Supplementary Material

The relative effectiveness of empirical and physical models for simulating pyroclastic density currents under different emplacement conditions

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Supplementary Table 1: DEM specifications.

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| **DEM** | **Base DEM** | **Grid****spacing** | **Vertical resolution** | **Source** | **Notes** | **Reference** | **Additions** |
| 1995 970 m | Pre-eruption DEM | 10 m | 10 m per 25 m² | 1: 25,000 topo map | Digitized from map | Wadge & Isaacs, 1988 | 970 m dome created from maximum height measurements, photographs, and sparse theodolite measurements |
| 1995 1010 m  | Pre-eruption DEM | 10 m | 10 m per 25 m² | 1: 25,000 topo map | Digitized from map | Wadge & Isaacs, 1988 | 1010 m dome created from maximum height measurements, photographs, and sparse theodolite measurements |
| 2007 | Pre-eruption DEM  | 10 m | 7 m per 10 m² | Terrestrial LiDAR, GPS | Pre-eruption DEM amended with surveys of dome and valleys | Cole et al., 2010; Darnell, 2010; R. Herd, unpub.; Ogburn, 2008; SAC, 2011; G. Wadge, unpub. | 1050 m dome updated from Ogburn (2008) using theodolite measurements, limited LiDAR surveys, and photographs |
| 2010 | n/a | 1 m | 15 cm per 1 m² | Airborne LiDAR | New survey of southern Montserrat, excluding dome | Cole et al., 2010; SAC, 2011 | 1130 m dome created manually by contour shaping using photographs |

LiDAR = Light Detection And Ranging