Introduction to TAFB: Duties, Forecasts, and Products

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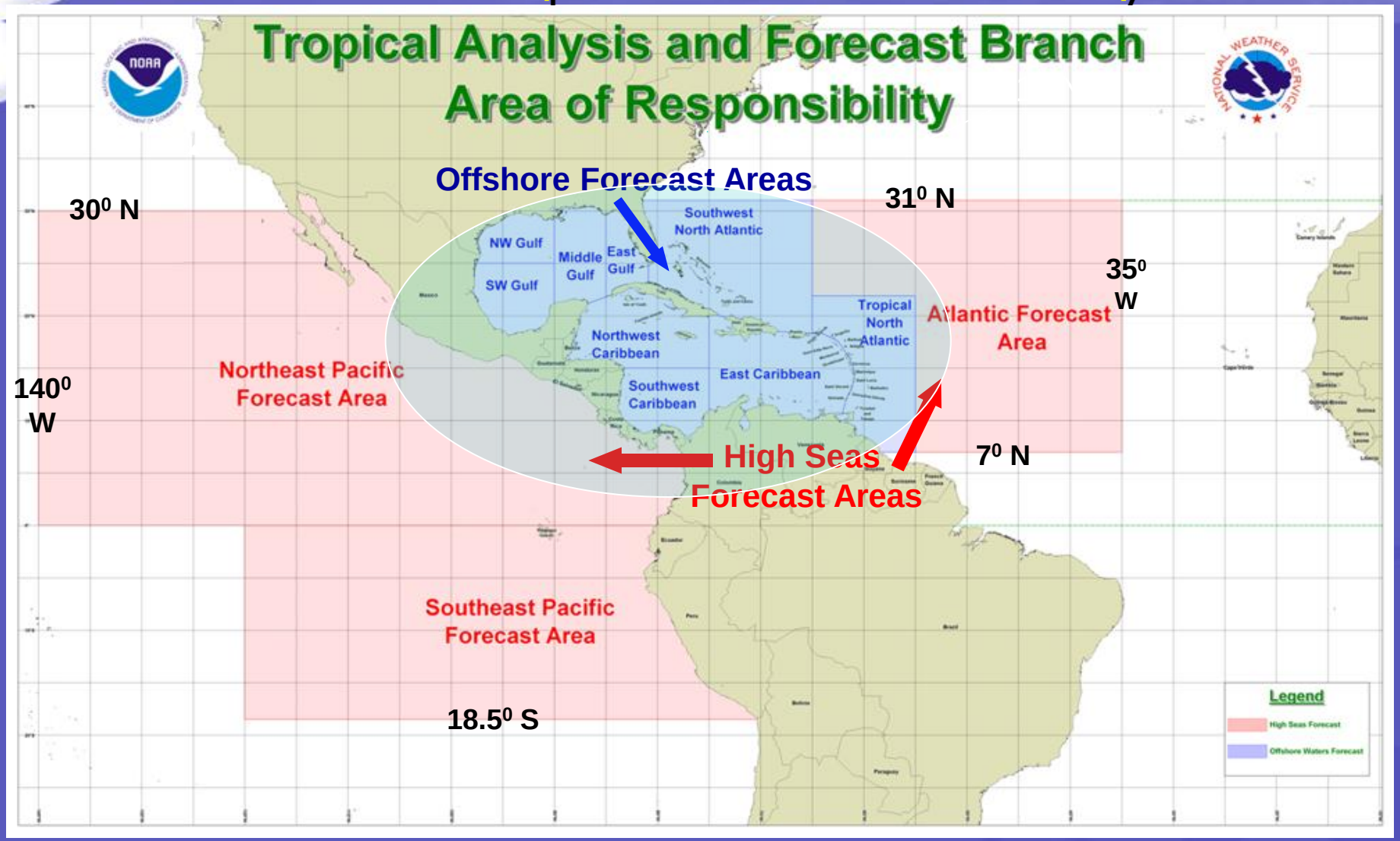
Tropical Analysis and Forecast Branch (TAFB)

- **Year round (24/7/365) products**
  - Marine forecasts (graphical and text) and discussions (MIM)
  - Surface analyses and discussions (TWD)
  - Aviation forecasts and warnings (backup responsibilities) ***
  - Satellite-derived rainfall estimates
- **Hurricane Season**
  - Tropical cyclone intensity estimates using Dvorak technique
  - Media support to NHC (English, Spanish, French)
  - Radar tracking of tropical cyclones
  - Forecast support to Hurricane Specialists (Marine)

TAFB produces 57 graphic products & 48 text products each day.



~ 14 million sq. nautical miles

TAFB Forecast Desks

Pacific/Classification Desk

Atlantic/Pacific Analysis Desk

Atlantic Forecast Desk

4th Desk/Back-up

TAFB Forecast Duties

Pacific/Classification Desk

Marine Forecast Products

Northeast Pacific High Seas Forecast
(FZPN03 KNHC)

Tropical Cyclone Wave Height Estimates

Meteorological Discussion

East Pacific Tropical Weather Discussion
(AXPZ20 KNHC)

Satellite Products

Dvorak Tropical Cyclone Satellite Intensity Estimates

Microwave Satellite Position Estimates

Objective Dvorak Satellite Intensity Estimates

Satellite Rainfall Estimates

Graphical Products

Sea State Analysis
Wind & Wave Forecasts
Wave Period Forecasts
Surface Prog. Forecasts
High Wind Graphic
TC Danger Area Graphic

TAFB Forecast Duties

Marine Forecast Products

Atlantic High Seas Forecast
(FZNT02 KNHC)

Gulf of Mexico Offshore Waters Forecast (FZNT24 KNHC)

Caribbean/Atlantic Offshore Waters Forecast (FZNT23 KNHC)

NAVTEX Forecasts (3)
(FZNT25 KNHC, FZNT26 KNHC, & FZNT27 KNHC)

Atlantic Forecast Desk

Graphical Products

Sea State Analysis
Wind & Wave Forecasts
Wave Period Forecasts
Surface Prog. Forecasts

Meteorological Discussion

Marine Weather Discussion
(AGXX40 KNHC)

TAFB Forecast Duties

Surface Analysis

6-hourly for area from 20S to 30N between 10E and 140W

3-hourly mainly for Gulf of Mexico, Florida, Mexico,

Pan-American Temperature/Precipitation Table

Atlantic/Pacific Analysis Desk

Meteorological Discussion

Atlantic **T**ropical **W**eather **D**iscussion

Graphical Forecast Products

Surface Prog. Forecasts

Additional TAFB Duties

TAFB Staffs "4th" Desk between August 1- October 20.
Relieves other 3 desks during the busy peak of the hurricane season.

Back-Up Responsibilities

- OPC's Atlantic High Seas & Offshore Forecasts
- Honolulu S. Pacific HSF & Satellite Products
- Aviation Products over Caribbean & Gulf of Mexico (FACA & SIGMETS)

4th Desk/Back-up

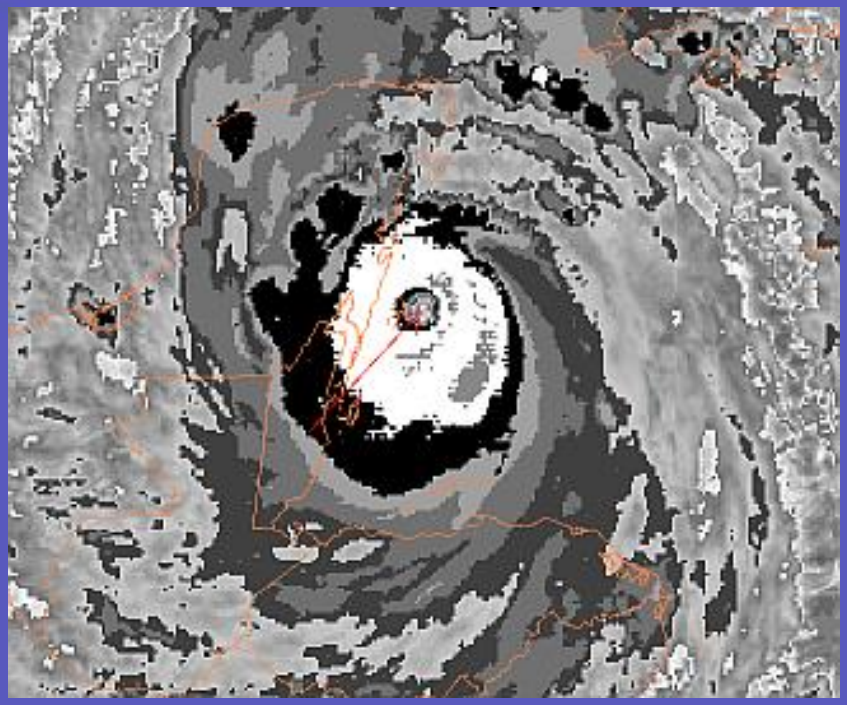
Additional TAFB Duties

Hurricane Support Meteorologists

- WSR-88D radar fixes for landfalling tropical cyclones
- Media support during tropical cyclone events
- Tropical cyclone forecast support
- Hurricane Liaison Team (HLT)

