Geophysical Research Abstracts,
Vol. 11, EGU2009-11463-2, 2009
EGU General Assembly 2009

Geodynamical behavior of some active area in Egypt, as deduced from geodetic and gravity data

E. Issawy (1), J. Mrlina (2), A. Radwan (1), S. Mahmoud (1), and A. Rayan (1)

(1) National Research Institute of Astronomy and Geophysics, Helwan, Egypt, (2) Geophysical Institute, Czech Academy of Science, Prague, Czech Republic

Temporal gravity variation in parallel with the space geodetic technique (GPS) had been started in Egypt for real campaigns in 1997. The geodetic networks around the High Dam, Aswan area was the first net to be measured. More than five measurement epochs were performed. The results had a considerable limit of coincidence between gravity and GPS observations. The trend of gravity changes indicated a positive stress and had the vertical displacement observed for leveling points. The lowest gravity changes along Kalabsha fault reflect extensional and/or strike component of the stress field.
Also, the areas around Cairo (Greater Cairo) and due to the occurrence of an earthquake of 1992, such type of measurements were useful for monitoring the recent activity. The data of the geodetic network around Cairo after 5 campaigns showed that, the estimated horizontal velocities for almost all points are 5.5± mm/year in approximately NW-SE direction. The non-tidal changes can explain the dynamic process within the upper crust related to the development of local stress conditions. The trends of gravity changes are more or less coincident with that deduced from GPS deformation analysis and the occurrence of the main shocks in the area.
In additions, in 2005 the geodetic network around the southern part of Sinai and the Gulf of Suez were established. One campaign of measurements had been performed and the gravity values were obtained.