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Measurement of Intermediate Slip Rate of Sabzpushan Fault Zone in Southwestern Iran, Using Optically Stimulated Luminescence (OSL) Dating

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Abstract : In order to reduce earthquake hazards in urban areas, it is necessary to perform comprehensive studies to understand the dynamics of the active faults and identify potentially high risk areas. The fault slip-rates in Late Quaternary sediment are critical indicators of seismic hazard and also provide valuable data to recognize young crustal deformations. To measure slip-rates accurately, is needed to displacement of geomorphic markers and ages of quaternary sediment samples of alluvial deposit that deformed by movements on fault. In this study we produced information about Intermediate term slip rate of Sabzpushan Fault Zone (SPF) within the central part of the Zagros Mountains of Iran using OSL dating technique to make better analysis of seismic hazard and seismic risk reduction for Shiraz city. For this purpose identifiable geomorphic fluvial surfaces help us to provide a reference frame to determine differential or absolute horizontal and vertical deformation. Optically stimulated luminescence (OSL) is an alternative and independent method of determining the burial age of mineral grains in Quaternary sediments. Field observation and satellite imagery show geomorphic markers that deformed horizontally along the Sabzpoushan Fault. Here, drag folds is forming because of evaporites material of Miocen Formation. We estimate 2.8±0.5 mm/yr (mm/y) horizontal slip rate along the Sabzpushan fault zone, where ongoing deformation is involve with drug folding. The Soltan synclinal structure, close to the Sabzpushan fault, shows slight uplift rate due to active core-extrousion.

Keywords : slip rate, active tectonics, OSL, geomorphic markers, Sabzpushan Fault Zone, Zagros, Iran
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