

## LEWIS GLACIER, MOUNT KENYA, 2010 (1:2,500)

Rainer Prinz

Institute of Meteorology and Geophysics, Centre for Climate and Cryosphere, University of Innsbruck, Austria

The map presents the glacier surface topography, the ice thickness, the glacier areal change since 2004, and the network of ablation stakes including an automatic weather station as the baseline for ongoing glaciological field studies on Lewis Glacier, Mount Kenya. Lewis Glacier (0°9' S, 37°18' E) is amongst the best-documented tropical glaciers and this work serves as a continuation of monitoring one of the few tropical reference glaciers. Surveying was accomplished on 2 and 3 March 2010. The glacier margin and numerous transects of the glacier surface were surveyed using differential global positioning receivers (Trimble Pathfinder ProXH and ProXT rovers and a second ProXH as a local base station with external Zephyr antennas). Glacier surface topography was interpolated to a digital elevation model with 5 m grid point spacing. Ice thickness was measured at the same dates with ground-penetrating radar at a central frequency of 6.4 MHz. Refer to Prinz et al. (2011) for information about the ice thickness measurement, its accuracy and ice volume changes since 1934. Full documentation of the map is contained in Prinz et al. (2012). Surface mass balance measurements for 2010/2011 and 2011/2012 are reported as -1.54 m w.e. and -1.03 m w.e., respectively. These values are as negative as the minima measured between 1978 and 1996, and show a strong dependence on duration and depth of snow cover, which cause an impact on accumulation as mass input and ablation via the surface albedo. From 1934 to 2010, Lewis Glacier lost 90% of its volume and 79% of its area, with the highest rates of ice volume loss occurring around the turn of the century (Prinz et al. 2012).