

Current Developments at the IUE Data Analysis Center

IUEDAC Staff (CSC)

9 July 1993

1 Facility Status

In March, 1993 the IUE Regional Data Analysis Facility (IUE RDAF) was officially renamed the IUE Data Analysis Center (IUEDAC). The name change was due to the closing of the Colorado RDAF last September.

1.1 Staff Changes

There have been several changes in the staff in the last few months. In November, 1992, Dr. Jerry Bonnell left the IUE project to join the Compton GRO Science Center located in building 1 at GSFC. Similarly, at the beginning of February 1993, Dr. Nancy Oliverson left her duties as the RDAF Technical Supervisor to join the NSSDC group at GSFC in building 26. Jen Gagliardi, former assistant, is currently a full time graduate student at the University of Maryland.

Dr. Tom Meylan has assumed the position of IUEDAC Technical Supervisor. Dr. Meylan has been with the IUE project as the Image Processing Astronomer for the last 3 years. Dr. Mario Perez is currently the IUEDAC astronomer, in addition to his duties as Resident Astronomer, which he has been performing for nearly 5 years.

1.2 Hardware Changes

A significant amount of disk space has been obtained for the IUEDAC, some through donations by local users. A 500 MB RA-81 disk drive was replaced with a 1 GB RA-72. In addition, George Sonneborn donated a 1 GB SCSI disk for the IUEDAC workstation. With the 400 MB disk purchased with the workstation, the IUEDAC has gained a total of almost 2 GB of disk space. As a result, staff members have restructured the user accounts and have increased disk quotas from 30,000 to 40,000 blocks.

The Tektronix Phaser IIsd color postscript printer is now operational and has become one of the most popular printers on the local cluster. Due to the extensive use by other projects (primarily COBE and HRS), the lab has agreed to purchase future printer supplies. (Color prints currently cost approximately \$2.00 and transparencies ~\$3.00 each.)

1.3 Software Changes

On December 3, 1993, we will be "decommissioning" the old IDL Version 1 based IUE RDAF software. It will be removed from our computers, and it will no longer be serviced. This date will mark the second anniversary of moving IUEDAC software (at that time the RDAF) from FORTRAN based IDL to C based IDL v2.0. Our software currently runs under IDL v3.0.

There may be some researchers who still make use of the IUE Version 1 analysis system. If you are one of them, please take note of this change. Our current software provides the capabilities you are used to, plus many other analysis tools and enhancements. It still runs in the same manner as the obsolete Version 1 software.

It should be noted that the Version 1 analysis software contains calibrations which have not been updated in many years. The current IUEDAC software contains these calibration upgrades, and should be used whenever a calibration is to be applied to IUE data.

Also, we are modifying our IDL v3.0 based analysis software to handle NEWSIPS data. We currently have FITS input and output capabilities ready to use on NEWSIPS data, and many of our analysis routines are ready for use with these new data. These capabilities will not be available with the Version 1 software.

Please take these intervening five months to make the change-over less disruptive to your programs. We'll be happy to answer any questions you may have concerning this change-over.

For the current software based on IDL v3.0, the entries below describe the major software and data base modifications implemented at the IUEDAC since September, 1992.

- 03-SEP Implemented new versions of IDL MOUNT and DISMOUNT commands
- 14-OCT The out-dated UVFLUX catalogs and procedures were deleted from the IUERDAF account. A backup tape was created for users interested in getting a copy.
- 15-OCT New tape drive assignments have been defined on IUE to allow users to access the 8 mm and CHAMP tape drives.
- 29-OCT The new IUE merged observing log and FES catalog have been updated. Goddard entries up to Oct. 14th (GMT 288) are included.
- 13-NOV The Call-back modem lines have been connected to a terminal server in order to solve recent modem problems (note: this will require an additional "connect iue" command after call-back)

