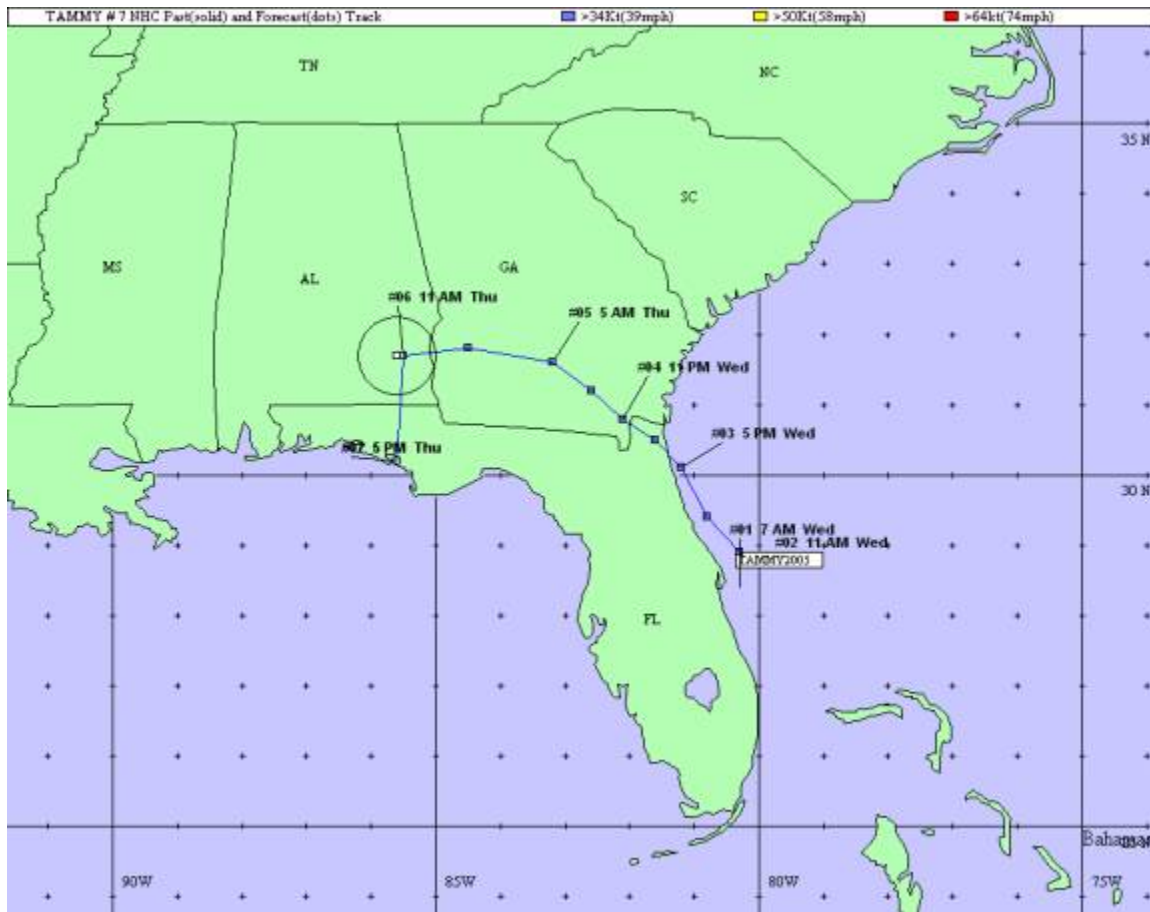


Tropical Storm Tammy



South Carolina Department of Natural Resources
Land, Water and Conservation Division
South Carolina State Climatology Office
Compiled by Mark Malsick

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EVENT SUMMARY:

Tammy began as a weak easterly wave that tracked slowly across the Atlantic and became a persistent quasi-stationary wave over the Bahamas until the US Navy issued a Tropical Cyclone Formation Alert (TCFA) for the disturbance at 23°N 074.5°W. This disturbance had menaced the Bahamas for the previous 48 hours with 30 knot winds (Fig. 1). Early in the morning of October 5, 2005, National Weather Service Radar and 30 knot buoy observations indicated a rapidly developing, well-defined surface circulation in a broad tropical disturbance 40 miles east of Melbourne, Florida, that was quickly upgraded to Tropical Storm Tammy based on 35 knot winds embedded in deep convection contained in the northeast quadrant (Fig. 2.) of the season's twenty-first storm. Coastal proximity (<50 nm) of a rapidly developing Tammy forced the accelerated classification of this new storm.

