

Kaser, G. & Ch. Georges (1999): On the Mass Balance of Low Latitude Glaciers.
Geografiska Annaler 81A(4), 643-652.

Abstract

Glacier mass balance studies in the low latitudes are rare and glaciological methods and terminology are basically adapted from mid- and high latitude conditions. The low latitudes are considered to be the tropics and, to some extent, the adjoining dry subtropics. The outer tropics are proposed as an intermediate zone with tropical character during the humid season and subtropical character during the dry season. Delimitations as well as respective climate and glacier regimes are discussed in order to distinguish them from each other and from the mid-latitudes. Different sensitivities of the glaciers can be expected and promise, in turn, a complex climatological interpretation of glacier fluctuations. For this, detailed mass balance studies on low latitude glaciers are required. The respective discussion is concentrated on the Peruvian Cordillera Blanca whose topographical setting provides both spatial and temporal subdivisions in humid and dry regimes in one region. However, theoretical considerations and field experience show problems for the determination of mass balance variables in the Cordillera Blanca and the low latitudes in general. The absence of annual temperature variations hinders the development of impermeable layers which can be identified as annual reference layers and which prevent meltwater from percolating into the firn body. Thus, a combination of ablation measurements and the application of the flux divergence method for the determination of accumulation is proposed.