Unidata Equipment Awards 2010:

Replacement Electronic Maproom Hardware for the Department of Atmospheric and Environmental Sciences, UAlbany

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In the spring of 2010, the Department of Atmospheric and Environmental Sciences (DAES) received funds from Unidata's annual Equipment Awards program for the above named project. As a result, during the summer of 2010, our department purchased eight Dell Optiplex 780 desktop computers. The computers consisted of four dual-quad core CPU's (thus eight CPU's are available per unit) with eight GB of RAM. The PC's were received too late in the summer to be ready for the fall semester, but were in place for the start of the second semester in January, 2011. Seven of the systems sit in the DAES's electronic maproom, while the eighth resides in the PI's office, for use as a development machine as well as an emergency hot spare.

Given that these new machines replaced 2006-vintage PC's, the performance gain has been a boon to the maproom's users. The 2006 PC's had only a single CPU, so having eight CPU's per machine has made a world of difference. Furthermore, the use of 64-bit CentOS 5 and Windows 7 operating systems allow users to allocate more than the previous limit of 1.5GB of RAM to Java-based programs, such as Unidata's Integrated Data Viewer.

Although the maproom is used by faculty, staff, and students, junior and senior level undergraduates are the heaviest users of the new Optiplexes. The students put a variety of tools to excellent use in local and national forecast contests, synoptic lab presentations and discussions, and class projects (Figs. 1, 2). Historically, Unidata's GEMPAK/N-AWIPS software has been the most widely used meteorological display and analysis package. The new machines have been very effective in taking advantage of new features in the latest (6.2.0) release of the software. Students are also exposed to Unidata's Integrated Data Viewer (IDV) during the spring semester when they take the P.I.'s computer applications class. The new machines' hardware can easily handle the demands of the current 2.9 builds of the IDV. The maproom also hosts two quasi-weekly research discussions, one led by Dr. Paul Roundy which centers on tropical-extratropical interactions, and another hosted by Dr. Lance Bosart where recent interesting weather events are explored from a variety of temporal and spatial scales (Fig. 3). In addition to Unidata software, discussion participants use the Crestron audio-visual system housed in the maproom to display graphics on the new workstations from external websites as well as locally-installed packages such as MATLAB and NCAR Graphics.

A key goal of the DAES' proposal was to enable sharing of data locally and externally via Unidata's RAMADDA server. The department's RAMADDA server (http://ramadda.atmos.albany.edu:8080) was established prior to the funding of this proposal, and users can upload content easily with the IDV's Publisher plugin as well as view content stored on RAMADDA. Currently, output from the DAES' regional Weather Research and Forecasting

(WRF) Model run, is updated four times a day and served via RAMADDA (Fig. 4). Users are also encouraged to use RAMADDA to house their IDV bundles of interest.

Future plans include enabling the use of virtual machines so that each of the Optiplexes will solely boot and run CentOS, rather than relying on dual booting to support the Windows 7 operating system. This will enable students to run lengthy processes in batch mode without risk of job termination when it is necessary to run Windows. As a result, it will be possible to take students through the steps of building, configuring, and running their own WRF models and share them in a manner similar to what is already done the department's real-time model suite.
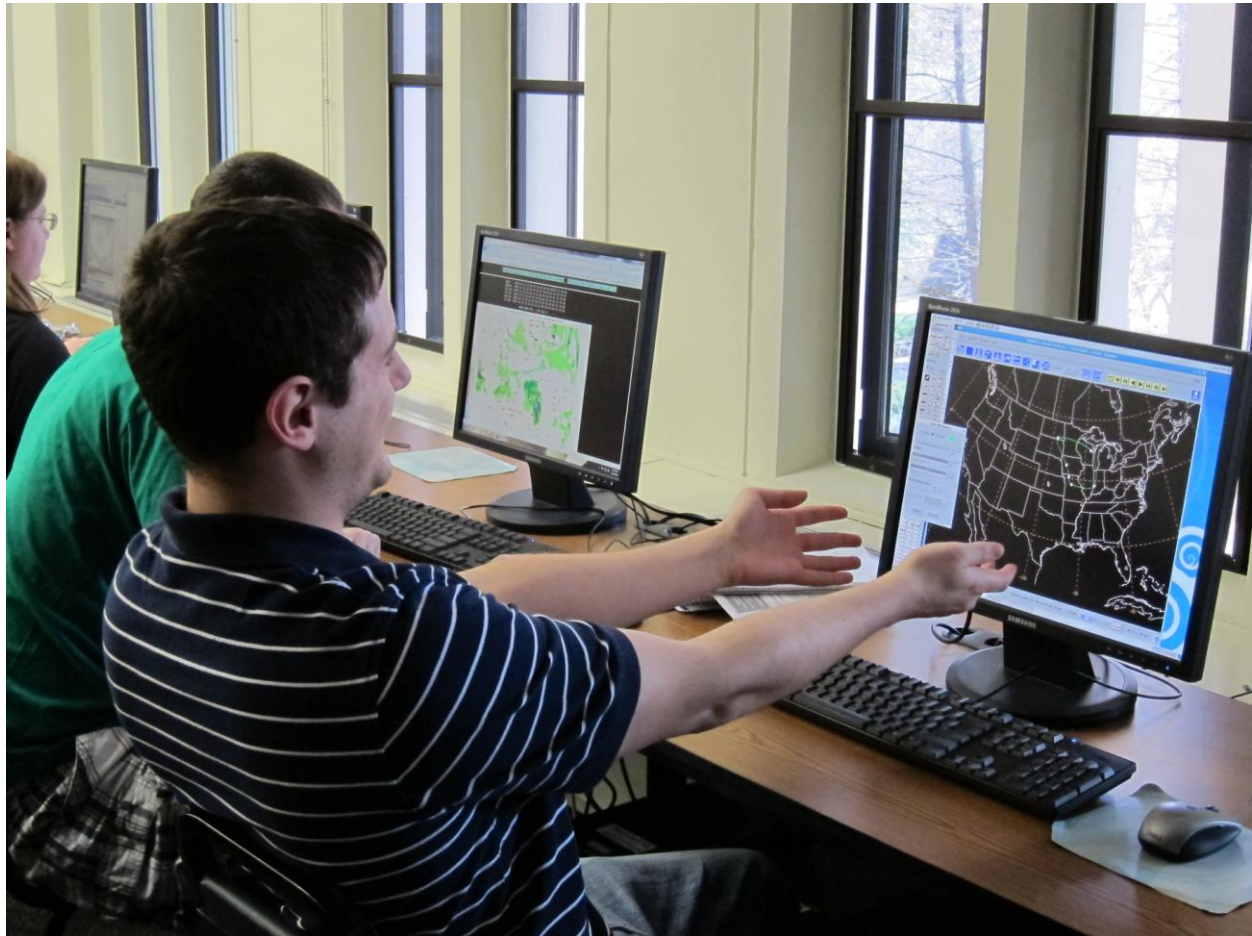

