

A global standardized network for monitoring mangrove vulnerability to sea-level rise

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Abstract

Sea-level rise (SLR) threatens human populations around the world and mangroves sensitive to increased inundation. Mangrove vulnerability to SLR is quantified by the Revised Relative SLR, which is the sum of eustatic sea-level rise, deep subsidence, and surface and shallow subsurface processes. While the quantification of spatial variability in SLR and deep subsidence is well advanced, surface and shallow subsurface processes contributing to wetland surface elevation change vary substantially across space, and quantification remains the ‘missing piece’ of the puzzle needed to assess site-specific vulnerability to sea-level rise and the processes controlling it. In this presentation we provide a brief comparison of methods to measure surface and shallow subsurface processes (surface elevation change), and focus on the Rod Surface Elevation Table–accretion Marker Horizon (RSET-MH) method to provide sufficiently precise and comparable vulnerability data sets across global mangrove systems. We discuss previous research conducted using the RSET-MH method over the past 20 years, and show that significant new opportunities for modelling and policy will arise with a coordinated global monitoring network. Finally, we discuss the development of a global monitoring network, including the costs for setup, data sharing opportunities and the unprecedented research, conservation, and global climate change policy mitigation and adaptation opportunities that could result from a ‘bottom-up’ coastal wetland SLR monitoring network.

Keywords

adaptation, conservation, geomorphology, mitigation, policy