Map database of superficial deposits and glacial geomorphological landforms in Finland — methodology and classifications

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A Quaternary deposits and glacial geomorphological landforms map database has been defined by the Geological Survey of Finland (GTK). The definition combines various Quaternary geological map databases (1:20/50 000, 1:100 000 and 1:200 000) and other geological data, especially aggregate, engineering geological and aquifer investigation data with topographical map database and orthophoto information, but especially LiDAR based DEM information of the National Land Survey of Finland.

The multi-year project aims to produce 'the best mapping data for each location' with a cost-effective processing approach. The various themes combine both the main geological unit information with the new, landsystems-based glaciodynamical themes. The mapping process emphasizes interpretation of the various data sets to an integrated, holistic thematic combination with minimal fieldwork.

Previously, the Quaternary mapping information to the scale of 200k was the best available for the whole country and only included sediment material (texture) type. New map themes will additionally include the classification of glaciogenic deposit and landform types and will differentiate between glacifluvial deposits and littoral deposits typically forming the same polygon in 200k maps. Various moraine landforms will also be described. The glaciodynamic themes included into the database are: Mega scale glacial lineations (MSGL) (drumlins, megaflutings etc.) and various types of other moraines referred to much slower ice flow velocities or terminus features (ribbed moraines, hummocky moraines, De Geer moraines and end moraines). During the course of the project, new glacial features cf. reflecting variations in ice flow velocities will be mapped using LiDAR-DEM data. The new map database will be a significant contribution for the mineral exploration studies and land use management in Finland.