Figure 1: Senior undergraduate Matt Corbi prepares a convective outlook using NMAP2

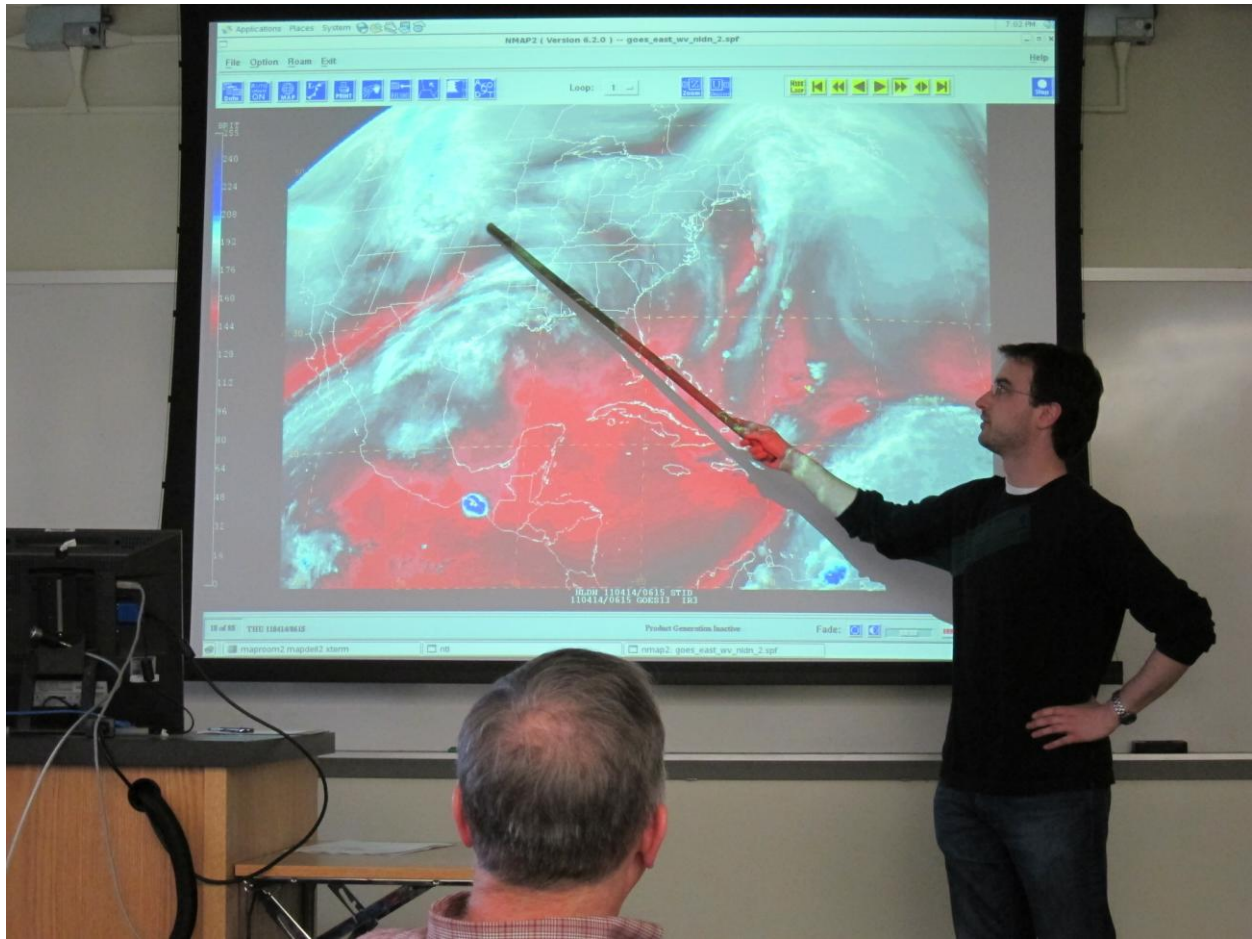**Figure 2: Senior undergraduates prepare their forecast discussions on the new Optiplex computers**

