Abstract Submitted
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Experimental simulation of the fragmentation/breakup of a positively buoyant subaqueous volcanic eruption[1] ARNAB GANGULY, PETER FRIEDMAN, University of Massachusetts Dartmouth — The breakup of a positively buoyant subaqueous volcanic eruption was experimentally investigated using Particle Image Velocimetry. The surrogate for the volcanic discharge was silicone oil and the surrogate for the surrounding seawater was a mixture of glycerin and water, mixed in proportion to match the refractive index of the silicone oil and dyed with Rhodamine. The fragmentation/breakup of the jet/plume was only weakly affected by the discharge Richardson number and Reynolds number. To simulate the effect of volcanic volatiles, small amounts of the seawater surrogate were injected into the volcanic surrogate prior to discharge. The effect of the volatiles, even in very small concentrations, was to enhance fragmentation of the discharged fluid.

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