

New Caledonia: Geology, Geodynamic Evolution and Mineral Resources

The Geological Society of London Books Editorial Committee

Chief Editor

Rick Law (USA)

Society Books Editors

Jim Griffiths (UK)
Dan Le Heron (Austria)
Mads Huuse (UK)
Rob Knipe (UK)
Phil Leat (UK)
Teresa Sabato Ceraldi (UK)
Lauren Simkins (US)
Randell Stephenson (UK)
Gabor Tari (Austria)
Mark Whiteman (UK)

Society Books Advisors

Kathakali Bhattacharyya (India)
Anne-Christine Da Silva (Belgium)
Xiumian Hu (China)
Jasper Knight (South Africa)
Spencer Lucas (USA)
Dolores Pereira (Spain)
Virginia Toy (Germany)
Georg Zellmer (New Zealand)

The scientific and production quality of the Geological Society's books matches that of its journals. Since 1997, all book proposals are reviewed by two individual experts and the Society's Books Editorial Committee. Proposals are only accepted once any identified weaknesses are addressed.

The Geological Society of London is signed up to the Committee on Publication Ethics (COPE) and follows the highest standards of publication ethics. Once a book has been accepted, the volume editors agree to follow the Society's Code of Publication Ethics and facilitate a peer review process involving two independent reviewers. This is overseen by the Society Book Editors who ensure these standards are adhered to.

Geological Society books are timely volumes in topics of current interest. Proposals are often devised by editors around a specific theme or they may arise from meetings. Irrespective of origin, editors seek additional contributions throughout the editing process to ensure that the volume is balanced and representative of the current state of the field.

Submitting a book proposal

More information about submitting a proposal and producing a book for the Society can be found at <https://www.geolsoc.org.uk/proposals>

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

Maurizot, P. and Mortimer, N. (eds) 2020. *New Caledonia: Geology, Geodynamic Evolution and Mineral Resources*. Geological Society, London, *Memoirs*, **51**, <https://doi.org/10.1144/M51.0>

Maurizot, P., Collot, J., Cluzel, D. and Patriat, M. 2020. The Loyalty Islands and Ridge, New Caledonia. *Geological Society, London, Memoirs*, **51**, 131–145, <https://doi.org/10.1144/M51-2017-24>

Geological Society Memoir No. 51

New Caledonia: Geology, Geodynamic Evolution and
Mineral Resources

Edited by

P. Maurizot

New Caledonia Geological Survey, New Caledonia

and

N. Mortimer

GNS Science, New Zealand

2020
Published by
The Geological Society
London

The Geological Society of London

The Geological Society of London is a not-for-profit organisation, and a registered charity (no. 210161). Our aims are to improve knowledge and understanding of the Earth, to promote Earth science education and awareness, and to promote professional excellence and ethical standards in the work of Earth scientists, for the public good. Founded in 1807, we are the oldest geological society in the world. Today, we are a world-leading communicator of Earth science – through scholarly publishing, library and information services, cutting-edge scientific conferences, education activities and outreach to the general public. We also provide impartial scientific information and evidence to support policy-making and public debate about the challenges facing humanity. For more about the Society, please go to <https://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 Geological Society of America (GSA), the Society for Sedimentary Geology (SEPM) and the Geologists' Association (GA). GSL Fellows may purchase these societies' publications at a discount. The Society's online bookshop is at <https://www.geolsoc.org.uk/bookshop>

To find out about joining the Society and benefiting from substantial discounts on publications of GSL and other Societies go to <https://www.geolsoc.org.uk/membership> 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, go to <https://www.geolsoc.org.uk/events>. To find out more about the Society's Corporate Patrons Scheme visit <https://www.geolsoc.org.uk/patrons>

Proposing a book

If you are interested in proposing a book then please visit: <https://www.geolsoc.org.uk/proposals>

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 2020. Except as otherwise permitted under the Copyright, Designs and Patents Act, 1988, this publication may only be reproduced, stored or transmitted, in any form or by any other means, with the prior permission in writing of the publisher, or in the case of reprographic reproduction, in accordance with the terms of a licence issued by the Copyright Licensing Agency in the UK, or the Copyright Clearance Center in the USA. In particular, the Society permits the making of a single photocopy of an article from this issue (under Sections 29 and 38 of this Act) for an individual for the purposes of research or private study. Open access articles, which are published under a CC-BY licence, may be re-used without permission, but subject to acknowledgement.

