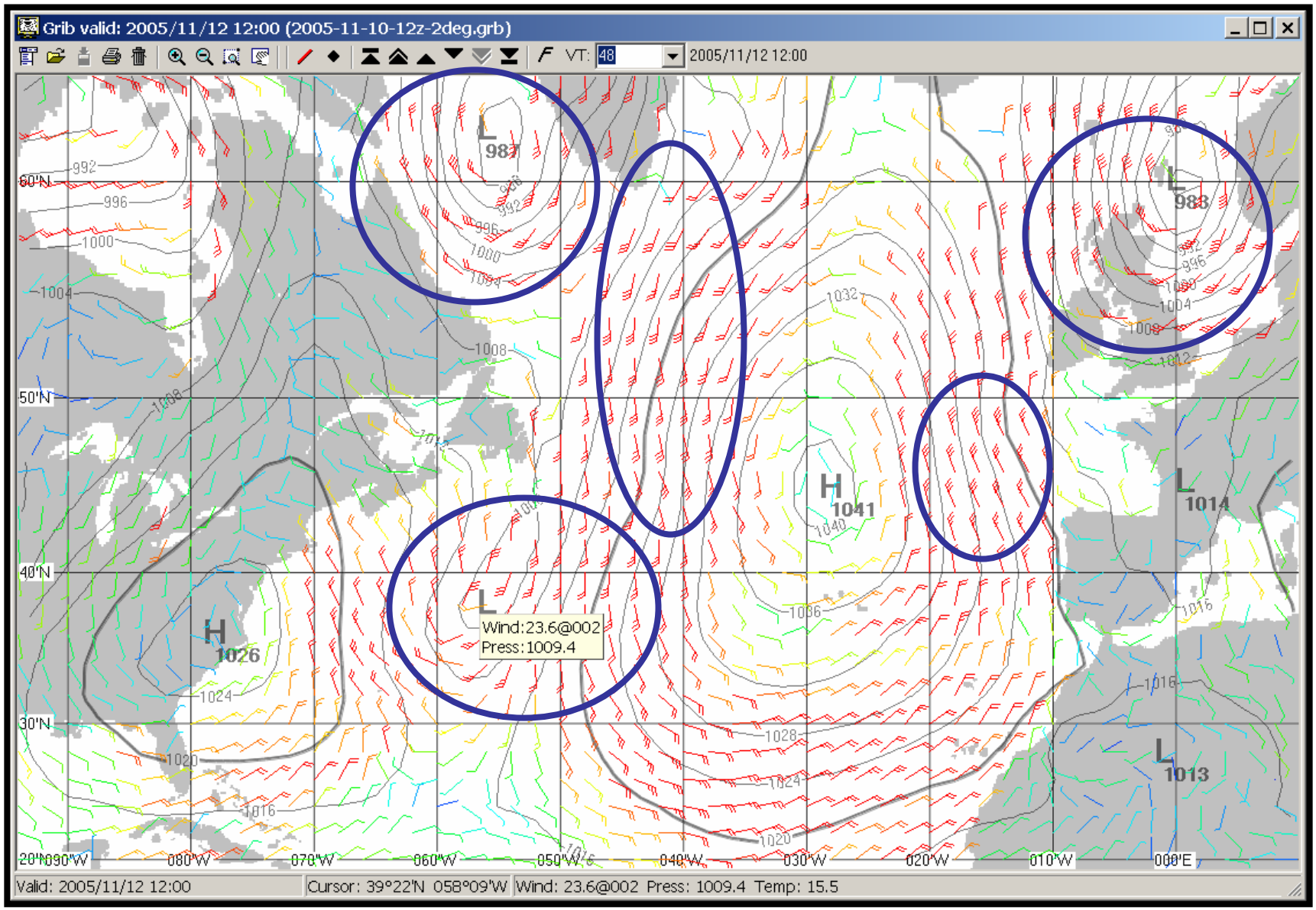


I Strongly Recommend That You Learn the Importance of Human Intelligence Forecasts First…

Such as an OPC Surface 48 Hour Forecast…

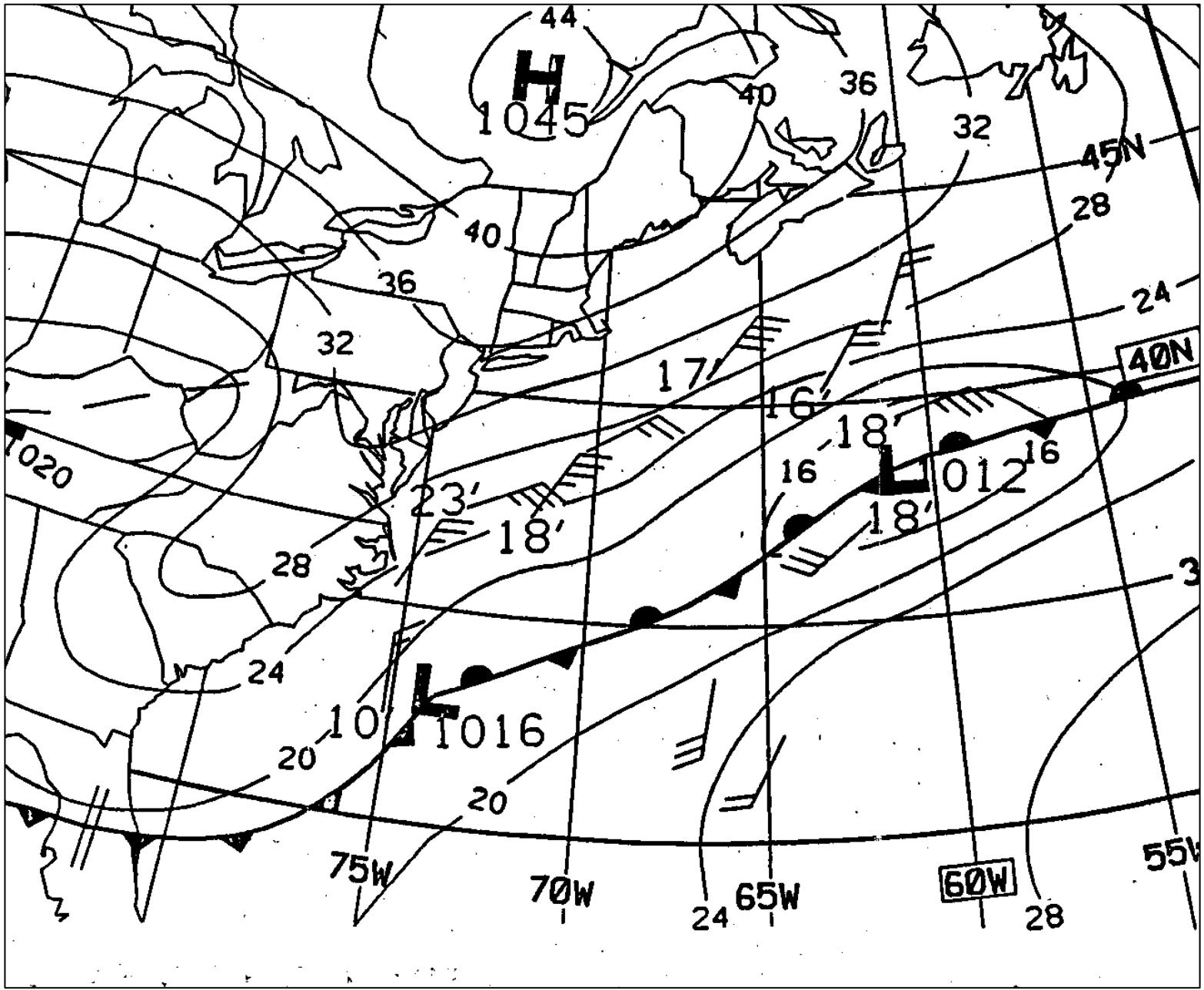


When Compared to Same GRIB 48 Hour Surface FCST…the Winds do NOT Match OPC's Forecast!

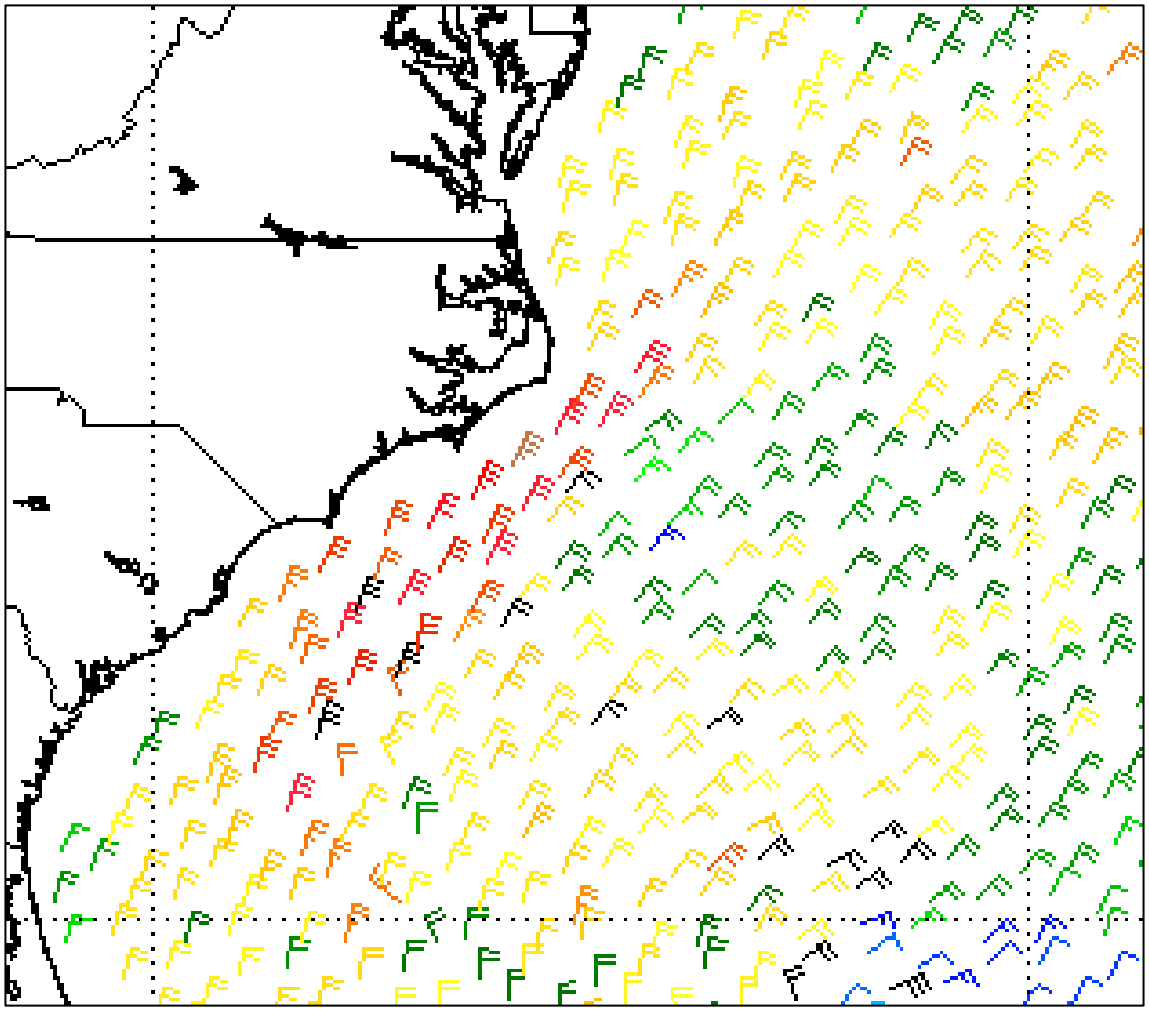


Local and Geographic Effects.. How will this impact a Gulf Stream Crossing?

