World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:10, No:01, 2016

A Study on the Influence of Aswan High Dam Reservoir Loading on Earthquake Activity

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Abstract : Aswan High Dam Reservoir extends for 500 km along the Nile River; it is a vast reservoir in southern Egypt and northern Sudan. It was created as a result of the construction of the Aswan High Dam between 1958 and 1970; about 95% of the main water resources for Egypt are from it. The purpose of this study is to discuss and understand the effect of the fluctuation of the water level in the reservoir on natural and human-induced environmental like earthquakes in the Aswan area, Egypt. In summary, the correlation between the temporal variations of earthquake activity and water level changes in the Aswan reservoir from 1982 to 2014 are investigated and analyzed. This analysis confirms a weak relation between the fluctuation of the water level and earthquake activity in the area around Aswan reservoir. The result suggests that the seismicity in the area becomes active during a period when the water level is decreasing from the maximum to the minimum. Behavior of the water level in this reservoir characterized by a special manner that is the unloading season extends to July or August, and the loading season starts to reach its maximum in October or November every year. Finally, daily rate of change in the water level did not show any direct relation with the size of the earthquakes, hence, it is not possible to be used as a single tool for prediction.

Keywords : Aswan high dam reservoir, earthquake activity, environmental, Egypt
Conference Title : ICEWRE 2016 : International Conference on Environmental and Water Resources Engineering
Conference Location : Jeddah, Saudi Arabia
Conference Dates : January 26-27, 2016