Coastal Processes and Erosion on Lake Erie at the Millennium.

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The shore of Lake Erie has been evolving in response to wave action at or near the present lake level for several thousand years. These processes have created eroding bluffs in areas of high relief and sandy depositional features in other areas. In the last 20 years there have been tremendous advances in our understanding of the processes that are responsible for the ongoing evolution of the shoreline. Pioneering research efforts on Lake Erie in the early 1980's were the key to a new understanding of erosion processes for shorelines formed in glacial sediments - referred to as cohesive shores. Cohesive shores usually feature an eroding bluff or cliff at the shoreline and the knowledge developed from these Lake Erie investigations is now applied to similar shorelines throughout the world. In the early 1990's the entire length of the Lake Erie shoreline was classified on a 1 km reach basis through a three-tier system (above water geomorphic, underwater geology and shore protection) as part of the International Joint Commission Levels Reference Study. Very recently the shoreline classification system has been revised and refined for the entire US shore of Lake Erie as part of the Lower Great Lakes Erosion Study (LGLES) sponsored by the Buffalo District Corps of Engineers (COE). Over the next two to three years it is planned that a Flood and Erosion Prediction System (FEPS) will be implemented for the entire US shoreline of Lake Erie under the LGLES utilizing the shoreline classification system. Baird & Associates have recently developed and implemented the FEPS for the entire shoreline of Lake Michigan for the Detroit District COE. The ArcView GIS based FEPS will provide a versatile Coastal Zone Management tool for managing and accessing physical coastal data and for predicting waves, water levels, nearshore coastal processes, erosion and deposition under existing conditions and future "what if" scenarios.