

Abstract

The aim of this bachelor thesis is to examine if a degree-day model can simulate melt processes on tropical Lewis Glacier on Mount Kenya. If the model can describe the occurring ablation, positive air temperatures would have a close relationship with the ice and snow ablation on Lewis Glacier and could be used to simulate the ablation also under changing climate scenarios.

The methodical approach was to derive a degree-day factor from the meteorological records measured by an automatic weather station on the glacier for three years. Different time intervals, for example dry and wet seasons and single months, were studied. The pattern of the degree-day factors shows no systematic seasonality: months in dry seasons cannot be distinguished from months in wet seasons and a degree-day model is not appropriate to describe melt processes on Lewis Glacier.

Ablation on Lewis Glacier is high at times with high wind speeds, low relative humidity and strong incoming shortwave radiation. The long rains 2010 appeared with steady positive mean air temperatures over two months and a continuing ablation at the same time. In this time interval a relationship between positive air temperatures over longer time intervals and ablation can be assumed, but more data is needed to reinforce this assumption.