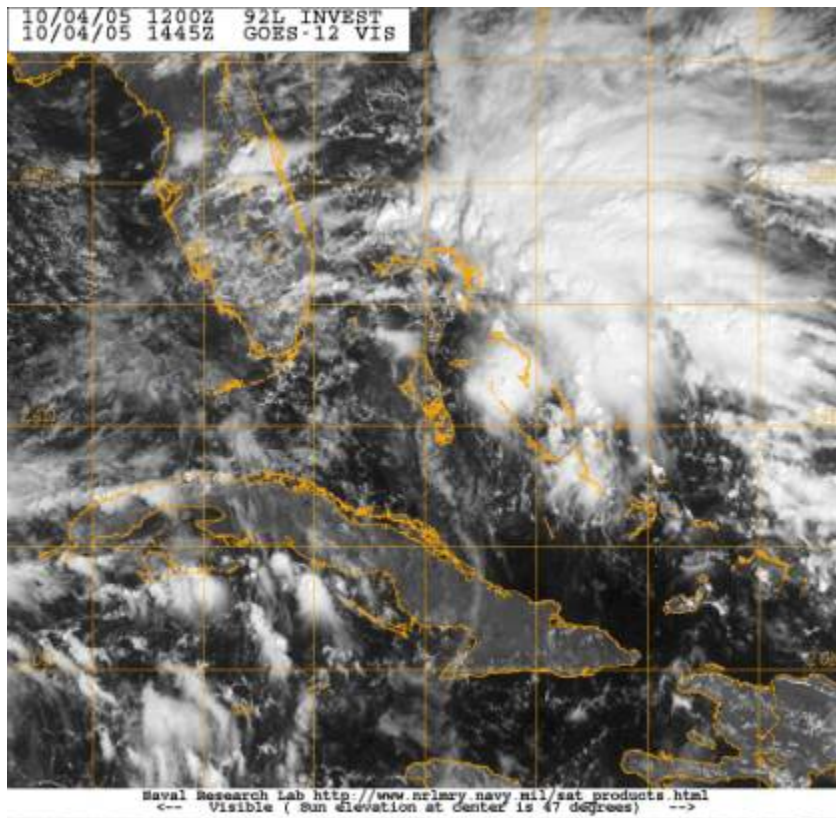


Figure 1. Initial wave disturbance that became Tropical Storm Tammy.

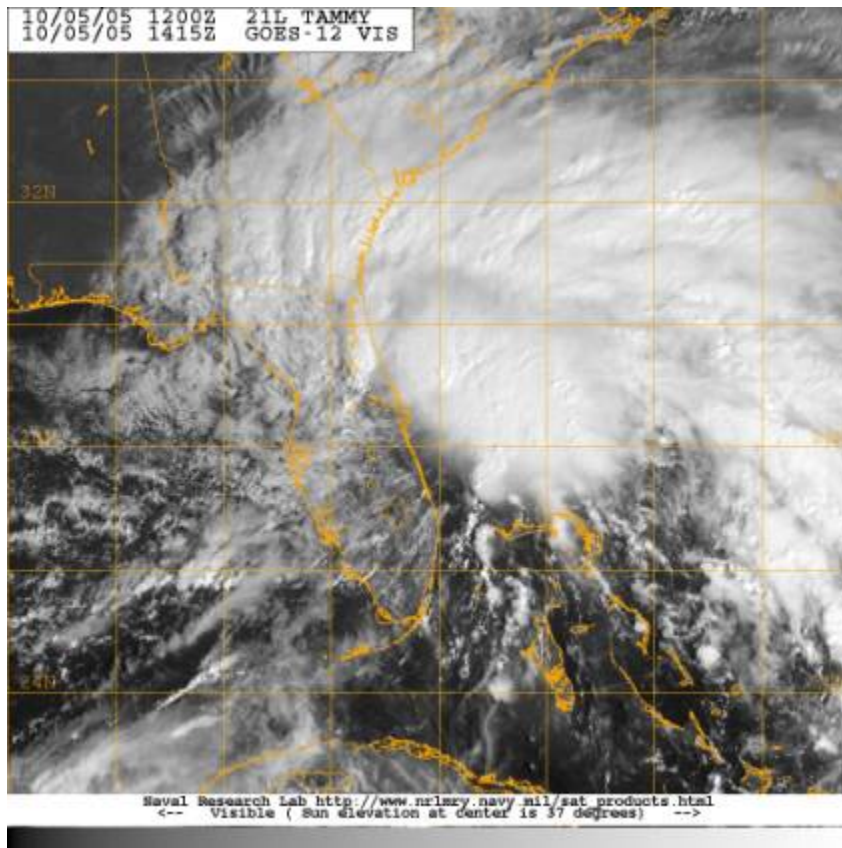


Figure 2. Tropical Storm Tammy.

