Can 9/96

793

ISEE 2

Multi-Coord Ephemeris on OD

77-102B-00K

Decom Mag Data on OD

77-102B-04S

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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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

ISEE-1
MAGNETOMTER DATA & DOCOMMUTED

THESE DATA SET CONSIST OF 10 OPTIMEN 1000M WRITE –ONCE-READ-MANY (WORM) OPTICAL DISK PLATTERS, COPY TO ON DLT.

DD#	DATA SET ID	DSC#	TIME SPAM
DD109640	ISEE-1 77-102A-04X	791	
	ISEE-1 77-102B-04S	793	

CONTAIN 20 OPTICAL PLATTERS SIDE

FILES: 8,346

ISEE 2

MULTI-COORDINATE EPHEMERIS (MER)
77-102B-00K

DOCOMMUTATED (DECOM) MAGNETOMETER DATA
77-102B-04S

These data sets consist of ten Optimem 1000M Write-Once-Read-Many (WORM) optical disk platters. A copy of the format has been included.

77-102B-00K XXNO-00485

KV#	MCE LOG VOL INDENT	DATA GRPS	TIME SPAN
KV000034	USA_NASA_NSSD_IC20_0001A	0001-0534	10/22/77 - 01/02/83
	0001B	0535-1028	01/02/83 - 09/26/87

77-102B-04S SPMS-00161

KV#	MCE LOG VOL INDENT	DATA GRPS	TIME SPAN
KV000044	UAS_NASA_NSSD_IC2D_0001A	0001-0005	10/22/77 - 11/18/77
		0007-0041	11/28/77 - 04/12/78
	0001B	0042-0108	04/12/78 - 12/03/78
KV000045	UAS_NASA_NSSD_IC2D_0002A	0109-0115	12/03/78 - 12/27/78
		0117	12/31/78 - 01/02/79
		0119-0173	01/07/79 - 07/17/79
	0002B	0152-0207	05/02/79 - 11/14/79
KV000046	UAS_NASA_NSSD_IC2D_0003A	0236-0247	02/20/80 - 04/02/80
		0249	04/06/80 - 04/09/80
		0252-0296	04/13/80 - 09/20/80
	0003B	0297-0346	09/21/80 - 03/14/81
KV000047	UAS_NASA_NSSD_IC2D_0004A	0347-0389	03/15/81 - 08/12/81
	0004B	0390-0461	08/12/81 - 04/21/82

77-102A-04X

KV#	MCE LOG VOL INDENT	DATA GRPS	TIME SPAN
KV000048	UAS_NASA_NSSD_IC2D_0005A	0462-0535	04/21/82 - 01/04/83
	0005B	0536-0606	01/05/83 - 09/11/83
		0608-0613	09/14/83 - 10/05/83
KV000049	UAS_NASA_NSSD_IC2D_0006A	0614-0526	10/05/83 - 11/20/83
		0628-0677	11/23/83 - 05/16/84
	0006B	0678-0752	05/16/84 - 02/02/85
KV000050	UAS_NASA_NSSD_IC2D_0007A	0753-0841	02/03/85 - 12/10/85
	0007B	0842-0885	12/11/85 - 05/14/86
KV000051	UAS_NASA_NSSD_IC2D_0008A	0886-0937	05/14/86 - 11/12/86
	0008B	0938-1009	11/12/86 - 07/18/87
KV000052	UAS_NASA_NSSD_IC2D_0009A	1010-1029	07/19/87 - 09/26/87
		0006	11/18/77 - 11/23/77
		0007	11/23/77 - 11/27/77
		0116	12/27/78 - 12/30/78
		0118	01/03/79 - 01/07/79
		0248	04/02/80 - 04/06/80
		0250	04/09/80 - 04/12/80
		0607	09/11/83 - 09/14/83
		0627	11/20/83 - 11/23/83
	0009B	NONE	EMPTY DISK

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SANTA BARBARA • SANTA CRUZ

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October 4, 1993

Enclosed in this box are 10 Optimem 1000M Write-Once-Read-Many (WORM) optical disk platters containing International Sun-Earth Explorer #2 (ISEE-2) Multi-Coordinate Ephemeris (MCE) data [1 disk] and Decommutated (DECOM) Magnetometer data [9 disks] at highest resolution as received from Goddard Space Flight Center.

These disks were written using NSSDC SOAR software and may be accessed using DEC/VMS files-11 commands, for example, "MOUNT/NOWRITE DUC0: ISEE2DEC". Each disk logical volume (one side of a disk) contains a volume description file in Standard Formatted Data Units (SFDU) and has the file name "[000000]VOLDESC.SFD". Also, each logical volume includes a file containing the structure of the data files in SFDU format. These files are named "[000000]MCE.SFD" for the MCE logical volumes and "[000000]DECOM2.SFD" for the DECOM logical volumes. Finally, software has been archived on each logical volume that demonstrates how to read and process these datasets. For a description of the software see the file "[000000]AAREADME.TXT" on the MCE logical volumes and the file "[SOURCE]AAREADME.TXT" on the DECOM logical volumes. Printed copies of all the VOLDESC.SFD files, along with one copy of MCE.SFD, DECOM2.SFD and the AAREADME.TXT files have been included for reference.

Please note that each logical volume has an NSSDC logical volume identification number. Technical support for the preparation of SFDU documentation was provided by Doug Gross of the NSSDC Standards Office, (310)513-1693. Included on the next page is a list of logical volume ID numbers and the data coverage on each logical volume.

If you have any questions please contact:

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One hundred twenty-five years of service.

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77-102B-00K
77-102B-04S

MCE LOG VOL IDENT	DATA GROUPS	TIME COVERAGE
USA_NASA_NSSD_IC20_0001A	0001 - 0534	10/22/77 14:49 - 01/02/83 05:59
USA_NASA_NSSD_IC20_0001B	0535 - 1028	01/02/83 00:00 - 09/26/87 05:59

DECOM LOG VOL IDENT	DATA GROUPS	TIME COVERAGE
USA_NASA_NSSD_IC2D_0001A	0001 - 0005	10/22/77 19:15 - 11/18/77 00:00
	0008 - 0041	11/28/77 00:00 - 04/12/78 00:04
USA_NASA_NSSD_IC2D_0001B	0042 - 0108	04/12/78 00:06 - 12/03/78 00:22
USA_NASA_NSSD_IC2D_0002A	0109 - 0115	12/03/78 01:08 - 12/27/78 00:26
	0117	12/31/78 01:38 - 01/02/79 22:29
	0119 - 0173	01/07/79 03:25 - 07/17/79 21:53
USA_NASA_NSSD_IC2D_0002B	0174 - 0235	07/18/79 01:06 - 02/19/80 23:02
USA_NASA_NSSD_IC2D_0003A	0236 - 0247	02/20/80 01:11 - 04/02/80 00:43
	0249	04/06/80 00:36 - 04/09/80 00:26
	0251 - 0296	04/13/80 02:25 - 09/20/80 23:46
USA_NASA_NSSD_IC2D_0003B	0297 - 0346	09/21/80 01:00 - 03/14/81 20:12
USA_NASA_NSSD_IC2D_0004A	0347 - 0389	03/15/81 00:24 - 08/12/81 00:52
USA_NASA_NSSD_IC2D_0004B	0390 - 0461	08/12/81 00:57 - 04/21/82 00:55
USA_NASA_NSSD_IC2D_0005A	0462 - 0535	04/21/82 00:55 - 01/04/83 22:43
USA_NASA_NSSD_IC2D_0005B	0536 - 0606	01/05/83 04:44 - 09/11/83 00:43
	0608 - 0613	09/14/83 02:00 - 10/05/83 00:09
USA_NASA_NSSD_IC2D_0006A	0614 - 0626	10/05/83 00:09 - 11/20/83 01:31
	0628 - 0677	11/23/83 01:04 - 05/16/84 00:17
USA_NASA_NSSD_IC2D_0006B	0678 - 0752	05/16/84 01:12 - 02/02/85 21:37
USA_NASA_NSSD_IC2D_0007A	0753 - 0841	02/03/85 00:31 - 12/10/85 23:16
USA_NASA_NSSD_IC2D_0007B	0842 - 0885	12/11/85 01:00 - 05/14/86 00:44
USA_NASA_NSSD_IC2D_0008A	0886 - 0937	05/14/86 00:49 - 11/12/86 00:37
USA_NASA_NSSD_IC2D_0008B	0938 - 1009	11/12/86 00:32 - 07/18/87 22:52
USA_NASA_NSSD_IC2D_0009A	1010 - 1029	07/19/87 00:17 - 09/26/87 06:11
	0006	11/18/77 00:00 - 11/23/77 01:02
	0007	11/23/77 03:39 - 11/27/77 23:59
	0116	12/27/78 01:17 - 12/30/78 23:33
	0118	01/03/79 02:12 - 01/07/79 01:04
	0248	04/02/80 00:38 - 04/06/80 00:37
	0250	04/09/80 00:26 - 04/12/80 23:50
	0607	09/11/83 00:34 - 09/14/83 01:59
	0627	11/20/83 01:31 - 11/23/83 00:38
USA_NASA_NSSD_IC2D_0009B	NONE	NONE (EMPTY DISK)

MANY PATHWAYS, ONE JOURNEY
125
UC

One hundred twenty-five years of service.

DSC 793
MY-102B-00K

CCSD3FF0000500000001CCSD3CS00004markeraa
ADIDNAME=NSSD0070;
CCSD$$MARKERmarkeraaCCSD3KS00002markerbb

TYPE_OF_FILE_NAME: Multi-Coordinate Ephemeris (MCE) Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2)

TECHNICAL_CONTACT: Harry Herbert
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Los Angeles, CA 90025-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

CCSD$$MARKERmarkerbbCCSD3DF0000200000001

RECORD_TYPE_NAMES: ATTITUDE/ORBIT DATA

FILE_ATTRIBUTES: SEQUENTIAL, FIXED_RECORD_LENGTH
FIXED_RECORD_TYPE_LENGTH: 3384 BYTES
FIELD_SYNTAX_OF_ALL_DATA_FIELDS: 4-BYTE IBM_FLOATING_POINT

FILE_STRUCTURE:
Each file consists of a header record followed by a number of data records. Both types of records are 3384 bytes long and consist of 4-byte (32-bit) floating point numbers in IBM/360 format. IBM/360 floating point format has the following bit structure:

```
IBM bit position  --> 3 3222222 222211111111111
                  --> 1 0987654 32109876543210987654321 0

IBM bit structure --> 0 0000000 000000000000000000000000
                      |    |              |
           1 bit sign |    |      24 bit magnitude
          of mantissa      |        of mantissa
                           |
          7 bit exponent (in base 16)
           +64 (range is 0 to 128)
```

The implied binary point is just to the left of the mantissa. The decimal value of the IBM number is computed as:

(mantissa * (16 ** (exponent - 64))) * (-1 ** sign bit)

Thus, if the sign bit is set, the value is the negative of the number.
NOTE: Two's complement arithmetic is not used with the IBM mantissa and the IBM exponent is never negative.

CONTENTS_OF_EACH_FILE_HEADER_RECORD:

Table 2
ISEE-A or B Attitude/MCE Header Record

Word No.	Description	
1-45	GSFC TAG (1440 bits)	
46	Spare	
47-48	Satellite identification	7710201.0 for ISEE-1 7710202.0 for ISEE-2
49	Date (YYMMDD.0)	UT start time of satellite data
50	Day of year (Jan. 1 = 001)	
51	Seconds of day	

52	Date (YYMMDD.0)	UT stop time of satellite data
53	Day of year (Jan. 1 = 001)	
54	Seconds of day	
55	= delta t in seconds, if tape has equal intervals between data records (60) = 0 if tape has unequal intervals	
56-58	Spares	
59	Number of words per data record	Should be 846, incorrectly set to 75
60	Mean anomaly	
61-71	Run identification data	
72	Date (YYMMDD.0)	Coordinate system reference data
73	Day of year (Jan. 1 = 001)	
74	Apparent sidereal time in radians	
75-85	Harmonics (if applicable)	
86	Date (YYMMDD.0)	Epoch for orbit
87	Day of year (Jan. 1 = 001)	
88	Seconds of day	
89	Semi-major axis, a (km)	
90	Eccentricity, e	
91	Inclination, I (deg)	

Table 2 (Continued)

Word No.	Description
92	Right ascension of the ascending node, OMEGA (deg)
93	Time rate of change of OMEGA (deg/day)
94	Argument of perigee, omega (deg)
95	Time rate of change of omega (deg/day)
96	Period, RHO (min)
97	Time Rate of change of RHO (min/day)
98-298	Orbital elements, coefficients of drag, etc., as applicable to individual orbit generators.
299-846	Fill to same record length as data records.

CONTENTS_OF_EACH_DATA_POINT_RECORD:

Table 3
ISEE-A or B Attitude/MCE Data Record

Word No.	Description	
1	Day of year (Jan. 1 = 001)	time of orbit data
2	Milliseconds of day	in this record
3	Longitude (deg)	satellite position in

Word No.	Description
4	Latitude (deg) — geocentric coordinates
5	Longitude (deg) — satellite position in
6	Latitude (deg) — geomagnetic coordinates
7	Ro (Earth radii) a geomagnetic coordinate of the satellite position, CUL
8	r_t radial distance of the satellite from the center of the Earth (km)
9	GSEx
10	GSEy — Satellite position in Geocentric Solar Ecliptic Coordinates (km)
11	GSEz
12	GSMx
13	GSMy — Satellite position in Geocentric Solar Magnetosphere Coordinates (km)
14	GSMz
15	GSEx
16	GSEy — Moon position in Geocentric Solar Ecliptic Coordinates (km)
17	GSEz
18	GSMx
19	GSMy — Moon position in Geocentric Solar Magnetospheric Coordinates (km)
20	GSMz
21	GEIx
22	GEIy — Satellite position Geocentric Equatorial Inertial (km)
23	GEIz
24	GEIx
25	GEIy — Sun position in Geocentric Equatorial Inertial (AU)
26	GEIz
27	Longitude — Sub-solar point in geomagnetic
28	Latitude — coordinates (deg)
29	Distance from the satellite to the moon (km)
30	Distance parallel to the x-axis from the satellite to the moon (km)
31	1st row, 1st column
32	1st row, 2nd column
33	1st row, 3rd column
34	2nd row, 1st column — Geocentric Solar Ecliptic-to-Geocentric Solar Magnetospheric transformation matrix.
35	2nd row, 2nd column
36	2nd row, 3rd column
37	3rd row, 1st column

38	3rd row, 2nd column	Geocentric Equatorial Inertial-to-Geocentric Solar Ecliptic transformation matrix.
39	3rd row, 3rd column	
40	1st row, 1st column	
41	1st row, 2nd column	
42	1st row, 3rd column	
43	2nd row, 1st column	
44	2nd row, 2nd column	
45	2nd row, 3rd column	
46	3rd row, 1st column	
47	3rd row, 2nd column	
48	3rd row, 3rd column	

Table 3 (Continued)

Word No.	Description
49	Right Ascension — Satellite position in celestial inertial (deg)
50	Declination — Satellite position in celestial inertial (deg)
51	Right Ascension — Velocity vector in celestial inertial (deg)
52	Declination — Velocity vector in celestial inertial (deg)
53	Magnitude of the velocity (km/sec)
54	L McIlwain parameter (Earth radii)
55	B Magnetic field strength (nanoteslas)
56	B/Bo Ratio of the magnetic field strength at the satellite to the field strength at the invariant equator
57	Satellite-Earth-Sun angle, Lsep (deg)
58	Satellite-Earth-Moon angle (deg)
59	Right ascension — Magnetic vector in celestial inertial
60	Declination — Magnetic vector in celestial inertial
61	Longitude — Sub-solar point in (deg)
62	Latitude — Geocentric Equatorial Inertial
63	GSEx — Theoretical geomagnetic field in
64	GSEy — Geocentric Solar Ecliptic
65	GSEz — coordinates (in nanoteslas)
66	Undefined
67	Date of data (YR MO DA)
68	Longitude — Geodetic satellite position (deg)
69	Latitude — Geodetic satellite position (deg)
70	Height above spheroid (km)
71	Ascending node number (pass number)
72	Year of data

Table 3 (continued)

Word No.	Description
73	Delta x — Separation vector in GSE (km) (ISEE-A to ISEE-B)
74	Delta y — Separation vector in GSE (km) (ISEE-A to ISEE-B)
75	Delta z — Separation vector in GSE (km) (ISEE-A to ISEE-B)
76	Delta r — Separation Distance (km)
77	Vx — Velocity components of Separation vector in GSE (km/sec)
78	Vy — Velocity components of Separation vector in GSE (km/sec)
79	Vz — Velocity components of Separation vector in GSE (km/sec)
80	V — Separation rate (km/sec)
81	Spin period (seconds)
82	Ecliptic Longitude — Spin axis orientation in GSE (degrees)
83	Ecliptic Latitude — Spin axis orientation in GSE (degrees)
84	Attitude Quality Indicator
85-840	NINE MORE 84-WORD ITEMS
841-846	FILL for record size compatibility

Interpreting the Definitive Output Quality Indicator for ISEE-A and -B

Value*	Interpretation
1.	Spacecraft is in daylight; attitude accuracy is good; spin period accuracy is good.
2.	Spacecraft is in daylight; attitude accuracy is good; spin period accuracy is degraded.
3.	Spacecraft is in daylight; attitude accuracy is good; spin period contains fill**.
4.	Spacecraft is in daylight; attitude accuracy is degraded; spin period accuracy is good.
5.	Spacecraft is in daylight; attitude accuracy is degraded; spin period accuracy is degraded.
6.	Spacecraft is in daylight; attitude accuracy is degraded; spin period contains fill.
7.	Spacecraft is in daylight; attitude contains fill; spin period accuracy is good.
8.	Spacecraft is in daylight; attitude contains fill; spin period accuracy is degraded.
10.	Spacecraft is in shadow; attitude is estimated; spin period is estimated.
11.	Spacecraft is in shadow; attitude is estimated; spin period contains fill.

