Seminar “Ocean, Ice and Atmosphere”,
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Energy constrained mixing parameterizations for ocean models: The consistent IDEMIX closure and the role of anisotropic tidal forcing

Friederike Pollmann (University of Hamburg)

Small-scale turbulent mixing shapes water mass properties, affects biogeochemical cycles and contributes to driving the large-scale overturning circulation. It is, however, not resolved by state-of-the-art ocean models and hence needs to be parameterized. Energy constrained parameterizations ensure that the mixing sources are adequately accounted for. In the ocean interior, these mixing sources are mainly breaking internal gravity waves. The internal wave model IDEMIX predicts the propagation and dissipation of internal wave energy and forms the backbone of state-of-the-art energy constrained mixing parameterizations. IDEMIX is forced by internal wave generation maps, with the dominant forcing occurring at the sea floor through the interaction of barotropic tidal currents and bottom topography. I will provide an introduction to the IDEMIX model including its evaluation against observations and show recent results on how a directionally resolved tidal forcing in IDEMIX affects the modeled energy fluxes and predicted mixing.