



Cutting the protective vegetation exposes less tolerant plants and buildings to salt spray.

D. Hurricane implications

A hurricane, as defined by the National Oceanic Atmospheric Administration (NOAA), is a tropical storm with winds that have reached a constant speed of 74 miles per hour or more. As a hurricane nears land, it can bring torrential rains, high winds, and storm surges. Storm surge is an abnormal increase in the ocean's level, sometimes in excess of several feet high and several miles wide (NOAA 2005).

Mitigation is important with respect to hurricane storm surge. Mitigation can include any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies (FEMA, 2005). Mitigation steps can include: floodplain management activities, construction of barriers, and the purchasing of flood insurance. These mitigation steps will help reduce the amount of structural damage to homes and financial losses from building and crop damages should a flood occur.

With increased construction comes an increase in vulnerability to storms. Sullivan's island has been subject numerous hurricanes, the more prominent storms being in 1893, 1911, 1963 and was devastated by Hurricane Hugo in 1989. The most talked about storm to affect Sullivan's Island was Hurricane Hugo in 1989. "Hugo completely submerged the island, eroded dunes, and carried over wash into the interior. While this damage pattern was island-wide, the greatest destruction was in the shore zone" (Lennon et al. p. 1996).

The entire island lies within the hundred year flood zone, placing the entire island in either extreme or high risk zones.

The maps that have been created use the Saffir-Simpson Hurricane Scale, which categorizes storms on a 1-5 scale based on sustained wind speed. The Saffir-Simpson Scale can be seen below:

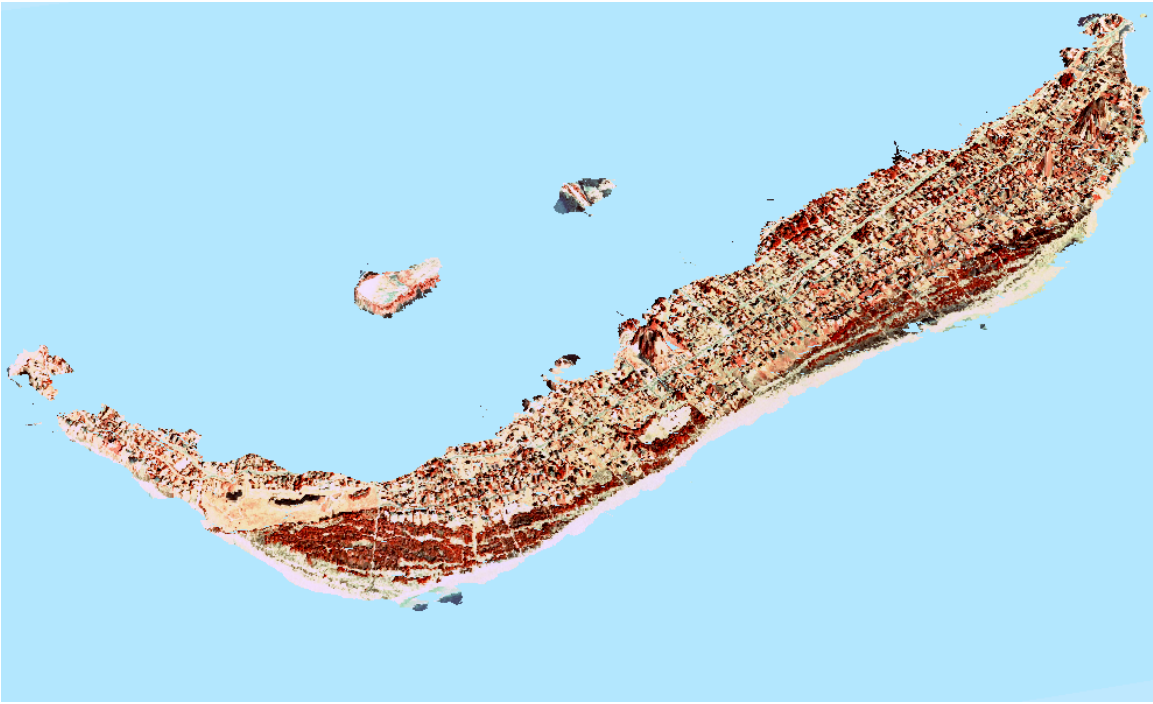
- Category 1 Hurricane storm surge model = 5 feet above normal
- Category 2 Hurricane storm surge model = 8 feet above normal
- Category 3 Hurricane storm surge model = 12 feet above normal
- Category 4 Hurricane storm surge model = 18 feet above normal
- Category 5 Hurricane storm surge model = 25 feet above normal

In the face of a Category 3 or higher Hurricane, all residents will hopefully be evacuated. If evacuation does not occur, there is little likelihood for any survival.

