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Kaser, G. (2001): Glacier-climate interaction at low latitudes. Journal of Glaciology, 47(157), 195-204.

Abstract

In the low-latitudes there is an absence of major thermal seasonality, yet there are three different climate regimes related to global circulation patterns and their seasonal oscillation: the humid inner tropics, the dry subtropics, and int ermediate between these two, the outer tropics. For the respective glacier regim es the vertical profiles of specific mass balance, VBP, are modeled considering vertical gradients of accumulation, air temperature and albedo, the duration of the ablation period and a factor for the ratio between melting and sublimation. The model is first calibrated with data from Hintereisferner (Alps) and then it is applied to tropical conditions. The simulated VBP matches well the measured p rofiles from the Irian Jaya (New Guinea) and Mount Kenya. Due to lack of field e vidence, the subtropical VBP cannot be verified directly. However, application o f the respective model versions separately to the humid and the dry seasons of t he outer tropical Glaciar Uruashraju (Cordillera Blanca) provides reasonable res ults. Glaciers in the humid inner tropics are considered to be most sensitive to variations in air temperature, while dry subtropical glaciers are most sensitiv e to changes in air humidity. The two seasons of the outer tropics have to be vi ewed from these different perspectives.