12.	Spacecraft is in shadow; attitude contains fill; spin period is estimated.
13.	Event occurred; spacecraft is in daylight (attitude and spin period contain fill).
14.	Event occurred; spacecraft is in shadow (attitude and spin period contain fill).
9999999.	Attitude contains fill; spin period contains fill.

* As with all data fields in the Multi-Coordinate Ephemeris data file, the quality indicator value is in IBM S/360 floating point format (Real * 4).

** Fill data items will contain a value of 9999999 (seven 9's).

MISCELLANEOUS_ATTRIBUTES:
The documentation included in the CONTENTS_OF_EACH_FILE_HEADER_RECORD and the CONTENTS_OF_EACH_DATA_POINT_RECORD were keypunched directly from the documentation originally received from GSFC, with some modifications for clarity.

/* EOF */

77-102B-045

CCSD3FF0000500000001CCSD3CS00004markeraa
ADIDNAME=NSSD0188;
CCSD$$MARKERmarkeraaCCSD3KS00002markerbb

TYPE_OF_FILE_NAME: ISEE-2 DECOM Magnetometer Data

DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2)

TECHNICAL_CONTACT: Harry Herbert
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(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

CCSD$$MARKERmarkerbbCCSD3DF0000200000001

RECORD_TYPE_NAMES: MAGNETIC_FIELD

FILE_ATTRIBUTES: SEQUENTIAL, FIXED_RECORD_LENGTH
FIXED_RECORD_TYPE_LENGTH: 2520 BYTES
SYNTAX_OF_ALL_DATA_ELEMENTS: 4-BYTE IBM_INTEGER

DISK_FILE_STRUCTURE:

Disk File Attributes: Sequential, fixed record length.
Physical Record length: 2520 bytes per block.

Data organization:

- ISEE-2 DECOM data has a total of 1028 disk files where each file contains one group of data as shipped by GSFC. The group numbers range from 0001 to 0999, and from 1001 to 1029.

Each disk file contains several internal 'tape files':

- Tape File 1
  . Header block. (The first block of the tape file)
  . Data blocks. (The rest of the blocks of the tape file)
    Each data block contains four logical records, each with a length of 628 bytes, for a total of 2512 bytes. Bytes 2513 to 2520 are used to indicate the sequential block number of the tape file.
  . EOF trailer block. (The last block of the tape file)

- Tape File 2
  . Header block. (The first block of the tape file)
  . Data blocks. (The rest of the blocks of the tape file)
    Each data block contains four logical records, each with a length of 628 bytes, for a total of 2512 bytes. Bytes 2513 to 2520 are used to indicate the sequential block number of the tape file.
  . EOF trailer block. (The last block of the tape file)

... ...

- Tape File N -- the last tape file
  . Header block. (The first block of the tape file)
  . Data blocks. (The rest of the blocks of the tape file)
    Each data block contains four logical records, each with a length of 628 bytes, for a total of 2512 bytes. Bytes 2513 to 2520 are used to indicate the sequential block number of the

tape file.
. EOF trailer block. (The last block of the tape file)

- EOF trailer block. (Repeat of the EOF trailer block)

CONTENTS_OF_EACH_FILE_HEADER_BLOCK:

Note: All integer numbers are in IBM integer format.
For example: 21 will be in hexadecimal '0015'
11 will be in hexadecimal '000B'

- Header block:
A total of 2520 bytes, with 264 bytes data and 2256 bytes of filler.

Tape file header block format:

Item No.	Word Offset	Byte Count From	- to	Size bits	Content
1	0	1	180	1440	GSFC Tag. 180 bytes for Goddard Space Flight Center internal use
2	45	181	184	32	Satellite ID number
3	46	185	188	32	Recording station ID number
4	47	189	192	32	Experiment ID number, ISEE-A, 11; ISEE-B, 21
5	48	193	196	32	Start time of data: Year, two digits
6	49	197	200	32	Start time of data: Day of year, "Jan. 1"=1
7	50	201	204	32	Start time of data: Millisecond of day
8	51	205	208	32	Stop time of data: Year, two digits
9	52	209	212	32	Stop time of data: Day of year
10	53	213	216	32	Stop time of data: Millisecond of day
11	54	217	220	32	Last spacecraft clock time in the tape file
12	55	221	224	32	Start time of next tape file: Year
13	56	225	228	32	Start time of next tape file: Day of year
14	57	229	232	32	Start time of next tape file: Millisecond
15	58	233	236	32	Next tape file spacecraft clock time start
16	59	237	240	32	%of data recovered=(Actual/anticipated)*1000
17	60	241	244	32	Number of minor frames in the tape file
18	61	245	248	32	Bit rate (4096, 16384, etc.)
19	62	249	252	32	Shipping group number (Run number)
20	63	253	256	32	Reel sequence number (Part number)
21	64	257	260	32	File sequence number on the reel
22	65	261	264	32	Orbital position data flag 0 = definitive orbit 2 = predicted orbit 3 = no orbit, propagation delay not commuted
23	66	265	2520	18048	Fill with all integer number zeros

CONTENTS_OF_EACH_DATA_BLOCK:

Note: All integer numbers are in IBM integer format.
For example: 21 will be in hexadecimal '0015'
11 will be in hexadecimal '000B'

- Data block:
The data block has a total of 2520 bytes. It contains 4 logical records, each with a length of 628 bytes, for a total of 2512 bytes. There is an 8 byte block sequential number indicator at the end of each block. Each logical record has an identical format and contains 52 bytes of logical record header, 384 bytes of 64 6-byte minor data frames, 64 bytes of spacecraft housekeeping (telemetry stream bytes 30 and 31), 64 bytes of experiment housekeeping (telemetry stream bytes 62 and 63) and 64 bytes of spacecraft housekeeping (telemetry stream bytes 94 and 95).
NOTE: Please see the MISCELLANEOUS_ATTRIBUTES section at the end of this document for additional comments concerning the housekeeping information described below.

The logical record format:

Item No.	Word Offset	Byte Count From	- to	Size bits	Content
					Logical record header - 52 bytes
1	0	1	4	32	Experiment ID number, ISEE-A 11, ISEE-B 21

2	1	5	8	32	Day of year of first bit of the minor frame
3	2	9	12	32	Millisecond of day of first bit of the minor frame
4	3	13	16	32	Spacecraft clock time for the minor frame
5	4	17	20	32	Average minor frame rate in microseconds
6	5	21	21	8	Frame counter
7		22	22	8	Fill flag in hexadecimal format 00 = fill data at some point in logical record 11 = no fill data in logical record
8		23	23	8	Bit rate flag in hexadecimal format 00 = other 01 = low bit rate 10 = high bit rate 11 = other
9		24	24	8	Time quality flag in hexadecimal format 00 = quick look 01 = fraction smoothed and delay corrected, but unverified by other stations 10 = smoothed, delay corrected and verified after adjusting the ground station time 11 = same as 10 above, but no adjustment required to ground station time
10	6	25	40	128	Data quality flag in hexadecimal format Total 16 bytes for 64 minor frames, each 2 bits for a minor frame 00 = fill data 01 = unused 10 = good (undecoded) 11 = excellent (decoded)
11	10	41	44	32	Orbital position in Geocentric Solar Ecliptic(GSE) coordinates, X component in meters.
12	11	45	48	32	Orbital position in Geocentric Solar Ecliptic(GSE) coordinates, Y component in meters.
13	12	49	52	32	Orbital position in Geocentric Solar Ecliptic(GSE) coordinates, Z component in meters.

Item No.	Word Offset	Byte Count From - to		Size bits	Content
	64 Minor data frames - 6 bytes for each minor frame word, total 384 bytes				
14	13	53	436	3072	Minor frame word(MFW) Each MFW has 6 bytes for X, Y and Z components. The arrangement of the 6 bytes is: |byte0|byte1|byte2|byte3|byte4|byte5| | X1 | Y1 | Z1 | X2 | Y2 | Z2 | Note: The Serial Command byte within the experiment housekeeping section (byte 541 of each logical data record) provides the SENSITIVITY, PRECISION and number of bits to shift left (in SINGLE PRECISION MODE). A DOUBLE PRECISION datum is a pair of bytes (16 bits) such as X2X1, Y2Y1 or Z2Z1 where the sign bit is the left most bit of X2, Y2 Z2. The sign bit is reversed to create an IBM integer value since the magnetometer used a sign bit of 1 to indicate a positive number and a sign bit of 0 to indicate a negative number. A SINGLE PRECISION datum is an 8 bit value stored anywhere within the two byte (16 bit) pairs X2X1, Y2Y1 and Z2Z1. The 8 bits are right justified in the 2 byte pair and then shifted N bits left according to the bit shift value stored in the serial command indicator. Please see the ISEE magnetometer data processing software included in this

archive for an example of how to unpack this datum.

Proj ID	Word Offset	Byte Count From	- to	Size bits	Content		
S/C Housekeeping					total 64 bytes Word offset 109, from byte 437 to 500		
	109	437	437	8	~RX1 AGC		w30 f0
		438	438	8	~RX1 SPE		w31 f0
		439	439	8	~PLATF 1 SPT		w30 f1
		440	440	8	~PLATF 3 SPT		w31 f1
	110	441	441	8	~RX1 PDET SPT		w30 f2
		442	442	8	~Thrust 2 HKT		w31 f2
		443	443	8	~MER B PEAKST		w30 f3
		444	444	8	~RCE Press High		w31 f3
	111	445	445	8	~CHARGE CURRENT		w30 f4
		446	446	8	~DISCHARGE CURRENT		w31 f4
		447	447	8	~PLATF 2 SPT		w30 f5
		448	448	8	~PLATF 4 SPT		w31 f5
	112	449	449	8	~RX2 PDET SPT		w30 f6
		450	450	8	~Thrust 1 HKT		w31 f6
		451	451	8	~Tank HKT		w30 f7
		452	452	8	~Battery SPT		w31 f7
	113	453	453	8	~A/D CALIBR 2		w30 f8
		454	454	8	~Experiment Current		w31 f8
RU		455	455	8	~IPD I/P Power,INT PD Current		w30 f9
		456	456	8	~MER A PEAKST		w31 f9
	114	457	457	8	~**********		w30 f10
		458	458	8	~**********		w31 f10
		459	459	8	~**********		w30 f11
		460	460	8	~**********		w31 f11
	115	461	461	8	~A/D CALIBR 2		w30 f12
		462	462	8	~Battery Voltage		w31 f12
		463	463	8	~Mainbuf Current	(RUD)	w30 f13
		464	464	8	~Mainbuf Voltage	(RUD)	w31 f13
	116	465	465	8	~OBL A PEAKST		w30 f14
		466	466	8	~**********		w31 f14
		467	467	8	~OBL B PEAKST		w30 f15
		468	468	8	~RCE Press Low	(RUD)	w31 f15
	117	469	469	8	~**********		w30 f16
		470	470	8	~**********		w31 f16
		471	471	8	~**********		w30 f17
		472	472	8	~**********		w31 f17
	118	473	473	8	~**********		w30 f18
		474	474	8	~**********		w31 f18
		475	475	8	~**********		w30 f19
		476	476	1	~**********		w31 f19
				1	~**********		
				1	~**********		
				1	~**********		
				1	~**********		
				1	~Coding Stat;0=Uncoded,1=Coded		
				1	~Hilo Bitrate; 0=Low ,1=High		
				1	~ENC OSC Start;0=2 on,1=1 on		
	119	477	477	8	~ALBA AMP O/P		w30 f20
		478	478	8	~ALBB AMP O/P		w31 f20
		479	479	8	~**********		w30 f21
		480	480	8	~RX2 SPE		w31 f21
	120	481	481	8	~**********		w30 f22
		482	482	8	~RX2 AGC		w31 f22
		483	483	8	~**********		w30 f23
		484	484	8	~**********		w31 f23
	121	485	485	8	~**********		w30 f24
		486	486	8	~**********		w31 f24
		487	487	8	~**********		w30 f25
		488	488	8	~**********		w31 f25
	122	489	489	8	~**********		w30 f26
		490	490	8	~**********		w31 f26
		491	491	8	~**********		w30 f27
		492	492	8	~**********		w31 f27
	123	493	493	8	~**********		w30 f28
		494	494	8	~**********		w31 f28
		495	495	1	~TX1 Coherent		w30 f29
				1	~TX2 Coherent		
				1	~TX1 ANAL		
				1	~TX2 ANAL		
				1	~TX1 RANG		

				1	~TX2 RANG			
				1	~RX1 Locked			
				1	~RX2 Locked			
		496	496	2	~TX To Ant Status 0=1121ER 1=1122OK 2=1121OK 3=1222ER			w31 f29
				1	~BATTERY CHARGE			
				2	~Pyro. Enable1/2			
				1	~BATTERY DisCharge			
				1	~HAD			
				1	~GUD			
	124	497	497	2	~FRD 1/2 0 = Off/Off 1 = Off/On 2 = On/Off 3 = On/On			w30 f30
				1	~PAD			
				1	~EGD			
				1	~KED			
				2	~AND1/2 0 = Off/Off 1 = Off/On 2 = On/Off 3 = On/On			
				1	~RUD1/2 0 = Off/Off 1 = Off/On 2 = On/Off 3 = On/On			
		498	498	1	~RUD2 0 = Off/Off 1 = Off/On 2 = On/Off 3 = On/On		(RUD)	w31 f30
				1	~Pyro.			
				1	~WBD A/B 0 = Off/Off 1 = Off/On 2 = On/Off 3 = On/On			
				4	~EPD I/P Power 0 = '24816' 1 = '248--' 2 = '24-16' 3 = '24---' 4 = '2-816' 5 = '2-8--' 6 = '2--16' 7 = '2----' 8 = '-4816' 9 = '-48--' 10= '-4-16' 11= '-4---' 12= '--816' 13= '--8--' 14= '---16' 15= 'Off'			
				1	~TA Converter 1/2 0 = Off/Off 1 = Off/On 2 = On/Off 3 = On/On		(RUD)	
		499	499	2	~TA Converter 1/2 0 = Off/Off 1 = Off/On 2 = On/Off 3 = On/On			w30 f31
				2	~TM Converter 1/2 0 = Off/Off 1 = Off/On 2 = On/Off 3 = On/On			
				1	~Main Switch			
				1	~EXT PD ISOLA			
				1	~ASUA Sun Power			
				1	~ASUA Sun Power			
		500	500	1	~ASUB Sun Power			
				1	~ASUB ALB Power			w31 f31

				1	~WBD A/B 0 = Off/Off 1 = Off/On 2 = On/Off 3 = On/On
				1	~DH Autoswitch
				1	~**********
				1	~**********
				1	~**********
				1	~**********

