

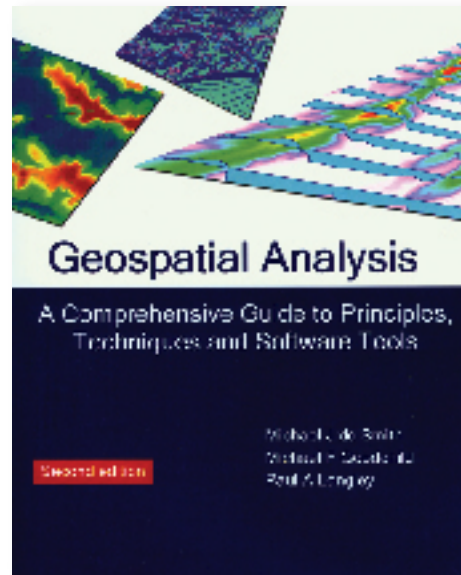
*Geospatial Analysis: A Comprehensive Guide to Principles, Techniques and Software Tools*, by Michael de Smith, Michael F. Goodchild, and Paul A. Longley. Troubador Publishing Ltd., Leicester, England. 2007. ISBN 13: 978-1906221-980 (Soft cover version). 491 pp, \$69.95.

What happens when the “Ok” button is clicked on a Geographic Information System (GIS) software program menu? Queries are made, data are analyzed, and results and maps are generated. All of this is done “behind the scenes” using algorithms, formulas, and processes known only to those who created the software code or someone willing to dig deep into software documentation—if it exists to this level of detail. So what really happens behind that menu in the software’s deep, hidden places? The book, *Geospatial Analysis: A Comprehensive Guide to Principles, Techniques and Software Tools*, was written to answer that question and to shed much needed light on those “behind the scenes” processes. Packing the book with terms, definitions, formulas, process steps, and algorithms, de Smith and his colleagues have documented a multitude of wide-ranging GIS analysis processes that to most, up until now, have remained deeply hidden behind a software menu.

*Geospatial Analysis* contains eight chapters: Introduction and Terminology, Conceptual Frameworks for Spatial Analysis, Historical and Methodological Context, Building Blocks of Spatial Analysis, Data Exploration and Spatial Statistics, Surface and Field Analysis, Network and Location Analysis, and Geocomputational Methods and Modeling.

The first three chapters provide a comprehensive discussion of software tools, terminology, formulas, data characteristics, spatial relationships, spatial statistics, and methods for framing spatial questions. Chapters 4 to 7 are the heart of the book and cover spatial analysis tools and techniques in depth. Chapter 4 includes data models, geometric operations, queries, distance and directional analysis, grid operations, and map algebra. Statistical methods, exploratory analysis, point, distance, and grid statistics, spatial auto-correlation, and regression methods are covered in Chapter 5. Chapter 6 consists of modeling surfaces, surface geometry, visibility, watersheds, and interpolation methods. Chapter 7 covers network and location analysis, network construction, and routing, and Chapter 8 wraps it all together with geocomputational methods, agent-based modeling, artificial neural networks and evolutionary computing.

*Geospatial Analysis* is available as a soft or hard cover book, a downloadable PDF file, and on-line. To keep costs low and facilitate revisions, the book version is produced using “print on demand” technology, with all the figures printed in black and white. The PDF version is in color and uses 9 to 10 megabytes of storage. The Drumlin reader/publisher program and an authentication code provided by the publisher are required to view the PDF. The reader is available for free download on the book’s web site and works with Windows 2000, XP, and Vista. Buyers of the book also get a free access to the PDF. The on-line version is provided for free.



The authors have built a companion web site to the book (<http://www.spatialanalysisonline.com/>) which contains the on-line version of the book and additional resources such as PowerPoint files for educators, the GIS data and spreadsheets used to generate the figures and illustrations, and other resources. The site provides a comprehensive software listing with separate lists of free and commercial software. A list of GIS blogs, case studies, terminology, formulas, recommended reading, and additional links from the University of Arkansas are provided.

Overall, this is an excellent resource for most in the GIS field. The information presented is generally not software specific, although there are many refer-

ences to how some software programs address selected analytical tools. The software information is comprehensive and very helpful to someone looking to purchase new or additional programs. The inclusion of the many software products from Europe helps the user in the United States who might not know about these resources.

Fortunately, the authors are not trying to reach every GIS user with this one publication. The casual user or novice does not need this book and would find the text far too detailed for their use. An advanced user or scientist would find the book very helpful as it documents GIS processes in good detail, which allows them to better use analytical tools or to customize software code to the benefit of their research. Software developers would also find this text helpful since it thoroughly documents so many GIS processes. This text serves as a companion to *Geographic Information Systems and Science* (2<sup>nd</sup> edition, 2005) which also has Longley and Goodchild as co-authors.

Parts of Chapter 2 duplicates what is found in most introductory texts, particularly where it details basic data structures and characteristics. The explanation of analytical tools would benefit from case study examples in the book. It is awkward to simultaneously page through the book and the PDF file or on-line version in order to view the figures in color. Making the book available in printed, PDF, and on-line forms is an excellent approach and it will be interesting to see if more publishers will adopt this option. However the lack of color in the book takes away the richness and vibrancy found in GIS displays and maps.

The authors should be congratulated for producing an excellent book, one that deserves to be next to most GIS users’ computers, on their computers, or in their list of favorite web sites.

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