

Assessment of Landslide Environmental Impact Using Aerial Images

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SUMMARY

Landslide is one of the most costly and damaging natural hazards of the world, and has direct and indirect influence on a number of human activities. The term landslide includes a wide range of mass movement, such as rock falls, deep failure of slopes and shallow debris flows. Aerial imagery is a very powerful tool for landslide monitoring because it offers a synoptic view of landslide that can be repeated at different time intervals. This study focuses on the application of landslide activity maps created by digital photogrammetric techniques for evaluating the mass movement hazard and environmental impact in selected areas of the Northern East Turkey: Rize and surrounding. The availability of multi-year aerial photo coverage helped to assess the morphological changes, which occurred in the last seven years. This information, integrated with historical data on slope instability and field checks, was used to produce landslide activity maps. The morphological changes have been revealed from aerial images that are belonging to 1996 and 2002 years. For the evaluation of the aerial images, stereo photogrammetric software by Z/I Imaging was used. From the images that are belonging to 1996 and 2002 years, digital terrain models and vector map, which are containing the landslides area, were determined by using mentioned software. The landslides have been occurred very wide areas in the study area at 2001 year. As a result of these landslides, most houses were destroyed or being useless. At the same time, the areas utilized the folk such as agricultural areas especially tea gardens, road networks, energy lines have been damaged. In this study, the parameters that landslides occurring have been determined and environmental impacts of the landslides have been fixed. In addition, threatening areas of landslides have been resolved with separately. As result, it is presented to have determined the landslides environmental effects in combination with image data and geomorphological data.

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