



edited by
K.J. Gregory

**Background to
Palaeohydrology**
A Perspective

BACKGROUND TO PALAEOHYDROLOGY

A Perspective

Edited by

K. J. GREGORY

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A Wiley-Interscience Publication

JOHN WILEY & SONS

Chichester · New York · Brisbane · Toronto · Singapore

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Library of Congress Cataloging in Publication Data:

Main entry under title:

Background to palaeohydrology.

'A Wiley-Interscience publication.'

Includes index.

1. Palaeohydrology. I. Gregory, K. J. (Kenneth John)
QE39.5.P27B33 1983 551.48 83-5929
ISBN 0 471 90179 2

British Library Cataloguing in Publication Data:

Gregory, K. J.

Background to Palaeohydrology

1. Palaeohydrology

I. Title

551.4 GB659.6

ISBN 0 471 90179 2

Typeset by Activity, Salisbury, Wiltshire.

Printed in Great Britain by The Pitman Press, Bath, Avon.

*BACKGROUND TO
PALAEOHYDROLOGY*

INTERNATIONAL GEOLOGICAL CORRELATION
PROGRAMME



PROJECT 158

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Preface

Unlike many edited volumes this one emerged as an idea well before rather than after a conference. An international conference in the UK in 1983 was planned as one of a succession of meetings during the ten year research programme (1977–1986) for IGCP Project 158, and it seemed desirable to collect together a number of general papers reviewing the state of the art in the several fields which contribute to palaeohydrology. The flavour of a number of chapters reflects the inception of the sequence of essays against the background canvas of recent developments in British research but, as is usual in a rapidly-advancing field, it has also been possible to include contributions from other internationally recognized specialists. A number of research papers and volumes stimulated by IGCP Project 158 have already been produced, and I hope that this present volume will be a worthy addition and testimony to the vision of the initiators of the international project, Professor Leszek Starkel and Björn Berglund, who have been kind enough to contribute a foreword to the volume. The arrangement of the chapters is explained in the Introduction (pp. 12) but it is necessary to emphasize that in a newly-developing field such as palaeohydrology several alternative sequences of chapter organization can be visualized. It was decided to separate those chapters providing background from others affording a further perspective because a more conventional organization, according to climate, hydrology, vegetation history, river channels, etc., would emphasize that some subject areas are not reviewed as completely as others. This is indeed deliberate because palaeohydrology being at the cross-roads, or spaghetti junction, of a range of disciplines, cannot call upon reviews that extend too far into the subject areas of hydrology, climatology, and Quaternary vegetation history, all of which have commanded volumes of their own. To continue the transport analogy, a location at the confluence of a number of routes means that, not only does flow of information and techniques occur to the intersection, but there can also be a transmission of ideas from palaeohydrology back to the contributing disciplines. Research in the early 1980's has already embraced some very innovative developments and this volume will be worthwhile if it can convey a little of the excitement that palaeohydrological investigations can instill and if it stimulates further innovations.

It is a great pleasure to acknowledge, in addition to the advice generously provided by Professor Leszek Starkel and Professor Björn Berglund, the discussions with Professor J. B. Thornes; the work of all the contributors; the secretarial assistance provided by Mrs R. Flint and Miss Liane Bailey; the cartographic advice given generously by Mr A. S. Burn and last but not least the patience of my family.

KEN J. GREGORY

Foreword

LESZEK STARKEL AND BJÖRN E BERGLUND

The reconstruction of climatic variations is the goal of all environmental reconstructions for the period since the deglaciation of the last inland ice. Important evidence on palaeoclimates comes through the reconstruction of different palaeohydrological parameters such as sea and lake level changes, variations in river discharge and sediment load, vegetational changes traced locally in mires and regionally in ecotone displacements, and finally the rate of glacial retreat.

It is symptomatic, too, that in all IGCP (International Geological Correlation Programme) projects covering the last 15000 years this palaeohydrological component is in the centre of attention. This applies to the longer established projects devoted to Quaternary glaciations (No. 24) and to sea level changes (No. 61) as well as to the younger ones, still in progress, which are devoted to lakes and floods in lower latitudes (No. 146) and to the palaeohydrology of the temperate zone (No. 158). It is a pleasure for us that this volume saw the light of day in the atmosphere of the last-mentioned project. Project definitions and research methods were described in an extensive guidebook for Project 158 subproject B dealing with lake and mire environments (Berglund, 1979–1982) and in a shorter guidebook for Project 158 subproject A dealing with fluvial environments (Starkel and Thornes, 1981), both containing many international contributions. It should be mentioned that most European countries, and the North American ones too, are taking an active part in the project. Since 1978 annual symposia have been organized in Finland (1978), France (1979), West Germany and Austria (1980), Poland (1981), and the Soviet Union (1982), and these have been a great help in the development of new methods and ideas. Of special value was the latest symposium, organized jointly with other IGCP project leaders (mentioned above) and, as is usual every year, together with the Eurosiberian Subcommittee for studies of the Holocene of INQUA. This latest symposium was held in Moscow in August 1982, during the XI INQUA Congress. Some of the papers presented at that session are included in this volume, but the greater part of the basic papers in this book are the contributions of our British colleagues who, under the guidance of Ken J. Gregory, decided to put together present knowledge on palaeohydrology and present it to all participants at the symposium in England and Wales, September 1983. We hope that this volume will contribute to the further

development of a new branch of science, namely palaeohydrology, and be an important step in the realization of our own and of other IGCP projects.

As the leaders of the IGCP project 158 we express our cordial thanks to all contributors and especially to Ken for his editorial work.

Cracow and Lund, December 1982

LESZEK STARKEL

BJÖRN E BERGLUND

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L. Starkel and B. Berglund

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