Dvorak Classifications

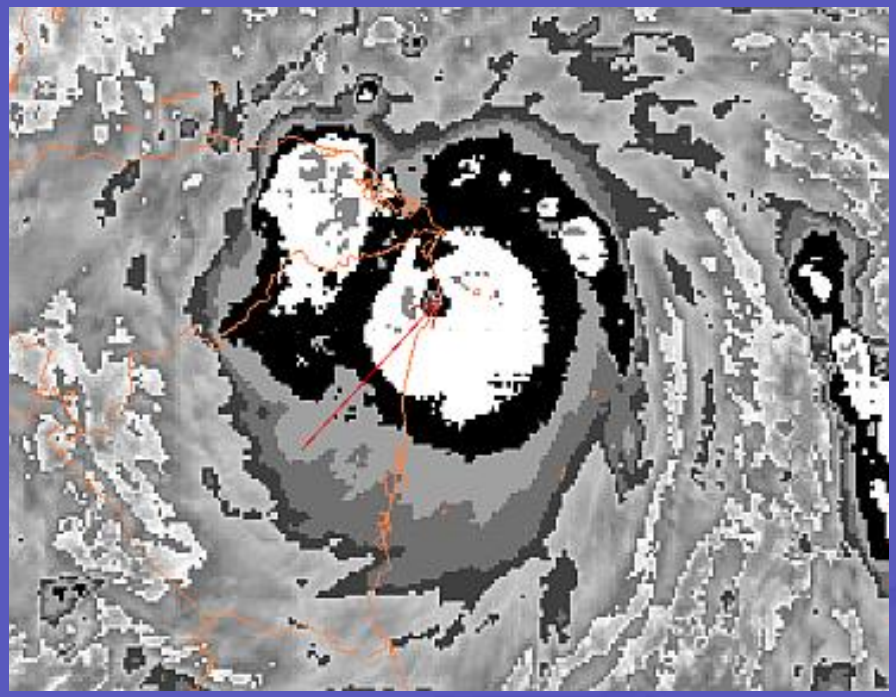
DEAN 21 August 0615 UTC



T 7.0/7.0
140 KT 921 MB

RECON 8/21/0605 UTC
156 KT (FLV) – 140 KT
909 MB

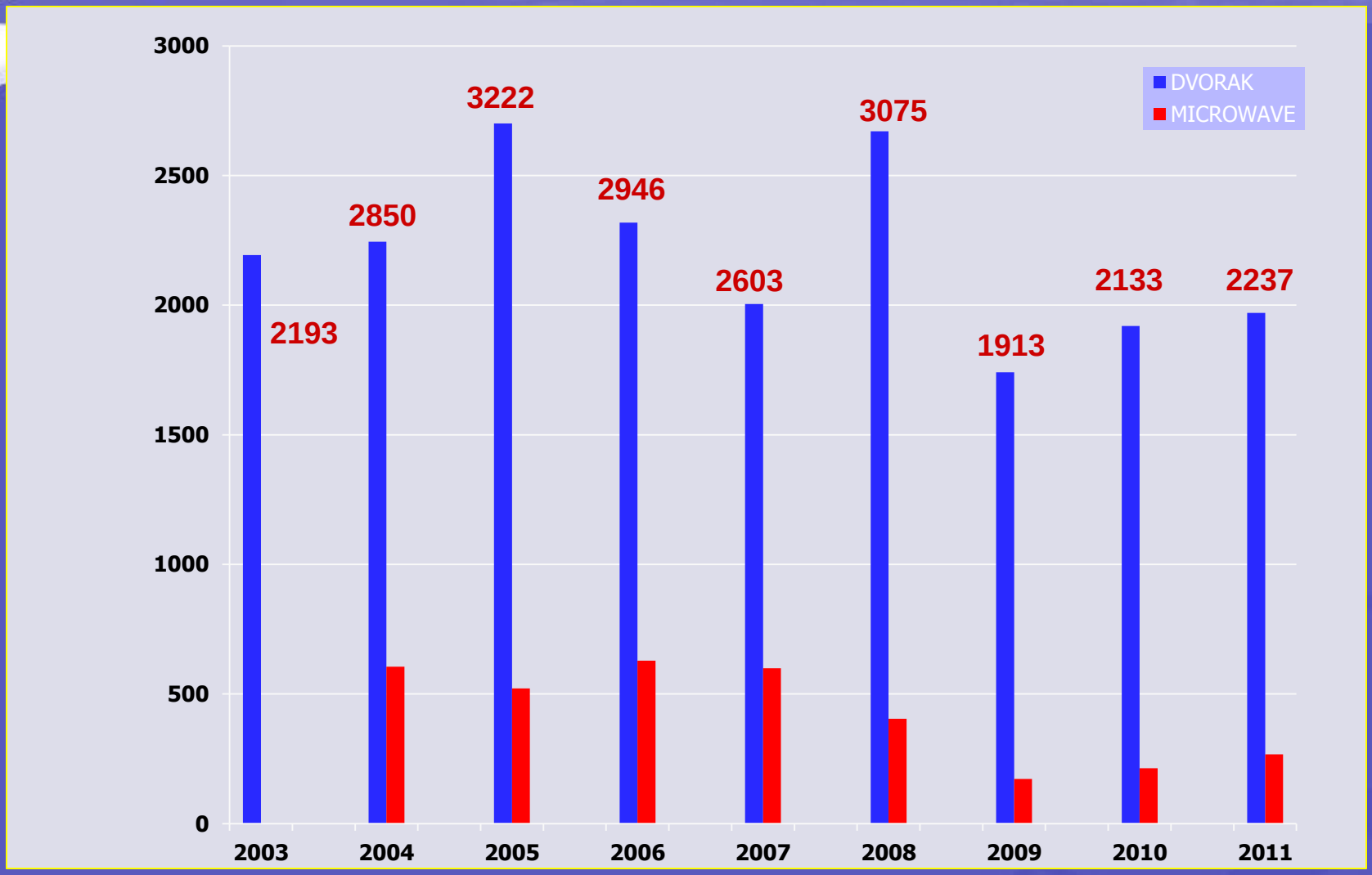
FELIX 4 September 1145 UTC



T 7.0/7.0
140 KT 921 MB

RECON 9/04/0702 UTC
148 KT (FLV) – 133 KT
939 MB

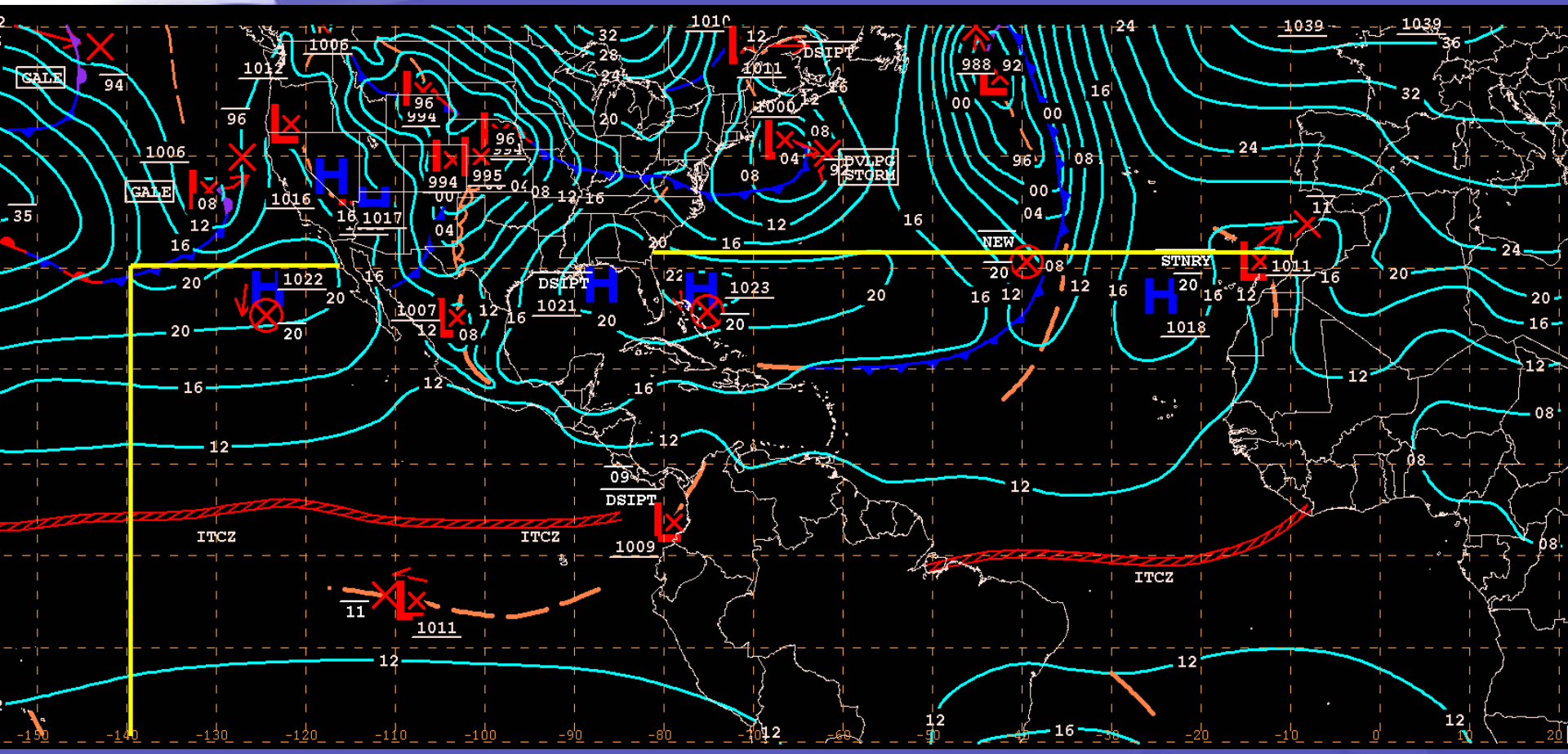
Dvorak Classifications (Intensity & Position Estimates)



Microwave Fixes began in 2004

Surface Analysis
and
Tropical Weather Discussions

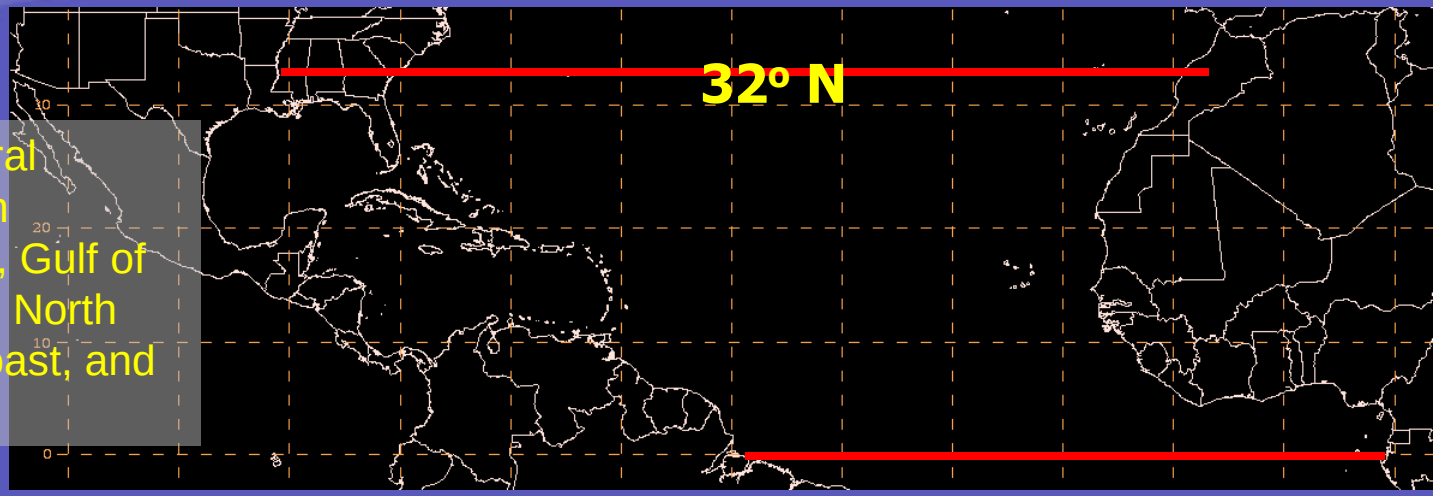
Unified Surface Analysis

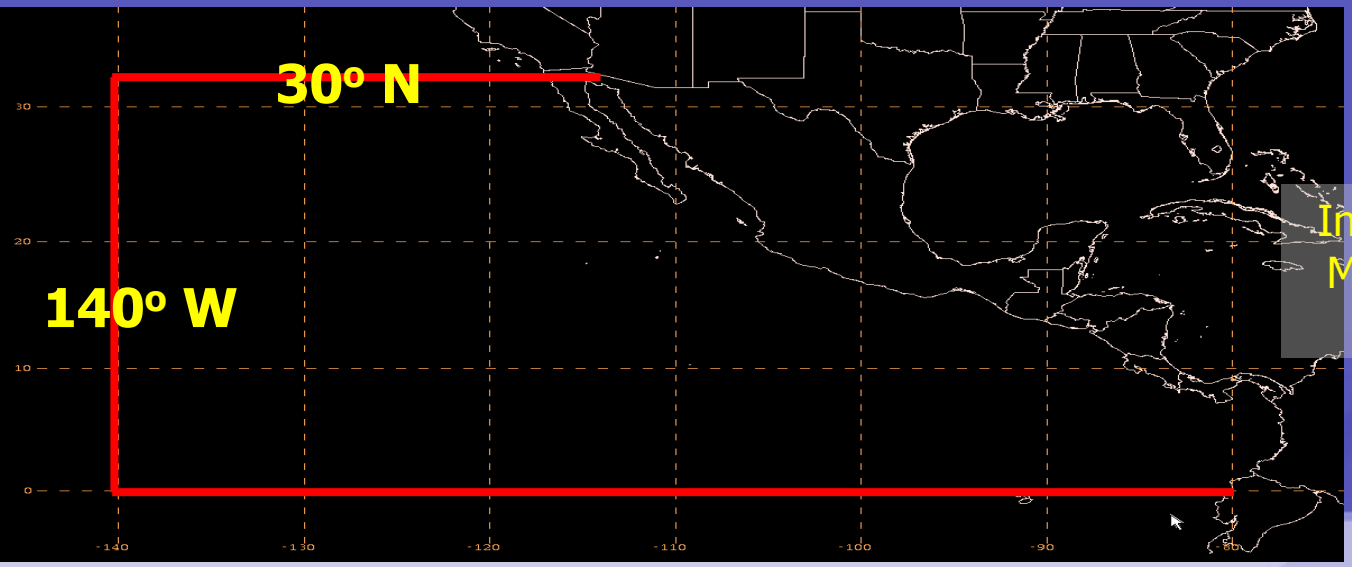


TWD Areas of Responsibility

- North Atlantic

Includes: Mexico, Central America, northern South America, Florida/SE US, Gulf of Mexico, Caribbean Sea, North Atlantic to the African coast, and coastal west Africa





- East Pacific

Includes west coastal areas of Mexico, Central America, and northern South America

What is the Tropical Weather Discussion (TWD)?

- Plain language narrative text product describing:
  - Major synoptic scale features and significant areas of disturbed weather
  - Short-term trends and forecasts (up to ~48 hours)
  - Meteorological reasoning for current features/weather and trends/forecasts
  - Model performance; degree of confidence in forecast
- Two separate products cover tropical North Atlantic and eastern North Pacific Oceans, and adjacent land areas
- Provides tropical weather information to those who need to know the current state of the atmosphere and expected trends

General TWD Format

- Special Features
  - Tropical and Subtropical Cyclone
  - Significant feature that has the possibility of developing into a TC.
- Tropical Waves
- ITCZ
- Discussion- Areas can change with weather pattern
  - Gulf of Mexico
  - Caribbean
  - Western and Central Atlantic
  - Eastern Atlantic

Special Features Section

- Overall structure or appearance of system
- Indicate future intensity changes following current TC forecast
- Discuss associated middle/upper level features and convection

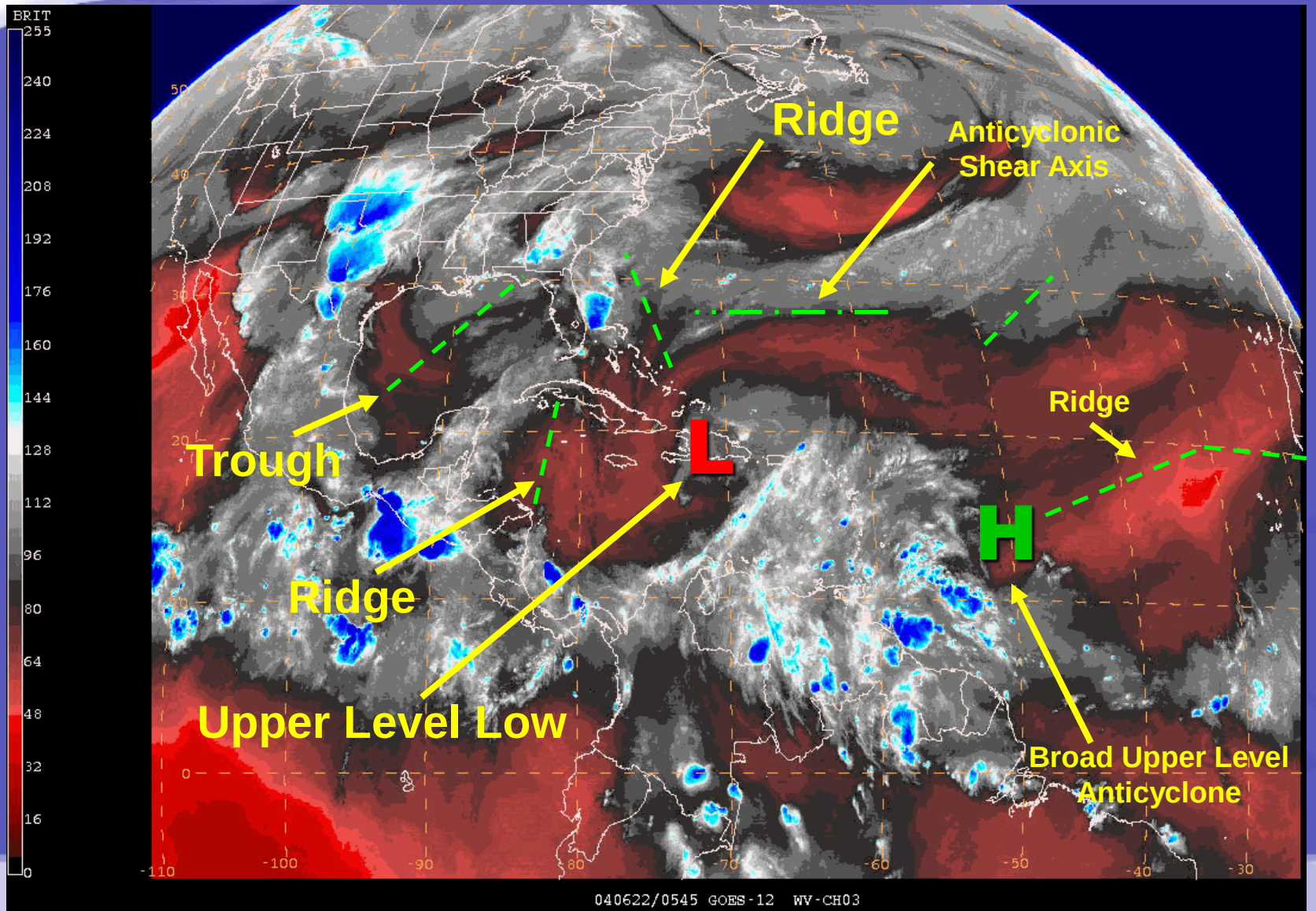
Tropical Waves Section

- Discuss from east to west
- Summarize strength, position (including level of uncertainty), and movement, including reference to familiar geographic locations
- Provide reasons for positioning (wind shifts in timesections, pressure falls, features in satellite Hovmoeller diagrams, etc.)
- Indicate associated convection, other impacts

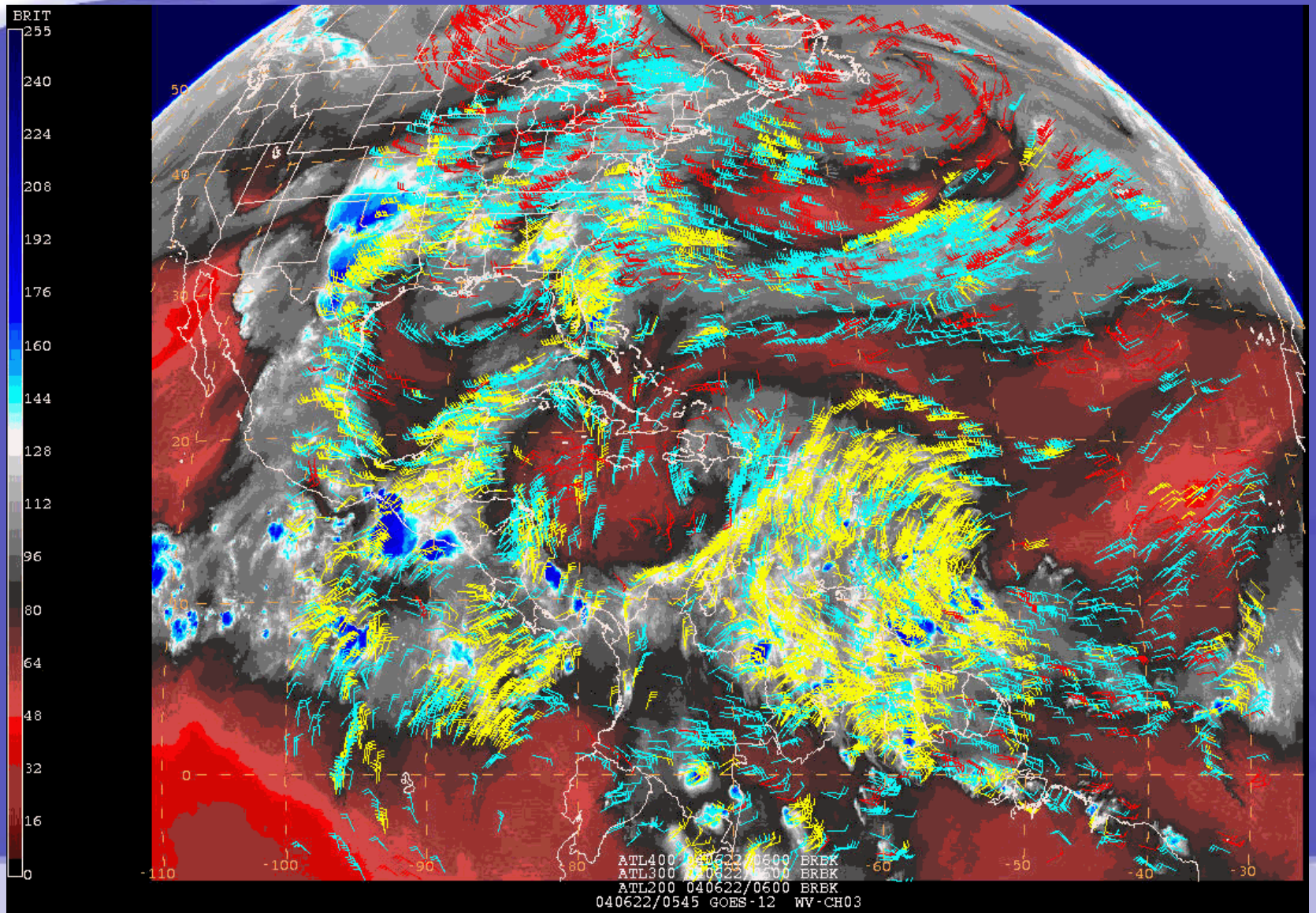
Data and Tools Needed to Construct a TWD

