

## **University of Missouri-Kansas City Equipment Award Report**

*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 Dr. Jimmy Adegoke, University of Missouri at Kansas City

With funds received from a 2005 Unidata Equipment Award, the University of Missouri Kansas City Department of Geosciences upgraded its meteorology and geoscience computer lab with new Dell OptiPlex GX620 Pentium 4 PCs. Not unexpectedly the upgraded lab serves at least three somewhat diverse purposes. One: improved course offerings in meteorology. Two: provide a venue for professional development workshops for high school science teachers. And three: ultimately to enrich a summer program called MOSEP or Minority Outreach Science Enrichment Program.

The Unidata-supported enhancements have strengthened our geoscience education outreach efforts and improved our ability to attract external funding. A recent 4-year NSF grant to the department (PI, Adegoke) will enable us to offer professional development (PD) workshops for high school science teachers designed to enhance their knowledge and the use of inquiry in geoscience content areas. The program is designed to increase middle and high school teachers' knowledge in the geosciences, enhance student awareness of careers in the geo and environmental sciences, and increase the numbers of underrepresented minorities entering geosciences fields at the undergraduate level. The program will also focus on increasing the number of KCMSD high school teachers certified to teach Advanced Placement environmental science courses as well as adding to the number of schools participating in UMKC's high school/college program. All the data exploration components of the summer PD workshops will be conducted using the resources acquired with the Unidata Equipment Award funds.



In addition to the six computers purchased with the Equipment Award funds, six more were purchased with UMKC internal cost sharing funds. We installed Unidata's Integrated Data Viewer (IDV) on all of these units, and they are now used to support the laboratory components of our meteorology instructional courses. With the new resources for real-time meteorological data ingest and significant storage capability, we are now in a position to archive data for

major weather events that come through the Kansas City area for future instructional purposes. We will also be able to use the archived material to develop case studies, a potential benefit to other members of the Unidata community. The equipment will enable UMKC to upgrade from our current leaf-node status to that of a relay site within the Unidata network by leveraging the UMKC connection to Internet2 traffic, thus directly supporting the expansion of the Unidata Network in the Central US.

Perhaps the most significant new hardware capability that the Unidata award made possible was the acquisition of a custom-built high end slackware Linux 10.2 server running the 2.4.32 kernel. It has 4GB RAM and 700GB RAID1 and 1.4TB RAID5 storage. The server has its own UPS and is housed in one of the secure university computer server rooms that is alarmed and monitored by the Campus police. Communication between the server and the laboratory is via gigabit (1 gigabit per second) connections (with redundant gigabit uplink) of the campus backbone though individual computers in the laboratory are connected to switches with 100 megabit/s ports. Server connection to the Unidata network is via the UMKC 80M connection to the Internet and 90M connection to Internet2.

Another outreach program, [MOSEP](#) provides middle school student participants opportunities to use real-time satellite data for inquiry-based learning. The program's initial focus was providing unique hands-on science and inquiry-based learning experiences for grades 8-9 science students in the Kansas City urban school districts. In the program's first year (2004) MOSEP interns (see image above) participated in a variety of activities that included math and science instruction and visits to science labs. Follow-up activities included year-long academic mentoring. While languishing this year, it is hoped that funds will be available to continue this program next year.

The University Missouri--Kansas City is located in Kansas City, Missouri, which forms the core of a bi-state metropolitan area that has a total population of 1.7 million. The Department of Geosciences at UMKC offers undergraduate programs in geography, geology, and environmental studies. The department also has an MS program in Urban Environmental Geosciences and participates in the UMKC interdisciplinary doctoral degree program (IPhD).

## **CADIS: Cooperative Arctic Data Information Service**

The phrase: "unprecedented data volumes" or some variant of it has been articulated so frequently that it has reached the cliché level; and it takes on new meaning when we consider the [International Polar Year \(IPY\)](#) which will be generating data of that magnitude. IPY requires a program to provide the discovery, access, and use of the data, including a data storage repository, and a portal for the discovery, as well as tools to manipulate the data. Enter the [CADIS project](#), a collaborative endeavor among UCAR (Unidata), NCAR (Earth Observing and Computational & Information Systems Labs), and NSIDC (The National Snow and Ice Data Center). Collaborators submitted a proposal to provide the cyberinfrastructure to form the CADIS system and portal which will be preserved and made available to the scientific and educational community.

CADIS has been funded through a joint proposal supported by to the National Science Foundation's Office of Polar Programs. The CADIS team includes Jim Moore (NCAR/EOL) as PI, with Mohan Ramamurthy (Unidata director), Roger Barry, Florence Fetterer, and Mark Parsons (CU Boulder), and NCAR/CISL's Don Middleton as Co-PIs.

