



Multi-resolution data and object oriented classification in torrential risk analysis: application to the Guisane Valley (Southern Alps, France)

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Object oriented classification is a recent and emerging tool which is more and more developed in the field of natural and earth sciences. The main outcome of this methodology is the identification of morphological features based on digital image segmentation (i.e. satellite and airborne data). In most cases, very high resolution data from satellite imagery (i.e. Quick-Bird, Ikonos) or airborne imagery (i.e. orthophotography, Lidar) are used in the implementation of very high spatial resolution (i.e. metric to submetric) geodatabases and in land use analysis. However, these applications don't fulfil requirements of hydrological risk management plan at basin scale. Indeed, acquisition conditions (i.e. spatial coverage, lidar data storage, costs ...) and numerical data availability (i.e. lack of historical data) reduce operational possibilities of these methodologies to local approaches.

This communication proposes results of a torrential risk research led in the Guisane valley (Southern Alps, France) based on image segmentation and object oriented classification with multi-source/multi-resolution data and E-Cognition 5 (i.e. Definiens Professional).

A first point focuses on methodological aspects and thematic potentials of the two selected dataset. The first one of with very high spatial resolution (i.e. metric precision) comes from the official French geographical data (i.e. IGN data: GIS, Orthophotography, DEM). The second dataset of high space resolution (i.e. 15m precision) comes from ASTER imagery (i.e. multispectral and DEM).

A second point presents a critical analysis based the results obtained with IGN data

(i.e. very high spatial resolution), ASTER data (i.e. high space resolution and multi-spectral data) and IGN-ASTER dataset (i.e. very high spatial resolution with multi-spectral data). Automatic recognition of torrential morphologies and ground knowledge from field survey will be discussed for the Guisane valley case study.

The third point concludes on the potential issues of this methodology for torrential risk mapping and decision-making in the operational implementation of natural hazard management plan in the Guisane valley.