Counter Opposing Flow

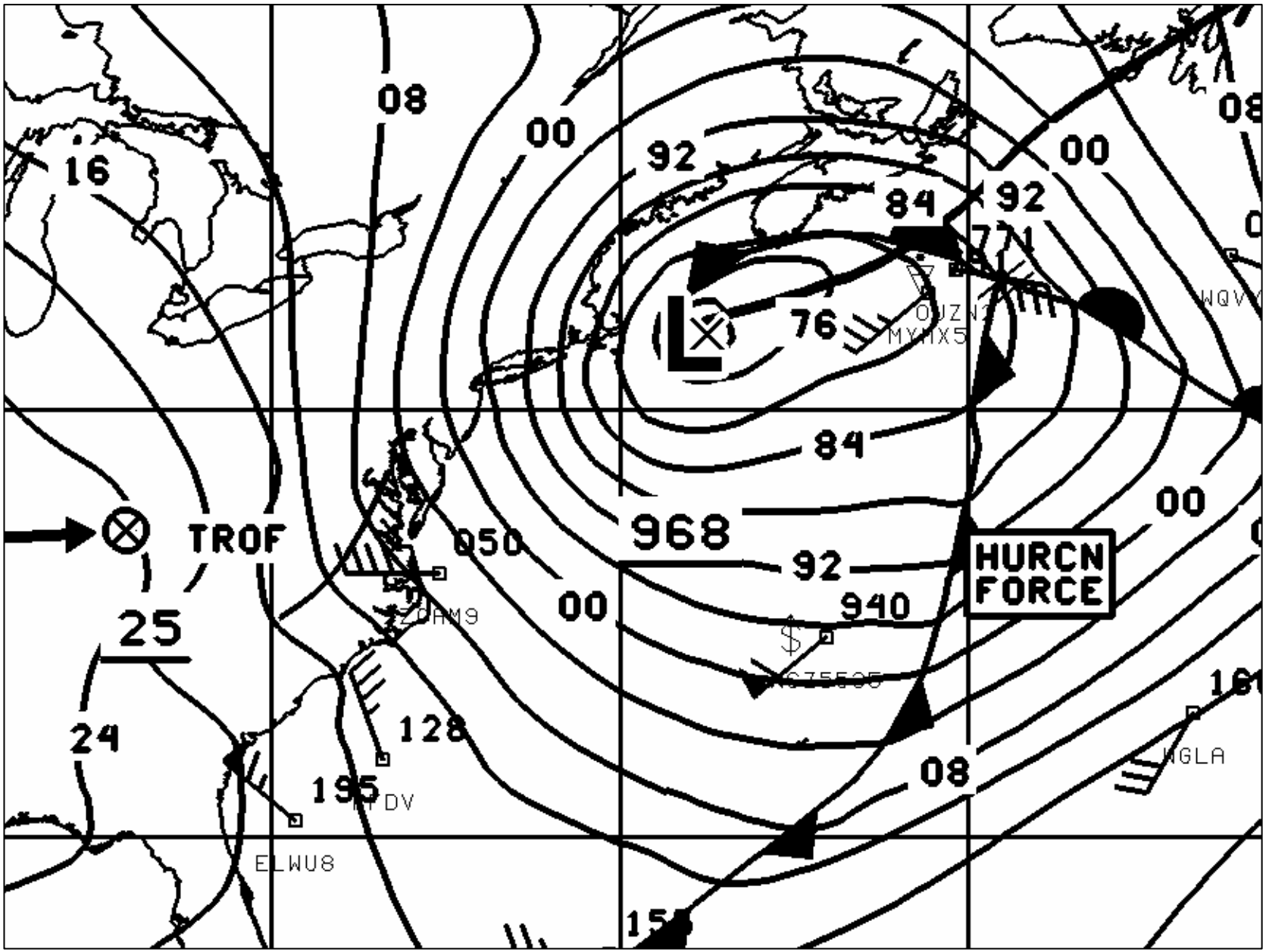


Scatterometer derived winds

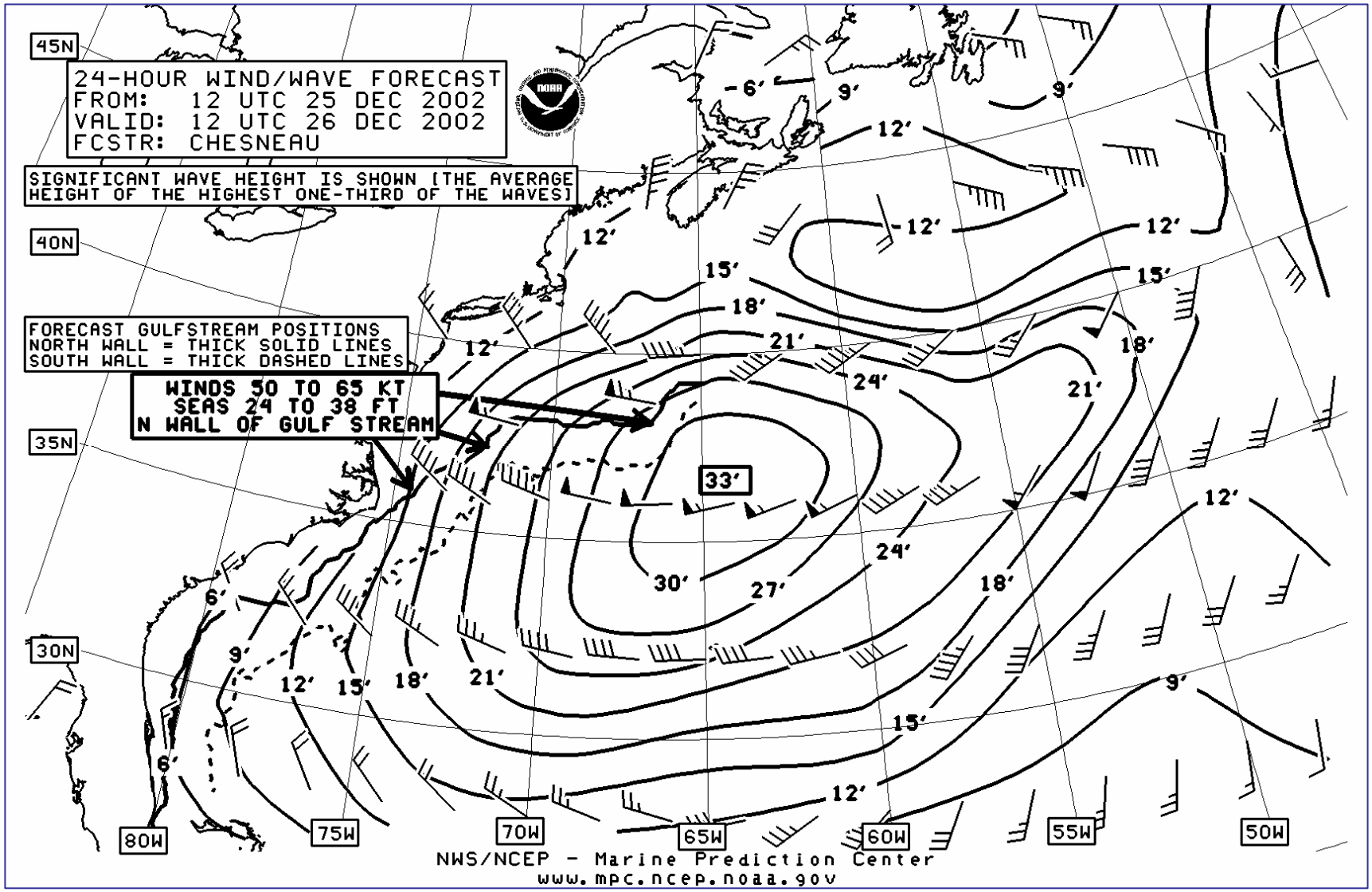


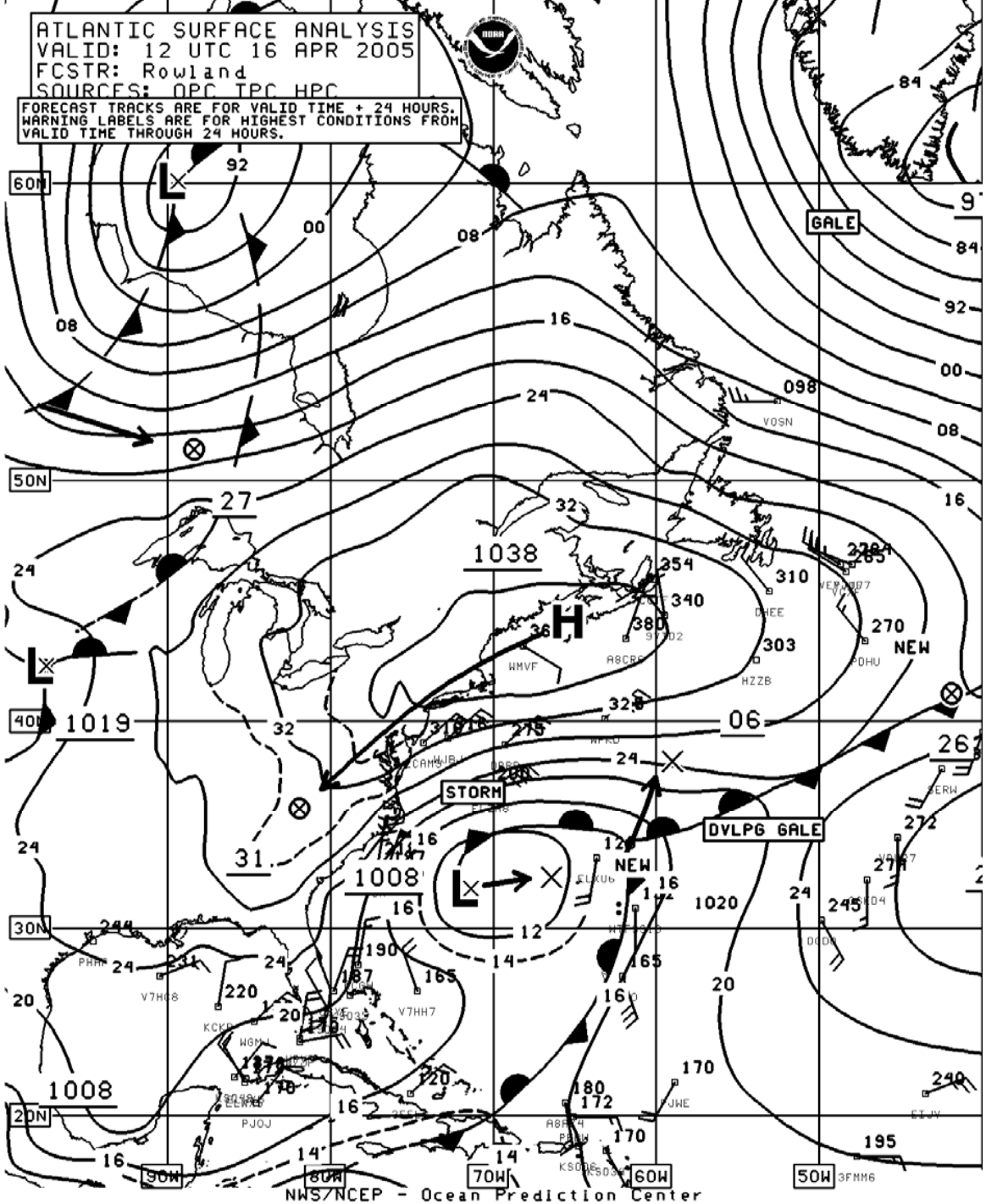
QUIKSCAT…wind speeds, directions

Surface Analysis VT 06Z Dec 26

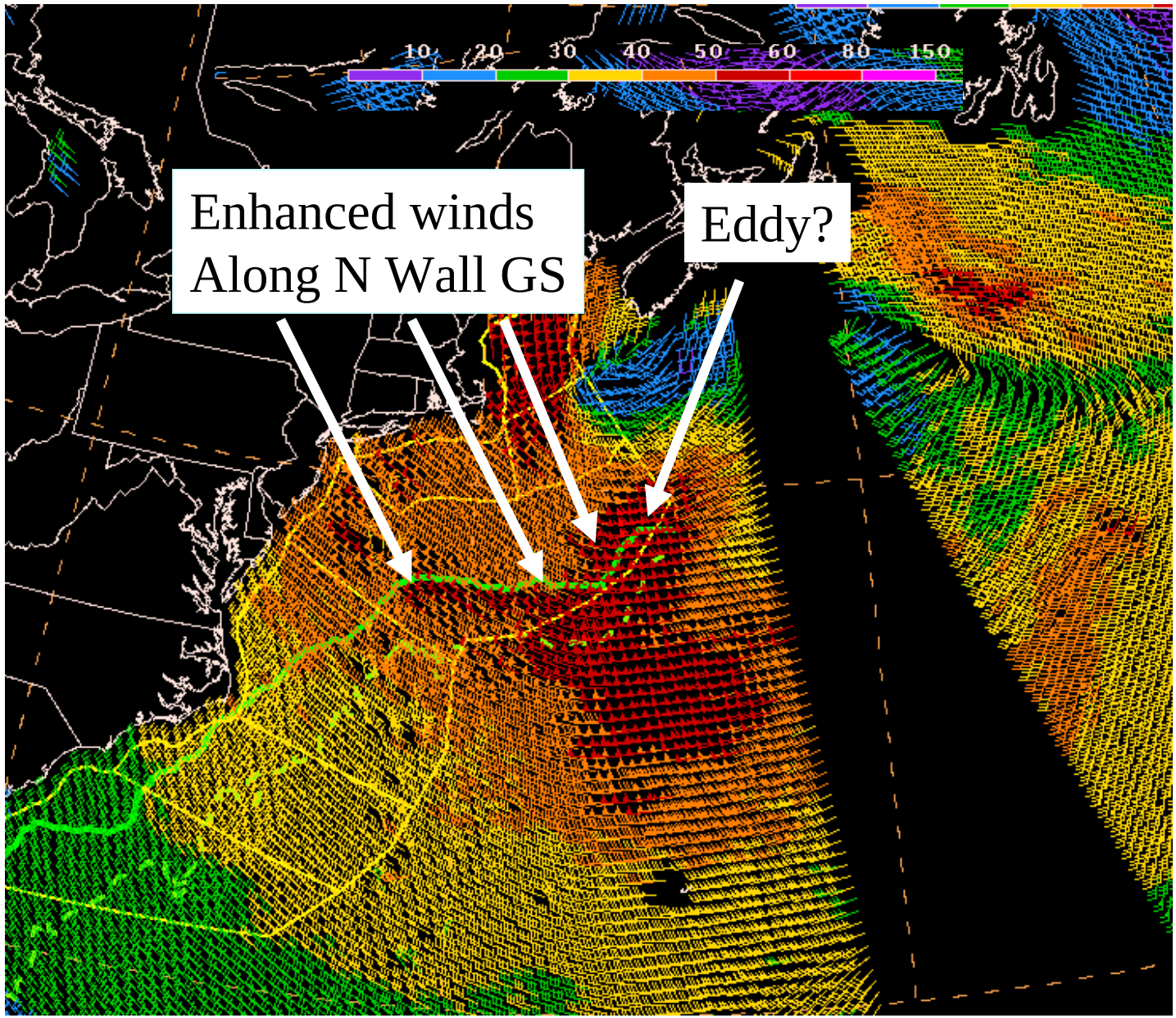


24 hour Wind Wave Forecast VT 12Z Dec 26




ATLANTIC SURFACE ANALYSIS
VALID: 12 UTC 16 APR 2005
FCSTR: Rowland
SOURCES: OPC TPC HPC
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS.
WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
VALID TIME THROUGH 24 HOURS.
60N
50N
40N
30N
20N
90W
80W
70W
60W
50W
GALE
STORM
DVLPG GALE
NEW
1038
1019
1008
1020
NWS/NCEP - Ocean Prediction Center
WWW.OPC.NCEP.NOAA.GOV

QuickSCAT Image VT 1300Z Dec 26



Wind Against Current

Wind against a Gulf Stream Current!

THUNDERSTORM TIPS

Know the forecast!

- **NOAA WX Radio**
- **Fronts, troughs, boundaries**

Watch the sky!!!

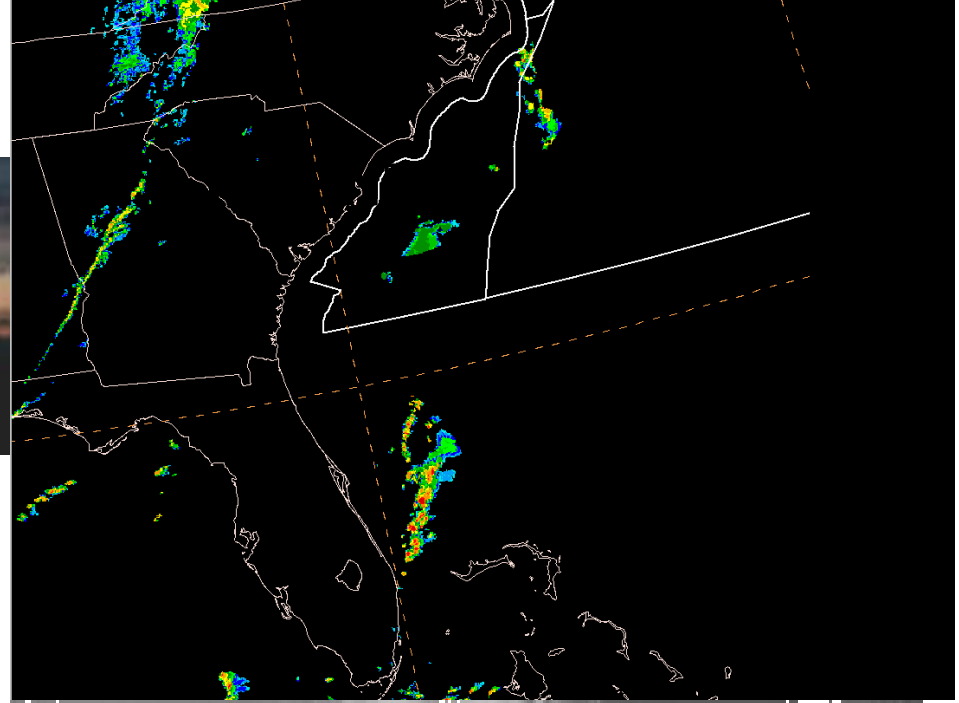
Gulf Stream

- **Flow parallel to the Stream**
- **Max activity at night**

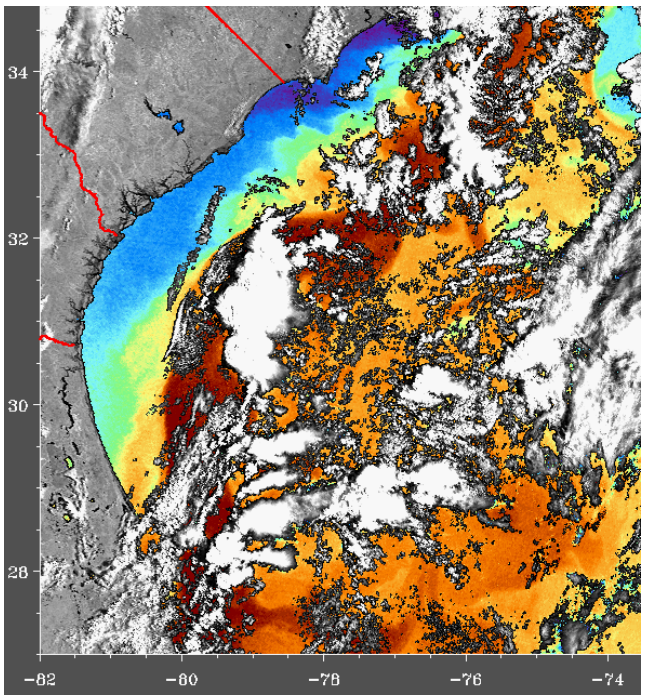
Radar (rain clutter/sea clutter)

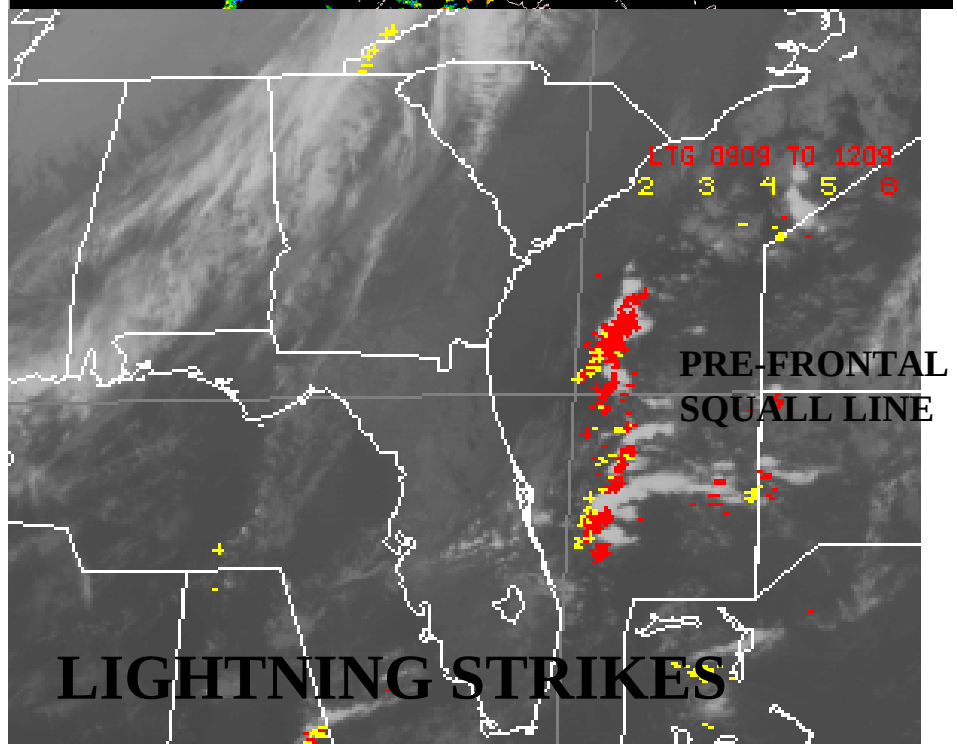
Act early!

THE GULF STREAM



SPAWNING GROUND FOR T-STORMS



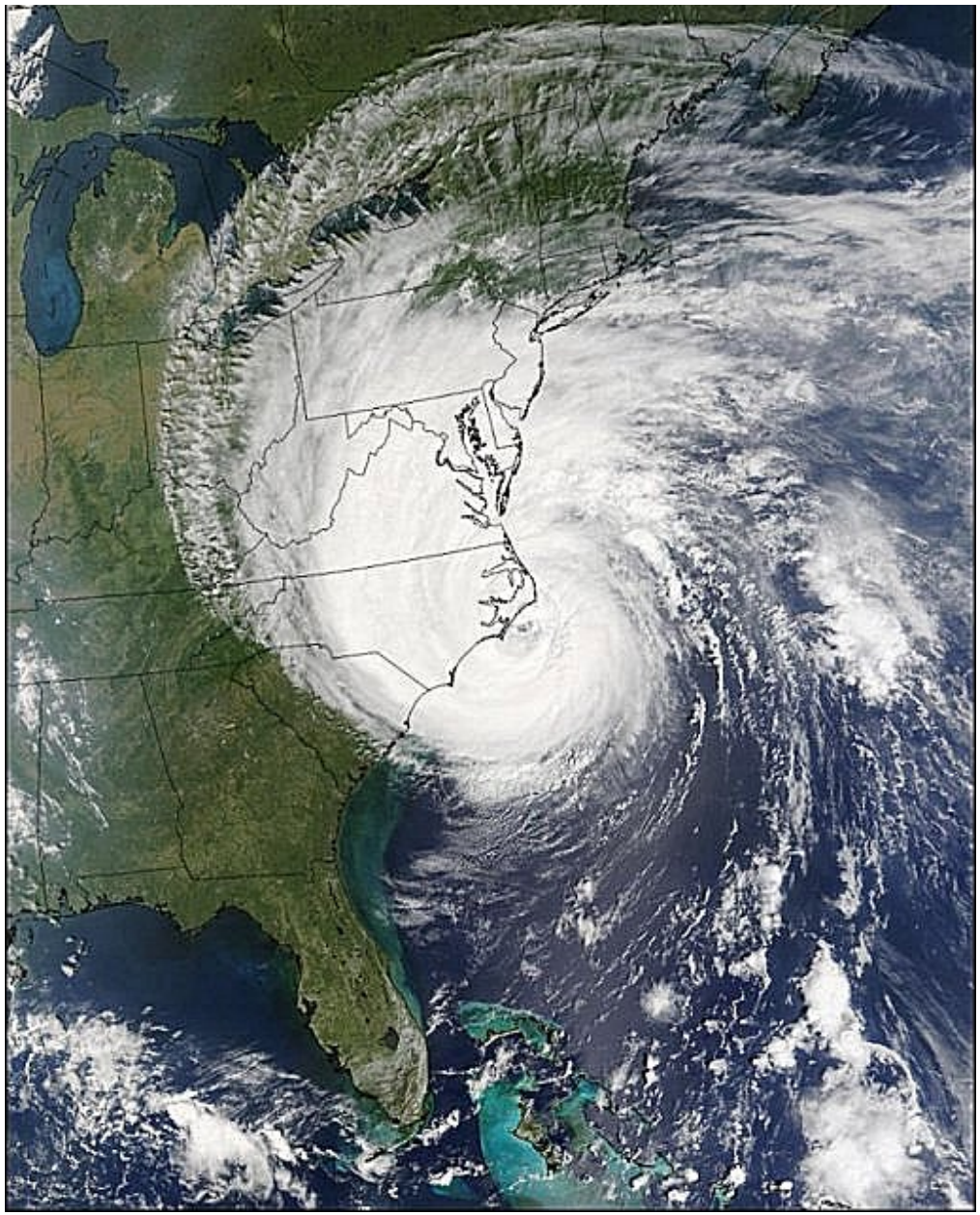


LIGHTNING…again, who is the highest point on the water?

