

## Mount Kenya revisited: The disappearance of Lewis Glacier based on detailed reconstruction of ice loss between 1934 and 2018

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Drastic glacier retreat in the tropical mountains of Africa has been analyzed in a number of recent studies. This study focuses on the Lewis glacier, the largest glacier of Mount Kenya, which has been studied intensively, starting with the mapping expedition by Troll and Wien in 1934. Based on a first comprehensive repeat photography campaign using original archival material (photographs and maps from various years), multi-temporal and multi-scale remote sensing data and a drone derived orthophoto and high resolution DEM from 2018, we quantified the glacier areas and volume changes between 1934, 1963, 1983, 2004, 2015 and 2018. The glacier area decreased from 0.49 km<sup>2</sup> in 1934 to 0.04 km<sup>2</sup> in 2018. Connectivity of the glacier body is documented until June 2015, whereas the separation of the Lewis glacier in two distinct parts becomes evident in January 2016. The estimated final disappearance of this equatorial glacier is projected for the time between 2027 and 2029, depending on the extrapolation mode.