

A Record Smasher: Overview of the 2005 Atlantic Hurricane Season

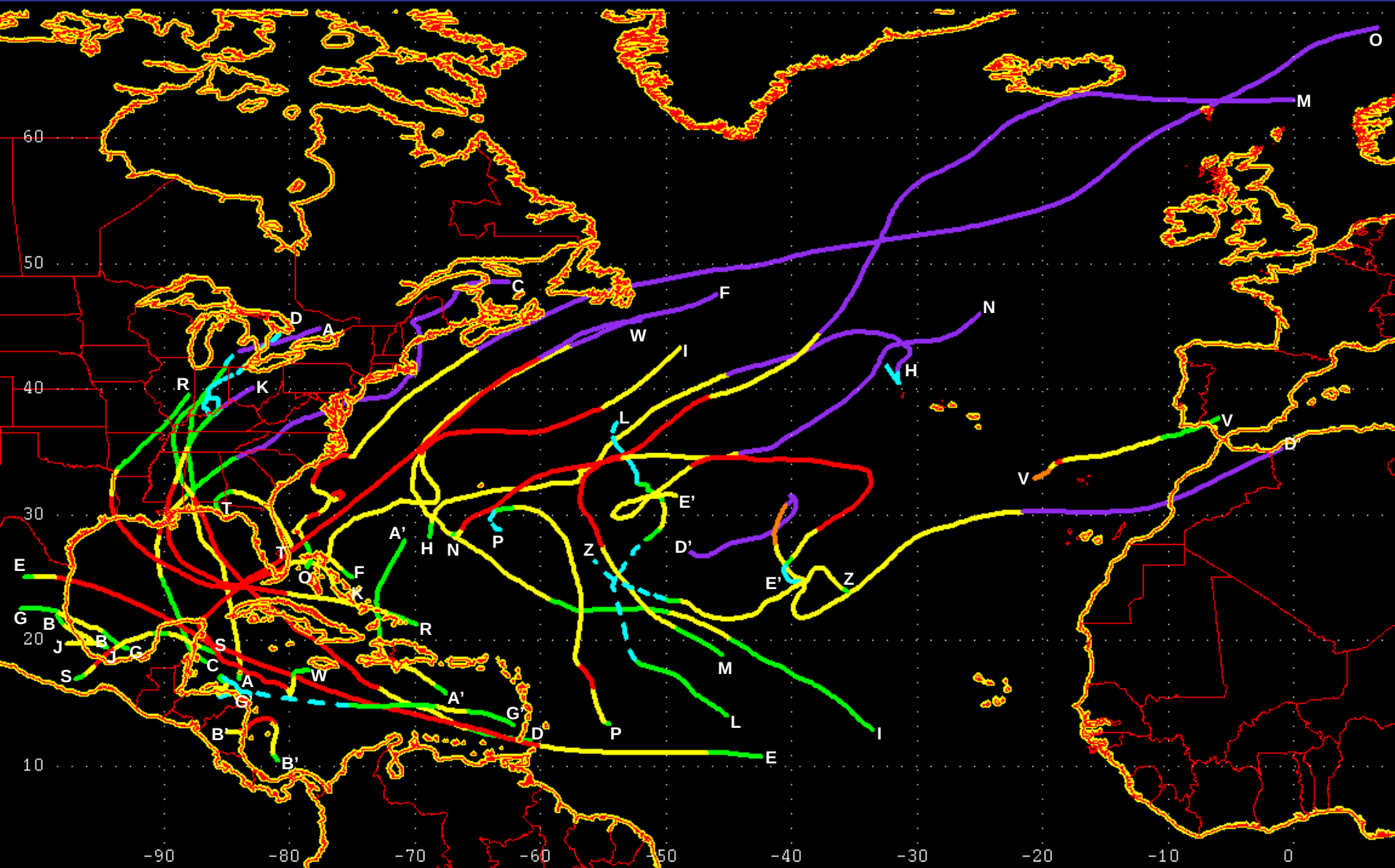
March 20, 2006

Jack Beven

NATIONAL HURRICANE CENTER

WHERE AMERICA'S CLIMATE AND WEATHER SERVICES BEGIN

The 2005 Atlantic Hurricane Season



2005 ATLANTIC HURRICANE SEASON STATISTICS					
NAME	DATES	MIN. PRESS (MB)	MAX. WINDS (MPH)	DIRECT DEATHS	U.S. DAMAGE (\$ million)
TS ARLENE	8 - 13 JUN	989	70	1	minor
TS BRET	28 - 30 JUN	1002	40	1	
H CINDY	3 - 7 JUL	991	75	1	320
H DENNIS	4 - 13 JUL	930	150 (4)	42	2230
H EMILY	11 - 21 JUL	929	160 (5)	6	minor
TS FRANKLIN	21 - 29 JUL	997	70		
TS GERT	23 - 25 JUL	1005	45		
TS HARVEY	2 - 8 AUG	994	65		
H IRENE	4 - 18 AUG	970	105 (2)		
TS JOSE	22 - 23 AUG	998	60	6	
H KATRINA	23 - 30 AUG	902	175 (5)	1200	75000
TS LEE	28 AUG - 2 SEP	1006	40		
H MARIA	1 - 10 SEP	962	115 (3)		
H NATE	5 - 10 SEP	979	90 (1)		

2005 ATLANTIC HURRICANE SEASON STATISTICS					
NAME	DATES	MIN. PRESS (MB)	MAX. WINDS (MPH)	DIRECT DEATHS	U.S. DAMAGE (\$ million)
H OPHELIA	6 - 17 SEP	976	85 (1)	1	70
H PHILIPPE	17 - 24 SEP	985	80 (1)		
H RITA	18 - 26 SEP	895	180 (5)	7	10000
H STAN	1 - 5 OCT	977	80 (1)	80	
TS TAMMY	5 - 6 OCT	1001	50		minor
H VINCE	8 - 11 OCT	988	75 (1)		
H WILMA	15 - 25 OCT	882	185 (5)	22	16800
TS ALPHA	22 - 24 OCT	998	50	26	
H BETA	26 - 31 OCT	960	115 (3)		
TS GAMMA	14 - 21 NOV	1002	50	37	
TS DELTA	22 - 28 NOV	980	70		
H EPSILON	29 NOV - 8 DEC	981	85		
TS ZETA	30 DEC - 6 JAN	994	65		

SEASON HIGHLIGHTS

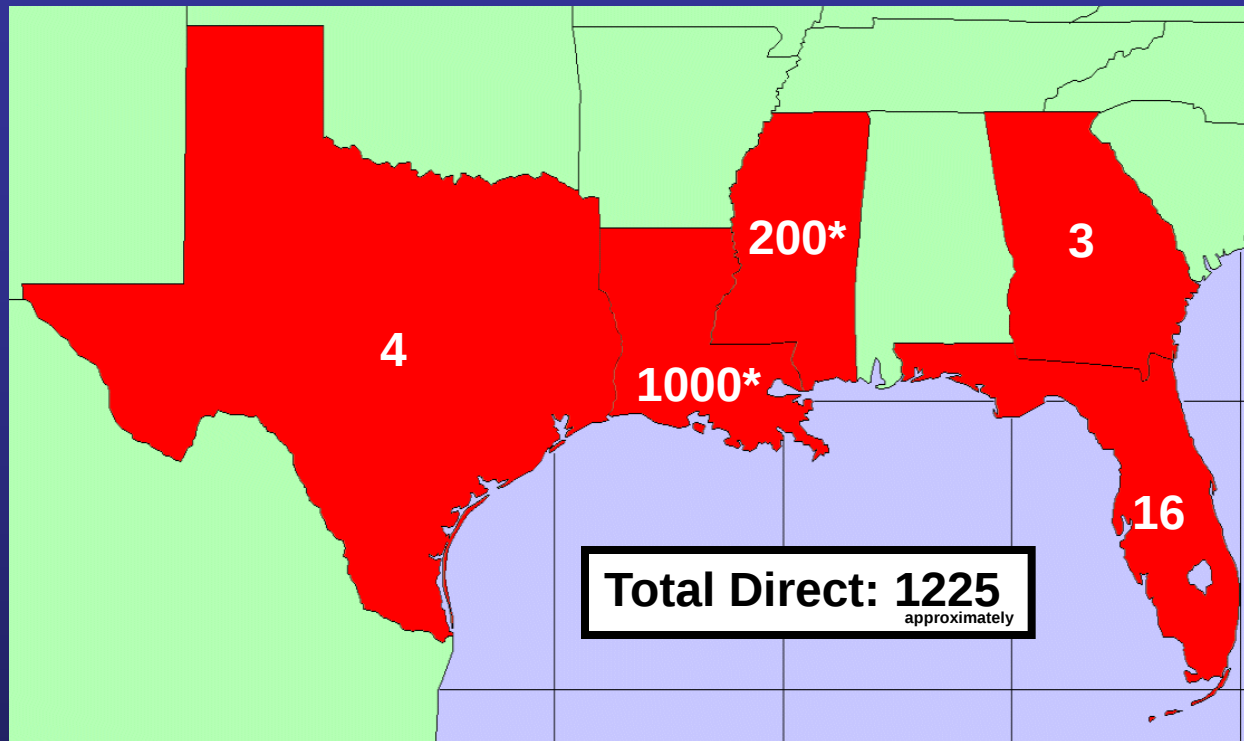
- Most active Atlantic hurricane season of record - 27 tropical storms developed, breaking the old record of 21 set in 1933.
- Fifteen tropical storms became hurricanes, breaking the record of 12 set in 1969.
- Seven of the hurricanes became major hurricanes. This included the first time that four Category 5 hurricanes had been observed in a single Atlantic season and the first time that four major hurricanes hit the United States in one season.
- Hurricane Wilma had the lowest minimum central pressure ever observed in an Atlantic hurricane - 882 mb. The central pressure of Wilma fell 88 mb in 12 hours.
- The “Accumulated Cyclone Energy” (ACE) for the season was 285% of median – the highest value of record for an Atlantic hurricane season.

SEASON HIGHLIGHTS

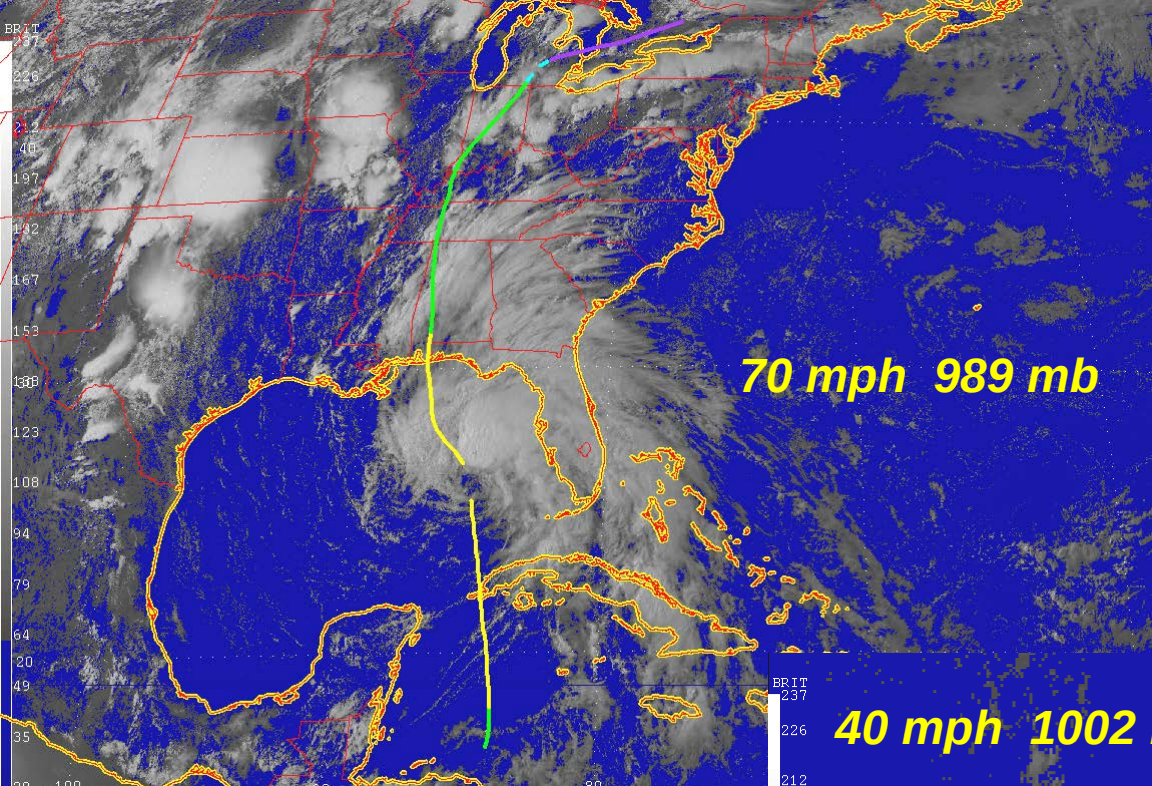
- Seven landfalls in the United States, including Hurricane Cindy, Dennis, Katrina, Rita, and Wilma along with Tropical Storms Arlene and Tammy. Hurricane Ophelia also struck the North Carolina coast, although the center stayed just offshore.
- Death toll near 1400, including around 1200 from Katrina in the United States - the deadliest U. S. hurricane since the Palm Beach-Lake Okeechobee hurricane of 1928. Additionally, a large area of disturbed weather affecting Central America at the time of Hurricane Stan may have caused 1000-2000 deaths.
- Total damage to property in the United States estimated near \$104 billion - the costliest U. S. hurricane season of record. Katrina caused estimated damage of \$75 billion, making it the costliest single hurricane in U. S. history.
- *Preliminary* track forecast verification indicates that the average forecast errors for 12-72 hr were at or near record low levels.

2005 Preliminary Direct Hurricane Fatalities

Updated 6 Mar 06

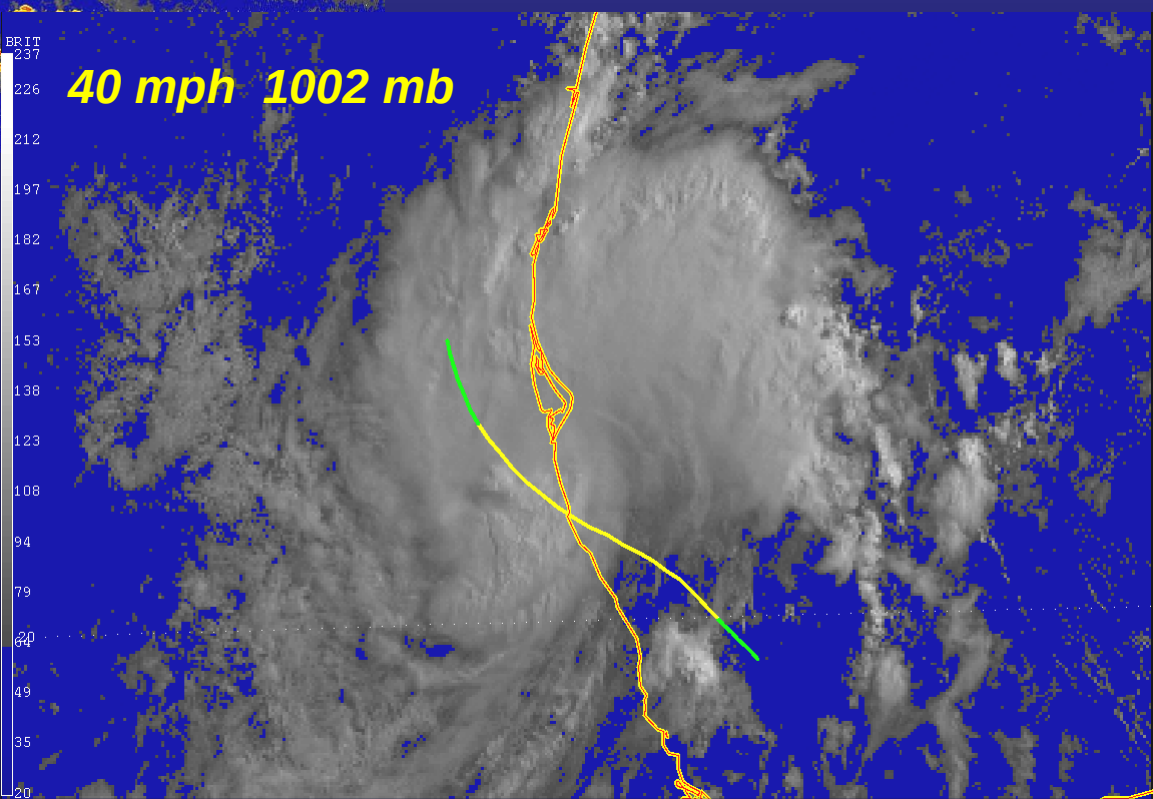


Arlene:	1 (FL)
Cindy:	1 (GA)
Dennis:	1 (GA), 2 (FL)
Katrina:	1000 (LA), 200 (MS), 6 (FL), 1 (GA)
Ophelia:	1 (FL)
Rita:	1 (LA), 4 (TX), 1 (MS), 1 (FL)
Wilma:	5 (FL)



