

UNIDATA Newsletter

Summer 1988

Unidata Releases SDM Software

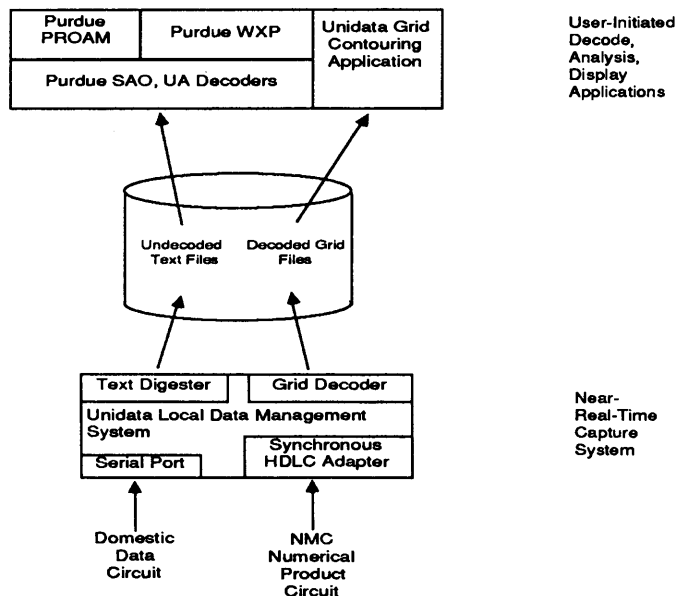
The first general release of the Unidata System for Scientific Data Management (SDM) was made during a workshop held in Boulder 27-29 June. With this software release, the Unidata program officially moves out of its development phase and into full deployment. (For a brief history of the Unidata Program, see the *Director's Report* in this issue of the newsletter.)

Twelve participants attended the USSDM workshop representing the following institutions:

Colorado State University
 Cornell University
 Florida State University
 Institute of Naval Oceanography (UCAR)
 Iowa State University
 Naval Postgraduate School
 Oregon State University
 New Mexico State University
 University of Arizona
 University of Colorado
 University of Michigan
 University of Washington

Continued on next page

Figure 1
 June 1988 USSDM Release



Information Packet Now Available

The Unidata Program Center has recently put together a packet to provide general information on its program and software. The packet includes written materials, a color brochure showing some typical screen displays, and hard copy of program output. The contents of the packet will evolve as we identify the areas that need further explanation.

The information packet also includes a demonstration diskette of Unidata's PC-McIDAS program. The diskette can be run on any IBM AT personal computer containing an Enhanced Graphics Adapter expansion board. (Sorry, we do not have an IBM PS/2 version available at this time.) The demonstration consists of an automated "slide show" explaining components of the PC-McIDAS system and an interactive mock-up of the system itself. The in-

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 Management Workshop:
 •Announcement
 •Application

Information continued

teractive portion uses stored data files and allows the user to perform PC-McIDAS-type functions, such as displaying satellite imagery, generating surface maps and overlaying NMC gridded products, through the function-key menus.

To obtain this packet, contact the Unidata Program Center.



Release continued

The package distributed to the participants included Unidata's Local Data Management (LDM) software that handles data ingested from the Domestic Data Plus (DD+) and the Numerical Products Service (NPS) circuits. (The DD+ circuit includes the surface airways observations and the upper air soundings; NPS includes the National Meteorological Center (NMC) gridded forecast data.)

The DD+ bulletins are stored as raw text data files on disk and the NMC grid data are decoded and stored as simple numerical files. This constituted the near-real-time data-capture portion of the system.

The release also included a set of applications programs consisting of ported versions of Purdue University's Weather Processor (WXP) and Purdue Regional Objective Analysis of the Mesoscale (PROAM) packages plus a demonstration program, developed by Unidata, for displaying NMC grids.

As you can see from Figure 1 on the front page of this issue, the Purdue WXP suite of applications contains the decoders for the SAO and UA observations. Thus, in this release, the decoders are not part of the real-time capture system but are run as user-initiated applications that produce "flat files" of decoded data in text form. These flat files in turn can be processed by other applications that perform objective analysis or calculate a number of derived parameters. WXP also includes a set of display applications for plotting and contouring the resulting fields on a map background.

In addition, the participants were given over 300 pages of documentation in the form of the *USSDM Manual*. The manual covers LDM design and installation, and includes a site manager's guide and user's guides to the applications. This release (Version 1.0) of the USSDM runs on two operating systems: DEC VMS and Sun UNIX.

