

Standing meanders of the Antarctic Circumpolar Current as observed by Argo floats

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Eddies in the Southern Ocean have been quantified by such measures as eddy kinetic energy and vertical eddy momentum transfer. Recent studies suggest length of streamlines can be used to characterise the eddy activity. The Antarctic Circumpolar Current, the greatest ocean current in the world, is known to have steady transport under increasing westerly wind stress in interdecadal time scales. From eddy resolving simulations, it has been hypothesised that some adjustment to the wind occurs on and around standing meanders of the ACC. One manifestation of the adjustment is the lengthening of streamlines. I used trajectory and hydrography data from Argo floats to study this behaviour in observed data. Seven major meanders were identified along the ACC. Eddies around the meanders have an effect to increase the radius of curvature, or stretch the streamlines. This effect was found generally on the eastern flanks of meridional ridges, where poleward eddy transport was found. The poleward eddy transport plays important roles in the meridional overturning circulation and momentum budget. Another important role in shaping the streamlines was highlighted.

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