



Graphically Depicting the Hurricane Local Statement



Hurricane Local Statement

GRAPHICAL
HLS

LOCAL WIND ●

LOCAL SURGE ●

MARINE ●

FLOODING ●

TORNADOES ●

GRAPHICS ISSUED:
1130 PM FRI
OCT 15 1999 DD

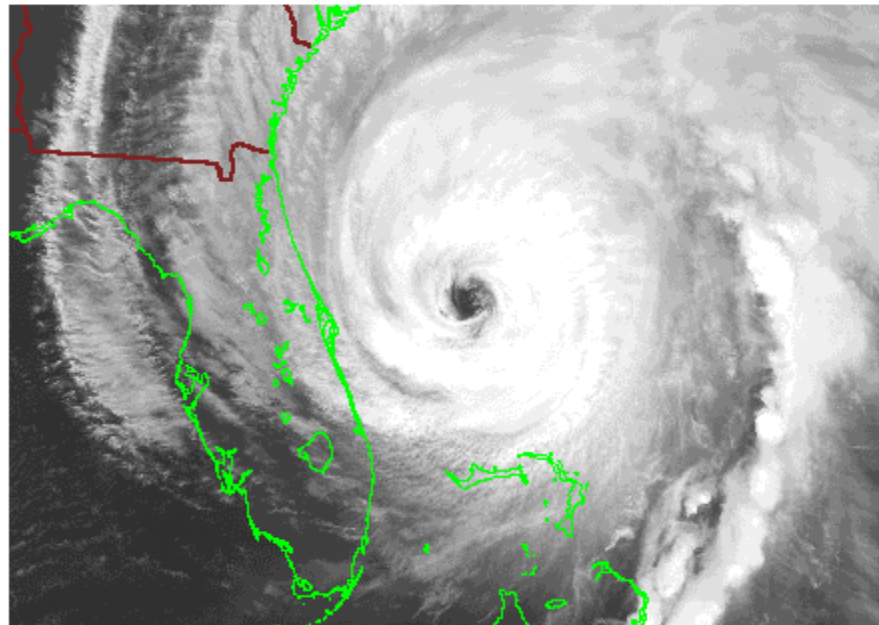
TEXT VERSION

Tropical
Prediction
Center

EMERGENCY
PREPAREDNESS

SITUATION ROOM

David W. Sharp & Scott M. Spratt



National Weather Service Melbourne, FL

HLS - The Official Text Version

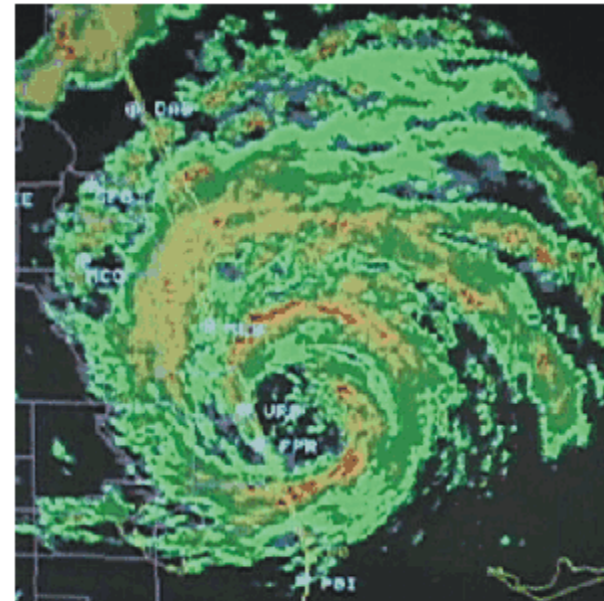
- Issued by the local WFO whenever tropical cyclone Watch and/or Warning is in effect.
- Information based on latest TPC forecast.
- To address the threat of expected tropical cyclone hazards, locally.
- To include all related hazards:
 - ▶ Local Winds
 - ▶ Local Surge
 - ▶ Local Flooding (rain)
 - ▶ Local Tornadoes
 - ▶ Local Marine



HLS - The Dilemma

Due to the diversity of threats, and the potential occurrence of multiple coincident threats, the text version (alone) is often insufficient to properly express all related weather concerns...

- **The HLS (text) may become overwhelmingly large in order to accommodate detail.**
- **The HLS (text) may become overgeneralized in order to manage product length.**



...TROPICAL STORM WARNING IN EFFECT FROM FLORIDA CITY NORTHWARD TO FERNANDINA BEACH ON THE FLORIDA EAST COAST AND FOR LAKE OKEECHOBEE...

...FLOOD WATCH FOR ALL OF EAST CENTRAL FLORIDA THROUGH SATURDAY...

...HIGH WIND WARNING FOR OKEECHOBEE... OSCEOLA... LAKE... ORANGE AND SEMINOLE COUNTIES TONIGHT...

AREAS AFFECTED...

THIS STATEMENT RECOMMENDS ACTIONS TO BE TAKEN BY RESIDENTS OF MARTIN...SAINT LUCIE... OKEECHOBEE... INDIAN RIVER... BREVARD... OSCEOLA... ORANGE... LAKE...SEMINOLE... FLAGLER... AND VOLUSIA COUNTIES OF EAST CENTRAL FLORIDA.

STORM INFORMATION...

AT 1130 PM EDT ...THE CENTER OF HURRICANE IRENE WAS LOCATED NEAR LATITUDE 26.4 NORTH...LONGITUDE 80.4 WEST. THIS POSITION IS ABOUT 25 MILES SOUTHWEST OF WEST PALM BEACH FLORIDA.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

HURRICANE IRENE IS INLAND OVER PALM BEACH COUNTY AND IS FORECAST TO MOVE OFFSHORE IN THE VICINITY OF STUART. IT IS FORECAST TO PASS ABOUT 30 MILES EAST OF CAPE CANAVERAL BY EARLY AFTERNOON SATURDAY. THIS REPRESENTS A LARGE SHIFT IN THE FORECAST TRACK TO THE EAST. THE GREATEST DANGER FROM HURRICANE IRENE WILL BE IN THE RAIN BANDS ALONG THE NORTH AND EAST EDGE OF THE CIRCULATION CENTER. RESIDENTS OF MARTIN... SAINT LUCIE ...OKEECHOBEE... INDIAN RIVER AND BREVARD SHOULD BE ESPECIALLY ALERT AND PREPARE FOR FLOODING DUE TO TORRENTIAL RAINFALL AND TROPICAL STORM FORCE WINDS. RESIDENTS OF LOW LYING AND FLOOD PRONE AREAS SHOULD REMAIN ALERT FOR THE ISSUANCE OF FLOOD WARNINGS AND BE PREPARED TO TAKE ACTION TO PROTECT LIFE AND PROPERTY.

CURRENT RADAR/SEVERE WEATHER THREAT...

AT 11 PM... STRONG RAIN BANDS NORTH OF THE CENTER OF IRENE WERE MOVING ONSHORE IN NORTHERN PALM BEACH COUNTY AND MARTIN AND SAINT LUCIE COUNTIES. SOME LOCAL FLOODING HAS BEEN REPORTED IN MARTIN COUNTY ALONG WITH MINOR ROOF DAMAGE. AS THE RAIN BANDS MOVE NORTH TORRENTIAL TROPICAL RAINS... ALONG WITH WINDS GUSTING TO NEAR 50 MPH WILL SWEEP NORTH ACROSS MARTIN... SAINT LUCIE AND INDIAN RIVER COUNTIES. THE STRONGEST WINDS AND GREATEST THREAT FOR WIND DAMAGE WILL BE ALONG THE IMMEDIATE COAST. EAST AND THEN NORTH WINDS WILL BUILD ALONG THE COAST NORTH OF STUART PRODUCING CONSIDERABLE BEACH EROSION. A FLOOD WARNING IS IN EFFECT FOR MARTIN COUNTY THROUGH EARLY SATURDAY MORNING.

BRIEF...ISOLATED TORNADOES ARE POSSIBLE IN OUTER RAINBANDS THROUGH THE NIGHT. THESE TYPE OF TORNADOES OFTEN SPIN UP QUICKLY AS STRONG RAINBAND CONVECTION MOVES ONSHORE. TORNADO WARNINGS MAY BE ISSUED LATER TONIGHT.

.WIND AND RAINFALL INFORMATION...

BASED ON THE CURRENT FORECAST TRACK SUSTAINED TROPICAL STORM FORCE WINDS SHOULD SPREAD FROM MARTIN AND SAINT LUCIE COUNTIES TO INDIAN RIVER...OKEECHOBEE AND BREVARD COUNTIES BY EARLY MORNING AND FROM NORTHBREVARD COUNTY TO VOLUSIA COUNTY DURING THE DAY ON SATURDAY. WINDS GUSTING TO TROPICAL STORM FORCE COULD OCCUR ON SATURDAY IN ORANGE...SEMINOLE AND OSCEOLA COUNTIES. PEAK WIND GUSTS DURING IRENE ALONG THE COASTS ARE EXPECTED TO BE IN THE 50 TO 60 MPH RANGE WHICH WILL NOT CAUSE WIDESPREAD DAMAGE... BUT WILL DOWN SOME TREES AND CAUSE EXTENSIVE POWER OUTAGES. RESIDENTS OF HIGH RISE BUILDINGS ALONG THE BEACH FRONT SHOULD EXPECT STRONGER GUSTS.

.STORM SURGE AND STORM TIDE INFORMATION...

SIGNIFICANT STORM SURGE IS NOT EXPECTED ALONG THE COAST. HOWEVER...SUSTAINED ONSHORE WINDS OF TROPICAL STORM FORCE WILL PRODUCE EXTREMELY ROUGH SURF... RIP CURRENTS... ADDITIONAL BEACH EROSION... AND POSSIBLY SOME MINOR COASTAL FLOODING... ESPECIALLY AROUND THE TIME OF HIGH TIDE. HIGH TIDES ALONG THE EAST CENTRAL FLORIDA COAST FROM DAYTONA BEACH TO FORT PIERCE WILL BE JUST AFTER MIDNIGHT TONIGHT AND JUST AFTER 1 PM SATURDAY AFTERNOON.

.NEXT UPDATE...

THE NEXT HURRICANE LOCAL STATEMENT WILL BE ISSUED AT 6 AM OR SOONER IF CONDITIONS WARRANT.

SHORT RANGE FORECASTS ISSUED HOURLY BY NWS MELBOURNE WILL CONTAIN THE LATEST RADAR INFORMATION AND EXPECTED EFFECTS FROM IRENE.

ADDITIONAL INFORMATION CAN BE FOUND AT THE NWS MELBOURNE WEB SITE AT [HTTP://WWW.SRH.NOAA.GOV/MLB](http://www.srh.noaa.gov/mlb)

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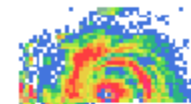
DD

Graphical HLS- The Premise

- **To provide a set of “experimental hazard graphics” to complement the official textual HLS.** (all related weather hazards)
- **To provide a suite of products that is desirable by the users.** (useful; easy to understand; customer feedback mechanism)
- **To exploit the display and communications capabilities of the Internet.** (usual disclaimers)
- **To support the NWS Strategic Plan.**
(deliver better products & services, graphic-oriented products)

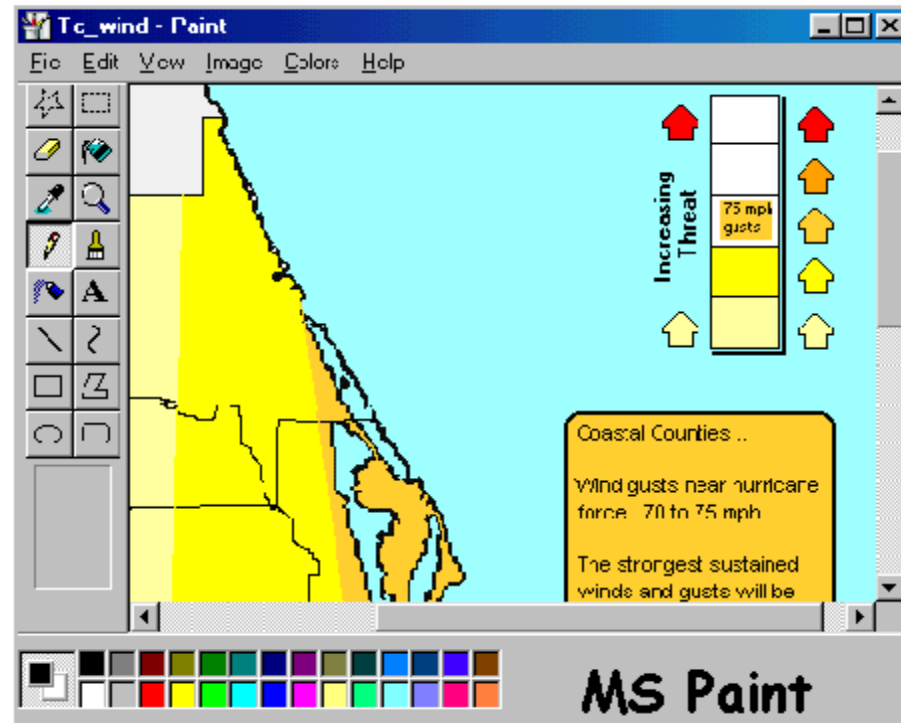


Experimental



Graphical HLS - Layout & Design

- **Wanted an “*Appliance*” look and feel.**
(based on graphical HWO concepts; not an online magazine)
- **Wanted the “*one-stop*” web page concept.**
(provide user with access to all necessary information)
- **Wanted an “*easy to use*” graphics package.**
(for manual composition)
- **Wanted a way to facilitate “*consistency*”.**
(forecaster to forecaster & issuance to issuance)



