



## **Detection of slope failures due to the 2004 Niigata-ken Chuetsu, Japan earthquake using high-resolution satellite images**

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In order for quick emergency response after a large-scale disaster, it is important to rapidly grasp the distribution of the damage. Remote sensing data would be useful to identify the distribution of the damaged areas. The 2004 Niigata-ken Chuetsu, Japan Earthquake (Mw6.6) produced many slope failures and the associated building and road damage. The slope failures are visually observed in high-resolution satellite images since the vegetations are flowed away and the soils are exposed on the surface in most of the slope failure areas. In this paper, a methodology for detecting slope failure areas from the high-resolution satellite images is introduced and the applicability of the method is examined. Difference of Normalized difference vegetation index (NDVI) between the pre- and post-earthquake IKONOS images is used to evaluate the slope failure areas. The areas where NDVI is remarkably decreased are extracted as the slope failure areas. Digital elevation model (DEM) is included in the analysis to overlay the images precisely and to reduce mis-detection on flat areas. The distribution of the detected areas shows good agreement with the slope failure areas manually detected from the aerial photographs.