IUE Regional Data Analysis Facilities

Bulletin No. 1

In an effort to keep IUE users informed of recent changes to the IUE Regional Data Analysis Facilities (RDAF's), a regular article will appear in this and future IUE Newsletters. Although prepared by the staff of the Goddard facility, the bulletin will be published in coordination with the Colorado RDAF. We also plan to include the updated versions of the RDAF Tutorial and Reference manuals in a future issue of the IUE Newsletter.

The text below is divided into three sections: general changes, which include RDAF policy matters and staff changes, hardware changes which may affect RDAF users, and finally, software changes. Also enclosed is a general letter of announcement describing the data analysis facilities which was recently distributed to seventh episode observers.

1) General

There have been several changes in the RDAF staff during the past several months. The current staff at both facilities is shown below:

Goddard

Manager: Randy Thompson
Spectroscopist: Nancy Evans
Data Analysis Assistants: Keith Feggans & Bill Hathaway

Colorado

Manager/Spectroscopist: Ed Brugel
Programmer/Assistant: Terry Armitage (shortly leaving for 2-5 months)

In accord with the original plans for managing software development and implementation, the Goddard RDAF will be holding a Software Review Meeting later this summer. This meeting is open to all interested RDAF users and is generally used to establish guidelines for future software development. This particular meeting will also include discussions regarding the effect of the new hardware configuration on the GSFC RDAF (see below). Anyone interested in attending this meeting should contact a member of the RDAF staff.

There has been some difficulty recently with RDAF users who wish to have images they have requested to be reprocessed available for their use at the RDAF. Reprocessing requests go through a fairly elaborate process involving the NSSDC, IUE Image Processing and the IUE Data Manangement Center. Generally these images are processed on a time available basis unless there are time constraints imposed, as for example, when a requester wishes to use the RDAF on a certain date. It is suggested that the RDAF user notify the RDAF staff of his reprocessing request as early as possible so that we can be sure the data will be available for his use. Note that this may mean contacting the RDAF at least a month or two prior to his visit depending on the number of images requested for reprocessing. The requester should also mention his intentions to use the RDAF in his original reprocessing request so that NSSDC knows to hold the data tape(s) here.

2) Hardware Changes at Goddard:

The Goddard RDAF users represent one of several groups who use a facility known as the Interactive Data Analysis Facility (IADAF). The IADAF, which is the main computer resource for the code 680 laboratory, has recently purchased a VAX 11/750 minicomputer with a 6250 bpi tape drive and a 500 MB disk drive. Although it is intended that the RDAF will continue to operate primarily on the existing PDP 11/44 computer, the tape drive and disk drive should be available for our use. This should help relieve recent problems with tape I/O and disk space. Hopefully the RDAF software can be configured to run on either computer thereby allowing the RDAF to continue operation in the event of hardware problems on the PDP 11/44. The new hardware has arrived at Goddard but is not yet installed. The two computers will initially be run independently so that testing the VAX should not interfere with current operations. Eventually, the computers will be networked together using DECNET. It is suggested that users planning on using the GSFC facility this summer call in advance to not only schedule time on a terminal but also to check the status of the computer (i.e. to see if it's operational).

3) Software Changes at Goddard:

The entries below describe the software modifications implemented at Goddard between January 1st and June 25th of this year:

17-JAN A new version of QIUEHI3 has been added to the experimental library [210,21]. The coefficients for the ripple correction were updated to those published by Ake in IUE newsletter #19.

19-JAN The latest version of the merged observing log was installed. (The next update is scheduled for early June.)

02-FEB The following routines were implemented from the experimental library: SEARCH, MOSORT, MOCRACK, MOPRINT, ORDER, & MOLIST.

New routines added to the experimental library:

15-FEB EXPTIME - prompts user for exposures times to be entered into record 0 of specified input file (useful for routines which perform an absolute calibration)

MOSORT - faster version of existing routine which includes seconds in its sorting by increasing RA (previous sorts only used RA hours and minutes)

IPLIST - lists out relevant IUESIPS configuration entries based on selection criteria input by user (e.g. camera, dispersion, aperture, etc.)

23-FEB RESAMPLE - updated to prevent errors which occur with large input vectors. DOC file also updated.