NWS Melbourne



THUNDERSTORMS
Severe
Strong

FLOODING

SEASONAL

MARINE

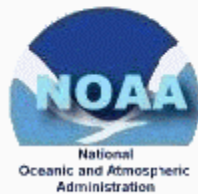
FIRE WEATHER

GRAPHICS ISSUED:
1100 AM EDT TUE
SEP 5 2000 SPRATT

TEXT VERSION



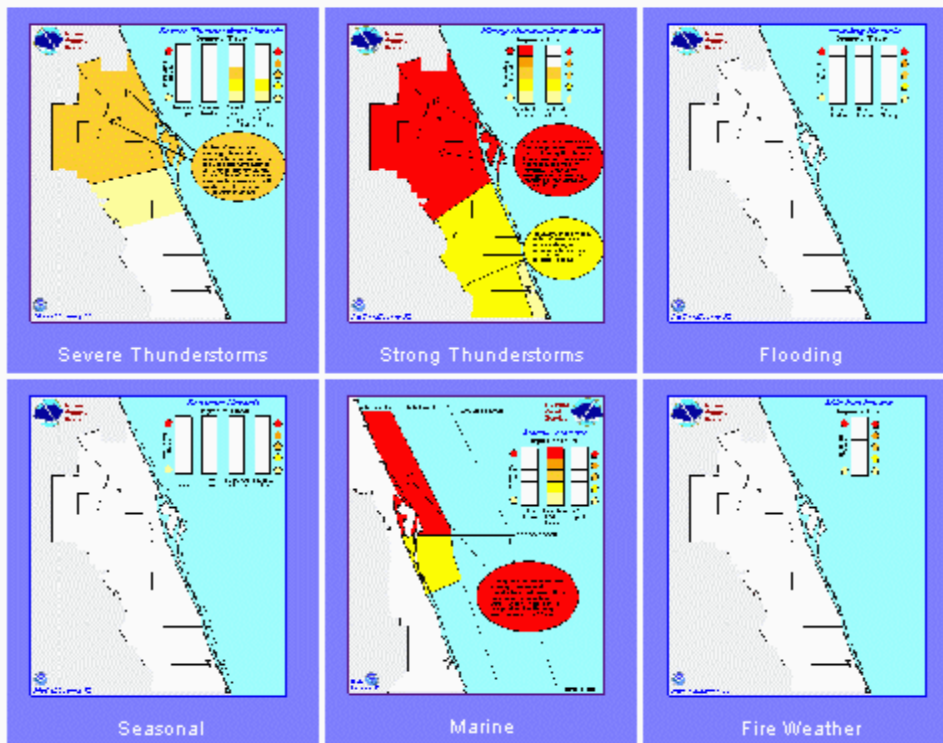
SITUATION ROOM



National Weather Service
Southern Region
Melbourne, Florida



Graphical Hazardous Weather Outlook



Click thumbnail images for full-sized graphic.

Note: When HLS is issued, it replaces the HWO.

Hurricane Local Statement



LOCAL WIND ●

LOCAL SURGE ●

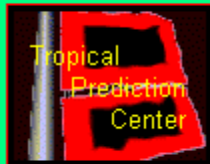
MARINE ●

FLOODING ●

TORNADOES ●

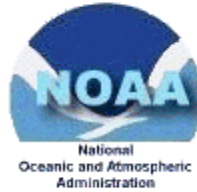
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PREPAREDNESS

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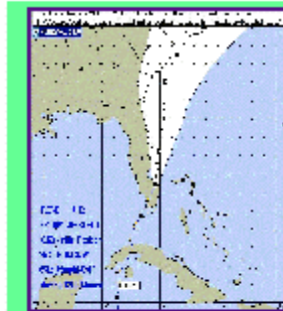


National Weather Service
Southern Region
Melbourne, Florida

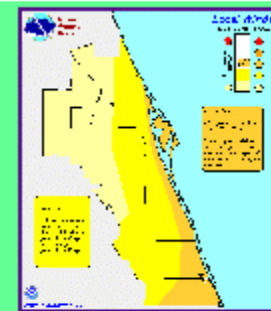


Graphical Hurricane Local Statement

(test) Hurricane Irene (test)



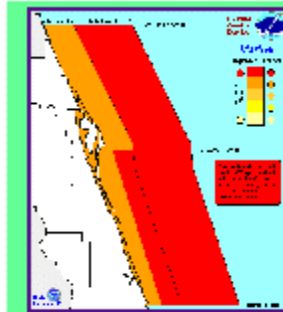
Cyclone Track



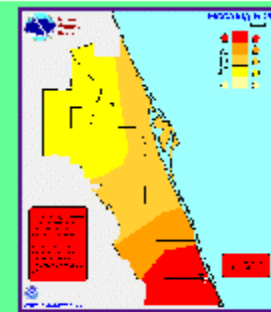
Local Wind



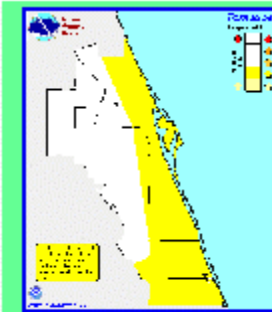
Local Surge



Marine Impacts



Flooding



Tornadoes

Click thumbnail images above for full-sized individual hazard graphic.

Graphical Hurricane Local Statement - NWS Melbourne - Netscape

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Hurricane Local Statement

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Tropical Prediction Center

EMERGENCY PREPAREDNESS

SITUATION ROOM

Parameter forecasts are contingent on potential track error as not to minimize any particular threat.

IRENE #12
FRI 10/15/99 23 EDT (03Z) - Initial Position
26.40 N 80.40 W
65kt (75mph)-Cat 1
Moving 12kt (14mph)

Assuming average hurricane track errors, the center of the tropical cyclone should pass within the white swath over the next 72 hours. The blue line indicates the past track (blue squares mark Tropical Depression stage, yellow squares for Tropical Storm intensity, and red squares show Hurricane strength). The dashed line within the white swath indicates the latest National Hurricane Center forecast (with successive heavy black squares indicating the forecast position at 12, 24, 36, 48, and 72 hours from the advisory time).

Document: Done

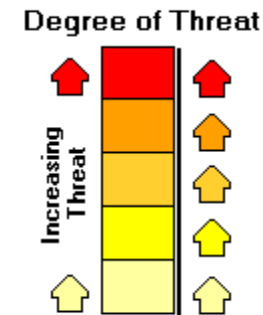
Threat Graphic - DoT & TAM

● Degree of Threat (DoT)

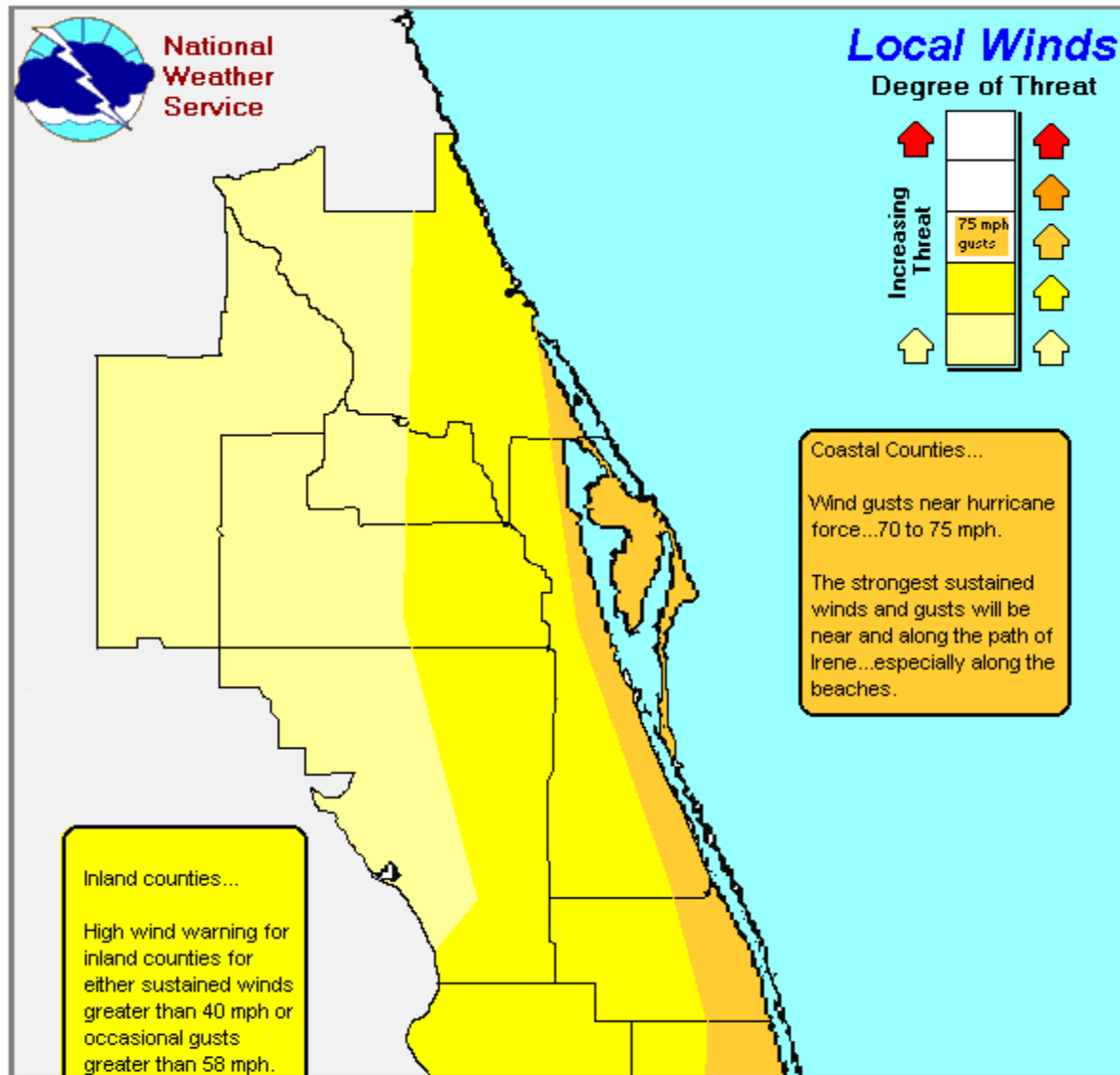
- ▶ Depicts the greatest level of threat of a particular hazard within east central Florida.
- ▶ **Winds, Surge, Marine** - Long-fused hazards
(threat level definitions based on local knowledge & experience, current tiered watch/warning/advisory structure)
- ▶ **Flooding Rain, Tornadoes** - Short-fused hazards
(mainly convective; threat level definitions based on forecast confidence & coverage, and potential impact)

● Threat Area Map (TAM)

- ▶ Depicts geographical area(s) at higher risk and/or delineates the timing of a particular hazard.



Threat Graphic



Ability to more clearly depict the inland wind threat.

Graphical Hurricane Local Statement - NWS Melbourne - Netscape

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Hurricane Local Statement

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SITUATION ROOM

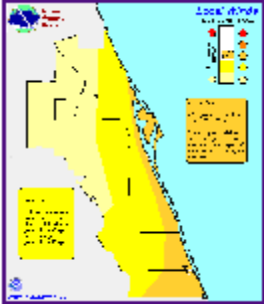
Degree of Threat & Threat Area Map

Tropical Cyclone Hazards - Local Winds

Click thumbnail image or scroll down for full-sized graphic.

LOCAL WINDS

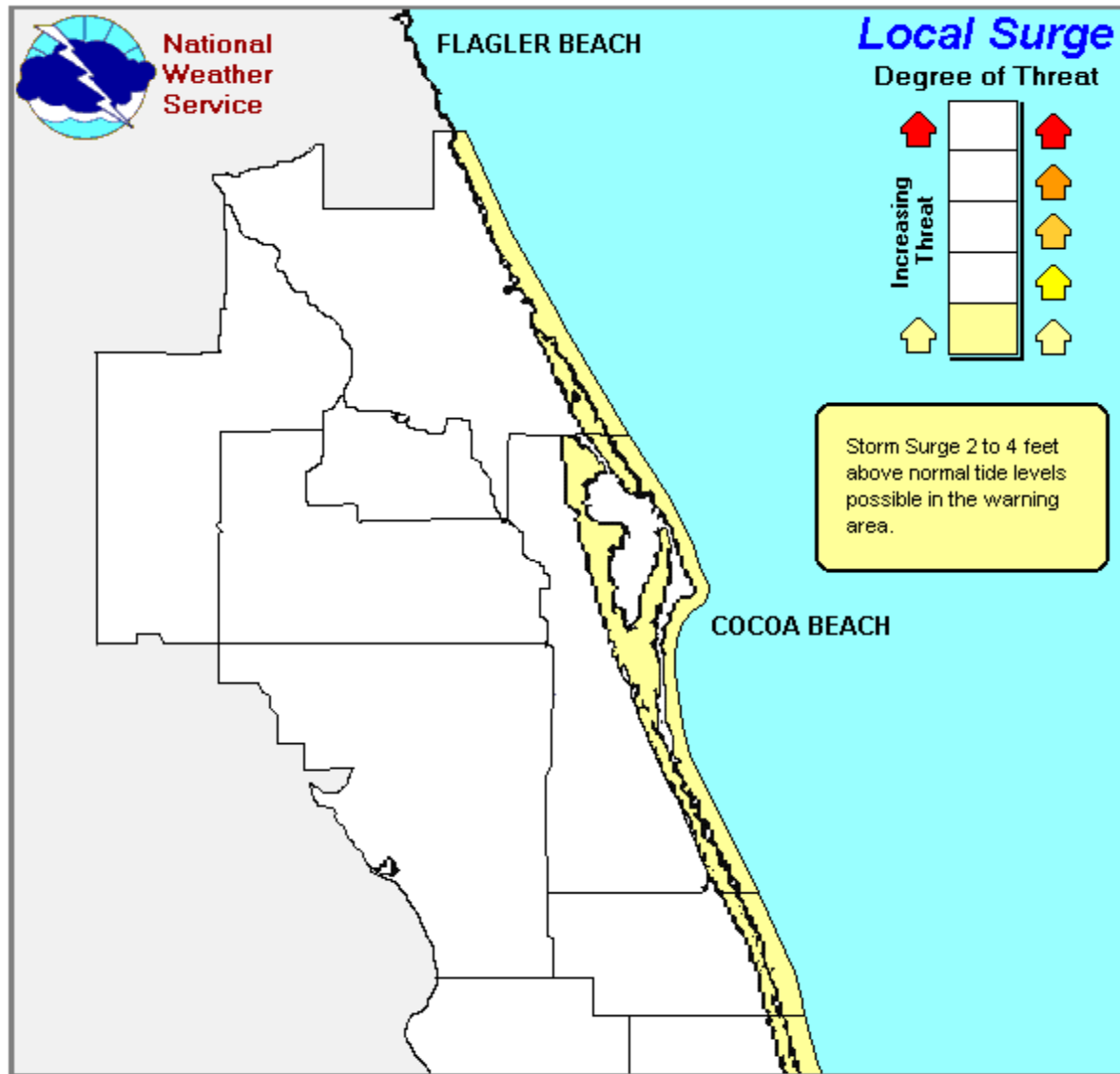
		> 110 mph (Major Hurricane) Category 3, 4, & 5 Force
		96 - 110 mph Category 2 Force
		74 - 95 mph Category 1 Force
		58 - 73 mph Strong Tropical Storm Force
		39 - 57 mph Tropical Storm Force



Winds = Winds associated with a tropical cyclone (highest expected anywhere within east central Florida...coastal or inland)

Document: Done

*Threat
Graphic*



Locally calibrated based on historical cases and surge maps.