Note: There have been some modifications to version 1.0 of the USSDM since its release in June. Please see the *In Brief* column in this issue for details.

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*Director's Report***Unidata Enters Deployment Phase***Dave Fulker*

In May, Unidata received the first increment of funds, from the National Science Foundation (NSF), specifically for deploying its software. This marks the beginning of a new stage for Unidata, referred to as "Phase IV" in NSF-Unidata planning documents. For those of you unfamiliar with Unidata history, the preceding stages were roughly as follows:

Phase I encompassed concept development, and culminated with a well-attended workshop in Madison, Wisconsin, during the summer of 1983. During that workshop, representatives from many universities, NSF, and UCAR reached a consensus on goals and initial strategies for the Unidata Program.

Phase II began at the end of 1984 with the formation of four working groups assigned to address four specific topics: Data Access, Communications, Data Management, and "Local Hardware and Software Systems." Each was staffed by volunteers from the university atmospheric science community to address its specific topic, specifying community requirements and designing suitable system components to meet those needs. The reports produced by these working groups, the last of which was completed in early 1986, formed the basis for the overall Unidata system architecture. The Unidata satellite broadcast data services became available in Phase II, through a Unidata subcontract with Zephyr Weather Information Services, Inc.

Phase III was a system development and testing period that began formally in the summer of 1986. During this time,

components for the initial Unidata software releases were completed and given to a few universities for evaluation and for identifying and correcting problems:

- In December 1987, Unidata's personal computer software (PC-McIDAS, developed at the University of Wisconsin-Madison for IBM PC/AT as well as PS/2 computers) and the real-time data stream on which PC-McIDAS operates were considered ready for general use when the McIDAS Broadcast Evaluation (McBE) Committee held its final meeting. This volunteer committee evaluated PC-McIDAS systems in university education and research settings, and concluded its efforts by recommending minor changes to the software and to the schedule of broadcast data.

- In May of 1988, Unidata's Local Data Management (LDM) software tests were concluded (for DEC/VMS and Sun/UNIX computers) at several universities. The LDM was combined with several applications software packages (contributed largely by Purdue University) to create the initial release of the Unidata System for Scientific Data Management (SDM).

Phase IV activities actually began in February of 1988 when the Unidata Program Center (UPC) in Boulder held its first workshop for training university representatives in the use of the PC-

McIDAS system. Since the official award of the Phase IV grant, the UPC has held two more training workshops, one in June to release the SDM software, and the second in August for additional PC-McIDAS users. A substantial body of documentation has been created by the UPC, as well as a tracking system for user reports and other components of a comprehensive user support environment.

Phase IV of Unidata will also encompass continuing software development as we improve upon the applications and user interface software included in the SDM, as we complete our development of the Network Common Data Format (netCDF) and associated access software, and as we identify image processing software for use in conjunction with the SDM.

Entering this new phase of the Unidata Program causes me to reflect upon the people who have contributed to the Unidata endeavor, and the list is quite remarkable. At the risk of inadvertently omitting important people, I would like to thank some individuals whose contributions have been especially significant from my perspective. (I was only peripherally involved in Unidata prior to November of 1984.)

John Dutton (Pennsylvania State University) will turn over the chair of the Unidata Policy Committee to Robert Fox (University of Wisconsin-Madison) this October. John has been both visionary and vigorous in helping to establish a viable Unidata program. He has insisted

Continued on next page

Deployment continued

that the program be guided by university representatives; this has been manifest in the roles played by the Unidata Policy Committee, the original Madison Workshop attendees, the four working groups in Phase II, and Unidata's present Implementation Working Group.

John played an important part in adopting the notion of "local" data management on every campus, as distinct from the more typical "data center" approach to meeting Unidata-like needs for data access and data processing. As this idea evolved through system design to a deliverable realization, John has been a continuous source of support and encouragement to the program and to me personally in his long-standing role as chair of the Steering and Policy Committees.

Three individuals, Ernest Agee (Purdue University), James Green (NASA Goddard Space Flight Center), and Robert Wilhelmson (University of Illinois) are completing their tenure on the Unidata Policy Committee with the transition from Phase III to Phase IV. Two of these, Agee and Wilhelmson, served on the original Unidata Steering Committee and have been involved in the program's leadership for the duration. Purdue software development and other contributions have been especially important to Unidata, as indicated in previous newsletters.

