544

AEROS 1 and 2

EUV SPECTRA DATA

72-100A-04A

74-055A-04A

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1. INTRODUCTION:

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP's).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

When printing, special settings may be required to make the text box appear on the printed output.

Version	Date	Person	Page	Description of Change
01				
02				

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC
INFORMATION SYSTEM:

http://nssdc.gsfc.nasa.gov/nmc/

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There
you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

a. Associated Documents   To find associated documents you will need to
                                   know the document ID number and then click here.
                        http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/

b. Core Catalog Materials

AEROS 1 & 2

EUV SPECTRA DATA, TAPE

72-100A-04A SOUV-00022

74-055A-04A

This data set has been restored. There was originally
1 9-track, 1600 BPI tape written in BIN. There is 1 restored tape.
The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI.
The tape was created on an UNIVAC 1100 computer. The DR and DS numbers
along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	D#	FILES	TIME SPAN
DR03647	DS03647	D47969	1	12/23/72 - 08/05/73 (AEROS 1)
				07/21/74 - 07/03/75 (AEROS 2)

AEROS A AND B

EUV/SPECTRA DATA

72-100A-04A

74-055A-04A

This data set catalog consists of 1 tape. The tape was created on a UNIVAC 1100 computer. The tapes are 1600 BPI, binary, 9 track, with one file of data. The D and C numbers are as follows:

D#	C#	TIME SPAN	
D-47969	C-22438	12/23/72 - 08/05/73	(AEROS A)
		07/21/74 - 07/03/75	(AEROS B)

* AEROS B data starts at record 23.

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Description of magnetic tape "AEROS-EUV"

This tape summarizes the observations of the EUV-spectrometer flown
in 1972 ... 75 on satellites AEROS-A and -B. These were the first
instruments of this kind which had an on-board calibration device.
A description of the instrument was given by the experimenter
G. SCHMIDTKE et al. in J. Geophys. 40 (1974), 577 (see also the
report of the AEROS-team: Ergebnisse des AEROS-Satellitenprogramms,
Heidelberg 1980, which can be found at WDC).

Using the calibrations the recorded spectra were quantitatively
evaluated in 42 spectral ranges (see annexed example table for 19.
Jan. 1973). These had been chosen by G. SCHMIDTKE (in agreement with
H. HINTEREGGER) so as to be adapted to the needs of aeronomy. Note
that for ranges marked 'unaufgelöst' not the total energy flux in
that specific range is given but only that obtained after subtrac-
tion of the individually marked emission lines in the same range.
(E.g. for range 80.o - 63.o the three emissions marked before, i.e.
OV, cont., O III, must be added in order to get the total emission
in that range while for 46.o - 37.o no specific emission is marked
such that the indication gives directly the total emission.)

Since for some applications, in particular indicing (see SCHMIDTKE
Geophys. Res. Lett. 3, (1976), 573) intensities in broader spectral
ranges are of some interest, after the 42 indications we give yet
the total intensity in 8 subranges, then in 2 and finally in the
whole range of the instrument from 105 to 16 nm. Thus the total num-
ber of wavelength ranges noted per observation is 42 + 8 + 2 + 1 = 53;
for each of these we give the energy flux from the full disk in
μwm^{-2} and also the photon flux in $m^{-2}s^{-1}$. So we have a total of
106 measured values per observation (of which, of cause, all but
42 are redundant). Note that lack of suitable observation is either
marked by a negative integer or (most often) by zero intensity.
(Correctly measured intensities must always be greater than zero.)

The number of spectra per day was variable between one and twelve according to the conditions of the satellite. One important difference between the two AEROS missions should be held in mind: while data from 1974 and 75 can all be considered as being uninfluenced by absorption in the terrestrial atmosphere (because they were corrected, where needed) this is not so for the 1973 data for which the effectively measured intensities (i.e. including loss by absorption) are given. The solar zenith angle at the satellite and the altitude of this latter are, however, given and corrections are left for the user to make. Anyway, only a small part of the data (where the height was less than 250 km) might be influenced by absorption.

Daily average spectra have been published as reports of the former 'Fraunhofer-Institut für physikalische Weltraumforschung' at Freiburg (F.R.G.):
for AEROS-A (Dec. 1972 - Aug. 1973): IPW-WB3 (1978)
for AEROS-B (July 1974 - Sept. 1975): IPW-WB11 (1980).
Copies of these exist at the WDC's.
Different from these daily average data all usable individual measurements of full spectra are given on the tape. (Only during the last months of the second mission one channel of the instrument had failed so that all spectra cover only half of the total range).

The tape has the following format:

1/2 inch, 9 tracks (so that per character these are 8 valid bits plus one for (odd) parity);
1600 B.p.i. ;
double words of 9 Bytes each (i.e. 4 and half Bytes (36 bits) for one word).

A block length of 2320 words is used throughout; all blocks have identic structure (see 'coding' below). The whole data set is given in chronological order (both missions) in one file ended with two EOF marks at the very end.

Each block has 20 'lines' of equal structure, each of which contains 116 words with 36 valid bits each. Each line gives one individual spectrum.

