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# UNIDATA Newsletter

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Fall 1988

## Unidata Software Support Policy

*Dave Fulker*

The goal of the Unidata program is to improve the accessibility and usability of scientific data on university computers. To accomplish this, the Unidata Program Center (UPC) provides a variety of software packages and systems whose functions include data management, analysis, and display. In general, this software derives from collaborations among universities, government agencies, and the UPC.

**T**his document articulates policy regarding UPC support of this software. We define support to include all aspects of helping universities make effective use of the software's capabilities as well as maintaining and improving the performance and correctness of the software itself.

### Definitions

We have defined eight software support activities. These are not absolutely distinct, but they are useful in defining levels of software support.

(1) *Version Control:* Managing the frequency and quality of new software releases to maximize the benefits of software updates while minimizing their negative impacts (faulty repairs, inadequate documentation, lack of backward compatibility, general annoyance, etc.). This activity also encompasses archiving old versions of software.

(2) *Testing:* Creating and following a test regimen for new software and for software updates, often involving selected users (alpha or beta test sites), to measure quality prior to general release.

(3) *Distribution:* Making software available to users, either passively (by allowing network access to relevant code and documentation) or actively (by creating versions for distribution on tapes or other media). In the latter case, the versions usually must be tailored specifically to match the target computer, operating system, and transport medium. Furthermore, active distribution continues indefinitely (updates are sent to all previous recipients of the software), which requires maintaining information (on hardware configurations, etc.) about recipient sites.

(4) *Problem Resolution:* Keeping track of problems reported by users; verifying those problems and isolating them to specific system components; conveying problem descriptions to system developers for solution; developing and testing those solutions; conveying the solutions to affected users; and generating software and documentation updates to effect permanent solutions for all users.

(5) *Enhancement:* Translating complaints, ideas for improvements, and

*Continued on next page*

## SDM Workshop Marks Beta Test Release of netCDF

Unidata held its second workshop for the Scientific Data Management (SDM) system in Boulder on 17-18 November. Fourteen participants and one observer met at Unidata headquarters to receive training on installing and using the SDM. Participants represented the following institutions:

Colorado State University  
Drexel University  
Massachusetts Institute of  
Technology  
National Center for Atmo-  
spheric Research:  
Scientific Computing  
Division and Atmospheric  
Technology Division  
Parks College of St. Louis  
University  
Pennsylvania State  
University

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**Software Support continued**

other suggestions into software enhancements; and minimizing or at least controlling loss of compatibility with previous versions of the software. This category also encompasses software adaptations required for continuing compatibility with new releases of the underlying computer hardware, operating systems, compilers, etc. Other activities include tuning the software for improved performance, transporting the software to other computers, and integrating the software with other applications or basic services.

(6) *Documentation and Publicity:* Creating, updating, and publishing various levels of software documentation for use by site managers and users, the latter ranging from novices to experts in

computing and science. This category also encompasses announcements (or warnings) of fixes and new releases as well as brochures and other publicity materials.

(7) *Training:* Providing instruction for site managers and/or users on installing and effectively using the software.

(8) *Consultation:* Providing technical assistance, usually by telephone or electronic mail, in the use of the software. This service is especially important to identifying, isolating, and solving problems encountered by users.

**Levels of Support**

The UPC provides two categories of software support: comprehensive and

nominal. The first, comprehensive support, requires continuing effort on the part of both the UPC and the developer (i.e., the university or other organization that provided the original software) or other members of the Unidata community apart from the UPC. The second, nominal support, might just as well be termed community support as most of the support activities are provided by the software developers. The two levels of support are defined below in terms of the functions provided by the UPC; these functions are referenced to the support activities defined above.

*Comprehensive Software Support*

**C**omprehensive support entails UPC responsibility for all eight activities. Where the UPC has not developed the software, many services will be obtained from the developer on a voluntary or contractual basis. These are likely to include developing test procedures, developing and testing solutions to bugs and other problems, enhancing software, and writing technical documentation.

**Caveats and limitations:**

- Update schedules (activity 1) may be less than optimal due to resource limitations.
- Distribution (activity 3) is passive to the greatest practical extent.
- Enhancement (activity 5) is limited by available resources and priorities recommended by various Unidata advisory groups.
- Training (activity 7) is limited to site managers.

