

Weather “Whats”

Safety at Sea Seminar
March 5, 2016
Kaneohe Yacht Club

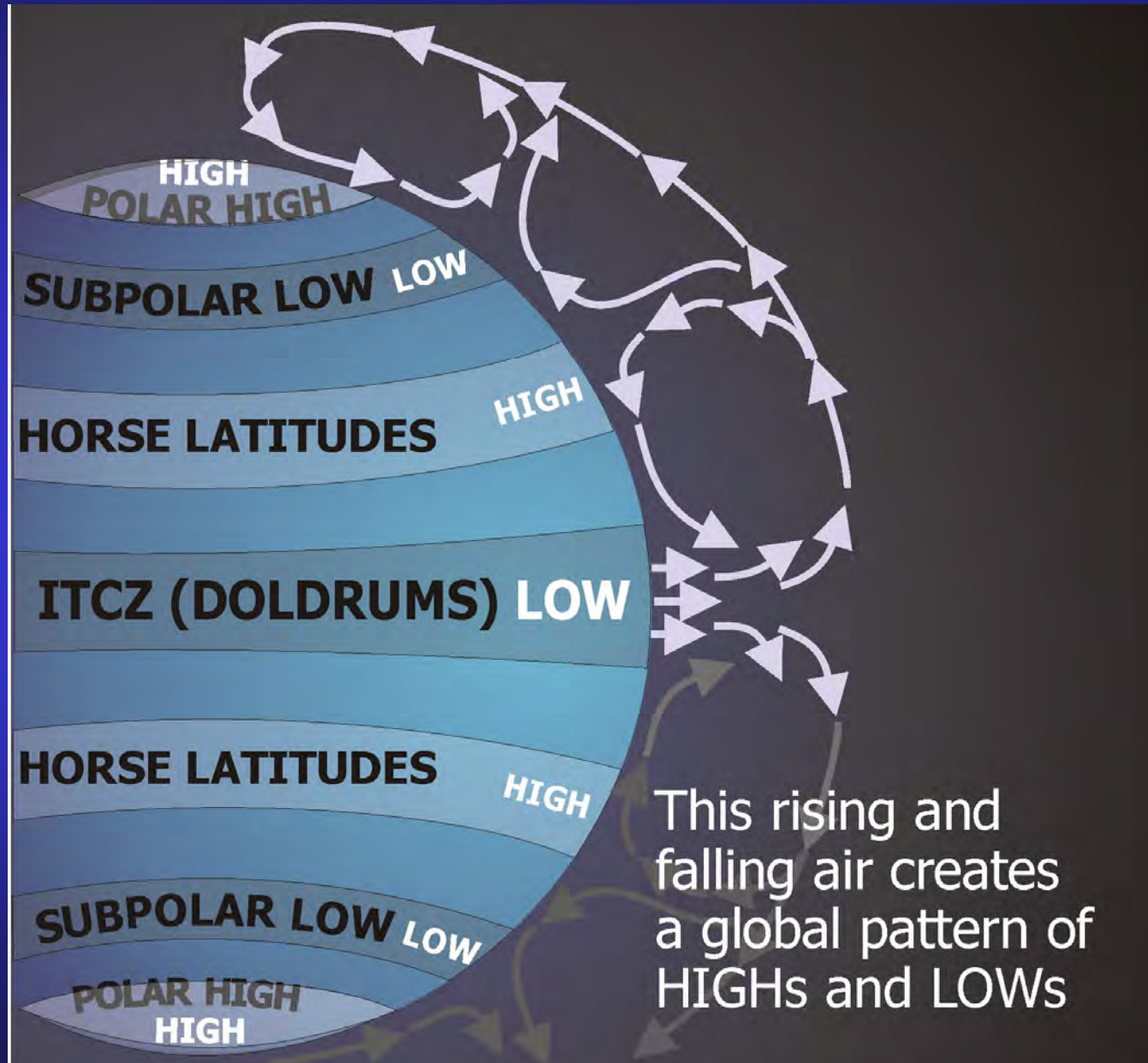


Rick Shema, CCM
Certified Consulting Meteorologist
by American Meteorological Society
rick@weatherguy.com
Mobile: +1- 808-291-9949



weatherguy  *com*

GLOBAL HIGHS & LOWS

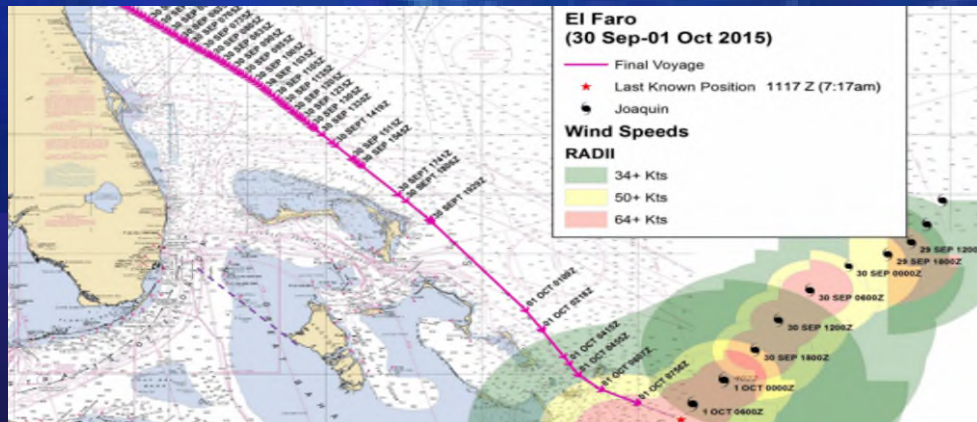


A MARINER SHOULD:

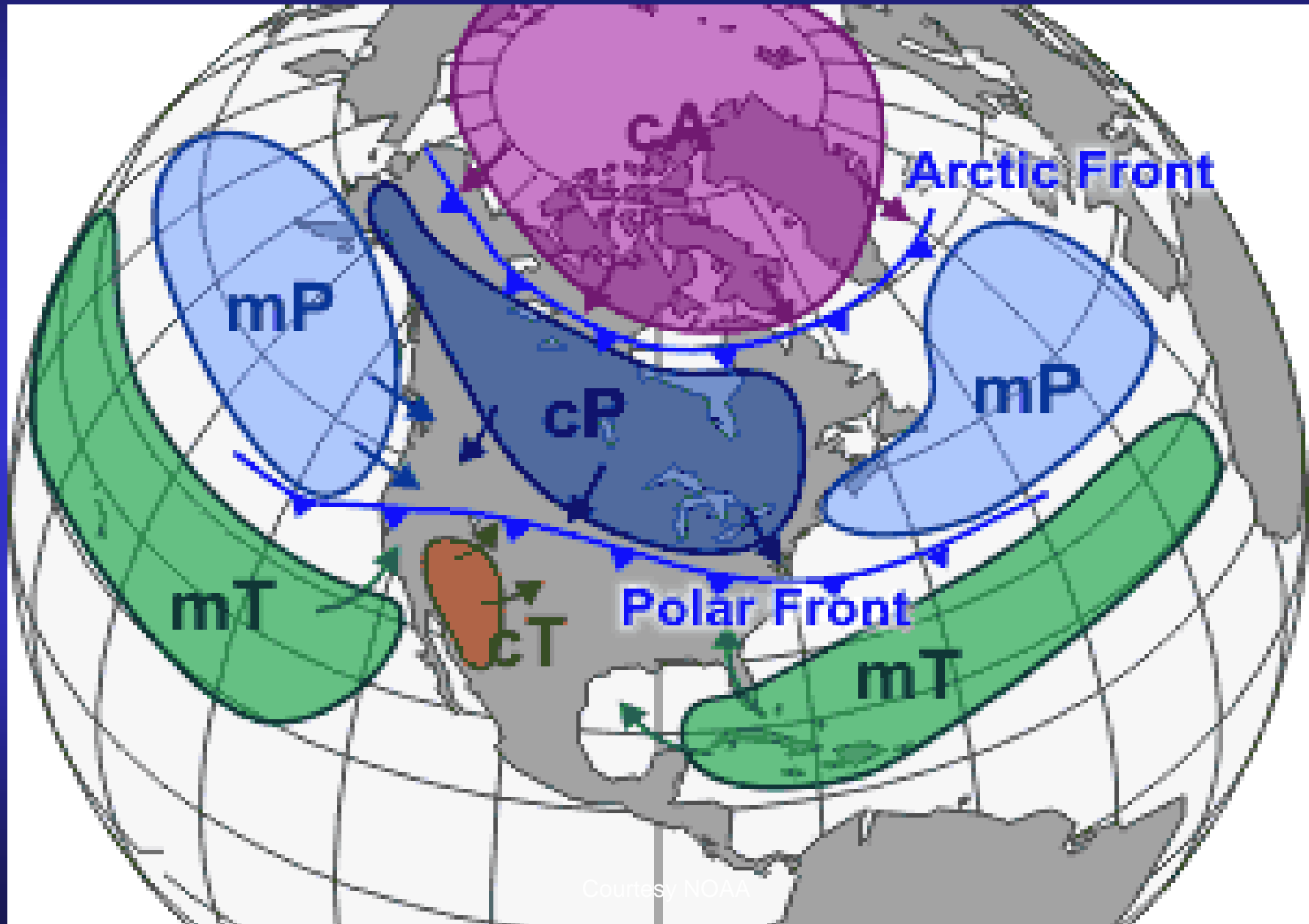
1. Receive valid weather information
2. Understand & continually monitor situation for changes in weather
3. Comprehend forecast & phenomena
4. Know how weather effects your crew & vessel
5. Prepare procedures to avoid heavy weather

POTENTIAL vs PREDICTED

Prudent decision making considers Potential, not as much the Prediction.



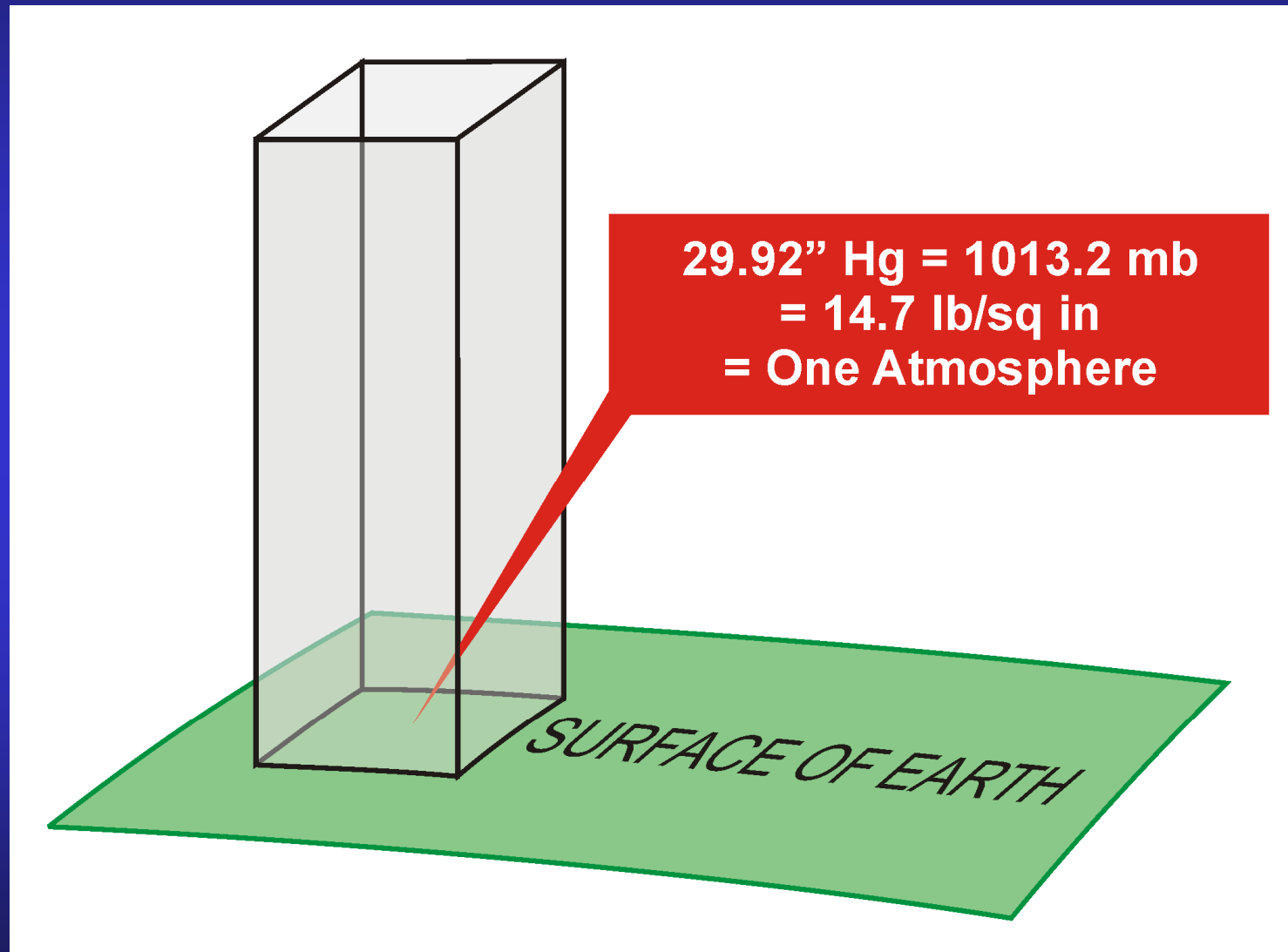
A i r M a s s e s







Atmospheric Pressure



Isobars

PACIFIC SURFACE ANALYSIS
ISSUED: 15:10 UTC 04 MAR 2016
VALID: 12:00 UTC 04 MAR 2016
FCSTR: HOLLEY
SOURCES: OPC NHC WPC HFO

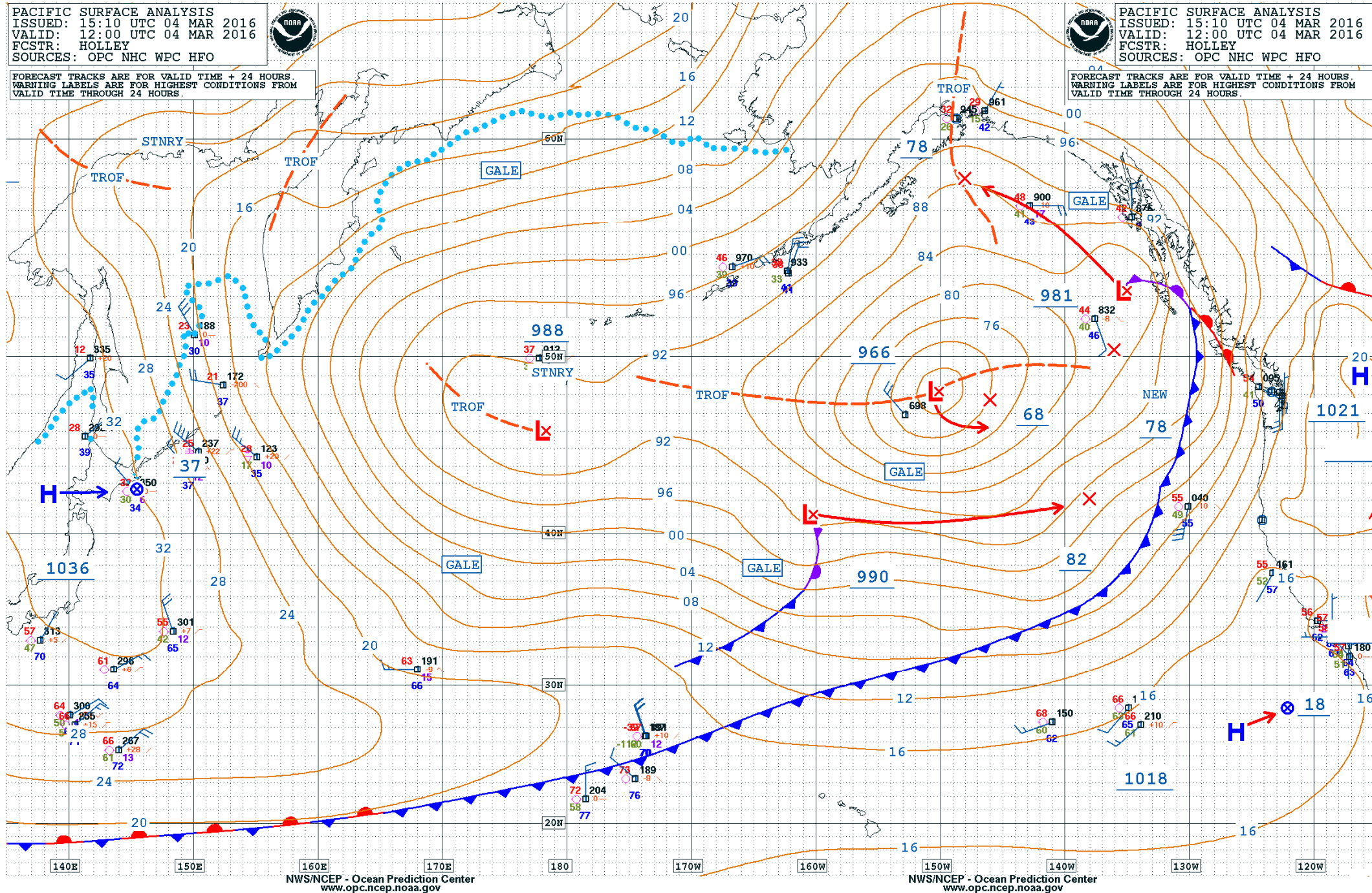


FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS
WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
VALID TIME THROUGH 24 HOURS.

