Image Processing and Data Analysis with ERDAS IMAGINE is intended as a step-by-step guide on processing remotely sensed data using ERDAS IMAGINE in an educational setting. Split into fourteen chapters, the guide is organized in a workflow that a student might use during a geospatial research project. While the content is similar to existing software field guides and unpublished sources created by individual university professors or students, this book contains multiple exercises using GIS for easy reference.

The content is grouped into five general areas, interweaved with instructions on using ERDAS IMAGINE, ESRI ArcMap for Desktop, and Quantum GIS (QGIS). The five areas are organized in various chapters; chapters 1 and 2 are on data collection focused on the acquisition of spatial data accompanied by instructions to ingest this data within the three software platforms; chapters 3 and 4 are on image processing that include georectification, orthorectification, and associated transformation and resampling techniques; chapters 6 and 7 are on image display limited to radiometric and spatial image enhancement; chapters 5 and 13 are focused on positional and thematic accuracy assessment separated by their usage within the instructional process; and chapters 8 to 12 and 14 are on image analysis. Review questions are included for each chapter with answers at the back of the book.

The book title places emphasis on ERDAS IMAGINE, but the book has almost equal content on ESRI ArcMap for Desktop and QGIS. These additions are a bonus for the user and should have been reflected in the title.

In Chapter 1, readers are to expect that a section on acquiring data from the LandsatLook Viewer will be included, but it is absent. In addition to acquiring data, this chapter includes instructions on displaying this data using the three geospatial software. The data acquisition information is already outdated, but readers should still be able to figure out where the information has moved or how to obtain similar data from the same websites.

Chapter 2 is the official introduction to the software applications, but software steps introduced in the previous chapter break up this workflow. In addition, the data acquisition steps are repeated, which makes some chapters stand on their own where others require other chapters to continue. The ERDAS steps used may not be the most efficient, but do not alter the outcome. For example, the book continually includes a step to 'Fit to Frame' for each image displayed. This step can be eliminated by presetting an option available in "Preferences." In addition, the remote sensing information relayed is limited or specific to the data the authors used in their exercises. Band Combinations is an example, where the reader would benefit from a table showing common band combinations and some uses of each combination for display and analysis.
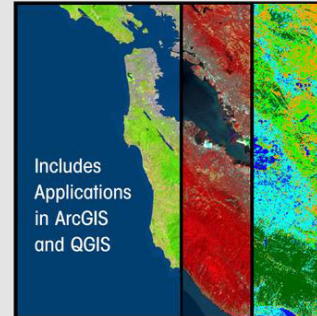
Image Processing and Data Analysis with ERDAS IMAGINE

Stacy A.C. Nelson and Siamak Khorram.
Taylor & Francis Group, LLC: Boca Rotan, FL. 2019. XV and 329 pp., diagrams, maps, photos, images, index. Hardcover. $144.00. ISBN-13 978-1-1380-3498-3.

Reviewed by Shiloh Dorgan, Physical Scientist, U.S. Army Corps of Engineers, Alexandria, Virginia.

Chapters 3 and 4 on georectification and orthorectifcation could be merged into a single chapter, as the only difference between the ERDAS processes is the incorporation of elevation data. The absence of the information explaining different transformations and resampling techniques, as well as clear best practices in selecting ground control points, is a weak spot in the book. Aside from that, the simple steps in using ERDAS to perform rectifications are clear and useful.

Chapter 5 on Positional Accuracy Assessment is succinct and informative in including an easy to read explanation of Root Mean Square Error (RMSE). Chapters 6 and 7 introduce Radiometric and Spectral Image Enhancements that are concise and beneficial to users. It would further benefit students to know the different types of enhancements outside of the two

chapters, showing the distinction between Spectral, Radiometric, and Spatial Enhancements. Chapters 8-14 provide a great compilation of instructions for students to follow in order to digitize using manual photointerpretation in both two and three dimensions, supervised and unsupervised classification, and detailed thematic accuracy assessment, mostly using ERDAS.

The book does not thoroughly explain the underlying basics of evaluating and processing remotely sensed data, creating a potential weak spot that may impact a student's overall understanding of remote sensing and image processing if used as a stand-alone resource.

In summation, this book serves as an easy how-to guide for new users of ERDAS, as well as for students new to geospatial technology. I appreciate the book's presentation of detailed step-by-step instructions for commonly used project applications. The book can serve as a reference for getting started, as well as a quick reminder for existing users. Readers will find the exercises useful in understanding how to use ERDAS IMAGINE, ESRI ArcMap for Desktop, QGIS, as well as to compare the similarities and differences between the three software. I am looking forward to future editions stemming from this effort.