

More than 100 years glacier monitoring on Jamtalferner/Silvretta/AT: A review of methods and results.

Andrea Fischer

Austrian Academy of Sciences, Institute for Interdisciplinary Mountain Research, Innsbruck, Austria
(andrea.fischer@oeaw.ac.at)

Jamtalferner in the Austrian part of the Silvretta is an Alpine glacier with more than 100 years of measurement history, starting with length change records in 1892 and maps from 1895 onwards. Today, monitoring is complemented by mass balance (from 1988/89 onwards) and climate. On the occasion of the 30 year anniversary of the mass balance records time series have been analyzed and homogenized, finding that the debris cover significantly changed during the past decades with effects on surface mass balance. For homogenization, original point mass balance data was reanalyzed and evaluated according to consistent glacier shapes derived from airborne orthophotos and LiDAR data. Resulting changes in specific mass balance have been lower than 5%/anno. The direct data agree with geodetic data within expected measurement uncertainties.

Jamtalferner currently is in a stage of retreat with disintegration of the three tributaries, which allows to exemplarily study the effects of such nonlinear processes on mass balance and length change records, as these can be expected to influence retreat patterns in Eastern Alps in near future. The environmental education platform founded in 2014 contributed to the outreach of scientific results. In future, the site will host additional research projects, e.g. on sediment transport or bio/geochronology.