

Object Based Land Cover Classification with Orthophoto Data After Natural Disaster

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SUMMARY

Earthquakes are the most destructive natural hazards, which result in massive loss of life, highly infrastructure damages, extensive destruction of the built environment and great financial losses. More than a million earthquakes occur around the worldwide which is equal to two earthquakes per minute according to the statistics about the earthquakes. Natural disasters have brought more than 780.000 deaths approximately % 60 of all mortality is due to the earthquakes after 2001. After the earthquake, earthquake-induced building damage detection is very significant step. On October 23th, 2011, at 10:41 UTC (13:41 local time), a great earthquake took place at 38.75 N 43.36 E in the eastern part of Turkey in Van Province. 604 people died and about 4000 buildings seriously damaged and collapsed after this earthquake. In recent years, the development of remote sensing technique make it possible to detect and monitor things on the Earth's surface fast, cheap and accurate by using satellite and aerial images. Image classification is one of the most significant analysis in order to create thematic maps with satellite and aerial images.

The motivation of this study is to detect the collapsed residential buildings and debris areas after the earthquake by using orthophotos with the object based image analysis and also see how well remote sensing technology was carried out in determining the collapsed buildings. In this study, conventional pixel-based classification algorithm was not used in classifying orthophotos due to aerial images were ineffective to create land use/land cover map especially in complicated urban areas. Orthophotos are the aerial photograph which is generally applied in geospatial data establishment and update. In this study, two different land surfaces were selected as case study areas. In the first phase, segmentation was applied with optimum scale and then two different classification approaches, namely "supervised" and "unsupervised" approaches were applied and their classification performances were compared. Object-based Image Analysis (OBIA) was performed using e-Cognition software.

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