



FRIEND 2002— REGIONAL HYDROLOGY: *Bridging the Gap between Research and Practice*

Edited by

HENNY A. J. VAN LANEN

*Sub-department of Water Resources, Wageningen University, Nieuwe Kanaal 11,
6709 PA Wageningen, The Netherlands*

SIEGFRIED DEMUTH

*Institute of Hydrology, University of Freiburg, Fahnbergplatz, D-79098 Freiburg,
Germany*

Co-editors

ERIC SERVAT

Institut de Recherche pour le Développement, Montpellier, France

RICHARD IBBITT

National Institute of Water and Atmospheric Research, Christchurch, New Zealand

CHRISTEL PRUDHOMME

Centre for Ecology and Hydrology, Wallingford, Oxfordshire, UK

MUHAMMAD F. BARI

*Department of Water Resources Engineering, Bangladesh University of
Engineering and Technology, Dhaka, Bangladesh*

DENIS HUGHES

Institute for Water Research, Rhodes University, Grahamstown, South Africa

MARIA DEL CARMEN LLASAT

Department of Astronomy and Meteorology, University of Barcelona, Spain

SIMON H. MKHANDI

Water Resources Engineering Programme, University of Dar es Salaam, Tanzania

Selected papers for the fourth International Conference on FRIEND held at Cape Town, South Africa, from 18 to 22 March 2002. The conference was convened jointly by the United Nations Educational, Scientific and Cultural Organization-International Hydrology Programme (UNESCO-IHP), the South African IHP National Committee, Southern Africa FRIEND, the International Association of Hydrological Sciences (IAHS), and the World Meteorological Organization (WMO).

**Published by the International Association of
Hydrological Sciences 2002**

IAHS Press, Centre for Ecology and Hydrology, Wallingford,
Oxfordshire OX10 8BB, UK

IAHS Publication no. 274

ISBN 1-901502-81-3

British Library Cataloguing-in-Publication Data.

A catalogue record for this book is available from the British Library.

© IAHS Press 2002

This publication may be reproduced in whole or in part in any form for education or nonprofit uses, without special permission from the copyright holder, provided acknowledgement of the source is made. As a courtesy the authors should be informed of any use made of their work. No use of this publication may be made for resale or other commercial purposes without the prior written permission of IAHS Press.

The papers included in this volume have been peer reviewed and some were extensively revised before publication.

The editors would like to thank their co-editors for help during the reviewing process and the authors for their cooperation during the preparation of this book. They also would like to acknowledge Penny Kisby of IAHS Press.

IAHS is indebted to the employers of the editors for the invaluable support and services that enabled them to work effectively and efficiently.

The designations employed and the presentation of material throughout the publication do not imply the expression of any opinion whatsoever on the part of IAHS concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The use of trade, firm, or corporate names in the publication is for the information and convenience of the reader. Such use does not constitute an official endorsement or approval by IAHS of any product or service to the exclusion of others that may be suitable.

The conference was financially supported by UNESCO, the UK Department for International Development, WMO, IAHS, the German IHP/OHP National Committee, the Dutch IHP/OHP National Committee, and the French Ministry of Foreign Affairs.

The formatted pages were produced at IAHS Press, Wallingford, UK, by Penny Kisby.

Publications in the series of Proceedings and Reports (Red Books) are available *only* from:

**IAHS Press, Centre for Ecology and Hydrology, Wallingford,
Oxfordshire OX10 8BB, UK**

tel.: +44 1491 692442; fax: +44 1491 692448; e-mail: jilly@iahs.demon.co.uk