



## **Deformation on Aso Caldera (SW Japan) detected through DInSAR**

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Aso caldera, located on Kyushu island (SW Japan), was formed during four major explosive eruptions, from ~300 to ~90 ka. The caldera is approximately 20 km wide and in the central part are located 17 main volcanic vents, among which Naka-Dake, one of Japan's most active volcanoes. During the last 20 years the Naka-Dake erupted 6 times, the last eruption occurring in February 2008. Its activity is characterized by Strombolian-type and phreatic eruptions with VEI 1 or 2.

Despite the continuous activity, the associated surface deformation history of Aso is poorly constrained.

In this study, we used DInSAR in order to analyze the ground deformation at Aso caldera for the period from 1993 to 2010. We processed 71 SAR images in descending orbit acquired by different sensors (ERS 1-2, ENVISAT and ALOS) using ROI\_PAC software (JPL release). For C-band sensors (ERS-ENVISAT) we selected SAR images pairs with spatial baseline below 400m and temporal baseline less than three years. The coherence is generally low, with signal restricted to patches located on inhabited areas because the caldera surroundings are mountainous and vegetated. On the contrary, for ALOS data (L-band SAR sensor) we used less restrictive parameters since we obtain in general larger coherence values. However, due to the longer wavelength of ALOS compared with C-band sensors (23.5 cm vs. 5.6 cm) the detection of small displacements might be more difficult.

We stacked the interferograms in order to increase the signal-to-noise ratio and detect any deformation in the caldera field. Preliminary results show moderate deformation, in order of 1cm/yr, localized in the central part of the caldera. Our preliminary results provide an interesting DInSAR study of surface deformation caused by small eruptions occurring cyclically, such as those observed at Aso caldera.