

Abstract

Lake Chala is a transboundary fresh water resource with no surface water inflow or outflow and is located in the southwestern part of Kenya on the Kenya-Tanzania border. The lake catchment area is bound by longitudes 37° 41' E and 37° 43' E and latitudes 3° 18' S and 3° 20' S. The Lake has a surface area of 4.2 km² and lies within a surface catchment area of about 16.23 km², which falls within a semiarid region frequently facing severe water scarcity especially during periods of prolonged drought. The major economic activities in this area are agriculture, horticulture and animal husbandry which account for about 75-80% of household income. Due reliance on rain fed agriculture, water scarcity has often had negative impact on the people and there is need to tap the lake water for irrigation purposes. As such, water samples were collected on the Kenya and Tanzania sides from eleven (11) sites in March 2011 and subjected to analysis for chemical characteristics. Ten of the water samples show that the type of water that predominates in the study area is Ca-Mg-HCO₃ type, while one water sample from a shallow well is a Ca-Mg-chloride type based on hydro-chemical facies. The suitability of water for irrigation has been evaluated based on sodium percent, residual sodium carbonate, sodium adsorption ratio and salinity hazard and is therefore suitable for irrigation purposes.