2013 年 10 月 18 日受付，2013 年 11 月 29 日採録

Abstract

To evaluate the accumulation of ^{137}Cs released from the Fukushima Daiichi Nuclear Power Plant in ocean sediment, a sedimentation model was developed and applied to the South Tohoku offshore region. The following results were obtained. (1) Rapid direct adsorption from bottom water explained the time variation of ^{137}Cs in sediment. The inverse result for an adsorption rate of 0.1 d reproduced the observations. (2) The desorption rate is gradual. The inverse of the desorption rate of 25 d for fine sediment and 5 d for coarse sediment reproduced the observations. These results suggest that the differences in the temporal variation of ^{137}Cs in sediment can be attributed to differences in the desorption rate with grain size. (3) The observed vertical migration of ^{137}Cs for coarse sediment is explained by adsorption and desorption between sediment and bottom or interstitial water. (4) The sensitivity analysis suggests that the supply of ^{137}Cs by sinking particles is not a dominant process, except for in the nearshore region.