

Sea Level and Storm Trends, Canaveral National Seashore

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Sea Level Summary

Historical tide gauge data from the Daytona Beach, FL tide gauge show that sea level around Canaveral National Seashore (CANA) is rising (IPCC 2013; NOAA tides and currents 2012; Figure 1). CANA has only been directly in the path of one hurricane-strength storm (Hurricane David, 1979) over the last century; however, it has been within 10 miles of at least two other hurricane paths. Storms are expected to intensify over the next century. At least one Saffir-Simpson category 3 hurricane should be expected to travel up to CANA by 2100.

Table 1. Historical and projected sea level and storm trends for Canaveral National Seashore.

Sea Level and Storm Surge Trends, Canaveral National Seashore		2050 ²	2100 ³
Historical sea level trend, 1925–1983	+0.09 in/yr		
Number of tropical storms, depressions and subtropical storm paths within 10 miles of Canaveral, 1842–2011	22		
Estimated storm surge height ¹ (Category 1, mean tide), 2014	0.2 ft		
Estimated storm surge height ¹ (Category 4, mean tide), 2014	15.1 ft		
Low Emissions Scenario (RCP 4.5) Projected sea level		No data	+1.80 ft
Intermediate Emissions Scenario (RCP 6.0) Projected sea level		+0.77 ft	+1.83 ft
High Emissions Scenario (RCP 8.5) Projected sea level		No data	+2.27 ft

¹Storm surge heights are projected on top of current mean sea level for Canaveral National Seashore Visitor Information Center. It should be expected that potential storm surge heights will change over time based on changes in mean sea level.

²Calculated by Caffrey and colleagues using IPCC data.

³Ensemble mean based on data used for figure 13.20 by the IPCC (2013).

Sea Level Change and Storm Surge Vulnerability at Canaveral National Seashore

- Increasing sea levels may lead to loss of land and critical habitat.
- Increased erosion and/or accretion across the coastline by storms coupled with shorelines adjusting to new mean sea levels.
- Rising groundwater tables and possible salt water intrusion due to rising sea levels.
- Increased risk of high intensity storm events.
- Potential loss of nearby freshwater ecosystems as sea levels rise.

References for Additional Sea Level and Storm Surge Information

- Intergovernmental Panel on Climate Change: <http://www.climatechange2013.org/report/>
- USACE Sea Level Calculator: <http://www.corpsclimate.us/ccaceslcurves.cfm>
- NOAA Tides and Currents: <http://tidesandcurrents.noaa.gov>
- NPS Storm Surge Mapping: <http://mariacaffrey.com/storms>
- NOAA Historical Storm Data: <http://www.ncdc.noaa.gov/ibtracs/>

