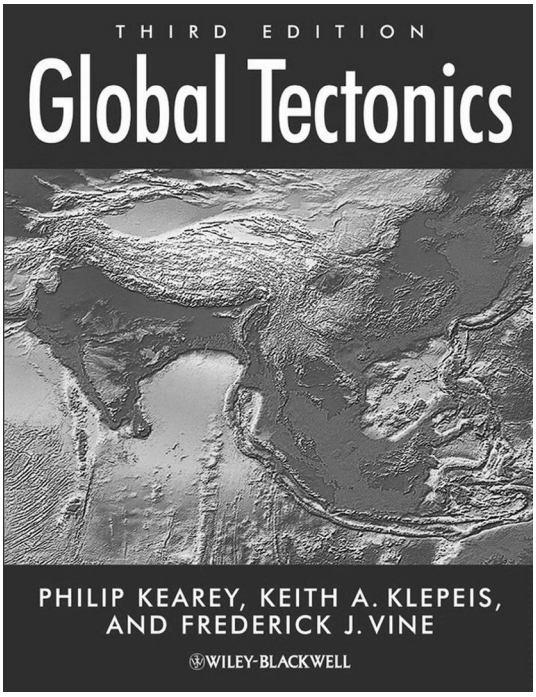
Global tectonics (3rd ed.), by Philip Kearey, Keith A. Klepeis & Frederick Vine, 2009. Wiley-Blackwell, The Atrium, Chichester, West Sussex, PO19 8SQ, United Kingdom. Paperback (also available as e-book), 496 pages. Price EUR 47.30; USD 89.95; GBP 34.99. ISBN 978-1-4051-0777-8.



This third edition provides an excellent in-depth overview on the one of the most revolutionary topics in the earth sciences. The authors significantly expanded the scope of issues covered in the first two editions of the book, while in places restructuring it. The changes to the third edition are large: there are two completely new chapters, including those on continental transforms and strike-slip faults, as well as those on Precambrian tectonics and the supercontinent cycle. The sections expanded in this edition include those on continental rifts and rifted margins, absolute plate motions and hotspots, direct measurements of relative plate motions, ocean ridges, orogenic belts, mantle processes including plumes, and large igneous provinces. The book is 149 pages longer than the second edition. The geology and geophysics sections are well balanced and rich in illustrations of excellent quality, which makes them easy reading.

Each topic is updated and provides a list of suggested additional readings. The comprehensive bibliography at the end of the book makes a very useful databank of references, which facilitates access to more specialized works dealing with any of the main issues covered by the book. The book now comes with an inset containing 17 colour plates, which are particularly helpful in understanding the text, and which are a valuable new resource.

The new order of chapters seems to work better than older editions of the book. The present version begins with a short, but very useful, historical perspective on global tectonics (Chapter 1). Then we move on to the internal structure of the Earth (Chapter 2), described in the necessary detail for a textbook dedicated to students of geology. Chapter 3 is an elegant and compact section devoted to continental drift and palaeomagnetism. It is followed by a description of sea-floor spreading and transform faults (Chapter 4). Chapter 5 gives a detailed description of the framework of global tectonics: plates and plate margins, distribution of earthquakes, relative plate motions, hotspots and absolute plate motion, true polar wander, superplumes and, finally, triple junctions. The next chapter deals with ocean ridges (Chapter 6) and it is followed by a description of continental rifts and rifted margins (Chapter 7). This latter chapter presents general characteristics of continental rifts, igneous activity related to them (including large igneous provinces) as well as the mechanisms of rift initiation. Chapter 8 is devoted to continental transforms and strike-slip faults. Following a chapter on subduction zones (Chapter 9), various types of orogenic belts are discussed (Chapter 10). This chapter describes also the principles of terrane analysis, structure of accretionary orogens as well as the mechanism of terrane accretion. The next chapter introduces the new topic of Precambrian tectonics and the supercontinent cycle (Chapter 11); it provides a comprehensive view on the formation of the first continents and on the major differences between Archaean and Proterozoic tectonics. Assuming that the reader has absorbed the contents of the preceding chapters, Chapter 12 addresses the issue of the mechanism of plate motion and clearly il-

lustrates all the controversial aspects involved. Finally, in Chapter 13, we are introduced into implications of plate tectonics for environmental changes like fluctuations of the sea level and sea-water chemistry, changes in oceanic circulation and Earth's climate as well as problems of economic geology like autochthonous and allochthonous deposits.

Throughout the book, the discussion is systematic, with alternative theories being introduced and thoroughly discussed. Where the evidence does not clearly support any of the views, the reader is left with the competing theories. The book assumes that the reader is familiar with a considerable knowledge of geology, geophysics and physics.

This is an excellent textbook for upper-level students needing a coherent, readable summary on tectonics. It is also a most valuable reference work for specialists seeking a broad update on recent discoveries in tectonics, starting from surface geology down to geophysical and geochemical insights. The book as a whole is not only clear and comprehensive, but also pleasant to read. It is a highly recommended must-have on the bookshelves of earth scientists for some time to come.

Jacek Szczepański
University of Wrocław
e-mail: js@ing.uni.wroc.pl