Behind any program like Unidata there are individuals who place their reputations at risk by making commitments and budget projections far in advance of truly reliable and concrete planning information. Richard Greenfield (Atmospheric Sciences Division of NSF) has played this role for Unidata, and the challenge he faced was significant: in 1982 and during the subsequent years of rapid computer evolution, Greenfield laid out budgets and advocated effectively for a significant change in the ways universities obtain weather data and use computers to analyze those data. This was done in a generally difficult financial climate at NSF.

Greenfield engaged other senior members of the atmospheric science community, including Verner Suomi (University of Wisconsin-Madison) and Thomas VonderHaar (Colorado State University), in shaping the Unidata program and in projecting its needs, especially with regard to interactive data processing as an essential adjunct to pure data transmission.

Verner was the founder and director of the Space Science and Engineering Center (SSEC) on the Madison campus, where the Man-Computer Interactive Display and Analysis System (McIDAS) has been under development for many years. An adaptation of this

system (PC-McIDAS) now forms the core of Unidata's personal computer software, and the supporting data stream is created at SSEC, in near-real time, prior to its broadcast by Unidata.

An important influence on the technical direction of the Unidata program was exerted by Christopher Cooper (Rutherford Appleton Laboratory, U.K.) who has been a communications consultant to Unidata several times during Phases II and III. Cooper's leadership of the Communications Working Group led to a system design that exploited modern network technology to realize the aforementioned concept of local data management, to integrate satellite broadcast techniques with more conventional networking, and to permit effective use of many small computers or "workstations."

Finally, I wish to pay tribute to the long list of individuals who served on the Steering Committee, Policy Committee, and various working groups that have been the real essence of Unidata. We have been fortunate to have a strong community base for the program, strong in technical expertise and strong in willingness to contribute efforts and ideas for the common good. For these contributions I am deeply indebted.



Manager's Report**A Summer Filled with Varied Activities***Ben Domenico*

As the reports in this issue attest, Unidata is now fully concentrating on deploying its software to the university community. This deployment takes several forms: providing general information, distributing software and providing training and support on it, and updating software and hardware systems to stay abreast of technology.

General Information

A big part of Unidata's deployment effort involves distributing information on the Unidata program as widely as possible: what it encompasses, what systems and services it makes available, and how to obtain them. In addition to distributing this newsletter and responding to telephone queries, we are participating in as many workshops and conferences as our resources allow. A case in point is my attendance at the College Faculty Enhancement Workshop sponsored by the National Weather Service Training Center and the National Science Foundation (see the *Community Interactions* column in this issue.)

Through these interactions we have come to realize that we need more introductory literature about Unidata—some of it directed at a nontechnical audience such as university administrators. As we announce elsewhere in this issue, we have assembled an information packet that includes a PC demonstration diskette on PC-McIDAS with examples of screen displays as well as an interactive segment demonstrating the software's menu system.

The packet also includes written materials, photographs of typical display

screens, and hard copy of program output. These will evolve as we identify the areas that need further explanation.

Distribution and Training

To institutions that have decided to adopt Unidata systems, we are giving the software and providing training in its installation, maintenance, and use. In June we held our first training workshop for the Unidata System for Scientific Data Management (SDM) and in August, a second PC-McIDAS workshop. Our program plans call for four workshops per year: two for each system.

Support

We are establishing support systems to help our users communicate with our office and with one another, both to obtain software updates and to make their own software and knowledge accessible to the community. For example, our User Support section now has email addresses for all Unidata users using electronic mail. This directory includes both NSFnet (or Internet) and OMNET/Telemail addresses.

We also have identified a gateway that allows messages to be sent between OMNET and NSFnet users. Whenever possible, we encourage users to submit inquiries and suggestions electronically using the electronic tracking forms that we have provided for these mail systems.

Updates

We are continuing to update our systems to take advantage of developments in software, computing, and

communications technology. Our goal is to incorporate the most useful of these into Unidata systems to ensure that our programs stay as near state of the art as available resources allow. (The specific enhancements to both PC-McIDAS and the SDM are detailed elsewhere in this issue.)

Collaborations

In our support and updating efforts, we plan to work with university, government, and industrial organizations that have contributions to make in these areas. Several commercial organizations are interested in collaborating with us on projects that will further the use of scientific workstations in the academic community. Some of these organizations have their own internal projects oriented toward the atmospheric sciences; others have targeted the atmospheric sciences as a specialized market. We will continue to interact with these organizations to ensure that we keep our systems up to date and that we are able to provide ongoing support for the systems that are installed in universities.