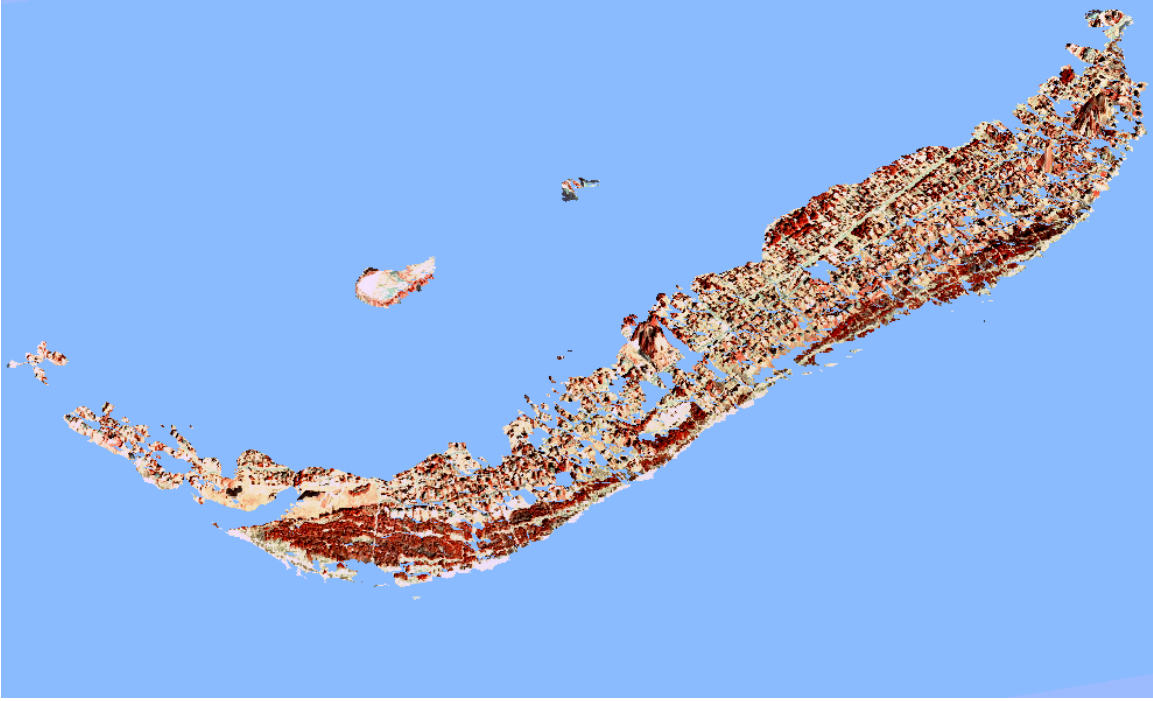
Illustrations of different hurricane storm surges displayed below:



