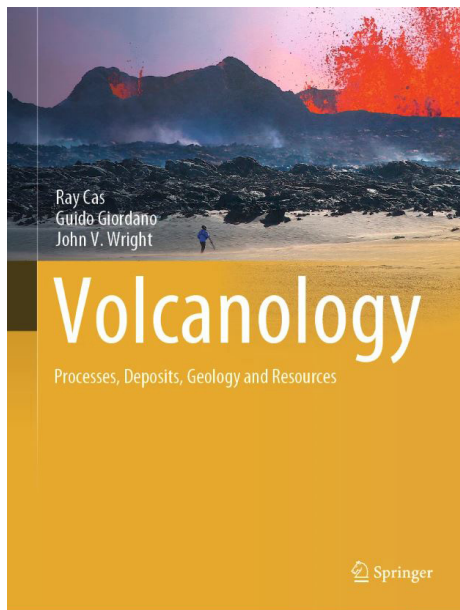


**Volcanology. Processes, Deposits, Geology and Resources**, by Ray Cas, Guido Giordano, John V. Wright, 2024. Springer Textbooks in Earth Sciences, Geography and Environment (STEGE); 1833 pages. Hardcover: price € 160.49, eBook: price € 117.69, ISBN: 978-3-319-66612-9



In 1987, Cas and Wright published a seminal volcanology text, “Volcanic Successions”, which became a cornerstone for my generation. To fully appreciate the scope and depth of their new book, one must consider the legacy and content of its predecessor and the substantial differences, and advancements made since the original edition. Now, nearly forty years later, the same authors, joined by Guido Giordano, have produced a new textbook, “Volcanology”, that far surpasses its predecessor in both scope and execution. All authors are listed in each chapter, with their order varying based on their specific contributions. Despite the authors’ modest claims, the encyclopedic ambition of this work is unmistakable. Its impressive length – nearly 1900 pages – surpasses even the 1400 pages of the second edition of “The Encyclopedia of Volcanoes”. The purpose of this book is to provide a description of volcanic deposits and the processes involved in their eruption and deposition, but also to describe methods for studying and interpreting volcanic sequences. In the foreword, the authors make it clear

that they will provide their personal insights and evaluations of processes and interpretations as research scientists. This book’s clear statement of intent is fully expressed in Chapter 10. Here, pyroclastic density currents (PDCs) are initially hinted at before moving on to describe pyroclastic flows and surges as the two end-member types on the spectrum of PDCs. The difference between the various types of gravity flows is not merely terminological but relates to profoundly different transport models. This distinction is crucial, considering the lively scientific debate that has developed on these issues over the last twenty years.

The book is organised into 18 chapters grouped into six parts, from specific processes and deposit types to the large-scale architecture of volcanoes. In doing so, the authors upset the order of presentation of many volcanology books that proceed from the general (volcanism and tectonic setting) to the particular (types of eruptions). The various chapters are often built around a core from the previous book, updated and expanded, and supplemented with new tables and colour figures. After a brief introduction centered on the facies concept (Chapter 1), the following four chapters describe the properties of magmas and the processes governing their ascent through the conduit to the surface. Part B is dedicated entirely to effusive eruptions and intrusions, with individual chapters focused on basaltic lavas (Chapter 5), differentiated lavas (Chapter 6), komatiites (Chapter 7), and subvolcanic intrusions (Chapter 8). Part C addresses explosive eruptions and pyroclastic deposits, devoting three chapters to sustained columns and fall deposits (Chapter 9), subaerial pyroclastic density currents (Chapter 10), and underwater debris flows (Chapter 11). Part D examines secondary processes (Chapter 12) that erode and transport primary products, along with syn- and post-depositional alteration processes (Chapter 13). Part E questions the terminology used to describe and classify volcanic deposits in both descriptive and genetic terms (Chapter 14)

and explores methods for establishing stratigraphy, mapping units, understanding relationships between lithofacies, and recognizing the role of volcano-tectonic deformations (Chapter 15). Finally, Part F aims to reconstruct 'the Big Picture' through the architecture of major volcanic forms and the processes that created them (Chapter 16). This chapter concludes with a discussion on volcanic hazards, summarizing the primary dangers associated with various eruptive styles – a brief but deliberate choice, as a more thorough treatment would warrant a separate book. The final two chapters explore the relationships between volcanism and tectonic environments (Chapter 17), and the natural resources associated with volcanic products (Chapter 18). An important cross-chapter approach concerns practical knowledge – from how to classify an ignimbrite to the routine methods used for correlating volcanic successions, along with additional tools currently employed for mapping volcanoes and volcanic terrains. The book impressively showcases its content through a wealth of figures and colour photos. These visual aids are not merely supplementary; they are integral to understanding the material. The high-quality images highlight the true chromatic nuances of volcanic deposits, bringing to life the text's descriptions and enhancing the reader's comprehension. The meticulous attention to visual detail allows for a deeper appreciation of the subject matter, making the book not only informative but also visually engaging.

I love the hard copy, but I must admit that the keyword search functionality of the e-text is unparalleled, even with a comprehensive final index. Springer has been generous with space for bibliographical references, including recent literature

appropriately cited throughout the text. Notably, the authors have chosen to place the bibliography at the end of each chapter, ensuring that the relevant references are readily available for each topic discussed. While this results in some inevitable duplication of citations across chapters, it greatly enhances the reader's ability to access pertinent information efficiently.

Recently, in this esteemed column, I had the delightful task of spelunking through a spry little booklet by Branney and Zalasiewicz, charmingly titled "Volcanoes: A Very Short Introduction." This literary sprite, in a brisk 154 pages, manages to encapsulate the fundamental concepts thoroughly elaborated upon in the weighty tome "Volcanology" by Cas et al. One might say that Branney's booklet and Cas's magnum opus are like the alpha and omega of volcanological literature, with every piece of work in the field nestling somewhere in between these two illustrious end-members.

As a volcanology professor, I can already foresee the dismay in my students' eyes when they encounter the formidable thickness of this recommended text. Nonetheless, this challenge is a welcome one. Each page is a journey through volcanic processes, an inexhaustible source of valuable information that will not only prepare students to tackle the complexities of the field but also to contribute significantly to future developments in volcanology. I extend my gratitude to the authors for providing such high-quality material to educate and inspire the next generation of volcanologists.

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