

Eddies observed by Argo floats

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Eddies play an important role in the oceanic general circulation theory, specifically its meridional overturning component. Due to the limited spatial extent, however, synoptic observation of the eddy field has been difficult and its quantitative arguments have depended mostly on numerical simulation outputs. Argo floats, which revolutionised physical oceanographic observations, demonstrate their capability in the eddy observation (albeit at limited depths).

Under the Temporal Residual Mean framework, the most natural coordinate system for ocean circulation theories, we estimated the eddy transport above the mean 1000 dbar surface by using the hydrographic and drift velocity data from Argo floats. Eddy transport is strong in the western boundaries and in the Southern Ocean. In the midlatitude oceans, it is weaker and equatorward. In the southern part of the Antarctic Circumpolar Current (ACC), it is larger than 10 Sv poleward.

In the Southern Ocean, we can discuss the vertical transport of zonal momentum input by the westerly wind and responses of the ACC to variable wind localised to topographic features.

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