A NOVEL DYNAMICAL-BASED METHOD FOR THE DETERMINATION OF THE RAIN PERTAINING TO A DEBRIS-FLOW EVENT AND ITS USE FOR THE DETERMINATION OF RAINFALL THRESHOLDS

Giorgio Rosatti(1), Daniel Zugliani(2) and Marina Pirulli(3)
(1), (2) Department of Civil, Environmental and Mechanical Engineering - University of Trento, Trento, Italy
(3) Department of Structural, Geotechnical and Building Engineering, Polytechnic University of Turin, Turin, Italy

Conceptual scheme of a debris-flow dynamics

Rainfall threshold determination

Dynamical-based method (BDA)

- Rain pertaining to a debris flow
- Debris flow relevant rain duration
- Average intensity over the duration
- Frequentist method
- $I_D$ threshold

Literature method (CDM)

- Dry period estimation
- Debris flow relevant rain duration
- Average intensity over the duration
- Frequentist method
- $I_D$ threshold

Comparison

1) Shorter duration
2) Higher intensity
3) Limited overlapping between the two methods
4) Relative difference higher than 25%

Essential bibliography

(c) M. T. Brunetti et al. Rainfall thresholds for the possible occurrence of landslides in Italy. Natural Hazards and Earth System Sciences, 10 (3): 447–458, 2010

Acknowledgement

This work has been supported and funded by CARITRO Foundation – Cassa di Risparmio di Trento e Rovereto (Italy)