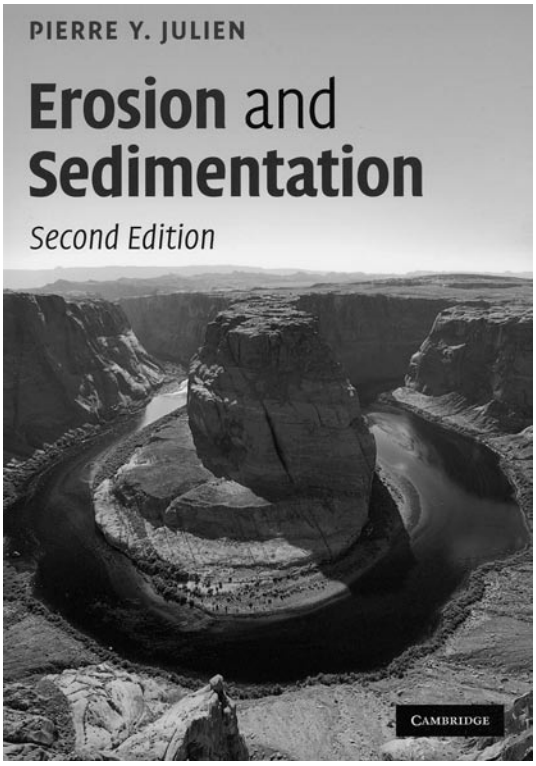
Erosion and sedimentation (2nd ed.), by Pierre Y. Julien, 2010. Cambridge University Press (www.cambridge.org). xvii + 371 pages. Hardback: price GBP 80.00, USD 140.00; ISBN 978-0-521-83038-6. Paperback: price GBP 35.00, USD 60.00; ISBN 978-0-521-53737-7. E-book: price USD 48.00; ISBN 978-0-511-71803-8.



A beautiful cover (a photo of the famous Horseshoe Bend in the Colorado River near Page, Arizona) that fits well with the title of the book: *Erosion and sedimentation*. Thus, a book that will immediately attract attention from all sedimentologists (and probably physical geographers). How disappointed will they be when they browse through the contents! And what a shame that so many of those who are potentially interested in the contents of this book will never read it!

The present review of the book should be considered as a warning: it is not a book for sedimentologists or physical geographers, but rather a book for engineers (and, admittedly, for sedimentologists and physical geographers who do not work in the field, but rather make theoretical calculations and/or who have to calculate the strength of some processes because the outcomes might be relevant for engineering constructions). This is expressed perfectly in many places, as on page 46, where the author provides a formula regarding processes along a streamline for a homogeneous rotational incompressible fluid. Why fluid? Do streams on earth (except for some very exceptional cases) consists of anything else than water? And has any sedimentologist ever seen a homogeneous fluid? There are always inhomogeneities, for instance in the form of sedimentary particles, air bubbles, etc.

It must therefore be concluded that the book has little to offer for the 'normal' sedimentologist, who may even miss some data. The 7-page subject index does, for instance, not contain the lemma 'Stokes', while Stoke's Law is important for practical sedimentology. And if anything theoretical is known among sedimentologists regarding both sedimentation and erosion, it is the Hjulström diagram; but this diagram is not present, the work by Hjulström is not referred to, and his name is not even included in the index! The above criticism does not imply in any way that the book is of insufficient quality. There is just too large a discrepancy between the title and the contents. And I must admit that I think the contents interesting, even though I will probably not profit from it scientifically: it is too mathematical for the type of sedimentology that I practice. Formulas are not the problem: they form an essential part of most earth-science textbooks nowadays – see the review of the book by Wangen (2010) in the present issue – and I have even been consulted by a publisher how to improve a book on mathematical modelling (Yang, 2008) for a second edition. While not being afraid of formulas, I think, however, that a book should be more than mere formulas, and that is my main objection against this book by Julien.

I feel that it is only appropriate when reviewing a mathematics-oriented book to give some numbers. The book contains over 275 numbered formulas, which often consist of 'subformulas' (e.g. 10.20a, 10.20b, 10.20c, 10.20d). In addition, there are 30 tables and over 100 figures, both also often consisting of

'subtables' and 'subfigures', respectively. And this is only *without* the sections (clearly indicated by a greyish background) that contain examples, exercises, problems and case studies. These sections, which take jointly over 100 (!) pages, also contain numerous formulas, figures and table-like data. Furthermore, there are a 3-page list of symbols, two appendices ('Einstein's sediment transport method' and 'Useful mathematical relationships') that take jointly 15 pages and that are equally full of formulas and tables. Taking into account the list of contents, the preface, the introductory chapter, the bibliography and the index, one might wonder whether the book contains any 'normal' text. Well, it does, but very little, indeed: I estimate it as some 70 pages, less than 20% of the total book! This implies, in my opinion, that the book may be useful for checking calculations, but not for learning about sedimentology or erosion.

As I mentioned above, this does not necessarily imply that it is not a good book. Although probably too theoretical for academics who work with practical sedimentological features, it may be helpful for engineering geologists (as, in contrast to what is commonly believed, engineers are commonly less precise because they have, for safety reasons, to take into account a wide margin of uncertainly in the outcome of their calculations, e.g. for construction purposes). They may think that this book is helpful, as it gives a quite good overview (though not complete, as mentioned above!) of the various aspects of sedimentation and erosion. This is reflected in the contents, which comprise, after an introduction, chapters on 'Physical properties and dimensional analysis', 'Mechanics of sediment-laden flows', 'Particle motion in inviscid fluids', 'Particle motion in Newtonian fluids', 'Turbulent velocity profiles', 'Incipient motion', 'Bedforms', 'Bedload', 'Suspended load', 'Total load', and 'Reservoir sedimentation'.

A good overview, but not for sedimentologists. Even in Chapter 8 (Bedforms) no single bedform is depicted! No wonder: Julien is Professor of Civil and Environmental Engineering. Fine, but he should have given this second edition of his 1995 book another title, thus increasing the chance that he will attract potentially interested readers: engineers.

References

Wangen, M., 2010. *Physical principles of sedimentary basin analysis*. Cambridge University Press, Cambridge, 527 pp.

Yang, X.-S., 2008. *Mathematical modelling for earth sciences*. Dunedin Academic Press, Edinburgh, 310 pp.

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