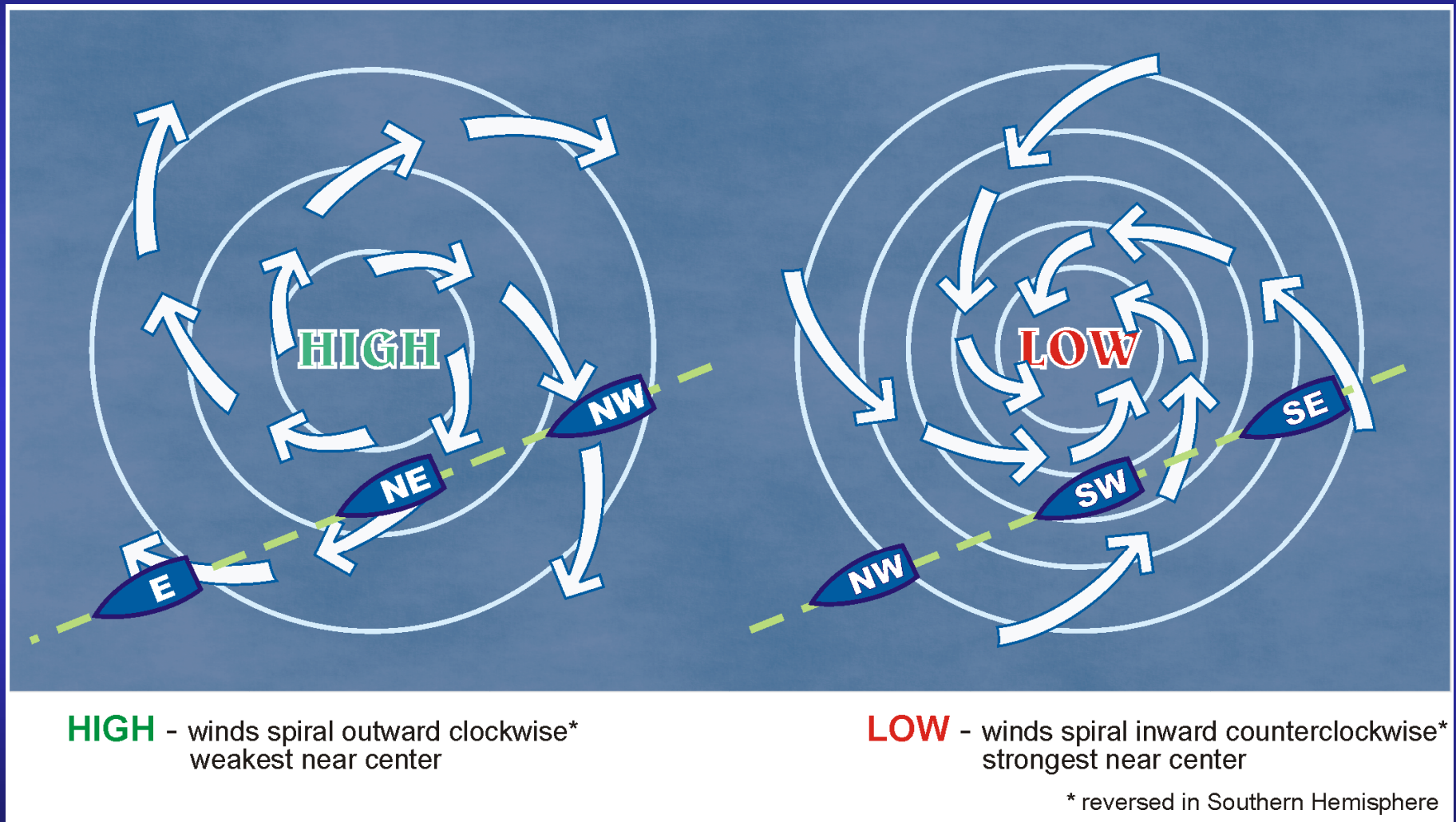


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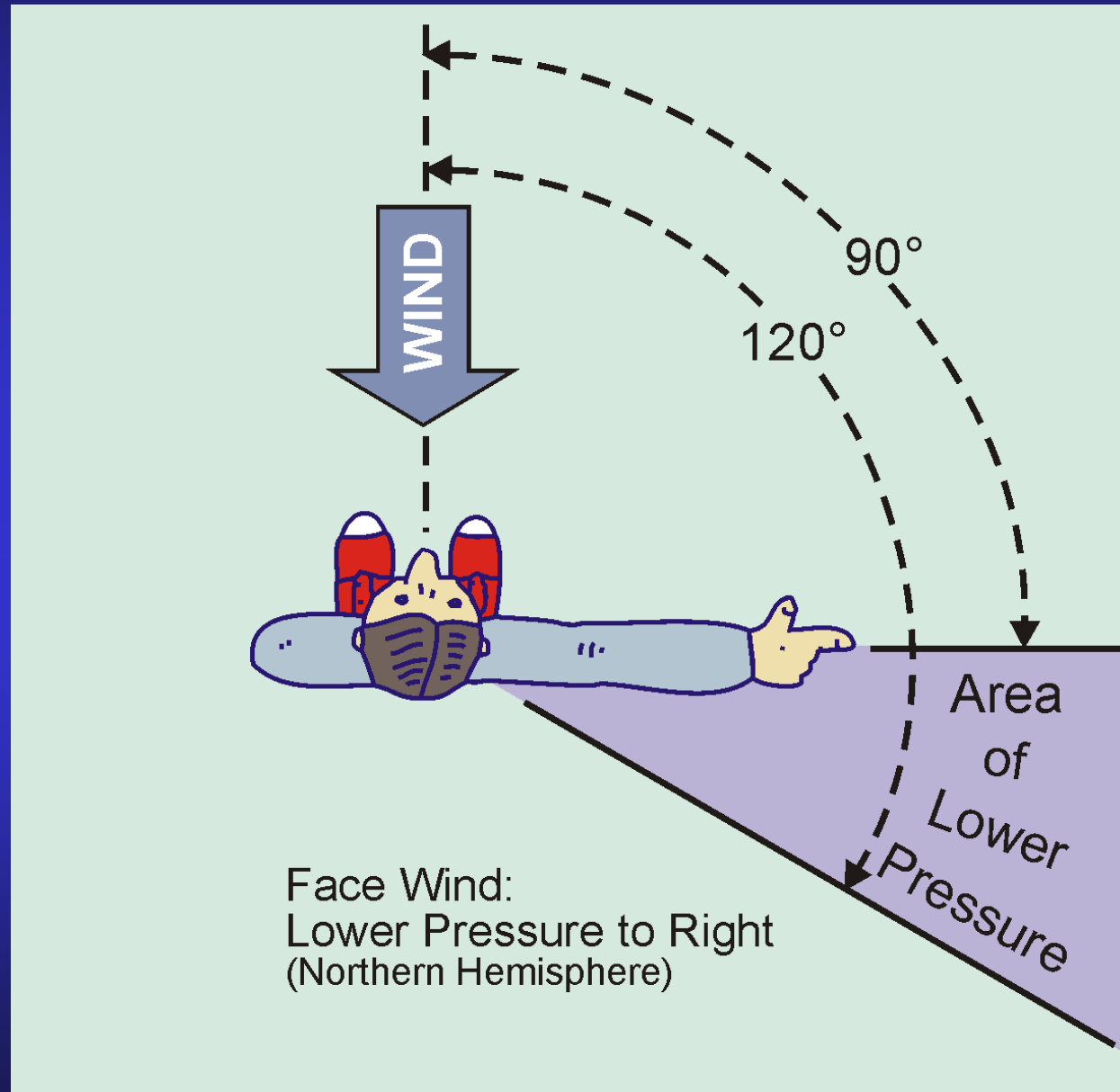
FORECAST TRACKS ARE FOR VALID TIME + 24 HOURS
WARNING LABELS ARE FOR HIGHEST CONDITIONS FROM
VALID TIME THROUGH 24 HOURS.



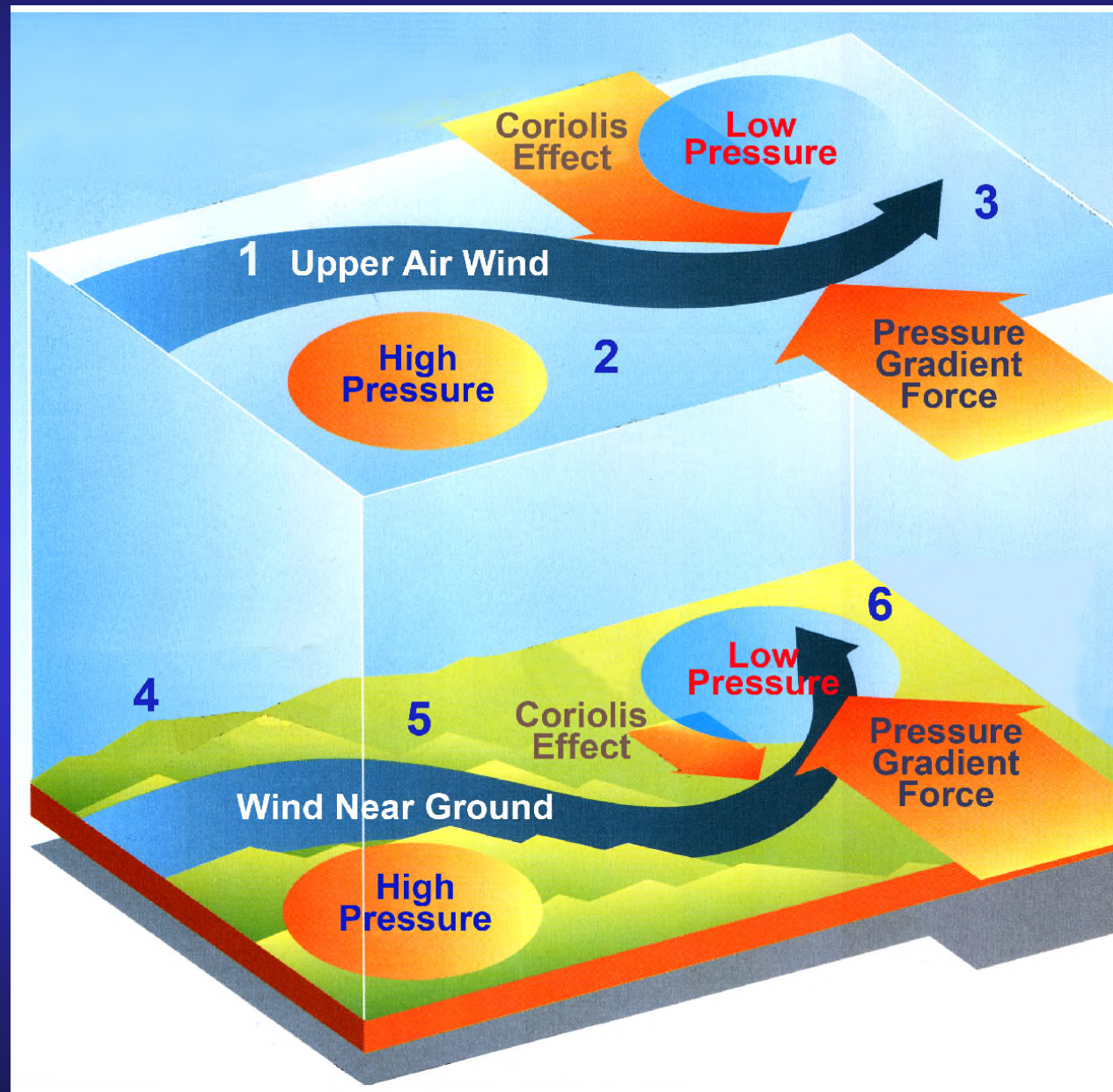
Surface Highs & Lows



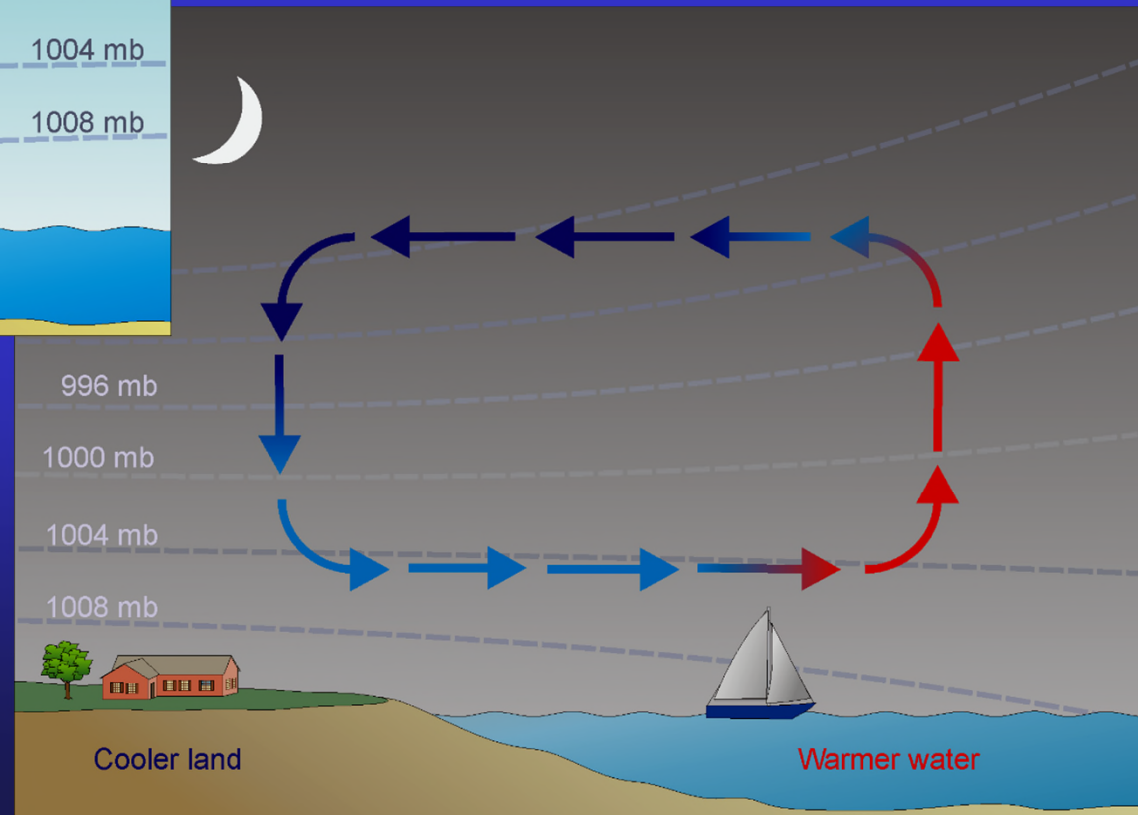
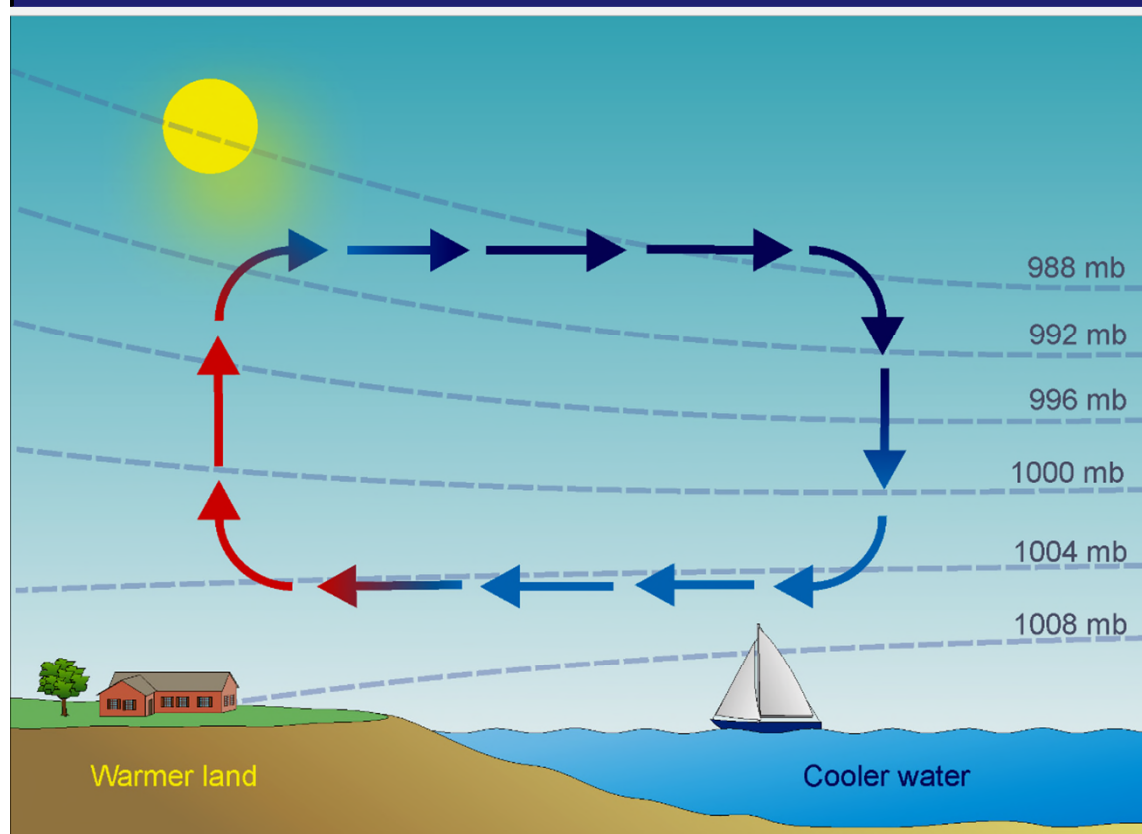
Buys Ballot's Law



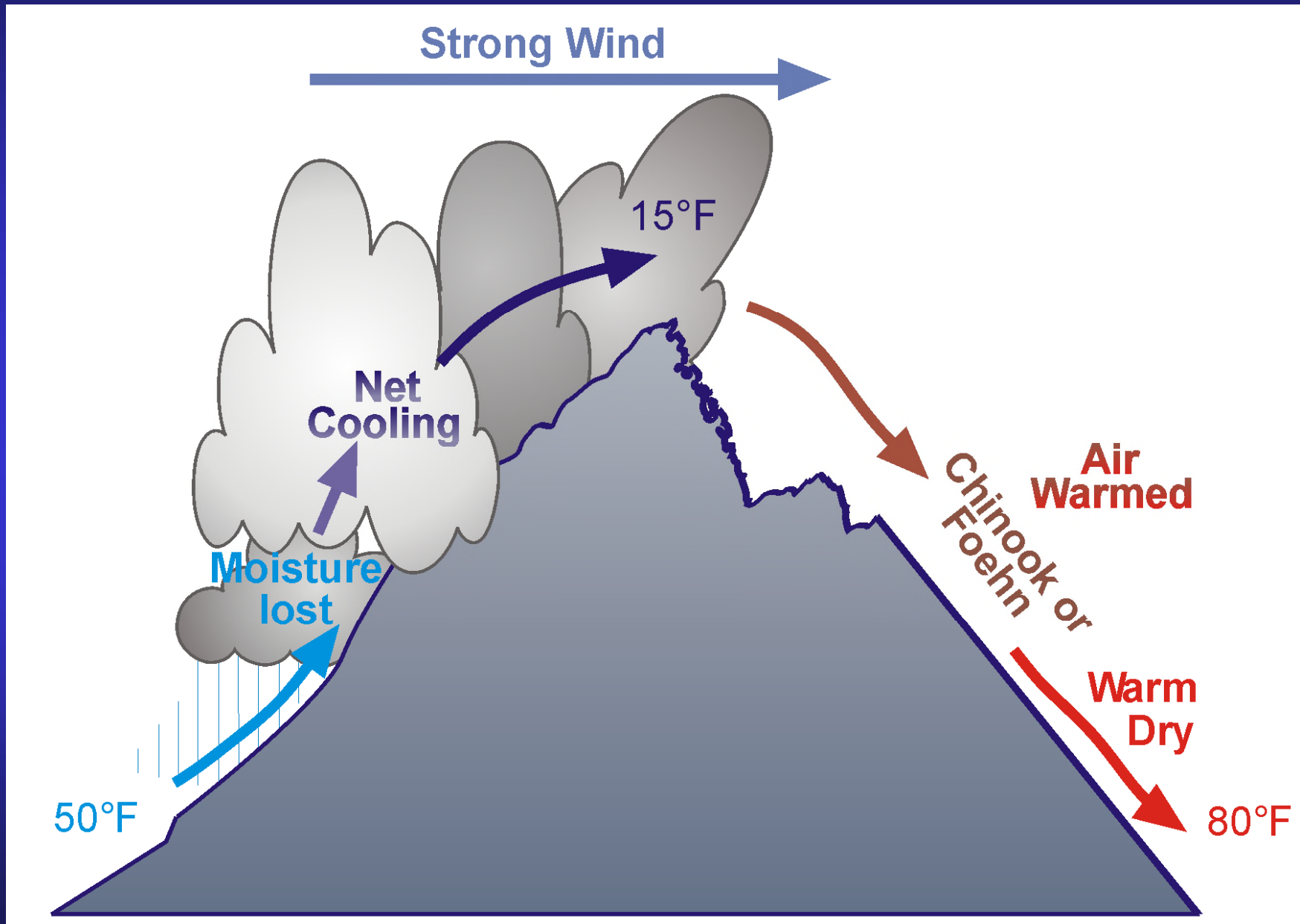
Wind Direction & Altitude



Land/Sea Breezes



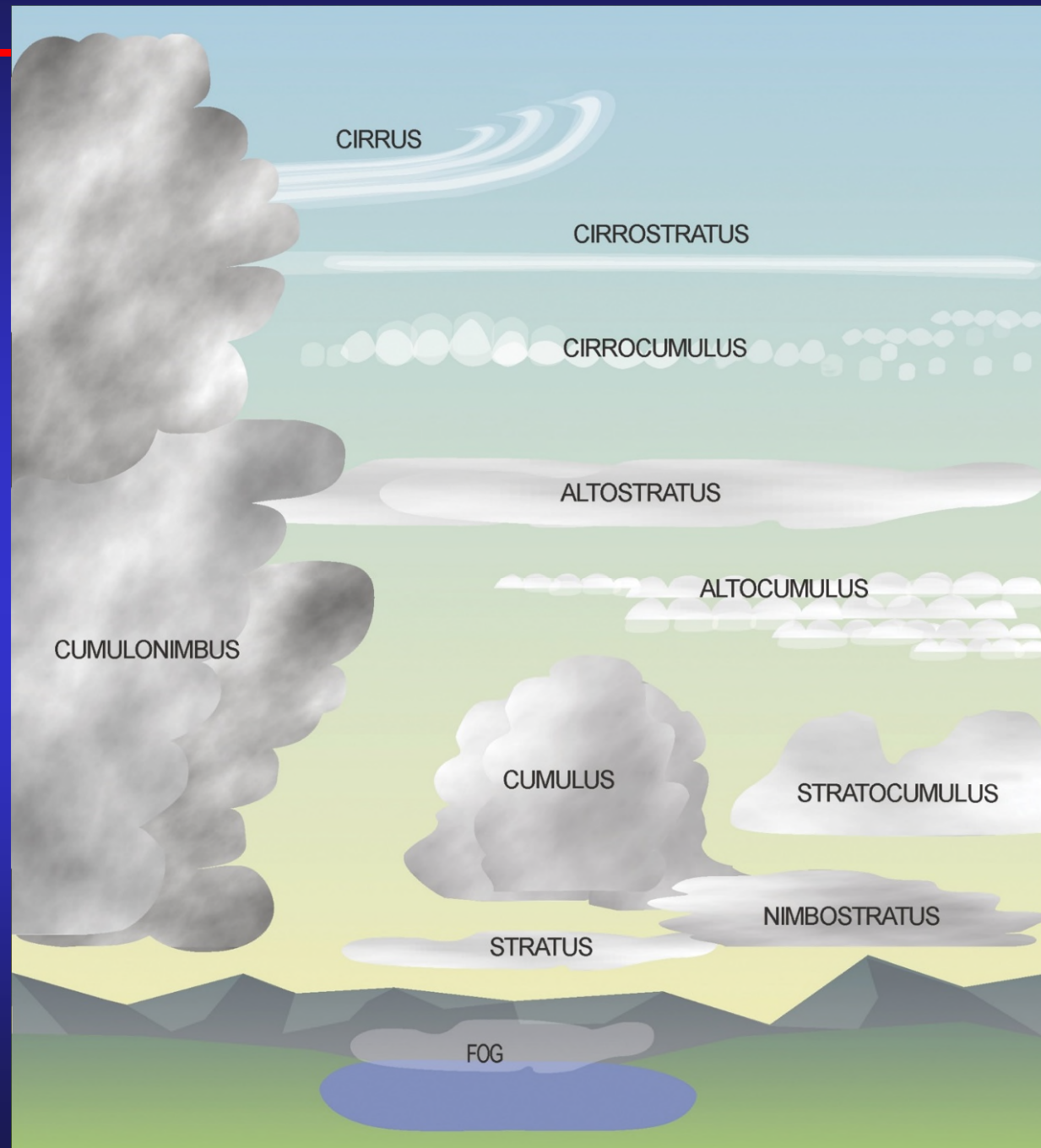
Down Slope



Cloud Base Height

		Clouds of Vertical Development	
<u>HIGH</u> above 20,000ft	Cirrus (Ci) Cirrostratus (Cs) Cirrocumulus (Cc)		Cumulonimbus (Cb) from near ground to above 50,000ft
<u>MIDDLE</u> 20,000ft to 6,500ft	Altostratus (As) Alto cumulus (Ac)	Cumulus (Cu)	
<u>LOW</u> below 6,500ft	Stratocumulus (Sc) Nimbostratus (Ns) Stratus (St)	Bases 1,500ft Tops 16,000ft	

