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Mixing induced in a dense current flowing down a sloping bottom in a rotating fluid CLAUDIA CENEDESE, Woods Hole Oceanographyic Institution, CLAUDIA ADDUCE, Università degli Studi "RomaTRE" — A density driven current was generated in the laboratory by releasing dense fluid over a sloping bottom in a rotating freshwater system. Over a wide range of parameter values, the following four flow types were found: laminar, wave, turbulent and eddy regime. The amount of mixing between the dense and the ambient fluids was measured and its dependence on the Froude number and on the distance downslope was determined for increasing values of the Reynolds number. Mixing increased significantly when passing from the laminar to the wave regime; i.e. with increasing Froude number. We believe that mixing between the dense salty water and the lighter fresh water was caused by breaking waves. We quantified the amount of mixing observed and estimated the value of the entrainment velocity at the interface between the dense fluid and the fresh overlying fluid. The results have been compared with previous laboratory experiments which presented the classic turbulent entrainment behavior and observational estimates of the Mediterranean and Denmark Strait overflow.

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