Tammy rapidly moved north, parallel to the Florida coast, at 14 knots passing over NOAA buoy 41009 which measured a central pressure of 1004mb. Tammy's asymmetrical convection hindered accurate center fixes, which complicated the track forecast. Aircraft recon later on the 5 measured peak flight level winds of 53 knots 150 nautical miles northeast of Tammy's center. This measurement and 50-55 knot visual estimates supported surface wind estimates of 45 knots. Motion estimates of Tammy were now 330 at 12 knots.

Tammy quickly made landfall by 9 PM October 5 in the vicinity of Mayport, Florida, with 35 knot winds and heavy rain, particularly in the northern semi-circle (Fig. 3). Tammy rapidly lost intensity while over south central Georgia as it slowed and spread heavy tropical rain bands into the Georgia coastline and South Carolina. Tammy was downgraded to a Tropical Depression at 11AM October 6 as it lurched slowly westward into southern Alabama where Tammy was absorbed within an cold frontal boundary. This frontal boundary sheared Tammy rapidly and spread a large plume of heavy tropical convective debris that would affect South Carolina and other coastal states northeastward into New England with deadly and devastating flooding.

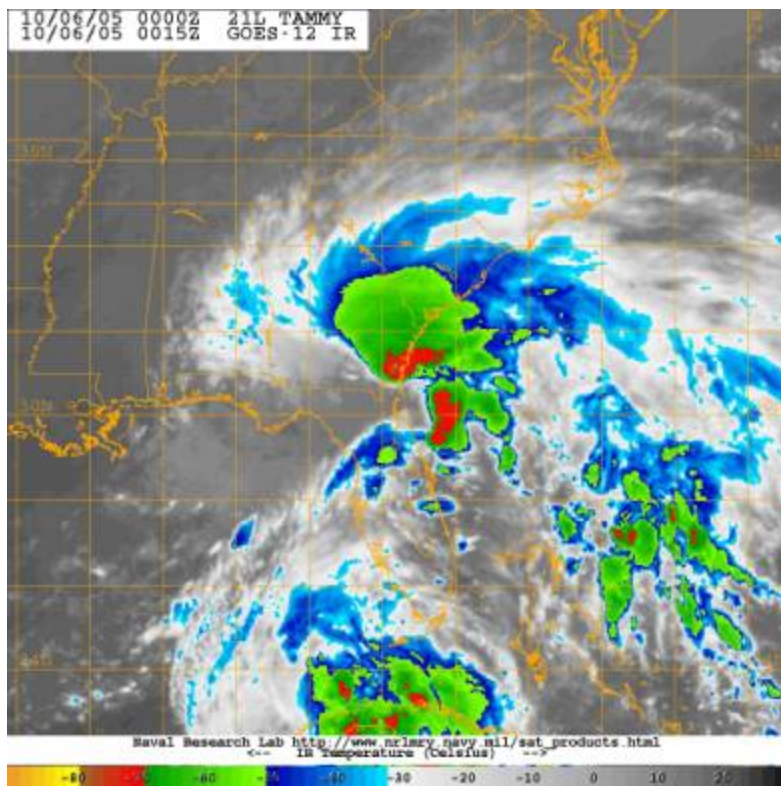


Figure 3. Tammy at landfall 06 October 2005.

