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## Ground deformation associated with the August 2019 eruption of Piton de la Fournaise (La Réunion Island) inferred from DInSAR measurements

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Piton de la Fournaise volcano forms the southeastern part of La Réunion, an oceanic basaltic island in the southernmost part of Mascarene Basin (Indian Ocean). Five eruptions occurred at Piton in 2019, accompanied by seismic activity, lava flow, and lava fountaining. Here below, we focus on the fourth eruption occurred between August 11 and 15 on the southern-southeastern flank of the volcano, inside the Enclos Fouqué caldera. This eruption was characterized by the opening of two eruptive fissures. We retrieve the surface deformations induced by the eruptive activity through space-borne Differential Synthetic Aperture Radar Interferometry (DInSAR) measurements. First, we generated the coseismic deformation maps by applying the DInSAR technique to SAR data collected along ascending and descending orbits by the Sentinel-1 constellation of the European Copernicus Programme. The DInSAR technique allows us to analyze the deformation patterns caused by the 11 August 2019 eruption. We also retrieved the pre-eruptive deformation patterns through the Small BAseline Subset (SBAS) DInSAR approach. Then, we modelled the DInSAR displacements to constrain the geometry and characteristics of the eruptive source. The modelling results suggest that the observed deformation can be attributed to the interaction between a shallow magma reservoir located at ~1.5-2 km depth below the summit, and the intrusion of a dike feeding the eruptive fissure inside the Enclos Fouqué caldera.

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