

Ocean State Estimation by Using Ocean Mixing Observations

*Shuhei Masuda¹, Satoshi Osafune¹

1. Japan Agency for Marine-Earth Science and Technology

Ocean state estimation is a useful tool to reveal mechanisms of oceanic phenomena. Recently, turbulence observation data has been increasing by lots of effort of researchers. Here we synthesize pre-existing ocean data with newly-acquired turbulence data using state-of-art assimilation technique. Available observations of turbulence strength in the ocean, will be “blended” with temperature, salinity, sea surface height anomaly data applying dynamically self-consistent state estimation approach with 4D-VAR adjoint system. The control variables are mixing coefficients in addition to oceanic initial conditions and surface fluxes. We propose some new techniques and schemes to assimilate turbulence data. The obtained state estimation can better represent global bottom water warming.

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