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Landslides induced by earthquakes reflected by electric and electromagnetic data

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The main objective of this paper was to implement electric and electromagnetic (EM) monitoring system on a test area (Provita de Sus landslide), in order to provide the landslide evolution related to the intermediate depth earthquakes (EQ) occurred in the seismic active Vrancea zone (Romania). The main activities that have been accomplished consist of: (i) implementation and continuous improvement of the monitoring system depending on the landslide test sites conditions; (ii) near real-time signals processing for pattern recognition in "pre-disaster" and "co-disaster" circumstances; (iii) DC-electric and EM used as variables, indices and indicators responses in the seismic-induced landslide area; (iv) relative landslide hazard level evaluation. Thus, the specific methodology and software packages have been applied to obtain all the important indicators to point out their anomalous behaviour versus the specific pattern pre-established in non geodynamic conditions. Consequently, by analyzing the data set carried out at Provita de Sus (test site), it was possible to assign the increase of the landslide activity related to the local fault which has been reactivated by the EQ with magnitude higher than 5. Additionally, by combining different data types and analysis techniques, and also by merging electric and electromagnetic variables with corresponding indicators (spatial-temporal distribution), a compelling geodynamic model was carried out. In the end, this paper illustrates the stage of the system implementation and to what extent the results carried out in the Provita de Sus test site may contribute on understanding such kind of phenomenon, in order to provide the information necessary for landslide hazard level evaluation and risk mitigation.