Data-driven landslide modelling: from inventory to predictive mapping routines

Hakan Tanyas, Luigi Lombardo

Credits: 2 CFU
Number of hours: 16

Objectives:
The course is an introductory class to landslide susceptibility modelling. It starts with the concept of susceptibility and landslide prediction in general, and moves onto exploring what a landslide inventory represents. From there crucial notions to assess the quality and completeness of an inventory will be provided as the foundations for the analyses to be run in the following days. As the susceptibility consists of the likelihood estimated for each spatial element partitioning a given landscape, the course will include a demonstration of how to compute slope units. From these, a data matrix will be obtained to be used via the R programming language for subsequent analyses. There, Generalized Linear and Additive Models will be tested by using codes prepared for the class. Every step of the course, aside from the introductory one, will be an hands-on experience for the attendees and will provide a solid foundation for the use of spatial statistics for any natural hazard prediction.

Date	Time	# hours	Topic / Teacher
20 June	09.00 – 13.00	4	Introduction and landslides inventories *Luigi Lombardo and Hakan Tanyas*
21 June	09.00 – 13.00	4	Landslide size statistics and Slope Unit generation with GRASS GIS *Hakan Tanyas*
22 June	10.00 – 12.00	2	Generalized Linear Modelling in R *Luigi Lombardo*
26 June	10.00 – 12.00	2	Generalized Additive Modelling in R *Luigi Lombardo*
27 June	10.00 – 12.00	2	How to interpret the results of a susceptibility model *Luigi Lombardo*
28 June	10.00 – 12.00	2	How to measure the performance of a susceptibility model *Hakan Tanyas and Luigi Lombardo*