

CHANGE OF WATER ENVIRONMENT DURING TWO DECADES IN THE SEA OF HARIMA, THE EASTERN SETO INLAND SEA, JAPAN

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Water quality, bottom sediment, amount of COD and nutrient loadings, as well as certain social conditions surrounding the Sea of Harima were investigated in order to evaluate the change of the water environment in the enclosed sea, the eastern Seto Inland Sea, Japan, during the past two decades. The surface bottom sediments were taken at 65 sites in the summers of 1981, 1991, and 2001. The average values of IL, AVS-S (1981 and 2001), TOC, T-N, T-P, and COD (1991 and 2001), showed a statistically significant trend of decrease during the investigation period. These results suggest that sediment quality may have improved during the last two decades. On the other hand, the time series analysis of water quality in the Sea of Harima showed different tendencies, depending on each parameter. Notably, phosphorus and nitrogen concentrations showed an increase. The coverage sewage system in the catchment area improved from 14 % in 1975 to 34 % in 2001, but shows a large variance, depending on each prefecture. The amount of COD and T-P loadings decreased from 89 ton/day 55 ton/day and from 6.96 ton/day to 3.50 ton/day in 1979 and 1999, respectively. The amount of T-N loadings decreased from 65.8 ton/day in 1984 to 53 ton/day in 1999. The bottom sediment may change corresponding to the decreasing amount of COD and nutrient loadings, even though some parameters of water quality did not show changes. These results suggest that the bottom sediment can be used to effectively evaluate changes in the water environment. We should also study the relationship between water quality and bottom sediment under different amounts of COD and nutrients loading.