

ORSSAB Member Bob Hatcher's Expertise Benefits Board

When board member Bob Hatcher was a student at Vanderbilt, he didn't even know what geology was. Now he knows more than just about anyone. "I was going to be a chemist and I had to choose a minor. The advisor said 'what about geology?' and I asked 'what's geology?' He didn't know himself and had to go ask someone. When he came back and described it, it sounded interesting so I took the introductory course. I became fascinated with it and double majored in geology and chemistry."

Bob went on to receive a master of science in geology from Vanderbilt and a doctorate in structural geology from the University of Tennessee (UT). He is now a Distinguished Scientist and Professor as a research scientist in the Department of Earth and Planetary Sciences at UT.

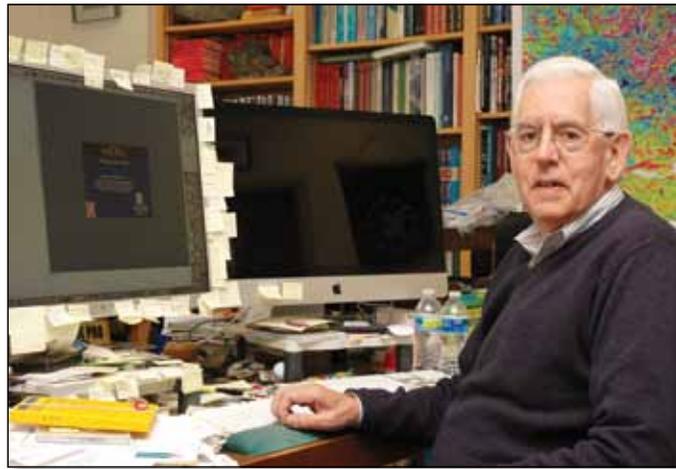
"I'm primarily interested in how the earth's crust is put together. I focus on how mountain chains form new crust. Mountain chains are the primary crust forming process that we see on earth. Spin-offs from that research include applications in the study of earthquakes, landslides, oil and gas exploration, and radioactive waste disposal."

Bob began his career as an exploratory geologist with Humble Oil and Refining (now ExxonMobil) in New Orleans. After about a year he joined the faculty at Clemson University. Twelve years later he moved to Florida State, which has a graduate program in geology. He taught and did research there for a couple of years before moving to the University of South Carolina for six years.

Then in 1986 he returned to the area when offered the position as a

Distinguished Scientist under a joint appointment to UT and Oak Ridge National Lab and became full time at UT in 2000. "Today I do little original field work of my own, but primarily manage graduate students' field work and do a lot of lab work. I don't have to teach, but I enjoy working with students, so I teach a couple of courses a year."

As the board's EM Committee chair, Bob has been instrumental in finding an independent expert to help board members and DOE better understand



Board member Bob Hatcher in his office at the University of Tennessee.

how groundwater flows through fractured rock on the ORR. "One of the problems we feel has never been resolved is a thorough understanding of the groundwater system on the reservation," he said. "I started asking friends at the U.S. Geological Survey who would be an expert who could address this and advise us."

The expert identified is Dan Goode with USGS who spent several days in Oak Ridge in August to get an overview of the problem. DOE is considering how to make use of Goode's expertise.

Bob is currently involved in research to determine if there have been large pre-historic earthquakes in East

Tennessee and how often they occur. "We now know there have been large quakes (6.0 or greater). We just don't know how often they happen," he said. "Understanding this has a direct effect on the design of buildings, dams, highways, nuclear plants, and so on. There have been many similar studies in West Tennessee and around Charleston, but little has been done in this area. In West Tennessee, the large earthquake cycle is about 400 years. In Charleston it's 600-700 years; here we don't know."

He said there is evidence of pre-historic quakes in this area on the order of magnitude 6.5 to 7. "We're trying to find more evidence. The more evidence we have the greater the chance of finding out how often they happen. So we're trying to quantify more as to what the hazard really is. You do that by looking at relatively modern river sediments (younger than a few hundred thousand years old) for evidence of earthquake activity.

"One of the reasons DOE wants to tear down the old buildings on the reservation is because they were built without careful design for seismic activity."

Earthquakes in this area are common, but none have measured more than a magnitude 4.8 in recorded history. "This area is the second most active seismic zone in the eastern U.S. behind New Madrid in West Tennessee," he said.

Bob stays busy with research and working with students, but for his last board term he hopes to have more time for ORSSAB activities like attending the semiannual chairs' meetings.

With the free time he does have, he likes to spend it on the golf course, taking photographs, or skeet shooting. 