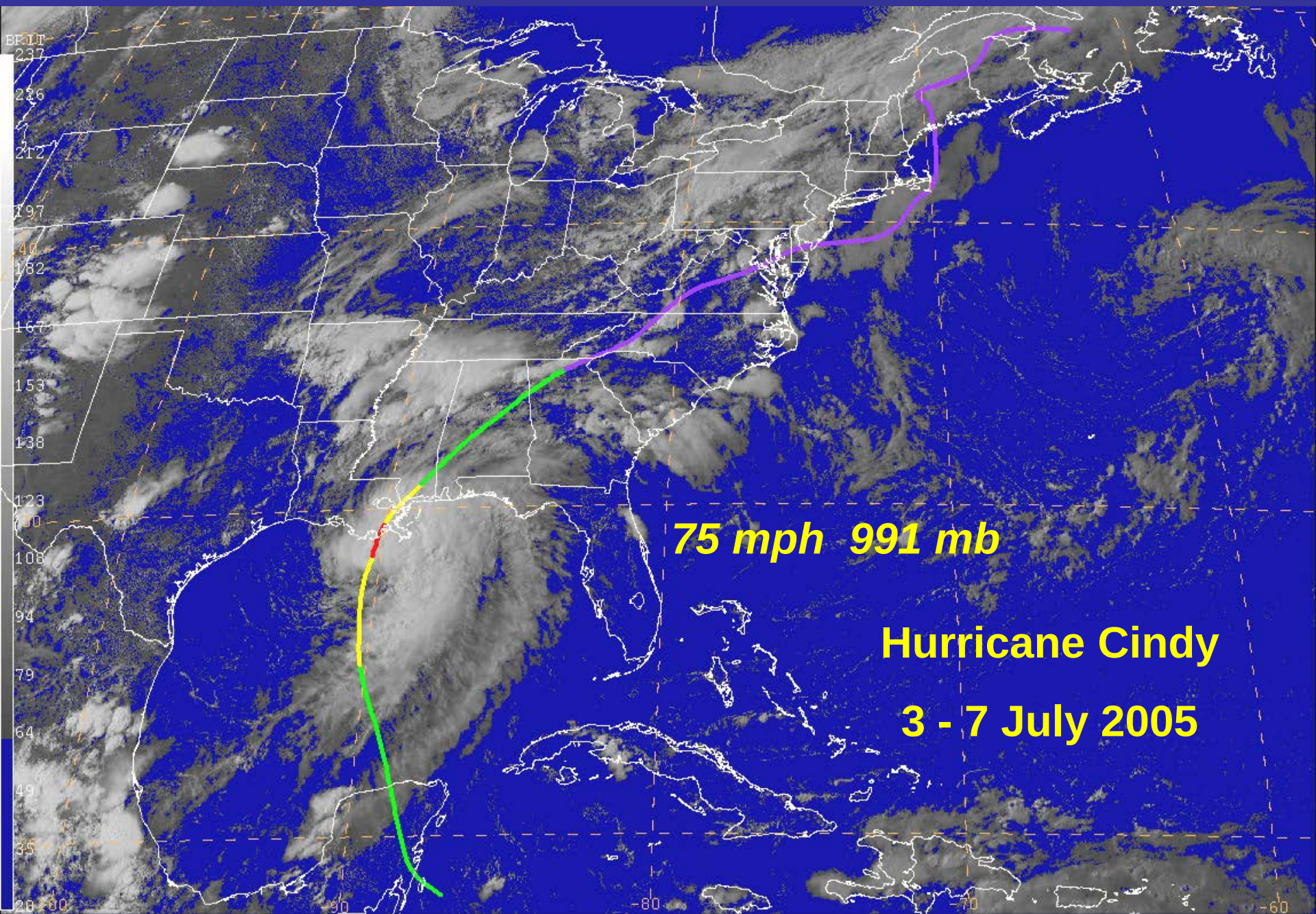
Tropical Storm Arlene

8 - 13 June 2005



Tropical Storm Bret

28 - 30 June 2005

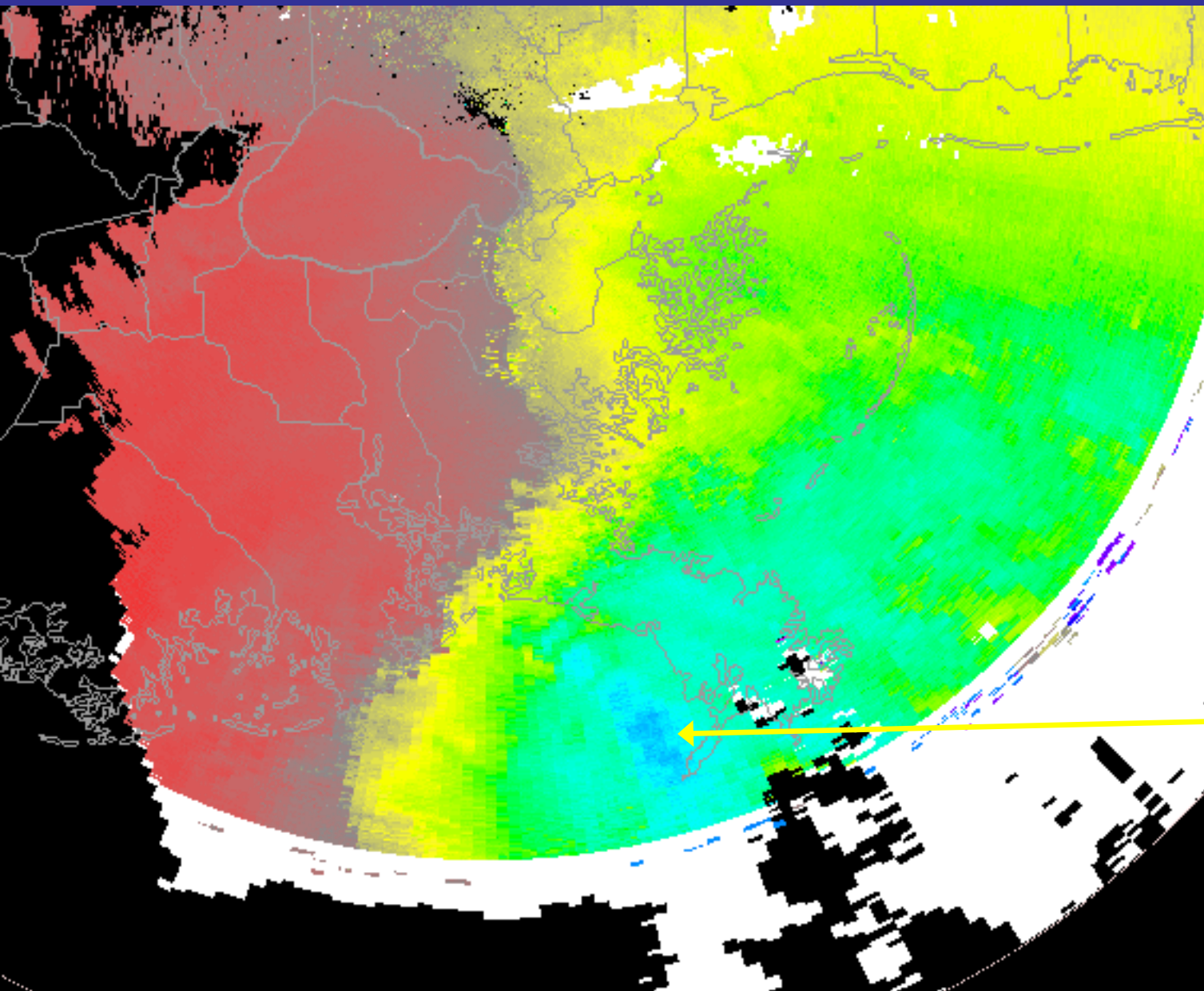


75 mph 991 mb

Hurricane Cindy

3 - 7 July 2005

WSR-88D Shows Cindy Was A Hurricane Near Landfall

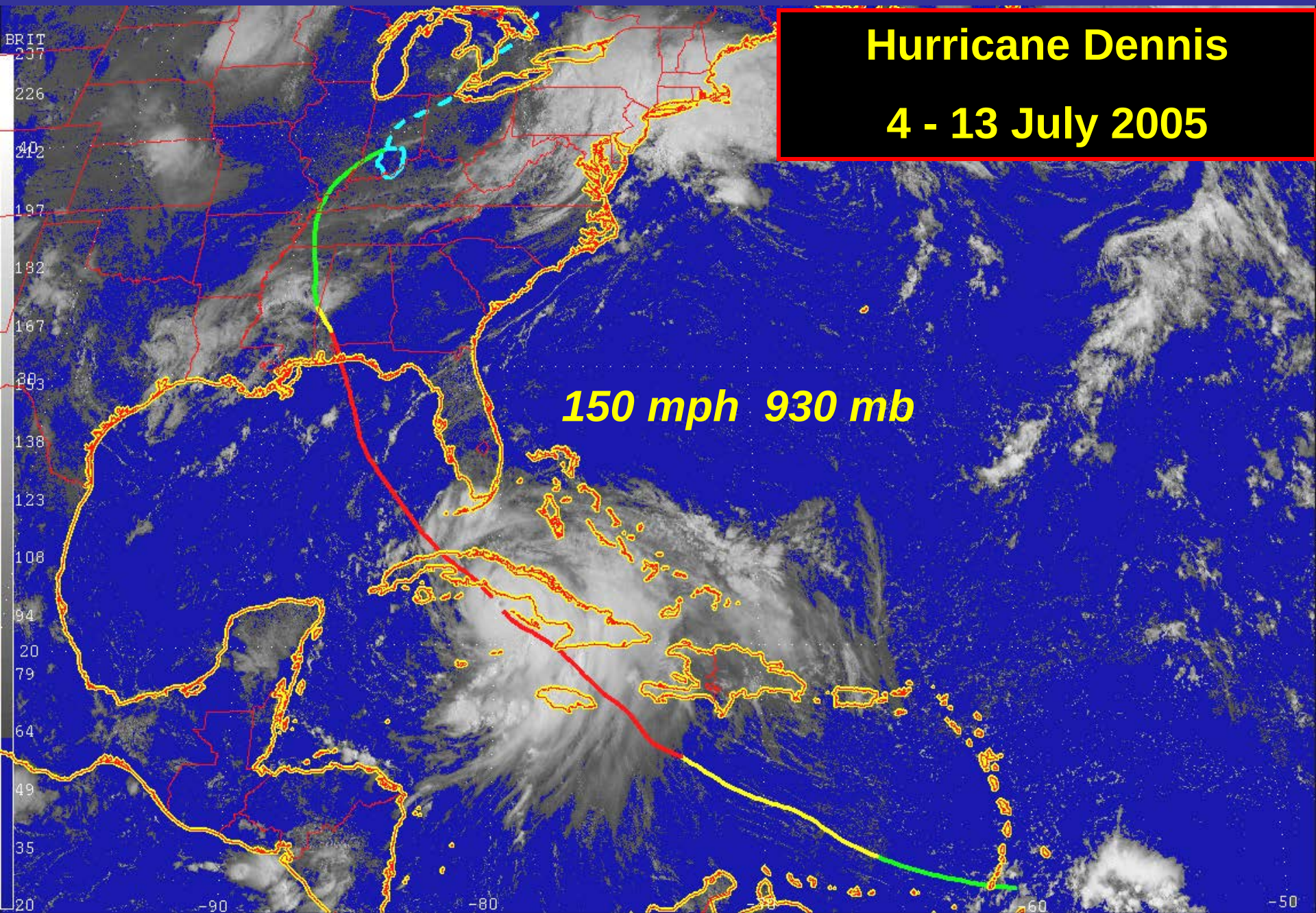


70-74 kt winds
at 8000 ft
suggests 65 kt
at the surface

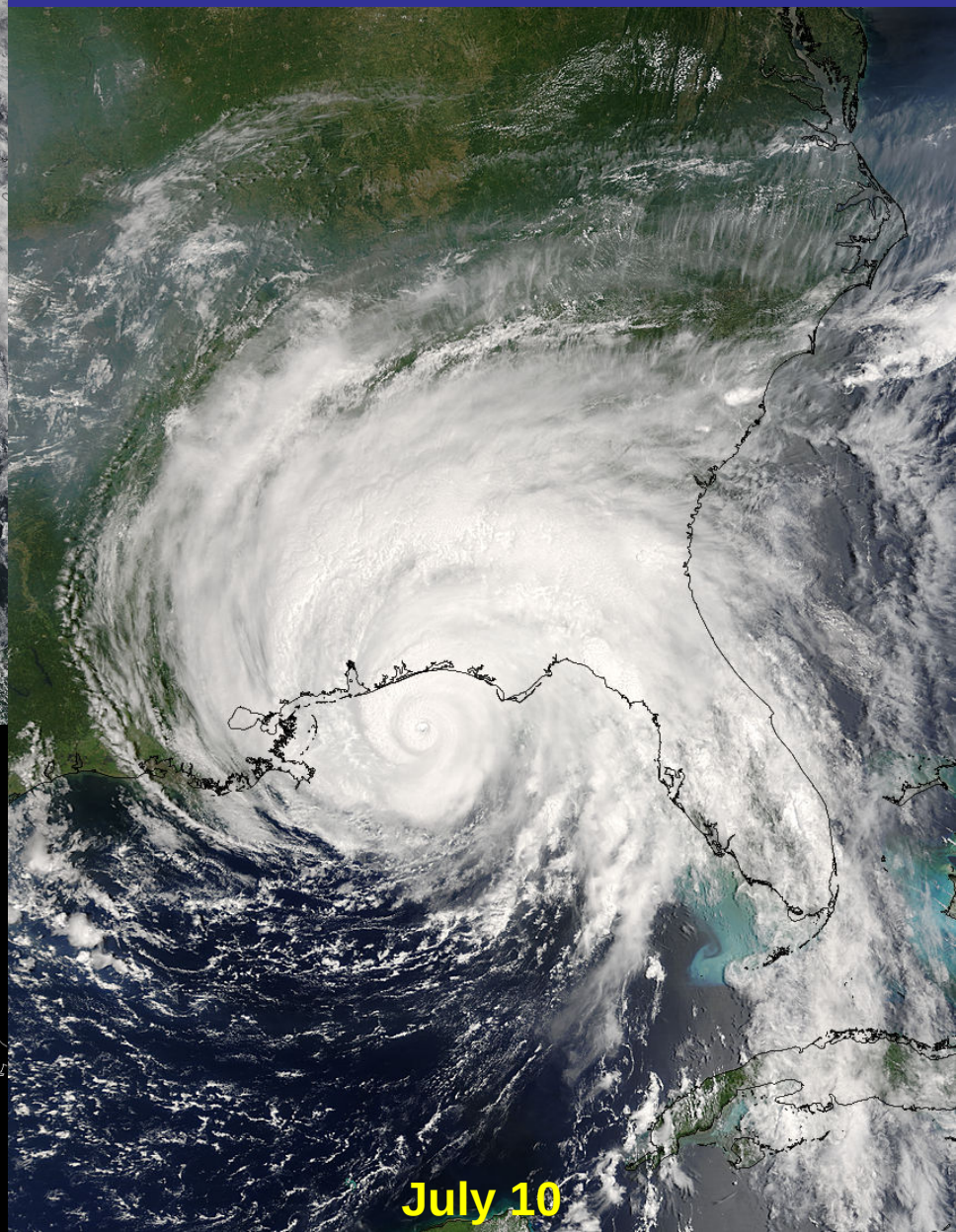
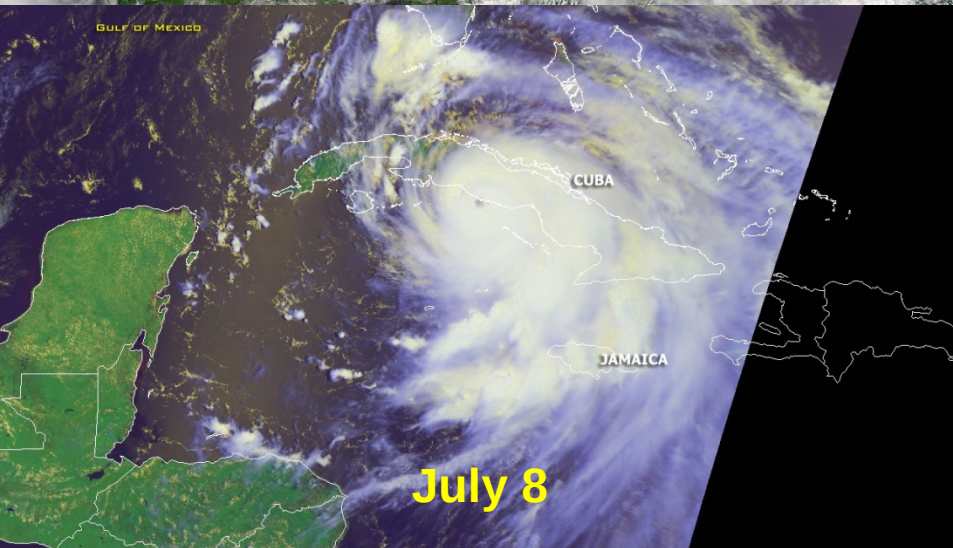
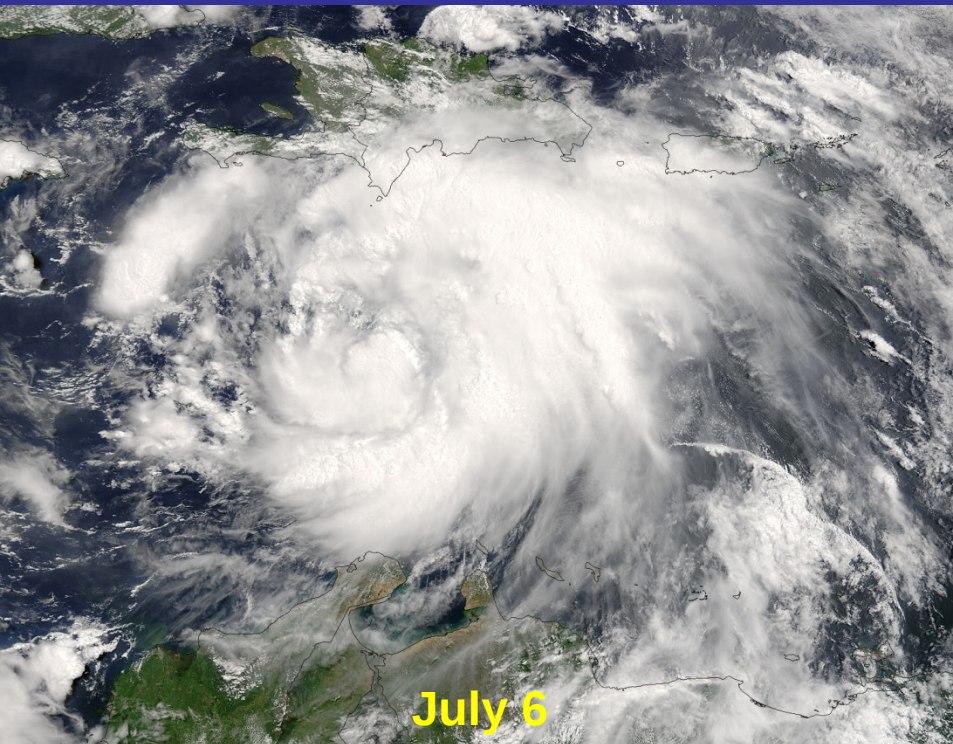
Hurricane Dennis