Full information on the Society's permissions policy can be found at <https://www.geolsoc.org.uk/permissions>

British Library Cataloguing in Publication Data

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

ISBN 978-1-78620-466-0

ISSN 0435-4052

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, UK

Contributors

L. Bailly

Bureau de Recherches Géologiques et Minières (French Geological Survey), 3 Avenue Claude Guillemin, BP 36 009, 45 060, Orléans, France

l.bailly@brgm.fr

A. Bordenave

ENSEGID, Bordeaux INP, 1 allée F. Daguin, 33607 Pessac Cedex, France

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

aurelien.bordenave@ensegid.fr

D. Bosch

Géosciences Montpellier, Université de Montpellier, Place Eugène Bataillon, 34095 Montpellier, France

bosch@gm.univ-montp2.fr

H. J. Campbell

GNS Science, PO Box 30368, Lower Hutt 5040, New Zealand

h.campbell@gns.cri.nz

J. Collot

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

julien.collot@gouv.nc

D. Cluzel

University of New Caledonia, ISEA-EA 7484, BP R4, 98 851 Nouméa, New Caledonia

dominique.cluzel@unc.nc

H.L. Davies

University of Papua New Guinea, PO Box 414, Papua New Guinea

hdavies@upng.ac.pg

S. Etienne

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

samuel.etienne@gouv.nc

N. Folcher

University of New Caledonia, ISEA-EA 7484, BP R4, 98 851 Nouméa, New Caledonia

nfolcher@koniambonickel.nc

M. Iseppi

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

miseppi@srk.com

J. Jeanpert

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

julie.jeanpert@gouv.nc

S. Lesimple

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

stephane.lesimple@gouv.nc

P. Macera

Earth Science Department, Pisa University, Via S Maria 53, 56126 Pisa, Italy

macera@dst.unipi.it

P. Maurizot

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

pierre.maurizot@gouv.nc; maurizot@canl.nc

S. Meffre

University of Tasmania, Private Bag 79, Hobart 7001, Australia

smeffre@utas.edu.au

C. Monnin

Centre National de la Recherche Scientifique – Institut de Recherche pour le Développement, Géoscience Environnement Toulouse, Observatoire Midi-Pyrénées, Université de Toulouse, 14 Avenue Edouard Belin, 31400 Toulouse, France

christophe.monnin@get.obs-mip.fr

A. Montanini

Department of Chemistry, Life Sciences and Environmental Sustainability, Parco Area delle Scienze 157/a, 43124 Parma, Italy

alessandra.montanini@unipr.it

M. Patriat

*Ifremer, UR Géosciences Marines, 29280 Plouzané, France
Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia*

martin.patriat@ifremer.fr

B. Pelletier

Geosciences Azur (UMR 6526), IRD, 101 Promenade R. Laroque, BP A5, 98800 Nouméa, New Caledonia

bernard.pelletier@ird.fr

B. Robineau

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

Bernard.robineau@gmail.com

W. R. Roest

Ifremer, UR Géosciences Marines, 29280 Plouzané, France

walter.roest@ifremer.fr

A. Secchiari

Department of Chemistry, Life Sciences and Environmental Sustainability, Parco Area delle Scienze 157/a, 43124 Parma, Italy

arianna.secchiari@nemo.unipr.it

M. Seton

*EarthByte Group, School of Geosciences, The University of Sydney, NSW 2006, Australia
State Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an, China*

maria.seton@sydney.edu.au

B. Sevin

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

brice.sevin@gmail.com

R. Sutherland

Victoria University of Wellington, PO Box 600, Wellington 6140, New Zealand

Rupert.Sutherland@vuw.ac.nz

E. Tournadour

*Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia
ADECAL Technopole, ZoNéCo Research Program, 98845 Nouméa, New Caledonia*

elsa.tournadour@gouv.nc

M. Vendé-Leclerc

Service Géologique de Nouvelle-Calédonie (New Caledonia Geological Survey), BP M2, 98 849 Nouméa, New Caledonia

myriam.vende-leclerc@gouv.nc

S. Williams

*EarthByte Group, School of Geosciences, The University of Sydney, NSW 2006, Australia
State Key Laboratory of Continental Dynamics, Department of Geology, Northwest University, Xi'an, China*

simon.williams@sydney.edu.au