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Unidata Program Center  
P.O. Box 3000  
Boulder, CO 80307  
(303) 497-8695

**Unidata staff members:**

Sally Bates, <i>Newsletter</i> editor	497-8637
Cathy Cormack, systems programmer	497-8846
Glenn Davis, systems programmer	497-8643
Ben Domenico, program manager	497-8877
	(OMNET/Telemail: B.DOMENICO)
David Fulker, program director	497-8696
	(OMNET/Telemail: D.Fulker)
Bob Green, user support head	497-8641
	(OMNET/Telemail: UNIDATA.SUPPORT)
Susan Kassinger, administrator	497-8695
	(OMNET/Telemail: S.KASSINGER)
Mary Mintz, administrative secretary	497-8644
Melanie Pappas, student assistant	497-8688
Russ Rew, systems development head	497-8845
Mike Schmidt, student assistant	497-8688
Tom Yoksas, user support	497-8642

**Director's Report**

**Defining Software Support**

Dave Fulker

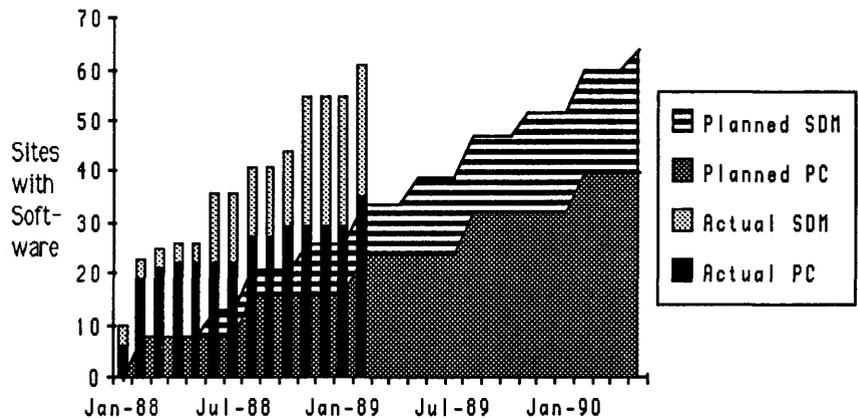
Unidata is catching on. Deployment of Unidata systems is occurring at about twice the rate we projected in submitting our deployment proposal to NSF (see chart at right) and it is clear that these users expect a "supported" system. In fact, several users have commented on the importance of continued Unidata software support in convincing their departmental administrations that investing resources in Unidata systems will reap long-term rewards.

Thus we have begun to precisely define what "software support" by the Unidata Program Center (UPC) entails. This is complicated by a fundamental dichotomy. It has been a long-standing Unidata principal to use software contributed by universities. However, providing full support for all relevant contributions would require vastly more resources than will ever be available at the UPC. In response to this quandary, the Unidata Policy Committee has adopted definitions of software support to be provided by the UPC, as well as principles for deciding what software is to be supported.

These principles are described in the article on the Unidata Software Support Policy that appears elsewhere in this issue. Your comments would be welcome.



**Unidata Software Use:  
Actual and Projected**



*Sites that have received training to use Unidata's Scientific Data Management (SDM) and PC-McIDAS software (including those already enrolled for the upcoming workshop in February) compared with plans submitted one year ago as part of the Unidata Phase IV (deployment) proposal to NSF. Note the differences between actual and planned figures as they pertain to the ratio of SDM (VMS- & UNIX-based) installations to PC-McIDAS (MSDOS-based) installations. We projected that about one-third of the sites would use the more expensive VMS or UNIX systems, but so far the figure is closer to one-half.*

*Software Support continued*

- Consultation (activity 8) is via electronic mail, to the greatest practical extent, and is available to site managers, not students or other end-users.

*Nominal (Community) Software Support*

UPC activities for software that is nominally supported are predominantly passive. Specifically, they are limited to:

- **Passive Version Control (activity 1):** Providing remote log-in accounts and adequate disk space on UPC computers for developers to maintain their software and to perform patches/updates as needed.
- **Passive Distribution (activity 3):** Making software available to users via network (NSFNET) by configuring the appropriate disk space to be accessible via the "anonymous" form of the DARPA file transfer protocol (FTP).
- **Publicity (activity 6):** Via the *Unidata Newsletter* and/or electronic mail, publishing change notices and other items of interest as written by developer.

**Unidata Software Support Policy**

**U**nidata is already distributing software. These libraries will necessarily change with time, not only as their components evolve, but as new software becomes available to augment or replace existing components. The ultimate authority regarding whether and

which kind of support a software package will receive rests with the Unidata Policy Committee. The Policy Committee has adopted the following evaluation factors and technical criteria in making software-support decisions.

*Evaluation Factors for Nominal Support*

In considering whether specific software should receive **nominal** support, only three major factors are evaluated:

- (1) Compliance with the minimum technical criteria (see below);
- (2) Willingness of the author or other parties to collaborate with the UPC in providing ongoing software support; and
- (3) General compatibility between the software and Unidata objectives.

