

## Monitoring of Sakurajima Volcano using X-band and L-band SAR

MIYAGI, Yosuke<sup>1\*</sup> ; OZAWA, Taku<sup>1</sup> ; SHIMADA, Masanobu<sup>2</sup>

<sup>1</sup>National Research Institute for Earth Science and Disaster Prevention, <sup>2</sup>Japan Aerospace Exploration Agency

Sakurajima volcano is located in southwestern part of Japan, and currently one of the most active volcanoes in Japan. Eruptive activities from a Showa-crater have activated since 2009, and many explosive eruptions have occurred and lava dome growth was found in January 2015. In previous studies, regional and local deformation were detected by GPS, tiltmeter, and leveling [Iguchi et al., 2013; Yamamoto et al., 2013]. To understand current condition and future unrest of Sakurajima, periodic monitoring is required. Although it is generally difficult to make a field observation in dangerous active volcanoes, a satellite remote sensing can make observations of even ongoing volcanoes periodically. Especially, Synthetic Aperture Radar (SAR) sensor is well-suited for monitoring active volcanoes because it can penetrate ash clouds and can observe targets like an active vent. Moreover, SAR data are applicable to use a Differential Interferometric SAR (DInSAR) technique to detect crustal movement associated with the magmatic activities. In this study, we used COSMO-SkyMed (CSK) data through JAXA-ASI co-operative research and ALOS-2/PALSAR-2 data. And we tried DInSAR/PSInSAR processing.

We have been monitoring on Sakurajima volcano using CSK data acquired between 2010 and 2014 from both ascending and descending orbits. From amplitude images, we detected apparent changes of backscattering intensity probably due to an enlargement of the Showa-crater. Because enough coherence could be given by only short-term pairs and the crustal movement on Sakurajima is small, it was hard to detect signals from the DInSAR processing. Then we tried PSInSAR processing using StaMPS software [Hooper et al., 2007]. The results show 1cm/year uplift in north part of Sakurajima volcano between 2012 and 2014, and it corresponds to results from leveling survey. ALOS-2/PALSAR-2 launched in May 2014, and the data have been acquired from both ascending and descending orbits since September 2014. We will introduce the latest result using ALOS-2/PALSAR-2 data.

Keywords: Synthetic Aperture Radar, Sakurajima, Monitoring, InSAR, PSInSAR, Deformation