

## Mixing processes observed by a slocum glider at the Oyashio-TWC front

\*Daisuke Hasegawa<sup>1</sup>, Takahiro Tanaka<sup>1</sup>, Takeshi Okunishi<sup>1</sup>, Ichiro Yasuda<sup>2</sup>

1. Tohoku National Fisheries Research Institute, Japan Fisheries Research and Education Agency, 2. Atmosphere and Ocean Research Institute, The University of Tokyo

In order to grasp the detailed mixing processes along the frontal region between the Oyashio and the Tsugaru Warm Current (TWC), we conducted a zigzag survey crossing the front several times from the merging region of the two current systems to the down stream by an underwater glider (Slocum G2 Glider) equipped with a turbulence sensor, from July 24<sup>th</sup> to August 29<sup>th</sup> in 2017. The observed frontal structure indicated the subduction and the intrusion processes of the cold and fresh Oyashio water under the warm and salty TWC water, along layer between 26.5 to 26.8 sigma-theta, which resulted the favorable conditions to the salt finger convection at the upper interface along the 26.5 sigma-theta, and the diffusive convection at the lower interface along the 26.8 sigma-theta where the fresh and cold Oyashio water lying above the warm and salty water. The strong turbulence intensity is observed around the intruded layer, and the mean temperature and the salinity in the layer became warmer and saltier with the increase of the distance from the front, which suggested the time evolution of the vertical mixing driven by double diffusive convections between the three different water masses. Though the strongest turbulence intensity was observed around the frontal region, which may suggest the importance of the cabbeling effect as the additional source of the turbulent mixing.

Keywords: double diffusion, mixing, cabbeling