A Multi-Scale Visualization and Exploration of the Mora Watershed, New Mexico

Joseph Zebrowski¹, Patti Dappen² and Adrian Sanchez³

¹New Mexico Highlands University, NMHU NRM Dept, Box 9000, Las Vegas, NM, New Mexico, 87701, United States, jpzebrowski@nmhu.edu
²New Mexico Forest and Watershed Restoration Institute, Box 9000, Las Vegas, NM, New Mexico, 87701, United States

Beginning in the spring of 2015, a team of New Mexico Highlands University (NMHU) faculty and students began developing a series of curriculum modules to teach various practices for delineating watersheds, collecting field data, and exploring watershed features using desktop and online geographic information systems. This work was funded as part of New Mexico EPSCoR's Western Consortium, Watershed Analysis, Visualization, and Exploration (WC-WAVE), Undergraduate Visualization and Modeling Network (UVMN). In the first phase of the project, curriculum for delineating watersheds from 30-meter, 10-meter, and lidar-derived 0.3-meter resolution digital elevation models was developed. The Environmental Protection Agency’s BASINS software is used. A users’ guide for field data collection with Avenza’s PDF Maps applications was also developed. A suite of camera equipment and accessories was obtained to help enhance field data collection using “gigapan” photography. In the continuation phase of the project, NMHU is developing an Introduction to Geographic Information Systems module. This module is being supported with exercises in using ESRI’s ArcGIS Online platform to explore and create web maps, create Story Maps, and collect field data using ESRI’s Collector for ArcGIS app. A unique aspect of this project was the establishment of a “co-learning” environment among students and faculty. Students were assigned to develop specific modules and were then expected to teach their faculty mentors what they had learned. Modules from the first phase of the project are already being used in various NMHU courses. Modules from the continuation phase are being piloted at NMHU this spring and will be incorporated in a course being conducted this summer at nearby Rio Mora National Wildlife Refuge by the Community College of Denver. The Denver Zoo at Rio Mora National Wildlife Refuge is also adopting the curriculum for use in various courses and workshops they will offer. All curriculum will be made available on the New Mexico Forest and Watershed Health Clearinghouse, allaboutwatersheds.org.

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