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Hurricane Local Statement

GRAPHICAL HLS

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Tropical Prediction Center

EMERGENCY PREPAREDNESS










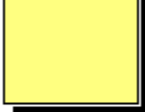
SITUATION ROOM

Degree of Threat & Threat Area Map

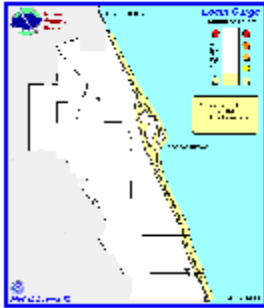
Tropical Cyclone Hazards - Local Surge

Click thumbnail image or scroll down for full-sized graphic.

LOCAL SURGE

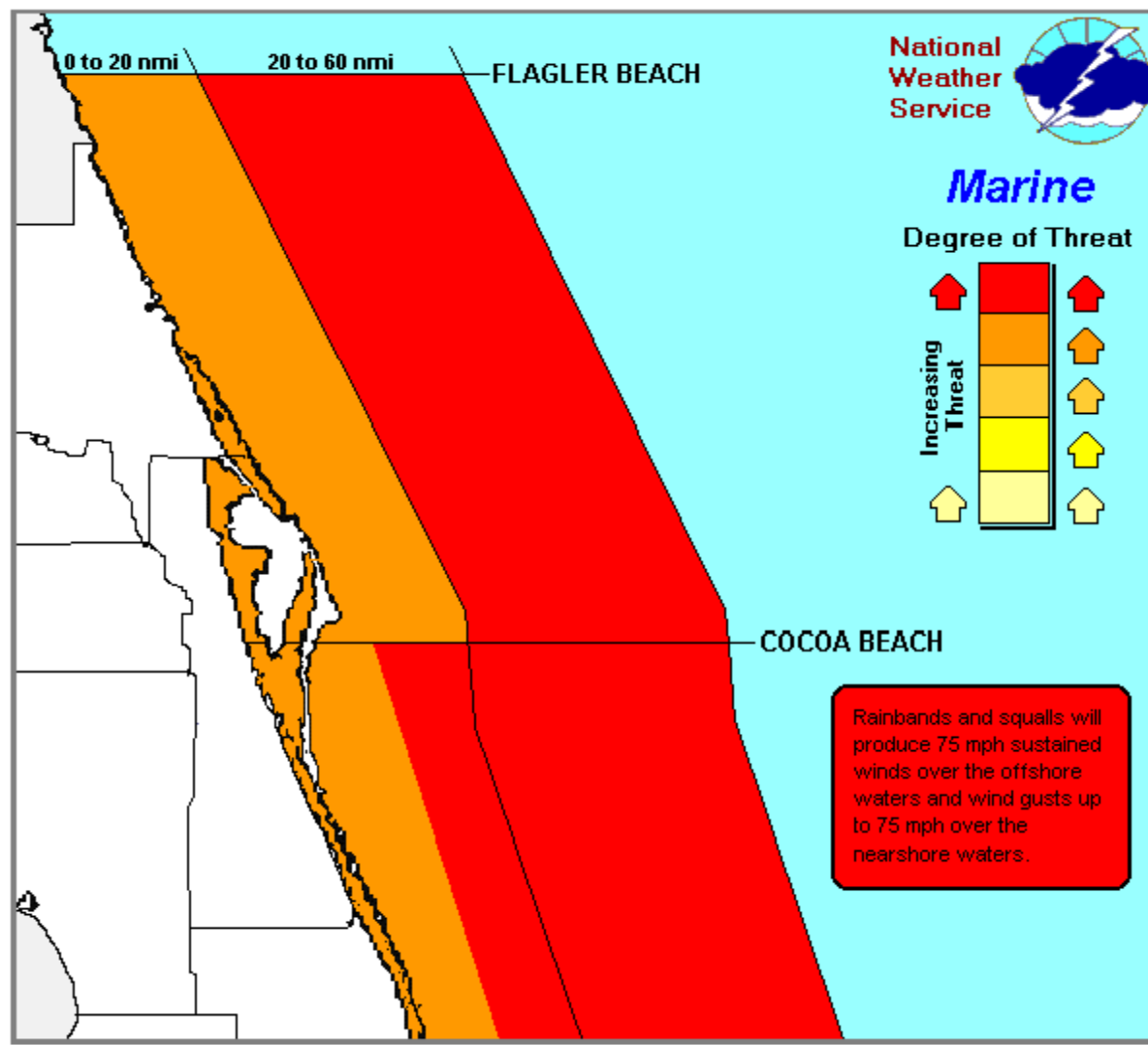
		13 feet or higher
		9 - 12 feet
		6 - 8 feet
		4 - 5 feet
		3 feet or lower

Local = Storm Surge + Astronomical Tide
Surge (highest expected anywhere along the east central Florida coast)



Document: Done

*Threat
Graphic*



Many times the marine impact is given insufficient attention when, in fact, it may be the primary concern (locally) with certain passing cyclones.

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Hurricane Local Statement

GRAPHICAL HLS

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Tropical Prediction Center






EMERGENCY PREPAREDNESS

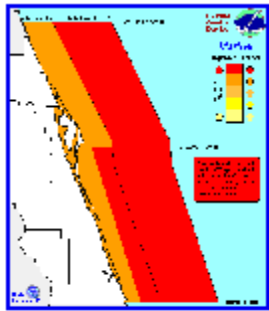
SITUATION ROOM

Degree of Threat & Threat Area Map

Tropical Cyclone Hazards - Marine Impacts

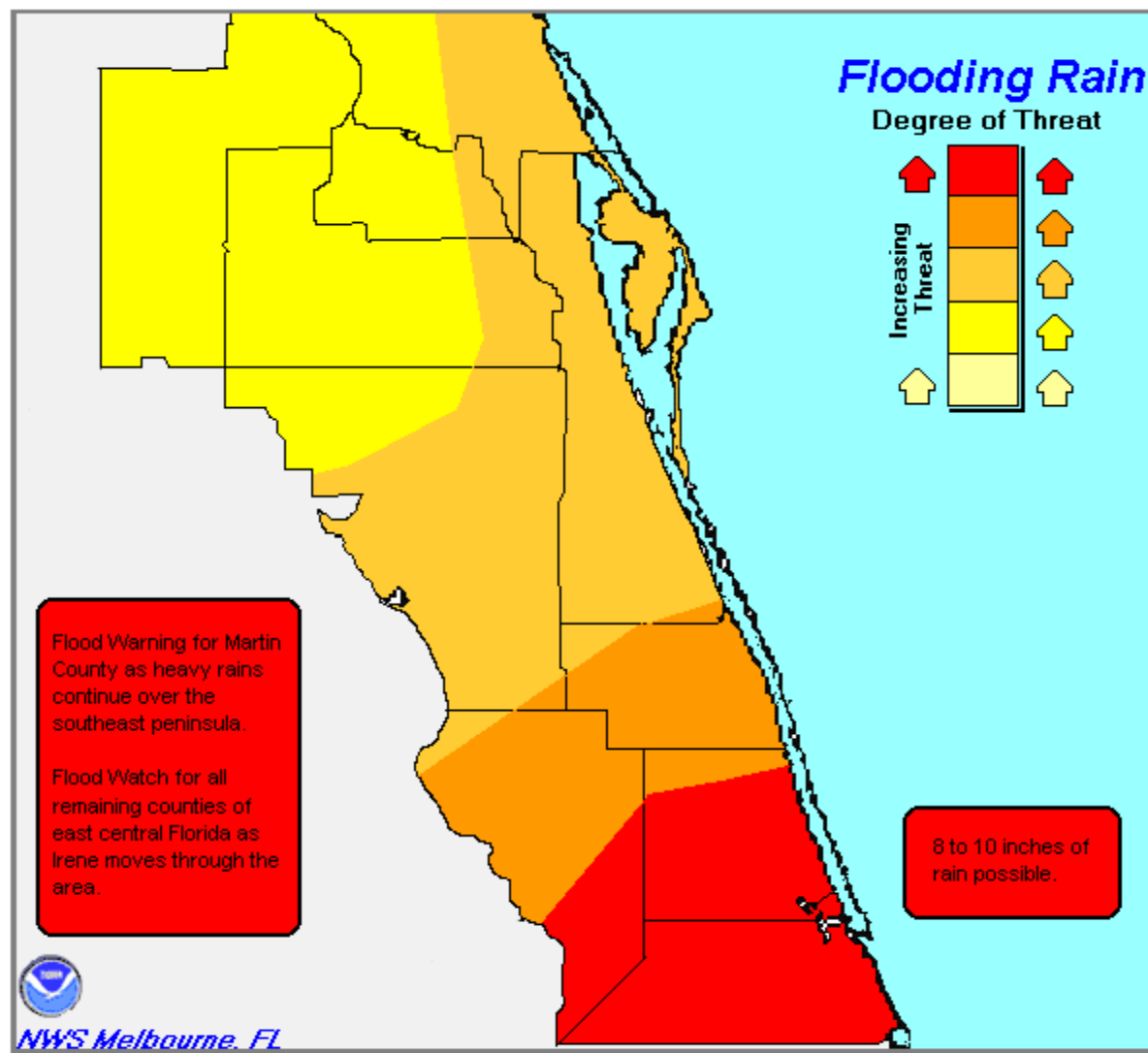
Click thumbnail image or scroll down for full-sized graphic.

Marine	
	Hurricane Warning
	Tropical Storm Warning
	Small Craft Should Remain In Port (seas 10+ feet)
	Small Craft Should Remain In Port (seas 7 to 9 feet)
	Small Craft Should Not Venture Far From Port / Small Craft Should Exercise Caution



Document: Done

*Threat
Graphic*



Not a
direct
"QPF"

Not necessary to change to Saffir-Simpson Scale to include flooding rain.

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Hurricane Local Statement

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HLS

LOCAL WIND ●

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Tropical Prediction Center

EMERGENCY PREPAREDNESS

SITUATION ROOM

Degree of Threat & Threat Area Map

Tropical Cyclone Hazards - Flooding Rain

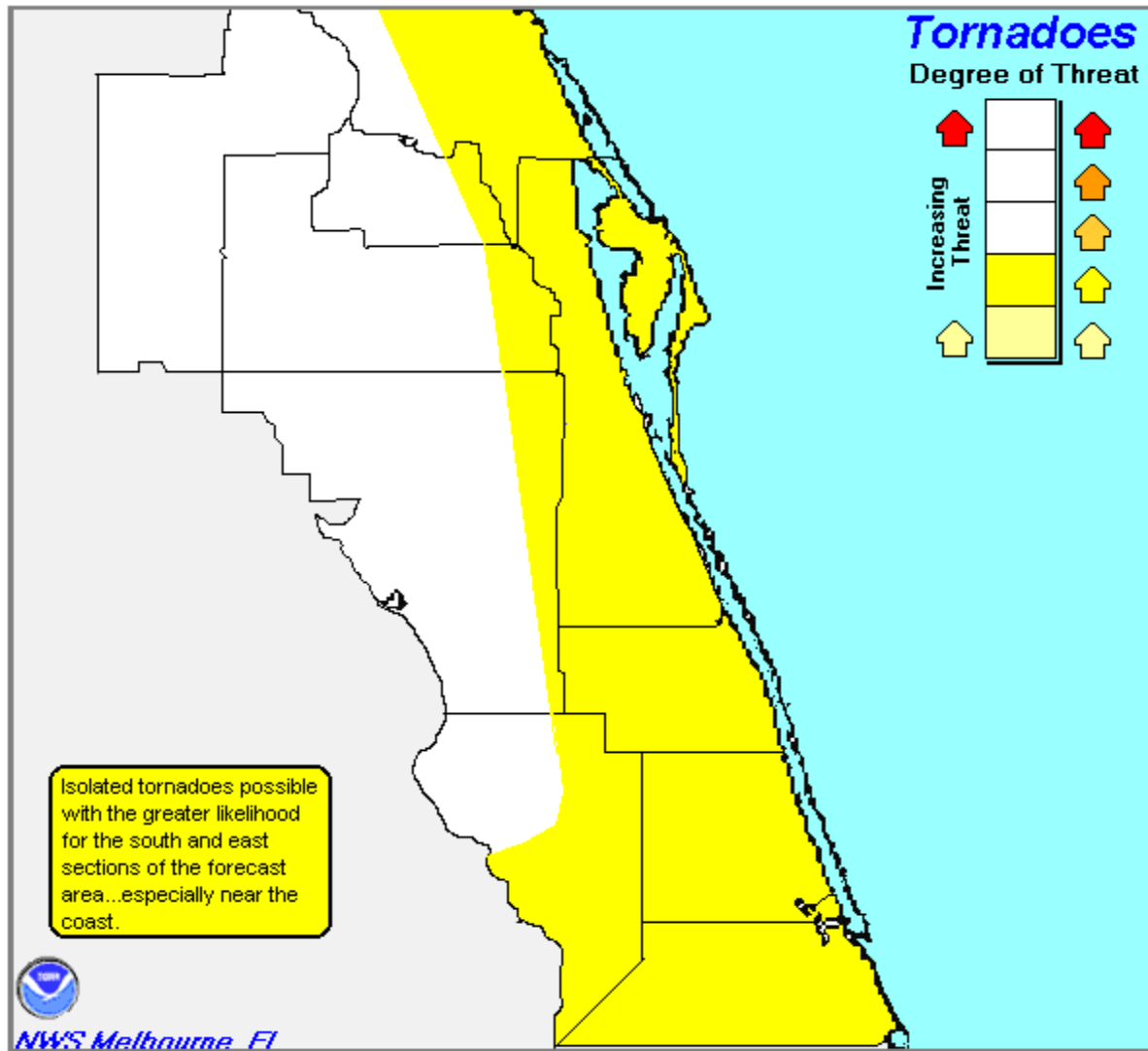
Click thumbnail image or scroll down for full-sized graphic.

