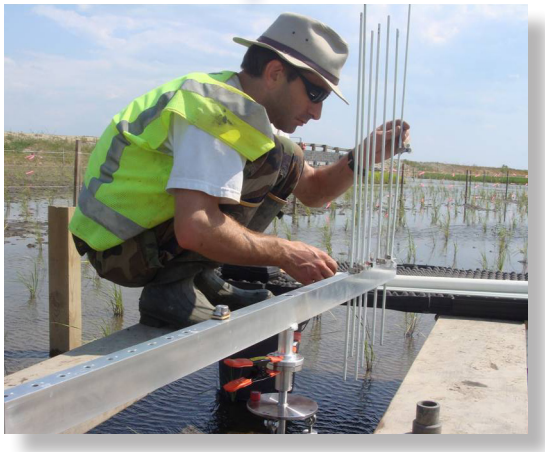
Ecosystem and Climate Operations: Geodesy at the Water's Edge

ECO

Geodesy for Coastal Science, Management, and Community Resilience



Hazard resilience and habitat restoration are critical concerns facing coastal managers today. Precise determination of water levels and land elevations, as well as their trends through time, are essential for addressing these important issues.

Ecosystems and Climate Operations (ECO)

The NGS **ECO** team provides guidelines and access to high-accuracy height information in selected inter-tidal habitats. Whereas NOAA's National Geodetic Survey has long worked on accurately determining the geospatial aspects of the land and the land-water interface, more recently, **ECO** has become a vehicle for enhancing other targeted NOAA partnerships within the coastal zone. The **ECO** team develops applications of the geospatial framework, bringing it into critical coastal habitats, such as bays, estuaries, marshes, and wetlands, to support science and monitoring.

Elevation Is Critical to Coastal Ecosystems

The sustainability of coastal ecosystems is threatened by sea level change, land subsidence, and erosion. High-accuracy monitoring tied to known geodetic and tidal datums allows the **ECO** team and its partners to determine the magnitude of these threats and plan for a sustainable future.

Accurate estimates of local inundation regimes contribute to the successful restoration of degraded wetlands. The joining of NOAA capabilities—including high-accuracy land elevations, water levels, long-term data monitoring, and predictive ecosystem modeling—is critical to coastal restoration science and management.

Sentinel Sites

Sentinel Sites concentrate infrastructure and resources to track the status of key indicators of ecosystem integrity in the face of changing local sea levels and land elevations. Sentinel sites consist of local positional control networks with high-accuracy geodetic connections to the National Spatial Reference System (NSRS), local Continuously Operating GPS Reference Stations (CORS), tide gauges, Surface Elevation Tables (SET), and ecological monitoring infrastructure. The sentinel site program allows for standardized monitoring of changes in key ecosystem variables such as elevation, water levels, and environmental processes.

Contact NGS ECO to learn more:
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