



Modelling the Agulhas Current using SAfE (Southern Africa Experiment).

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The Agulhas Current is a major contributor for the closure of the global thermohaline circulation. At a regional scale, it is a key for the ecosystems along the East and South coasts of South Africa. It is one of the strongest Western Boundary Currents with a unique retroflexion being the most turbulent area of the World Oceans. At present, the best global circulation models are still not totally satisfactory in their representations of the Agulhas Retroflexion and the subsequent generation of Agulhas Rings into the South Atlantic Ocean. The ROMS (Regional Oceanic Modelling System) model is employed to reproduce the Agulhas Current System at a regional scale. The model domain is designed according to the assumption that variability coming from the Mozambique Channel is essential for the downstream behavior of the Agulhas Retroflexion. A sensitivity analysis shows the importance of the parameterization of the lateral turbulent processes. A nested model at three times higher resolution reproduces the fine scale coastal processes associated to the interactions between the Agulhas Current and the Agulhas Bank.