

Glacial landform evolution in transitional cold – warm bed subglacial conditions in the central part of Scandinavian Ice Sheet, in northern Finland

Pertti Sarala

Geological Survey of Finland, P.O. Box 77, 96101 Rovaniemi, Finland/
Oulu Mining School, University of Oulu, Finland
e-mail pertti.sarala@gtk.fi

On-going glaciomorphological mapping in Finland based on airborne LiDAR (Light Detection And Ranging) interpretation has revealed new data that is useful for the glaciodynamic examination in the glaciated terrain. One of the key study areas in Finland has been the Kuusamo Ice Lobe area close to the Late Weichselian ice-divide zone in Finnish Lapland. The glacial morphology of the ice lobe is composed mainly of moraine morphologies such as the glacial streamlined lineations of the Kuusamo drumlin field in the eastern part and different hummocky and ribbed moraines in the western part, i.e. at the core of the ice lobe. The drumlin field was formed under surging type glacial movement during Younger Dryas while the core part of the glacier remained cold-based. Glaciofluvial deposits (eskers and delta formations) occur in places representing last deglaciation phase. Particularly, ribbed moraines represent the depositional formations formed under subglacial conditions at the transitional zone between the warm and cold based glacier. However, an erosional, subglacial meltwater channel network cutting the ribbed moraine formations before the deposition of glaciofluvial deposits and smoothly lineated surface of morainic terrains by glacier reworking gives new knowledge of the formation phases of subglacial moraine formations in the core part of continental glacier. As the subglacial meltwater activity that formed the erosional channel system and later channel fills such as eskers was worked after ribbed moraine formation, the origin of the ribbed moraines must be earlier process, happened close to cold-based core part.