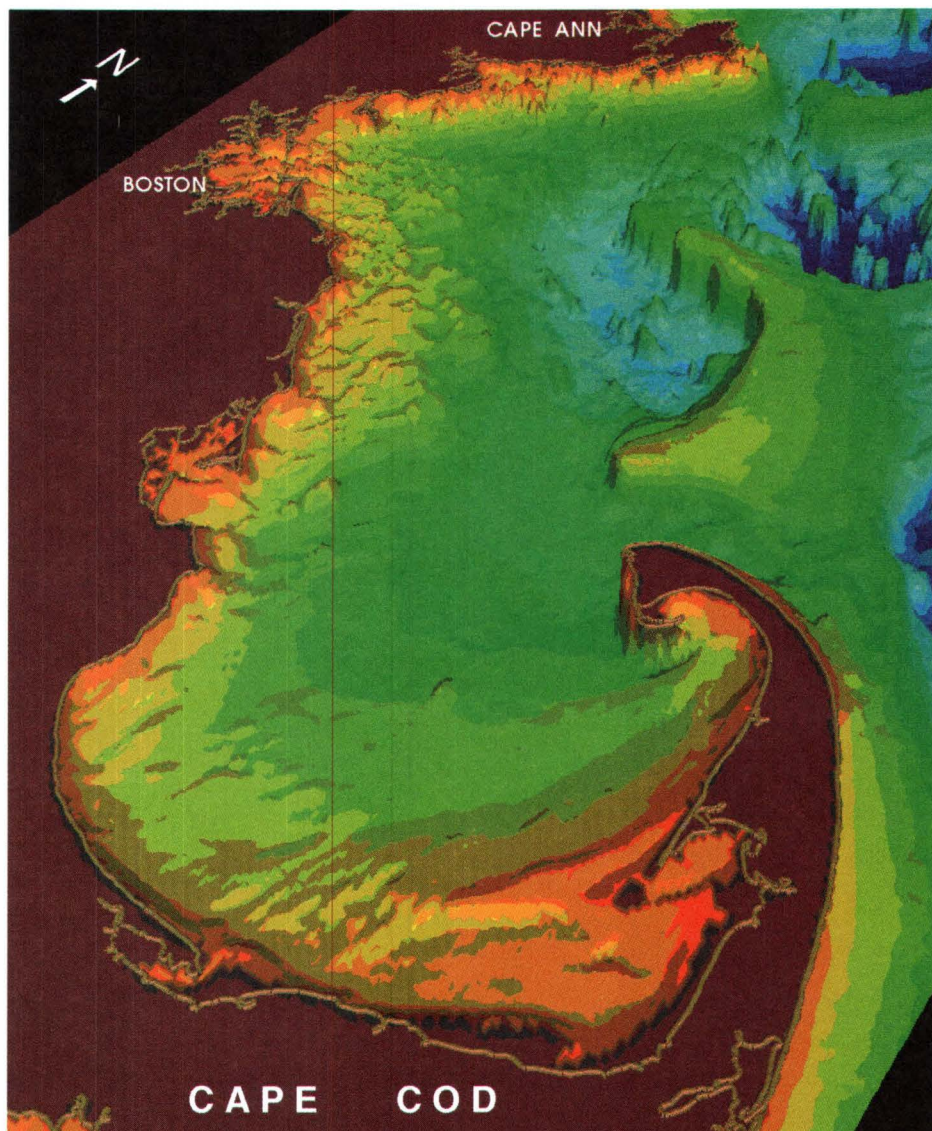


## Mission

The U.S. Geological Survey's (USGS) Scientific Visualization Laboratory at the National Center in Reston, Va., provides a central facility where USGS employees can use state-of-the-art equipment for projects ranging from presentation graphics preparation to complex visual representations of scientific data. Equipment including color printers, black-and-white and color scanners, film recorders, video equipment, and DOS, Apple Macintosh, and UNIX platforms with software are available for both technical and nontechnical users. The laboratory staff provides assistance and demonstrations in the use of the hardware and software products.

## Background

In response to the growing need to present, publish, and exchange data and experimental results, a graphics laboratory was established in 1972. As the amount of data collected increased and as scientists requested better ways to display their results in an informative manner, the need for visual representation of data evolved. Thus, the graphics laboratory, once specializing in presentation graphics only, evolved into the USGS Scientific Visualization Laboratory, encompassing the visualization of scientific and technical data. Through the use of the resources available in this laboratory, scientists can now present their data in a variety of formats for many types of audiences ranging from peer scientists to the general public. Scientific data visualization provides scientists with the mechanisms to view, interact with, and better understand their data.