- Climatological knowledge and/or data
- Recent:
  - TAFB surface analyses
  - Surface and upper air observations
  - Geostationary infrared, water vapor, and visible imagery
  - Satellite-derived winds (e.g., QuikSCAT, GOES cloud- and water vapor-tracked winds)
  - Radar observations
  - Lightning Data
- Latest model analyses and forecasts
- (Tropical) Meteorological knowledge and analysis techniques

Water Vapor Image Interpretation: Locate Mid/Upper Level Features



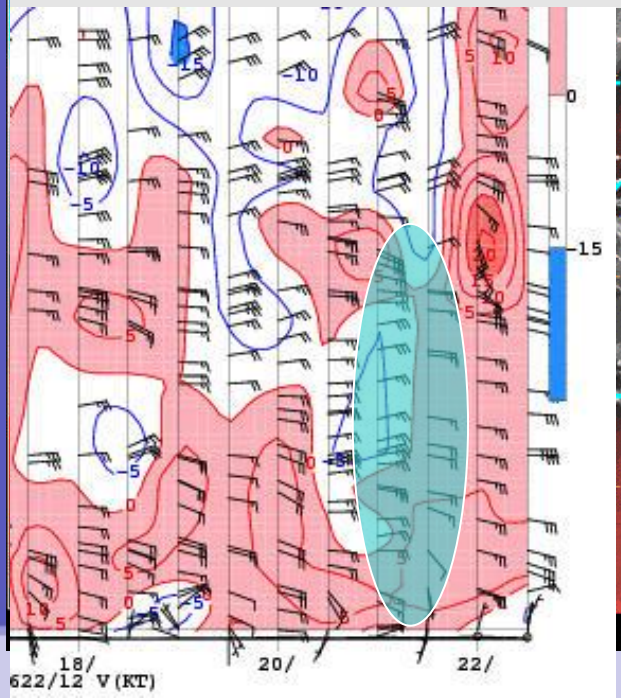
Water Vapor Image Interpretation: Satellite-Derived Wind Vectors

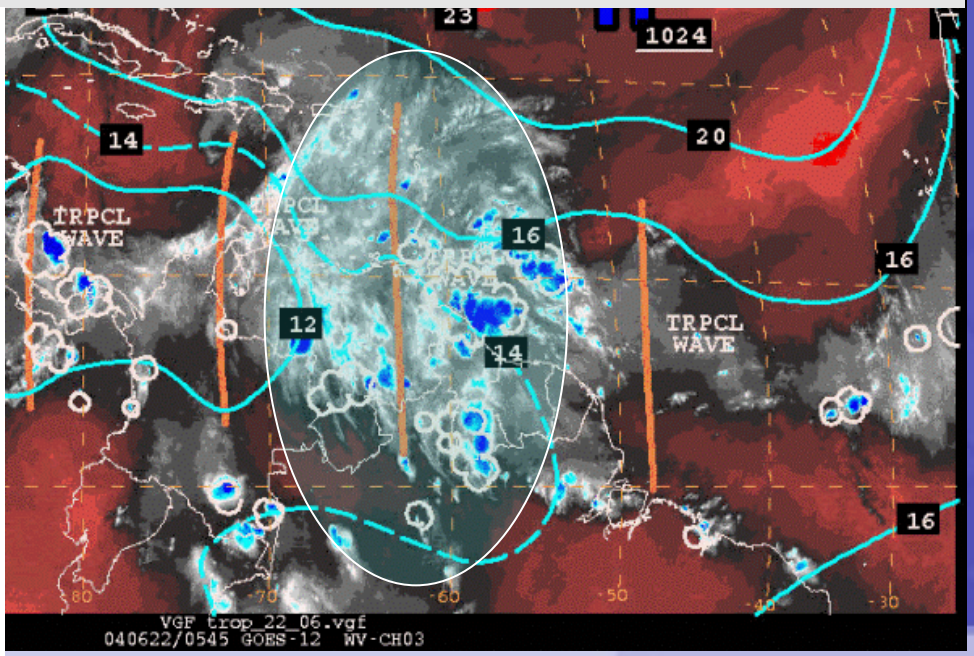


Relating Surface and Mid/Upper Levels

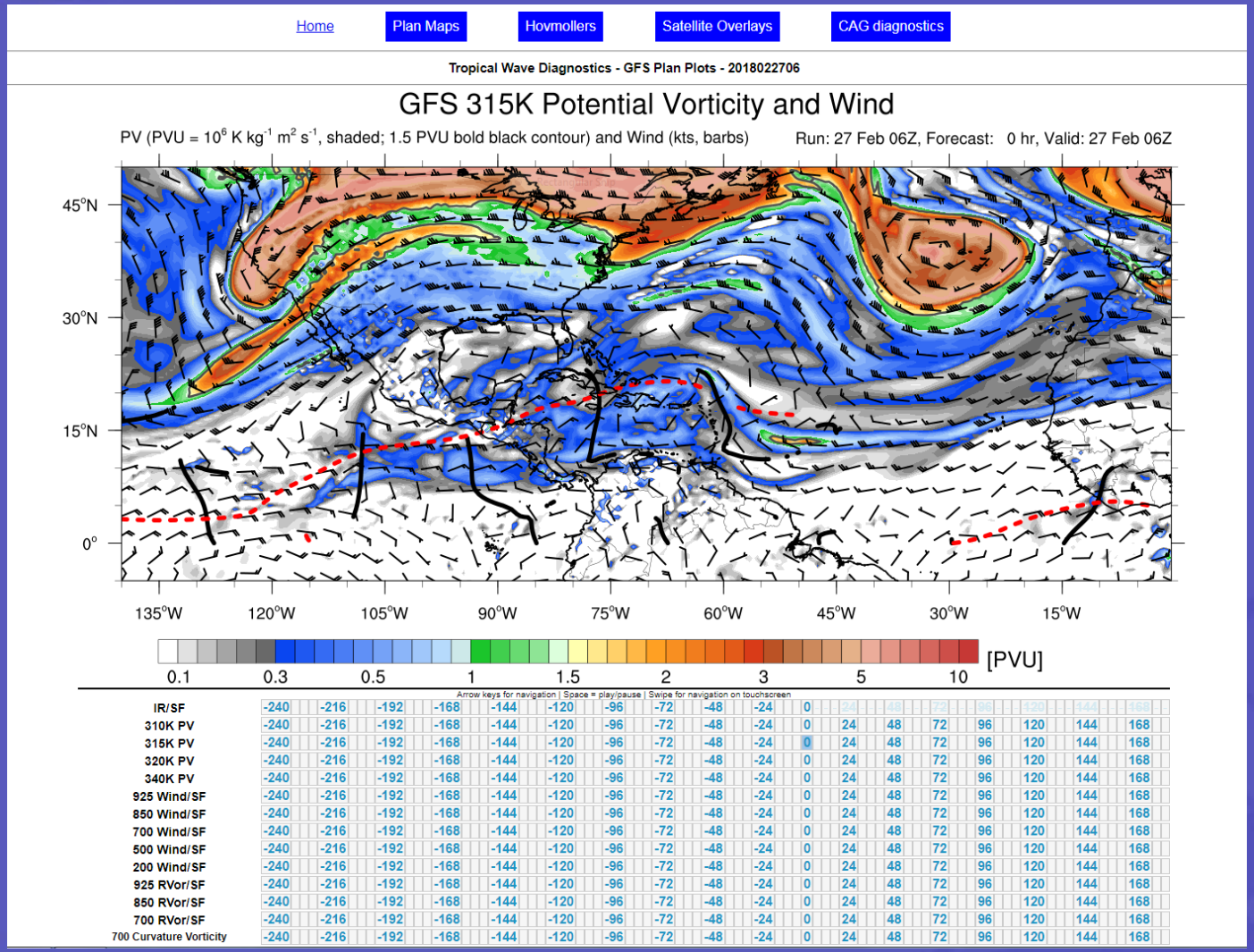
Example of reasoning for tropical wave position/placement

E CARIBBEAN TROPICAL WAVE LOCATED ALONG 63W S OF 19N MOVING WEST 15-20 KT. THE CAYENNE VERTICAL SOUNDING SHOWS A WEAK WAVE PASSAGE...GENERALLY ABOVE 900 MB...SOMETIME EARLY ON THE 21 JUN. BY EXTRAPOLATION...THIS WOULD PLACE THE WAVE IN THE VICINITY OF THE LESSER ANTILLES. THE CONVECTIVE PATTERN IS DISORGANIZED DUE TO STRONG VERTICAL SHEAR E OF AN UPPER LOW OVER HISPANIOLA AND MOST OF THE TSTMS ARE STILL LAGGING SE OF THE WINDWARD ISLANDS. WIDELY SCATTERED MODERATE CONVECTION FROM 7N-14N BETWEEN 54W-64W MOVING TOWARDS THE WINDWARD ISLANDS AND NE VENEZUELA.





Identifying Tropical Waves



- G. Berry
- C.Thorncroft
- A. Levine
- A. Penny

TAFB Marine Forecasts

Marine forecasting timeline 1988-2000

- June 1988 - Tropical Satellite Analysis and Forecast (TSAF) Branch acquires High Seas responsibility from
  - WFO San Francisco (HSFEP2)
  - WFO Miami (HSFAT2)
- March 1993 – TSAF acquires High Seas responsibility for METAREA XVI – Peru (HSFEP3)
- June 1995 – TSAF becomes TAFB
- June 2000 – TAFB acquires the Offshore waters forecast responsibility from
  - WFO Miami (OFFNT3)
  - WFO New Orleans/Slidell (OFFNT4)

Marine forecasting timeline 2001- 2012

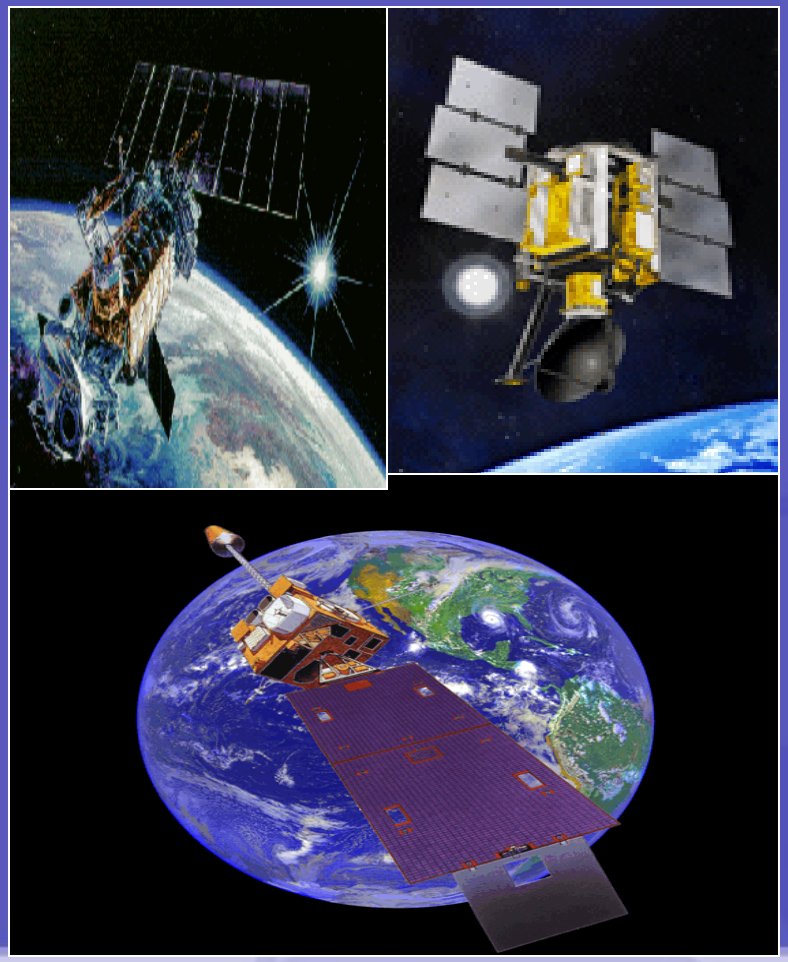
- July 2001 - TAFB added new offshore waters forecast zone to cover the Tropical North Atlantic east of the Windward/Leeward Islands
- May-Oct 2010 – TAFB provides enhanced decision support services (EDSS) in the wake of the Deepwater Horizon Oil Spill
  - Experimental gridded marine forecasts **http://www.nhc.noaa.gov/tafb/gridded_marine/index.php**
  - Experimental Graphicasts **http://www.nhc.noaa.gov/aboutgraphicast.shtml**

Marine Observation Systems: Available Tools

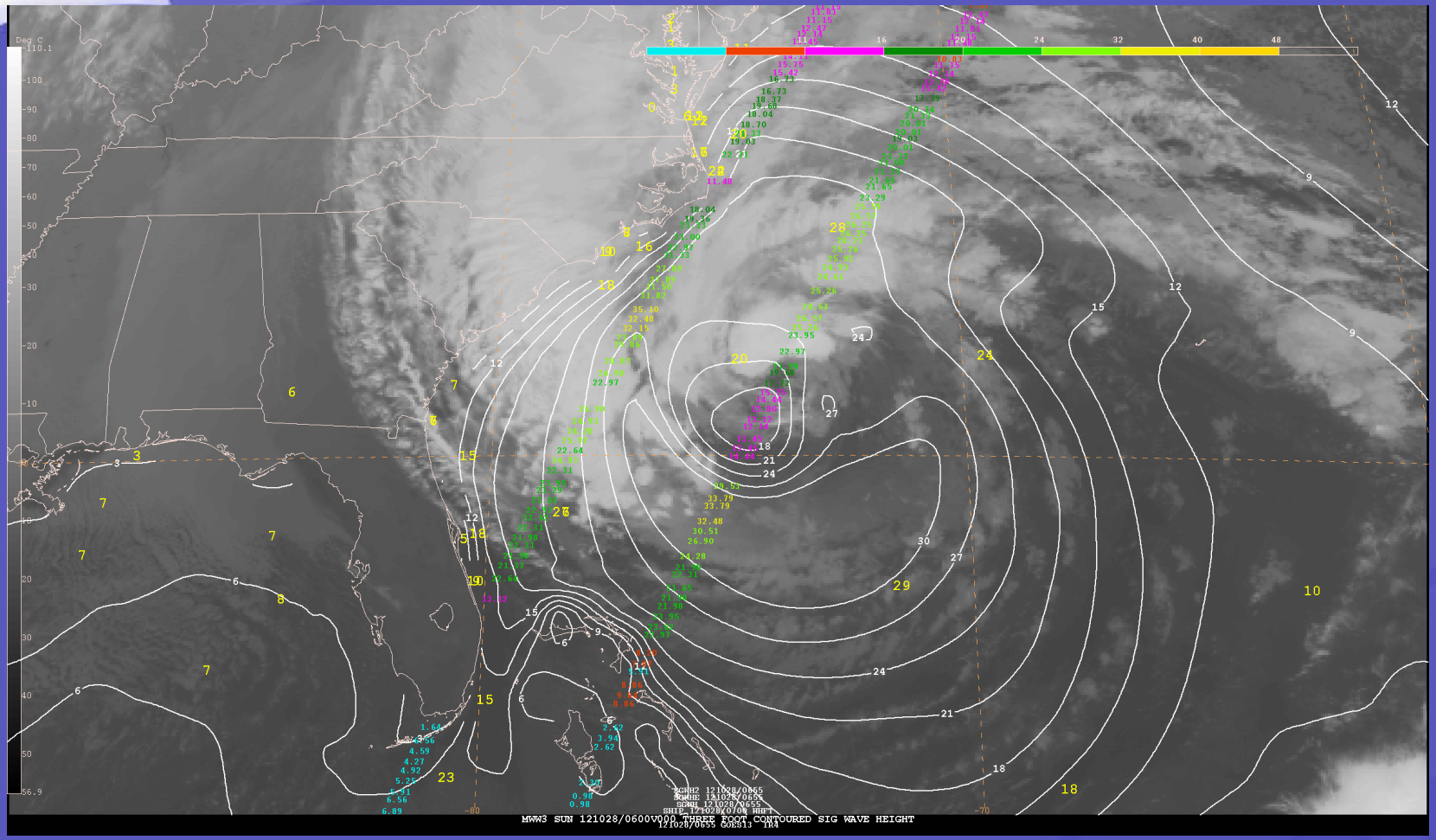
- Coastal-Marine Automated Network (C-MAN)
- Buoys (moored and drifting)
- Volunteer Observing Ship (VOS)
- Satellite Derived Products

