



Making the Case for GeoSTEM Education

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As the national Science-Technology-Engineering-Mathematics (STEM) education policy makers in the United States work through reports, findings, forums, workshops, etc., there emerges an opportunity to present the strong case of why and how the role of the Geosciences community can and should be at the forefront of these discussions. Currently existing within the Geosciences scientific and educational community are policies, frameworks, guidance, innovative technology, and unique interdisciplinary Earth System data sets that will establish a pathway to the role of the Geosciences in the classroom, in the 21st Century workforce, and in society. The question may be raised, “Why GeoSTEM?” But the real question should be . . . “Why not?”

Over the past several years the Geosciences have dominated the news cycle in the United States. As we face future natural and human generated hazards and disasters such as the Gulf Oil Spill, not to mention issues confronting society such as Climate Change, Sustainability and Energy, the Geosciences have a critical role in the public awareness, safety, and national security of our nation. In the past year we have experienced volcanic eruptions, earth-quakes, tsunamis, hurricanes, tornadoes, wildfires, severe drought and flooding, outbreaks of severe weather.

Planet Earth will be monitored, observed, and studied as an Earth System, in real or near real time. Policy-makers, decision-makers, scientists, teachers, students, and citizens will not only participate in the process, but come to use such information and data routinely in their daily lives. 3-D data visualizations, virtual field trips, and interactive imagery from space all will contribute to the doing of real science in real time. Policy-Makers have linked Science, Technology, Engineering, and Mathematics (STEM) Education to United States’ future economy and national security. The GeoSTEM community can deliver added value through leveraging current and future Geoscience-related resources that monitor our planet and protect the life and property of our citizens.

The integration of a Geoscience and Remote Sensing Laboratory into an existing Earth Science program or a new Earth Systems Science course allows students to acquire the necessary rigorous laboratory skills as required by colleges or universities, while developing and becoming proficient in technological skills using industry standard analysis tools. With the accessibility of real-time or near real time data, students in a GeoSTEM driven course can engage in inquiry-based laboratory experiences focusing on real life applications, both local and global.

Developing pathways between geoscientists, researchers, teachers, and students, will create an exchange of information, data, observations, and measurements that will lead to authentic science investigations through the monitoring of weather, water quality, sea surface temperature, coral reefs, marine wildlife, earthquakes, tsunamis, wildfires, air quality, land cover, and much more. Satellite, remote sensing, and geospatial technologies can introduce students and society to data that can inform policy makers and society both now and in the future.