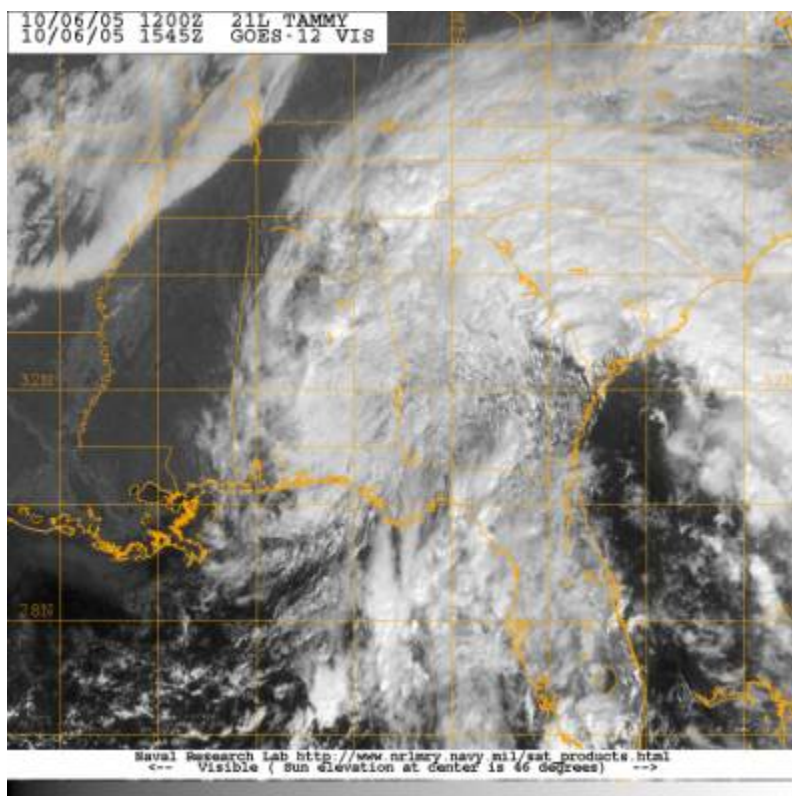


Figure 4. Tammy overland prior to frontal absorption.

FORECAST CONSIDERATIONS:

Tammy was a surprising, short duration coastal storm that intensified from a persistent tropical wave into a minimal storm between an upper level low over the eastern Gulf of Mexico and the southwestern boundary of the Atlantic sub-tropical high. These synoptic features provided a lively north-northwesterly steering along the Florida coast on the morning of October 5 until landfall. (Fig. 5) Strengthening of the sub-tropical high provided a more westerly component for Tammy's track until Tammy was absorbed by an approaching frontal boundary.

