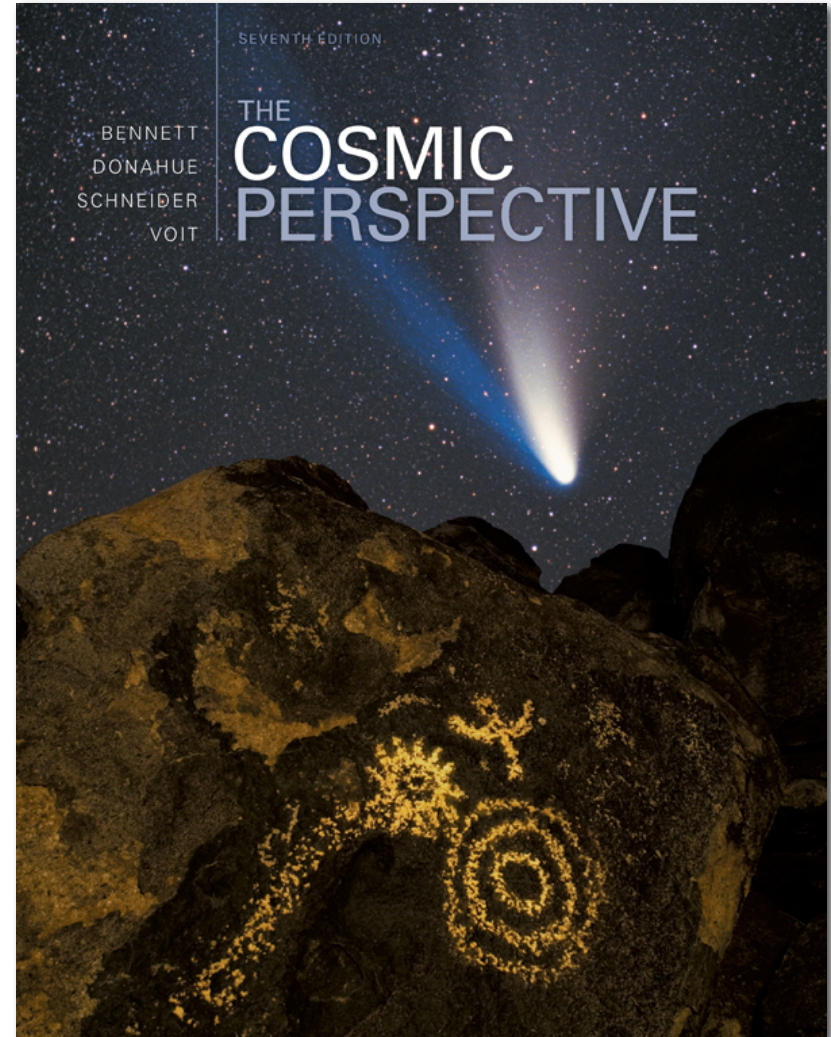


The Cosmic Perspective

Seventh Edition

Planetary Geology: Earth and the Other Terrestrial Worlds



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- b) Mercury and Earth
- c) Mercury and Earth's Moon
- d) Earth and Venus
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How do we learn about Earth's core, mantle, and crust?

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- b) seismic waves
- c) X-ray imaging
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- b) seismology
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- b) the crust plus the mantle
- c) a relatively rigid outer layer of rock that floats on molten rock below
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How does an object's rate of cooling vary with size?

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What is necessary for *differentiation* to occur in a planet?

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- b) It must be made of a mix of materials of different density.
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Do you think *differentiation* is likely to happen in a very small planet?

- a) yes
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Why are smaller terrestrial bodies such as Mercury or the Moon "geologically dead"?

- a) They don't have volcanoes.
- b) They cooled off faster than Earth did.
- c) They don't have erosion.
- d) They were hit by fewer meteorites than Earth.
- e) They are made of different materials than Earth.

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Do you think seismology would work on the Moon?

- a) No, because there is no water or air.
- b) No, because the Moon is geologically dead.
- c) Yes.

Do you think seismology would work on the Moon?

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Which of the following is an example of *convection*?

- a) Heat radiates from a planet into space.
- b) Heat travels from atom to atom from inside a planet to the outside.
- c) Hot material inside a planet rises, and cool material sinks towards the center.
- d) Metal conducts energy throughout Earth's core.

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What is true of convection that stresses a planet's crust?

- a) Mountains may form where the crust is pushed together.
- b) Cracks and valleys may form where the crust is pulled apart.
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What are the 4 basic processes that shape planetary surfaces?

- a) magnetic fields, impacts, volcanoes, erosion
- b) magnetic fields, earthquakes, volcanoes, erosion
- c) tectonics, impacts, volcanoes, erosion
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- e) tectonics, impacts, erosion, magnetic fields

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The lunar crater *Tycho* is about 80 km (50 miles) across. It was probably made by

- a) the eruption of the large volcano in its center.
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Why do the *lunar highlands* have many more craters than the *lunar maria*?

- a) They are on the side of the Moon away from Earth, which was hit by more impacts.
- b) Lava flooded the maria, hiding many craters.
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Why do we think Mars had more volcanic activity in the past than it does today?

- a) Mars was bombarded with more impacts in the past, which fueled more volcanic activity.
- b) Mars would have been warmer in the past.
- c) Some meteorites from Mars come from relatively young lava.
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What evidence is there for past liquid water is on Mars?

- a) channels that look like dry riverbeds
- b) eroded crater rims and erased craters
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The interior of Earth consists of

- a) a metallic core and solid rock outer shell.
- b) a rocky core and metallic outer shell.
- c) a metallic core and liquid rock outer shell.
- d) a liquid rocky inner core and solid rock outer shell.
- e) a mixture of rock and metals throughout.

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Suppose Venus rotated as fast as Earth. How would this change its relative levels of volcanism, tectonics, and erosion?

- a) All would remain the same – they are independent of rotation.
- b) All three would be higher.
- c) All three would be lower.
- d) Levels of volcanism and tectonics would stay the same, but erosion levels would be higher.
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Should we land on Mars and search for life?

- a) Yes, if we found evidence of life it would have important scientific implications.
- b) Yes, if we found evidence of life it would have major scientific, philosophical, and religious implications.
- c) No, it's too expensive.
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