4 - 13 July 2005

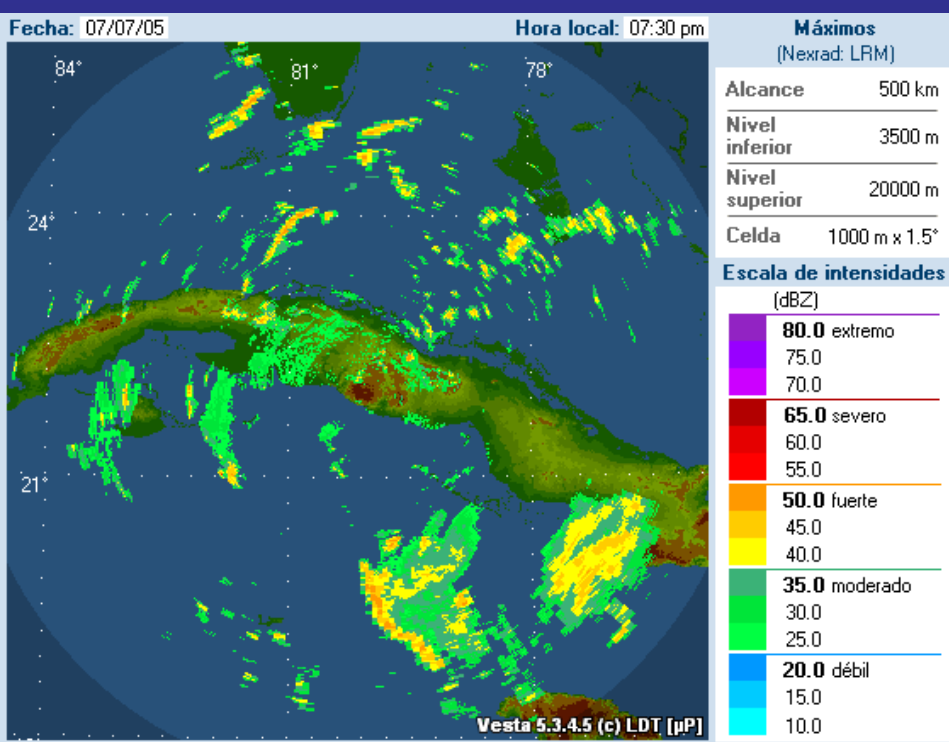
150 mph 930 mb



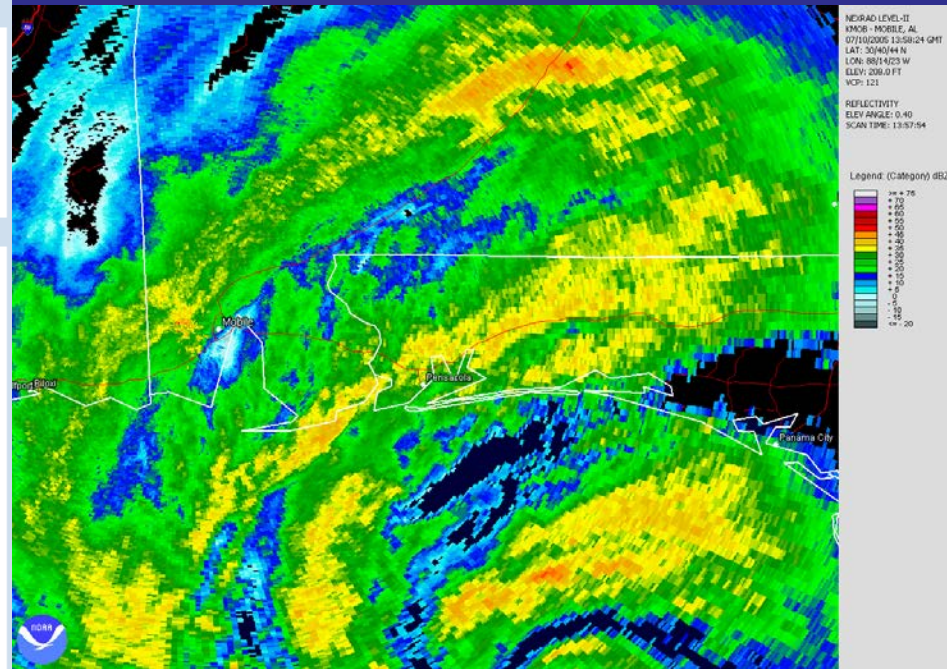
Images of Dennis



Radar Animations of Dennis



Central Cuba



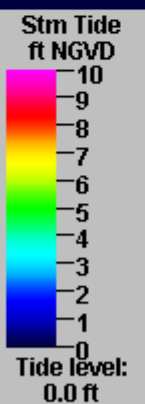
Mobile WSR-88D

OF MEXICO

FLORIDA

Andros

Start of shelf trapped wave
up the Florida Coast

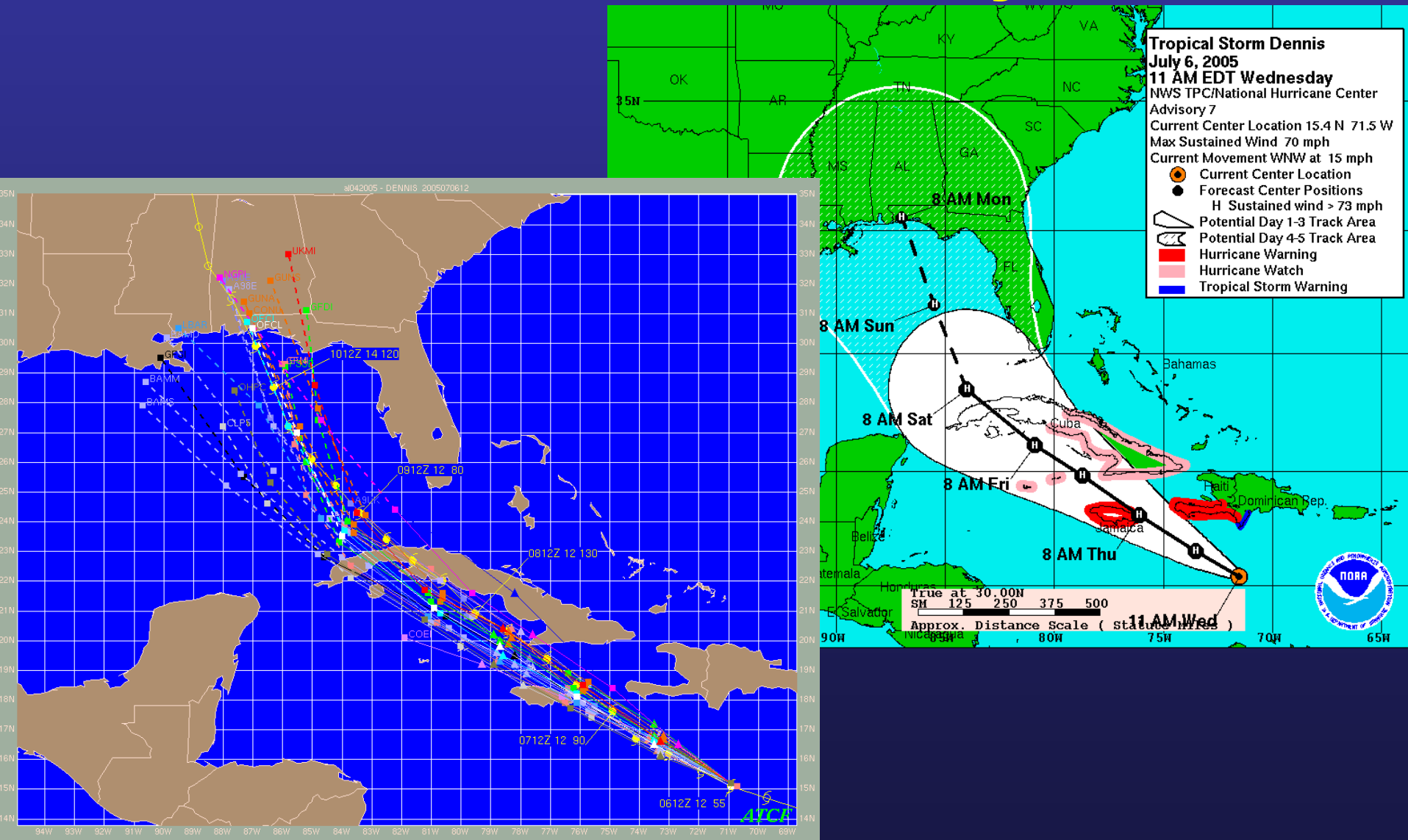


07/08/2005
17:01:15 UTC



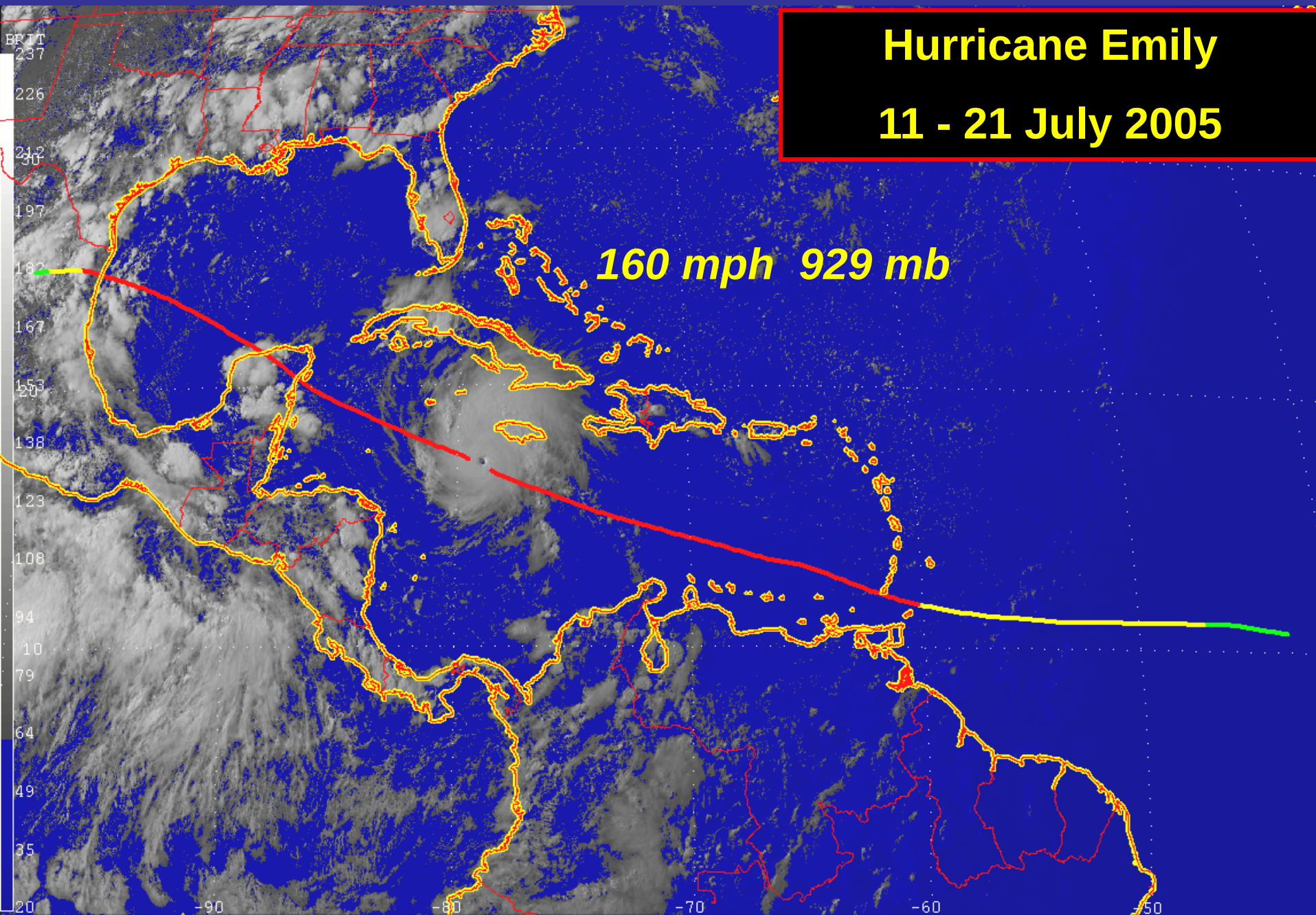
Dennis Track Forecasts

1200 UTC 6 July



Hurricane Emily

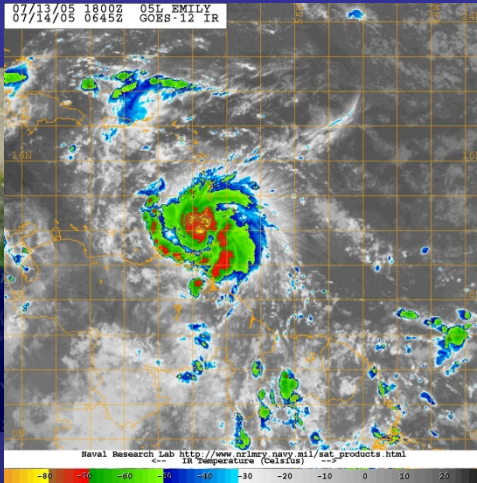
11 - 21 July 2005



Images of Emily



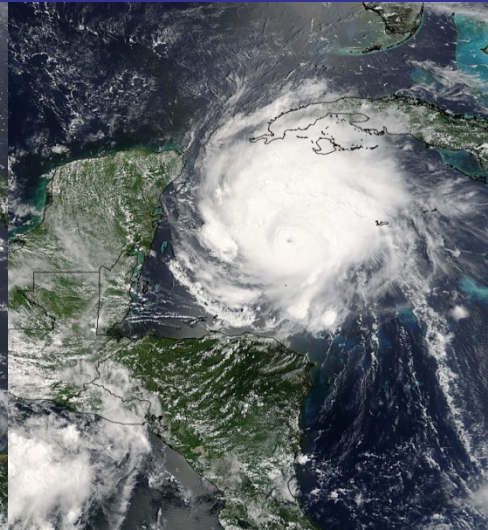
July 11



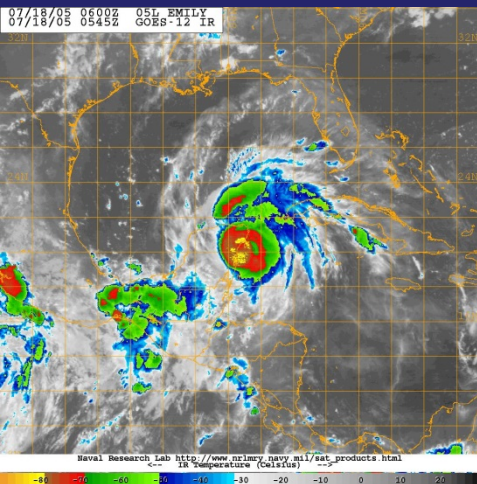
July 14



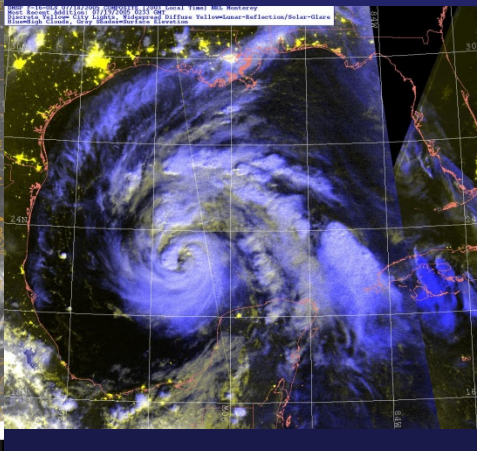
July 16



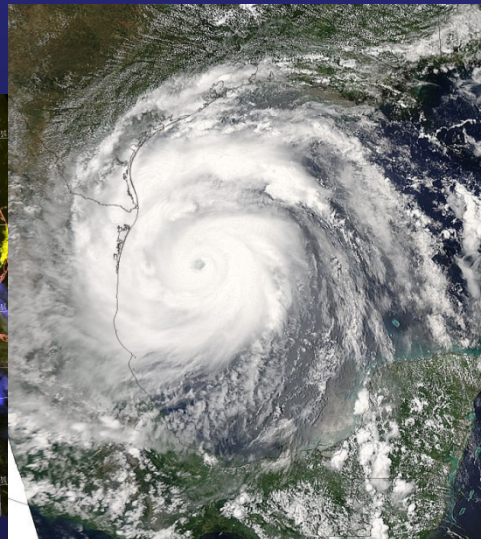
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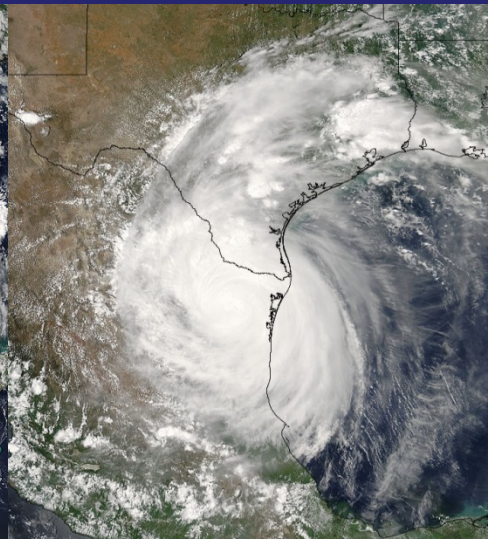
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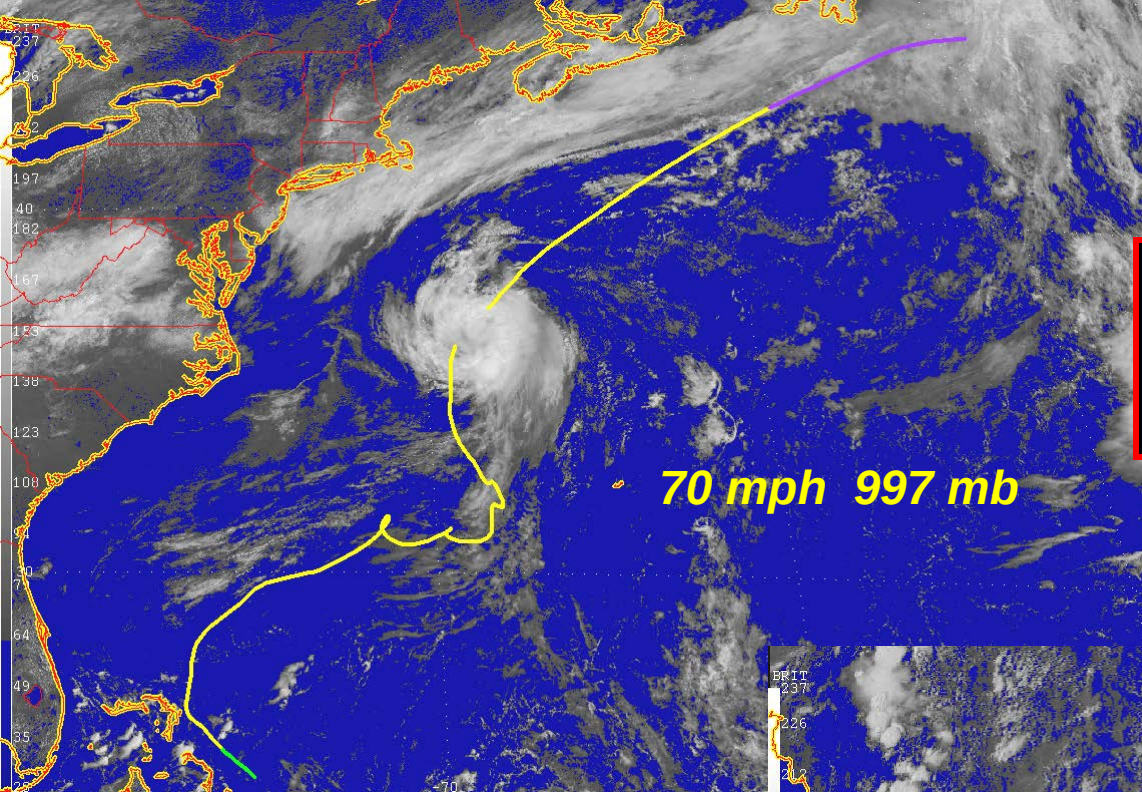
July 19



July 19

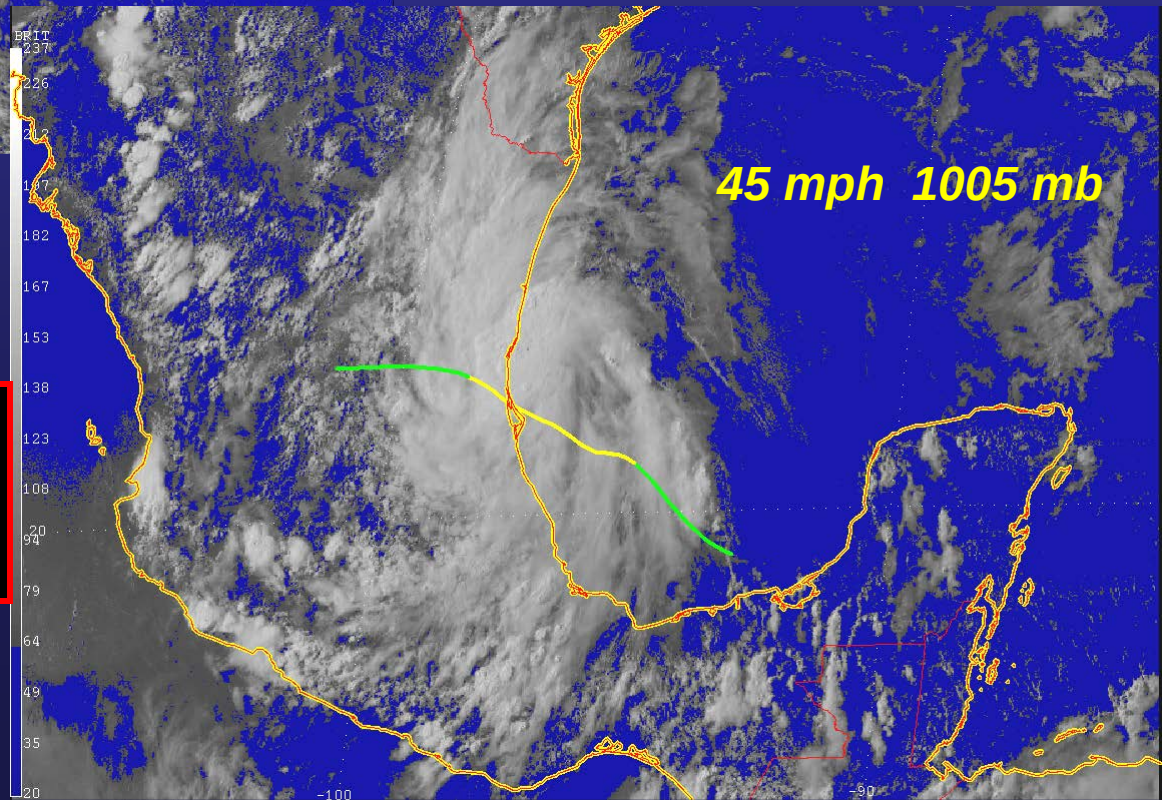


July 20



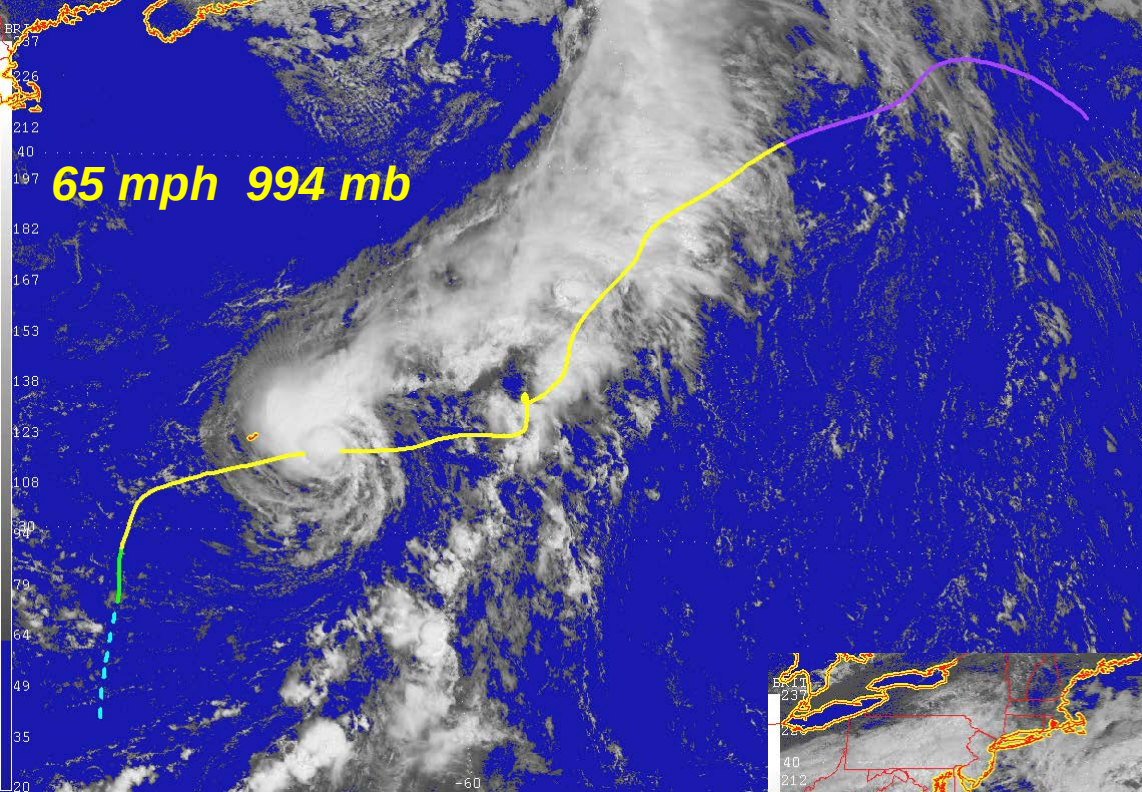
Tropical Storm Franklin
21 - 29 July 2005

