

Recent Lake Level Changes in Ethiopia

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Ethiopia has various natural lakes, most of these lakes are located within the Ethiopian Rift Valley System. Some of the lakes and feeder rivers are utilized for irrigation, soda abstraction, commercial fish farming and recreation. They also support a wide variety of endemic birds and animals. For the last half century, these lakes show highly variable changes in lake level and areal extent. The lake levels of some of the lakes are expanding and some are declining. A large number of lakes show neither rising nor declining trends, except for the usual seasonal and interannual variations governed by climatic factors.

This paper presents the likely reasons of lake level changes by giving scientific evidence using integrated hydrological and hydrogeological studies. A converging evidence approach was applied to reconstruct the temporal and spatial variability of lake levels. The methods include conventional hydrogeological mapping, hydrometeorological data analysis, water balance assessment, hydrological modelling, hydrochemical surveys, satellite and aerial photography interpretations.

Particular reference is given to human influences on three highly affected lakes: Ziway, Abiyata and Beseka. Much of the changes in these lakes are related to anthropogenic factors, mainly excessive extraction of water for irrigation and soda extraction. Furthermore, the paper gives possible reasons for changes in the hydrogeological setting of other lakes within the Rift Valley by correlating lake levels with catchment factors such as rainfall and evaporation.