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Internal Gravity Waves Generated by Convective Plumes JOSEPH ANSONG, BRUCE SUTHERLAND, University of Alberta — Internal gravity waves are generated when a turbulent buoyant plume impinges the interface between a uniform density layer and a linearly stratified layer. Laboratory experiments are conducted in which a buoyant plume is released at the top of uniform-density layer. The penetration of the plume into the stable layer causes displacements of the isopycnals which results in the generation of radially and downward propagating waves away from the density interface. We examine the axisymmetric internal gravity waves and their relation to the properties of the plume at the density interface. The conical waves were analyzed using a newly-developed 3D Synthetic Schlieren method. The experiments show that less than five per cent of the plume's energy flux is lost to the waves. The results are related to atmospheric generation of gravity waves by deep convective clouds or thunderstorms through the mechanical oscillator effect.

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