

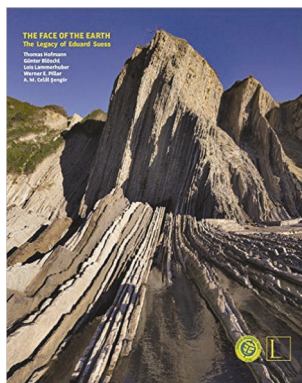
rift architecture and passive margins in the introductory chapter, detailed explanation is missing in the later chapters. Moreover, the authors also make the readers aware of the gaps in our knowledge on tectonic inheritance. Chapter 2 deals with the general trend of developmental aspects of rift axis and faults. The authors could have merged the first two chapters into one, as the contents of both seem to be introductory and similar. Chapter 3 discusses the brittle fracture behaviour of anisotropic rocks, based on the modified Mohr–Coulomb failure criterion and also fracture orientation. The development of fractures along varying orientations depends on the angular relationship between anisotropic plane and maximum principal stress axis direction.

Chapter 4 deals with the features responsible for tectonic inheritance. These pre-existing crustal anisotropic features are either ‘pervasive’ or ‘discrete’. The control of such fabrics is discussed with examples drawn from different parts of the world like the East African rift, Cenozoic continental rifts of Europe, Tertiary Rift System of Thailand, South Atlantic passive margins, eastern coast of North America’s passive margin, and eastern and western passive margins of India. Chapter 5 discusses the rheological heterogeneities and mechanical weaknesses in the lithosphere that control rift architecture. The geometry and genesis of rifts depend on the strength, thickness, composition, strain rate and thermal state of the lithosphere. The introduction of analogue modelling to understand crustal stretching due to pre-rift fabrics in chapter 6, gives the readers a better idea of the controlling parameters due to tectonic inheritance. It would have been better if the authors introduced some numerical models along with the analogue models for explaining the concerned topic. Chapter 7 presents a summary.

This book will be useful to all researchers and students of geology. It will challenge them to think further. The book is one of its kind and must be welcome in college/university libraries.

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The Face of the Earth: The Legacy of Eduard Suess. Thomas Hofmann, Günter Blöschl, Lois Lammerhuber, Werner E. Piller and A. M. Celâl Şengör. Edition Lammerhuber, Austria. 2014. 104 pages. Price: US\$ 45 (Hardcover). ISBN-10: 3901753699. ISBN-13: 978-3901753695.

Many geologists, especially the younger generations, may not know of Eduard Suess (1831–1914). Yet, the work of this great Austrian geologist had a tremendous impact on geology. Consider the terms Gondwana (land), Laurentia, Tethys, shield, eustasy, batholith, foreland, listric fault, backthrust (backfold); these and many other geologic terms we commonly use today were coined by Suess. It is a delight to see that Suess’ legacy is appreciated by this book on the 100th anniversary of his death. Readers may refer to Sorkhabi¹ for more information on Suess and his work.

The book begins with an autographed photograph of Suess, and quotes from two obituaries of him published in 1914. John Wesley Judd (*Nature*, 93) remarked: ‘Suess held much the same position among German-speaking peoples as did Huxley among English and Americans.’ Charles Schuchert (*Science*, 39) wrote: ‘The greater part of Suess’s long life was devoted to working out the evolution of the features of the earth’s surface.’

There are five essays (almost the first half of the book) and ‘quotes from the writings of Eduard Suess’, which cover the rest of the volume. The five essays include: ‘Eduard Suess and the origin of modern geology’ (by Sengör from Istanbul Technical University); ‘From palaeontology and stratigraphy to Earth system science’ (by Piller from University of Graz); ‘Suess and the dynamics of the plane earth’ (by Sengör); ‘Two water problems of a big city’ (by Blöschl from Vienna University of Technology); and

‘Milestones of a life beyond the geoscience’ (by Hofmann, Geological Survey of Austria).

The image of Suess portrayed in these essays is indeed impressive. He was a dedicated geologist from Vienna, who should be celebrated as one of the founders of tectonic. He was a well-read, cultured, multilingual geologist whose brilliant ideas were later incorporated into the modern theory of plate tectonics (even though only a few geologists today are aware of it). For example, consider his ideas about the former supercontinents of Gondwanaland in the south and Laurentia and Angaraland in the north, and the vanished Tethys Ocean between these two realms, out of which the entire Alpine–Himalayan belt emerged as an asymmetrical orogenic system (with hinterlands and forelands) consisting of large-scale folds generated by compressional (tangential) stresses (not vertical or thermal uplifts). This was proposed by Suess (before the plate tectonics theory) and is still valid. The reader is also reminded that Suess started his career as a palaeontologist, but instead of being stuck with taxonomy, he moved on to embrace stratigraphy, and eventually integrated these two traditional disciplines in geology with tectonics and the global record of rocks. It was in this manner that he could propose, for instance, the idea of eustasy (global changes in sea level). Certain facts about his life may surprise the reader. He was also an applied geologist, whose 1862 book on the soil of Vienna marks the beginning of what we today call urban geology. Suess was not only a university professor at Vienna, but also a prominent member of the Austrian parliament representing the liberal left party. He played an important role in designing the First Vienna Spring Water Main that brought fresh, unpolluted water from the Alps to the growing population of Vienna in 1873, which still supplies 40 per cent of Vienna’s urban water. Suess’ son Franz Eduard (1867–1941) was also a geologist.

Quotes from the writings of Suess (in German and English) are well selected to convey some key information about his vision and work. Most of these quotes are from his masterpiece, *The Face of the Earth (Das Antlitz der Erde)*, which illustrate, how he wrote science in a lyric style: ‘What I offer you is little more than a number of questions, but questions are the buds on the tree of knowledge.’

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Or consider the last quote: ‘The breaking up of the terrestrial planet, this it is we witness.’ This last phrase refers to his idea that tectonic deformation is the result of collapse of continental blocks due to the cooling, shrinking of planet Earth which began a long time ago (when the Earth was even hotter) and still continues today. The idea of a cooling, collapsing Earth (contractionism) is now outdated.

The entire book is profusely illustrated with amazing photographs which enhance the text and please the reader’s eye. In short, the book offers a snapshot of Suess’ legacy and contributions to geoscience. Geologists will benefit from reading this book, as they will learn about the historical development of their science expressed in a great mind and person; younger generations of geolo-

gists will doubly benefit as they will be inspired by it. A shortcoming of the book is that it does not provide a list of Suess’ main papers and books.

Closely related to this book is the special issue of *Austrian Journal of Earth Sciences* (vol. 107/1), also published in 2014. It consists of nine papers. A paper by Sengör (Eduard Suess and global tectonics: an illustrated short guide) is particularly mentioned here, because it describes (in a ‘short guide’ of 76 pages) how Suess embraced the now-outdated idea of the cooling, collapsing Earth. Using two short publications from Suess, an abstract of his paper in 1873 and his 1904 letter to W.J. Sollas, the English translator of *Das Antlitz der Erde* (which was used as a preface to *The Face of the Earth*, four volumes, 1904–1909), Sengör offers a wealth of information on

Suess’ thoughts on global tectonics. Had Suess lived a few more years, he most probably would have abandoned the idea of contraction (the cooling, collapsing Earth) and would have developed the theory of continental drift and deformation that Alfred Wegener (1915) and Emil Argand (1922) did later, standing on the shoulders of Suess, one of the giant minds in geology.

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1. Sorkhabi, R., *Curr. Sci.*, 1995, **68**, 853–858.
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