

Seismic Hazard Assessment of Western Saudi Arabia and Red Sea Region

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Abstract

The preliminary seismic hazard assessment of western Saudi Arabia is primarily embodied in two single element maps which are the estimated maximum intensity and expected intensity in 50 years at 10% probability of exceedance. The maps were prepared from results obtained from applications of locally developed empirical relations, methods and equations that are considerably appropriate from physical considerations. The results can be considered relatively reliable estimates as indicated by the general agreement and correlation to locations and orientations of seismic source zones manifested by occurrences of major and strong earthquake events. The two maps are similar in shape, outline, and values at lower intensity level, but differ relatively at higher intensity values. Land and coastal areas that are of seismic concern are those which are covered by iso-curves of intensities from VIII to XII along transform faults with possible extension toward inland on both sides of the Red Sea, dislocation lines, rift systems, volcanic ranges, and possible intersection of these seismic zones.