Plinius Conference Abstracts
Vol. 16, Plinius16-86, 2018
16th Plinius Conference on Mediterranean Risks
© Author(s) 2018. CC Attribution 4.0 license.

Application of spatial logistic multiple regression for landslide susceptibility analysis in the Beni-Chougrane Mountains, Western Algeria

Mansour Zaagane, Abderahmane Hamimed, and Soraya Refas

In Algeria, the triggering and acceleration of landslides reveal increasingly worrying and even catastrophic aspects. The mountain areas remaining the most affected by this phenomenon. These mountains undergo an accelerated degradation leading to the reduction of the production capacities and the wear of the living conditions of the residents. Located in the western part of Algeria, the Beni-Chougrane Mountains are a good example for the analysis of the problems of landslide. This region is an area characterized by moderate altitudes that hardly exceed 1000 meters. This region is occupied by soft and friable formations represented by a clay and marly lithology. Indeed, this part of tellian chain which is situated in the southern zone of a large basin geologically named (Bas-Cheliff Basin). During the Cenozoic, this basin was the subject of a clastic sedimentation represented essentially by marls and clays Mio-Pliocene in age. This situation remains worrying, given the livelihoods of the mountain population and increasingly threatened by this type of phenomenon. Many cultivated areas disappear to give way to weathered rock and intensive grazing, which has led to the destruction of infrastructure and the silting of dams (Fergoug dam). The landslides in the Fergoug river sub-watershed result from the conjunction of different factors: land use, precipitation, stiffness of the relief and weak vegetation cover. In added we note other factors as earthquakes and a very dense road network. The factors analyzed using GIS show the sensitivity of the Fergoug river sub-watershed to landslides. This sensitivity is particularly aggravated by runoff from the slopes. In this perspective, the present work integrates into a preventive framework, in fact, the predictive mapping of natural risks aims at delimiting the areas that may be exposed to this type of instability, and then at enacting protective measures vis-a-vis these risks. In fact, rugged reliefs, with slopes formed by soils of a loose lithology to which are added a flow of rainwater favor the appearance of big cracking which evolve in landslides mobilizing a large part of ground. To overcome this problem we have used the multiple regression which is a technique based on the spatial analysis of the factors involved in triggering landslides, such as slope, hydrographic network, exposure, land use, earthquakes, road network etc. Our results seem satisfactory and show a correlation of 94%.