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Present state of geodynamic properties of Kalabsha area, northwest of Aswan Lake, Egypt

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Abstract

Aswan Lake is the second largest man-made lake in the world. Its filling started 1964 and reached the maximum water level in 1978. An earthquake of magnitude 5.5 took place in 1981 along the most active fault near the lake (Kalabsha fault). This earthquake was followed by a tremendous number of smaller events that continue till now.

Seismicity and the underground water table around the lake are monitored continuously through a radio-telemetered network. A local geodetic network was established around parts of the active faults in the northwestern part of the High Dam Lake, for monitoring vertical and lateral movements. The Kalabsha local geodetic network (the first one) was established around an active part of the Kalabsha fault in 1983. Precise geodetic measurements have been carried out twice a year since 1984.

On the basis of the repeated geodetic measurements, seismicity of the area and

geophysical as well as geological data, the present state of the geodynamical properties of the Kalabsha area is studied.

Remarkable horizontal movements were detected; they are correlated with the seismicity of the area and are attributed to the differential loading by the lake. The Kalabsha fault is a right-lateral strike-slip motion on an E-W plane. The magnitude of the movements detected along the fault is variable for the different epochs of measurements and is correlated with both seismicity and water loading in the lake.



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