

**2015 GSA Annual Meeting in Baltimore, Maryland, USA (1-4 November 2015)**

Paper No. 213-5

Presentation Time: 9:00 AM-6:30 PM

**IMPROVEMENTS IN PAN-EUROPEAN LANDSLIDE SUSCEPTIBILITY ASSESSMENT:  
THE ELSUS VERSION 2 MAP**

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An update of the initial European Landslide Susceptibility Map (ELsus 1000 Version 1) released in 2013 through the EC Joint Research Centre (JRC) European Soil Data Centre (ESDAC) is presented. As in the previous map, the methodology employed for the updated map ELSUS Version 2 comprises the division of the analyzed European area into seven climate-physiographic model zones, the use of a reduced set of spatial susceptibility predictors (slope angle, shallow subsurface lithology, and land cover), and specific heuristic spatial multicriteria evaluations (SMCE) of model zones for susceptibility mapping. However, in the improved new version of ELSUS the original "lithology" data set consisting of soil parent material information derived from the European Soil Database (ESDB) is replaced by new information obtained from the International Hydrogeological Map of Europe at 1:1.5 Million scale (IHME 1500). IHME lithology describes both consolidated and unconsolidated shallow geologic materials over Europe, showing a higher significance for landslide susceptibility assessment than the soil parent material above. Additionally, in version 2 the mapping unit cell size increases from 1 km to 200 m and new areas such as Iceland, Cyprus, the Faroes, and the Shetlands are covered on the map. Moreover, the new ELSUS Version 2 has been calibrated and validated with an updated pan-European landslide inventory now containing more than 155,000 landslides (30% more than used for ELSUS Version 1). A further improvement is the geographic adjustment of the slope angle, lithology and land cover spatial susceptibility criteria to uniform coastline information derived from VMAP 1000 data now allowing for an area-wide susceptibility mapping of European coastal areas.

The expanded and updated landslide inventory and the higher quality of the "lithology" data have enabled us to establish more consistent SMCE schemes for the individual model zones. The enhancements of ELSUS Version 2 result in an overall increase of the predictive power of the map of about 10%, as shown by ROC curve metrics obtained with the updated landslide inventory. It can be assumed that more distributed landslide information in specific model zones will further improve the accuracy of ELSUS in the future.

Session No. 213--Booth# 213

[T56. Landslide Inventories and Time Series: Data Collection, Statistics, Geospatial Analysis, and Relationships to Other Geohazards \(Posters\)](#)

Tuesday, 3 November 2015: 9:00 AM-6:30 PM

Exhibit Hall (Baltimore Convention Center)

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