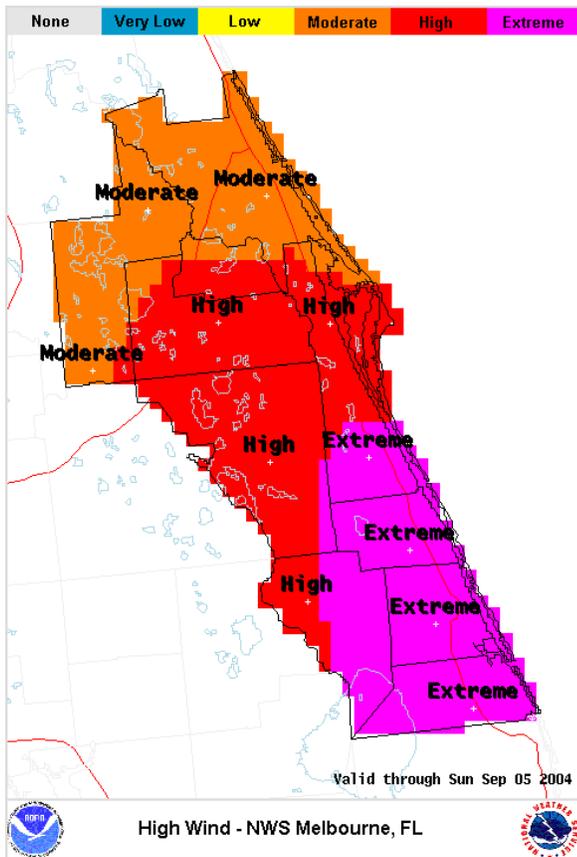




Experimental

Tropical Cyclone Wind Impact Product



Description: Issued by the local Weather Forecast Office (WFO) during tropical cyclone situations, the *Tropical Cyclone Wind Impact* product depicts the potential impact of the associated wind 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*. It combines the forecasting expertise of the National Hurricane Center and the local WFO by considering the larger-scale maximum wind speed forecast along with local-scale enhancements, while also accounting for inherent forecast uncertainties in track, intensity, and size of the tropical cyclone. Thus, it effectively employs both deterministic (e.g., wind speed) and probabilistic (e.g., uncertainty) components of the forecast for a more complete expression of the wind threat and corresponding impact. 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 winds are no longer an immediate threat to local communities.

Utility: The *Tropical Cyclone Wind Impact* product uses an index scheme to distill an abundance of wind 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 activities, 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 high wind.

For Example: Upon the issuance of a tropical cyclone Watch or Warning, a small business owner might investigate the *Tropical Cyclone Wind Impact* product to determine the extent to which their company's interests are being threatened by the associated wind, accompanied by a generalized description of potential wind impacts within the community. Store managers would be equipped to make responsible decisions. Pickup and delivery schedules may be altered, trucks and buildings secured, and employees released from work as necessary. More so, government officials at all levels would have greater indication of the extent to which certain locations are being threatened, as well as those areas in danger of being hardest hit. Response and recovery resources can be better positioned and managed, with other resources safely secured.

Note: The example image depicts the potential wind impact associated with Hurricane Frances (2004) as expressed within 24 hours of landfall in east central Florida. Graduated definitions are based on the forecast strength of the wind, but also accounting for inherent forecast uncertainty in the track, intensity, and size of Frances.