Satellite Data Sources

- WINDSAT 25 km
- ASCAT 50/25 km
- OSCAT 50 km
- SSM/I (wind speed only)
- Satellite-derived winds (low-level cloud drift wind speed and direction)
- Altimeters: Jason I & II and Envisat (wave height only)
- TRMM (wind speed only)

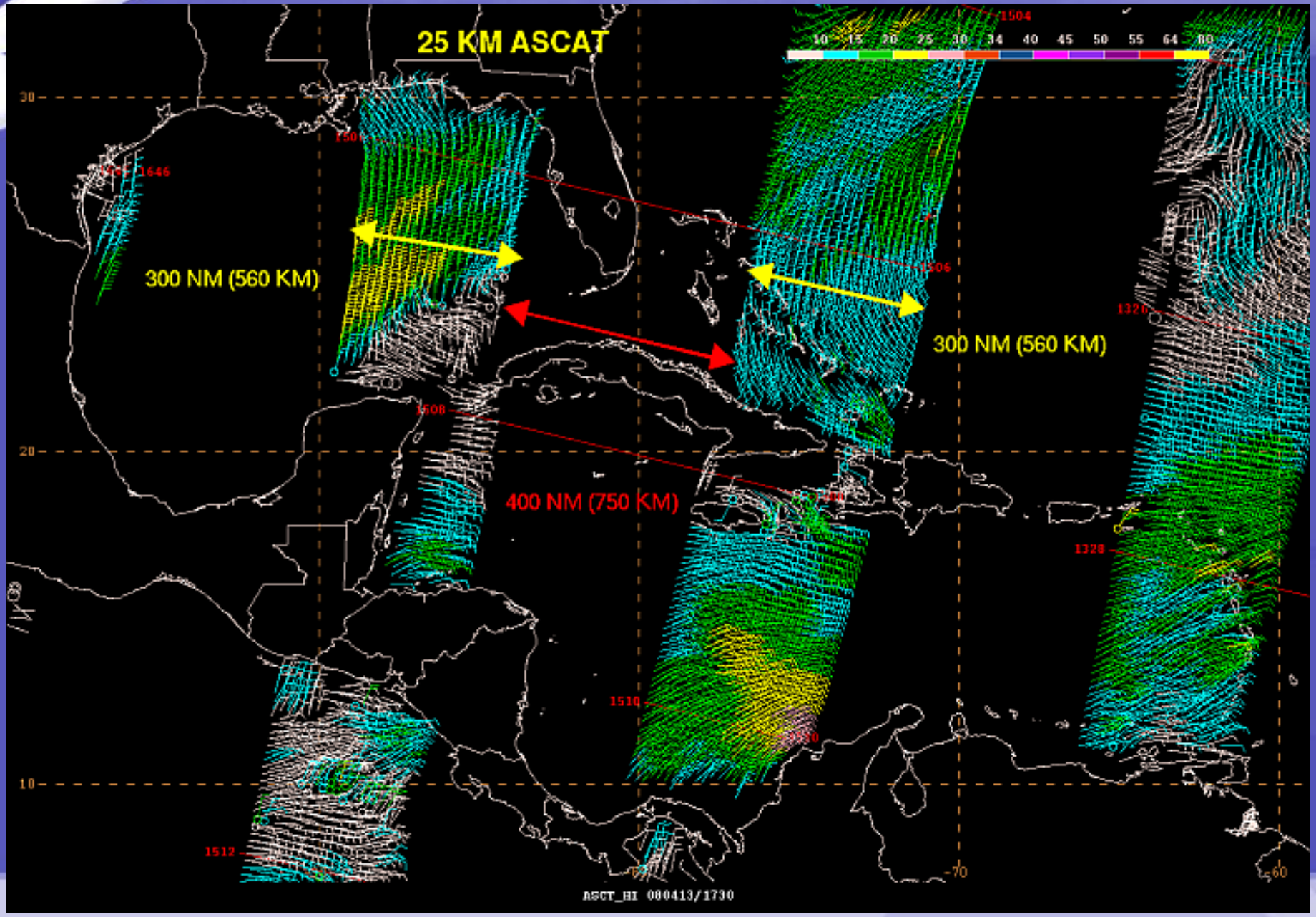


Enhanced Sea State Analysis



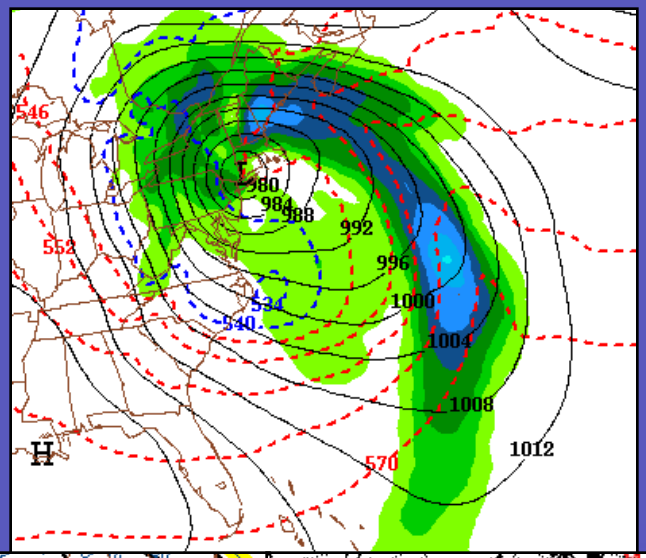
Sandy 28 Oct 2012 ~0600Z

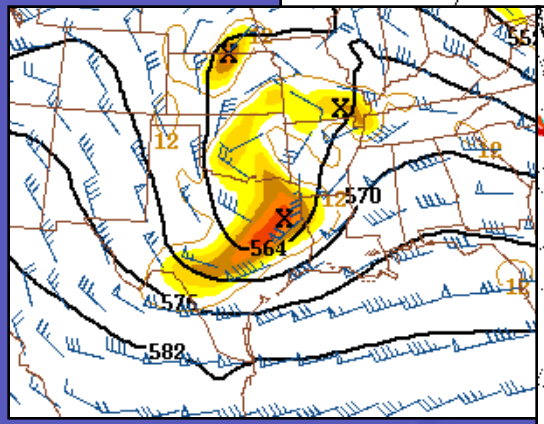
25 KM ASCAT Winds

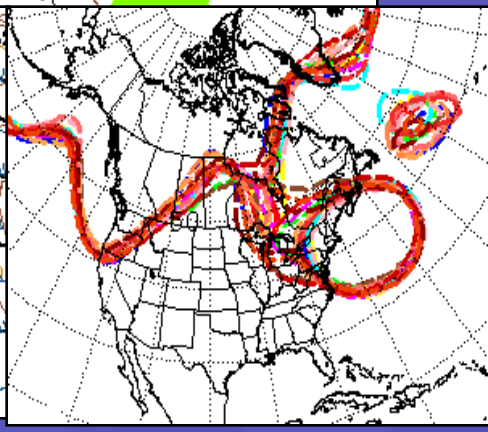


NWP Model Guidance

- GFS – Traditionally primary model for NWS/TAFB forecasters -24 km
- GFS Ensemble – Probability of 20 and 34 kt winds, mean MSLP, "spaghetti" high/low plots.
- NAM/SREF – limited domain problem for TAFB's large Area of Responsibility
- Other Global Models
  - NAVGEM
  - UKMET
  - ECMWF
  - CMC

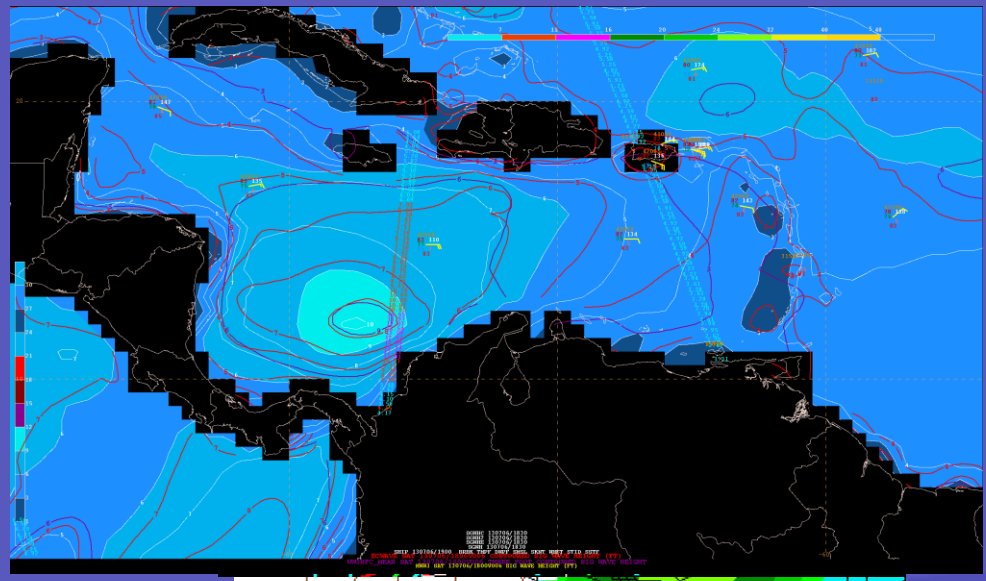


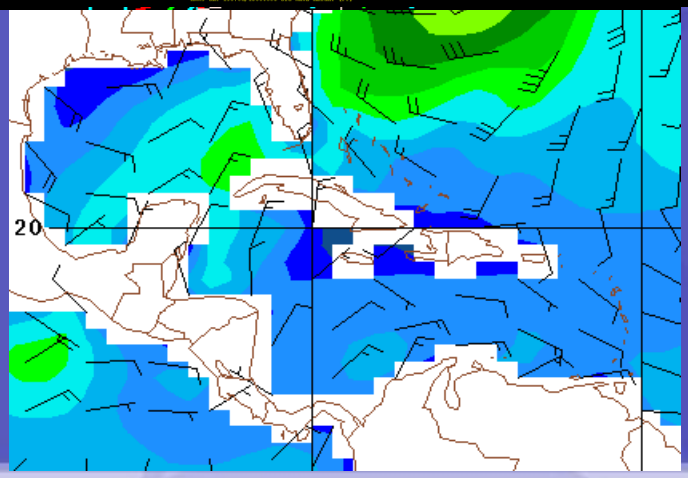


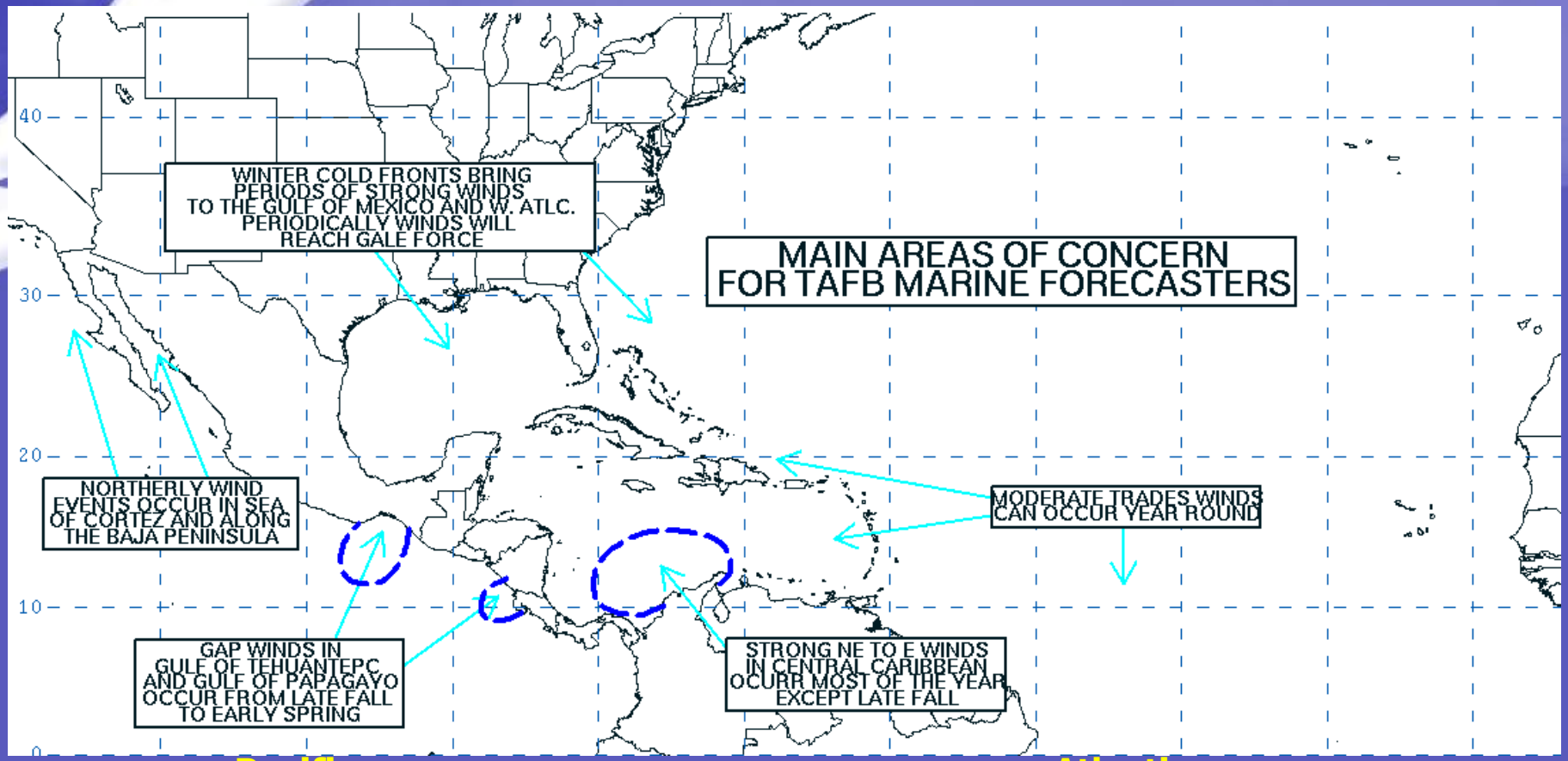


NWP Wave Model Guidance

- NOAA Wavewatch III
  (GFS based wind field)
  - Regional scale (WNA/ENP)
  - GFDL version (NAH)
  - Multi-Grid (Resolutions)
- FNMOC Wave
  (NAVGEM based wind field)
- UKMET Wave
- ECMWF Wave
- WW3-FNMOC Ensemble
- WW3 Ensemble







