

SCCWRP #547

Evaluating Sediment Depositional Patterns Using Be-7 in Upper Newport Estuary, California

Hilary Collis¹, Jaye Cable¹, Martha Sutula²

¹*Department of Oceanography and Coastal Sciences, Louisiana State University, Baton Rouge, LA*

²*Southern California Coastal Water Research Project, Westminster, CA*

ABSTRACT

Sediment deposition and resuspension in estuarine environments are important for understanding non-point source inputs of bioactive elements (N, P, Si). Resuspension events allow recently deposited particle-bound nutrients to become remineralized and made available for primary productivity. Magnitude and variability of sediment mixing and deposition events were evaluated in upper Newport Estuary, California, from January to November 2004 to understand their importance in estuarine biogeochemical budget. Six 20-cm long cores were collected monthly from three sites (an intertidal and subtidal zone at each site) to evaluate seasonal and spatial depositional patterns and possible resuspension events using ⁷Be ($t_{1/2} = 53$ days). Inventories of ⁷Be indicate the uppermost site receives the greatest deposition throughout the year. Highest mass accumulation values occurred in March and April at the uppermost site in both the intertidal and subtidal zones (11.57 and 12.28 g/cm², respectively). A distinct seasonal trend appears with greatest deposition occurring during the wet season when atmospheric washout and watershed runoff increase, and the greatest sediment removal occurs during the summer months when little input occurs from precipitation or stream runoff. Resuspension potential in this estuary is generally high in this well mixed estuary with a large tidal range ($h = 2.74$ m). Resuspension may act as an important internal mechanism for recycling nutrients within the estuary.

Due to distribution restrictions, the full-text version of this article is available by request only.
Please contact pubrequest@sccwrp.org to request a copy.