Coding (in lines of 116 words each) is as follows:

Word no.	dec.digit	contents	dec.digit	
1	7..3	11111 for mission A 22220 for mission B	2..o 3..o	measurement no
2	4..o	1oo x solar zenith angle χ /°		
3	1..o	1o x kp (magn. activity)		
4	2..o	Zürich sunspot number		
5	2..o	COVINGTON's solar (1o.7 cm) noise index		
6	5..o	date (5,4 day; 3.2 month; 1,o year)		
7	5..o	Univ. time (5,4 hour; 3,2 min; 1,o s)		
8	4..o	modif. Julian date (MJD1, unit d)		
9	5..o	Julian microday (MJD2, unit 10^{-6} d)		
1o..51		energy flux / μ Wm^{-2} in 42 wavelength ranges		
52..59		" " in 8 subranges		
6o,61		" " in 2 subranges		
62		" " total		
63..1o4		photon flux / 10^{10} m^{-2}s^{-1} in 42 wavelength ran		
1o5..112		" " in 8 subranges		
113...114		" " in 2 subranges		
115		" " total		
116	5..o	av. height of satellite / m		

Missing values: negative number (for words 1...9 and 116)
                   zero (for intensity values: 1o...115)

Wellenlänge bzw. Bereich	Identifikation	Energie-fluß $\mu W\ m^{-2}$	Photonen-fluß $10^{12} m^{-2} s^{-1}$
103.8+103.2	O VI	86	45
102.57	H Ly-2	77	40
99.10	N III	14	7
97.70	C III	106	52
97.25	H Ly-3	16	8
94.97	H Ly-4	9	4
94.45	S VI	3	1
102.7-91.1	unaufgelöst	45	22
91.1-89.0	H cont	92	42
89.0-86.0	H cont	81	36
83.42	O II,III	14	6
86.0-83.0	H cont	45	19
83.0-80.0	H cont	23	10
91.1-80.0	unaufgelöst	10	4
79.02+78.77	O IV	14	5
77.04	Ne VIII	7	3
80.0-77.0	H cont	16	6
76.04	O V	6	2
77.0-74.0	H cont	10	4
70.34	O III	8	3
80.0-63.0	unaufgelöst	25	9
62.97	O V	60	19
62.53	Mg X	15	5
60.98	Mg X	31	9
58.43	He I	55	16
55.44	O IV	26	7
52.11	Si XII	12	3
50.4-47.0	HeI cont	47	12
49.93	Si XII	15	4
46.52	Ne VII	10	2
63.0-46.0	unaufgelöst	37	10
46.0-37.0	unaufgelöst	33	7
36.81	Mg IX	44	8
36.07	Fe XVI	18	3
33.54	Fe XVI	40	7
30.38	He II	572	87
28.41	Fe XV	63	9
37.0-28.0	unaufgelöst	221	36
28.0-23.1	unaufgelöst	359	46
23.1-20.5	unaufgelöst	190	21
20.5-17.6	unaufgelöst	761	73
17.6-15.5	unaufgelöst	142	12
102.7-91.1	integral	270	134
91.1-80.0	integral	265	117
80.0-63.0	integral	86	32
63.0-46.0	integral	308	87
46.0-37.0	integral	33	7
37.0-28.0	integral	958	150
28.0-20.5	integral	549	67
20.5-15.5	integral	903	85
103 – 46	integral	929	370

EXE TPDUMP ES

DUMP CF TAPE CN1114

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(  96 )   ...C2 2642   ...C 165286   CC613060   0C0012135 7   C00.1532234   0C0.12540347   CC000404564   000000671116
( 1008)   ..0C663742   0C0C0C214377   CC01057270   0000000074514   000003275560   080031745763   000003145133   000001555060
( 1056)   .  12 13.1   ..11556164   CCCC6671   CCCCC016444   CCC0C0001161   0007CC010377   CCCCC0001163   00000000521
( 1104)   .  C163   C.CC0C03453   .CC6736   CCCC1  57 1   CCC2C.C4772   CCCC((03044   CCCC00001433   C0000000552
( 1152)   0000000C0700   0C000C000337   0CC00001021   0000030C267   5001040C476   0CC00000345   CCCC00001426   000000003216
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( 2016)   CCC0C027562   0C000C023751   0CC00005437   90C C  155   C00.10 1223   000.0034010   C0000014141   000000017304
( 2064)   CCC.0C3533   4111C115513   CC173246   CCCC2675446   CCC05233C134   000 0001402C   030000000024   000000000045
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( 216 )   ..0C275456   0CC0C032651   CC17155   0C0C00 542   0C00136216   0C0C023702C   0CCCC211421   CC000030655
( 22 8)   C00C0C115101   0CC0C050054   0CC00020721   000030027661   000000013743   000000031746   000000012046   000000026560
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               RECS.   INPUT   SIZE   PERM ZERO P   SHORT UNDEF. #RECS. TOTAL#
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START TIME 1 / 1/92 10: 2:48   STOP TIME 1 /01/92 1 : 3: 5