GMU's EastFire Cluster

The original report was submitted in fulfillment of the contractual agreement for Unidata Equipment Award recipients to submit an article detailing their use of funds received.

Editor

By Xianjun Hao and John J. Qu, George Mason University

Facilities purchased with the Unidata Equipment Award funds received by GMU in 2006 have helped us significantly in processing real-time remote sensing datasets and providing fire-related data and images for research and operational use. These high resolution real-time datasets are not valuable not only for the fire community, but are useful for research and applications in air quality, environment, and climate related communities as well. We appreciate Unidata's support, and we are making efforts to standardize the formats of our real-time datasets and to develop related software toolkits so that other communities can use these data efficiently through Unidata.

GMU's Unidata Equipment Award proposal was funded in June 2006. The proposed equipment was ordered in September 2006 and received a month later. We constructed a small cluster, which includes a Dell PowerEdge 2900 server with two Intel Xeon duo-core CPUs at 3.2GHZ, 4G memory, and 3 terra-bytes disk space; 6 Dell Precision 490n workstations, each with two duo-core CPUs at 3.0GHZ, 2G memory; and a one Giga-byte network switch. Our old equipment was integrated into the EastFIRE cluster. Our system infrastructure is illustrated in the figure (left).

The EastFIRE cluster is used for supporting research and education activities at the EastFIRE Lab. Since the system was installed, we have been developing software packages and web-based applications on it to transfer our research results for operational data processing and applications. During the fire season of 2007, we processed real-time data products for part of the eastern United States to provide support to the fire community. These products include MODIS true-color and false color images, real-time live fuel moisture, active fire, smoke, vegetation index, fire danger index, drought index,
and aerosol optical depth. Images of these data products can be obtained from http://eastfirelab.gmu.edu/gafire/index.shtml. The system was also used to support the 2007 EastFIRE Conference, held at George Mason University from June 5 to 8. A special session was organized to address recent fires in Georgia and Florida. The EastFIRE data products generated with the equipment from the Unidata Equipment Award, was introduced to analyze the Georgia and Florida fires.

Over 12 scientists and PhD students from the EastFIRE Lab use this system regularly for satellite remote sensing data processing and modeling. In addition, the system supports several GMU courses such as Physical Principles of Remote Sensing and EOS 900 Wildland Fire – Natural Hazard and Ecosystem Process. Students in these classes have used the EastFIRE cluster to study remote sensing data processing and to complete their course projects.

New Unidata Forum: Models as Educational Tools

Working collaboratively with the Unidata Users Committee, UPC Web Master, Jen Oxelson, has created a forum called "Models as Educational Tools." Its creation originated from a suggestion made during the 2006 Users Workshop.

The forum's goal is to provide a place where educators can discuss how they are using models in the classroom as well as sharing their experiences, trade advice, and ultimately, and perhaps most importantly, share their own material; because this is the overarching goal of the effort: creating a "living repository" of quality-checked materials which may be downloaded by educators for use in their own classrooms.

The repository is a work in progress. We have yet to iron out all the details of how materials will be uploaded and disseminated. However, if you are interested in sharing material or have material you wish to provide, please feel free to post a thread to the forum, and we will go from there.

For more background on this effort, please see the Meeting Summary "Models as Educational Tools" in the July 2007 edition of BAMS, which describes the Unidata Summer 2006 workshop and its goals.

Though traditional approaches still have their place, the workshop demonstrated that model use in the classroom is an important tool. More specifically, models to teach complex as well as simple concepts, while not a magic wand, are an indispensable tool in today's educational environments. Such use is here to stay.

There's general agreement the workshop was a great success, possibly the best of all time.

See also: July/August 2006 e-letter.
News Briefs

IDV Release

A new release of the Integrated Data Viewer (2.3) is now available for download. First released in mid-August, a few of the new 2.3 release features include new image displays, time line choosers and user defined derived quantities. Please see the release notes for a complete list of new features.

Annual Report

The 2006-2007 Annual report for Unidata's five-year funding proposal was submitted to the National Science Foundation a couple of weeks ago. That proposal, Unidata 2008: Shaping the Future of Data Use in the Geosciences is nearing its period of performance. It seemed fitting (and required!) that as we approach our fiscal year end on the 30th of this month that we needed to take the time to look back at what we accomplished over the past year as well as to begin planning for the year ahead. When you review the report (pdf version), we think you'll agree that it's been a successful year, and most of that success has been achieved with your not inconsiderable cooperation, collaboration, input, and active participation.

New Governing Committee Members

We are pleased to announce new appointments to our two governing committees. The Policy Committee will welcome new members Mike Bevis (Ohio State University) and Vanda Grubisic (Desert Research Institute) to its fall meeting in Boulder in late October. Current member Paul Ruscher will return to serve a second term. The Users Committee will welcome Bill Gallus (Iowa State University) to its membership.

Mike is an observational and a theoretical scientist specializing in the areas of geodesy/ geodynamics and geophysics and is a pioneer in GPS meteorology. Vanda's interests are in numerical modeling and field project observations, and she actively supports geoscience education efforts and projects. Paul, a longtime participant in the Unidata community, also has a record of supporting and developing geoscience education tools. He will be cycling IDV use into his classroom teaching beginning this fall. Bill Gallus is no stranger to Unidata. His participation in workshops and his use of Unidata data products and tools give him a great base for Users Committee participation.

We've said it before, but it cannot be repeated too often: these committees represent you and your interests in the Unidata arena. You can, and you should, feel free to contact any committee member with your ideas or concerns. Policy Committee members are listed here, and the Users Committee membership is here.