- 16-NOV An error in the IUE merged log and FES catalog which caused all time-related fields to be four hours early has been corrected.
- 09-DEC The experimental versions of the following routines were implemented in the IUEDAC production library:
 ASC_READ, ATRD, BSPOT, BS_INOUT, DCCOR, FITSCON,
 FLAGNAN, IFITSREAD, IMFITS, IUE3DRD, IUEARRD, IUEATRD
 IUEFHRD, IUEFX, LBLFIX, PSTRA, RBS, RBSENSCOR, SKIPF,
 and WDUMP.
- 19-JAN IUERDAF account was moved from IUE\$USER0 to IUE\$USER1.
- 19-JAN New routines in the experimental library:
 IUEFX - allows user to have archive data sent to a unix node when requested from a vms node.
 SEARCHV2 - allows user to both search merged observing log and request archived data for returned entries.
 NOTE: This has been superceded by a new version of SEARCH; see entry for SEARCH below.
 IFITSREAD - runs IUEFHRD in silent mode.
- 27-JAN IDL version 3.0.0 installed on the IUE VAX.
- 05-FEB The IUE FES catalog and the IUE Merged Observing log were updated. Goddard entries up to January 21st are included.
- 12-FEB New routines in the experimental library:
 FEATURE - keyword added for turning off print option, time stamp and point flagging added to hard copies, and warning printed regarding negative flux values.
 HFIX - runs faster and allows an array of filenames as input.
 IUEARRD - properly handles FITS primary array files with data blocks which are exactly a multiple of 2880 bytes.
- 23-FEB Due to differences between IDL 2.3 and 3.0, new versions of GAUSSFITS, CRSCOR, and CRSMAX were implemented in the standard production library. The changes involved modifying parameters for some intrinsic IDL commands (e.g., XYOUTS and OPLLOT) and will basically be transparent to the user.

- 05-MAR New routines in the experimental library:
SEARCHV2 - displays search criteria in option 21 - 23:
see entry for SEARCH below.
IUECOPY - properly handles files with truncated records and
runs faster.
BITTEST - accepts vectors as input
- 17-MAR The SEARCHV2 database search routines and the latest FITS
routines which have been available in the experimental
library have now been implemented in the production library.
- 14-APR The password for the IUEORDER account has been changed. Please
contact a member of the IUEDAC staff for the new password.
- 21-APR A new version of DCCOR has been added to the experimental
library. The new version uses updated dispersion relations to
determine wavelength corrections for all LWR and SWP spectra
obtained after 1984.
- 07-MAY New routines in the experimental library:
IUEFHRD - /FULL option allows IUE FITS file headers to be
extracted without separating out the IUE VICAR label
section
VICAR - does not add aperture designation to output file name
(subroutine of GOTORDAF and IUECOPY)
CON_SAV - allows .SAV files to be transferred from VMS to UNIX
using either Multinet or Wollongong FTP commands.
WDUMP - /color option allows screen dumps to color postscript
files
- 13-MAY The IUE standard star spectra have been moved from
iue\$user1:[iuerdaf.database.stdstars] to the new account
IUE\$USER5:[iueatlas.stdstars]. The logical IUER_STDS has been
changed accordingly.
- 14-MAY The IUE merged observing log has been expanded to include more
fields. (Note the additional fields are currently accessible
only in 'expert' mode.)
- 01-JUN The staging area used by NDADS for temporary storage of IUE
data has been changed from ANON_DIR:[IUE] to
ANON_DIR:[DATA_DIST.IUE]. (Note this change should be

transparent to most users.)

07-JUN An error was corrected in the experimental version of IUECOPY. Users are cautioned that files created with the previous version may be corrupted.

06-JUL Updated versions of the IUE bibliographic references database tables have been implemented. Image references have now been completed for 1992 and 1978 - 1984.

09-JUL The merged log search routine SEARCHV2 has been replaced by the new routine SEARCH. The merged log has also been updated. Goddard entries up to June 9th are included.

The latest version of the User's Tutorial Manual is available online as a LATEX file in the account: IUE\$USER1:[IUERDAF.MANUALS]TUTORIAL.TEX.

2 New Services, Available and Planned

2.1 How to Obtain the IUEDAC Software Package

VMS - Copies of the IUEDAC IDL-based software package in VMS save sets are now available from the project. The most recent versions of the software can be provided on a 9-track magtape and are also now available on disk for electronic transfer. These disk files are located in IUE\$USER5:[IUEBCK]. A README file is included in that directory which contains installation instructions. A password is needed to retrieve these save sets, and it can be obtained from Randy Thompson, whose address and number is listed at the end of this article.