*Evaluation Factors for Comprehensive Support*

More complex factors must be evaluated in considering software for **comprehensive** support. In addition to the three listed above, we must consider:

- (4) Potential contribution of the software to the overall value of the Unidata "core," as measured against the objectives of the Unidata program and the needs of its participants; and
- (5) Availability of adequate Unidata resources for providing comprehensive support as defined above.

Unidata's core software contains all the packages in Unidata's Scientific Data Management and PC-McIDAS systems. Specifically, these are:

- The Local Data Management package, including ingestors and digesters.
- netCDF access library.
- SDM applications suite, including Purdue's WXP program.
- PC-McIDAS software.

*Minimum Technical Criteria for All Unidata-Supported Software*

**A**ll software supported by the UPC, whether at the nominal or comprehensive level, should meet certain minimum criteria intended to set high standards for its quality and supportability. Specifically, Unidata-supported software should be:

- Written in F77 FORTRAN, VAX FORTRAN, C, or C++.
- Using Graphics Kernel Standard (GKS) interfaces to generate displays.
- Running on a computer with a UNIX, VMS, OS/2, or MSDOS operating system.
- Compatible and potentially co-resident with software to support TCP/IP networking over Ethernet.
- Directly compatible with and complementary to one or more core Unidata software packages.
- Invoked via the same user interface employed by Unidata for other software on the same operating system.
- Robust and provide helpful messages in the presence of errors by the user or in the data.

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**Manager's Report****Unidata's Many Projects***Ben Domenico*

As you can gather from the tidbits on this page, the job of a project manager is made of many disparate activities. While I often feel that I'm performing feats of juggling, Unidata's program of software development, distribution, and support is the thread of commonality that binds these "juggler's clubs."

**Presentations**

Unidata was involved in two meetings at NCAR in October. Dave Fulker, Unidata's director, was invited to present an overview of the Unidata program to the annual meeting of representatives from NCAR's member institutions. The next day, he made a shorter presentation to the American Meteorological Society's biannual meeting of Departmental Heads and Chairs, also at NCAR. To augment these, we set up Unidata workstations at NCAR's Mesa Laboratory and staffed them for the duration of both meetings. This allowed attendees to see the Scientific Data Management (SDM) and PC-McIDAS systems in action and to get answers to specific questions about the program and scientific computing systems.

Also in October, I had the opportunity to meet with managers of IBM's Academic Information Services

(ACIS) division in Milford, Connecticut. IBM had invited Robert Bunting, director of UCAR's Corporate Affiliates Program, and me to describe UCAR and Unidata activities. The opportunity to discuss the Unidata program with IBM was particularly welcome as IBM is currently supporting efforts by Purdue University to port Unidata's SDM software to the IBM RT/AIX computer. ACIS has also been quite generous with Unidata in loaning us workstations for demonstrations and workshops.

**Software Updates and Development**

As we report elsewhere in this newsletter, we released SDM version 1.2 in November. We have also released a test version of the netCDF package. Our current schedule calls for a general release of the netCDF early next year. We also plan to release version 2.0 of the SDM during the first quarter of 1989; it will contain substantial changes in architecture, which provide a simpler, more flexible interface and improvements in performance over the current version.

In the meantime, in a cooperative educational venture with the University of Colorado, three computer science students are developing a graphics package, tentatively called

UNIGRAPH, for the SDM. UNIGRAPH is being written in the C language and is intended to take advantage of workstation graphic capabilities. Under supervision by the Unidata staff, the three students are developing routines for generating maps and contouring data. The utilities will use the Graphics Kernel Systems (GKS) standard libraries.

The UNIGRAPH project fulfills a graduation requirement for the students and fills a gap for C-language scientific graphics utilities in Unidata's SDM package. Once delivered, the software will be tested and, if necessary modified, by Unidata before being released for use by Unidata sites.

**Software Training and Support**

The second SDM workshop, held in November, was well attended and another PC-McIDAS training workshop is scheduled for February (see the announcement attached as the back page to this newsletter). The interest in the workshops and the limited space in our building have prompted us to find more comfortable quarters for the training sessions. In the future, we hope to use the facilities at NCAR's Mesa Laboratory.

*Software Support continued*

- Well documented both for the user and the installer/maintainer.
- Well coded and well commented for ease of maintenance.
- Accompanied by test data and/or test programs suitable for assessing installation success and compatibility issues.
- Presently employed by universities participating in Unidata.

*Criteria Evolution and Exceptions*

We expect these criteria to evolve along with the state of current computational and communication technologies. Changes in the criteria, however, will be subject to approval by the Unidata Policy Committee. The committee can also permit exceptions to the minimum criteria where appropriate; this will permit Unidata support of software that is especially valuable to the university community.