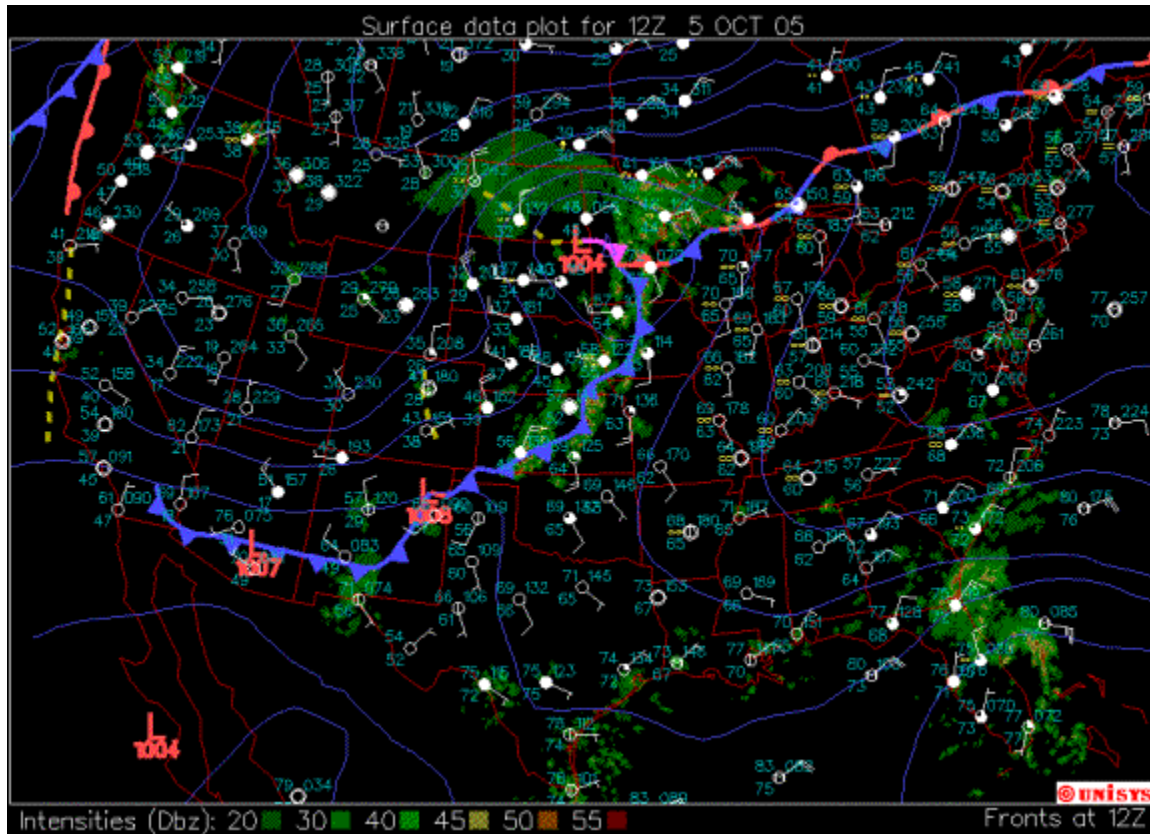


Figure 5. Surface synoptic situation 12Z 05 October 2005.

The rapid intensification of Tammy can be attributed to Florida's warm, coastal waters, abundant low level relative vorticity associated with the disturbance lingering over the Bahamas prior to October 5 and upper level divergence at 300mb (Figures 6 and 7). A large 500mb cyclone (Figures 8-10) over Arkansas provided the shallow mean level steering, forcing Tammy quickly inland. Persistent upper level shear prevented Tammy from intensifying above Tropical Storm strength during its short life over warm Florida waters. Upper level shear was also responsible for Tammy's asymmetric circulation and deep convection concentration in the northeast semi-circle.

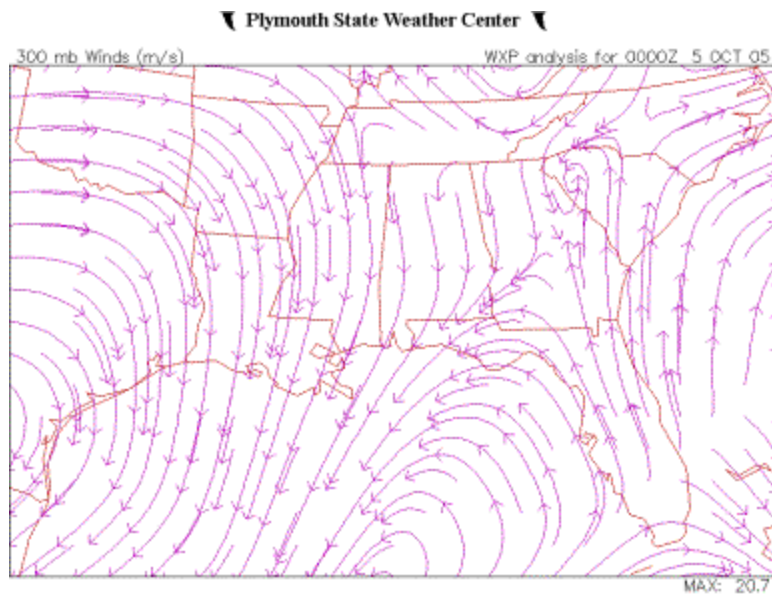


Figure 6. 300 millibar streamlines 00Z 05 October 2005.

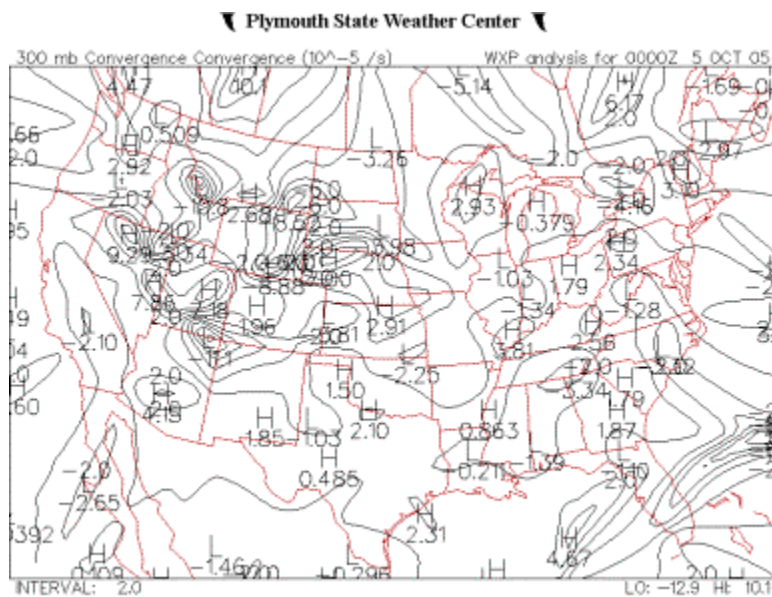


Figure 7. 300 millibar divergence 00Z 05 October 2005.

