Frontal mixing processes of the Oyashio and Tsugaru Warm Current in the Northwestern Pacific transition area

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Three major water masses from the Oyashio, Kuroshio, and Tsugaru Warm Current merge in the Northwestern Pacific, resulting in highly variable and complicated oceanographic conditions. In this study, we report preliminary results of our 2017 summer field campaign focusing on mixing processes at the front between the Oyashio and the Tsugaru Warm Current (O-T) by using the R/V *Wakataka-maru* (692t equipped with a shipboard 38 kHz ADCP, a turbulence profiler with a nitrate sensor attached, and Underway-CTD system) and Slocum G2 Glider (equipped with a turbulence sensor, ADCP, CTD and bio-optical sensors). We conducted zigzag surveys with the both platforms crossing the O-T front from the merging area: off the Cape Erimo to the downstream: off Sanriku. The observed hydrographic data indicate multiple intrusions at different layers across the O-T front. We will discuss the mixing processes with the observed turbulence data to reveal the detailed and continuous degenerative processes, which can exchange water properties (heat, salt, nutrients and etc.) between the two water masses.

Keywords: Oyashio, Tsugaru Warm Current, Turbulence Mixing

