



Post-glacial landforms dating by lichenometry in Iceland – the accuracy of relative results and conversely

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Lichenometry studies are carried out in Iceland since 1970 all over the country, using various techniques to solve a range of geomorphologic issues, from moraine dating and glacial advances, outwash timing, proglacial river incision, soil erosion, rock-glacier development, climate variations, to debris-flow occurrence and extreme snow-avalanche frequency. Most users have sought to date proglacial landforms in two main areas, around the southern ice-caps of Vatnajökull and Myrdalsjökull; and in Tröllaskagi in northern Iceland.

Based on the results of over thirty five published studies, lichenometry is deemed to be successful dating tool in Iceland, and seems to approach an absolute dating technique at least over the last hundred years, under well constrained environmental conditions at local scale. With an increasing awareness of the methodological limitations of the technique, together with more sophisticated data treatments, predicted lichenometric 'ages' are supposedly gaining in robustness and in precision.

However, comparisons between regions, and even between studies in the same area, are hindered by the use of different measurement techniques and data processing. These issues are exacerbated in Iceland by rapid environmental changes across short distances and, more generally, by the common problems surrounding lichen species mis-identification in the field; not mentioning the age discrepancy offered by other dating tools, such as tephrochronology. Some authors claim lichenometry can help to a precise reconstruction of landforms and geomorphic processes in Iceland, proposing yearly dating, others includes margin errors in their reconstructions, while some limit its use to generation identifications, refusing to overpass the nature of the gathered data and further interpretation. Finally, can lichenometry be a relatively accurate dating technique or rather an accurate relative dating tool in Iceland?