

IUE Image Processing News

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July 15, 1996

1. Final Archive ("NEWSIPS") Processing Update

The NASA IUE Project has processed and archived virtually all of the NASA SWP and LWP low-dispersion images so far. VILSPA is likewise processing their data and sending it to NASA; most of the pre-1990 data are now available.

SWP high-dispersion processing should begin sometime late this summer. Please check the monthly IUE electronic newsletter for updates on NEWSIPS processing status.

To find out which images are processed and available from the IUE Archive, you may use any of several methods.

1. Use the IUEDAC search routine SEARCH to check the IUE Merged Log and examine the FA Status Flag (Z means processed and available).
2. Use the Web to check the IUE Merged Log at http://banzao.gsfc.nasa.gov/IUE/search/IUE_search_menu.html
3. Submit a user request (see below). This method is the most up-to-date and informative.
4. Submit a data request to NDADS and see if the files are found.

The NEWSIPS data may be retrieved from the IUE archive, maintained by NASA on the NSSDC NDADS system, in any of the following three ways. Note that you must first request that the data be loaded to disk from the optical disk jukebox, then you can copy or ftp the data to your site (there are also options that can be set to copy the data to your site automatically, but you must provide your password).

1. Use the World Wide Web to request the data, at http://nssdca.gsfc.nasa.gov/ndads/archives_form_IUE.html
2. Use the IUEDAC routine IUEFX.
3. Use e-mail and anonymous ftp. See *NASA IUE Newsletter* No. 52, pg. 70, 1993, for instructions.

The *NEWSIPS Processing Information Manual* was published in *NASA IUE Newsletter* No. 53. Copies are available on request. The text portion is also accessible through the Web at <http://www.vilspa.es/iue/IUEFA/manual/chap00/chap00.html>. For a copy of the manual or for more information, please contact Cathy Imhoff (301-794-1470 or imhoff@iuegtc.gsfc.nasa.gov).

2. Priority Requests for NEWSIPS Processing

NEWSIPS data users may request to have specific images processed at high priority. This will allow you to have quick access to the Final Archive data that you need. You may also request a status report for a list of images. This will provide up-to-date information noting whether each image has been processed, is available from NDADS, is in the processing queue, or can't be processed at this time.

You can submit a request via the Web at http://banzao.gsfc.nasa.gov/IUE/search/IUE_usrreq.html, or use the DAC routine `USRREQ`.

You may also send an email message to `USRREQ@IUEGTC.GSFC.NASA.GOV` in the following format. Note that the entry for `REPRT/PROCESS` should be `R` to request a status report or `P` to request priority NEWSIPS processing. The keyword values should all start in column 15, 5 digit image numbers are required, and the dispersion (`L` or `H`) should be indicated.

```
NAME           Joe Astronomer
EMAIL_ADDRESS  joe@some.computer.edu
PHONE          555-555-5555
SPONSOR        University of Life
REPRT/PROCESS P
IMAGELIST
SWP01234L
SWP12345L
LWP09876L
ENDOF LIST
```

If you find that some images are listed as "not ready for processing", you may wish to check with Cathy Imhoff. In many cases, only a minor fix is needed and the data can be quickly processed.

3. Chronology of Changes to the NEWSIPS Data Files

Some changes have occurred in our Final Archive Data Processing System that affect some of the output data. We have compiled a list of those changes below, further updating the list published in the last IUE Newsletter. Many of these modifications and corrections will not affect users, but two recent changes are important to note.

- The extraction of most LWP low-dispersion spectra taken after November 12, 1992, has been forced to point-source in order to minimize the effects of solar scattered light (the "streak") on the extracted spectra (item # 8). Exceptions are trailed spectra, multiple spectra offset in the aperture, and sky background images (item # 11).
- The spectral extraction when SWET finds only 2 nodes has been changed in order to improve the reliability of the fluxes. Instead of using the SWET "optimal" extraction, a default profile (point source or extended, as appropriate) is used.

Please note that the *NEWSIPS Image Processing Information Manual* pre-dates these changes, and the dates listed below apply to data processed at NASA only.

1. *NEWSIPS Version 2.3.1; implemented April 20, 1994.*

Software was ported to run on updated software on the DECstations. This included updates in the Ultrix operating system, pMIDAS, and the Fortran compiler. Output data processed on this system have slight differences with data processed under earlier versions at NASA. The differences are a few pixels which differ by ± 1 FN in the LILO and SILO files, plus differences on the order of 10^{-6} of the flux for floating point values in the MXLO files (net, absolutely calibrated flux, and sigma arrays). These differences are estimated to be well within the errors of the output values. Note that all VILSPA data have been processed on the updated system software and pMIDAS.