TROPICAL CYCLONES

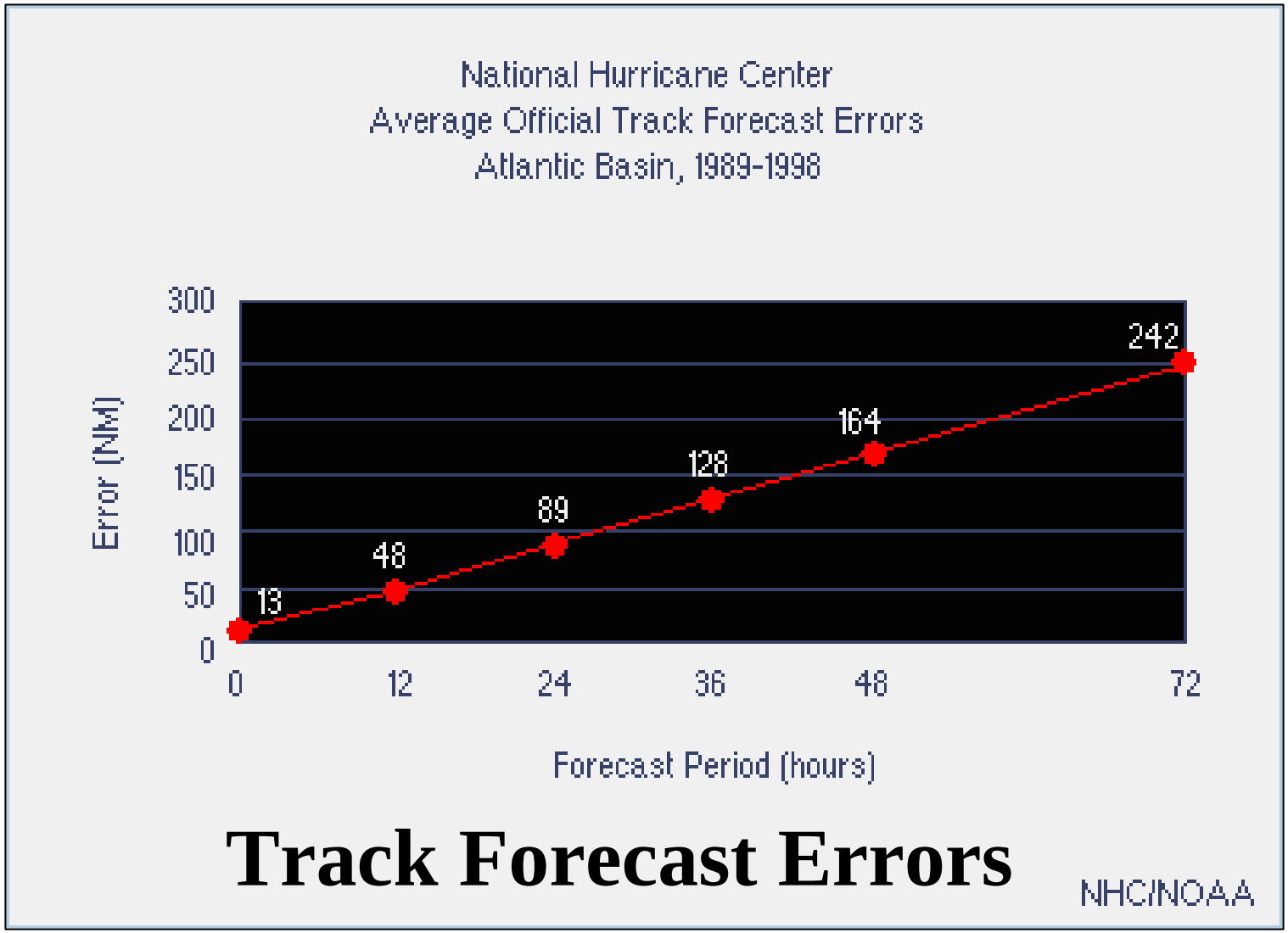
Avoid the 34 Knot Wind Radii !!!

TROPICAL CYCLONES

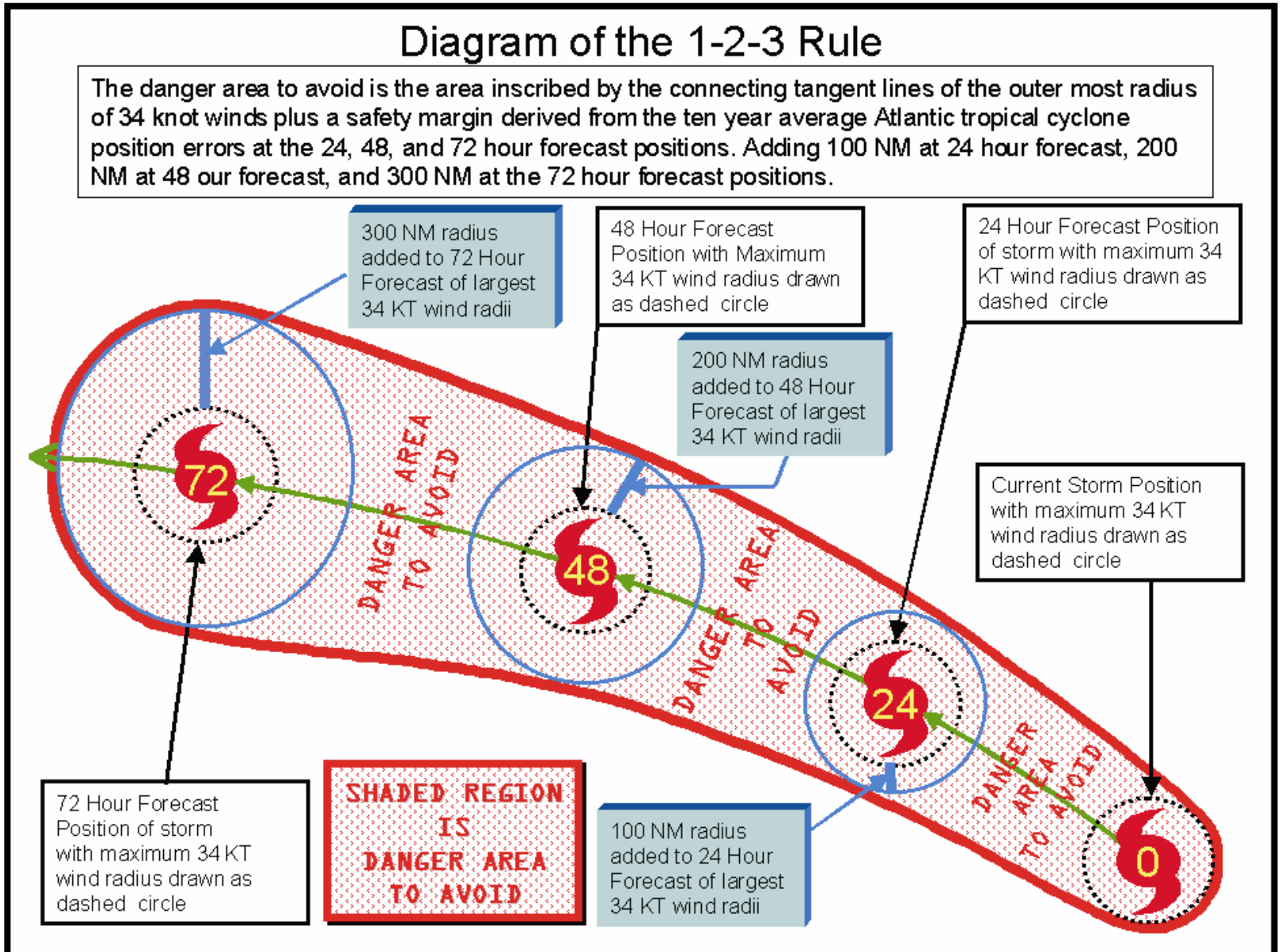


Hurricane Isabel 18 Sep 2003

Statistical Error Biases in Forecasts Provide the Basis For…

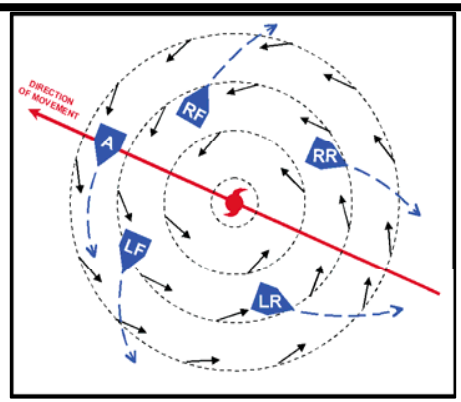


…The 1-2-3 Rule for Danger Area To Avoid!

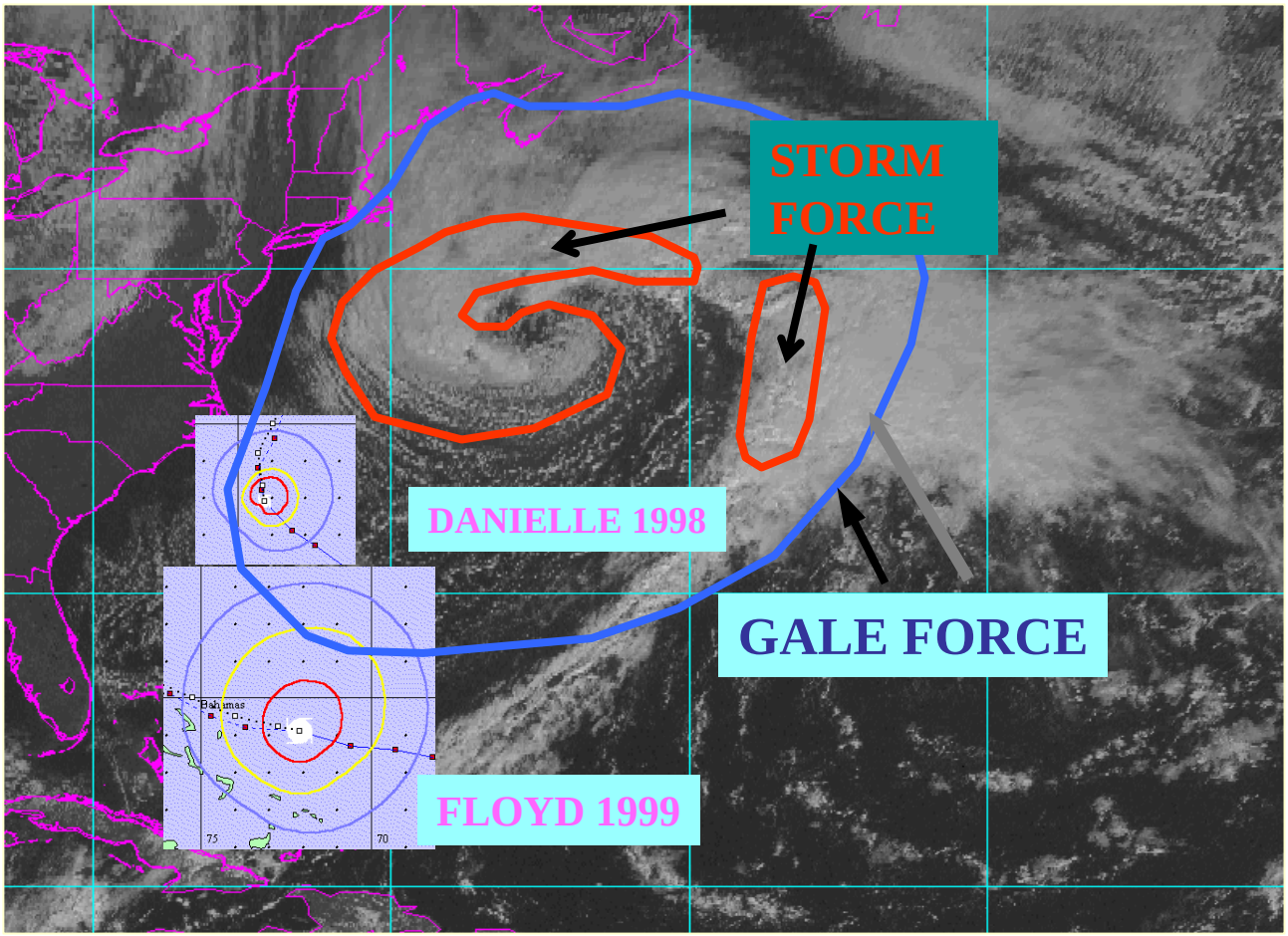


Caught At Sea… Navigating To Clear

Vessel Location	Navigation Action
Ahead Of Tropical Cyclone	Put the wind at 160° relative to the ship on the starboard side making best course and speed into the left semi-circle of the system.
Right Semicircle Of Tropical Cyclone	Put the wind at 045° relative to the ship on the starboard side attempting to make best course and speed to clear the system. Wind & wave in this region can often drastically reduce ship forward speed.
Left Semicircle Of Tropical Cyclone	Put the wind at 135° relative to the ship on the starboard side making best course and speed to increase separation between ship and tropical cyclone.
Behind The Tropical Cyclone	Maintain best riding course and speed to increase separation between ship and tropical cyclone.



Comparing Extra-Tropical Cyclones with their Tropical Cousins-



TRS and Extra-tropical Cyclone warning criteria wind & field comparisons

Weather Originates in Many Scales and Dimensions

Levels of Weather Systems

Scale	Feature	Duration
Global	Jet Stream	months/weeks
Synoptic	Highs & Lows Troughs & Ridges	weeks/days
Meso-scale	Squall Line, Gulf Stream "North Wall"	day or hours
Local (Micro)	thunderstorms micro-bursts, waterspouts	hours or less

Schematic 3-D Atmospheric Profile of Upper Level Air Flow, Vertical Motions, and Synoptic Scale Surface High and Low Pressure Systems and their Frontal Features

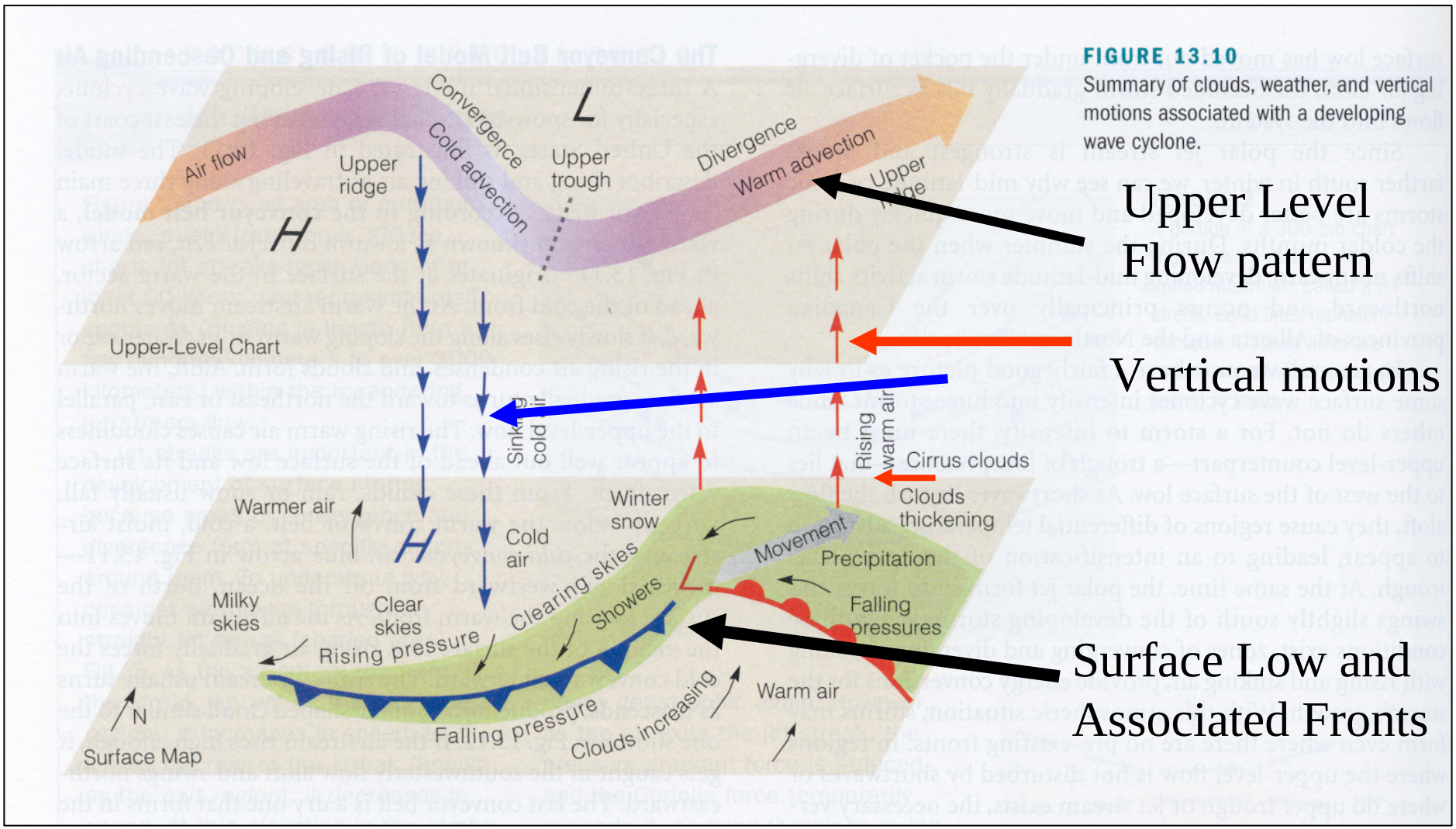
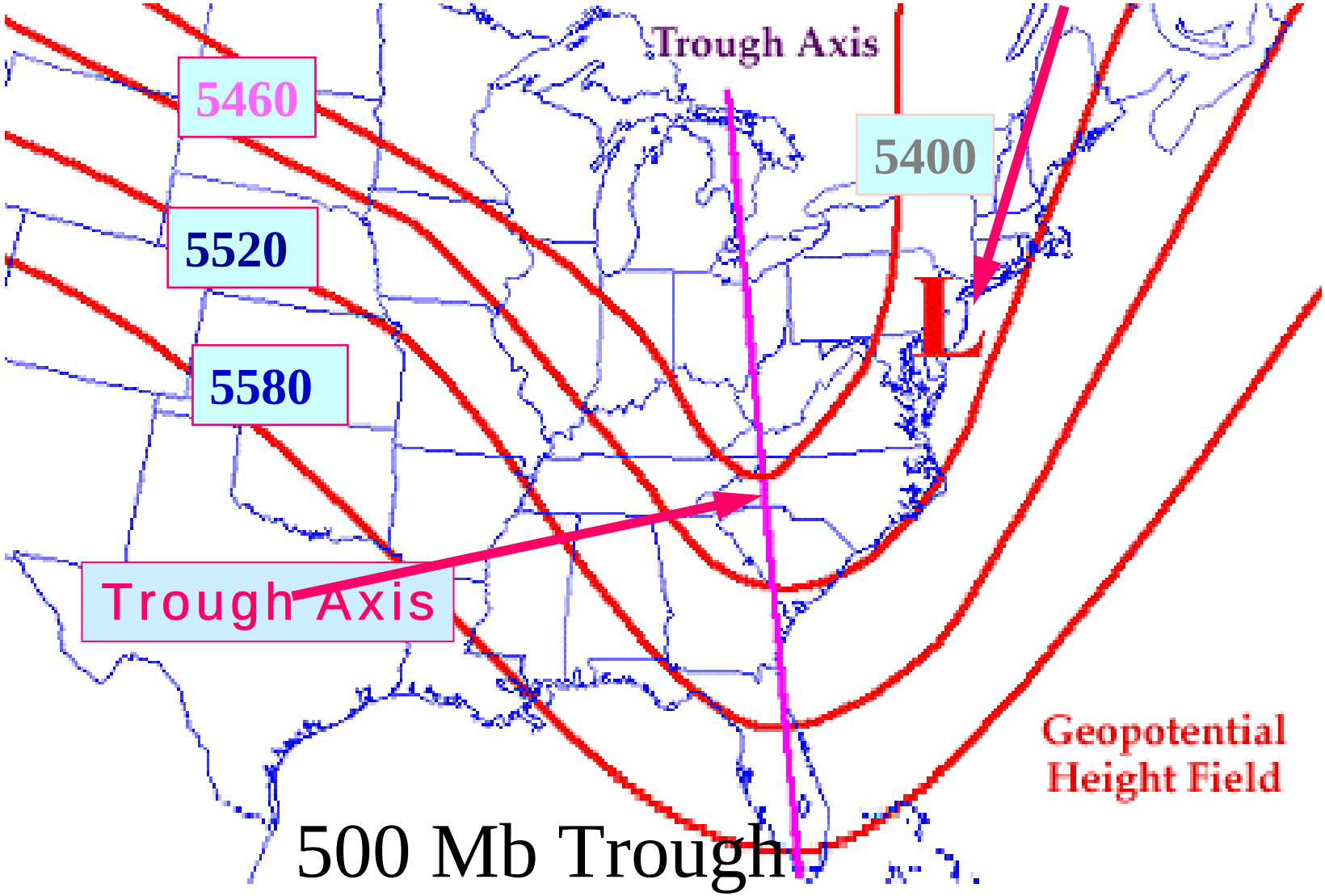


