

Kaser, G. (1999): A Review of Modern Fluctuations of Tropical Glaciers. *Global and Planetary Change* 22(1-4), 93-104.

Abstract

The tropical climate is characterized by a homogeneous atmosphere without frontal activity, a lack of thermal seasonality, and by one to two differently pronounced precipitation seasons. Consequently, tropical climate has a characteristic impact on tropical glaciers, with glacier-climate interactions different from those of the mid- and high-latitudes. The glaciers of tropical South America, Africa and New Guinea had a general maximum extent during the Little Ice Age. LIA and have receded since the second half of the 19th century. Since then the fluctuations have been differently pronounced in different regions, but their general behaviour has been largely synchronous. The retreat from the LIA extent slowed on many glaciers at the beginning of the 20th century, some of them even readvanced almost to the LIA extent. The 1930s and 1940s brought a marked loss of ice masses and were followed by a moderate retreat. Around 1970 the recession generally slowed. Some glaciers even advanced. The last decade was again characterized by a pronounced glacier recession on all tropical mountains which are under observation. The modern fluctuations of tropical glaciers are also quite synchronous to those of the glaciers in the mid-latitudes. A reduction in air humidity with all the consequent changes in energy and mass balance is suggested to be a major reason for the general recession of tropical glaciers since the end of LIA. The rise in air temperature explains only part of the glacier recession. The accelerated recession since the 1980s is most probably caused by increased air temperature and increased air humidity. Nevertheless, the knowledge of tropical glaciers is still scarce compared to those of the mid and high latitudes. This contribution reviews present knowledge of the fluctuations of tropical glaciers.