



Fundamentals of Satellite Remote Sensing: An Environmental Approach, Second Edition

By *Emilio Chuvieco*

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Fundamentals of Satellite Remote Sensing: An Environmental Approach, Second Edition By Emilio Chuvieco

Fundamentals of Satellite Remote Sensing: An Environmental Approach, Second Edition is a definitive guide to remote sensing systems that focuses on satellite-based remote sensing tools and methods for space-based Earth observation (EO). It presents the advantages of using remote sensing data for studying and monitoring the planet, and emphasizes concepts that make the best use of satellite data.

The book begins with an introduction to the basic processes that ensure the acquisition of space-borne imagery and provides an overview of the main satellite observation systems. It then describes visual and digital image analysis, highlights various interpretation techniques, and outlines their applications to science and management. The latter part of the book covers the integration of remote sensing with GIS for environmental analysis.

Based on the first English version published in 2010, this latest edition has been written to reflect a global audience, and factors in international debates and legal issues surrounding EO, as well as future developments and trends.

New in the Second Edition:

- Includes additional illustrations now in full color
- Uses sample images acquired from different ecosystems at different spatial resolutions to illustrate different interpretation techniques
- Updates information on recent satellite missions (Landsat-8, Sentinel-2, hyperspectral and hyperspatial programs)
- Covers near-ground missions (including UAV) and ground sensors (spectroradiometers, cameras, LIDAR, etc.) to support EO analysis
- Offers analysis of image spatial properties
- Presents material on visual analysis, time series analysis, and data fusion
- Provides examples of EO data that cover different environmental problems, with particular relevance to global observation

Fundamentals of Satellite Remote Sensing: An Environmental Approach, Second Edition details the tools that provide global, recurrent, and comprehensive views of the processes affecting the Earth and is a must-have for researchers, academics, students, and professionals involved in the field of environmental science.

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Editorial Review

Review

"... this book comprehensively covers the fundamentals of satellite remote sensing, including radiation physics, atmospheric correction, spectral signatures of ground targets, sensors, image processing and analysis, and information retrieval. It also includes enlightening chapters on the validation of satellite-retrieved information and the integration of remote sensing data with geographical information systems. The breadth and depth of this book benefit greatly from the author's wide range of research experience in various fields of remote sensing applications. The text is well written and easy to follow, and the figures are well crafted and informative. It can be an ideal choice as a textbook for an introductory course on satellite remote sensing of the land surface, and it can also be a dependable desktop copy for remote sensing scientists and professionals."

?Dr. Jing M. Chen, University of Toronto, Canada

"... one of the most easy-to-follow, best-organised and accessible overviews of the topic. The inclusion in this second edition of ample schematic examples and conceptual colour illustrations is very helpful in explaining the hard-to-grasp terminology that, more often than not, remote sensing textbooks fail to disentangle. ... It is an excellent resource for students and practitioners alike."

?Dr. Elias Symeonakis, School of Science and the Environment, Manchester Metropolitan University, UK

"I value this book highly because it deals with the whole remote sensing chain in a systematic way. ... a comprehensive introduction into the field of remote sensing. It covers all relevant aspects of the remote observation of the Earth's surface ..."

?Dr. Jan Clevers, Laboratory of Geo-Information Science and Remote Sensing, Wageningen University, the Netherlands

"... It is an absolutely essential read for undergraduate and postgraduate students who want to get on top of the basics in image processing and classification."

?Kevin Tansey, University of Leicester, UK

"... ideal for an introductory course on remote sensing."

?Viviana Maggioni, George Mason University, Fairfax, Virginia, USA

"...a valuable book providing a thorough introduction into the field of earth observation, which will be very valuable as a book of reference for many years. It can be an ideal choice as a textbook for an introductory course on satellite remote sensing of the land surface. The text is well written and easy to follow, and as such highly recommended for students at the undergraduate level."

?*International Journal of Applied Earth Observation and Geoinformation*, May 2016

"...a good textbook for teaching, a useful source for post-graduate researchers, and a valuable reference source for managers and practitioners."

International Journal of Digital Earth, July 2016

"I think that this book is an extremely informative and useful resource for students, instructors, researchers, and professionals in the geospatial field and in ecology. Not only does the book discuss issues in a concise and clear way, but the graphics and imagery used are very informative and help to clarify potentially confusing concepts. The bibliography is particularly helpful as it allows the reader to easily delve into detail on a certain topic. I recommend this book highly as an addition to any library on remote sensing."

WAML Information Bulletin, November 2016

"This book is an attempt to help students and professionals become more familiar with remote sensing technology, focusing on satellite remote sensing. All remote sensing aspects are described, from the physical basis to obtain information from a distance, to the operation of platform carrying out the sensor system, to the data acquisition, storage, and interpretation. There are a multitude of airborne sensing systems. Among them, those focused on the thermal emission from the earth, centered on the short wave infrared (SWIR) and long wave infrared (LWIR), have their place in the book." *QIRT Journal*, December 2016

"...a useful addition to more mainstream remote sensing texts."

The Photogrammetric Record, March 2017

"...has a good general coverage of remote sensing technology and has an excellent coverage of applications related to environmental systems."

Geospatial World, March 2017

About the Author

Emilio Chuvieco is a professor of geography and director of the Environmental Ethics chair at the University of Alcalá, Spain. He was a visiting professor at the University of California at Berkeley and Santa Barbara, the Canadian Remote Sensing Center, Cambridge University, and the University of Maryland. In addition, he is science leader of the Fire Disturbance project within the European Space Agency's Climate Change Initiative program. He has coauthored 330 papers and book chapters, and 23 books. He has advised 35 Ph.D. dissertations. He is currently co-editor-in-chief of the journal *Remote Sensing of Environment*

Users Review

From reader reviews:

John Enriquez:

Playing with family in a park, coming to see the coastal world or hanging out with close friends is thing that usually you might have done when you have spare time, after that why you don't try factor that really opposite from that. Just one activity that make you not sense tired but still relaxing, trilling like on roller coaster you have been ride on and with addition associated with. Even you love Fundamentals of Satellite Remote Sensing: An Environmental Approach, Second Edition, it is possible to enjoy both. It is fine combination right, you still would like to miss it? What kind of hang type is it? Oh seriously its mind hangout guys. What? Still don't understand it, oh come on its named reading friends.

Nancy Baumgardner:

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