

Seismicity and GPS Observations for studying crustal deformation and Geodynamics in and around Egypt

Egypt has suffered from a numerous of destructive earthquakes such as Kalabsha earthquake (1981, Mag 5.4) near Aswan city, Cairo earthquake (1992, Mag 5.9) and Aqaba earthquake (1995, Mag 7.2). The Egyptian authorities do a great effort to mitigate the earthquake disasters. The seismicity at the zones of high activity is investigated in details in order to obtain the active source zones. Since the year of 1994 till now, the geodetic observations by means of GPS were applied to cover some other regions of the country. These regions include Sinai, Gulf of Suez, Greater Cairo, Aswan and the Middle part on the River Nile. Data adjustment and analysis of repeated GPS campaigns using Bernese Software prevailed significant movements which may help in understanding the geodynamics of these regions. In the meantime, GPS measurements of crustal motions for 200 sites extending east-west from the Caucasus Mountains to the Adriatic Sea and north-south from the southern edge of the Eurasian plate to the northern edge of the African plate were carried out and estimate of plate motions at stations were determined. From the previous results, we could find there are some correlations between the computed surface deformation and the earthquake occurrences.

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