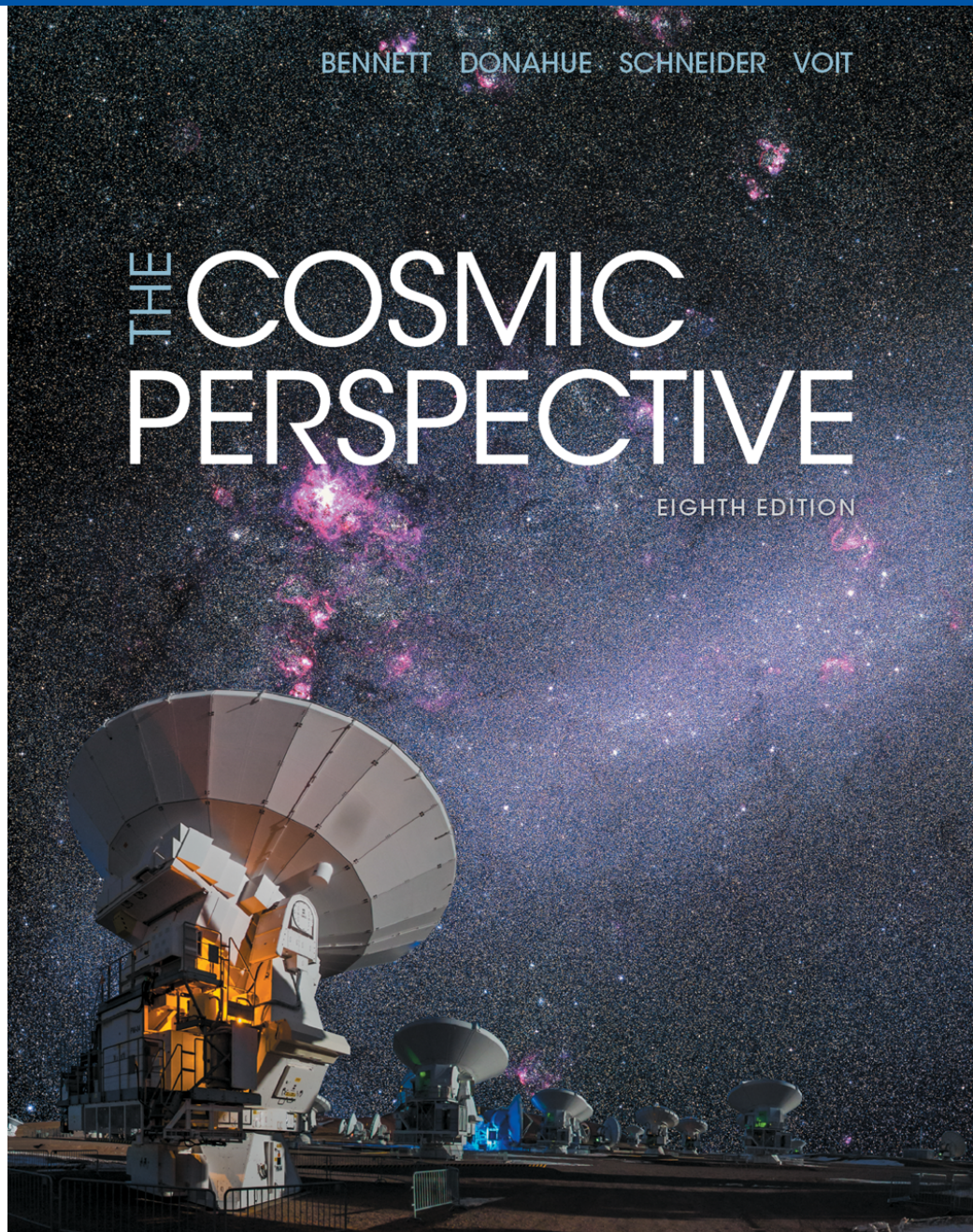
Review Clickers

Chapter 10: Planetary Atmospheres: Earth and the Other Terrestrial Worlds



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Why is atmospheric pressure less on top of a mountain than at sea level?

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b) Denser air sinks to sea level; the air on mountains is lighter.
c) The pressure at every height in the atmosphere is due to the weight of the air above it.
d) none of the above

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b) have a thicker atmosphere.
c) be colder than freezing.
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If Earth didn't have an atmosphere, what would happen to its temperature?

a) It would go up a little.
b) It would go up a lot.
c) It would go down a little.
d) It would go down a lot.
e) It wouldn't change.

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Which of the following correctly arranges the layers of Earth's atmosphere from closest to the surface to closest to space?

a) troposphere, stratosphere, exosphere, thermosphere
b) stratosphere, exosphere, thermosphere, troposphere
c) troposphere, stratosphere, thermosphere, exosphere
d) thermosphere, troposphere, stratosphere, exosphere

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Infrared radiation emitted by Earth's surface

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b) causes convection.
c) causes weather (storms).
d) all of the above
e) none of the above

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b) ultraviolet light from the Sun.
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The sky is blue because

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b) blue is the color of oxygen gas.
c) blue is the color of nitrogen gas.
d) the blue light in sunlight scatters more than the red light.
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Sunrise and sunset are reddish because

a) Sunlight travels through a thicker atmospheric layer to reach our eyes and the scattered blue light does not reach us.
b) Typically most red sunlight arrives to Earth tangentially, that is on sunrise and sunset.
c) Larger wavelengths and lower energies (the red part of the visible spectrum) are typical in sunrise and sunset.
d) The heat from Earth's radiative cooling makes the sky redder on sunrise and sunset.
e) None of the above.

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a) hot air from the equator rising and cool air at the poles falling
b) Earth's rotation
c) convection
d) the Coriolis effect
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b) changes in Earth's reflectivity
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a) We never had any.
b) It escaped into space.
c) It dissolved in the oceans and was incorporated into rocks.
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Why do we think Mars was once warmer and wetter?

a) It shows evidence of plenty of volcanoes to outgas an atmosphere.
b) There are major polar ice caps.
c) There is evidence it once had liquid water. It is too cold for that now.
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What is the main reason that Venus is warmer than Earth?

a) Venus is closer to the Sun than Earth.
b) Venus has a higher reflectivity than Earth.
c) Venus has a lower reflectivity than Earth.
d) The greenhouse effect is much stronger on Venus than on Earth.
e) Human presence on Earth has led to declining temperatures.

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Suppose we could magically replace Venus' actual atmosphere with an atmosphere identical to Earth's. Could liquid water exist on its surface?

a) No, the runaway greenhouse effect would ensure that liquid water would immediately evaporate.
b) No, the low pressure would ensure that liquid water would immediately evaporate.
c) Yes, the surface temperature would be well below the boiling point of water.
d) Yes, the conditions would be exactly as on Earth.
e) Yes, but only at the poles.

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Suppose that, somehow, all plants died out. What would happen to the oxygen in our atmosphere?

a) The oxygen would eventually be used up in oxidation reactions with the surface.

b) The oxygen would initially decrease, but as greenhouse gases and temperature increased, it would recover to its normal value.

c) The oxygen would increase as plants would not exist to remove it from the atmosphere.

d) Plants grow by intaking carbon and therefore the oxygen content would be unaffected.

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Would it be plausible for a planet that had an Earth-like atmosphere with plentiful oxygen, but no life of any kind to exist in another solar system?

a) Plausible. Life requires far more than oxygen to exist.
b) Plausible. The oxygen may have been transported there by cometary impacts.
c) Implausible. Oxygen is highly reactive and its presence in an atmosphere suggests replenishment by a living organism of some sort.
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