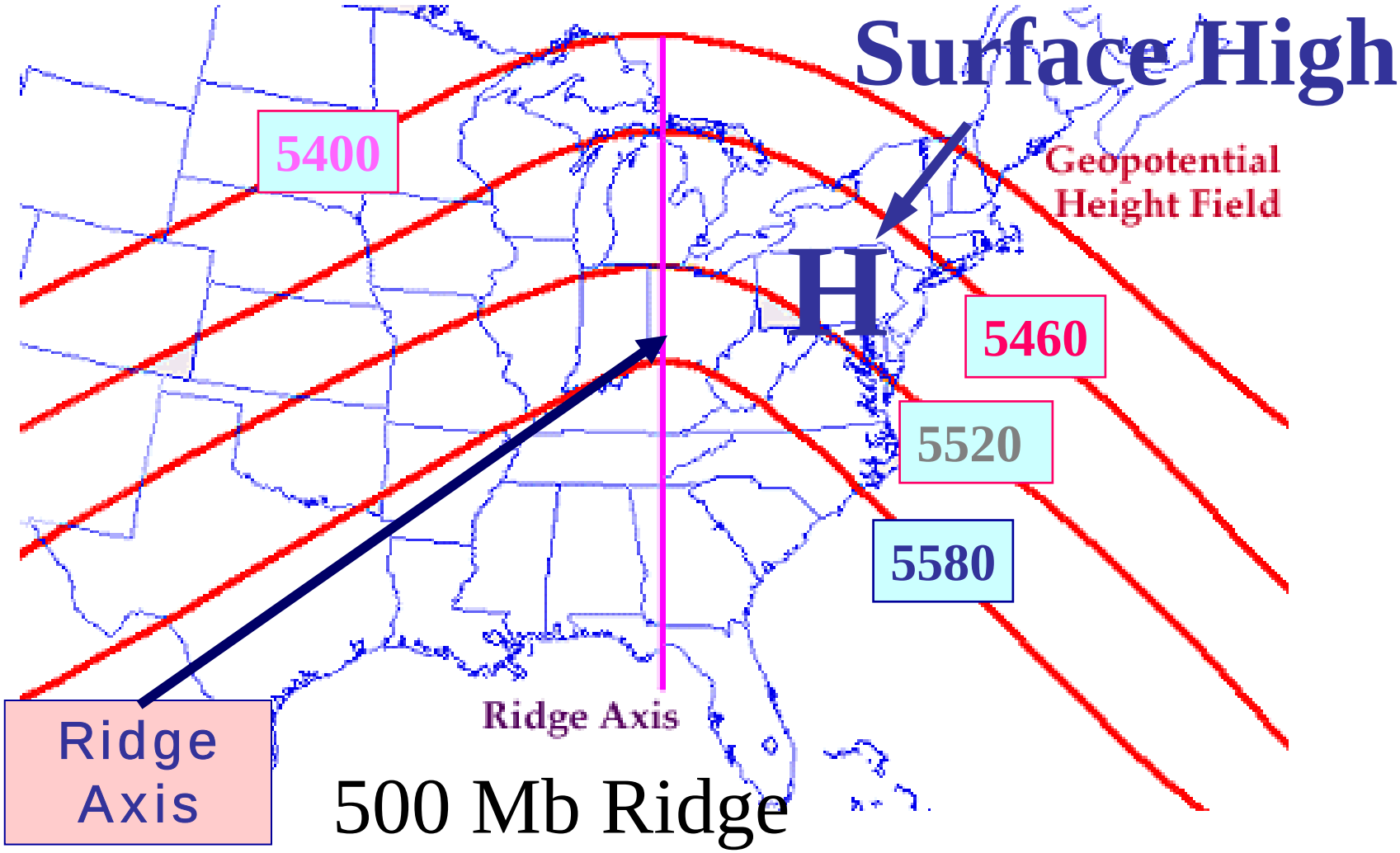
FIGURE 13.10
Summary of clouds, weather, and vertical motions associated with a developing wave cyclone.

Let us Examine Synoptic Scale Features on a Upper Air 500 Mb Chart…**Surface Low**



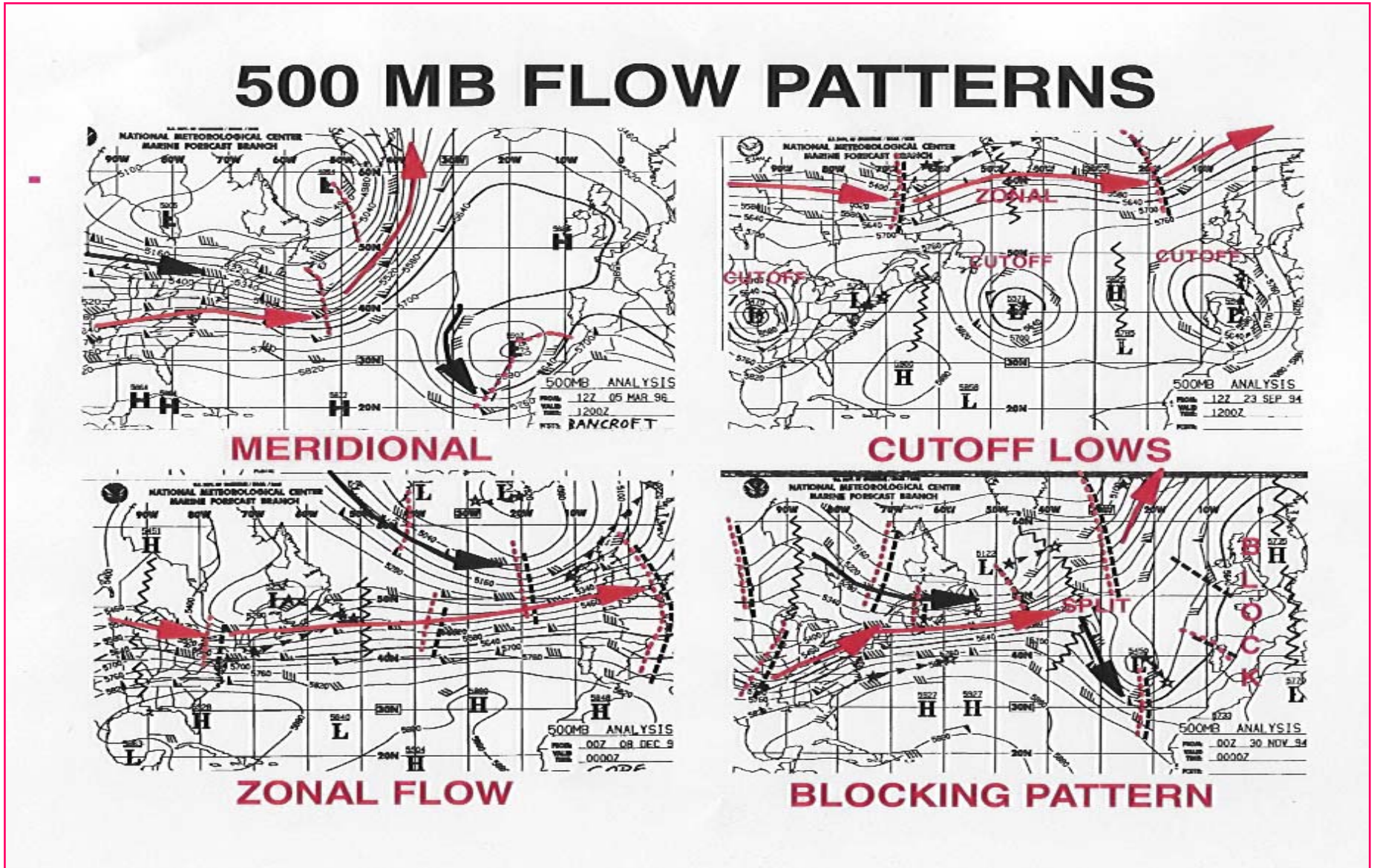
500 Mb Trough

Let Us Examine Synoptic Scale Features on a 500 Mb Chart…



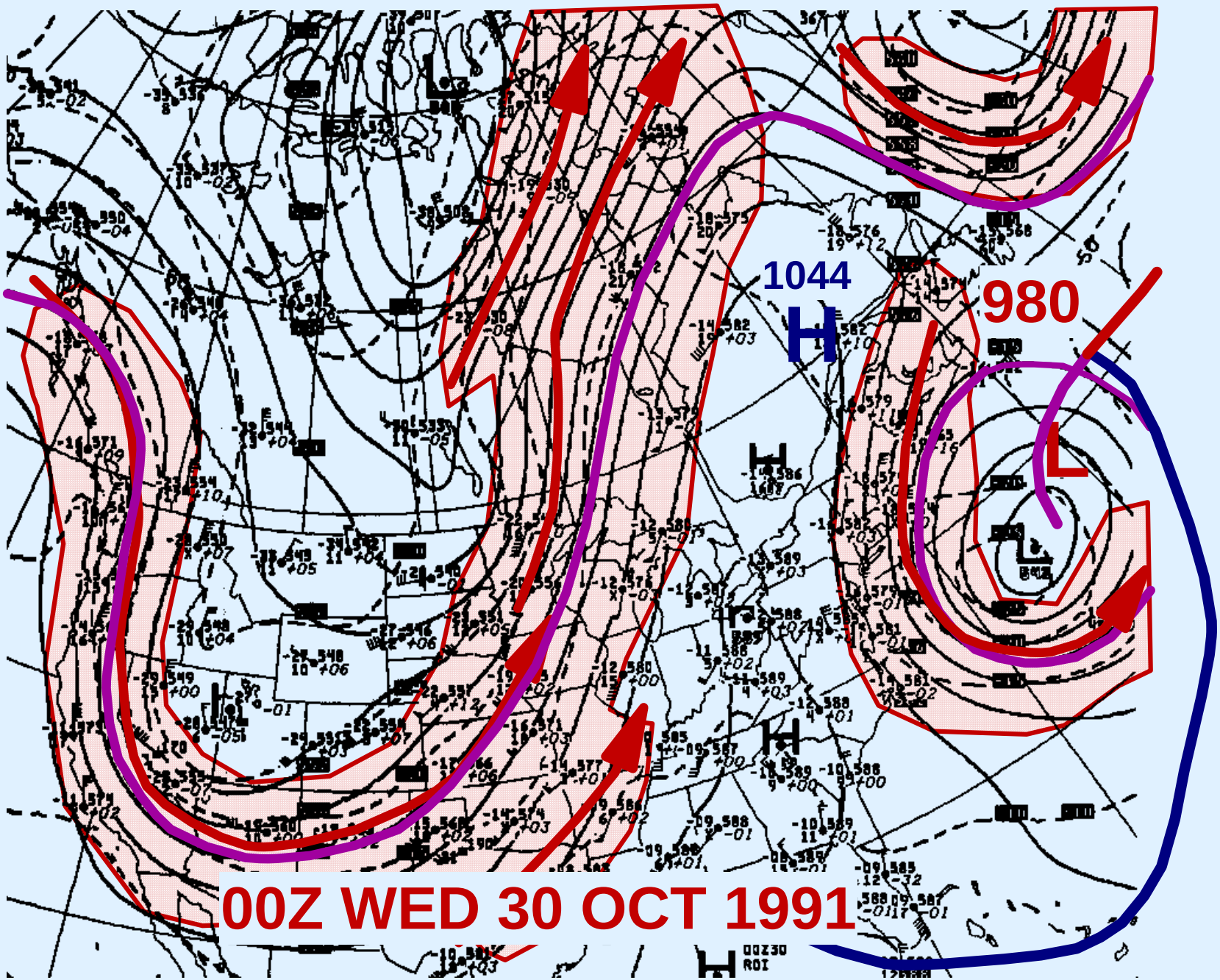
500 Mb Ridge

…Which Are Embedded Within the Basic 500 Mb Flow Patterns…



REMEMBER THE HALLOWEEN STORM OF 1991?

"THE PERFECT STORM"


1044
H
980
L
00Z WED 30 OCT 1991

Surface Pressure 0000 UTC 30 Oct 91

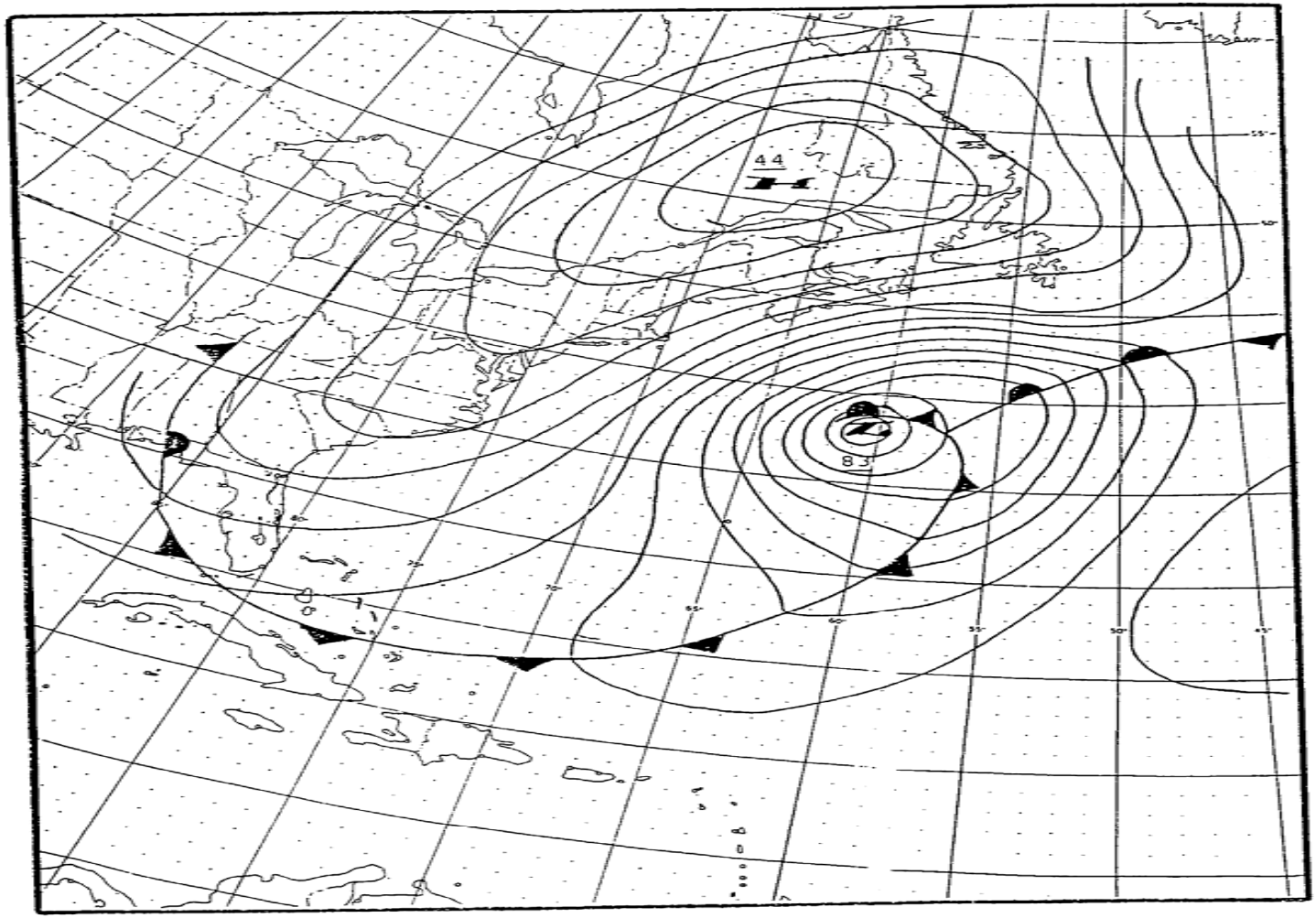
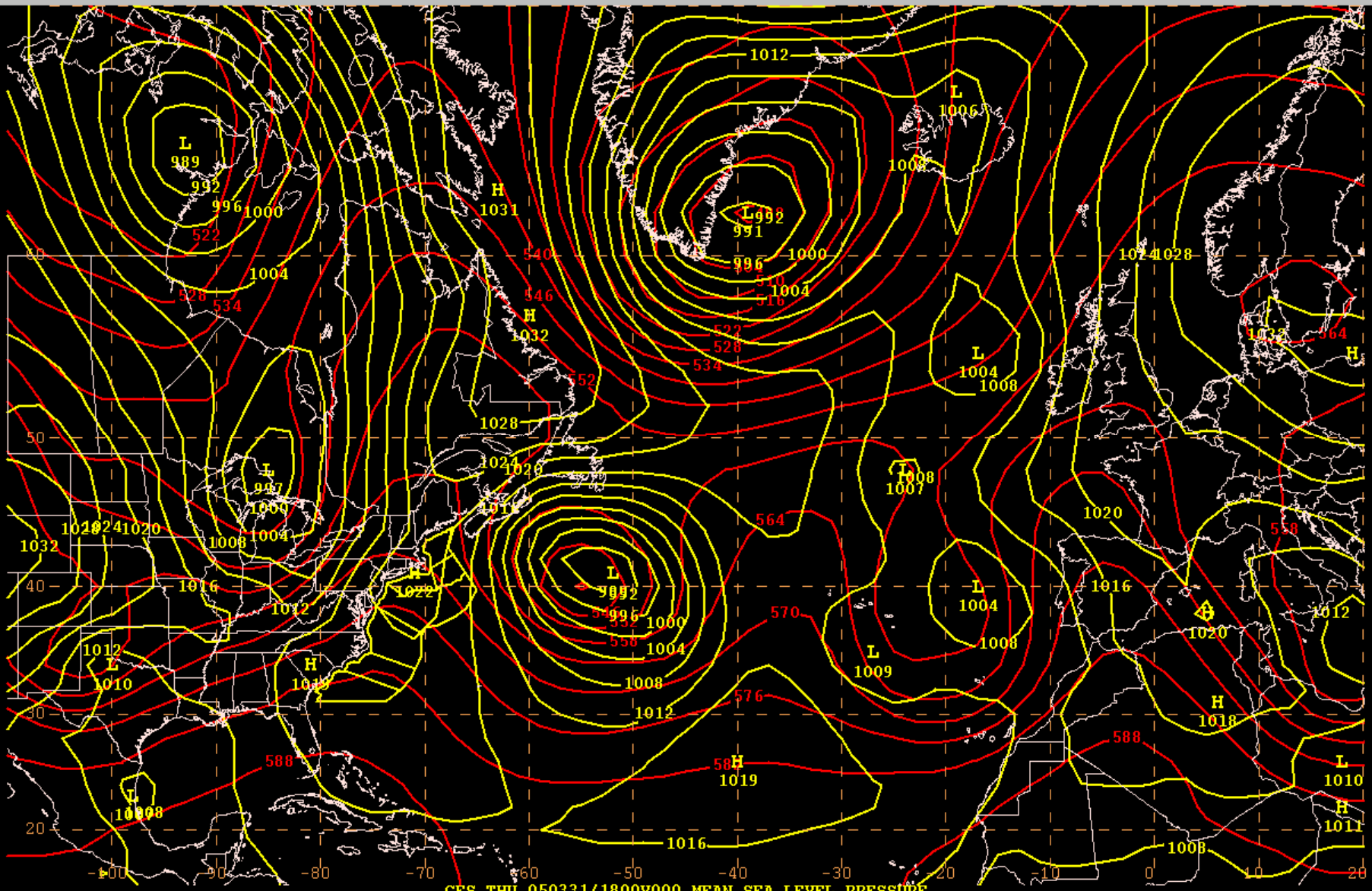


Figure 12. 0000 UTC Surface Analysis - 30 October 1991.

