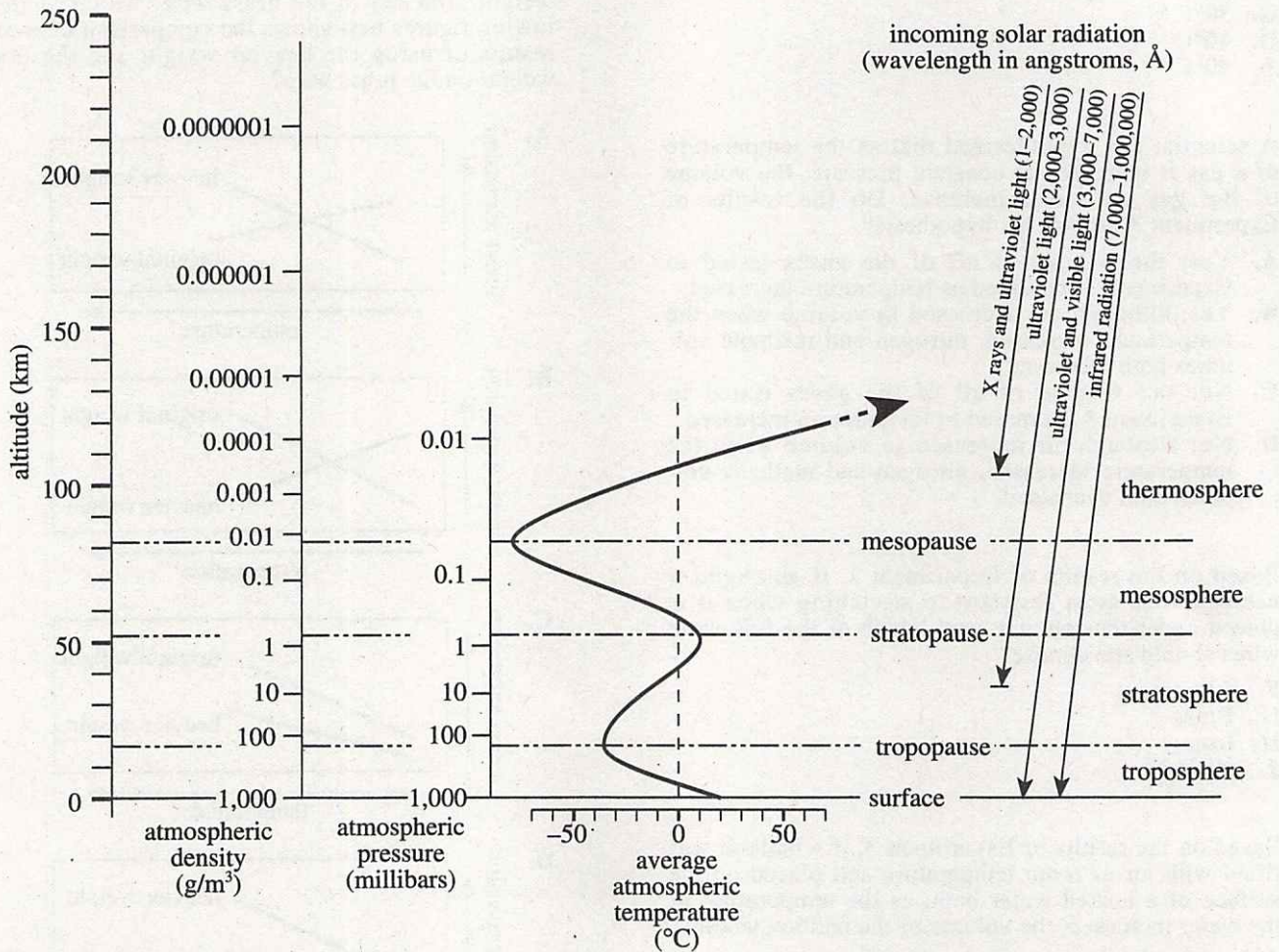


Passage IV

Certain layers of Earth's atmosphere absorb particular wavelengths of solar radiation while letting others pass through. Types of solar radiation include X rays, ultraviolet light, visible light, and infrared radiation. The cross section of Earth's atmosphere below illustrates the altitudes at which certain wavelengths are absorbed. The arrows point to the altitudes at which solar radiation of different ranges of wavelengths is absorbed. The figure also indicates the layers of the atmosphere and how atmospheric density, pressure, and temperature vary with altitude.



Note: 1 Å = 1×10^{-10} meters.

Figure adapted from Arthur Strahler, *The Earth Sciences*. ©1963 by Harper and Row.

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18. According to the data provided, at what altitude is the upper boundary of the thermosphere located?
- F. 150 km
 - G. 200 km
 - H. 250 km
 - J. The upper boundary is not included on the figure.
19. The ozone layer selectively absorbs ultraviolet radiation of 2,000–3,000 Å wavelengths. According to this information and the data, which atmospheric layer contains the ozone layer?
- A. Troposphere
 - B. Stratosphere
 - C. Mesosphere
 - D. Thermosphere
20. The information provided in the figure indicates that the air temperature in the troposphere is LEAST likely to be influenced by which of the following wavelengths of energy?
- F. 1,500 Å
 - G. 4,500 Å
 - H. 6,000 Å
 - J. 7,000 Å
21. On the basis of the information in the figure, one could generalize that atmospheric pressure in each atmospheric layer increases with:
- A. decreasing temperature.
 - B. increasing temperature.
 - C. decreasing altitude.
 - D. increasing altitude.
22. Atmospheric boundaries are at a higher than usual altitude above areas that get more direct solar radiation. Based on this information and the data provided, which of the following predictions about atmospheric boundaries would most likely be true if Earth received *less* solar radiation than it presently does?
- F. The tropopause, stratopause, and mesopause would all increase in altitude.
 - G. The tropopause, stratopause, and mesopause would all decrease in altitude.
 - H. The tropopause and stratopause would increase in altitude, but the mesopause would decrease in altitude.
 - J. The tropopause would decrease in altitude, but the stratopause and mesopause would increase in altitude.