



Florida Department of Environmental Protection



Florida Geological Survey



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HAZARDS - COASTAL EROSION

Florida's beaches are a well-known aspect of the state's appeal to visitors and residents alike. The state's official website boasts of 1,100 miles of beaches. Estimates of the total length of Florida's coastline vary according to the way that it is measured. Florida's tidal coastline is 2,276 statute miles. A significant portion of the coast is marshy. Florida also has areas of rocky coastline and coastline occupied by mangroves. Florida's beaches are essential to tourism, and growing numbers of permanent and seasonal residents choose to live at or near the coast. Coastal erosion is a cause for concern along many of Florida's beaches.

Coastal erosion has both natural causes and causes related to human activities. Gradual coastal erosion results naturally from the very slow rise of sea-level. Severe coastal erosion can occur over a very short period of time when the state is impacted by hurricanes, tropical storms and other weather systems. Some coastal erosion may be caused by poorly thought-out coastal development. However Florida's lengthy coastline necessitates the existence of many navigation inlets and their construction and maintenance are an ongoing source of coastal erosion.

Longshore currents move water in a direction parallel to the shoreline. Sand is moved parallel to most beaches in Florida by longshore drift and currents. Ideally the movement of sand functions like a balanced budget. Sand is continually removed by longshore currents in some areas but it is also continually replaced by sand carried in by the same type of currents. Structures such as piers or sea walls, jetties, and navigational inlets may interrupt the movement of sand. Sand can become "trapped" in one place by these types of structures. The currents will, of course, continue to flow, though depleted of sand trapped elsewhere. With significant amounts of sand trapped in the system, the continuing motion of currents (now deficient in sand) results in erosion. In this way, human construction activities that result in the unnatural trapping of sand have the potential to result in significant coastal erosion.

The Florida Geological Survey's Coastal Research Group has a number of research efforts directed toward documenting coastal erosion and also locating sources of sand for beach nourishment efforts. That program is described at: <http://www.dep.state.fl.us/geology/programs/coastal/coastal.htm>. Maintenance of Florida's sandy beaches is extremely important to the environmental and economic health of the state. The Bureau of Beaches and Coastal Systems has a variety of programs that aim to maintain and protect Florida's coast. Coastal erosion and efforts to combat it, as well as permitting that is aimed at preventing such erosion are described in more detail at the website: <http://www.dep.state.fl.us/beaches/>

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Shell hash beds exposed by coastal erosion.



Rip Rap being used to control erosion



Coastal erosion at a Flagler County beach.



Another example of coastal erosion at a Flagler County beach.

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