

BOOK REVIEW

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

“Fundamentals of Satellite Remote Sensing: An Environmental Approach” by Emilio Chuvieco introduces remote sensing data as a valuable source of information in understanding our environment. The second edition of this book aims to describe sources of available remote sensing data and how this data can be exploited as a key piece of information in environmental applications.

Chuvieco focuses on providing an overview of all stages of satellite remote sensing workflows, from choosing an appropriate source of data to analysis of that data, through a wide range of images and datasets applied over a consistent set of study areas. This choice—along with the wise selection of study areas which encompass a wide range of landscape types—allows the reader to develop familiarity with the area. In turn, this familiarity makes the task of understanding differences in data types, spectral bands and indices, and interpretation techniques more approachable, ultimately aiding in developing our knowledge of the many different aspects of the environment.

The first two chapters of the book provide a basic grounding in the principles behind remote sensing. Chapter 1 provides definitions, background, and justification for the use of satellite remote sensing, while Chapter 2 outlines the physical principles behind remote sensing. Chapter 3 provides a good overview of satellite systems, including an historical overview of satellite systems and updated information on some of the more recent satellite missions (such as Landsat-8 and Sentinel-2). Chapter 4 covers the fundamentals of analysing remote sensing imagery and is used to establish the reader with an expectation of what to expect in the more advanced chapters that follow.

The next three chapters provide an in-depth overview of current approaches to the analysis of remote sensing data. The first of these chapters, Chapter 5, outlines how visual interpretation techniques remain an important part of the analysis of satellite imagery. Chapters 6 and 7, which together make up approximately half of the book, outline digital imagery approaches. Although these chapters are both well written and comprehensive in content, their overall length makes them a slightly daunting prospect for even the expert reader. Given the use of summary and review questions at the end of each chapter, it is clear that one intended use of this book is as textbook to accompany undergraduate

university remote sensing courses. However, the difficulty and length of this material will be especially challenging for student readers.

Chapter 8 covers validation of the methods introduced in the previous sections. This is a very important part of satellite remote sensing that is too often undertaken as an afterthought in projects. In this chapter, Chuvieco correctly highlights the importance of validation as key part of satellite remote sensing for environmental applications. The final chapter on integrating GIS and remote sensing, however, is too brief to cover this important and often complex topic, and its inclusion appears does not add much value to the overall message of the book.

In summary, Chuvieco provides an complete overview of satellite remote sensing containing a suitable mix of theory and interesting practical examples. The book can be considered a valuable resource for environmental practitioners considering the use of satellite remote sensing as source of information. For these readers the use of consistent example images demonstrates the power of satellite remote sensing to extract a wide range of information. This will enable readers to gain insights as to how these techniques can be applied to their problems and their parts of the world.

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## References

- [1] CHUVIECO, E. *Fundamentals of Satellite Remote Sensing: An Environmental Approach, Second Edition*. CRC Press, Boca Raton, FL, 2016.