Falling water-levels in saline lakes of the central Rift Valley of Kenya: The case of Lake Elmenteita

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Abstract

Reasons why Lake Elmenteita and rivers flowing into it decreased in volume during 1958–1987 were investigated. The effects of changing climate, landcover and landuse were considered. The study suggested that falling lake water-levels are not due to climate change alone: landuse changes and river abstraction and damming may also be important. Long-term trends in rainfall and evaporation reveal various patterns: monthly evaporation has slightly decreased recently but with no effect on lake levels; rainfall has remained more or less constant in total amount, but monthly falls show increased variability. Although flows in rivers and streams are primarily determined by rainfall, other factors operate near the lake so discharge into the lake cannot be predicted from rainfall. Increased settlement and farming on former forested areas within the catchment and irrigation along rivers also indirectly affect discharge values. Additionally, accelerated soil erosion from farmed lands has led to a reduced lake volume following soil deposition in the lake. It is noted that landuse changes need to be carefully monitored because of their effect on lake levels.

Key words: water-levels - Rift Valley - Lake Elmenteita - saline lakes