

Cambridge University Press

978-0-521-82205-3 - Measuring the Natural Environment, Second Edition

Ian Strangeways

Frontmatter

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Measuring the Natural Environment, Second Edition

Measurements of natural phenomena are vital for any type of environmental monitoring, from the practical day-to-day management of rivers, agriculture and weather forecasting, through to longer-term assessment of climate change and glacial retreat. This new edition of *Measuring the Natural Environment* looks at all aspects of past, present and future measurement techniques, describing the operation of the instruments used and the quality and accuracy of the data they produce.

The book describes the techniques and instruments used to measure all of the variables of the natural world: solar and terrestrial radiation, air and ground temperature, humidity, evaporation and transpiration, wind speed and direction, rainfall, snowfall, snow depth, barometric pressure, clouds, lightning, atmospheric chemistry, soil moisture and soil tension, groundwater, river level and flow, water quality, sea level, sea surface temperature, ocean currents and waves, and polar ice. This second edition has been brought completely up to date, and expanded considerably through the addition of six new chapters, and the extension and modification of many of the existing chapters.

Measuring the Natural Environment is the first book to make a thorough enquiry into the origins of environmental data, upon which our scientific understanding and economic planning of the environment directly hang. The book will be important for all those who use or collect such data, whether for pure research or day-to-day management. It will be useful for students and professionals working in a wide range of environmental science: meteorology, climatology, hydrology, water resources, oceanography, civil engineering, agriculture, forestry, glaciology and ecology.

Ian Strangeways is Director of TerraData, a consultancy in meteorological and hydrological instrumentation and data collection. From 1964 until 1989 he was head of the Instrument and Applied Physics sections at the Institute of Hydrology (Natural Environment Research Council).

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PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE
The Pitt Building, Trumpington Street, Cambridge, United Kingdom

CAMBRIDGE UNIVERSITY PRESS

The Edinburgh Building, Cambridge CB2 2RU, UK

40 West 20th Street, New York, NY 10011-4211, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

Ruiz de Alarcón 13, 28014 Madrid, Spain

Dock House, The Waterfront, Cape Town 8001, South Africa

<http://www.cambridge.org>

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First published 2000

Second edition 2003

Printed in the United Kingdom at the University Press, Cambridge

Typeface Times 11/14pt. *System* L^AT_EX 2_ε [TB]

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

Library of Congress Cataloguing in Publication data

Strangeways, Ian, 1932–

Measuring the natural environment / Ian Strangeways. – 2nd edn

p. cm.

Includes bibliographical references and index.

ISBN 0 521 82205 X – ISBN 0 521 52952 2 (paperback)

1. Earth science – Measurement. 2. Environmental monitoring. I. Title.

QE33.S79 2003

363.7/063–dc21 2003044038

ISBN 0 521 82205 X hardback

ISBN 0 521 52952 2 paperback

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Acknowledgements

Richard Dawkins, in *The Blind Watchmaker*, says he prefers to include credits at the relevant point in the text, rather than in a separate section. I agree, but although I tried it, I found it did not suit the style of my book, mostly because I have used a fairly impersonal style. This makes it less seamless to include acknowledgements in amongst the technical detail. I have broken with tradition to the small extent, however, that names are in bold and each starts on a new line, as in a reference list.

But why should I need any help? My experience of measuring the natural environment extends from 1964 to 1989 at the Institute of Hydrology (IH), now the Centre for Ecology and Hydrology (CEH), first as head of the Instrument Section and later of Applied Physics, continuing after 1989 as consultant until the present. During this nearly 40-year period, my work has been a mix of new instrument development and the application of existing equipment, new and old, to a variety of projects, many overseas and embracing all of the world's climates. Despite this, experience of every aspect of the subject has not been equal and I felt it advisable to check out some specialised areas and details about which I was not entirely certain. And now in this second edition, I have added new chapters and although the methods and general principles are remarkably similar throughout the whole field of measuring the natural environment, they are different in detail. So further advice had to be obtained and visits made.

I would, therefore, like to acknowledge the advice, help and time of those listed below, who talked me through new topics, helped fill in gaps, corrected errors, checked my text, gave access to equipment for photography, spent time showing me round laboratories or simply reassured me that I was right in the first place:

James Bathurst, *Newcastle University*, commented on, and refined, my summary of the slope-area method of estimating river flow.

John Bell, ex *CEH*, supplied detailed notes describing how soil moisture is measured by the thermogravimetric method.

viii *Acknowledgements*

Ken Blyth, *CEH*, gave me advice on the basic principles of remote-sensing satellite instruments.

Mike Brettell, *Vaisala UK Ltd.*, loaned me radiosonde equipment to photograph (Figs. 16.1, 16.2 and 16.3) and advised on state-of-the-art radiosonde sensors.

Chris Collier, *Salford University*, read the section on weather radar and suggested changes and additions.

Mike Collins, *ex Met. Office*, explained the various definitions and acronyms of lighting detection systems.

J. David Cooper, *CEH*, discussed soil moisture capacitance probes and the time domain reflectometry method and gave access to instruments for me to photograph Figs. 9.5 (a), (b), 9.6 and 9.8.

Andy Dixon, *CEH*, guided me through the technical complexities and terms of borehole drilling, and loaned me two photographs (Figs. 9.15 and 9.16).

Jonathan Evans, *CEH*, showed me the latest eddy correlation equipment, now able to measure CO₂ fluxes, and supplied drawings from which I produced Fig. 7.4(b).

John Gash, *CEH*, advised on techniques for measuring water vapour flux and gave access to equipment for photographing, shown in Figs. 5.11, 7.2, 7.3 and 7.4(a).

Reg Herschy, *CNS, Reading*, read the chapter on Rivers and lakes and suggested changes, in particular concerning river flow measurement.

Wynn Jones, *Met. Office*, supplied information on ocean buoys, provided Figs. 17.3, 17.4 and 17.5 and checked the chapter on ocean measurements (first edition).

Charles Kilburn, *Rutherford/Appleton Laboratory*, showed me a range of equipment at Chilbolton for measuring the upper atmosphere (Figs. 14.7, 16.9, 16.10, 16.11, 16.12). For more details see: <http://www.rcru.rl.ac.uk/chilbolton/facilities.htm>

Tony Lee, *Met. Office*, clarified the details of lightning radio wave propagation and the basis of the several methods of detecting *sferics*.

Robin Pascal, *Southampton Oceanography Centre*, spent an afternoon answering my questions regarding instrumentation on ships for oceanographic research.

Sarah Price, *My copy editor*, who has suggested many improvements to the text, picked up errors and followed up questions regarding references and copyrights for me.

Jonathan Shanklin, *British Antarctic Survey*, commented on the instrumentation currently in use in Antarctica and helped identify the types of ice in Figs. 18.6–18.10.

Acknowledgements

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John Stewart, *Southampton University*, read, and suggested changes to, the chapter on remote sensing (first edition).

Jon Turton, *Met. Office*, supplied extensive information on the Argo float project, which is an important new ocean observation initiative.

Alan Walker, *Newbury*, demonstrated instruments from his barometer collection at *Halfway Manor*, which I photographed to illustrate Chapter 6.
<http://www.alanwalker-barometers.com>.