BC-ESP Sites Include:
- Amesbury Middle School, Amesbury, MA
- Bellingham Public Library, Bellingham, MA
- Locke Middle School, Billerica, MA
- Mary Lyon School, Brighton, MA
- Heath School, Brookline, MA
- Gleason Public Library, Carlisle, MA
- Duxbury Middle School, Duxbury, MA
- Framingham High School, Framingham, MA
- Ipswich Public Library, Ipswich, MA
- Malden Catholic High School, Malden, MA
- Old Rochester Memorial Jr High, Mattapoisett, MA
- St. Raphael Parish School, Medford, MA
- Merrimack Public Library, Merrimack NH
- John F. Kennedy Middle School, Natick, MA
- Rupert A. Nock Middle School, Newburyport, MA
- C.J. Prescott Elementary School, Norwood, MA
- Pembroke Community Middle School, Pembroke, MA
- Wellfleet Public Library, Wellfleet, MA
- Nashoba Valley Tech High School, Westford, MA
- Weston Public Library, Weston, MA
- St. Theresa of Avila School, West Roxbury, MA
- Lurgio Middle School, Bedford, NH

Feel Free to Contact These Sites About Their BC-ESP Experiences!

Participant Learning:
Participants acquire knowledge and skills in:
- Scientific Processes and the Scientific Method
- Mathematics, Including Algebra and Trigonometry
- Mapping and Plotting of Geographical Information
- Earthquake Science, Physics, and Technology
- How to Organize, Interpret, and Analyze Data
- Plate Tectonics and its Effects on the Surface of the Earth

Participants also learn about the nature of science and are involved in the very essence of doing science, namely curiosity and discovery.

“As I walked into class today as I do many other days, I took a glance over at the seismograph to see if there was any recent activity in the tectonic plates. I noticed a drastic reading on the screen and I rushed to tell my teacher... I’m so fascinated in science that I really enjoy things like that.”
~ BC-ESP Middle School Student

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Seismology is an interdisciplinary science with a wide range of applications, including the study of earthquakes and volcanoes, prospecting for natural resources, monitoring chemical and nuclear explosions, and evaluation of earthquake hazards. Other important aspects of seismology are its role in probing the structure of the Earth’s interior, and in investigating tectonic processes that have shaped our Earth.

Mastering the concepts of seismology requires understanding many scientific concepts, such as: energy, mechanics, and waves, and also teaches participants how the natural environment impacts our everyday lives. Thus, seismology offers numerous possibilities for teaching about the nature of scientific inquiry and a wide range of important scientific ideas.

The Boston College Educational Seismology Project (BC-ESP) is a unique partnership of seismologists and teachers working together in the classroom. The resulting synergy allows us to continue to evolve and develop best practices in science and education.

Educational Seismograph that Records Real Earthquakes

Using simple, inexpensive educational seismographs, our students have direct experience with monitoring earthquakes around the world. Students analyze seismograms recorded by their seismograph to better understand the various aspects of seismology. Having their own seismograph in the classroom gives participants a way of collecting real-world data and making measurements that help them to understand earthquakes, the internal structure of the Earth, and processes by which the Earth changes.

Earthquake Tracking

Each week participants plot on a map of the Earth all earthquakes of magnitude 5.0 or greater reported for that week by seismologists around the world. As the year progresses, they construct a cumulative plot that eventually includes all earthquakes (magnitude 5.0 and greater) that occurred while they were involved in the project. As the participants work through this activity they first notice that the initial pattern of epicenters appears to be quite random. After about a month, however, the "Ring of Fire" around the Pacific begins to emerge from the scatter and by the end of a few months other plate boundaries become clear.

Engineering Seismology and Earthquake-Resistant Buildings

Participants study how buildings respond to earthquake shaking. Scale models of buildings with a variety of shapes and sizes are tested on a "shake table" that simulates earthquake shaking in a laboratory setting. Participants observe how their scale model buildings perform and explore alternative designs that improve the durability of their buildings in an earthquake. This exercise involves a discussion of the effect of earthquakes on our built environment and addresses topics such as building construction, emergency response, economics of a region, government programs for earthquake safety, and public policy about natural hazards.