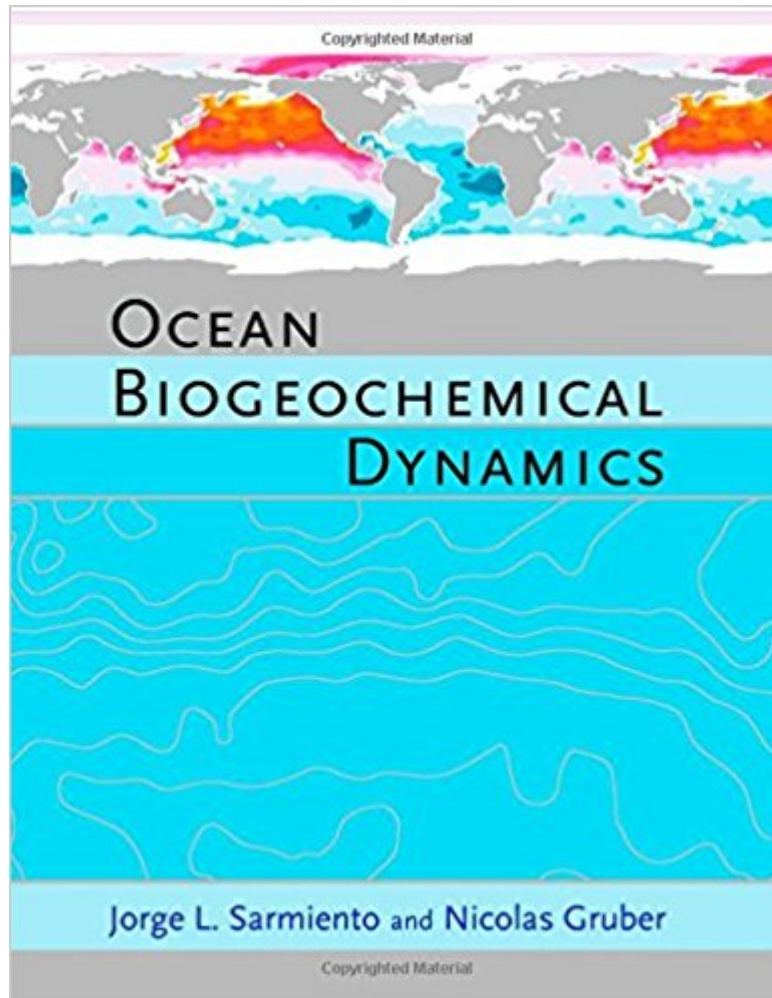




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# Ocean Biogeochemical Dynamics



## Synopsis

Ocean Biogeochemical Dynamics provides a broad theoretical framework upon which graduate students and upper-level undergraduates can formulate an understanding of the processes that control the mean concentration and distribution of biologically utilized elements and compounds in the ocean. Though it is written as a textbook, it will also be of interest to more advanced scientists as a wide-ranging synthesis of our present understanding of ocean biogeochemical processes. The first two chapters of the book provide an introductory overview of biogeochemical and physical oceanography. The next four chapters concentrate on processes at the air-sea interface, the production of organic matter in the upper ocean, the remineralization of organic matter in the water column, and the processing of organic matter in the sediments. The focus of these chapters is on analyzing the cycles of organic carbon, oxygen, and nutrients. The next three chapters round out the authors' coverage of ocean biogeochemical cycles with discussions of silica, dissolved inorganic carbon and alkalinity, and  $\text{CaCO}_3$ . The final chapter discusses applications of ocean biogeochemistry to our understanding of the role of the ocean carbon cycle in interannual to decadal variability, paleoclimatology, and the anthropogenic carbon budget. The problem sets included at the end of each chapter encourage students to ask critical questions in this exciting new field. While much of the approach is mathematical, the math is at a level that should be accessible to students with a year or two of college level mathematics and/or physics.

## Book Information

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## Customer Reviews

"This textbook is a monumental and masterful achievement, and the authors should be

congratulated both for taking on this important task and for the end result. . . . Every serious student and post-doc in this discipline, and all senior practitioners, should purchase or borrow a copy of this book and read it from cover to cover."--David M. Karl, Bulletin of the American Society for Limnology and Oceanography

Readers of Environmental Conservation with an interest in marine biogeochemistry and earth system science are encouraged to purchase or borrow this book. It is a comprehensive text on a complex and timely topic, and is one that will enlighten students and professionals alike. The authors are to be congratulated on their tour-de-force."--Peter Burkill, Environmental Conservation

"Ocean Biogeochemical Dynamics is an outstanding text for student and professional alike. The authors have developed an exceptionally lucid yet detailed discussion of the major biogeochemical cycles in the oceans, culminating in a quantitative examination of climate change and the contemporary carbon cycle. The book is a tour de force that should be incorporated into all marine chemistry and biogeochemistry courses."--Paul Falkowski, Rutgers University

Global ocean research projects during the past two decades have resulted in explosive growth in our knowledge of ocean biogeochemistry. Sarmiento and Gruber's book crystallizes this knowledge into a systematic quantitative treatise. For many years to come, this observation--and equation-filled volume will serve as a window into the literature on many subjects, a textbook for our classes, and a reference book on our desks. Studied carefully, it could teach chemical, biological, and physical oceanographers to speak a common language."--Edward A. Boyle, Massachusetts Institute of Technology

With this book, ocean biogeochemistry--the fascinating science behind the cycling of elements in the sea, and their transformation by biological, chemical, and physical properties--has finally found its theoretical underpinning. The two authors, both world experts, have succeeded in bringing together in a comprehensive and unified way the mass of information from the different scientific disciplines as well as the numerous observations obtained over the last few decades. This book will serve as the ultimate reference, both for students and the advanced research scientist, for many years to come."--Martin Heimann, Max Planck Institute for Biogeochemistry

The Sarmiento and Gruber text is a very impressive achievement, providing a readable yet advanced treatise on ocean biogeochemistry and providing the best available summary of the advances of the last few decades. The emphasis on dynamics is highly relevant for studies of global change, while the emphasis on problem solving has yielded an invaluable teaching reference."--Ralph Keeling, Scripps Institution of Oceanography

Sarmiento and Gruber have cleverly found the middle ground between the "educated layman" approach so often typified in "soft sciences" and the stultifying rigor

that cloaks the conceptual simplicity underlying many of the foundations of the field. They don't shy away from mathematical explanations but rather use them to make their points succinctly, and to clarify what is often a confused muddle in more basic texts."--W.J. Jenkins, Woods Hole Oceanographic Institution

Thank you for excellent items

This book will introduce you to the basics and important concepts of biogeochemical oceanography. It's a good reference book and I think it will be helpful for graduate students to prepare for their qualification exams.

I have a very positive opinion... the process was clear and the delivery fast..so I am happy with and I will recommend it to my friends.

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