Putting upper air and surface together!

File Option Roam Exit Help

Data MAP PRINT RELOAD Loop: 1 Zoom UnZoom Hide Loop Stop



1 of 41 THU 050331/1800V000

Terminal

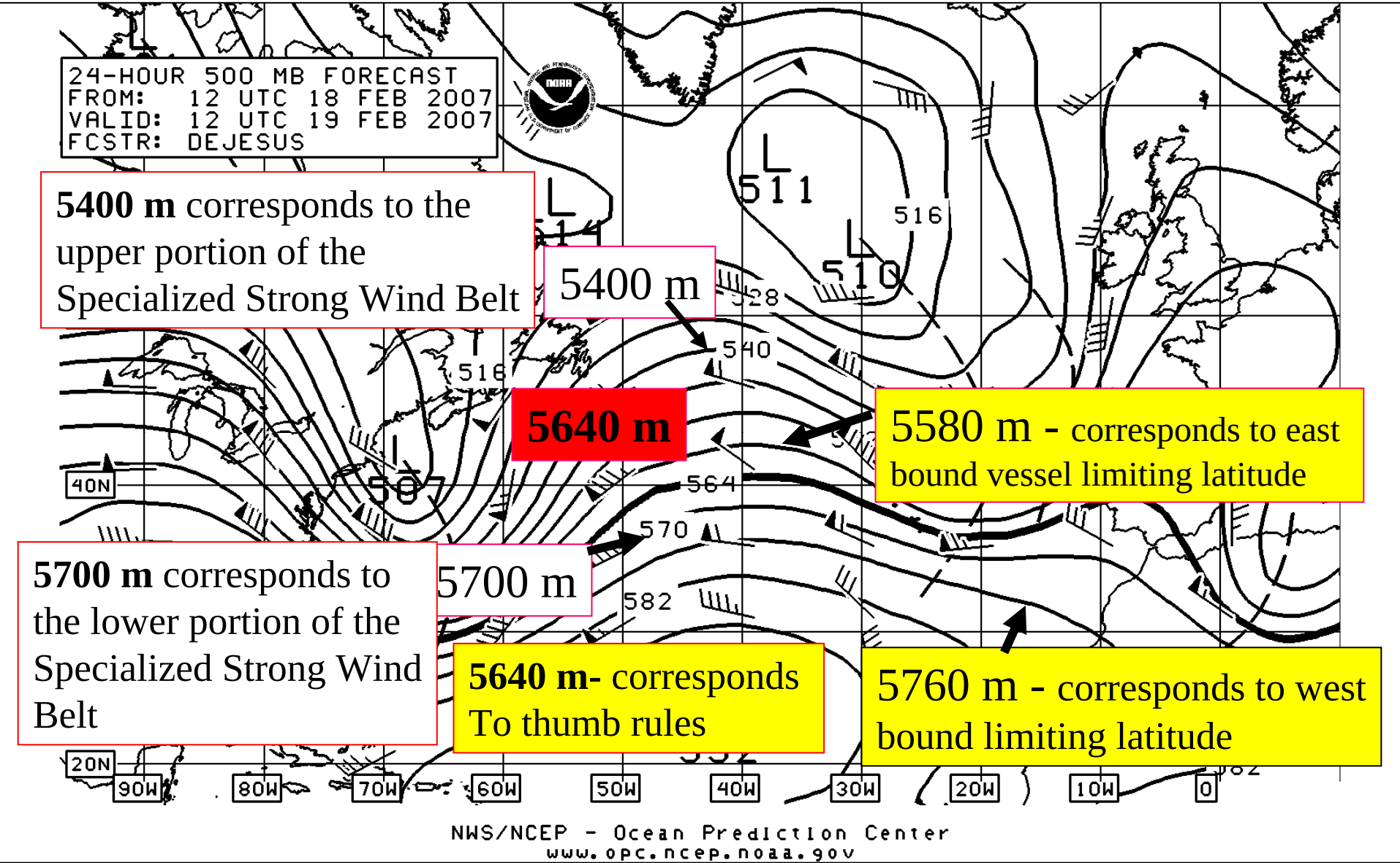
File Edit View Terminal Go Help

ERROR 40.93, -54.64

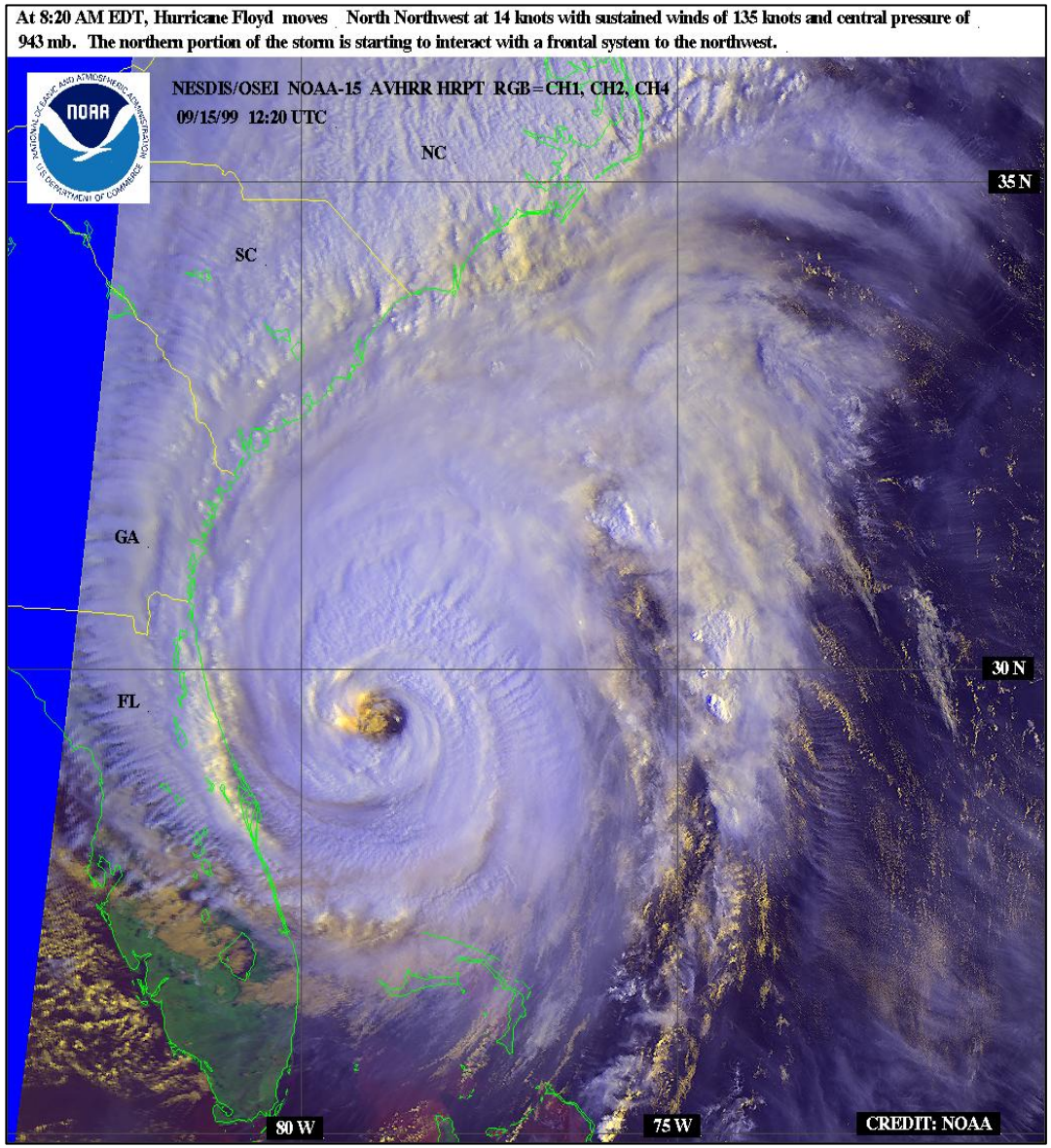
500 Mb Rules of Thumb

- Surface lows track at 1/3 to 1/2 the 500 Mb wind speed aloft
- Surface lows track parallel to ISO-height contours
- Up to 50% of 500 Mb wind speed can be translated to the surface behind the 500 Mb trough axis (in the colder northwesterly flow)
- Surface storm track (low pressure centers) lie between 300 and 600 nautical miles north of the **bold 5640 meter contour**
  - southern extent of surface Beaufort force 6 (22-27 kts) "westerlies" in summer and force 7(28-33 knots) winter

Sneak preview of Heavy Weather Avoidance by Ma-Li Chen and Lee S Chesneau

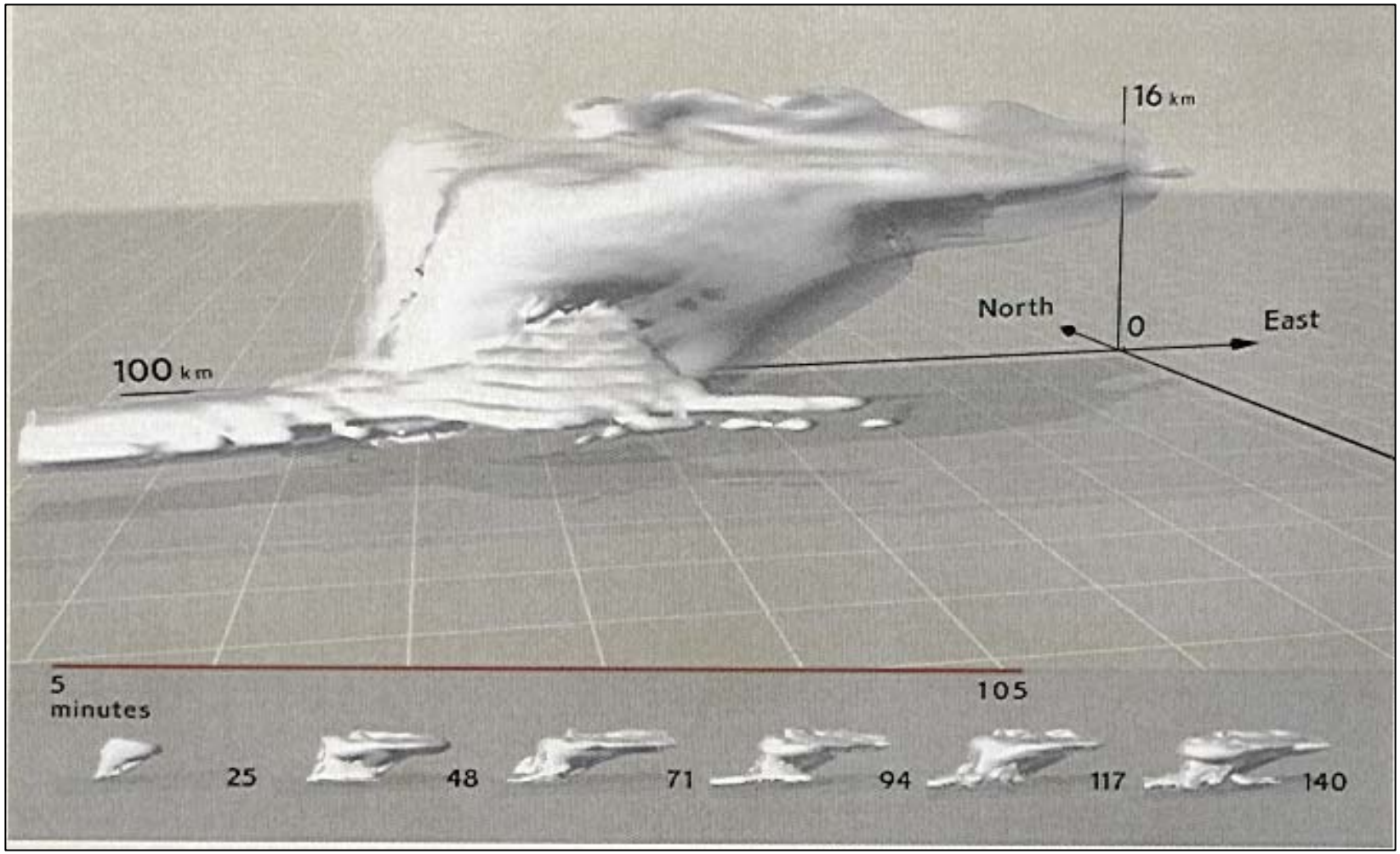


“Tropical Lows”…Hurricane Floyd



Tracking NW at 14 Knots and Winds Speeds of 135 Knots Near Center

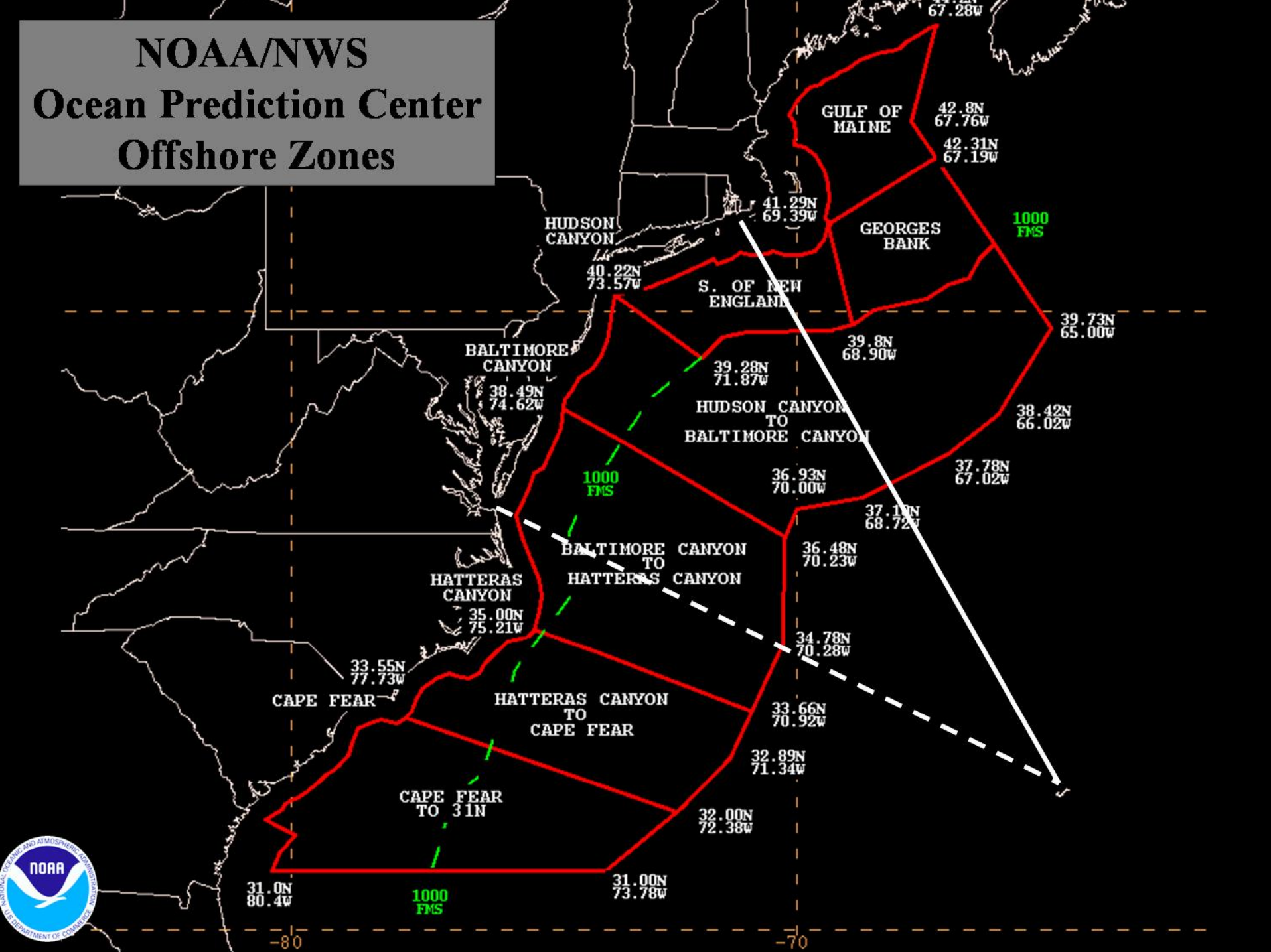
Which Leads Smaller Scale Which Also Has Dimensions in Time and Space…



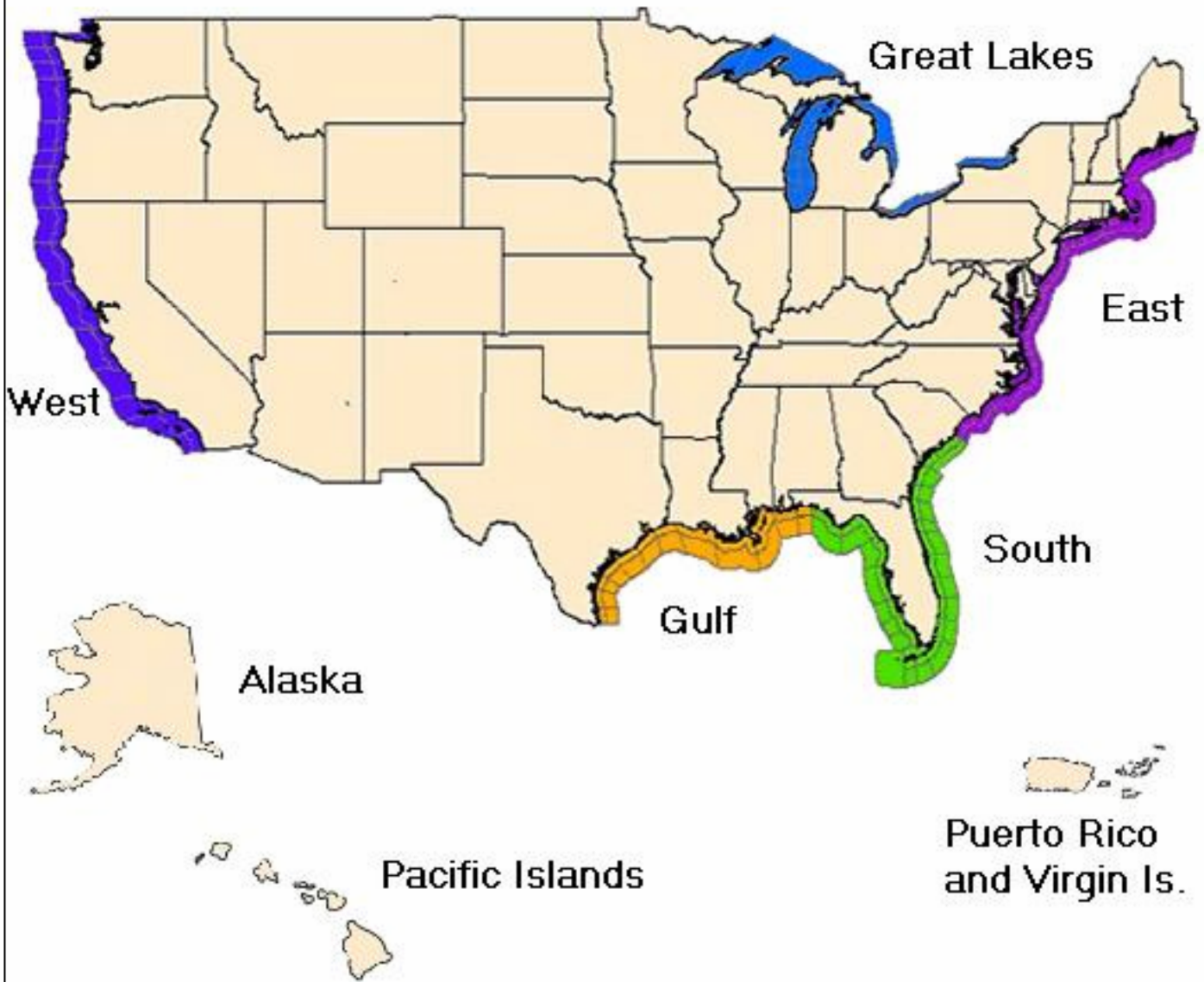
To Even Smaller Scale Features Such As Water-spouts…Which Again Are A Manifestation of Larger Scale Weather Patterns, Systems, and Features

