

EGU21-628

<https://doi.org/10.5194/egusphere-egu21-628>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Impact of spatial data uncertainty in global debris flow susceptibility analysis

Laurie Kurilla and Giandomenico Fubelli

University of Torino, University of Torino, Department of Earth Science, Torino, Italy (laurie.kurilla@edu.unito.it)

There are many types and degrees of uncertainty associated with spatial data and processes.

There are many factors and attributes associated with debris flow analyses which are prone to uncertainty. For simplicity, in this presentation, only two attributes of debris flow events are investigated along with the impact of their uncertainty on the determination of environmental predisposing factors. These two attributes, critical to debris flow susceptibility analyses, are landslide classification and event location. The associated predisposing factors studied herein are lithology, soils, climate, ecophysiological units, topography, hydrology, and tectonics.

In a landslide susceptibility analysis, landslide event location accuracy is paramount yet often inaccurately known. Landslide inventories are often constructed based on mapping from aerial imagery, media reports, and field work by third party sources; and in a data-driven approach to debris flow susceptibility analysis the landslide type is important in modeling the relevant predisposing factors distinctive to each landslide type.

In a study of global debris flow susceptibility an analysis of the impact between known location and a location accuracy offset, and landslide categorization uncertainty demonstrates the impact of uncertainty in defining the appropriate predisposing factors associated with debris flows.

This analysis is part of a larger debris flow global susceptibility determination which trains on known debris flow events and the predisposing factors associated with them to identify potential areas that may be susceptible to debris flows. This study looks at the impact/differences that mis-categorization or location uncertainty have on the determination of predisposing factors, along with methods of conveying uncertainty information.