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Environmental Properties of Proglacial Meltwater Geomorphic Units in Lithuania's Post-Glacial Landscapes

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Proglacial meltwater systems played a key role in shaping post-glacial landscapes in parts of Lithuania, forming a variety of landforms such as meltwater channels, outwash plains, glaciofluvial valleys, terrace systems and related sedimentary landforms. Although these landforms have been widely described in terms of glacial and proglacial processes, their role in structuring present-day environmental conditions has received comparatively less attention.

In this study, we examine selected proglacial meltwater geomorphic units in Lithuania and explore their environmental properties, with particular emphasis on sedimentological characteristics, soils, vegetation patterns, and land-use structure. Geomorphic units were identified through interpretation of LiDAR-derived digital elevation models supported by geological mapping. These data were combined with spatial information on soils, land cover, and landscape structure to characterise the environmental context of individual units.

The results explore whether and how proglacial meltwater geomorphic units are associated with variations in environmental characteristics within Lithuania's post-glacial landscapes.

The study considers the relevance of proglacial meltwater geomorphic units as a framework for interpreting landscape organisation and environmental properties. This perspective may contribute to improved landscape interpretation, environmental assessment, and spatial planning in formerly glaciated regions.