

GEOMATICS AND NATURAL HAZARDS: FROM SPATIO-TEMPORAL POINT EVENTS TO MAPS

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Context

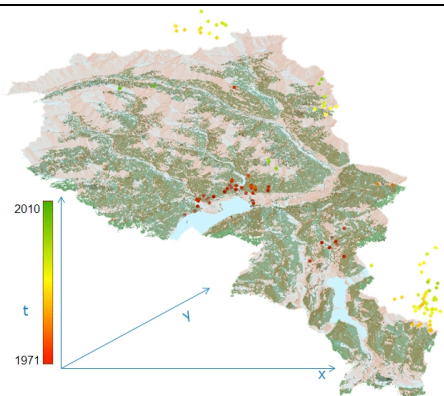
The spatial analysis of natural hazards is largely investigated in literature especially for susceptibility map purpose. Events like landslides, earthquake and wildfires, are normally not randomly distributed, but aggregated forming clusters. The cluster analysis and, more in general, the investigation of the spatio/temporal pattern of hazardous phenomena, is basic to discover predisposing factors and for prevention and forecasting purposes. Results allow in turn detecting more vulnerable area and frame periods where the hazard is more likely to occur. This study is primarily focused on investigating the spatial pattern of environmental data sequences and on mapping their distribution at different periods, including a comprehensive spatio/temporal analysis.

Objectives and Methods

The main goal of this project is to investigate and map the spatio-temporal structure of hazardous phenomena (such as landslides, earthquake and wildfires) in order to detect more vulnerable areas and frame periods. The core of the analyses will be based on geospatial/statistical and clustering methods. The use of GIS software will have great importance mainly for the data preparation and pre-processing and for mapping.

Literature

Tonini M., Pedrazzini A., Penna I., Jaboyedoff M., 07-2014. *Spatial pattern of landslides in Swiss Rhone valley*. Natural Hazards pp. 97-110.
 Vega-Orozco C., Tonini M., Conedera M., Kanevski M., 2012. *Cluster recognition in spatial-temporal sequences: The case of forest fires*. Geoinformatica 16 pp. 653-673.
 Pereira M.G., Caramelo L., Vega-Orozco C., Costa R., Tonini M., 2015. *Space-time clustering analysis performance of an aggregated dataset: The case of wildfires in Portugal*. Environmental Modelling & Software 72(17) pp. 239-249.
 Conedera M., Tonini M., Oleggini L., Vega-Orozco C., Leuenberger M., Pezzatti G.B., 07-2015. *Geospatial approach for defining the Wildland-Urban Interface in the Alpine environment*. Computers, Environment and Urban Systems. 52 pp. 10-20.



WEBSITES

<https://sites.google.com/site/spacetimepatterns/snsfproject>

<http://www.unil.ch/idyst/home/menuinst/research-poles/geoinformatics-and-spatial-m/geomatics-and-geostatistics.html>