UNIX - The software package for UNIX (SunOS) and ULTRIX systems are available through the network via anonymous ftp or on 1/4" cartridges and 9-track tapes. To transfer the files (sun_*.tar.Z), via anonymous ftp, use the following commands:

- ftp iuesn1.gsfc.nasa.gov (128.183.57.16)
- login - anonymous
- password - username@host
- cd pub
- get README
- get DOC
- get INSTALL
- get REGISTER

- binary
- mget sun*.Z (or mget ultrix*.Z)
- bye

These files are intended to be unpacked in the installation directory using the “uncompress” and “tar xvf” commands. More complete installation instructions can be found in the file INSTALL. Introductory documentation on the IUEDAC procedures can be found in the file DOC. If you retrieve the software via anonymous ftp, please send us the Registration form (file REGISTER) via e-mail.

Feel free to contact Randy Thompson (rthompson@iuedac.gsfc.nasa.gov), the IUE DAC Manager, or Pat Lawton (lawton@iuesn1.gsfc.nasa.gov) for additional assistance with your installation of the IUEDAC software.

2.2 New IUE Bibliographic Search (IUEREF)

IUEDAC is pleased to announce that the new IUEREF routine is available in the experimental library for users to try. IUEREF is a user interface for accessing the IUE Bibliographic Databases. The databases are of refereed papers dealing with IUE data from 1978 to 1992; images and aliases are complete through 1984 and for the year 1992. Some of the fields included are primary author’s last name and initial(s), articles title, journal’s name, journal’s volume number, journal’s page number, journal’s year, and coauthors’ last names and initials. When available, the IUE camera and image number(s) and object name are included. The databases IUEREF uses are created from information stored in INGRES (a database system) tables. This information has been read into IDL compatible database files via a suite of IDL routines.

Access to the new databases is via IUEREF or a suite of database routines that IUEREF accesses. If preferred, a user may use the database routines interactively. They are described in the “expert” mode documentation (option 0 lists the different help/documentation files, then type 5). Users who wish to use the routines interactively are welcome to do so. Please see the “expert” mode documentation and the routines’ prologs for more information. If necessary, please contact a member of the IUEDAC staff for further assistance.

For users who prefer an interface similar to SEARCH, IUEREF provides such an interface. Also, a user may use IUEREF for the initial searches, and then use the optional output (parameters artlist and objlist) with the database routines.

IUEREF has three parameters - one required (reset) and two optional (artlist and objlist). RESET is a one-dimensional 6 element string array of search parameters. To compile (after you are in IDL) type .RUN EXPV2:IUEREF.

2.3 SEARCH, the Merged Log Searching Routine

The new IUEDAC IDL procedure SEARCH was recently added to the implemented library. It replaces and improves upon SEARCHV2 (and the IUEDAC’s IDL Version

1 procedure SEARCH). Both the IUE Merged Log (IUELOG) database and the IUE FES (IUEFES) databases may be searched via SEARCH.

The fields that have been added include: visual magnitude, focus, fpm, effective exposure length, large aperture status, observation station, Guest Observer's name, tracking mode, read gain, exposure gain, THDA at the start of the exposure and at image read, image type, UVC voltage, lamp flag, roll and position angles of the spacecraft, number of missing minor frames, microphonics flag, non standard image flag, number of camera bad scan stats, heater warm-up time, read transmission rate, history replay flag, read flag, data lost flag, only raw image archived flag, other abnormal condition flag, target location after exposure in FES-X and FES-Y units, type of camera prep, IUESIPS processing date, and release date.

The fields that may be used for searches are observation date, camera, image number, aperture, dispersion, observing program, object id, right ascension and declination for both epoch 1950 and 2000, object class, exposure time, spectral type, visual magnitude, and station id.

There are now 10 print formats. The first 9 are predetermined formats. Options 1 and 2 together provide the needed information to estimate exposure times for targets. The 10th print format is a "make-your-own" print format option. It is only for the IUELOG database. Using this mode it is possible for the user to generate a format with more than 80 columns.

There is documentation available on SEARCH, the IUELOG and IUEFES databases, and the "expert" mode of the database software via option 0 of SEARCH's main menu. Also, if needed, please contact the IUEDAC staff for assistance.

The IUE Merged Log, IUELOG, which is searched by SEARCH, has been updated and is now current through the 9th of June 1993. The IUEFES database is current through the 27th of October 1992.

