

Towards Detecting Earthquake Deformations by Microwave Radiometer

Takashi Maeda[1]; Tadashi Takano[2]

[1] EORC, JAXA; [2] NU

Interferograms formed by the data of a satellite-borne synthetic aperture radar enables us to detect faint land-surface deformations in connection with volcanic eruptions or earthquakes. However, since the time lag between two scenes of a synthetic aperture radar used to form interferograms becomes longer than the recurrent period of a satellite aboard it, it is not clear enough when land-surface deformations occur in volcanic eruptions or earthquakes.

It was recently confirmed that microwave energy is emitted when rocks are fractured in laboratory experiments. Land-surface deformations are likely to be accompanied by rock failures. Therefore, if rocks are crushed by land-surface deformations, microwave energy generated by rock failures is likely to be detected by a satellite-borne microwave radiometer. Based on this concept, we developed an algorithm to evaluate microwave energy generated by rock failures on the land surface. In this paper, the development process and the verification result of the algorithm is presented.