

Atmospheres of Terrestrial Planets/Greenhouse Effect. (Reader 34; Study notes on website: "Greenhouse Effect"; Lecture-Tutorial "Greenhouse Effect; Astropedia Ch. 5 "Environmental change on Earth")

1. Define: Kelvin scale, air pressure, the bar.
3. How are atmospheres created? How are atmospheres destroyed?
4. What are the most abundant gasses in the atmospheres of Earth, Venus, and Mars?
5. Explain how the greenhouse effect works.
6. What are the most important greenhouse gasses on Earth? Which are natural and which are man-made?

Mars (Astropedia Ch. 6)

1. Compare Mars with the Earth in size.
2. Explain why liquid water cannot exist on the surface of Mars.
3. Discuss the evidence for liquid water on the surface of Mars in the past.
4. Argue for and against the presence of life on Mars.
5. Describe the surface features on Mars. What is Mt. Olympus?

Venus (Astropedia Ch. 6)

1. Compare Venus with the Earth in size.
2. Explain how Venus's rotation is opposite to the Earth's. Compare the length of day with the length of the year on Venus.
3. Explain how the greenhouse effect works. Which are the most important greenhouse gasses on Venus and on the Earth?
4. Explain how the oceans were lost (runaway greenhouse effect).
5. Discuss the clouds of Venus: their composition and their effect on the surface temperature.
6. Discuss the processes that have shaped the surface of Venus.
7. Explain how crater counts show that the entire surface is the same age, about 500 Myr, and how this may be due to catastrophic volcanism.

The Earth (Astropedia Ch. 5 thru "Environmental Change on Earth",. Lecture-Tutorial 99-101; Reader 49)

1. Explain how plate tectonics gives rise to volcanos, earthquakes, and moving continents.
2. Discuss what happens to the brightness of the Sun as it ages and how this affects the Habitable Zone.
3. Explain how CO<sub>2</sub> is put into and taken out of the atmosphere. Explain how the CO<sub>2</sub> thermostat regulates the temperature.
4. Discuss how the Continuously Habitable Zone is related to the search for Earth-like planets in the Galaxy.

Jupiter and Saturn (Astropedia Ch. 7)

1. Diagram their internal composition and structure of these two planets.
2. Compare the theories of formation of these planets.
3. Compare the composition of the atmosphere and the clouds.
4. Relate the formation of rings to the concept of the Roche limit (tidal stability limit).
5. Discuss the role shepherd moons in forming narrow rings.

Uranus and Neptune (Astropedia Ch. 7)

1. Describe the internal composition of these planets and the composition of their atmospheres.
2. Compare the Great Dark Spot with the Great Red Spot.
3. Compare their axes of rotation and their magnetic fields.

Photo ID

Identify photos of the 15 largest planets and moons (Reader page 1.1).