

## Seismological Studies in Some Areas in Egypt

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**Abstract :** Aswan area is one of the important areas in Egypt and because it encompasses the vital engineering structure of the High dam, so it has been selected for the present study. The study of the crustal deformation and gravity associated with earthquake activity in the High Dam area of great importance for the safety of the High Dam and its economic resources. This paper deals with using micro-gravity, precise leveling and GPS data for geophysical and geodetically studies. For carrying out the detailed gravity survey in the area, were established for studying the subsurface structures. To study the recent vertical movements, a profile of 10 km length joins the High Dam and Aswan old dam were established along the road connecting the two dams. This profile consists of 35 GPS/leveling stations extending along the two sides of the road and on the High Dam body. Precise leveling was carried out with GPS and repeated micro-gravity survey in the same time. GPS network consisting of nine stations was established for studying the recent crustal movements. Many campaigns from December 2001 to December 2014 were performed for collecting the gravity, leveling and GPS data. The main aim of this work is to study the structural features and the behavior of the area, as depicted from repeated micro-gravity, precise leveling and GPS measurements. The present work focuses on the analysis of the gravity, leveling and GPS data. The gravity results of the present study investigate and analyze the subsurface geologic structures and reveal to there be minor structures; features and anomalies are taking W-E and N-S directions. The geodetic results indicated lower rates of the vertical and horizontal displacements and strain values. This may be related to the stability of the area.

**Keywords :** repeated micro-gravity changes, precise leveling, GPS data, Aswan High Dam

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