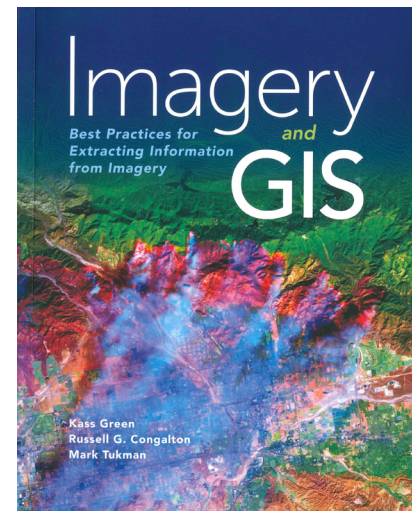


Imagery and GIS: Best Practices for Extracting Information from Imagery is a new remote sensing textbook aimed at GIS users interested in remote sensing as a data source and rather than the technical details of creating remote sensing data. In the current state of remote sensing, where data are widely accessible, and geometric and radiometric pre-processing are often automated, this book is well suited to the majority of potential remote sensing users interested in the application of remote sensing data rather than the technical processes behind remote sensing. The book is organized into 14 chapters divided into 4 sections – “Discovering Imagery,” “Using Imagery,” “Extracting Information from Imagery,” and “Managing Imagery and GIS Data,” with acronyms, glossary, references, and index at the end of the book. Each chapter is organized with bold headings with an introduction that prepares the reader for why the information in this chapter is important and concludes with a summary that specifically considers “practical considerations” that GIS professionals using remote sensing will need to anticipate. Throughout the book, there are colorful and detailed tables, charts, and pictures that support the text, along with occasional references to ArcGIS software and products. The book also contains several real-world case studies that help connect concepts with practice.

Section 1 serves as an introduction to both the book, but also fundamental concepts such as types of GIS data structures, how imagery fits into GIS and the types of maps produced from imagery, the imagery workflow, and the fundamentals of remote sensing such as the electromagnetic spectrum, types of sensors, types of platforms, and characteristics of imagery in the spatial and spectral domains. This section of the book is detailed and up-to-date without being too technical or overwhelming to new students of remote sensing. I particularly like the inclusion of a dedicated section at the end of chapter 2 (Thinking About Imagery), that outlines image workflows in 4 steps helping the reader understand how the following sections support the ultimate goal of high-quality data from remote sensing. Section 1 concludes with an entire chapter dedicated to choosing the correct imagery with helpful figures and tables detailing current and future sensors and platforms. Although this list may become quickly dated, it serves as an excellent resource.

Section 2, “Using Imagery” is split into two chapters. “Working With Imagery” covers data formats, visual enhancements, filters, and mosaics, and how to access imagery in ArcMap or ArcGIS Online including incorporating remote sensing into story maps. “Imagery Processing: Controlling Unwanted Variation in the Imagery” directly refers back to the imagery workflow from section 1. This chapter does a particularly good job of describing the different factors that can affect radiometric and geometric characteristics of imagery without being too technical. Readers appreciate the sources and implications of radiometric and geometric corrections without getting into the



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trigonometry or physics of these corrections better suited for more advanced readers and textbooks.

Section 3, “Extracting Information,” is the largest section of the book covering 5 chapters and 158 pages. This section is both detailed and broad describing a wealth of techniques from conceptualizing classification schemes, digital elevation models, elements of image interpretation, data transformations, spectral pattern analysis, incorporation of ancillary geospatial data in data exploration, classifications (including object-based image analysis and machine learning) and concludes with image change analysis. While the previous sections were well structured and approachable, I found this sec-

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tion of the textbook more difficult and challenging to use, as the chapter titles do not clearly indicate the topics covered in each chapter and several topics span multiple chapters. For example, the elements of image interpretation are part of chapter 9 “Data Exploration” which also includes topics such as Tasseled-Cap Transformation and DEM Hillshades, while the application of manual interpretation is part of chapter 10 “Image Classification.”

Section 4, “Managing Imagery and GIS Data” contain three chapters that address accuracy assessment and imagery data management including publishing/processing services, and a final concluding chapter. Of all the chapters, I found the “Summary – Practical Considerations” for accuracy assessment particularly well done encouraging the reader to think critically about both the implementation and interpretation of accuracy assessments. The chapter on “Managing and Serving Imagery” provides the strongest link between remote sensing and GIS and provides a useful technical guide on the various characteristics and tools that need to be setup and managed in order for remote sensing imagery and data to be fully incorporated into a Geographic Information System used by many users. For example, the authors detail mosaic datasets and how they can be used to deliver custom imagery to a user.

I appreciate the book’s approach of connecting remote sensing to GIS rather than as a stand-alone discipline. Given the growth of GIS over the last two decades and the increasing number of specialized GIS programs in colleges and universities, this book seems to fit in an important need of helping to train GIS professionals in remote sensing who may not become remote sensing specialists. The emphasis on best practices and practical considerations lends itself well to the GIS community who are focused on applications rather than development. The inclusion of limited references ArcGIS products appeals to GIS users, but the book makes an excellent textbook or reference no matter what software is being used.

However, there were a few missed opportunities that would have made this book truly excellent. First, the book focuses almost exclusively on the classification of vegetation, not only in the case studies, but also the methods presented. In the introduction to the textbook, the authors state the importance of remote sensing to a range of fields including precision agriculture, humanitarian aid, forestry, and mining. There is a missed opportunity to connect with the boarder GIS community for applications in these fields. Second, while the book is admirably up-to-date in regards to sensors, there is a notable lack of unmanned aerial system/ drone remote sensing. While drones are mentioned as a platform, the book is completely lacking in describing Structure from Motion and its products such as orthomosaics and digital surface models. Given the growth of drone remote sensing and its distinctly different characteristics and processing methods, this should be an essential part of any contemporary remote sensing textbook.

Imagery and GIS is a well-rounded and approachable introductory remote sensing textbook clearly written with GIS users and community in mind. The quality of the book both in content and printing (e.g., color figures and fonts) combined with an excellent glossary and index, all at an affordable price, make it a very appealing textbook or reference.



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