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Using simple, stand-alone seismographs in the classroom

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The IRIS Education and Outreach program has distributed over 120 educational seismographs (the AS1) to schools and science centers across the US in the past 5 years as well as to educational groups in several other countries. The AS1 seismograph is a low cost ($600US), stand-alone system that is capable of recording 1-4 teleseismic earthquakes per month, depending on the site. Local earthquakes, mining blasts, and cultural noise can also be recorded. It is easy to use and its design makes it effective to teach about how a seismometer works and to install in a classroom for immediate and continuous viewing and use. The data are displayed using the AmaSeis software developed by Alan Jones. Available exercises developed by IRIS and other groups include instrument calibration, magnitude and location estimation, and analysis of seismograms. The AmaSeis software can also be used without a seismograph to display, analyze and interpret seismograms downloaded from the Internet. While AS1 seismographs have the advantage of being independent units that do not require a network connection, it is valuable for teachers and students to be part of a larger group. Information can be shared between teachers using a listserve, data can be shared via the SpiNet site maintained by Science Education Solutions, and near-real-time helicorder images can be shared via Web sites. Teachers explore the basics of AS1 operation as part of an earthquakes and plate tectonics workshop, after which they can apply for a seismograph. They are encouraged to attend an additional 1-day workshop focused on the operation of the seismograph and its use in the classroom. Where possible, a seismologist visits individual schools after the seismograph has been installed. The school visits have helped the teachers to become more involved in the program and has helped encourage teachers and students to communicate with other schools about their mutual earthquake recordings.