Pacific

- Cold Fronts
- NE Trades
- Funneling "Gap" winds
  - Gulf of Tehuantepec
  - Gulf of Fonseca/Papagayo
  - Gulf of Panama
  - Sea of Cortez
  - Baja California

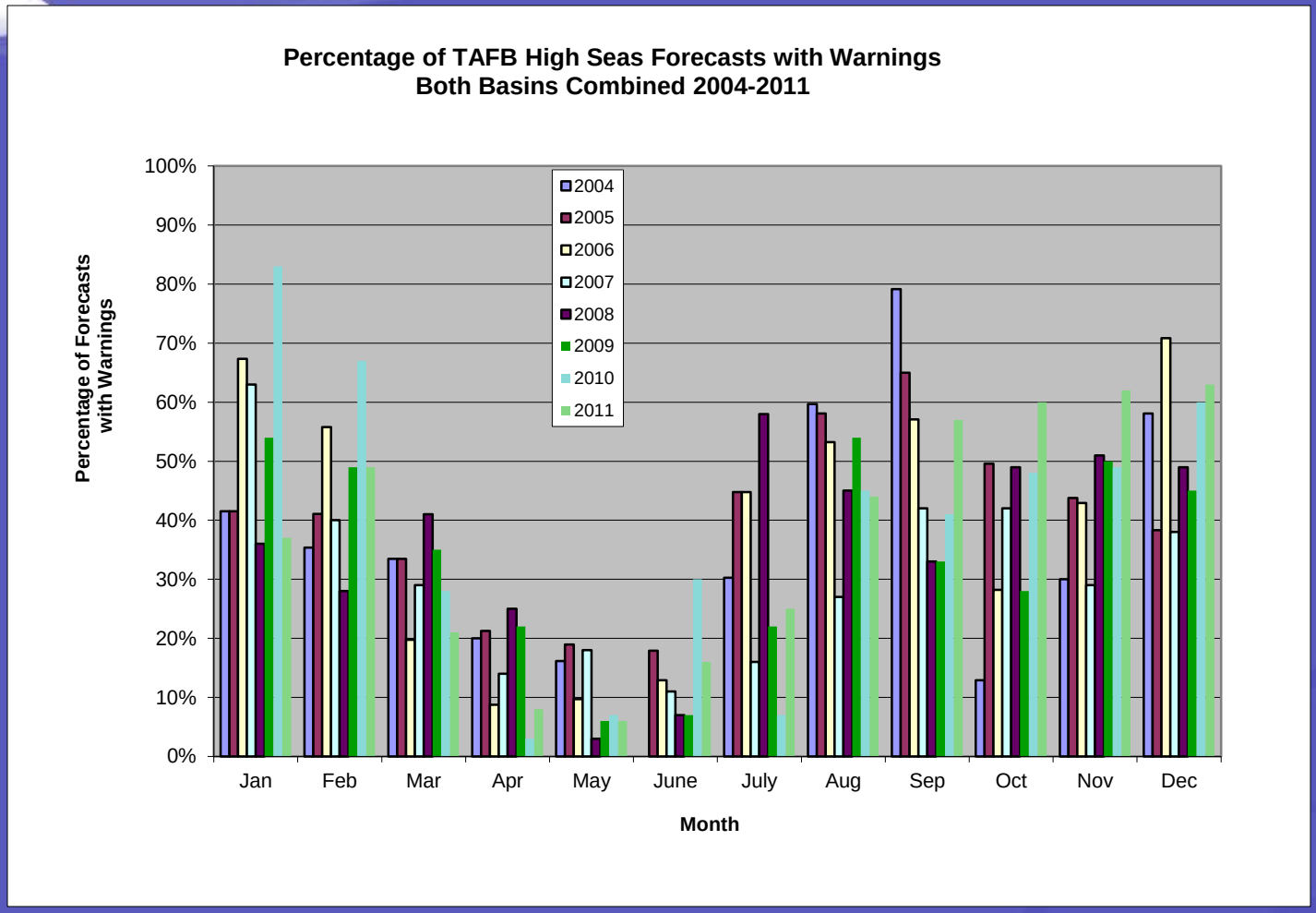
Atlantic

- Gales in Gulf of Mexico/SW North Atlantic in Winter
- Shelf water effect in NW Gulf of Mexico in winter
- Persistent Easterly Trades
- Funneling winds
  - Yucatan Channel
  - Florida Straits
  - Caribbean Passages
  - SW Caribbean within 60-120 NM of Colombian coast

High Seas Forecasts

- High Seas Forecast includes synopsis of primary weather features and 24 and 48 hour forecasts
- High Seas Forecasts only include winds 20 kt or greater and/or seas 8 ft or higher
- Significant Convection and Areas of Fog and Visibilities < 3 NM

Average Monthly Percentage of TAFB High Seas Forecasts with Warnings* (Atlantic and East Pacific)



- Extratropical (Gale, Storm and Hurricane Force)
- Tropical (Tropical Storm and Hurricane)

Offshore Waters Forecasts

- Offshore Forecasts are 5-day forecasts geared toward recreational and smaller fishing vessels, which may spend a few days at sea
- Offshore Forecasts are broken into smaller zones
- Offshore forecasts are a more detailed forecast than the High Seas, as ALL winds and seas are forecast out to 5 days.
- Light winds may be stated as “5 to 10 kt”, seas are forecast down to 1 foot.
- Offshore forecasts are period rather than event driven

Current Atlantic OFF zones

000
FZNT23 KNHC 270911
OFFNT3

Offshore Waters Forecast for the SW and Tropical N Atlantic and Caribbean Sea
NWS National Hurricane Center Miami, FL
411 AM EST Tue Feb 27 2018

Offshore Waters Forecast for the Tropical N Atlantic from 07N to 22N between 55W and 64W, the SW N Atlantic S of 31N W of 65W including Bahamas, and the Caribbean Sea.

Seas given as significant wave height, which is the average height of the highest 1/3 of the waves. Individual waves may be more than twice the significant wave height.

AMZ001-272115-
Synopsis for Caribbean Sea and Tropical N Atlantic from 07N to 19N between 55W and 64W
411 AM EST Tue Feb 27 2018

.SYNOPSIS...Winds will pulse to strong at night along the coast of Colombia throughout the period. Similar winds will pulse in the Windward passage, and along the SE coast of Hispaniola through Wed night. Large swell will cross the tropical Atlc zones Wed night through Fri night. A more significant swell event will affect the Atlc Passages E of 69W by late Sat.

$$

AMZ011-272115-
Caribbean N of 18N W of 85W including Yucatan Basin-
411 AM EST Tue Feb 27 2018

.TODAY...NE to E winds 10 to 15 kt. Seas 3 to 5 ft.
.TONIGHT...E winds 10 to 15 kt. Seas 3 to 5 ft.
.WED...E to SE winds 10 to 15 kt. Seas 3 to 5 ft.
.WED NIGHT...E to SE winds 10 to 15 kt. Seas 3 to 5 ft.
.THU...SE winds 10 to 15 kt. Seas 3 to 5 ft.
.THU NIGHT...E to SE winds 10 to 15 kt. Seas 3 to 5 ft.
.FRI...E to SE winds 10 to 15 kt. Seas 3 to 5 ft.
.FRI NIGHT...NE to E winds 5 to 10 kt. Seas 2 to 4 ft.
.SAT...NE to E winds 10 to 15 kt. Seas 2 to 4 ft.
.SAT NIGHT...NE winds 10 to 15 kt. Seas 3 to 5 ft.

$$

Marine Weather Discussion

- ***MIAMIMATS (AGXX40 KNHC)***
- **Issued Twice Daily – between 1:00-2:30 AM/PM**
- **Sections of Product**
  - Synopsis and Forecast Discussion
  - Current Warnings (Gale, Storm, T.C.)
- **Discussion Area**
  - Gulf of Mexico
  - Caribbean Sea
  - Southwest N Atlantic S of 31N W of 55W
- **Synopsis/Discussion**
  - Major synoptic scale features influencing Offshore Waters area
  - Significant/relevant surface/ship/buoy observations
  - SSMI/QuikSCAT Observations
  - Performance of models (GFS, NOGAPS, NWW3) with current forecast scenarios

Marine Weather Discussion
Coordination Tool

MARINE WEATHER DISCUSSION
NWS TPC/NATIONAL HURRICANE CENTER MIAMI FL
135 AM EST MON FEB 12 2007

MARINE WEATHER DISCUSSION FOR GULF OF MEXICO...CARIBBEAN SEA AND SOUTHWEST NORTH ATLC S OF 31N W OF 55W.

SYNOPTIC PATTERN

GULF OF MEXICO...INCREASING SE RETURN FLOW EVIDENT ACROSS THE NW GULF WITH SEVERAL PLATFORMS REPORTING 20 KT WINDS. ELSEWHERE CONDITIONS ARE RATHER TRANQUIL. SFC TROUGH ACROSS THE FLORIDA STRAITS APPEARS TO BE LIFTING NWD IN ADVANCE OF AN UPPER LEVEL SHORTWAVETROUGH OVER THE CNTRL GULF. GFS HINTS AT SFC LOW DEVELOPMENT WHICH MAY BE A RESULT OF CONVECTIVE FEEDBACK IN THE MODEL. FOR NOW WILL NOT INDICATE A SFC LOW. IN ANY EVENT THE ONLY NET EFFECT WILL BE A WIND SHIFT AS THIS FEATURE PASSES OFF TO THE NE EARLY TUE. MOST SIGNIFICANT CHANGE IS THE ARRIVAL OF A COLD FRONT OVER THE FAR NW TUE WHICH SWEEPS RAPIDLY SEWD AND EXTENDS FROM CENTRAL FLORIDA TO THE BAY OF CAMPECHE BY EARLY WED AND SE OF THE AREA BY THU. A SECONDARY SURGE OF COLD AIR ENSUES THU WITH AN INCREASE IN NLY WINDS ACROSS MOST OF THE GULF W OF 90W. WINDS GRADUALLY DECREASE FRI. ALTHOUGH THE

MODEL DISCUSSION

OPERATIONAL RUN OF THE GFS HINTS AT GALES IN THE SW GULF...THE ENSEMBLE MEAN PROBABILITIES ARE ONLY IN THE 30-40 PCT RANGE SO WILL NOT MENTION GALES AT THIS TIME AND INDICATE NLY WINDS 25-30 KT WITH HIGHER GUSTS THU INTO FRI FOR THIS AREA.

EXTENDED OUTLOOK 3-5 DAYS

SW N ATLC...RATHER WEAK QUASI-STATIONARY FRONT EXTENDS FROM 26N65W TO THE FLORIDA STRAITS WITH THE WESTERN END OF THE FRONT BECOMING ACTIVE IN ADVANCE OF A SHORTWAVE NOTED OVER THE GULF ABOVE. GFS INDICATES THAT THIS FRONT WILL BE THE FOCUS FOR SFC LOW DEVELOPMENT ON TUE AHEAD OF A MORE SIGNIFICANT SYSTEM WED AND THU. GIVEN THE CONVECTIVE FEEDBACK ISSUES WITH THE GFS COUPLED WITH THE FACT THAT THIS SOLUTION IS SHARED ONLY WITH THE LOWER RESOLUTION NOGAPS...WILL NOT INDICATE A SFC LOW AT THIS TIME BUT RATHER MOVE THE WARM FRONT NWD W OF 70W LATE TUE INTO WED. THE HIGHER RESOLUTION ECMWF/UKMET DO NOT INDICATE A SFC LOW. SECONDARY CYCLOGENESIS OFF THE NC/MID ATLC COAST ON WED ENSURES BROAD FETCH OF INCREASING SWLY WINDS N OF 25N WITH WINDS 20-30 KT. ALL THE RELIABLE MODELS HAVE BEEN TRENDING FURTHER N WITH THE SECONDARY CYCLOGENESIS AND THUS LESSENING THE CHANCES FOR GALES OVER THE NORTHERN PORTION OF THE FCST AREA LATE WED AND THU BEHIND A STRONG COLD FRONT. ENSEMBLE PROBABILITIES HAVE ALSO TRENDED LOWER AS WELL TO 20-30 PCT. THE COLD FRONT ENTERS THE FAR NW PORTION OF THE AREA WED AND EXTENDS FROM 30N70W TO S FLORIDA BY WED EVENING AND FROM 28N65W TO THE FLORIDA STRAITS BY THU EVENING. A SECONDARY SURGE OF COLD AIR ARRIVES FRI AND INCREASES NWLY WINDS TO 20-30 KT OVER MOST AREAS N OF 25N.

WARNINGS

WARNINGS...

ATLANTIC...NONE.

CARIBBEAN...NONE.

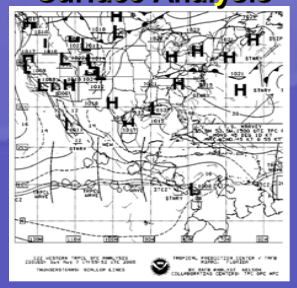
GULF OF MEXICO...NONE.

Suite of Marine Radiofax Charts Produced by TAFB

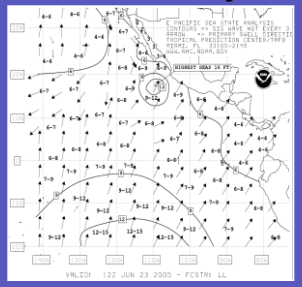
Pt. Reyes and Honolulu Radiofax

Pt. Reyes Broadcast Frequencies	Honolulu Broadcast Frequencies
4346 kHz	9982.5 kHz
8682 kHz	11090 kHz
12786 kHz	16135 kHz
17151.2 kHz	23331.5 kHz
22527 kHz	

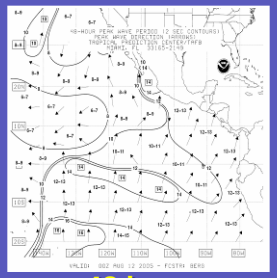
Surface Analysis



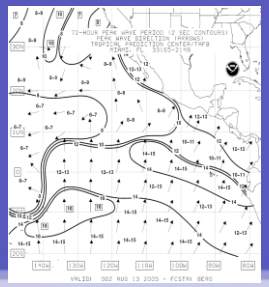
Sea State Analysis



Peak Wave Period & Swell Direction



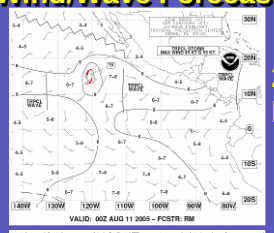
48 hr.



72 hr.

Wind/Wave Forecasts

24 hr.



