

## Foreword – Mellors and Wald

*“The great aim of education is not knowledge but action”* – Herbert Spencer

The goal of this issue is to highlight some recent education and outreach efforts with emphasis on innovative K-12 (and equivalent), museum, and internet-based efforts that have sprung to life not only in the US but also around the world. A major theme is the development of “schoolyard” seismology efforts but this issue also includes a variety of other efforts including museum displays as well as descriptions of two of the major (IRIS and SCEC) seismology-oriented public outreach programs.

It is hoped that this issue will provide a resource and perhaps a springboard for future efforts. In particular, this cumulative experience detailed here may be useful for upcoming major projects such as Earthscope and the national seismic network, which will require an effective outreach effort to achieve success.

But before plunging into the details of the various education and outreach programs, it is useful to step back and consider the motivation and goals for education and outreach, i.e., why should seismologists, engineers and other professionals spend any time on these efforts? One clear answer is to promote scientific literacy at all levels, from kindergarten on up. But it is important to remember that education alone does not protect a family from a collapsing wall of unreinforced masonry when a  $M_w$  7.4 earthquake strikes; action is needed beforehand to avoid the situation. And so seismology E&O is more important than simply increasing scientific literacy; it provides the basis for informed action to save lives and property on a local, regional, and national levels. These actions range from individuals bolting bookshelves on walls to decision makers creating (and enforcing) building codes. But none of these steps will happen without previous education, and will cease if efforts are not ongoing.

The issue begins with an opinion piece by J. Goltz on why education and outreach should not only be considered only useful but necessary. B. Yeats provides a description of a college course that considers the ramifications of earthquakes in a societal context.

Taber et al reports on the education and outreach efforts of the IRIS program and Benthien et al reports on the Southern California Earthquake Center. Internationally, efforts are more focused on earthquake hazard. Yokio et al discusses the goals and methods of a successful international program to teach earthquake engineering and Jain et al reports on innovative efforts in India to educate on seismic hazard using a variety of media from newspapers to ?.

A major theme is the development of school seismometer programs. Originally sparked by the Princeton Earth Physics Program (PEPP), The original concept was to simultaneously provide educational use and provide useful research data, which was not always easy to accomplish. a variety of efforts both in the US and in Europe have taken shape and evolved.

Baldwin et al report on hard-won experience from several years of PEPP operation in Arizona high schools and provides useful lessons for future educational efforts using a combination of instruments. Hansen and Ruff report on the Ohio seismic network, which has been effective in improving the accuracy of local epicenters using a network of school-based instruments. Pennington et al reports on an alternate scheme that effectively uses temporary installations of instruments between various schools. Kafka write an indepth case study of using instruments in an undergraduate institution.

Much activity has occurred on the other side of the Atlantic as well, and several comprehensive and successful programs are underway. Filatov et al and Boulanko present a pair of papers on the SeisSchool program in Norway which uses advanced instrumentation along with a highly innovative set of electronically based curricular modules. Another successful project is the French Educational Network as reported by Viereux. Cantore discusses their results in Italy, an area of substantial seismic risk.

Finally, Jones et al discusses the widely used and well-implemented educational programs useful for displaying seismic data, seismicity, and wavefronts.

Hennet et al reports on museum displays of real-time seismic using experience from a set of exhibits that have been seen by millions of people. Mellors et al reports on a smaller-scale museum display.

Vernon et al reports on the links between an active network and education uses; and Kilb et al reports on innovative uses of a high-tech visualization center to display seismic data. Reif discusses experience with graduate students teaching K-12, an avenue linking seismology with teacher training.

And in closing, we might also remember a comment by Mark Twain “*I never let schooling get in the way of my education*”.

## List of papers

### Introduction

Science Can Save Us: Outreach as Necessity and Strategy

Goltz

Seismology and Society: A College Course in Why It All Matters - Yeats

### Programs

The IRIS education and outreach program- Hennessey et al.

Some innovative education and outreach projects in India for earthquake risk reduction-  
Jain

Across the borders-present, past and future of the training courses held by ISEE-Yokoi

Development and Implementation of the SCEC Communication, Education and Outreach  
Program-Benthien

### School seismology

SeisSchool project in Norway: Equipment, network operation, data acquisition, and  
processing system-Filatov

Electronic learning modules for high school students in seismology-Boulaenko

Lessons Learned in Eight Years of Seismology Outreach in Arizona Schools

French Educational Seismological Network "Sismo des écoles"-Berenguer

The Eduseis Project in Italy: An Educational Tool for Training and Increasing Awareness  
on the Seismic Risk-Cantore

The Ohio Seismic Network-Hansen

The Los Angeles Physics Teachers Alliance Group (LAPTAG) High School

Seismograph Project-Simila

Earthquake Seismographs for Volunteers to Operate in K-12 Classrooms Pennington

Using the AS1 seismograph for laboratory exercises in an introductory geophysics  
course: turning seismic moments into teachable moments-Kafka

A suite of educational computer programs for seismology- Jones et al.

### Museums and other stuff

A Real-time Interactive Educational Seismology Exhibit- Mellors et al

Earthquakes in museums- Hennessey et al.

Geophysics for kids: the experience of the Istituto Nazionale de Geofisica e Vulcanologia-  
Burrato et al.

The visualization center at Scripps Institute of Oceanography: education and outreach-  
Kilb et al.

Education and outreach based on the ANZA seismic network in southern California-  
Vernon et al.

The PISCES project: how to bring seismology and other sciences into elementary  
classrooms-Reif