Lets do a Virtual Voyage Through the NWS Forecast Zones

NOAA/NWS
Ocean Prediction Center
Offshore Zones



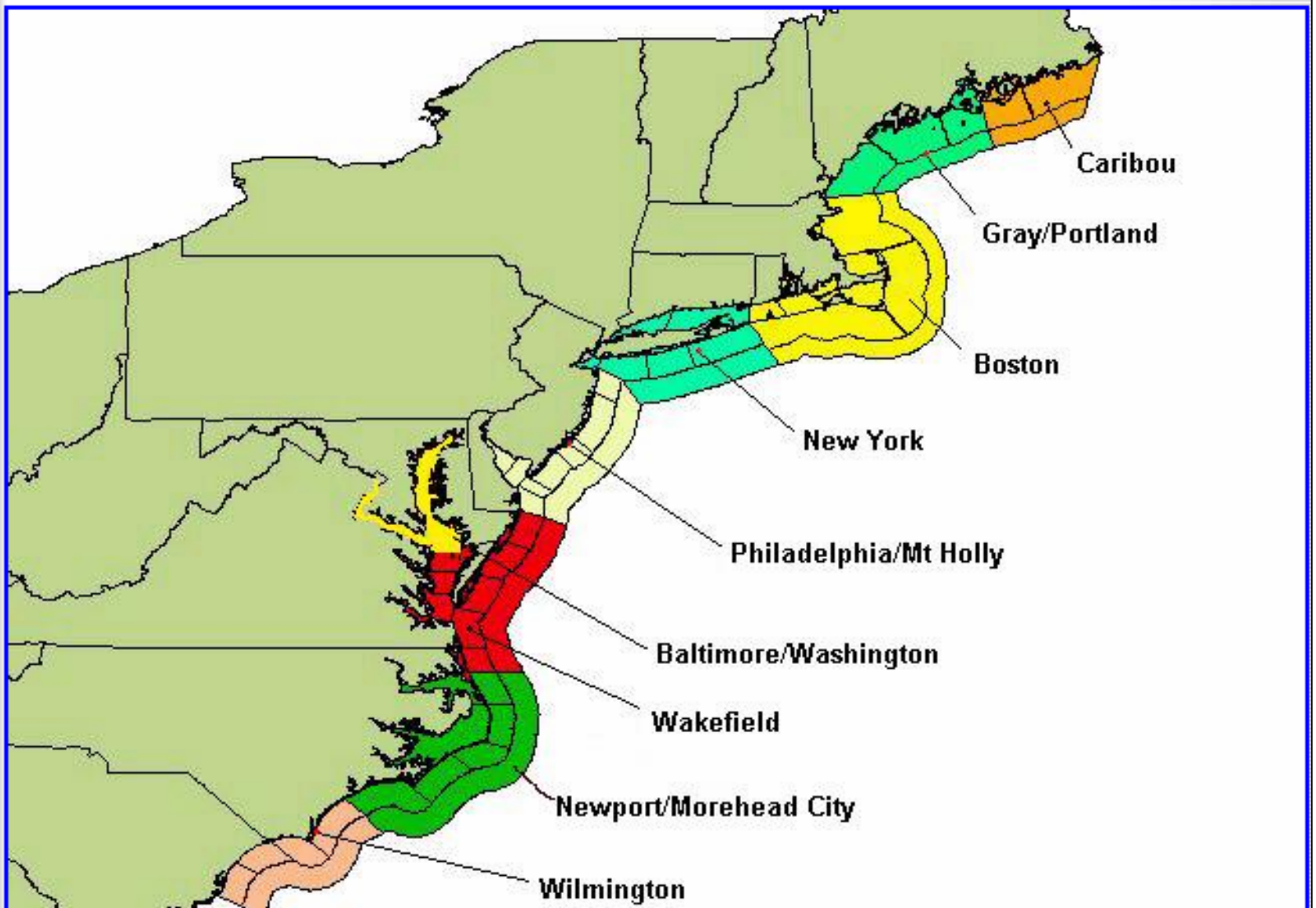
>>Click on the area of interest below<<

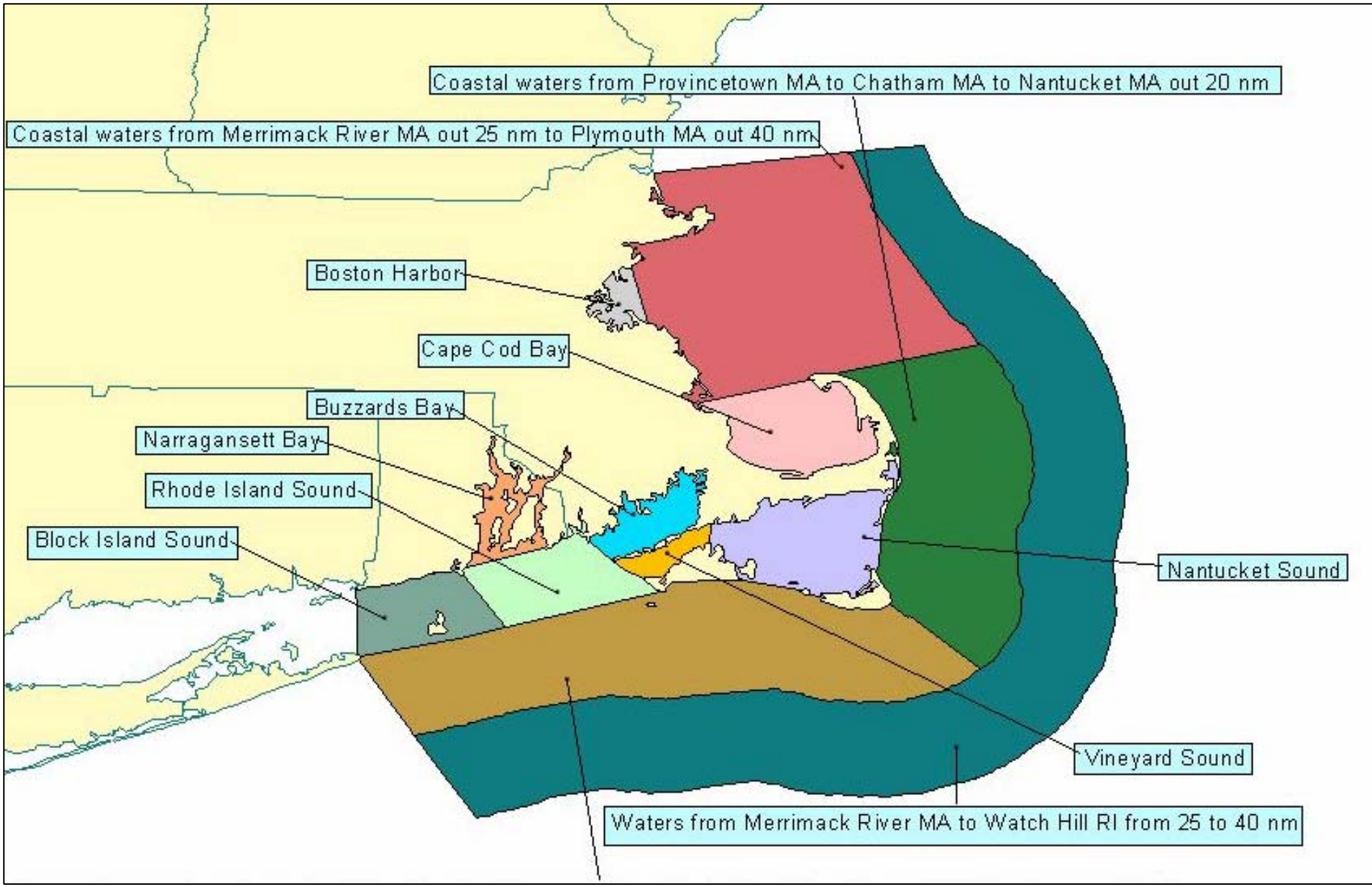


Coastal Waters Text Forecasts by Zone

East

>>Click on the area of interest below<<




Coastal waters from Provincetown MA to Chatham MA to Nantucket MA out 20 nm
Coastal waters from Merrimack River MA out 25 nm to Plymouth MA out 40 nm
Boston Harbor
Cape Cod Bay
Buzzards Bay
Narragansett Bay
Rhode Island Sound
Block Island Sound
Nantucket Sound
Vineyard Sound
Waters from Merrimack River MA to Watch Hill RI from 25 to 40 nm

NWS Coastal Waters Forecast

```
FZUS51 KBOX 081429
CWFBOX
COASTAL WATERS FORECAST
NATIONAL WEATHER SERVICE TAUNTON MA
929 AM EST SAT MAR 8 2008
COASTAL WATERS FROM THE MERRIMACK RIVER MA TO WATCH HILL RI OUT TO
25 NM
ANZ236-090215-
/O.CON.KBOX.GL.W.0021.080308T2200Z-080309T2200Z/
NARRAGANSETT BAY-
929 AM EST SAT MAR 8 2008

GALE WARNING REMAINS IN EFFECT FROM 5 PM EST THIS AFTERNOON
THROUGH SUNDAY AFTERNOON

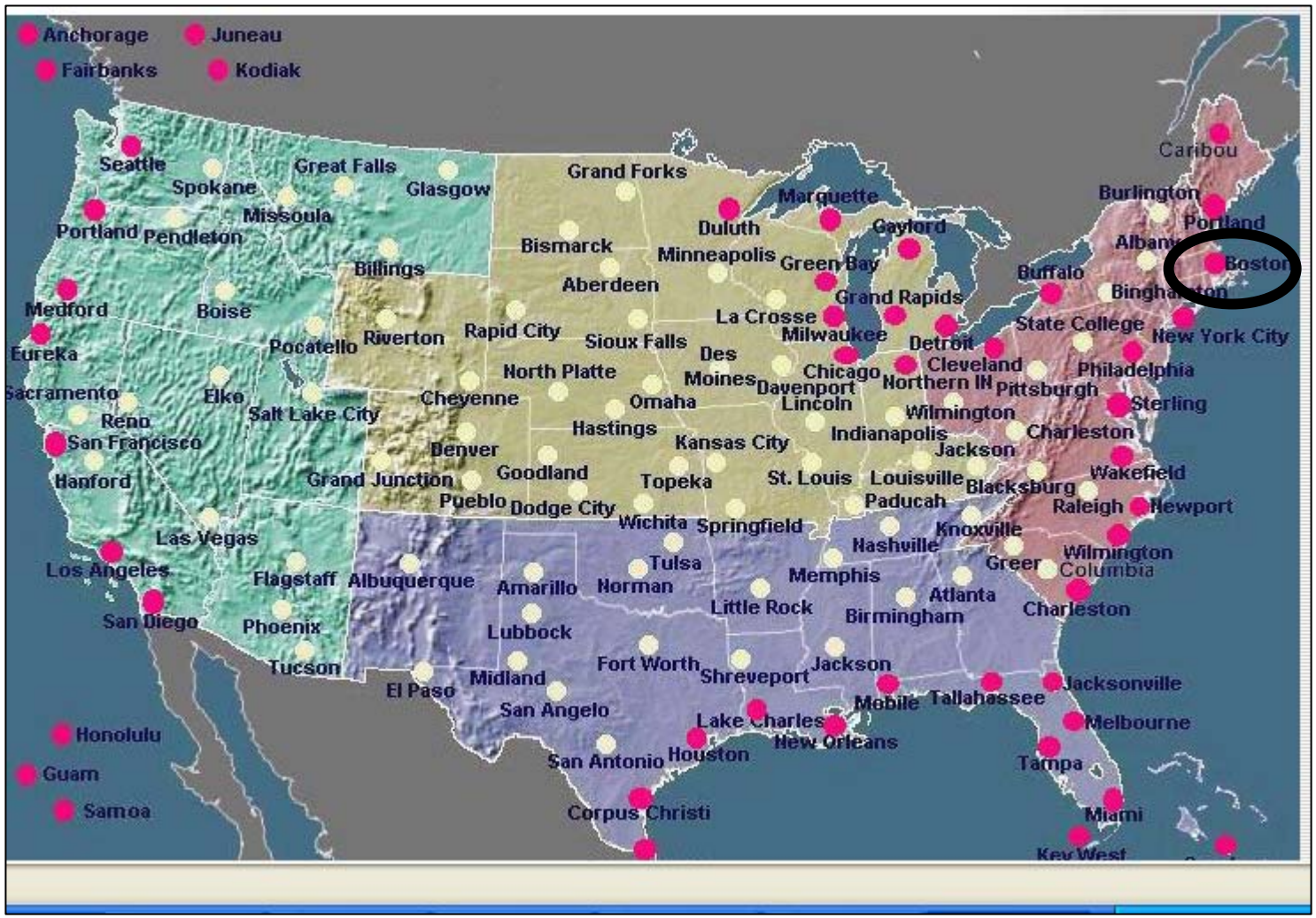
TODAY
N WINDS AROUND 5 KT...BECOMING NE AROUND NOON...THEN
BECOMING SE 15 TO 20 KT WITH GUSTS UP TO 25 KT LATE. WAVES 1 TO
2 FT...EXCEPT UP TO 5 FT AT THE BAY ENTRANCE. RAIN THROUGH EARLY
AFTERNOON...THEN RAIN WITH A CHANCE OF TSTMS LATE. AREAS OF FOG.
VSBY 1 NM OR LESS.

TONIGHT
S WINDS 20 TO 25 KT...BECOMING SW 25 TO 30 KT AFTER
MIDNIGHT. GUSTS UP TO 45 KT. WAVES 2 TO 4 FT. AT THE BAY
ENTRANCE...WAVES 5 TO 8 FT...BUILDING TO 8 TO 11 FT AFTER
MIDNIGHT. RAIN WITH A CHANCE OF TSTMS IN THE EVENING. AREAS OF
FOG IN THE EVENING WITH VSBY 1 NM OR LESS.

SUN
W WINDS 20 TO 25 KT WITH GUSTS UP TO 40 KT... DIMINISHING
TO 15 TO 20 KT WITH GUSTS UP TO 30 KT LATE. WAVES 2 TO 4 FT. AT
THE BAY ENTRANCE...WAVES 7 TO 10 FT... SUBSIDING TO 4 TO 7 FT IN
THE AFTERNOON.
```

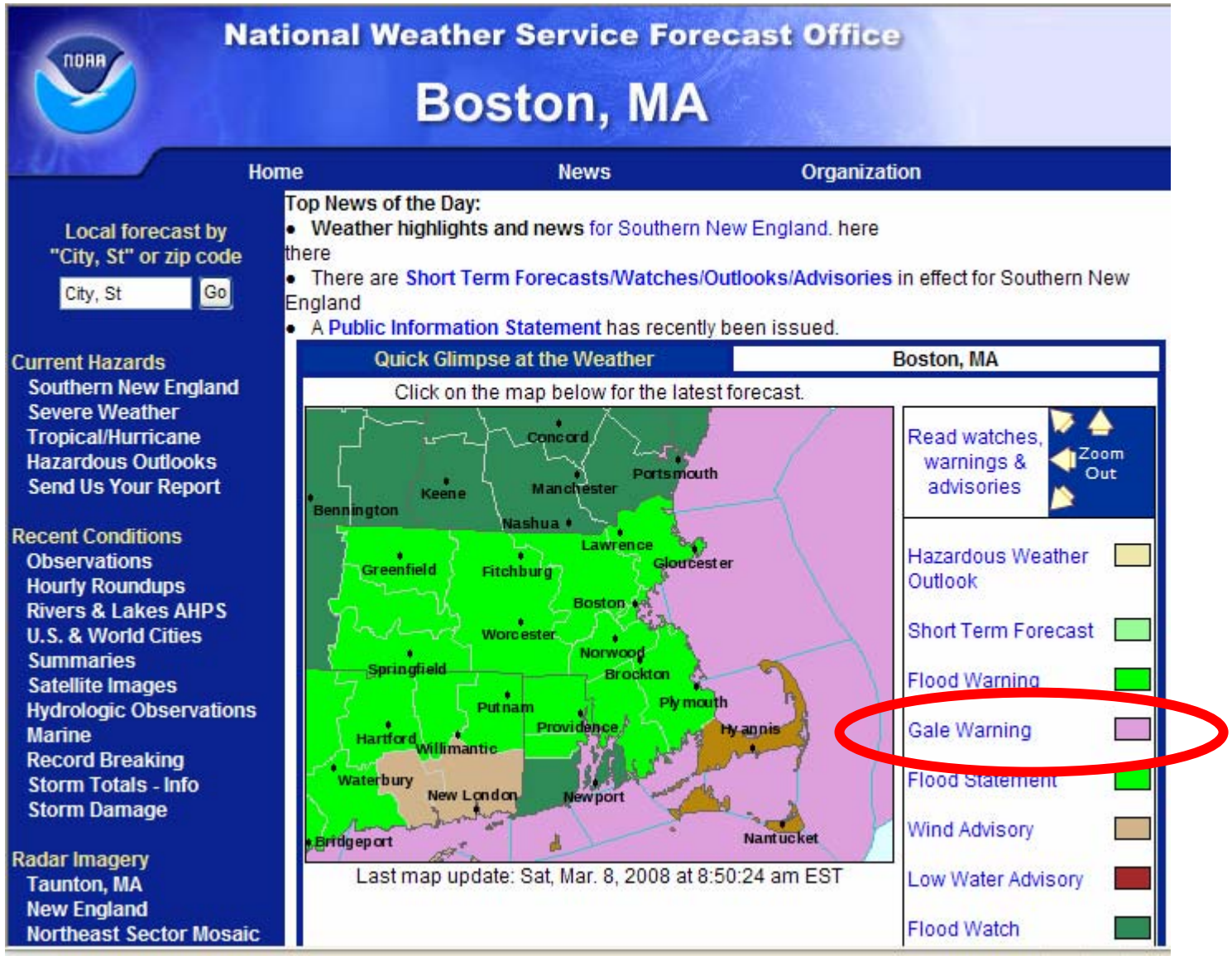
Done

NWSFOs



Anchorage
Juneau
Fairbanks
Kodiak
Seattle
Spokane
Great Falls
Glasgow
Grand Forks
Caribou
Burlington
Portland
Missoula
Portland
Pendleton
Duluth
Marquette
Gaylord
Albany
Boston
Bismarck
Minneapolis
Green Bay
Billings
Aberdeen
Buffalo
Binghamton
Medford
Boise
Grand Rapids
La Crosse
State College
Eureka
Pocatello
Riverton
Rapid City
Sioux Falls
Milwaukee
Detroit
New York City
Des
Moines
Chicago
Cleveland
Philadelphia
North Platte
Davenport
Northern IN
Pittsburgh
Sacramento
Elko
Cheyenne
Omaha
Lincoln
Sterling
Reno
Salt Lake City
Wilmington
Hastings
Indianapolis
Charleston
San Francisco
Denver
Kansas City
Jackson
Hanford
Grand Junction
Goodland
Topeka
St. Louis
Louisville
Blacksburg
Wakefield
Pueblo
Dodge City
Paducah
Raleigh
Newport
Wichita
Springfield
Knoxville
Las Vegas
Nashville
Wilmington
Tulsa
Greer
Columbia
Los Angeles
Flagstaff
Albuquerque
Amarillo
Norman
Memphis
Atlanta
Little Rock
Birmingham
Charleston
San Diego
Phoenix
Lubbock
Tucson
Fort Worth
Jackson
Shreveport
Midland
El Paso
Jacksonville
Mobile
Tallahassee
San Angelo
Lake Charles
Melbourne
Honolulu
New Orleans
San Antonio
Houston
Tampa
Guam
Samoa
Corpus Christi
Miami
Key West

