

Implications of efficient turbulent mixing for global interconnections of AMOC

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We investigate the role of cross-density (diapycnal) mixing over the global ocean with an emphasis on its role in driving the upper and lower branches of the ocean Meridional Overturning Circulation (MOC) and their interconnections. Here we provide evidence, based on a compilation of observational, theoretical and numerical methods, that mixing is most efficient where MOC is strongest: upper ocean in the Atlantic basin and lower ocean in the Indo-Pacific basins. This suggests that the restratification of water masses in the deep and abyssal ocean, while itself dependent on mixing, occurs at a rate which keeps mixing optimal. We will discuss pathways for further verifying this yet speculative result and its implications for global ocean circulation modeling and AMOC-global MOC interconnections.