

Recognition of micro-scale deformation structures in glacial sediments - pattern perception, observer bias and the influence of experience

Leighton, Iain D. and Hiemstra, John F. and Weidemann, Christoph T. (2013) Recognition of micro-scale deformation structures in glacial sediments - pattern perception, observer bias and the influence of experience. [Journal (Paginated)]

Full text available as:



[PDF](#) - Published Version
792Kb

Abstract

It is a scientist's mission to try to remain unbiased. However, certain factors play a role in scientific analyses that are not controlled by conscious thought. These factors are potentially very important in areas of science where interpretations are based on a scientist's ability to identify patterns or structures. One such area is the micromorphology of glacial sediments. In this paper we investigate the role of an analyst's experience in relation to pattern perception with specific reference to turbate microstructures in glacial diamictons. An experiment was conducted on 52 participants, which demonstrated that, as may be expected, more experienced (glacial) micromorphologists tend to exhibit a higher sensitivity-to-signal, but that complete novices, if given clear instructions, can reach levels of sensitivity similar to those of experts. It also showed, perhaps more surprisingly, that response bias does not decrease with experience. We discuss psychological factors, such as the drive for success and consistency, that may have contributed to these results and investigate their possible implications in the micromorphological analysis and interpretation of glacial sediments.

Item Type:	Journal (Paginated)
Subjects:	Psychology > Applied Cognitive Psychology Psychology > Cognitive Psychology Psychology > Perceptual Cognitive Psychology Psychology > Psychophysics
ID Code:	8925
Deposited By:	Weidemann, Christoph T.
Deposited On:	04 May 2013 23:08
Last Modified:	15 Jan 2014 14:34

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