



Unpicking periglacial palimpsests

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Many areas of mid-latitude Europe have experienced repeated phases of periglacial activity during the Quaternary period. In high-relief landscapes or where erosion and/or transport dominated periglacial processes, periglacial activity has largely removed evidence for previous periglacial phases. In lowland depositional settings, periglacial features have better preservation potential either through (a) sediment aggradation leading to, for example, the preservation of ice-wedge pseudomorphs, composite-wedge pseudomorphs, relict sand wedges and involutions within the sedimentary record; or (b) a lower degree of landscape instability. Periglacial features preserved as a result of the latter are sometimes of more significance as they are found near or at the land surface, where their geomorphic expression may be preserved and they can still affect modern landscape processes such as weathering and subsidence. However, the apparent high preservation potential of these localities, their near- or at-surface positions combined with our knowledge of repeated periglacial activity raises questions as to whether they are the products of: (a) the final cycle of periglacial activity, (b) thermokarst features resulting from the most recent phase of permafrost thaw, (c) palimpsests of multiple cycles of periglacial activity, (d) overprinting by post-depositional non-periglacial processes, or (e) a combination of these processes.

In the Breckland area of Eastern England, near-surface Cretaceous Chalk has preserved above it an extensive landscape of sand-filled patterned ground, including thermal-contraction crack structures and stripes. Previous research carried out on epi-, syn- and antisynthetic sand wedges in Arctic Canada, which included the application of luminescence dating to determine chronologies, is used to gain an understanding of wedge development and potential for preservation of multi-cyclic activity. This is applied to intensively sampled and dated complex sand-filled patterned-ground features from the Brecklands. Results show multiple luminescence age clusters within patterned-ground features and these are discussed to see if they indicate multi-cyclic generation of patterned ground, ie palimpsests, or have been generated by other causes.