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A data integration system for ocean climate change research in the Northwest Pacific

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A data integration and processing system was established to provide long-time data and real-time data to the researcher who are interested in long-term variation of ocean data in the Northwest Pacific area. All available ocean data of 6 variables (ocean temperature, salinity, dissolved oxygen, ocean CO₂, nutrients) in the NWP area (0°N - 65°N, 95°E - 175°E) are collected from the Korean domestic organizations (KIOST, NFIS, KHOA, KOEM), the international data systems (WOD, GTSP, SeaDataNet, etc.), and the international observation networks (Argo, GOSHIP, GLODAP, etc.). Total number of data collected is over 5 millions and observation dates are from 1938 to 2022. After referring to several QC manuals and related papers, QC procedures and test criteria for 6 data items were determined and documented. Several Matlab programs complying with QC procedures were developed and used to check quality of all collected data. We excluded duplicated data from the data set and saved them in 0.25° grid data files. Long-term average over 40 years and standard deviation of data at each standard depths and grid point were calculated. All quality controlled data, qc flag, average, standard deviation of each ocean variables are saved in format of netCDF and provided to ocean climate researchers and numerical modelers. We also have 2 plans using the collected data from 2023 to 2025. The one is production of long-term grid data set focused on the NWP area, the other is developing a data service system providing observation data and reanalysis data together.

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