

Potential impacts of the freshwater flux from the Kamchatka Peninsula on the dense shelf water formation in the Sea of Okhotsk

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Dense Shelf Water (DSW) in the Sea of Okhotsk forms over the northern continental shelf. DSW entrains a lot of materials, such as dissolved oxygen, CO₂ and iron, from the continental shelf region and carries them to the North Pacific through the intermediate layer. The overturning circulation associated with DSW is controlled by salinity. One of primary controlling factors of salinity is brine rejection when sea ice forms. Another controlling factor is salinity of the surface inflow to the continental shelf region from the North Pacific Ocean. In this project, we focus on the latter, with a special attention to the effects of freshwater flux from the Kamchatka Peninsula. We found in a previous study that the precipitation over the Kamchatka Peninsula is significantly correlated with the DSW salinity, where the precipitation can explain one-third of the variability of DSW salinity. We aim to quantify the effects of this freshwater process throughout atmosphere, land and ocean. In this poster presentation, results of a numerical experiment on the DSW overturn in the presence or absence of the riverine freshwater flux from the Kamchatka Peninsula are discussed.

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