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# Spatial variations of the Kuroshio nutrient stream from the East China Sea to South of Japan

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Based on velocity calculated from hydrographic data obtained from 39 cruises during from 2000 to 2009 and nitrate concentration data observed from 1964 to 2011, we calculated nitrate flux (the product of velocity and nitrate concentration) and nitrate transport (integration of flux over a section) through 5 sections along the Kuroshio path from the East China Sea (Sections PN and TK) to south of Japan (Sections ASUKA and 137E). In addition, Section OK east of the Ryukyu Islands was also examined. The nitrate flux showed a subsurface maximum core with a value of 9, 10, 6, 11 and 11 mol/m2/s at Sections PN, TK, OK, ASUKA, 137E, respectively. The depth of subsurface maximum core changes at five sections and was about 400, 500, 800, 500, and 400 m at Sections PN, TK, OK, ASUKA, 137E, respectively. The eastward nitrate transport was 171, 167, 351, 942, 1444 k mol/s at Sections PN, TK, OK, ASUKA, 137E, respectively. The difference between nitrate transport through Section ASUKA and the sum of transports through Sections TK and OK, as well as the difference of nitrate transport between Sections ASUKA and 137E, suggest that the Kuroshio recirculation south of Shikoku can significantly intensify the eastward nitrate transport by the Kuroshio and therefore play an important role in the nitrate transport in the Kuroshio region.