ASSESSMENT SYSTEM OF GIS-OBJECTS USING MULTI-TEMPORAL IMAGERY FOR NEAR-REALTIME DISASTER MANAGEMENT

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ABSTRACT:

In this paper, a damage assessment system of GIS-objects such as roads and buildings after natural disasters is presented. The main contribution is the integration and exploitation of multi-temporal imagery leading to a more robust assessment of infrastructural objects. In addition, the chronological development of the assessed objects is investigated. The multivariate alteration detection method is used to detect changes between different time points in conjunction with the classification of different changes realized via Gaussian mixture models. Further accessorily introduced information are derived from GIS, in particular DEM belief functions. The strategy of the proposed approach is the combination of the computed probabilities using individual appropriate methods. The goal of the system is the assignment of GIS-objects into different damage assessment categories as intact or not intact/destroyed using the fused information from multi-temporal multi-sensorial data. The system is tested at a test scenario assessing roads concerning their trafficability. The results show the improvement of the damage assessment system after the integration of multi-temporal information.

TOPIC: Change detection and process modelling
ALTERNATIVE TOPIC: Change detection and process modelling