



The 2018 eruption at the volcanic island Kadovar, Papua New Guinea, analysed using multi-sensor satellite imagery

Simon Plank, Michael Nolde, Stefan Schlaffer, and Sandro Martinis

German Aerospace Center (DLR), German Remote Sensing Data Center, Wessling, Germany (simon.plank@dlr.de)

The 1.5 km wide circle-shaped Kadovar Island belongs to the Schouten Islands, a group of six volcanic islands which form the western end of the Bismarck Volcanic Arc, located north of Papua New Guinea. Kadovar Island is the emergent summit of a stratovolcano. The last historic activity of Kadovar Volcano may have been in 1700. In the early 1900s and in 1976 fumarolic activity was reported. The first confirmed historical eruption at Kadovar began around mid-day local time on 05 January 2018. We studied the eruption over a period of ten months by analysing a time series of multi-sensor satellite imagery. The dataset consists of weather independent synthetic aperture radar (SAR) data acquired by ALOS-2, Sentinel-1, KOMPSAT-5 and TerraSAR-X, thermal VIIRS and MODIS imagery and multispectral data acquired by Landsat-8 and Sentinel-2. Volcanic activity was observed at three vents in the central crater and at two vents at the eastern coast, where a new peninsula was created by lava flows. Until 07 February 2018, the area of the peninsula strongly increased with an average growth rate of ~ 4490 m²/day to a maximum size of over 71800 m². Two days later the coastal lava flow collapsed. This was followed by a re-growth of the peninsula at a rate of ~ 560 m²/day to the final area of ~ 40000 m² in May 2018. The satellite-based observations showed again thermal activity at the central crater in the beginning of August 2018 towards the end of the observation period in November 2018.