#621

AE-E

EUVS EXPERIMENT SOLAR FLUX DATA

75-107A-06C

AE-E

EUVS SOLAR-FLUX DATA, TAPE

75-107A-06C

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY IT CONTAINED ONE 9-TRACK, 1600 BPI STANDARD LABEL TAPE WRITTEN IN EBCDIC. THERE IS ONE RESTORED NON-LABELED TAPE WRITTEN IN ASCII. THE DR TAPE IS A 3480 CARTRIDGE AND THE DS TAPE IS 9-TRACK, 6250 BPI. THE ORIGINAL TAPE WAS CREATED ON A XDS 930 COMPUTER AND WAS RESTORED ON AN IBM 9021 COMPUTER. THE DR AND DS NUMBER ALONG WITH THE CORRESPONDING D NUMBER AND TIME SPAN IS AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR003769	DS003769	D046759	1-61	06/03/77 - 09/25/80

REQ. AGENT	RAND NO.	ACQ. AGENT
DAD	V0224	RNH

AE-E

EUVS EXPERIMENT SOLAR FLUX DATA

75-107A-06C

This data set consists of 1 tape. The tape is 9-track, 1600 BPI, contains 183 files, and is written in EBCDIC and was created on an XDS 930 conputer. The D and C numbers along with the time span follow:

D#	C#	TIME SPAN
D-46759	C-23592	06/03/77 - 09/25/80

N5-107A-06C

EUV Reference Spectrum 74113

1978

J. E. Hinteregger
Air Force Geophysics Laboratory
Hanscom Air Force Base
Bedford, Massachusetts 01731

Parameter: Solar photon fluxes from 15 to 2000 Å

Brief Description: This data set consists of the two solar Extreme Ultraviolet (EUV) reference spectra R74113 and F74113 compiled by H. E. Hinteregger based on rocket measurements conducted on April 23, 1974, and simultaneously obtained EUV fluxes by his AE-E spectrometer. The rocket measurements were used to establish absolute calibration factors for the AE-E instrument. The original proposed R74113 spectrum (Hinteregger, 1976) was revised to become F74113 (Heroux, Hinteregger, 1978), following refined evaluation of the rocket data and detailed analysis of the long record of AE-E measurements. F74113 is representative for solar minimum conditions and has been widely used in aeronomical studies. The solar sunspot minimum was recorded in July 1976. By that time, however, the photon fluxes had already increased again by about 30%, i.e., the solar cycle variations of sunspot numbers and photon fluxes were out of phase. It has also been found that the variation of photon fluxes over one solar cycle is strongly wavelength dependent. Nevertheless, in most aeronomical computations the solar cycle variation of EUV photon fluxes is modeled by using the F74113 reference spectrum together with one of the solar indices (e.g., Hinteregger et al., 1981).

Availability: On one tape (NSSDC ID **#RS-12B**)

References:

H. E. Hinteregger, Measurement of Solar Flux Intensities Below About 2000 Å, *J. Atmos. Terr. Phys.* 38, 701, 1976.

L. Heroux and H. E. Hinteregger, Aeronomical Reference Spectrum for Solar UV Below 2000 Å, *J. Geophys. Res.* 83, 5305, 1978.

H. E. Hinteregger, K. Fukui, and B. R. Gilson, Observational, Reference and Model Data on Solar EUV, from Measurements on AE-E, *Geophys. Res. Lett.* 8, 1147, 1981.

G. Schmidtke, Modeling of the Solar Extreme Ultraviolet Irradiance for Aeronomic Applications, *Encyclopedia of Physics XLIX/7*, K. Rawer (ed.), Springer-Verlag, Berlin, 1984.

C. A. Barth, W. K. Tobiska, G. J. Rottman, and O. R. White, Comparison of 10.7 cm Radio Flux with SME Solar Lyman Alpha Flux, *Geophys. Res. Lett.* 17, 571, 1990.

Table 1. Lists of Detailed Reference Spectrum[@] of EUV Irradiance for wavelengths below 200 nm

File Name	Issue ID (YYDDD)	Reference Date or Period	Number of Wavelengths listed	Fluxes/ 10^{13} Photons $m^{-2}s^{-1}$ λλ/nm 1 - 15	λλ/nm 15 - 37	λλ/nm 37 - 103	Class "K"	Period of C_λ-avg.	References
F74113	78115*	23 April 1974	1957*	0.58	15.90	26.89	N.A.	N.A.	Heroux and Hinteregger (1978)
F76REF	79135	13 - 28 July 1976	1972	0.64	15.37	31.77	0,1,2	Feb 79	Hinteregger (1981a)
SC#21REF	81099	- " -	1659	0.55	11.99	30.99	1,2	Jul 77 -Sep 80	Hinteregger et al.(1981a)
SC#21REFW	81101	- " -	1659	0.55	12.01	30.99	1,2	- " -	"in work"