Common Cloud Types

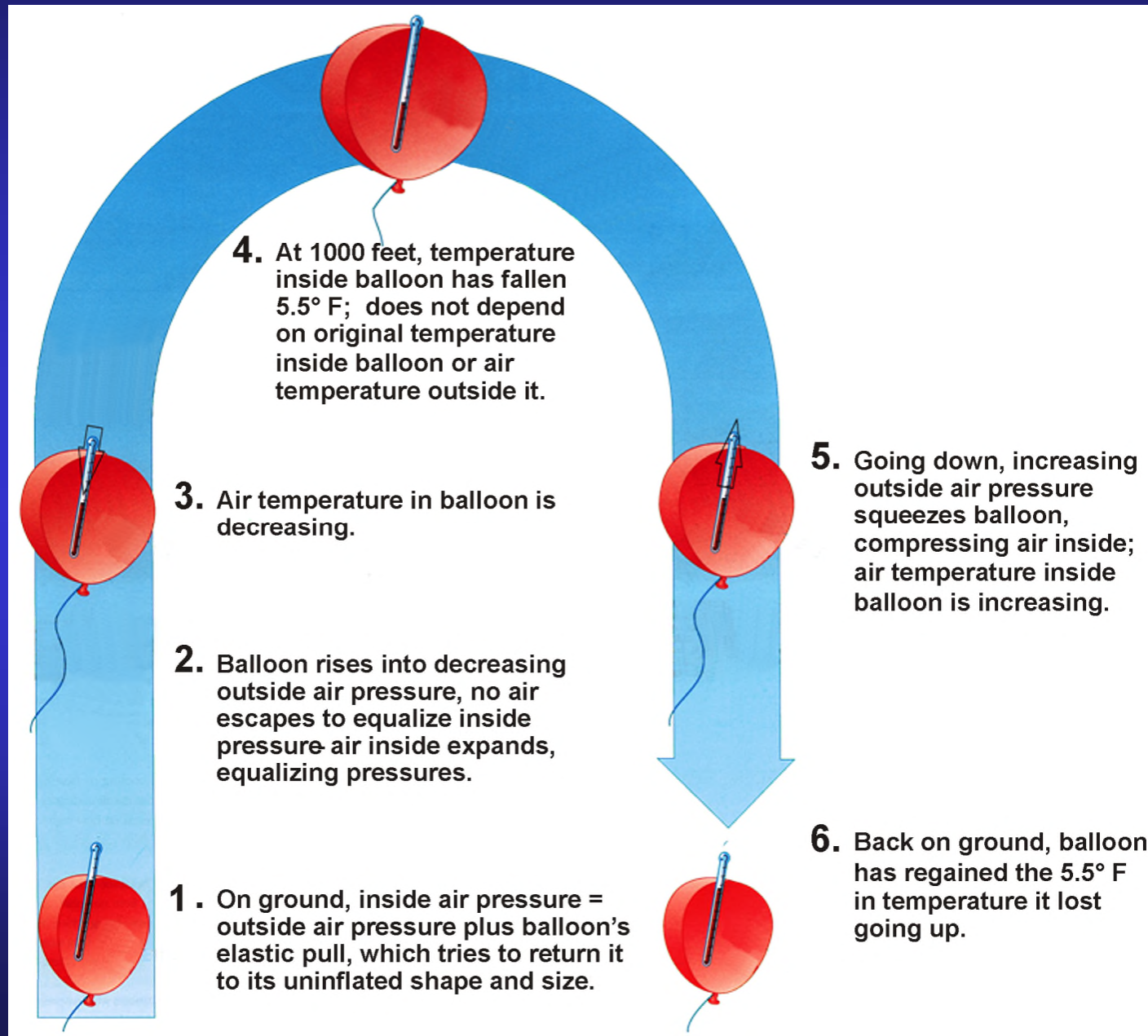


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Stability/Instability

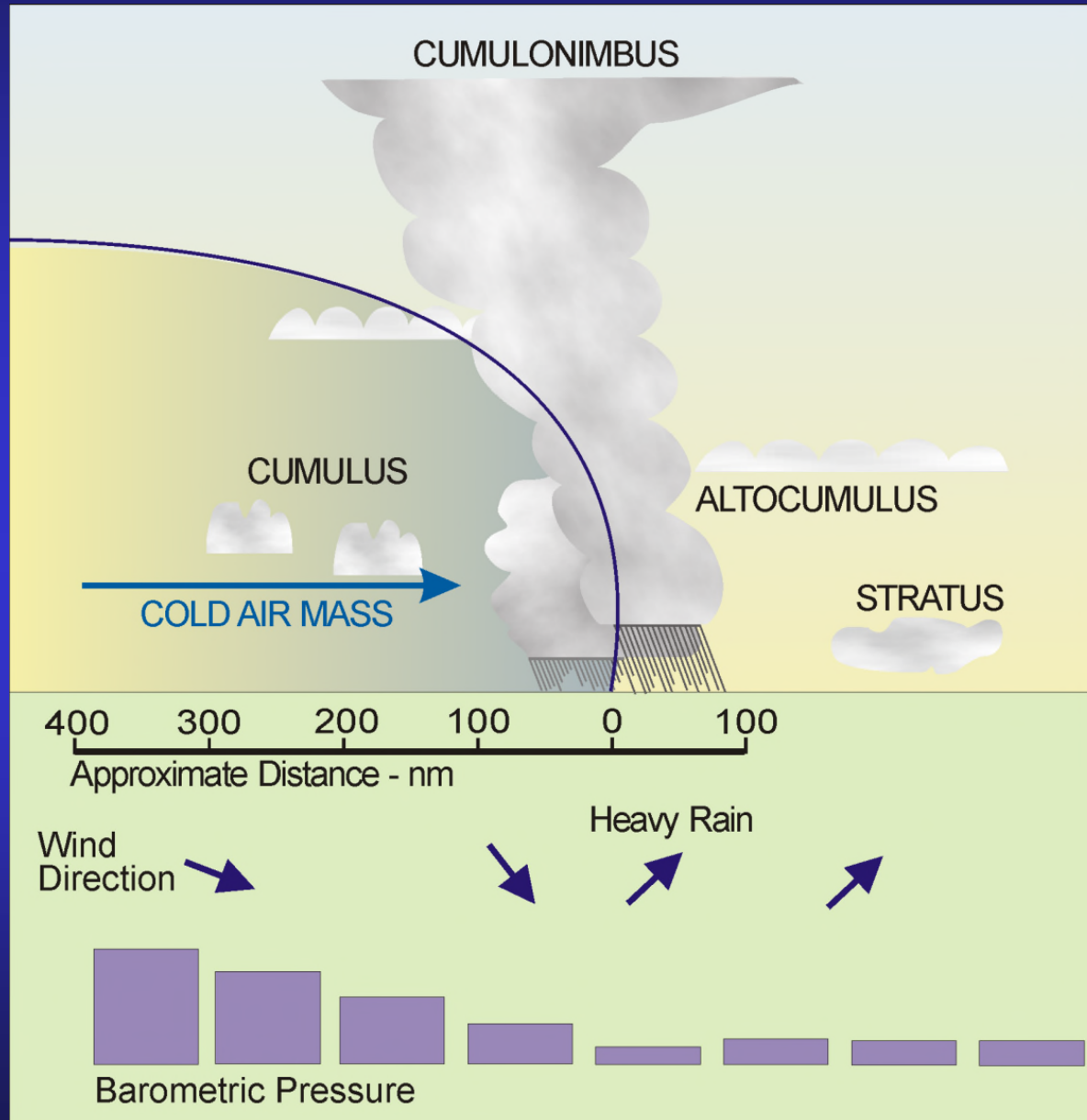
- Stability:
 - when there is relatively little vertical movement.
 - an air parcel resists being pushed up or down.
- Instability:
 - when there is significant vertical movement .
 - an air parcel tends to continue rising or falling when pushed up or down.

