

Domain 3D Project Launch

The University is launching into the next phase of a long-term, place-based teaching and research project designed to provide students and faculty with years of research and learning opportunities that will deepen our understanding of the natural history and resources of the Domain. Originated by Vice-Chancellor John McCardell in 2014 and christened "Domain 3D", the project was brainstormed by the Geology and Forestry professors and received the blessing of the Board of Regents in 2015. Although the project is rooted in the Department of Earth and Environmental Systems, faculty and students from a variety of other disciplines across the College will be involved as it progresses. The goal of Domain 3D is to use multiple geoscience data types to characterize the Domain subsurface in three dimensions, from the soil to the basement rock. Generations of Sewanee students have mapped the geology of the plateau from rock outcrops on the surface and the bluffs, but very little is known about how these formations extend and change in the subsurface. Our students will move on to careers that require them to do just this – map the subsurface through both direct and indirect measurements, and the Domain 3D project is intended to provide them experience in collecting, integrating and utilizing these data.

The first phase of the initiative (2015-2020) yielded extensive data sets focused on the very shallow subsurface. These data have been used by faculty and students in geology, forestry, archaeology, and environmental science. The next phase of the project will involve collecting seismic data that will be used to map thousands of feet underneath the plateau. Seismic data is collected by sending an acoustic signal into the earth and recording the reflected waves at the surface, similar to an ultrasound. The signal truck will follow existing paths and roads; where access is limited, hand-held hammers may be used to generate the signal. These geophysical data will help us visualize the structural and sedimentological changes happening in the subsurface. Students will be involved in the preparation for and actual acquisition of the data this coming academic year. In following years, they will learn how to process the data into useful images, interpret these images, and integrate them with other available geologic data to fully characterize the subsurface geology of the Domain.

As we move forward with the project, the University will provide both timelines and details of the acquisition process to the Sewanee community as the plans develop. The Domain 3D project has and will continue to provide students and faculty with many years of research, learning, and skills development, deepening our understanding of the land and preparing our students for the future.