70 mph 997 mb



Tropical Storm Gert
23 - 25 July 2005

45 mph 1005 mb

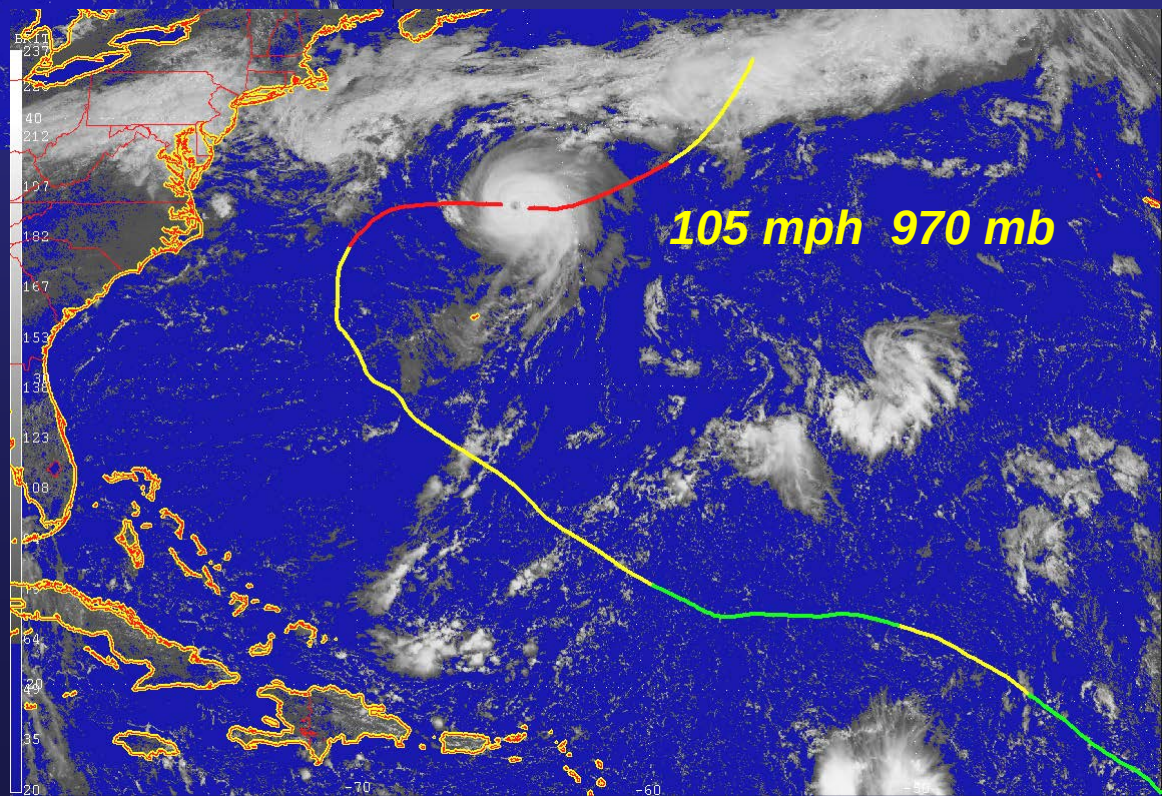


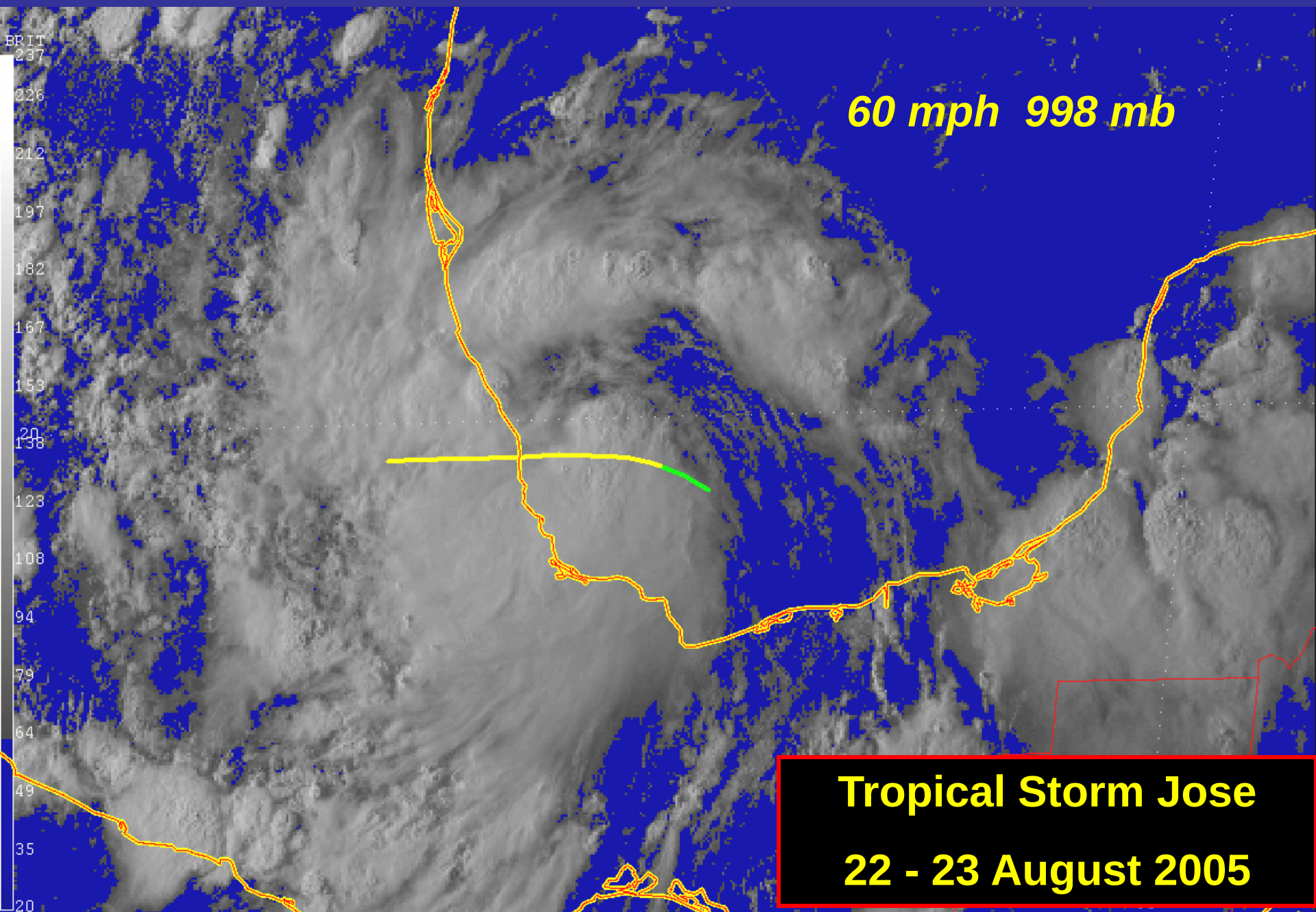
Tropical Storm Harvey

2 - 8 August 2005

Hurricane Irene

4 - 18 August 2005



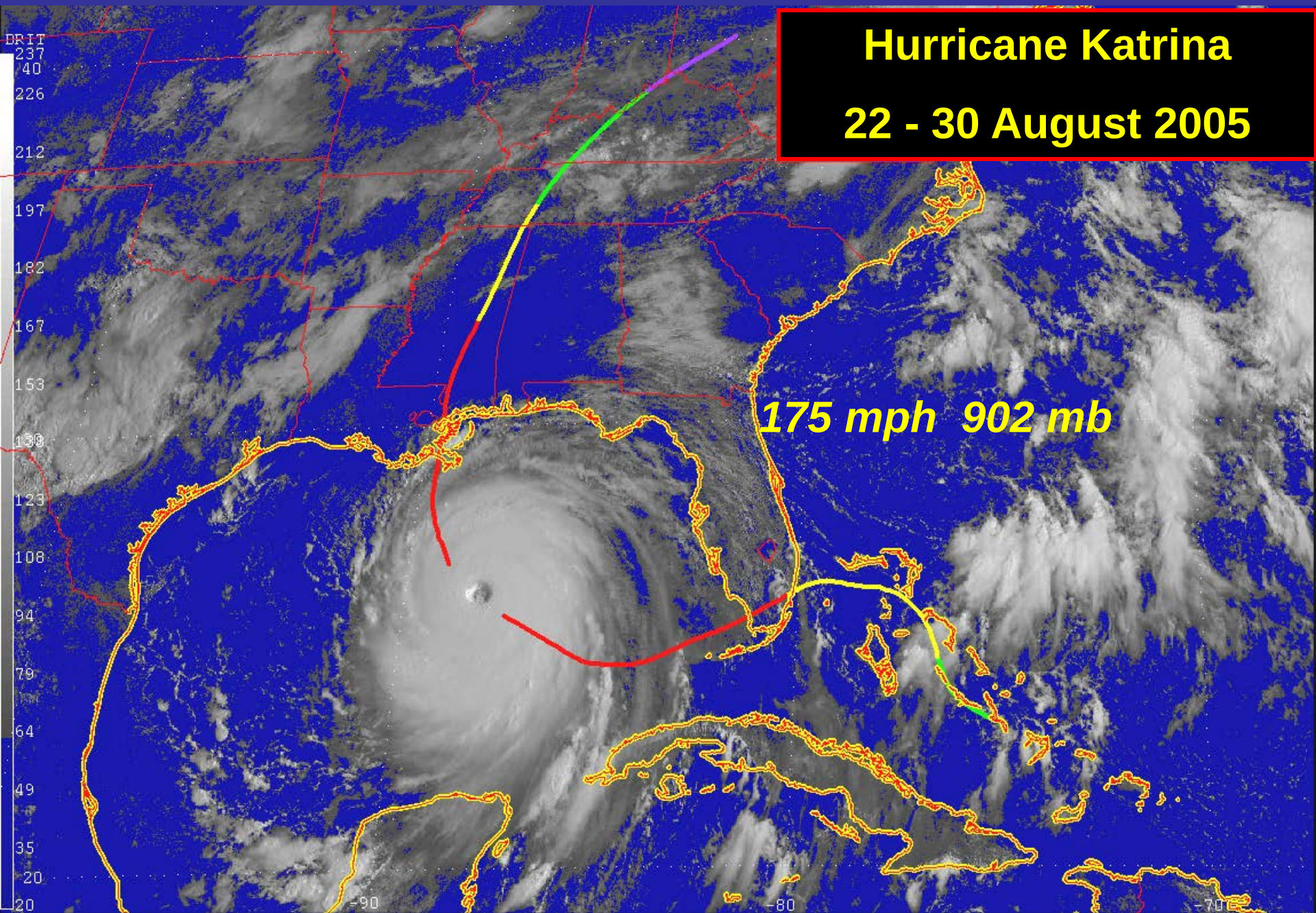


Tropical Storm Jose
22 - 23 August 2005

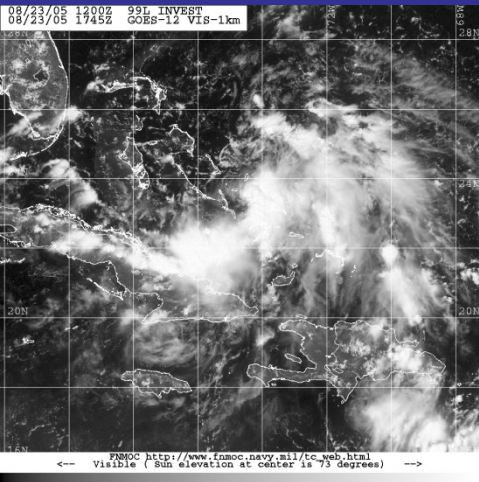
Hurricane Katrina

22 - 30 August 2005

175 mph 902 mb



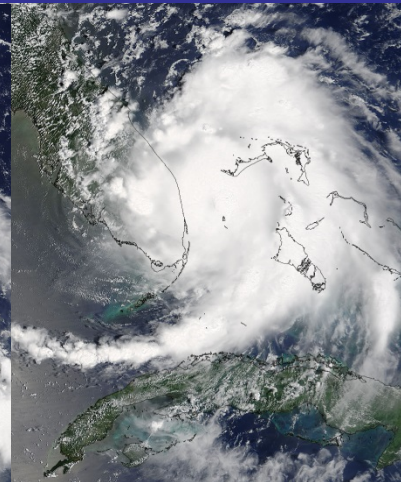
Images of Katrina



August 23



August 24



August 25



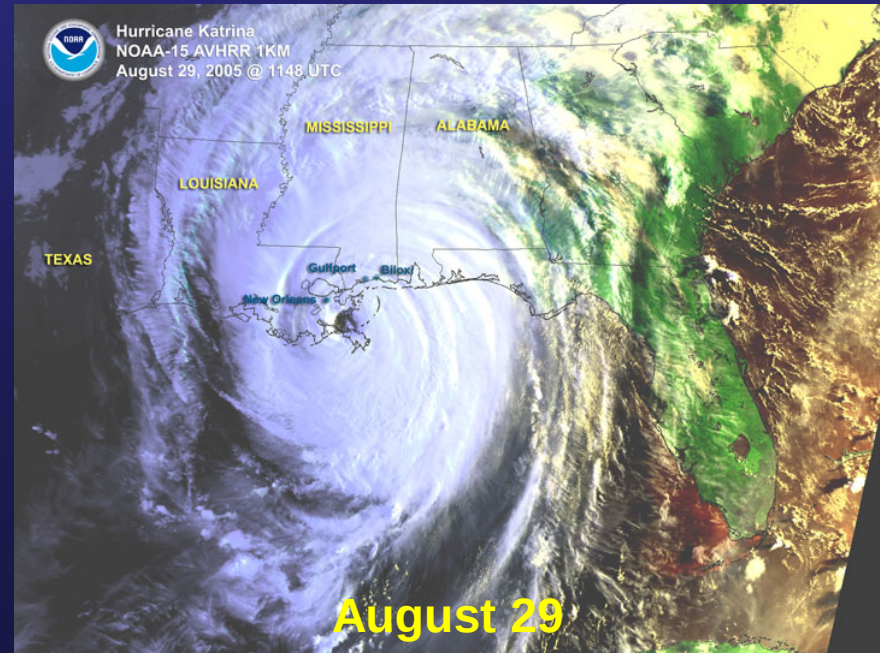
August 26



August 27

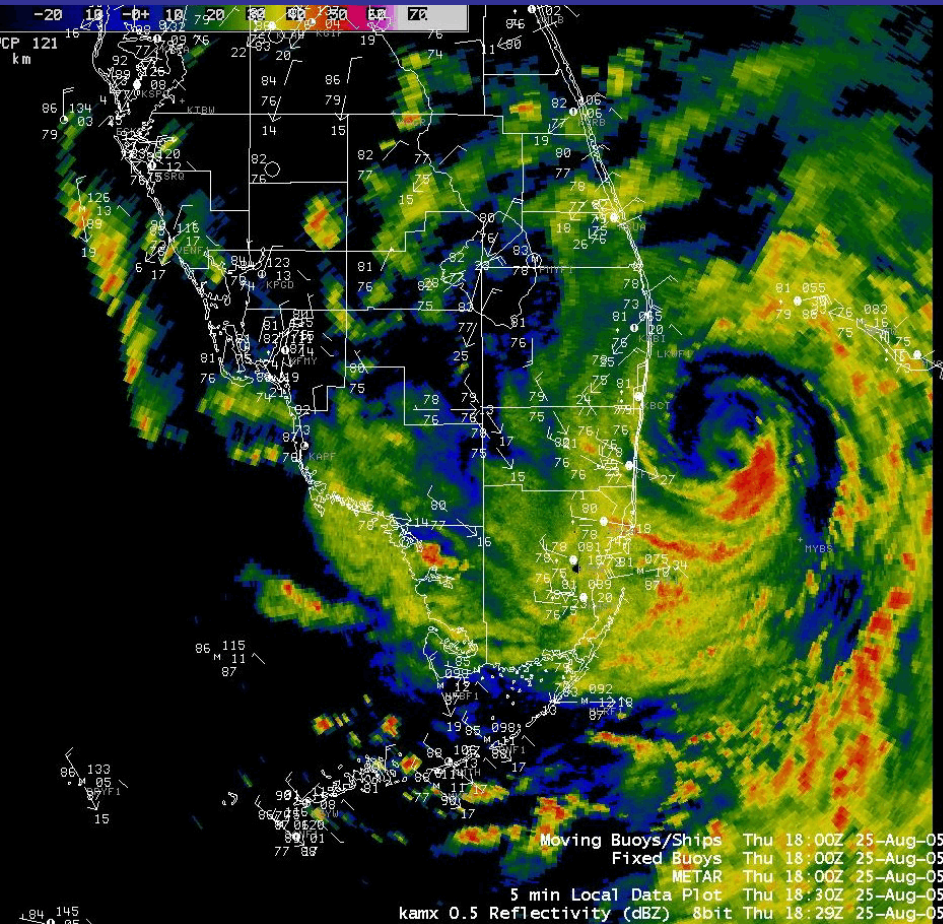


August 28

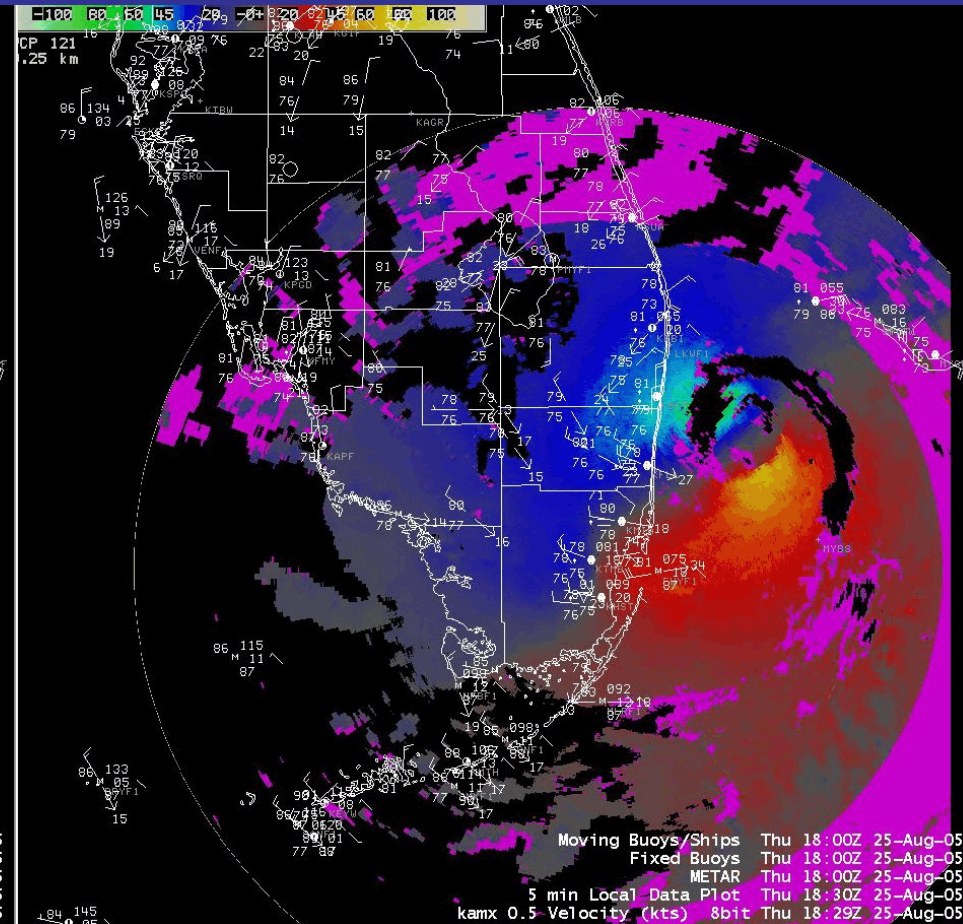


August 29

WSR-88D Animation of Katrina

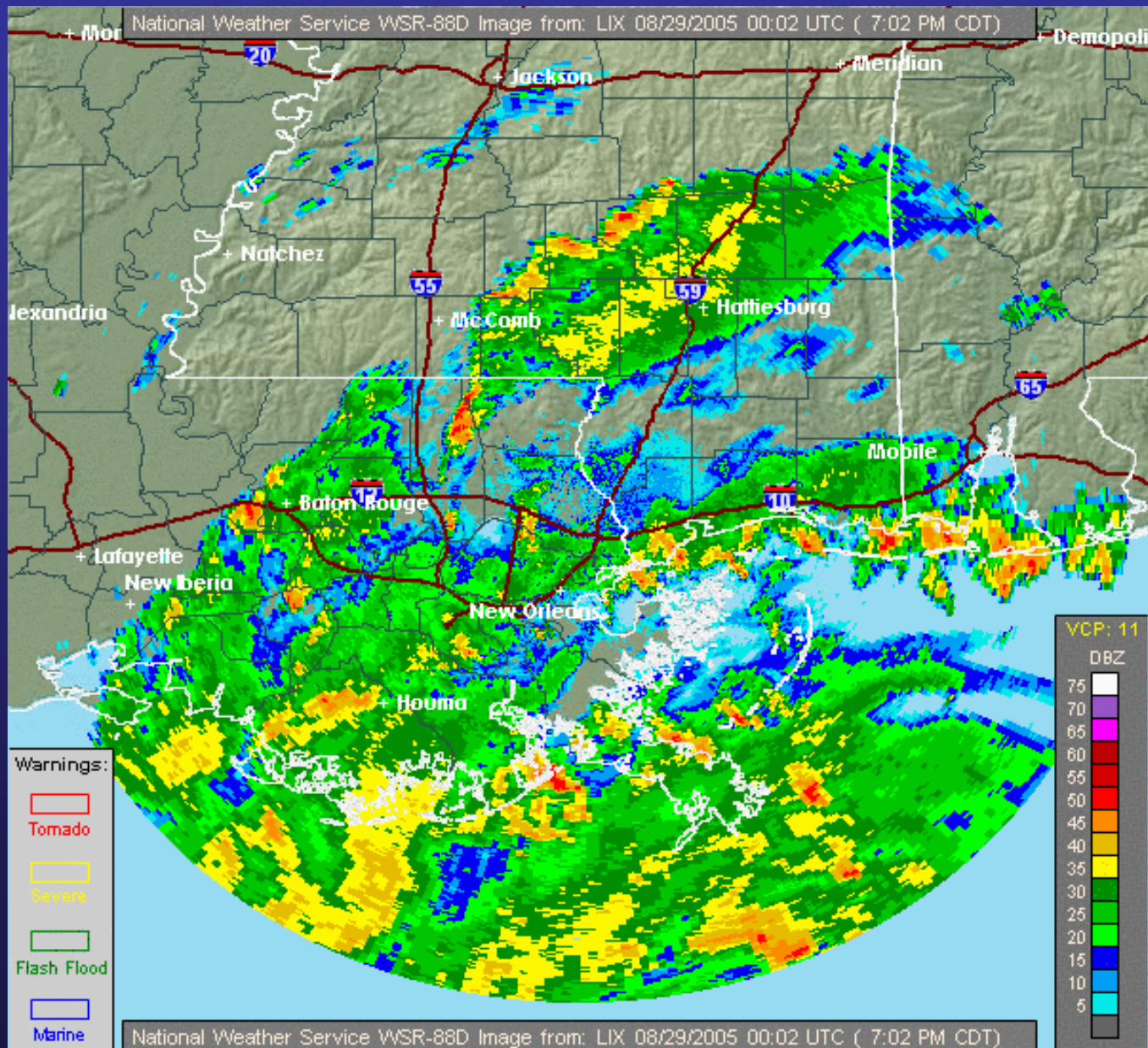


Reflectivity

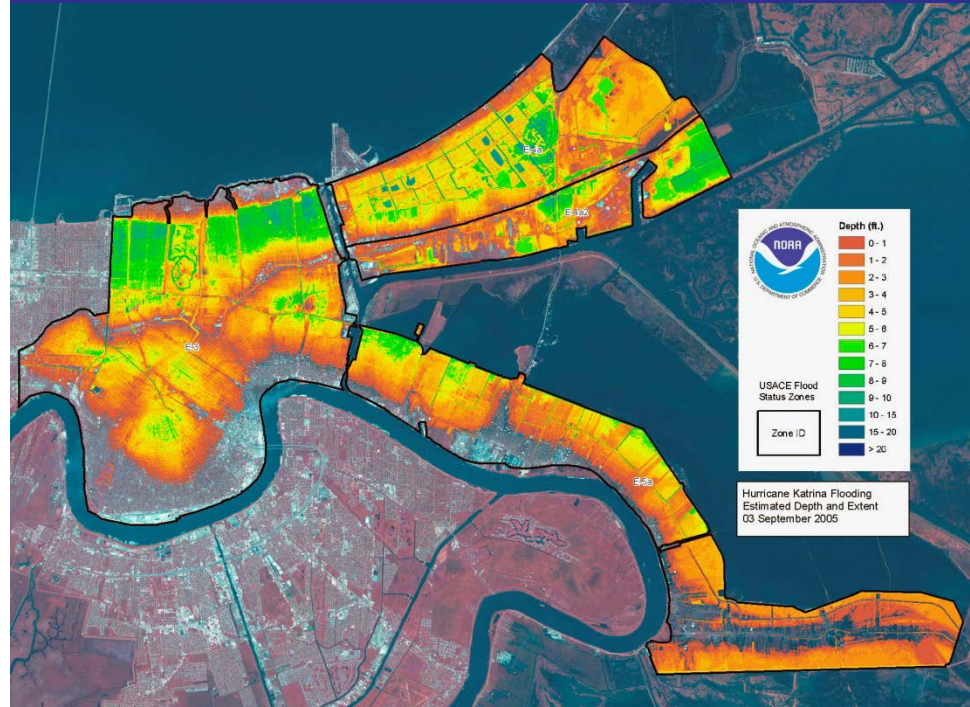


Velocity

Hurricane Katrina Landfall



OBSERVED COASTAL PROFILES FOR HURRICANES CAMILLE (1969) and KATRINA (2005)

Hurricane Katrina Flooding
Estimated Depth and Extent
03 September 2005

Katrina's Damage

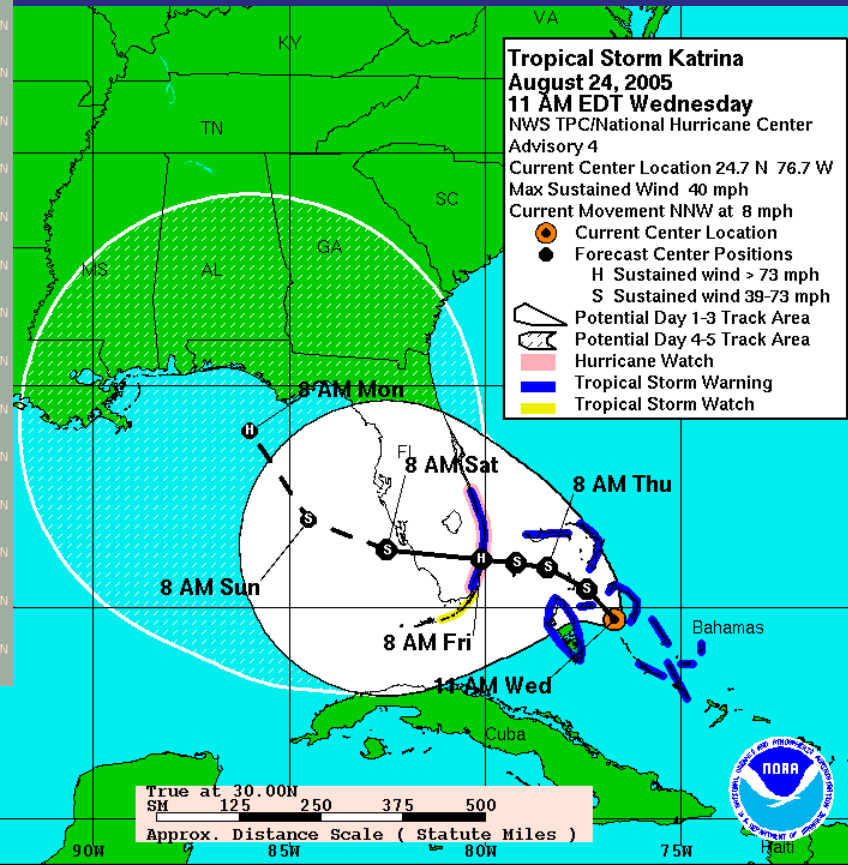
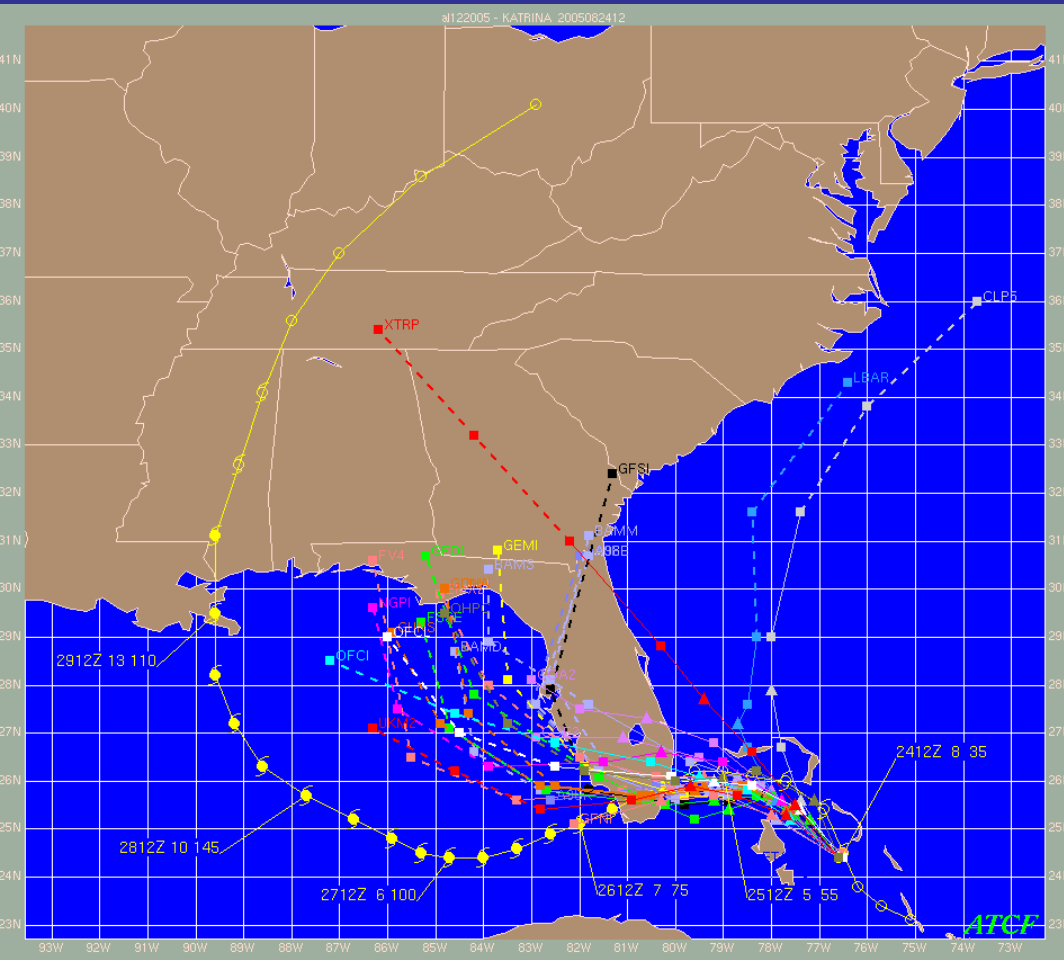


Katrina's Damage



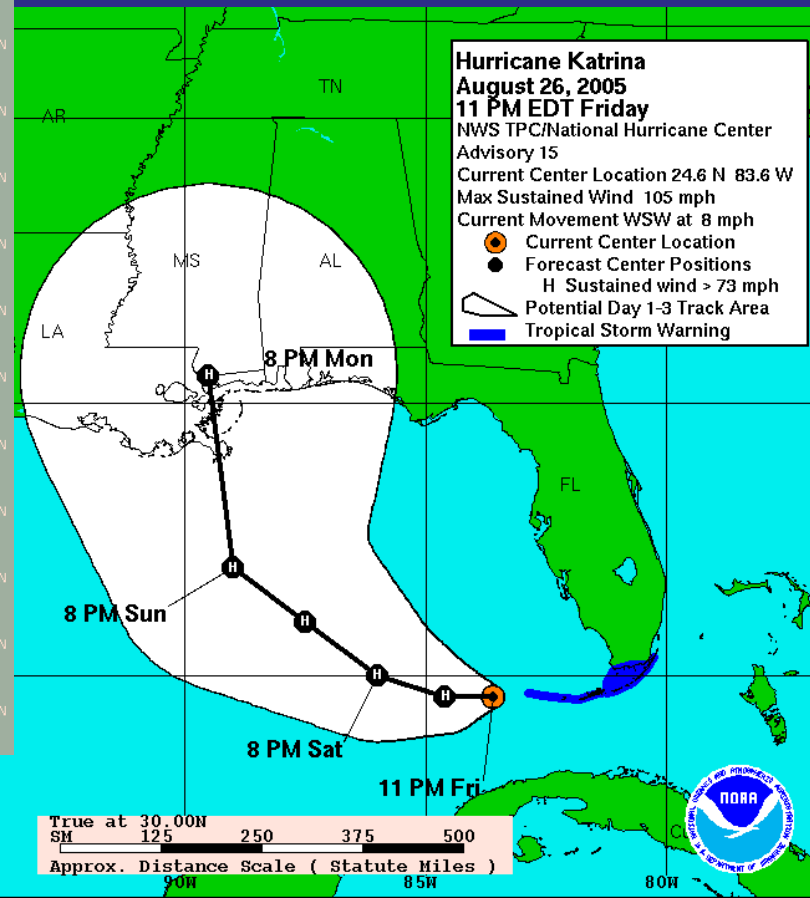
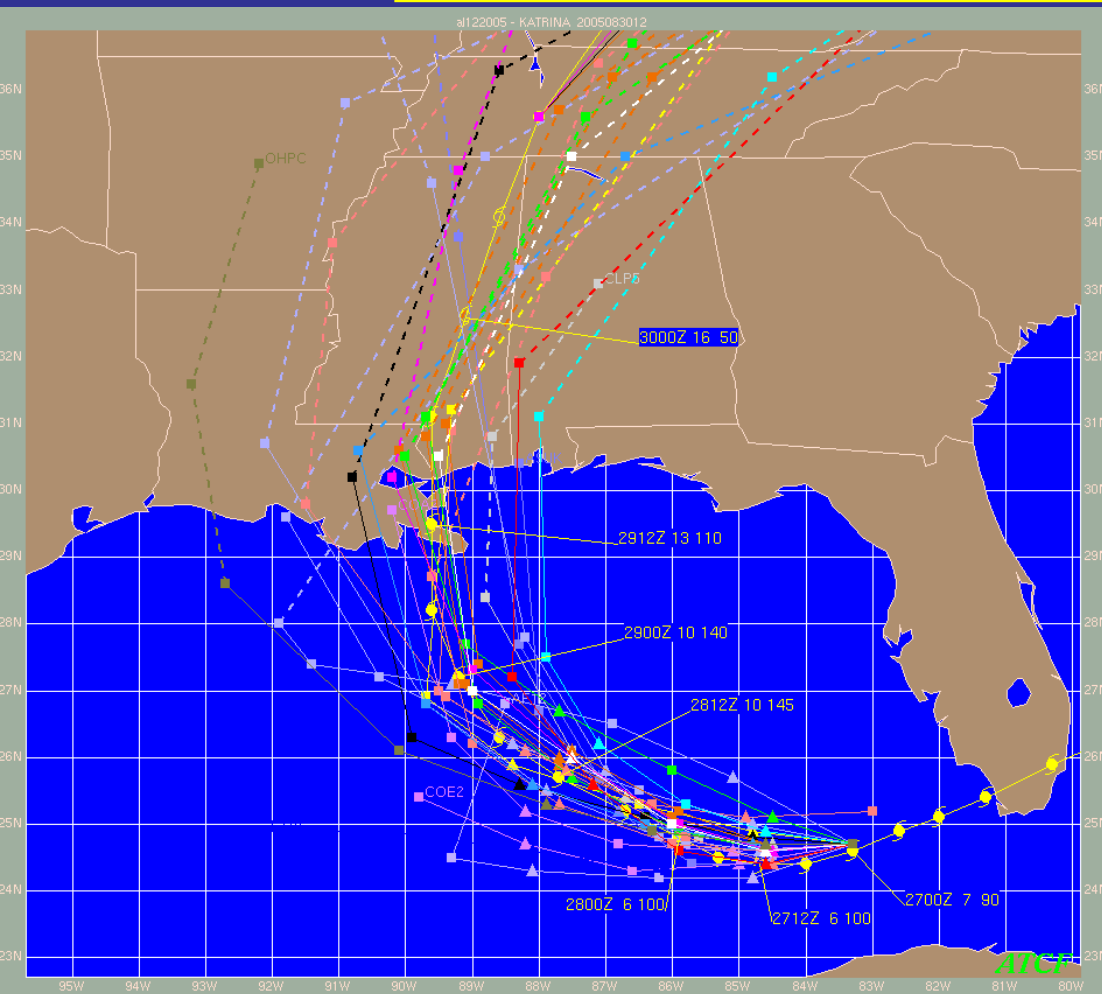
Katrina Track Forecasts