These activities are a testament to Unidata's full commitment to deploying its program throughout the university community as well and as widely as possible.

Staff Change

We would like to introduce Mary Mintz, who recently joined our staff as the administrative secretary.



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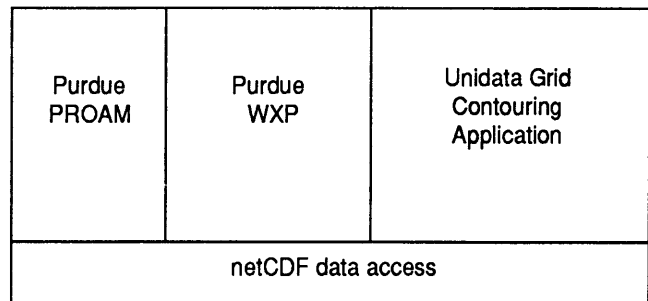
November Release

The November release will include decoders for the upper air and surface airways bulletins integrated into the near-real-time capture system. The data will be stored on disk in network Common Data Format (netCDF) files. (See the Spring 1988 issue of this newsletter for details on the netCDF software). Figure 2 presents a block diagram of the SDM components for the November release.

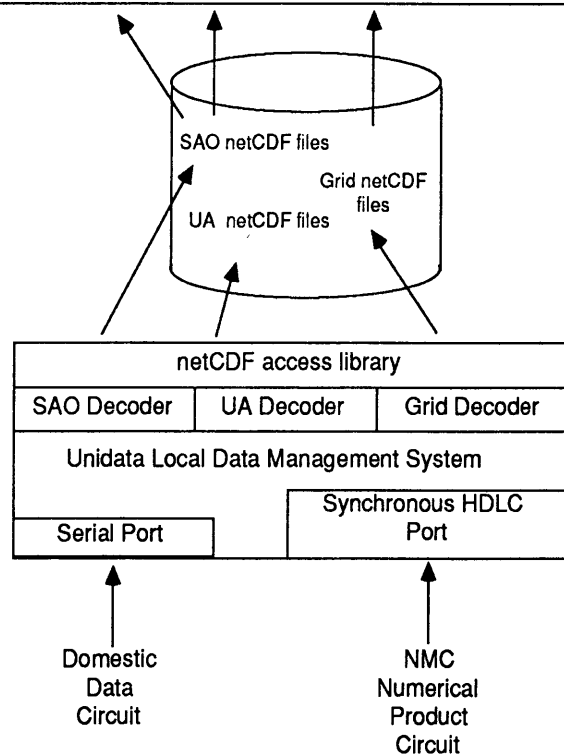
2

Figure 2
November 1988 Release
Unidata System for Scientific Data Management

User-Initiated
Analysis and
Display
Applications



Near-
Real-Time
Capture
System



Coprocessor Board No Longer Required for Sun Configuration

Glenn Davis

The configuration specifications for the UNIX-based Unidata System for Scientific Data Management, published in the Fall 1987 issue of this newsletter, are being altered. Due to changes in Sun Microsystems, Inc. products, sites wishing to use the Unidata software for Sun UNIX systems will no longer be required to purchase a coprocessor board in order to capture gridded data. We will publish new configuration specifications this software in the future, when all the implications and options have been identified.

In the meantime, users currently planning to order Sun hardware may contact Unidata for the most current information. For readers familiar with Sun products, the remainder of this article provides the technical background to this change.

The NMC Numerical Product Service feed, which carries the gridded model data, is a 4800 synchronous channel using simplex (one-way) protocol based on X.25 (a networking standard). When Unidata began to work on data capture for this feed, there was no vendor-supported method for reading synchronous data on a Sun computer.

Sun now has a series of networking products in its SunLink line of products that Unidata software can use to capture the grid data. Each of them contains a low-level synchronous driver, and Unidata sites may select the product that is most useful in their particular configurations. The products are:

SunLink Internet Router
SunLink X.25
SunLink DDN
SunLink SNA products
SunLink BSC

The low-level driver, called the "zss" driver, used by the Unidata software makes use of the Zilog 8530 serial communications controller now found on every Sun workstation. This means that no coprocessor board is needed. Thus, our configuration recommendations no longer require a workstation model with a VME bus. This considerably reduces the cost of the necessary Sun equipment. In addition, this development assures you of software support across future changes in the operating system.

