

黒潮栄養塩ストリームの構造とインパクト

Structure and impact of the Kuroshio nutrient stream

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Recently the Kuroshio has drawn attention as an important supply route of nutrients in the western North Pacific. However, it is unknown whether nutrient concentrations are enhanced along the jet on isopycnal surfaces, as is the case for the “nutrient stream” along the Gulf Stream. We aim to ascertain the structure of nutrient concentration enhancement along the Kuroshio jet and to estimate the impact of nutrient transport downstream to the Kuroshio-Oyashio interfrontal zone (KOIZ), which is a highly productive region and a major global fishing ground. Recent multiple- transects and retrospective analyses of historic hydrographic data have revealed that the along-jet maximum nitrate concentration appears only in spring on the isopycnal surface $25 < \sigma_\theta < 26$ in the downstream region of the Kuroshio. The Kuroshio nutrient stream contributes significantly to productivity in the euphotic layer along its downstream trajectory, in conjunction with enhanced vertical turbulence. Analysis of the budget of epipychnal nitrate transport across transects that enclosed the KOIZ suggests that the Kuroshio nutrient stream has a non-negligible potential to significantly impact high productivity in the KOIZ.

キーワード：黒潮栄養塩ストリーム、黒潮親潮移行領域、等密度面輸送

Keywords: Kuroshio nutrient stream, Kuroshio-Oyashio interfrontal zone, epipychnal transport