Perspective view of the seafloor topography of Cape Code Bay, Mass. The image was created with Advanced Visual Systems, Inc., Application Visualization System (AVS).

## Purpose

The purpose of the laboratory is to provide advice and assistance and to make state-of-the-art hardware and software available to technical and nontechnical users for visualizing scientific data and preparing presen-

tations. In addition, data visualization provides the capability to communicate complex mathematical models of earth processes into animation and other visual formats aimed at both technical and nontechnical audiences. The laboratory provides equipment that normally cannot be justifiably purchased for a short-term



project or a project undertaken by a small group of researchers.

## Laboratory Resources and Services

Hardware and software are available in the laboratory on a first-come, first-serve basis for USGS employees and cooperators who have the knowledge to use the equipment unassisted or those who wish to experiment with the hardware and software. Laboratory staff is available daily to assist with various projects or questions.

Laboratory staff requires that all users of the facility sign in at the monitor provided as you enter the laboratory. The usage statistics provide information to evaluate new hardware and software and upgrades required to ensure that the laboratory continues to meet the needs of its users. The laboratory staff gives advice to technical and nontechnical users on the most appropriate and cost-effective hardware and software for the visualization and interpretation of their data.

Specifically, the laboratory staff assists in the areas of data visualization, image processing, animation techniques, rendering techniques, two- and three-dimensional data manipulation, data analysis, data modeling, quality video recording, digitizing and editing (limited basis), presentation graphics, scanning, and 35mm slide production.

Users who have large projects to complete may call the laboratory coordinator for more information. After a project is approved, personnel with expertise in the needed disciplines are assigned to a project team to assist the scientist.

For projects requiring assistance in multiple disciplines, the laboratory functions on a project-oriented basis; the task is assigned to a team consisting of personnel with expertise in the required disciplines. This allows the laboratory staff to use personnel specializing in

areas such as communications, video technology, animation, presentation graphics, scanning, and networking. This structure also provides personnel specializing in various hardware platforms such as the Data General AViiON, Sun Microsystems Sun, Silicon Graphics Indigo<sup>2</sup>, Apple Macintosh, and DOS-based systems and the software running on each of these platforms. Connections to the USGS file servers and workstations are provided via Ethernet.

## Laboratory Access

The laboratory is available to all USGS employees who would like to use visualization techniques in their data analysis and presentation projects. The laboratory is also available, by special arrangement, to users with projects that involve USGS and other organizations, to experiment with visualization technology to determine its appropriateness for their specific needs.

### Hardware

The following hardware is available for use in the laboratory:

#### Personal Computers

Apple Power Macintosh 8100/80 AV  
Six DOS Workstations

#### UNIX Workstations

Data General AViiON 410  
Silicon Graphics Indigo<sup>2</sup>  
DEC 3000 Model 600 AXP  
Sun 690 MP Sun Microsystems

#### Peripheral Equipment

Apple LaserWriter II (300 dpi)  
Hewlett-Packard ScanJet IIC  
Hewlett-Packard ScanJet IICx  
Hewlett-Packard Laserjet 4M (600 dpi)  
Howtek Color Scanmaster  
Matrix PCR Slide Film Recorder  
Nikon 35mm Slide Scanner  
Tektronix 4693DX Color Printer

Tektronix Phaser III Color Postscript  
Printer  
Tektronix Phaser 220i Color Postscript  
Printer  
Dual 20 MB Bernoulli Drive

#### Video Equipment

Commodore Amiga Computer/  
NewTek Video Toaster  
U-Matic SP Sony 9850 Recorder  
Video Editing Station  
Silicon Graphics Video Creator

### Software

The laboratory has drawing, graphing, and charting software, image manipulation software, communications software, presentation software, scanning software, visualization software, and limited word processing and spreadsheet software.

## Location and Hours

The laboratory is located in Reston, Va., on the first floor of the National Center in Room 1B201. The laboratory is open daily (Monday through Friday) from 9:00 a.m. to 3:30 p.m.

## Information

The USGS's Scientific Visualization Laboratory Guide to Services is available on request and contains a complete listing of hardware and software available. A guide to video equipment and services in the laboratory is also available.

For more information, contact:

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