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ZEF – Ecology and Development Series No 62

Growing lake with growing problems: integrated hydrogeological investigation on Lake Beseka, Ethiopia

Lake Beseka, one of the Ethiopian rift valley lakes, has been expanding since the late 1960s and early 1970s. The expansion of the lake has had severe implications for the surrounding environment. This study explores the lake-groundwater dynamics and analyzes the hydraulic interaction of the lake with the surrounding groundwater system. Integrated approaches of hydrochemistry, isotope hydrology, recharge estimation, and groundwater modeling were combined to qualitatively and quantitatively describe the groundwater flow system in the area. Results indicate that groundwater inflow accounts for half of the total water inflow to Lake Beseka, and it is hypothesized that the expansion of the lake is related to changes in the amount of this inflow.