

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Mixing Induced by Slope and Valley Flow Collisions in Complex Terrain¹ H.J.S. FERNANDO, C. HOCUT, Q. ZHONG, Univ of Notre Dame, MATERHORN TEAM — Collision of slope and valley flows at night in complex terrain air basins lead to powerful, recurring turbulence generating events. The contributions of these collisions to turbulent mixing in complex terrain basins has been studied using data taken during the field experiments of Mountain Terrain Atmospheric Modeling and Observations (MATERHORN) Program as well as laboratory measurements conducted under controlled conditions using counter flowing gravity currents in which detailed turbulence observations were made using LDV/PLIF. These collisions cause localized instabilities, which, together with turbulence generated by impingement of fronts on one another generate a turbulence field that decay rapidly under local stable stratification. Buoyancy fluxes measured during laboratory experiments are parameterized using suitable dimensionless parameters that characterize the nature of gravity currents. The laboratory results are compared with field measurements.

¹Funded by ONR grant # N00014-11-1-0709.

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Date submitted: 30 Jul 2014

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