Proj ID	Word Offset	Byte Count From	- to	Size bits	Content	
Experiment Housekeeping					total 64 bytes Word offset 125, from byte 501 to 564	
HA	125	501	501	8	~AGC 1	w62 f0
HA		502	502	8	~AGC 2	w63 f0
HA		503	503	8	~-V Reference	w62 f1
HA		504	504	8	~Int. Cal. Status 0 = Undefine 1 = Off 2 = Stemp 7 3 = Stemp 6 4 = Stemp 5 5 = Stemp 4 6 = Stemp 3 7 = Stemp 2 8 = Stemp 1	w63 f1
PA	126	505	505	8	~H/Lem ESweep/PSweep, (PAD) EM High Voltage, +5V Power Monitor	w62 f2
PA		506	506	8	~+15V,-15V,+10V Monitor; Secem Lev 1/2	w63 f2
KE		507	507	8	~K3 Sensor HKT	w62 f3
KE		508	508	8	~K1 DIGITL SPT	w63 f3
87	127	509	509	8	~**********	w62 f4
KE		510	510	8	~+10V Power Monitor	w63 f4
89		511	511	8	~**********	w62 f5
AN2		512	512	8	~High Volt Monitor	w63 f5
RU	128	513	513	8	~FLIPPER POWER	w62 f6
RU		514	514	8	~MAG POWER MONITOR 0=off 1=on 2=undefine	w63 f6
AN2		515	515	8	~+5V Power Monitor	w62 f7
AN2		516	516	8	~F Power Convert HKT	w63 f7
HA	129	517	517	8	~VCO 1	w62 f8
HA		518	518	8	~VCO 2	w63 f8
GU		519	519	8	~+6V Power Monitor	w62 f9
GU		520	520	8	~AGC 1	w63 f9
PA	130	521	521	8	~Multiple High Voltage (PAD)	w62 f10
PA		522	522	8	~+5V Power Monitor	w63 f10
GU		523	523	8	~DC Compress	w62 f11
		524	524	8	~AGC 2	w63 f11
GU	131	525	525	2	~Ant. Selet 0 =Search 1 =Long2 2 =Long1 3 =Short	w62 f12
				3	~WB RX Frequ. 0 = Base BD 1 = 250 KHz 2 = 62 KHz 3 = 1 MHz 4 = 31 KHz 5 = 500 KHz 6 = 125 KHz 7 = 2 MHz	
				3	~RS Ch. Select 0 =Ch 0 1 =Ch 8 2 =Ch 4 3 =Ch 12 4 =Ch 2 5 =Ch 10 6 =Ch 6 7 =Ch 14 8 =Ch 1	

					9 =Ch 9		
					10=Ch 5		
					11=Ch 13		
					12=Ch 3		
					13=Ch 11		
					14=Ch 7		
					15=Ch 15		
GU		526	526	1	~RS Ch. Select	w63	f12
					0 =Ch 0		
					1 =Ch 8		
					2 =Ch 4		
					3 =Ch 12		
					4 =Ch 2		
					5 =Ch 10		
					6 =Ch 6		
					7 =Ch 14		
					8 =Ch 1		
					9 =Ch 9		
					10=Ch 5		
					11=Ch 13		
					12=Ch 3		
					13=Ch 11		
					14=Ch 7		
					15=Ch 15		
				1	~RS Ch. Status		
					0 = Sweep		
					1 = Lock		
				1	~ZMEASMT Status		
					0 = Inhibt		
					1 = Enable		
				4	~RS Ch. Monitor		
					0 =Ch 0		
					1 =Ch 8		
					2 =Ch 4		
					3 =Ch 12		
					4 =Ch 2		
					5 =Ch 10		
					6 =Ch 6		
					7 =Ch 14		
					8 =Ch 1		
					9 =Ch 9		
					10=Ch 5		
					11=Ch 13		
					12=Ch 3		
					13=Ch 11		
					14=Ch 7		
					15=Ch 15		
				1	~GML003 Verify		
AN2		527	527	8	~Detect B Current	w62	f13
AN2		528	528	8	~Power Monitor A	w63	f13
AN1	132	529	529	8	~0V,+6V,+12V Power Monitor, COLD HKT(A11)	w62	f14
AN1		530	530	8	~-200V,-6V,+10V Power Monitor, COLD HKT(A12)	w63	f14
AN2		531	531	8	~+7V Power Monitor	w62	f15
AN2		532	532	8	~+25V Power Monitor	w63	f15
HA	133	533	533	8	~VCO 3	w62	f16
		534	534	8	~AGC 3	w63	f16
KE		535	535	8	~+6V Power Monitor	w62	f17
		536	536	8	~-6V Power Monitor	w63	f17
PA	134	537	537	8	~P1 Electr. HKT	w62	f18
PA		538	538	8	~P2/3 Sensor HKT	w63	f18
KE		539	539	8	~Exp. MB Current	w62	f19
		540	540	8	~High Voltage	w63	f19
RU	135	541	541	1	~SERIAL COMMAND	w62	f20
					~H/L Sensity; 0=Low,1=High		
				1	~Precision Status; 0=Double,1=Single		
				1	~Shift Enable; 0=No, 1=Yes		
				1	~Shift Enable; 0=No, 1=Yes		
				4	~Shift bits indicator		
AN2		542	542	1	~Gain 1 Stat; 0=High, 1=Low	w63	f20
				1	~Gain 4 Stat; 0=High, 1=Low		
				1	~Gain 7 Stat; 0=High, 1=Low		
				1	~Gain 10 Stat; 0=High, 1=Low		
				1	~Ampl 2-8 Stat;0=NoSelected,1=Selected		
				1	~Ampl 3-9 Stat;0=NoSelected,1=Selected		
				1	~Ampl 5-11Stat;0=NoSelected,1=Selected		
				1	~Ampl 6-12Stat;0=NoSelected,1=Selected		
		543	543	8	~**********	w62	f21
AN2		544	544	8	~**********	w63	f21

AN2	136	545	545	8	~Detect A Current	w62 f22
AN2		546	546	8	~Power Monitor B	w63 f22
AN2		547	547	8	~HV1 Power Monitor	w62 f23
AN2		548	548	8	~HV2 Power Monitor	w63 f23
HA	137	549	549	8	~+6V,-6V Power Monitor	w62 f24
HA		550	550	8	~-6V Power Monitor	w63 f24
HA		551	551	8	~H1 Electr. SPT	w62 f25
GU		552	552	8	~G1 Electr. SPT	w63 f25
	138	553	553	8	~G3 Search SPT	w62 f26
GU		554	554	8	~G4 Short El. SPT	w63 f26
		555	555	8	~K2 Analog SPT	w62 f27
KE		556	556	8	~K3 Sensor SPT	w63 f27
AN2	139	557	557	1	~Stand Alone; 0=Stop, 1=Start	w62 f28
				1	~Stand Alone; 0=No, 1=Yes	
				1	~HV1 Status	
				1	~HV2 Status	
				2	~HV3 Status;0=Off,1=On1,2=On2,3=On3	
				2	~HV4 Status;0=Off,1=On1,2=On2,3=On3	
AN2		558	558	2	~Sequence Status B; 0=Step4,1=Step1,2=Step2,3=Step3	w63 f28
				2	~TM Status B; 0=Mode4,1=Mode1,2=Mode2,3=Mode3	
				2	~Sequence Status A; 0=Step4,1=Step1,2=Step2,3=Step3	
				2	~TM Status A; 0=Mode4,1=Mode1,2=Mode2,3=Mode3	
AN2		559	559	8	~E Electric SPT	w62 f29
AN2		560	560	8	~F Detector SPT	w63 f29
	140	561	561	8	~SENSOR TEMPERATURE(R2 Magn. SPT)	w62 f30
RU		562	562	8	~FLIPPER TEMPERATURE(R1 Elec. SPT)	w63 f30
AN1		563	563	8	~CON.SPT(A13)	w62 f31
AN2		564	564	8	~A21 TBD SPT	w63 f31

Proj ID	Word Offset	Byte Count From - to		Size bits	Content	
S/C Housekeeping					total 64 bytes Word offset 141, from byte 565 to 628	
	141	565	565	1	~**********	w94 f0
				1	~P1/P2 AFT TM	
				1	~S1/S2 AFT TM	
				1	~S4/S3 AFT TM	
				1	~P1/P2 DUR TM	
				1	~S1/S2 DUR TM	
				1	~S4/S3 DUR TM	
				1	~AOCE Power	
		566	566	1	~Stop VAL 1/2	w95 f0
				1	~P1/P2 Status	
				1	~S1/S2 Status	
				1	~S4/S3 Status	
				1	~**********	
				1	~**********	
				1	~**********	
				1	~**********	
		567	567	8	~CTU Start Monitor	w94 f1
		568	568	8	~CTU Start Monitor	w95 f1
	142	569	569	8	~CTU Stop Monitor	w94 f2
		570	570	8	~CTU Stop Monitor	w95 f2
		571	571	8	~CTU Delete Time	w94 f3
		572	572	8	~CTU Delete Time	w95 f3
	143	573	573	8	~FORMTCNT MSB	w94 f4
		574	574	1	~**********	w95 f4
				1	~CTU OP Time	
				1	~Stop TC ACOU	
				1	~Start TC ACOU	
				1	~CTU Test Mode	
				2	~CTU OP MODE 0=Puls 2 1=Cont 2=Puls 1 3=Cont	
				1	~CTU CNTR FCT	
		575	576	8	~FORMCNT LSB	w94 f5
		575	576	8	~FORMCNT LSB	w95 f5
	144	577	577	8	~SUN PULSE DELAY #1 ???	w94 f6
		578	578	8	~MER SUN LE1F	w95 f6
		579	579	8	~**********	w94 f7
		580	580	8	~**********	w95 f7

	145	581	581	1	~**********		w94 f8
				1	~P1/P2 AFT TM		
				1	~S1/S2 AFT TM		
				1	~S4/S3 AFT TM		
				1	~P1/P2 DUR TM		
				1	~S1/S2 DUR TM		
				1	~S4/S3 DUR TM		
				1	~AOCE Power		
		582	582	1	~Stop VAL 1/2		w95 f8
				1	~P1/P2 Status		
				1	~S1/S2 Status		
				1	~S4/S3 Status		
				1	~**********		
				1	~**********		
				1	~**********		
				1	~**********		
		583	583	8	~**********		w94 f9
		584	584	8	~**********		w95 f9
	146	585	585	8	~**********		w94 f10
		586	586	8	~**********		w95 f10
		587	587	8	~**********		w94 f11
		588	588	8	~**********		w95 f11
	147	589	589	8	~MER ALB LE		w94 f12
		590	590	8	~MER ALB LE		w95 f12
		591	591	8	~OBL ALB LE		w94 f13
		592	592	8	~OBL ALB LE		w95 f13
	148	593	593	8	~OBL Sun LE1F		w94 f14
		594	594	8	~OBL Sun LE1F		w95 f14
		595	595	8	~**********		w94 f15
		596	596	8	~**********		w95 f15
	149	597	597	8	~**********		w94 f16
		598	598	8	~**********		w95 f16
		599	599	8	~**********		w94 f17
		600	600	8	~**********		w95 f17
	150	601	601	8	~**********		w94 f18
		602	602	8	~**********		w95 f18
		603	603	8	~**********		w94 f19
		604	604	8	~**********		w95 f19
	151	605	605	8	~MAG DELAY(? OBL ALB TE)		w94 f20
		606	606	8	~OBL ALB TE		w95 f20
RU		607	607	8	~Mag Pulse	(RUD)	w94 f21
RU		608	608	8	~Mag Pulse	(RUD)	w95 f21
	152	609	609	8	~SUN PULSE DELAY #2		w94 f22
		610	610	8	~MER SUN LE2F		w95 f22
		611	611	8	~**********		w94 f23
		612	612	8	~**********		w95 f23
	153	613	613	8	~**********		w94 f24
		614	614	8	~**********		w95 f24
		615	616	8	~**********		w94 f25
		615	616	8	~**********		w95 f25
	154	617	617	8	~**********		w94 f26
		618	618	8	~**********		w95 f26
		619	619	8	~**********		w94 f27
		620	620	8	~**********		w95 f27
	155	621	621	8	~MER ALB TE		w94 f28
		622	622	8	~MER ALB TE		w95 f28
		623	623	8	~**********		w94 f29
		624	624	8	~**********		w95 f29
	156	625	625	8	~OBL Sun Le2f		w94 f30
		626	626	8	~OBL Sun Le2f		w95 f30
		627	627	8	~**********		w94 f31
		628	628	8	~**********		w95 f31

Note: ********** is used in the housekeeping sections to indicate items that were not defined in the documentation originally provided to the ISEE magnetometer team. Some or all of these values may be unused spares. All items of importance to ISEE magnetometer data processing have been documented.

CONTENTS_OF_EACH_LOGICAL_EOF_BLOCK:

Note: All integer numbers are in IBM integer format.
For example: 21 will be in hexadecimal '0015'
11 will be in hexadecimal '000B'

- Logical EOF block:
The logical EOF block has a total 2520 bytes made up of 630 4-byte words filled with the number -999 in IBM integer format. Two

consecutive logical EOF blocks are used to indicate the end of the disk file.

Tape FILE EOF Block Format:

Item No.	Word Offset	Byte Count From - to	Size bits	Content
1	0	1 2520	2520*8	Each word is filled with number -999 in IBM integer format

ISEE-2_EXPERIMENTER_ID_CODES:

Exp ID	Project Code	Investigator
14	AND1/2	Dr. Anderson
15	EGD	Dr. Moreno
16	FRD	Dr. Frank
17	GUD	Dr. Gurnett
18	HAD	Dr. Harvey
19	KED	Dr. Keppler
20	PAD	Dr. Paschmann
21	RUD	Dr. Russell

MISCELLANEOUS_ATTRIBUTES:
The information included in the CONTENTS_OF_EACH_DATA_BLOCK section above were keypunched directly from the documentation originally received from GSFC. Occasionally, text has been inserted to explain items of importance to ISEE magnetometer data processing. Also, on some occasions, the original documentation was incomplete or unreadable. In these instances, every effort has been made to fill in the information gaps and all items required to process ISEE magnetometer data have been documented. In the case of the various housekeeping data, the available documentation was originally organized by experiment. The table included in this document has been reorganized to be in ascending byte order. The table has also been enhanced to include the word and byte offset in the logical data record.

In the original telemetry stream, each 128 byte telemetry frame included 6 housekeeping bytes: 30, 31, 62, 63, 94 and 95, with the three adjacent pairs of bytes containing related housekeeping information. After 32 consecutive telemetry frames, each of the three types of 64 byte housekeeping frames had been completely transmitted, along with 64 6-byte minor frames of magnetometer data (384 bytes) and data from the various other instruments on the spacecraft. To build a logical data record of magnetometer DECOM data these 64 minor frames of magnetometer data were packaged together with the three housekeeping frames as described in the tables above. Next to each housekeeping item in the tables there is a reference to which type of housekeeping "word" it is (w30, w31, w62, w63, w94 or w95) and also a reference to which telemetry frame of a set of 32 consecutive telemetry frames (numbered 0-31) it is from. For example, "w30 f0" is from word 30 of the current telemetry frame and from frame 0 of a set of 32 consecutive telemetry frames (numbered 0-31). As the tables indicate, when the DECOM files were created, adjacent pairs of housekeeping bytes were packed into each of the three types of housekeeping frames until all 32 consecutive telemetry frames had been processed. Thus, for example the first 64 byte spacecraft housekeeping frame is built from "w30 f0", "w31 f0", "w30 f1", "w31 f1", "w30 f2", "w31 f2" and so on up to "w30 f31" and "w31 f31". The same pattern occurred for the 64 byte experiment housekeeping frame (w62 and w63) and the second 64 byte spacecraft housekeeping frame (w94 and w95). These telemetry stream "word" and "frame" references have been included in this document because the original documentation from GSFC contained these references.

Throughout this document, the data have been referred to as "4-BYTE

IBM_INTEGER" format. This is only partially true in that most of the data items are only a few bits or bytes in length and must be unpacked into full four byte values. The tables above clearly indicate the size of each item in bits and include the word and byte location of each item in the logical data record. The ISEE magnetometer data processing software archived on this disk demonstrates how to unpack this data. The term "4-BYTE IBM_INTEGER" describes a format for storing whole numbers on a variety of computer systems. This includes the IEEE integer format used by most UNIX computer systems. In this representation, the highest order bit is the sign bit (0 for a positive number and 1 for a negative number) and the remaining 31 bits are the magnitude of the datum with the highest order bit being the most significant bit and a negative number being represented by its two's complement.

/* EOF */

MY-102B-00K

```
* ------------------------------------------------------------------------ *
*                                                                          *
* aareadme.txt - This file contains a list of the files in the [000000]    *
*                directory of the Optimem 1000 Write-Once Read-Many disk   *
*                platters containing the Multi-Coordinate Ephemeris (MCE)  *
*                data set of the International Sun-Earth Explorers (ISEE)  *
*                1 and 2 spacecraft of the United States National          *
*                Aeronautics and Space Adminstration (NASA).               *
*                                                                          *
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* LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS        *
* FOR A PARTICULAR PURPOSE.                                                *
*                                                                          *
* For information about this software please contact:                      *
*                                                                          *
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*     NSI/DECnet e-mail:  BRUNET::CTRUSSELL                                *
*     Telephone:          (310)825-3188                                    *
*                                                                          *
*   Programmer:                                                            *
*     Harry Herbert                                                        *
*     UCLA - Institute of Geophysics and Planetary Physics                 *
*     5833 Slichter Hall                                                   *
*     Los Angeles, Ca. 90024-1567                                          *
*     INTERNET e-mail:    hherbert@igpp.ucla.edu                           *
*     NSI/DECnet e-mail:  BRUNET::HARRY                                    *
*     Telephone:          (310)825-9030                                    *
*                                                                          *
* ------------------------------------------------------------------------ *
```

AAREADME.TXT

This file contains a map showing how the files in the [000000] directory of the ISEE MCE WORM disk are used to read and interpret the ISEE MCE dataset. Included herein is a brief description of the purpose of each file. The files themselves contain more complete documentation.

