FLOODED AREAS EXTRACTION DUE TO THE 2011 THAILAND FLOOD USING RADARSAT-2 AND THAICHOTE IMAGERY DATA

Pisut NAKMUENWAI [1] and Fumio YAMAZAKI [2]

[1] Graduate Student, Graduate School of Engineering, Chiba University, Japan.

[2] Professor, Graduate School of Engineering, Chiba University, Japan.

ABSTRACT:

This paper examines an extraction method of widespread flooded areas occurred in Chao Phraya River basin, central Thailand, in the autumn of 2011. RADARSAT-2 imagery data have been mainly used to extract affected areas, while THAICHOTE imagery data have been used as optical supporting data for the Thai government. In this study, the same data were used in a somewhat different method with more deeply in detail. The ScanSAR Narrow-mode with cross-polarization of RADARSAT-2 was introduced to improve the accuracy and get more information on the ground. The SAR intensity images, which can be acquired either in the nighttime or bad weather, were the most effective because smoothness of water surface always shows low backscatter values. In the same way, the NDVI value calculated from THAICHOTE images is also able to recognized flooded areas form open space under a clear sky condition. However, both of these sensors cannot discriminate flooded urban areas easily because of the limitation of their spatial resolutions. Backscatter values still kept high while the buildings were surrounded by water. The extracted results were validated by a high-resolution optical satellite image, digital surface model (DEM) and digital terrain model from LiDAR.