DATA SET CATALOG #94

OGO-I and OGO-III Spectometer

64-054A-21I

66-049A-22K

1 tape

I. INTRODUCTION

The development of the Outer Zone Electron Model AE-4 was based on electron count rate data from spacecraft experiments flown between 1959 and 1967. The AE-4 model is a functional representation of time-averaged data profiles with respect to B/B_0, L, local time, and energy obtained from each of several data sets. The electron count rate data from the Electron Spectrometer Experiments (64-054A-21 and 66-049A-22*) flown on OGOs 1 and 3 by the University of Minnesota were the principal data used in defining the energy spectra for the AE-4 model. This paper describes the reduction of the data from microfilmed listings of spectrometer rates vs. pitch angle at discrete L (data sets 64-054A-21F and 66-049A-22F*) and plots of spectrometer rates vs. L (data sets 64-054A-21E and 66-049A-22E*) produced by these experiments.

The University of Minnesota experiments on OGOs 1 and 3 consisted of physically identical spectrometers. Comparison of the data over diverse time periods was facilitated by the similarity of the spectrometers. The spatial coverage and time coverage allowed analysis of the fluxes in the slot region (L = 2.4 to 4.0) over the solar cycle period from minimum to near maximum. Data from L = 1.3 to 7.0 were also studied.

*National Space Science Data Center (NSSDC) experiment and data set identification numbers are based on international designations for spacecraft. The first five digits and letter (64-054A) identify a spacecraft. The following two digits (-21) identify an experiment. The letter appended to the experiment identification (F in -21F) identifies a unique body of data and/or supporting information associated with a given experiment.

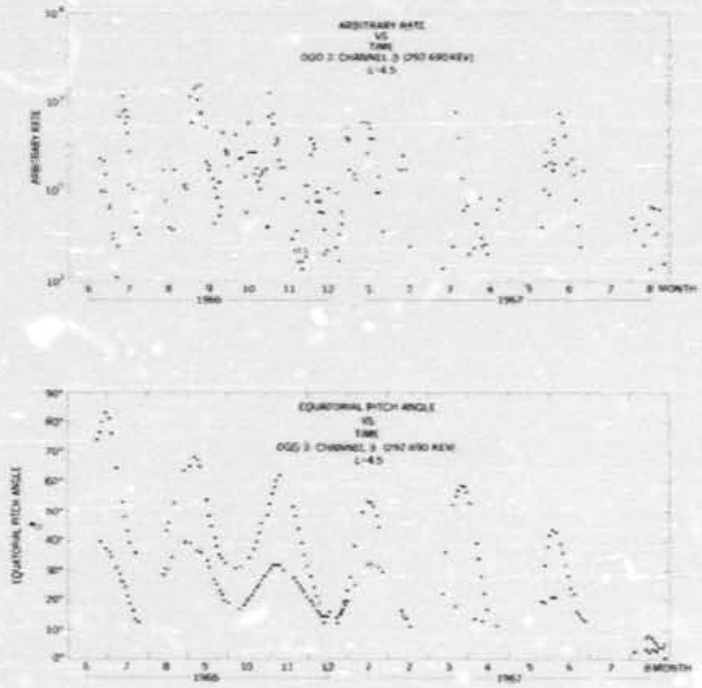

Figure Set 2 - Typical Case Which Yielded Acceptable Pitch Angle Distribution for OGO 3

OGO 1 & 3 SPECTROMETER 6/12/73
64-054A-21I
66-049A-22K

The time spans for the four files on D-5577 are:

File 1	OGO 1	9/15/64 - 11/24/65	
2	OGO 1	9/13/64 - 7/9/67	
3	OGO 3	4/22/65 - 12/27/67	6/11/66
4	OGO-3	6/11/66 - 12/25/67	

The times for files 1-3 are written DY/MN/YR
File 4 is mixed - some dates are written DY/MN/YR and some are MN/DY/YR.

OGO 3 was launched 6/7/66 yet the data in file 3 begins 4/22/65.

The time spans found for files 1-3 do no correspond with what is in the data set catalog.

