

Abstract Submitted
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Internal Gravity Waves in a Dipolar Wind. JEAN-MARC CHOMAZ, LadHyX, CNRS-Ecole polytechnique, 91128 Palaiseau, France, RAMIRO GODOY-DIANA, LOCEAN, Université Pierre et Marie Curie-CNRS-IPSL, 75005 Paris, France, CLAIRE DONNADIEU, LadHyX, CNRS-Ecole polytechnique, 91128 Palaiseau, France — An experimental study on the interaction of the internal wave field generated by oscillating cylinders in a stratified fluid with a pancake dipole is presented. The experiments are carried out in a salt-stratified water tank with constant Brunt-Väisälä frequency. When the wave and the dipole propagate horizontally in opposite directions (counterpropagating case), the phase line of the gravity wave beam steepens towards the vertical as it enters the dipolar field and it may even reach a turning point where the wave is reflected. When the dipole and the wave propagate in the same direction (copropagating case), the wave beam is bent towards the horizontal and may be absorbed by the dipole. In that case, the waves encounter a critical layer, and momentum is transferred to the dipole. Three-dimensional effects of the dipolar velocity field on the propagating internal waves induce focusing and refraction of a wave beam, that in ocean flows may lead to wave breaking.

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