DEVELOPMENT OF EARTHQUAKE-INDUCED BUILDING DAMAGE ESTIMATION MODEL BASED ON SATELLITE L-BAND SAR AND ITS APPLICATION TO ALOS/PALSAR

Masashi MATSUOKA[1] and Nobuoto NOJIMA[2]

[1] Member of JAEE, Senior Research Scientist, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan, m.matsuoka@aist.go.jp
[2] Member of JAEE, Professor, Dept. of Civil Engineering, Gifu University, Gifu, Japan, nojima@gifu-u.ac.jp

ABSTRACT: In order to expand the existing C-band SAR based damage estimation model into L-band SAR, this paper rebuilds a likelihood function for severe damage ratio on the basis of dataset from JERS-1/SAR (L-band SAR) images observed the 1995 Kobe earthquake and its detailed ground truth data. The model which integrates the fragility functions of building damage in terms of seismic intensity and proposed likelihood function is then applied to PALSAR (L-band SAR) images taken over the areas affected by the 2007 Pisco, Peru, and the 2008 Sichuan, China, earthquakes.

Key Words: L-band Synthetic Aperture Radar, Building Damage, Seismic Intensity, Data Integration, JERS-1/SAR, ALOS/PALSAR