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TEMPORAL AND SPATIAL EVOLUTION OF GEOLOGICAL HAZARDS SUSCEPTIBILITY IN THE EARTHQUAKE AREA BASED ON THE VARIATION TREND VALUE OF EVALUATION FACTORS: A CASE STUDY OF QIPAN GULLY

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Abstract

The four-phase geological hazards from Qipan Gully are the research object. Based on the multi-year variation value of precipitation and vegetation, the ICM, LR, and ANN models were chosen to study the spatial-temporal evolution of geological hazards susceptibility. The evolution trend of various susceptibility types was studied using susceptibility transfer. The research revealed that vegetation tended to increase, with the rate of increase (NDVI>0.6) being 2.44%/a and the covered area proportion of increased vegetation being 94.56%. Geological hazards showed a negative trend, decreasing both quantity and area covered by 71.96% and 66.72%, respectively. The study on the transfer of geological hazards susceptibility types revealed that the ELS and LS increased by 3.49 km^2 and 8.33 km^2, 1.08 km^2 and 10.39 km^2, and 7.28 km^2 and 8.85 km^2, respectively, by the ANN, LR, and ICM models. In addition to offering guidance and study directions for dynamic geological hazards evaluation in high seismic intensity mountainous locations, we expect that the research findings will be able to ensure the safety of residents' lives and property.

Key words: multi-phase geological hazards, Qipan Gully, susceptibility evaluation, susceptibility transfer, temporal-spatial evolution

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