

## Predictors Table

Predictor	Unit of Measurement	Meaning
DEM_Puglia	Meters (m)	Elevations from Digital Elevation Model (8m) downloaded from SIT Puglia and modified in nan values (filling)
Land_Use_Index	dimensionless	Land cover index with values between 0.05 and 1 (derived from the analysis of land use classes updated to 2011, based on the evaluation of sediment mobility dynamics in relation to land cover)
Rainfall_Index	dimensionless	Rainfall index with values between 0.05 and 1, derived from the classification of mean annual rainfall intervals (mm/y) obtained by interpolation of data acquired from rainfall stations
Ru_Index	dimensionless	Roughness index with values between 0.05 and 1, derived from Terrain Ruggedness Index classes (TRI - calculated from the DEM)
Slope_Index	dimensionless	Slope index with values between 0.05 and 1, derived from slope classes
Soil_Stability_Index	dimensionless	Soil stability index with values between 0.05 and 1, derived from the classification of soil properties in relation to sediment mobility dynamics
Rainfall extremes 95°	(mm/d)	Value corresponding to the 95th percentile of the distribution of annual maxima during the first consecutive day of rainfall *
Rainfall extremes 50°	(mm/d)	Value corresponding to the 50th percentile of the distribution of annual maxima during the first consecutive day of rainfall *
Soil thickness	(cm)	Soil thickness in cm, derived from ACLA data
Soil permeability	Class (1-6)	Soil permeability classes, derived from ACLA data. (1 = very high permeability, 6 = very low permeability)
Land Cover Change	Class (1-28)	Classification of land use changes between 2000 and 2018, based on Copernicus data.

\* Roseto, R., Dellino, P., Schena, P., & Capolongo, D. (2024). Spatial distribution and trend analysis of extreme rainfall time series in Apulia region (Italy). *Phys. Geogr. Quat. Dyn*, 46, 163-177.