



DInSAR/PSInSAR Observations of Kirishima, Shinmoe-dake Volcano, Japan

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Shinmoe-dake in the Kirishima volcano group is located in southwestern part of Japan. In January 2011, eruptive activities started from the Shinmoe-dake crater and resulted in sub-Plinian and Vulcanian eruptions and a rapid accumulation of lava within the crater. GPS and DInSAR data acquired before and after the eruption revealed pre-eruptive inflation, co-eruptive deflation, and post-eruptive inflation centered on 5km west of the crater. The eruption phase ceased by the beginning of September, and the post-eruptive inflation also ceased by November 2011. After the 2011 eruption, monitoring by TerraSAR-X have continued. Surface change and surface deformation on the lava within the crater were detected by high-resolution amplitude images and DInSAR data. Especially, the surface deformation after September 2011 revealed a continual shortening of satellite-ground distance even after the end of the main activity. This LOS shortening means uplifts of the lava surface. We estimated the volume increase of the lava after November 2011, using DInSAR processing of TerraSAR-X data, and concluded that the volume increase still continued in December 2012. The volume change rate has decreased with a small fluctuation as an overall trend. PSInSAR and long-term DInSAR results helped us to know deformation around the crater. They show LOS elongation including a subsidence in the northeast flank of the crater. It is interpreted that the subsidence is caused by a deflation of shallow deformation source located just beneath the crater.