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Measurement of entrainment and mixing in oceanic overflows PHILIPPE ODIER[1], JUN CHEN, MICHAEL RIVERA, ROBERT ECKE, Los Alamos National Laboratory — The mixing and entrainment processes existing in oceanic overflows, e.g., Denmark Strait Overflow (DSO), affect the global thermohaline circulation. Owing to limited spatial resolution in global climate prediction simulations, the small-scale dynamics of oceanic mixing must be properly modeled. We have built a facility (Oceanic Overflow Facility) allowing the study of a gravity current along an inclined plate, flowing into a steady ambient medium. At small values of the Richardson number, the shear dominates the stabilizing effect of the stratification and the flow at the interface of the current becomes unstable, resulting in turbulent mixing. In addition, the level of turbulence is enhanced by an active grid device. Using PIV and PLIF to measure, respectively, the velocity and density fields, we characterize the statistical properties of the mixing. We also study the entrainment of the ambient fluid by the flow. An accurate parametrization of the mixing and entrainment can be a valuable input for ocean circulation models.

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