Formation mechanism for the North Pacific Transition domain SST and SSS fronts

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The North Pacific Transition Domain is the area where water exchange between subtropical and subarctic is carried out and there are SST and SSS fronts. The Transition domain is very important area for air-sea interaction, ocean mixed layer formation, biological production, and so on. In this study, to clarify SST and SSS fronts structure and its formation mechanism in the transition domain, we analyzed the data of drifting buoys observation in 2015 and 2017 and modelled particles trajectory.

The buoy trajectories and the modelled trajectories captured the flow structure (i.e. front structure) in detail. They suggest that the flow structure in the transition domain is dominated by low rise bottom topography. We also showed mixing ratio of the subarctic and the subtropical seawater in the Transition domain using the particle tracking. In addition, it was also found that the place where the sea water tends to stagnate well corresponds to the place where the SST deviation appears due to the variation of the Isojet jet J1 indicated by Mitsudera et al. (2018).

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