The zss driver is limited to a speed of 19200 baud. Future dedicated Unidata channels may operate at speeds greater than this. There is a Sun-supported coprocessor system, SunLink MCP, which may be used for higher speeds. Unidata software assumes that a zss driver will work with this as well.

In summary, we are now recommending that most sites purchase one of the SunLink products to provide a synchronous serial device driver. We will be phasing out support for the Unidata Systech device driver. For more details, contact Glenn Davis at Unidata.



Unidata Workshops

Robert Green

Over the past few months, the Unidata Program Center (UPC) offered two training workshops at its headquarters in Boulder: The first SDM Training Workshop was held 27-29 June, and on 2-4 August, UPC held its second Unidata PC-McIDAS Training Workshop.

SDM Workshop

This workshop was the forum for Unidata's first release of its Scientific Data Management (SDM) software. (A full report on the contents of this first release can be found on the front page of this issue.) The workshop included instructions on installing the software and using the demonstration applications, as well as discussions on how users can attach their own applications to the software's local data management system. Thanks to the Boulder Sun Microsystems office, which loaned Unidata a Sun Model 3/160, all the participants were able to test the software during laboratory sessions.

Informal discussions with the workshop participants and their workshop evaluations indicated that they were pleased with the content of the workshop and were anxious to return to their institutions and install and use the software.

Second Unidata PC-McIDAS Training Workshop

The Unidata/PC-McIDAS Training Workshop was held 2-4 Aug 1988. Four

Continued on next page

Workshops continued

universities were represented at the workshop: University of Michigan, State University of New York-Oswego, Rutgers University, and Washington State University. Two divisions of NCAR also were represented: Advanced Technology and Climate and Global Dynamics. Low attendance seemed to be due to concurrent workshops and lack of funding for travel and equipment purchases.

The manual released at the workshop had received substantial editing based on comments from users and from the User Support staff. About 35 additional commands were documented in the revision, and an index was added to each section.

This workshop included use of several PS/2 Model 60s, loaned to Unidata thanks to the efforts of Mort Kagan of IBM's ACIS division. The additional equipment meant that each participant had his own system to use during the sessions. This greatly increased Unidata's ability to train people on the system's command mode because more time could be spent on hands-on activities. The participants were very pleased with having the large block of time to work with the system while they were here.

The evaluations from the participants were very positive. They indicated that the Unidata PC-McIDAS system had much greater capabilities than the participants had expected. As a result of their training, the participants indicated

□

Community Interactions**Brainstorming on the netCDF**

The Unidata Program Center (UPC) recently hosted a meeting of individuals who have had experience implementing versions of NASA's Common Data Format (CDF) software. An article in the last *Unidata Newsletter* described our experience with a prototype network CDF.

The meeting included representatives from Apple Corporation, SeaSpace Corporation, the University of Miami, and the UPC. Unfortunately, representatives of NASA's National Space Science Data Center could not attend, but they provided input via electronic mail prior to and via a conference call during the meeting. The participants agreed on a formal procedural interface and a set of conventions to be used in defining specific netCDF structures. First the UPC will document these, then we will begin modifying existing code to meet the revised specifications.

College Faculty Enhancement Workshop

Bob Weinbeck and Greg Byrd (State University of New York at Brockport) organized the College Faculty Enhancement Workshop at the National Weather Service Training Center in Kansas City. This workshop, which was jointly sponsored by the National Weather Service and the National Science Foundation, was primarily for instructors from smaller institutions who teach courses in meteorology, but who are not part of a meteorology department.

Ben Domenico, Unidata's Program Manager, attended the conference to give a general introduction of the Unidata Program.

During the workshop, participants made a field trip to Lawrence, Kansas, where professor Joe Eagleman (University of Kansas) treated them to demonstrations of his tornado laboratory and of his Unidata PC-McIDAS system; he also autographed copies of his book *Severe and Unusual Weather*. Everyone came away with a picture of what the Unidata system can do and how the University of Kansas uses the Unidata system in its program.

Synoptic Meteorology Workshop

NCAR's Advanced Study Program sponsored a symposium and workshop this summer on teaching synoptic meteorology. The purpose of the workshop was to discuss how synoptic meteorology should be taught using today's computer capabilities. The workshop was organized by Robert Gall (University of Arizona), George Huffman (University of Maryland), and Carlyle Wash (Naval Postgraduate School).

