

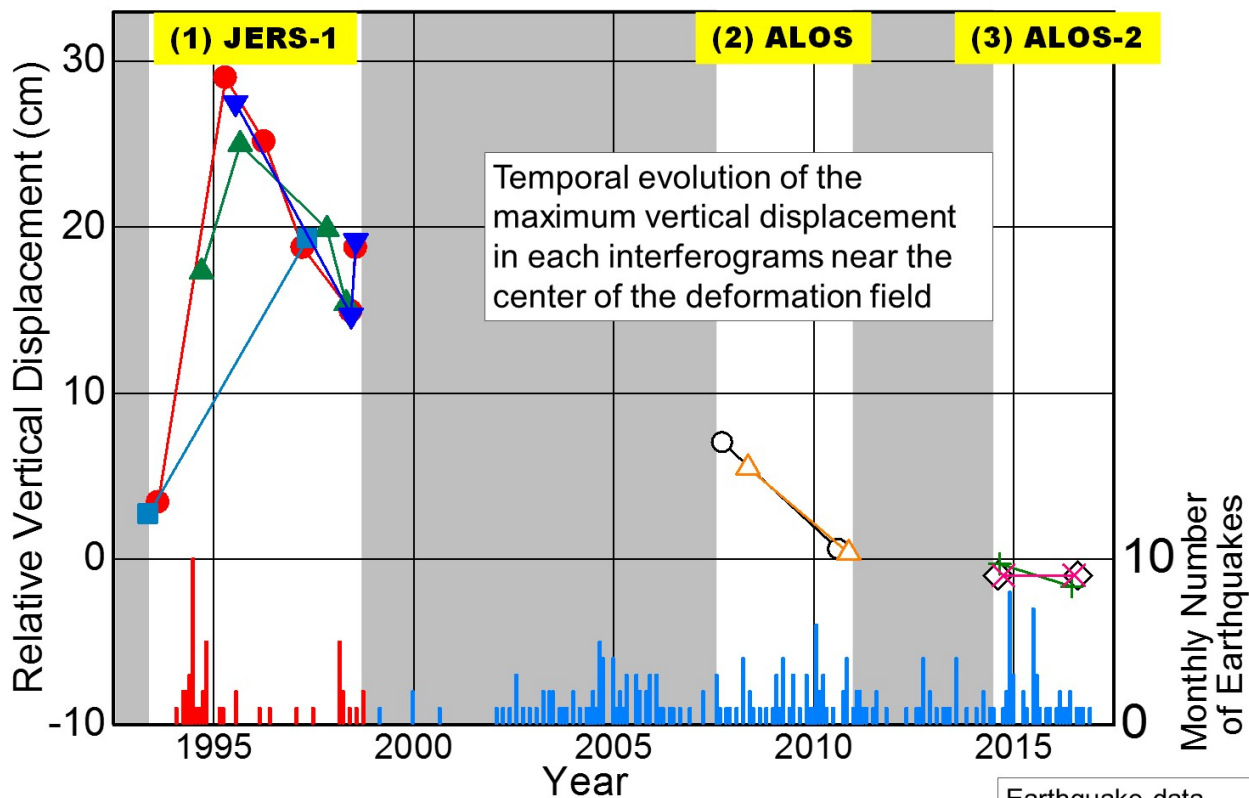
## Volcanic deformation of Atosanupuri volcanic complex in the Kussharo caldera, Japan, from 1993 to 2016 revealed by JERS-1, ALOS and ALOS-2 radar interferometry