28-FEB KURUCZ - allows log AB other than 0 (for selecting KURUCZ models)

29-FEB IUEIM - improved vertical swath calculation, and optional plotting allowed using !VAR5 parameter

01-MAR IUEPLOT - improved vertical swath plotting using IUEIM (above)

13-MAR CALCOMP - leaves system plotting variables unchanged and does not abort if .LAB file does not exist

05-MAR An error was discovered in the version of TABINV implemented on Jan. 17th 1984 which caused errors in the corrected fluxes output

by the routine UNRED. Corrected versions of both TABINV and UNRED now exist in the experimental library.

06-JUN An experimental version of IUELO has been added to [210,21]which allows users to specify either integer or floating point exposure times.

06-JUN HISTROY.TXT file, used by ASSESS and IPLIST, was updated to include configuration entries up to number 111.

15-JUN HISTORY.TXT and ASSESS.PRO updated to properly handle VILSPA images and early images which don't contain the processing date in label.

The IUE Regional Data Analysis Facilities (RDAF)

Computer facilities for interactive analysis of IUE data are now available at Goddard and at the University of Colorado. Both facilities are staffed by astronomers and assistants to help you with your program of analysis. The capabilities of the facilities and the requirements for scheduling are described below. While the use of these facilities is free of charge to all astronomers, it is expected that current IUE observers and archival researchers will use funds from their IUE grants to cover travel and per diem expenses incurred during their use of the facilities. In order to minimize overall expenses, a special effort will be made to accomodate those astronomers who are already at Goddard for an observing run and who wish to remain to analyze their data.

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RDAF CAPABILITIES

At the RDAF, the visitor uses a Tektronix graphics terminal to display and measure spectra interactively. Most first-time visitors are able to become proficient users after an hour or so of training. A data analysis assistant is available full-time to help with any questions or problems. The capabilities provided by the existing routines include the following:

- convenient, interactive measurements on low or high dispersion spectra: wavelengths, radial velocities, and equivalent widths of spectral lines; continuum fluxes in any desired bands
- comparisons of spectra: adjustment to a common wavelength scale and calculation of a ratio, difference, or average.
- smoothing and filtering
- identification of low quality data points due to reseau, the saturation of the detector, microphonic noise, particle hits, etc.
- estimation of interstellar extinction and correction for it
- comparison with the library of spectral standards or with blackbody spectra or with spectra from the IUE data archives
- customized re-extraction of low dispersion spectra; this is especially useful to reduce noise and reject "hits" in the spectra of faint sources
- customized extraction of low dispersion spectra of spatially extended sources
- publication quality plots

Observers can request to examine their new spectra during their observing run. Generally, the images are available the next working day after they are obtained.

The RDAF is particularly helpful in the analysis of spectra from the IUE data archives:

- searching the log of observations for objects by name, position, spectral type, etc.
- rapid access to any of the 30,000 released spectra (at GSFC, a spectrum can often be obtained in a few hours if necessary, although it is safest to allow a few weeks advance notice).
- accessing the engineering data or the processing history in the image header.
- improvements for deficient processing of the original data (e.g. SWP linearity errors, calibration of high dispersion spectra, correction of velocity scale)
- Calcomp plots for high dispersion spectra
- picture display of images (e.g. to replace the photowrite, which is not available for any of the Vilspa images)

In addition, the RDAF staff is often able to modify existing routines or to write new ones as required to meet any special needs of an individual observer, especially if advance notice is provided. There is a limited budget for continued software developement, so that users should contact the staff to get updates on the capabilities or to register suggestions for new routines.

RDAF SCHEDULING

Many observers find it convenient to stay on a day or two after observing to use the RDAF for initial study and measurement of their data. A second trip some time later might be required to correct or complete any measurements, compare with models, make plots for publication, etc.

Some advance notice is required to schedule access to the computer terminal, assistance from the staff, storage space on disk, use of peripheral equipment such as the tape drives and plotters, etc. While we are happy to attempt to fit in last minute requests, it is best to call at least 2 to 3 weeks in advance to discuss your requirements and reserve a time slot. This is especially true if you want to get spectra from the archives or to do some complicated processing.

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