

Eddy transport in upper 1000 m observed by Argo floats

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Mesoscale eddies which account for most of oceanic kinetic energy plays important roles in turbulent mixing in the ocean. One of the crucial roles is horizontal transport. Because quantitative observation of eddy transport requires velocity and hydrographic measurements, at a eddy-resolving resolution, in the middle of water column, they have been estimated only from results of numerical simulations. With recent increase in number of Argo floats, fuelled by vibrant efforts of the community, it is now possible to estimate the eddy statistics using the Argo data. Here, I report horizontal eddy transport estimated using the drift and hydrographic data from the Argo floats based on the formulation by McDougall and McIntosh (2001). Eddy transport is large in the western boundary current regions in the Northern Hemisphere, the mid-latitude Indian Ocean and along the Antarctic Circumpolar Current in the Southern Hemisphere. Locally, upgradient (in thickness) transports are found, which cannot be explained by baroclinic instability per se and thus showing negative thickness diffusivity.

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