Air Rising & Sinking

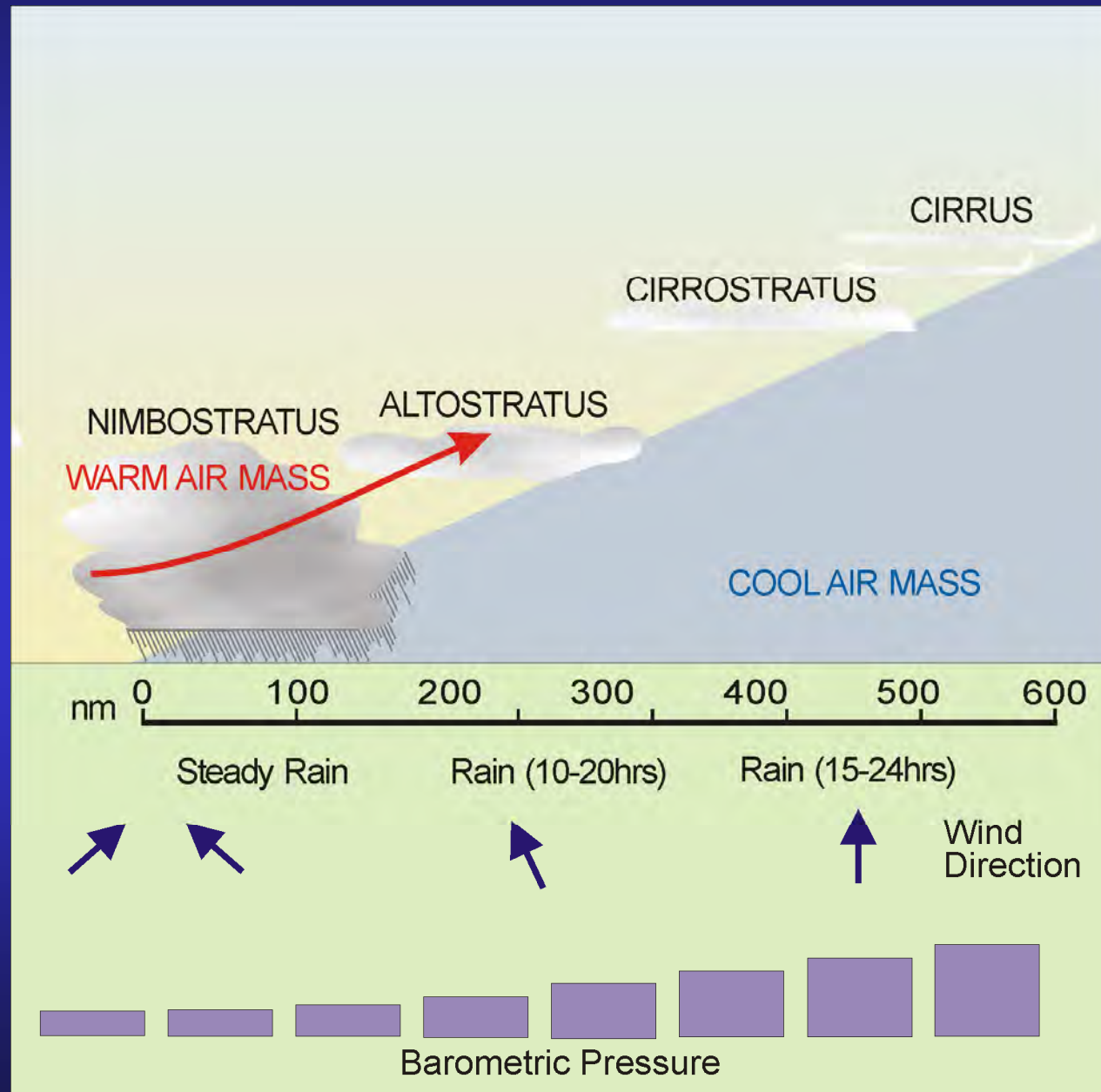




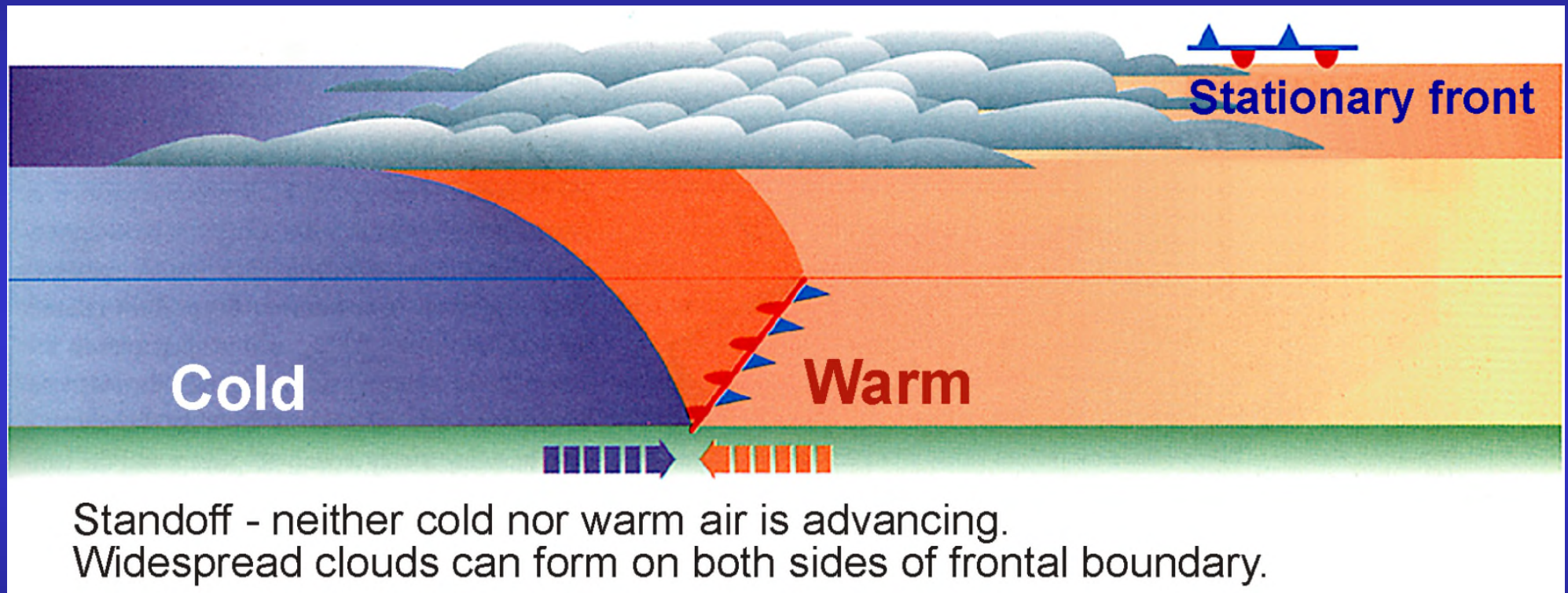
Cold Front Weather



Warm Front Weather

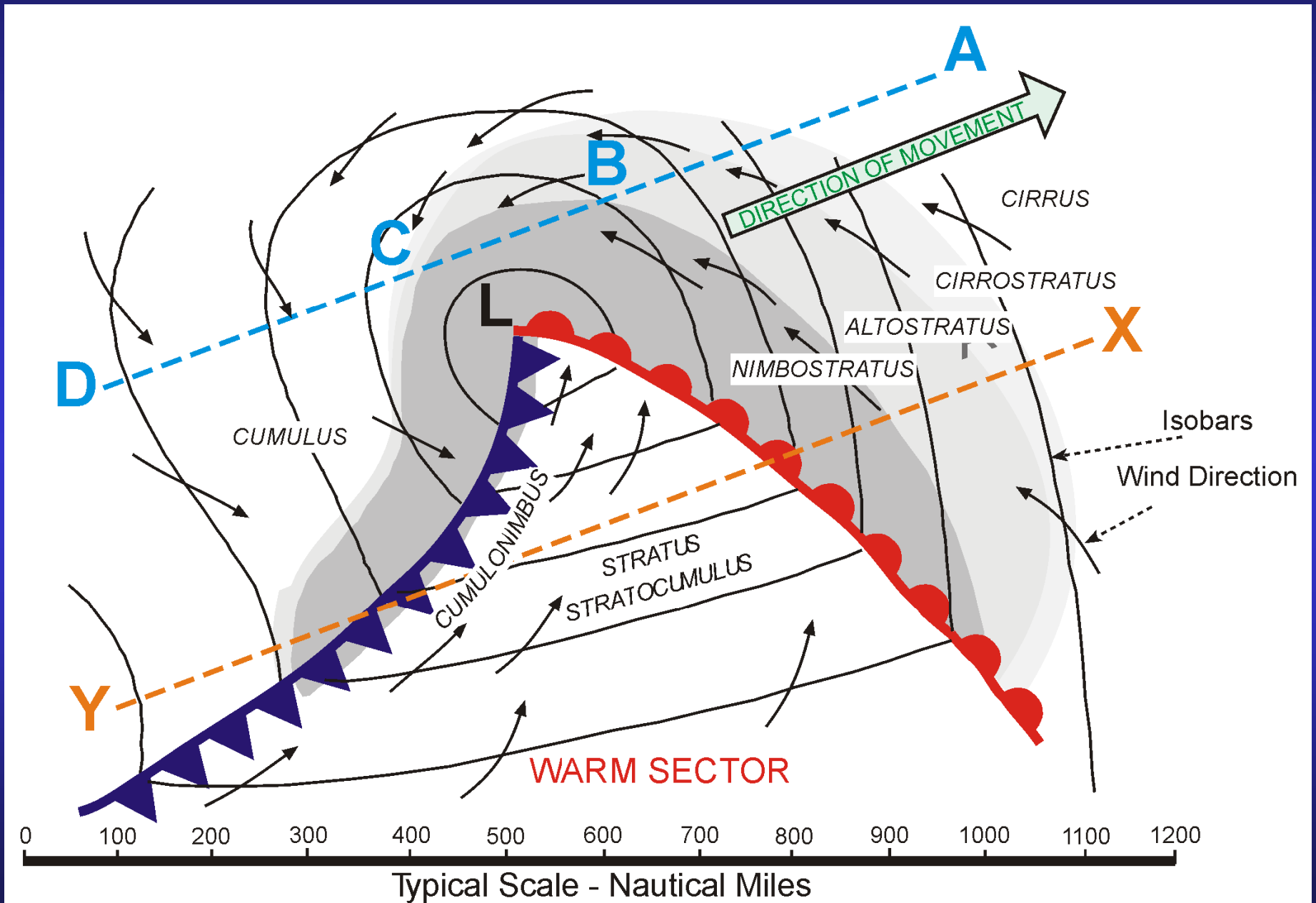


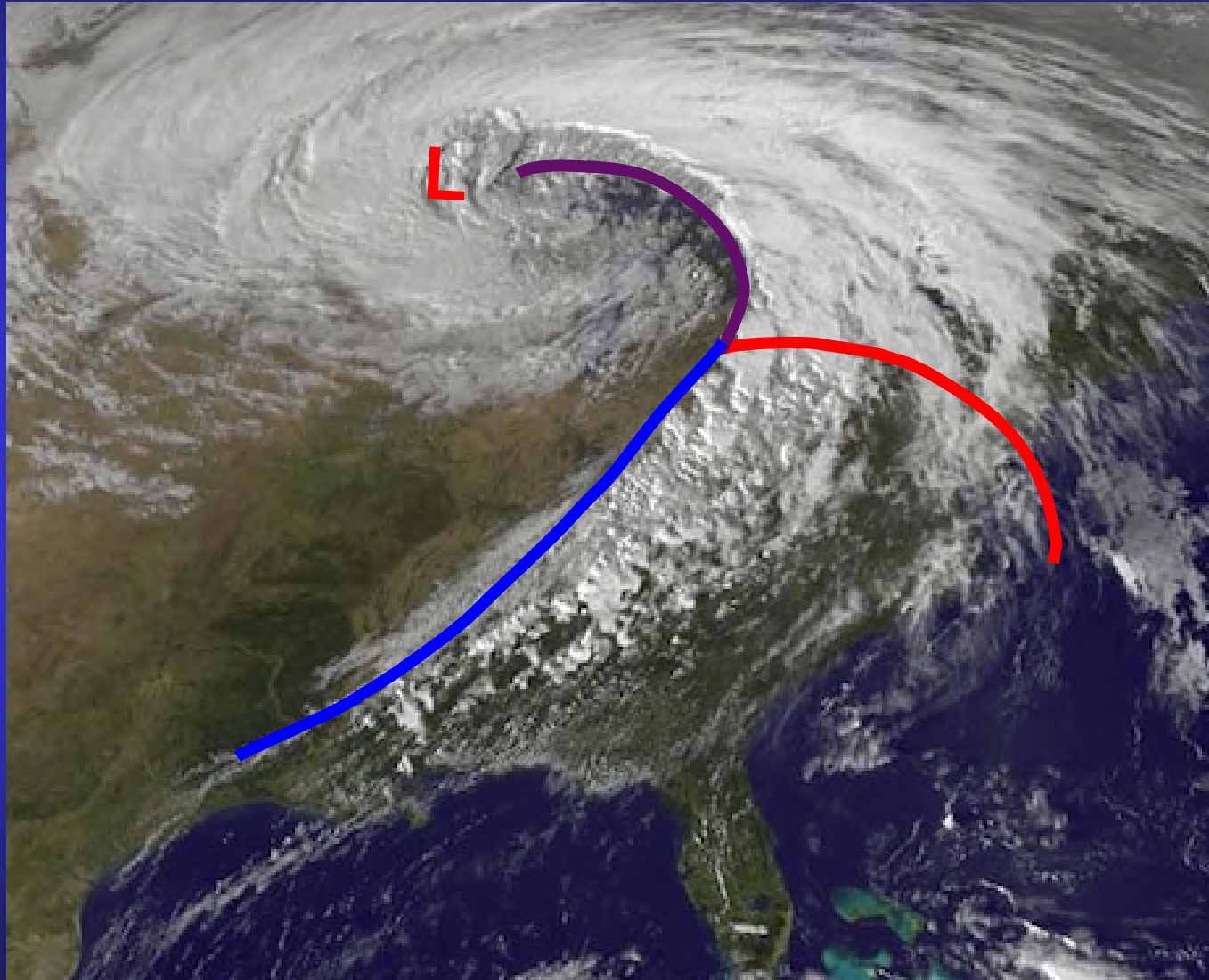
Stationary Front



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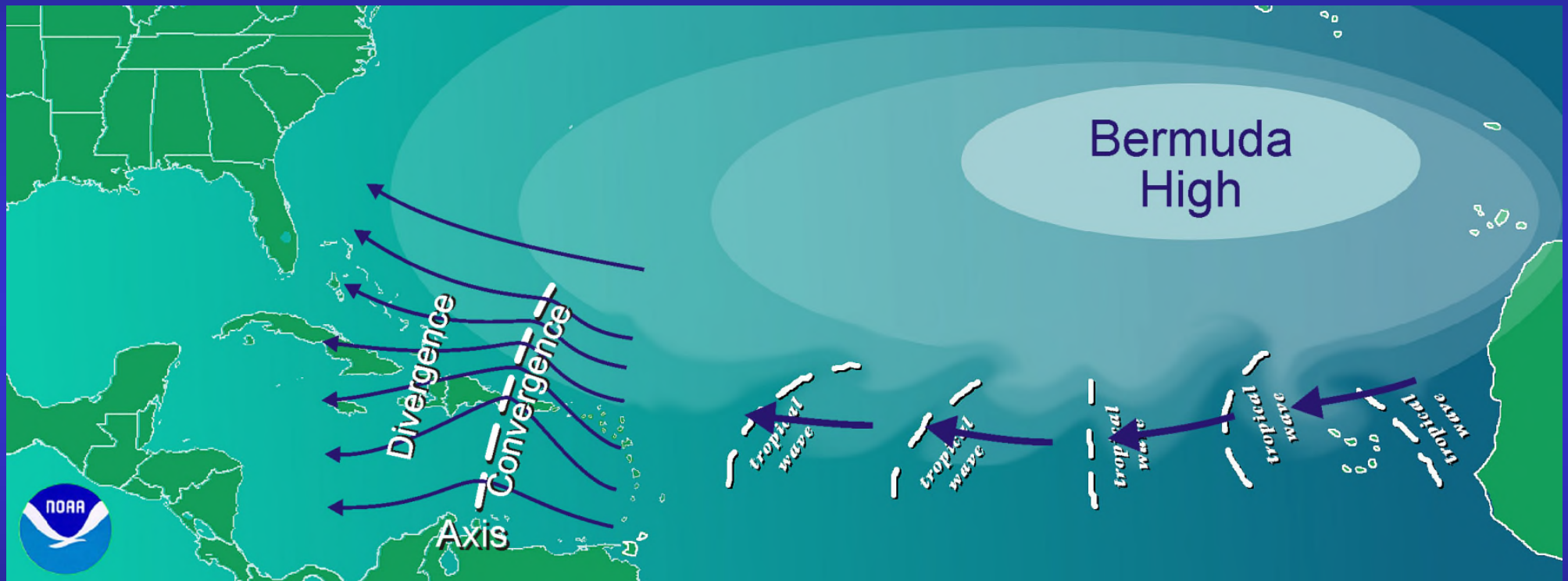
Mid-latitude Storms





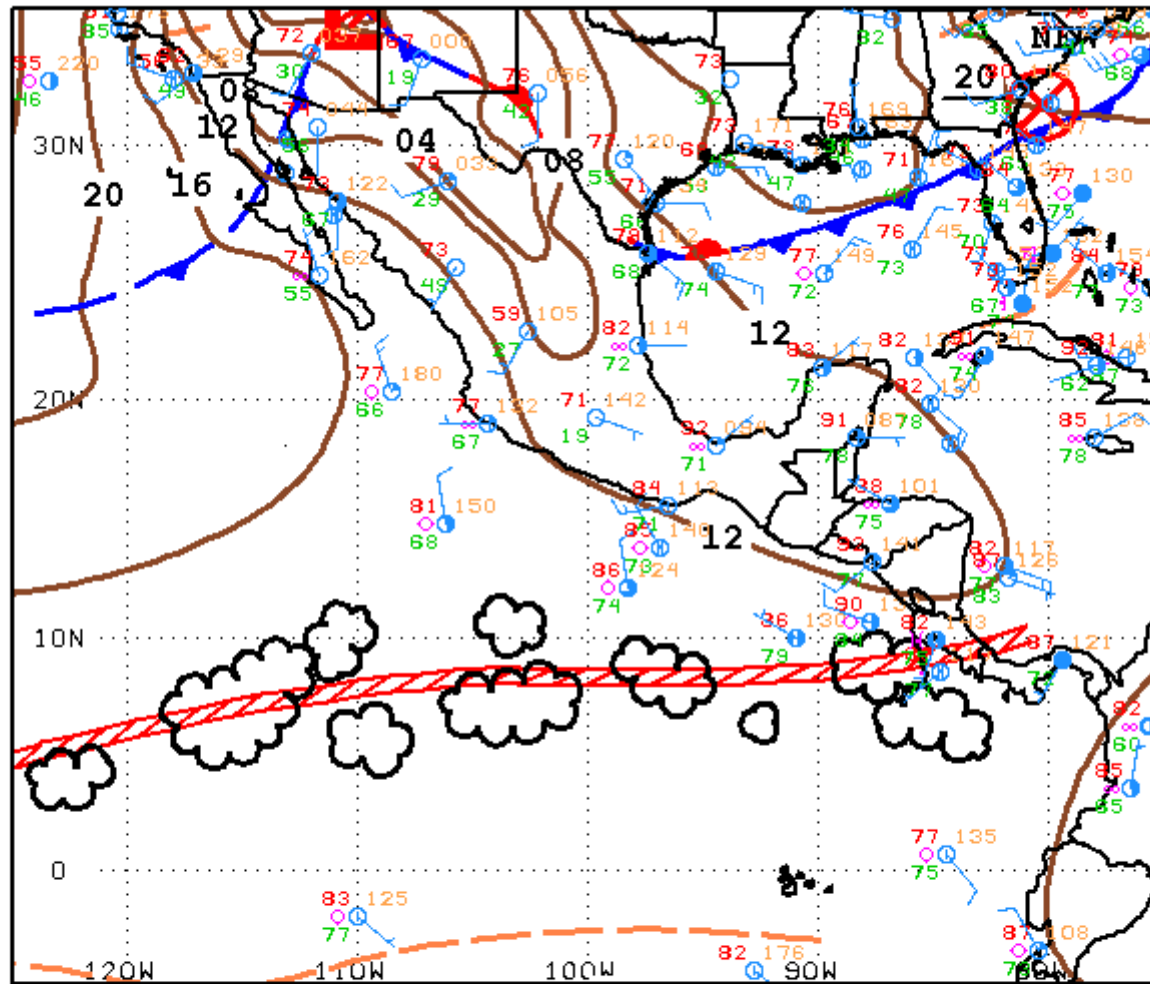
Courtesy NASA

Easterly Wave-Tropics

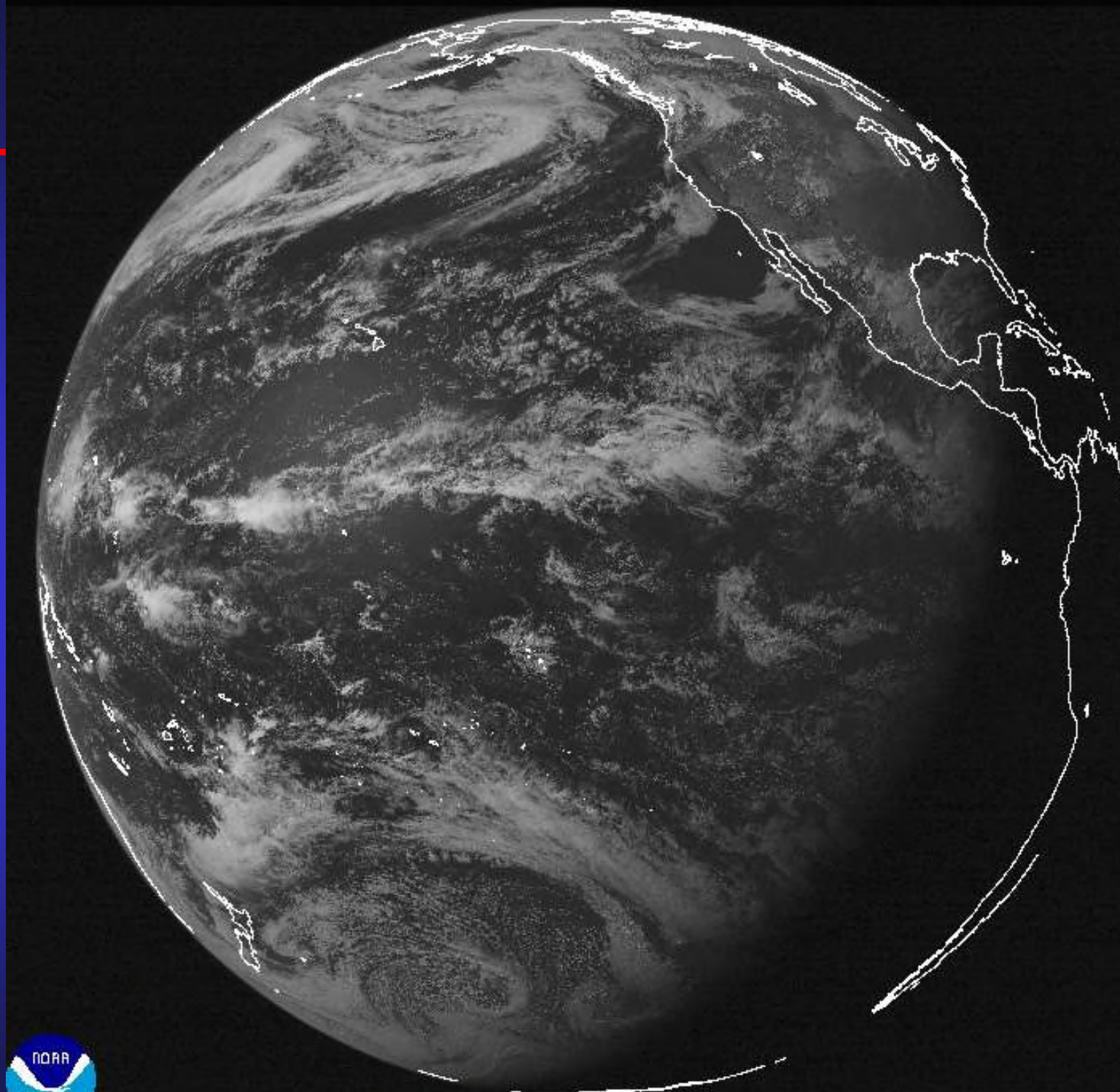


Courtesy NOAA

Inter-Tropical Convergence Zone (ITCZ)



18Z NORTHEAST PACIFIC SFC ANALYSIS
ISSUED: Thu Apr 12 20:45:34 UTC
THUNDERSTORMS: SCALLOP LINES
TROPICAL PREDICTION CENTER
MIAMI, FLORIDA
BY TAFB ANALYST: RW/GR
COLLABORATING CENTERS: TPC OPC HPC HFO

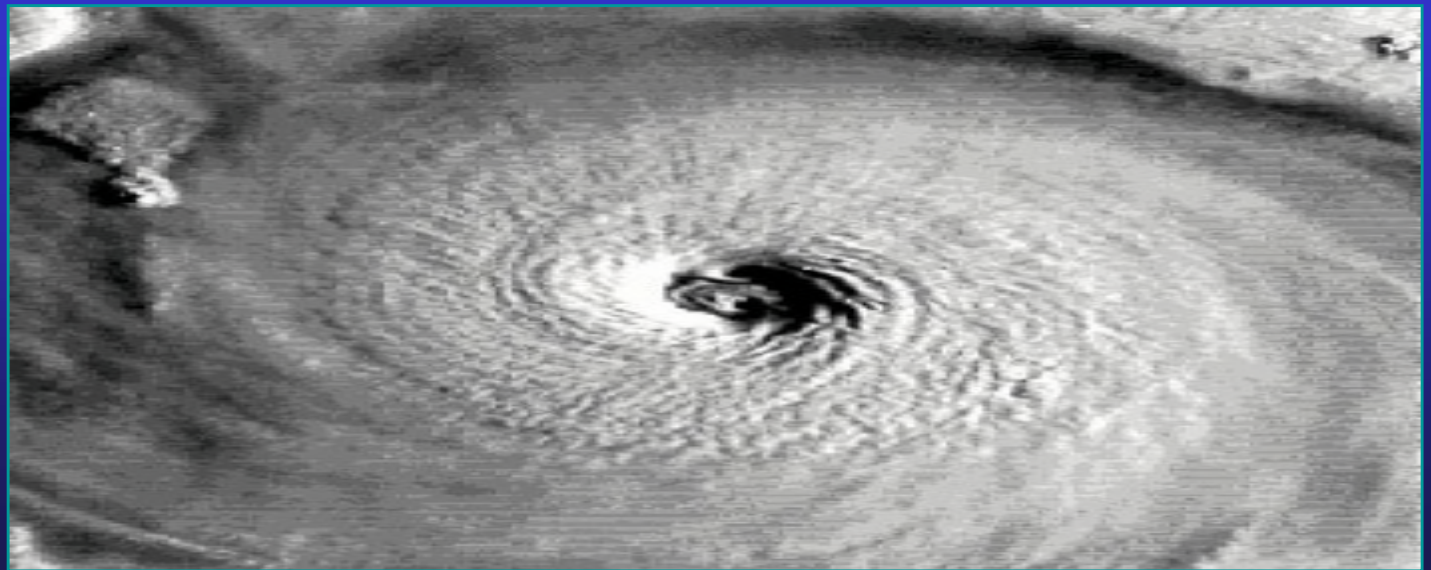


VISIBLE 5 14 2013 0000Z

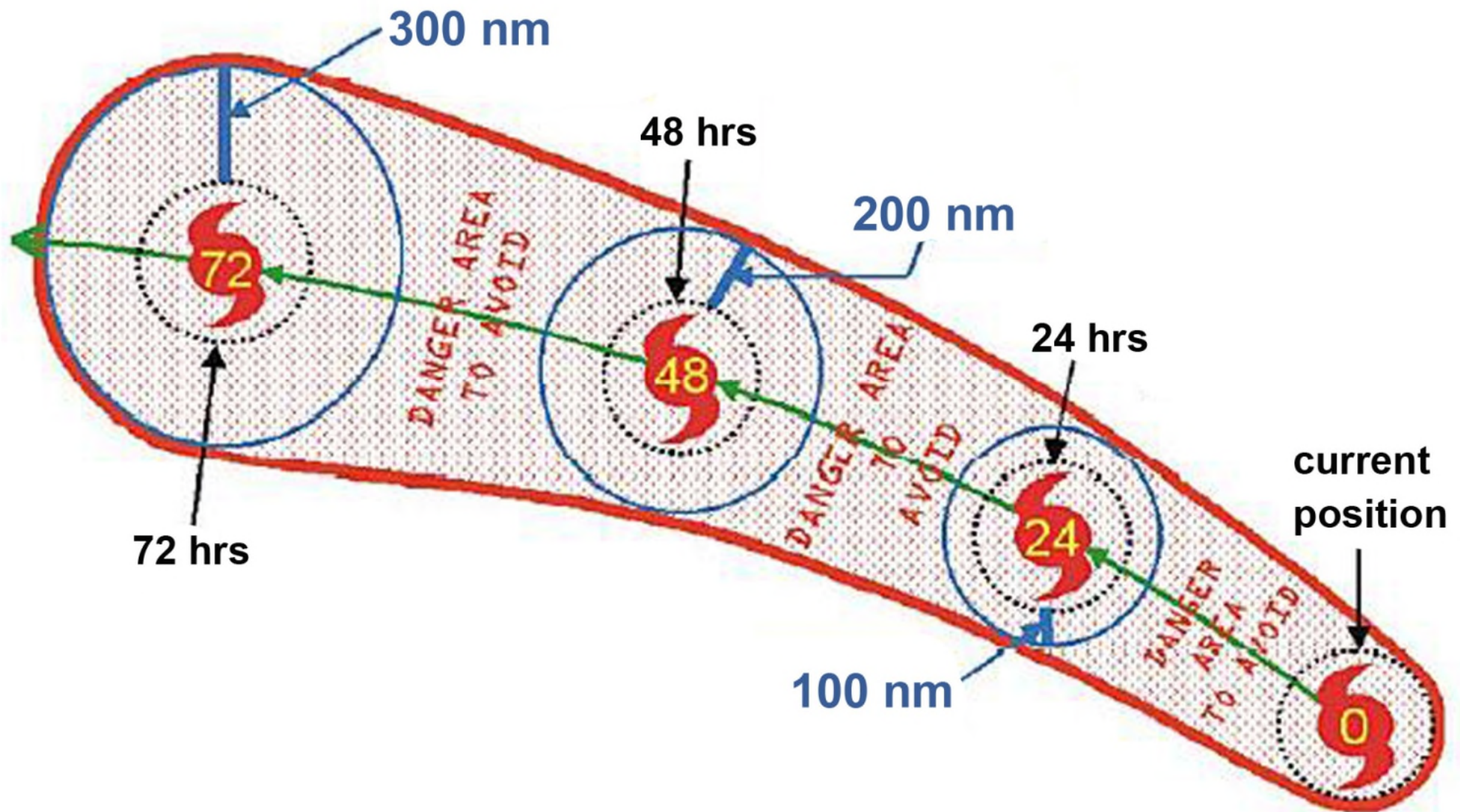
TROPICAL CYCLONES

Conditions Required for Formation:

- ◆ Sea Surface Temp Greater Than 80 Deg F
- ◆ Converging Low Level Winds Between 5-15N/S
- ◆ Weak/No Vertical Winds Shear
- ◆ Upper Level Outflow (divergence)