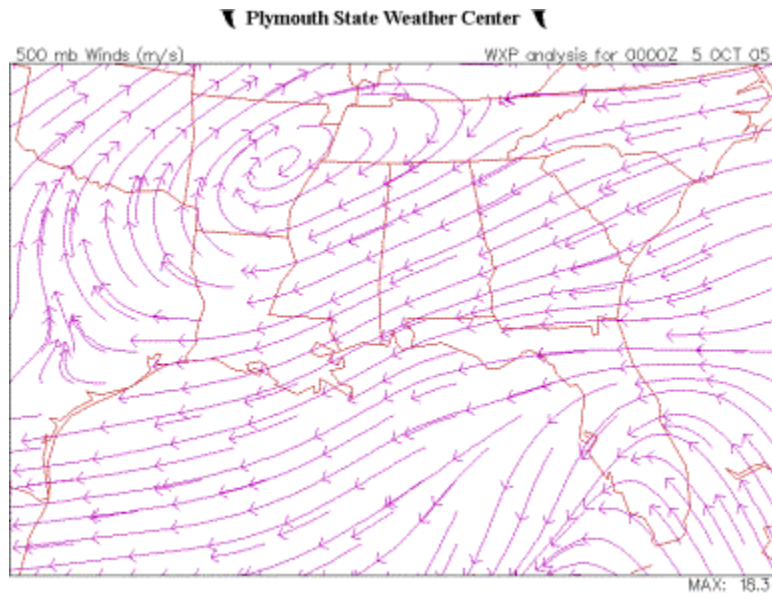


Figure 8. 500 millibar streamlines 00Z 05 October 2005.

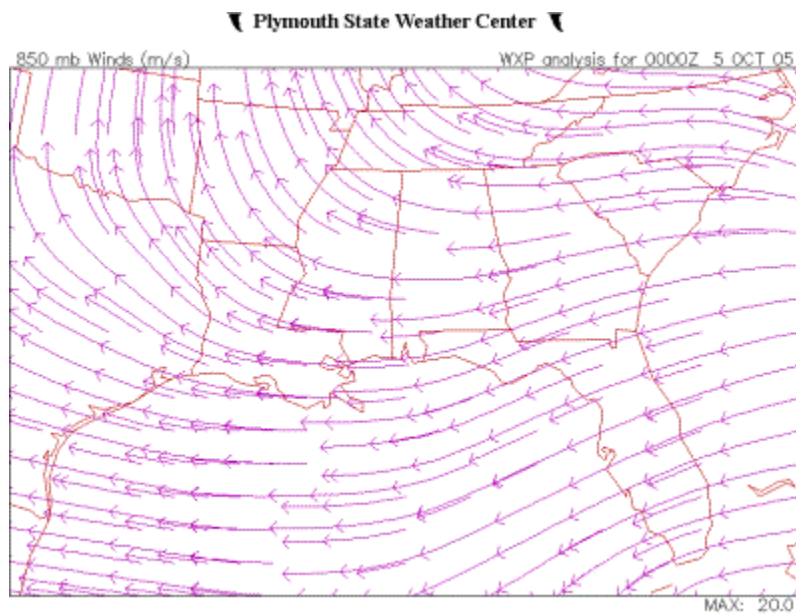


Figure 9. 850 millibar streamlines 00Z 05 October 2005.

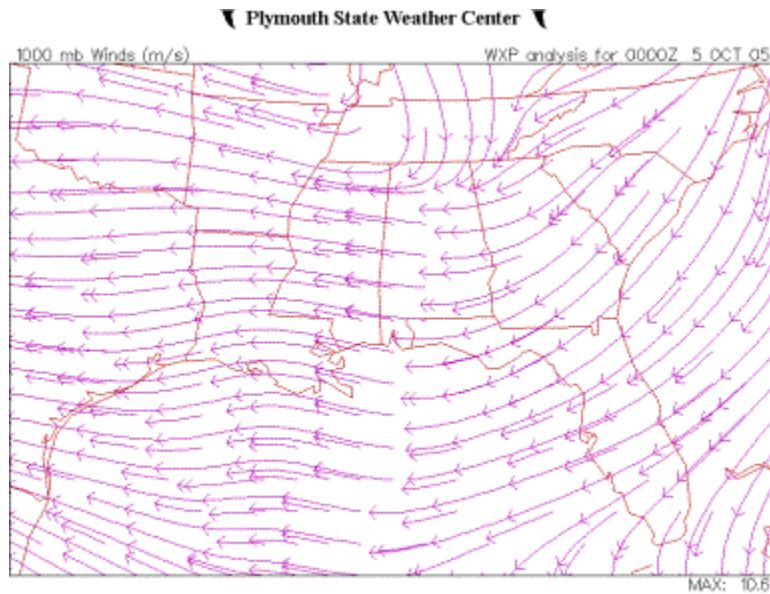


Figure 10. 1000 millibar streamlines 00Z 05 October 2005.