WORM disk files:

voldesc.sfd - SFDU volume description file for this disk. This file contains spacecraft and instrument descriptions, an overview of the MCE dataset, a list of the data files included on the disk with their start and stop times, and a list of the support files that have been included on the disk. These support files are described more fully in this AAREADME.TXT file.

mce.sfd - SFDU detailed dataset description. This file provides a detailed layout of the MCE dataset including a description of each item in the MCE dataset and its word location in the header or data records.

DEC VMS files:

mce - Program to read ISEE MCE data files and write their contents to SYS$OUTPUT. It is contructed from these files:

MCE.COM - Compile and link command file MCE.FOR
MCE.FOR - FORTRAN program to write out ISEE MCE data files
CTIME.FOR - FORTRAN time subroutines used by MCE.FOR

IGPP.FOR - FORTRAN general subroutines used by MCE.FOR

Sun UNIX files:

Makefile - Input file for the UNIX "make" command. It builds the library libIGPP.a and compiles and links all Sun MCE programs.

libIGPP.a - Subroutine library created by Makefile and used by all Sun MCE programs. It is constructed from these files:

convert.c - C language data conversion functions
ctime.c - C language time functions
flat.F - FORTRAN UCLA-IGPP flat file subroutines
flatcom.f - FORTRAN include file for flat.F
igppfort.f - FORTRAN general subroutines
igpplib.c - C language general functions

mce - Program to read ISEE MCE data files and write their contents to standard output. It is contructed from these files:

mce.f - FORTRAN program to write out ISEE MCE data files
libIGPP.a - UCLA-IGPP subroutine library described above

atorb - Program to read and interpret ISEE MCE data and write out a UCLA-IGPP flat file (Please refer to comments in the source code for furthur details concerning flat files). It is contructed from the first three files listed below and uses the last four files:

atorb.f - FORTRAN program to read and interpret MCE data
aolib.f - FORTRAN subroutines included in atorb.f
libIGPP.a - UCLA-IGPP subroutine library described above

aperigee.dat - ISEE 1 perigee times & altitude, read by atorb
bperigee.dat - ISEE 2 perigee times & altitude, read by atorb
iseelmce.dat - ISEE 1 MCE start/stop times, read by atorb
isee2mce.dat - ISEE 2 MCE start/stop times, read by atorb

ao2ascii - Program to read a UCLA-IGPP flat file containing ISEE MCE data and write the information to standard output. It is contructed from these files:

ao2ascii.f - FORTRAN program to write out ISEE MCE Flat files
libIGPP.a - UCLA-IGPP subroutine library described above

USAGE NOTES - To use the Sun UNIX programs, FTP in ASCII mode the source code from VMS to UNIX. Rename the FORTRAN file "flat.f" to "flat.F" for use by cpp (the makefile will attempt to do this automatically). Type "make all" to compile and link all the ISEE MCE programs. To move the ISEE MCE data files use the BINARY mode of FTP.

To determine which ISEE MCE data groups are needed to process certain ISEE orbits with ATORB, cross reference the MCE data file start and stop times in the "iseeXmce.dat" files with the ISEE orbital start times in the "Xperigee.dat" files.

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This file contains a list of the files in the [SOURCE] directory of the Optimum 1000 Write-Once Read-Many disk platters containing the raw DECOM data set of the fluxgate magnetometers on the International Sun-Earth Explorers (ISEE) 1 and 2 spacecraft of the United States National Aeronautics and Space Administration(NASA).

ADDITIONAL DOCUMENTATION

Additional documentation resides in the [000000] directory of this WORM disk in the files VOLDESC.SFD and DECOM1.SFD or DECOM2.SFD.

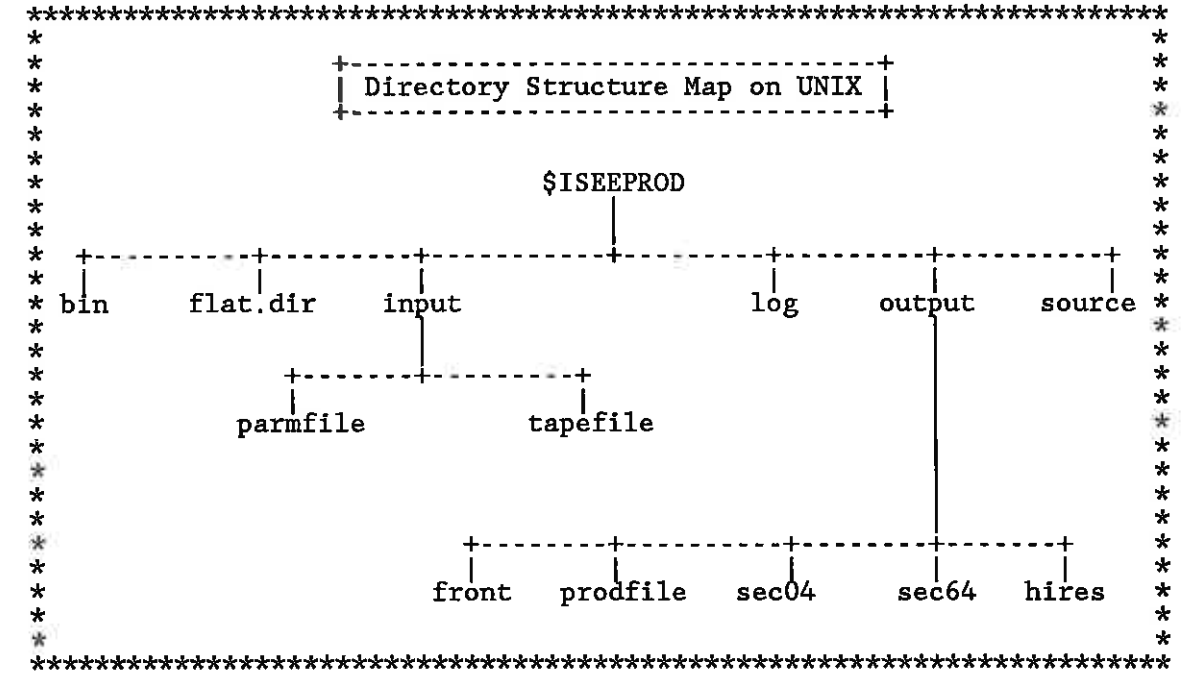
voldesc.sfd - SFDU volume description file for this disk. This file contains spacecraft and instrument descriptions, an overview of the DECOM dataset, a list of the data files included on the disk with their start and stop times, and a list of the support files that have been included on the disk. These support files are described more fully in this AAREADME.TXT file.

decom1.sfd or decom2.sfd - SFDU detailed dataset descriptions. These files provide a detailed layout of the DECOM datasets including a description of each item in the DECOM datasets and their word and byte locations in the header or data records. decom1.sfd is included on WORM disks of ISEE-1 magnetometer DECOM data and decom2.sfd in included on WORM disks of ISEE-2 magnetometer DECOM data.

AAREADME.TXT

NAME: AAREADME.TXT
PURPOSE: This file contains a map showing how the files in the

```
*           [SOURCE] directory of the ISEE magnetometer DECOM WORM    *
*           disk are used to make the ISEE production dataset.        *
*           Included herein is a brief description of the purpose of  *
*           each file along with the Sun/UNIX directory structure for *
*           ISEE magnetometer DECOM data processing.                  *
* INPUT:    N/A                                                       *
* OUTPUT:   N/A                                                       *
**********************************************************************
```




```
**********************************************************************
*                                                                    *
*                 +------------------------------+                   *
*                 |  File Structure Map on UNIX  |                   *
*                 +------------------------------+                   *
*                                                                    *
* bin       -- Contains executable files for the source code files   *
*              in the source directory.                              *
* flat.dir  -- ATIMES.ffh, ATIMES.ffd, BTIMES.ffh, BTIMES.ffd (DECOM *
*              group start/stop times); and aperigee.ffh, aperigee.ffd,*
*              bperigee.ffh, bperigee.ffd (ISEE perigee times)       *
* parmfile  -- ainput.dat and binput.dat (input parameter file for   *
*              program parmedit.f)                                   *
* tapefile  -- Contains the magnetometer DECOM data files, e.g.      *
*              dec20604.dat, ready for use by the production programs*
* log       -- Log message files from program makeprod_a or makeprod_b,*
*              e.g. pkb0604.  And, Log message files from program    *
*              iseeprodff.c, e.g. b0604.  It contains the working    *
*              parameter files for program icat.F, e.g. parm####.icat.*
* front     -- Brief information files("Front Page") from makeprod_a or*
*              makeprod_b, e.g. BF0604.                              *
* prodfile  -- The output file for makeprod_a or makeprod_b, e.g.    *
*              B00604.                                               *
* hires     -- The default directory for iseeprodff.c high resolution*
*              output data, e.g.  bhi0604.ffh, bhi0604.ffd.          *
* sec04     -- The default directory for iseeprodff.c 4 sec resolution*
*              output data, e.g.  b4s0604.ffh, b4s604.ffd.           *
* sec64     -- The default directory for iseeprodff.c 64 sec resolution*
*              output data, e.g.  b64s0604.ffh, b64s0604.ffd.        *
* source    -- The source code for ISEE production programs:         *
*                                                                    *
*              AAREADME.TXT   flat2ascii.c   parmlist.c    yams.f    *
*              Makefile       flatcom.f      qbms.f        yas1.f    *
*              convert.c      icat.F         qbs1.f        yas2.f    *
*              convert.for    igppfort.f     qbs2.f        yas3.f    *
*              ctime.c        igpplib.c      qbs3.f                  *
*              ff_igpp.c      iseeprodff.c   time_igpp.c             *
*              ff_igpp.h      jtlib.f        time_igpp.h             *
*              flat.F         parmedit.f     whowner.c               *
*                                                                    *
```

```
**********************************************************************

**********************************************************************
*                    Library Files and Resource Files                *
*--------------------------------------------------------------------*
*  flat.dir      - The directory containing the resource data files in *
*                  UCLA-IGPP flat file format.  ATIMES and BTIMES     *
*                  contain DECOM group start and stop times.  aperigee *
*                  and bperigee contain ISEE orbital perigee times.  *
*                                                                    *
*  ff_igpp.c     - UCLA-IGPP flat file subroutines for C language     *
*                  programs.                                         *
*                                                                    *
*  ff_igpp.h     - C language header file for ff_igpp.c.              *
*                                                                    *
*  time_igpp.c   - Time function subroutines for C language programs. *
*                                                                    *
*  time_igpp.h   - C language header file for time_igpp.c.            *
*                                                                    *
*  ctime.c       - Time function subroutines for C or FORTRAN programs.*
*                                                                    *
*  flat.F        - UCLA-IGPP flat file subroutines for C or FORTRAN   *
*                  programs.                                         *
*                                                                    *
*  igppfort.f    - FORTRAN language general subroutines.             *
*                                                                    *
*  igpplib.c     - C language general functions.                     *
*                                                                    *
*  convert.c     - C language data conversion functions.             *
*                                                                    *
*  convert.for   - FORTRAN data conversion subroutines for VMS.      *
*                                                                    *
*  jtlib.f       - Perigee time and orbit information functions, the  *
*                  input resource files are under isee/flat.dir      *
*                                                                    *
*  whowner.f     - function to extract user ID for icat parameter file.*
*                                                                    *
**********************************************************************

**********************************************************************
*                            ISEE-TAR.Z                              *
*--------------------------------------------------------------------*
* NAME:     isee-tar.Z                                               *
* PURPOSE:  Input file for the UNIX "tar" command.   The "tar" command*
*           uses this file to create the ISEE DECOM production file  *
*           structure described above in the "file structure map"    *
*           section.                                                 *
* FUNCTION: UNIX "tar" file containing the ISEE production file      *
*           structure.                                               *
**********************************************************************

**********************************************************************
*                            Makefile                                *
*--------------------------------------------------------------------*
* NAME:     makefile                                                 *
* PURPOSE:  Input file for the UNIX "make" command.  It compiles and *
*           links all ISEE production programs for Sun/UNIX systems. *
* FUNCTION: An ASCII text file used by the UNIX "make" command.      *
* INPUT:    The source code files under $ISEEPROD/isee/source        *
* OUTPUT:   The executable UNIX binary files under $ISEEPROD/isee/bin *
* NOTE:     See the UNIX manuals for a description of "make".        *
**********************************************************************

**********************************************************************
*                            parmedit.f                              *
*--------------------------------------------------------------------*
* NAME:     parmedit.f   (Old name: yiput.f)                         *
* PURPOSE:  Display and edit the input parameters for the ISEE DECOM  *
*           production program.  The parameters include:  spacecraft *
*           ID, group number, start/stop time, spin period, flip     *
*           state, etc.                                              *
* INPUT:    $ISEEPROD/input/parmfile/ainput.dat or $ISEEPROD/input/  *
*           parmfile/binput.dat.                                     *
* OUTPUT:   None, except updating the above input files.             *
* FUNCTION: This program asks for a group number then allows the     *
*           parameters for this group to be edited.                  *
```

```
* LIB:      ctime.c convert.c                                          *
*************************************************************************

*************************************************************************
*                          parmlist.c                                   *
*-----------------------------------------------------------------------*
* NAME:     parmlist.c                                                  *
* PURPOSE:  Reads the ISEE production input parameter files and writes*
*           an ASCII version of the information.                       *
* INPUT:    $ISEEPROD/input/parmfile/ainput.dat or $ISEEPROD/input/    *
*           parmfile/binput.dat.                                       *
* OUTPUT:   An ASCII file specified by the user.                       *
* FUNCTION: This program reads the binary production input parameter  *
*           files and writes out the information as ASCII text.  This *
*           allows the user to more easily review the information.    *
* LIB:      time_igpp.c                                                *
*************************************************************************

*************************************************************************
*              makeprod_a(yams.f, yas1.f, yas2.f and yas3.f)            *
*-----------------------------------------------------------------------*
* NAME:     makeprod_a (includes yams.f, yas1.f, yas2.f and yas3.f)    *
* PURPOSE:  Reads in a magnetometer DECOM file, processes the data     *
*           and creates an ISEE production disk file.  The program     *
*           also creates a front page file, which is a log file of     *
*           the production run.                                         *
* INPUT:    $ISEEPROD/input/tapefile/dec1GGGG.dat, where GGGG is the   *
*           group number.                                               *
* OUTPUT:  -$ISEEPROD/output/prodfile/AOGGGG, where GGGG is the group *
*           number.  This is the magnetometer production output file. *
*          -$ISEEPROD/output/front/AFGGGG, where GGGG is the group     *
*           number.  This is the "front page" information file.        *
*          -$ISEEPROD/log/pkaGGGG, where GGGG is the group number.     *
*           This file is updated periodically to show how far the      *
*           program has progressed through the input data file.        *
* FUNCTION: This is the main program for ISEE-A data processing.       *
* LIB:      ctime.c flat.F igppfort.c igpplib.f convert.c jtlib.f      *
*************************************************************************

*************************************************************************
*              makeprod_b(qbms.f, qbs1.f, qbs2.f and qbs3.f)            *
*-----------------------------------------------------------------------*
* NAME:     makeprod_b (includes qbms.f, qbs1.f, qbs2 and qbs3.f)      *
* PURPOSE:  Reads in a magnetometer DECOM file, processes the data     *
*           and creates an ISEE production disk file.  The program     *
*           also creates a front page file, which is a log file of     *
*           the production run.                                         *
* INPUT:    $ISEEPROD/input/tapefile/dec2GGGG.dat, where GGGG is the   *
*           group number.                                               *
* OUTPUT:  -$ISEEPROD/output/prodfile/BOGGGG, where GGGG is the group *
*           number.  This is the magnetometer production output file. *
*          -$ISEEPROD/output/front/BFGGGG, where GGGG is the group     *
*           number.  This is the "front page" information file.        *
*          -$ISEEPROD/log/pkbGGGG, where GGGG is the group number.     *
*           This file is updated periodically to show how far the      *
*           program has progressed through the input data file.        *
* FUNCTION: This is the main program for ISEE-B data processing.       *
* LIB:      ctime.c, flat.F, igppfort.f igpplib.f, convert.c, jtlib.f *
*************************************************************************

*************************************************************************
*                          iseeprodff.c                                 *
*-----------------------------------------------------------------------*
* NAME:     iseeprodff.c                                                *
* PURPOSE:  Reads ISEE production output files created by programs     *
*           makeprod_a or makeprod_b and creates three data files,     *
*           one with 64 second resolution data, one with 4 second      *
*           resolution data and one with undespun high resolution      *
*           sensor data (usually there is a value every ~0.25 seconds *
*           but every fifth orbit there is a value every 1/16 second).*
*           The user has the option to write the three files in either*
*           ASCII format or as a UCLA-IGPP flat file.                  *
* INPUT:    $ISEEPROD/output/prodfile/XOGGGG, where X is spacecraft    *
*           ID (A or B) and GGGG is the group number.                  *
* OUTPUT:  -By default, the output files are placed in the directories*
*           $ISEEPROD/output/[sec04,sec64,hires].  The user is allowed*
```

```
*           to specify an alternate directory path where all output   *
*           data files will be located.  The files are named X64sGGGG,*
*           X4sGGGG and XhiGGGG, where X is the spacecraft ID (a or b)*
*           and GGGG is the group number.  If the user selects ASCII  *
*           output format, the files have the type extension ".asc",  *
*           if the user selects the UCLA-IGPP flat file format then a *
*           pair of files are written, an ASCII file containing meta  *
*           data with the type extension ".ffh" and a binary file     *
*           containing a flat table of time-tagged data records with  *
*           the type extension ".ffd".                                *
*          -$ISEEPROD/log/XGGGG, where X is the spacecraft ID (a or b)*
*           and GGGG is the group number.  This file contains any     *
*           notes and problems encountered during the processing.     *
* LIB:      ff_igpp.c time_igpp.c whowner.c                           *
* NOTE:     To generate despun high resolution data, one must use the *
*           program icat.F to read a production output file and create*
*           a UCLA-IGPP flat file.  One may then use the program      *
*           flat2ascii.c to convert the despun data set to ASCII text.*
*************************************************************************


*************************************************************************
*                              icat.F                                   *
*-----------------------------------------------------------------------*
* NAME:     icat.F  (Old name: icat.f)                                  *
* PURPOSE:  Reads ISEE production output files created by programs    *
*           makeprod_a or makeprod_b and creates a UCLA-IGPP flat file*
*           containing user selected portions of the data.  icat.F can*
*           extract 64 second, 4 second or despun high resolution data*
*           for a user specified start and stop time.  It also allows *
*           the user to select an arbitrary averaging interval for the*
*           high resolution data, allows data of any resolution to be *
*           provided in spacecraft, GSE or GSM coordinates and it can *
*           include GSE or GSM trajectory information with the        *
*           magnetometer data, all at the user's option.              *
* INPUT:    $ISEEPROD/output/prodfile/XOGGGG, where X is spacecraft ID*
*           (A or B) and GGGG is the group number.                    *
* OUTPUT:  -User specified UCLA-IGPP flat file containing a user      *
*           selected subset of the ISEE magnetometer data.            *
*          -$ISEEPROD/log/parmXXXX.icat, where XXXX is the four digit *
*           UNIX user ID.  This file contains the responses by a user *
*           to the questions asked by icat during that user's last run*
*           of the program.  These answers are used as the default    *
*           answers for the next run of icat by that user.  This makes*
*           it easier for a user to extract multiple data sets where  *
*           the user's input parameters change very little.           *
* LIB:      ctime.c flat.F igppfort.f igpplib.c convert.c jtlib.f     *
* NOTE:     At UCLA, the production output files are generally stored *
*           on magnetic tape using an HP9000 (HP-UX) computer.  Data  *
*           is extracted from these tapes using the program icat.F.   *
*************************************************************************


*************************************************************************
*                           flat2ascii.c                                *
*-----------------------------------------------------------------------*
* NAME:     flat2ascii.c                                                *
* PURPOSE:  Reads a UCLA-IGPP flat file and writes the contents to an *
*           ASCII file.                                               *
* INPUT:    A UCLA-IGPP flat file, which is made up of two files, an  *
*           ASCII file containing meta data with the type extension   *
*           ".ffh" and a binary file containing a flat table of       *
*           time-tagged data records with the type extension ".ffd".  *
* OUTPUT:   An ASCII file containing the meta data and instrument data*
*           from a UCLA-IGPP flat file with the same filename as the  *
*           input flat file, but with the type extension ".asc".      *
*           The data records in the ASCII file are of the format:     *
*           YY DOY MM DAY HH:MM:SS.MSEC  99999.9  ....   ....  999.99 *
*                                        |--- all columns of data --| *
* LIB:      ff_time.c                                                 *
* NOTE:     This program does not use the UCLA-IGPP flat file library.*
*************************************************************************


*************************************************************************
* USAGE on Sun/UNIX systems:                                            *
* ------------------------                                              *
*  -FTP in binary mode the file ISEE-TAR.Z to a Sun/UNIX system.        *
*   After the transfer the file will have the name isee-tar.z.  Rename*
*   the file by typing "mv isee-tar.z isee-tar.Z".  Uncompress the    *
```

```
*   file by typing "uncompress isee-tar.Z".  You now have the file    *
*   "isee-tar".                                                       *
*  -Select a directory as the ISEE production root directory and "cd" *
*   there.  Extract the ISEE production files and directory structure *
*   by typing "tar -xvf /path/isee-tar", where /path is the full path *
*   to where the file "isee-tar" is located.                          *
*  -Define the environment variable ISEEPROD to be the full directory *
*   path to the root directory of the ISEE production structure.  For *
*   example, if you typed "tar -vxf /path/isee-tar" while in the      *
*   directory /someroot/anysubdir/isee and you are using the C-shell, *
*   you should type "setenv ISEEPROD /someroot/anysubdir/isee".       *
*      !!!!!!!!!!!!!!!   This step must always be performed for the   *
*      !!!!!!!!!!!!!!!   ISEE magnetometer software to work.  You may *
*      !!! WARNING !!!   wish to add this command to your .login file *
*      !!!!!!!!!!!!!!!   or your .cshrc file so that it is done       *
*      !!!!!!!!!!!!!!!   automatically for you.                       *
*  -Type "make all" to compile and link all the ISEE production       *
*   programs.  One may also compile and link each program seperately  *
*   by typing "make <program name>".                                  *
*  -FTP in binary mode the magnetometer DECOM data file you want to   *
*   process to the directory $ISEEPROD/input/tapefile.                *
*  -Run $ISEEPROD/bin/makeprod a for ISEE-1 data and run $ISEEPROD/   *
*   bin/makeprod b for ISEE-2 data.  The output from these programs   *
*   will be $ISEEPROD/output/prodfile/XOGGGG, where X is 'A' or 'B'   *
*   and GGGG is the group number.                                     *
*  -Use the programs $ISEEPROD/bin/iseeprodff or $ISEEPROD/bin/icat to*
*   extract all or part of the data in the production output file.    *
*   Program iseeprodff will create UCLA-IGPP flat files or ASCII files*
*   of all the 64 sec data, 4 sec data and undespun high resolution   *
*   sensor data in the production output file.  Program icat will     *
*   create UCLA-IGPP flat files of a user specified portion of the    *
*   64 second, 4 second or despun high resolution data.  The user has *
*   the option to specify the start and stop time of the data, whether*
*   to average the high resolution data, whether to rotate the data to*
*   GSE or GSM coordinates and whether to include spacecraft position *
*   in the output data file.  Please note that a UCLA-IGPP flat file  *
*   is made up of two files, an ASCII file containing meta data with  *
*   the type extension ".ffh" and a binary file containing a flat     *
*   table of time-tagged data records with the type extension ".ffd". *
*  -Use the program $ISEEPROD/bin/flat2ascii to convert a UCLA-IGPP   *
*   flat file to an ASCII file.  The ASCII file will include both the *
*   meta data and the instrument data.  When using this program one   *
*   should exclude the file type extension when entering the name of  *
*   the flat file to be converted.  For example, if the flat file is  *
*   made up of the two files b64s0604.ffh (meta data file) and         *
*   b64s0604.ffd (instrument data file) one should enter "b64s0604" as*
*   the input file name to the program flat2ascii.  The output ASCII  *
*   file will have the name "b64s0604.asc".                           *
*                                                                     *
*  -Use parmlist.c to make an ASCII listing of the ISEE production    *
*   input parameter files.  Use parmedit.c to edit the ISEE production*
*   input parameter files.  The input parameters include spacecraft   *
*   ID, group number, group Start/Stop time, initial flip state,      *
*   inital spin period, offset values for X/Y/Z sensors, total number *
*   of tape files in the group, Bz adjustment values, Coupling        *
*   matrices, etc.                                                    *
*                                                                     *
*  -Type "make clearobj" to delete the object code files.             *
*                                                                     *
* USAGE on VAX/VMS systems:                                          *
* -------------------------                                          *
*   The UCLA magnetometer production software is only supported on Sun*
*   UNIX computer systems.  The file ISEE-TAR.Z in the [SOURCE]       *
*   directory has been provided to facilitate software installation on*
*   Sun computer systems.  All the files included in the Sun "tar"    *
*   file have also been included in the [SOURCE] directory in their   *
*   native form.  This includes both FORTRAN and C source code and    *
*   binary data files in Sun/UNIX format including IEEE floating point*
*   values.  The file convert.for includes FORTRAN subroutines to     *
*   convert from IEEE and IBM floating point to VMS floating point.   *
*   These subroutines can be used to modify the provided programs to  *
*   allow them to read IEEE binary data files on VMS.  Please contact *
*   the magnetometer team at UCLA for furthur details.                *
**********************************************************************
```

