OBJECT-ORIENTED METHODS FOR LANDSLIDES DETECTION USING HIGH RESOLUTION IMAGERY, MORPHOMETRIC PROPERTIES AND METEOROLOGICAL DATA

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ABSTRACT:

Mapping landslides and building landslides inventory have received a special attention from a wide range of specialist. In building a landslide inventory an important step is the spatial delineation of the landslides body, followed by the landslides classification according with an international used classification system and the identification of other landslides characteristics. The main methods for landslides mapping are based on field observation, image interpretation and stereo-restitution. Our paper discusses a semi-automated process based on objected-oriented analysis for landslides bodies' delineation. Several recent papers Moine et al. 2009, Tapas et al. 2010 had similar approaches for landslides bodies delineation and classification using objected-oriented analysis combined with spectral and morphometric properties of the landslides. Our approach is similar with Tapas et al. 2010, but we take into account, besides the morphometric properties, the meteorological data for the periods when the landslides have occurred. The algorithm is using high resolution aerial images with a spatial resolution 0.5 meters, a DEM with a spatial resolution of 2.5 meters and daily meteorological data for the year 2005. The meteorological data was spatial interpolated and the images were used in the objected oriented analysis and this has led to a significant increase in the number of corrected indentified landslides. The algorithm was tested in the administrative area of Breaza Town from Romanian Curvature Sub-Carpathians, for which a detailed landslides inventory was available

TOPIC: Image processing and pattern recognition
ALTERNATIVE TOPIC: Data fusion and data assimilation