

Abstract Submitted
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Experimental investigations of buoyancy effects in turbulent jet mixing L.K. SU, D.B. HELMER, Johns Hopkins University — The effect of buoyancy on global turbulent jet scaling is well known, but its effect on mixing is less well understood. Here, planar laser imaging methods provide measurements of scalar and velocity fields (non-simultaneously) in turbulent, buoyant helium-air jets. Jet Reynolds numbers range up to 3000, and the measurements focus on the region of the flow where the global scaling is momentum-dominated, to isolate the local effects of buoyancy. Results indicate changes in scalar similarity profiles, for example, in comparison with neutrally buoyant flows. Other points of interest include the effects of buoyancy on flow organization, intermittency, entrainment, and scale interactions.

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