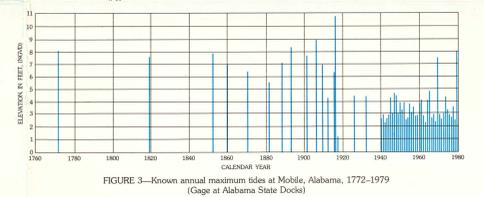
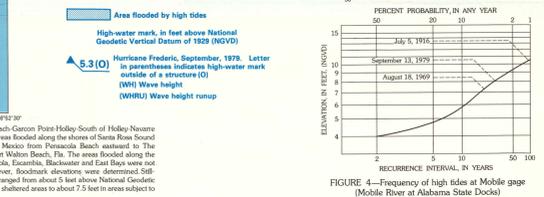


HURRICANE FREDERIC TIDAL FLOODS OF SEPTEMBER 12-13, 1979, ALONG THE GULF COAST, ORIOLE BEACH, GARCON POINT, HOLLEY, SOUTH OF HOLLEY, AND NAVARRE QUADRANGLES, FLORIDA

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Introduction—The approximate areas flooded by Hurricane Frederic, September 12-13, 1979, along coastal areas of Alabama, Florida, and Mississippi are shown in a series of hydrologic atlases. The atlases (Fig. 1) are listed below. The area covered by the atlases extends from about 8 miles west of Fort Walton Beach, Fla., westward along the Gulf Coast through Alabama to Moss Point, Miss., a distance of about 115 miles. Elevations shown are related to National Geodetic Vertical Datum of 1929 (NGVD).

The Orleau Beach-Garcon Point-Holley-South of Holley-Navarre map shows the areas flooded along the shores of Santa Rosa Sound and the Gulf of Mexico from Oriole Beach, Fla., westward to the Narrows near Fort Walton Beach, Fla. The areas flooded along the shores of Pensacola, Escambia, Baker and East Bays were not delineated, however, flood boundaries were determined. Still-water elevations ranged from about 5 feet above National Geodetic Vertical Datum in delineated areas to about 7.5 feet in areas subject to wind setup.

HYDROLOGIC INVESTIGATIONS ATLAS NUMBER

STATE	ATLAS NUMBER	COVERED AREA
MISSISSIPPI	HA-621	Mobile Bay, Grand Bay, and the Gulf of Mexico
ALABAMA	HA-622	Mobile Bay, Grand Bay, and the Gulf of Mexico
FLORIDA	HA-623	Mobile Bay, Grand Bay, and the Gulf of Mexico
MISSISSIPPI	HA-624	Mobile Bay, Grand Bay, and the Gulf of Mexico
ALABAMA	HA-625	Mobile Bay, Grand Bay, and the Gulf of Mexico
FLORIDA	HA-626	Mobile Bay, Grand Bay, and the Gulf of Mexico
MISSISSIPPI	HA-627	Mobile Bay, Grand Bay, and the Gulf of Mexico
ALABAMA	HA-628	Mobile Bay, Grand Bay, and the Gulf of Mexico
FLORIDA	HA-629	Mobile Bay, Grand Bay, and the Gulf of Mexico
MISSISSIPPI	HA-630	Mobile Bay, Grand Bay, and the Gulf of Mexico
ALABAMA	HA-631	Mobile Bay, Grand Bay, and the Gulf of Mexico
FLORIDA	HA-632	Mobile Bay, Grand Bay, and the Gulf of Mexico
MISSISSIPPI	HA-633	Mobile Bay, Grand Bay, and the Gulf of Mexico
ALABAMA	HA-634	Mobile Bay, Grand Bay, and the Gulf of Mexico
FLORIDA	HA-635	Mobile Bay, Grand Bay, and the Gulf of Mexico
MISSISSIPPI	HA-636	Mobile Bay, Grand Bay, and the Gulf of Mexico
ALABAMA	HA-637	Mobile Bay, Grand Bay, and the Gulf of Mexico
FLORIDA	HA-638	Mobile Bay, Grand Bay, and the Gulf of Mexico
MISSISSIPPI	HA-639	Mobile Bay, Grand Bay, and the Gulf of Mexico
ALABAMA	HA-640	Mobile Bay, Grand Bay, and the Gulf of Mexico
FLORIDA	HA-641	Mobile Bay, Grand Bay, and the Gulf of Mexico

International system of units (S.I.)—Most units of measurement used in this atlas are inch-pound units. The following factors may be used to convert inch-pound units to Standard International (S.I.) units:

inch-pound units	Factor	To obtain S.I. units
feet (ft)	0.3048	meter (m)
feet (ft)	0.3048	centimeter (cm)
feet (ft)	0.3048	millimeter (mm)
feet (ft)	0.3048	kilometer (km)
feet (ft)	0.3048	meter per second (m/s)
feet (ft)	0.3048	meter per hour (m/h)
feet (ft)	0.3048	kilopascal (kPa)