FLOODING

- Extreme Hazard Threat
- Very High Hazard Threat
- High Hazard Threat
- Moderate Hazard Threat
- Hazard Threat

Document: Done

*Threat
Graphic*



Take advantage of local experience regarding outer rainband tornadoes.

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Hurricane Local Statement

GRAPHICAL HLS

LOCAL WIND ●

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TORNADOES ●

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Tropical Prediction Center

EMERGENCY PREPAREDNESS










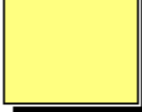
SITUATION ROOM

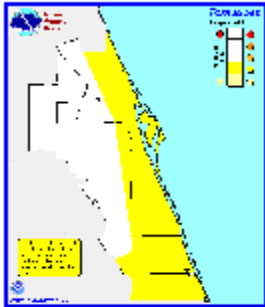
Degree of Threat & Threat Area Map

Tropical Cyclone Hazards - Tornadoes

Click thumbnail image or scroll down for full-sized graphic.

TORNADOES

		Extreme Hazard Threat
		Very High Hazard Threat
		High Hazard Threat
		Moderate Hazard Threat
		Hazard Threat



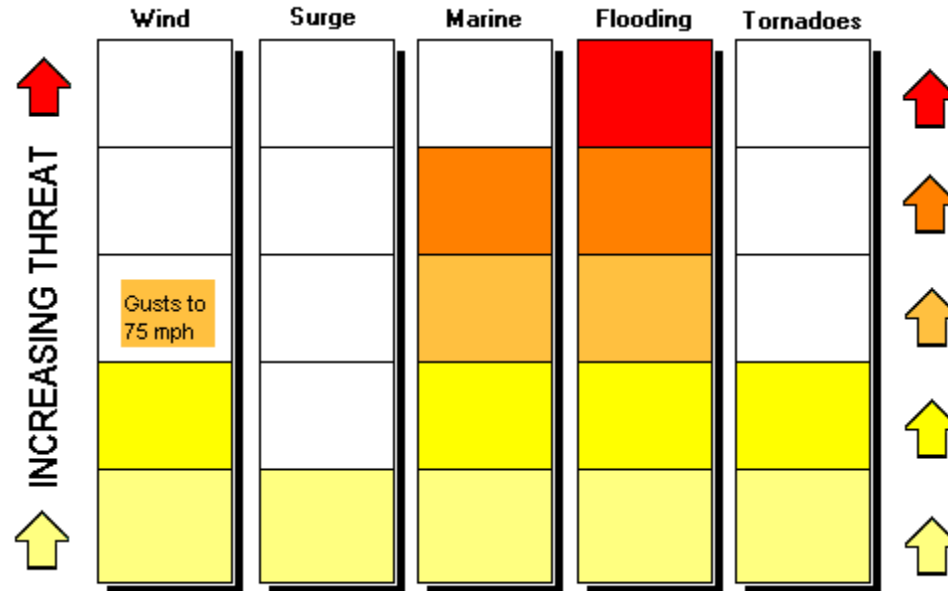
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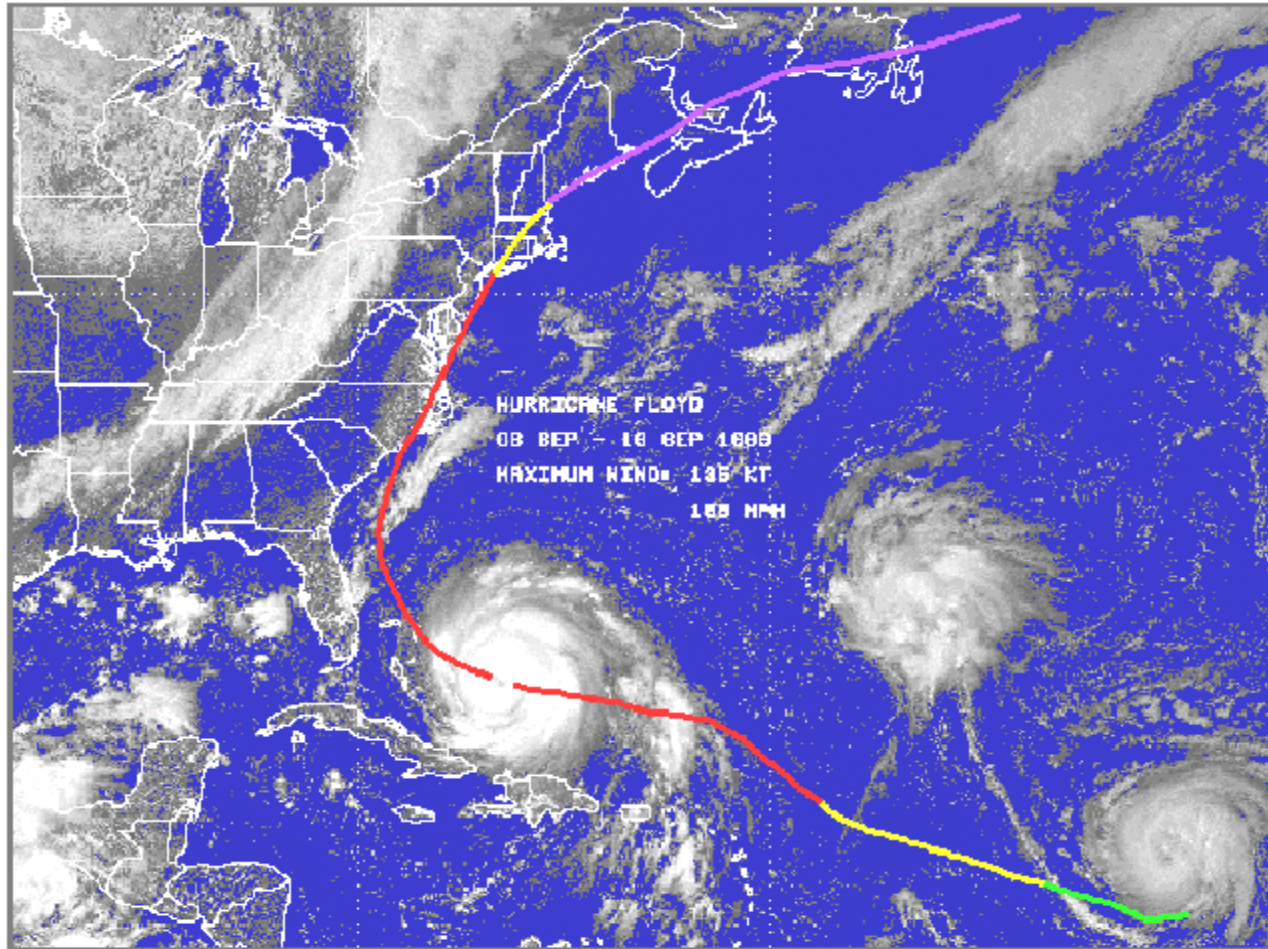
National Weather Service - Melbourne, Florida
Hurricane & Tropical Storm Hazards
Maximum Degree of Threat (DoT)
Specific to East Central Florida



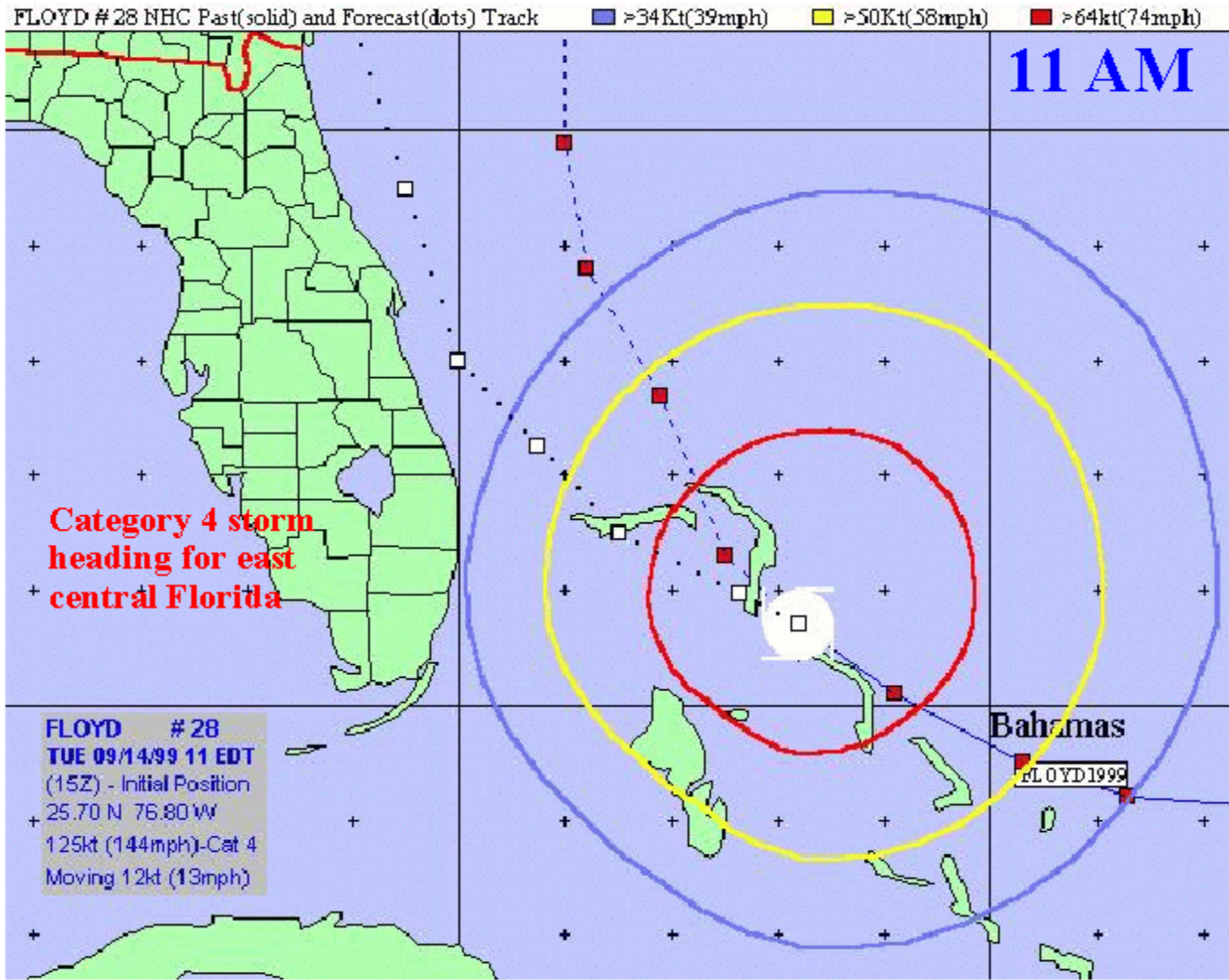
TEST Hurricane Irene *TEST*



While TPC speaks to the specifics of the cyclone (storm-centered), the field office speaks to the “*local threat situation*” based on the official track/intensity forecast (location-centered).



The catalyst for the graphical HLS project was the changing of the *local threat situation* to east central Florida (local area) during Hurricane Floyd and our (in)ability to effectively communicate that information to the public.





National Weather Service - Melbourne, Florida

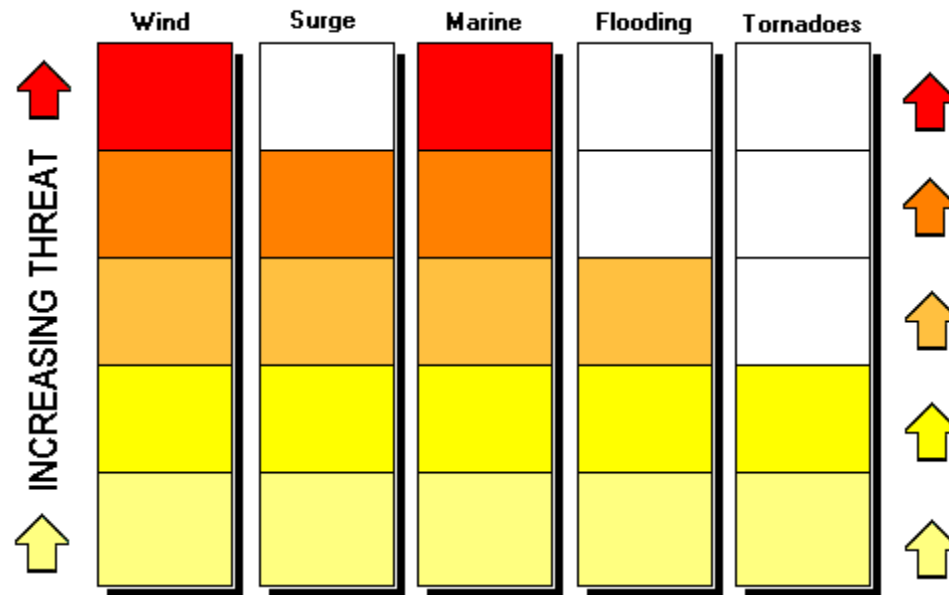
Hurricane & Tropical Storm Hazards

Degree of Threat (DOT)

