BERYLLIUM-7 ATMOSPHERIC DEPOSITION AND SEDIMENT INVENTORIES IN THE NEPONSET RIVER ESTUARY, MASSACHUSETTS, USA

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Measured monthly atmospheric depositional fluxes of cosmogenically produced $^7$Be ranged from 1 to 67 mBq/cm$^2$ in Boston, Massachusetts between September 2000 and August 2007. These fluxes exhibited seasonality and supported a decay-corrected $^7$Be atmospheric depositional running inventory that ranged from 36 to 144 mBq/cm$^2$. Annual $^7$Be deposition exhibited an increasing trend that may reflect a general decrease in solar activity and a general increase in precipitation over the 7-year sampling period. To investigate short-term sediment dynamics and accumulation patterns in the Neponset River estuary, we collected six sediment cores in July 2006 and measured $^7$Be sediment inventories ranging from 48 to 546 mBq/cm$^2$. Comparisons of these sediment inventories with the $^7$Be running inventory from atmospheric deposition (101 mBq/cm$^2$) at the time of core collection indicated a large degree of spatial heterogeneity in sediment accumulation patterns and its potential use as a tool for assessing the impacts of environmental restoration activities in estuarine environments.

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