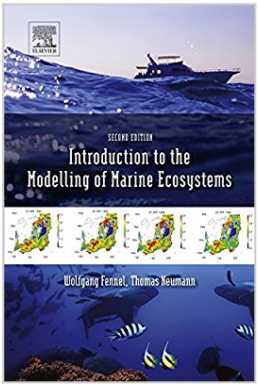

Introduction to the Modelling of Marine Ecosystems (Elsevier Oceanography Series)

By W. Fennel, T. Neumann

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Introduction to the Modelling of Marine Ecosystems, Second Edition provides foundational information on the construction of chemical and biological models – from simple cases to more complex biogeochemical models and life cycle resolving model components. This step-by-step approach to increasing the complexity of the models allows readers to explore the theoretical framework and become familiar with the models even when they have limited experience in mathematical modeling. *Introduction to the Modelling of Marine Ecosystems* shows how biological model components can be integrated into three dimensional circulation models and how such models can be used for numerical experiments.

- Covers the marine food web from nutrients, phytoplankton to higher trophic levels
- Presents information on the response of marine systems to external pressures as seen in physical biological models
- Provides an extended discussion of unifying theoretical concepts and of physical biological interaction
- Covers higher trophic levels, in particular multi-species fish models and their interaction with the biogeochemical models
- Offers MATLAB scripts on a companion website for many of the described example models to facilitate reproduction of the findings in the book and guide reader to writing own code

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Editorial Review

From the Back Cover

Introduction to the Modelling of Marine Ecosystems, Second Edition provides step-by-step processes for modeling the complex relationships that exist in real-world marine ecosystems. This essential book provides foundational information on the construction of chemical and biological models, from simple cases to more complex biogeochemical models and life cycle resolving model components. *Introduction to the Modelling of Marine Ecosystems* utilizes a step-by-step approach of increasing the complexity of the models to allow readers to explore the theoretical framework and become familiar with the models, even with limited experience in mathematical modeling. The text also shows how biological model components can be integrated into three dimensional circulation models and how these models can be used for numerical experiments. Researchers working in or beginning work in the field of ecosystem modeling, marine ecology, and environmental prediction will find this a valuable and engaging treatise on marine ecosystem modeling.

Key Features - Covers the marine food web from nutrients, phytoplankton to higher trophic levels - Presents information on the response of marine systems to external pressures as seen in physical biological models - Provides an extended discussion of unifying theoretical concepts and of physical biological interaction - Covers higher trophic levels, in particular multi-species fish models and their interaction with the biogeochemical models - Offers MATLAB scripts on a companion website for many of the described example models to facilitate reproduction of the findings in the book and guide reader to writing own code Accompanying Companion Website: http://booksite.elsevier.com/9780444633637

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Dr. Wolfgang Fennel is professor emeritus of physical oceanography at the University of Rostock and he was head of the section of physical oceanography of the Baltic Sea Research Institute, (IOW). His background is theoretical oceanography and he is a specialist in oceanic circulation and wave processes. He is also working on the coupling of physics and marine biology. Wolfgang Fennel was President of SCOR (2008-2012) and is now Past SCOR President until 2016. He promoted interdisciplinary co-operation.

Dr. Thomas Neumann is senior scientist working in the section of physical oceanography in the Baltic Sea Research Institute, (IOW). After an initial oceanographic career in small scale processes in the sea he turned his scientific interests in the 1990ties to coupled physical and biological modeling. He is one of the leading experts in coupled physical biogeochemical models.

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