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Early Cretaceous Volcanism in Central and Eastern Argentina During Gondwana Break-Up

Springer

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ISSN 2191-589X ISSN 2191-5903 (electronic)
SpringerBriefs in Earth System Sciences
ISBN 978-3-319-29591-6 ISBN 978-3-319-29593-0 (eBook)
DOI 10.1007/978-3-319-29593-0

Library of Congress Control Number: 2016930287

This Springer imprint is published by SpringerNature
The registered company is Springer International Publishing AG Switzerland

Preface

The objective of this contribution is to analyse the geochemistry, petrogenesis and geodynamics of the Early Cretaceous volcanism in Argentina, mainly located in Córdoba and Misiones provinces, during the break-up of Gondwana.

In Córdoba (central Argentina), the analysed volcanic rocks are outcropping in Sierra Chica and different groups of lithological types were recognized in various localities. These are mainly alkaline basalts that reflect a lithospheric mantle source.

In Misiones (north-eastern Argentina), the volcanic rocks are tholeiitic basalts and belong to Paraná Magmatic Province (PMP) which is regionally extended in South America and has a counterpart in Africa (in the localities of Etendeka and Angola). This large igneous province (LIP) has been widely studied by several authors, and different models have been considered to explain its origin. Dating obtained through various methodologies ($^{40}Ar/^{39}Ar$, U–Pb, and Re–Os isochrons) and published by different authors indicate an Early Cretaceous age between 131.6 ± 2.3 and 134.7 ± 1 Ma for PMP, though interbedded acid volcanic rocks yielded even 137.3 ± 1.8 Ma.

A new $^{40}Ar/^{39}Ar$ age of 129.6 ± 1 Ma from an alkaline rock of Sierra Chica of Córdoba (SCC) presented in this contribution, points out that this volcanism was slightly younger than PMP.

It is suggested that the volcanism in Misiones and in the overall LIP could have been linked to an ascending limb of a large-scale convective roll induced by the subduction in the western margin of Gondwana. This ascending limb might have mainly affected weak cortical areas (old sutures between cratons). On the other hand, the volcanism of Sierra Chica might have been related to a small-scale edge-driven convection triggered by the great contrast in thickness between the Río de la Plata craton and the Pampia terrane.

Acknowledgments

This monograph is dedicated to the memory of Enzo Piccirillo, Carlos Ernesto Gordillo and Daniel Alberto Valencio, from whom the authors learnt how to work in science. Enzo Piccirillo and Marco Iacumin are specially acknowledged for the helpful discussions and reviews of the Ph.D. thesis of the first author, as well as for the support in technical, analytical and field work received from the University of Trieste. Special gratitude for Giuliano Bellieni for microprobe analyses carried out at the University of Padova. In the same way, the following are kindly acknowledged: Marcela Remesal, Sonia Quenardelle, Stella Poma, Víctor Ramos, Carlos Rapela, José Viramonte, Mónica Escayola and Iván Petrinovic for significant opinions and suggestions expressed in diverse opportunities. We also thank SEGEMAR, CONICET and Universidad de Buenos Aires for letting us do this work, particularly to Alberto Ardolino and Jose Mendía, for the encouragement received to undertake the study of Misiones rocks. Kindly thanks to Claudio Gaucher and Jorge Bossi for the significant comments on the Precambrian units in south-eastern South America. This work was supported by grants from Universidad de Buenos Aires (UBACyT 20020100100894) and Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET-PIP 112-200801-02828).

Contents