The event included hands-on sessions using an IBM RT and 12 PS/2s networked with a Sun Microsystems Model 3/160 as file server. The workshop laboratory systems were connected via a local area network (LAN) to a Sun 3 in NCAR's computer room that captured real-time data using

Community Interactions continued

the Unidata Local Data Management (LDM) system. The Unidata Program Center's role in this event was coordinating the loan and installation of the equipment as well as providing the PC-McIDAS software and an introduction to its use.

The success of the workshop was due to the efforts of a number of people. Dan Vietor (Purdue University) installed the Purdue's Weather Processor (WXP) software on all the systems, including the DOS-based PS/2s and the UNIX-based IBM RT and Sun workstations. The systems running WXP could access the data directly from the LDM on NCAR Sun's disks thanks to the Network File System.

N CAR staff members also contributed considerable time and expertise to the workshop. Liz Coolbaugh, Phil Rasch, Carl Sierka, and Warren Washington (all of NCAR's Climate and Global Dynamics Division) arranged the loan of a Sun color workstation and helped configure it into the network. Doug Chaney, Britt Bassett, Del Harris, and Don Morris (all of NCAR's Scientific Computing Division) helped to install the Zephyr connection, and lent a much-appreciated hand in configuring the laboratory.

Special thanks are also due to Mort Kagan and Tom McKay of IBM's Academic Information Systems division; to Andy Barnes, Doug Kennedy, Marleen McDaniel, and Terry Reynolds of Sun Microsystems; and to Paul Foster, Joe McClain, and Jimmie Smith of Zephyr Weather Information Systems for loaning all the necessary equipment to NCAR for the workshop.

For many of the participants, the symposium was their first exposure to the Unidata systems. As a result, there seemed to be considerable interest in obtaining the Unidata systems and a plethora of ideas for enhancing and expanding them.

State Climatologists Convention

In early August, Ben Domenico attended the annual convention of state climatologists, held in Oregon. The meeting involved a large number of people from the academic community who are interested in weather data from a somewhat different perspective. Ben gave a brief overview of the Unidata Program and demonstrated the PC-McIDAS system using near-real-time data obtained from the UPC file server via high-speed modem (effectively but somewhat clumsily using an operator-assisted phone system).

Technology Transfer Conference

Unidata demonstrated its PC-McIDAS system and the Purdue adaptation of NCAR Graphics at the Front Range Community College Technology Conference, sponsored by Colorado Congressman David Skaggs.

**In Brief****Changes to SDM 1.0 Available**

Since the June release of the SDM 1.0 for UNIX and VMS, we have made several changes to the source code and documentation to fix bugs, improve error messages, and enhance the functionality of the software.

Users who are on NSFnet and who are familiar with the use of FTP (File Transfer Protocol) can access these changes in a file named CHANGES in the `ussdm` subdirectory of the Anonymous FTP directory (see the announcement below for detail on how to access the CHANGES file). The file logs all changes made to the software in reverse chronological order and describes the files changed, the reasons for the changes, and whether the change is for UNIX or VMS systems. Site managers at sites using Unidata's SDM should examine the CHANGES file periodically to determine if there are important changes they should incorporate into their local system before the next release.

PC-DOS 4.0 Incompatible With PC-McIDAS

In July, IBM released the latest version of its disk operating system (DOS): PC-DOS 4.0. **Please note:** there are *no* plans for making PC-McIDAS compatible with this new version; the only supported DOS version is PC-DOS 3.3. PC-McIDAS development efforts are now focused on IBM's new operating system: OS/2.

SDM 1.1 Available Via Anonymous FTP

The Unidata System for Scientific Data Management (SDM) 1.0 software, along with changes made since the release that bring it to version 1.1, is available from Unidata via File Transfer Protocol (FTP). The current UNIX distribution is in the `ussdm` subdirectory under anonymous FTP (user: `anonymous` password: `guest`) on:

```
unidata.ucar.edu
(128.117.40.3)
```

The current VMS distribution is available from:

```
laurel.ucar.edu
(128.117.40.6)
```

via anonymous FTP (user: `FTP`; password: `FTP`), in the `[USSDM]` subdirectory of the FTP login.

We recommend that you attend a Unidata SDM workshop before you try to install the software. However, the distribution has SDM documentation (coded in LaTeX), including installation instructions for both VMS-based VAXstations UNIX-based and Sun workstations.

