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978-0-521-87733-6 - Sandstone Landforms

Robert. W. Young, Robert. A. L. Wray and Ann. R. M. Young

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SANDSTONE LANDFORMS

Sandstones form the backdrop to some of the world's most spectacular scenery – forming high mountain ranges, bold cliffs, extensive plateaus, impressive caverns and magnificent towers. They are found all over the planet and in all climates, from hot deserts to the polar region, and provide the construction material for iconic buildings in numerous countries.

Following on from the authors' successful 1992 book, this is the only volume that considers sandstone landforms from a truly global perspective. It describes the wide variety of landforms that are found in sandstone, and discusses the role of lithological variation, chemical weathering and erosional processes in creating these features, with examples drawn from around the world. Climatic and tectonic constraints on the development of sandstone landscapes are also considered.

This volume provides a comprehensive assessment of the literature from publications in a range of languages, and is illustrated with over 130 photographs of sandstone features from every continent. It presents a holistic account of sandstone terrain for researchers and graduate students in a variety of fields including geography, geomorphology, sedimentology and geomechanics.

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Collectively, the authors have over 70 years' experience in the subject.

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CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo, Delhi
Cambridge University Press
The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9780521877336

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First published 2009

Printed in the United Kingdom at the University Press, Cambridge

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

ISBN 978-0-521-87733-6 hardback

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Preface

Sandstones are found worldwide – from Greenland to Antarctica, and on all continents. The Old Red Sandstone forms the spine of Britain, extending from Wales to the Orkney Islands. Its stratigraphy and fossils were studied by the doyen of geology, James Hutton, and were the core of the ‘map that changed the world’ by the pioneering geologist, William Smith. The world’s tallest waterfall, Angel Falls, tumbles over the sandstones of the Roraima in Venezuela. Iconic buildings in many parts of the world are made of sandstone. Movie-goers will recognize the sandstone terrain of Utah in many Westerns and the sandstone spires in the Czech Republic in the film *The Lion, The Witch and The Wardrobe*. Sandstone and its landforms are therefore of interest not only academically but generally.

The Youngs’ earlier book, *Sandstone Landforms*, was published by Springer in 1992 (copyright reverted to Robert and Ann Young in 1997). Their aim then was to draw together the main explanations of sandstone geomorphology from accounts scattered throughout the literature, and to add their own field observations. This was written as a high-level academic book, and is now out of print. To our knowledge, its only predecessor was a 1972 treatise in French by Monique Mainguet. Since 1992, the focus of research on sandstones has shifted to what was then a new field – the widespread and significant impacts of silica solution on sandstone landscapes. A major review of European sandstones is due for publication (Hartel *et al.*, in press). Still however, much information remains scattered within a plethora of scientific journals.

Our aim here is to bring together not just an overview of research on sandstone landforms, but a global perspective that includes assessment of the underlying principles used in interpreting the landscapes. We have updated and revised the previous work, and the section on solutional landforms and processes has been greatly expanded. As with the earlier edition, we hope that we can convey some of the fascination and interest – some may even say, absorption – that sandstone landscapes have provided for all of us.

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We are grateful to colleagues who have provided photographs (as acknowledged in the captions) and assistance – Piotr Migon, Stefan Doerr, Rowl Twidale, Dennis Netoff, Andy Spate and John Dixon. We acknowledge also the use of photographs from Mr Hong Kaidi, Jan Galloway and the estate of the late J.N. Jennings. At Cambridge University Press, London, we thank Matt Lloyd for arranging the publication, and Diya Gupta, Anna-Marie Lovett and Sarah Lewis for editorial assistance.