DSC 793
77-102B-00K

CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT:	USA_NASA_NSSD_IC20_0001A
LOG_VOL_NSSDC_EXPT_ID:	77-I02B-U0
LOG_VOL_INITIATION_DATE:	1990-01-19
LOG_VOL_CLOSING_DATE:	1993-09-21
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 3.1
TECHNICAL_CONTACT:	Harry Herbert University of California at Los Angeles Institute of Geophysics and Planetary Physics 5833 Slichter Hall Los Angeles, CA 90025-1567 (310) 825-9030 NSI=hherbert@igpp.ucla.edu NSI-DECnet=BRUNET::HARRY
PREV_LOG_VOLS:	None

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME:	Multi-Coordinate Ephemeris Data
DATA_SOURCES:	International Sun-Earth Explorer 2 (ISEE-2)
SCIENTIFIC_CONTACT:	Dr. Christopher Russell University of California at Los Angeles Institute of Geophysics and Planetary Physics 6871 Slichter Hall Los Angeles, CA 90025-1567 (310) 825-3188 NSI=ctrussel@igpp.ucla.edu NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm.

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT_ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:
Not applicable.

B. OPERATIONAL_MODE:
Not applicable.

C. MEASURED_PARAMETERS:
Satellite position, speed, spin axis orientation and spin rate were determined.

D. PERFORMANCE_OF_THE_INSTRUMENT:
The instruments functioned with undiminished accuracy until re-entry.

E. RESOLUTION:
The temporal resolution of the data is one sample per minute.

PARAMETERS:
The archive includes the original MCE data as received from Goddard Space Flight Center.

DATA_SET_QUALITY:
The data submitted on this disk are of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block (10 minutes) of data.

DATA_PROCESSING_OVERVIEW:
The MCE data was received on 9-track magnetic tapes written at 1600 BPI with one week of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with 25 weeks of data per copy tape. No changes were made to the data so the data retained its original blocking factor format. These copy tapes were then written to optical disk, again one disk file for each week of data, without any alteration to the data. Thus, the data contained on this optical disk is as close as possible to the original MCE data that was received from GSFC.

At UCLA the MCE data is processed on Sun/UNIX workstations by the FORTRAN program ATORB. ATORB reads the MCE data, calculates model field values and field line intercepts to 15 RE and then writes the data to UCLA-IGPP flat files. A UCLA-IGPP flat file is made up of a pair of data files. One contains ASCII metadata, the other contains a flat table of time-tagged binary data records. One flat file is written per orbit for each spacecraft where an orbit is from perigee to perigee. This file is later merged with 60 second averages of the ISEE-1 and ISEE-2 magnetometer data to produce the UCLA magnetometer one minute resolution summary dataset. ATORB and other UCLA programs to read and interpret the MCE data have been archived on this disk in the directory [000000]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM floating point format. Therefore, any computer program that reads this data on a VMS or UNIX system must convert the data to its native floating point format in order to utilize the information. Otherwise, the data are in standard geophysical units and are easily accessible and interpretable. The software archived on this disk demonstrates how to read these datasets, including conversion of floating point formats.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes the MCE data for approximately one half of the entire mission for either ISEE-1 or ISEE-2. Thus, one optical disk, two logical volumes, contains the entire mission for one spacecraft and two optical disks include all the MCE data for ISEE-1 and ISEE-2.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original MCE data measured every 60 seconds.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1977-10-22T14:49:00 TO 1983-01-02T05:59:00

TYPE_OF_FILE_TIME_COVERAGE:
Multi-Coordinate Ephemeris Data 1977-10-22T14:49:00 TO 1983-01-02T05:59:00

FILE_NAMING_CONVENTION:
File names are of the form MCE#XXXX.DAT where MCE is the type of data, # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number of the first group in that file with leading zeroes as needed.

Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12

varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data. The original MCE data were distributed by Goddard Space Flight Center to the Principal Investigator teams using these same group numbers, however, beginning with groups 13 and 14, two data groups, 7 days of data, were included on each magnetic tape.

For example, the file MCE10013.DAT includes MCE data from January 1, 1978 at 00:00:00 through January 8, 1978 at 05:59:00. This covers the same basic time range as ISEE-1 DECOM data groups 13 and 14 since ISEE-1 DECOM group 13 includes data from January 1, 1978 at 00:00:00 through January 4, 1978 at 00:23:00 and ISEE-1 DECOM group 14 includes data from January 4, 1978 at 00:24:00 through January 8, 1978 at 00:01:00.

LOG VOL FILE TIME COVERAGE:

MCE20001.DAT	1977-10-22T14:49:00	TO	1977-10-25T00:29:00
MCE20002.DAT	1977-10-25T00:08:00	TO	1977-11-01T09:00:00
MCE20003.DAT	1977-11-01T03:56:00	TO	1977-11-06T05:00:00
MCE20004.DAT	1977-11-05T22:47:00	TO	1977-11-11T17:00:00
MCE20005.DAT	1977-11-11T17:00:00	TO	1977-11-17T21:47:00
MCE20006.DAT	1977-11-17T21:47:00	TO	1977-11-23T06:00:00
MCE20007.DAT	1977-11-23T00:00:00	TO	1977-11-27T05:59:00
MCE20008.DAT	1977-11-27T00:00:00	TO	1977-12-04T05:59:00
MCE20009.DAT	1977-12-04T00:00:00	TO	1977-12-11T05:59:00
MCE20010.DAT	1977-12-11T00:00:00	TO	1977-12-18T05:59:00
MCE20011.DAT	1977-12-18T00:00:00	TO	1977-12-25T05:59:00
MCE20012.DAT	1977-12-25T00:00:00	TO	1978-01-01T05:59:00
MCE20013.DAT	1978-01-01T02:00:00	TO	1978-01-08T05:59:00
MCE20015.DAT	1978-01-08T00:00:00	TO	1978-01-15T05:59:00
MCE20017.DAT	1978-01-15T00:00:00	TO	1978-01-22T05:59:00
MCE20019.DAT	1978-01-22T00:00:00	TO	1978-01-29T05:59:00
MCE20021.DAT	1978-01-29T00:00:00	TO	1978-02-05T05:59:00
MCE20023.DAT	1978-02-05T00:00:00	TO	1978-02-12T05:59:00
MCE20025.DAT	1978-02-12T00:00:00	TO	1978-02-19T05:59:00
MCE20027.DAT	1978-02-19T00:00:00	TO	1978-02-26T05:59:00
MCE20029.DAT	1978-02-26T00:00:00	TO	1978-03-05T05:59:00
MCE20031.DAT	1978-03-05T00:00:00	TO	1978-03-12T05:59:00
MCE20033.DAT	1978-03-12T00:00:00	TO	1978-03-19T05:59:00
MCE20035.DAT	1978-03-19T00:00:00	TO	1978-03-26T05:59:00
MCE20037.DAT	1978-03-26T00:00:00	TO	1978-04-02T05:59:00
MCE20039.DAT	1978-04-02T00:00:00	TO	1978-04-09T05:59:00
MCE20041.DAT	1978-04-09T00:00:00	TO	1978-04-16T05:59:00
MCE20043.DAT	1978-04-16T00:00:00	TO	1978-04-23T05:59:00
MCE20045.DAT	1978-04-23T00:00:00	TO	1978-04-30T05:59:00
MCE20047.DAT	1978-04-30T00:00:00	TO	1978-05-07T05:59:00
MCE20049.DAT	1978-05-07T00:00:00	TO	1978-05-14T05:59:00
MCE20051.DAT	1978-05-14T00:00:00	TO	1978-05-21T05:59:00
MCE20053.DAT	1978-05-21T00:00:00	TO	1978-05-28T05:59:00
MCE20055.DAT	1978-05-28T00:00:00	TO	1978-06-04T05:59:00
MCE20057.DAT	1978-06-04T00:00:00	TO	1978-06-11T05:59:00
MCE20059.DAT	1978-06-11T00:00:00	TO	1978-06-18T05:59:00
MCE20061.DAT	1978-06-18T00:00:00	TO	1978-06-25T05:59:00
MCE20063.DAT	1978-06-25T00:00:00	TO	1978-07-02T05:59:00
MCE20065.DAT	1978-07-02T00:00:00	TO	1978-07-09T05:59:00
MCE20067.DAT	1978-07-09T00:00:00	TO	1978-07-16T05:59:00
MCE20069.DAT	1978-07-16T00:00:00	TO	1978-07-23T05:59:00
MCE20071.DAT	1978-07-23T00:00:00	TO	1978-07-30T05:59:00
MCE20073.DAT	1978-07-30T00:00:00	TO	1978-08-06T05:59:00
MCE20075.DAT	1978-08-06T00:00:00	TO	1978-08-13T05:59:00
MCE20077.DAT	1978-08-13T00:00:00	TO	1978-08-20T05:59:00
MCE20079.DAT	1978-08-20T00:00:00	TO	1978-08-27T05:59:00
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MCE20083.DAT	1978-09-03T00:40:00	TO	1978-09-10T05:59:00
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MCE20087.DAT	1978-09-17T00:00:00	TO	1978-09-24T05:59:00
MCE20089.DAT	1978-09-24T00:00:00	TO	1978-10-01T05:59:00
MCE20091.DAT	1978-10-01T00:00:00	TO	1978-10-08T05:59:00
MCE20093.DAT	1978-10-08T00:00:00	TO	1978-10-15T05:59:00
MCE20095.DAT	1978-10-15T00:00:00	TO	1978-10-22T05:59:00
MCE20097.DAT	1978-10-22T00:00:00	TO	1978-10-29T05:59:00
MCE20099.DAT	1978-10-29T00:00:00	TO	1978-11-05T05:59:00
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MCE20107.DAT	1978-11-26T00:00:00	TO	1978-12-03T05:59:00
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MCE20111.DAT	1978-12-10T00:00:00	TO	1978-12-17T05:59:00
MCE20113.DAT	1978-12-17T00:00:00	TO	1978-12-24T05:59:00
MCE20115.DAT	1978-12-24T00:00:00	TO	1978-12-31T05:59:00

