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Book review

Satellite Aerosol Remote Sensing Over Land, A.A. Kokhanovsky, G. de Leeuw (Editors). Praxis, Chichester, UK (2009). xvii+388 pp., US$ 229, Hardbound, ISBN: 978-3-540-69396-3

This collective monograph includes twelve in-depth review chapters contributed by experts in various aspects of the discipline of aerosol remote sensing over land using passive measurement techniques. The introductory chapter by G. de Leeuw and A.A. Kokhanovsky emphasizes the great importance as well as the extreme complexity of aerosol retrievals over bright land surfaces. The second chapter by R.C. Levy summarizes dark-land MODIS collection five aerosol retrievals and provides a detailed description of the retrieval algorithm and the results of product evaluation. The third chapter, by A. Lyapustin and Y. Wang, describes the time series technique for aerosol retrievals over land from MODIS radiances. The fourth chapter, by I.L. Katsev et al., outlines an iterative procedure for the retrieval of spectral aerosol optical thickness and surface reflectance from satellite data using a fast radiative transfer code and its applications to MERIS radiance measurements. Chapters 5 and 6, by L. Curier et al. and W.M.F. Grey and P.R.J. North, respectively, describe the methodology and results of aerosol retrievals over land using the (A)ATSR dual-view algorithm. The seventh chapter, by G.E. Thomas et al., summarizes an optimal estimation retrieval scheme for the derivation of the properties of atmospheric aerosol from top-of-atmosphere radiances measured by satellite-borne visible–IR radiometers. T. Holzer-Popp et al. discuss, in Chapter 8, the benefits and limitations of the synergistic aerosol retrieval method SYNAER. The retrieval of aerosol properties over land using MISR observations is discussed in detail by J.V. Martonchik et al. in Chapter 9. The great potential of polarimetric remote sensing of aerosols over land surfaces is illustrated in Chapter 10 by B. Cairns et al. Chapter 11, by Y.M. Govaerts et al., deals with the application of the optimal estimation approach to the joint retrieval of aerosol optical depth and surface bidirectional reflectance using MSG/SEVIRI observations. The final chapter, by S. Kinne, discusses how to create superior global maps of aerosol optical thickness by combining different remote-sensing data sets.

The editors deserve a lot of credit for being able to secure these instructive chapters and form a self-contained and comprehensive monograph, whereas the authors should be recognized for putting substantial effort into creating very useful and state-of-the-art summaries of different aspects of this research fields undergoing rapid development. Perhaps the only serious omission is the lack of a chapter on active lidar measurements of aerosol properties. The book is beautifully produced and contains many color illustrations imbedded in the respective chapters rather than combined into a separate color section.

This excellent and timely book is a must for any research or university library and a valuable addition to the personal library of any researcher or graduate student specializing in aerosol science, atmospheric radiation, and remote sensing.

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