

## **GEOLOGIC MAPS AND MODELS OF COASTAL AND NEARSHORE CHANGE FOR AIDING COASTAL MANAGERS IN ADAPTING TO SEA-LEVEL RISE AND STORMS**

*S. Jeffress Williams, U.S. Geological Survey, Woods Hole, MA 02543  
Asbury H. Sallenger, U.S. Geological Survey, St Petersburg, FL 33701*

**Keywords:** coastal hazards, Lidar mapping, seafloor mapping, coastal modeling, coastal management, coastal vulnerability, sea-level rise, storms, coastal vulnerability, usSEABED

A large and expanding proportion of the U.S. population (>50%) and related urban infrastructure are located in vulnerable regions along the Atlantic, Gulf of Mexico, and Pacific coasts and increasingly come into conflict with the natural processes associated with coastal change. In the future, as the effects of changing global climate are more fully realized with accelerated sea-level rise and more intense storms, these impacts will become more frequent and more challenging with effects to human coastal communities and ecosystems. Coastal change is driven by complex and interrelated processes. Over this century and beyond, the potential for coastal change is very likely to increase and coastal change will be much more widespread and variable than has been observed in the historic past.

Considering the large population and dense development in the coastal zone, the degree of vulnerability and extent of risk to coastal landforms (e.g., barrier islands, wetlands, deltas) and human infrastructure needs to be scientifically understood, quantified, and assessed. The need is high for federal agencies, with state, local, NGO, and academic partners, to provide increased and improved scientific information and services to support decisions and management. This is being addressed to limited degree by means of high resolution geologic mapping of coastal zones and nearshore regions and using models to better understand sediment transport processes driving coastal change. Coastal decision makers are planning now to address increased hazards from climate change and need more tools and science information that can be applied to help to prepare for and adapt to present and future impacts of climate change on coastal ecosystems.

A panel session of four speakers will present examples of a variety of coastal and seafloor mapping and modeling efforts underway.

1. Mapping storm effects and coastal change hazards- A.H. Sallenger and others
2. Seafloor mapping of Massachusetts- W. Barnhardt and others
3. Assessing sea-level rise impacts- B.T. Gutierrez and others
4. Seafloor sediment characterization using usSEABED- S.J. Williams and others

Contact: S. Jeffress Williams  
U.S. Geological Survey

*Proceedings of Coastal Zone 09  
Boston, Massachusetts  
July 19 to 23, 2009*

384 Woods Hole Rd.  
Woods Hole, MA 02543  
[jwilliams@usgs.gov](mailto:jwilliams@usgs.gov)  
508-457-2383