

The benefit of unmanned aerial vehicles for volcano monitoring and emergency management - a case study for the 2019 paroxysms at Stromboli volcano, Italy

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In recent years, unmanned aerial vehicles (UAVs) have developed into powerful tools for volcano monitoring. Particularly valuable during an eruptive crisis, they facilitate observations without the need for scientists to enter hazardous areas. Here, we present the utilisation of vertical take-off and landing (VTOL) drones for emergency management at Stromboli volcano, Italy, that experienced two paroxysms in summer 2019. UAVs provide a low-cost method to safely and quickly obtain updated topographic and thermal maps of the volcano, which can be used to assess the situation and determine morphological changes due to the eruptions. The obtained georeferenced digital elevation models (DEMs) have resolutions up to 0.2 m and serve to obtain eruption volumes by comparison to pre-paroxysms DEMs.

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