Shallow landslide susceptibility model for the Oria river basin, Gipuzkoa province (North of Spain). Application of the logistic regression and comparison with previous studies.

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In the Oria river basin (885 km2) shallow landslides are very frequent and they produce several roadblocks and damage in the infrastructure and properties, causing big economic loss every year. Considering that the zonification of the territory in different landslide susceptibility levels provides a useful tool for the territorial planning and natural risk management, this study has the objective of identifying the most prone landslide places applying an objective and reproducible methodology. To do so, a quantitative multivariate methodology, the logistic regression, has been used. Fieldwork landslide points and randomly selected stable points have been used along with Lithology, Land Use, Distance to the transport infrastructure, Altitude, Senoidal Slope and Normalized Difference Vegetation Index (NDVI) independent variables to carry out a landslide susceptibility map. The model has been validated by the prediction and success rate curves and their corresponding area under the curve (AUC). In addition, the result has been compared to those from two landslide susceptibility models, covering the study area previously applied in different scales, such as ELSUS1000 version 1 (2013) and Landslide Susceptibility Map of Gipuzkoa (2007).

Validation results show an excellent prediction capacity of the proposed model (AUC 0,962), and comparisons highlight big differences with previous studies.