

Large Igneous Provinces from Gondwana and Adjacent Regions

The Geological Society of London
Books Editorial Committee

Chief Editor

RICK LAW (USA)

Society Books Editors

JIM GRIFFITHS (UK)

DAVE HODGSON (UK)

PHIL LEAT (UK)

NICK RICHARDSON (UK)

TERESA SABATO CERARDI (UK)

DANIELA SCHMIDT (UK)

RANDELL STEPHENSON (UK)

ROB STRACHAN (UK)

MARK WHITEMAN (UK)

Society Books Advisors

GHULAM BHAT (India)

MARIE-FRANÇOISE BRUNET (France)

ANNE-CHRISTINE DA SILVA (Belgium)

JASPER KNIGHT (South Africa)

DOLORES PEREIRA (Spain)

VIRGINIA TOY (New Zealand)

MARCO VECOLI (Saudi Arabia)

GEORG ZELLMER (New Zealand)

Geological Society books refereeing procedures

This volume is published under an agreement between the Scientific Committee on Antarctic Research and the Geological Society of London and arises from the 12th International Symposium on Antarctic Earth Sciences (ISAES), Goa, July 2015.

GSL is the publisher of choice for books related to SCAR's geoscience activities, and SCAR receives a fee for all books published under this agreement.

Books published under this agreement are subject to the Society's standard rigorous proposal and manuscript review procedures.

It is recommended that reference to all or part of this book should be made in one of the following ways:

SENSARMA, S. & STOREY, B. C. (eds) 2018. *Large Igneous Provinces from Gondwana and Adjacent Regions*. Geological Society, London, Special Publications, **463**.

VIJAYA KUMAR, K., LAXMAN, M. B. & NAGARAJU, K. 2018. Mantle source heterogeneity in continental mafic Large Igneous Provinces: insights from the Panjal, Rajmahal and Deccan basalts, India. *In*: SENSARMA, S. & STOREY, B. C. (eds) *Large Igneous Provinces from Gondwana and Adjacent Regions*. Geological Society, London, Special Publications, **463**, 87–115. First published online July 11, 2017, <https://doi.org/10.1144/SP463.5>

GEOLOGICAL SOCIETY SPECIAL PUBLICATION NO. 463

Large Igneous Provinces from Gondwana and Adjacent Regions

EDITED BY

S. SENSARMA

University of Lucknow, India

and

B. C. STOREY

University of Canterbury, New Zealand

2018

Published by
The Geological Society
London

THE GEOLOGICAL SOCIETY

The Geological Society of London (GSL) was founded in 1807. It is the oldest national geological society in the world and the largest in Europe. It was incorporated under Royal Charter in 1825 and is Registered Charity 210161.

The Society is the UK national learned and professional society for geology with a worldwide Fellowship (FGS) of over 10 000. The Society has the power to confer Chartered status on suitably qualified Fellows, and about 2000 of the Fellowship carry the title (CGeol). Chartered Geologists may also obtain the equivalent European title, European Geologist (EurGeol). One fifth of the Society's fellowship resides outside the UK. To find out more about the Society, log on to www.geolsoc.org.uk.

The Geological Society Publishing House (Bath, UK) produces the Society's international journals and books, and acts as European distributor for selected publications of the American Association of Petroleum Geologists (AAPG), the Indonesian Petroleum Association (IPA), the Geological Society of America (GSA), the Society for Sedimentary Geology (SEPM) and the Geologists' Association (GA). Joint marketing agreements ensure that GSL Fellows may purchase these societies' publications at a discount. The Society's online bookshop (accessible from www.geolsoc.org.uk) offers secure book purchasing with your credit or debit card.

To find out about joining the Society and benefiting from substantial discounts on publications of GSL and other societies worldwide, consult www.geolsoc.org.uk, or contact the Fellowship Department at: The Geological Society, Burlington House, Piccadilly, London W1J 0BG: Tel. +44 (0)20 7434 9944; Fax +44 (0)20 7439 8975; E-mail: enquiries@geolsoc.org.uk.

For information about the Society's meetings, consult *Events* on www.geolsoc.org.uk. To find out more about the Society's Corporate Affiliates Scheme, write to enquiries@geolsoc.org.uk.

Published by The Geological Society from:

The Geological Society Publishing House, Unit 7, Brassmill Enterprise Centre, Brassmill Lane, Bath BA1 3JN, UK

The Lyell Collection: www.lyellcollection.org

Online bookshop: www.geolsoc.org.uk/bookshop

Orders: Tel. +44 (0)1225 445046, Fax +44 (0)1225 442836

The publishers make no representation, express or implied, with regard to the accuracy of the information contained in this book and cannot accept any legal responsibility for any errors or omissions that may be made.

© The Geological Society of London 2018. No reproduction, copy or transmission of all or part of this publication may be made without the prior written permission of the publisher. In the UK, users may clear copying permissions and make payment to The Copyright Licensing Agency Ltd, Saffron House, 6–10 Kirby Street, London EC1N 8TS UK, and in the USA to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA. Other countries may have a local reproduction rights agency for such payments. Full information on the Society's permissions policy can be found at: www.geolsoc.org.uk/permissions

British Library Cataloguing in Publication Data

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

ISBN 978-1-78620-325-0

ISSN 0305-8719

Distributors

For details of international agents and distributors see:

www.geolsoc.org.uk/agentsdistributors

Typeset by Nova Techset Private Limited, Bengaluru & Chennai, India

Printed and bound by CPI Group (UK) Ltd, Croydon CR0 4YY

Acknowledgements

Special thanks to the reviewers of the manuscripts submitted to this volume for their tireless, thorough and incisive comments that considerably helped to improve the manuscripts: Andrea Marzoli, Rajneesh Bhutani, N.V. Chalapathi Rao, Phil T. Leat, Phil Kyle, Teal Riley, Saibal Gupta, Peter C. Lightfoot, Talat Ahmad, M.L. Dora, Erfan Ali Mondal, Ramananda Chakrabarti, Dwijesh Ray, Hidehisa Mashima, Debajyoti Paul, Patricia Craig, Sujoy

Kanti Ghosh, Keith Bell, Nitin R. Karmalkar, Gautam Sen, Saemi Halldorsson, R.W. Kent, Nilanjan Chatterjee, Raymond Duraiswami, Yong-Fei Zheng, Ashima Saikia and an anonymous reviewer. We also thank Angharad Hills, Tamzin Anderson, Sarah Gibbs and Rachael Kriefman at the Geological Society for thorough and professional editorial handling of the book.

Vivek P. Malviya (India) deserves a special mention for his outstanding and critical help on the Editorial desk as Editorial Assistant.