



Pre-Quaternary landforms in northern Sweden

K. Ebert

Department of Physical Geography and Quaternary Geology, Stockholm University, Sweden
(karin.ebert@natgeo.su.se / Phone: +46-8-164779)

Fluvial erosion and deep weathering were of major importance for landscape development in northern Scandinavia before the Quaternary glaciations. In the Holocene, fluvial erosion was a dominating erosion agent. However, the extensive glaciations gave the northern Swedish landscape a strong glacial imprint. Little focus has hitherto been put on the preglacial landscape development. In this study, the long-term landscape development is investigated by tracing palaeolandforms in the northern Swedish landscape. Some of these landforms have persisted since the Tertiary, or even longer back in time, for example by surviving glaciation through preservation under cold based ice. Palaeosurface remnants and inselbergs are examples for such landforms. Palaeosurfaces are parts of old denudation surfaces that been elevated and, by adapting to the new base level (sea level) partly been down-cut by subsequent erosion. Several land uplift phases will consequently lead to the formation of “stepped surfaces”, so-called palaeosurface generations. A combination of GIS-analyses of DEMs (digital elevation models) and fieldwork was used to identify palaeosurface remnants. Palaeosurface remnants and surface generations were examined in detail in Ätnajåkki valley and Tjeuralako plateau in the mountain zone of the northern Scandes in northern Sweden. The results indicate that mountain tops, plateaus and valley benches with an inclination of less than 11 °, and that have remained largely unaffected by glacial erosion, represent palaeosurface remnants in these areas. Four palaeosurface generations could be identified in the Ätnajåkki area, and five palaeosurface generations in the Tjeuralako area. Another landform type connected to the palaeosurface generations are inselbergs to the east of the northern Scandes. Inselbergs have possibly survived since the Mesozoic and were to different degrees altered by glacial erosion. The top surface of the inselberg Dundret has been suggested to be part of the highest

palaeosurface generation within the northern Scandes. Other inselberg surfaces have been investigated and can possibly be correlated to palaeosurface generations within the northern Scandes. Hence, palaeosurface remnants and inselbergs are large-scale landforms that have not or only slightly been altered by glacial erosion, and have consequently persisted since preglacial time, probably due partly to their size, and partly the cold-based and thereby protective nature of overriding Quaternary ice sheets.