Collaborative Educational Seismology Projects in Texas and New England

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There is a growing concern that the quality of science education today is not adequate to provide students with the level of scientific literacy they will need to be effective citizens in the 21st century. To address this concern, Educational Seismology Projects (ESPs), such as the Texas Educational Seismic Project (TX-ESP) and the Boston College Educational Seismology Project (BC-ESP) promote inquiry-based learning and investigative methods in Earth science classrooms, at public events, and in after-school activities. Our common goal is to enhance science education by offering opportunities for students, teachers, and the public to be directly involved with research scientists.

ESP Examples of Wave Propagation and Attenuation

Comparing Technology

After significant earthquakes, Weston Observatory compares seismograms recorded by expensive, research-quality seismographs with seismograms of the same earthquakes recorded by low-cost educational instruments. The EQ1, AS1, and Raspberry Shake seismographs offer reasonable quality seismograms for conducting student science research (See BELOW). This enables open-ended, inquiry-based discussions about the effectiveness of different seismic technologies.

Testing Technology and Seismology Concepts

COLLABORATION ACROSS THE NATION

An advantage of this collaboration is the locations of our ESPs: BC-ESP is located farther from regions of very active seismicity, so BC-ESP students don’t tend to record as many earthquakes as TX-ESP students. Our TX-ESP seismographs record more earthquakes, with stronger signals, than BC-ESP. When BC-ESP students see the TX-ESP recordings (on their own web-interface), they often find more subtle signals of the same earthquakes on their New England seismographs. Ongoing recording of high-quality seismograms provides opportunities to generate state-specific, NGSS inspired, and original curriculum.

ESPs Grow New Citizen Scientists

Through our educational partnerships, we make a difference in the lives of citizens and students of all ages and in offering socio-economic circumstances by engaging in hands-on learning opportunities and teaching science as it is actually practiced.

The science of seismology forms an excellent foundation for this endeavor because: (1) It is an interdisciplinary science that requires integration of many STEM concepts, and (2) It teaches how the natural environment impacts our everyday lives (see BELOW).

Monitoring the Weather....

Making Our Own Earthquakes...and experimenting with wave attenuation

EQ1 Seismograph (above) and EQ1 (below) Seismographs

EQ1, EQ2, AS1, and Raspberry Shake seismographs

EQ1 seismographs offer reasonable quality seismograms for conducting student science research (See BELOW). This enables open-ended, inquiry-based discussions about the effectiveness of different seismic technologies.

Comparing seismograms at multiple locations provides teachable moments for TX-ESP and BC-ESP students to investigate seismic wave propagation and attenuation.