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Internal tide dissipation: triadic resonant instability and evenescent waves OCEANE RICHET, Ladhyx - Ecole polytechnique, CAROLINE MULLER, LMD - ENS, JEAN-MARC CHOMAZ, Ladhyx - Ecole polytechnique —
Several previous numerical studies suggest the presence of a critical latitude corresponding to an enhanced energy dissipation associated to mixing and a strong latitudinal dependence of the local energy dissipation. The purpose of this study is to understand mechanisms behind this latitudinal dependence. We separate the evolution of the energy dissipation with latitude in two parts: before the critical latitude, where internal waves are propagative and after the critical latitude, where internal waves can be evanescent. Before the critical latitude, we propose a mechanism in 3 stages involving triadic resonant instability. At the critical latitude, the peak of energy dissipation is explained by inertial waves with small vertical scales. After the critical latitude, the presence of near-inertial evanescent waves generated by the parametric subharmonic instability explains dissipation on several degrees of latitude after the critical latitude. The study combines theoretical results and 2D idealized numerical simulations.

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