2. *NEWSIPS Version 2.4; implemented September 8, 1994.*

The software included the following corrections and changes.

- Fix VD NAXIS FITS keywords. Prior to this, the keywords were erroneously given as NAXIS1 = 2, NAXIS2 = 768, and NAXIS = 768. The correct values are NAXIS1 = 768, NAXIS2 = 768, and NAXIS3 = 2.

- Fix translation of binary header in VICAR label to ASCII. Prior to this, the translation from binary to hexadecimal to ASCII was incorrect.

- Drop MJD FITS keywords; add JD FITS keywords. The IUE Project decided to change from Modified Julian Date (JD - 2400000.5) to standard Julian Date. The keywords were likewise changed from LMJD-OBS, SMJD-OBS, LMJD-MID, and SMJD-MID, to LJD-OBS, SJD-OBS, LJD-MID, and SJD-MID for the large and small aperture start and midpoint of the exposures.

NOTE: all NASA and VILSPA data have been reprocessed or otherwise updated to this version (or later) of the NEWSIPS software and rearchived.

3. NEWSIPS Version 2.4.1; implemented October 27, 1994.

The capability to process LWP low-dispersion images was implemented at this time.

In addition, an error in certain FITS headers was corrected. If the VICAR label were exactly 100 lines long, several blank lines were erroneously inserted in the FITS headers. This error affected only SWP low-dispersion images processed under Version 2.4. These images were later identified and reprocessed.

4. NEWSIPS Version 2.4.1_A; implemented December 15, 1994.

This software provides the capability to process LWP and SWP low-dispersion images on an Alpha AXP computer. Due to differences in the operating system and Fortran compiler from the DECstations, there are small differences in the output data files. The differences consist of a few pixels which differ by ± 1 FN in the LILO and SILO files, plus differences on the order of 10^{-6} of the flux for floating point values in the MXLO files (net, absolutely calibrated flux, and sigma arrays). These differences are estimated to be within the expected uncertainties of the output values.

5. Correct processing time stamp; implemented January 24, 1995.

Prior to this, the processing time stamps in the FITS headers of images processed on the Alpha system (R2.4.1_A) were incorrectly given in local time. This was changed to compute the correct U.T.

6. Correct format for cross-correlation; implemented March 30, 1995.

Prior to this, if the cross-correlation were 100% successful, only asterisks were printed. This change corrects that format listing the successful cross-correlation

percentage in the HISTORY section. Affected images were identified and reprocessed.

7. NEWSIPS Version 2.4.2; implemented May 11, 1995, on DECstations, and on June 20, 1995, on Alpha.

The calibration files were updated so that SWP images through 1996 can be processed.

8. NEWSIPS Version 2.4.3; implemented August 31, 1995, on DECstations, and on September 7, 1995, on Alpha.

The calibration files were updated so that LWP images through 1996 can be processed.

LWP low-dispersion spectra taken after November 12, 1992, may be affected by the solar scattered light ("streak") problem. Therefore the extraction for these spectra is always forced to point source (unless the spectra are trailed or multiple) in order to minimize the effects of the streak. Users should inspect data that may be affected by the streak and perform customized extractions as needed.

9. Processing of sky background images; implemented December 18, 1995, on DECstations, and on January 30, 1996, on Alpha.

The capability to process sky background (object class 07) was added to the system. Any spectra with detected fluxes are flagged for possible reverification.

10. Processing history change; implemented January 3, 1996, on DECstations, and on January 30, 1996, on Alpha.

Prior to this, the processing history does not always correctly list the extraction mode as "point source" for LWP images taken after November 12, 1992 (i.e. images potentially affected by the streak for which the extraction has been forced to point source). This was fixed and the affected images reprocessed and rearchived.

11. NEWSIPS Version 2.4.4; implemented March 11, 1996, on Decstations, and on May 4, 1996, on Alpha.

The extraction of spectra where SWET finds only 2 nodes was changed to improve the reliability of the fluxes. In this case, the spectrum is extracted using a default line profile (point source or extended, as appropriate) centered on the empirically found central line of the spectrum. Before this, the SWET extraction was used but

was found to overestimate the net fluxes. All affected spectra were identified and reprocessed with this version of the NEWSIPS software and rearchived.

The extraction of sky background images (object class 07) was changed so that the extended extraction is always used, even after November 12, 1992, when the spectra may be affected by the solar scattered light ("streak") problem. All affected sky background spectra were identified, reprocessed, and rearchived.