A localized shallow magma source of Shinmoe-dake, Kirishima revealed by L-band multi-temporal InSAR

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Ryukyu volcanic arc is Japan's triple junction formed by the subduction of the Philippine Sea Plate beneath the Eurasian Plate. Lying on the north of this arc, Kyushu Island volcanoes could severely disrupt over 110 million people's everyday life with potential catastrophic caldera-forming eruption. 2011 Shinmoe-dake eruption is the latest magmatic eruption on Kyushu Island. GPS based modeling has been conducted, but no InSAR yet.

We processed three tracks of ALOS L-band SAR data covering Shinmoe-dake crater using time series InSAR technique. All show deflation on and around the crater. A shallow magma chamber of about 2.7 km under the summit is estimated using half-space Mogi model. This confirms that shallow magma source is preferential on strike-slip tectonic settings.

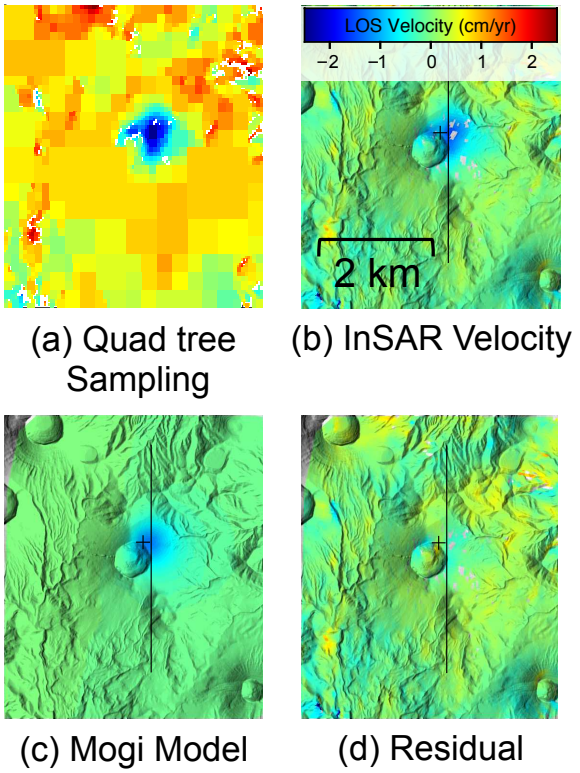

Fig. Depth of magma storage of Shinmoe-dake, Kirishima from Feb 2007 to Aug 2010