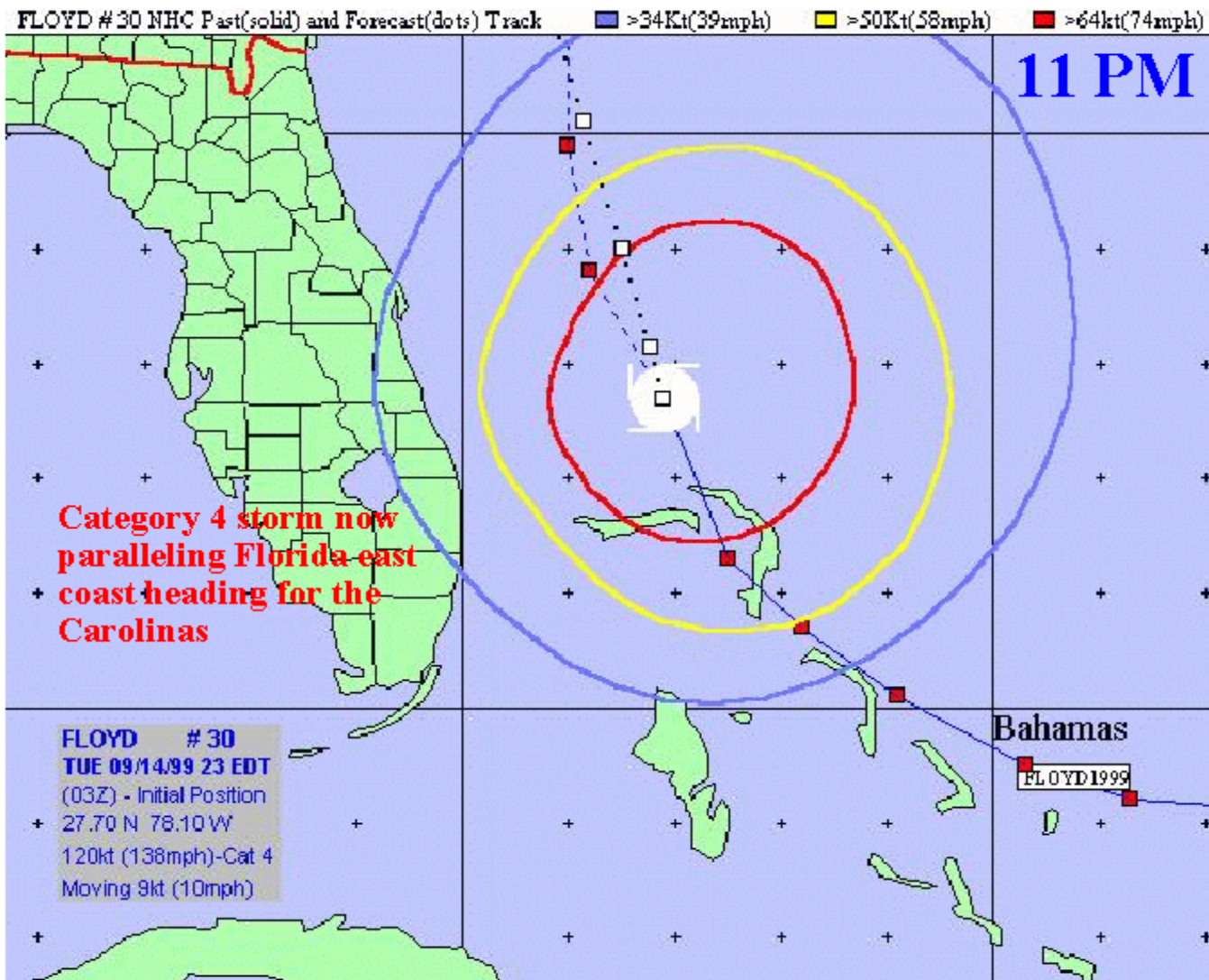
Specific to East Central Florida



Hurricane Floyd - 11 AM



Local Threat Situation: Glancing landfall of an (Atlantic) major hurricane whose west side will overspread the local forecast area but whose east side will generally stay over the local marine area. (The situation would, of course, be of varying difference for MIA, JAX, as well as other coastal offices.)

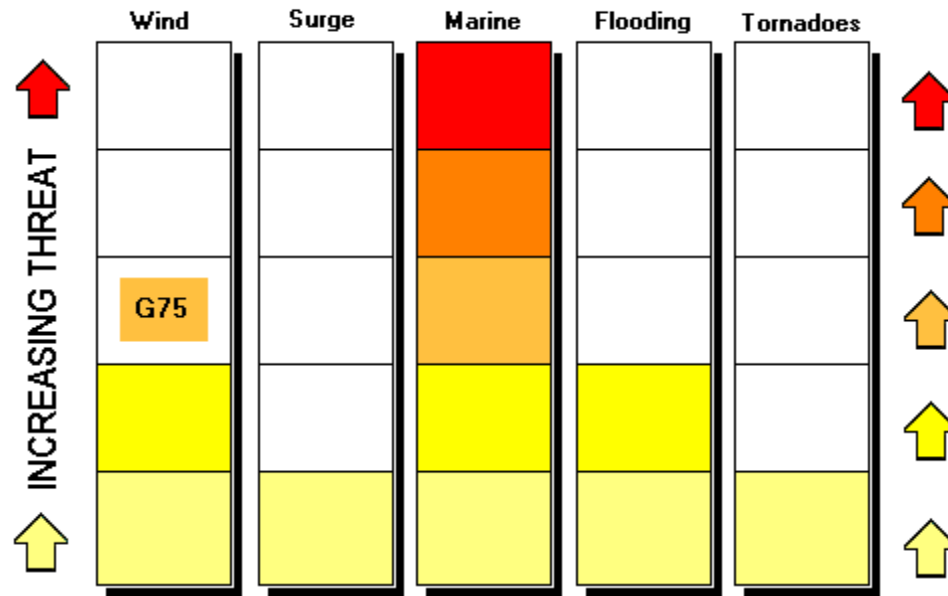




National Weather Service - Melbourne, Florida
Hurricane & Tropical Storm Hazards
Degree of Threat (DOT)
Specific to East Central Florida

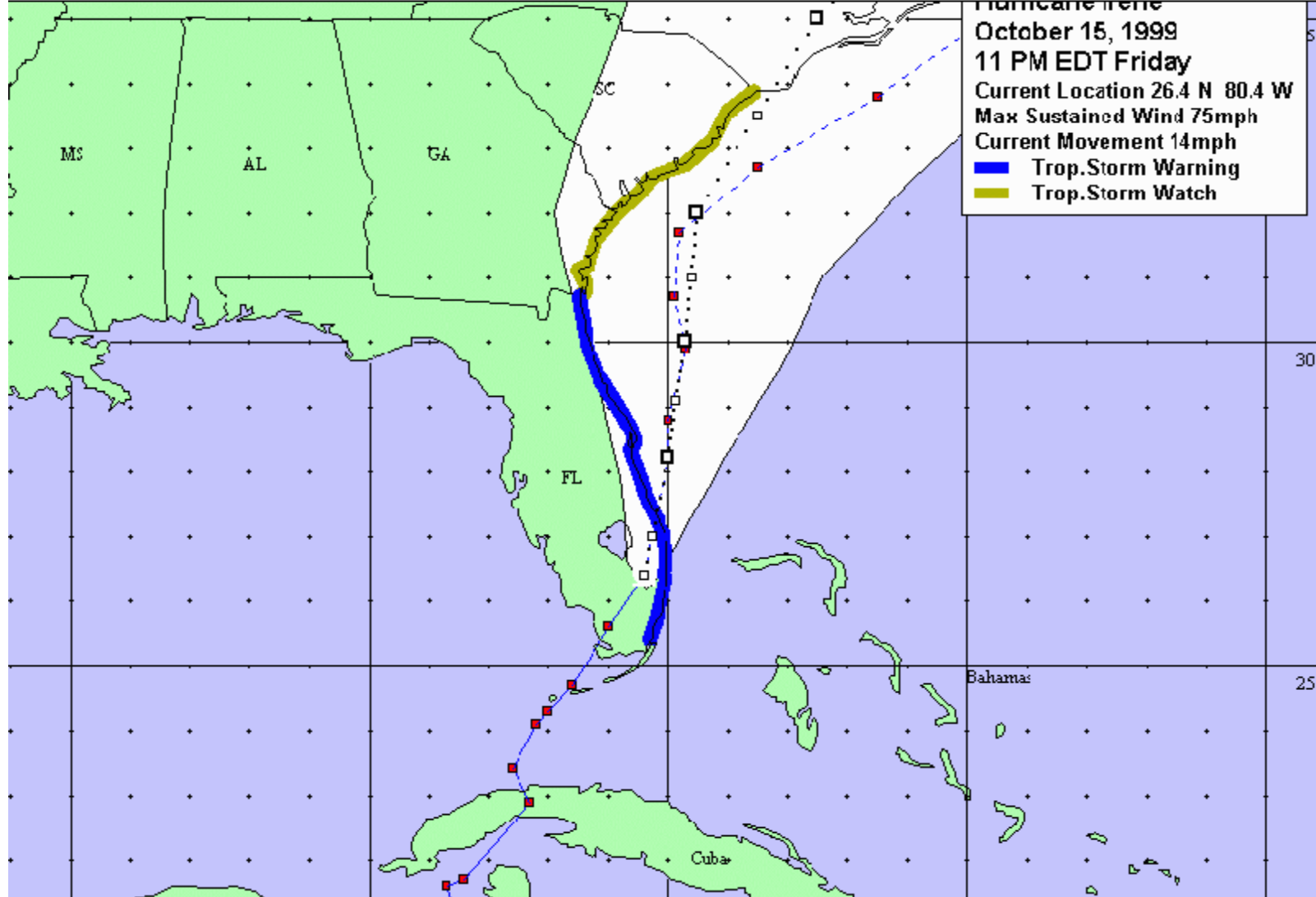


Hurricane Floyd - 11 PM



Local Threat Situation: (Atlantic) major hurricane whose west side will brush the local forecast area (gusts to hurricane strength near the coast) as its track parallels the Florida east coast.

Hurricane Irene (1999)



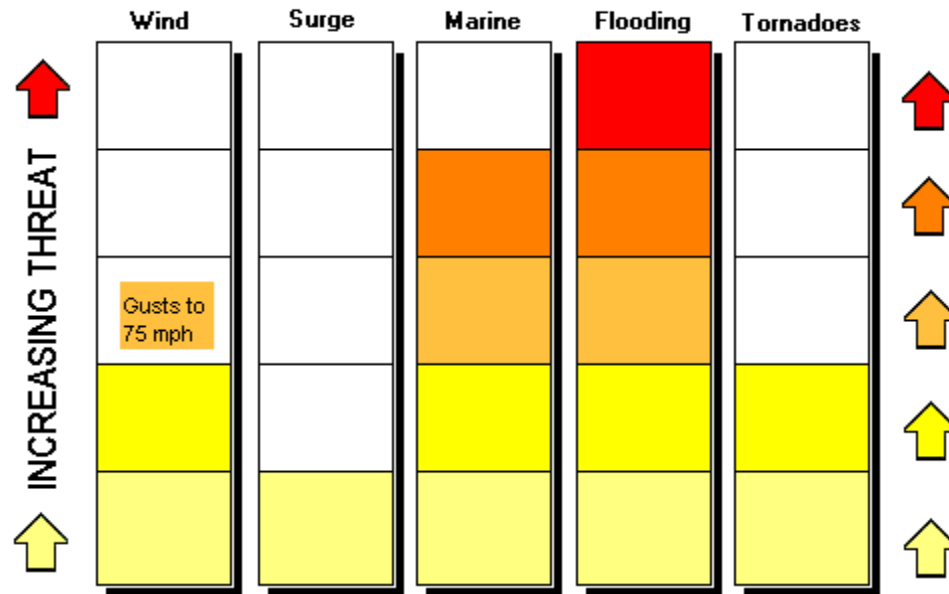


National Weather Service - Melbourne, Florida
Hurricane & Tropical Storm Hazards
Maximum Degree of Threat (DoT)
Specific to East Central Florida



TEST Hurricane Irene *TEST*

- Flooding
- Marine
- Wind (G75 mph)

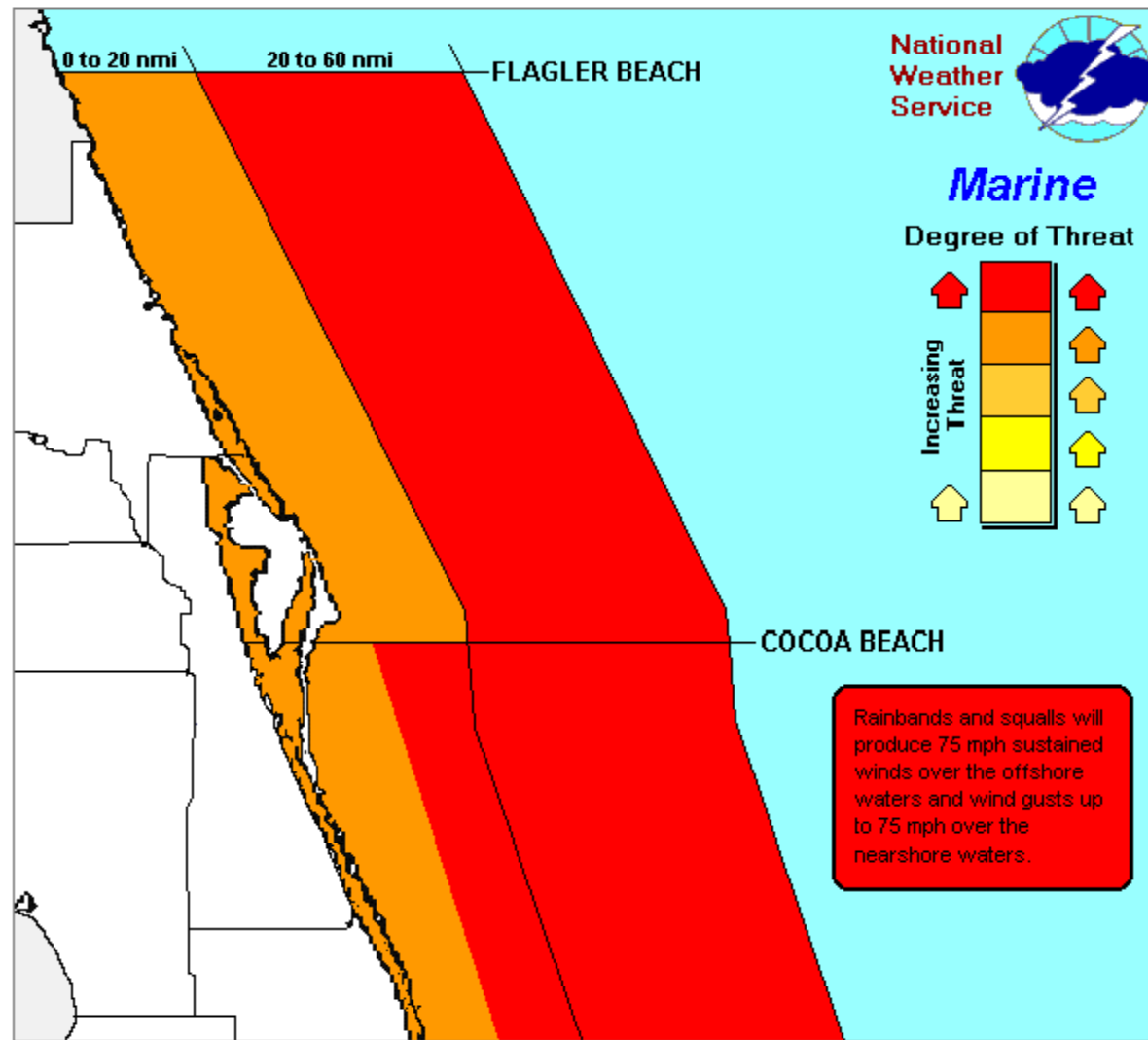


Local Threat Situation: Post-landfall Category 1 hurricane (marginal) approaching forecast area from the south. Significant rainfall already over south peninsula with QPF well over flash flood guidance (3 hr & 6 hr) for counties along track (south forecast area). East side of cyclone over marine area where winds are expected to be just at hurricane strength. Eye to exit peninsula south of Cape Canaveral.

