



GIS analysis of elevated erosion surfaces in northern Norway

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Elevated erosion surfaces, particularly the 'palaeic' summit surface, are distinct landscape features locally abundant throughout Norway. Both the age and origin of these palaeosurfaces are still debated. The palaeic summit surface has traditionally been interpreted as an uplifted peneplain of Mesozoic or Cenozoic age. Some authors also recognize several additional palaeosurfaces at intermediate elevations formed at different times and by different processes during the Cenozoic. Recently, it has been questioned if it is possible to preserve ancient peneplains or other landscape features during subsequent uplift and denudation. The glacial buzzsaw model, which explains low relief high altitude landscapes as the result of active freeze-thaw processes, has been proposed as an alternative model in western Norway.

Unfortunately, there are as yet no reliable techniques to determine the age of these palaeosurfaces; apatite fission track and apatite (U-Th)/He results are often quoted as supporting evidence, but the same results are used to support competing models. Elevated palaeosurfaces are frequently used for tectonic reconstructions and uplift history, to show neotectonic fault activity, block rotation or correlation with erosion surfaces offshore, though often based on limited geomorphological analysis.

As a first step to further understanding the origin of these palaeosurfaces and their role and importance for the morphotectonic evolution of the landscape, we have mapped and characterized palaeosurfaces at different elevations throughout the Troms province in northern Norway. We investigated the influence of the rocktype (eg. competence) and the presence and orientation of structures in the bedrock (eg. foliation bedding/faults) on the occurrence, size and orientation of elevated palaeosurfaces. In addition, we have attempted to reconstruct the paleic summit surface through interpolation between the remnants.

Preliminary results suggest a correlation between the occurrence of palaeosurfaces and foliation bedding in the bedrock, with extensive palaeosurfaces preserved in areas with near horizontal structures. The overall orientation of the paleic summit surface appears to be gently sloping towards the north-northwest, which would be consistent with post-glacial isostatic uplift.