BOOK REVIEW

An Introduction to Ocean Remote Sensing

SEELYE MARTIN
Cambridge University Press; ISBN 0521802806; xxvii+426 pp.; 2004; $75.

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For more than three decades, satellites have been observing the ocean from several hundred kilometers above the surface of the Earth. From the vantage of space, they have given us a global view of the ocean surface and its variability. Satellite instruments that are in orbit today detect a broad range of ocean variables that touch on all aspects of oceanography. These include sea surface temperature, surface wind velocity, chlorophyll, sea surface elevation, and ice cover, among others. The unifying element of satellite remote sensing is not just that measurements are made from space, but more specifically that satellite instruments detect electromagnetic radiation that is either emitted from or reflected off the surface of the ocean.

Seelye Martin's book, *An Introduction to Ocean Remote Sensing*, explores the full gamut of satellite oceanography, providing a comprehensive description of the technology used to observe the ocean from space over the past three decades and the satellites that are planned for the future.

Writing a book such as this is undoubtedly a challenge, because the methods used to observe the Earth are constantly in flux, satellites can fail unexpectedly early, and new scientific results are constantly emerging. In spite of these challenges, this book provides an up-to-date and complete view. It is similar in scope to Ian S. Robinson's recently released *Measuring the Oceans From Space*, although at two thirds the page count (and half the price), Martin's presentation is considerably more compact.

The book begins with three chapters of introductory material. Chapter 1 discusses satellite orbits and imaging strategies, chapter 2 discusses upper ocean phenomena that are observable from space, and chapter 3 reviews electromagnetic radiation. This is followed by more detailed review of electromagnetic theory as it applies to Earth measurement.

Chapter 4 describes radiative transfer through the atmosphere, and chapter 5 considers the behavior of electromagnetic radiation at the air-sea interface.

Subsequent chapters cover each measurement method in turn. Chapters 6–9 address passive methods in the visible frequency bands for ocean color, in the infrared for sea surface temperature, and at microwave frequencies for temperature, salinity, wind speed and direction, and sea ice. The book then turns its attention to active methods, with an introduction to radars in chapter 10, followed by specific chapters on scatterometry, altimetry, and imaging systems such as synthetic aperture radar. Finally, chapter 14 reviews new satellite systems that are in the pipeline.

With passing mentions of even continental ice and seafloor bathymetry, the book's review of ocean observation from space leaves no obvious omissions.

Overall, the emphasis is primarily on the physics used to measure the ocean rather than on ocean physics or biology. Nonetheless, the book features numerous examples of oceanographic results gleaned from satellite observations, and these are effectively illustrated with black-and-white figures and 23 color plates. Undergraduates or new graduate students with little background in physical oceanography might find this tough going as a stand-alone text book, since it does not provide detailed derivations of basic oceanographic principles, nor does it explain in depth the motivation for measuring quantities such as wind or sea surface temperature.

However, oceanographers who have a basic command of electromagnetic theory and differential equations will appreciate the book as a way to learn about the principles underlying remote sensing methods. Although the information about specific planned missions will undoubtedly change, because of the book's completeness and its thorough references it should remain a valuable reference on ocean remote sensing for years to come.

—SARAH T. GILLE, Scripps Institution of Oceanography and Department of Mechanical and Aerospace Engineering, University of California San Diego, La Jolla

ABOUT AGU

Neugebauer Receives 2004 Kaula Award

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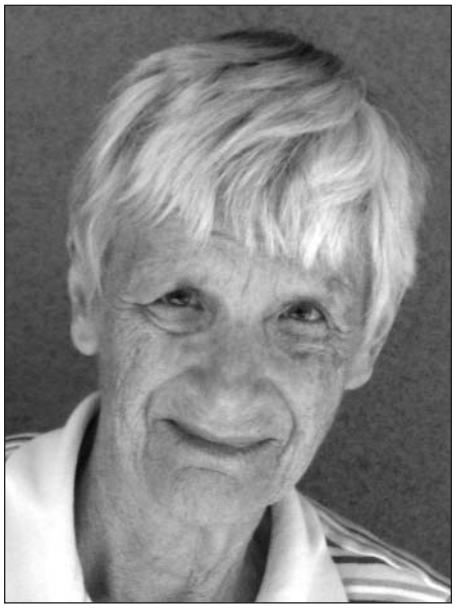
The William Kaula Award recognizes unselfish service to the scientific community through extraordinary dedication to, and exceptional efforts on behalf of, the AGU publications program. It is particularly fitting that recognition by the publications program be named in honor of William Kaula, who gave unstintingly of his talents and energies to AGU publications. He served as editor of Reviews of Geophysics *and* JGR-Solid Earth, *led the development of a number of policies and practices during his service on the Publications Committee, was a mentor to many junior scientists serving as journal editors and associate editors, and pressed always for higher standards for AGU journals.*

The 2004 recipient is Marcia Neugebauer.

Citation

Marcia Neugebauer is one of the pioneers of the Space Age. She started work at the Jet Propulsion Laboratory in June 1956 and contributed directly to the first identification and studies of the solar wind using some of the first space missions. Later, Marcia brought her enthusiasm, thoroughness, and broad impact to the American Geophysical Union, including working for the AGU publications program as editor-in-chief of *Reviews of Geophysics* and then serving as president of the AGU.

As editor-in-chief of *Reviews of Geophysics* Marcia led the team of editors in a total redirection of the journal to make it more interesting for all members. Time had passed since Bill Kaula left the editorship, and *Reviews* was losing support from the membership. Marcia developed an aggressive plan. It involved face-to-face meetings of editors at which the hot topics were identified and potential authors were selected. This was the first time that AGU had a journal with a specific editorial plan. To assure that the articles would be useful to the nonspecialist, Marcia initiated the concept of cross-disciplinary review, which helps makes them understandable to those in other fields.



As past president of the Union, Marcia helped to establish the working model for dealing with complaints under the AGU Policy on