L 1.7 TIME 11/11/60 at end of 1st file > OGO-1
L 6.0 CHANNEL 1 4/26/60

APPENDIX B

LISTINGS FOR PROGRAM GLSWS

Preliminary
From NSSDC 71-08

APPENDIX ___

OGO 1 and OGO 3 Magnetometer

Data Sets 64-054A-21I, -049A-22K

New data sets for the OGO 1 and 3 University of Minnesota electron spectrometer experiments were created as a result of data reduction efforts for the AE-4 electron model. Details of data reduction are given in the text. The new data sets each consist of two files of data on tape. One file contains inner zone data; the other contains outer zone data. All two data sets were combined on one magnetic tape for convenience of storage. The tape characteristics and format follow.

Tape Number:

File 1: OGO 1 64-054A-21I Inner zone electron data, L = 1.3-2.4. All data originated from data set 64-054A-21I. Sept. '64 to Dec. '67.

File 2: OGO 1 64-054A-21I Outer zone electron data, L = 2.4-7.0. Sept. '64 to Dec. '67.

File 3: OGO 3 66-049A-22K Inner zone electron data, L = 1.3-2.4. All data originated from data set 66-049A-22I. Jan '66 to Dec. '67.

File 4: OGO 3 66-049A-22K Outer Zone Electron data, L = 2.4-7.0. Jan. '66 to Dec. '67

Density:	556 BPI	
Mode:	BCD	
Parity:	EVEN	
Record Length:	64 Character	
Tracks:	7	
Machine:	IBM 7094	
Tape No:	D-05577	C-04692

```
$NAME          .UN06.=.UN03.
$IBFTC FLUXCO  NODD,NODECK,H94/2,XR7
C     PROGRAM FLUX CONVERSION -- REVISED AUG 69 AT NSSDC BY GJW
C     STANDARD INPUT UNIT = TAPE 5.  STANDARD OUTPUT UNIT = TAPE 6
C     FOR USE AT NSSDC USE $NAME CARDS TO CONVERT UNITS 5,6 TO 2,3.
C     FOR PUNCH CARD OUTPUT OPTION, TAPE 8 IS WRITTEN.
      DIMENSION B(100),BINTR(100),SJ(100),SJINTR(100),Y(210),YINTR(100)
      DIMENSION DATAP(210),DATAF(210),REAL(210),EXTRA(210)
      DIMENSION N(21),ALOGSJ(210),TITLE(30),KON(10)
      DIMENSION PDATA(10),FDATA(10),SLOPE(210)
      DIMENSION  F(36,10) ,IKMAX(14)
      DIMENSION THR(10),EKS(3)
      COMMON B,BINTR,SJ,SJINTR,Y,YINTR,DATAP,DATAF,REAL,EXTRA,N,TITLE
      COMMON KON,SLOPE,ALOGSJ,PDATA,FDATA,LER,INTFLG,ALPHA
      COMMON /FUNC/ NBELOW,NABOV,LOW,NS
      REAL L
      DATA NCASE/200/,MAXITR/500/,INTAPE/5/,IPUNCH/0/,LFLAGX/0/,EPS/0./
      DATA N1/0/,N2/0/
C
C
C*****************************************************************
      DATA IK/0/, IL/1/
C     THE FOLLOWING DATA STATEMENT SPECIFIES THE NUMBER OF CHANNELS
C     FOR EACH L-SET FOR WHICH DATA WILL BE SUPPLIED TO THE PROGRAM.
C     IF IKMAX IS LESS THAN 5 FOR ANY  L-SET, THE PROGRAM ASSUMES THAT
C     CHANNELS 1 THROUGH IKMAX ARE THE ONES PROVIDED.  SINCE IKMAX IS
C     DATA DEPENDENT, THE DATA STATEMENT MUST BE CHANGED FOR EACH
C     APPLICATION.
      DATA IKMAX /5,5,5,4,4,5/
      IKMAX = IKMAX * 2
C*****************************************************************
C
C
      ALPHA=.005
      LER=0
      NS=100
      INTFLG=0
C     NAMELIST /SET1/LFLAGX,NCASE,MAXITR,EPS,LER,INTAPE,INTFLG,IPUNCH
C    1,ALPHA
 100  FORMAT (1H1)
 900  FORMAT (10A6,6X,I1,I2,1X,I1,I1,I3,F5.3)
 901  FORMAT(1H0,48X,12HDATA LISTING  ,/,(I5,2(1PE20.8),I10,2(1PE20.8))) )
 902  FORMAT(4H0BC=,F10.5,5X,3HBE=,F10.5)
 903  FORMAT(29H1N1,N2,LFLAGX,B,Y,BINTR,YINTR,/,3I5,/,(I5,2(1PE20.8)))
 904  FORMAT(15H1N3,DATAP,DATAF,/,I5,/,(I5,2E20.8))
 905  FORMAT(1H1,2X,1HI,1TY,1HB,19X,1HJ,16X,6HLOG(J),//,
     1(I5,3(1PE20.8)))
 906  FORMAT ( 35H1WE SEEM TO HAVE INPUTED ONLY ZEROS ,/,
     1 18H EXECUTION DELETED )
 907  FORMAT (1H1, (4I5))
 908  FORMAT (15H1B,J,LOG, SLOPE,/,(I5,3(1PE20.8)))
 909  FORMAT(9X,I4,16X,I4,16X,I4,16X,I4)
 910  FORMAT(10X,7H NCASE=I4,1H,,10X,7HMAXITR=I4,1H,/,
     110X,7HINTAPE=I4,1H,,10X,7HINTFLG=I4,1H,/,
     210X,7HIPUNCH=I4,1H,,10X,7HLFLAGX=I4,1H,/,
     310X,7H  LFMT=I4,1H,,7H   LER=I4,1H,)
 911  FORMAT(10X,7H   EPS=F10.5,1H,,4X,7H ALPHA=F10.5)
 912  FORMAT(A3,6X,E10.4,10X,E10.4,10X,E10.4,10X,E10.4)
```