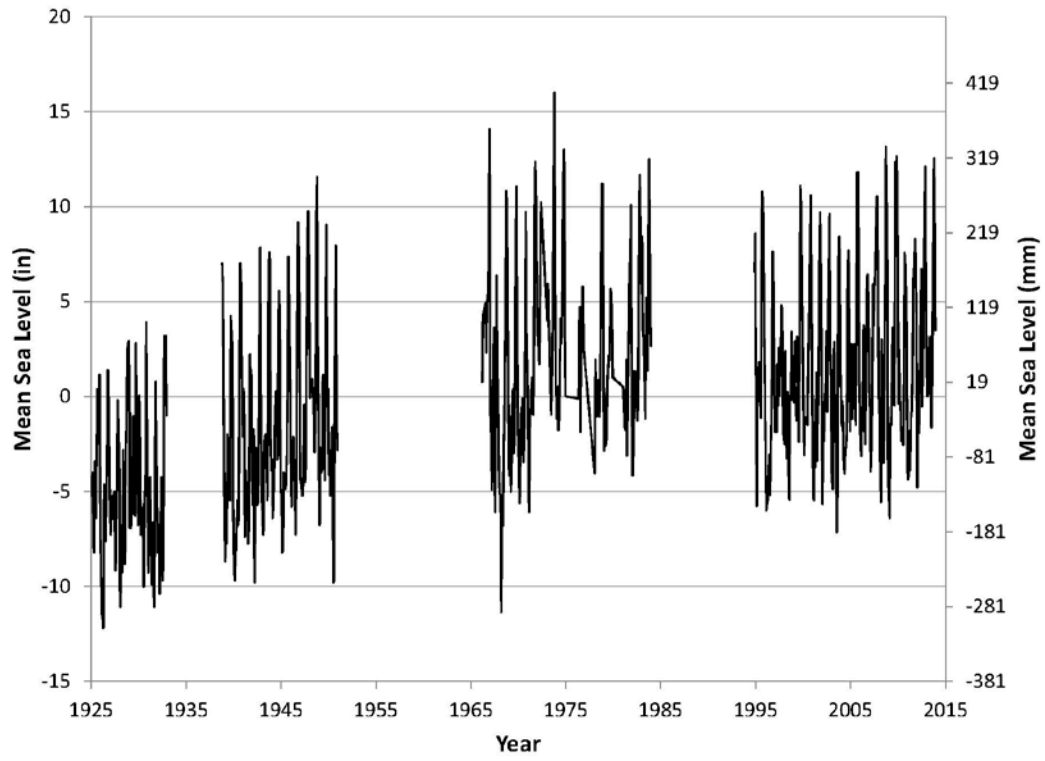


Figure 1. Sea level trends for multiple tide gauges near Canaveral National Seashore (made using data from Daytona Beach 1925–1950, Daytona Beach Shores 1966–1983, and Trident Pier 1994–2013).

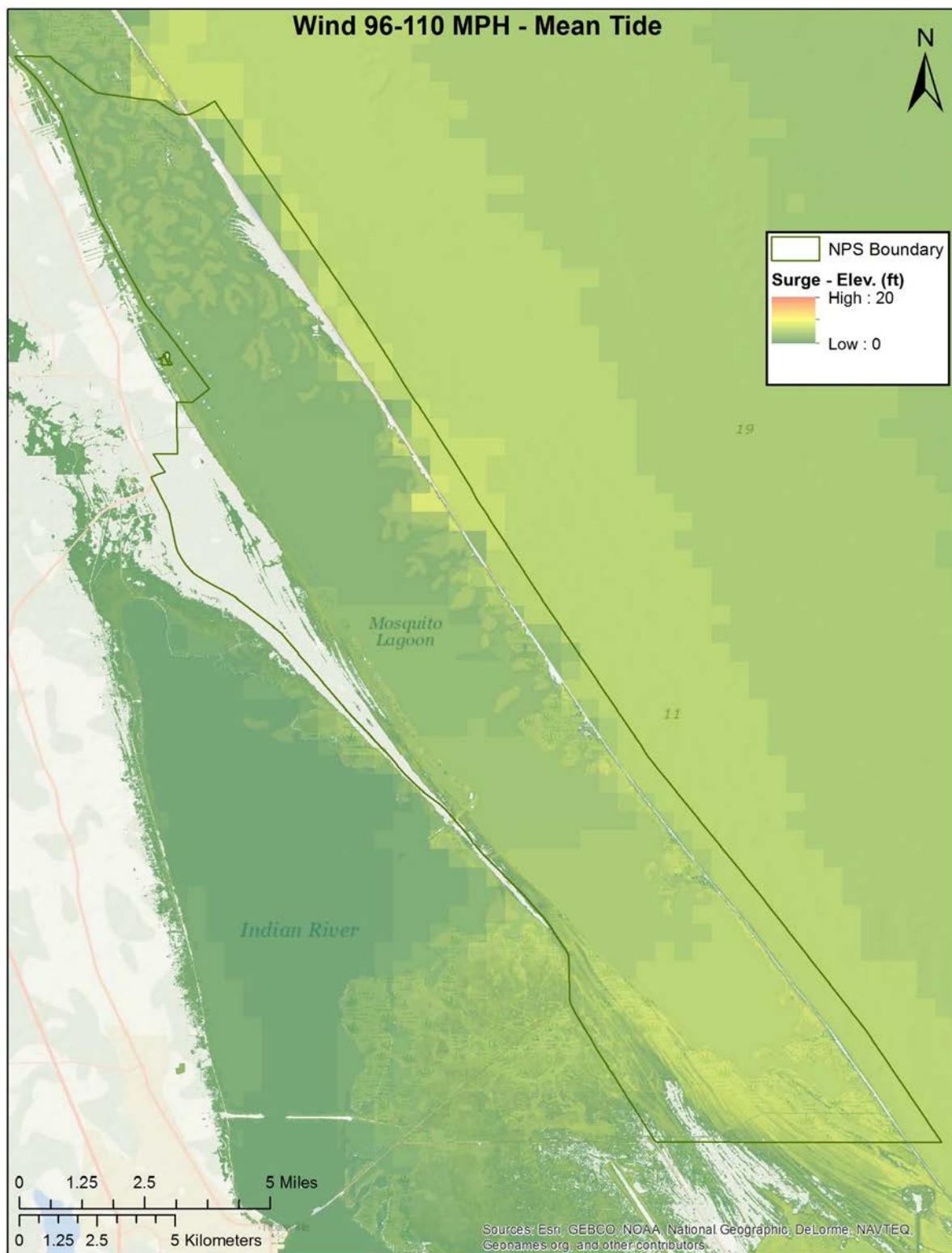


Figure 2. Potential storm surge height and extent of a Saffir-Simpson category 2 hurricane striking during mean tide.