Tropical Cyclone Wind Impact Definitions

Impact Levels	Description
Extreme	<ul style="list-style-type: none"> • Threat - An extreme threat to life and property. • Minimum Action - Prepare for the likelihood of extreme to catastrophic wind damage. • Potential Impacts - Hurricane- winds 110 to 130 mph gusts 140+ mph. Catastrophic damage expected to man-made and natural structures. Houses of poor to average construction will be severely damaged or destroyed. Well constructed homes will have substantial damage to roof and walls. Destruction may occur to homes with gabled roofs, with the wind lifting them off. Many industrial buildings will be destroyed, others will have partial roof and wall damage. Wood framed garden apartment buildings will be severely damaged or destroyed and others will have partial roof and wall failures. High rise office buildings will sway dangerously. Most windows will be blown out and moderate structural damage is possible. Airborne debris, including heavy pieces, will cause extensive damage. People, pets and livestock exposed to the winds are at great risk for injury or death. Electricity and water will be unavailable for days and perhaps weeks after the hurricane passes. The majority of trees will be snapped and uprooted, most common among those of small and medium size. Livestock exposed to the winds will be critically injured or killed. • Potential Impacts- Hurricane winds - 130 to 160 mph gusts 170+ mph. Devastating damage is expected. Most of the area will be uninhabitable for weeks, perhaps longer. At least one half of well constructed homes will have roof and wall failure. All gabled roofs will fail, leaving those homes severely damaged or destroyed. The majority of industrial buildings will become non functional. Partial to complete wall and roof failure is expected. All wood framed low rising apartment buildings will be destroyed. Concrete block low rise apartments will sustain major damage, including some wall and roof failure. High rise office and apartment buildings will sway dangerously, a few to the point of total collapse. All windows will blow out. Airborne debris will be widespread and may include heavy items such as household appliances and even light vehicles. Sport utility vehicles and light trucks will be moved. The blown debris will create additional destruction. People, pets and livestock exposed to the winds will face certain death if struck. Power outages will last for weeks as most power poles will be down and transformers destroyed. Water shortages will make human suffering incredible by modern standards. The vast majority of native trees will be snapped or uprooted. Only the heartiest will remain standing, but be totally defoliated. Few crops will remain. Livestock left exposed to the winds will be killed.
High	<ul style="list-style-type: none"> • Threat - A critical threat to life and property from strong hurricane force winds. • Minimum Action - Prepare for the likelihood of major wind damage. • Potential Impacts - Hurricane Winds 90 to 110 mph gusts 115 to 135 mph. Extremely dangerous winds will cause extensive damage and all mobile homes will be destroyed. Houses of poor to average construction will be severely damaged or destroyed. Moderate to major damage will occur to well constructed homes. Many gabled roofs will fail along with some exterior walls. Aluminum and light steel roofs will be torn off buildings at industrial parks. Partial roof and exterior wall failures are likely at low rise apartment buildings, especially those of poor to average construction. Most windows in high rise office buildings will be blown out, with minor to moderate damage possible due to swaying. Airborne debris will cause additional major damage as well as injuries and a few fatalities. Near total power loss is expected with numerous lines and power poles knocked down. The availability of potable water will be diminished as filtration systems begin to fail. Numerous trees, especially small to medium trees, will be downed, snapped or uprooted.
Moderate	<ul style="list-style-type: none"> • Threat - A significant threat to life and property; hurricane force winds likely. • Minimum Action - Prepare for the likelihood of moderate wind damage. • Potential Impacts - Hurricane winds 60 to 70 mph gusts to 95 mph. Poorly constructed or unsecured mobile homes will be destroyed and others will have substantial damage. Houses of poor to average construction will have partial wall

	<p>and roof failure as well as blown out windows. Unsecured light to moderate weight outdoor items will become projectiles, causing additional damage and perhaps injury. Many areas will have power outages with numerous downed wires and some power poles pulled down. Some large trees will be uprooted, especially those on saturated ground. Numerous large branches of healthy trees will snap.</p> <ul style="list-style-type: none"> • Potential Impacts - Hurricane winds 70 to 90 mph gusts to 110 mph. Very dangerous winds will produce widespread damage and destruction of mobile homes is likely. Houses of poor to average construction will have major damage, including partial wall collapse and roofs being lifted off. Well constructed houses will incur minor damage to shingles, siding and gutters as well as blown out windows. Up to one quarter of gabled roofs will fail. Partial roof failure is expected at industrial parks, especially to those buildings with light weight steel and aluminum coverings. Older, low rising apartment roofs may also be torn off as well as receiving siding and shingle damage. Some glass in high rise office buildings will be blown out. Airborne debris will cause damage, injury and possible fatalities. Some trees will be uprooted or snapped. Nearly all large branches will snap. Many healthy small to medium sized trees will be snapped or uprooted, especially where the ground is saturated.
<p style="text-align: center;">Low</p>	<ul style="list-style-type: none"> • Threat - A low threat to life and property; tropical storm-force winds are likely. • Minimum Action - Prepare for the likelihood of minor to locally moderate wind damage. Residents should move unfastened items, such as garbage cans and deck furniture, indoors. • Potential Impacts - Tropical Storm winds 30 to 40 mph gusts to 50 mph. Minor damage may occur in older mobile home parks. Weak tree branches may snap. • Potential Impacts - Tropical Storm winds 40 to 50 mph gusts to 65 mph. Minor damage will occur to many mobile homes. A few homes may receive mostly minor damage to roof shingles and siding. Unsecured lightweight items may become projectiles, causing additional damage. Some electrical wires will be blown down and local power outages are likely. Some weaker small trees and large branches may snap and bring down electrical lines resulting in power outages. • Potential Impacts - Tropical Storm winds 50 to 60 mph gusts to 80 mph. Most mobile homes will experience moderate to substantial damage. Houses of poor to average construction will have damage to shingles, siding and gutters. Some windows will be blown out. Unfastened home items of light to moderate weight will become airborne, causing additional damage and possible injury. Dozens of wires will be blown down. Local power outages will affect entire neighborhoods. Many large branches of healthy trees will be snapped and weakened. Small to medium sized trees will be uprooted or snapped. Power outages will affect entire neighborhoods, especially in areas with numerous downed trees and power lines.
<p style="text-align: center;">None</p>	<ul style="list-style-type: none"> • Threat - No discernable threat to life and property; winds to remain below tropical storm-force, but windy conditions may still be present. • Minimum Action - Evaluate personal and community disaster plans and ensure seasonal preparedness activities are complete. • Potential Impact – Wind damage is not expected; impact should be negligible.