**Note:** In some cases university adaptations of core software for use on other computer brands may be achievable without detriment to the software's usability on the UPC-supported computer configurations. In such cases, the UPC will collaborate with the developer of the adaptations to include them directly in the core component, where they will receive comprehensive support. Under such circumstances, however, it remains clear that the UPC is in no position to test these adaptations directly or otherwise guarantee their long-term viability on the specific brands of computers for which they were developed.

*Status of Current Software*

With the support policy and activities in mind, we can now assign each of the current Unidata software packages to one of the two support levels. Because of resource constraints, it is possible to provide comprehensive support only for the small, carefully chosen core of Unidata software. The software in this core has been tested and released to the university community by the UPC.

*Software Planned for Comprehensive Support*

- Unidata's core programs;
- New Mexico Tech's netCDF operator library (Candis; planned);
- User interface package, to be selected (planned);
- Image processing package, to be selected (planned);
- LDM adaptations by Purdue for IBM RT compatibility (pending Policy Committee consideration and approval).

*Software Under Consideration for Nominal Support*

- PC-DOS version of WXP and PROAM;
- Purdue/NCAR graphics software;
- NASA GEMPAK;
- Naval Postgraduate School LDM/decoders to create GEMPAK files.

⊥

*Workshop continued*

Salem State College  
Texas A&M University  
University of California,  
Davis  
University of Colorado  
University of Illinois at  
Urbana-Champaign  
University of Oklahoma

The participants received version 1.2 of the SDM, which includes Unidata's Local Data Management (LDM) program, for capturing data from the Zephyr broadcast—Domestic Data Plus (DD+) and the Numerical Products Service (NPS)—and three applications packages—Purdue University's Weather Processor (WXP), the Purdue Regional Objective Analysis of the Mesoscale (PROAM) package, and a demonstration program called MAP developed by Unidata to display grids.

The enhancements to WXP include the ability to decode and plot DD+ manually digitized radar, a new upper air decoder, "bug" fixes, and performance improvements. There were bug fixes and performance improvements to the Local Data Management package as well.

In addition to SDM version 1.2, participants received the first test version of Unidata's new Network Common Data Form (netCDF) software. This software package is an interface that allows you to create, access, and share scientific data in a form that is usable by different computers. Unidata's goal in creating the netCDF interface is to produce a data form that is "self-describing" and "network-transparent." By self-describing, we mean that the data file includes information *defining* the data it contains; network-transparent means

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## New Contract Terms with Zephyr

The Unidata Program Center (UPC) and Zephyr Weather Information Services, Inc. have been negotiating a modification to the contract that covers the Zephyr data broadcast to Unidata sites. The modification specifies the criteria to be used in evaluating Zephyr's contract performance and establishes a refund schedule for failure to meet these. These modifications were prompted by our desire for firmer control over the performance of the broadcast system, including recourse for sites where performance is believed to be substandard.

**B**riefly, the performance specifications concern error rates and installation:

- The modification specifies a bit-error rate of no greater than  $10^{-6}$  (1 error per million bits transmitted), averaged over 99.95% of the seconds that occur. This allows Zephyr to eliminate

the worst 1200 seconds (20 minutes) in a month when calculating actual performance. At the same time, the Zephyr broadcast should provide 99.5% totally error-free seconds. The number of whole seconds in a month during which errors occur must not exceed 12,000 (3.33 hours).

- A new receiver installation or reconfiguration must perform as required for at least 30 days on at least one channel before the installation can be considered successful.

To verify the error rate, monitoring equipment will be installed at the Unidata

Program Center and any other Unidata site may obtain the equipment. The contract modification also specifies procedures for reporting and repairing equipment yielding poor reception as well as the obligations of Unidata sites to facilitate Zephyr's response to poor performance.

**O**nce the final terms on the contract modification have been agreed to and signed by UCAR and Zephyr, Unidata sites will receive copies of the document.



### *Workshop continued*

that files can be accessed by computers with different ways of storing integers, characters, and floating-point numbers. Thus the actual data representations are hidden; all the operations to access and manipulate the data in a netCDF file are accomplished through the functions provided by the netCDF interface (composed of about 30 library routines).

With this structure, scientists can adapt applications to use netCDF files by calling the appropriate netCDF library routines. This should enable them to access netCDF data regardless of where the data were generated and regardless of what type of computer they are using. All that is required is that the data are stored in netCDF files.

The netCDF release includes interfaces for both C and FORTRAN. At the Unidata Program Center, it has been

tested in both the UNIX and VMS environments. The netCDF software should be ready for general release during the first quarter of 1989.



