

Generation of meso-scale eddies in the southern Indian ocean

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A Leeuwin Current region off the coast of western Australia is known as an area of strong meso-scale eddy activity among the midlatitude eastern boundary current regions. While these eddies are believed to be generated through mixed barotropic and baroclinic instability associated with the poleward-flowing Leeuwin Current, their relative importance as well as interactions between eddies and large-scale circulations need to be investigated in detail. Motivated by the above, an analysis on energy conversion between eddy field and mean flow is conducted. Results revealed detailed spatial distributions of large baroclinic energy conversion. The interactions between density anomalies and the thermal front near 30° S play an important role in making the baroclinic energy conversion.

Keywords: meso-scale eddies, Leeuwin Current, eddy-mean flow interactions