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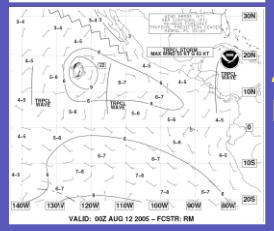

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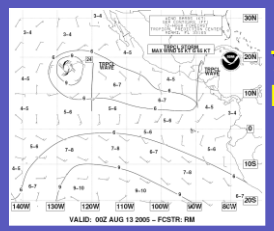
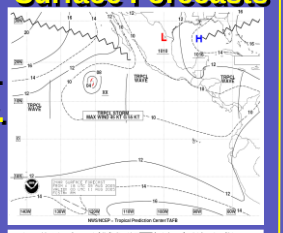
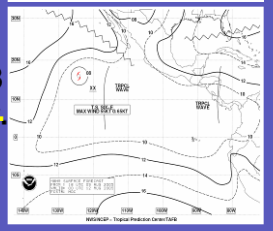
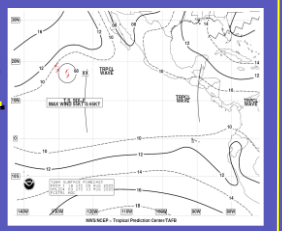


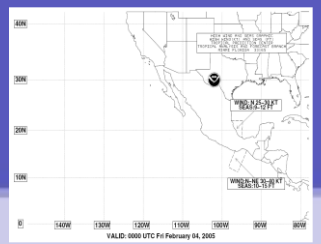
Surface Forecasts



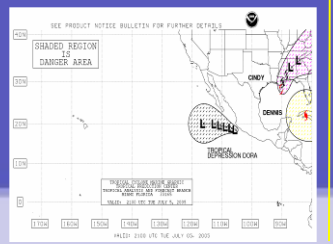




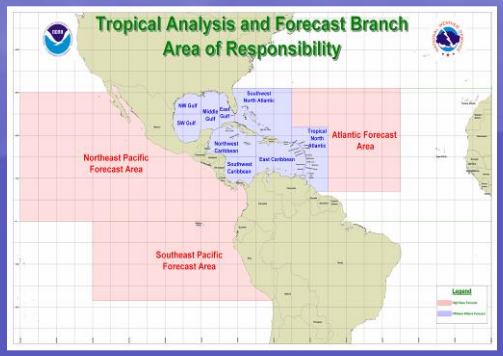
High Wind Graphic



TC Danger Graphic



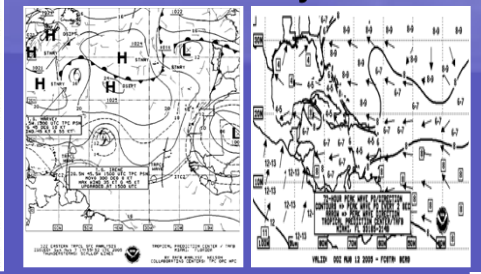
Tropical Analysis and Forecast Branch Area of Responsibility



New Orleans Radiofax

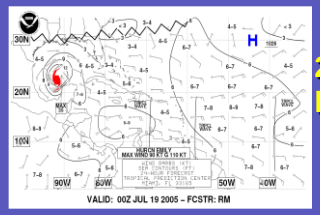
New Orleans Broadcast Frequencies
4317.9 kHz
8503.9 kHz
12789.9 kHz
17146.9 kHz

Surface Analysis



Wind/Wave Forecasts

24 hr.



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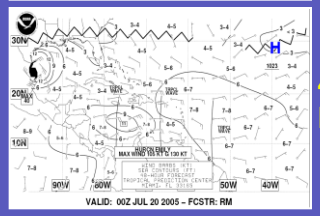
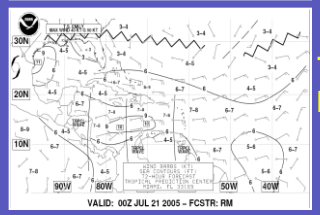
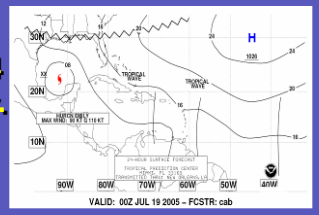
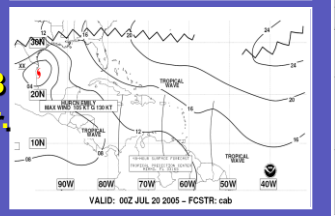


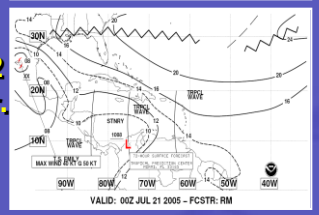
72 hr.



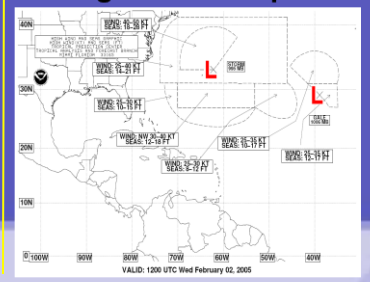
Surface Forecasts



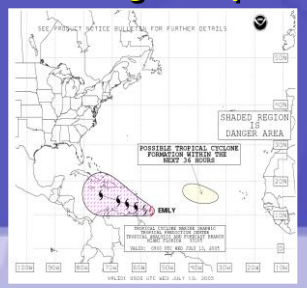




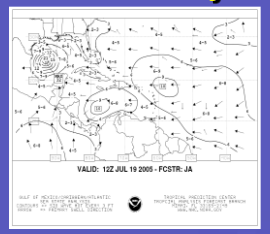
High Wind Graphic



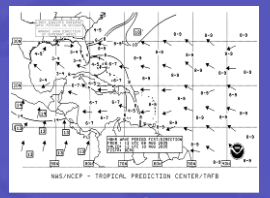
TC Danger Graphic



Sea State Analysis



Peak Wave Period & Swell Direction



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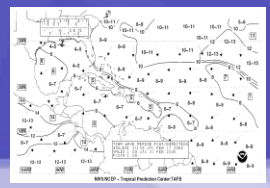
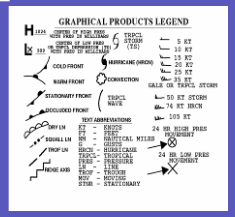
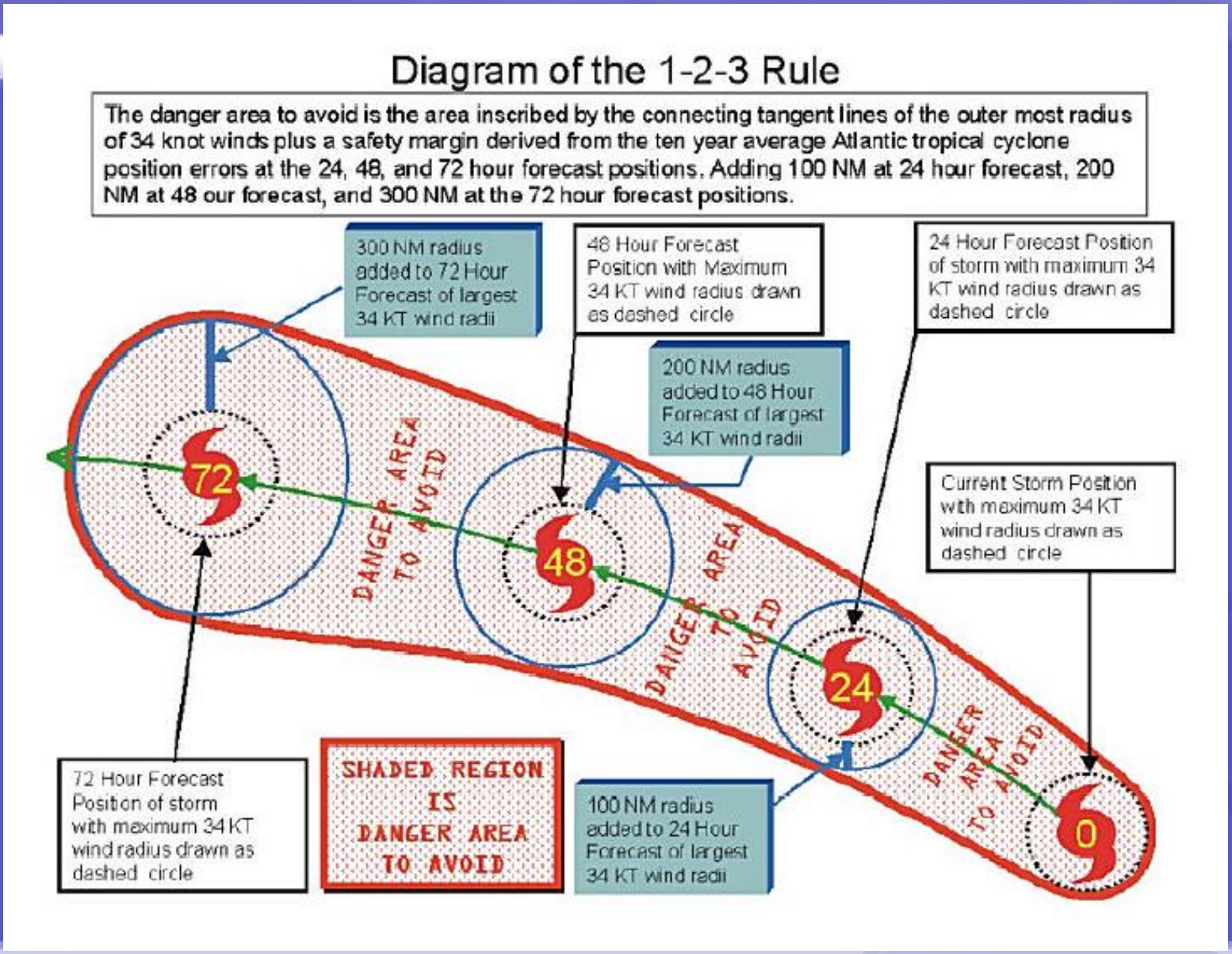


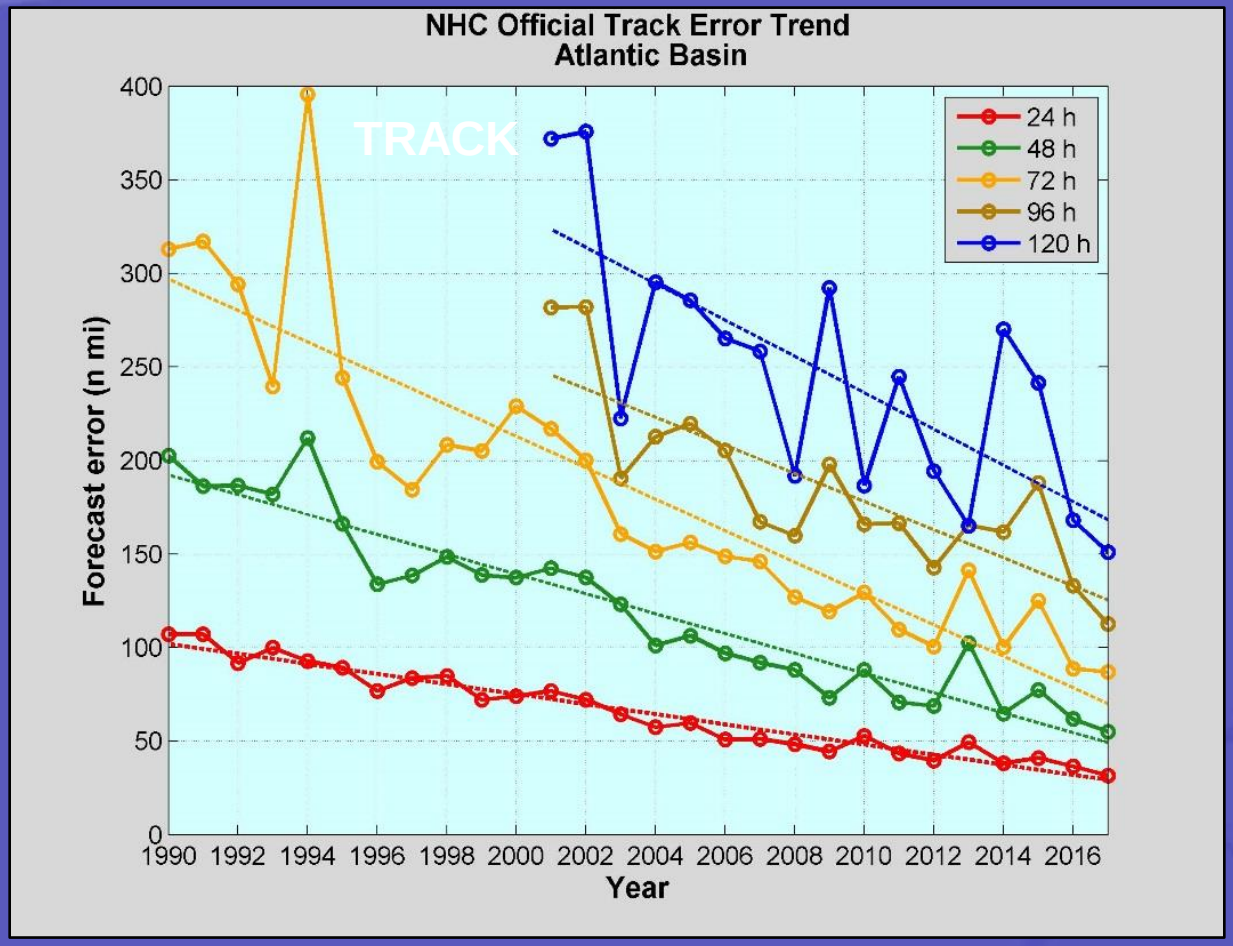
72 hr.



