Geophysical Research Abstracts, Vol. 7, 06468, 2005
SRef-ID: 1607-7962/gra/EGU05-A-06468

Madagascar, a wave maker for the Agulhas retroflection ?

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The transport of heat and salt by rings from the Agulhas Current retroflection is recognized as a key to the exchange of properties between the Indian and Atlantic Oceans. The mechanisms for the spawning of these rings is still imperfectly understood. Natal Pulses, large singular meanders on the trajectory of the Agulhas Current, are known to be able to precipitate shedding events for Agulhas rings. Recent investigations have demonstrated that Natal Pulses in turn may be triggered by eddies coming from the Mozambique Channel. Recent observations have in fact demonstrated that large mesoscale eddies are an inherent part of the circulation on the western side of the Mozambique Channel. They travel predominantly southwestward into the region of the Agulhas Current proper. SAfE (Southern African Experiment) is an eddy resolving numerical experiment conducted to simulate the ocean dynamics surrounding the southern tip of Africa. After a validation of the model solution, a sensitivity analysis is conducted to quantify firstly the role of Madagascar in the generation of Mozambique Channel eddies, and second the impact of these on the Agulhas retroflection.