The format for header records, data records, and trailer records follows. This sequence is repeated for each channel and L-set in each file in the following manner:

Channel 1	$L = L_1$
Channel 1	$L = L_2$
. .	. .
. .	. .
Channel 1	$L = L_n$
Channel 2	$L = L_1$
. .	. .
. .	. .
Channel 5	$L = L_n$*

* Data may not exist for all channels at all L values.

HEADER CARD

DATA CARDS

TRAILER CARD

```
      LOW=J1
      NABOV=J2
      CUT=DATAP(J2)
      OPT=0.
      VAR(1)=DATAP(J1)
      IF(I.EQ.J3)VAR(1)=DATAP(J1)*(1.+ALPHA)
      VAR(2)=0.
      HMAX=(CUT-VAR(1))/3.
      HMIN=(CUT-VAR(1))/FLOAT(MAXITR)
      DER(1)=HMIN*4.
      DO 7 I1=1,100
7     TEMP(I)=0.
      CALL AUX2
      IF(LER.GE.0.AND.LER.NE.IGRAL2)GO TO 18
      WRITE(6,902)J1,J2
      WRITE(6,900)DER,VAR,EU,EL,HMAX,HMIN,DATAP(NBELOW),OPT
18    DO 8 J=1,MAXITR
      CALL F4AMRK(VAR,DER,AUX2,NV,OPT,EU,EL,HMAX,HMIN,TEMP)
      IF(VAR(1)+DER(1).GE.CUT)GO TO 9
8     CONTINUE
9     OPT=1.
      DER(1)=CUT-VAR(1)
      DO 10 J=1,100
10    TEMP(J)=0.
      CALL AUX2
      CALL F4AMRK(VAR,DER,AUX2,NV,OPT,EU,EL,HMAX,HMIN,TEMP)
6     REAL(NBELOW)=REAL(NBELOW)+VAR(2)
      J3=J3+1
      IF(J3.GT.J4)GO TO 16
      EXTRA(NBELOW)=0.
      DO 11 I=J3,J4,2
      J1=N(I-1)
      LOW=J1
      J2=N(I)
      NABOV=J2
      CUT=DATAP(J2)
      OPT=0.
      VAR(1)=DATAP(J1)
      VAR(2)=0.
      HMAX=(CUT-VAR(1))/3.
      HMIN=(CUT-VAR(1))/FLOAT(MAXITR)
      DER(1)=HMIN*4.
      TEST2=0.
      DO 12 I1=1,100
12    TEMP(I1)=0.
      CALL AUX2
      IF(LER.GE.0.AND.LER.NE.IGRAL2)GO TO 19
      WRITE(6,902)J1,J2
      WRITE(6,900)DER,VAR,EU,EL,HMAX,HMIN,DATAP(NBELOW),OPT
19    DO 13 J1=1,MAXITR
      CALL F4AMRK(VAR,DER,AUX2,NV,OPT,EU,EL,HMAX,HMIN,TEMP)
      IF(VAR(1)+DER(1).GE.CUT)GO TO 14
13    CONTINUE
14    OPT=1.
      DER(1)=CUT-VAR(1)
      DO 15 J1=1,100
15    TEMP(J1)=0.
      CALL AUX2
```

