Project SLAM: A Flexible Field Seismology and Earthquake Studies Teaching Module

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A current challenge in science education and outreach is to provide students the vital link between scientific information learned in the classroom and the process of acquiring and evaluating new scientific data. The Earth sciences are uniquely positioned to leverage the allure of fieldwork as a driving force behind discovery that can be translated to the classroom with relatively little effort. More specifically, the advent of portable broadband seismometers has led to significant advances in our understanding of Earth’s interior, structure, and dynamics. The primary goal of our efforts is to provide students the link between field seismology studies and the classroom from grade 7 to the introductory college level.

We have therefore constructed a series of field seismology and earthquake studies teaching exercises to provide a first step at bridging this gap. This teaching module, named Project SLAM (Seismology Learning and Analysis Module), is publicly available on a web site (http://slam.asu.edu), and includes an interactive teaching component as well as downloadable documents for distribution in classes. An example page from the website is shown in the Figure. The project was funded through the IRIS Education and Outreach program.

The exercises in SLAM combine exciting and educational aspects of three areas of Earth sciences research, including the development of field seismology arrays, exploring earthquake activity, and understanding Earth structure. We utilize a multitude of Internet resources to enable a flexible system that can be used for a broad range of grade levels. For example, students work through the process of evaluating various locations in the U.S. for a hypothetical portable seismometer installation. Students are asked to evaluate a site’s power, noise, accessibility, and safety using several WWW resources including the U.S. Census Bureau, TerraServer, and MapQuest. Following this introduction, students are either assigned or choose a site from a list (pictures near bottom of figure). These sites were specifically chosen to represent a breadth of possible seismometer locations, ranging from Central Park in New York City to the Mojave Desert in California to farmlands in Idaho. The purpose of providing this range of sites forces students to realize that there is not a single “correct” site; rather, the variability of locations demonstrates that seismometer sites rarely possess excellent parameters for all site factors.

The recently initiated EarthScope program will produce an enhanced level of public awareness and excitement regarding studies of Earth’s interior. Some of the activities in Project SLAM are ideal for integration into a broader-scale Education and Outreach component that can enable students and classrooms to help discover appropriate locations for seismometers as USAArray marches across the U.S. over the next 10 years.