Figure 3: Instructional Support Specialist Ross Lazear leads the Friday research map discussion (Dr. Lance Bosart, foreground)
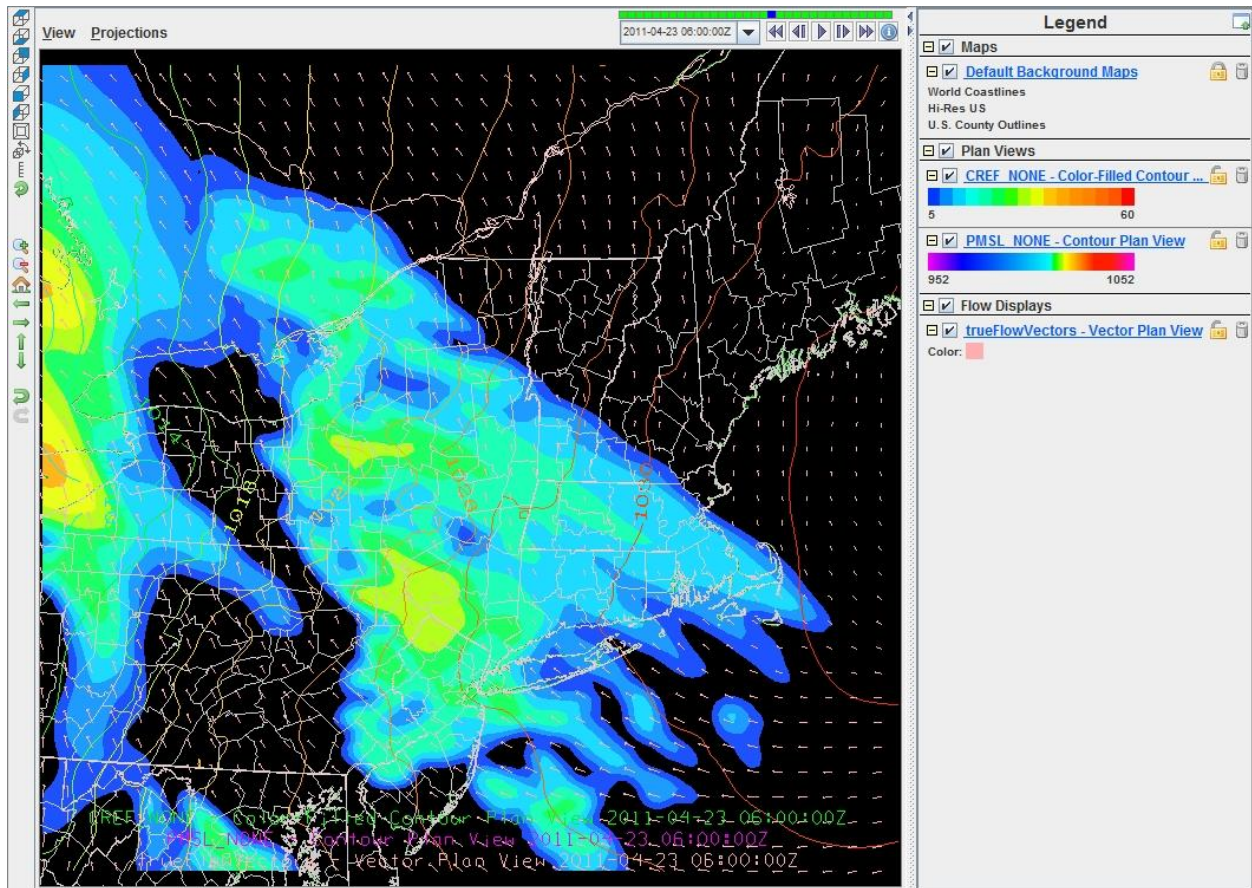
Figure 4: IDV-created image from DAES WRF run, served by RAMADDA