



## **Composite-wedge pseudomorphs and relict sand wedges in lowland Belgium: growth and decay history, optically stimulated luminescence dating and palaeoenvironmental implications**

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Reconstruction of former periglacial environments heavily relies on the identification of frost-wedge pseudomorphs, relict sand wedges and soil wedges. During the past seven years a large number of these wedges have been identified in lowland Belgium. Wedge forming processes have been reconstructed, providing information on Pleistocene palaeoenvironmental and palaeoclimatic conditions. Investigation methods included field observations, sedimentological analysis and optically stimulated luminescence (OSL) dating. A key observation includes the identification of composite-wedge pseudomorphs and relict sand wedges. The observations are significant in a variety of ways. Firstly, growth and decay histories of these thermal contraction wedges could be reconstructed more accurately than ice-wedge pseudomorphs; due to their well-preserved morphology and wedge fillings which are suitable for OSL-dating. OSL-dating, which provides direct age estimates for thermal contraction cracking and sand deposition, also contributes to improved correlations with other palaeoenvironmental and palaeoclimatic records such as marine and ice cores. Secondly, inferences on sand/ice contents provide information on palaeoenvironmental conditions (snow and vegetation cover) during wedge-formation, which is important to estimate palaeotemperatures. Finally, the high frequency of this wedge type compared to previous studies

might suggest a bias in previous reconstructions. Despite improvements in the understanding of the periglacial record of lowland Belgium, many uncertainties remain. These relate to the reconstruction of wedge-forming processes, correlations, palaeoenvironmental and palaeoclimatic inferences.