MCE20117.DAT 1978-12-31T00:00:00 TO 1979-01-07T05:59:00
MCE20119.DAT 1979-01-07T00:00:00 TO 1979-01-14T05:59:00
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MCE20199.DAT 1979-10-14T00:00:00 TO 1979-10-21T05:59:00
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MCE20205.DAT 1979-11-04T00:00:00 TO 1979-11-11T05:59:00
MCE20207.DAT 1979-11-11T00:00:00 TO 1979-11-18T05:59:00
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MCE20213.DAT 1979-12-02T00:00:00 TO 1979-12-09T05:59:00
MCE20215.DAT 1979-12-09T00:00:00 TO 1979-12-16T05:59:00
MCE20217.DAT 1979-12-16T00:00:00 TO 1979-12-23T05:59:00
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MCE20229.DAT 1980-01-27T00:00:00 TO 1980-02-03T05:59:00
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MCE20247.DAT 1980-03-30T00:00:00 TO 1980-04-06T05:59:00
MCE20249.DAT 1980-04-06T00:00:00 TO 1980-04-13T05:59:00
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MCE20253.DAT 1980-04-20T00:00:00 TO 1980-04-27T05:59:00
MCE20255.DAT 1980-04-27T00:00:00 TO 1980-05-04T05:59:00
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MCE20265.DAT 1980-06-01T00:00:00 TO 1980-06-08T05:59:00
MCE20267.DAT 1980-06-08T00:00:00 TO 1980-06-15T05:59:00
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PREV_LOG_VOL_COVERAGE: None

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REFERENCE="CONVERT.C";
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REFERENCE="CTIME.FOR";
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DSC 793
MM-102B-00K

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LOG_VOL_INITIATION_DATE:	1990-01-19
LOG_VOL_CLOSING_DATE:	1993-09-21
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 3.1
TECHNICAL_CONTACT:	Harry Herbert University of California at Los Angeles Institute of Geophysics and Planetary Physics 5833 Slichter Hall Los Angeles, CA 90025-1567 (310) 825-9030 NSI=hherbert@igpp.ucla.edu NSI-DECnet=BRUNET::HARRY
PREV_LOG_VOLS:	USA_NASA_NSSD_IC20_0001A

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DATA_SET_NAME:	Multi-Coordinate Ephemeris Data
DATA_SOURCES:	International Sun-Earth Explorer 2 (ISEE-2)
SCIENTIFIC_CONTACT:	Dr. Christopher Russell University of California at Los Angeles Institute of Geophysics and Planetary Physics 6871 Slichter Hall Los Angeles, CA 90025-1567 (310) 825-3188 NSI=ctrussel@igpp.ucla.edu NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm.

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT_ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:
Not applicable.

B. OPERATIONAL_MODE:
Not applicable.

C. MEASURED_PARAMETERS:
Satellite position, speed, spin axis orientation and spin rate were determined.

D. PERFORMANCE_OF_THE_INSTRUMENT:
The instruments functioned with undiminished accuracy until re-entry.

E. RESOLUTION:
The temporal resolution of the data is one sample per minute.

PARAMETERS:
The archive includes the original MCE data as received from Goddard Space Flight Center.

DATA_SET_QUALITY:
The data submitted on this disk are of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block (10 minutes) of data.

DATA_PROCESSING_OVERVIEW:
The MCE data was received on 9-track magnetic tapes written at 1600 BPI with one week of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with 25 weeks of data per copy tape. No changes were made to the data so the data retained its original blocking factor format. These copy tapes were then written to optical disk, again one disk file for each week of data, without any alteration to the data. Thus, the data contained on this optical disk is as close as possible to the original MCE data that was received from GSFC.

At UCLA the MCE data is processed on Sun/UNIX workstations by the FORTRAN program ATORB. ATORB reads the MCE data, calculates model field values and field line intercepts to 15 RE and then writes the data to UCLA-IGPP flat files. A UCLA-IGPP flat file is made up of a pair of data files. One contains ASCII metadata, the other contains a flat table of time-tagged binary data records. One flat file is written per orbit for each spacecraft where an orbit is from perigee to perigee. This file is later merged with 60 second averages of the ISEE-1 and ISEE-2 magnetometer data to produce the UCLA magnetometer one minute resolution summary dataset. ATORB and other UCLA programs to read and interpret the MCE data have been archived on this disk in the directory [000000]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM floating point format. Therefore, any computer program that reads this data on a VMS or UNIX system must convert the data to its native floating point format in order to utilize the information. Otherwise, the data are in standard geophysical units and are easily accessible and interpretable. The software archived on this disk demonstrates how to read these datasets, including conversion of floating point formats.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes the MCE data for approximately one half of the entire mission for either ISEE-1 or ISEE-2. Thus, one optical disk, two logical volumes, contains the entire mission for one spacecraft and two optical disks include all the MCE data for ISEE-1 and ISEE-2.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original MCE data measured every 60 seconds.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1983-01-02T00:00:00 TO 1987-09-26T05:59:00

TYPE_OF_FILE_TIME_COVERAGE:
Multi-Coordinate Ephemeris Data 1983-01-02T00:00:00 TO 1987-09-26T05:59:00

FILE_NAMING_CONVENTION:
File names are of the form MCE#XXXX.DAT where MCE is the type of data, # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number of the first group in that file with leading zeroes as needed.

Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12

varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data. The original MCE data were distributed by Goddard Space Flight Center to the Principal Investigator teams using these same group numbers, however, beginning with groups 13 and 14, two data groups, 7 days of data, were included on each magnetic tape.

For example, the file MCE10013.DAT includes MCE data from January 1, 1978 at 00:00:00 through January 8, 1978 at 05:59:00. This covers the same basic time range as ISEE-1 DECOM data groups 13 and 14 since ISEE-1 DECOM group 13 includes data from January 1, 1978 at 00:00:00 through January 4, 1978 at 00:23:00 and ISEE-1 DECOM group 14 includes data from January 4, 1978 at 00:24:00 through January 8, 1978 at 00:01:00.

LOG VOL FILE TIME COVERAGE:

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DSC 793
77-102B-04S

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LOG_VOL_CLOSING_DATE: 1993-09-30
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT:
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(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS: None

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DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
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NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT_ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an

orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL_MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED_PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE_OF_THE_INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA_SET_QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA_PROCESSING_OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1977-10-22T19:15:44.940 TO 1977-11-18T00:00:08.126
1977-11-28T00:00:58.710 TO 1978-04-12T00:04:57.081

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1977-10-22T19:15:44.940 TO 1977-11-18T00:00:08.126
1977-11-28T00:00:58.710 TO 1978-04-12T00:04:57.081

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:
DEC2000I.DAT 1977-10-22T19:15:44.940 TO 1977-10-24T23:55:04.026
DEC20002.DAT 1977-10-25T00:20:13.559 TO 1977-11-01T04:05:06.268
DEC20003.DAT 1977-11-01T05:00:47.361 TO 1977-11-07T01:44:59.142
DEC20004.DAT 1977-11-07T01:45:40.018 TO 1977-11-12T00:11:55.994
DEC20005.DAT 1977-11-12T00:12:28.495 TO 1977-11-18T00:00:08.126
DEC20008.DAT 1977-11-28T00:00:58.710 TO 1977-12-04T00:34:42.643
DEC20009.DAT 1977-12-04T00:35:09.644 TO 1977-12-11T00:13:00.193
DEC20010.DAT 1977-12-11T00:05:00.182 TO 1977-12-18T01:27:50.844
DEC20011.DAT 1977-12-18T01:05:43.812 TO 1977-12-25T00:46:48.215
DEC20012.DAT 1977-12-25T00:46:53.715 TO 1977-12-31T23:59:58.868
DEC20013.DAT 1978-01-01T00:05:09.626 TO 1978-01-04T00:24:56.922
DEC20014.DAT 1978-01-04T00:25:13.422 TO 1978-01-08T00:58:40.671
DEC20015.DAT 1978-01-08T00:51:57.656 TO 1978-01-11T00:29:56.869
DEC20016.DAT 1978-01-11T00:11:28.842 TO 1978-01-15T00:34:59.838
DEC20017.DAT 1978-01-15T00:24:57.323 TO 1978-01-18T00:02:58.529
DEC20018.DAT 1978-01-18T00:04:07.031 TO 1978-01-22T00:59:57.166
DEC20019.DAT 1978-01-22T01:00:04.666 TO 1978-01-25T00:40:29.528
DEC20020.DAT 1978-01-25T00:40:40.528 TO 1978-01-29T01:22:55.878
DEC20021.DAT 1978-01-29T01:23:03.878 TO 1978-02-01T00:59:57.147
DEC20022.DAT 1978-02-01T01:00:04.148 TO 1978-02-05T00:17:07.409
DEC20023.DAT 1978-02-05T00:17:14.909 TO 1978-02-08T01:29:57.112
DEC20024.DAT 1978-02-08T01:30:03.113 TO 1978-02-12T00:20:43.943
DEC20025.DAT 1978-02-12T00:18:57.939 TO 1978-02-15T00:01:34.264
DEC20026.DAT 1978-02-15T00:01:38.264 TO 1978-02-19T00:28:59.863
DEC20027.DAT 1978-02-19T00:29:02.863 TO 1978-02-22T01:44:57.307
DEC20028.DAT 1978-02-22T01:45:00.807 TO 1978-02-26T01:55:55.198
DEC20029.DAT 1978-02-26T01:56:09.199 TO 1978-03-01T00:29:59.496
DEC20030.DAT 1978-03-01T00:30:05.871 TO 1978-03-05T00:09:05.870
DEC20031.DAT 1978-03-05T00:09:35.370 TO 1978-03-08T01:08:57.226
DEC20032.DAT 1978-03-08T01:08:59.726 TO 1978-03-12T00:15:09.986
DEC20033.DAT 1978-03-12T00:15:18.986 TO 1978-03-15T00:00:14.110
DEC20034.DAT 1978-03-15T01:00:53.950 TO 1978-03-19T00:11:03.219
DEC20035.DAT 1978-03-19T00:11:46.720 TO 1978-03-22T00:02:34.850
DEC20036.DAT 1978-03-22T00:02:39.350 TO 1978-03-25T23:59:59.320
DEC20037.DAT 1978-03-26T00:00:00.695 TO 1978-03-29T00:59:53.165
DEC20038.DAT 1978-03-29T00:59:57.665 TO 1978-04-02T00:17:58.708
DEC20039.DAT 1978-04-02T00:18:05.208 TO 1978-04-05T01:47:57.913
DEC20040.DAT 1978-04-05T01:48:01.413 TO 1978-04-09T01:17:06.622
DEC20041.DAT 1978-04-09T01:17:13.622 TO 1978-04-12T00:04:57.081

/* NOTE: */
/* The files below are located on LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0009A */
/* DEC20006.DAT 1977-11-18T00:00:19.882 TO 1977-11-23T01:02:30.810 */
/* DEC20007.DAT 1977-11-23T03:39:58.536 TO 1977-11-27T23:59:57.209 */

```
PREV_LOG_VOL_COVERAGE: None

CCSD$$MARKERmarkeracCCSD3RF0000200000001

REFERENCETYPE=$CCSDS2;

LABEL=ATTACHED;
REFERENCE="DECOM2.SFD";

LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
REFERENCE="/SOURCE/BINPUT.DAT";
REFERENCE="/SOURCE/BPERIGEE.FFD";
REFERENCE="/SOURCE/BPERIGEE.FFH";
REFERENCE="/SOURCE/BTIMES.FFD";
REFERENCE="/SOURCE/BTIMES.FFH";
REFERENCE="/SOURCE/CONVERT.C";
REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
REFERENCE="/SOURCE/ISEEPRODFF.C";
REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
```

CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0001B
LOG_VOL_NSSDC_EXPT_ID: 77-I02B-04
LOG_VOL_INITIATION_DATE: 1992-03-03
LOG_VOL_CLOSING_DATE: 1993-09-30
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT: Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS: USA_NASA_NSSD_IC2D_0001A

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2)
and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT: Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT_ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an

orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL_MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED_PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE_OF_THE_INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA_SET_QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA_PROCESSING_OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1978-04-12T00:06:20.583 TO 1978-12-03T00:22:00.633

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1978-04-12T00:06:20.583 TO 1978-12-03T00:22:00.633