Hurricane
conditions likely
offshore east of
center.

Tropical Storm
conditions likely
near shore.

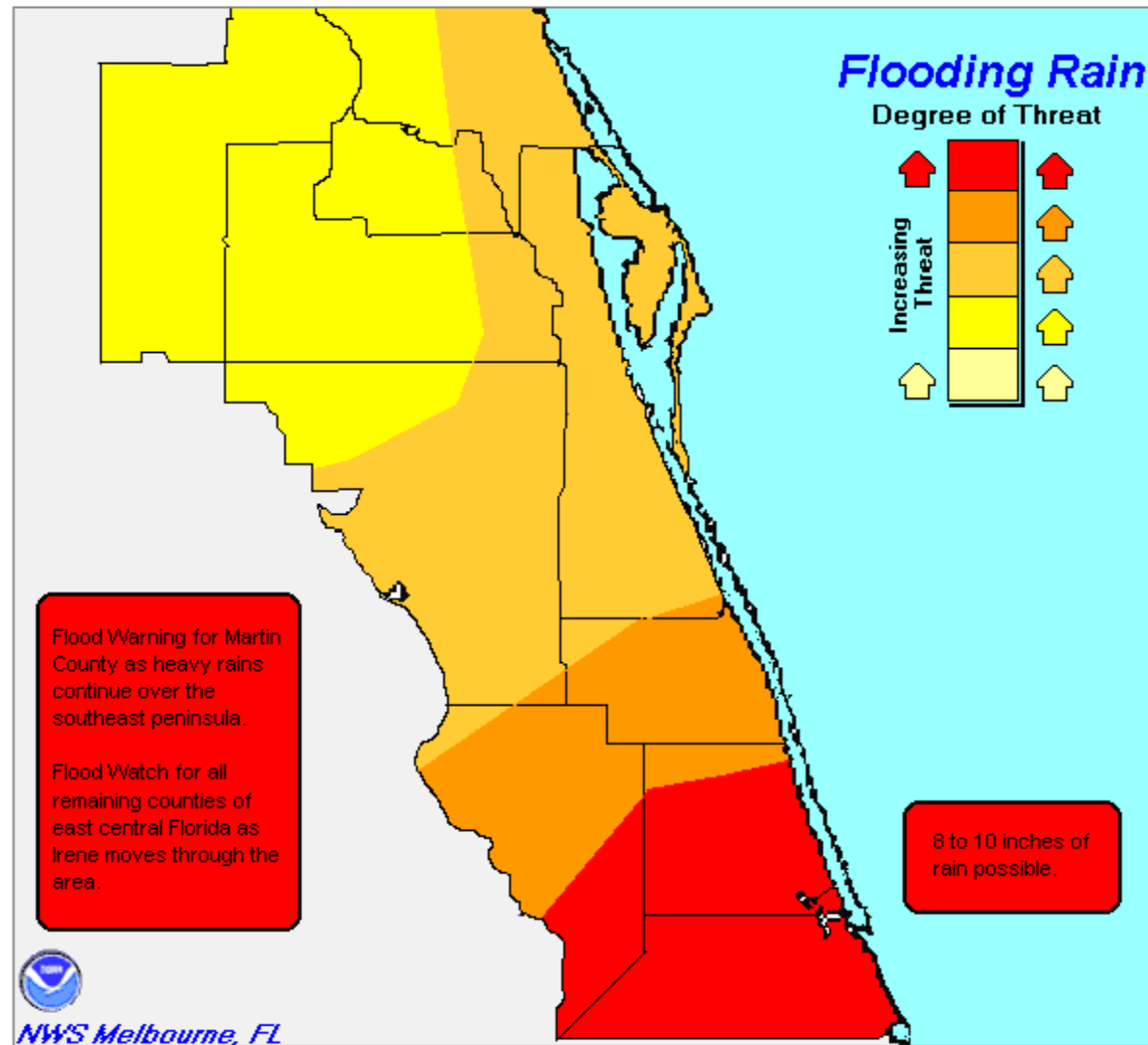
**Greatest marine
threat for eastern
(seaward) forecast
area.**



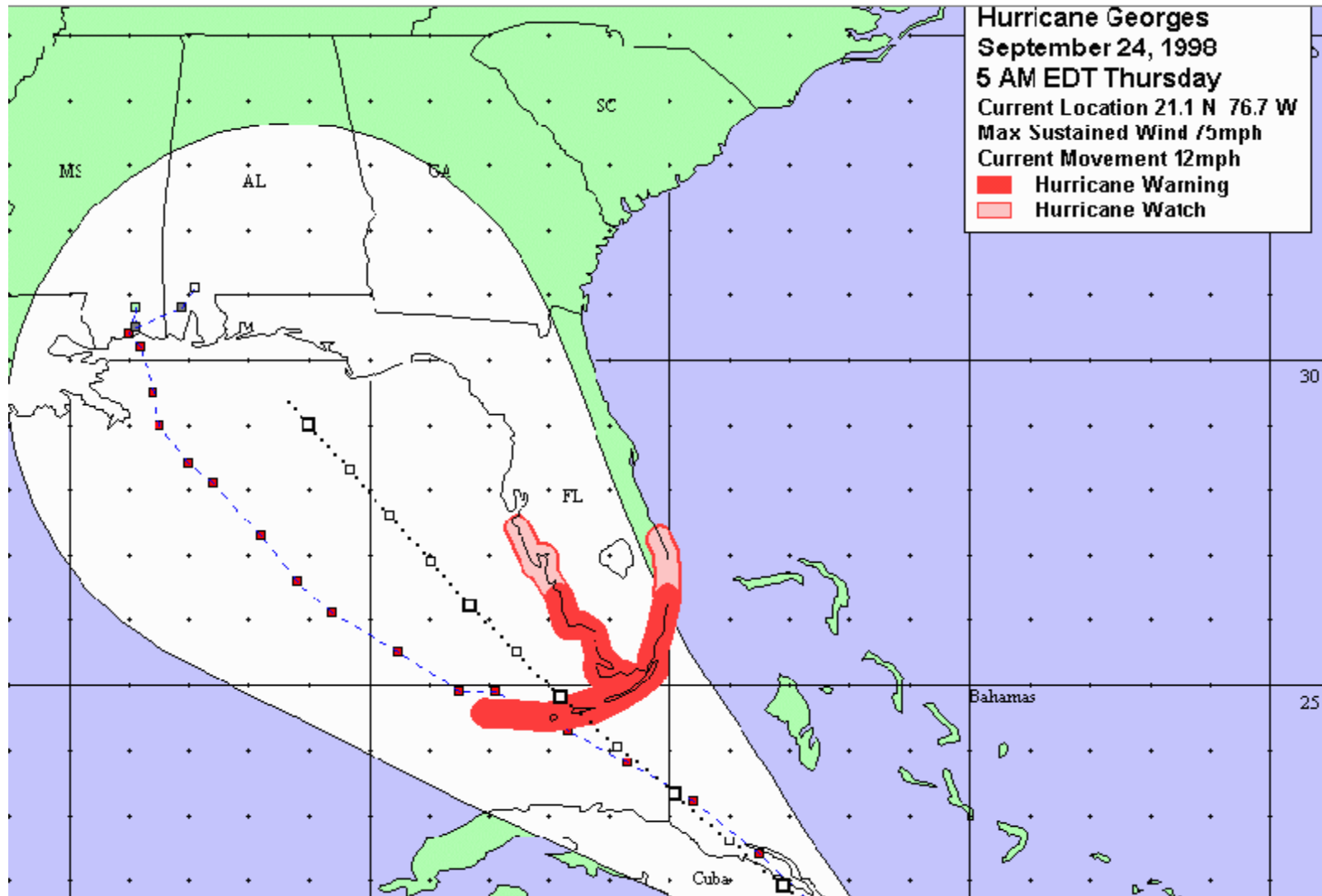
Greatest flooding threat southeast forecast area... lessening threat to the northwest.

Flood Watch all CWA...but varying levels of threat.

Not purely QPF... but “effects” of rainfall (relative to values from flash flood guidance).



Hurricane Georges (1998)





National Weather Service - Melbourne, Florida
Hurricane & Tropical Storm Hazards
Degree of Threat (DOT)
Specific to East Central Florida

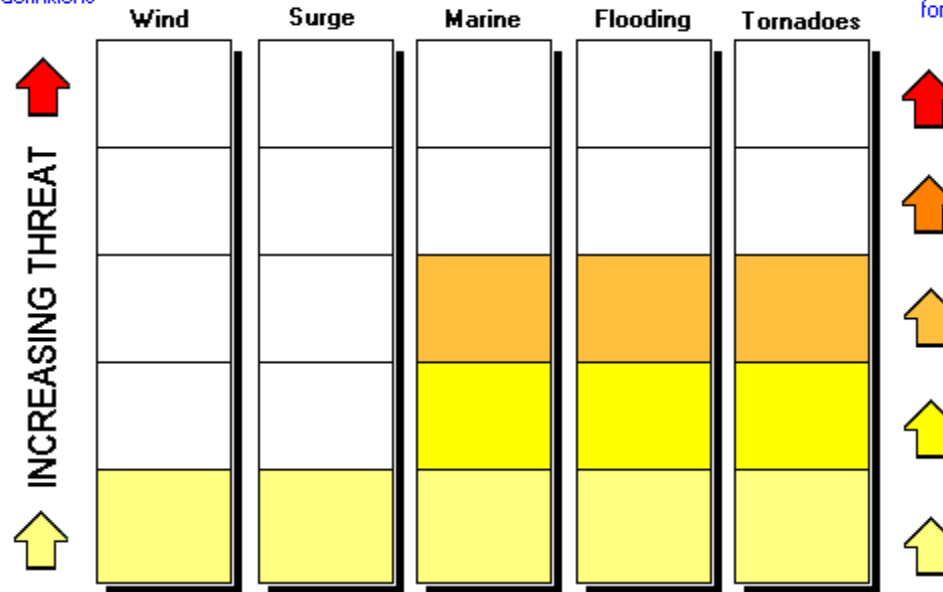


Hurricane Georges

Click buttons to left for definitions

Scroll down for maps

- Marine
- Flooding
- Tornadoes

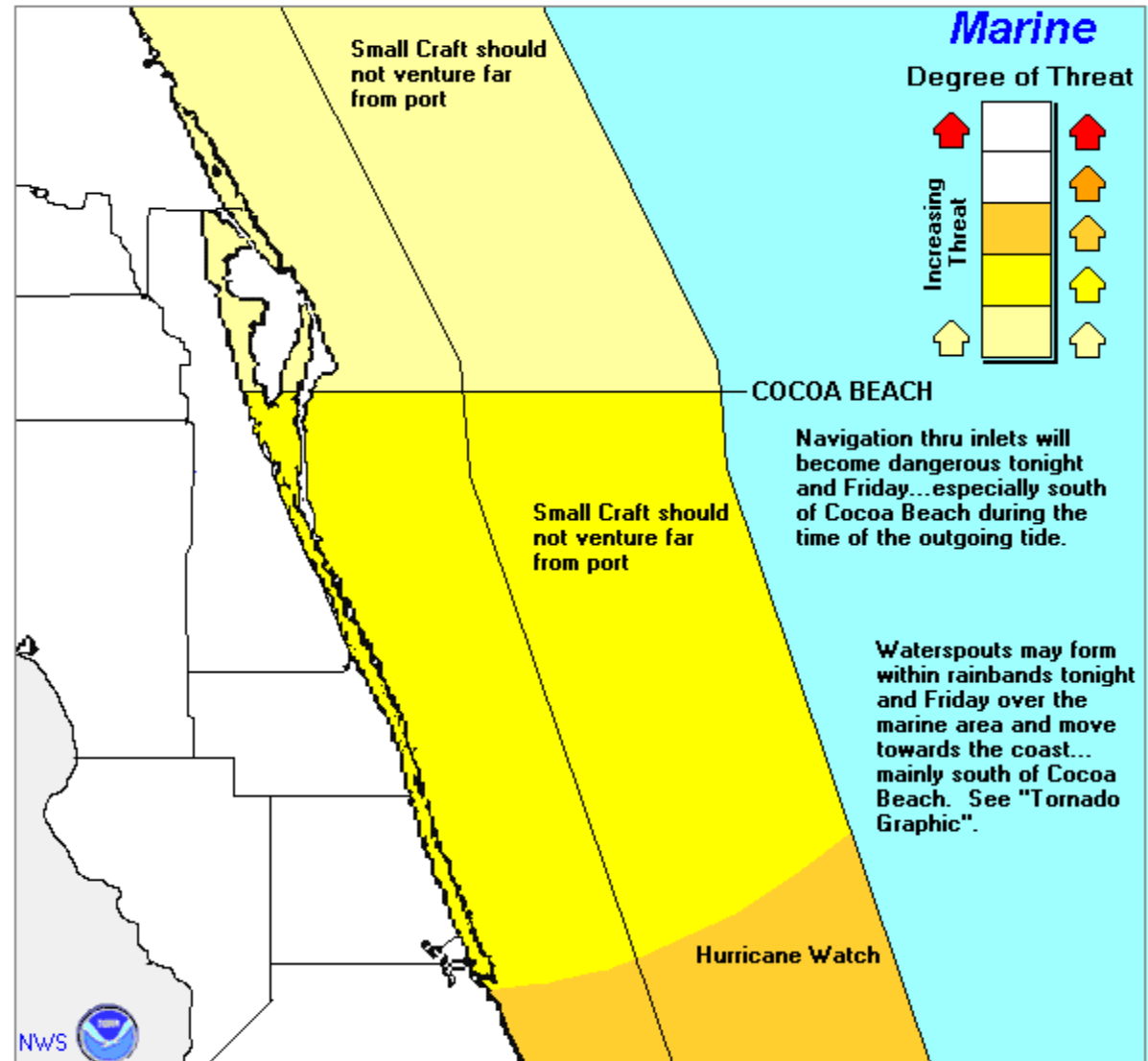


Local Threat Situation: Minimal hurricane forecast to move from Cuba towards the Florida Keys and strengthen. Hurricane Watch in effect for southernmost County Warning Area, but threat for significant winds expected much farther south. Greatest threats are high seas over southern marine area, heavy rain and isolated tornadoes from outer rainbands possibly spreading north to southernmost counties.

