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Satellite Monitoring of Inland and Coastal Water Quality

Retrospection, Introspection, Future Directions

By Robert P. Bukata, CRC Press, LLC, 2005, 272 pages, ISBN 0849333563, Hardcover, \$129.95 US

REVIEWED BY CURTIS D. MOBLEY

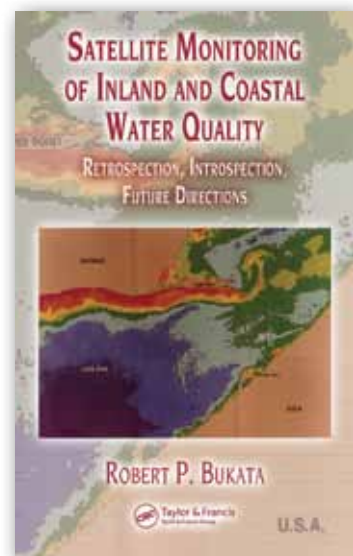
Note the title of this book. It is about remote sensing of coastal and inland “Case 2” waters, not the open ocean. It is a book of commentary about remote sensing, not a text where you learn how to do remote sensing. Robert Bukata, who has decades of experience in “ocean color” remote sensing of optically complex inland and coastal waters, collects the wisdom he accumulated during those years. He allows himself the luxury of waxing poetic and laying out his personal opinions for all who agree or disagree with his viewpoints. I envy him for that opportunity.

Ocean-color remote sensing of open-ocean waters has revolutionized blue-water oceanography and our understanding and monitoring of Earth. Bukata claims that the equally great potential of remote sensing of inland and coastal waters remains unfulfilled. The reason is that the scientific community often has failed to provide potential users with the information they need for resource management and policy formulation. Scientists may get excited about the bumps in a spectral radiance distribution, but most potential end-users of the imagery need

to know things like: Has this sea grass bed decreased in size since last year? Is this coral reef healthy? Are sediment or nutrients eroded from nearby farms making this lake uninhabitable for a particular species? In the absence of relevant end-user products, the manager or politician regards the imagery produced by scientists as little more than pretty pictures, and an agency responsible for a wetland continues to collect water samples for laboratory analysis. If remote sensing does not provide the water-quality products needed by these non-scientist end-users, no advocacy group develops to ask for more research, and future scientific development and ecosystem management suffer.

Bukata directs his discussion primarily to scientists—from graduate students to seasoned veterans—to make them aware of the needs of nonscientists who are potential, but not current, users of remotely sensed imagery. His message is simple: if you do not make a product your customer needs, you go bankrupt. Managers are the secondary audience, and the intent is to help them understand the capabilities and limitations of remote sensing and see what they are missing by not utilizing remote sensing.

After an introductory chapter, he gives a non-technical overview of the science underlying remote sensing of inland waters, and then a chapter on the problems



associated with extracting water-quality parameters from mineral-laden Case 2 waters. Chapter 4 enumerates various possible applications of water quality products to environmental monitoring, and Chapter 5 describes the water-quality products currently available for Case 2 waters. There are specific examples of successes as well as “lost opportunities” from the Great Lakes and coastal waters. Two more chapters on current remote sensing systems and “truth in advertising” of remote sensing products complete the book. The author includes a useful acronym list, a glossary, and references.

I agree with much of what Bukata has to say. Many pages in my review copy now have sentences underlined where he makes important points. What I do not like about the book is the writing style. There is much extraneous material. For example, page 15 lists the titles and singers of 18 songs, 10 of which I have never even heard of. I confess that I seldom listen to music, but in any case I am unable to see how Bukata’s favorite music has anything to do with remote sensing.

Important points are always presented in bullet form. This is acceptable in a PowerPoint presentation, but it is tedious and overdone in this book. Few readers, myself included, are going to wade

through his three-page, 53-bullet “summary of what environmental end-users might need.” The information is important and logically summarized, but the presentation makes for slow reading.

Down to the Sea for Science

75 Years of Ocean Research, Education, and Exploration at the Woods Hole Oceanographic Institution

By Vicky Cullen, Woods Hole Oceanographic Institution, 2005, 184 pages, Hardcover, \$25 US

REVIEWED BY CHARLES H. GREENE

Since its beginning, the Woods Hole Oceanographic Institution (WHOI) has been the quintessential American oceanographic research institution. Although WHOI was not the oldest American institution dedicated to ocean research, not even the most senior within the town of Woods Hole, its history during the past century has been one of constantly breaking new ground and setting new trends for the world’s ocean research community. What is it that set this groundbreaking and trendsetting institution apart from the other oceanographic research institutions that came into existence during the past century? The answer to this question can be found in Vicky Cullen’s richly illustrated history of WHOI entitled *Down to the Sea for Science*.

Down to the Sea for Science was written to commemorate WHOI’s 75th an-

niversary. Today, it is remarkable to contemplate how far WHOI and American oceanography have come during those 75 years and how closely intertwined are the histories of both. Although WHOI was founded in 1930, its roots, as well as those for American oceanography as we know it today, can be traced back to the 19th century. Vicky Cullen does a superb job of chronicling in words, illustrations, and photographs how the small village of Woods Hole evolved from the modest home of the U.S. Bureau of Fisheries’ first permanent field station in 1885 to what is today one of the most renowned centers of ocean science in the world.

During the decade leading up to the founding of WHOI, two prominent marine biologists, Frank Lillie of the University of Chicago and Henry Bigelow of Harvard, set into motion the events that would alter the history of oceanography. Lillie, considered “the founding father of WHOI,” was the driving force behind these events, using his formidable lobbying skills to sway the scientific policies of the federal government while

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simultaneously securing unprecedented private support for oceanography from the Rockefeller Foundation. As a result of Lillie’s efforts, the National Academy of Sciences formed a Committee on Oceanography, chaired by Lillie, which was charged with creating a vision for the future of oceanography in the United States. Under Bigelow’s guidance, as secretary, this Committee produced a final report that was not only influential in steering the future direction of American oceanography, but also instrumental in the establishment of WHOI.

“The establishment of a well equipped oceanographic institution on the Atlantic coast” was the first recommendation made by the Committee on Oceanography. With generous support from the Rockefeller Foundation, this