



Definition of national and local rainfall thresholds for the possible initiation of landslides in Italy

M. T. Brunetti (1), M. Rossi (1), S. Peruccacci (1), F. Guzzetti (1), D. Valigi (2), and S. Luciani (2)

(1) CNR, IRPI, Perugia, Italy (mariateresa.brunetti@irpi.cnr.it), (2) Università degli Studi di Perugia, Perugia, Italy

Landslides in Italy are triggered primarily by intense or prolonged rainfall. A database of 673 rainfall events, that have resulted in landslides in Italy, is available to us and was used to define Intensity-Duration (ID) rainfall thresholds, for the Italian territory and for local regional (administrative) zones. The database contains the cumulative rainfall measurement and the duration of the event before the landslide occurrence. In many cases, the geographical position and the time of the slope failure are available. We have proposed two objective methods to determine rainfall thresholds for landslide occurrence in Italy: one method is based on Bayesian inference, and a second method adopts a “frequentist” approach. Comparison of the equations indicates that the two methods give similar results. To investigate the dependence of rainfall thresholds on the local characteristics of the soil, we calculated rainfall thresholds for the Abruzzo region in Central Italy.