gaseous chemicals, an energy-transfer system, a shield protecting us from extraterrestrial radiation, and an insulator. It is also an important medium for water distribution.

Earth is a water planet. Because of the temperature on Earth, water exists naturally in three states: liquid, gas, and solid. All the water on Earth makes up the **hydrosphere.** The hydrosphere includes the oceans, lakes, rivers, streams, and aquifers. It includes the polar icecaps, glaciers, snowpacks, and permafrost. It also includes the aerial water vapor and condensates in the form of clouds, fog, and precipitation.

And finally, creeping, hiding, running, burrowing, flying, slithering, and swimming through, over, under, onto, and into the other three spheres is the **biosphere.** The sum total of all the living organisms on Earth is the biosphere. It is this raggle-taggle, at times improbable, assemblage of millions of different kinds of life-forms that gives Earth its particular flavor.

All four spheres can be bundled into one global sphere called the **ecosphere.** The ecosphere is that portion of a planet that is inhabited by life. Thus, it includes a portion of the atmosphere, a portion of the lithosphere, a portion of the hydrosphere, and all of the biosphere. We focus on the biosphere in this course. However, we will continually consider the interactions between living organisms and the other three spheres to reinforce the idea that life is never disconnected from the physical environment.

THINK QUESTIONS

1. Give at least two examples of how a change in one variable in an ecosystem can start a chain reaction that affects several other variables.
2. Why is global warming considered by some scientists to be such an important problem?
3. What are some advantages of doing research on ecosystems in Biosphere 2 rather than in the natural ecosystem? What are some disadvantages?
4. Think about the statement "Every decision has an environmental impact." What decisions do you make that add carbon dioxide to the environment? What decisions do you make that would add less carbon dioxide to the environment than you currently add?
5. Why should we be concerned about species becoming extinct? What endangered species are found in the area where you live? What has caused them to become endangered? What is being done to help them survive?