

# Effects of climate change and human activity on lake levels in the Kenyan rift (case study Naivasha)

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## Abstract:

Lake Naivasha, (0. 45°S, 36. 26°E) lies in the Kenyan rift approximately 80km NW of Nairobi. It lies at 1,890m (a.s.l) and an average depth of 6m with the deepest part being the crescent island crater at a maximum depth of 30m. There are two smaller lakes within the vicinity of Lake Naivasha; Oloiden and Sonachi. The lake is a fresh water lake situated within that part of Eastern Africa that is influenced by the monsoonal systems of Asia and Indian Ocean with Rainfall averaging from 450-900mm<sup>-1</sup>. The lake is underlain by flood basalts (Miocene), phonolites (Pleistocene), trachytes (Quaternary), volcaniclastics, Quaternary deposits, and their weathering products (Olago et al., 2009). Lake Naivasha and aquifer surrounding the lake are important water resources in the area and they are used extensively for agriculture mainly in the booming flower industry and domestic water supplies. However in the last 100 years, there have been large variations in the lake level with the past four decades indicating a steady decline of the lake waters. This has been attributed in part to climate variations as well as the vast human activities taking place at the shores of the lake. Studies in the lake of the past millennium (Verschuren et al., 2000; Olago et al., 2009; Olaka et al., 2010) have showed climatic induced fluctuations in the lake level associating the fluctuations with periods of lowstands (Medival Warm Period ~AD 900-1300) and periods highstands (Little Ice Age ~1300-1900). More studies on the anthropogenic impacts in the lake (Odada et al., 2005) have showed a steady decline in the lake waters. Therefore the research reveals that collective impacts of both climate change and human activities have exerted profound effects to the declining waters of Lake Naivasha.