BOOK REVIEW

REGIONAL GROUNDWATER MODELLING by M. Thangarajan.
Published by Capital Publishing Company, New Delhi, 340 pages, Price: Rs.950/-

The subject of this book is very topical and apt considering the importance the study of water resources is gaining everyday. The author has substantial experience in this area and hence a very detailed and experienced view of regional groundwater modeling is expected. The author justifies this in some areas whereas in other areas of the book falls short of expectation. Thus the book may not fill the needs of all concerned working in this area. However, the credit for bringing out such a book should go to the author since such a book in the Indian context may not be available.

The book is divided into 13 chapters starting from the basics of groundwater flow, different topics such as modelling techniques, data requirements, model design, calibration and execution have been discussed. Special emphasis has been given to the discussion on modelling of hard rock aquifers using analog models and sedimentary aquifers using numerical models. Case studies of mass (contaminant) transport in hard rock aquifers and also in sedimentary deposits have been discussed in detail. Many modelling approaches used in fractured formation have been presented and their limitations have also been elaborated. Some details on groundwater chemistry have also been presented with a discussion on chemical modelling of groundwater chemistry and application of these models on Kodaganur River Basin. In the last chapter, the management of water resources through community participation, artificial recharge, and remedial measures of contaminated sites has been presented.

As seen, the author has taken on himself an arduous task of bringing a large amount of information in one book. Because of the nature of the subject concerned and also the experience of the author, the book has turned out to be good in patches. For example, the chapters on field case histories, have come out well, whereas the chapters on mathematical modelling techniques are far from satisfactory. In a book on modelling, equal attention should be given to both conceptual and the mathematical part. The chapter on analog modelling techniques looks outdated, as these are not in vogue at present. Now-a-days, there is a lot of emphasis on quality aspects of groundwater. The presentation of this aspect along with modelling techniques is very limited. Further, regional modelling invariably involves a lot of data obtained from various methods including remote sensing technique which has not been dealt with at all. Although the author dwells upon at various places on the use of different commercial/public domain software, he has not evaluated the merits/limitations of them. At the end the reader will be left with the same confusion he started with.

All in all the book is well written and will be useful for beginners in the regional modelling area. There are a lot of slips in citing references, printing mistakes and the mathematical notations are not good. The above mentioned points may be useful for improvement, which can be carried out in the next edition.

M.S. Mohan Kumar
Department of Civil Engineering
Indian Institute of Science
Bangalore – 560 012
Email: mskk@civil.iisc.ernet.in

REMOTE SENSING IN GEOLOGY by SM. Ramasamy. Published by Rawat Publications, Jaipur & New Delhi, 2003, 251p. Price: Rs.495/-

This book is a compilation of eighteen research articles by Prof. SM. Ramasamy of the Centre for Remote Sensing, Bharathidasan University, Tiruchirapalli. Some are single authored and some are in collaboration with researchers from Space Application Centre, Ahmedabad, Geological Survey of India, Andhra University, ONGC, University of Melbourne, Australia, CGWB, Kerala State Landuse Board and the Centre for Remote Sensing, Bharathidasan University.

Though emphasis has been laid on structure and tectonics aspects, a balance has been struck by including other studies related to the divergent geological provinces of India.

Papers of specific interest which revolve around structure and tectonics include: 'The Origin of Domes and Basins in...’

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Precambrian fold belt of India'; 'Tectonic Evolution of Early Precambrian South Indian Shield'; 'Lineament Fabric of Rajasthan and Gujarat'; 'Stress Modelling of Vindhyan Basin'; 'Evolution of Ramgarh Dome'; 'Circular Features of Thar Desert' and 'Deformation Tectonics of Deccan Volcanics'. In all these papers, the role of satellite imagery and aerial photographs in mapping the structural grain has been very well brought out by Ramasamy, Bakliwal and the other authors. There are eighteen papers in this volume with contributions on Western India, parts of Northern India, Central India and South India. The information contained in each of the papers is of value to young researchers.

The first paper by Sood et al. provides a comparative evaluation of the images provided by SIR-A, TERRA and Landsat platforms, with respect to their utility in extracting geological and landuse information in parts of Rajasthan. This paper gives an important suggestion that keeping the spectral bands constant and increasing the spatial resolution of satellite image data, may not help in acquiring additional information on lithology. Though this is a work done during 1986, its findings are significant now and are now being implemented in the form of hyperspectral remote sensing.

In-depth analysis on the lineaments of Rajasthan and Gujarat (Paper 5), modeling of Vindhyan Basin (Paper 8) and evolution of Ramgarh Dome (paper 10) are benchmark papers and may be seen as sources of valuable information and a model research work for budding structural geologists.

The morphotectonic evolution of the Deccan volcanics of Southern Saurashtra, coupled with the study of its relation to the western extension of the Narmada lineament, described in paper 13, is yet another demonstration of the potential of satellite images and field studies for structural interpretation.

Though there is a good dosage of structural aspects, the quantum of information on lithological and mineral mapping using remote sensing could have been higher. Such a balanced approach would have done justice to the title of the book. Another aspect that would have added value to the book is its size. The highly informative maps (and the book) could have been printed on A4 size paper, thus providing better clarity of details to the reader.

On the whole, this book provides wholesome information on how to extract geological information for tectonic studies, and draw inferences on the tectonic evolution and settings of different terrains. The efforts of Prof. Ramasamy and his team in building an active school of research in Remote Sensing at the Bharathidasan University is laudable. This book is certainly worth finding a place in the libraries of individuals and institutions carrying out studies in Geology and Remote Sensing.

Department of Geology, Anna University, Chennai - 600 025 Email:ssanjeevi@annauniv.edu

Announcements

CALL FOR PAPERS ON ALKALINE AND BASIC MAGMATISM: Indian Association of Geochemists, Varanasi brings out the Indian Journal of Geochemistry annually. Each volume of this Journal has a special section devoted to specific topics in Geochemistry. For the year 2004, the Journal has planned to bring out a special section on "Alkaline and Basic Magmatism". Papers are invited on this topic. For further details, please contact: Dr. L.G. Gwalfani, The University Department of Geology, GPO Box 89, Civil Lines, Nagpur - 440 001; Phone: 0712-2558953; Email: talou101@rediffmail.com

41st ANNUAL CONVENTION OF THE INDIAN GEOPHYSICAL UNION (IGU) AND MEETING ON INTER AND INTRAPLATE SEISMICITY IN INDIA: PRESENT KNOWLEDGE AND FUTURE STRATEGY: This convention and meeting are scheduled during 29-31 December, 2004 at Saurashtra University, Rajkot, Gujarat. Apart from the special theme the three-day convention strating from 29 December 2004, will cover the following scientific topics: (1) Solid Earth Geophysics; (2) Atmosphere, Space and Planetary Sciences; (3) Marine Geosciences; (4) Theoretical and Experimental Geophysics; (5) Environmental Geophysics; (6) Geoscientific Instrumentation: Recent Advances; (7) Exploration Geophysics. For further details, please contact: Dr. P.R. Reddy, Convener, and Hon. Secretary and Treasurer, Indian Geophysical Union, NGRI Campus, Uppal Road, Hyderabad - 500 007. Phone: 040-23434662 (O), 040-27006534 (R). Fax: 040-27171564; Email: igu123@rediffmail.com or nandula@eth.net

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