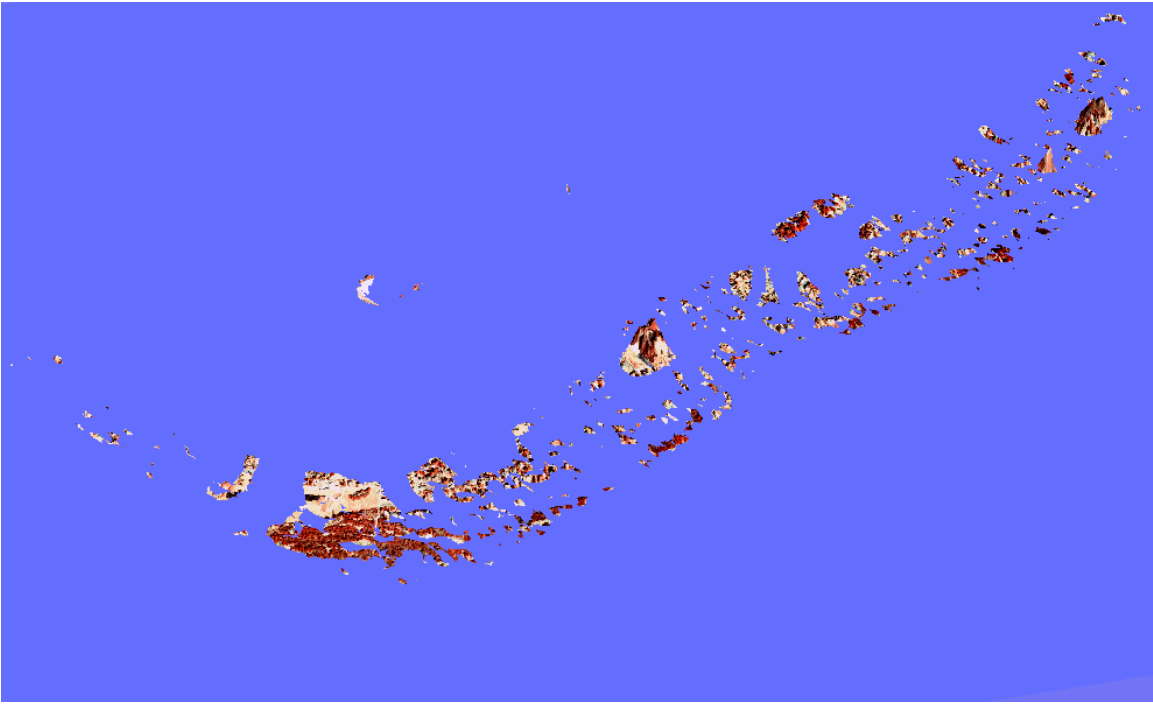
Sunny day on Sullivan's Island



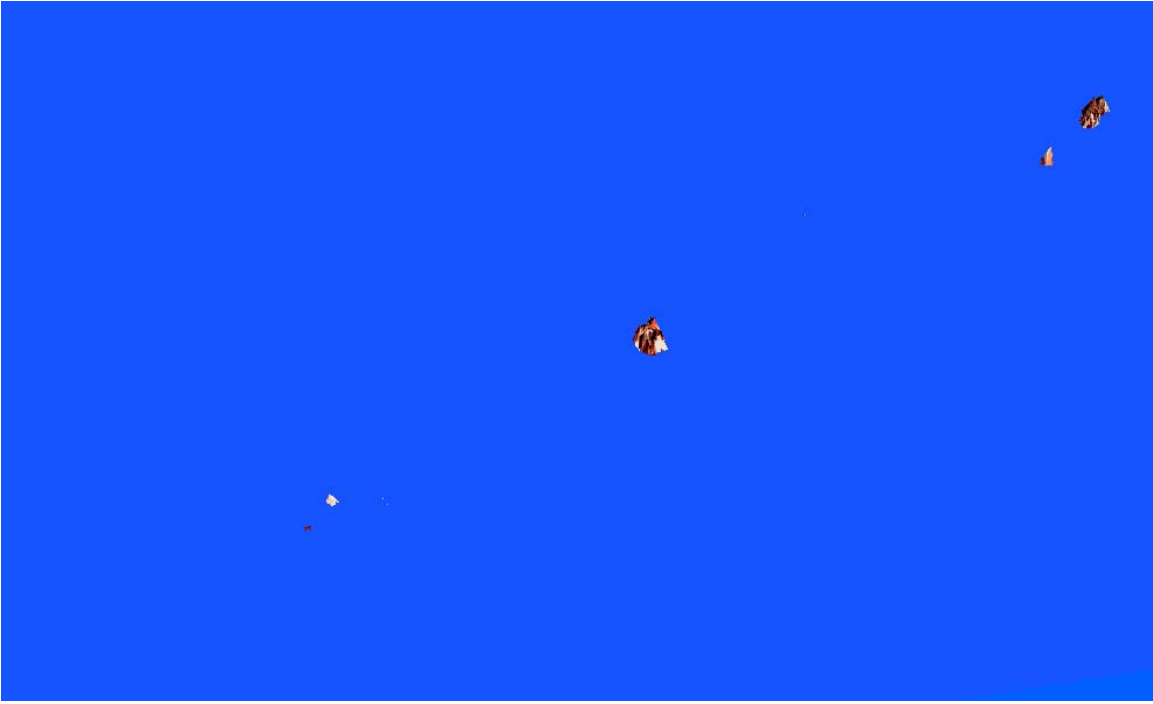
Category 1: Storm Surge 5'



