

Periglacial Environments in relation to Climatic Change

International Symposium, May 3–6, 1991, Maastricht-Amsterdam (The Netherlands)

Introduction

Climate-related change of the periglacial environment in the past and in the present was the central theme of the Symposium. The study of the climatic impact on modern and ancient environments continues to open new perspectives for both the reconstruction and interpretation of periglacial conditions and the management of present-day periglacial regions. The objectives of the Symposium were firstly to discuss the modifications in geocological systems located in a region affected by multiple climatic alternations and secondly, to use the impressive library of palaeoenvironmental and palaeoclimatic data from such a region to understand further the present relationships between climate and ecological systems.

The meeting was planned for the jointly operating 'Working Group on Periglacial Environments' of the International Permafrost Association and the 'Commission on Frost Action Environments' of the International Geographical Union. It has been organized by the section of 'Quaternary Geology and Lowland Studies' of the Vrije Universiteit at Amsterdam.

The Netherlands has a long tradition in reconstructing Pleistocene periglacial environments based on palaeogeomorphological, sedimentological and palaeoecological investigations. Results of recent studies and progression in ideas were presented and discussed in the light of the experiences of specialists from other research areas. The most prominent of these results are presented in the first paper in this issue.

The Symposium was attended by forty-five scientists from fifteen countries. Three days of excursions, extending from Maastricht to Amsterdam, focused on periglacial aeolian and fluvial palaeoenvironments in relation to climatic conditions. More

particularly, climatically induced changes in different kinds of fluvial, transitional fluvio-aeolian and aeolian environments were demonstrated. It could be shown at several occasions that the path of deterministic relationships between periglacial environment and climate is not fruitful, but that instead a major role has to be attributed to threshold values and delay times. The formation and preservation of specific periglacial phenomena (wedges, cryoturba-tions, ground ice) were illustrated in association with their diagnostic significance for palaeoclimatic reconstruction.

The one-day paper session was introduced by guest speaker Prof. Dr. J. Oerlemans who lectured 'On the meteorological conditions near ice sheet margins'. Twenty-three lectures and posters from all continents reported on a large variety of Pleistocene periglacial environments and their relation to climate. These contributions concentrated on four themes: periglacial environmental processes, periglacial slope and planation developments, periglacial sedimentary structures and periglacial environments and processes during the last glacial maximum.

The variegated experience of the participants resulted in fruitful and stimulating discussions, both in the field and during the paper session. They have resulted in the following conclusions and recommendations. Firstly, parametrisation, common already for some time in actuo-periglacial research, is growing in importance in palaeo-periglacial research as well. Furthermore, reliability in the correlations between data from different sources has improved considerably by accurate dating. However, emphasis on results from isolated localities has to be avoided. It will be the challenge of coming years to further differentiate between local, site-specific effects and features of regional importance. In-depth spatial analyses are now required to establish

the regional relationships of the observed changes in periglacial environments. It may be concluded that real progress has been made in the understanding of various aspects of changes in periglacial environments as a function of climate.

A special issue of 'Permafrost and Periglacial Processes' contains the Symposium contributions with a clear emphasis on specific periglacial processes. This issue of 'Geologie en Mijnbouw' presents the papers with strong affinity to western and central Europe. As mentioned above, its first paper summarizes the progress in periglacial research in the Netherlands during the last decade. Following papers report on the origin of periglacial phenomena, sediments and landforms, which occurred

many times during the Pleistocene in western and central Europe. Especially their relations with climatic conditions are stressed. The two final papers deal with specific periglacial disturbances of the original physical sediment properties.

Our sincere thanks go to all participants for the presentations and discussions and the friendly atmosphere, and to all who helped in different ways: sponsors (especially International Geographical Union, Royal Netherlands Academy of Sciences, Faculty of Earth Sciences of the Vrije Universiteit at Amsterdam), technical staff and students for logistics, and the editors of both Journals for publishing the results of this Symposium.

Jef Vandenberghe and Jacques Schwan
Guest Editors

Institute of Earth Sciences
Vrije Universiteit
De Boelelaan 1085
1081 HV Amsterdam
The Netherlands