A "tar" file (for UNIX sites) or a "backup saveset" (for VMS sites) of the SDM software is also available, if you want the entire distribution in a single file for unpackaging on your home system. Be sure to get either of these files in binary mode, as they have non-ASCII characters in them. For more details, send a message with your questions to:

```
support@groucho.ucar.edu.
```

VMS 5.0 Does Not Support KMV-1A (Yet)

The June release of the Unidata SDM for Digital Equipment Corporation VMS systems was intended for versions 4.6 or 4.7 of the VMS operating system.

DEC has since announced VMS 5.0, a new version of its operating system. However, the announcement included a note that the DEC KMV-1A communications coprocessor, used by the Unidata software to ingest NMC grids from the NWS Numerical Products Service, is not yet supported under VMS 5.0. We have made inquiries to Digital about when the necessary device driver will be supported, and they have indicated that we should not expect support for the KMV-1A until late this year.

Our advice to Unidata VMS sites wishing to capture NMC grid products with the Unidata software is: do not upgrade your operating systems to VMS 5.0 until the new KMV-1A device driver is available and has been tested with the new version of the operating system.

PC-McIDAS Revision 3.3

In late August, the Unidata Program Center (UPC) received the most recent distribution of PC-McIDAS: Version 3.3. This will be the last release of DOS-based PC-McIDAS. Current and future development of PC-McIDAS by the University of Wisconsin-Madison will be based on OS/2, IBM's new operating system. We will test PC-McIDAS Revision 3.3 here at Unidata headquarters before offering it to the Unidata PC-McIDAS community at-large. In addition, we will write the documentation for the new or expanded features to be included in the Unidata release.

Some of the new features are satellite image resizing (blowing-up and shrinking), an on-line help facility, hard-copy lists of textual products on a serial printer, Meteorological Database (MD) view and editing facilities, a two-dimensional object tracking procedure, a mechanism for repeating PC-McIDAS commands using string table entries as

input, string table manipulation routines, command scheduler routines, and an editor for surface station data.

We will release PC-McIDAS Revision 3.3 as soon as we have finished testing and documenting the changes.

FIFOLIB Rewritten for VMS

A new version of the library software (FIFOLIB) that is used to support a staging file between ingesters and digesters in the VMS version of the SDM's Local Data Management (LDM) system is now available. The new version offers better performance than the first release, and also saves disk space, since the staging files never seem to grow significantly. We urge VMS sites that have implemented the first release to obtain these new files and remake the executables for the LDM processes. The new files are described in the file named `CHANGES` in the `ussdm` subdirectory of the anonymous FTP directory.

Next Unidata PC-McIDAS Training Workshop

The date has now been set for the next Unidata PC-McIDAS Training Workshop to be held at the Unidata Program Center in Boulder, CO. For all of you who like to plan your schedules a few months in advance, the two-and-a-half day workshop will be Tuesday thru Thursday, 21-23 February 1989. The formal announcement and application will be in the Fall issue of the *Unidata Newsletter*. If you have any specific questions, please contact Unidata User Support.

Current plans call for this workshop to be the last to use the MS-DOS version of the PC-McIDAS software. Future

releases from University of Wisconsin's SSEC should be using the new OS/2 operating system. Additional information about the OS/2 version and about what the current sites will need to do to upgrade will be included in future issues of this newsletter.

Public Domain Software

The National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign, has recently announced the availability to the general public of some software packages that may be of interest to Unidata users. The software packages are NCSA Telnet for the PC; NCSA Telnet for the Macintosh; NCSA Image Tool for the Sun Workstation; and NCSA Image Tool for the Macintosh II.

According to NCSA's announcements, if you have a personal computer with a proper Ethernet adapter, the NCSA Telnet programs provides you with a "DARPA standard Telnet program with build-in standard FTP, configurable network parameters, Tektronix graphics emulation, and VT102 emulation for multiple sessions."

The NCSA Image Tool program, the organization maintains, is a "Scientific visualization tool, using raw raster files as input, that provides image display, animation, and color palette manipulation as well as contour, three-dimensional, and shaded data plots."

For more information and an order form, please contact:

NCSA Software Orders
152 Computing Applications
Building
605 E. Springfield Ave.
Champaign, IL 61820

Acronyms and Terms

We have added this column because the terms appearing in this newsletter may be unfamiliar to some of our readers. The definitions reflect how terms are used at the Unidata Program Center and may differ in some particulars from usage elsewhere.