1 - 2 - 3 Rule

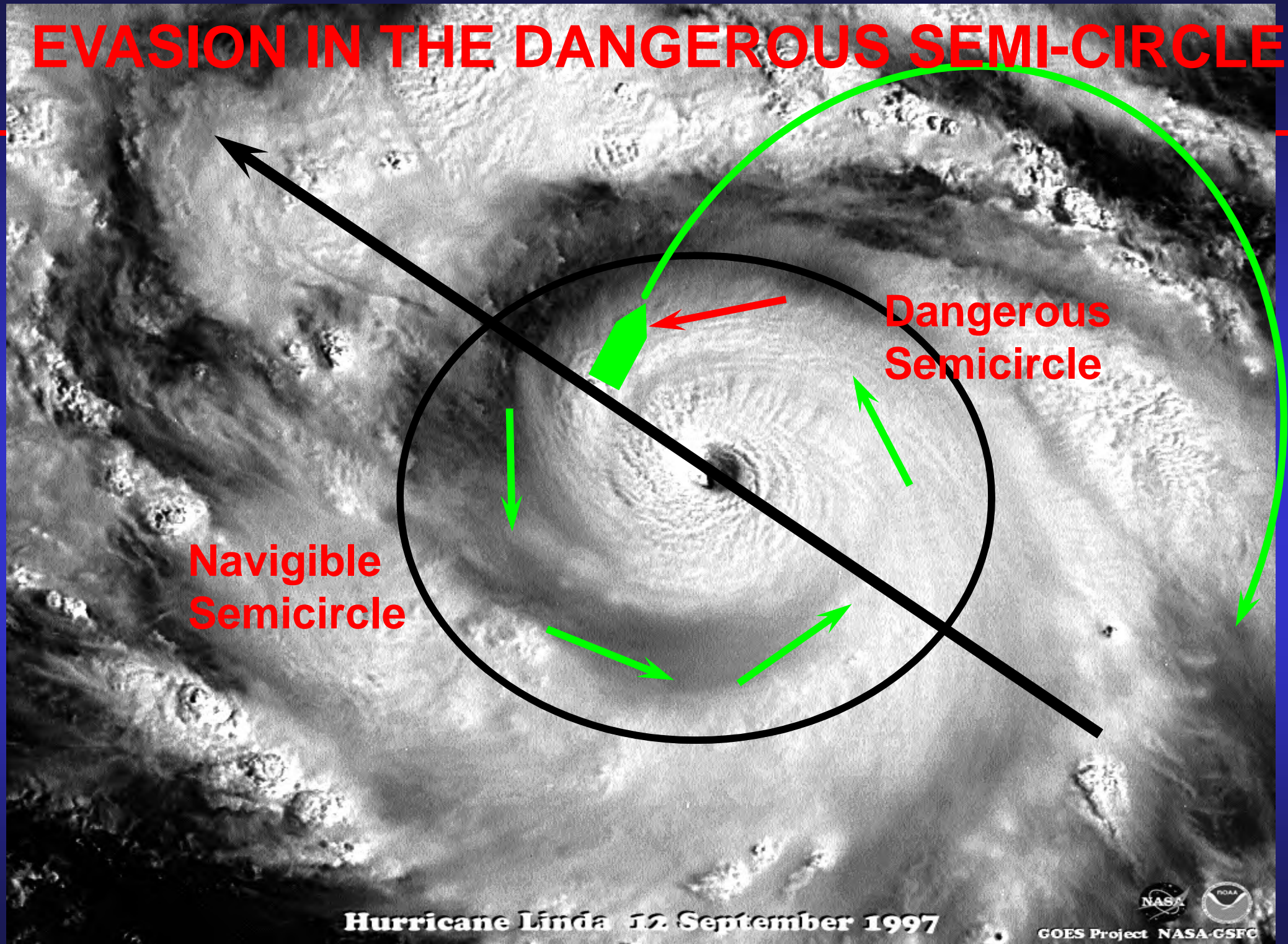


EVASION IN THE DANGEROUS SEMI-CIRCLE

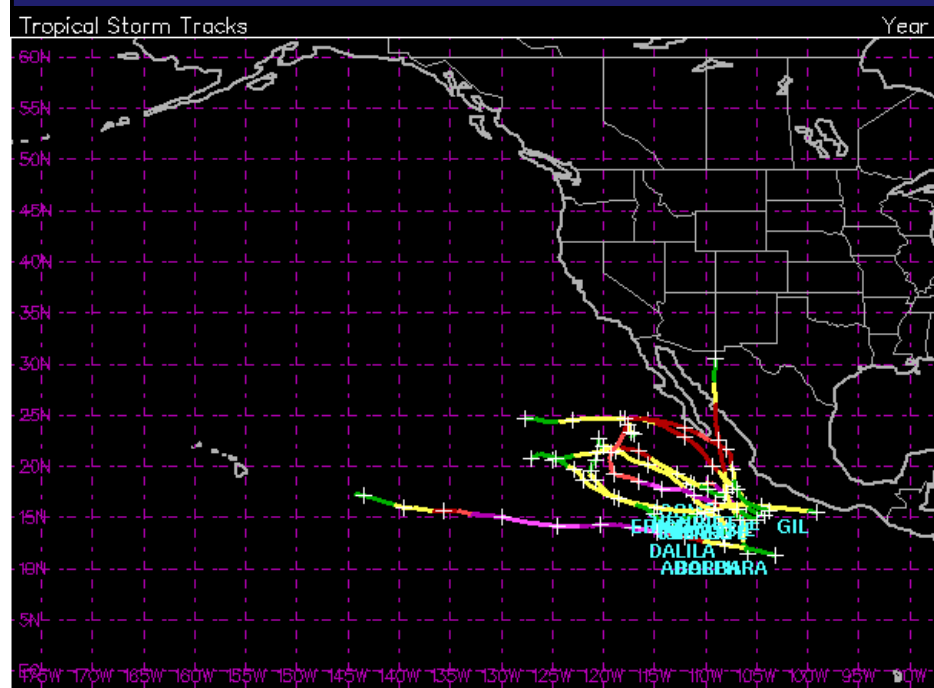
**Navigable
Semicircle**

**Dangerous
Semicircle**

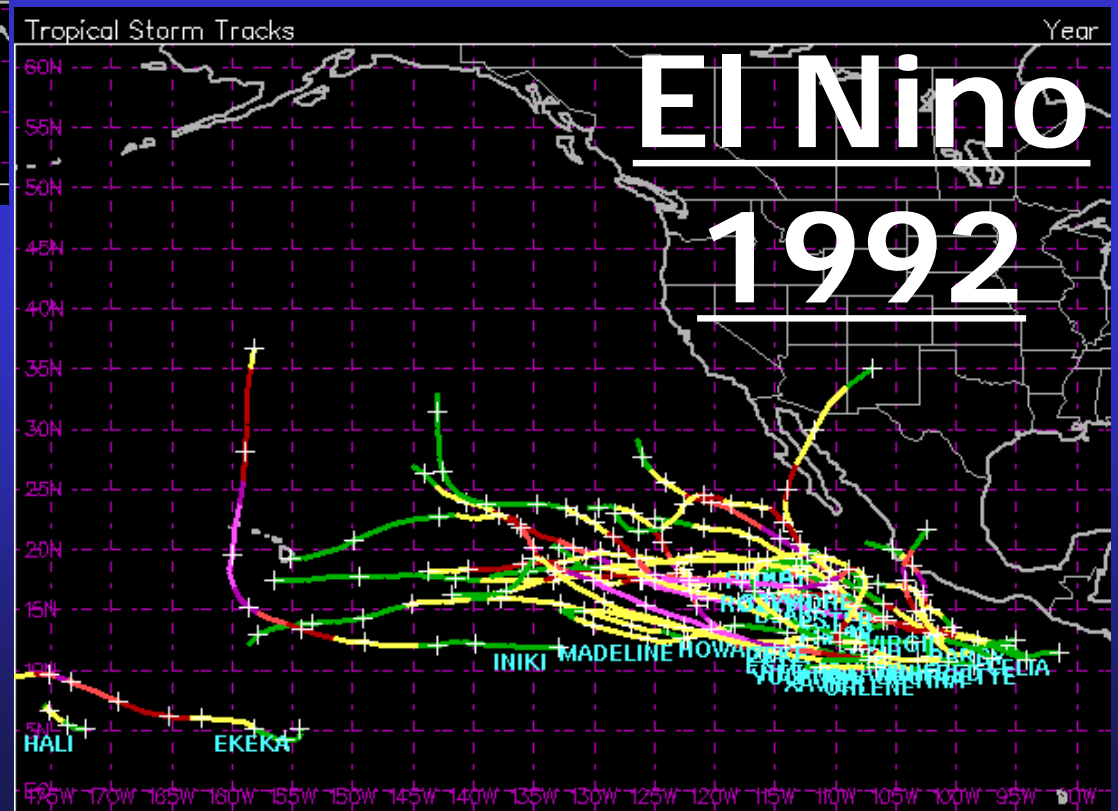
Hurricane Linda 12 September 1997



T C F R E Q U E N C Y

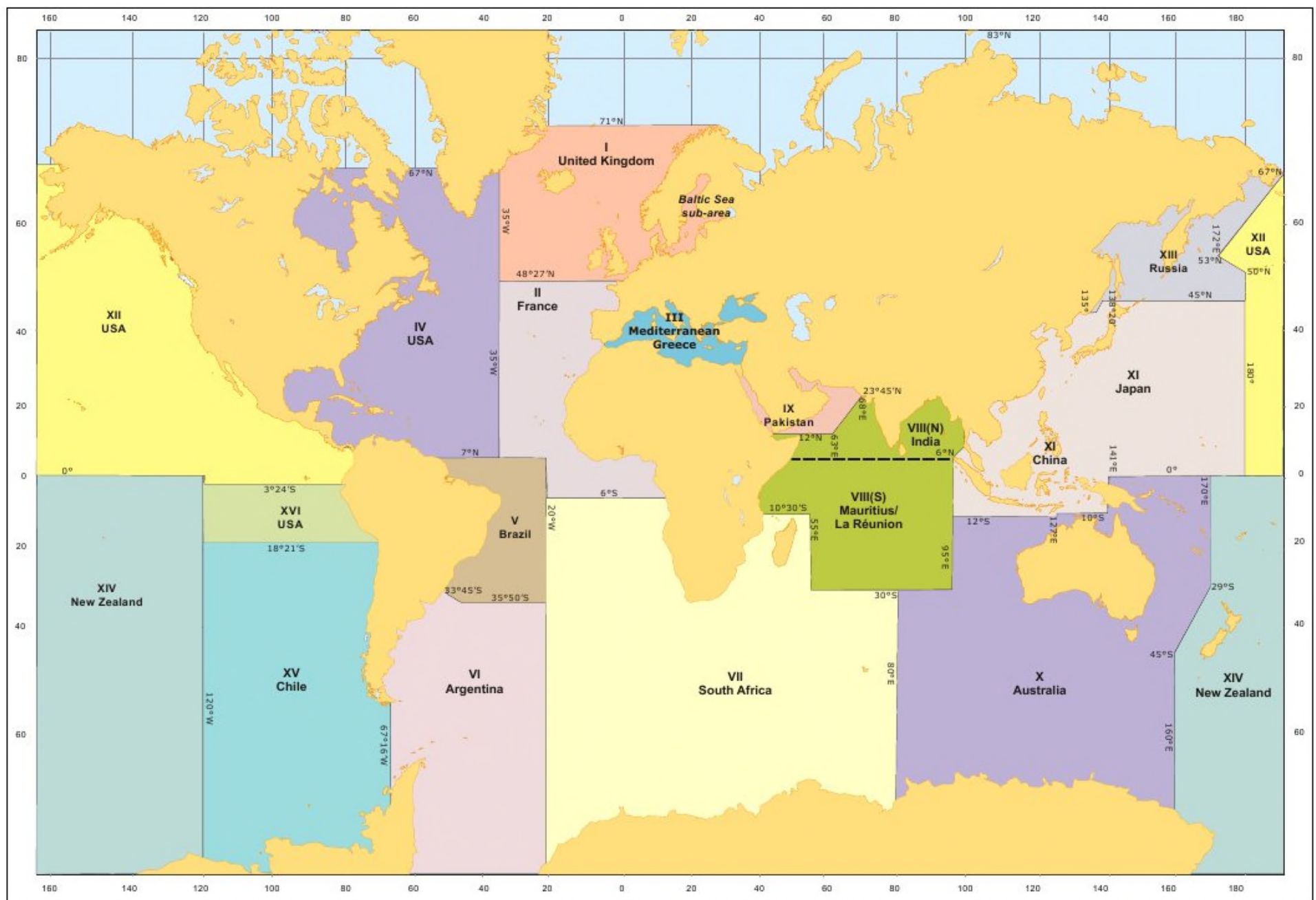


Non El Nino 1995



El Nino 1992

WEATHER SOURCES



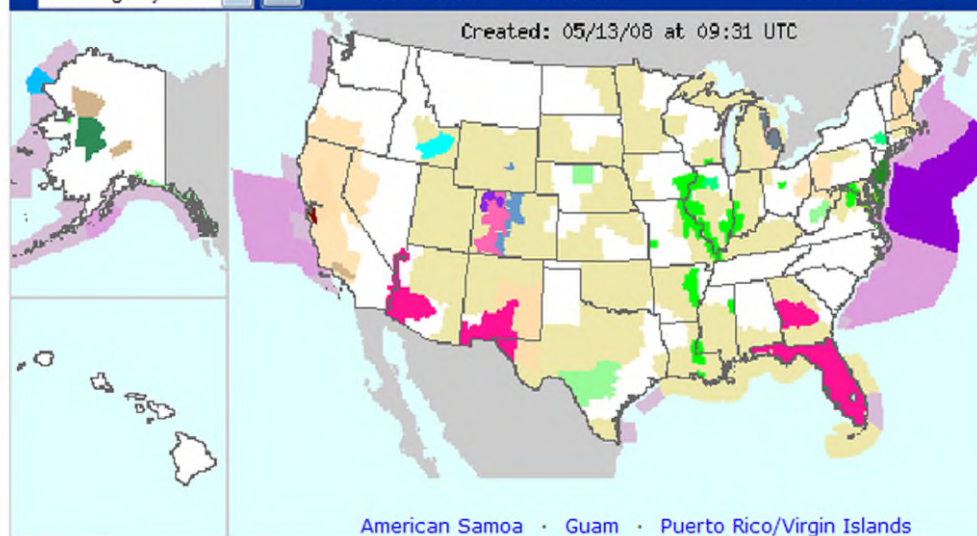
source WMO/OMM



National Weather Service

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"City, St" [XML](#) [RSS Feeds](#)**Warnings**[Current](#)[By State/County...](#)[UV Alerts](#)**Observations**[Radar](#)[Satellite](#)[Snow Cover](#)[Surface Weather...](#)[Observed Precip](#)**Forecasts**[Local](#)[Graphical](#)[Aviation](#)[Marine](#)[Hurricanes](#)[Severe Weather](#)[Fire Weather](#)**Text Messages**[By State](#)[By Message Type](#)[National](#)**Forecast Models**[Numerical Models](#)[Statistical Models...](#)[MOS Prod](#)[GFS-LAMP Prod](#)**Climate**[Past Weather](#)[Predictions](#)**Weather Safety**[Weather Radio](#)[Hazard Assmt...](#)[StormReady /](#)[TsunamiReady](#)[Skywarn™](#)**Education/Outreach****Information Center**[Tsunamis](#)[Publications...](#)**...NOAA Employing New Tools to Accurately Measure Climate Change...**

NOAA announced it will install the last nine of the 114 stations as part of its new, high-tech climate monitoring network. The stations track national average changes in temperature and precipitation trends. The U.S. Climate Reference Network (CRN) is on schedule to activate these final stations by the end of the summer. [Details...](#)

[Warnings & Forecasts](#)[Graphical Forecasts](#)[National Maps](#)[Radar](#)[Water](#)[Air Quality](#)[Satellite](#)[Climate](#)[Warnings By State](#) [Click Below To Zoom In.](#)[Tabs At A Glance](#)[American Samoa](#) • [Guam](#) • [Puerto Rico/Virgin Islands](#)

- Heavy Snow Warning
- Winter Storm Warning
- Storm Warning
- Coastal Flood Warning
- Flood Warning
- Gale Warning
- Freeze Warning
- Red Flag Warning
- Flood Advisory

- Coastal Flood Advisory
- High Surf Advisory
- Snow Advisory
- Heavy Freezing Spray Warning
- Dense Smoke Advisory
- Small Craft Advisory
- Brisk Wind Advisory
- Dense Fog Advisory
- Wind Advisory

- Air Quality Alert
- Flood Watch
- Excessive Heat Watch
- Fire Weather Watch
- Coastal Flood Statement

N W S

National Weather Service Forecast Office

Honolulu, HI

weather.gov



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Local forecast by
"City, St" or Zip Code

City, St

Go

NOAA > NWS > WFO Honolulu

WWA Map

Hawaii Surface
Analysis

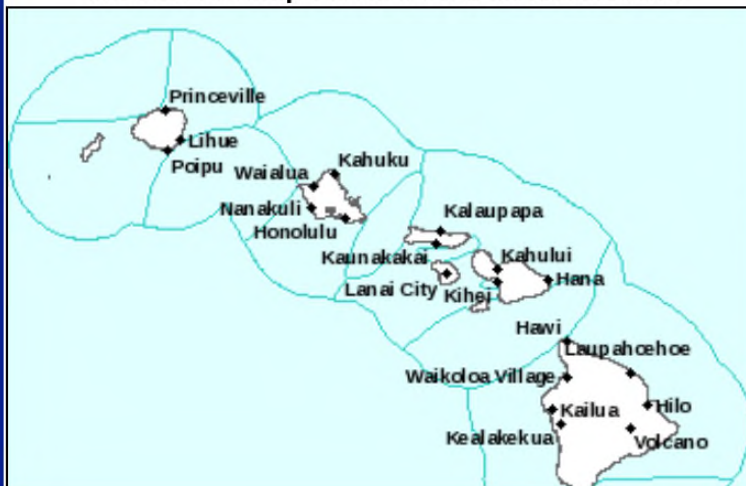
24 hour
Forecast Map

48 hour
Forecast Map

72 hour
Forecast Map

Last 3 hour
Precipitation

Click on the map below for the latest forecast.



Read watches,
warnings &
advisories.



There are no watches,
warnings, or advisories
at this time.

Hawaii Area Synopsis

Light trade winds will return across the islands this weekend as a ridge of high pressure retreats northward. Winds will begin to swing back to southerlies late Sunday as a front approaches the state from the northwest. The front will move through the islands Tuesday and Wednesday, bringing a good chance of showers along with windy conditions through late next week.

Updated: 03/04/2016 8:08 pm HST

weather.gov/hawaii

Add this widget to your page

Boston, MA

[Home](#)[News](#)[Organization](#)Search for: ☒ NWS ☐Point Forecast: Hyannis MA
41.64N -70.32W

Last Update: 4:07 am EDT

Hourly Weather Forecast Graph

[\[hide menu\]](#)

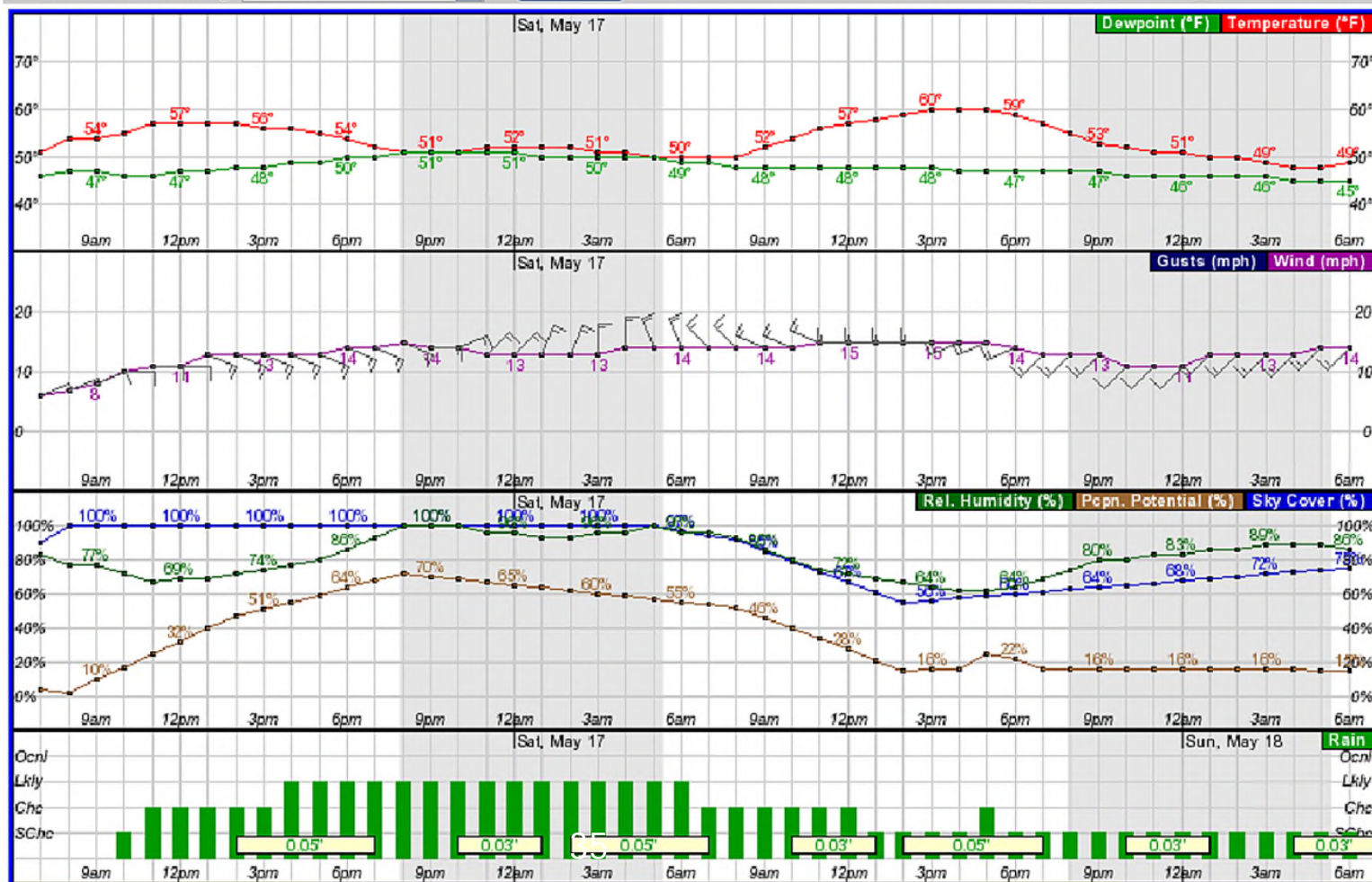
<input checked="" type="checkbox"/> Temperature	<input checked="" type="checkbox"/> Surface Wind	<input type="checkbox"/> Thunder
<input checked="" type="checkbox"/> Dewpoint	<input checked="" type="checkbox"/> Sky Coverage	<input checked="" type="checkbox"/> Rain
<input type="checkbox"/> Heat Index	<input checked="" type="checkbox"/> Precipitation Potential	
	<input checked="" type="checkbox"/> Relative Humidity	