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:
DEC2004Z.DAT 1978-04-12T00:06:20.583 TO 1978-04-16T00:41:57.731
DEC20043.DAT 1978-04-16T00:40:02.228 TO 1978-04-18T23:59:59.063
DEC20044.DAT 1978-04-19T00:24:15.348 TO 1978-04-23T01:09:57.568
DEC20045.DAT 1978-04-23T01:10:04.068 TO 1978-04-26T02:09:37.708
DEC20046.DAT 1978-04-26T02:09:51.708 TO 1978-04-30T00:15:27.774
DEC20047.DAT 1978-04-30T00:15:30.649 TO 1978-05-03T00:04:59.253
DEC20048.DAT 1978-05-03T00:54:52.825 TO 1978-05-07T01:24:57.128
DEC20049.DAT 1978-05-07T01:25:05.128 TO 1978-05-10T00:00:42.958
DEC20050.DAT 1978-05-10T01:38:05.091 TO 1978-05-14T01:09:57.527
DEC20051.DAT 1978-05-14T01:10:03.027 TO 1978-05-17T00:52:56.804
DEC20052.DAT 1978-05-17T00:31:12.774 TO 1978-05-21T01:23:11.798
DEC20053.DAT 1978-05-21T01:23:22.298 TO 1978-05-24T00:56:51.740
DEC20054.DAT 1978-05-24T00:56:57.490 TO 1978-05-28T01:58:53.467
DEC20055.DAT 1978-05-28T01:59:22.468 TO 1978-05-31T00:30:02.325
DEC20056.DAT 1978-05-31T00:30:12.325 TO 1978-06-04T00:00:01.834
DEC20057.DAT 1978-06-04T00:00:11.835 TO 1978-06-07T00:29:56.071
DEC20058.DAT 1978-06-07T00:29:43.571 TO 1978-06-11T00:21:20.161
DEC20059.DAT 1978-06-11T00:20:28.660 TO 1978-06-14T00:56:57.309
DEC20060.DAT 1978-06-14T00:35:07.279 TO 1978-06-18T00:40:20.637
DEC20061.DAT 1978-06-18T00:40:55.638 TO 1978-06-20T23:30:06.107
DEC20062.DAT 1978-06-21T01:03:20.740 TO 1978-06-25T01:54:28.646
DEC20063.DAT 1978-06-25T02:35:13.201 TO 1978-06-28T00:42:57.402
DEC20064.DAT 1978-06-28T00:43:10.902 TO 1978-07-01T23:05:58.228
DEC20065.DAT 1978-07-02T00:00:05.301 TO 1978-07-05T00:00:07.202
DEC20066.DAT 1978-07-05T00:06:41.711 TO 1978-07-08T23:58:58.083
DEC20067.DAT 1978-07-09T00:26:34.121 TO 1978-07-12T00:11:38.021
DEC20068.DAT 1978-07-12T00:12:11.772 TO 1978-07-16T02:00:57.296
DEC20069.DAT 1978-07-16T02:01:13.796 TO 1978-07-18T23:15:00.076
DEC20070.DAT 1978-07-19T00:14:53.160 TO 1978-07-23T00:23:35.776
DEC20071.DAT 1978-07-23T00:23:42.652 TO 1978-07-26T01:06:34.526
DEC20072.DAT 1978-07-26T01:06:06.025 TO 1978-07-30T00:47:37.145
DEC20073.DAT 1978-07-30T00:47:47.645 TO 1978-08-02T00:50:23.786
DEC20074.DAT 1978-08-02T00:50:42.286 TO 1978-08-06T00:48:02.156
DEC20075.DAT 1978-08-06T00:29:38.629 TO 1978-08-09T00:00:12.215
DEC20076.DAT 1978-08-09T00:01:17.716 TO 1978-08-12T23:59:54.043
DEC20077.DAT 1978-08-13T00:00:05.043 TO 1978-08-15T23:59:56.825
DEC20078.DAT 1978-08-16T00:00:14.451 TO 1978-08-20T00:30:24.441
DEC20079.DAT 1978-08-20T00:30:38.941 TO 1978-08-23T01:05:02.877
DEC20080.DAT 1978-08-23T00:51:55.359 TO 1978-08-27T00:22:59.720
DEC20081.DAT 1978-08-27T00:38:28.110 TO 1978-08-30T00:19:35.302
DEC20082.DAT 1978-08-30T00:19:45.302 TO 1978-09-03T00:41:57.301
DEC20083.DAT 1978-09-03T00:36:08.793 TO 1978-09-06T01:34:19.864
DEC20084.DAT 1978-09-06T01:34:26.364 TO 1978-09-10T00:18:13.664
DEC20085.DAT 1978-09-10T00:19:05.290 TO 1978-09-13T00:13:59.997
DEC20086.DAT 1978-09-13T00:15:05.499 TO 1978-09-17T01:12:11.693
DEC20087.DAT 1978-09-17T01:12:03.193 TO 1978-09-20T01:00:26.048
DEC20088.DAT 1978-09-20T01:37:09.601 TO 1978-09-24T00:37:32.606

```
DEC20089.DAT  1978-09-24T00:38:10.607 TO 1978-09-26T23:14:31.670
DEC20090.DAT  1978-09-27T00:22:05.268 TO 1978-10-01T01:33:56.642
DEC20091.DAT  1978-10-01T01:26:04.631 TO 1978-10-04T01:14:59.494
DEC20092.DAT  1978-10-04T01:15:02.744 TO 1978-10-08T02:05:27.932
DEC20093.DAT  1978-10-08T02:05:46.433 TO 1978-10-10T23:32:47.003
DEC20094.DAT  1978-10-11T01:05:05.138 TO 1978-10-15T00:27:31.324
DEC20095.DAT  1978-10-15T00:21:49.191 TO 1978-10-18T00:03:54.499
DEC20096.DAT  1978-10-18T00:04:01.000 TO 1978-10-22T01:51:56.683
DEC20097.DAT  1978-10-22T01:52:01.183 TO 1978-10-25T01:20:03.071
DEC20098.DAT  1978-10-25T01:18:07.068 TO 1978-10-29T01:12:00.782
DEC20099.DAT  1978-10-29T04:22:02.057 TO 1978-11-01T00:00:00.923
DEC20100.DAT  1978-11-01T04:28:00.313 TO 1978-11-05T01:00:57.387
DEC20101.DAT  1978-11-05T01:55:23.965 TO 1978-11-08T00:42:00.325
DEC20102.DAT  1978-11-08T01:45:04.046 TO 1978-11-12T00:04:57.108
DEC20103.DAT  1978-11-12T01:20:03.716 TO 1978-11-14T23:35:00.863
DEC20104.DAT  1978-11-15T02:44:45.641 TO 1978-11-19T00:25:04.018
DEC20105.DAT  1978-11-19T05:46:14.373 TO 1978-11-22T00:20:06.337
DEC20106.DAT  1978-11-22T00:41:15.123 TO 1978-11-25T23:44:57.599
DEC20107.DAT  1978-11-26T10:00:04.976 TO 1978-11-28T23:26:57.295
DEC20108.DAT  1978-11-29T00:00:12.843 TO 1978-12-03T00:22:00.633

PREV_LOG_VOL_COVERAGE: 1977-10-22T19:15:44.940 TO 1977-11-18T00:00:08.126
                       1977-11-28T00:00:58.710 TO 1978-04-12T00:04:57.081

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REFERENCE="DECOM2.SFD";

LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
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REFERENCE="/SOURCE/CTIME.C";
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REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
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REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
```

CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0002A
LOG_VOL_NSSDC_EXPT_ID: 77-102B-04
LOG_VOL_INITIATION_DATE: 1992-03-25
LOG_VOL_CLOSING_DATE: 1993-09-30
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT:
Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:
USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT_ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:

In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL_MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED_PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE_OF_THE_INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA_SET_QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA_PROCESSING_OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs

have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1978-12-03T01:08:05.078 TO 1978-12-27T00:26:05.646
1978-12-31T01:38:00.908 TO 1979-01-02T22:29:57.645
1979-01-07T03:25:29.067 TO 1979-07-17T21:53:01.705

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1978-12-03T01:08:05.078 TO 1978-12-27T00:26:05.646
1978-12-31T01:38:00.908 TO 1979-01-02T22:29:57.645
1979-01-07T03:25:29.067 TO 1979-07-17T21:53:01.705

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:

DEC20109.DAT	1978-12-03T01:08:05.078	TO	1978-12-06T00:00:11.353
DEC20110.DAT	1978-12-06T00:00:17.854	TO	1978-12-10T00:03:57.891
DEC20111.DAT	1978-12-10T03:52:02.232	TO	1978-12-12T23:43:59.021
DEC20112.DAT	1978-12-13T02:12:44.621	TO	1978-12-17T00:01:56.976
DEC20113.DAT	1978-12-17T01:20:00.593	TO	1978-12-19T22:07:11.238
DEC20114.DAT	1978-12-20T02:25:14.619	TO	1978-12-23T22:29:58.352
DEC20115.DAT	1978-12-24T00:33:00.537	TO	1978-12-27T00:26:05.646
DEC20117.DAT	1978-12-31T01:38:00.908	TO	1979-01-02T22:29:57.645
DEC20119.DAT	1979-01-07T03:25:29.067	TO	1979-01-09T23:45:05.519
DEC20120.DAT	1979-01-10T00:14:53.564	TO	1979-01-13T23:50:09.181
DEC20121.DAT	1979-01-14T00:00:00.696	TO	1979-01-17T00:34:58.740
DEC20122.DAT	1979-01-17T04:30:33.111	TO	1979-01-20T23:32:58.892
DEC20123.DAT	1979-01-21T01:13:25.537	TO	1979-01-24T01:01:17.264
DEC20124.DAT	1979-01-24T02:16:06.872	TO	1979-01-27T23:06:56.938
DEC20125.DAT	1979-01-28T02:32:06.234	TO	1979-01-31T00:22:59.646
DEC20126.DAT	1979-01-31T01:34:50.253	TO	1979-02-03T23:33:59.860
DEC20127.DAT	1979-02-04T03:16:14.646	TO	1979-02-06T22:34:58.849
DEC20128.DAT	1979-02-07T00:46:03.017	TO	1979-02-10T21:25:00.467
DEC20129.DAT	1979-02-11T01:26:20.414	TO	1979-02-13T23:44:59.581
DEC20130.DAT	1979-02-14T00:31:09.140	TO	1979-02-18T00:05:57.530
DEC20131.DAT	1979-02-18T01:29:01.137	TO	1979-02-21T01:01:00.654
DEC20132.DAT	1979-02-21T01:57:00.726	TO	1979-02-24T22:49:57.540
DEC20133.DAT	1979-02-25T01:49:56.273	TO	1979-02-28T00:21:54.809
DEC20134.DAT	1979-02-28T00:46:34.845	TO	1979-03-03T23:59:58.068
DEC20135.DAT	1979-03-04T00:00:03.069	TO	1979-03-07T00:36:11.758
DEC20136.DAT	1979-03-07T01:23:22.328	TO	1979-03-11T00:14:58.228
DEC20137.DAT	1979-03-11T00:53:57.785	TO	1979-03-14T00:00:01.920
DEC20138.DAT	1979-03-14T00:00:07.920	TO	1979-03-18T00:19:57.221
DEC20139.DAT	1979-03-18T00:43:45.255	TO	1979-03-21T00:31:58.567
DEC20140.DAT	1979-03-21T00:26:16.079	TO	1979-03-25T00:56:57.852
DEC20141.DAT	1979-03-25T02:25:18.983	TO	1979-03-27T23:21:57.902
DEC20142.DAT	1979-03-28T01:06:05.052	TO	1979-04-01T01:06:36.003
DEC20143.DAT	1979-04-01T01:30:05.537	TO	1979-04-03T23:59:57.472
DEC20144.DAT	1979-04-04T00:00:03.472	TO	1979-04-08T01:00:38.258
DEC20145.DAT	1979-04-08T01:00:44.758	TO	1979-04-11T00:53:00.638
DEC20146.DAT	1979-04-11T00:53:11.764	TO	1979-04-15T00:16:06.664
DEC20147.DAT	1979-04-15T00:08:17.652	TO	1979-04-17T23:15:16.675
DEC20148.DAT	1979-04-18T00:03:01.723	TO	1979-04-22T02:04:57.224
DEC20149.DAT	1979-04-22T02:01:35.219	TO	1979-04-24T22:23:10.122
DEC20150.DAT	1979-04-25T02:01:00.823	TO	1979-04-29T00:08:57.693
DEC20151.DAT	1979-04-29T00:09:34.694	TO	1979-05-02T00:38:01.209
DEC20152.DAT	1979-05-02T00:23:40.688	TO	1979-05-06T00:03:39.814

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DEC20153.DAT  1979-05-06T00:03:49.314 TO 1979-05-09T00:34:43.134
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DEC20155.DAT  1979-05-13T00:53:53.300 TO 1979-05-16T00:45:47.708
DEC20156.DAT  1979-05-16T00:40:01.700 TO 1979-05-20T01:13:26.279
DEC20157.DAT  1979-05-20T01:03:52.767 TO 1979-05-23T00:06:58.091
DEC20158.DAT  1979-05-23T00:00:23.082 TO 1979-05-27T00:06:58.453
DEC20159.DAT  1979-05-27T00:56:06.020 TO 1979-05-30T00:35:59.817
DEC20160.DAT  1979-05-30T00:19:17.169 TO 1979-06-03T00:00:07.824
DEC20161.DAT  1979-06-03T00:15:04.844 TO 1979-06-06T01:15:07.800
DEC20162.DAT  1979-06-06T01:15:15.300 TO 1979-06-10T00:28:45.561
DEC20163.DAT  1979-06-10T00:28:51.562 TO 1979-06-12T23:39:21.006
DEC20164.DAT  1979-06-13T00:35:04.082 TO 1979-06-17T00:29:21.388
DEC20165.DAT  1979-06-17T00:29:27.389 TO 1979-06-20T00:11:40.240
DEC20166.DAT  1979-06-20T01:54:05.379 TO 1979-06-23T22:24:20.916
DEC20167.DAT  1979-06-24T01:59:26.217 TO 1979-06-26T23:45:58.056
DEC20168.DAT  1979-06-27T00:18:33.101 TO 1979-06-30T22:23:07.279
DEC20169.DAT  1979-07-01T00:17:28.934 TO 1979-07-04T00:45:59.621
DEC20170.DAT  1979-07-04T00:40:04.612 TO 1979-07-08T00:40:09.851
DEC20171.DAT  1979-07-08T00:35:03.844 TO 1979-07-11T01:39:59.833
DEC20172.DAT  1979-07-11T01:34:59.826 TO 1979-07-15T00:15:43.102
DEC20173.DAT  1979-07-15T00:15:48.102 TO 1979-07-17T21:53:01.705

/* NOTE:                                                                  */
/*  The files below are located on LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0009A  */
/*   DEC20116.DAT  1978-12-27T01:17:43.223 TO 1978-12-30T23:33:58.721      */
/*   DEC20118.DAT  1979-01-03T02:12:55.984 TO 1979-01-07T01:04:59.351      */

PREV_LOG_VOL_COVERAGE: 1978-04-12T00:06:20.583 TO 1978-12-03T00:22:00.633

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REFERENCETYPE=$CCSDS2;

LABEL=ATTACHED;
REFERENCE="DECOM2.SFD";

LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
REFERENCE="/SOURCE/BINPUT.DAT";
REFERENCE="/SOURCE/BPERIGEE.FFD";
REFERENCE="/SOURCE/BPERIGEE.FFH";
REFERENCE="/SOURCE/BTIMES.FFD";
REFERENCE="/SOURCE/BTIMES.FFH";
REFERENCE="/SOURCE/CONVERT.C";
REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
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REFERENCE="/SOURCE/FLAT2ASCII.C";
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REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
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REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";
```

```
/* EOF */
```

CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0002B
LOG_VOL_NSSDC_EXPT_ID: 77-102B-04
LOG_VOL_INITIATION_DATE: 1992-03-25
LOG_VOL_CLOSING_DATE: 1993-09-30
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT:
Harry Herbert
University of California at Los Angeles
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5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
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PREV_LOG_VOLS:
USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
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NSI=ctrussel@igpp.ucla.edu
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SOURCE_CHARACTERISTICS:

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The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically

meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type of file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1979-07-18T01:06:59.480 TO 1980-02-19T23:02:58.819

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1979-07-18T01:06:59.480 TO 1980-02-19T23:02:58.819

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:
DEC20174.DAT 1979-07-18T01:06:59.480 TO 1979-07-21T23:59:59.053
DEC20175.DAT 1979-07-22T00:00:07.053 TO 1979-07-25T00:25:49.010
DEC20176.DAT 1979-07-25T00:52:03.046 TO 1979-07-29T00:54:58.903
DEC20177.DAT 1979-07-29T00:55:07.153 TO 1979-08-01T00:31:10.841
DEC20178.DAT 1979-08-01T01:32:19.924 TO 1979-08-04T22:09:36.082
DEC20179.DAT 1979-08-05T00:29:03.774 TO 1979-08-08T01:55:09.341
DEC20180.DAT 1979-08-08T01:41:12.822 TO 1979-08-12T01:12:11.348
DEC20181.DAT 1979-08-12T01:54:00.406 TO 1979-08-15T01:59:58.390
DEC20182.DAT 1979-08-15T01:59:30.889 TO 1979-08-19T00:23:37.893
DEC20183.DAT 1979-08-19T00:28:55.900 TO 1979-08-22T00:40:00.479
DEC20184.DAT 1979-08-22T00:40:02.104 TO 1979-08-26T00:59:57.623
DEC20185.DAT 1979-08-26T00:54:01.115 TO 1979-08-29T01:00:59.304
DEC20186.DAT 1979-08-29T00:38:16.273 TO 1979-09-02T00:29:03.113
DEC20187.DAT 1979-09-02T00:08:26.710 TO 1979-09-04T23:28:44.414
DEC20188.DAT 1979-09-05T00:25:58.491 TO 1979-09-09T00:59:55.961
DEC20189.DAT 1979-09-09T00:59:58.961 TO 1979-09-12T01:20:56.065
DEC20190.DAT 1979-09-12T01:21:20.066 TO 1979-09-16T00:42:04.253
DEC20191.DAT 1979-09-16T00:46:47.259 TO 1979-09-19T00:15:04.928
DEC20192.DAT 1979-09-19T00:15:19.798 TO 1979-09-23T01:39:26.430
DEC20193.DAT 1979-09-23T01:20:31.903 TO 1979-09-25T23:04:59.837
DEC20194.DAT 1979-09-26T00:01:17.795 TO 1979-09-30T00:19:59.880
DEC20195.DAT 1979-09-30T00:10:37.617 TO 1979-10-03T01:14:58.878
DEC20196.DAT 1979-10-03T01:08:56.870 TO 1979-10-07T00:21:17.951
DEC20197.DAT 1979-10-07T00:14:55.942 TO 1979-10-10T00:15:58.594
DEC20198.DAT 1979-10-10T00:10:10.587 TO 1979-10-14T00:29:26.884
DEC20199.DAT 1979-10-14T00:28:54.383 TO 1979-10-17T00:17:57.733
DEC20200.DAT 1979-10-17T00:12:21.725 TO 1979-10-20T23:03:02.693
DEC20201.DAT 1979-10-21T01:05:59.748 TO 1979-10-23T22:06:25.167
DEC20202.DAT 1979-10-24T00:02:23.285 TO 1979-10-28T01:43:55.336
DEC20203.DAT 1979-10-28T01:44:01.336 TO 1979-10-30T23:32:58.948
DEC20204.DAT 1979-10-31T00:14:58.008 TO 1979-11-03T23:59:56.453
DEC20205.DAT 1979-11-04T00:00:00.453 TO 1979-11-07T01:53:56.172
DEC20206.DAT 1979-11-07T02:54:56.249 TO 1979-11-11T00:16:02.047
DEC20207.DAT 1979-11-11T00:16:05.047 TO 1979-11-14T00:15:00.171
DEC20208.DAT 1979-11-14T00:08:52.913 TO 1979-11-18T00:13:57.682
DEC20209.DAT 1979-11-18T00:14:00.682 TO 1979-11-21T01:09:55.453
DEC20210.DAT 1979-11-21T01:10:08.453 TO 1979-11-25T00:45:54.603
DEC20211.DAT 1979-11-25T00:46:12.854 TO 1979-11-27T22:12:04.149
DEC20212.DAT 1979-11-28T00:02:56.792 TO 1979-12-02T00:14:58.231
DEC20213.DAT 1979-12-02T00:15:03.231 TO 1979-12-05T00:00:15.650
DEC20214.DAT 1979-12-05T00:00:22.150 TO 1979-12-09T00:06:57.207
DEC20215.DAT 1979-12-09T00:16:44.719 TO 1979-12-12T00:39:59.225
DEC20216.DAT 1979-12-12T00:41:39.727 TO 1979-12-15T22:27:13.279
DEC20217.DAT 1979-12-16T00:08:58.407 TO 1979-12-19T01:05:06.280
DEC20218.DAT 1979-12-19T02:21:51.882 TO 1979-12-22T22:05:56.748