ACIS	Academic Information Services, a division of IBM.
ASCII	American Standard Code for Information Interchange; a standard code for electronically exchanging character-based (nonbinary) information.
ASP	Advanced Study Program; NCAR's visitor program
CDF	Common Data Format; a data storage format developed by NASA.
DARPA	U.S. Department of Defense Advanced Research Projects Agency.
DD+	Domestic Data Plus; a data stream provided by Zephyr comprising the NWS Domestic Data and Public Product services.
DEC	Digital Equipment Corporation.
DOS	Disk Operating System; see MSDOS and PCDOS.
email	Any electronic mail system.
FIFOLIB	The library software used to support a staging file between the ingesters and digesters in the current version of the Unidata LDM (see below).
FTP	File Transfer Protocol; a method of transferring files electronically that can be implemented on a variety of computers. It is an applications-level protocol based on TCP/IP (see below).
IBM	International Business Machines.
Internet	The collection of all interconnected computer networks that use TCP/IP (see below). For Unidata sites, NSFnet is the main connection to the Internet.
LDM	Unidata's Local Data Management software; part of Unidata's System for Scientific Data Management (SDM) software package.
McIDAS	Man-Computer Interactive Data Access System; a software package for analyzing and displaying meteorological data; created by the University of Wisconsin-Madison's Space Science and Engineering Center. The original McIDAS program is designed for mainframes. The Unidata PC-McIDAS version was designed to Unidata specifications by the SSEC.
MSDOS	The disk operating system for personal computers developed by Microsoft Corporation; the PCDOS version is used by IBM personal computers; IBM-compatible computers use other versions of MSDOS.
NASA	National Aeronautics and Space Administration.
NCSA	National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign.

netCDF	The implementation of NASA's Common Data Format data storage system developed by Unidata for networked computers.	simplex	A one-way circuit, channel, or communications system.
NMC	National Meteorological Center.	SSEC	Space Science and Engineering Center, University of Wisconsin-Madison.
NPS	Numerical Products Service, a data product broadcast by Zephyr containing the NMC gridded forecast data.	Sun	Sun Microsystems, Inc.
NSF	National Science Foundation.	tar	Tape Archive; a format that combines multiple files and directories into a single file that can be easily moved; does not alter the original's directory structure.
NSFnet	A national computer network established by NSF and managed by the University of Michigan and MERIT, Inc. NSFnet is part of the Internet.	TELNET	An applications-level program that allows remote login; part of TCP/IP.
NSSDC	National Space Science Data Center; a NASA center.	TCP/IP	Transmission Control Protocol/Internet Protocol. A file-transfer standard for networks developed by DARPA. (IP defines the format of the packets passing through the Internet; TCP defines how computers cooperate to ensure data is passed correctly and reliably.)
NWS	National Weather Service.	UA	Upper air observations.
packet switching	The process of transferring data by addressed packets so that the communications channel is occupied only during the transmission time of the packet.	UNIX	A computer operating system developed by AT&T and modified extensively by the University of California, Berkeley. Berkeley UNIX is one of the three operating systems supported by Unidata (the other two are MSDOS and VMS).
PC	Any personal computer; here refers to any of IBM's personal-computer-size machines. Also applies to IBM-compatible machines from other vendors.	USSDM	See SDM.
PCDOS	The version of MSDOS distributed by IBM for use with its personal computers.	UPC	Unidata Program Center.
PC-McIDAS	A version of the McIDAS software developed by the University of Wisconsin-Madison's Space Science and Engineering Center to analyze a special meteorological data stream on IBM PC-class computers. SSEC has further altered the software for Unidata users, which is referred to as Unidata PC-McIDAS.	VMS	A computer operating system developed by the Digital Equipment Corporation; one of the three operating systems supported by Unidata (the other two are MSDOS and UNIX).
PROAM	Purdue Regional Object Analysis of the Mesoscale; a software package developed by Purdue University, a version of which is distributed as part of the USSDM.	WXP	Purdue University's Weather Processor software for analyzing and displaying meteorological data; this package has been ported to run with the SDM.
SAO	Surface airways observations.	X.25	An international standard for connecting computers to networks that use packet switching.
SDM	Unidata's System for Scientific Data Management; a software package for capturing and displaying scientific data that has been broadcast by satellite; runs on UNIX and VMS systems.	Zephyr	Zephyr Weather Information Services, Inc.; a commercial firm that broadcasts meteorological data.