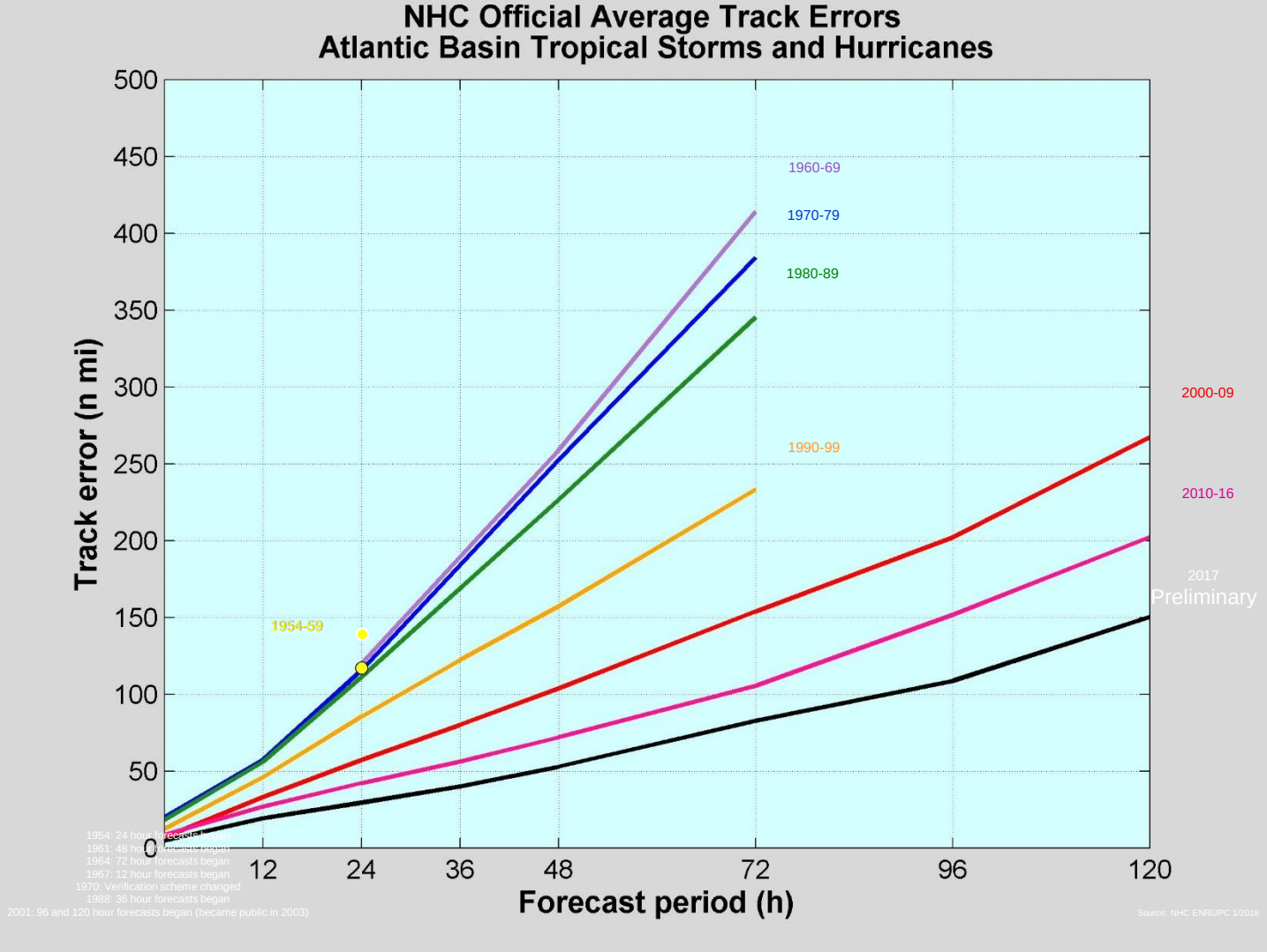
1-2-3 Rule for Hurricane Avoidance



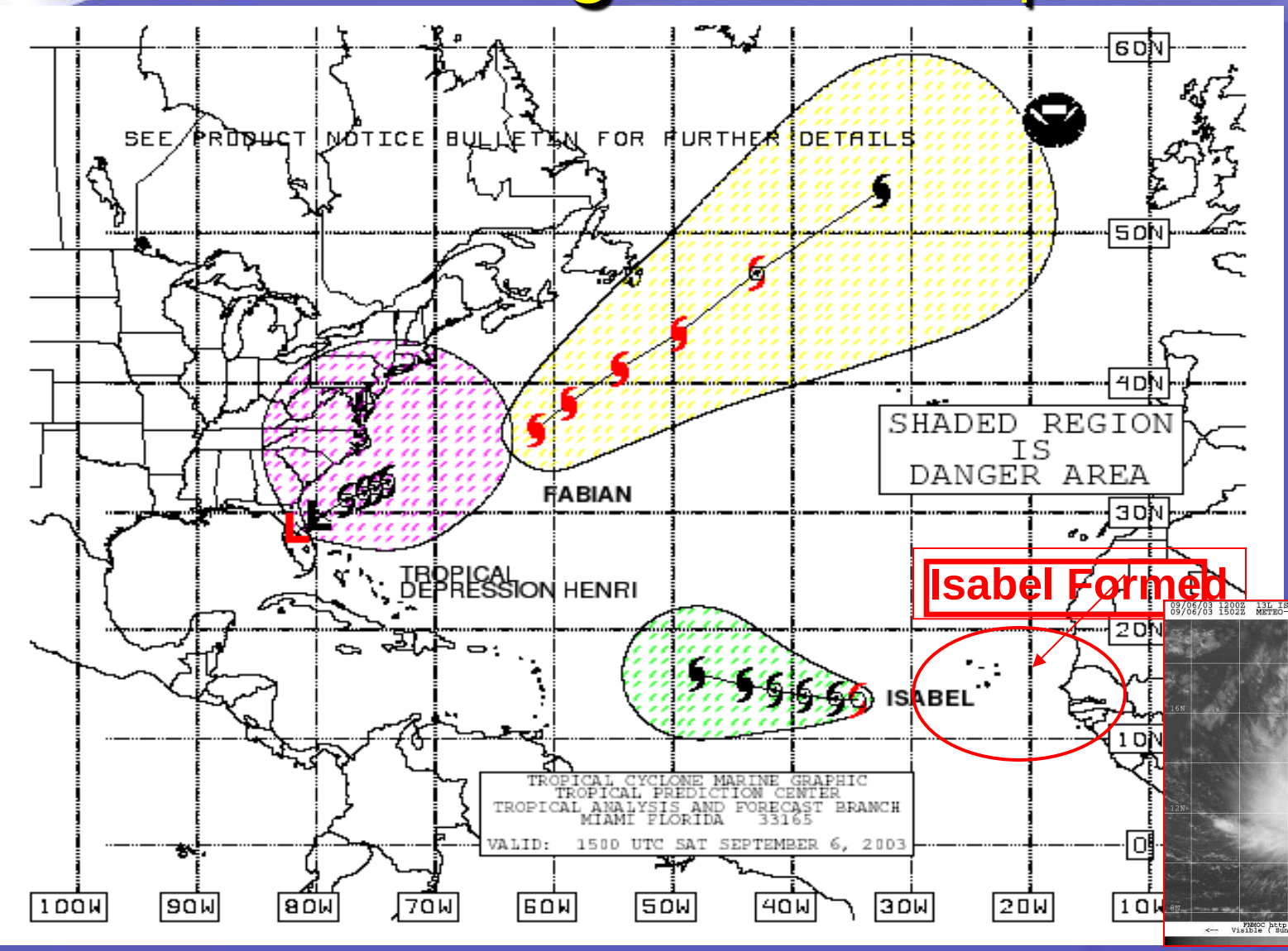
Are NHC Forecasts Getting Better?

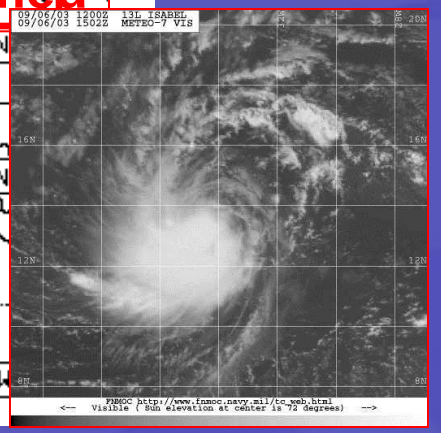


NHC Forecast Skill



Atlantic Tropical Cyclone Danger Area Graphic





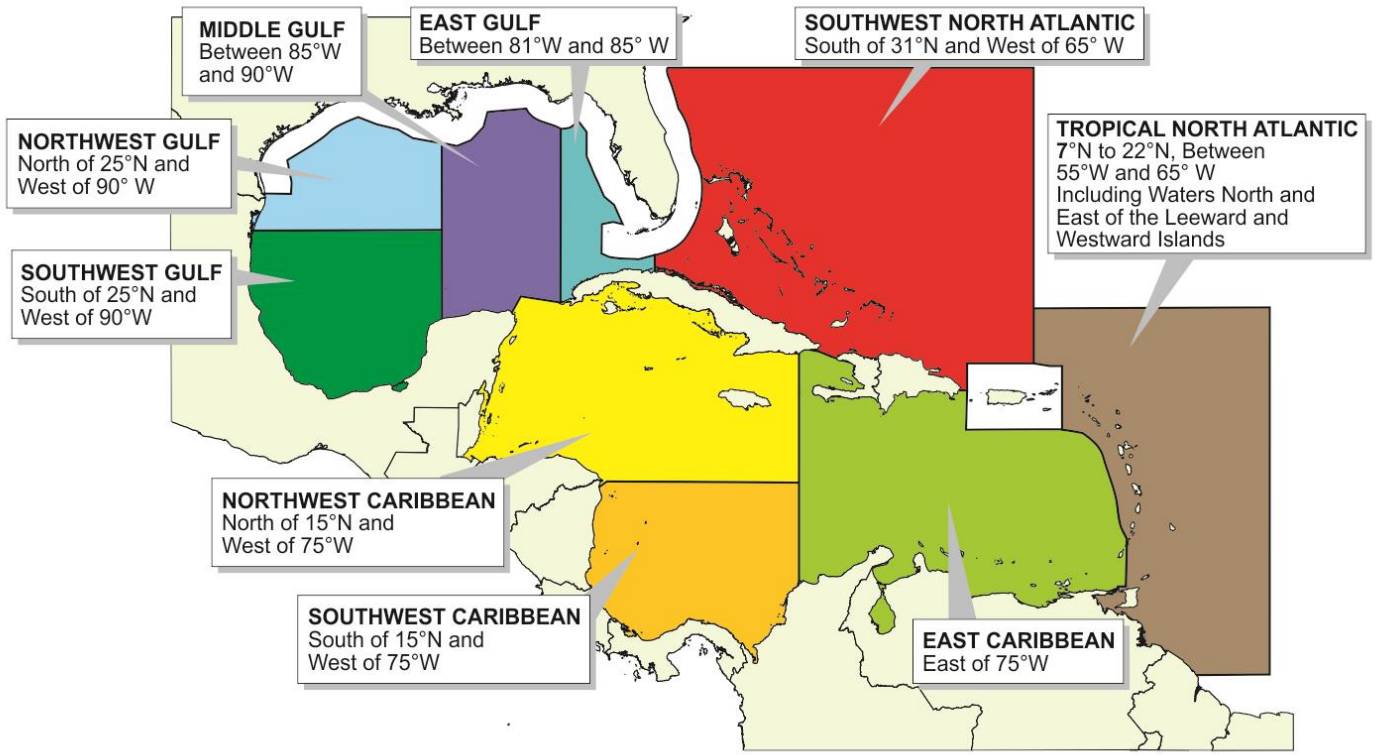
Areas of Possible Tropical Cyclone Formation are Depicted.

TAFB New Products/Services 2010 - 2012

- June 2010 - Gridded forecasts of 10-m winds, MSLP, SIG wave heights, Primary swell period, direction & height
- Aug 2010 – Daily Graphicast to provide Enhanced Decision Support Services (EDDS)
- May 2011 – Introduction of Monsoon troughs and shear lines on surface analysis
- June 2011 – Experimental Satellite Rainfall Product

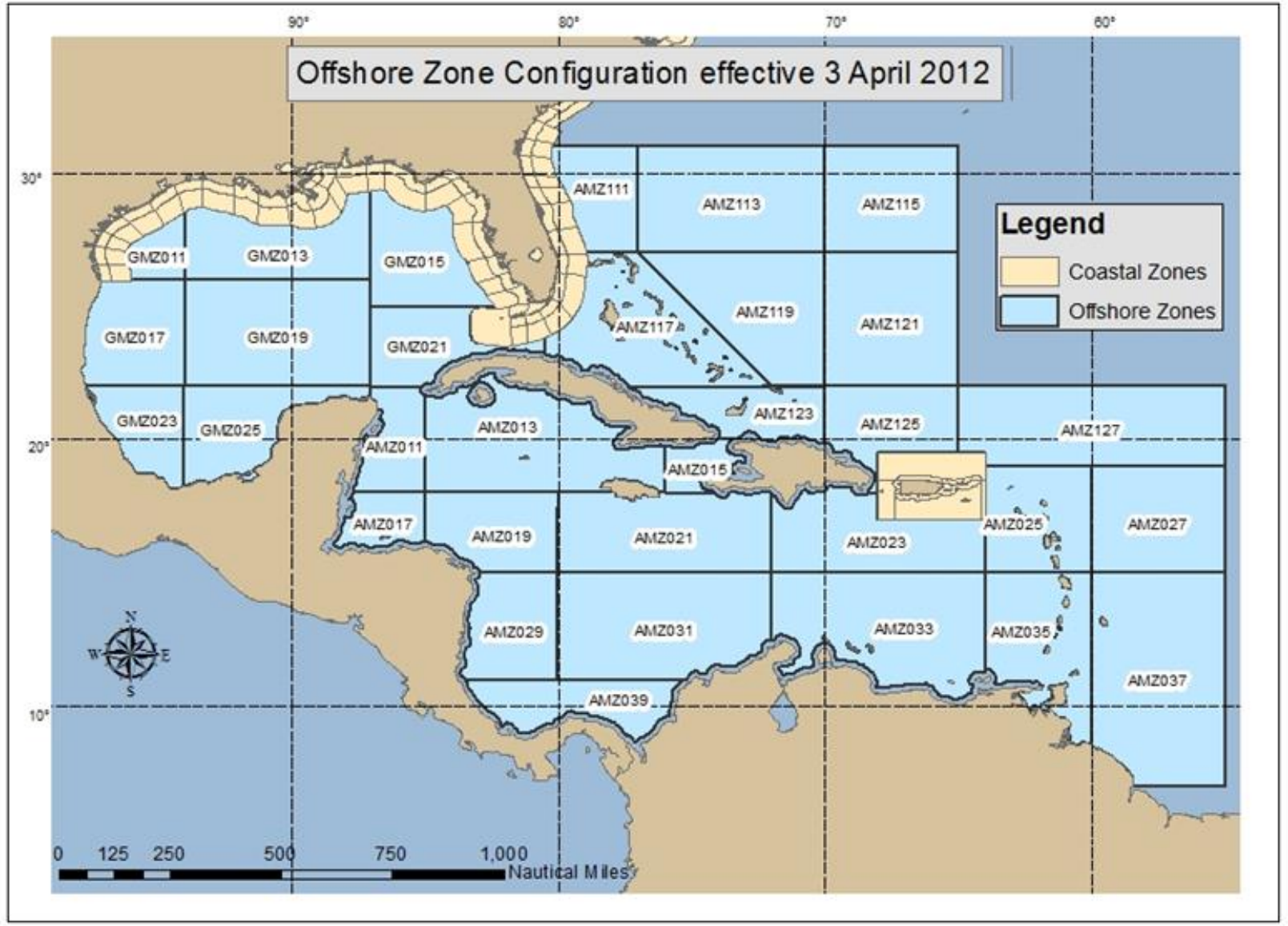
TAFB New Products/Services 2010 - 2012

- Oct 2011 - TAFB submitting request to change marine zones in the offshore waters to smaller zones to provide more detail
- Implementation - 3 April 2012
- June 2012 – Experimental Wind Speed Probability based TC Danger Graphic

