



Sustainable Estuaries, Coastal, Urban, and River Environments: A Global Network of Elevation and Landscape Resilience Data

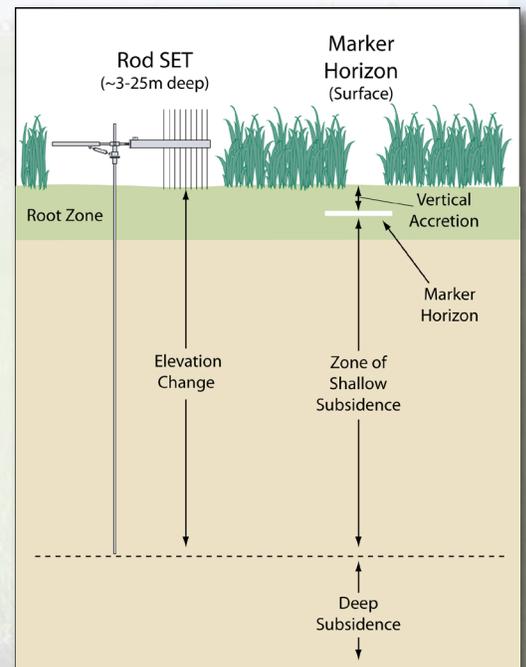
Climate change and accelerating sea-level rise are resulting in changes to coastal ecosystems and landscapes that impact social systems, economic and food security, and environmental stability. These impacts are particularly notable in areas highly vulnerable to rapid sea-level rise such as intertidal coastal marshes and riverine deltas. These environments frequently support significant fish and wildlife populations, as well as food and other economic resources for the human communities dependent on these nutrient-rich ecosystems.



Coastal Mangrove Forest

Rapid landscape change can present major challenges for managers and policy makers, particularly in the face of insufficient data and limited ability to forecast ecosystem resilience. SECURE (Sustainable Estuaries, Coastal, Urban and River Environments: a Global Network of Elevation and Landscape Resilience Data) is a response to the scientific and management challenges facing coastal and riverine systems. SECURE is a global network of Surface Elevation Table – Marker Horizon (SET – MH) stations that provides high-resolution accretion, elevation, and subsidence data across local and regional landscapes. The data are used to determine directly wetland vulnerability to current sea-level rise, and to forecast wetland vulnerability to future sea-level rise through numerical models.

The SET – MH Method: Wetland elevation is measured with a SET from a benchmark established at a site by driving stainless steel rods to refusal, up to 25 meters deep. The SET is temporarily attached to the benchmark to obtain readings of the land surface relative to the benchmark. At the initial SET reading, marker horizons are laid on the surface to measure future sediment deposition. Each site is revisited periodically to obtain measures of surface accretion from the marker horizons and elevation change from the benchmarks. Differences between these two trends reflect the amount of shallow subsidence at the site.



The SET-MH Method: profile view

SET – MH installations began in 1992 in the U.S. and now in 2011 the network spans 26 countries on 6 continents, with great opportunity for further expansion and partnership. In combination with interested partners, and when linked with robust strategic planning on specific goals to be achieved over time, the SECURE network can be an invaluable tool for the future as we face the complex challenges of sea level rise and landscape change in coastal, urban, and river environments.

For further information contact: Dr. Donald Cahoon, 301-497-5523



SET-MH elevation measurements



SET Locations

