

Major New Facility in Weeks Hall

Halliburton Geoscience Visualization Lab Opens

With the generous support of Landmark Graphics and their parent corporation Halliburton, as well as alumni gifts, the department has built a major new facility for the display, visualization, and interpretation of datasets including 3D seismic reflection images and other geospatial information. In the public mind, geology is not necessarily seen as a high-tech science, yet increasingly we all grapple with complex digital data ranging from satellite to seismic, models to microscopy. Our tools to work with these data have lagged behind, but this exciting new resource is a major step toward closing that gap.

When geophysics faculty member Harold Tobin arrived in 2006, he already intended to apply for a Landmark University Partners software grant—a long-standing program whereby Landmark gives its very powerful petroleum-industry seismic processing and interpretation software to academic users for a nominal charge. However, he quickly discovered that something even bigger was possible, as the department had an interested ally in the person of David Lesar, CEO of Halliburton and a UW-Madison alumnus (BS Zoology, 1975; MBA 1978). He arranged for faculty members Tobin,

Jean Bahr, Herb Wang, Laurel Goodwin, and Alan Carroll, computer guru Ben Abernathy, and graduate student Chris Muffels to travel to Houston and meet with Landmark executives and engineers. During that meeting all

recognized the need in academia for software and hardware tools alike that rival those in the industry, to help us train the next generation of geoscientists with cutting-edge technology. And so the newly-completed **Halliburton Geoscience Visualization Lab** was conceived. Landmark-Halliburton agreed to donate a Cyviz 3D-stereo capable theater-style display system, digital chalkboard



The new Visualization Lab in action. Graduate students Ninfa Bennington, Jennifer Walker, and Peter Garaffo use Landmark Geoprobe software to analyze 3D seismic data. (Harold Tobin)

technology, a video-conferencing system and several computers, as well as their design and installation expertise. The department took on the renovation of Weeks 212/214 into a combined teaching lab and collaborative research environment. Our goal was to create a conducive environment for interactive computer-based teaching, team-oriented problem solving and research, and 3D visualization of complex geospatial data. Renovation of room 212 began in September 2007 and the finishing touches were put on the lab in February 2008.

"What started as a plan for a lab for seismic interpretation has morphed into something much broader than that, with potential application across all areas of geosciences."

— Harold Tobin

can be found ooh'ing and aah'ing while looking nerdy in 3D polarizing glasses. Four bright LCD projectors flood the screen with overlapping and cross-polarized images to produce a high-resolution, wide-screen image with the stereo effect. We're computationally ecumenical, with well-equipped Mac, Windows, and Linux computers all in place

Walking into the "Viz Lab" feels like stepping into a very different environment from the typical geology department laboratory. The room is dominated by the 12-foot wide, rear-projected screen, and department members

and capable of running 3D stereo and other applications. Four additional high-end workstations round out the research and teaching capacity of the lab. Graduate students from the geophysics and sedimentology groups are already at work on 3D seismic data. Other students and faculty are interested in using the capability for display of earthquake tomography and subducted slabs, X-ray CT scans of cores, groundwater model output, and many other applications using the new facility. Tobin says, "The ability to put seismic data up on the big screen and interpret it collaboratively allows us to much more easily approach it as a team effort, as it would be done in an industry setting." The stereo display capability also has real potential for undergraduate teaching of subjects like structural geology and mineralogy—the three-dimensional visualization at the heart of so much of earth science is a challenge for many students.

We are deeply grateful to Halliburton for their generosity and to Dave Lesar for spearheading the effort. Kudos also to Ben Abernathy, Bill Unger, Michelle Szabo, and the UW Facilities Planning and Management staff for their hard work that resulted in a great design and layout. We have no doubt that this facility is a major enhancement to our teaching and research work at both the undergraduate and graduate levels. Visitors are welcome! ●