2.4 Image Retrieval

The full IUE archive (about 90,000 images), with the exception of the images taken in the last 6 months or so, is electronically accessible. It is possible to access directly the IUE archive via an e-mail request to the NDADS facility at NSSDC (located at GSFC). If you have access to the IUE computer or the IUEDAC software, after you are in IDL, type IUEFX to obtain the calling sequence. For example, to request extracted low-dispersion data (MELO files), type IUEFX,'L'. You will be prompted for your password, camera name and image sequence numbers. Usually, if everything is up and running, the files should be copied into your account within 2-5 minutes. If any problems occurred, an e-mail message arrives to your account describing the problem.

Although IUEFX assumes (by default) that the VMS node name is IUE and the UNIX node is iuesn1, the parameter NODE can be used in the procedure call to send the IUE data to the specified node. For example, the command, IUEFX,'L','whysun.gsfc.nasa.gov' will send the requested data to a local UNIX workstation named whysun. Alternatively, IUEFX could be edited to redefine the default node names.

It should be noted that the NDADS staging area for IUE images has been changed from NDADS::ANON_DIR:[IUE] to NDADS::ANON_DIR:[DATA_DIST.IUE]. If problems occur during the network file transfer, the requested files may still be stored and accessed from this staging area.

As reported in a recent Three-Agency paper, the demand for archived IUE data in the United States continues to increase. Since July 1982, approximately 246,000 images have been distributed, implying that U.S. astronomers have requested archival data at an average rate of more than 24,000 images per year. This exceeds the rate at which new data are being accumulated (about 5,600 images per year) by more than a factor of 4. In comparison, during 1992 and excluding ~12,000 images transferred by the project to an IBM archive, more than 49,000 images were requested!

2.5 NEWSIPS Analysis Software Developments

Analyzing IUE Final Archive (also known as NEWSIPS) data at the IUE Data Analysis Center (IUEDAC) will require using some new procedures (and revised versions of existing procedures). A number of the procedures in the IUEDAC's IDL library however are not IUESIPS-specific (e.g. POINT) and will work with vectors extracted from the NEWSIPS files. Generally, any procedure that can run without the "h" (scale factor or "header" record) and "e" (epsilon flags) vectors, and which does not involve file input/output should work. Please note that most of the current IUEDAC calibration procedures (e.g., CALIB) and correction procedures (e.g., RBSENSCOR) are not compatible with the NEWSIPS data. If you are uncertain about any procedures, please contact a member of the IUEDAC staff.

Some IUEDAC procedures will be revised to allow them to handle both IUESIPS and NEWSIPS data, while some completely new procedures for the NEWSIPS data will be needed. This work is ongoing and will be geared partially according to users' requests. However, certain high priority abilities must wait since the IUEDAC has insufficient information to complete them (e.g., we have not yet received the appropriate calibration files needed for alternate extraction routines).

A "Getting Started" document has been written containing information on new procedures and a list of procedures that are believed to work with NEWSIPS data without any modifications required. Please contact a member of IUEDAC staff for a copy.

2.6 Miscellaneous Projects

The IUEDAC has begun distributing an electronic IUEDAC newsletter. The newsletter is intended primarily to inform remote sites of recent changes to the IUEDAC software and will be distributed via electronic mail. The initial distribution list was generated from lists of recent IUE observers, IUEDAC users, and remote sites which have requested the IUEDAC software. Users can be added or deleted from this current

distribution list by sending e-mail to IUE::NEWS (or news@iue.gsfc.nasa.gov). The newsletter will be distributed approximately monthly.

FITS routines have now been completed which allow users to read FITS primary arrays, binary table extensions, image extensions, and table extensions. IUE-specific FITS readers have also been developed which allow the NEWSIPS IUE data to be extracted without the user needing to know the data format or the FITS file structure.

The IUEDAC continues to participate in the NASA Astrophysics Data Systems (ADS) project which allows remote users to access catalogs and online documentation maintained at major observatories throughout the U.S. using a common software system. The IUE node currently supports about 18 ADS users each month.

The IUEDAC staff continues to assist LASP personnel in generating a backup copy of the IUE archive that will be stored on magnetic tape on the IBM 9021 computer at GSFC. The archive will provide a way for users to access IUE data when the NSSDC archive data is unavailable. The process of transferring data from NSSDC to the IBM has been useful for discovering files which are either corrupted or missing from the NSSDC archive.

The IUEDAC is currently collecting flux and intensity UV spectra of the Sun. A fairly large range of types of data are being collected for use as standards in a broad range of contexts. The spectra are currently being prepared and will be available online.

