

Geitner, C., Griebner, M., Moran, A., Stötter, J., Walte, E. and Wastl, M. (2003):

Lichenometrische Erhebungen an aufgelassenen Höfen sowie erste Anwendung der Ergebnisse auf gletschergeschichtliche Fragestellungen in Nordisland. *Norden*, 15, 151-162.

Abstract

The comparison of lichenometric studies in Iceland shows that the regional differentiation of lichen growth rates is very important when using this method for dating younger Holocene deposits. In this study such a regional differentiation is attempted for central northern Iceland. The data is based on the survey of lichens at farm ruins on both peninsulas of Tröllaskagi and Flateyarskagi with known dates of abandonment. Of the total of 121 ruins that were searched for, lichens of the genus *Rhizocarpon* could be evaluated for 77 localities. Due to a differentiated rating of the individual inquiries, the data base was reduced to the 35 most reliable locations. The lichen growth rate of 0.47 mm/year, for the entire region acquired from this data base, is higher than the lichen growth rates known so far for central Tröllaskagi (0.39 and 0.44 mm/year). By the separate evaluation of 9 locations near the coast and 7 distanced from the coast, the correlation of the values of each group was raised significantly. Moreover the relatively broad span of growth rates for the whole region could be outlined. It lies between 0.36 and 0.52 mm/year. The values known hitherto for central Tröllaskagi (0.39 and 0.44 mm/year) are inserted well in the newly acquired values and represent a plausible spatial sequence which relates to the precipitation gradient from the coastal regions to the interior.

In a second step the attempt was made to apply the spatial differentiation of growth rates for three glacier forefields. Thereby emphasis was laid upon the comparison of regions near the coast to those distanced from the coast. It could be illustrated that the maximum glacier advances of modern times in unison fall in the mid 19th century. This report is congruent with the results of other investigations of less extreme climatic localities in central Tröllaskagi. However, without the undertaking of the differentiation of growth rates, the maximum advance of glaciers located near the coast would be dated approximately 20 years too early, while the maximum advance of glaciers located at a distance from the coast would be dated around 20 years too late. Therefore both advances would hardly be recognized as a reaction to the same climate change and hence could enable other interpretations.

Although there are still unanswered questions concerning foundations and application of the lichenometric method, and in spite of an often unsatisfactory data basis, especially in the glacier forefields, the following conclusion can be made. Even in comparatively small areas in northern Iceland, the lichen growth rates need to be differentiated regionally in order for past glacial records to be interpreted with a corresponding spatial resolution.