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# Research Brief: Geomorphic Processes Affecting the Formation and Response of Sedimentological Features in Regional Sediment Systems

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**Issue** The response of river systems to various stimuli has profound implications for the ecological systems related to the river environment. Development of modeling and assessment tools to address environmental issues associated with rivers and related environs (riparian wetlands, floodplains, estuaries, deltas, reservoirs) requires an understanding of the mechanics, processes, causative factors, and resulting products of river reaction, response, and recovery. However, research to provide a better understanding of fluvial system response to modifications by man and nature is needed as a contribution toward development of management strategies, modeling and assessment tools, and engineering solutions for sediment systems.

**Objectives** The primary objective of this work unit is to determine the geomorphic processes relative to the response and recovery of selected sediment systems to natural events and anthropogenic causes. Within each selected system, surface and subsurface features will be identified and described, and the geomorphic process or processes influencing their development and evolution will be determined. A second objective is to provide scientifically sound and operationally efficient technologies for integrating this knowledge into methods and strategies for managing sediment at the local and regional scale.

**Research/Design** After conducting a literature review, field sites indicative of regional sediment systems based on existing geomorphic characterization and consideration of variability and similarity between each site will be selected. Field investigations to enhance available data, with focus on identification of sedimentological features and lithologic variations within the river channel and associated floodplain, will be conducted. Analyses of sediment cores to determine average sedimentation rates and sediment age will allow synthesis results from different field sites. Final results will be used to develop a geomorphic model of sediment system response with identification and description of key parameters influencing the type, direction, and rate of sediment system reaction, response, and recovery.

**Application** The results of this research will provide a better understanding of fluvial system response to modifications by man and nature. When combined with other regional sediment management efforts and products, these results will form the basis for developing management strategies, modeling and assessment tools, and engineering solutions tools to address environmental issues associated with rivers and related environs.

**Products** Links and information will be posted here. View online at <http://rsm.usace.army.mil>.

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