

Establishment of a Unidata Site and Workstation Pool for Meteorological Education

Unidata Equipment Award Report Dr. Dennis Todey South Dakota State University

The South Dakota Office of Climate and Weather (SDOCW) received a \$9000 award for development of a teaching lab in the Agricultural and Biosystems Engineering Department at South Dakota State University. South Dakota State University was previously not a Unidata site. Only one Unidata site existed in South Dakota. This grant allowed us to renovate a computer lab for classroom use and to become a Unidata site to provide information to the people of the state through state climate web page.

Classroom Education

The PI teaches a junior level class entitled Physical Climatology and Meteorology. This is traditionally a course for non-meteorologists, particularly people involved in agriculture. Many have little background in science, let alone meteorology.

Being the only experience many students have with climate and weather in their college career, the course is structured to introduce basic concepts of meteorology and climatology while developing applications of these data to give students usable tools for their careers in agriculture.

The six machines and server purchased with these equipment funds were combined with a fellow faculty member's grant of \$7200 through the SDSU Foundation to create a computer lab with a total of 12 dual-boot machines (Windows-Linux) which could be utilized by the meteorology class and another lab course taught by the other faculty member. The addition of these computers was matched with university funds to renovate an existing computer lab to house these computers, and provide instructor display and work areas for students. The lab (Fig. 1) contains four computers around a single table which can allow individual work in conjunction with group sharing to develop and share work (Nicolai and Todey, 2004). Another dedicated server was purchased to serve specific Unidata products and data to the student computers and the state climate web site.

One offering of the course since the deployment of the workstations has allowed some redevelopment of the course in working with climatic data. More integration of the use of Unidata products is planned for the next offering.

The lab has provided a location for another student to take a course at a distance in cooperation with the South Dakota School of Mines and Technology (the other South Dakota Unidata site). (See photograph page 2.)

Extension Education

A second continual application of the Unidata data and software has been continuous access to data products for the SDOCW. As state climatologist and extension climatologist (part of the SDSU Cooperative Extension Service), the PI has the responsibility of providing data and analysis to the people of the state. This is an educational aspect, although a non-traditional and unstructured method of education. The educational opportunities occur individually, at specific times based on the needs of the user, and are available consistently at a distance to the user.

Fig. 1 Renovated computer lab.

The Unidata software and connection to data through Iowa State University has been developed extensively to provide current information to the people of the state. The state climate web site contains surface data and plots, radar plots, and many other maps produced from GEMPAK software to be served to people of the state. Airport station data provided through the web site are used to give guidance for pesticide applicators, drought coordination, and others.

Model data are also being ingested for several applications related to soybean rust, wind forecasting and other research.

Much of South Dakota is under-reported temporally and spatially for many different meteorological data, especially in real-time. Large sections of the state have no real-time information available for tracking current conditions for forecasting (via NWS), delayed reporting of rainfall through the coop stations, and a lack of understanding of detailed resolution for parameters other than high and low temperatures and daily precipitation. The SDOCW has been the recipient of a federal grant to add 23 new automated weather stations. The goal is to serve these data in real-time. The LDM software will be used to upload these station data to the datastream for users in and around South Dakota. The NWS and other users will access these data in this manner.

References

Nicolai, R. and D. Todey, 2004: Team Building-Share the future. Celebration of Teaching and Learning, South Dakota State University, 28 April 2004.