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'Understanding volcanoes and society: the key for risk mitigation'



Damage from lava flows: insights from the 2014-2015 eruption of Fogo, Cape Verde

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Fast-moving lava flows during the 2014-2015 eruption of Fogo volcano in Cape Verde engulfed more than 90% of buildings (n=260) within three villages in the Chã das Caldeiras area, as well as large sections of agricultural land and the only road into the area. The eruption was poorly reported in the global media, particularly relative to the Kilauea lava flows that destroyed two buildings in Pahoa, Hawaii in the same month. Nevertheless, the Fogo eruption had a catastrophic impact for the close-knit communities of Chã das Caldeiras, destroying much of their property, land and livelihoods. Volcanic risk assessment typically considers that any object - be it a building, infrastructure or agriculture - in the path of a lava flow will be completely destroyed. A pre-eruption field assessment of the vulnerability of buildings, infrastructure and agriculture on Fogo to the range of volcanic hazards was carried out in 2010. Many of the areas assessed were subsequently impacted by the 2014-2015 eruption. Shortly after the eruption ended, two of the coauthors carried out a post-eruption field assessment of the damage caused by the lava flows. Here, we present our findings from the damage assessment in the context of building and infrastructural vulnerability to lava flows. We found that a binary vulnerability function for lava flow impact was appropriate but that interesting building and infrastructure responses were observed. Such damage assessments for lava flows are rare, but important for understanding future hazard and reconstruction on Fogo and elsewhere.