Hurricane Watch
for extreme south
CWA...but threat
increases farther
south.

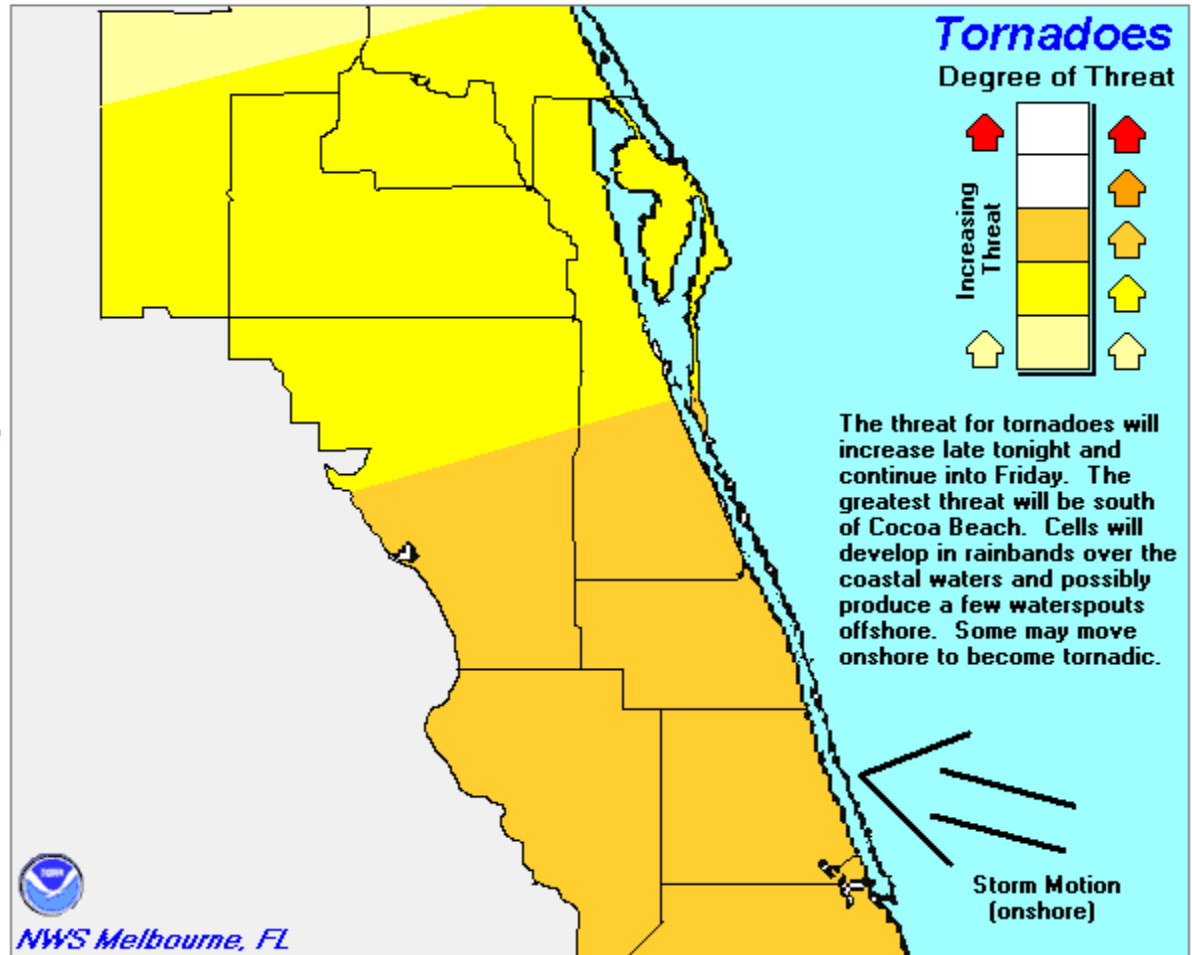
ECFL mariners
advised to remain
near port.

Inlet navigation
difficulty and
threat for
waterspouts
highlighted for
south CWA.

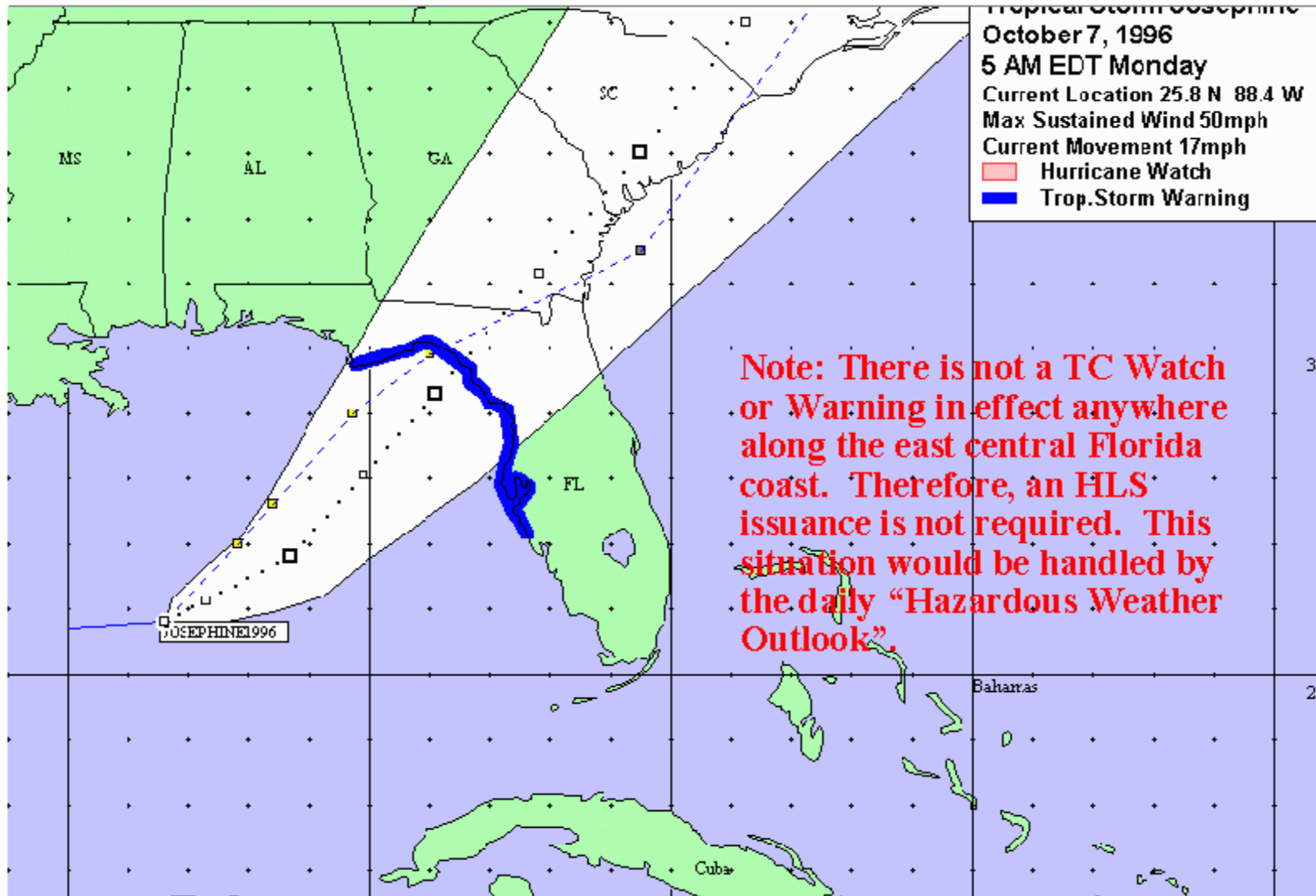


Tornado threat for all ECFL...but increases over south forecast area.

Tornado cells to move onshore from the Atlantic.



Tropical Storm Josephine (1996)

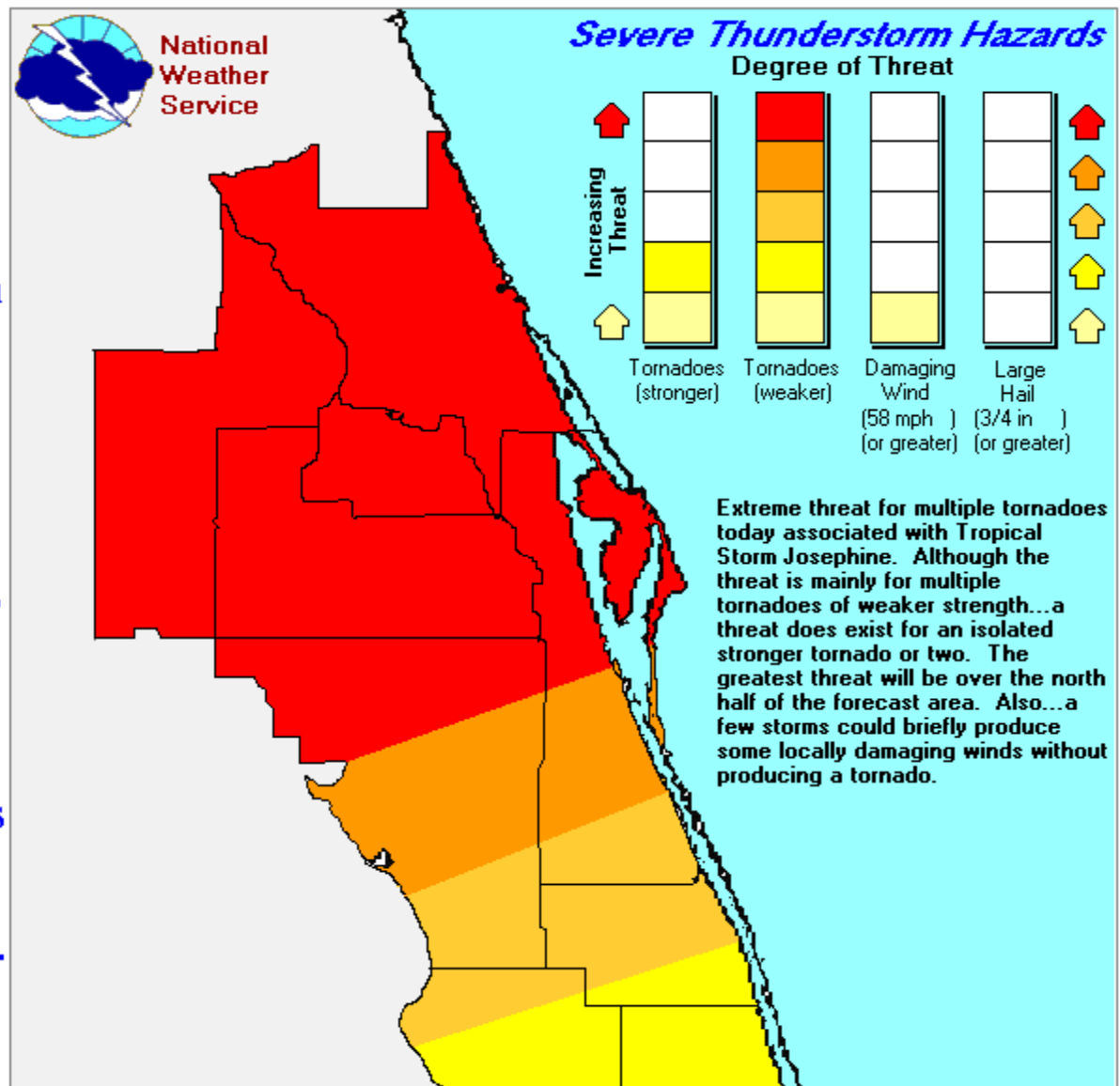


Hazardous Weather Outlook (HWO):

