

# SCANSAR INTERFEROMETRIC ANALYSIS USING EDUCATIONAL SAR AND DORIS INSAR PROCESSORS

Yosuke Ito<sup>\*1</sup>, Hiroshi Nii<sup>2</sup> and Kenshiro Yano<sup>3</sup>

*\*Presenter,*

*<sup>1</sup> Professor, Naruto University of Education,*

*748 Takashima, Naruto-city, Tokushima Pref. 772-8502, Japan;*

*Tel: +81-88-687-6553; Fax: +81-88-687-6022*

*Email: ito@naruto-u.ac.jp*

*<sup>2</sup> Teacher, Naruto City Ooasa Junior High School,*

*105 Ikenotani, Ooasa, Naruto-city, Tokushima Pref. 779-0303, Japan*

*<sup>3</sup> Postgraduate student, Naruto University of Education,*

*748 Takashima, Naruto-city, Tokushima Pref. 772-8502, Japan*

## **ABSTRACT:**

ScanSAR allows expansion of range swath dimension and its data are useful for mapping ground condition in extra wide area. Differential interferometric synthetic aperture radar technology can accurately measure ground deformation. The ScanSAR data can be also applied to interferometric processing. This research proposes to introduce ScanSAR interferometric analysis as a subject for science and technology education. This paper describes an implementation method for the ScanSAR interferometric processing in the educational field. In general, since commercial software requires high initial and maintenance costs to use them continuously, free educational interferometric processing software is desirable. The Educational SAR processor (EduSAR) and the Delft object-oriented radar interferometric software package (Doris) are chosen to include the ScanSAR interferometric processing as the learning contents. EduSAR has been developed as an educational SAR processor by Naruto University of Education, Japan, since 2006. Doris is open source and free interferometric processing software that is provided by Delft University of Technology, Netherlands. EduSAR focuses raw ScanSAR data using the full-aperture algorithm and produces single look complex (SLC) data which have uniform pulse repetition frequency and range sampling rate. Doris was improved for processing large size SLC data file with high reliability. Additional software for map-projection was also developed by using the Generic Mapping Tools (GMT) and the Ruby programming language. Deformation maps in the radar line-of-sight direction can be generated with the standard color scale. As processing examples, large scale ground deformations caused by 2008 Sichuan, 2010 Haiti, and 2010 Chili earthquakes are indicated in the ScanSAR interferograms using ALOS PALSAR data in the scan mode. Since the trends of pattern in the produced deformation maps are similar with the results analyzed by other organizations, the capability of the educational ScanSAR interferometric processors was verified.

**Keywords:** ScanSAR, Interferogram, Deformation, Technology, Education

**Remarks:** We would like to request “**Poster presentation**” to explain our study effectively.