Acid Deposition: A Journey through the Spheres

By Chelsey Frank

No one earth sphere exists without the impact of the others. By working together, earth scientists combine data and knowledge of the atmosphere, hydrosphere, biosphere and geosphere to learn more about interactions between them. Acid deposition, also called acid rain, is an interaction between these spheres. Earth scientists measure it and study its effects. By working as a team, they help put in place laws, regulations and programs that protect us and the environment from acid deposition.

Acid deposition is a great example of an interaction in the earth systems, because it includes four earth spheres. Pollutants such as nitrogen oxide and sulfur dioxide are emitted into the atmosphere. These chemicals combine with water vapor or dust particles and fall to earth as nitric and sulfuric acids. Here, they enter the hydrosphere, biosphere and geosphere. They contaminate water sources, poison plant and animal life, and erode rocks and structures.

Earth scientists study acid deposition to learn more about its creation, composition, and effects. Some scientists take samples from the atmosphere or hydrosphere to learn more about how acid is created in the atmosphere and how much is in dust and precipitation. Others observe the geosphere and biosphere to learn how acid deposition affects rocks, soil, plants and animals. By comparing their data, scientists can find trends in atmospheric deposition and make deposition maps of the United States.

Earth scientists work in teams to make conclusions on acid deposition's creation, composition and impact on the environment. By using their combined data, they can help put in place programs, such as EPA's Acid Rain Program, that limit the amount of emissions that can be put into our atmosphere. By doing this, earth scientists guarantee a cleaner environment for the future.