NWSFO Boston, MA



NWS Coastal Waters Forecast

```
FZUS51 KBOX 081429
CWFBOX
COASTAL WATERS FORECAST
NATIONAL WEATHER SERVICE TAUNTON MA
929 AM EST SAT MAR 8 2008
COASTAL WATERS FROM THE MERRIMACK RIVER MA TO WATCH HILL RI OUT TO
25 NM
ANZ236-090215-
/O.CON.KBOX.GL.W.0021.080308T2200Z-080309T2200Z/
NARRAGANSETT BAY-
929 AM EST SAT MAR 8 2008

GALE WARNING REMAINS IN EFFECT FROM 5 PM EST THIS AFTERNOON
THROUGH SUNDAY AFTERNOON

TODAY
N WINDS AROUND 5 KT...BECOMING NE AROUND NOON...THEN
BECOMING SE 15 TO 20 KT WITH GUSTS UP TO 25 KT LATE. WAVES 1 TO
2 FT...EXCEPT UP TO 5 FT AT THE BAY ENTRANCE. RAIN THROUGH EARLY
AFTERNOON...THEN RAIN WITH A CHANCE OF TSTMS LATE. AREAS OF FOG.
VSBY 1 NM OR LESS.

TONIGHT
S WINDS 20 TO 25 KT...BECOMING SW 25 TO 30 KT AFTER
MIDNIGHT. GUSTS UP TO 45 KT. WAVES 2 TO 4 FT. AT THE BAY
ENTRANCE...WAVES 5 TO 8 FT...BUILDING TO 8 TO 11 FT AFTER
MIDNIGHT. RAIN WITH A CHANCE OF TSTMS IN THE EVENING. AREAS OF
FOG IN THE EVENING WITH VSBY 1 NM OR LESS.

SUN
W WINDS 20 TO 25 KT WITH GUSTS UP TO 40 KT... DIMINISHING
TO 15 TO 20 KT WITH GUSTS UP TO 30 KT LATE. WAVES 2 TO 4 FT. AT
THE BAY ENTRANCE...WAVES 7 TO 10 FT... SUBSIDING TO 4 TO 7 FT IN
THE AFTERNOON.
```

Done

A Portion of the OPC Text Offshore Marine Forecast

```
OFFSHORE WATERS FORECAST
NWS OCEAN PREDICTION CENTER WASHINGTON DC
400 AM EDT WED MAR 14 2007

NEW ENGLAND CONTINENTAL SHELF AND SLOPE WATERS FROM 25 NM
OFFSHORE TO THE HAGUE LINE...EXCEPT TO 1000 FMS S OF NEW ENGLAND

ANZ080-141430-
400 AM EDT WED MAR 14 2007

.SYNOPSIS FOR NEW ENGLAND WATERS...A COLD FRONT WILL APPROACH
THE WATERS FROM THE NW TODAY AND TONIGHT...AND MOVE SE ACROSS THE
WATERS THU. THE FRONT WILL STALL S OF THE AREA THU NIGHT INTO
FRI. A LOW OVER VIRGINIA EARLY FRI WILL INTENSIFY AND MOVE NE
LATE FRI INTO SAT...WHILE LIFTING THE FRONT N AS A WARM FRONT.
THE LOW PRES SYSTEM WILL MOVE NE OF THE AREA LATE SAT. HIGH PRES
WILL BUILD SLOWLY E TOWARD THE WATERS SUN.
$$

ANZ081-141430-
GULF OF MAINE TO THE HAGUE LINE
400 AM EDT WED MAR 14 2007

...GALE FORCE WINDS EXPECTED FRI AND SAT...

.TODAY...SW WINDS 20 TO 30 KT. SEAS 7 TO 10 FT...BUILDING TO 9 TO
13 FT...HIGHEST N. SCATTERED SHOWERS AND PATCHY FOG. VSBY 1 TO 3
NM.
.TONIGHT...SW WINDS 20 TO 30 KT EARLY...BECOMING SW TO W 15 TO 20
KT LATE. SEAS SUBSIDING TO 7 TO 11 FT LATE...HIGHEST NE.
SCATTERED TO NUMEROUS SHOWERS WITH PATCHY FOG. VSBY 1 TO 3 NM.
.THU...WINDS BECOMING N TO NE 20 TO 25 KT. SEAS SUBSIDING TO 6 TO
9 FT...HIGHEST E. SHOWERS CHANGING TO RAIN.
.THU NIGHT...N TO NE WINDS 20 TO 25 KT. SEAS 6 TO 10 FT...HIGHEST
E. AREAS OF RAIN.
.FRI...NE WINDS INCREASING TO 25 TO 35 KT LATE. SEAS BUILDING TO
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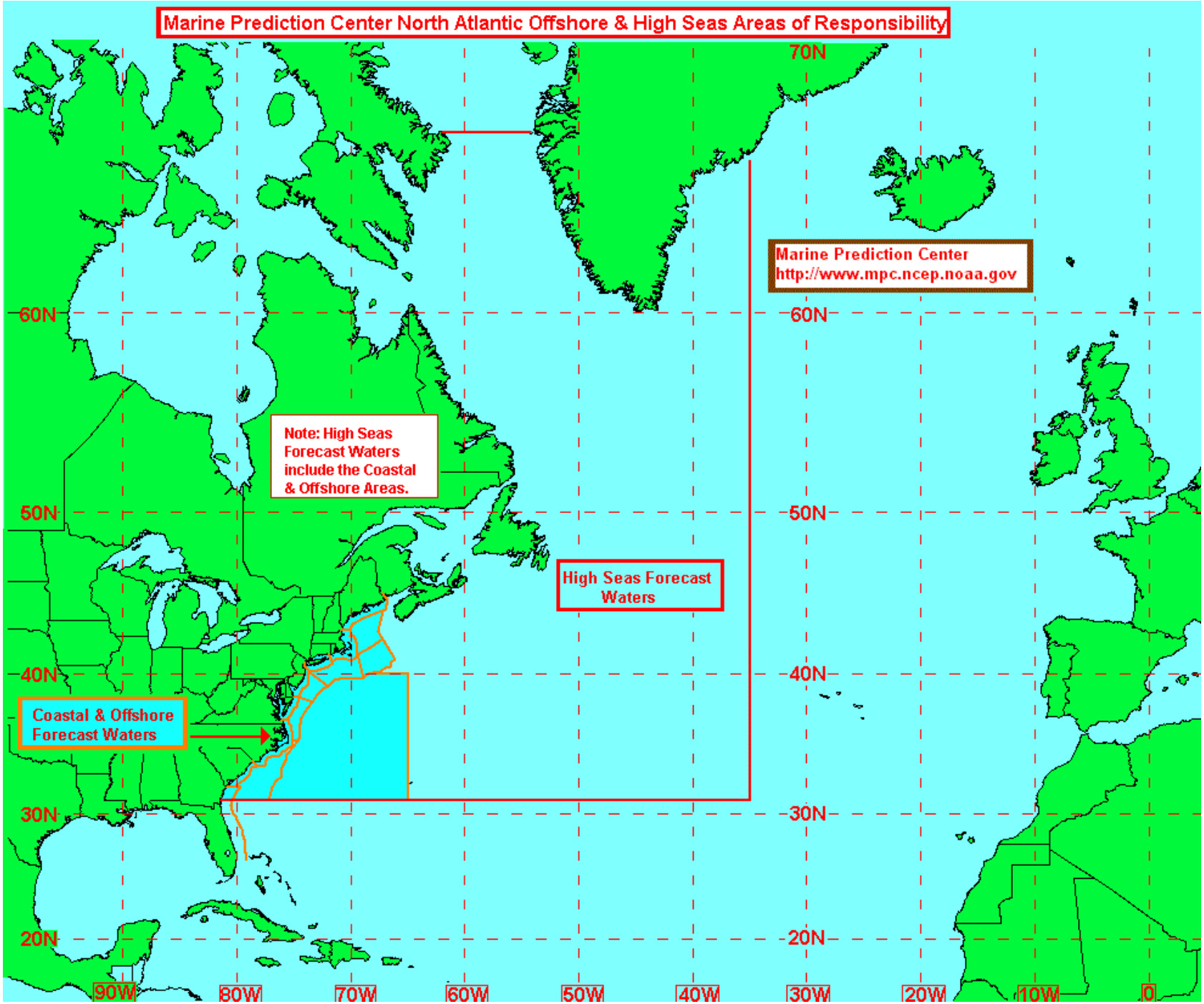

Marine Prediction Center North Atlantic Offshore & High Seas Areas of Responsibility
Marine Prediction Center
http://www.mpc.ncep.noaa.gov
Note: High Seas Forecast Waters include the Coastal & Offshore Areas.
High Seas Forecast Waters
Coastal & Offshore Forecast Waters
70N
60N
50N
40N
30N
20N
90W
80W
70W
60W
50W
40W
30W
20W
10W
0

Portion of the OPC High Seas Alpha-Numeric Text Forecast

```
HIGH SEAS FORECAST FOR METAREA XII...CORRECTION
NATIONAL WEATHER SERVICE WASHINGTON DC/TPC MIAMI FL
OCEAN PREDICTION CENTER/OFB 1745 UTC JAN 10 2006
SUPERSEDED BY NEXT ISSUANCE IN 6 HOURS

SECURITE
PACIFIC N OF 30N AND S OF 67N E OF A LINE FROM BERING STRAIT
TO 50N 160E TO 30N 160E.

SYNOPSIS VALID 1200 UTC JAN 10.
24 HOUR FORECAST VALID 1200 UTC JAN 11.
48 HOUR FORECAST VALID 1200 UTC JAN 12.

.WARNINGS.

