



The yearlong celebration of science continues...

Geosciences and Planet Earth: The YoS2009 October Theme



Image Credits: (left): Colors of the Earth by OliBac, Creative Commons; (middle): dirac3000, Creative Commons (right): Mineral collection by Tjflex2, Creative Commons.

➤ What is Geoscience?

Earth is our home. Its rock layers and interactions with the atmosphere, hydrosphere (water and ice) and biosphere (plants and animals) have shaped the way humans live. Our civilizations, energy, resources, food and our health are all directly related to this wonderful planet. The study of those interactions and the underlying structure of the planets' systems is the realm of the geosciences, or more commonly called Earth science.

An often misunderstood science, Earth science is the culmination of ideas from physics, chemistry and biology which are used to understand the history and dynamic nature of our home planet. It is the unifying and holistic science which helps us to understand our past, present and future.

The images of rivers spilling over their banks and washing away entire towns, buildings decimated to rubble by the violent shaking of Earth's plates, and molten lava flowing up from inside Earth's core are constant reminders of the power of the Earth. Whether it is from a short-term weather event like *El Niño*, longer-term processes like plate tectonics, or a combination of both long and short term events such as global climate change, earth processes affect us all.

We live at a time of growing concern about the future of our planet, our over-use of its resources and the increasing threat of global climate change. We can only hope to deal effectively with these threats if we can learn to understand the processes that have maintained the balance of our planetary environment in the past, and how humans are now upsetting that balance. Central to all of the cycles that maintain life on our planet are the processes that recycle the rocks beneath our feet; central to our understanding of our planet's uncertain future is an understanding of its deep past.

By 2011, the world's population is forecast to reach 7 billion. If we are to continue to maintain a high quality of life, we need to delve much more deeply into our planet -- its processes, its resources and its environment. As the role of geoscience in meeting society's needs continue to grow, we see all sectors of society - government, private industry, and individuals - turning to geoscience to understand some of the most important challenges of our time.

➤ Connecting Geoscience to Our Lives

Can you imagine a life without...



...electricity or heat? The majority of the energy we use to run our society comes from fossil fuels or other earth resources (nuclear materials). Geoscientists seek replacement sources for our current reserves.



...warnings of impending landslides, earthquakes or tsunamis? The geosciences provide us with information on the regions which have the greatest risk of being affected by these natural disasters.



...coins, jewelry, electronics, cars and/or buildings? Without the geosciences we would not be able to find the valuable materials that are used to construct the items on which our civilization was founded.



...clean drinking water or water for our food crops? The geosciences help us to understand the nature of our increasingly depleted ground water reserves, which serve as the primary supply for our homes, cities, and agriculture.



...an understanding of the history of our planet and of life itself? Geoscientists have developed a picture of how life has changed on the planet over time using fossils to date rock layers.



...knowing what the future of our planet might be? From global climate change, to changes in volcanic activity, the geosciences help us to understand the Earth's natural cycles and predict and prepare for change.

Image credits: All images are from Creative Commons, Unless Otherwise Noted (top to bottom): TheGiantVermin; Dec '03 San Simeon earthquake, Hey Paul; Joe Sblabotnik; Henribergius; by Snap®; Earth by woodleywonderworks;