Abstract Submitted
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An experimental study of highly lazy plumes NIGEL KAYE, GARY HUNT, Imperial College London — We present results from an experimental study of highly lazy turbulent plumes, *i.e.* plumes with relatively low source momentum flux, or equivalently very large source Richardson numbers. Experimental observations indicate that the plumes contract as they move vertically away from the source and that the extent of the contraction is independent of the source Richardson number (consistent with previous experimental studies). Using the experimental technique developed by Baines (1983), we made volume flux measurements in the near source region of the plume. Our experimental results indicate that the volume flux increases linearly with distance from the source and scales with the source Richardson number to the one third power. This result is discussed in relation to existing entrainment models for forced plumes (low source Richardson number) and we demonstrate that these do not adequately describe the near source region of highly lazy plumes. It is also noted that the near source behaviour is similar to that of a line plume and a possible explanation for this behaviour is presented.
Baines, W.D. (1983), "A technique for the direct measurement of volume flux of a plume," *J. Fluid Mech.* **132**, 247–256.

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