Tide records—Records of storm tides along the Gulf Coast have been documented since 1772 at Mobile, Ala., by the Corps of Engineers and others, and continuous tide records have been compiled by the Corps of Engineers since 1940. A tide gauge is located at the Alabama State Docks, Mobile, Ala. Elevations of the normal maximum tides at this gauge are shown in Figure 3. Significant tide elevations at various points along the Gulf Coast for more than 20 hurricanes since 1893 have been recorded by the Corps of Engineers, the Geological Survey, and others. Data pertaining to some of the highest tides recorded are shown in table 1. Additional data for Hurricane Camille (1969) tides are shown on some of the maps.

National information—Other information pertaining to flooding along the Gulf Coast may be obtained at the district offices of the U.S. Geological Survey, Tallahassee, Tallapoosa, Florida, and Jackson, Mississippi. Descriptions of tidal observations, tide records, and tidal data may be obtained from the following published reports: Harris, D.L., and Landrum, C.V., 1957, *Annual tide-gauge tide-gage records for the Atlantic and Gulf Coasts of the United States, U.S. Department of Commerce, Weather Bureau, National Hurricane Research Project*, report 7.

Emergency water supplies—Some water wells identified by the Alabama Health Department, Division of Public Water Supply, as either approved or potential emergency water supplies, are shown on the map.

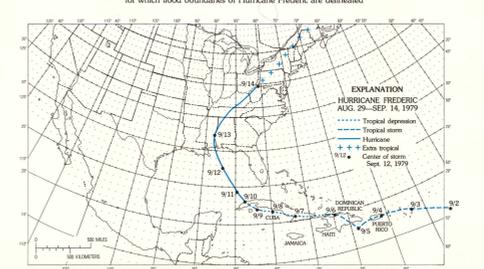


TABLE 1.—Hurricane Frederic tidal elevations at selected locations along the Gulf of Mexico coast, 1772-1979, in feet above National Geodetic Vertical Datum of 1929

Date	Mobile Bay, Ala.	Ororio Beach, Fla.	Garcon Point, Fla.	Holley, Fla.	South of Holley, Fla.	Navarre, Fla.
September 12, 1772	8.2					
August 23, 1882	8.0					
October 2, 1893	8.4					
September 27, 1906	10.8					
July 5, 1918	10.1					
September 13, 1979	11.2 (8.5)	8.3 (5.7)	7.3 (4.7)	5.8 (3.2)	5.3 (2.7)	4.8 (2.2)

Note: Records furnished by U.S. Army Corps of Engineers, Mobile District.

Storm-tide frequency—Frequency of high storm tides in Mobile Bay was derived from an statistical evaluation of the tide records of the gauge at Mobile, Ala. The frequency, expressed as the relation of recurrence interval to elevation of high tide at the Mobile gauge, is shown in Figure 4. The recurrence interval is inversely related to the percent probability of an event being equalled or exceeded in any one year. The percent probability of high-tide elevations of the Mobile gauge is also indicated. At the Mobile gauge, Hurricane Frederic's maximum tide exceeded the 100-year recurrence interval of about 25 to 30 years; that is, it may be equalled or exceeded on the average of about 40 times in a 100-year period. The maximum tide at Escambia, Fla., about 10.3 ft at the U.S. Highway 98 Causeway across Mobile Bay, Ala., and about 14.5 ft at Gulf Shores, Ala., American Red Cross casualty figures list 10 known deaths in Alabama, 1 in Florida, and 2 in Mississippi. The total number storm-related injuries and illnesses for the three States is 4,711. Estimates indicate that the total damage caused the Hurricane Frederic probably will exceed \$2 billion. In comparison, the total damage for Hurricane Camille (1969) was \$1.1 billion.

Tide records were furnished by U.S. Army Corps of Engineers, Mobile District, and the Mississippi District of the U.S. Geological Survey. Flood-tide elevations and other data for Hurricane Frederic were compiled jointly by the Alabama, Florida, and Mississippi Districts of the Geological Survey and the Corps of Engineers.

FIGURE 2—The track of Hurricane Frederic, September 2-14, 1979 (from track of Hurricane Frederic, August 29 to September 14, 1979, furnished by National Weather Service).

FIGURE 4—Frequency of high tides at Mobile Bay (Mobile River at Alabama State Docks).

FIGURE 3—Known annual maximum tides at Mobile, Alabama, 1772-1979 (Gage at Alabama State Docks).