Unidata will provide middleware (THREDDS), data transport (LDM) for real-time Arctic Observing Network (AON) data transmission, and analysis and visualization capabilities (Unidata's IDV). Unidata's Network Common Data Form with CF conventions is a strong contender for use as the "compatible format."

In the second year, real time delivery through CADIS of selected AON International Arctic Systems for Observing the Atmosphere (IASOA) data will be accomplished. Tools for searching via a Geographic Information Systems (GIS) map, and a map server showing the location of selected AON measurement sites and other Study for Environmental Arctic Change (SEARCH) components (where metadata is available) will be added. The end of year two will see the population of the CADIS portal with metadata and selected data from other catalogs, and potentially other sources. including NSIDC and NCAR catalogs. The system framework progress anticipated at the end of year two is depicted in the "Image Highlight" shown at the top of the left hand column. In the third year, system performance will be evaluated and documented, and a future direction charted.

The CADIS developers will seek out the participation of AON investigators to balance project support needs with system capabilities. Surveys, webinars, on-site meetings, and information bulletins will all be used to ensure its effectiveness in providing the data management service that will be accessible to scientists and educators as well as interested lay public and Arctic citizens.

Unidata is happy to be a participant in this ambitious, collaborative project.

## Introducing Tina Campbell

The program center gladly welcomes Tina Campbell, who steps into an Administrative Assistant position vacated earlier this spring. Tina brings a wealth of experience in finance, business, database design and use, and data conversion. All of these capabilities will serve her well in her new position which provides her with a wide variety of challenging tasks from financial tracking and analysis to web design.



Most recently Tina worked in UCAR's Sponsored Agreements Department division of Finance and Administration. Before that, she held a position with Peak Weather, a wholly owned company of the UCAR Foundation.

Tina rides horseback (she has a horse named Bobbie), skis, backpacks, and generally enjoys the great outdoors. Anyone who lists one of her most memorable moments as windsurfing while a group of dolphins jump and play alongside is certainly going to feel entirely at home with Unidata's athletic, outdoorsy, and adventurous staff; but day to day in the Program Center we value her professionalism, expertise, and friendly, agreeable manner.

## News Briefs

**Bibliography Update:** We're in the process of updating our [community bibliography](#). It seems unlikely that we've been able to locate all of the publications that involve the use of Unidata tools and data for the 2003-2008 timeframe, and we'd like for the list to be as complete as possible.. Format is not important at this point; just send along the basic information, author, title, journal, date, and so on. If you mentioned Unidata in the text of the article, great; but if you didn't and you used Unidata products in the research, we would like to know about that as well. Many, many thanks.

**Welcome back Shanna-Shaye Forbes:** [SOARS](#) Shanna returns to the program center for a third summer. We are delighted to have her back. She will be working with Ed Hartnett, netCDF developer, while she continues her work on the netCDF-4 C++ API project that she began last summer. This spring she received her B.S.E.E. degree from the University of Texas at Austin, and she'll be heading off to grad school at UC-Berkeley in the fall.

**Training workshops:** Some slots are still available in the 2007 Training Workshops. NetCDF--Developers, netCDF JAVA, GEMPAK, Advanced IDV, and McIDAS all have space for a few more participants. See the [web page](#) for more information.

**Equipment Awards:** The primary purpose of Unidata's Community Equipment Awards is to encourage new members from diverse disciplinary backgrounds in the geosciences to join the Unidata community, and for existing members to continue their active participation so as to enhance the community process. See [Article one](#).

We've had another competitive year of quality proposals with our Unidata Community Equipment Awards. This year special consideration was given to proposals that furthered the use of the Integrated Data Viewer (IDV) in education settings, including upgrades to existing classroom and laboratory equipment or procurement of new computers to run the IDV more efficiently. Additionally, proposals submitted by investigators in departments outside of those traditionally active in the Unidata community (e.g., meteorology) were encouraged. Of the thirteen proposals that were received, six stood out and will be sharing the \$100k allotted for the program:

Central Michigan University, Dr. Martin Baxter - "Enhancing the Use of IDV and GEMPAK in Undergraduate Research and Education at Central Michigan University"

Florida Institute of Technology, Dr. Steven M. Lazarus - "A Multidisciplinary Computer Lab for Meteorological and Oceanographic Applications at the Florida Institute of Technology"

University of Missouri-Columbia, Patrick S. Market, Anthony R. Lupo and Neil I. Fox - "Increasing Use of the Integrated Data Viewer (IDV) in the Atmospheric Science Curriculum at the University of Missouri-Columbia"

Plymouth State University, Brendon Hoch - "Enhancement of Meteorology Technology at PSU"

San Francisco State University, Dr. Dave Dempsey - "Upgrading SFSU's Weather Graphics and Simulation Laboratory"

University of Utah, Dr. John Horel - "Enhancing Use of Surface Observations in IDV"

Congratulations to all of the recipients, and we thank NSF and the Unidata community for their continued support of the Equipment Awards Program.