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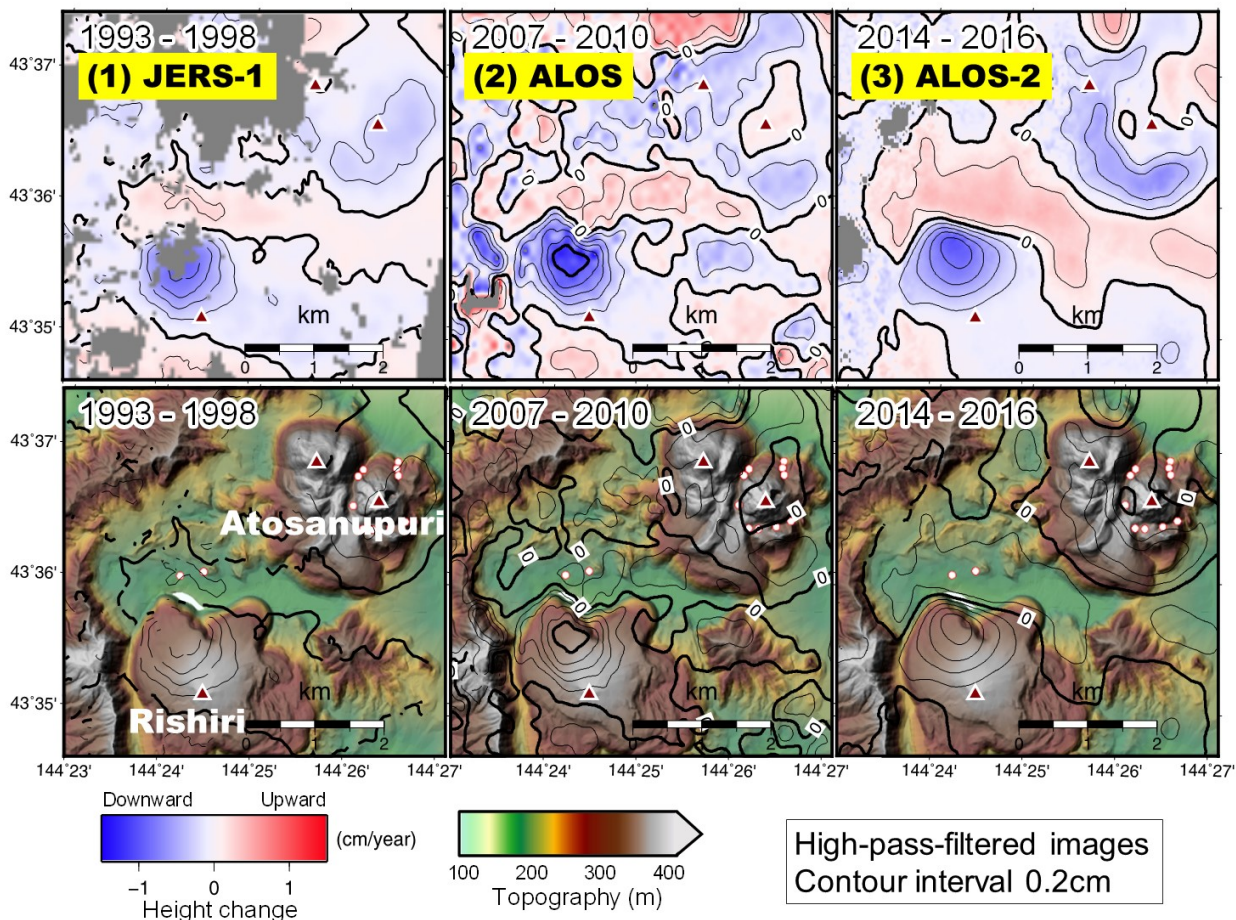
A series of inflations and deflations of a volcanic complex in the Kussharo caldera, eastern Hokkaido, Japan, was revealed by interferometric analysis using archived satellite synthetic aperture radar data. A time series of interferograms from 1993 to 1998 showed the evolution of a ground deformation process. The horizontal dimension of the deformation field is about 10 km in diameter, and the largest amplitude of the deformation is approximately 20 cm. The inflation occurred in 1994 and a simultaneous earthquake swarm activity was observed just around the inflation area, however, there was no other observation related to the deformation. The inflation was then followed by a deflation and the deflation is a mirror image of the inflation. Model simulations suggest that the deformation was caused by a source at a depth of about 6 km and the position of the source did not change throughout the episode. In addition to the main sequence of the inflation-deflation, there is a smaller scale deformation structure at the center of the deforming area. The small scale and constant rate deformation on lava domes was still observed 20 years later by a new satellite.

Keywords: Kussharo caldera, Atosanupuri volcanic complex, Volcanic deformation, InSAR, JERS-1, ALOS, ALOS-2



**Fig. 1 Series of inflation and deflation**

Earthquake data  
 - 1998 : after ERI  
 1999 - : after JMA



**Fig. 2 Average images of small scale deformation**