@) including many wavelength entries outside the instrumental range of the EUVS experiment and using separation of listed lines far beyond the modest spectral resolving power of that instrument, with continuum fluxes expressed by entries 1 Å apart (wavelengths are listed in units of 1 Å = 0.1 nm)

*) subsequent relatively minor revisions of F74113 were issued with ID = 78234, 79040, and 79109, with an increase of the number of wavelength records from 1957 to 1972 in final version (ID=79107)

Table 2. Lists of Observational EUV Data issued at various stages of progressing work

File Name	Date of Issue	Observations for Data Period	Number of sep. Lines; (Intervals)	July 1976 Irradiance Reference	Units used for Data Listing	References
EUVFLUX	12 Sep 79	77154-79226	9; (0)	F76REF	10^{10} Phot.m^{-2} s^{-1}	Hinteregger(1981a)
$EUVFLX	5 Feb 80	77154-79364	7; (0)	F76REF	same	Hinteregger(1981a;1981b)
$EUVFLXA	16 Jan 81	80001-80269	7; (0)	F76REF	same	informal distribution
SC#21OBS	2 Apr 81	77182-80269	9; (6)	SC#21REF	Ratios/(July 76)	informal distribution
SC#21OBSX	22 Apr 81	80270-80365	9; (6)	same; supplement giving extension to end of year		
SC#21OBS*	7 May 81	77182-80365	9; (6)	SC#21REF	Ratios/(July 76)	Hinteregger et al.(1981a; 1981b)

#1 #2 #4

*) replacing combination of previous SC#21OBS and supplement

15-10TA-06C

D-45759
June 3, 1977 -
Dec. 28, 1979

List of File 5

```
$NOP
$NOP
$NOP ********** DOUT1 ***********
$EXEC TPLIST BS

INPUT PARAMETERS ARE:  AS AL 1

 TAPE NO.   1                FILE NO.   1
 RECORD   1                  LENGTH   32736
1*** '$EUVFLX.EUVS'                FILE ISSUED 5 FEB 1980
                                   *
                                                                   *      SUPERSEDES 'EUVFLUX' FILE
ISSUED 12 SEP 79
 *      -----------------------------------------
                                   *
                                                                   *

 *          PRELIMINARY FLUX DATA FOR 7 EUV LINES(OR LINE GROUPS)
                                   *          ===================================================
                                                                   *

 *  FROM AE-E EUVS OBSERVATIONS FROM JUNE 1977 TO 30 DEC 1979
                                   *                                      -----------------------
                                                                   *

 *    THE 7 WAVELENGTHS COVERED IN THIS DATA SET ARE
                                   *
                                                                   *   1    H LYMAN ALPHA 1216 A
 *   2             BETA 1026 A
                                   *   3    HE I           584 A
                                                                   *   4    HE II            304 A
 *   5    O IV GROUP      554 A
                                   *   6    FE X BLEND     175 A (NOM.)
                                                                   *   7    MG X             609 A

 *
                                   *
                                                                   *

 *  IT MUST BE EMPHASIZED THAT  "ABSOLUTE" VALUES REFLECT ESTIMATES.
                                   *                                ==================================
==
                                                                   *

 *        THESE ESTIMATES ARE BASED ON THE FOLLOWING WORKING ASSUMPTIONS:
                                   *          (A) ADOPTING AERONOMICAL REF. SPECTRUM 'F74113'(HEROUX AN
D
                                                                   *                HINTEREGGER, 1978) F
OR ABSOLUTE VALUES ON 25 APRIL 1974.
 *        (B) EXTRAPOLATING AE-C EUVS OBSERVATIONS FROM 1974 THROUGH JULY
                                   *              1976 TO ESTABLISH ESTIMATED REFERENCE FLUXES FOR JULY
 1976
                                                                   *                (F76REF) ADOPTED AS
'CALIBRATION' OF THE AE-E INSTRUMENT. THE LATTER
 *          APPEARS TO HAVE BECOME VERY STABLE BY THEN.  F76REF WAS THEN ATTACHED TO OUR
                                   *              BASIC OBSERVATIONAL AE-E REFERENCE DATA SET FOR JULY
1976
                                                                   *                -----------------
-------------------------------------
 *          WHICH REPRESENTS AVERAGES OF CAREFULLY SELECTED AE-E OBSERVATONS AT
                                   *              ALL WAVELENGTHS (INCLUDING ALL GOOD OBSERVATIONS OF D
ATE RANGE
                                                                   *                76195-76210 UNDER SO
LAR CONDITIONS OF A SPOTLESS DISK, NO
 *          VISIBLE ACTIVE REGIONS, AND NO SIGNIFICANT DAY-TO-DAY VARIATIONS).
                                   *          (C) ASSUMING THAT THE AE-E INSTRUMENT SENSITIVITIES HAVE
NOT
                                                                   *                DEGRADED, I.E. REMAI
NED CONSTANT THROUGH 1977--1979.
 *
```