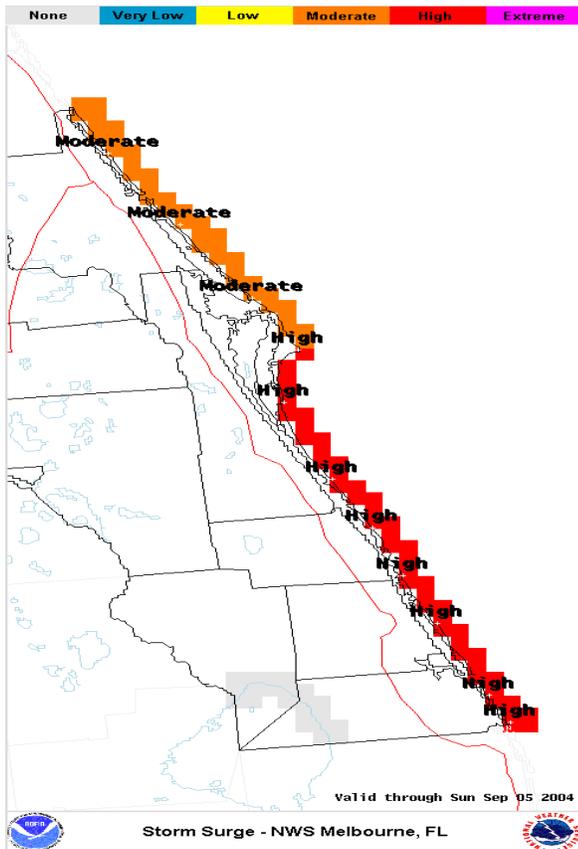




Experimental

Tropical Cyclone Surge Impact Product



Description: Issued by the local Weather Forecast Office (WFO) during tropical cyclone situations, the *Tropical Cyclone Surge Impact* product responsibly depicts the potential impact of the associated surge hazard from a location-centric perspective. It responsibly converts the most relevant threat assessment information into descriptions of potential impact using a color-coded index scale ranging from 0 to 5, *None* to *Extreme*. Levels are based on the magnitude of surge, but the likelihood of occurrence is also factored in by using probabilistic storm surge information and the average forecast track error with time. Locally, an assessment of the magnitude of the surge includes such situational information as the intensity and direction of the wind, the slope of the continental shelf, local bathymetry and dry-land relief, coastal configuration (barrier islands, bays, inlets, mouths of rivers, etc.), the contribution of astronomical tides, and the effects of battering waves. Thus, it effectively employs both deterministic (e.g., surge height) and probabilistic (e.g., uncertainty) components of the forecast for a more complete expression of the combined surge threat. Product release is triggered by the issuance of a tropical cyclone

Watch or Warning anywhere within the defined area. Routine updates are provided shortly after each official advisory and are continued until tropical cyclone surge waters are no longer an immediate threat to local communities.

Utility: The *Tropical Cyclone Surge Impact* product uses an index scheme to distill the abundance of coastal flooding information into a single plan-view map that is easy-to-understand. The product is designed to motivate less-sophisticated users to action regarding preparedness and impending evacuation activities in vicinity of the coast, while helping to prevent information paralysis. Importantly, it highlights the minimum actions to be taken and relates them to generalized impacts. For more-sophisticated users, this product serves as an excellent starting point for critical decision-making and is a coherent briefing tool. In gridded form, it can be ingested into Geographic Information Systems to address specific vulnerabilities, in context of the actual meteorological situation, for a more detailed assessment of the potential impact from coastal flooding.

For Example: Upon the issuance of a tropical cyclone Watch or Warning, coastal residents might investigate the *Tropical Cyclone Surge Impact* product to acquire personal awareness and assess the potential for local evacuation orders. Officials would have a greater indication of the extent to which certain coastal locations are being threatened, as well as those areas in danger of being hardest hit by combined surge waters.

Note: The example image depicts the potential storm surge impact associated with Hurricane Frances (2004) as expressed within 24 hours of landfall in east central Florida. Graduated definitions are based on the forecast height of the surge, but also account for inherent forecast uncertainties. Tides and battering waves are also considered.

