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Combined hydrological model of adjacent holocene lakes in Central Kenya Rift

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Hydrological models are often used to determine the magnitude of past climate changes. In most cases, lake balance models are applied to single lakes without the consideration of the hydrology of the surrounding areas. Today, the inner graben of the Central Kenya Rift is fragmented into two separate basins, the northern Nakuru-Elmenteita and the southern Naivasha basin, by a topographic barrier near Gilgil. The Nakuru-Elmenteita basin is closed towards the north by the Menengai caldera, which was temporarily filled by a small alkaline lake fed by the waters from the high holocene lake Nakuru-Elmenteita. Lake Naivasha also lost water at least temporarily through the Ol Njorowa gorge towards the south. Our simulation compares the results from various modelling scenarios with surface/subsurface water exchange between the basins and loss towards the adjacent basins in the north and south. This study illustrates the importance of combined hydrological modelling of adjacent rift lakes in East Africa.