

Wiggleview™

Wiggleview is a tool developed by the Electronic Visualization Laboratory (EVL) at the University of Illinois at Chicago (UIC) for visualizing seismic data. Data for seismic events is obtained from repositories maintained by IRIS (Incorporated Research Institutions for Seismology) at the Data Management Center (DMC) in Seattle, Washington.

Visualizations, such as those illustrated here, consist of a topographical map and 2D North/South (green lines), East/West (white lines) and vertical (pink lines) seismic traces recorded at each station in a worldwide network of seismometers. In addition, yellow 3D particle traces integrate the three components, and depict the actual tremors occurring at the instance of an event.

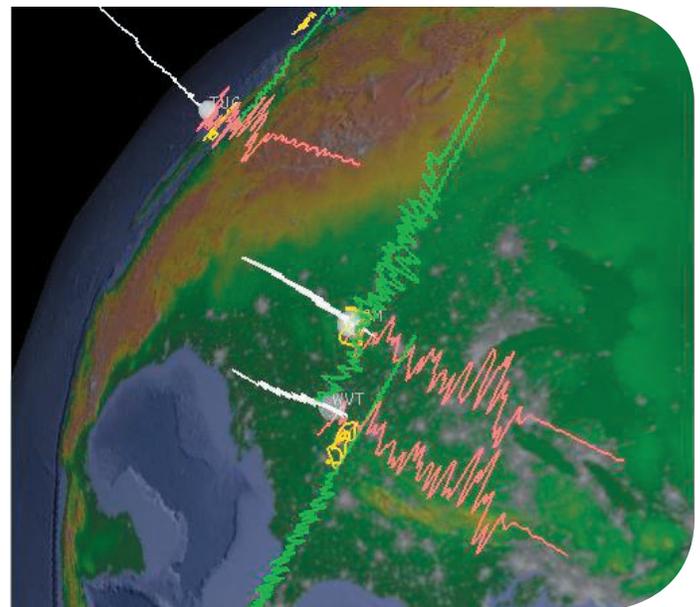
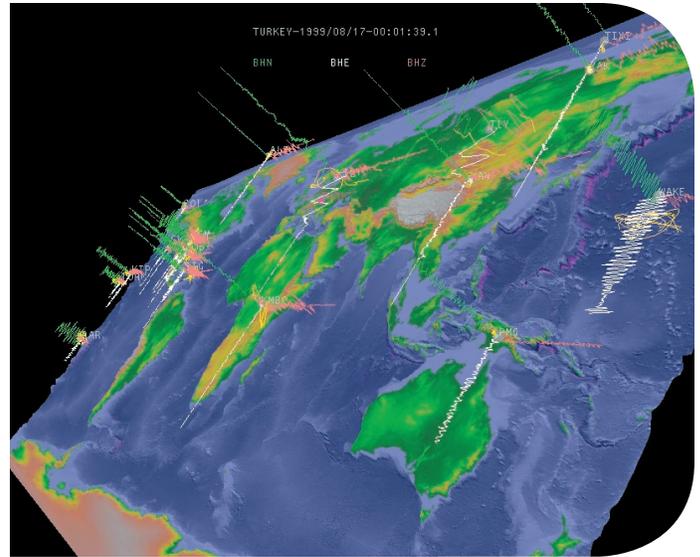
The tool's strength lies in being able to depict as many as 60 channels of waveforms and 20 traces of particle motion on a single display. This allows one to watch the seismic wave field expand about a source and see how it differs from place to place. It can also assist in understanding surface wave multipathing and anisotropy.

The 3D nature of the images enhances depth perception, thus allowing a better understanding of attenuation due to distance and earth structure, source directivity and seismic hazard estimation.

An early prototype of Wiggleview was demonstrated on a GeoWall at the Fourteenth Annual IRIS Workshop in June 2002. The version exhibited in the IRIS booth at the American Geophysical Union 2002 Fall Meeting displayed real-time seismic data retrieved from the CORBA server in Seattle, Washington.

Wiggleview is designed for two display platforms: the standard PC-based desktop or laptop with a high-performance graphics card, and the GeoWall stereoscopic projection system.