48-Hour Period Starting: 7am Fri, May 16

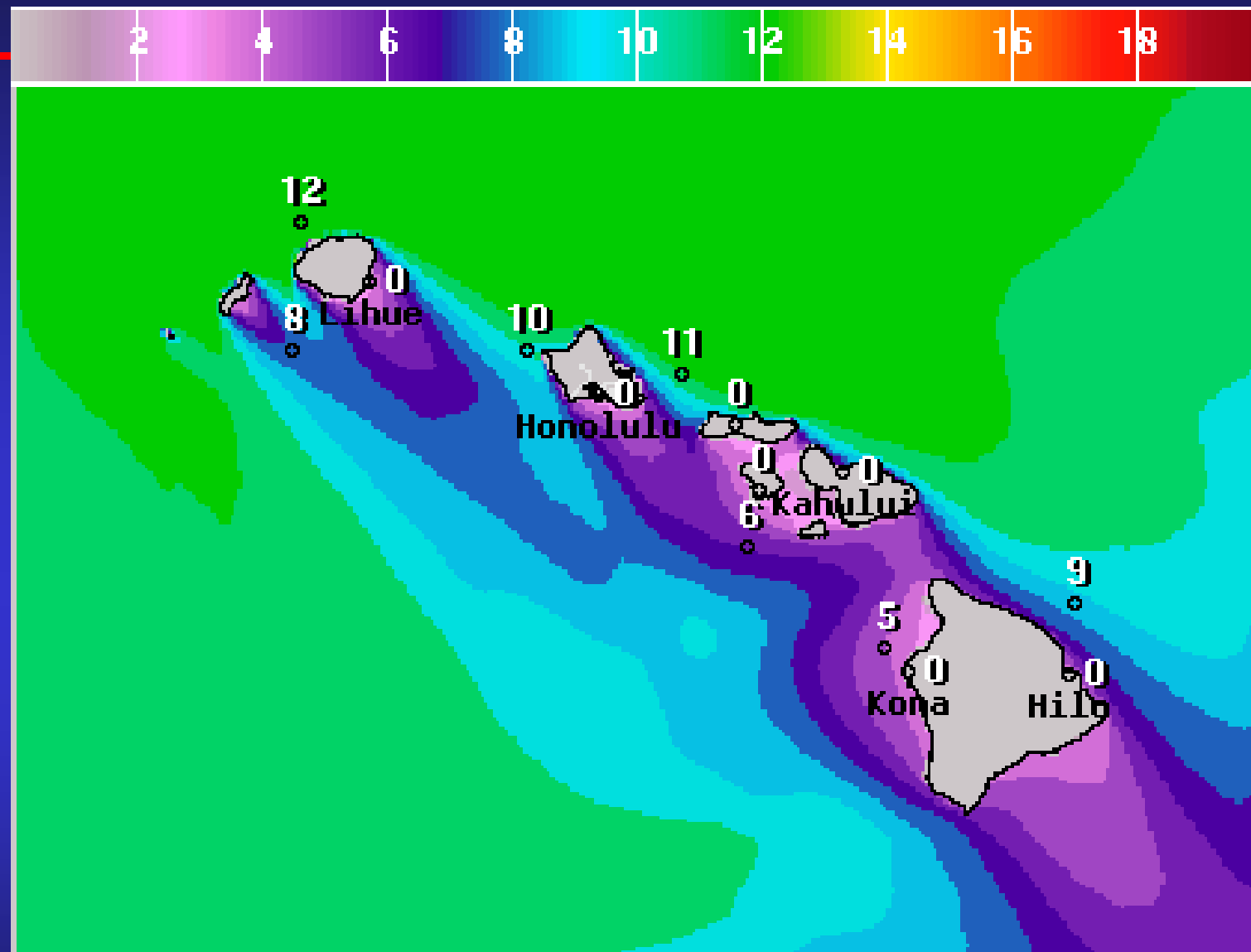
Submit

Back 2 Days

Forward 2 Days



WAVE GRAPHICS



Wave Height(ft) Ending Sun Mar 06 2016 2AM HST

(Sun Mar 06 2016 12Z)



National Digital Forecast Database

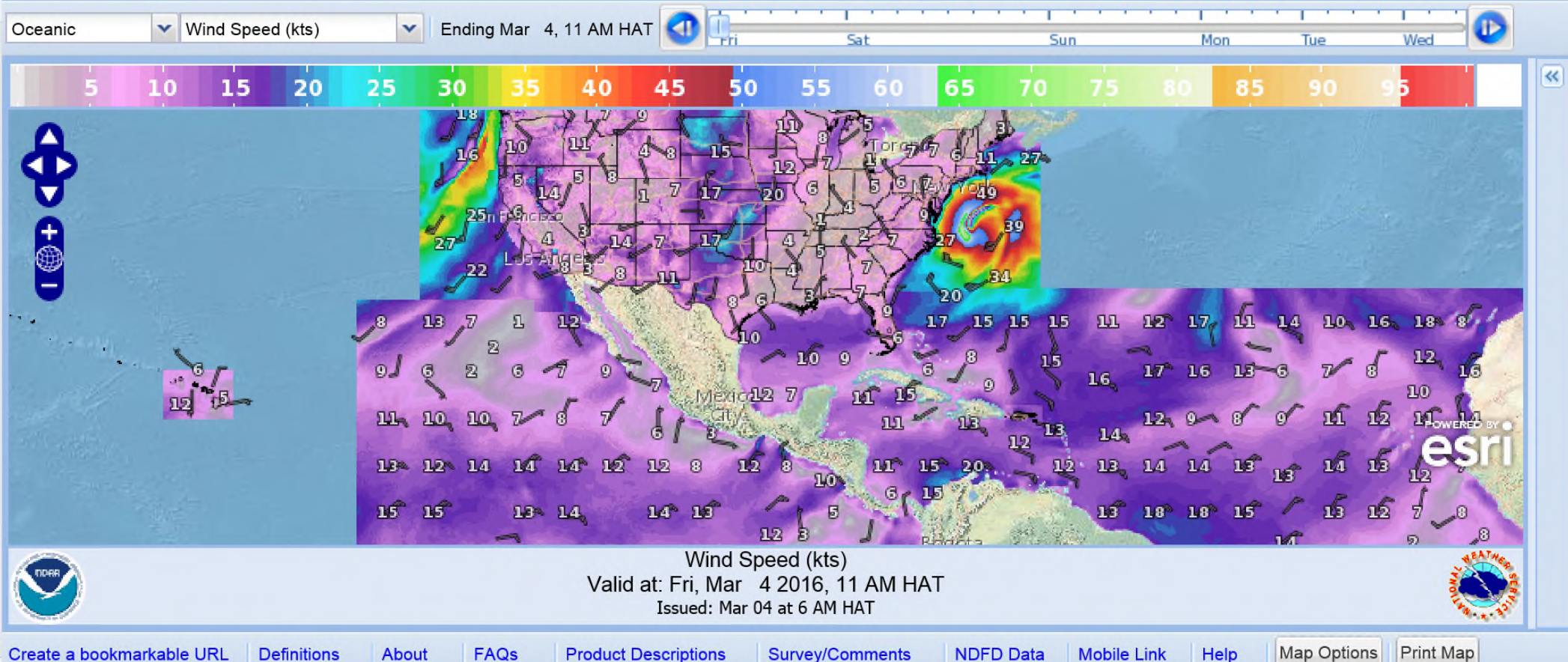
18z issuance

Graphic created-Mar 04 8:31AM HST



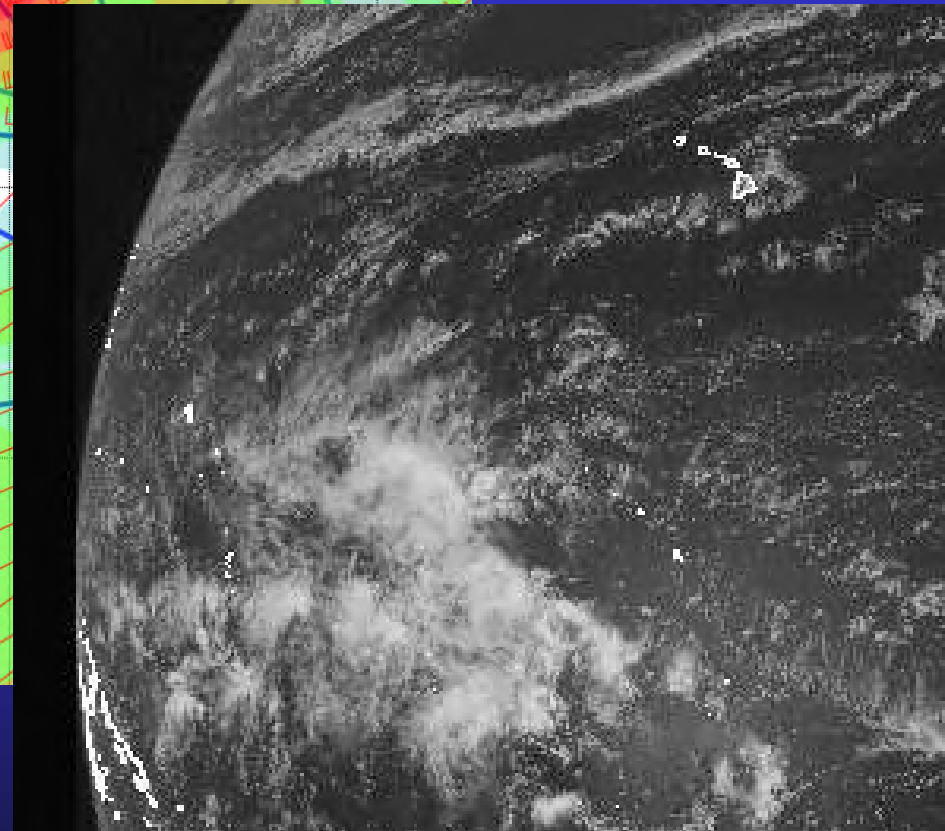
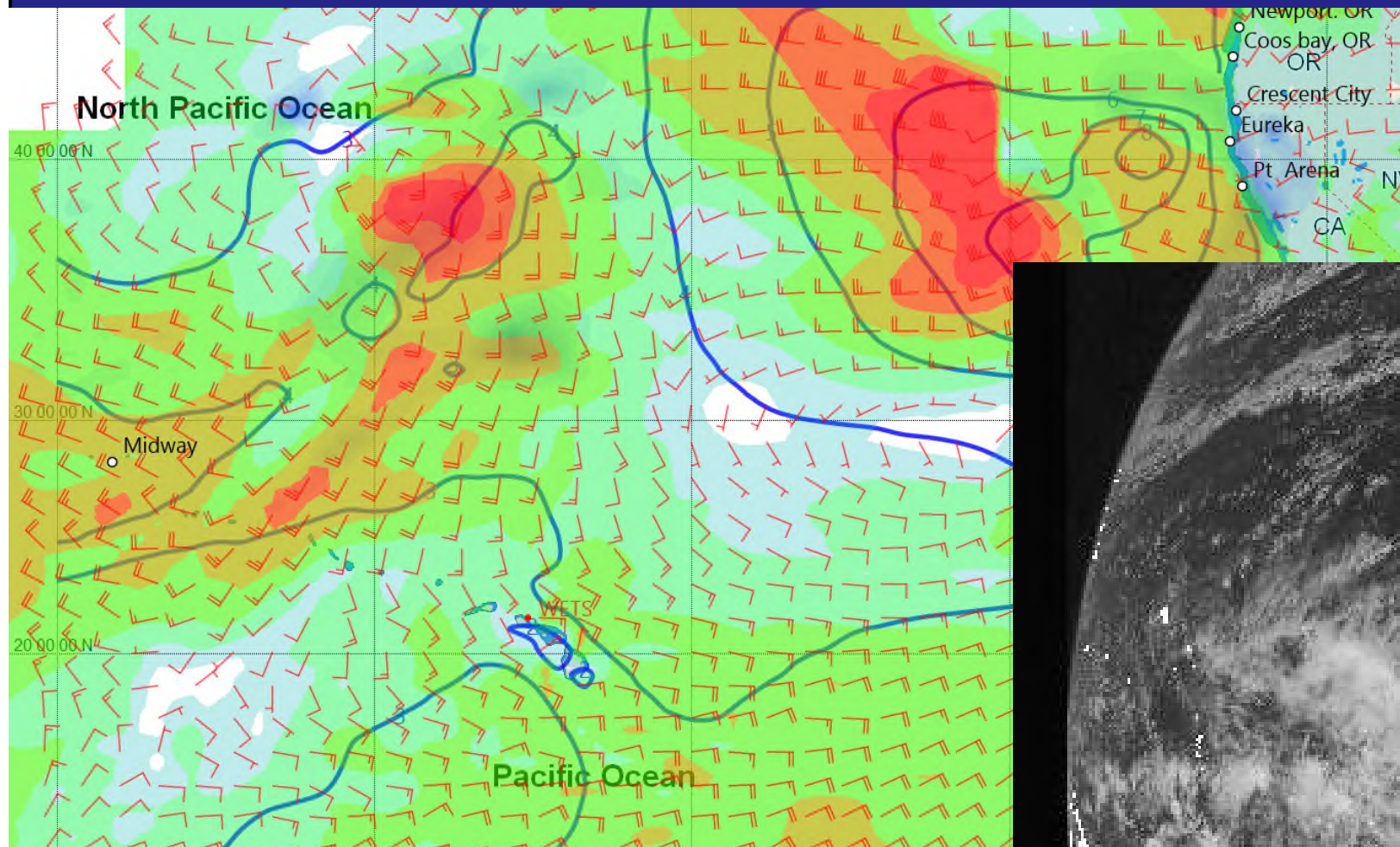
DIGITAL WEATHER

National Digital Forecast Database Display



GRB WEATHER

Wave Heights & Winds



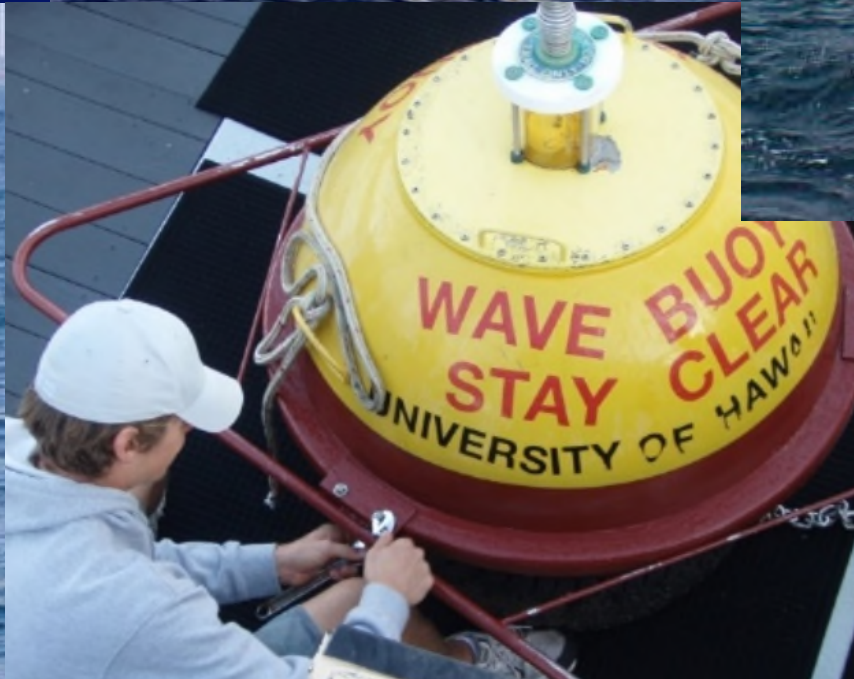
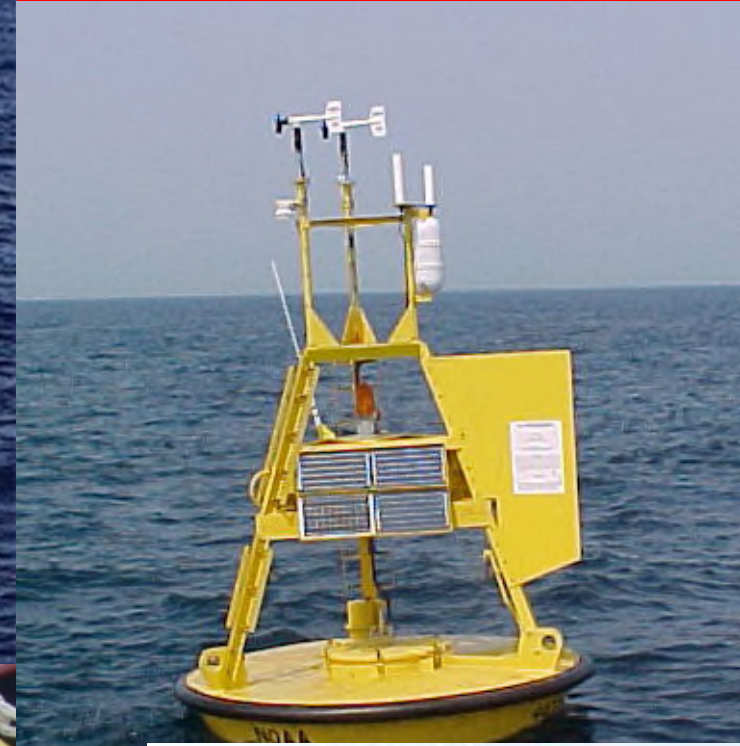
NOAA RADIO

- NOAA Weather Radio

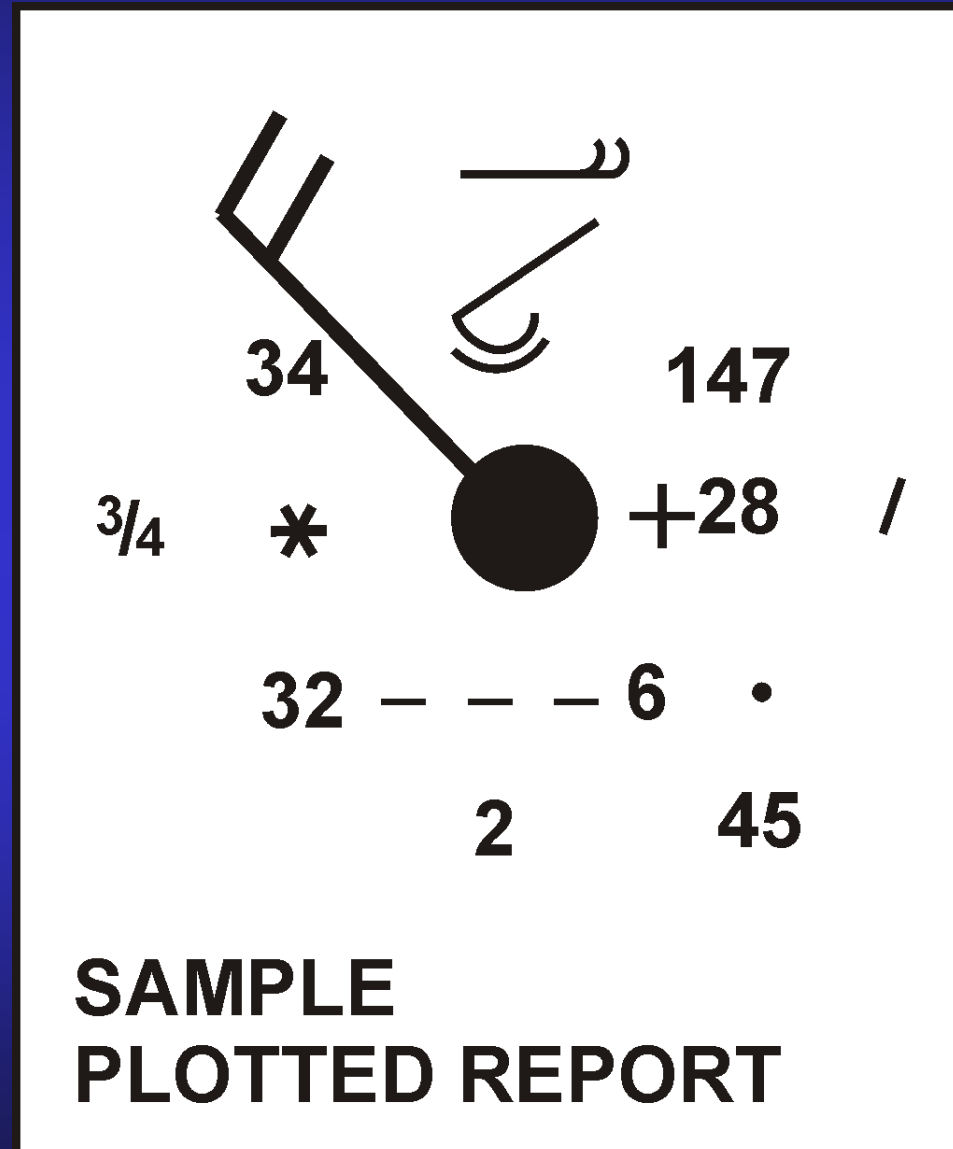
- broadcasts 24/7
- Has 7 VHF channels to avoid interference from overlapping areas
- covers all 50 states and coastal areas
- broadcasts tone alerts warning of severe weather
- forecasts river conditions in river areas
- All handheld and other marine VHF radios can receive NOAA broadcasts



