Global grid mapping of temperature and salinity based on Argo float data

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About twenty years have been passed since when Argo programme started in 1999, over 3500 active Argo floats are working to measure temperature and salinity in the upper ocean, accumulating over 2 million profiles. As the situation enables us to construct gridded temperature and salinity data set in the global ocean to be easier, variable kinds of 3-dimensional gridded data set based on purely Argo and Argo plus other observational data are produced from many institutes to investigate global changes in climate and ocean environment.

JAMSTEC produces quasi-real time gridded objective mappings of Argo, MOAA GPV for temperature and salinity fields, and MILA GPV for mixed layer depth every month or 10 days. Those data set are widely used not only to directly analyze the data set but also to validate the state estimate based on data assimilation. The data and its error from MOAA GPV are effectively informed to evaluate representation of temperature and salinity fields, which makes it possible to improve the data assimilation to be more elaborated for accurate analyses of changes in climate and ocean environment. While MILA GPV is produced with characteristics of Argo profiling float which has finer vertical resolution with horizontally homogeneous distribution. That enables us to capture detailed distribution of surface layer mixed layer depth, rapidly progressing physical and biogeochemical researches related to mixed layer variability.

In the future, the objective mapping will be more accurate and useful if the Core Argo array is sustained to obtain long-term statistical characteristics of the upper ocean temperature and salinity. Further, it is expected that improved mapping of physical and biogeochemical parameters will be developed when huge amount of measurement of temperature and salinity in deeper ocean than 2000 m and biogeochemical parameters, with the Deep and BGC Argo arrays.

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