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Multi-dimensional evolution of explosive product gas cloud Part II: Three-dimensional gram-scale charges[1] CHRISTIAN PETERSON, VERONICA ESPINOZA, KYLE WINTER, MICHAEL HARGATHER, New Mexico Tech — The evolution of an explosively-driven gas cloud was studied using gram-scale explosive charges. Spherical explosive charges were suspended in free-air above a solid surface and detonated, producing a shock wave and expanding gas cloud. The explosions were imaged with shadowgraphy and background oriented schlieren from multiple views. The individual views are used to track the evolution of the gas cloud surface in two dimensions. The views are combined to produce a three-dimensional reconstruction of the gas cloud. The fractal dimension of the gas cloud surface is measured from the digital images as a measure of the complexity of the surface. The time-evolution of the turbulence and surface details are measured. Results are compared to smaller-scale open air tests.

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