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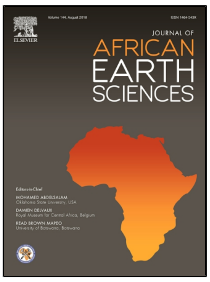

Stress transfer, aftershocks distribution and InSAR analysis of the 2005 Dahuieh earthquake, SE Iran

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Stress transfer, aftershocks distribution and InSAR analysis of the 2005 Dahuieh earthquake, SE Iran

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Abstract

In this paper, the authors studied the 2005 Dahuieh Zarand earthquake in SE Iran by combining Coulomb stress changes, InSAR study, locally recorded aftershocks and their spatial correlations, co-seismic slip distributions, Iso-seismal curves, and strong ground motion data. The event (M_W 6.4) occurred in Kerman province, SE Iran, on February 22, 2005. The locally recorded aftershocks were used to calculate the Coulomb stress changes and the decay time based on Omori's law. The decay time of aftershocks calculated by Omori's law was about 500 days. A great correlation was particularly deduced from the spatial distribution of the aftershocks and areas of increased Coulomb stress for optimal strike slip faults. Moreover, using SAR Interferograms, we determined the postseismic surface deformations. Also, the majority of the coseismic slips occurred in the eastern part, where there was sparsely distributed aftershocks. The deformation maps showed active uplift for at least 300 days after the main shock. We reconciled time decays of the aftershocks with the postseismic uplifts, calculated from InSAR. In our model, which is based on after slip evolution, for one of the postseismic relaxation mechanisms, we found a proper correlation between the aftershock decay time and InSAR