SOUTH CAROLINA EFFECTS:

Prior to and upon landfall Tammy spread a large precipitation shield over South Carolina (Figures 3 and 4). The strongest winds and convection were also in the northern quadrants of Tammy. Event rainfall maxima in excess of 10 inches were measured in the vicinity of Georgetown and Spartanburg, South Carolina. Widespread flooding, downed trees and power lines were widely reported throughout the State.

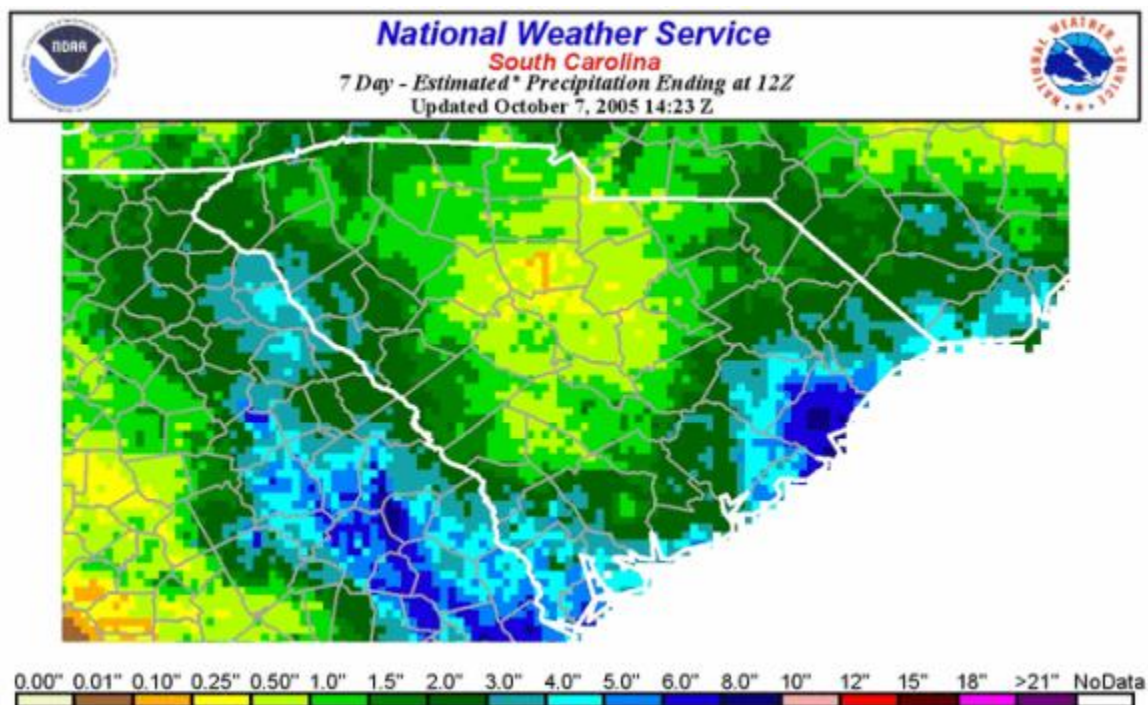


Figure 11. Estimated October 2005 South Carolina rainfall distribution.

Significant beach erosion was reported along the coast with heavy erosion occurring at Edisto Beach where several feet of beach were lost. Beach erosion also occurred along the coast at The Isle of Palms, Tybee Island and Hunting Island. High tide and pounding surf were responsible for the destruction of at least one house at Edisto Beach (Fig. 12b). Six to eight Edisto city blocks were closed due to sand and debris that blocked roads.



Figure 12a. Edisto City Beach damage.
(Photo by Delaine McJunkin)



Figure 12b. Edisto City Beach damage.
(Photo by Delaine McJunkin)

Gusty winds blew down 30 trees in Beaufort County. Scattered tree damage was reported along the coast. No tornados were reported during the passage of Tammy's convective debris. The South Carolina Emergency Operations Center was not activated for Tropical Storm Tammy.