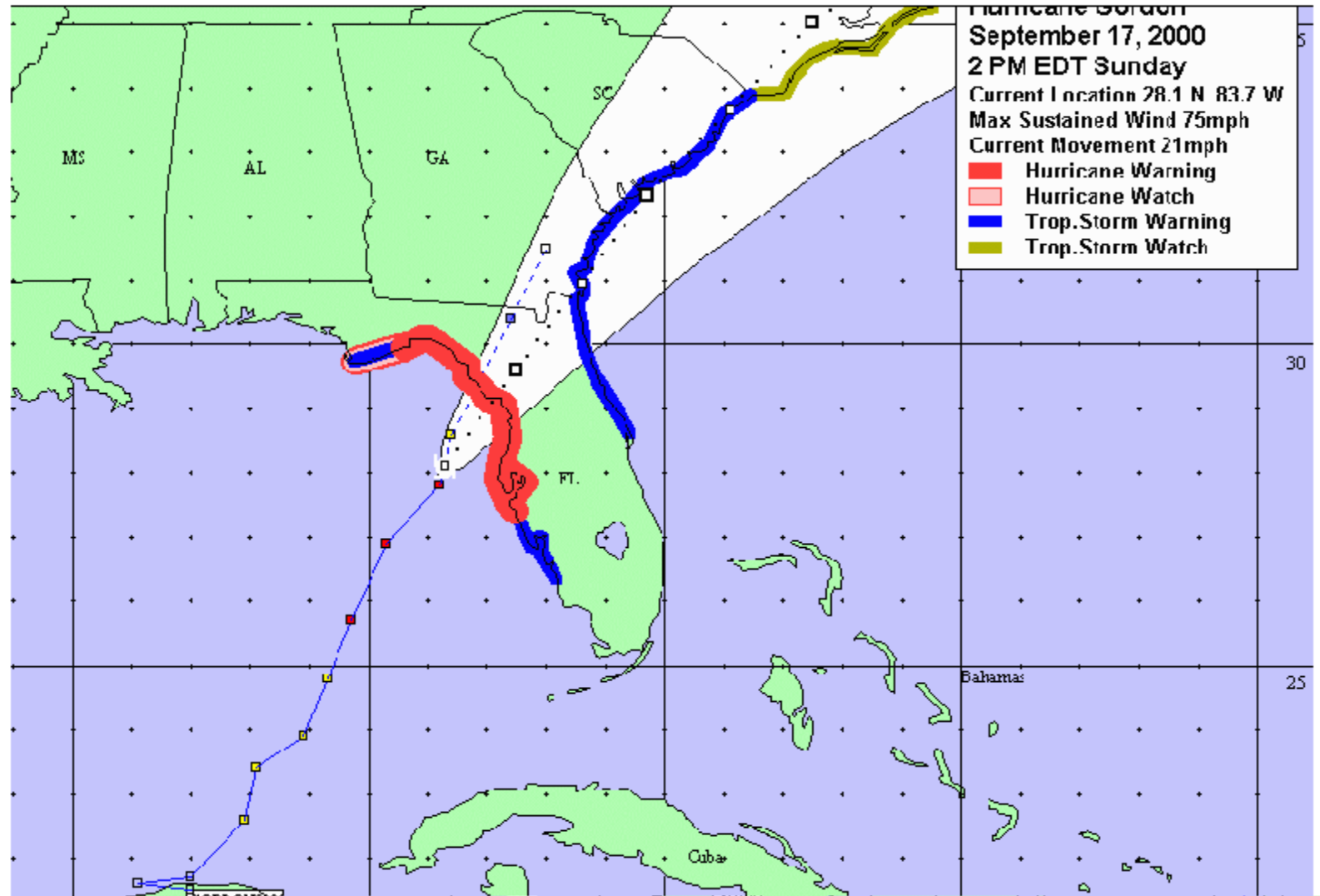
Tropical Storm (with hybrid traits) is forecast to make landfall over Florida Big Bend region.

No TPC Watches or Warnings in effect for ECFL...thus gHWO's are being composed to address peripheral hazard effects.

A large wind field and high shear exists with a boundary forecast to develop over northern CWA. A historically favorable situation for TC-tornadoes.



Hurricane Gordon (2000)



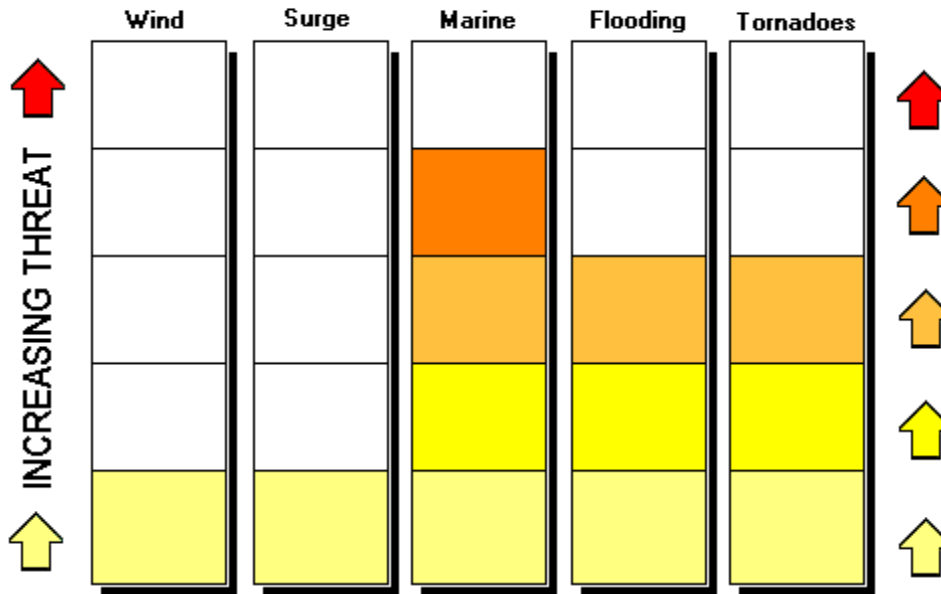


Combined Tropical Cyclone Hazards
Maximum Degree of Threat (DoT)
Specific to East Central Florida



Tropical Storm Gordon

- Marine
- Flooding
- Tornadoes



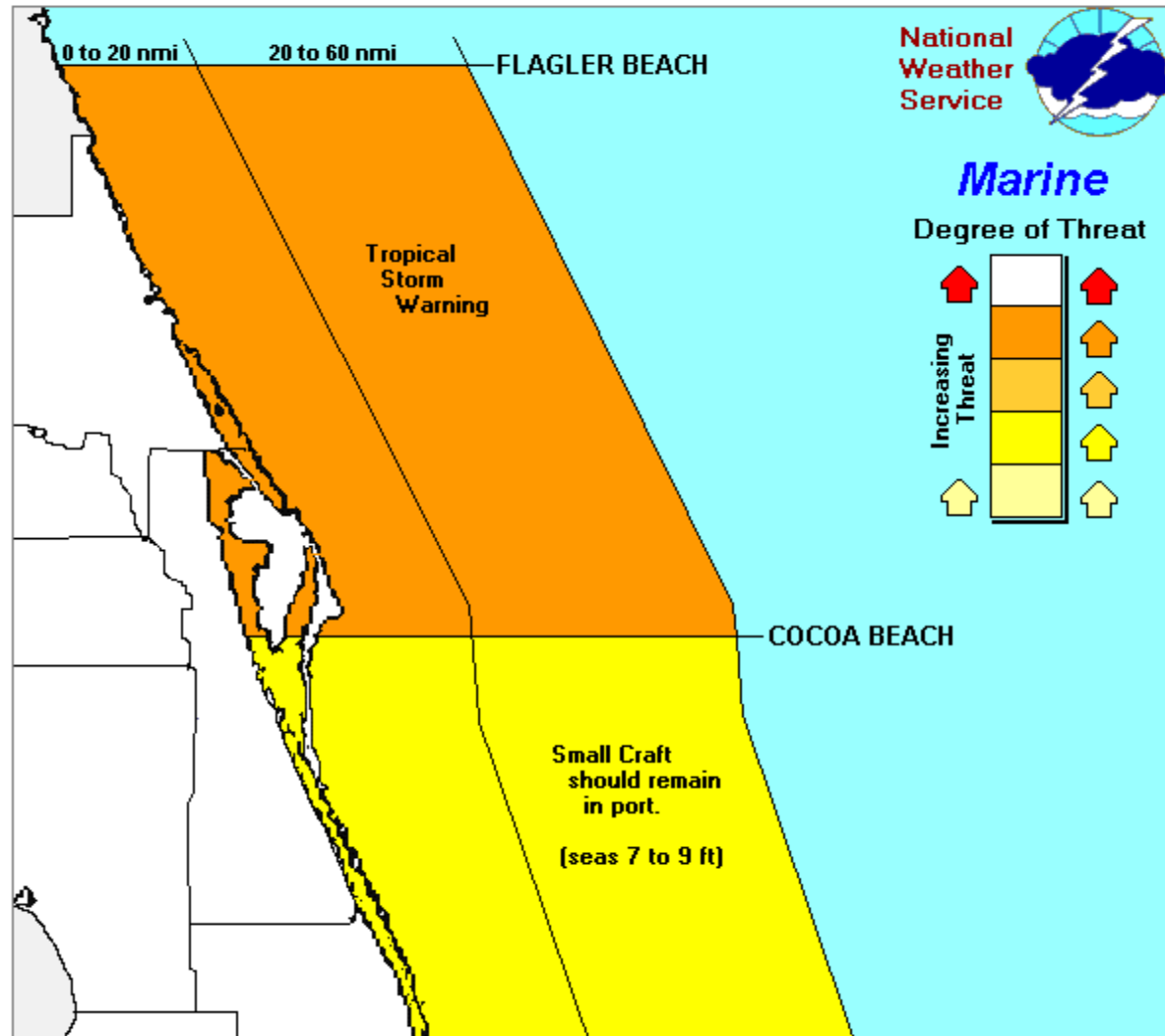
National Weather Service - Melbourne, Florida

Local Threat Situation: Minimal hurricane (with hybrid characteristics) forecast to make landfall across Florida Big Bend region. TS Warning in effect for northern coastal waters. Track is highly favorable for tornadoes, but possible boundary expected to be north of the CWA. Threat for flooding exists across northernmost CWA in associated with outer rainbands.

Tropical Storm Warning for wind & seas extreme north marine area.

Wind waves and swell a concern for the south area.

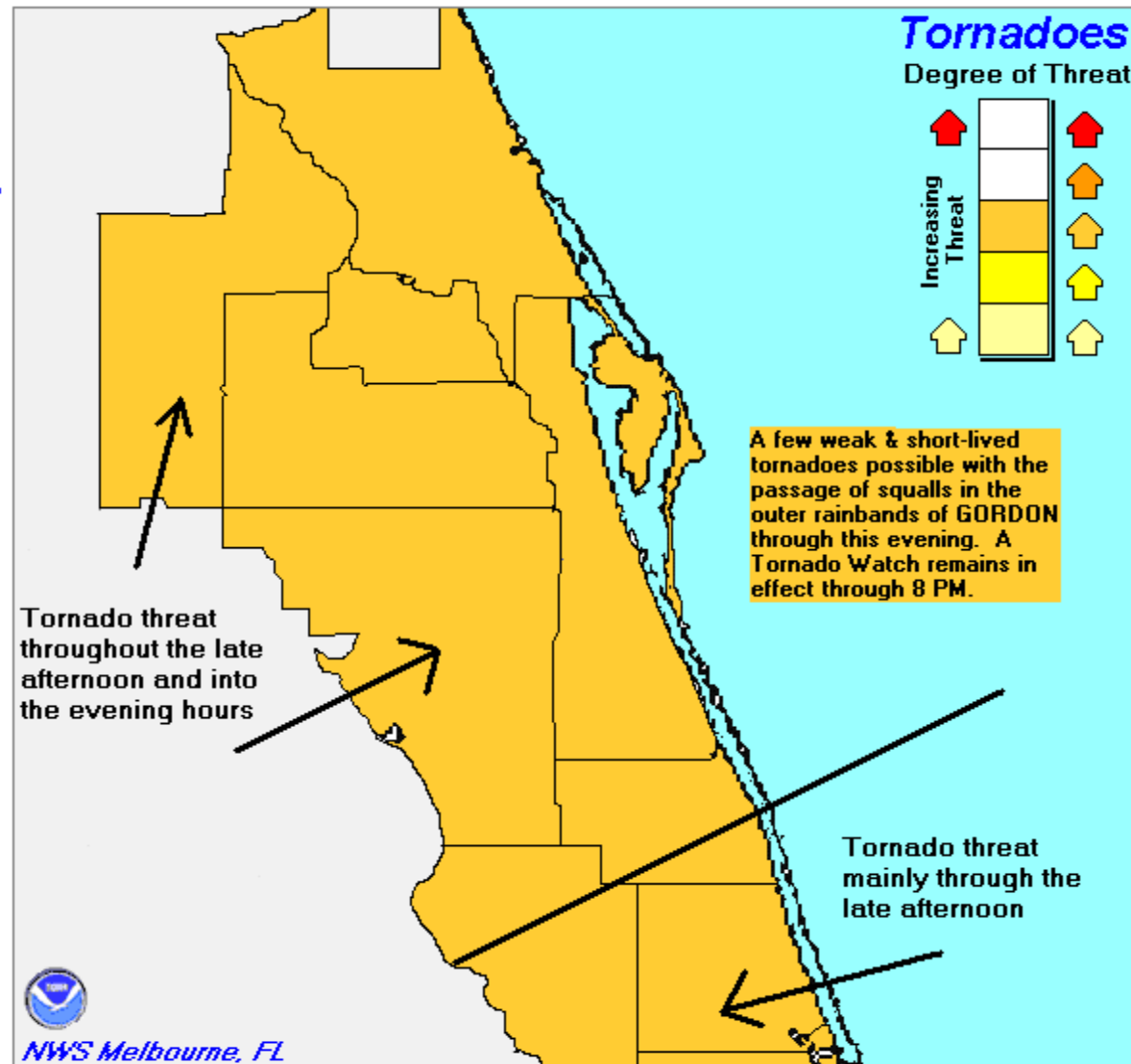
Surge will be minimal.



Tornado Watch for all ECFL.

Equal threat for the entire forecast area as rainbands rotate from south to north through ECFL.

Timing of the threat...for south area during the late afternoon but continuing into the evening for the north area.



Questions ???

Thank You!!!

2000 NOAA Hurricane Conference
Tropical Prediction Center
Miami, Florida

December 5, 2000

<http://WWW.SRH.NOAA.GOV/MLB/hlsfiles/hlsmain.html>

