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## Spatial and temporal variability of oxygen minimum layer and its monitoring by biogeochemical Argo floats in the North Pacific

Oxygen minimum layer (OML) in the North Pacific, which is clearly appeared as oxygen minimum below main thermocline, has larger area among the global OMLs. Concentration of dissolved oxygen in the North Pacific OML is significantly decreasing and its area and thickness is also expanding based on a small number of ship and station observations. In previous observational studies, the mechanism of decreasing trend might be caused by strengthened surface stratification and surface warming, which makes decreasing oxygen solubility and inflow of high-oxygen sea water from outside. Recently, some repeat ship observations with high accuracy data for physical and biogeochemical parameters were quantitatively detected those variations and trends, suggesting of which depend on area and depth (e.g., along 137 E and 165 E line-observations which are conducted every year by Japan Meteorological Agency; Takatani et al., 2012; Sasano et al., 2015). It might be one evidence of relationship between variability of OML and physical process such as ocean circulation and mixing. Actually in this study we carried out analyses of OML variability in the North Pacific and different amplitude and tendency are detected using limited Argo float data with dissolved oxygen. Although the number and density of data are still not enough to clarify detailed variability, recent decreasing trend of oxygen concentration and expansion of OML are represented from spatial discrete data in the western North Pacific region, the result of which is similar to the previous studies.

However, it is far from totally understanding OML distribution and its variability at this time, especially in the central North Pacific region. Therefore, further deployment of oxygen float for OML monitoring and also improvement of data quality control method for dissolved oxygen are required. Based on the communique in G7 Ise-shima summit, JAMSTEC plans to deploy some biogeochemical Argo floats (nutrient, pH, O<sub>2</sub> and/or Chl-a, including deep Argo float) mainly in the North Pacific region (around biogeochemical observation point of S1 at 30N,145E and K2 at 47N,160E). The deployment is directed to contribute the international BGC Argo project (BGC Argo Task Team, 2016), and also this will make us enable to capture detailed distribution and mechanism of OML in the North Pacific.

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