## PC-McIDAS Release 3.3

The Space Science and Engineering Center (SSEC) of the University of Wisconsin-Madison released the last revision of its PC-McIDAS software for MSDOS computers to Unidata in August. Since then, we have been testing it and making minor revisions. We now feel that the software is stable and contains enough significant enhancements over version 3.2 to warrant its release. This revision, numbered 3.3, will be sent to all current PC-McIDAS users in December along with new documentation for its use.

Several new features are included in this release. The user now has the ability to:

- modify raw satellite image header information (such as sensor source number, year, time, Julian day, line-resolution information, etc);
- change image frame directory;
- generate a gray-scale "color bar"

test pattern (useful when adjusting color monitors);

- list current conventional weather PC data files (both SVCA and RAOB);
- fill or erase graphics within a defined cursor;
- delete PIC files;
- compute distance on a satellite image;
- receive context-sensitive help;
- list image frame directories;
- list MD file schema;
- copy and edit MD files;
- list MD, RAOB, and SVCA file data;
- pack MD files;
- draw two-dimensional paths for object tracking;
- manipulate string-table entries;
- repeat commands using string-table entries for control;
- easily grid and contour SVCA and RAOB data;
- edit a surface station report; and

- use the PC-McIDAS command-scheduler.

In addition, satellite images may now be blown up or down (expanded or shrunk) and placed anywhere on a graphic frame. This feature allows you to put four (or more) satellite images on the same graphic frame for easy review. The map-drawing facility correctly overlays maps on images placed in quadrants on the graphic frame. In addition, with a simple key stroke, hard-copy lists of textual products may be produced on serial-line printers.

In all, PC-McIDAS version 3.3 includes several features that were lacking in earlier releases. The next major release of PC-McIDAS will be for IBM's new OS/2 operating system. Preliminary indications from the SSEC indicate that the OS/2 releases of PC-McIDAS will significantly improve on the DOS versions.



## Update: Unidata Configurations for PC-McIDAS Workstations

One of the computer systems supported by Unidata is the IBM PC/AT- or PS/2-class personal computer using the MSDOS operating system. The University of Wisconsin-Madison's PC-McIDAS system is Unidata's primary, supported software package for analysis and display under MSDOS. (MSDOS will be replaced by the OS/2 operating system in 1989.) The PC-McIDAS software is a complete package that captures data from the special Unidata channel available from Zephyr Weather Information Services, Inc. and provides to the

user displays of satellite, radar, and conventional data.

The prices contained in the PS/2 table are list prices obtained from IBM; they do not reflect discounts. Each of these models has been tested. IBM-compatibles have not been tested by Unidata and therefore are not formally supported.

One note of caution. The PC-McIDAS data stream has evolved to in-

clude a greater range of data. This has placed great strain on users with a minimal computer configuration. Any PC with a disk capacity of 30 megabytes or under is now too small to use both as a data-capture machine and a workstation.

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**Note:** Mention of any commercial company or product does not constitute an endorsement by the UPC. Unidata does not authorize any use of this information for advertising or publicity purposes.

## IBM PS/2 Configurations for PC-McIDAS

(Current as of 30 November 1988)

**Note: Contact your local IBM representative for the prices to you.**

	Part Number	List Price
*IBM Model 60 (10 MHz CPU)	8560-041	\$5,295
(1 Mb Memory, 44 Mb hard disk)		
80287 Math Coprocessor (10 MHz)	3001	595
80286 Memory Expansion Option (2 @ 512 Kb)	3006	1,098
80286 Memory Expansion Kit (3 @ 512 Kb)	3012	495
IBM Mouse	8770	99
8513 Color Display	8513-001	750
		=====
	Total	\$8332
*IBM Model 60 (10 MHz CPU)	8560-071	\$5,795
(1 Mb Memory, 70 Mb hard disk)		
80287 Math Coprocessor (10 MHz)	3001	595
80286 Memory Expansion Option (2 @ 512 Kb)	3006	1,098
80286 Memory Expansion Kit (3 @ 512 Kb)	3012	495
IBM Mouse	8770	99
8513 Color Display	8513-001	750
		=====
	Total	\$8832
†IBM Model 70 (20 MHz CPU)	8570-121	\$4,999
(1 Mb Memory, 120 Mb hard disk)		
80387 Math Coprocessor (20MHz)	8720	753
80386 Memory Expansion Option (3 @ 1 Mb)	5211	1,068
IBM Mouse	8770	99
8513 Color Display	8513-001	750
		=====
	Total	\$7669
†IBM Model 70 (25 MHz CPU)	8570-A21	\$7,116
(1 Mb Memory, 120 Mb hard disk)		
80387 Math Coprocessor (25 MHz)	6320	1,509
80386 Memory Expansion Option (3 @ 1 Mb)	5211	1,068
IBM Mouse	8770	99
8513 Color Display	8513-001	750
		=====
	Total	\$10,542