...STORM WARNING...
.12 HOUR FORECAST LOW W OF AREA 39N 156W 998 MB. OVER FORECAST
WATERS...FORECAST WINDS 30 TO 45 KT SEAS 10 TO 18 FT FROM 32N TO
42N W OF 164E.
.24 HOUR FORECAST LOW 42N 161E 985 MB. OVER FORECAST
WATERS...FORECAST WINDS 45 TO 60 KT SEAS 18 TO 33 FT WITHIN 240
NM S QUADRANT. FORECAST WINDS 30 TO 45 KT SEAS 11 TO 22 FT
ELSEWHERE FROM W OF A LINE FROM 33N 172E TO 41N 172E TO 46N
165E.
.48 HOUR FORECAST LOW 47N 171E 980 MB...WITH A FORECAST FRONT
FROM 47N 166E TO 49N 175E TO 45N 177W TO 37N 177E. FORECAST
WINDS 40 TO 50 KT SEAS 17 TO 34 FT WITHIN 300 NM S AND SE
QUADRANTS...AND WITHIN 120 NM N AND W OF FRONT W OF 177E
FORECAST WINDS 25 TO 40 KT SEAS 11 TO 22 FT ELSEWHERE FROM 41N
```

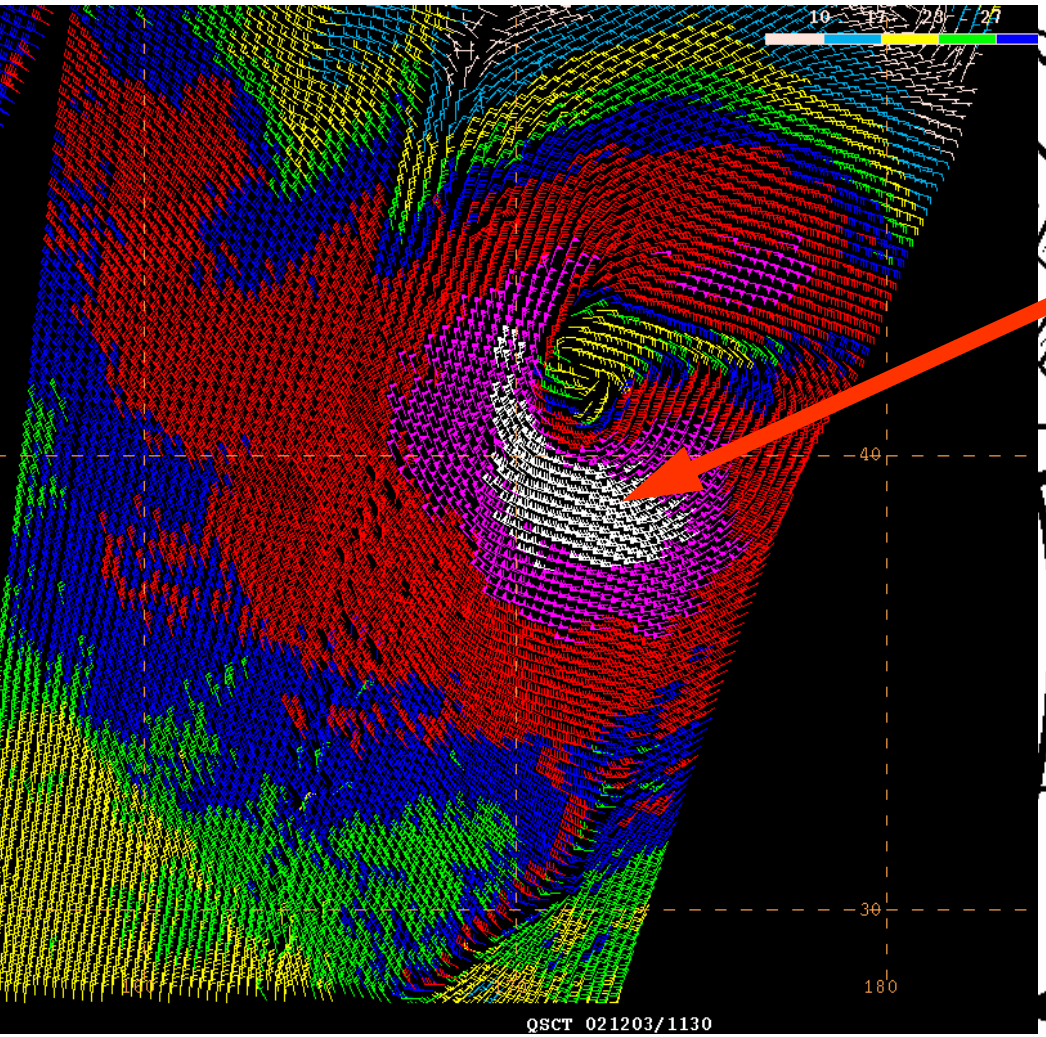
- **Before Departure…**
- The single most important decision for a successful voyage may well be prior to your departure time.
- It is possible to put yourself in harms way the moment you cast off
- Know the forecast…ahead of time
- Monitor the weather via HF Fax or the Internet….same products
- What products or services will you use at sea?
- Private weather routing service… Be in a position to intelligently engage; they are an advisory service only.
- The ultimate responsibility for weather forecasts and routing rests with the Skipper and his/her properly trained crew.

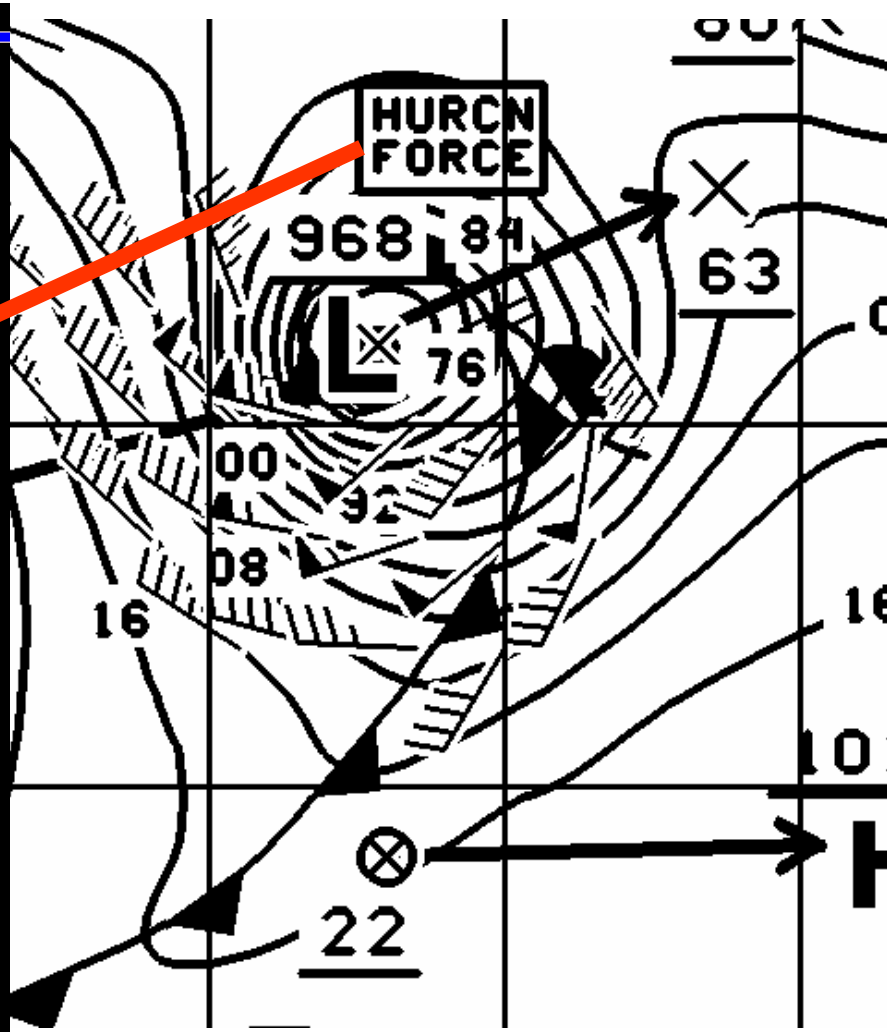
When Underway…

•Monitor the weather..as part of watch keeping/navigation
•Wind speed and/or direction changes
•Barometer
•Seas
•Is the weather evolving as planned?
•If not…determine and redefine options
•Know the current forecast and develop a confidence factor by validating previous forecast with the most current analyses!!!
•Monitor the weather through HF Weather fax, SSB, GMDSS,NOAA WX RADIO, non satellite based e-mail systems..
•If resources permit, the use of satellite technology enabling access to the same weather products posted to the internet will help the inevitable transition from old technology to the new.

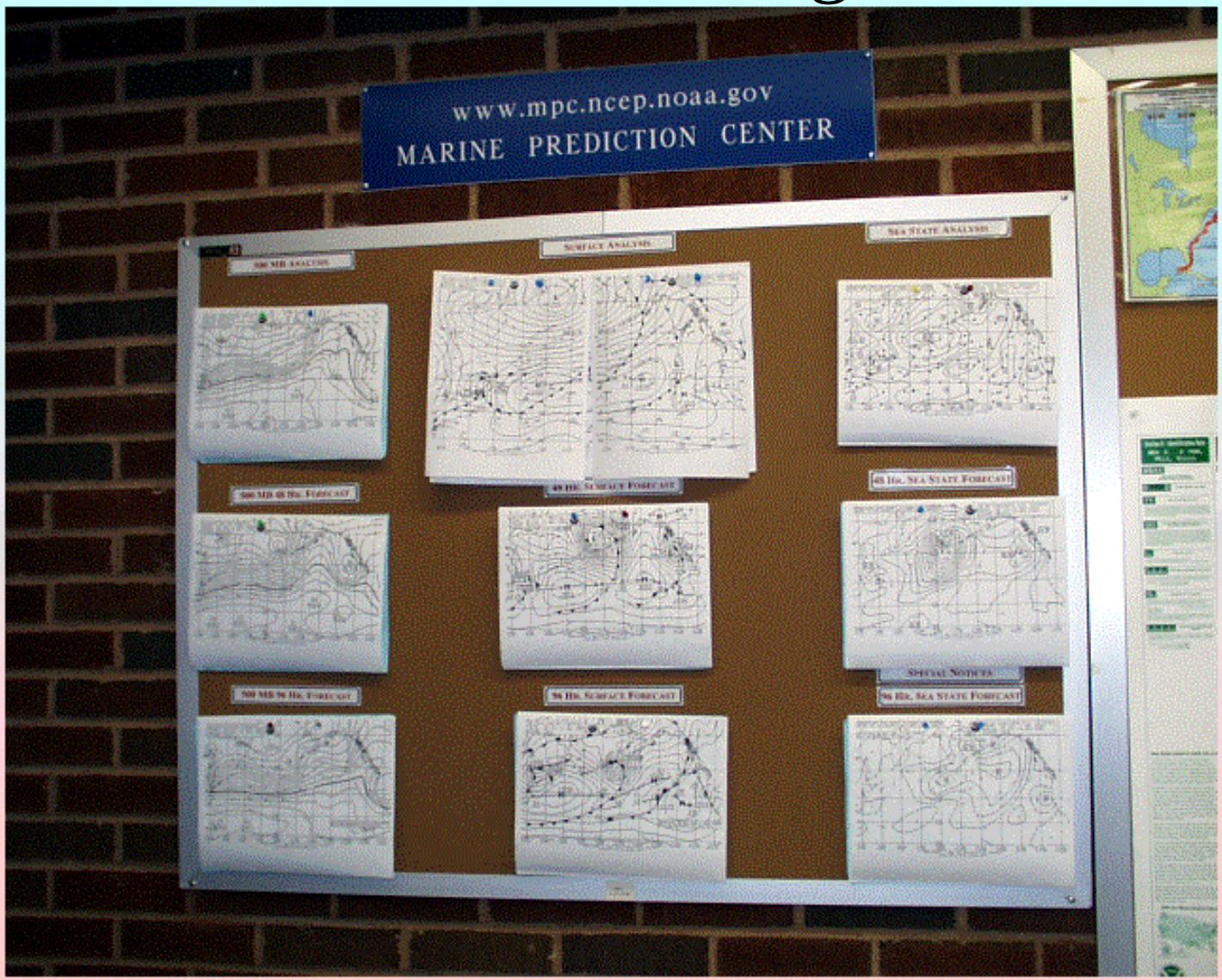
Maintain the Big Weather Picture…

both short and long term through day 5!!





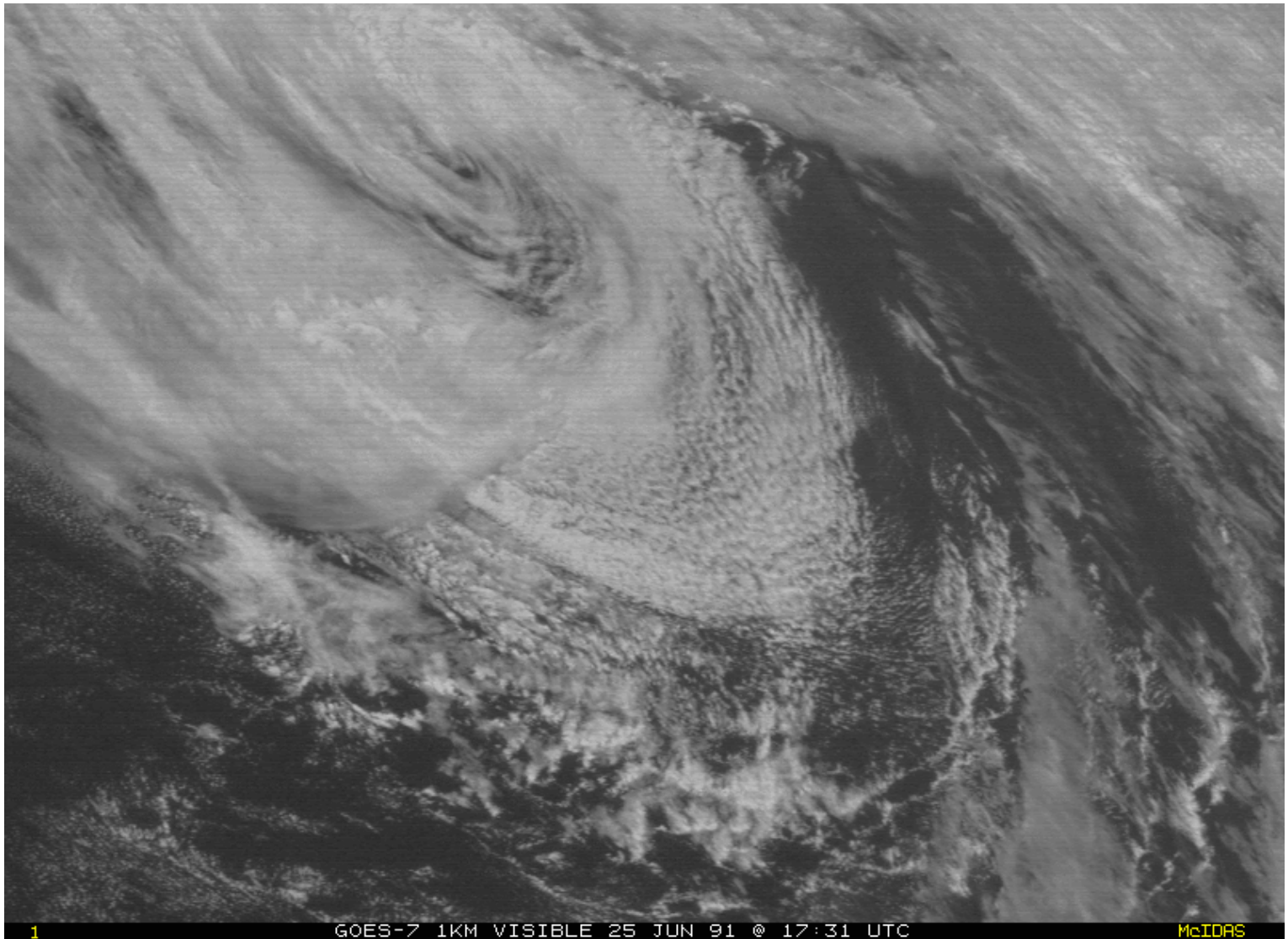
Logic of Display Must Reflect the Logic of Clear & Precise Thinking!!



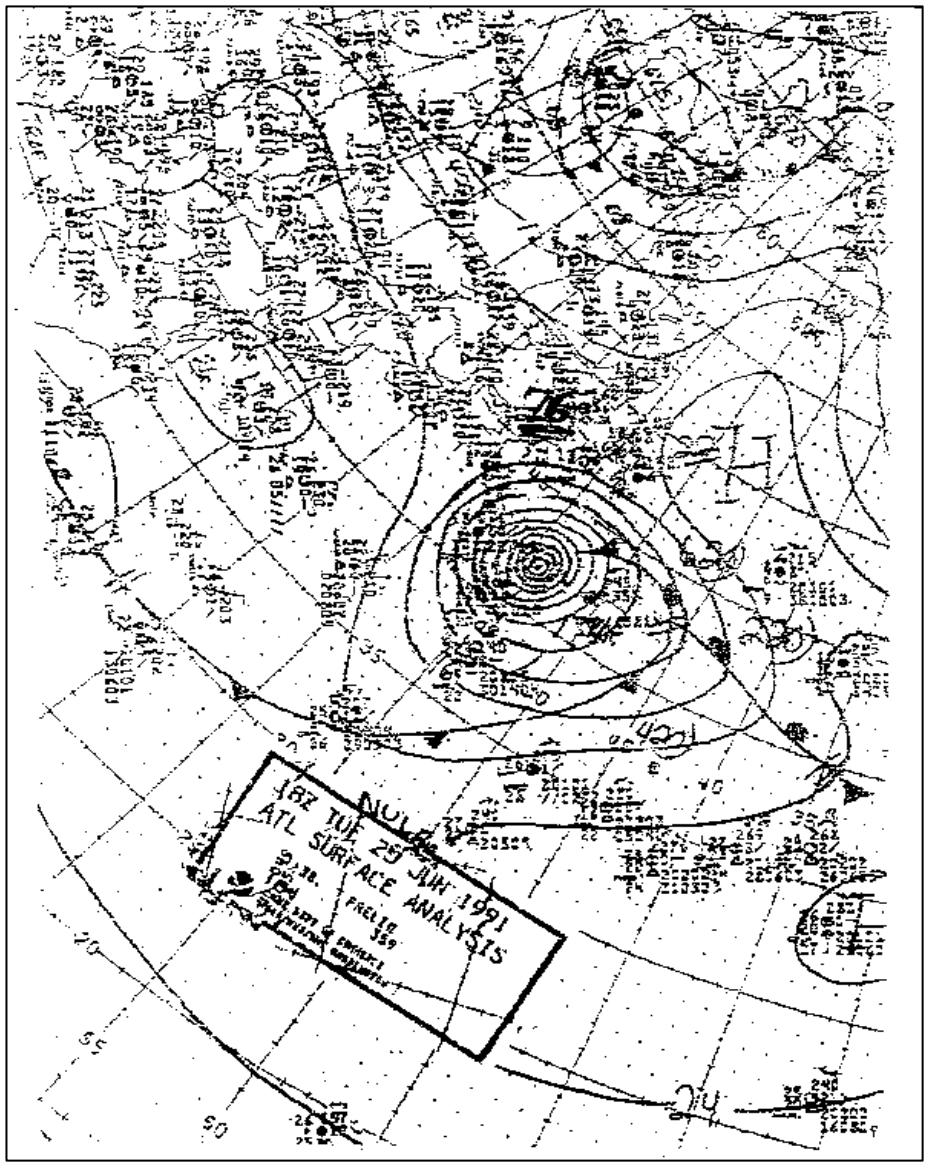
…So U Can Anticipate this type of event…

…And Avoid This Kind of Close Encounter!

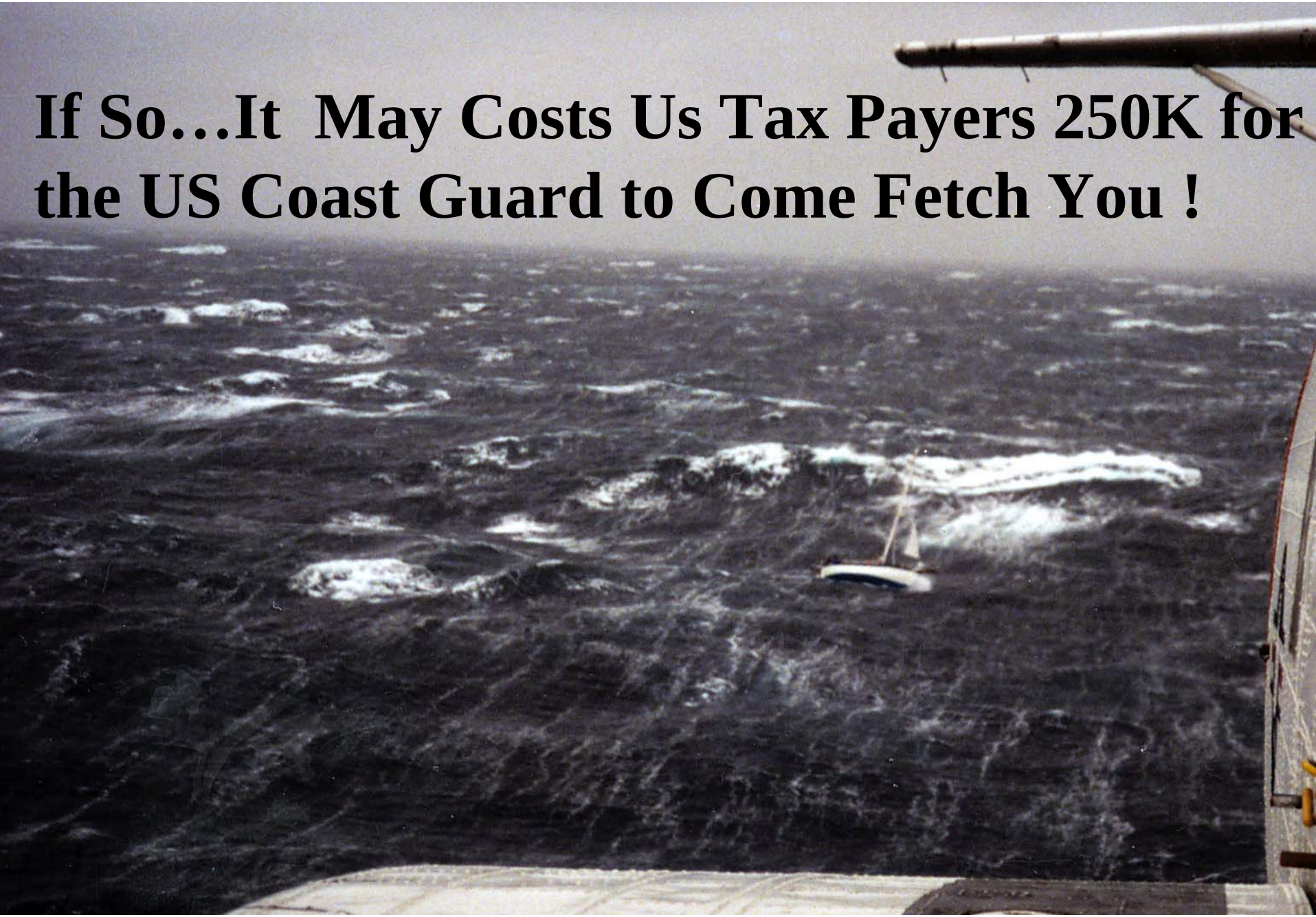
Strong Lows Can Develop at Any Time if Conditions Are Favorable….This is a Late June Low with Hurricane Force Winds….



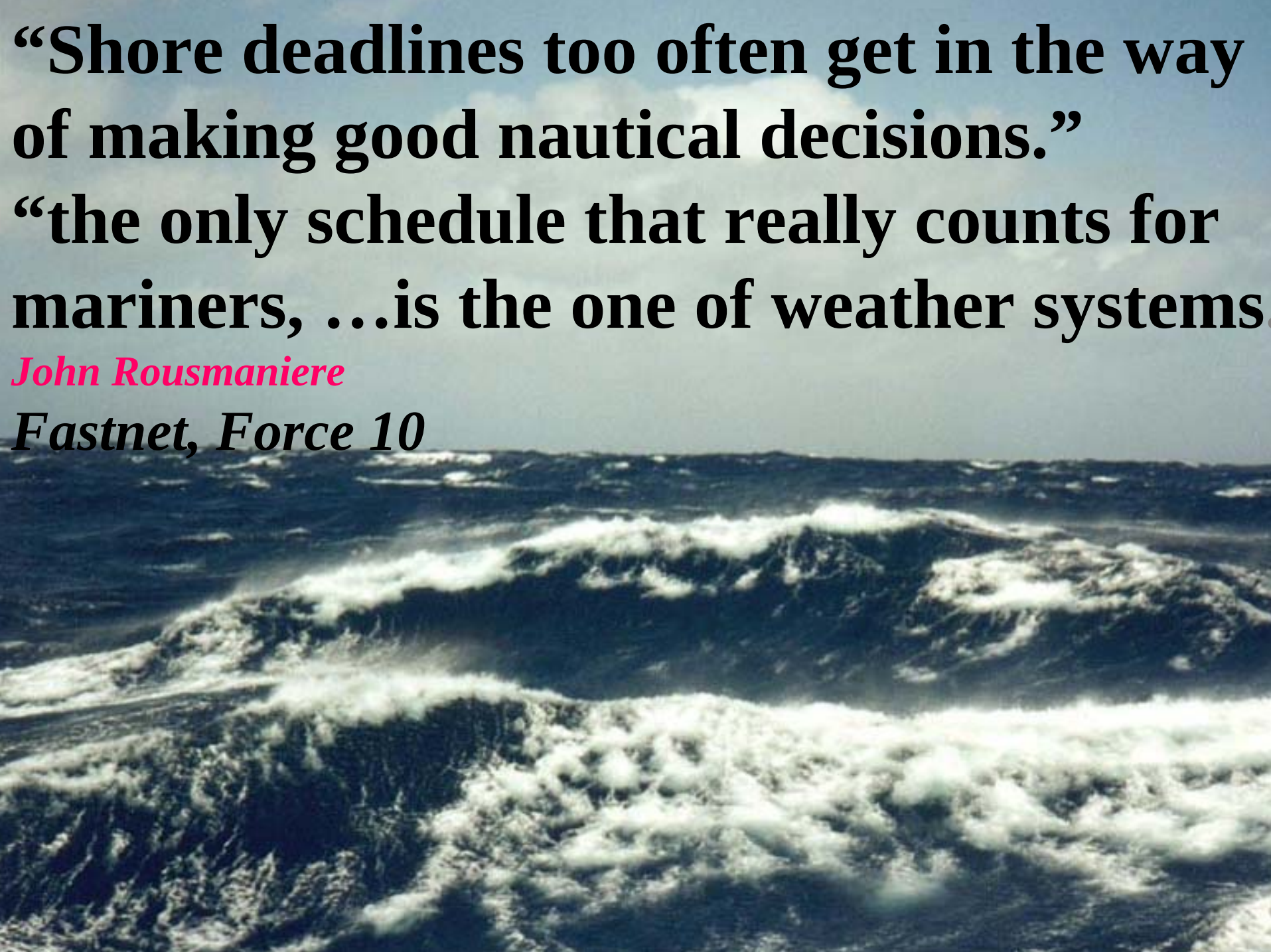
1800 UTC June 25, 1991



Is Your Goal to Storm Chase?


If So…It May Costs Us Tax Payers 250K for the US Coast Guard to Come Fetch You !

Your goal is
To be in this,
NO?



“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

“Some People Are Weather-wise, but Most Are Otherwise”

Benjamin Franklin