

## The objective analysis dataset of the JMA 137E repeat hydrographic section

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The 137E repeat hydrographic section of the Japan Meteorological Agency (JMA) was initiated in the winter of 1967, and fifty years has passed. The data in the 137E section have been widely used to reveal the oceanic structure and long-term variability in the western North Pacific. We made the objective analysis dataset of temperature and salinity in the 137E section from the winter of 1967 to 2017 and from the summer 1972 to 2017 by applying an optimum interpolation (OI) method. We released the interpolated data for grid points of depth, in-situ temperature, potential temperature, salinity and potential density every 1 dbar from “Marine diagnosis report” by JMA (<http://www.data.jma.go.jp/gmd/kaiyou/shindan/index.html>). Furthermore, we released the related figures, such as seasonal climatological distribution, vertical distribution, anomaly distribution and linear trends distribution with depth ordinate and potential density ordinate.

We adopted, as the first guess in the OI procedure, averaged data from 1990 to 2017, an exponential function was chosen for the weight function, with horizontal and vertical decay scales of 160 km and 400 dbar. The meridional interval were twenty minute at 34N–31N, thirty minute at 31N–30N and one degree at 30N–3N, and 1 dbar vertical interval. Since the JMA changed an observational instrument from the Nansen water sampling bottle with reversing thermometer to the CTD (Conductivity-Temperature-Depth) profiler after 1989, the vertical resolution of in-situ observation data had been different from discrete data to continuous data.

In this analysis, we obtained the optimally interpolated dataset with unified resolution in the 137E section. We expect the dataset will be more widely used an analysis to understand long-term variability with basin-scale and validation of a numerical model output.

Keywords: JMA 137E repeat hydrographic section, objective analysis, optimal interpolation