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†IBM Model 80 (16 MHz CPU) (1 Mb Memory, 44 Mb hard disk)	8580-041	\$6,995
80387 Math Coprocessor (16 MHz)	3002	895
80386 Memory Expansion Option (2 Mb)	3019	1,695
80386 Memory Expansion Kit (1 Mb)	3009	728
IBM Mouse	8770	99
8513 Color Display	8513-001	750
		=====
	Total	\$11,162

†IBM Model 80 (16 MHz CPU) (2 Mb Memory, 70 Mb hard disk)	8580-071	\$7,995
80387 Math Coprocessor (16 MHz)	3002	795
80386 Memory Expansion Option (2 Mb)	3019	1,595
IBM Mouse	8770	99
8513 Color Display	8513-001	750
		=====
	Total	\$11,234

†IBM Model 80 (20 MHz CPU) (2 Mb Memory, 115 Mb hard disk)	8580-111	\$8,995
80387 Math Coprocessor (20 MHz)	8720	1,295
80386 Memory Expansion Kit (2 Mb)	8722	1,395
IBM Mouse	8770	99
8513 Color Display	8513-001	750
		=====
	Total	\$12,534

†IBM Model 80 (20 MHz CPU) (2 Mb Memory, 314 Mb hard disk)	8580-311	\$11,995
80387 Math Coprocessor (20 MHz)	8720	1,295
80386 Memory Expansion Kit (2 Mb)	8722	1,395
IBM Mouse	8770	99
8513 Color Display	8513-001	750
		=====
	Total	\$15,534

\*A total of 3.5 Mb of RAM memory is required for the Model 60 system configurations.

†A total of 4.0 Mb of RAM memory is required for the Model 70 and 80 system configurations.

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*Configuration Update continued***IBM AT Configuration for PC-McIDAS**

IBM Model 339 (8 Mhz CPU)  
 (0.5 K Memory, 30 Mb hard  
 disk at minimum )  
 IBM 80287 Math Coprocessor

IBM Enhanced Graphics Adapter  
 IBM Enhanced Graphics Monitor  
 or (preferably)  
 IBM Video Graphics Adapter  
 IBM Video Graphics Monitor

Microsoft Mouse (bus version)  
 AST Advantage! Memory Adapter  
 (3.0 Mb)

**Notes:**

- (1) Unidata does not recommend purchasing new AT equipment for use as PC-McIDAS workstations. Instead, we recommend that new purchases be from the PS/2 class of machines, as described in the configuration table. If a properly configured AT is available, however, it will be adequate.
- (2) The Enhanced Graphics Adapter must contain 256 K of memory.
- (3) The AST Advantage! adapter *must* be fully populated (both on the adapter and its add-on daughter board) with 256 K RAM chips.

**Additional Required Items**

- (1) Serial-to-serial printer buffer device for use between Zephyr line and Personal Computer serial port. Unidata recommends: Blackbox, Inc., Basic Guffer Plus (256 K or greater).
- (2) Cabling: serial cable between buffer box and PC and sufficient serial

## Community Interactions

### Discussions on Data Management

Unidata director Dave Fulker met with members of the Interagency Working Group on Data Management in Global Change. The working group represents the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, the National Science Foundation, and the U.S. Geological Survey.

The working group is assessing the problems in, and developing coordinated strategies for, managing the tremendous variety and volume of data relevant to the earth's climate and environment. This includes data on the atmosphere, hydrosphere, geosphere, biosphere, and other systems. Convenient access to these data will be required by scientists involved in research on global change.

During their October meeting in Washington, D.C., Dave presented an overview of Unidata's approach to managing data, including the new data-access software, known as the netCDF. One virtue of the netCDF system is that data of many types can be placed into netCDF files, thereby permitting their study with a variety of powerful analysis and display programs.

cable between Zephyr earth station and buffer box. Remember, the cable connectors for ATs and PS/2s differ.

- (3) IBM DOS operating system software, version 3.3 only. (In 1989, DOS will be replaced by OS/2.)



### EDUCOM Conference

The EDUCOM conference was held in Washington, D.C. last month. EDUCOM is a consortium of industrial organizations and university computing administrators. Ben Domenico, Unidata's Program Manager, attended the conference to meet with participants and explain Unidata's program. Many university administrators are responsible for approving departmental hardware and software purchases for systems such as Unidata's.

### Purdue and IBM

Dave and Ben participated in a one-day meeting a Purdue University hosted by Ernest Agee of the Department of Earth and Atmospheric Sciences. Representatives from the National Science Foundation and IBM's division of Academic Information Services also participated. The goal of the meeting was to discuss possible mechanisms for implementing and supporting the Unidata SDM software under AIX, the UNIX variant adapted for future development and support by the Open Software Foundation, of which IBM, Digital Equipment Corporation, Hewlett Packard Co., Apollo Computer, Inc., and other prominent manufacturers are members.

