LONGTERM VARIATION IN NUTRINET CONCENTRATIONS IN EASTERN SETO INLAND SEA, JAPAN

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Osaka Bay is surrounded by highly populated area and is known as eutrophic sea. Terrestrial nitrogen and phosphorus loaded in Osaka Bay, flow out to the open ocean through the Kii Channel. In contrast, oceanic nutrients flow "into" the Kii Channel from the open ocean in summer during periods when the Kuroshio is detached from the shelf break. This inflow is caused by penetration of the cold and nutrient rich water into the Kii Channel. When the Kuroshio is attached to the shelf break, the inflow does not occur.

To reveal whether the cold and nutrient rich water flows further into Osaka Bay or not, we analyzed temperature and nutrients values in August from 1963 to 2000 measured by prefectural governments. The cold and nutrient rich water intruded on the bottom of the western Osaka Bay through the Kii Channel during periods when the Kuroshio is detached from the shelf break. Two-decade variations in nutrients concentration and temperature are found in the bottom water of Osaka Bay. The bottom temperature was high and nutrient concentrations were low in the 1970's and the 1990's. On the other hand, bottom Osaka Bay water was cold and nutrient rich, in the 1980's. These variations are correlated with the fluctuation of Kuroshio path. Kuroshio was frequently detached from the shelf break in the 1980's and the cold and nutrient rich water came into Osaka Bay in this period. Variation in Kuroshio path exerts an influence on yearly and long term variation in water quality in Osaka Bay.