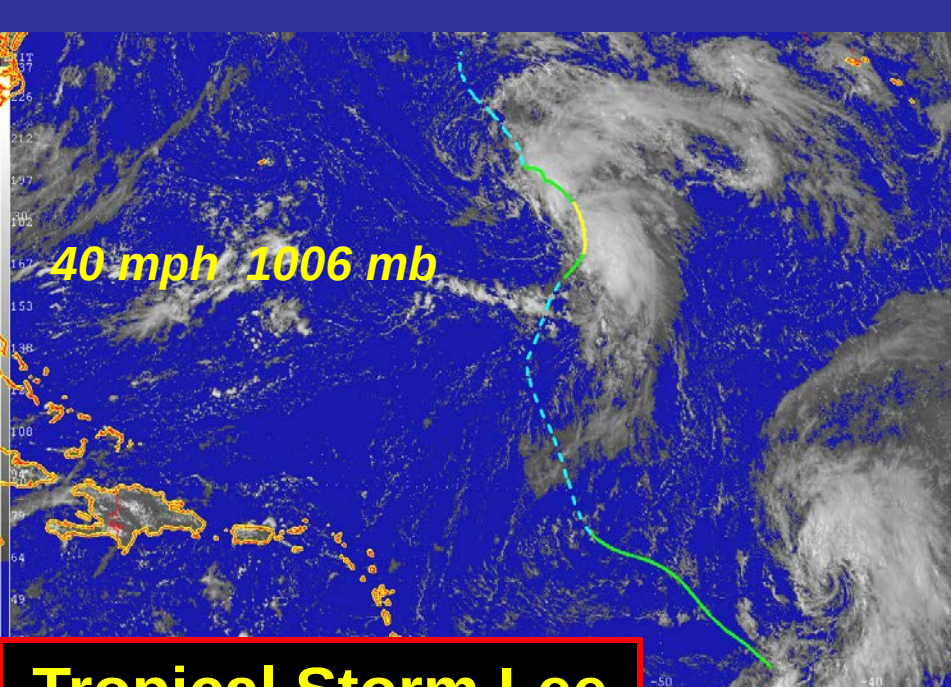
1200 UTC 24 August



Katrina Track Forecasts

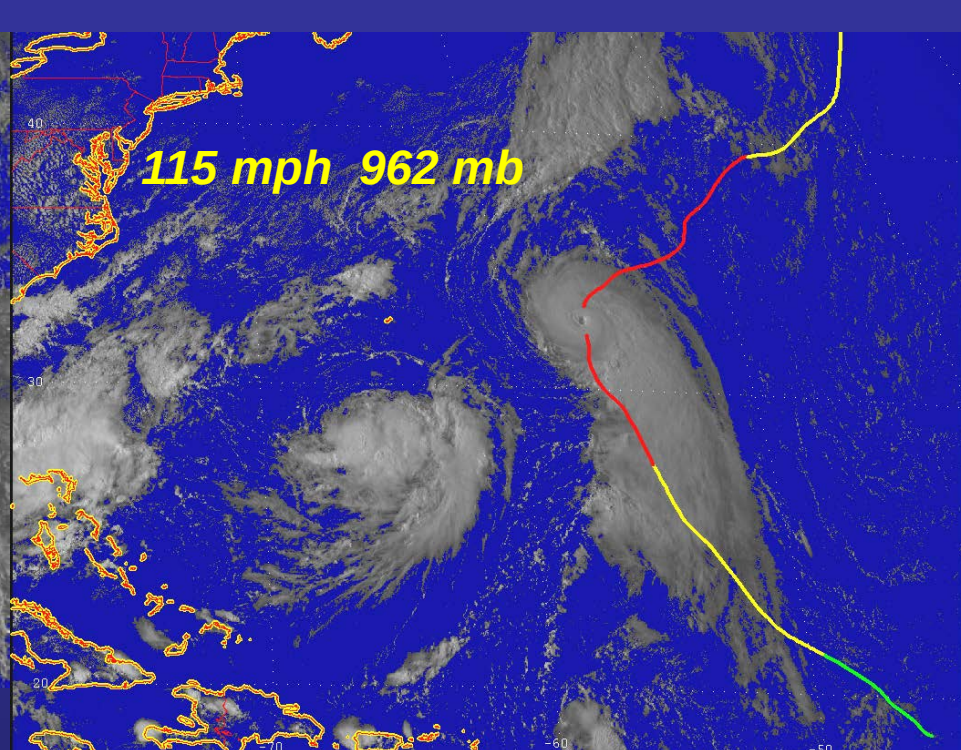
0000 UTC 27 August





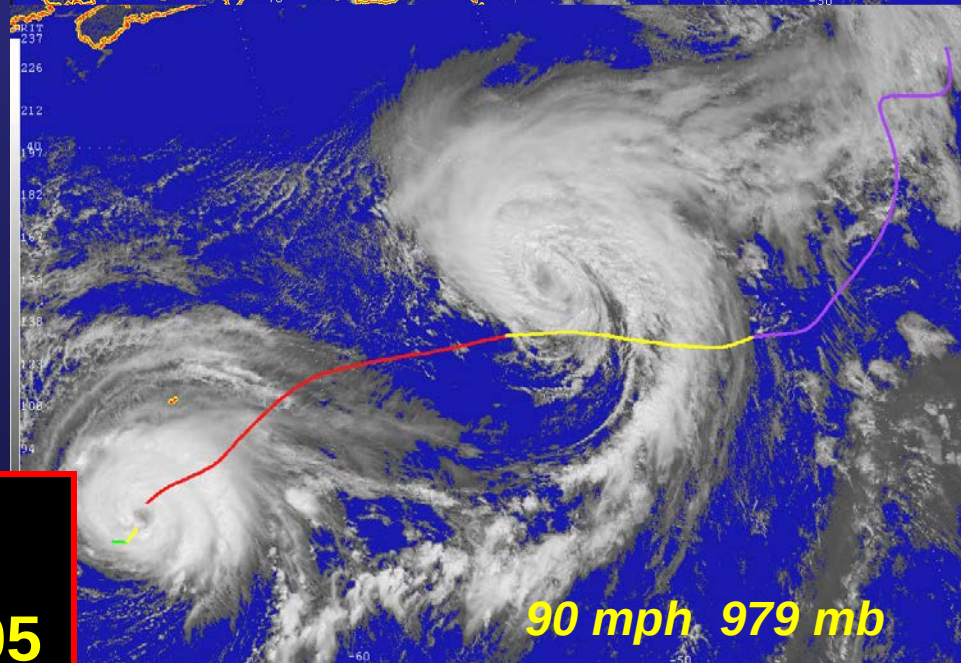
Tropical Storm Lee

**28 August - 2
September 2005**



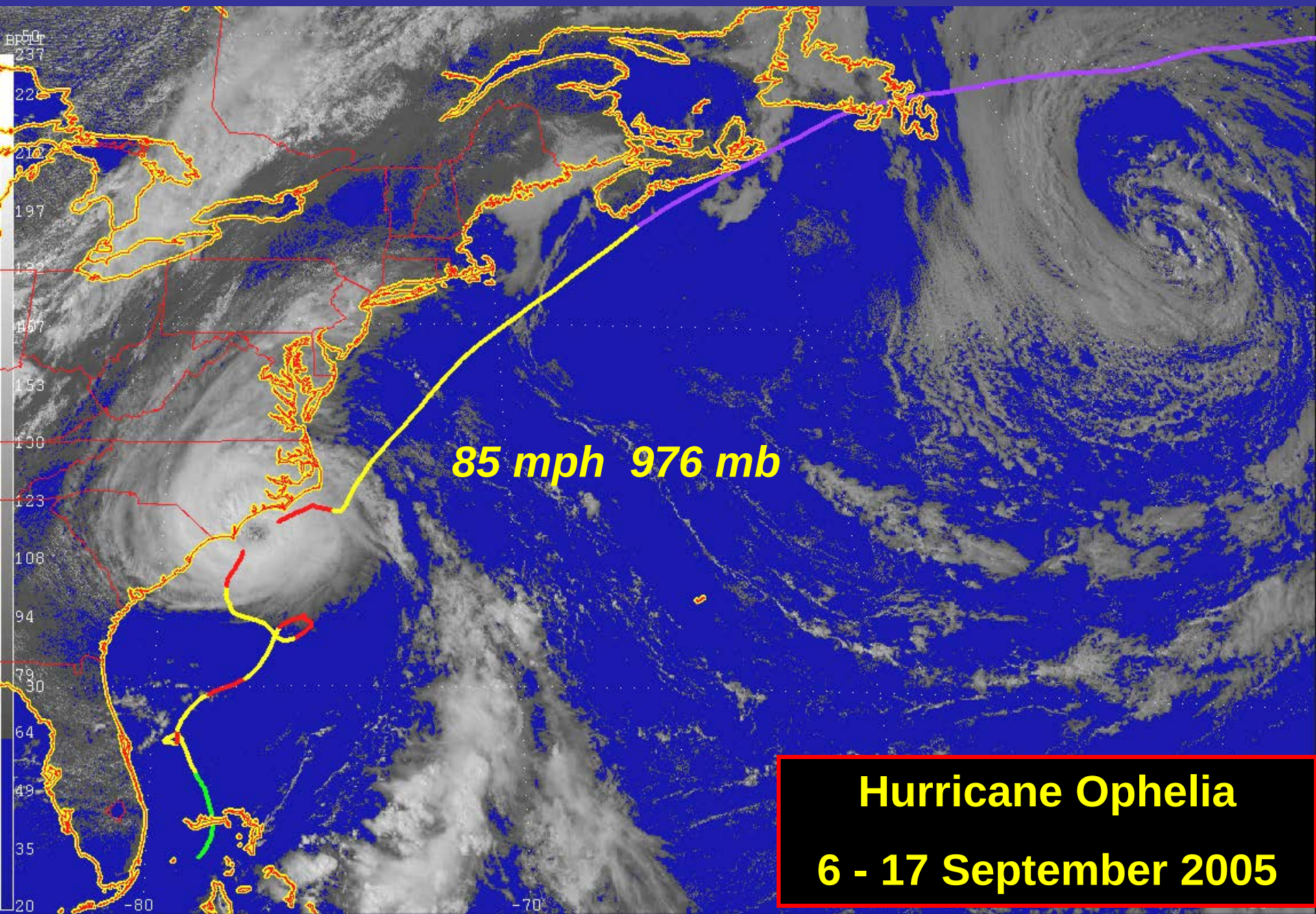
Hurricane Maria

1 - 10 September 2005



Hurricane Nate

5 - 10 September 2005



Hurricane Ophelia
6 - 17 September 2005

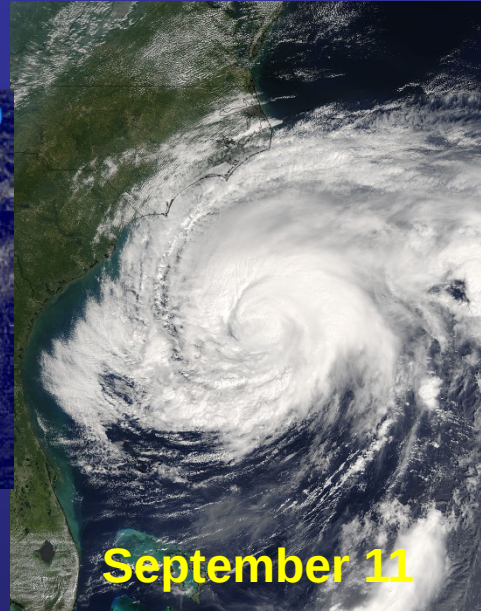
Images of Ophelia



September 6



September 9



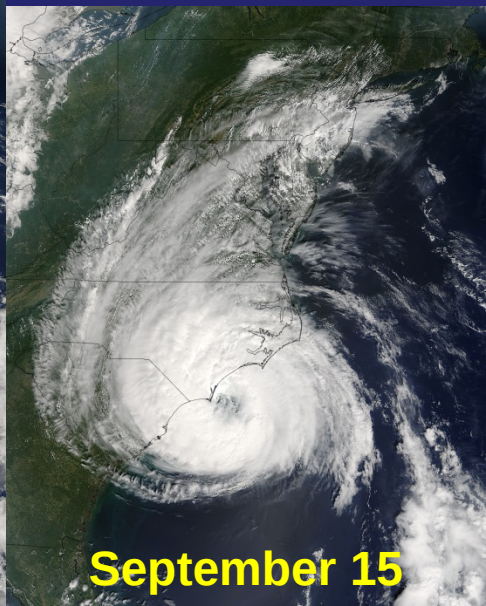
September 11



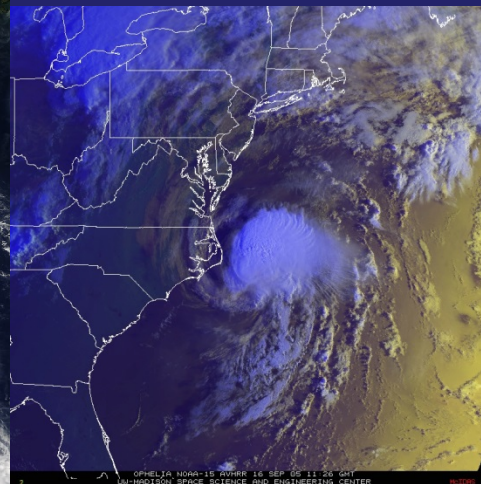
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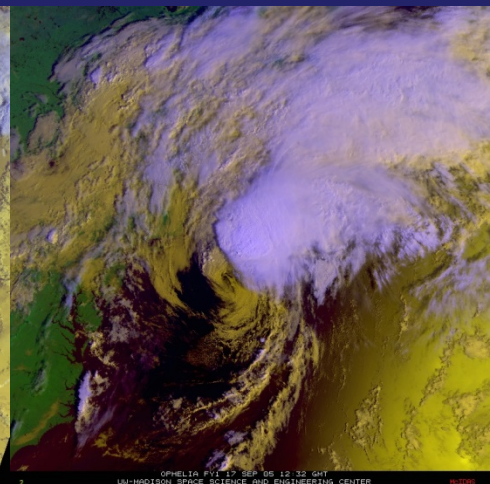
September 14