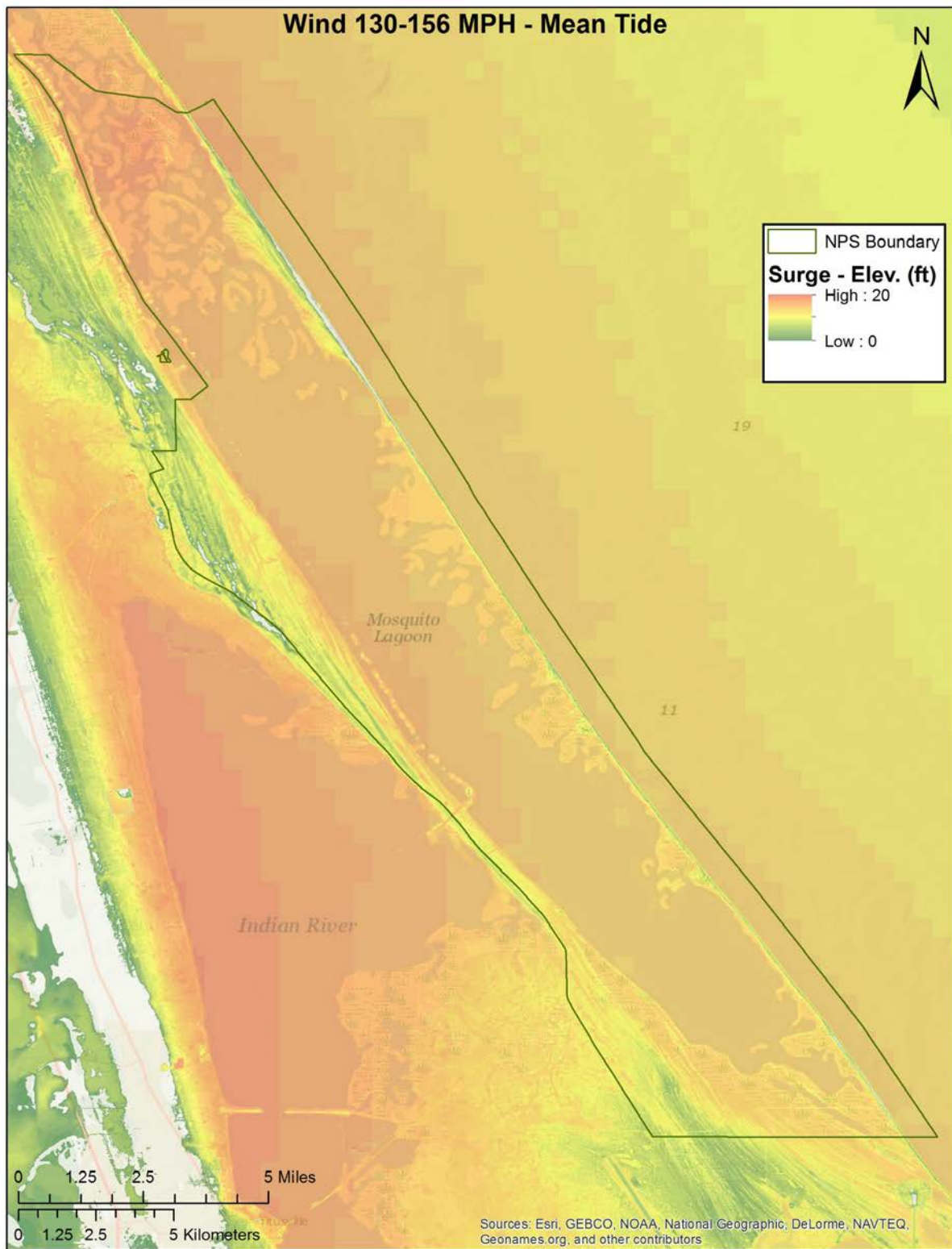


Figure 3. Potential storm surge height and extent of a Saffir-Simpson category 4 hurricane striking during mean tide.