

## REMOTE SENSING METRICS TO SUPPORT COASTAL PLANNING AND OPERATIONS

*Lauren Dunkin, Molly Reif, and Jennifer Wozencraft, U.S. Army Corps of Engineers*

The U.S. Army Corps of Engineers (USACE) National Coastal Mapping Program (NCMP) provides high-resolution, high-accuracy elevation and imagery data along U.S. shorelines on a recurring basis. Such in-house data capabilities along with other geospatial resources are integrated to address coastal challenges that are critical to USACE missions for Navigation, Coastal Storm Damage Reduction, and Environmental Stewardship. Recent efforts have focused on using spatial data to generate value added products that support USACE planning and managing objectives. Morphological and environmental parameters are extracted from spatial data and presented in a regional framework to help identify opportunities for coastal improvement through projects, regional sediment management, and engineering with nature. These coastal parameters, or metrics, are measurable indicators of the condition or characteristics of the coastal zone, such as dune height, beach width, shoreline change, shoal volumes, coverage and characteristics of land cover/use, critical habitats (e.g. submerged aquatic vegetation, wetlands, etc.), and impervious surface. Several research and development efforts are leveraging the use of a variety of such coastal metrics to address specific project needs. These projects include: 1) defining coastal regions at various scales to assess and compare conditions (i.e. identify appropriate reference sites), prioritize areas and project needs, monitor changes, and provide support for decision making and planning; 2) modeling critical species to support ecosystem restoration, planning, operations, and monitoring (such as modeling sea turtle nesting habitat to more efficiently establish strategies and protocols for improving resource management concepts); 3) modeling landscape level changes to evaluate and quantify project level impacts and benefits (such as simulating vegetation changes and associated ecological processes as a result of project activities) and; 4) assessing barrier island breach susceptibility to increase our capabilities and knowledge concerning coastal protection and resiliency.