### Visitors to Unidata

Several members of Colorado State University's (CSU) Department of Atmospheric Science visited Unidata headquarters at the end of October. Members of the department had seen the

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## In Brief

### PC-McIDAS Demos Available

The Unidata Program Center now has PC-McIDAS demonstration diskettes for IBM and compatible personal computers that have EGA or VGA video adapters. They both include examples of animation loops of GOES satellite images and manually digitized radar images.

Both demonstration diskettes include an automated "slide show" that presents and explains various products that can be generated on PC-McIDAS workstations. There is also an interactive mock-up of the menu-driven, Unidata PC-McIDAS workstation. The animation loops included in the mock-up significantly improve the "PC-McIDAS feel" of the demos.

System requirements for the demo include IBM PC, XT, AT, PS/2, or compatible computer, 640 Kb RAM, and DOS 2.0 (either MSDOS or PC-DOS) or higher. The EGA demos are shipped on 5-1/4-inch diskettes while the VGA

demos are shipped on 3-1/2-inch diskettes. VGA demos on 5-1/4-inch diskettes can be prepared on special request. The demos are also available via anonymous FTP, as described elsewhere in this issue.

For more information, contact Unidata User Support personnel.

### SDM 1.2 Available Via Anonymous FTP

The latest version (1.2) of the Unidata Scientific Data Management (SDM) software is now available from Unidata via File Transfer Protocol (FTP). The current UNIX distribution is in the `sdm` subdirectory of the anonymous FTP directory (user: `anonymous`, password: `guest`) on:

`unidata.ucar.edu`  
(128.117.140.3)

The current VMS distribution is available on:

`laurel.ucar.edu`  
(128.117.140.6)

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

**Note:** These are new IP numbers for Unidata's computers; we are no longer on the 128.116 network.

We recommend that you attend a Unidata SDM workshop before you try to install the software. However, the distribution includes SDM documentation (coded in LaTeX), including installation instructions for both VMS-based VAX-stations and UNIX-based Sun workstations. A software license file is included; the license must be completed and returned to:

UCAR Contracts Office  
P.O. Box 3000  
Boulder, CO 80307

A compressed "tar" file (for UNIX sites) or a backup "save set" (for VMS sites) of the entire SDM software distribution is available in the top-level anonymous FTP directories. Be sure to get either of these files in binary FTP mode, as they have non-ASCII characters in them. If you get the backup save set, you will also need to get a small program named **FIXREC** to fix the record structure of the FTP file after it is transferred to your local VMS computer. For more details, send a message with your questions to:

`support@unidata.ucar.edu`.



### Visitors continued

Unidata given at NCAR earlier in the month and requested an in-depth demonstration. Unidata's User Support staff were also able to provide them with information on the different hardware and software options available for a variety of systems. CSU is considering restructuring its Meteorology Computing laboratory.

Representatives from Digital Equipment Corporation (DEC) also visited during October in order to

familiarize themselves with Unidata's program. DEC will have a vendor's booth at the Fifth International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology, which will be held in Anaheim, California in January 1989. The representatives wanted to become more familiar with various meteorological packages being developed for and on DEC equipment.



## Acronyms and Terms

<b>ACIS</b>	Academic Information Services, a division of IBM.	<b>FORTRAN 77</b>	A specific version of FORTRAN. Unidata's standards will allow all Unidata programs to interface with any programs written in FORTRAN 77.
<b>AIX</b>	A version of UNIX developed by IBM.	<b>FTP</b>	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.
<b>ASCII</b>	American Standard Code for Information Interchange. A standard code for electronically exchanging character-based (nonbinary) information.	<b>GEMPAK</b>	General Meteorological Package. A NASA computer graphics software package.
<b>C, C++</b>	C is a programming language used extensively in systems software and scientific program applications. (UNIX is written in C.) C++ is a new variant of C.	<b>GOES</b>	Geostationary Operational Environmental Satellite; a NOAA weather satellite.
<b>CDF</b>	Common Data Format. Software packaged for storing data sets; developed by NASA's Space Science Data Center.	<b>GKS</b>	Graphic Kernel System; a computer graphics standard.
<b>DARPA</b>	U.S. Department of Defense Advanced Research Projects Agency.	<b>IBM PC AT</b>	One of the personal computer systems able to run Unidata PC-McIDAS.
<b>DD+</b>	Domestic Data Plus; a data stream provided by Zephyr comprising the NWS Domestic Data and Public Product services.	<b>IBM PS/2</b>	One of the personal computer systems able to run Unidata PC-McIDAS.
<b>DEC</b>	Digital Equipment Corporation. DEC manufactures several products used by Unidata, including the MicroVax GPX computer, the VAXmate computer, and the DELNI transceiver splitter boxes used on the Unidata Ethernet.	<b>LDM</b>	Unidata's Local Data Management software; part of the Unidata Program Center's Scientific Data Management (SDM) software system. The LDM builds a local archive of data collected from various sources. The LDM ingests and formats incoming data and allows access to that data by multiple workstations. The LDM may be used on computers employing either UNIX or VMS operating systems.
<b>EGA</b>	Enhanced Graphics Adapter. An IBM product that expands the graphics capability of a display terminal.	<b>McIDAS</b>	Man-Computer Interactive Data Access System. A computer graphics software package for analyzing and displaying meteorological data; created by the University of Wisconsin-Madison's SSEC. The original McIDAS program runs on IBM mainframes. The Unidata PC-McIDAS version was designed to
<b>FORTRAN</b>	(For formula translation.) The scientific programming language developed by IBM in the 1950s; used to create many of the graphics and analysis programs common to the Unidata program.		

