



Investigation of fault interaction and growth in Mygdonia basin (Greece) fault system

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Nowadays there is a scientific debate upon the strong correlation that exists between the earthquake clusters and the active seismogenic fault systems since they both constitute populations that participate in processes that include different states of initiation, interaction and coalescence. Since faults grow by the increase in their displacement and their length, the degree of fault interaction between two neighbour segments is expressed by scaling laws describing the fault dimensions, such as the displacement and the length. The distribution of the displacement along the fault trace, follows a bell-shaped pattern according to Dugdale model and is often a key to quantify the degree of interaction between two different fault segments since it gives an insight to the stage of growth and linkage between faults. In our case the fault attributes of Mygdonia basin that is located in the northern part of the Greek mainland are investigated under the prism of the scaling properties of its major active faults. Important seismogenic fault segments such as Lagina – Agios Vasilios, Gerakarou – Stivos and Sohoh fault that define the boundaries of the basin and have generated important earthquakes in the past are investigated. Displacement – length profiles were constrained for the major fault segments, using digital elevation models (DEMs) since intense tectonics is etched upon the topography of the area such as to provide valuable seismotectonic information. In our case scarp heights are used for the approximation of fault displacement. Structural information, concerning displacement measurements on active fault scarps, and slip lineaments onto fault expressions are collected in-situ from field surveys. The information based on the field observations, justify the results coming out from the D.E.M. analysis. The final results are compared to conclusions derived from the investigation of different fault systems and the influence on the hazard assessment is discussed.

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