

PSInSAR FOR LAND DEFORMATION MONITORING IN TOKYO, JAPAN BY USING TERRASAR-X DATA

Luhur Bayuaji¹, Bambang Setiadi² and Josaphat Tetuko Sri Sumantyo³

¹Faculty of Computer Science and Software Engineering, Universiti Malaysia Pahang
Lebuhraya Tun Razak, Gambang, Kuantan, Pahang, Malaysia, Luhurbayuaji@ump.edu.my

²Graduate School of Advanced Integrated Science, Chiba University
1-33 Yayoi-cho, Inage-ku, Chiba-shi, Chiba-ken, Japan, Bambang@chiba-u.jp

³Center for Environmental Remote Sensing (CEReS), Chiba University
1-33 Yayoi-cho, Inage-ku, Chiba-shi, Chiba-ken, Japan, Jtetukoss@faculty.chiba-u.jp

Abstract: The radar satellite TerraSAR-X provides high-resolution SAR images in X-band and the wavelength about 3.1 cm. The short wavelength of TerraSAR-X is more vulnerable to atmospheric disturbance compared to C and L-band data. Many studies have confirmed that atmospheric disturbance gave negative effect to the accuracy of Interferometry Synthetic Aperture Radar (InSAR) or Differential InSAR (DInSAR) result for land deformation monitoring. In this study, we perform the Persistent Scatterer InSAR (PSInSAR) technique into TerraSAR-X data in order to reduce the atmospheric disturbance effect for land deformation monitoring application. Twenty two TerraSAR-X data between 2008 and 2011 processed with the study area was around Yokohama Bay, Tokyo, Japan. The result shows PSInSAR technique is able reduce the atmospheric disturbance effect that appear on the InSAR or DInSAR result. Land deformation also clearly monitored in the study area.

Keyword : PSInSAR, land subsidence, SAR, InSAR, TerraSAR-X