*Continued on next page*

	Unidata specifications by the SSEC; it runs on IBM AT- and PS/2-class computers and is distributed by Unidata.	<b>OS/2</b>	Operative System/2; a new operating system developed by IBM and Microsoft; will replace PCDOS in Unidata personal computers systems.
<b>MD files</b>	Generalized meteorological data files; a McIDAS data base.	<b>PC</b>	Personal computer. An abbreviation sometimes used to refer generically to any personal computer, and at other times used to refer to the range of IBM personal computers, namely ATs and PS/2s, and to IBM-compatible machines from other vendors.
<b>MSDOS</b>	Microsoft Disk Operating System. 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. MSDOS is one of the three operating systems supported by Unidata (the other two are UNIX and VMS).	<b>PCDOS</b>	The version of MSDOS distributed by IBM for use with its personal computers.
<b>NCAR</b>	National Center for Atmospheric Research, which is governed by UCAR.	<b>PC-McIDAS</b>	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.
<b>NCAR Graphics</b>	A computer graphics package developed by NCAR. This package has already been widely distributed among the scientific community (over 800 copies have been supplied to university scientists). It not only serves to display atmospheric data, but (due to its modular FORTRAN design) it can be easily modified to provide graphic displays in other fields of research.	<b>PROAM</b>	Purdue Regional Objective Analysis of the Mesoscale. A FORTRAN-based display and analysis package for surface and upper air meteorological data. PROAM graphical output is based on NCAR graphics. A version of PROAM is distributed as part of the SDM.
<b>netCDF</b>	Network Common Data Form. The implementation of NASA's Common Data Format data storage system developed by Unidata for networked computers.	<b>RAOB</b>	Radio (radar) observation; balloon sounding.
<b>NPS</b>	Numerical Products Service, a data product broadcast by Zephyr containing the NMC gridded forecast data.	<b>SDM</b>	Scientific Data Management. Unidata's software package for capturing and displaying scientific data that has been broadcast by satellite; runs on UNIX and VMS systems and includes the Unidata LDM and MAP programs as well as the Purdue University PROAM and WXP applications.
<b>NSF</b>	National Science Foundation.	<b>SSEC</b>	University of Wisconsin-Madison's Space Science and Engineering Center; designer of the McIDAS and Unidata PC-McIDAS software.
<b>NSFnet</b>	National Science Foundation Network. A national computer network established by NSF and managed by the University of Michigan and MERIT, Inc.		

<b>SVCA</b>	Service A; a type of meteorological data stream.	<b>UPC</b>	Unidata Program Center.
<b>TCP/IP</b>	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.)	<b>VAX</b>	A minicomputer series manufactured by DEC.
<b>UNIGRAPH</b>	A GKS-based graphics package, written in the C language, for mapping and contouring meteorological data; being designed by the Unidata Program Center as a component for its Scientific Data Management package.	<b>VGA</b>	Video Graphics Array. An IBM graphics display product.
<b>UNIX</b>	A computer operating system developed by AT&T and modified extensively by the University of California, Berkeley. Berkeley UNIX (or BSD UNIX) version 4.2 is one of the three operating systems supported by Unidata (the other two are MSDOS and VMS).	<b>VMS</b>	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).
		<b>WXP</b>	Purdue University's Weather Processor software for analyzing and displaying meteorological data; this package has been ported to run with the SDM.
		<b>Zephyr</b>	Zephyr Weather Information Services, Inc. The commercial organization that, under contract with Unidata, currently provides weather data to Unidata users via communications satellite technology.