

Recent Shoreline Comparisons, Analyses, and Preliminary Products of the National Assessment of Shoreline Change Project

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Beach erosion is a chronic problem along most open-ocean shores of the United States. As coastal populations continue to grow, and community infrastructures are threatened by erosion, there is increased demand for accurate information regarding past and present shoreline changes. There is also need for a comprehensive analysis of shoreline movement that is regionally consistent. To meet these national needs, the Coastal and Marine Geology Program of the U.S. Geological Survey (USGS) is conducting an analysis of historical shoreline changes along open-ocean sandy shores of the conterminous United States and parts of Hawaii. A primary goal of this work is to develop standardized methods for mapping and analyzing shoreline movement so that internally consistent updates can periodically be made to record shoreline erosion and accretion.

This presentation summarizes the USGS shoreline change project and introduces completed map products for the Gulf of Mexico, the first in a series that will eventually include the Atlantic Coast, Pacific Coast, and Hawaii. Shoreline change evaluations are based on a comparison of three historical shorelines (generally from the 1800s, 1920s-1930s, 1970s) with a recent shoreline derived from lidar (light detection and ranging) topographic surveys (1998-2002). Long-term rates of change are calculated using linear regression with all four shorelines, and short-term rates of change are calculated using the end-point method with the two most recent shorelines. A 44-page, full-color report discusses shoreline change along the U.S. Gulf of Mexico, describes methods of analysis, interprets the results, provides explanations regarding historical and recent shoreline change trends, and describes community responses to coastal erosion. An Internet Map Server (IMS) provides access to the data generated by the project by allowing users to view and manipulate data layers interactively in a web browser, including vector shorelines and transects, associated short- and long-term rates of change, statistical uncertainties, and areas of beach nourishment. A data catalog complements the report and the IMS by offering downloadable data layers for each state.

The Gulf of Mexico Internet Map Server, the data catalog, and the full report, National Assessment Of Shoreline Change: Part 1, Historical Shoreline Changes and Associated Coastal Land Loss along the U.S. Gulf of Mexico (USGS Open-File Report 2004-1043) can be accessed via the project website at: <http://coastal.er.usgs.gov/shoreline-change/>.