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**Jets, plumes and particle-laden jets in two-dimensional environments** J.R. LANDEL, C.P. CAULFIELD, BPI & DAMTP, University of Cambridge, A.W. WOODS, BPI, University of Cambridge — Results on the experimental investigation of liquid jets and plumes in a quasi Hele-Shaw cell are presented. Few experimental studies have been conducted when jets are constrained in a narrow gap whose length is two orders of magnitude smaller than the length scales of the other two dimensions. In this configuration, the dynamics shown by the jets is very rich when parameters such as the initial flow-rate and the buoyancy are changed. Furthermore, different behaviors have been observed for the front of the jet and the flow in steady state. In particular, the models for the rise of the jet and the expansion must be slightly modified between the two cases. PIV techniques have been used to measure accurately the flow field of the jets and to allow accurate comparison with the theoretical models. Finally, the results of this investigation on jets and plumes serve as a basis for more complex experiments involving particle-laden jets. A better understanding of liquid jets with varying buoyancy proves to be useful to the study of this two-phase flow.

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