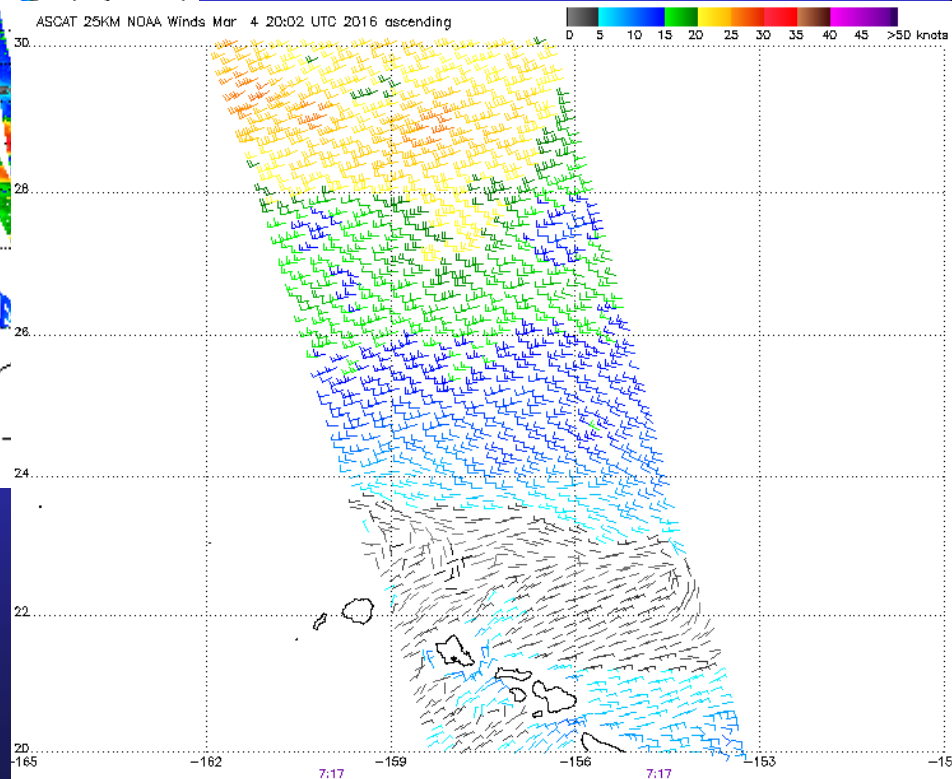
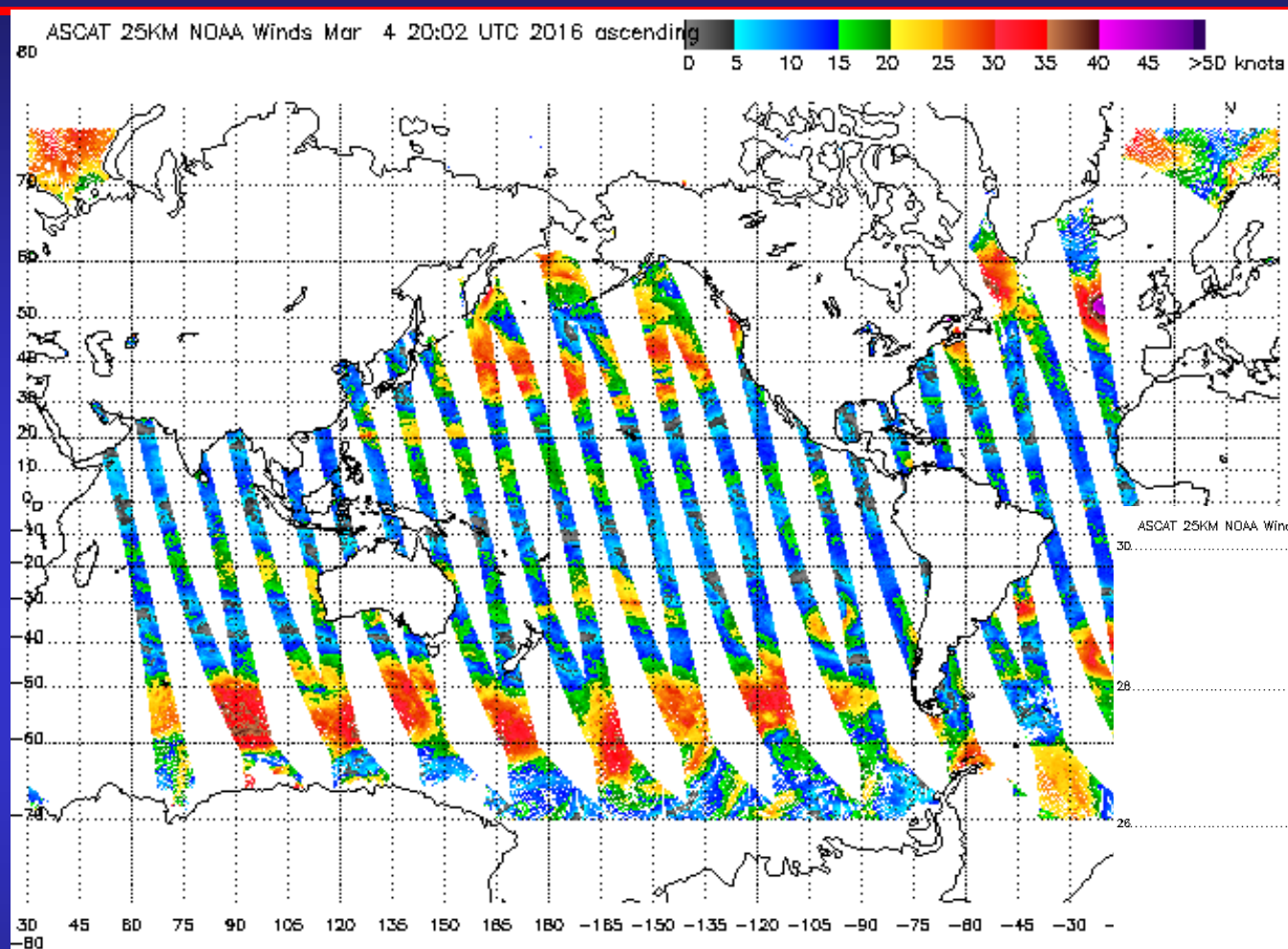
OBSERVATIONS



STATION REPORT



WINDS FROM SPACE



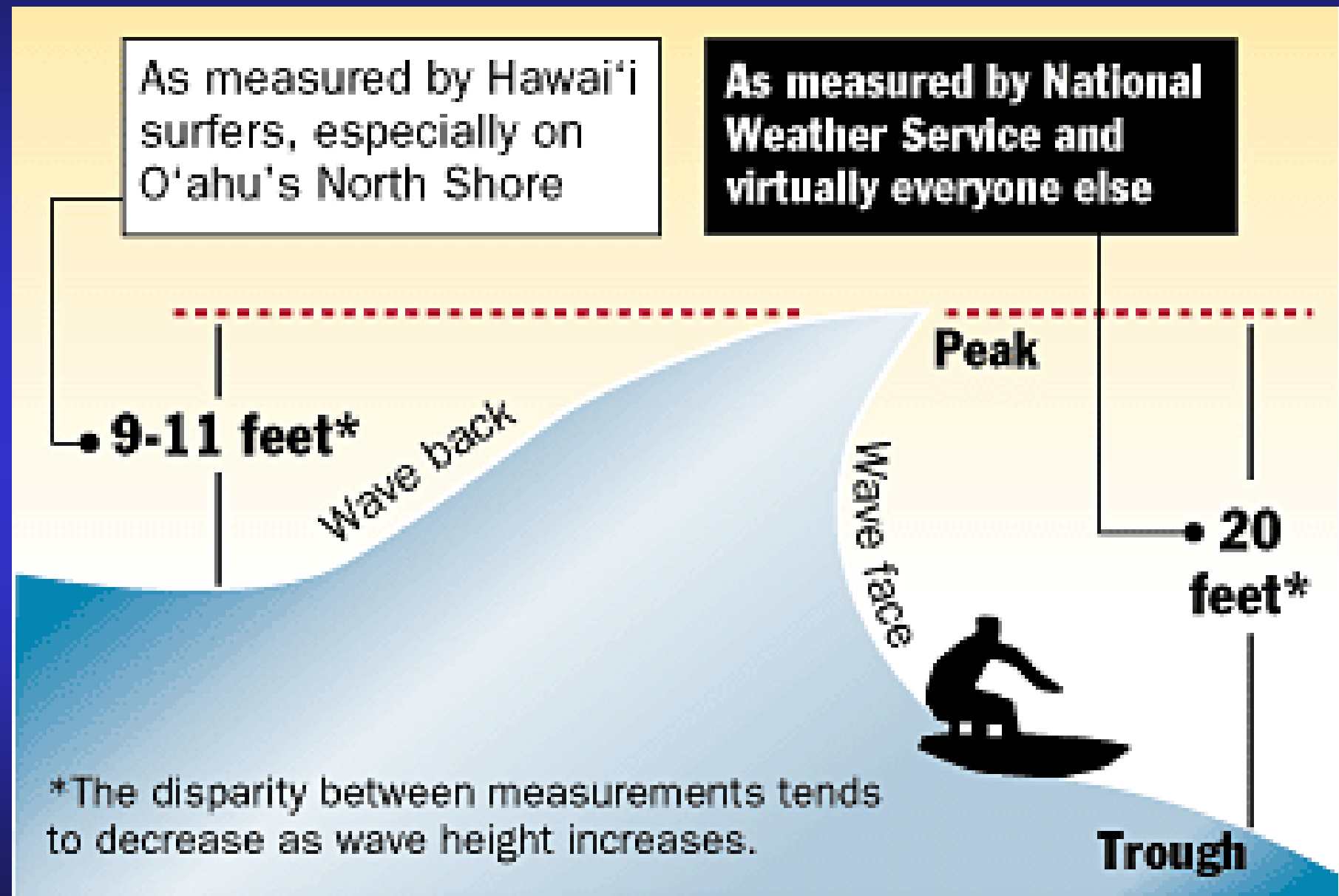
Notes: 1) Times are GMT 2) Times along bottom correspond to measurement at 25N
3) Data buffer is 22 hrs from Mar 4 20:02 UTC 2016 4) Black wind barbs indicate possible contamination
NOAA/NESDIS/Center for Satellite Applications and Research

W A V E S

The buildup of waves depends on:

- Strength and duration of the wind
- Fetch
- Strength and direction of ocean current
- Bottom depth and topography