September 15



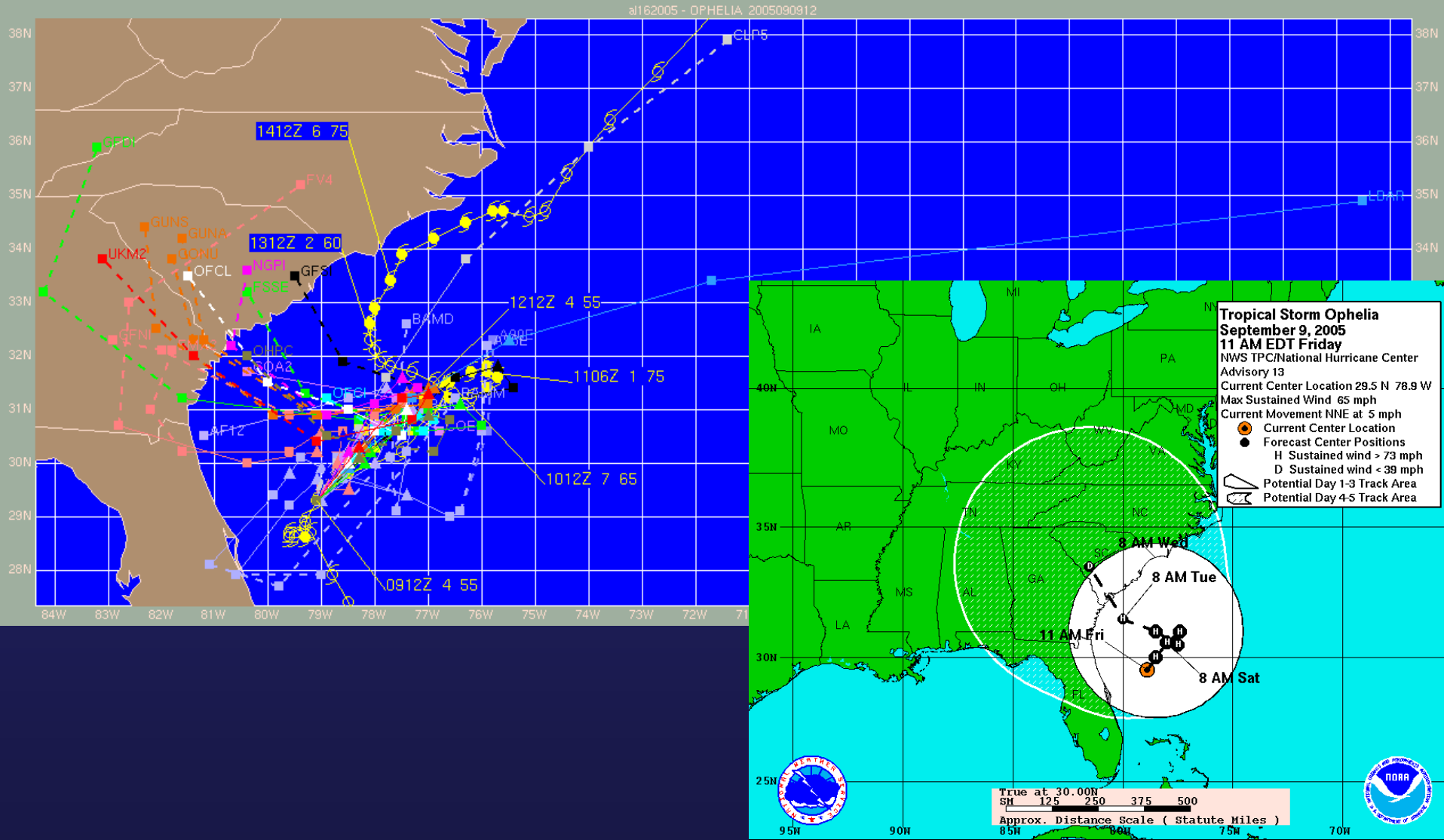
September 16



September 17

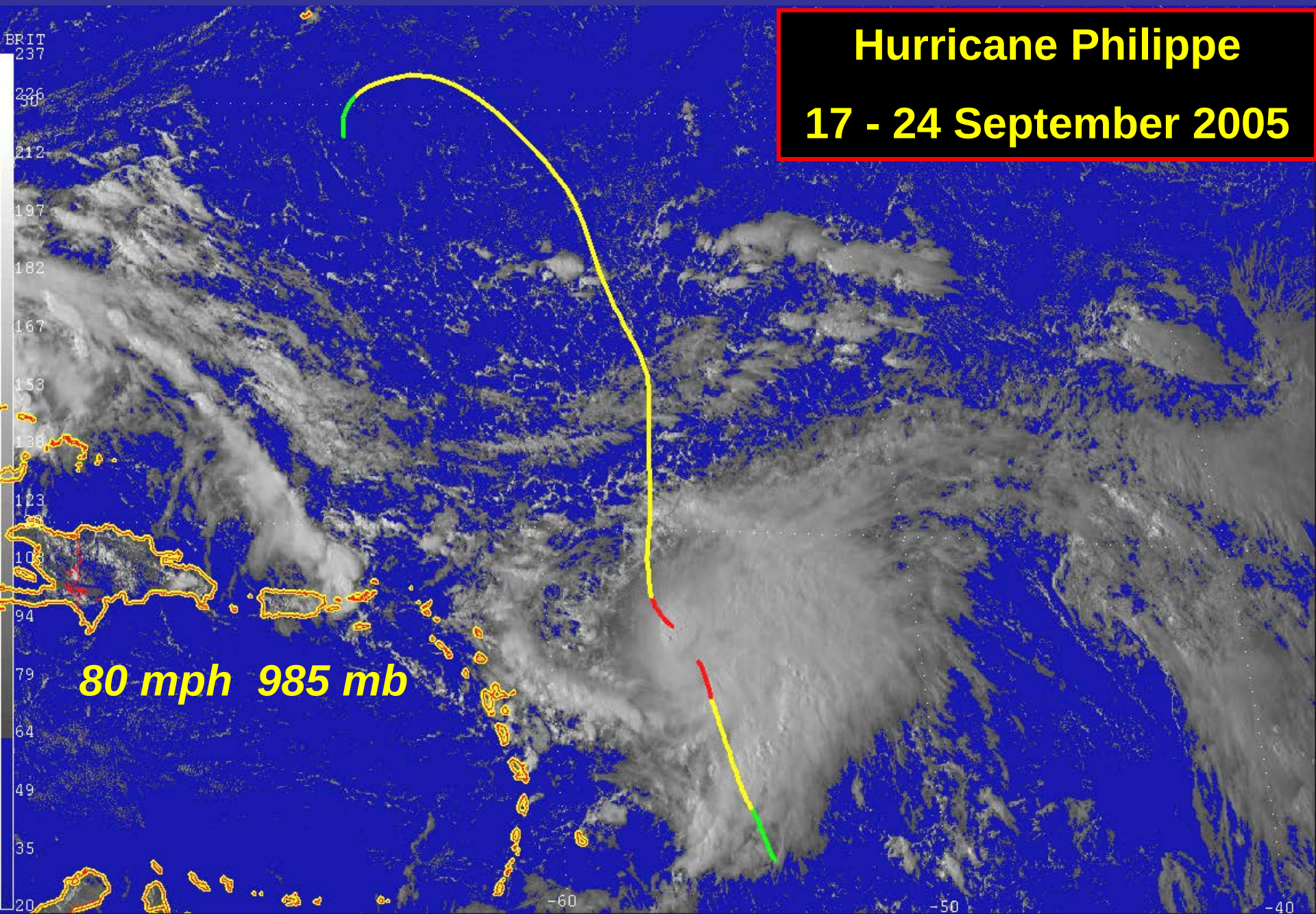
Ophelia Track Forecasts

1200 UTC 9 September



Hurricane Philippe

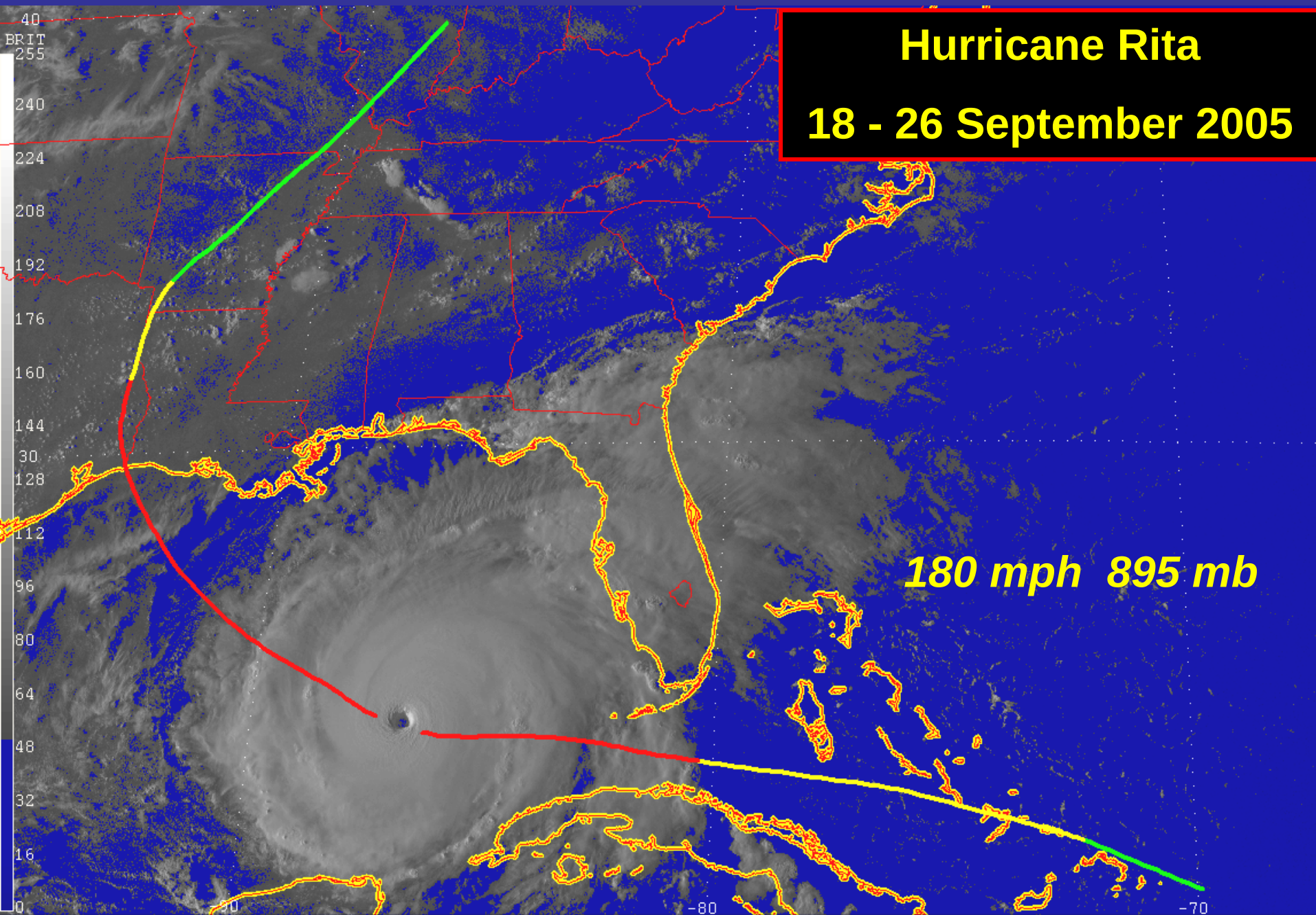
17 - 24 September 2005



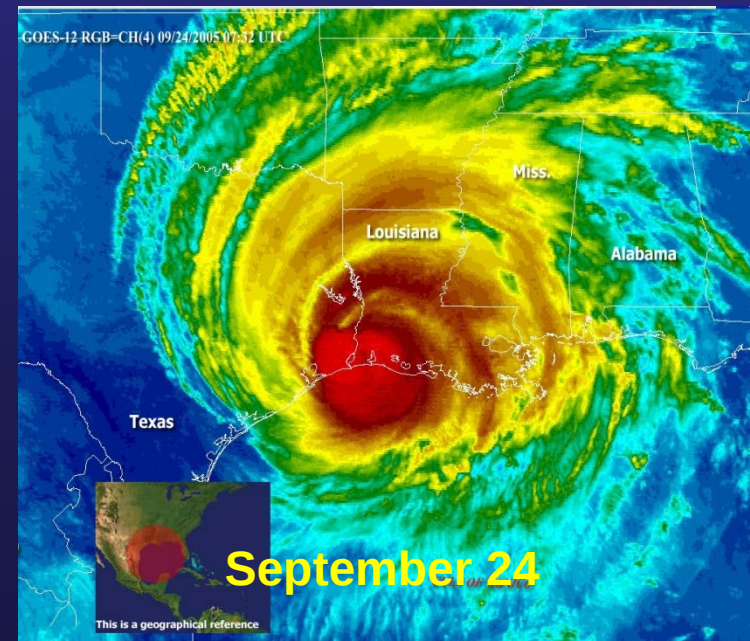
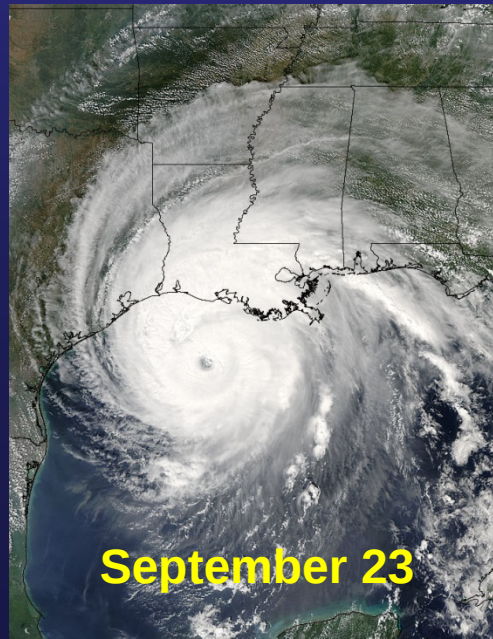
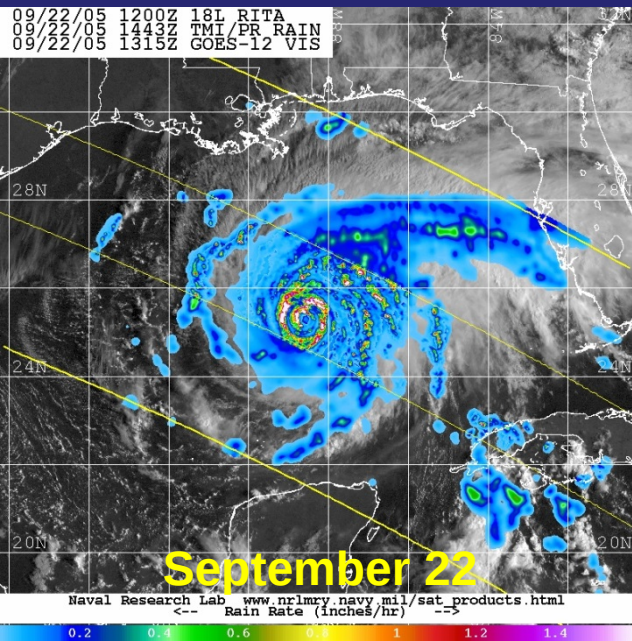
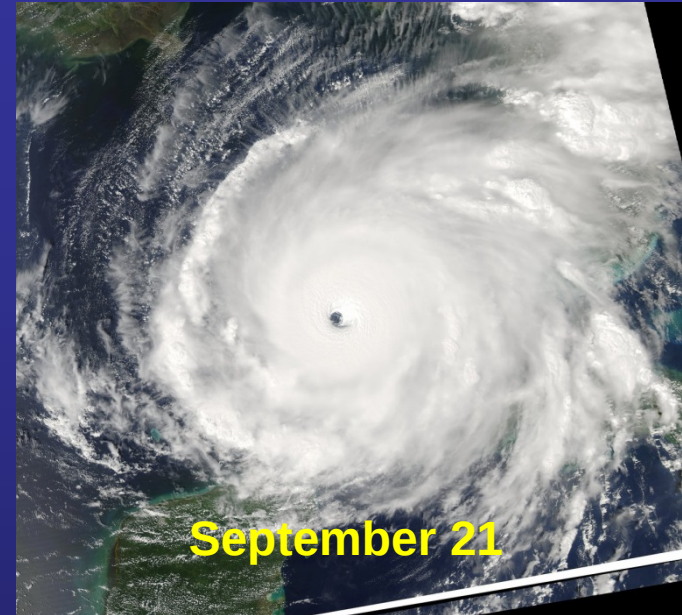
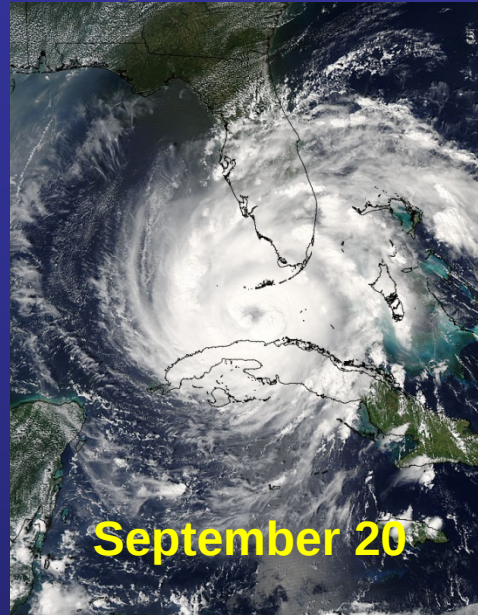
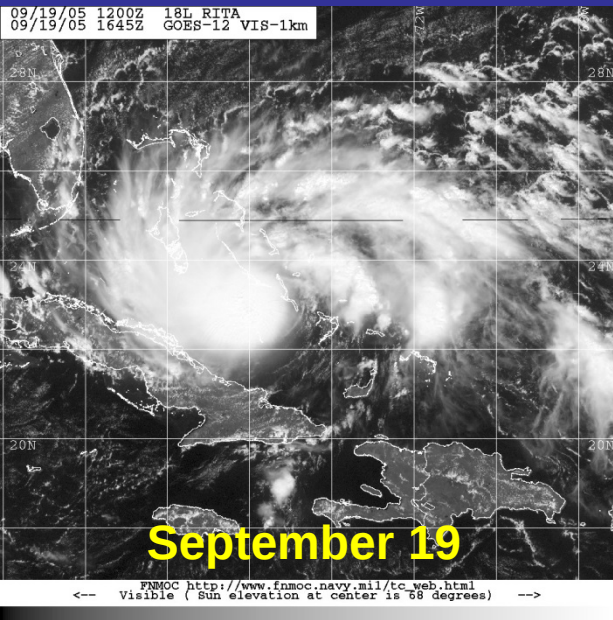
Hurricane Rita

18 - 26 September 2005

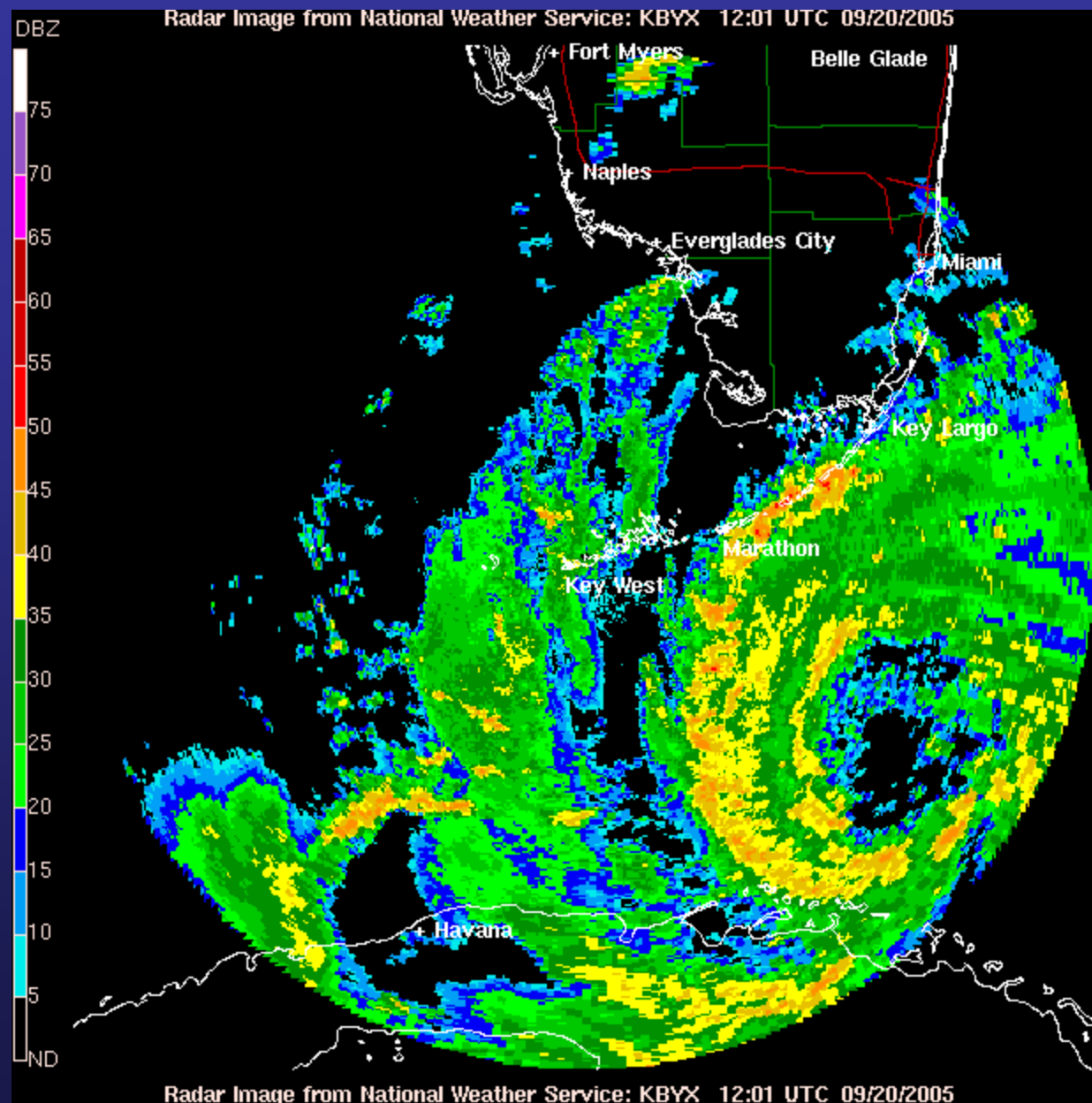
180 mph 895 mb



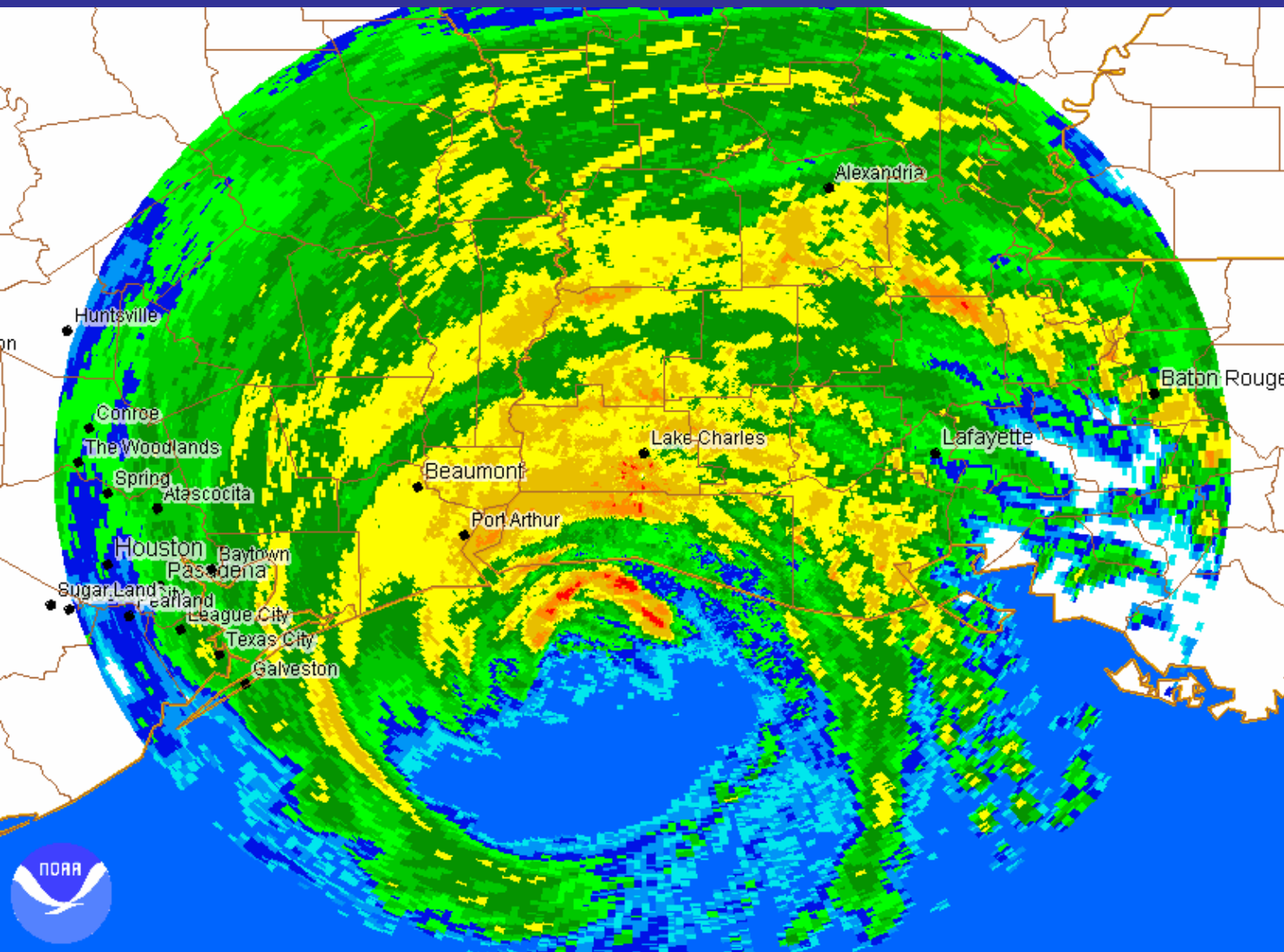
Images of Rita



Hurricane Rita Passing the Florida Keys



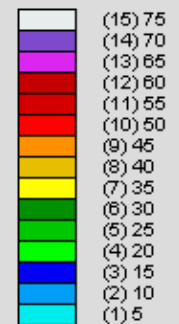
Hurricane Rita Landfall



BASE REFLECTIVITY
KLCH - LAKE CHARLES, LA
09/24/2005 05:29:42 GMT
LAT: 30/07/30 N
LON: 93/12/57 W
ELEV: 94.0 FT
MODE/VCP: A / 21

ELEV ANGLE: 0.50 °
MAX: 55 dBZ

Legend: (Category) dBZ

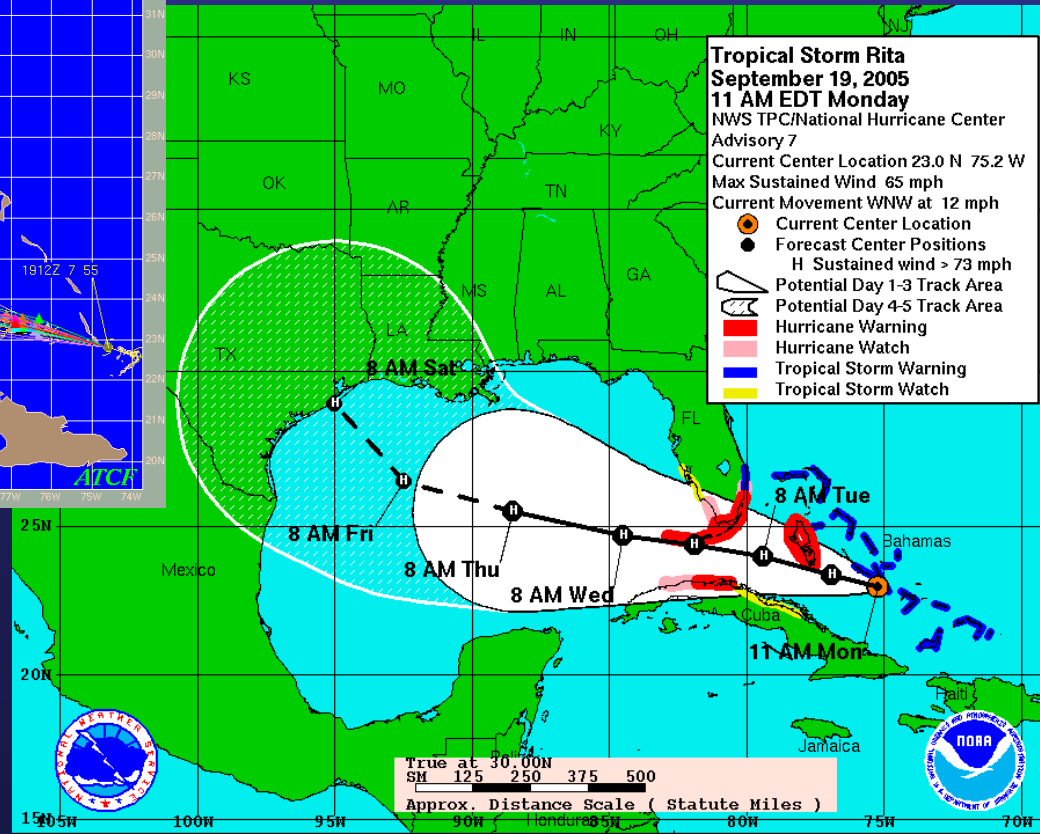
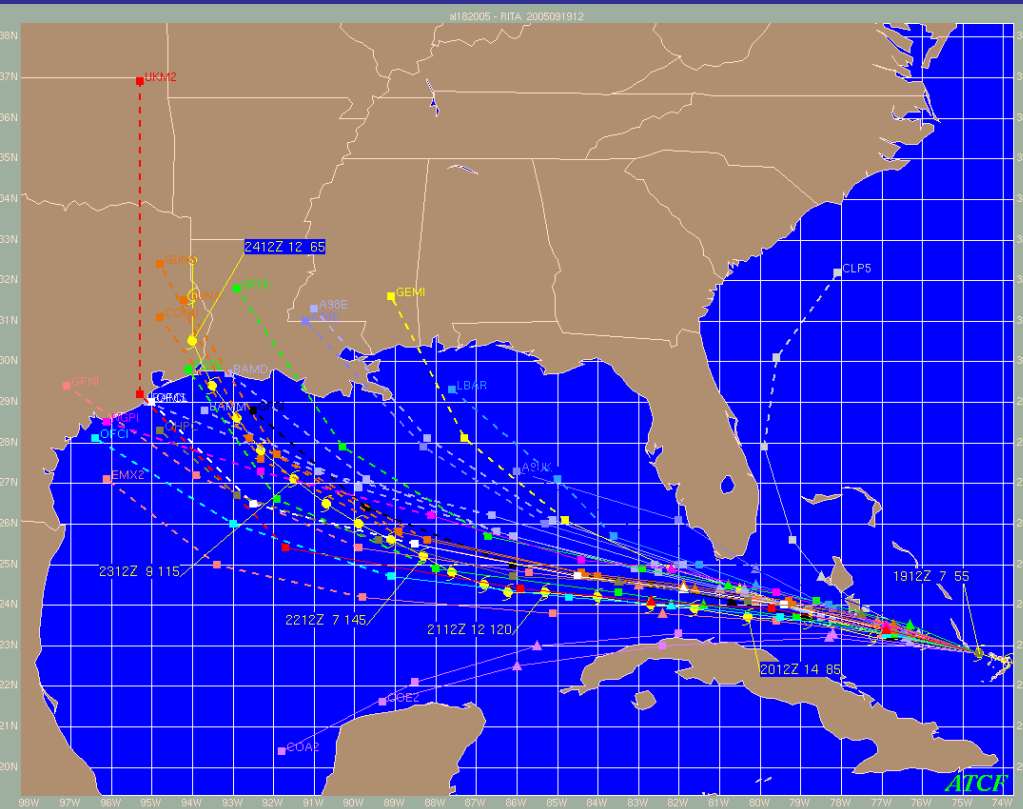


