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Using compiled seismic and GPS data for hazard estimation in some active regions of Egypt

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The recent crustal deformation studies have a great role for evaluating the geodynamics of the seismo-active areas in the country. The crustal deformations must be put in mind where connecting significantly with the human life and its resources. From the historical point of view and recent instrumental records, there are some seismo-active regions in Egypt, where some significant earthquakes had occurred in different places. The special tectonic features in Egypt: Aswan, Greater Cairo, Red Sea and Sinai regions are the territories of a high seismic risk, which have to be monitored by up-to date technologies. The investigations of the seismic events and interpretations led to evaluate the seismic hazard for disaster prevention and for the safety of the dense populated regions and the vital national projects as the High Dam. In addition to the monitoring of the seismic events, the most powerful technique of satellite geodesy GPS are used where geodetic networks are covering such seismo-active regions (Aswan and Greater Cairo geodetic networks are used for these analysis). The active crustal deformation field in active regions in Egypt are examined, as obtained from both seismological and GPS data. The results from data sets are compared and combined in order to determine the main characteristics of deformations and hazard estimation for specified regions (Aswan and Greater Cairo). The final compiled output from the seismological and geodetic analysis threw lights upon the geodynamical regime of these seismo-active regions and put Aswan and Greater Cairo under the lowest class according to horizontal crustal strains classifications.