



Diffusive coupling of Antarctic Bottom Water to North Atlantic Deep Water

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We give a theoretical discussion of the coupling between Atlantic Antarctic Bottom Water (AABW) and North Atlantic Deep Water (NADW). We argue that AABW is mainly driven by NADW through buoyancy forcing. Thus vertical diffusion between the two water masses leads to a robust relation of their relative strength in equilibrium. The theoretical results are supported by comparison with simulations of the coupled climate model CLIMBER-3 α which includes an oceanic general circulation model. In contrast to other studies, the main feature here is an increase of AABW strength with increasing NADW strength which saturates for strong overturning circulations.