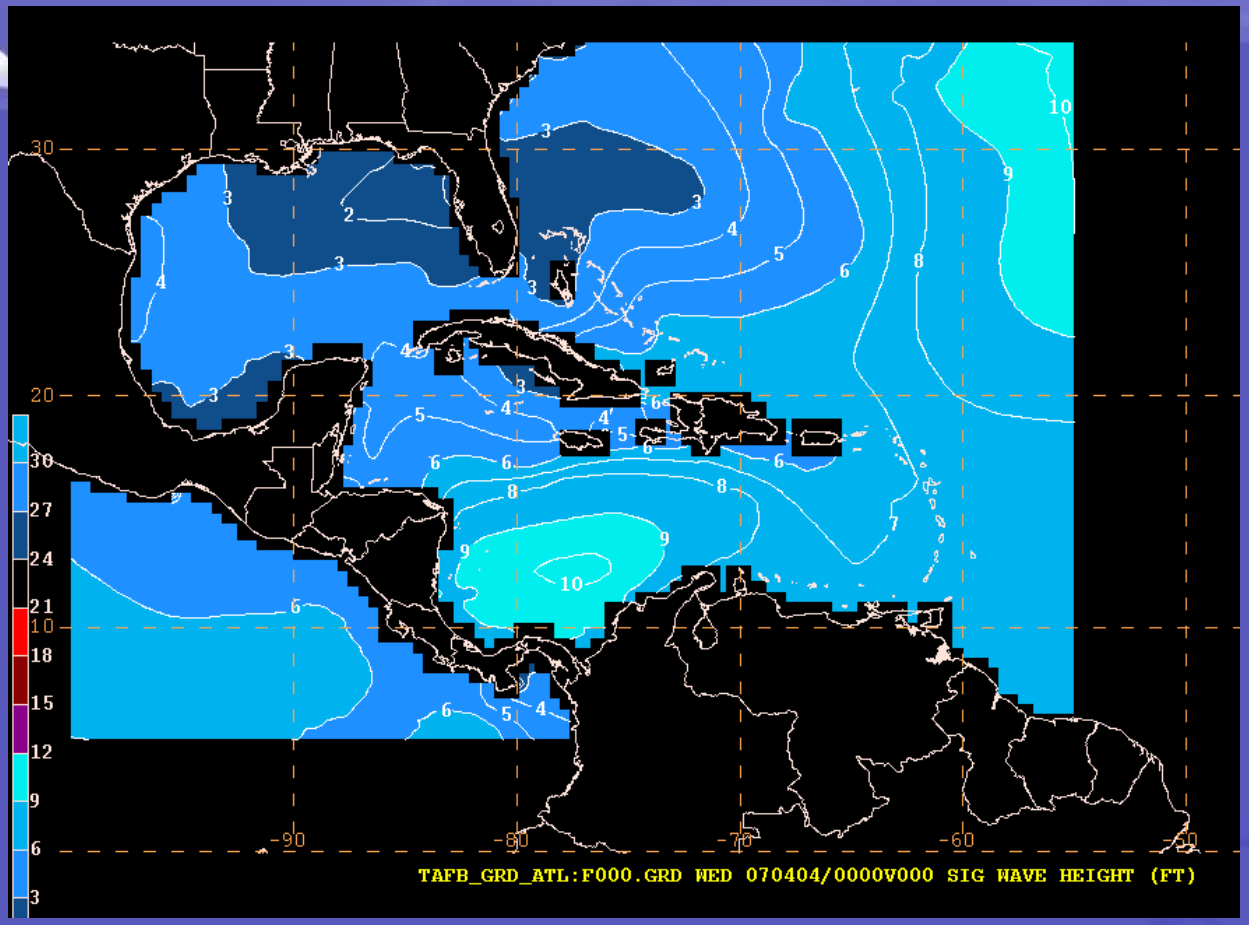


CURRENT OFFSHORE WATERS ZONES

Offshore Waters Forecast Zones
3 April 2012



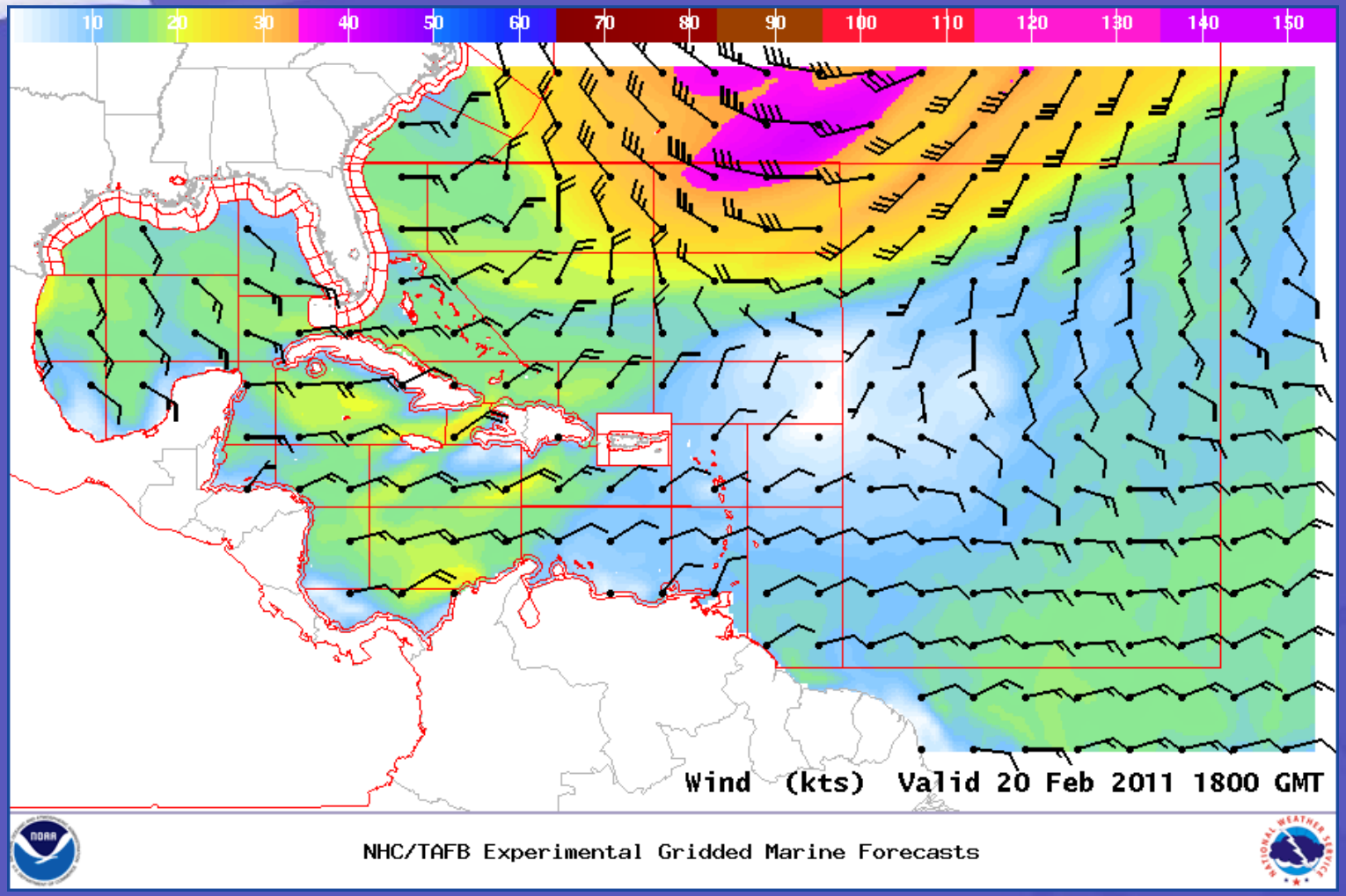
Gridded Sea State Analysis



Issued twice daily
0000 & 1200 UTC

In operational AWIPS data stream Oct 2010

Experimental Gridded marine forecasts



Internet URLs – New Offshore/Gridded Marine

NEW OFFSHORE ZONES

http://www.nhc.noaa.gov/experimental/offshores/

GRIDDED MARINE

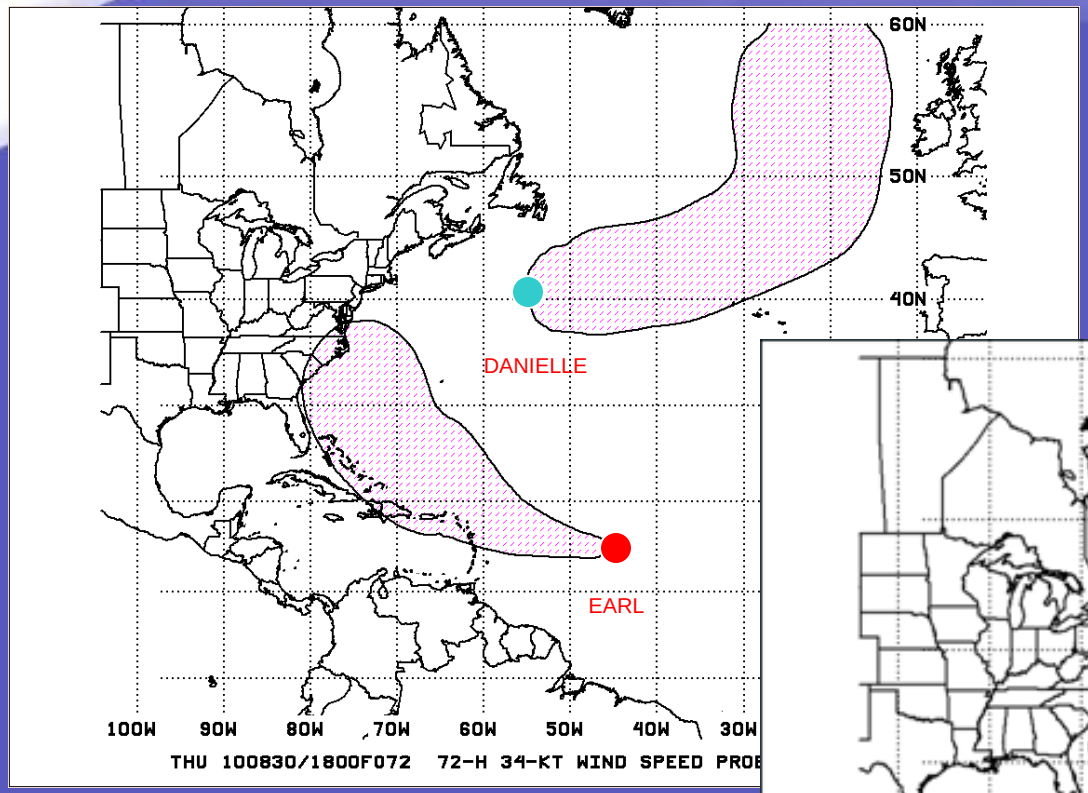
http://www.nhc.noaa.gov/tafb/gridded_marine/

New NHC Rainfall Product: Prototype Text

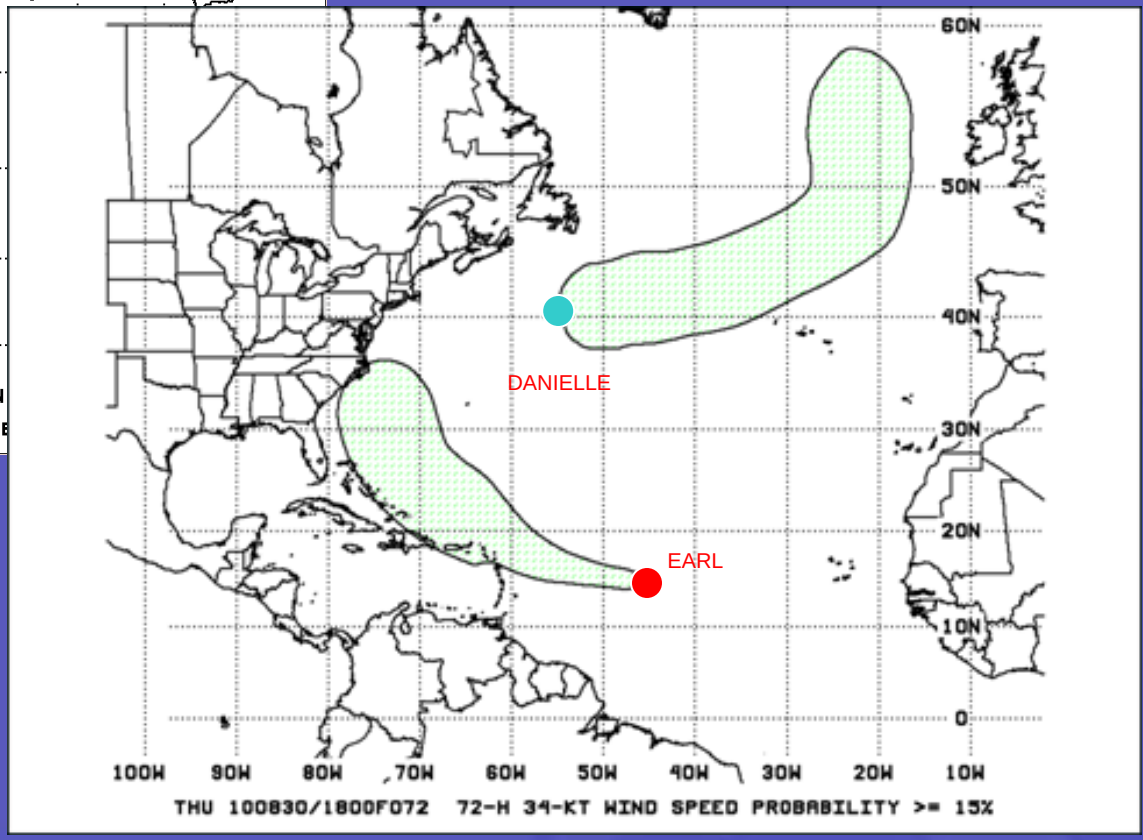
```
TCCA22 KNHC 291843
STDWCA

SATELLITE TROPICAL DISTURBANCE RAINFALL ESTIMATES
NWS NATIONAL HURRICANE CENTER MIAMI FL
2115 UTC TUE AUG 29 2009

SYSTEM NAME                    DATE/TIME          LOCATION
-----------                    ---------          --------
T.S ANDRES                     29/1800 UTC        17.2N 102.3W

RAINFALL ESTIMATED BY SATELLITE VIA QMORPH...
24-HOUR RAINFALL MAXIMUM (FROM 18-18 UTC)- 235 MM AT 23.3N  99.2W
6-HOUR RAINFALL MAXIMUM (FROM 12-18 UTC)- 150 MM AT 24.2N 100.5W
RAINFALL DISTRIBUTION IN MM OVER THE LAST 6-HOURS (FROM 12-18 UTC)...

LATITUDE.........................LONGITUDE.........................
.......104W-103W 103W-102W 102W-101W 101W-100W 100W- 99W  99W- 98W
27-28N     0- 40      5- 40     10- 45     10- 45     10- 30      0- 20
26-27N     5- 40     10- 45     15- 55     20- 50     15- 30      5- 20
25-26N    15- 45     20- 70     35- 85     60-100     30- 70     20- 45
24-25N    40- 76     55-100    100-130    110-150     60-100     40- 75
23-24N    20- 50     45- 70     70- 90     70- 95     40- 65     15- 40
22-23N     0- 35      5- 40     10- 30     10- 25      5- 25      0- 10
.....................................................................

RAINFALL ESTIMATED BY SATELLITE VIA NRL-BLEND.
24-HOUR RAINFALL MAXIMUM (FROM 18-18 UTC)- 295 MM AT 23.3N  98.7W
6-HOUR RAINFALL MAXIMUM (FROM 12-18 UTC)- 125 MM AT 24.6N 100.2W
RAINFALL DISTRIBUTION IN MM OVER THE LAST 6-HOURS (FROM 12-18 UTC)...

LATITUDE.........................LONGITUDE.........................
.......104W-103W 103W-102W 102W-101W 101W-100W 100W- 99W  99W- 98W
27-28N     0- 35      5- 40     10- 45     10- 45      5- 25      0- 20
26-27N     0- 35     10- 45     15- 50     20- 50     10- 30      5- 20
25-26N    15- 45     20- 70     35- 80     65-100     25- 70     15- 45
24-25N    35- 75     55- 95    100-120    110-125     60-100     35- 75
23-24N    20- 45     45- 75     65- 85     70- 95     35- 70     15- 40
22-23N     0- 30      5- 40     10- 30     10- 30      5- 25      0- 10
.....................................................................

RAINFALL HINDCAST FROM THE 06Z GFS MODEL.
24-HOUR RAINFALL MAXIMUM (FROM 18-18 UTC)- 305 MM AT 23.1N 101.8W
6-HOUR RAINFALL MAXIMUM (FROM 12-18 UTC)- 130 MM AT 24.9N 101.9W
RAINFALL DISTRIBUTION OVER THE LAST 6-HOURS (FROM 12-18 UTC)...

LATITUDE.........................LONGITUDE.........................
.......104W-103W 103W-102W 102W-101W 101W-100W 100W- 99W  99W- 98W
27-28N     0- 30      5- 40     10- 45     15- 45      5- 25      0- 20
26-27N     0- 35     10- 45     15- 45     20- 50     10- 30      5- 20
25-26N    15- 45     20- 70     35- 85     60-100     30- 70     20- 45
24-25N    35- 75     55-100    100-130    100-125     65-100     40- 75
23-24N    20- 45     45- 70     70- 85     70- 95     40- 70     15- 40
22-23N     5- 35      5- 40     10- 30     10- 25      5- 25      0- 10
.....................................................................

DIFFERENCES BETWEEN THE SATELLITE AND MODEL DERRIVED RAINFALL
ESTIMATES INDICATE UNCERTAINTY IN THE AMOUNT OF RAIN RECEIVED

RAINFALL MAY BE UNDERESTIMATED ON THE WINDWARD SIDE OF TERRAIN

FOR ADDITIONAL INFORMATION PLEASE VISIT
HTTP://WWW.HURRICANES.GOV/RAINFALL

FORECASTER NELSON
```

- **Similar to old text product in format, with differences in content:**
- **24-hour QPE from 3 methods**
  - **Presented as a range of rainfall within a 1ºx1º box**
  - **Covers total area of 6ºx6º centered near disturbance**
  - **Earth-relative coordinates (i.e. no reference to “left-of-center”/”right of center”)**

Wind Speed Probability Based Tropical Cyclone Danger Area Graphics



← 5 Percent Threshold



15 Percent Threshold →

TAFB Plans 2012-15

- Sea State initialized in GFE using "optimum interpolation" techniques from NWP guidance/surface observations – Fall 2012 – Replaces Sea Grid
- Locally run WW – JHT Project with NRL - Winter 2012-13
- Work with MMAB on valued added WW – 2013
- Enhanced marine products on the web
  - Point and click forecasts (MFM, Zones)
- Enhanced Decision Support Services (Local high resolution grids)
- Enhanced Ecological Support Services (HAB, Oil Spill)
- Collaborate/expansion of gridded marine forecasts with International MET services

Contact TAFB

- Tel: 305-229-4425 (Pacific)
  305-229-4424 (Atlantic)
  305-229-4426 (Analyst)
  305-229-4454 (Branch Chief)

? Questions – Comments ?