

The "big book" [AOFD] by Vallis is a treasure, but I suspect that this new *Essentials* is destined to be used much more widely in classrooms. Vallis does a superb job of communicating the peculiar tensions between deductive reasoning and physical intuition that underlie this science. The new book is more approachable but no less rigorous. I especially appreciate how the various equation sets are derived in succinct but meaningful ways in the first few chapters, and then used as tools to explore the dynamics in the chapters that follow. It's almost the perfect introductory textbook on this subject, and I plan to use it in my own courses.

Brian E. J. Rose,  
University at Albany

He's done it again. In *Essentials*, Geoff Vallis has produced a text that is useful to the student and the experienced scientist alike. While the content is simplified and shortened compared to its parent text, Vallis now provides even more descriptive explanations to support readers in their quest to navigate the physics of fluid flows. These explanations pair well with the theory, serving as an accessible introduction to students while also supporting the more experienced scientist as they put all of the pieces together. This will certainly be a future favourite for reading groups. Even readers with dog-eared versions of the parent book will want a copy of *Essentials*, for in it Vallis has added an entirely new chapter on planetary atmospheres, allowing the interested reader to venture into outer space to apply their newly honed GFD expertise.

Elizabeth A. Barnes,  
Colorado State University

For the past decade, Geoff Vallis' book *Atmospheric and Oceanic Fluid Dynamics* has been the "go to" encyclopaedic resource, but it is too lengthy and comprehensive to use as a course textbook. With this superb new shorter volume, Geoff Vallis provides us with the definitive graduate-level textbook, with just the right balance of essential topics alongside glimpses of more advanced topics at the cutting edge of research. The extensive use of margin notes, diamonds to indicate advanced topics, and a comprehensive set of problems will ensure that *Essentials of Atmospheric and Oceanic Dynamics* has much to offer students and researchers at all levels. The book opens with the quote: "Seek simplicity, accept complexity. Exploit simplification, avoid complication." On all counts, this book succeeds magnificently!

David Marshall,  
University of Oxford

Vallis' insights into the fundamentals and applications go a long way towards making otherwise complex topics readily grasped by those willing to study. He does not shy away from mathematics where needed, nor does he smother the reader with mathematics where pedagogically unnecessary. Those making it through this book will be ready to tackle a huge suite of research questions related to atmosphere and ocean fluid mechanics. Hence, this book serves an incredibly important role to the academic community. In a nutshell, we need more smart researchers who are adept at atmosphere and ocean dynamics to help understand how those dynamics are increasingly being affected by humanity's choices.

*Essentials of Atmospheric and Oceanic Dynamics* (EAOD) fills an important niche by offering an articulate and authoritative textbook to be worked through by advanced undergraduates and/or entering graduate students taking courses. The inclusion of exercises in EAOD is incredibly valuable for both students and teachers clamouring for more problem sets to test understanding. Whereas Vallis' previous book, *Atmospheric and Oceanic Fluid Dynamics* (AOFD) is the mother reference, EAOD offers a pedagogical entrée for those wishing to test the waters, including some deep waters. I will happily keep both books on my shelf and make use of them for personal study and to support the teaching of geophysical fluid dynamics.

Vallis has a clear writing style that brings the reader into the subject in an authoritative and friendly manner. He is a wise guru and gentle tutor. The subject of ocean and atmosphere fluid mechanics has matured greatly through his efforts at writing AOFD. EAOD furthers that maturation by allowing for a broader readership to tap into his brain. Well done Geoff!

Stephen M. Griffies,  
GFDL, Princeton University.

As its parent book became the bible of the field, but also grew in size and the number of topics it covered in its latest edition, this new book provides a perfect balance and introduction to the essential topics, giving a quick reference without going into all the details. In the Vallis tradition, it is presented clearly, perfectly packaged, and is well organized for both atmospheric and oceanic fluid dynamics. Its simplicity will make it majestically appealing both for people outside the discipline looking for an accessible, yet complete, introduction, and for students within the field at all levels. The inclusion of planetary atmospheres broadens the scope and makes it appealing to a wider and growing audience. Anyone with a background in physics can get the essentials using this book.

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