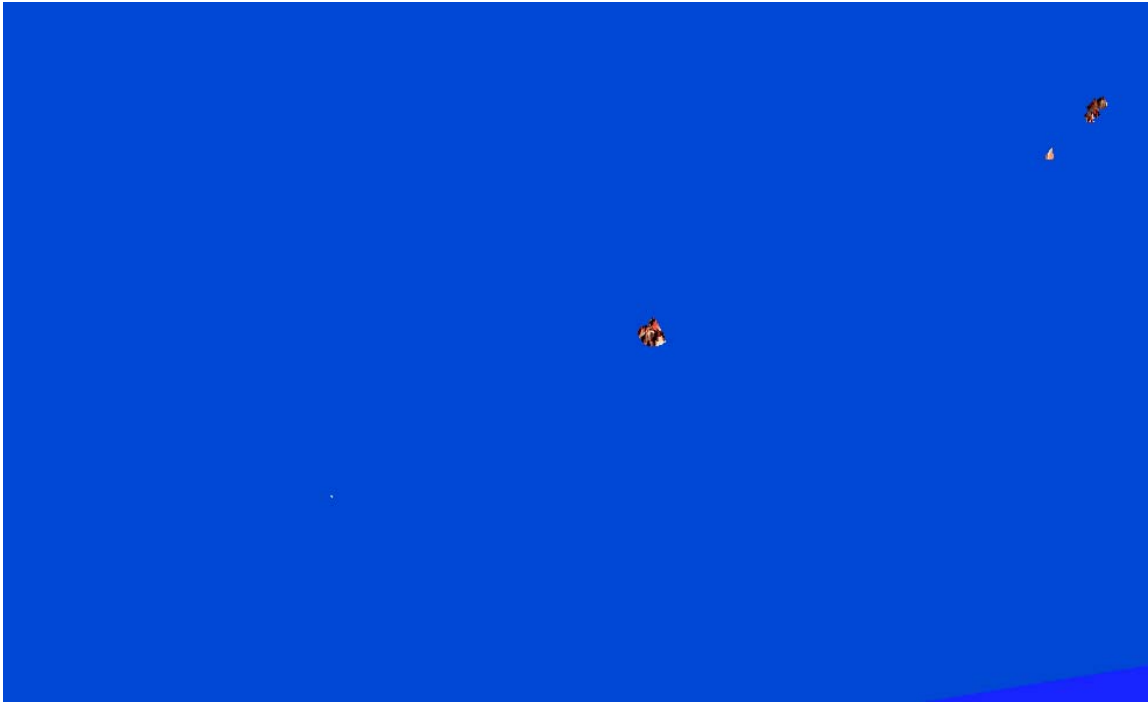
Category 2: Storm Surge 8'



Category 3: Storm Surge 12'



Category 4: Storm Surge 18'



Category 5: Storm Surge 25'

The results of the hurricane storm surge models can be seen in the tables below:

Table 5:

Hurricane Level	Storm Surge (ft)	Total Area (ac)	Total Area Flooded (ac)	Total Area Remaining (ac)	% flooded
Category 1	5.00	1670.30	867.79	802.52	0.52
Category 2	8.00	1670.30	1026.75	643.55	0.61
Category 3	12.00	1670.30	1490.69	179.61	0.89
Category 4	18.00	1670.30	1662.35	7.95	0.99
Category 5	25.00	1670.30	1665.59	4.71	0.99

Table 6:

Land Use	Total Areas (ac)	% Flooded after Cat 1: 5'	% Flooded after Cat 2: 8'	% Flooded after Cat 3: 12'	% Flooded after Cat 4: 18'	% Flooded after Cat 5: 25'
Historic/Cultural	5.91	0.00	0.07	0.39	0.93	0.93
Open areas	375.85	0.34	0.57	0.84	0.99	0.99
Residential	434.56	0.13	0.23	0.80	0.99	1.00
Roads	167.53	0.12	0.25	0.86	1.00	1.00
Wetlands	688.06	0.97	0.98	0.99	1.00	1.00