Geomorphological Analyses of Atlantic Coastal Systems

- **The Challenge:** Research goals of this project seek to improve understanding of the geomorphic behavior of coastal systems. Currently the largest effort is focused on Fire Island National Seashore. Analyses are ongoing to examine shoreline behavior; beach and dune topographic evolution; impacts of human manipulations; and the connection between beach/dune behavior, nearshore dynamics and the inner continental shelf geologic framework.

- **The Science:** Fire Island is part of a barrier island system that extends along the south shore of Long Island, New York. The majority of Fire Island lies within national park boundaries, which also contain a number of private communities. Undeveloped reaches of the island provide habitat for critical ecotypes and endangered species. Continuing erosion of the island has prompted increased pressure for a sediment management plan that would allow for systematic human modification to the barrier system to mitigate oceanfront erosion and breaching potential. Presently, little is known about the fundamental physical processes of the system and what impacts may result from both human alterations and increased sea-level rise.

- **The Future:** This research project is an ongoing collaboration between several disciplines within the USGS and the National Park Service, as well as academic partners. The research to date has established the first direct evidence of a link between the inner shelf morphology, geologic framework and beach behavior. By furthering the body of scientific knowledge of the behavior of barrier island systems and the processes that shape them, the results provide critical data for management of coastal resources.

Contact: Cheryl Hapke at (508)457-2297 or chapke@usgs.gov