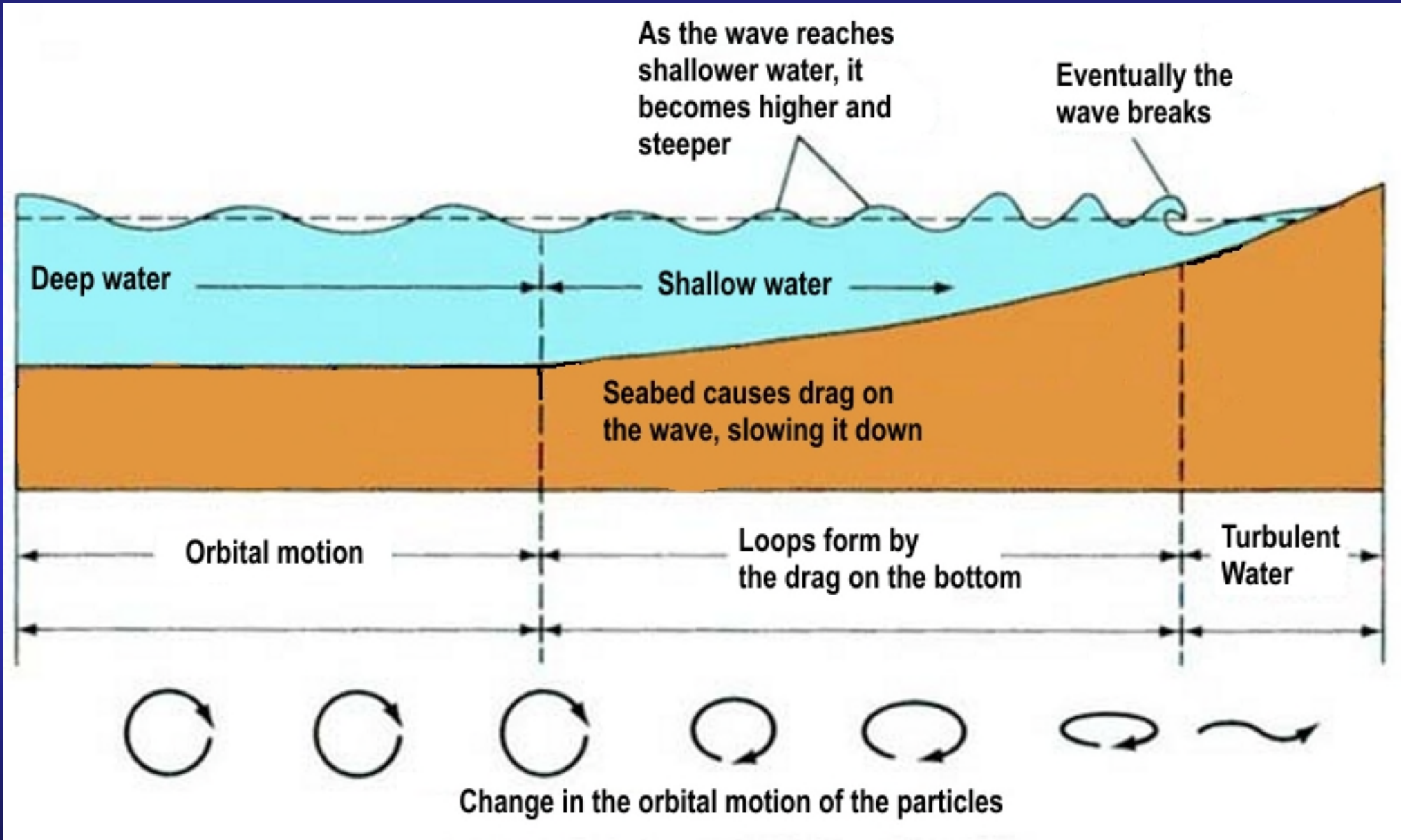
MEASURING WAVES



Source: National Weather Service

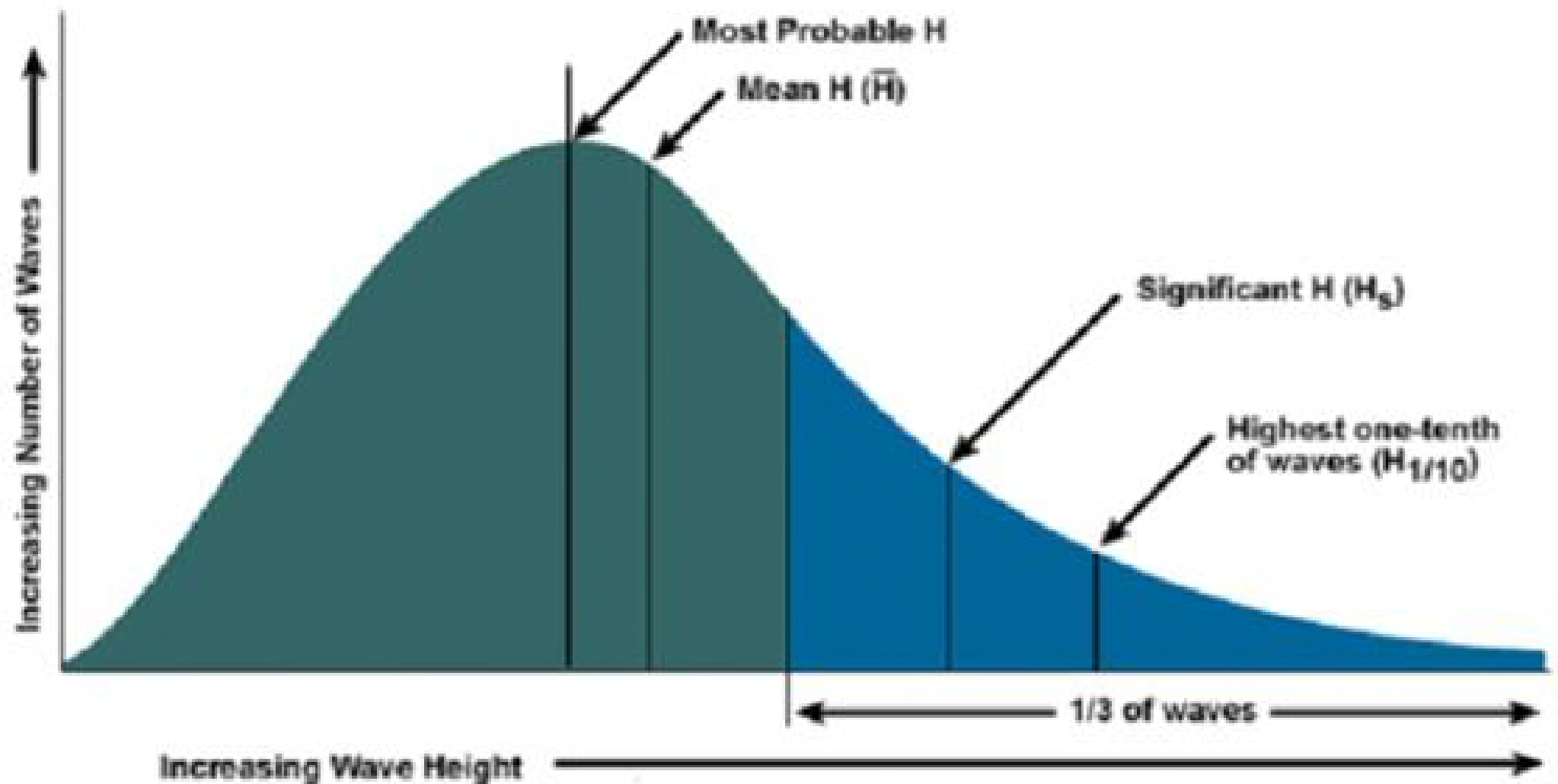
The Honolulu Advertiser

DEEP & SHALLOW WATER



SIGNIFICANT WAVES

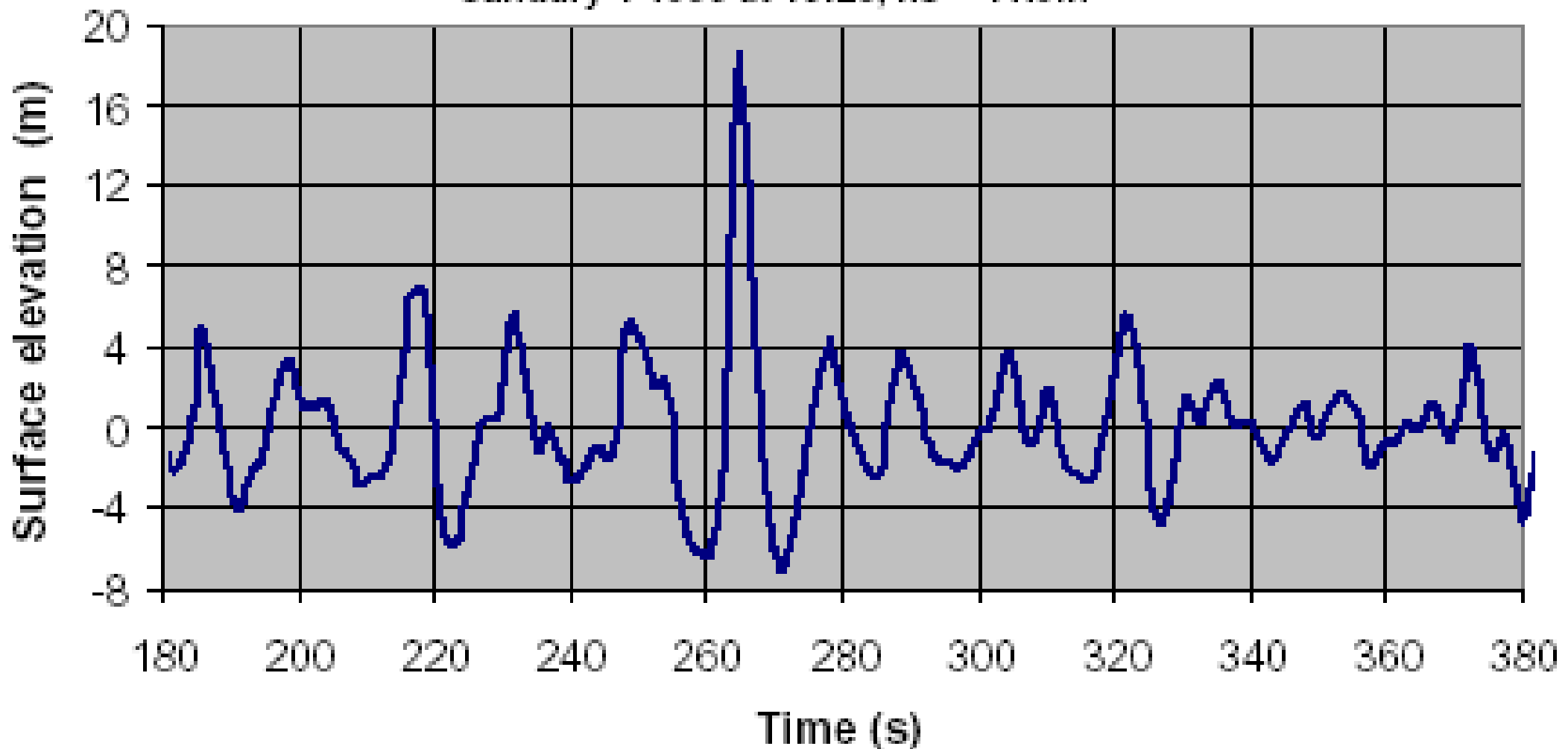
Statistical Wave Distribution



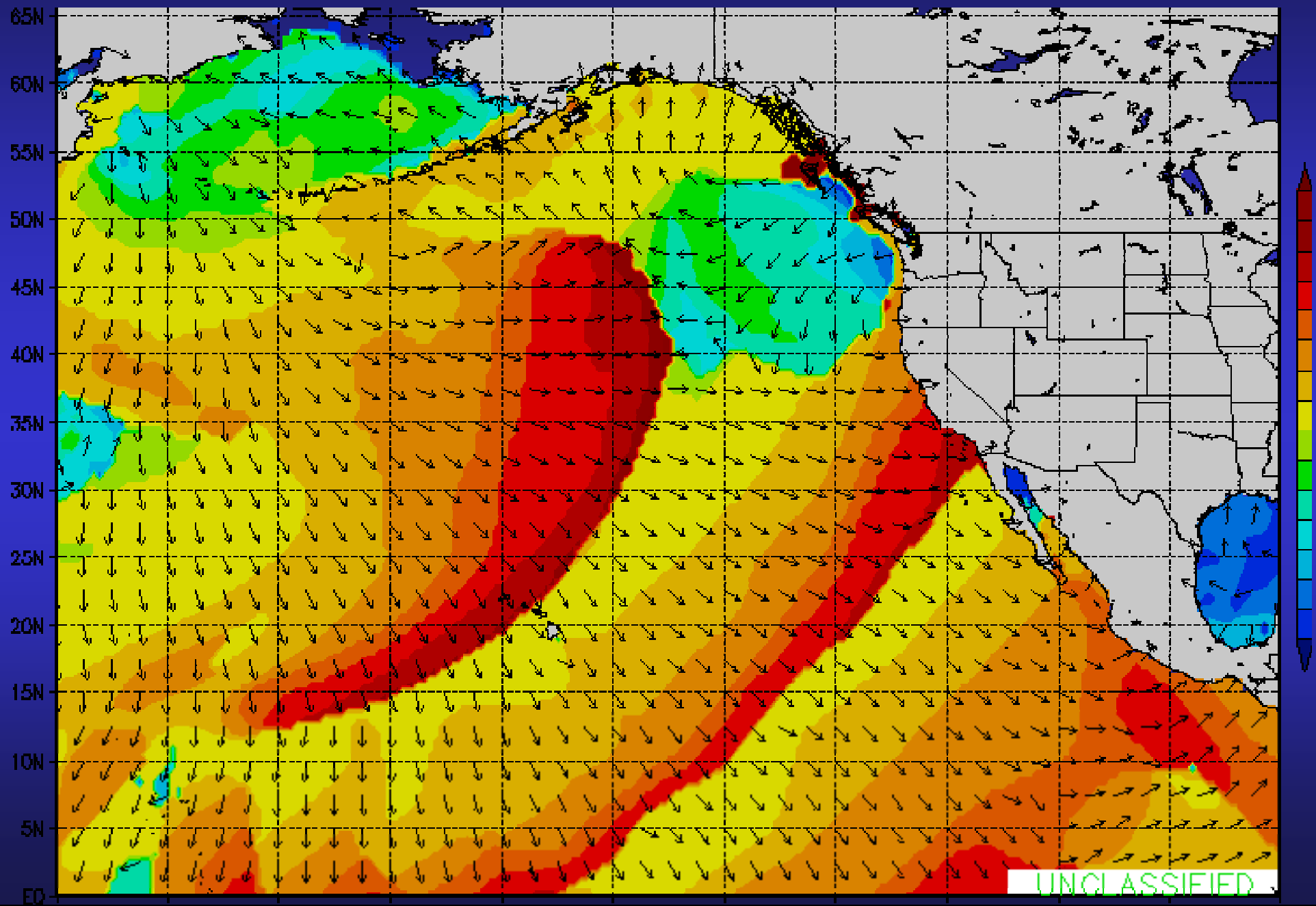
SUDDEN WAVE HEIGHTS

Draupner wave record

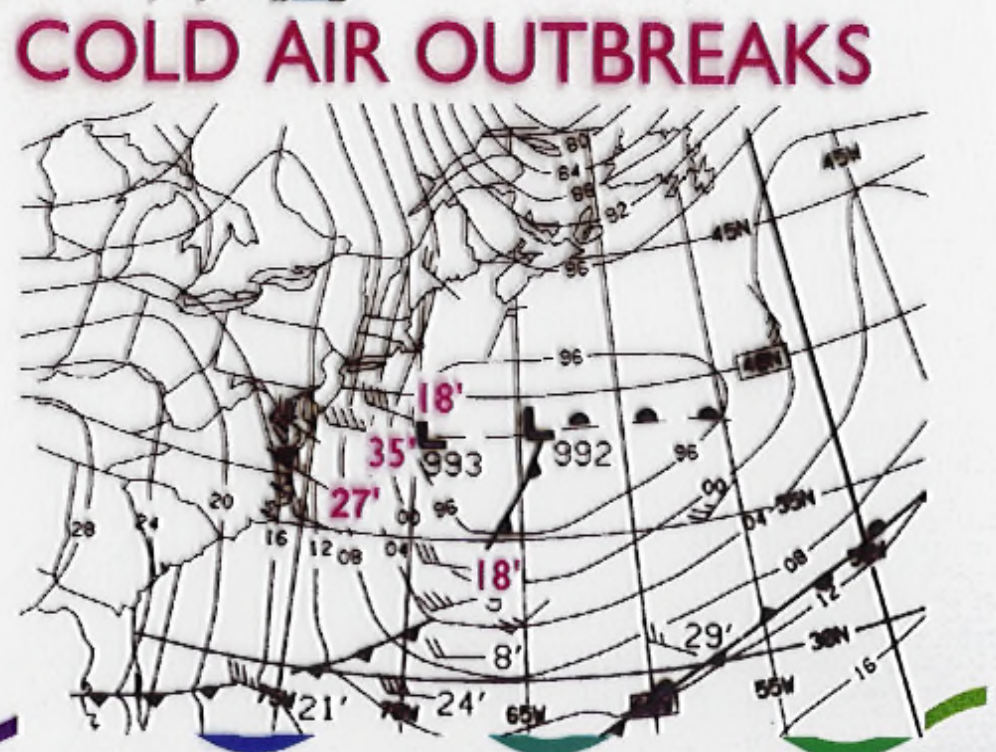
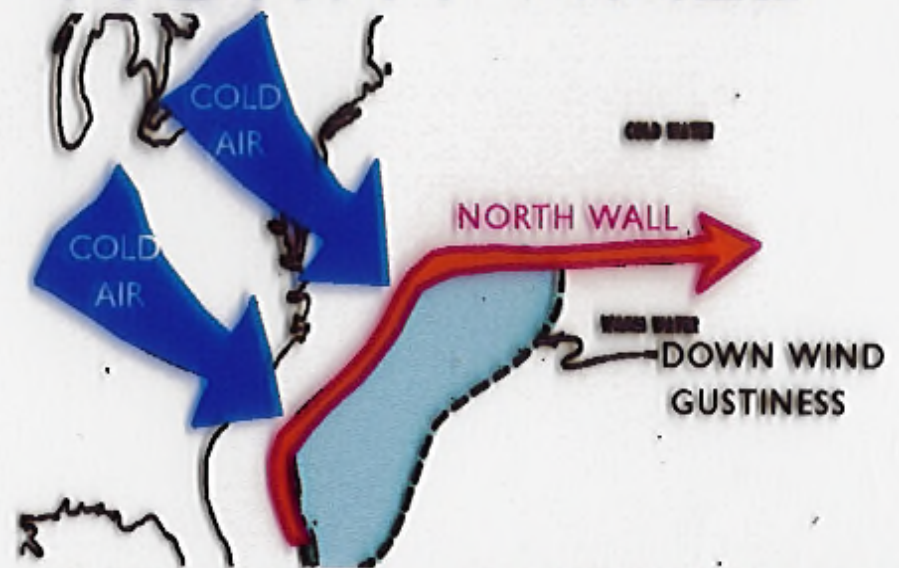
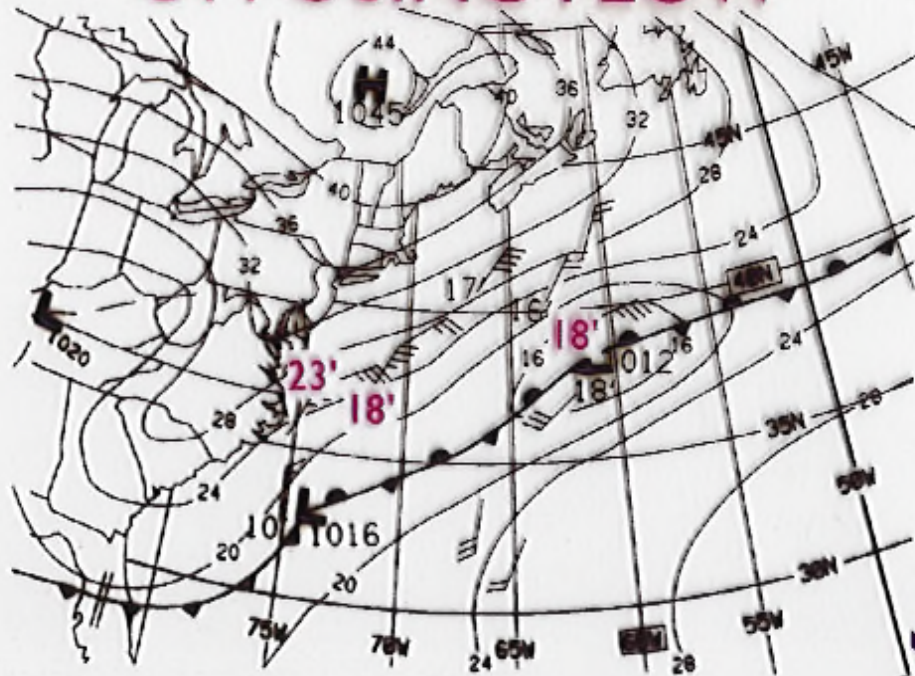
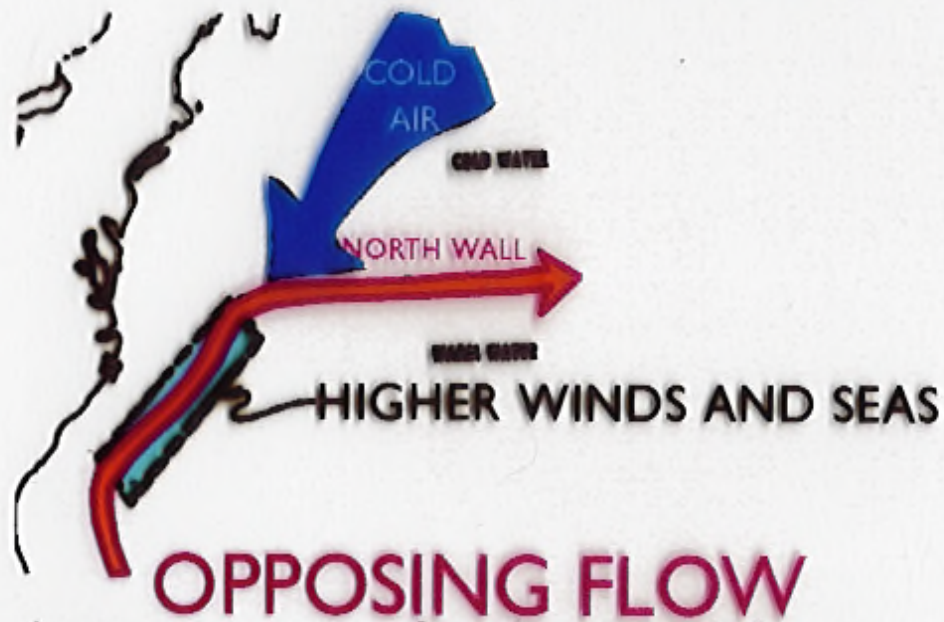
January 1 1995 at 15:20, $h_s = 11.9\text{m}$



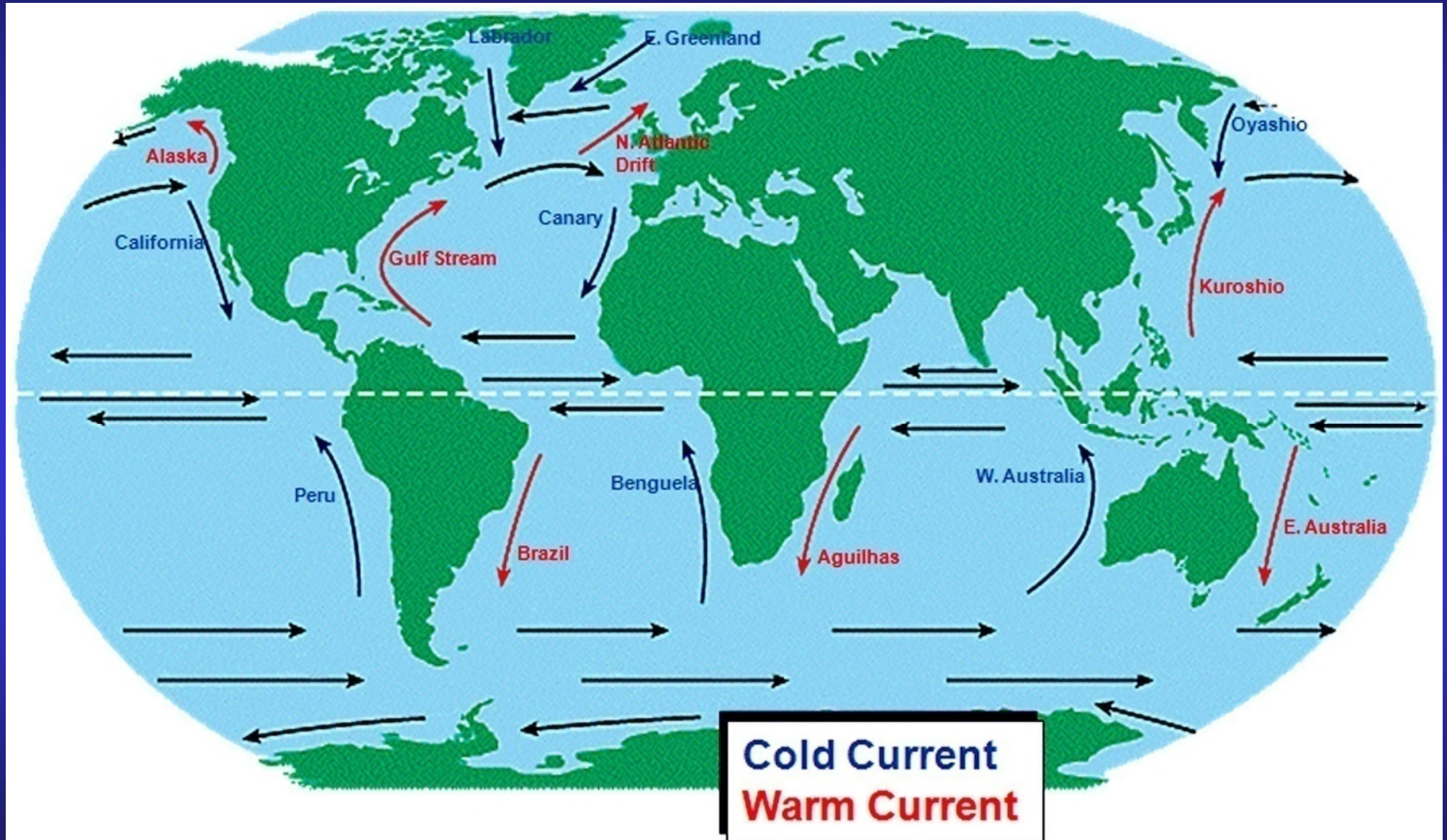
OCEAN SURFACE WAVES



GULF STREAM - NORTH WALL

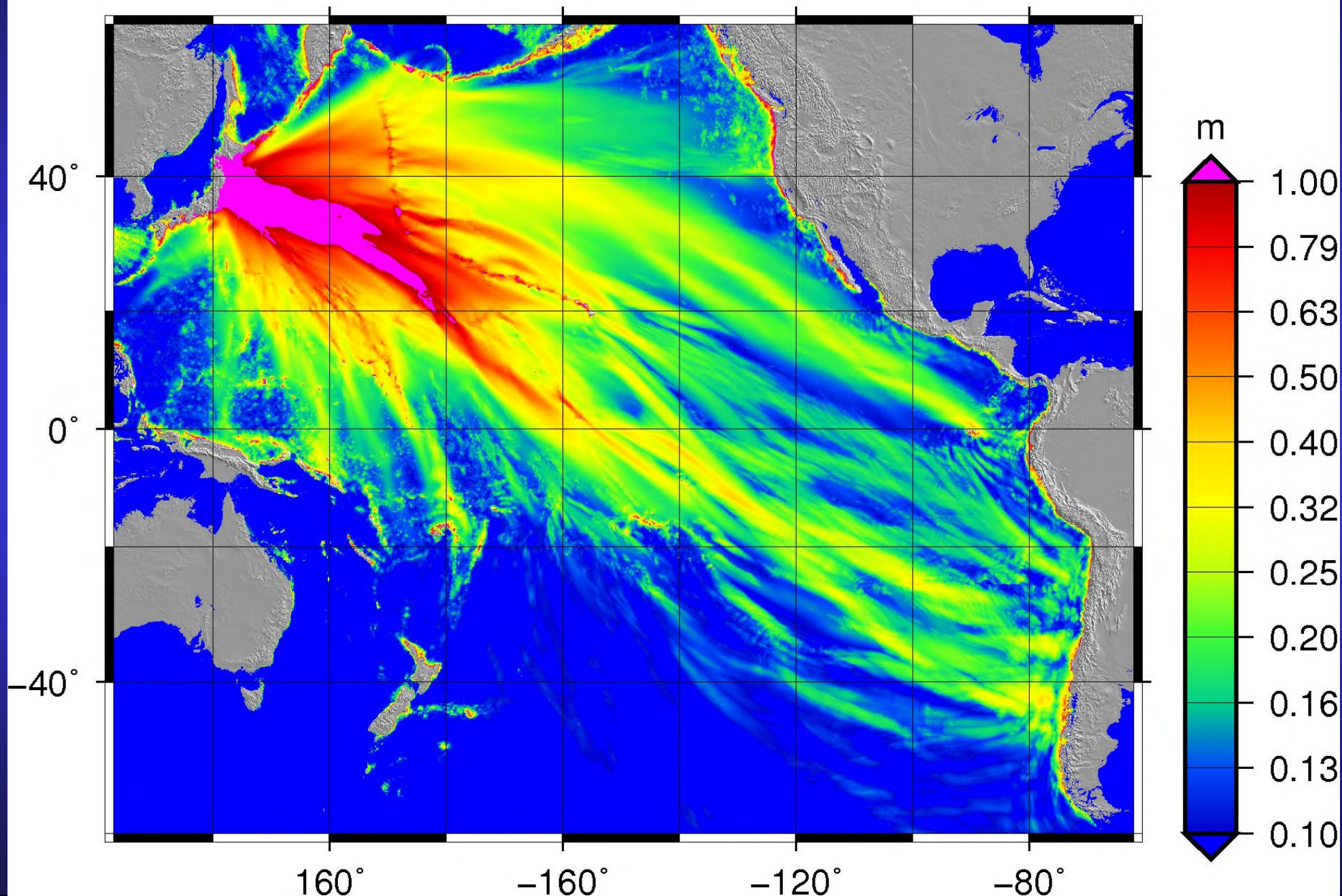


OCEAN CURRENTS



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T S U N A M I S



Open for Questions?