Rita's Damage



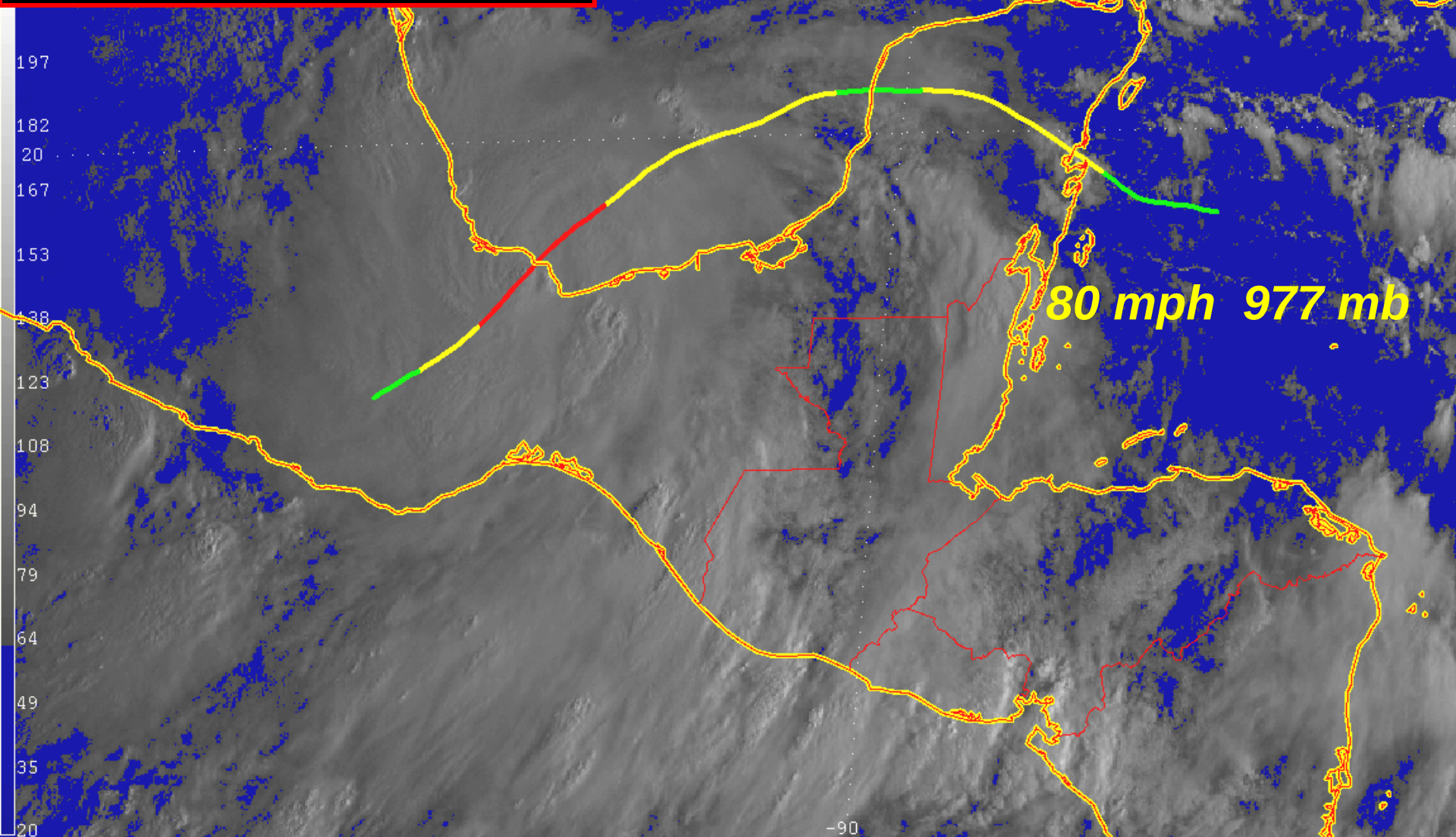
Rita Track Forecasts

1200 UTC 19 September



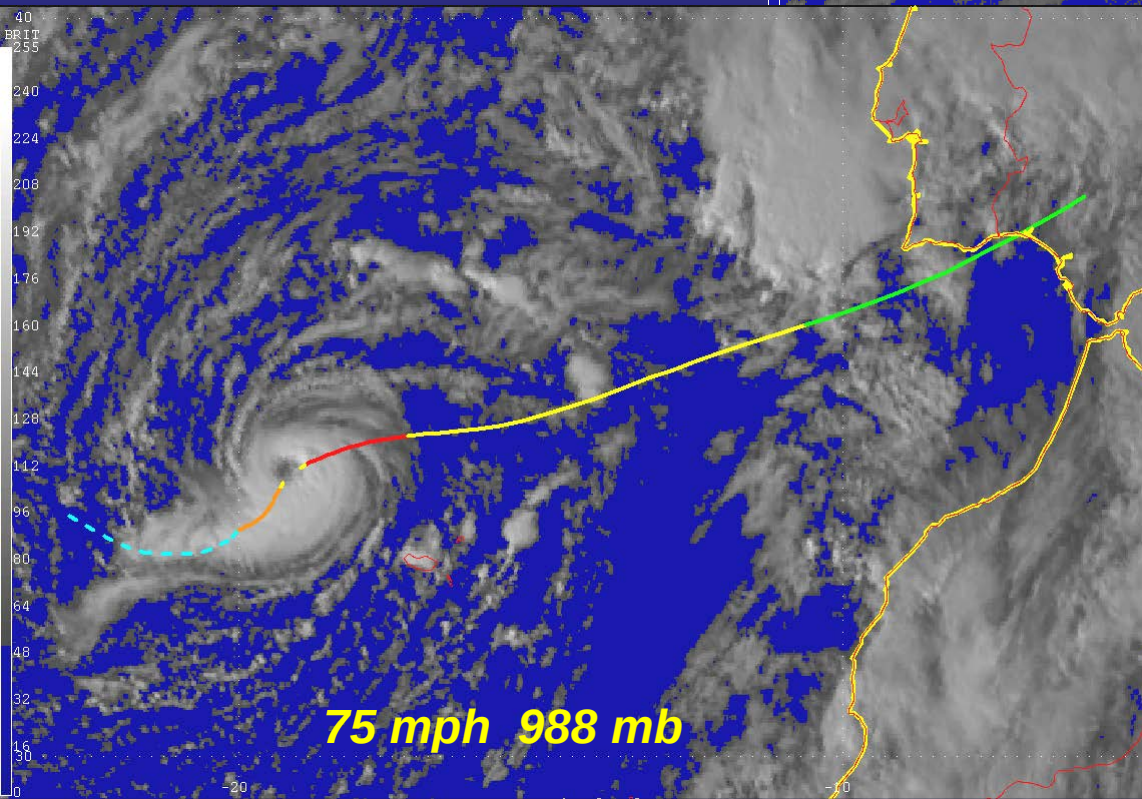
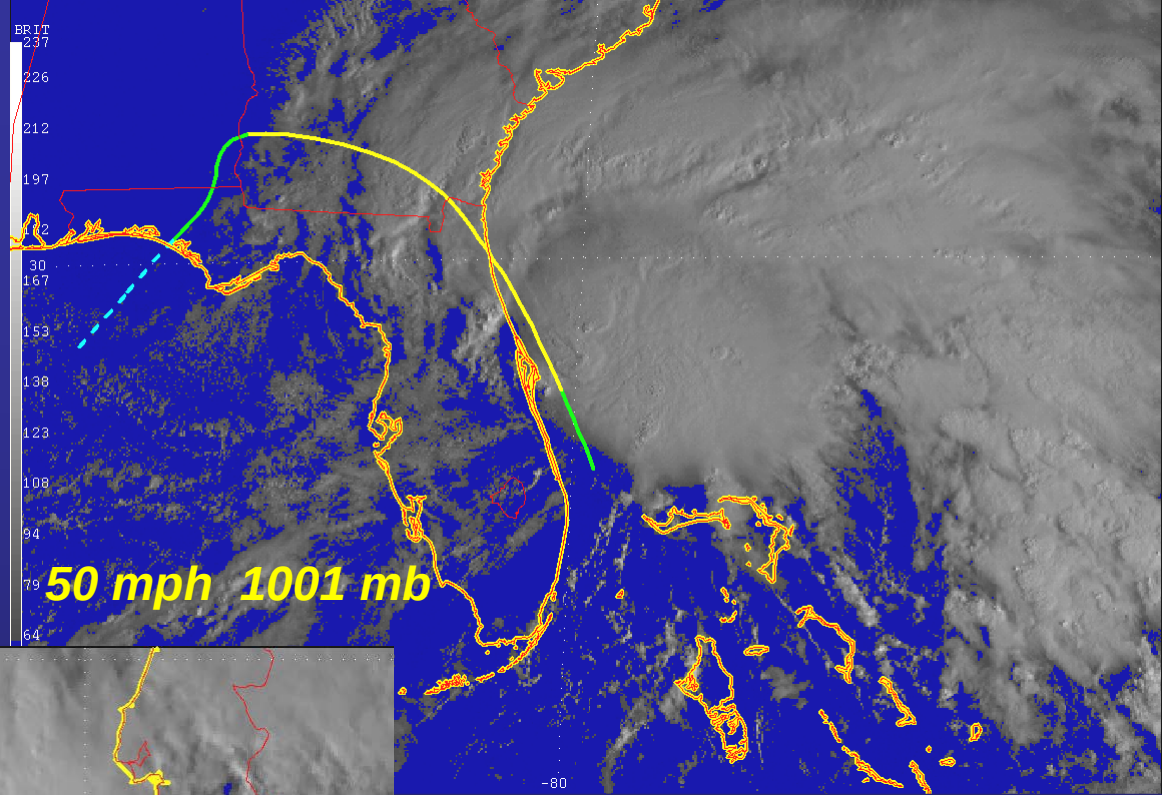
Hurricane Stan

1 - 5 October 2005



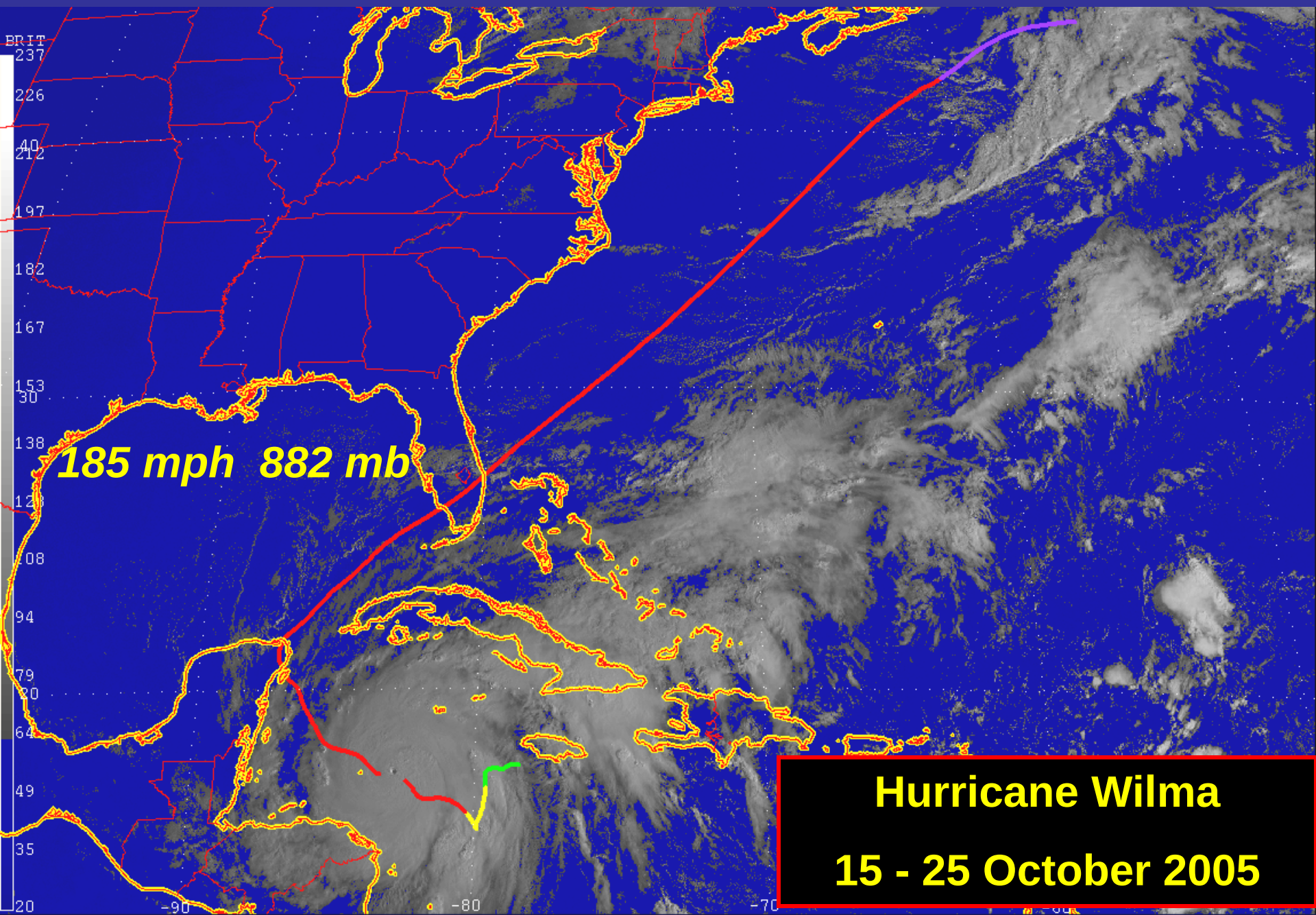
Tropical Storm Tammy

5 - 6 October 2005



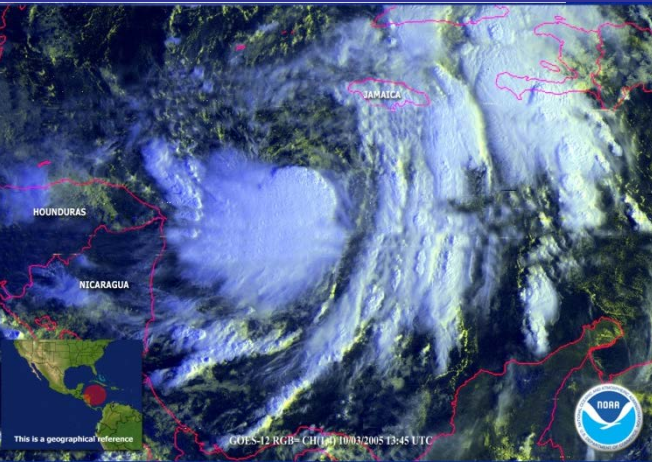
Hurricane Vince

8 - 11 October 2005



Hurricane Wilma
15 - 25 October 2005

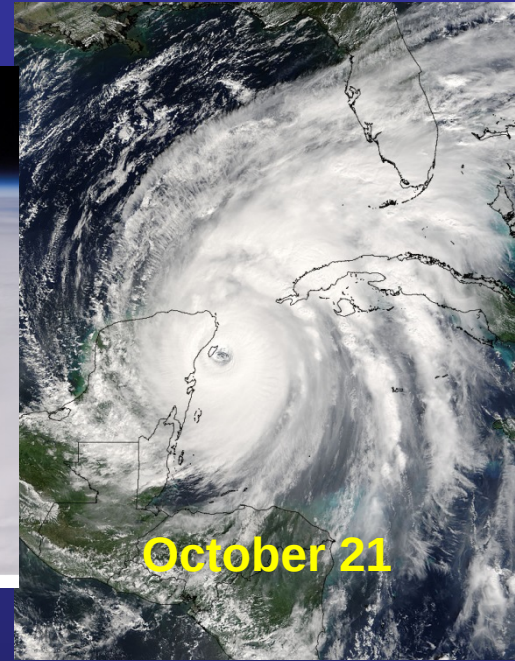
Images of Wilma



October 17



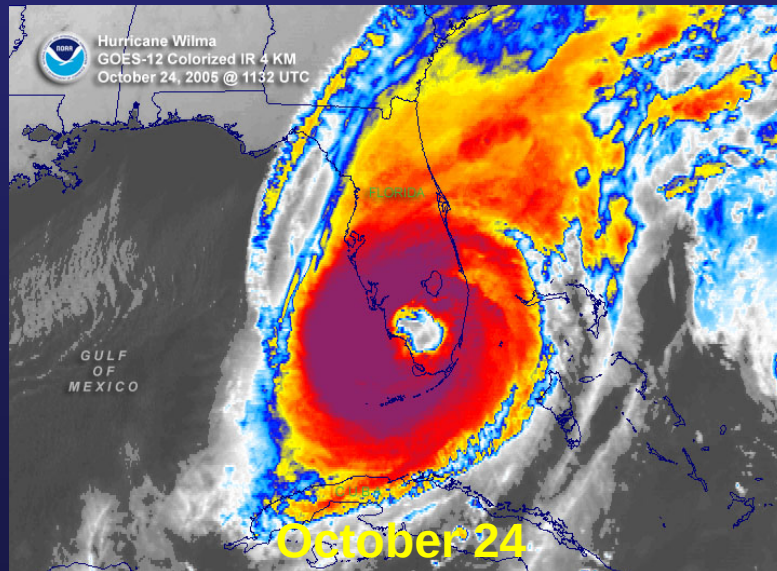
October 19



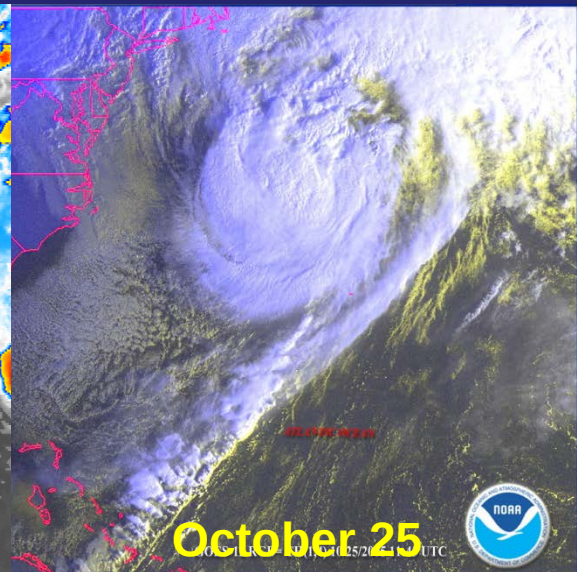
October 21



October 23



October 24



October 25

10/20/05 19:25:08

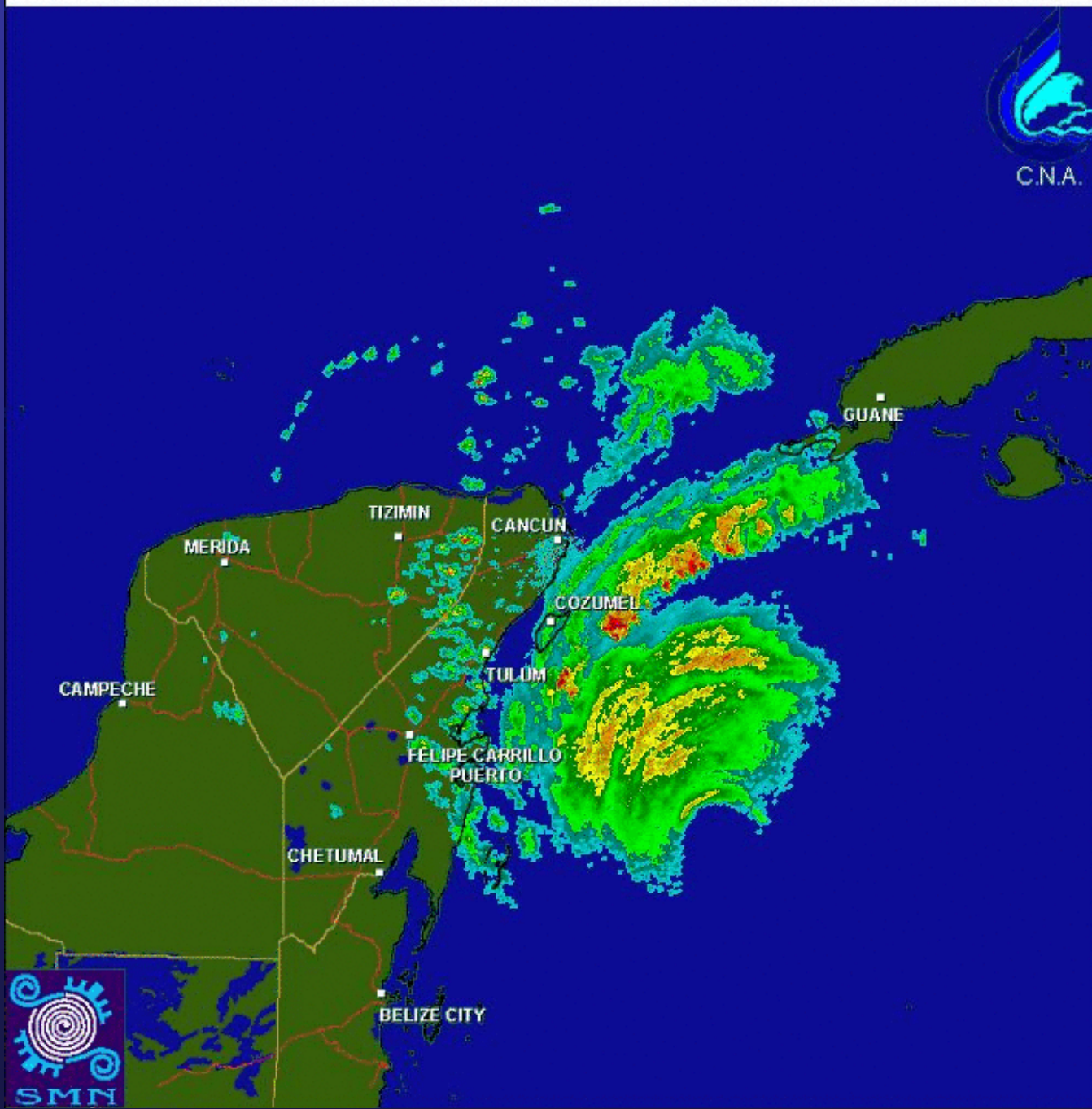
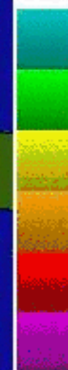
20 Oct 2005