<http://www.evl.uic.edu/atul/wiggleview>



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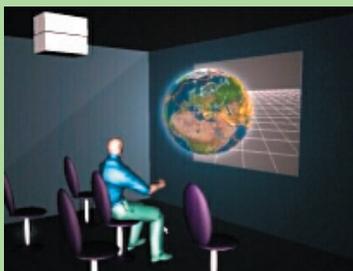
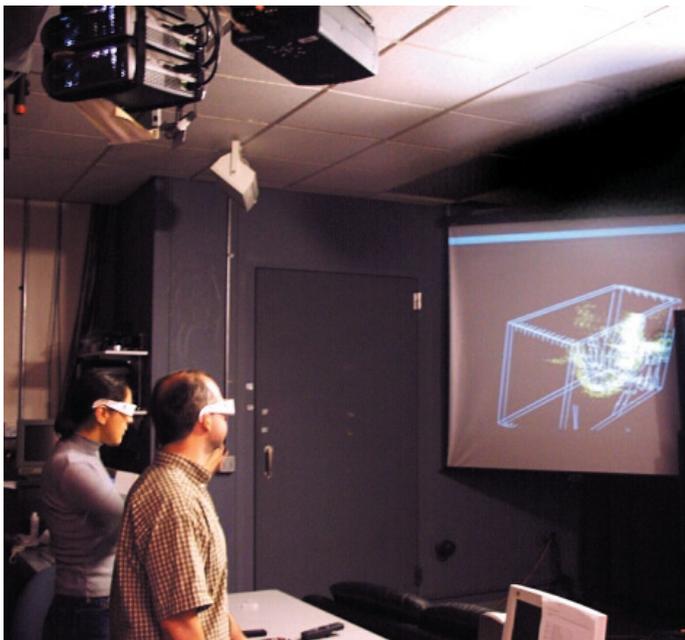
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GeoWall™



GeoWall Hardware Specifications

- Screen: rear projection requires black, rigid, high-contrast polarized screen and mount; front projection requires standard polarized “silver screen” and stand
- Two InFocus 530 projectors
- 1GHz CPU with 512 MB RAM and an NVIDIA GeForce4 Ti 4600 or Quadro4 graphics card
- Polarized glasses and filters
- OS: Linux, Windows or Mac

GeoWall Features

- Costs as little as \$8,500
- Built using commodity graphics card and PCs
- Portable and easily deployable
- Large user community

The GeoWall is low-cost, non-tracked, passive-stereo system. While it can be applied to many applications, the Geoscience community immediately saw its potential for supporting Earth science curriculum in the classroom and in geological fieldwork, and created a consortium to deploy this technology to its members; hence, the name “GeoWall.” The GeoWall Consortium currently documents 70 GeoWall installations in U.S. universities, laboratories and government research institutions.

While most Earth scientists are able to extract 3D information from 2D representations of geological structures, the extrapolation requires spatial thinking skills that often pose a stumbling block for students at the introductory level.

The GeoWall aids in the understanding of Earth science data with 3D models supported by low-cost, classroom-based virtual-reality visualization techniques. The GeoWall is based on the AGAVE™ technology developed at the University of Illinois at Chicago’s Electronic Visualization Laboratory.

Configured as either front or rear projection, the GeoWall allows distributed audiences to view and interact with 3D immersive content using passive polarization glasses similar to those worn to view 3D films.

The GeoWall supports EVL’s Immersaview™ software, developed to view 3D content running on the Windows 2000/XP, Redhat Linux 7.3, SuSE Linux and Mac OS-X operating systems. Immersaview is an Open Inventor model viewer that can visualize a single dataset or interact with an animation of scientific data.

GeoWall Consortium: <http://www.geowall.org>

ImmersaView: <http://www.evl.uic.edu/cavern/agave/immersaview>

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About Electronic Visualization Laboratory

The University of Illinois at Chicago’s Electronic Visualization Laboratory (EVL) is an interdisciplinary laboratory offering degrees in computer science and art, and specializing in virtual reality over high-speed networks. Funded research projects include tele-immersion and collaborative software, the development of viable, scalable, deployable stereo displays, and management of next-generation advanced networking initiatives. In 1992 and 1995, respectively, EVL invented the CAVE® virtual-reality theater and the ImmersaDesk®, now used globally for tele-immersive scientific discovery, art exhibition and industrial prototyping <www.evl.uic.edu>. For the past several years, EVL has been conducting research in next-generation VR devices, to construct variable resolution and desktop/office-sized displays. For more information about EVL, contact Laura Wolf <laura@evl.uic.edu>.