SCIENTISTS NEEDED FOR GROUND TRUTHING EXPERIMENTS

As both technology and the need to understand our environment increase, new ways to explore the Earth are being developed by the world's top researchers. Scientists have now begun to use a process known as "Ground Truthing" to learn about our planet in ways that better focus on the relationships between humans, plants, animals, and ecosystems.

Ground truthing is the process of sending technicians to gather information that either complements or disputes data collected by aerial photography, satellite sidescan radar, or infrared images. This team of ground truthing scientists will be collecting detailed calibrations, measurements, observations, samples, and verifications of the predetermined site.

Ground truthing is a way of looking at an entire mountain range, forest, watershed, coral reef, desert, grassland, river, or marsh to understand the interactions involved. With our present technology, we can measure an entire watershed and understand the relationships between different communities and survey the effects that humans are having on that ecosystem.

By studying aerial photography, scientists can learn about geographical features of an area. Rivers and streams are often visible. The difference between forested and developed land can be distinguished. Land use and human construction can be studied. We can better understand the extensive relationships that occur in ecosystems, by observing our environment from an overhead angle.

As part of the Mission Ground Truth: 21 program, you will to study aerial photographs and then ground truth the area. Students across the Earth are working together to better understand the world around them. Because we depend on stream ecosystems for clean water to drink and forest ecosystems for fresh oxygen to breath, you will focus your efforts on testing the health of those two ecosystems. If you accept your mission, you will be testing the chemical health of water, the levels of pollution in a stream, measuring the health of trees, and surveying for bird populations. Your first step will be to learn more about water, benthic macroinvertebrates, trees, and birds. Once you become knowledgeable in these subject areas, you will begin to look at the aerial photographs. Based on your study on the photographs, you will make a hypothesis about the health and ecosystem specifics at your site.

A hypothesis is an educated guess that guides an investigation to explain an observation. The hypothesis serves as the beginning theoretical basis for experimentation. After you collect data in the field and analyze it on the computer, you will either prove or disprove your hypothesis in a conclusion. The data you record and the conclusions that you reach will be saved and utilized by future generations.

Remember, a scientist quantifies his or her observations by measuring accurately and carefully. The measurements are recorded so other scientists can repeat the experiment and verify the evidence being gathered. By working with other students in your class, with other classes in your school, and with other schools in your region, you are helping the scientific community to better understand our world.