Géographie physique et Quaternaire

Simpson, John E., 1997. *Gravity Currents in the Environment and the Laboratory*. Second Edition. Cambridge University Press, 244 p., ill., 18 x 25,5 cm, 74,95$. ISBN 0 521 56109.

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Volume 53, Number 2, 1999

URI: https://id.erudit.org/iderudit/005691ar
DOI: https://doi.org/10.7202/005691ar

See table of contents

Publisher(s)

Les Presses de l'Université de Montréal

ISSN

0705-7199 (print)
1492-143X (digital)

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Cite this review

Kneller, B. (1999). Review of [Simpson, John E., 1997. *Gravity Currents in the Environment and the Laboratory*. Second Edition. Cambridge University Press, 244 p., ill., 18 x 25,5 cm, 74,95$. ISBN 0 521 56109.] *Géographie physique et Quaternaire*, *53*(2), 301–302. https://doi.org/10.7202/005691ar

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In the ten years since the first edition of *Gravity Currents* appeared, no other book or article has appeared that provides a comparable review of density-driven flows, and the volume will continue to be an essential introduction to the field for any serious student of environmental or experimental gravity currents. The scope of the book is broad, and covers gravity currents in the atmospheric, oceanographic, environmental, and earth sciences.

The title is an accurate reflection of the organisation of the book, the first half of which is devoted to environmental phenomena, both natural and anthropogenic, while the final hundred pages or so cover physical modelling in the laboratory, with a rather brief section on numerical modelling. Given the author's personal interest in aeronautics, the emphasis on atmospheric currents in the early part of the book is scarcely surprising, and this is the most heavily revised section in the second edition. After a brief introduction to the basic principles of flows driven by density differences, the following four chapters largely deal with the topics of thunderstorm outflows, dust storms, sea breezes and other atmospheric fronts (one of a handful of new references in the second edition is to Simpson's own book *Sea Breeze and Local Wind*, published in 1994).

The following five chapters cover environmental gravity currents of most direct interest to earth and environmental scientists. In the subaqueous realm this includes flows driven by density differences between different water masses in the ocean and between saline and fresh water in coastal settings, and by suspended sediment in turbidity currents. Chapters on volcanic gravity currents and avalanches cover flows of extremely diverse rheological behaviour, from lava flows to dense gas, and from powder snow avalanches to glaciers. Applications to the human environment include hazards to aircraft, gravity driven ventilation and fires within buildings, gases in mines, power station effluents and oil slicks, and includes some new material since the first edition.

The latter part of the book uses experimental data (in large part the author's own work) to introduce a theory that puts the earlier chapters in a more physical context. It covers the general structure of gravity currents, and the spread of dense fluids in two and three dimensions. It also introduces the effects of mixing, friction, interaction with obstacles, ambient stratification and ambient turbulence. For the specialist reader, this is in many ways the meat of the book, though the approach to the underlying mathematics has been deliberately simplified.

It is both a strength and the principle weakness of the book that it is essentially a review, and while it undoubtedly fills a niche as an introduction, it is a occasionally little frustrating for the reader who would like to go deeper into the subject. The structure of the book involves some compromises that presumably have been made in the interests of readability; environmental phenomena are described in chapters whose theme is more one of environment of occurrence than of the properties of the flows themselves. This means the logic of the development is not always apparent (*e.g.* material of human and social importance somewhat needlessly split between two chapters, and other chapter splits). It also makes the interjection of theory (most of which comes towards the end of the book) somewhat awkward. Also the experimental approaches reported towards the end of the book are not always tied back to natural phenomena described earlier.

Simplification of the maths also a presumably a compromise for the sake of readability; the superficiality of treatment of theory is sometimes frustrating, and one is often left wishing for a little more depth in the mathematical treatment, which is occasionally harder to follow than if it had been given in a little more depth. There are also a few errors, inconsistencies and omission of definitions which make the simplified approach to the maths occasionally hard to follow.

There was much less revision involved in the second edition than one might have anticipated - and persistence of a few errors

(and omissions) from 1st edition. For example, a good deal of work has appeared in the last ten years on mixing and entrainment, and on particulate gravity currents, including those with reversing buoyancy. It is particularly surprising that there is not more reference to the recent work of the Cambridge group with which the author has been so closely associated (*e.g.* Bonnecaze, Dade and Huppert), or that of the University of Minnesota (Garcia and Parker). Sediment transport by gravity currents is hardly addressed, despite some useful reviews in the last ten years. Similarly there is little on stratification within the flows (as opposed to that within the ambient fluid) and its consequences for interactions with topography.

The quality of production and lay-out is considerably improved from the 1st edition (though not, sadly, the quality of reproduction of the excellent photographs). The price, though cheaper in real terms, is still not cheap at almost $75US, but this book is still by far the broadest and most useful collection of material in the field. It remains not only an essential reference for anyone in any related discipline, but also absorbing and informative read for the general reader.

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