

Volcanic Worlds

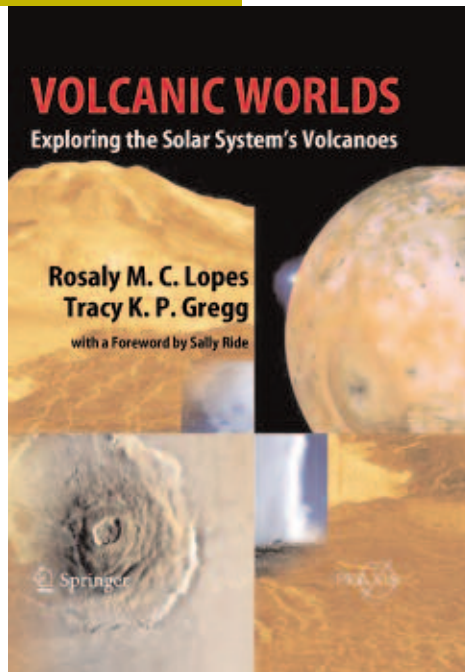
Exploring the Solar System's Volcanoes¹

The study of volcanoes throughout the solar system is an exciting subject, in part because of the dynamic nature of volcanoes on Earth and in part because of the wonder in exploring alien worlds only to find variations on a familiar theme. This book goes a long way to demonstrate to the non-specialist reader that studying volcanoes, be they on the Earth's ocean floor, in the wilds of Earth's polar regions, or on other planets, is indeed fun. It also shows that understanding the diversity of volcanism provides critical insights into the internal workings of planets.

As this book arrived just days before I gave a Careers Day talk at a local high school, I immediately found out that one of its most valuable aspects is its ability to inspire the next generation of planetary volcanologists. At the beginning of each chapter, the authors provide a few paragraphs of personal history describing how they became excited by volcanoes. A rarity in a research book such as this, the many personal references add insight into the motivation of the scientists. For example, a charming photograph of a young Katharine Cashman beaming with excitement at seeing her first active volcano (Mount Erebus in Antarctica) will surely incite many junior readers to see a live volcano for themselves. Several chapters also provide insights into what motivates a scientist and how planetary volcanology has propelled all of the contributing authors into careers as world-class scientists. For instance, Lisa Gaddis writes with great enthusiasm that "the Moon has been mine as long as I can remember," thereby motivating her to pursue a career in the spectroscopic analysis of lunar volcanic deposits.

The book also clearly demonstrates that scientists are not boring and that much of their work is done far from the shining white laboratories that many students believe is the center of all space research. For instance, Rosaly Lopes amusingly describes her furtive late-night efforts to bring three space scientists back to her hotel room in Italy in order to download the latest images collected by the Galileo spacecraft of volcanoes on Io.

Unique features of the book include a fascinating account by Tracy Gregg on the details of diving to submarine volcanoes in research vessels such as Alvin. Joy Crisp adds



a discussion of the design and operation of rovers that explore the surface of Mars, while Susan Kieffer contributes a chapter that does a fine job revealing the similarities among geysers on Earth, Io, and Triton.

Volcanic Worlds is not without some limitations, however. Greater attention to providing a consistent overview of the spatial distribution of volcanic activity on each planetary body would help the novice reader. In the case of volcanism on Venus, the book fails to show where volcanic landforms occur, focusing instead on the types of volcanic features observed. Disappointingly, the chapter on Martian volcanoes seen from orbit provides only a brief treatment of the diversity of volcanic landforms on the Red Planet and how calderas, lava flows, and volcano-tectonic features compare with terrestrial examples. The diversity of volcanism on Mars is left to the chapter by Mary Chapman and Gudrun Larsen, who discuss field strategies for the study of terrestrial analogs to Martian explosive volcanic products. It would also have been stimulating to read a discussion of volcanism on asteroids such as Vesta, because meteorites collected on Earth suggest that basaltic volcanism occurred during an early stage of the asteroid's formation.

Photographs in *Volcanic Worlds* are generally good, although the use of a better quality glossy paper would have improved their quality. I particularly liked the fact that several chapters provide helpful bibliographies for further reading. More consistency in this area among the chapters would have improved the overall value of the book as an introduction to a diverse range of topics. The target audience for the book is somewhat difficult to identify. In terms of a motivational text, it is best suited for high school and undergraduate college students. However, the high price (\$59.95) will discourage these groups to purchase it, so one hopes that a paperback version will soon be available.

While the back cover says that this is the first general review of volcanic activity throughout the solar system, the classic *Volcanoes of the Earth, Moon and Mars* by Gilbert Fielder and Lionel Wilson (1975) more correctly started the serious discussion of volcanism on the planets. Other books have followed, notably *Planetary Volcanism* by Peter Cattermole (1989), and *Environmental Effects on Volcanic Eruptions* edited by James Zimbelman and Tracy Gregg (2000). Excellent chapters on planetary volcanism were also included in earlier books such as *Volcanoes: A Planetary Perspective* by Peter Francis (1993) and *Volcanoes* by David Rothery (2001). Thus *Volcanic Worlds* is not unique, but nevertheless Lopes and Gregg's approach and enthusiastic writing are bound to make this book a fine addition to the library of any volcanologist, whether she (or he) is interested in volcanism on Earth or beyond.

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¹ Rosaly M.C. Lopes and Tracy K.P. Gregg, editors (2004) Springer Praxis Books (www.springeronline.com), 234 pages, hardcover, ISBN 3-540-00431-9, US\$59.95