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BOOK REVIEW
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Book Review: A Photographic Atlas of Flood Basalt Volcanism

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A Book Review on

A Photographic Atlas of Flood Basalt Volcanism

Hetu Sheth (Cham: Springer International Publishing AG), 2018, 363 pages,
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A book like this would not have been possible 30 years ago. This is due primarily to two factors: [1] contributions from numerous studies over the last 30 years that have documented the significance of flood basalt volcanism in the geological record, including their links to mass extinction events (see Ernst and Youbi, 2017 for an overview and numerous references), economically significant mineralization (Kamenov et al., 2007; Schulz et al., 2010), and groundwater resources (Burns et al., 2015), and CO_2 sequestration (McGrail et al., 2006). [2] Digital cameras that make taking (and storing) high-quality photographs by amateur photographers possible. As a result, documenting landscapes and specific physical features of geological phenomena has never been easier. These two overarching factors, coupled with researchers who have applied modern physical geological/volcanological techniques to the study of flood basalt volcanism, have set the stage for Hetu Sheth's book *A Photographic Atlas of Flood Basalt Volcanism*. Sheth is a flood basalt expert, who is well-known for his work on the Deccan Traps (India) and other flood basalt/large igneous provinces (e.g., Ontong-Java, South Caucasus, etc.) across the world. This experience is tied to high-quality image and photo captions contributed to by 89 international collaborators (mostly geologists who also work on flood basalts), yielding an impressive archive of the diverse and spectacular geological features associated with flood basalt provinces. Thus, the book is an outstanding reference for anyone interested in better understanding flood basalt volcanism on Earth.

The book is broad in scope and topics, and is divided into 12 chapters, including an introduction, which lay out geological features associated with flood basalts and flood basalt provinces. Each chapter benefits from a brief "Chapter Overview" that provides interesting historical context and scientific significance of the chapter's topics. An example of this is the overview associated with Chapter 2, Flood Basalt Landscapes. In it, readers learn the history of the word "trap" with respect to thick stacks of flood basalt lavas and how climate diversity impacts the morphology of flood basalt provinces, postemplacement. The pictures, which make up the bulk of the book, are generally spectacular and include stunning landscape shots. Also included are detailed, up-close views of lavas, degassing, emplacement, and cooling textures (e.g., pipe vesicles, tumuli, squeeze-ups, columnar joints of all shapes and sizes, subaqueous features like pillows and amazing pillow deltas, etc.), as well as a wide variety of other physical features related to effusive and explosive volcanism, magma diversity in flood basalt provinces, and syn- to postemplacement processes (e.g., deformation, mineralization, weathering, etc.). A useful glossary was placed at the end of the book, as well as a list of suggested reading and URLs of helpful websites that deal with flood basalts and volcanism in general. The glossary itself provides a helpful overview of terms, some of which may not be familiar to individuals who do not study flood basalts, igneous rock textures, or physical volcanology (e.g., bole, diktytaxitic, giant plagioclase basalt, etc.).

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My criticisms of this book are minor. At times, the sheer number of images is a little overwhelming. However, this is also one of the book's strengths because it demonstrates that there are fundamental similarities among flood basalt provinces, flood basalt physical volcanology, and associated phenomena throughout the world (and presumably on other planets). Chapter 11, which deals with secondary mineralization, could have benefited from more pictures of postmagmatic economically significant mineral deposits (some of these kinds of materials, e.g., layered mafic intrusions, are found in Chapter 9—Igneous Processes and Magmatic Diversity in Flood Basalt Provinces). The book is expensive (full color hardcover is US$269; e-book version, which I reviewed, is US$209), which may deter some people from buying it.

In summary, as a reference for flood basalt magmatism, the book is outstanding. I am only aware of a few other similar-style books, and while some are focused on physical volcanology, none are focused solely on flood basalts at the macroscopic scale. Quite frankly, I wish a book like this would have existed when I was beginning my graduate studies, and I will enthusiastically recommend it to my own student mentees. The "crowdsourcing" approach (where many individuals contributed to pictures and captions in the atlas) to compiling this atlas is unique and highly effective. I can envision this atlas as a reference framework for similar crowdsourced books focused on other disciplines of the geosciences. This atlas will become an important reference and should be in every science/academic library. I recommend it to anyone in the broader geoscience community, who study flood basalts, their impacts, or associated geological phenomena/processes.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and approved it for publication.

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