[illegible]

	COLUMN	FORMAT	SYMBOL	DESCRIPTION
HEADER CARD	1-44	A		Alphanumeric description of data that follows. Appears at the beginning of each channel-L set.
	45	I		Channel number (1,2,3,4,5)
	46-51	A		Continuation of alphanumeric description
	52-56	F5.2		L-value.
DATA CARD	1-8	E8.2	[illegible]	Arbitrary rate.
	9-15	F7.3	[illegible]	**B/BO. Ratio of magnetic field strength to equatorial magnetic field strength for the same L-value.
	16-22	F7.3	[illegible]	**Local time in hours.
	23-29	F7.3		Equatorial pitch angle in degrees.
	30-3[illegible]	F7.3	[illegible]	Universal time in hours and decimal fraction.
	38-39	I2	[illegible]	Month
	41-42	I1	[illegible]	Day of Month
	44-45	I2	[illegible]	Last two digits of year.
	71-75	I5	ID	Ref. NASA SP-3024 Vol. 1 pp. 10-11. An internal identification code.
	76-80	F5.2	[illegible]	L-value
TRAILER CARD	38-39	I2		The number 99 in this field indicates the end of data for this L-value for this channel. Another L-value follows.
				The number 90 in this field indicates the end of data. An end of file follows.

** These fields are blank for inner zone data, Files 1 and 3.

1.00E 00	8.97	3.27	-0.	99	-0	66		-9	9913 4.00

000-3(000-01) ELECTRON SPECTROMETER CHANNEL 5 L= 6.00

3.00E-01	1.33	23.20	70.50	7	11	66	1	17	9915 6.00
3.40E-01	1.06	23.20	65.80	7	13	66	1	18	9915 6.00
3.00E-01	3.77	16.22	20.50	7	15	66	0	20	9915 6.00
2.10E-01	1.16	22.67	56.00	7	17	66	1	20	9915 6.00
2.80E-01	1.00	19.20	73.00	9	9	66	1	47	9915 6.00
2.20E-01	2.19	13.13	32.00	9	10	66	0	48	9915 6.00
7.80E-01	2.52	12.80	28.00	9	14	66	0	50	9915 6.00
2.30E-01	1.00	15.67	61.00	11	1	66	1	73	9915 6.00
4.00E-01	1.31	15.40	68.30	11	5	66	1	75	9915 6.00
4.70E-01	1.31	15.27	67.10	11	7	66	1	76	9915 6.00

90

NSSDC

71-08

THE REDUCTION AND ANALYSIS OF ELECTRON DATA FOR OUTER ZONE ELECTRON MODEL AE-4

VOLUME III

OGO 1 and 3

UNIVERSITY OF MINNESOTA

EXPERIMENT DATA

MARCH 1971

NATIONAL SPACE SCIENCE DATA CENTER

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION - GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.

NSSDC 71-08

The Reduction and Analysis of Electron Data for Outer Zone Electron Model AE-4

Volume III
OGO 1 and 3 University of Minnesota
Experiment Data

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