Objective(s): Teachers will be able to
- Set-up, calibrate, operate and troubleshoot their AS-1 seismograph.
- Use data collected from their AS-1 seismograph as an integral part of their seismology/plate tectonics instruction.
- Participate as part of a larger community of educational seismograph users.

September 18th, 2009
8:00 – 8:15 Welcome & IRIS Overview and Review of Agenda    Michael Hubenthal, IRIS
8:15 – 8:45 Introduction Activity    Michael Hubenthal, IRIS
8:45 – 9:15 Seismographs in Schools Vision    Tammy Bravo, IRIS
Outcome: To provide teachers with a vision and examples for using the AS-1 and its data in their classrooms, and guidance for creating an implementation plan throughout the workshop.
9:15 – 10:15 Earthquake Machine    Michael Hubenthal, IRIS
Outcome: To increase participants understanding of the elastic rebound theory through the use of a mechanical model.
10:15 – 10:30 Morning Break
10:30 – 11:15 Seismic Waves Basics    Larry Braile, Purdue U.
Outcome: To increase participants understanding of Earthquake waves and their propagation.
11:15 – 12:00 Build Your Own Seismograph    Michael Hubenthal, IRIS
Outcome: Teachers will be able to explain how each part of a seismograph contributes to the recording of seismic waves and conduct the activity with their students.
12:00 – 1:00 Lunch
1:00 – 2:00 Zero-order seismology    Tammy Bravo, IRIS
Outcome: Teachers will register their stations, learn to navigate AmaSeis, find files in the AmaSeis file structure, extract and analyze earthquakes, save and upload data.
2:00 – 3:00 Recognizing Patterns In Seismograms    Larry Braile, Purdue U.
Outcome: Teachers will be able to distinguish earthquakes from seismic noise and will be able to recognize features within seismograms.
3:00 – 3:15   Afternoon Break

3:15 – 3:45   Using AS-1 data to locate earthquakes  
Tammy Bravo, IRIS  
Outcome: Teachers will be able to apply the S minus P method  
to locate Earthquakes from AS-1 data. Including; recognition  
of P and S arrivals, use of the AmaSeis travel time tool to determine  
the S minus P time, epicenter location on a globe, use of the  
USGS catalog to identify earthquakes

3:45 – 4:15  Structured Practice Locating Earthquakes  
Tammy Bravo, IRIS

4:15 – 4:30   Review Practice Events  
Tammy Bravo, IRIS

4:30 – 5:00  Small Breakouts

5:00   Gots and Needs

**September 19th, 2009**

8:00 – 8:30  Review of Gots and Needs

8:30 – 9:15   USAarray  
Jay Pulliam, Baylor U.

9:15 – 10:15  Where did “OUR” waves come from?  
Larry Braile, Purdue U.  
Outcome: Teachers will be introduced to the SeismicWaves  
program and will be able to import .sac files from the AS-1  
into SeismicWaves and connect the recording to Earth structure.

10:15 – 10:30   Morning Break

**Group A**

10:30 – 12:00  Setting-up, Troubleshooting & Calibrating Your AS-1  
Tammy Bravo, IRIS
Outcome: Teachers will be confident that their system is  
set up and working correctly, correct problems that might  
arise and will know how to perform a simple calibration of  
their system and to adjust the damping of their system  
accordingly

**Group B**

10:30 – 12:00  Web Tools, Applications, Software  
Michael Hubenthal, IRIS
Outcome: Teachers will be able to access and use a  
variety of web-based tools (IEB, REV, NEIC) to support  
the seismology instruction in their classrooms.

12:00 – 1:00   Lunch

**Group B**

1:00 – 2:30  Setting-up, Troubleshooting & Calibrating Your AS-1  
Tammy Bravo, IRIS
Outcome: Teachers will be confident that their system is  
set up and working correctly, correct problems that might  
arise and will know how to perform a simple calibration of  
their system and to adjust the damping of their system  
accordingly
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Instructor</th>
<th>Location</th>
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<tr>
<td>1:00 – 2:30</td>
<td>Web Tools, Applications, Software</td>
<td>Michael Hubenthal, IRIS</td>
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<td><strong>Outcome:</strong> Teachers will be able to access and use a variety of web-based tools (IEB, REV, NEIC) to support the seismology instruction in their classrooms.</td>
<td>Glenn Kroeger, Trinity U.</td>
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<td>2:30 – 2:45</td>
<td>Afternoon Break</td>
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<td>2:45 – 3:45</td>
<td>Calculate the Magnitude of An Event w/ AS-1 Data</td>
<td>Larry Braile, Purdue U.</td>
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<td><strong>Outcome:</strong> Teachers will be able to determine the magnitude of an event using AS-1 data and differentiate between magnitude estimates (mb, MS, mbLg). Including how to measure amplitude and period of seismic phases used in magnitude determination, how to use the Magnitude Calculator and how to find magnitude data in online catalogs.</td>
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<td>3:45 – 4:15</td>
<td>Structured Practice Calculating Magnitudes</td>
<td>Larry Braile, Purdue U.</td>
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<td>4:15 – 4:30</td>
<td>Review Practice Events</td>
<td>Larry Braile, Purdue U.</td>
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<td>4:30 – 5:00</td>
<td>Small Breakouts</td>
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<td>5:00</td>
<td>Gots and Needs</td>
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<td><strong>September 20th, 2009</strong></td>
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<td>8:00 – 8:15</td>
<td>Review of Gots and Needs</td>
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<td>8:15 – 9:15</td>
<td>Exploring Earth Structure with Occam’s Razor</td>
<td>Michael Hubenthal, IRIS</td>
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<td><strong>Outcome:</strong> Teachers will be able to explain and demonstrate how the internal structure of Earth (concentric layers of different density and composition) is inferred through the analysis of seismic data.</td>
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<td>10:15 – 10:30</td>
<td>Morning Break</td>
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<td>10:30 – 11:00</td>
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<td>11:00 – 11:30</td>
<td>Q&amp;A/Wrap-up/Distribute Materials</td>
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<td>11:30 – 12:00</td>
<td>Evaluation</td>
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<td>12:15</td>
<td>First van departs for Airport</td>
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