

## Detection of landslide surface deformation in Kathmandu triggered by the 2015 Gorkha, Nepal earthquake using InSAR image

\*Hiroshi, P. Sato<sup>1</sup>, Hiroshi Une<sup>2</sup>

1.College of Humanities and Sciences, Nihon University, 2.GSI of Japan

A previous study has reported that the 2015 Gorkha earthquake (Mw7.8), which occurred in Nepal, triggered more than 4000 landslides in mountain areas. In Kathmandu, another previous study also identified earthquake-induced land subsidence by interpreting local phase changes in interferograms that were produced from Advanced Land Observing Satellite-2 (ALOS-2)/Phased Array type L-band Synthetic Aperture Radar-2 (PALSAR-2) data. However, ground deformation was not discussed in detail. We studied line-of-sight changes from InSAR images using RINC 0.41 software (Ozawa 2014) and performed 2.5D analysis (Fujiwara et al. 2000) using these images, and we were able to obtain detailed local surface deformation data. Judging from the deformation data and field survey, we concluded that the surface deformation was not caused by land subsidence but by a landslide, specifically, a lateral spread. PALSAR-2 data used in this study were provided by JAXA in the framework of special collaborative research (B) "Surface deformation study using a new generation SAR" by Earthquake Research Institute, the University of Tokyo. This study was also supported by "the Nepal Earthquake and Hazard Mapping of Future Landslides for Making the Plan of Better Reconstruction" (Principal investigator, Prof. Chigira) related to the April 2015 Nepal earthquake in the J-RAPID Program by Japan Science and Technology Agency (JST).

### \* References

Fujiwara S, Nishimura T, Murakami M, Nakagawa H, M. Tobita M, Rosen PA (2000) 2.5-D surface deformation of M6.1 earthquake near Mt Iwate detected by SAR interferometry. Geophysical Research Letters 27: 2049-2052.

Ozawa T (2014) Development of InSAR processing tools in NIED -Part 3-. Proceedings of Japan Geoscience Union Meeting 2014 STT59-P12. <http://www2.jpgu.org/meeting/2014/session/S-TT59.html>

Keywords: SAR, Landslide, Gorkha, Nepal, Earthquake