



Spatial prediction of natural hazards using conditional probabilities models. Various approaches of Bayesian model - different results

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Conditional probabilities models have become general tools for spatial prediction of natural hazards and risk prediction. For our study we used Bayesian conditional probability model. The Bayesian probability model has been interpreted as cause-effect. The cause-effect interpretation give the theoretical advantage of that: if you know the cause of an event it is possible to predict the effect, or if you know the effect of an event it is possible to know the cause. This can be interpreted as a circle which goes around each time new and more accurate data is introduced. For this model we have two approaches: one in which the probability of a event to occur is calculated on the base of all the factors involved; the second one is that the probability of an event to occur is calculated separately for each factor using all the factors involved. In order to obtain a spatial prediction of natural hazards and risks for the second approach for the Bayesian model, it is need a summation of the factors involved. This could lead to more errors in the final result due to the necessity of using other methods to combine the images obtained for each factor involved and on the other hand due to the method used the previously process of ranking the factors. The models have been developed and integrated in Idrisi Kilimanjaro, using COM Object technology with Visual basic 6.0. The Bayesian conditional probability model has been tested using real data in the Subcarpathian Valley of Prahova River and also using a scenario. For this scenario we have created random images (the images were associated with imaginary factors) for which we have simulated events with known locations. The scenario is use in order to understand which are the errors induced by the Bayesian probability model