

Book Reviews

Basin Analysis. Principles and Applications

Authors: Allen PA, Allen JR

Publisher: Blackwell Publishing 2005, 2nd ed.; 549 pages; British Pounds 37.50; ISBN 0-632-05207-4

Reviewer: Jörg Matschullat, TU Bergakademie Freiberg, Germany (joerg.matschullat@ioez.tu-freiberg.de)

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Another edition to a textbook is most certainly the greatest acknowledgement for the author(s). As we all know, there are not so many textbooks that receive such an appreciation. Since its first release in 1990, the field of basin analysis has expanded widely, and new methods – including modelling techniques – have taken major steps to better understand and interpret observed features and processes. The Allen brothers deliver a major overhaul of the 1st edition and include the latest advancement. While keeping the previous structure and philosophy of the text, the book does justice to new data material, new technology and new concepts.

The content is organized in four parts with a total of 10 chapters, followed by the references and a substantial index.

Part 1, 'The foundations of sedimentary basins,' introduces basins in their plate tectonic environment and describes the physical state of the lithosphere.

Part 2, 'The mechanics of sedimentary basin formation,' yields four chapters on basin formation due to lithospheric stretching, flexure, the effects of mantle dynamics and associated to strike-slip deformations.

Part 3, 'The sediment routing system,' discusses sediment transport, basin stratigraphy and subsidence as well as thermal history.

The final part 4, 'Application to petroleum play assessment,' closes with a major chapter on the application of basin analysis to petroleum resource management.

New, as compared to the 1st edition, are the discussion on the relevance of crustal stretching and flexure, the chapter on the effects of mantle dynamics, the chapter on the 'erosional engine,' material on thermochronological and exposure dating tools, and the inclusion of the petroleum system concept in the last chapter. All other chapters have been revised and updated – partly major revisions – to provide an up-to-date, concise and comprehensive textbook on this fascinating and important topic.

The Allen brothers combine the academic experience with the approach of the practitioner and thus again deliver a very readable primer on the topic. All illustrations (b & w) are clear and helpful for the lecturer and professor to be implemented in related courses. Examples are taken from many different environments and regions, and the references reflect the international current discussion without a regional bias (e.g., North America or Europe). This 2nd edition is certainly an awaited text book and a welcome update that can be recommended without any hesitation to both undergraduate and graduate students as well as the practitioner in the field.

Book Reviews

Principles of Stratigraphy

Authors: Michael E. Brookfield

Publisher: Blackwell Publishing 2004, 2nd ed.; 340 pages; British Pounds 29.99; ISBN 1-4051-1164-X

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A new textbook on the basics of stratigraphy for undergraduate students is available by Michael E. Brookfield from Guelph, Ontario, Canada. In brief, it is a concise, beautifully illustrated (b & w, with a few 3D-modelling results in full colour), and clearly written source that certainly enriches the market. The book is organized in three parts: I) Basics, II) Tracing environments in time and space, and III) Interpreting geologic history – each of which is given about 100 pages. The work closes with appendices, a glossary, the references and a proper index.

A short introduction explains the important role of stratigraphy in the earth sciences, followed by part I that introduces weathering, sediments and sedimentary rocks, and the most important sedimentary environments. The 2nd part can still be considered basics but goes into the details of vertical, horizontal, and time dimensions, basin analysis, and stratigraphic systems. In part III, tectonic forces, sea-level changes, climate, and biology – as important drivers of stratigraphic processes – are dis-

cussed, followed by two chapters on stratigraphic problem times and places, and extraterrestrial stratigraphy. The appendix consists of imperial to metric conversions, figure legends, and the geological time scale. The figure legends show the international symbols for rock types, fossil assemblages, etc., to quickly display the most important features of strata.

Compared with many other more traditional textbook on the issue, Brookfield succeeds in transporting not only his fascination, dedication and long-ranging experience with the topic and the sharp knife of scientific thinking, but also the necessary broad, almost interdisciplinary view that helps to successfully solve the complex problems which stratigraphic work poses. He does not stop at the mere presentation and listing of principles and terminology, but beautifully applies it to adequately generalized problems. It is fun and enlightening to read and can only be wholeheartedly recommended as the textbook for any related course.