3 Communicating with the IUEDAC

3.1 IUEDAC Access

Personnel at the IUEDAC can be contacted in any of a number of ways. We are committed to providing analysis tools, and the training to use them, to make the analysis of IUE data as productive as possible. We remain ready to help solve problems related to the software we provide, and we continue to work on our package to improve its quality and expand its usefulness. Let us know what we can do to improve the package, or to help you use it more effectively.

Electronic Mail - Internet: name@IUEDAC.GSFC.NASA.GOV
 DECNet : IUEDAC::name or 16074::name
 (staff members are listed
 at the end of the article)

Remote Login - You need to have a local account on the IUE computer.
 If you need one, please call Randy Thompson (IUEDAC
 Manager) at (301) 286-8800. To do searches or retrieve
 data you can access one of the IUE accounts such as
 IUEORDER (call for the password).

Modem : (301) 286-9000 (1200, 2400 baud)
(301) 286-4000 (9600 baud)
Enter Number: LASP

local> C IUE

Call back lines are also available at 1200 and 2400
baud rates.

TELNET 128.183.57.58

SET HOST IUE or SET HOST 15378

File Transfer - FTP 128.183.57.58
(enter your IUE account name and password)
Note that the if you want to transfer binary files
(e.g., .DAT, .LAB, or .SAV), you need to specify
‘‘quote site io_mode’’ and ‘‘binary’’ and run
CON_RDAF if transferring files across different
platforms.

VMS DCL command Copy (from IUE to you local computer)
COPY 15378‘‘name password’’::disk:[name]file.ext *.*
(disk e.g., IUE\$USER1)

In case you have questions please send e-mail to: IUE::RTHOMPSON or rthompson@iue.gsfc.nasa.gov. If you need more detailed information we can send you the IUEDAC Remote Users Guide.

3.2 Software Registration

Those who have copied the IUEDAC IDL based Spectral Analysis Software package should be sure to register yourselves as owners/users. There are a number of reasons for this.

Perhaps the single most important reason to register your use of this software in these days of budget cuts is to provide the IUEDAC with usage statistics. NASA Head Quarters has mandated that IUEDAC make software exportation one of its highest priorities, and your registrations give us a means of demonstrating that we are meeting that directive.

From the user’s standpoint, it is helpful to you that we know who has the software in case problems arise. Obviously, we can service the users’ implementations better if we know who the users are. Should we uncover a problem with the package, we can broadcast this information to all users more efficiently. We can also broadcast

Platform(s) -----
(SunOS/UNIX, Dec/Ultrix, VAX/VMS, etc.)

Medium -----
(ftp, network copy, 1/2" tape, etc.)

Date obtained -----

If someone else will be maintaining the software installation, please provide that person's name and email address.

The IUEDAC Newsletter is written by the IUEDAC staff and sent via email to individuals on the distribution list. In addition to other items, it lists new and updated procedures available at the IUEDAC.

Do you wish to be added to the IUEDAC Newsletter email distribution list?

(yes/no) -----

Does the person maintaining the software installation wish to be added to the IUEDAC Newsletter email distribution list?

(yes/no) -----

If you wish to make any comments or make any other information known, please do so below.

Thank you again.

3.3 The Current IUEDAC Staff

Should you have any questions, problems or suggestions concerning the services or products available at the IUEDAC, feel free to contact any of the personnel listed below.

Function	Name	Preferred E-mail Address	Phone
Supervisor	Dr. Tom Meylan	IUEDAC::MEYLAN meylan@iuedac.gsfc.nasa.gov	301-286-7762 301-794-1471
Manager	Mr. Randy Thompson	IUEDAC::RTHOMPSON rthompson@iuedac.gsfc.nasa.gov	301-286-8800
Astronomer	Dr. Mario Perez	IUEDAC::PEREZ perez@iuedac.gsfc.nasa.gov	301-286-7762
UNIX Support	Ms. Pat Lawton	lawton@iuesn1.gsfc.nasa.gov	301-286-5103
Assistant	Ms. Lyla Taylor	IUEDAC::STAFF staff@iuedac.gsfc.nasa.gov	301-286-3938
Assistant	Ms. Ruth Bradley	IUEDAC::STAFF staff@iuedac.gsfc.nasa.gov	301-286-8060