



## **Relict non-glacial surfaces in formerly glaciated landscapes: dynamic landform systems?**

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Relict non-glacial surfaces occur within many formerly glaciated landscapes and contain important information on past surface processes and long-term landscape evolution (Goodfellow, 2007). While cosmogenic dating has confirmed the antiquity of relict non-glacial surfaces, the processes that contribute to their evolution and, consequently, the time scales over which they develop remain poorly understood. Of particular importance is the possibility that relict non-glacial surfaces may provide geomorphic markers for the reconstruction of preglacial landscapes, which would allow subsequent glacial erosion to be quantified. Furthermore, relict non-glacial surfaces may also hold information on preglacial and interglacial environmental conditions. An investigation of relict non-glacial surfaces was undertaken through remote sensing, mapping and analysis of surfaces in a GIS, and regolith studies involving cosmogenic dating-, grain size-, X-ray diffraction-, and X-ray fluorescence analyses. On the basis of these on-going studies, we show that depending on spatial variables such as bedrock lithology, slope, regolith thickness, and the abundance of fine matrix and water some surfaces are denuding very slowly, while others display more rapid denudation. High spatial variability in denudation rates results in changing surface morphologies over time. Rather than being static preglacial remnants, relict non-glacial surfaces are dynamic features that have evolved during the Quaternary. While reconstructions of preglacial landscapes and subsequent quantifications of glacial erosion from relict non-glacial surfaces remain valid, the Quaternary evolution of these surfaces should also be considered.

Goodfellow B.W., 2007. Relict non-glacial surfaces in formerly glaciated landscapes. *Earth-Science Reviews*, 80(1-2): 47-73.