

ASSESSMENT OF SEISMIC ACTIVITY OF ELBASANI-DIBRA REGION

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Abstract

The Elbasani-Dibra region is historically subjected to strong earthquakes ($I_0 > VIII$ EMS-98), as gathered from the intensity data. Currently, the seismicity of Elbasani-Dibra is characterized by moderate-energy earthquakes. The transversal Elbasani-Dibra seismic zone presents a significant seismic hazard to those living in northeastern Albania, western FYROM not only due to the pending earthquake but also due to the hundreds of earthquakes certain to follow the main shock. Assessment of seismic active layers and aftershock occurrence probability as part of seismic hazard evaluation represent large interests for Elbasani-Dibra urban zone. Determination of seismic active layers represents interest for recognition of real depth of seismic energy generation. Shallow earthquake with low energy causes higher damage in buildings than a deep earthquake with higher energy. Based on the depths of earthquakes data is showed that the seismic active layer in Elbasani-Dibra earth crust has the bottom in the depth of about 20 km. Depth of earthquakes generating represent interest for seismic tectonic studies especially in seismic hazard assessment. Shallow earthquake with smaller energy causes greater damage than a deep earthquake with greater energy. An evaluation of the aftershock probability for three earthquakes of Elbasani-Dibra zone with magnitude level M_D between 4.5 and 5.4 is made. Community structures affected by shallow earthquakes and from larger aftershocks may be compromised by the prolonged shaking associated with the main shock. We hypothesize that the main shock rupture directivity and slip distribution influence in aftershock hazard. These results are first steps towards more detailed geodynamic and seismic tectonic and hazard seismic analysis in this area. Aftershock probability is one evaluation method and it must be used as a part of earthquake evaluations. In this study, an example of statistical analyses of applying the aftershock probability evaluation method to recent three Elbasani-Dibra earthquakes is carried out. The number of events forecasted and the probability of aftershock activity is evaluated by combining the Gutenberg-Richter and the modified Omori models. Thus, such kind of evaluations can make a contribution to the success of disaster protection measures in Elbasani-Dibra urban region.

Keywords: *shallow earthquake, seismic active layers, aftershocks, seismic hazard*