TROPICAL STORM TAMMY WIND AND RAINFALL REPORTS:

Recorded Winds:(unofficial)

Edisto Beach (NWS site)	59 MPH...51 Knots
Folly Beach (C-Man buoy FBIS1)	54 MPH...47 Knots
Edisto Buoy (41004)	54 MPH...47 Knots
Port Authority Crane (CharlestonCounty)	50 MPH...44 Knots+++
Downtown Charleston (CHL)	49 MPH...43 Knots
Ravenel Bridge (Charleston County)	48 MPH...42 Knots+++
Frapp Island	48 MPH...42 Knots
Downtown Charleston (Coast Guard Station)	47 MPH...41 Knots
Ben Sawyer Bridge DOT sensor	47 MPH...41 Knots
Folly Beach City Hall	47 MPH...41 Knots
Hilton Head (Salty Dog Cafe)	45 MPH...39 Knots
Charleston (KCHS)	42 MPH...36 Knots
Goose Creek High School	42 MPH...36 Knots
Burke High School (Charleston County)	41 MPH...35 Knots
Savannah (RAWS site Jasper County)	41 MPH...35 Knots
Beaufort (Media MESONET)	39 MPH...34 Knots
Rivers Middle School (CharlestonCounty)	38 MPH...33 Knots
Beaufort (NBC)	37 MPH...32 Knots
Hilton Head (HXD)	35 MPH...30 Knots
Isle of Palms	35 MPH...30 Knots
Lambs Elementary School (Charleston County)	34 MPH...29 Knots
Mitchell Elementary School (Charleston County)	32 MPH...28 Knots

+++ Observation estimated at about 200 feet.

Precipitation Totals:

Division Name: Mountain

	Precipitation (inches)		
	Obs	1-Day Max	Date
Caesars Head	3.15	1.32	10/6
Hunts Bridge	1.67	0.84	10/7
Travelers Rest	3.90	1.90	10/7
Division Name: Northwest			
Anderson County Arpt.	3.58	2.71	10/6
Clinton	7.48	5.68	10/8
Gaffney	6.31	4.38	10/8
Greenville-Spartanburg Arpt.	4.12	2.13	10/7
Laurens	6.70	5.35	10/8
Lockhart	3.90	2.90	10/8
Pickens	2.07	1.50	10/7
Sandy Springs	3.28	1.85	10/7
Union	4.11	2.67	10/8
Walhalla	3.02	2.12	10/7
West Pelzer	3.49	1.76	10/8
Division Name: North Central			
Chester	2.77	0.93	10/8
Fort Mill	2.86	1.18	10/8+
York	3.86	2.37	10/8
Division Name: Northeast			
Andrew	11.51	7.60	10/7
Cades	4.81	2.98	10/7
Cheraw	3.41	2.42	10/7
Dillon	3.70	2.50	10/7

Effingham	4.45	2.81	10/7
Florence	3.84	2.91	10/7
Florence Regional Arpt.	3.17	2.14	10/6
Georgetown	14.88	6.98	10/7
Hartsville	3.10	1.83	10/7
Hemingway	9.40	6.75	10/7
McColl	5.32	3.01	10/6
Mullins	4.20	2.85	10/7
Division Name: West Central			
Aiken	5.25	2.61	10/8
Calhoun Falls	3.51	1.63	10/7
Chappells	5.44	3.51	10/8
Clark Hill	5.97	2.48	10/7
Johnston	3.52	1.14	10/8
Saluda	3.95	1.80	10/8
Division Name: Central			
Bishopville	1.98	0.61	10/6
Cedar Creek	1.46	0.58	10/6
Columbia Metro. Arpt.	2.45	1.09	10/6
Columbia USC	1.07	0.73	10/6
Sandhill Research	1.88	0.75	10/6
Sumter	2.34	0.83	10/7
Division Name: Southern			
Beaufort WWTP	4.23	2.20	10/6
Charleston City	3.44	1.56	10/7
Charleston Intl. Arpt.	3.65	1.44	10/5
Givhans Ferry	3.13	1.44	10/6
Jamestown	8.60	4.20	10/6
Santee COOP Spillway	4.07	2.14	10/6
Sullivans Island	3.70	1.53	10/7

Flag Information:

+ = indicates extreme also occurred on other dates (last date listed)

ACKNOWLEDGEMENTS:

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- National Weather Service Office, Wilmington, North Carolina

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Figures from the Plymouth State College and the UNISYS web sites were also used for this report.