Atmosphere - short essay

Environment, Earth

atmosphere of Earth is a layer of gases surrounding the planet Earth that is retained by Earth's gravity. The atmosphere protects life on Earth by absorbing ultraviolet solar radiation. A. Nitrogen - 78% - Dilutes oxygen and prevents rapid burning at the earth's surface. Living things need it to make proteins. Nitrogen cannot be used directly from the air. The Nitrogen Cycle is nature's way of supplying the needed nitrogen for living things. B. Oxygen - 21% - Used by all living things. Essential for respiration. It is necessary for combustion or burning. C. Argon - 0. 9% - Used in light bulbs. D. Carbon Dioxide - 0. 03% - Plants use it to make oxygen. Acts as a blanket and prevents the escape of heat into outer space. Scientists are afraid that the buring of fossil fuels such as coal and oil are adding more carbon dioxide to the atmosphere. E. Water Vapor - 0. 0 to 4. 0% - Essential for life processes. Also prevents heat loss from the earth. F. Trace gases - gases found only in very small amounts. They include neon, helium, krypton, and xenon. Layers of Atmosphere TROPOSPHERE This is the layer of the atmosphere closest to the Earth's surface, extending up to about 10-15 km above the Earth's surface. It contains 75% of the atmosphere's mass. The troposphere is wider at the equator than at the poles. Temperature and pressure drops as you go higher up the troposphere. Q: Why is the troposphere wider at the equator than at the poles? The Tropopause: At the very top of the troposphere is the tropopause where the temperature reaches a (stable) minimum. Some scientists call the tropopause a " thermal layer" or " cold trap" because this is a point where rising water vapour cannot go higher because it changes into ice and is trapped. If there is no cold trap, Earth would loose all its water! Most of what we call weather occurs in the troposphere. The uneven

heating of the regions of the troposphere by the Sun causes convection currents and winds. Warm air from Earth's surface rises and cold air above it rushes in to replace it. When warm air reaches the tropopause, it cannot go higher as the air above it (in the stratosphere) is warmer and lighter ... preventing much air convection beyond the tropopause. The tropopause acts like an invisible barrier and is the reason why most clouds form and weather phenomena occur within the troposphere. STRATOSPHERE This layer lies directly above the troposphere and is about 35 km deep. It extends from about 15 to 50 km above the Earth's surface. The stratosphere is warmer at the top than the bottom. The lower portion has a nearly constant temperature with height but in the upper portion the temperature increases with altitude because of absorption of sunlight by ozone. This temperature increase with altitude is the opposite of the situation in the troposphere. MESOSPHERE Directly above the stratosphere, extending from 50 to 80 km above the Earth's surface, the mesosphere is a cold layer where the temperature generally decreases with increasing altitude. Here in the mesosphere, the atmosphere is very rarefied nevertheless thick enough to slow down meteors hurtling into the atmosphere, where they burn up, leaving fiery trails in the night sky. THERMOSPHERE The thermosphere extends from 80 km above the Earth's surface to outer space. The temperature is hot and may be as high as thousands of degrees as the few molecules that are present in the thermosphere receive extraordinary large amounts of energy from the Sun. However, the thermosphere would actually feel very cold to us because of the probability that these few molecules will hit our skin and transfer enough energy to cause appreciable heat is

extremely low. The thermosphere corresponds to the heterosphere, a zone where there is no uniform distribution of gases. In other words, the gases are not well-mixed; instead they are stratified that is layered, in accordance to their molecular masses. In contrast, the gases in the homosphere (consisting of the troposphere, stratosphere and mesosphere) are uniformly distributed.