Museum Visit Project

You are to select one (1) of the following Earth System sections and design a presentation based on your findings at the American Museum of Natural History. In doing your presentation, you may use a science board display or PowerPoint. You are encouraged to do this as a group, but single presentations are acceptable.

Lithosphere

The lithosphere is the solid part of the earth made up of rocks, minerals, and other elements, not including the oceans. Exploring this sphere deals with the theory of plate tectonics, also known as continental drift; and explains the shape and position of our planet's land masses, oceans, and mountain ranges. Although it may seem obvious now, the idea that the continents float around the planet was not accepted until the 1960s. Geologists are scientists who study the earth's crust, or lithosphere. Some geologists use their knowledge of the processes that shape the earth's crust to find oil and minerals. Other geologists study volcanoes to find out how our planet's surface was shaped before life existed. Still other geologists apply their knowledge of how earth processes work to study other planets.

Questions

1. What is the lithosphere?
2. What causes earthquakes?
3. What is one way that mountains form?
4. What was Pangea and how do we know it existed?
5. If you wanted to make a model of the earth's lithosphere that showed how continental drift works, using things found in your kitchen, what would you use? Try it!

Biosphere

The biosphere is the part of the planet where living things can be found - from the upper reaches of the atmosphere to the bottoms of the oceans and thermal pools. By exploring this section, you will gain familiarity with a central concept of ecology: the food web. We all know every organism has to eat something to survive, but it's more of a challenge to think about how what one animal eats affects the entire fabric of living things. Ecologists want to learn about the processes and interactions between groups of organisms and their environments. They may study an entire ecosystem or a small piece of it like soil organisms; or they may study a particular factor such as wildfire. Many ecologists today use high-tech computer models and complex mathematics to look for patterns that can be hard to understand without these tools. Ecologists work for land management agencies, private conservation groups, and academic institutions.

Questions

1. What is a trophic level and how does it help us understand groups of organisms?
2. What is really moving through a food chain when organisms eat each other?
3. Where does all the energy in most food webs come from?
4. How come there are fewer numbers of animals at the top of a food pyramid?
5. Draw a food web for an ecosystem, such as a coral reef or the African savanna. Can you determine how the numbers of animals in the web would change if you increased or decreased one group?

Atmosphere

The atmosphere is the thin layer of gasses that surround our planet. It gives us the many varied climates, or long-term weather conditions, around the world. This section details the physical forces that contribute to climactic conditions. Along with larger-scale factors, local features of the landscape, such as the topography, strongly shape the wind and precipitation patterns of a particular place. Climatologists study climate in the past and present, and try to apply that knowledge to predictions of future climate trends. Global climate change is an important and controversial topic that will literally affect everyone in the world. Climatologists combine computer models; weather data collected from satellites; and ground measurements to try to understand these complex patterns.

Questions

1. What is the difference between climate and weather?
2. What powers our climate?
3. What are the physical forces that shape climate?
4. How do mountains affect the climate of an area?
5. Draw or build a model of the topography of your area. Determine where the winds come from and suggest where it should rain the most.

Hydrosphere

The hydrosphere includes all of the water on earth, from the oceans to glaciers and underground water. By interacting with this section, you will learn about the hydrological cycle, which is the circulation of water throughout the world, from the sea and land into the atmosphere and back to land again. The hydrological cycle is one of the major forces shaping climate and the weather. Hydrologists study the flow of water on many scales. Some things hydrologists do are very practical. For example, before a building or road can be built, a hydrologist must describe how water flows under or around the site. Other hydrologists look at

water availability and its impact on plant and animal life. Yet others focus on water in the atmosphere or in ice and glaciers. All hydrologists look for long-term patterns in the past, present, and future.

Questions

1. What is the hydrological cycle?
2. What are the three processes that drive the hydrological cycle?
3. What happens when one part of the hydrological cycle changes?
4. What does it mean that the water cycle is a "closed system?"
5. Draw a picture of the hydrological cycle starting at your house. Where does your water come from? Where does it go?