

ful photographs and portraits of the some of the giants in this area of study, including Nobel Prize Laureate Sir Chandrasekhara Venkata Raman, who correctly noted that the blue color of the sky was due to the scattering of sunlight by nitrogen in the atmosphere.

While on the whole, the book does a very nice job in reviewing historically key atmospheric issues in absorption and scattering phenomena related to our global system, there are some minor disappointments. Chapter 9 overviews the role of ozone and the chlorofluorocarbon depletion of the ozone layer ("ozone hole"), and neglects to comment on the important contributions of the chemists F. Sherwood Rowland and Mario Molina and atmospheric scientist Paul Crutzen in this area, which resulted in their receiving the Nobel Prize in chemistry in 1995. Other notable researchers who added significantly to this work include Susan Solomon, who is also missing from this review. Failing to discuss their role in setting the stage for the observations of ozone depletion made in Antarctica is a significant oversight in this historical overview of the subject. Additionally, chapter 10 reviews global climate is-

suces briefly, and while including the work of James Lovelock and others who have addressed the impacts of climate change, the overall coverage of this topic is a bit lacking, and neglects to address the potential impacts of aerosols.

Overall, I found the book to be very well written and translated, well illustrated, and an easy and quite enjoyable read. The author makes use of a number of stories to enhance the subject matter that will make this a very useful textbook for those teaching high school or lower-division undergraduate level courses on the subjects of optics, atmospheric science, and history of science. Noting that there are few books that are currently available on the subject that deal with this historical perspective, I would wholeheartedly recommend this book.

—JEFFREY S. GAFFNEY

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DYNAMIC DATA ASSIMILATION: A LEAST SQUARES APPROACH

John M. Lewis, S. Lakshminarayanan, and Sudarshan Dhall, 2006, 654 pp., \$150.00, hardbound, Cambridge University Press, ISBN 978-0-521-85155-8

I believe this is the first book about data assimilation with so many theories and algorithms put together systematically.

Audience: Data assimilation researchers and developers will find this work to be a very useful handbook on their desks.

This is a perfect textbook for postgraduate/postdoctorate-level courses. However, I would advise students to first attempt an introductory-level data assimilation course.

Strengths: The strengths of the book are the theoretical overviews of the data assimilation issues and the well-organized chapters from simple examples to the most advanced topics.

Weaknesses: For atmospheric and oceanic data assimilation systems, the most important issues are background covariance modeling, dynamic balancing, nonlinear observation operators, computation

cost, and nonlinearity (non-Gaussianity). I think these topics could be emphasized more in this book, in particular in the later chapters.

Illustrations: The diagrams for different reviews and comparisons are very useful.

Bottom line: This book provides readers with a good mathematical framework for data assimilation, with all important proofs and deviations.

I recommend the book for data assimilation system developers and colleagues who work with data assimilation research and applications.

—XIANG-YU HUANG

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