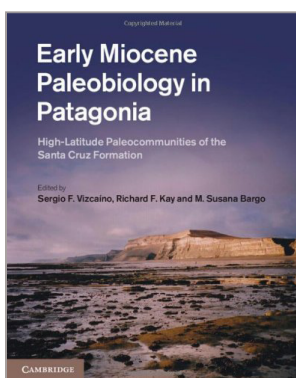




# Early Miocene Paleobiology in Patagonia: High-Latitude Paleocommunities of the Santa Cruz Formation

A book review



Edited by Sergio F. Vizcaíno,  
Richard F. Kay, M. Susana  
Bargo

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[Early Miocene Paleobiology in Patagonia](#) is a wonderful collection of papers dealing with high-latitude palaeocommunities of the Santa Cruz Formation, a fossil-rich rock unit in Argentine Patagonia. The papers comprise of research on palaeobiology, palaeobotany, chronology, sedimentology, palaeoenvironments, palaeoclimate, morphology and palaeoecology. With 17 contributions, this volume of over 370 pages contains a wealth of information for anyone investigating high-latitude palaeocommunities, palaeoclimate and South American geohistory.

The editors, Sergio F. Vizcaíno, Richard F. Kay and M. Susana Bargo, have a very good pedigree for editing this volume of important Argentinian science that is often lost in translation or published in obscure resources. I very much welcome this volume as the editors have covered the majority of the research disciplines required to provide a great understanding of the Santa Cruz Formation. The English throughout the volume is very good and the editors and publishers should be thanked for this.

Cambridge University Press has done a superb job on this volume, producing a very high-quality book. The text is well set out, the tables are clear, the illustrations are consistently of good quality and the photographs are very clear and well presented. It is also nice to see that each chapter has an abstract in Spanish.

As with all edited volumes the first chapter sets out the background to the book and the research focused on studying the Santa Cruz Formation. Then the volume quickly covers the topics of tephrochronology, absolute dating and geochronology. Following this are

a set of contributions that provide information on the sedimentology and stratigraphy of the Santa Cruz Formation. The understanding of the palaeoclimate and palaeoenvironment of this formation is supported by documenting evidence using trace fossil assemblages (ichnology), plant cuticle and spore/pollen assemblages, and the presence and structure of the amphibian and squamate reptile compositions.

The remaining half of the volume is dedicated to the palaeoecology and palaeobiology of the Santa Cruz Formation. These contributions include such fossils as birds, sloths, anteaters, rodents, ungulates, armadillos, glyptodonts, carnivores and primates. The volume also discusses the diversity of the mammalian and marsupial assemblages, with many of the contributions deal with taxonomy, body mass, ecology and ecomorphology. As previously mentioned, the illustrations and photographs are of high quality and these are clearly depicted in these contributions with stunning line drawings showing life reconstructions.

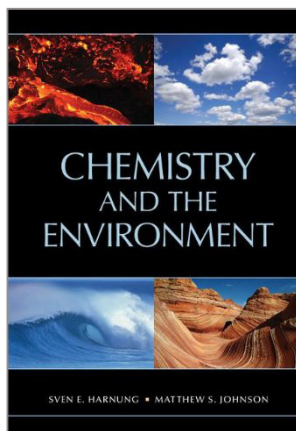
The volume ends with an excellent review of the palaeoenvironment and palaeoecology of the Miocene Santa Cruz Formation by the editors. This chapter covers the background of what is known about this formation that includes the contents of the previous contributions.

Ultimately our understanding of the Santa Cruz Formation is immensely increased by this edited volume, which is a valuable resource for any graduate student, post-doctoral researcher or lecturer who either works on the Miocene from South America or has an interest in the general understanding of this geological epoch. The volume covers all the topics required to obtain a broader understanding of the Santa Cruz Formation and each contribution has an extensive set of up-to-date references for the reader to follow up. This is a volume that you will not be disappointed in. I have enjoyed reading it so much that I wish I could take some time off to travel to Argentina and have a guided tour of the Early Miocene Santa Cruz Formation to see all the wonderful information I have read in this book.

*Darren R. Gröcke*  
Reader in Stable Isotope Geochemistry  
University of Durham, UK

# Chemistry and the Environment

## A book review



By Sven E. Harnung and  
Matthew S. Johnson

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The origin and movement of the atoms and molecules on the Earth is, understandably, a complex, nuanced and diverse subject. Indeed, if the natural world was not complex enough already, its chemistry is further obfuscated by the interferences of human activities. It is for this reason that the achievements of this book, namely presenting a fundamental and unified course in environmental chemistry, are made more impressive.

[Chemistry and the Environment](#) is written as the ideal companion to undergraduate and graduate level courses on environmental chemistry. The authors, Sven E. Harnung and Matthew S. Johnson, both at the University of Copenhagen, are highly respected researchers within the field of environmental chemistry and have devised the book based on their own courses.

After a short introduction, the book is divided into 10 chapters. The first three introduce the Earth and the base equations that govern its dynamics. Three chapters examining the atmosphere, hydrosphere and pedosphere, respectively, follow this, while chapter 7 describes global biogeochemical cycles. The book concludes with two chapters on the chemical industry and the environmental effects of certain chemicals, and a final chapter on climate change.

At the rear of the book, the expansive appendices also provide an almost exhaustive reference for the reader – from the periodic

table to polynuclear complex equations – who might otherwise have resorted to search online for such information.

Perhaps the most impressive aspect of this book is its conciseness. Each one of its chapters could be a textbook within itself, yet the authors manage to distill each topic down to its bare essentials. Some sections, such as the climate change chapter, might have benefitted from a more thorough detail, but, in most subjects, especially the chemical kinetics and fluid dynamics sections, it reaches considerable depth. The authors present the various subjects in a coherent narrative that is not interrupted by case studies or diversions.

One aspect that seems oddly lacking for a book such as this is end of chapter exercises. These are instead available online, the address for which is hidden in small print within the copyright section. The rationale for this is that they are designed to be issued by lecturers to students. Indeed, the answers, normally rarely available and a boon for students when they are, are only available to registered lecturers at the website. I expect that this might disappoint students, many of whom might wish to use the exercises for revision and do not have access to the answers as the lecturer does not use this book or its exercises. The exercises themselves are exemplary, being a mixture of open, descriptive questions and problems of many difficulty levels. Though it would undoubtedly lengthen the book, I feel that it might have made the book more self contained and complete if these exercises had been included within the volume itself and the answers made available to all.

This book will appeal to undergraduates, graduates and professionals alike. Though its scope is necessarily broad, it manages to tackle this most interdisciplinary of subjects with clarity and breadth. Because of its logical and concise layout, it forms an ideal companion – or even, the ideal basis – for any course in environmental chemistry.

*Oliver Knevitt*

*PhD student, University of Leicester, UK*

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