BOOK REVIEWS

ALLMENDINGER, R. W., CARDOZO, N. & FISHER, D. M. 2011. *Structural Geology Algorithms: Vectors and Tensors*. xii + 289 pp. Cambridge University Press. Price £65.00, US$99.00 (HB); £30.00, US$50.00 (PB). ISBN 9781107012004 (HB); 9781107401389 (PB). doi:10.1017/S0016756812000192

I like this book. The material covered, the level of detail and the inclusion of MATLAB scripts make this a timely, relevant and very useful textbook. As the authors note, the book works very well in combination with Pollard & Fletcher (2005), Fossen (2010), Nye (1985) and Press et al. (1986); all these volumes should be in the library of any serious quantitative geologist. The level of material is suited to senior undergraduates or above. The MATLAB code is available from the publishers web site, which should avoid any transcription errors from the many code fragments included in the text. The MATLAB scripts are well written and well commented, and can easily form the foundation of more ambitious individual projects. Making no pretensions to be a general structural geology text, the authors boldly present an analysis of rock deformation based on tensorial algebra. I think it works. It's difficult to find anything wrong with the book, but seismic moment tensors have largely been omitted (although arguably beyond the realm of 'pure' structural geology), and there is no discussion of tensors for anisotropic material properties, such as elasticity, viscosity or thermal conductivity (but again, analysis of Nye (1985) should suffice). I think this book will help structural geologists – of all levels – make that critical leap from purely geometrical analyses, through kinematics and into the underlying continuum mechanics of rock deformation. A worthy addition to your bookshelf.

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References

POLLARD, D. & FLETCHER, R. 2005. *Fundamentals of Structural Geology*. Cambridge University Press, 512 pp.

FOSSEN, H. 2010. *Structural Geology*. Cambridge University Press, 463 pp.

NYE, J. 1985. *Physical Properties of Crystals: Their Representation by Tensors and Matrices*. Oxford Science Publications, 352 pp.

PRESS, W., FLANNERY, B., TEUKOLSKY, S. & VETTERLING, W. 1986. *Numerical Recipes: The Art of Scientific Computing*. Cambridge University Press, 848 pp.

DAVIS, R. A. & DALRYMPLE, R. W. (eds) 2012. *Principles of Tidal Sedimentology*. xvi + 621pp. Springer. Price £180.00, US$279.00 (HB). ISBN 9789400701229. doi:10.1017/S0016756812000271

This substantial collection of papers owes its origins to the series of International Conferences on Tidal Sedimentology that were initiated back in 1973 by R. N. Ginsburg and which now takes place every four years, most recently in Qingdao, China (2008). Its rationale stems from the growing interest in tidal sedimentary environments and by the need for a more comprehensive synthesis that encompasses not only the well-studied sub-environments of the intertidal and shallow estuarine zone but also the hitherto less well-known tidally-influenced environments of the continental shelves and deep ocean. Of 21 chapters, four cover generic aspects of tidal constituents, tidal sediment transport, diagnostic tidal sedimentary signatures (tidalites), and the use of trace fossils as an indicator of tidal influence on sedimentation. The treatment of tidal constituents by Kvale is especially thoughtful, although it comes as something of a surprise to this reviewer to be told that geologists are still schooled largely in the theory of the equilibrium tide and that the dynamic tidal model represents something of a paradigm shift. We then have ten chapters covering the processes and facies of intertidal, estuarine, shallow marine and ocean environments. These treatments are uniformly excellent, and chapters by, *inter alia*, Fan on open-coast tidal flats, Bartholdy on saltmarshes, Hughes on tidal flat and saltmarsh channels, Reynaud and Dalymple on shallow marine tidal deposits and Dykstra on deep-water tidal sedimentology should be required reading for anyone working in these fields. A set of four chapters focuses on tidal sedimentation in the Precambrian, Carboniferous, Cretaceous and Eocene. Such studies are especially valuable on account of the inferences that can be drawn from studies of ancient tidalites concerning the nature of past tidal forcings as well as the broader-scale nature of past sedimentary exchanges between land and ocean. The final three chapters describe tidal sedimentation in carbonate environments, modern and ancient.

In addition to the quality of its individual contributions, the collection bears the hallmarks of strong editorial control. There is certainly a consistency in approach and also presentation that is lacking in so many edited volumes. The book is exceptionally well illustrated, and whilst the colouring of a few of the more conventional plots is of questionable benefit, the multitude of colour photographs and diagrams makes for a very attractive volume. The standard of production by Springer is high, as it should be given the price. Indeed, at £180 in the UK, this will put a hefty dent in any wallet. But *Principles of Tidal Sedimentology* provides a very welcome synthesis of recent advances in this field and is definitely a volume that anyone seriously interested in tidal sedimentology will want to have.

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