Tropical Cyclone Surge Impact Definitions

Impact Levels	Description
Extreme	<ul style="list-style-type: none"> • Threat: An extreme threat to life and property. Expect storm surge flooding 10 to 20 feet or more. • Minimum Actions: Prepare for the likelihood of extreme storm surge damage. Residents should take immediate action to protect life and heed evacuation advice from emergency management. People in the storm surge zone who have not evacuated should seek shelter in the nearest well built multi story building if possible. If evacuating to the attic take along a life jacket and ax to chop through the roof in the event severe flooding occurs. • Potential Impacts for 10 to 15 foot surge... • In Southeast Louisiana - Life threatening flooding possible in areas outside hurricane protection levees and in areas around Lakes Pontchartrain and Maurepas. Sections of west Jefferson, east St Charles and lower Lafourche hurricane protection levees could be over topped. Areas outside of hurricane protection levees will be severely inundated. People not heeding evacuation orders in single family, one or two story homes could face certain death. Many residences of average construction directly on the coast will be destroyed. Widespread and devastating personal property damage is likely elsewhere. Vehicles left behind will likely be swept away. Numerous roads will be swamped. Some may be washed away by the water. Entire flood prone coastal communities will be cutoff, perhaps for more than a week. Water levels may exceed 9 feet or more behind over topped levees. Significant storm surge flooding will move well inland especially along bays and bayous. Coastal residents in multi story facilities risk being cutoff for a week or more. • In Coastal Mississippi - Life threatening flooding possible in coastal areas and along bays and coastal bayous. People not heeding evacuation orders in single family one or two story homes in the storm surge zone could face certain death. Many residences of average construction directly on the coast will be destroyed. Widespread and devastating personal property damage is likely elsewhere. Vehicles left behind will likely be swept away. Numerous roads will be swamped. Some may be washed away by the water. Entire flood prone coastal communities will be cutoff for several days. Significant storm surge flooding will move well inland especially along bays and bayous. Coastal residents in multi story facilities risk being cutoff for several days. • Potential Impacts - For 15 to 20 feet or greater surge... • In Southeast Louisiana - Life threatening flooding is likely with deep and widespread storm surge flooding across many areas. Hurricane protection levees in southeast Louisiana may be over topped with potential of massive and widespread flooding. Severe flooding will occur around Lakes Pontchartrain and Maurepas impacting many communities near the lakes with deep flooding. Thousands of homes and vehicles will be flooded. Larger structures such as condominiums and hotels may be destroyed. Those with poor support may collapse. People who fail to evacuate may be swept to their deaths while others may be stranded for days surrounded by flood waters. Dozens of roads will be washed away. Water levels may exceed 15 feet or more behind over topped levees for several weeks. Full recovery will take months if not years. • In Coastal Mississippi - Life threatening flooding is likely with deep and widespread storm surge flooding across many areas. Storm surge and waves will pound the Mississippi coast with storm surge moving well inland, especially along bays, bayous and rivers. Thousands of homes and vehicles will be flooded. Larger structures such as condominiums and hotels may be destroyed. Those with poor support may collapse. Persons in the storm surge zone who fail to evacuate may be swept to their deaths while others may be stranded for days surrounded by flood waters. Dozens of roads will be washed away. Full recovery will take months if not years.
High	<ul style="list-style-type: none"> • Threat: A critical threat to life and property. Expect storm surge flooding of 8 to 10 feet. • Minimum Action: Prepare for the likelihood of major storm surge damage.

	<p>Coastal residents of one story homes in the storm surge zone who do not evacuate will face life threatening consequences...those in multi story or multi unit facilities risk being cut off for days. Residents in these areas should take action to protect life and property and heed evacuation advice from emergency management.</p> <ul style="list-style-type: none"> • Potential Impacts - For 8 to 10 foot surge... • In Southeast Louisiana - Storm surge flooding can be expected outside hurricane protection levees and in areas around Lakes Pontchartrain and Maurepas. Flooding of several feet of water may occur in non- elevated structures causing damage. Roads along the coast, tidal lakes, bayous and low lying areas may close with upwards of several feet of water in them. Parked vehicles will be severely damaged in the flood zone. • In Coastal Mississippi - Storm surge flooding can be expected in immediate coastal areas and along low lying areas along bays, bayous and rivers several miles inland. Flooding of several feet of water may occur in non elevated structures or those built on slabs causing damage. Roads along the coast, bayous and low lying areas may close with upwards of several feet of water
<p style="text-align: center;">Moderate</p>	<ul style="list-style-type: none"> • Threat: A significant threat to life and property. Expect storm surge and storm tide waters of 5 to 7 feet. • Minimum Action: Prepare for the likelihood of moderate storm surge damage. Residents in these areas should take action to protect property and head evacuation advice from emergency management. • Potential Impacts - for 5 to 7 foot surge. Storm surge flooding can be expected outside hurricane protection levees, in areas around Lakes Pontchartrain and Maurepas and along the immediate Mississippi coast. Flooding of several feet of water may occur in non elevated structures or those built on slabs, causing damage. Roads along the coast, bayous and low lying areas may close with upwards of several feet of water in them.
<p style="text-align: center;">Low</p>	<ul style="list-style-type: none"> • Threat: An elevated threat to life and property. Expect storm surge and storm tide waters of 4 feet or less. • Potential Impacts - For 4 feet or less surge. Minor storm surge flooding can be expected outside of hurricane protection levees, in areas around Lakes Pontchartrain and Maurepas and along the immediate Mississippi coast. Some non elevated homes in these areas may experience flooding. Minor tidal flooding of property and perhaps some flooding of low lying roads may occur during high tide.
<p style="text-align: center;">None</p>	<ul style="list-style-type: none"> • Threat: No discernable threat to life and property; no surge waters expected. • Minimum Action: Evaluate personal and community disaster plans and ensure seasonal preparedness activities are complete. • Potential Impact: Coastal flooding is not expected; impact should be negligible. Surf conditions may still be rough with minor beach erosion.