Journal of South American Earth Sciences 93 (2019) 84

Contents lists available at ScienceDirect

Journal of South American Earth Sciences

journal homepage: www.elsevier.com/locate/jsames

Book review

S. Siegesmund, M.A.S. Basei, P. Oyhantcabal, S. Oriolo. (Eds.), Geology of Southwest Gondwana, (2018) 688 pp.

This comprehensive book on the Geology of Southwest Gondwana contains 24 Chapters written by 54 authors and covering regional reviews relating to Gondwana to either South American or African-centric contributions. Across the various chapters, the focus shifts from palaeomagnetics to geophysics, tectonics, stratigraphic, geochronological and isotopic studies, with in the final chapters reviews on Banded Iron Ore, glaciations, palaeontology, sedimentological provenance, shear zones, metallogeny and impact structures, providing a balanced set of reference papers of wide interest to researchers working on Gondwana, South America and Africa.

The book is organised into four Parts: I. Paleomagnetism, Geophysics and Adamastor Ocean, II. Old continental landmasses, III. Neoproterozoic fold belts related to Western Gondwana formation and IV. Special topics.

The first part presents a Palaeomagnetic synthesis by Rapalini of knowledge on Gondwana, focusing on palaeomagnetic data for Western Gondwana blocks, and comparing them with constraints for Eastern Gondwana and Laurentia. Corner and Durrheim present an integrated geophysical and geological framework for the lithospheric structure of the Kalahari Craton, and it is unfortunate that a similar review is not presented for the Central African or South American cratons. Basei et al. provide a model for the opening and closing of the Adamastor Ocean based on a correlation between the Kaoko Belt in Africa and Dom Feliciano Belt in South America.

The second part is dedicated to the Archaean and Proterozoic evolution of the main cratonic units of Southwest Gondwana with chapters by Oyhantçabal et al. on the Rio de la Plata Craton and Oyhantçabal et al. and Passarelli et al. on the smaller fragments of the Nico Perez Terrane and Luis Alves and Curitiba Terranes, respectively. The African blocks are presented by Thiéblemont et al. providing a review of the Congo Craton, with Jelsma et al. focusing on the Angola segment, while Oriolo and Becker provide an overview of the Kalahari Craton.

The third part focuses on the Neoproterozoic fold belts that provide a record of the amalgamation history of Gondwana. The Brasiliano (Dom Feliciano and Ribeira) belt is discussed by Philipp et al. and Hueck et al., while the Pampean Belt forms the focus of a contribution by Lopez et al. The African belts are discussed by Goscombe et al. (Damara Belt), Frimmel (Gariep Belt) and Kisters and Belcher (Saldania Belt), while da Silva Schmitt et al. provide an overview of the assembly history of Gondwana as a whole.

The fourth and final part of the book assembles a series of contributions that cover a variety of special topics. Banded Iron Formations are discussed by Smith (Southern Africa) and Rosière et al. (South America). Poiré et al. provide a contribution on glaciations in South America, but unfortunately there is no equivalent contributions to cover Africa. Gaucher presents a review of the fossil record in Southwest Gondwana, while Zimmermann's contribution covers the Lower Palaeozoic Basins of Southwest Gondwana. Oriolo et al. present an overview of major shear zones, both in southern Africa and South America and discuss their role in the assembly of Gondwana. Borg and Gauert provide an overview of metallotects in the African parts of Southwest Gondwana, but unfortunately no companion paper covering South America is included in the book. A final chapter by Reimold et al. review the impact record for Southwest Gondwana, covering both the South American and African segments, as well as Eastern Gondwana (India and Australia).

This book offers a treasure trove of comprehensive review papers and new material of high scientific standard covering all parts of Southwest Gondwana. The new information and tectonic models presented across the book provide a compelling view of the geological history of the blocks that make up Southwest Gondwana, both in Africa and South America, and their assembly into the sub-supercontinent. This is an essential resource for all researchers working on Gondwana.

The book is published by Springer series: Regional Geology Reviews Springer, Berlin, and printed on acid-free paper with colour figures, and priced as 299 € (248,71 € for eBook).

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https://doi.org/10.1016/j.jsames.2019.04.014
Received 8 April 2019; Accepted 19 April 2019
Available online 20 April 2019
0895-9811