

# Journal of Sedimentary Research

An International Journal of SEPM

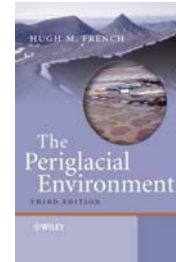
Colin P. North and Kitty L. Milliken, Editors

A.J. (Tom) van Loon, Associate Editor for Book Reviews

Review accepted 12 June 2007



*The Periglacial Environment* (3rd ed.), by Hugh M. French, 2007. Wiley & Sons Ltd., The Atrium, Southern Gate, Chichester, West Sussex PO 19 8SQ, England (customer@wiley.co.uk). Hardcover, xix + 458 pages. Price GBP 80.00; EUR 120.00. ISBN 0-470-86588-1.



The *Periglacial Environment* (3rd ed.) by H.M. French presents a comprehensive account of the characteristics and significance of periglacial processes, landforms and deposits. It is also the synthesis of the whole scientific career of French, now retired in Vancouver. The book, expanded from the previous edition, is organised into four parts.

Part one provides a general introduction to the subject, aimed particularly at geographers. It is based on concepts and climate boundaries but also supported by field observations in two regions of North America (Yukon and Beaufort coastal plain) and in relict periglacial environments, mostly from Great Britain, the mother land of French.

The second part provides an overview of the characteristics of present-day periglacial environments. First, ice formation is dealt with, together with associated mechanisms related to the thermal regime in soils and rocks, with several developments, including soil formation. A piece of art concerns permafrost (132 p.), its properties and behavior, its distribution and spectacular surface features as pingo, palsa or ice wedges, ground ice and thermokarst. Only 30 pages are devoted to the superficial mechanisms in the active layer (the top part thawing in summer), such as cryoturbation and frost shattering. Deformations due to cryoturbation mechanisms are distinctly distinguished from the deformation induced by loading, buoyancy and water-escape (see thermokarst involutions), although still some traces are left of the old "convection" theory for the formation of patterned ground. Slope processes are also briefly described, with a mixture of up-to-date experiments, with cautious doubts about relict concepts such as cryoplanation. Azonal processes in the periglacial zones, such as eolian and coastal processes, are described shortly, but with useful tables of present-day data regarding hydrology, sedimentary ablation and transportation.

Part three focuses on relict periglacial environments from the Pleistocene, at high and at low latitudes. This part is the weakest of the book. It starts with stratigraphical and chronological frameworks, sometimes with erroneous assessments (e.g. uplift of the Tibet plateau starting at the end of the Pliocene, and Antarctic isolation during the Late Tertiary!). The viewpoints of Russian authors concerning permafrost development for probably at least 5 Ma, are not mentioned. High latitudes are briefly mentioned. Recent research on the permafrost extent in southern America is ignored, just like the differentiation between converging periglacial and neotectonic paleo-features; this is a traditional weakness of periglacial geomorphologists. Nevertheless, the illustrations are interesting with original figures from the pioneers of periglacial studies (a.o. J. Dylik).

Part four is a masterpiece of applied periglacial geomorphology, the last favourite item of French; geotechnical and engineering aspects are presented in accessible language, but a mechanical approach is lacking.

Part Five concerns climate change in periglacial regions, mostly based on IPCC scenarios and recent data from various sources (mostly NSIDC). French follows the present-day hype on an

alarming global warming common alarm, partly due to methane degassing from gas hydrates in the permafrost. The physical characteristics of the clathrates imply, however, that they are stable in permafrost below 150-200m, so that is considered the potential depth of thaw for the worst warming scenarios for the coming century! With the negligence of data from the Tertiary in part four, the long stability of the Siberian permafrost is elapsed. But I appreciated particularly the chapter on human-induced thermokarst (part 2) as this phenomenon is often claimed today as a result of global warming only!

This book focuses on North American, and to a slightly lesser degree on Eurosiberian polar lowlands; this is completed by examples from Antarctica, the Tibet Plateau, and the northern mid-latitudes. The illustrations are very instructive and usually well chosen, but sometimes their size is not larger than found commonly in popular paperback editions. Historical figures, sometimes difficult to find, especially from Russian authors, are also reproduced and, fortunately, translated. The references are mostly from Britain and North America, but also contain fairly much Russian and recent Chinese literature.

To conclude, I recommend this textbook as an excellent resource for second- and third-year undergraduate students of physical geography and environmental science. The book provides an overview of the world's cold, non-glaciated environments. It is also informative reading for professionals, researchers and lecturers working and teaching in the field. Geologists should keep in mind, however, that it has been written by a geomorphologist.

Brigitte Van Vliet-Lanoe  
UMR 8110 CNRS Processus et Bilans des Domaines Sédimentaires SN5  
Université Sciences et Technologies de Lille  
59655 VILLENEUVE D'ASCQ Cédex  
FRANCE  
e-mail: [Brigitte.Van-Vliet-Lanoe@univ-Lille1.fr](mailto:Brigitte.Van-Vliet-Lanoe@univ-Lille1.fr)



SEPM - The Society for Sedimentary Geology