

Mixing Processes in the Kuroshio region and their influence on the low-trophic ecosystem

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In order to understand the vertical mixing processes in the Kuroshio, we carried out field observations in the Luzon Strait, east of Taiwan, outer shelf region of the East China Sea, and Tokara Strait in the past several years. The strong vertical mixing mainly due to interaction between the Kuroshio and seamounts were found in the areas east of Taiwan and Tokara Strait, while that mainly due to internal tides was found in the Luzon Strait and outer shelf region of the East China Sea. The nitrate flux associated with the strong vertical mixing in the Kuroshio was estimated using simultaneously measured nitrate concentration and vertical eddy diffusivity coefficient. The influences of vertically supplied nitrate on the phytoplankton and zooplankton were examined by field observations and laboratory experiments. In addition to the vertical mixing, the supply of nutrients from coastal waters was also observed and that due to horizontal and vertical advections were also diagnosed from results of a numerical model for a purpose of fully understanding on the nutrient dynamics along the Kuroshio.

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