

## Preliminary Report

### SUBTROPICAL STORM NUMBER ONE June 18-20, 1982

A subtropical depression developed rapidly over the eastern Gulf of Mexico on 18 June. It resulted from the interaction of a tropical disturbance moving northward from the Yucatan Peninsula and an upper level trough in the westerlies advancing from Texas. Although such an occurrence is unusual, a remarkably similar storm formed in the same area during June, 1974.

The tropical disturbance can be traced to the northwest Caribbean Sea on 15 June. During the following two days most of the convection moved through the Yucatan Channel into the southeastern Gulf of Mexico while a low pressure center formed over the Yucatan Peninsula. The low pressure system was most clearly evident at the 700 mb and 500 mb levels. There was a difference in wind direction of approximately 180 degrees at 500 mb between Merida and Belize during 15-16 June. At 0000 GMT, 17 June, the 500 mb wind at Merida backed to westerly as the low moved northward over the Gulf, and the temperature at that level rose to a very warm  $-3^{\circ}\text{C}$ . At low and middle levels conditions were very favorable for the development of a tropical storm, but at high levels there was a trough moving through the Gulf with strong westerly winds resulting in large vertical wind shear. At 1200 GMT, 17 June, the 200 mb winds at Tampa and West Palm Beach were 70 and 60 kt, respectively, and at 0000 GMT, 18 June, the 200 mb wind at New Orleans was 130 kt!

A reconnaissance flight on 17 June reported that there appeared to be multiple transient circulation eddies at the surface but no persistent well-defined center. Meanwhile at 500 mb the trough in the westerlies moving eastward through the Gulf overtook the low moving northward from Yucatan and merged to form a strong trough over the eastern Gulf.

At 0000 GMT, 18 June, the 850 mb wind at Tampa and West Palm Beach were southerly at 40 kt. Therefore, the synoptic situation over the Florida peninsula was characterized by a strong southerly flow of moist tropical air at low levels superimposed by a strong westerly current aloft--a classic situation for the development of severe weather over the state. In fact, some severe weather had been occurring over the peninsula as early as 16 June, as the fringes of the disturbance moved across the Florida Straits and over the peninsula.

Severe thunderstorm watches and warning were issued for certain areas on 16 June. But beginning on 17 June an almost continuous series of severe thunderstorm and tornado watches and warnings, along with special marine warnings, small craft advisories, and various types of special weather statements for heavy rains, high tides and flooding were issued by local Weather Service Offices throughout the peninsula. The frequency of warnings increased during the night of 18 June and most of the peninsula was under a tornado watch for the entire period. Radars showed severe thunderstorm cells moving rapidly northward over the peninsula during the night. Cell movement was frequently in excess of 40 kt.

During the predawn hours of 18 June, radar at Tampa showed increasing curvature of the rainbands which indicated that a center of circulation was forming

near the upper west coast of the peninsula. As winds increased further and pressures fell sharply along the west-central coast, gale warnings were issued for most of the west coast and the middle and upper east coast of the peninsula at 1100 GMT, 18 June (see accompanying summary of gale warning issuances). At 1200 GMT a special weather statement was issued by the Miami forecast office stating that a strong low pressure system would move rapidly across north Florida during the morning, causing gales, heavy rains, flooding, beach erosion, and possible tornadoes.

A comprehensive summary of meteorological data and casualties and damages is not available at this writing. However, preliminary information indicates three storm-related deaths, at least 13 injuries, and 25 homes destroyed in Florida. A Brevard county woman drowned when a canoe overturned, a year-old child was killed when swept into a drainage ditch in Orange county, and a Hendry county man was killed when his mobile home was destroyed by a tornado. A preliminary assessment of dollar damages compiled by a state disaster team places losses at \$6.8 million, but totals for Lee, Collier, Pasco and Hillsborough counties are still incomplete. High tides and waves caused flooding and beach erosion from Naples to the Tampa Bay area. Some waterfront buildings suffered damage from undermining and there was widespread damage to marinas and small boats. One-hundred thirty families were eventually evacuated from the Arcadia area as the Peace River crested above flood stage a few days after the storm.

The highest winds noted thus far in Florida were 36 kt with gusts to 42 kt during a thunderstorm at Macdill AFB in Tampa at 0817 GMT, 18 June. Storm rainfall amounts generally ranged from 4 to 6 inches except in the extreme northeast part of the state where more than 8 inches fell at Hastings and St. Augustine.

As the low accelerated to a forward speed of more than 30 kt and emerged off the northeast coast of Florida at 1600 GMT, 18 June, it was designated a subtropical storm. Gale warnings were extended northward to Cape Henlopen, DE, at 1900 GMT, 18 June, and to Watch Hill, RI, at 0130 GMT, 19 June.

An Air Force reconnaissance flight found surface winds of 60 kt and a central pressure of 992 mb during the afternoon of 18 June. From the time the storm moved off the Florida coast until it became extratropical just south of Newfoundland on 20 June, it followed a steady northeast heading and maintained a nearly constant strength of about 60 kt. However its forward speed slowed to about 15 kt off the South Carolina coast, then accelerated rapidly, reaching 45 kt off the coast of Nova Scotia. The central pressure remained about 992 mb until the morning of 20 June when it lowered to 984 mb as the center passed Sable Island, although maximum winds remained about 60 kt.

The storm's effects on land areas north of Florida were relatively minor. Rains of up to 9 inches in extreme eastern South Carolina and 4 inches in eastern North Carolina caused some stream and urban flooding, and tides of 2 to 3 feet above normal caused minor beach erosion. A 68 foot fishing trawler sunk in high seas at 0930 GMT, 19 June, about 65 miles southeast of Cape Fear, North Carolina, but the crew was rescued by the Coast Guard.

Winds reached 40 kt with gusts to 58 kt at the Oak Island Coast Guard station near Cape Fear, N. C., and 47 kt with gusts to 67 kt at the offshore tower at

Frying Pan Shoals about 40 miles southeast of Cape Fear on 18 June. Sustained winds of 60 kt were measured at Frying Pan early on 19 June. A ship encountered southeast winds of 35 kt with gusts to 60 kt along with 15 to 20 ft seas and a pressure of 993.9 mb, 52 miles southeast of Cape Fear at 0600 GMT, 19 June.

After crossing the Outer Banks of North Carolina, the storm remained sufficiently far at sea so as not to affect significantly the east coast from Virginia northward. Even though the central pressure remained low and gales covered a broad area, the storm center expanded and became distorted on 20 June as it passed near the southeast tip of Newfoundland.

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