High Resolution Satellite Imagery

Ian Dowman, Karsten Jacobsen, Gottfried Konecny, and Rainer Sandau

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***High Resolution Optical Satellite Imagery*, written by** Ian Dowman, Karsten Jacobsen, Gottfried Konecny, and Rainer Sandau, explores the characteristics of high resolution optical sensors and the ways in which optical imagery are acquired and processed. By itself, the term, "high resolution", is problematic since there is little consensus on what is considered "high resolution". In other words, where does the separation between high resolution and low resolution sensors begin? The book, however, sufficiently overcomes this problem by discussing systems, such as ASTER and SPOT alongside sensors with a ground sample distances (GSD) one meters or less. The book stands as a good reference for students and professionals.

The book can be divided into three parts. Part One (Chapter 1: Satellite Imaging Technology; Chapter 2: History of Optical Sensors in Space) is an introduction to satellite systems, concepts and terminologies as well as the history of space flight. This step-by-step introduction is helpful for readers with limited remote sensing expertise. However, more advanced readers will still enjoy reading these introductory chapters.

Part Two (Chapter 3: Principles of High Resolution Optical Sensors; Chapter 4: Sensors with a GSD of greater than 1m up to 16m; Chapter 5: Sensors with a GSD of 1 m or less) provide extensive theoretical and practical knowledge on "high resolution optical satellite imagery". In Chapter 3, Rainer Sandau proficiently summarizes the engineering and mathematics behind a generic optical sensor. The proceeding chapters investigate specific high resolution sensors in detail and provide informative tables and charts for an easier read. These chapters succinctly compile information ranging from camera characteristics to company profiles in charge of building these sensors.

Part Three (Chapter 6: Calibration, Sensor Models and Orientation and Chapter 7: Processing and Products) focuses on photogrammetric processing and remote sensing products. Topics discussed include rigorous models Rational Polynomial Coefficients (RPC) as well as Image Matching for Digital Elevation Model (DEM) generation, orthorectification, and data fusion. "Discussions on modeling, orientation and imagery products may seem limited to advanced readers, but these chapters still remain comprehensive so that they remain satisfactory to many. Finally, the book is closed by Chapter 7: Conclusions and Future Developments, where planned and potential missions are discussed.

Overall, the book fills an important gap in studies on high spatial resolution satellite data. Discussing specific sensor technologies and exploring their developmental trajectories offer a great opportunity not only for remote sensing specialists, but also for other scholars who are dealing with spatial data. The authors explain introductory topics in sufficient detail and open discussions for more advanced subjects. While doing so, the authors successfully cover "high resolution optical satellite imagery" in this relatively short book.

Due to the ways in which the book is organized some discussions overlap (e.g. CORONA camera system). This doesn't affect the flow, yet the number of such instances is large enough to be noticed by the reader. In various cases, the authors guide the reader to other chapters, sections and sub-sections for further explanation and references.

"High Resolution Optical Satellite Imagery" would have been more complete with an additional chapter on case studies using high resolution imagery. Spatial disciplines increasingly enjoy high resolution imagery due to wider availability and decreasing costs. There are exemplary studies throughout the book, but, these studies focus on sensor performances rather than how high-resolution imagery is exploited.

In summary, the author's provide an easy-to-read and high-quality book with sufficient number of color plates and graphs. The authors of the book were able to create a useful reference on the subject for a wide audience, including scientists and engineers. Scholars working with spatial data will also find this reference extremely valuable in their studies.