PPI
Rain Rate
480 km range
El: 0.8°

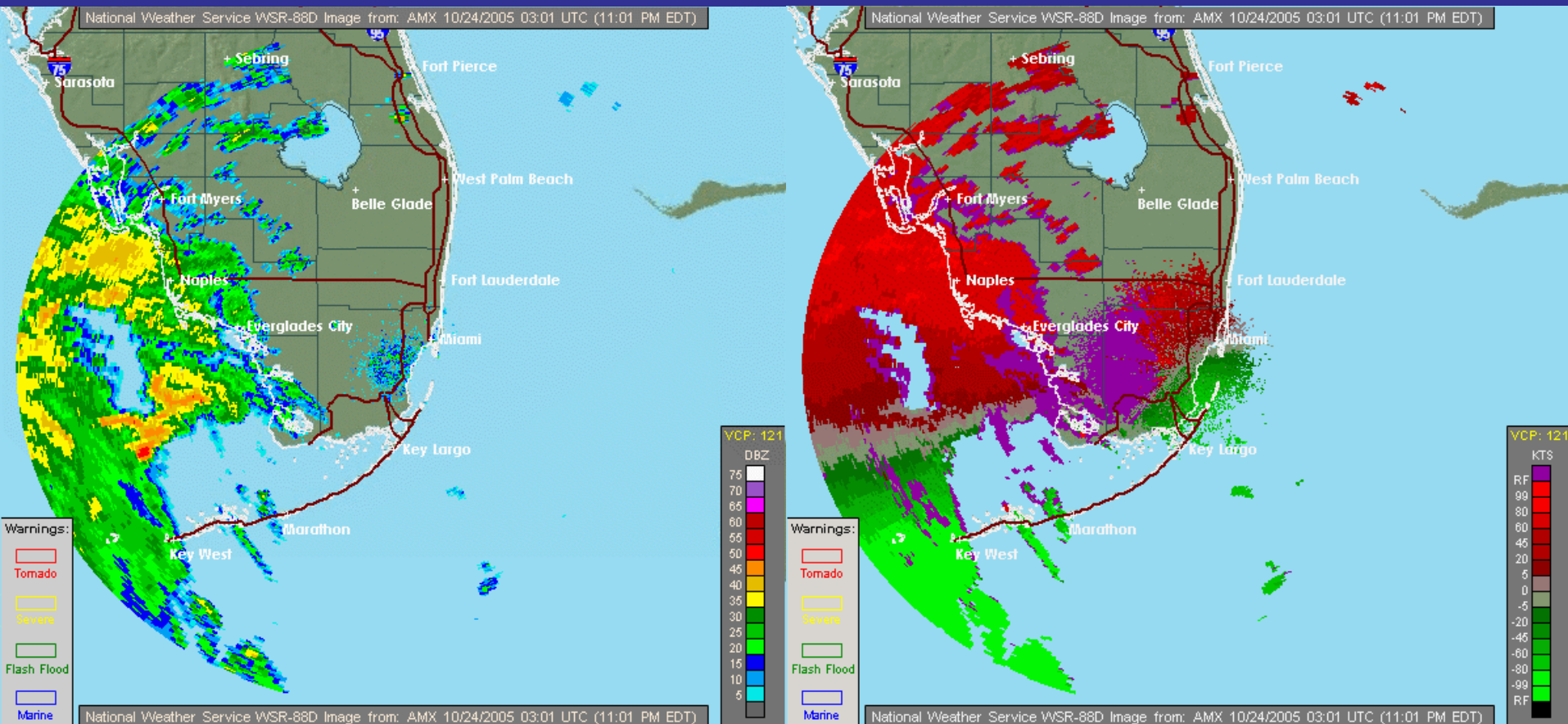


mm/hr

0.1
2.5
13.0
25.0
51.0
127.0



WSR-88D Animation of Wilma

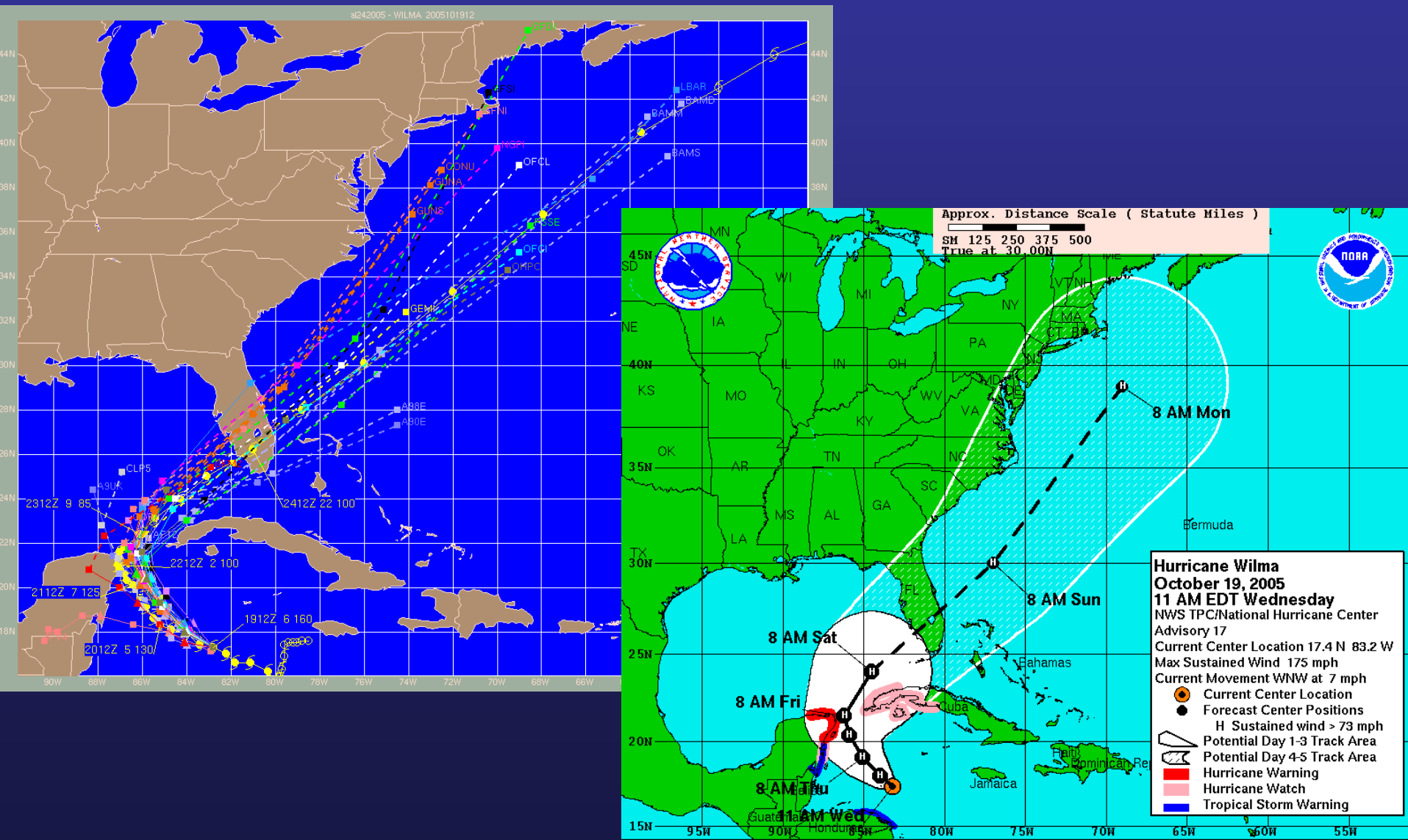


Wilma's Damage



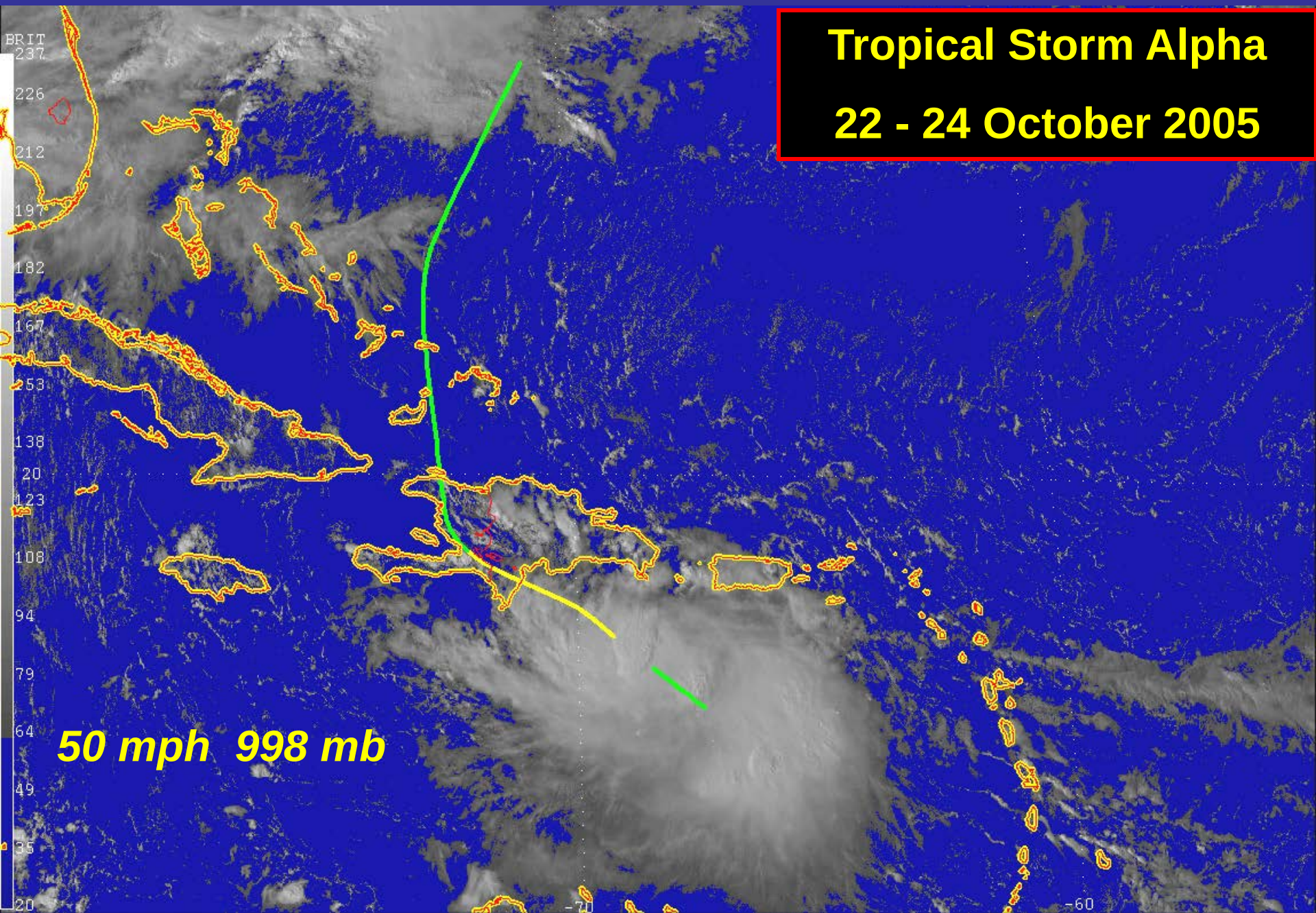
Wilma Track Forecasts

1200 UTC 19 October



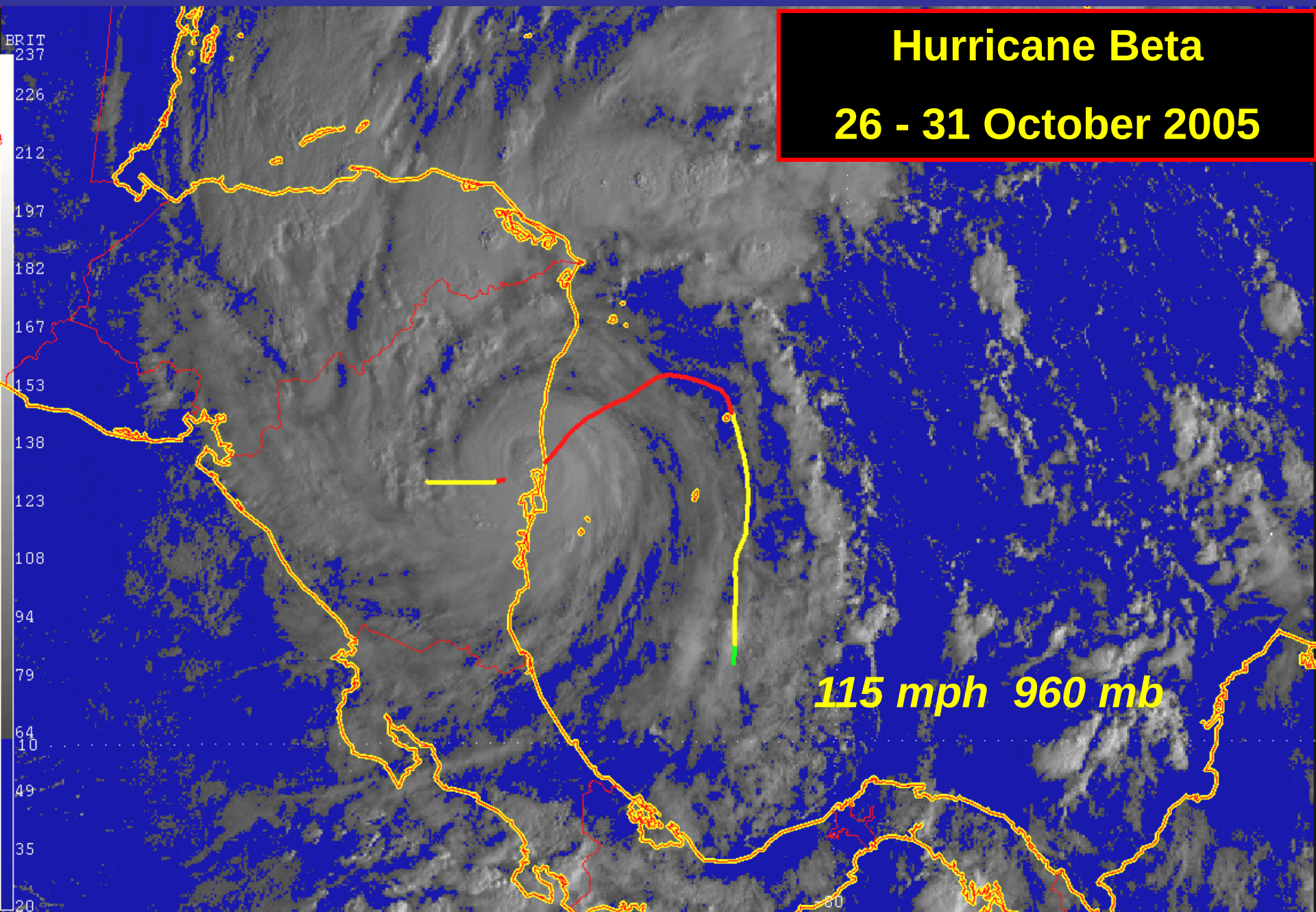
Tropical Storm Alpha

22 - 24 October 2005

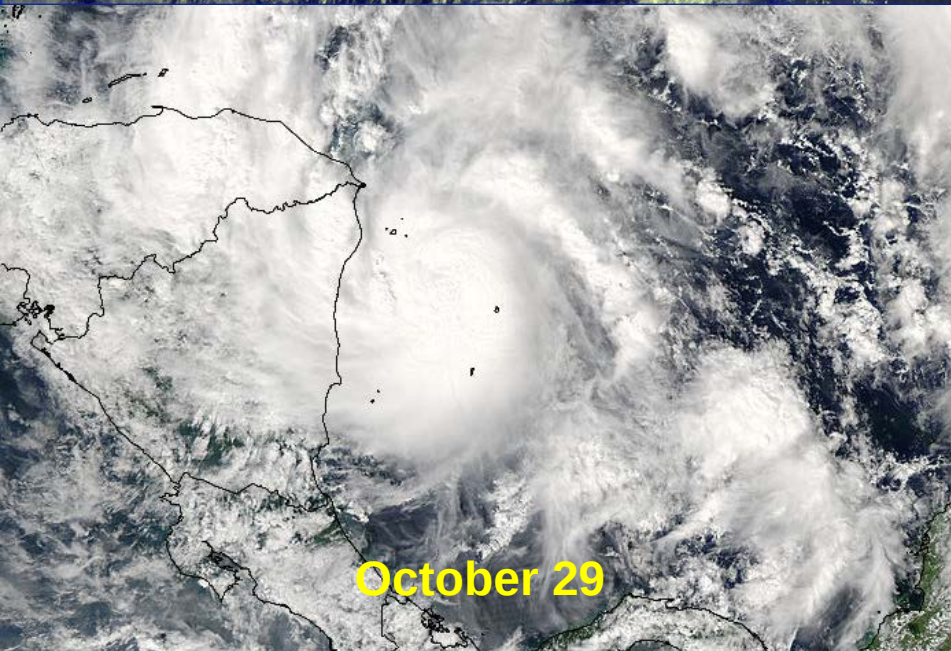
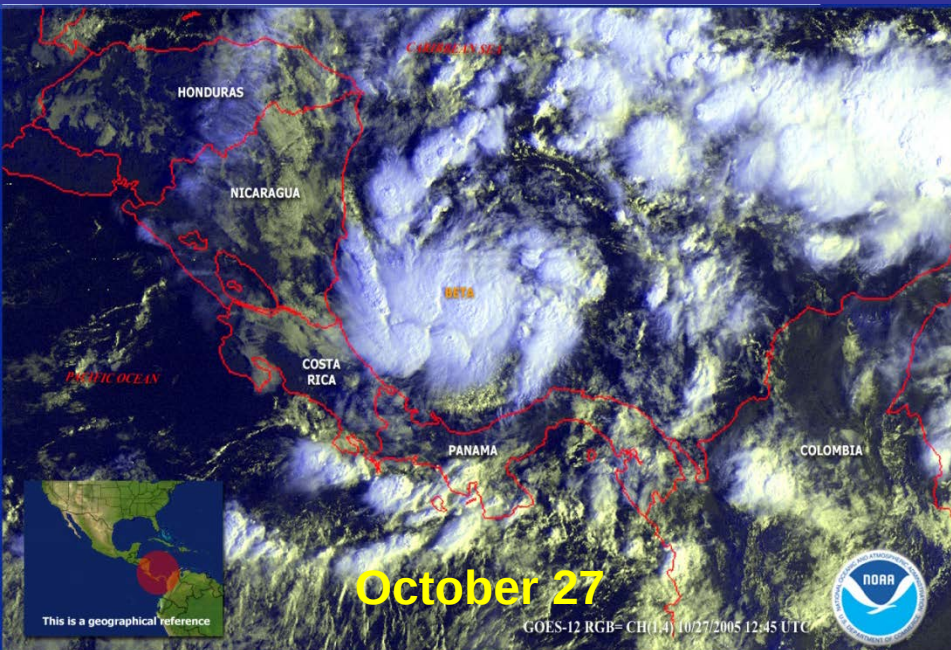


Hurricane Beta

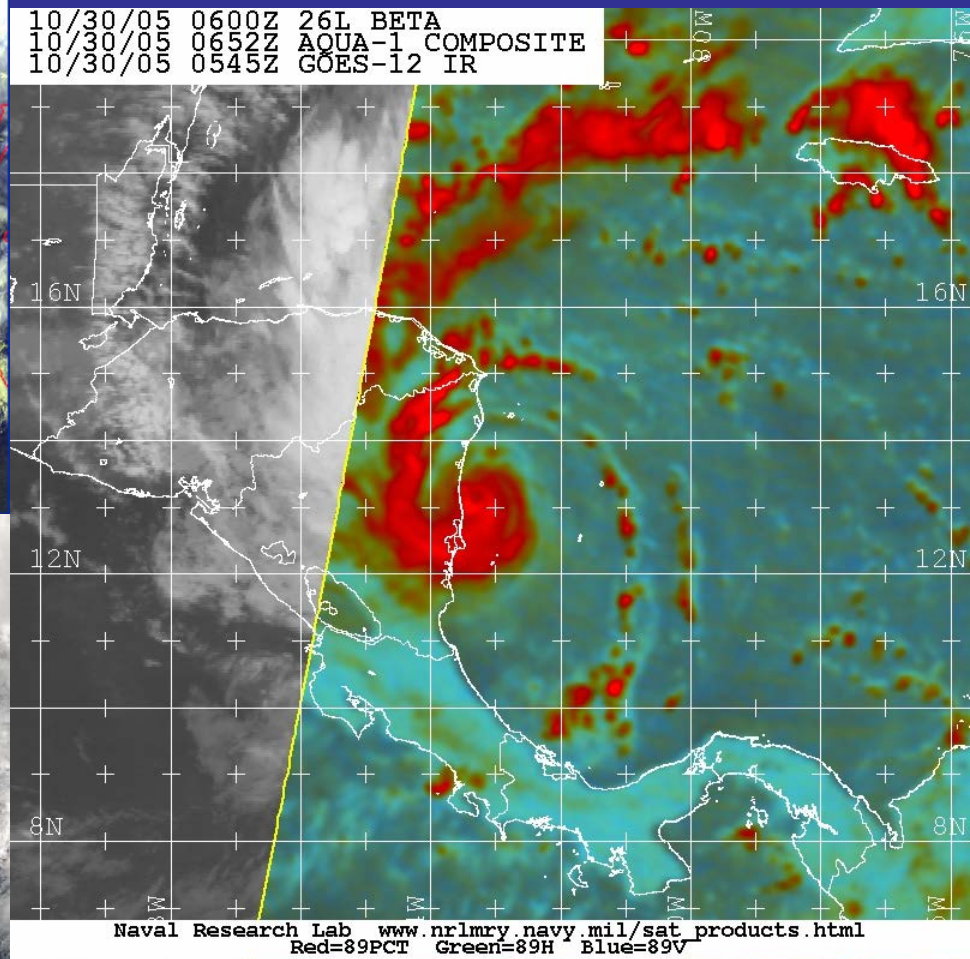
26 - 31 October 2005



Images of Beta



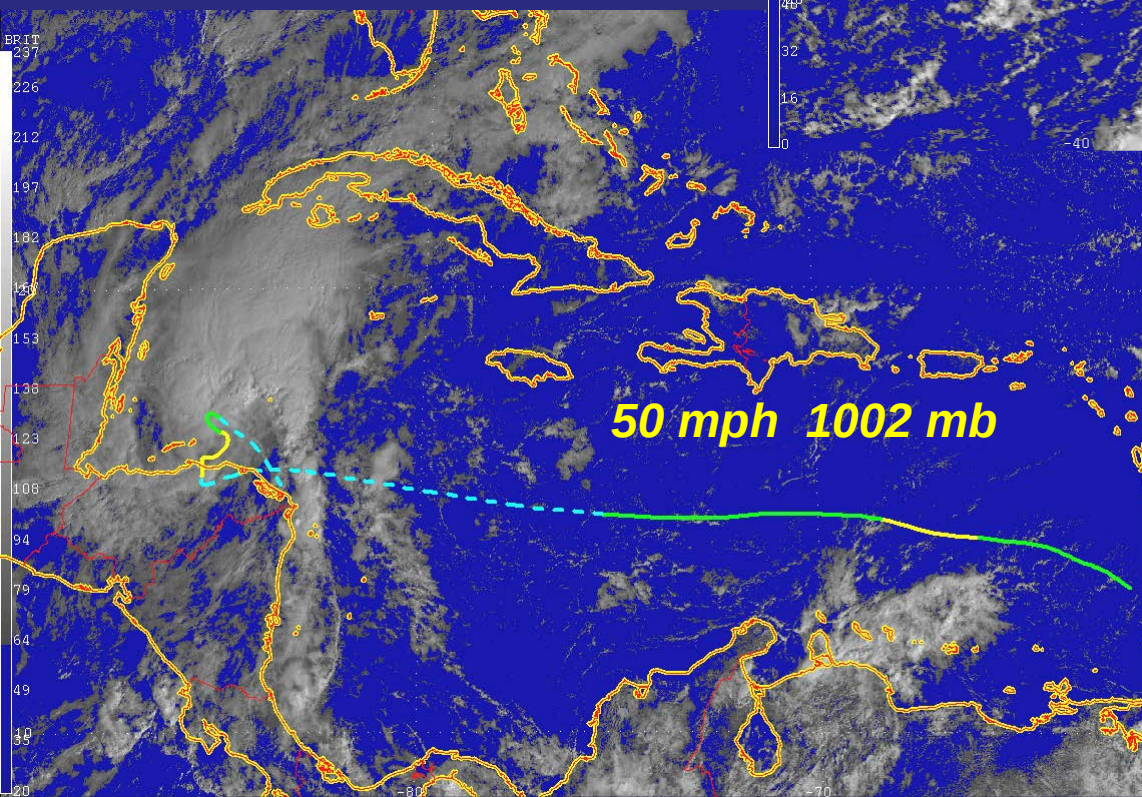
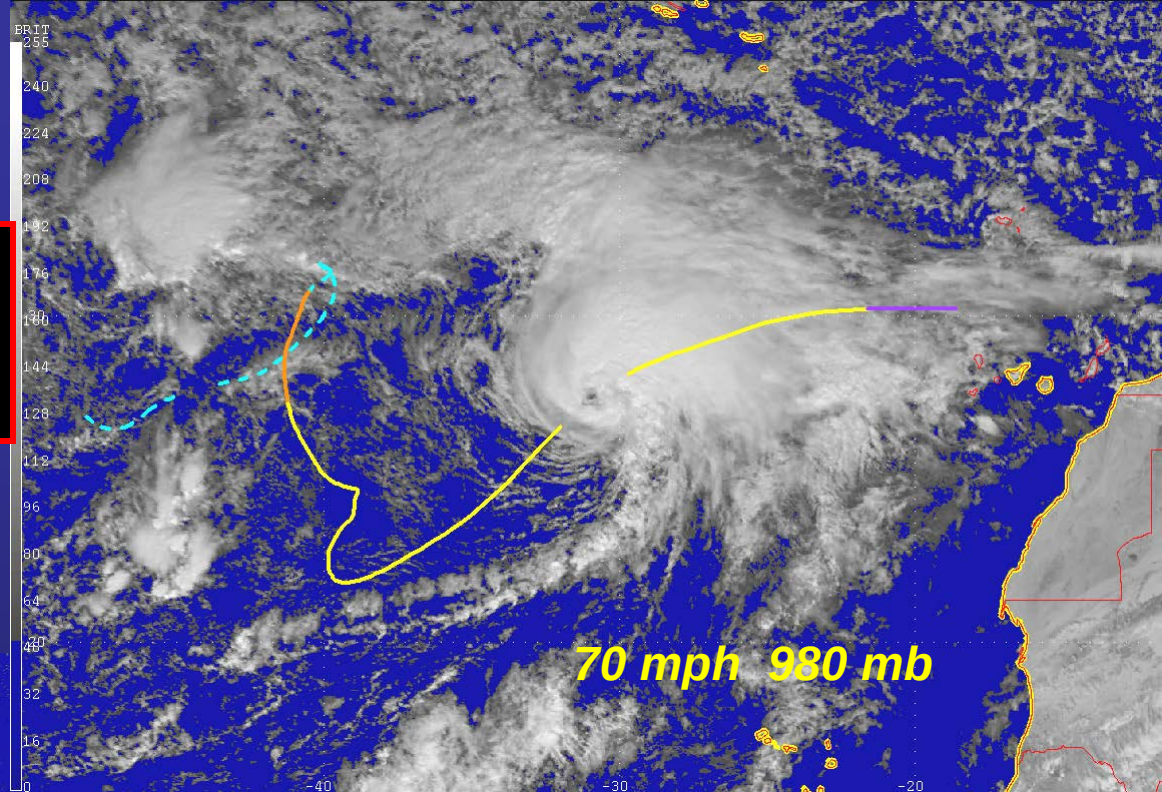
10/30/05 0600Z 26L BETA
10/30/05 0652Z AQUA-1 COMPOSITE
10/30/05 0545Z GOES-12 IR



October 30

Tropical Storm Delta

22 - 28 November 2005

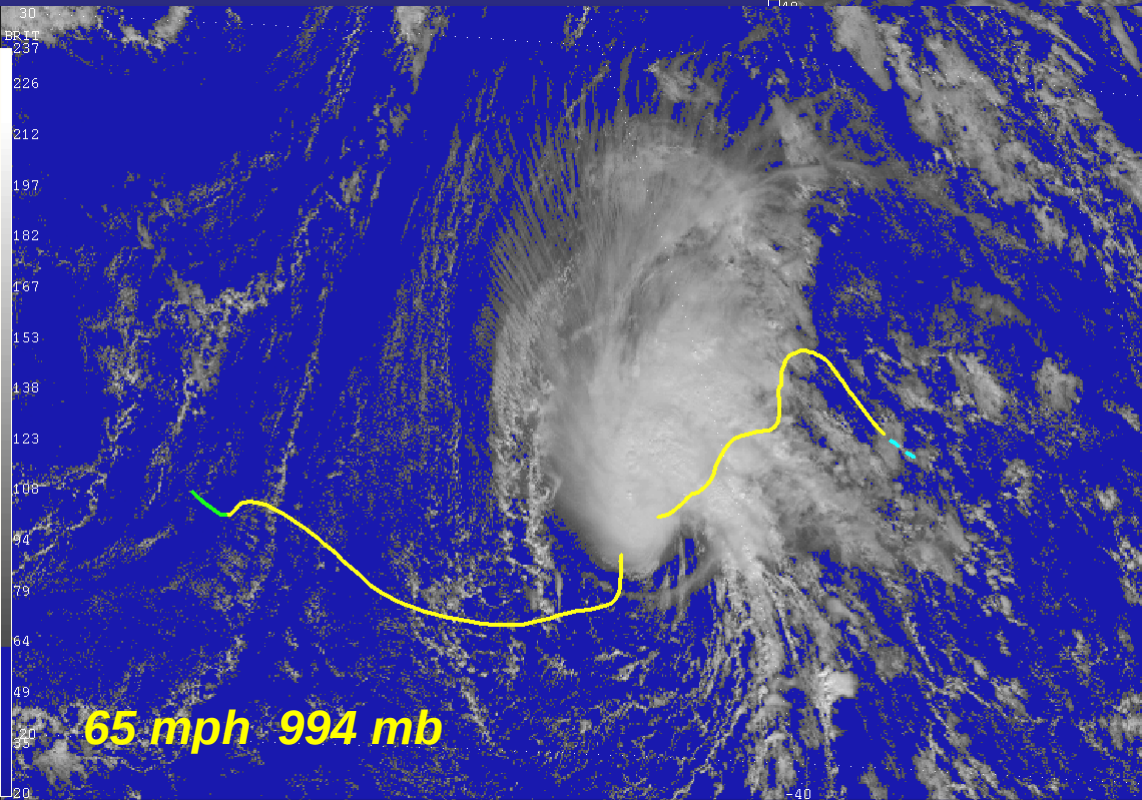
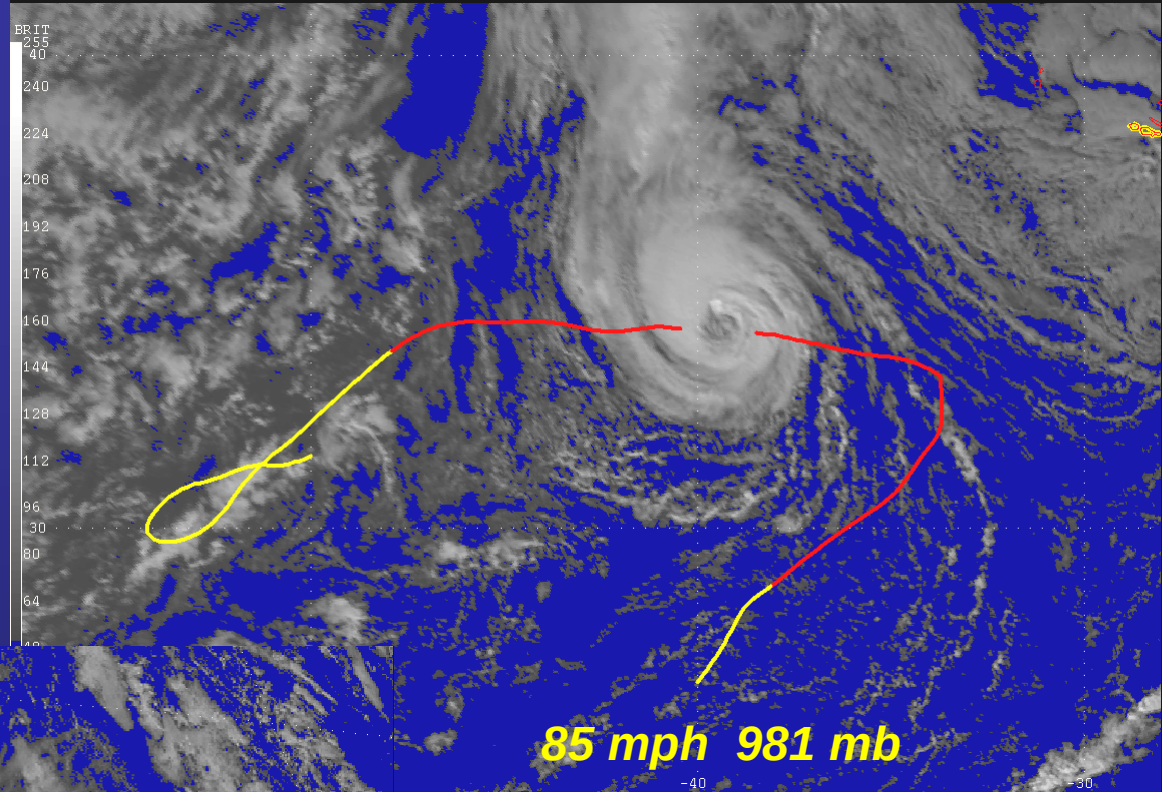


Tropical Storm Gamma

14 - 21 November 2005

Hurricane Epsilon

29 November - 8
December 2005



Tropical Storm Zeta

30 December 2005 - 6
January 2006