

2015 Unidata Equipment Grant

Transitioning to the IDV-CAVE: Improving Classroom Technology for Meteorology

Plymouth State University

Final Report

Plymouth State University was one of 5 institutions to receive a 2015 Unidata Equipment Grant. The grant, combined with matching funds from Plymouth State, provided 21 new Dell Optiplex 9020 workstations for use in our weather lab. Each PC features an NVidia GeForce GTX 745 4 GB video card in order to maintain the video requirements for AWIPS II and to allow IDV to function more efficiently in a dual monitor environment. The video card features one each of HDMI, VGA, and DVI port, making it easy to integrate with the existing dual monitor configuration at each workstation. Each system has a i5-4590 Quad Core 6 MB 3.3 Ghz processor and 8 GB of 1600 MHz DDR3 memory and a 500 GB hard disk.

During the 2015-16 academic year, the workstations were utilized heavily by students in a variety of classes, including Synoptic Meteorology, Atmospheric Physics, Instrumentation & Observations, Mesoscale Meteorology, Numerical Weather Prediction, Satellite & Radar Meteorology, and our meteorological computer application class which provides in depth instruction with IDV and ISL. Furthermore, students utilized the workstations to produce scholarly research in areas focused on topics such as atmospheric rivers, orographic precipitation, and explosive extratropical cyclone intensification over the North Pacific. The machines were also used for real time forecasting by students, benefiting Plymouth State athletic programs and provided an opportunity to collaborate with a private entity to provide ski & snowboarding forecasts. Additionally, students with financial aid awards from the U.S. Department of Education's Federal Work Study Program were provided an opportunity to use IDV to develop new graphics products for our website (<http://vortex.plymouth.edu>) as we continue to phase out maps produced by WXP legacy software.

Originally, it was envisioned that each PC would need to be dual boot for both Microsoft Windows (to support the majority of university installed software) and CentOS Linux (to support AWIPS II). Two machines were configured with an additional solid state drive to test the image deployment process and dual boot functionality. During system configuration testing, Unidata announced that it would be providing an AWIPS II client for Microsoft Windows. Once the client became available, it was tested for compatibility with both Unidata's cloud EDEX server and our own local EDEX server. Initial results indicate that students are able to use the Windows client for CAVE to perform a variety of meteorological analyses. By using the Microsoft Windows CAVE client, the amount of effort to manage and deploy software will

be greatly reduced by eliminating the need to keep two operating systems current with security patches and other updates. With CAVE now fully tested, we anticipate integration of AWIPS II into our curriculum in the next academic year.

The existing computers which were replaced were transitioned for usage by our graduate students for email/word processing and positioned in other classrooms for student needs which require minimal computing power, representing an overall life cycle for each computer of 7-9 years to maximize technology investment.

In the near future, the computers will continue to support courses and student research. Our program just received a three-year grant from NSF to study Cold-air Damming in Northern New England. Both graduate and undergraduate students will use the lab facility to access observational data and numerical model simulations on our server to support this research. In addition, Plymouth State University is moving toward a more interdisciplinary model of education that incorporates real-world problems into the classroom. Our computer lab is already used across disciplines as an Environmental Science graduate level GIS course used the facility this year and we anticipate collaborations to continue in the future.

Respectfully submitted,

Brendon Hoch
Plymouth State University
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