



## Planetary geology: an introduction

by Claudio Vita-Finzi

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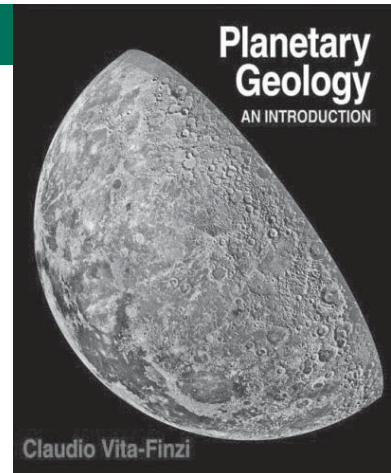
This is a handsomely-produced volume, but sadly it contains too many mistakes for me to recommend it for beginners. However teachers of planetary science capable of mentally filtering out the errors will find it of use, because of the amount of information assembled here and the insights offered by the author's refreshing perspective on planetary science. Rather than being a tour of the planets, this book has twelve chapters discussing different processes or properties: origins, orbits, internal structure, magnetism, topography, tectonics, volcanism, impacts, atmospheres, hydrospheres, surface processes (the book's best chapter), and life.

The cover blurb states that the book is 'based on a course taught by the author for more than a decade'. Although some of the content is up to date, there are anachronisms that really ought to have been avoided in a book published in 2005. For example, on page two we read that Pluto's orbit is exceptional because of its eccentricity and inclination. What about all those Kuiper belt objects with orbits similar to Pluto? In fact, the only mention of the Kuiper belt that I could find in the main text is a suggestion (p.40) that Kuiper belt objects suffer radiation-darkening of their surfaces. Novice readers must refer to the Glossary to find out what the Kuiper belt is, where they are told it is a 'belt of icy planetoids orbiting broadly from 30 out to 100 AU... it is part of the Oort Cloud'. Glancing across the page to the Oort cloud definition we find this described as 'a reservoir of cometary objects thought to exist at distances of 2000–100,000 AU. The Kuiper belt (35–50 AU) is that part of it affected by planetary perturbations.' If the inner edge of the Oort cloud is as defined here, then the Kuiper belt cannot logically be part of it. And, for the purposes of this book, is the Kuiper belt 30–100 AU or 35–50 AU? This is the sort of unnecessary inconsistency that both upsets and confuses students. Moreover, even if the author is firmly of the school that regards Pluto as somehow distinct from the Kuiper belt (rather than being part of it), he really should have alerted his readers to the controversy.

I was perplexed by the statement on page 26 citing *NEAR–Shoemaker* as a mission that was deliberately crashed to generate shockwaves to study a planetary interior.

In fact this craft made contact with the asteroid Eros at only 4 mph, slowly enough for the onboard gamma-ray spectrometer to continue working. I wonder if the author was thinking of *Lunar Prospector* that was crashed (fast!) into the Moon with Gene Shoemaker's ashes onboard, though even in this case the objective was to generate an ejecta plume rather than to trigger shockwaves, because there were no instruments on the surface to detect them.

There are other, clearer, signs of lack of care in preparing this book. On Figure 5.1 the trajectory of *Voyager 2* has been displaced relative to the rest of the diagram. Much worse, in the later part of chapter 6 the figures do not match their descriptions in the text. Figure 6.7 does not show a chaos region on Europa as claimed, Figures 6.8 and 6.9 are printed in reverse order, and although figures up to 6.14 are described in the text the final figure shown is Figure 6.13.



### Dave Rothery

Dr David Rothery, formerly an amateur variable star observer, now chairs the Open University's planetary science courses, and is the author of *Teach Yourself Planets*.

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