```
DEC20219.DAT  1979-12-23T00:10:53.411 TO 1979-12-26T00:58:46.068
DEC20220.DAT  1979-12-26T00:48:40.555 TO 1979-12-29T22:21:58.819
DEC20221.DAT  1979-12-30T01:47:29.457 TO 1980-01-02T00:28:57.231
DEC20222.DAT  1980-01-02T01:06:35.280 TO 1980-01-06T00:58:18.721
DEC20223.DAT  1980-01-06T01:59:00.299 TO 1980-01-08T20:57:57.509
DEC20224.DAT  1980-01-09T00:09:30.758 TO 1980-01-13T01:15:01.675
DEC20225.DAT  1980-01-13T06:36:27.107 TO 1980-01-16T00:20:12.523
DEC20226.DAT  1980-01-16T00:18:58.021 TO 1980-01-20T00:54:58.064
DEC20227.DAT  1980-01-20T03:11:55.241 TO 1980-01-23T00:53:04.815
DEC20228.DAT  1980-01-23T01:15:59.346 TO 1980-01-27T00:05:05.765
DEC20229.DAT  1980-01-27T00:05:08.765 TO 1980-01-29T22:21:57.744
DEC20230.DAT  1980-01-30T00:01:59.874 TO 1980-02-02T23:44:59.837
DEC20231.DAT  1980-02-03T00:09:56.369 TO 1980-02-05T23:59:59.457
DEC20232.DAT  1980-02-06T01:49:04.602 TO 1980-02-10T00:10:33.102
DEC20233.DAT  1980-02-10T00:08:48.099 TO 1980-02-12T23:18:57.132
DEC20234.DAT  1980-02-13T00:11:53.200 TO 1980-02-17T00:05:26.482
DEC20235.DAT  1980-02-17T00:55:43.299 TO 1980-02-19T23:02:58.819

PREV_LOG_VOL_COVERAGE: 1978-12-03T01:08:05.078 TO 1978-12-27T00:26:05.646
                       1978-12-31T01:38:00.908 TO 1979-01-02T22:29:57.645
                       1979-01-07T03:25:29.067 TO 1979-07-17T21:53:01.705

CCSD$$MARKERmarkeracCCSD3RF0000200000001

REFERENCETYPE=$CCSDS2;

LABEL=ATTACHED;
REFERENCE="DECOM2.SFD";

LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
REFERENCE="/SOURCE/BINPUT.DAT";
REFERENCE="/SOURCE/BPERIGEE.FFD";
REFERENCE="/SOURCE/BPERIGEE.FFH";
REFERENCE="/SOURCE/BTIMES.FFD";
REFERENCE="/SOURCE/BTIMES.FFH";
REFERENCE="/SOURCE/CONVERT.C";
REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
REFERENCE="/SOURCE/ISEEPRODFF.C";
REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
```

CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0003A
LOG_VOL_NSSDC_EXPT_ID: 77-102B-04
LOG_VOL_INITIATION_DATE: 1992-04-08
LOG_VOL_CLOSING_DATE: 1993-10-01
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT:
Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:
USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT ATTRIBUTES:

A. DESCRIPTION OF INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE OF THE INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA SET QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is

```
DEC20278.DAT  1980-07-16T00:26:57.730 TO 1980-07-20T00:05:57.409
DEC20279.DAT  1980-07-20T00:37:29.446 TO 1980-07-23T01:27:09.482
DEC20280.DAT  1980-07-23T01:27:13.982 TO 1980-07-27T00:40:28.981
DEC20281.DAT  1980-07-27T01:11:11.518 TO 1980-07-29T23:59:58.785
DEC20282.DAT  1980-07-30T00:29:05.818 TO 1980-08-03T00:11:09.806
DEC20283.DAT  1980-08-03T00:07:15.926 TO 1980-08-06T00:07:56.695
DEC20284.DAT  1980-08-06T00:08:30.695 TO 1980-08-10T01:03:02.284
DEC20285.DAT  1980-08-10T00:55:29.278 TO 1980-08-13T00:23:53.208
DEC20286.DAT  1980-08-13T00:28:47.714 TO 1980-08-17T00:02:35.141
DEC20287.DAT  1980-08-17T00:02:37.141 TO 1980-08-20T00:29:56.380
DEC20288.DAT  1980-08-20T01:01:59.420 TO 1980-08-24T01:51:00.888
DEC20289.DAT  1980-08-24T01:44:13.880 TO 1980-08-27T00:10:23.106
DEC20290.DAT  1980-08-27T00:11:17.607 TO 1980-08-31T00:35:38.378
DEC20291.DAT  1980-08-31T00:35:41.878 TO 1980-09-03T00:05:01.251
DEC20292.DAT  1980-09-03T02:54:05.950 TO 1980-09-07T01:10:47.929
DEC20293.DAT  1980-09-07T01:10:55.929 TO 1980-09-09T20:38:26.889
DEC20294.DAT  1980-09-10T00:26:19.163 TO 1980-09-14T01:14:26.255
DEC20295.DAT  1980-09-14T01:14:55.255 TO 1980-09-16T23:12:02.343
DEC20296.DAT  1980-09-17T01:15:56.998 TO 1980-09-20T23:46:16.298

/* NOTE:                                                              */
/*  The files below are located on LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0009A  */
/*   DEC20248.DAT  1980-04-02T00:38:14.823 TO 1980-04-06T00:37:11.297      */
/*   DEC20250.DAT  1980-04-09T00:26:16.834 TO 1980-04-12T23:50:14.316      */

PREV_LOG_VOL_COVERAGE: 1979-07-18T01:06:59.480 TO 1980-02-19T23:02:58.819

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REFERENCETYPE=$CCSDS2;

LABEL=ATTACHED;
REFERENCE="DECOM2.SFD";

LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
REFERENCE="/SOURCE/BINPUT.DAT";
REFERENCE="/SOURCE/BPERIGEE.FFD";
REFERENCE="/SOURCE/BPERIGEE.FFH";
REFERENCE="/SOURCE/BTIMES.FFD";
REFERENCE="/SOURCE/BTIMES.FFH";
REFERENCE="/SOURCE/CONVERT.C";
REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
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REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
REFERENCE="/SOURCE/ISEEPRODFF.C";
REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT:	USA_NASA_NSSD_IC2D_0003B
LOG_VOL_NSSDC_EXPT_ID:	77-I02B-04
LOG_VOL_INITIATION_DATE:	1992-04-08
LOG_VOL_CLOSING_DATE:	1993-10-01
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 4.2

TECHNICAL_CONTACT:

Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:

USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME:	DECOM Magnetometer Data
DATA_SOURCES:	International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:

Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT ATTRIBUTES:

A. DESCRIPTION OF INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE OF THE INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA SET QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA USAGE:
The data in this archive are stored in IBM integer format. Because the data

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DEC20340.DAT  1981-02-18T01:20:00.058 TO 1981-02-21T14:47:07.332
DEC20341.DAT  1981-02-22T02:45:26.871 TO 1981-02-24T21:12:57.819
DEC20342.DAT  1981-02-25T00:15:05.043 TO 1981-02-28T23:39:36.085
DEC20343.DAT  1981-03-01T01:14:44.701 TO 1981-03-03T23:40:17.921
DEC20344.DAT  1981-03-04T01:41:28.072 TO 1981-03-07T20:35:05.524
DEC20345.DAT  1981-03-08T01:47:57.911 TO 1981-03-11T00:19:58.167
DEC20346.DAT  1981-03-11T01:14:01.235 TO 1981-03-14T20:12:19.764

PREV_LOG_VOL_COVERAGE: 1980-02-20T01:11:28.984 TO 1980-04-02T00:43:00.830
                       1980-04-06T00:36:26.795 TO 1980-04-09T00:26:04.834
                       1980-04-13T02:25:01.507 TO 1980-09-20T23:46:16.298

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REFERENCETYPE=$CCSDS2;

LABEL=ATTACHED;
REFERENCE="DECOM2.SFD";

LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
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REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
REFERENCE="/SOURCE/ISEEPRODFF.C";
REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0004A
LOG_VOL_NSSDC_EXPT_ID: 77-I02B-04
LOG_VOL_INITIATION_DATE: 1992-09-09
LOG_VOL_CLOSING_DATE: 1993-10-01
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT:
Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:
USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
USA_NASA_NSSD_IC2D_0003B

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar

flares in the interplanetary region near 1 AU.

INSTRUMENT ATTRIBUTES:
A. DESCRIPTION OF INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE OF THE INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA SET QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA USAGE:

The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type of file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1981-03-15T00:24:30.550 TO 1981-08-12T00:52:00.720

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1981-03-15T00:24:30.550 TO 1981-08-12T00:52:00.720

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:

DEC20347.DAT	1981-03-15T00:24:30.550	TO	1981-03-18T00:01:05.935
DEC20348.DAT	1981-03-18T00:02:10.561	TO	1981-03-21T23:27:59.025
DEC20349.DAT	1981-03-22T00:58:31.595	TO	1981-03-25T00:45:59.307
DEC20350.DAT	1981-03-25T01:15:01.838	TO	1981-03-29T00:19:07.735
DEC20351.DAT	1981-03-29T00:08:57.472	TO	1981-04-01T00:05:58.474
DEC20352.DAT	1981-04-01T00:06:03.474	TO	1981-04-05T00:19:14.266
DEC20353.DAT	1981-04-05T00:23:42.772	TO	1981-04-08T00:39:32.733
DEC20354.DAT	1981-04-08T00:39:34.733	TO	1981-04-12T01:19:57.162
DEC20355.DAT	1981-04-12T01:20:20.662	TO	1981-04-15T00:00:14.089
DEC20356.DAT	1981-04-14T23:59:58.585	TO	1981-04-19T00:39:05.293
DEC20357.DAT	1981-04-19T01:01:54.320	TO	1981-04-22T00:58:38.135
DEC20358.DAT	1981-04-22T00:58:58.886	TO	1981-04-26T00:53:50.146
DEC20359.DAT	1981-04-26T00:48:16.137	TO	1981-04-29T00:30:55.625
DEC20360.DAT	1981-04-29T01:27:05.690	TO	1981-05-03T01:15:40.035
DEC20361.DAT	1981-05-03T01:15:55.035	TO	1981-05-06T01:49:35.420
DEC20362.DAT	1981-05-06T01:50:04.921	TO	1981-05-09T23:43:57.840
DEC20363.DAT	1981-05-10T02:22:08.520	TO	1981-05-13T00:51:58.866
DEC20364.DAT	1981-05-13T00:52:21.366	TO	1981-05-17T00:09:18.906
DEC20365.DAT	1981-05-17T00:43:51.695	TO	1981-05-20T01:19:54.100
DEC20366.DAT	1981-05-20T01:19:57.100	TO	1981-05-24T00:28:01.656
DEC20367.DAT	1981-05-24T02:53:57.823	TO	1981-05-27T00:02:15.229
DEC20368.DAT	1981-05-27T00:16:53.502	TO	1981-05-31T00:15:06.446
DEC20369.DAT	1981-05-31T00:07:48.438	TO	1981-06-02T23:59:54.927
DEC20370.DAT	1981-06-03T00:00:00.926	TO	1981-06-07T00:59:57.906
DEC20371.DAT	1981-06-07T01:00:21.406	TO	1981-06-09T22:16:05.666
DEC20372.DAT	1981-06-10T00:26:29.700	TO	1981-06-14T00:01:07.824
DEC20373.DAT	1981-06-14T00:01:30.325	TO	1981-06-17T00:19:57.415
DEC20374.DAT	1981-06-17T00:19:59.915	TO	1981-06-21T00:49:59.082
DEC20375.DAT	1981-06-21T00:50:19.707	TO	1981-06-24T01:06:59.557
DEC20376.DAT	1981-06-24T00:59:46.549	TO	1981-06-28T00:00:28.328
DEC20377.DAT	1981-06-28T00:04:44.833	TO	1981-07-01T01:13:31.038
DEC20378.DAT	1981-07-01T00:40:17.998	TO	1981-07-05T00:31:28.050
DEC20379.DAT	1981-07-05T00:25:11.543	TO	1981-07-08T00:31:08.141
DEC20380.DAT	1981-07-08T00:25:06.633	TO	1981-07-12T00:30:58.127
DEC20381.DAT	1981-07-12T00:26:19.122	TO	1981-07-15T00:25:18.823
DEC20382.DAT	1981-07-15T00:25:40.448	TO	1981-07-19T00:01:37.270
DEC20383.DAT	1981-07-19T00:00:55.269	TO	1981-07-22T00:02:17.669
DEC20384.DAT	1981-07-22T00:02:39.669	TO	1981-07-26T01:24:58.627
DEC20385.DAT	1981-07-26T01:25:18.503	TO	1981-07-28T23:59:57.088
DEC20386.DAT	1981-07-29T00:00:10.088	TO	1981-08-02T01:07:53.818
DEC20387.DAT	1981-08-02T01:03:58.314	TO	1981-08-05T01:24:58.303
DEC20388.DAT	1981-08-05T01:19:09.295	TO	1981-08-09T00:30:31.396

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DEC20389.DAT  1981-08-09T00:36:43.409 TO 1981-08-12T00:52:00.720

PREV_LOG_VOL_COVERAGE: 1980-09-21T01:00:03.388 TO 1981-03-14T20:12:19.764

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LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
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REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
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REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
REFERENCE="/SOURCE/ISEEPRODFF.C";
REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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LOG_VOL_IDENT:	USA_NASA_NSSD_IC2D_0004B
LOG_VOL_NSSDC_EXPT_ID:	77-102B-04
LOG_VOL_INITIATION_DATE:	1992-09-09
LOG_VOL_CLOSING_DATE:	1993-10-01
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 4.2

TECHNICAL_CONTACT:

Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:

USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
USA_NASA_NSSD_IC2D_0003B
USA_NASA_NSSD_IC2D_0004A

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME:	DECOM Magnetometer Data
DATA_SOURCES:	International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:

Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and

earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT ATTRIBUTES:

A. DESCRIPTION OF INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE OF THE INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA SET QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1981-08-12T00:57:53.728 TO 1982-04-21T00:55:23.722

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1981-08-12T00:57:53.728 TO 1982-04-21T00:55:23.722

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:

DEC20390.DAT	1981-08-12T00:57:53.728	TO	1981-08-16T00:59:57.652
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DEC20392.DAT	1981-08-19T00:54:58.619	TO	1981-08-23T00:58:56.670
DEC20393.DAT	1981-08-23T00:52:55.663	TO	1981-08-26T00:59:50.356
DEC20394.DAT	1981-08-26T00:59:54.356	TO	1981-08-30T00:01:40.867
DEC20395.DAT	1981-08-30T00:01:42.867	TO	1981-09-02T00:47:35.972
DEC20396.DAT	1981-09-02T00:47:38.472	TO	1981-09-06T00:16:03.279
DEC20397.DAT	1981-09-06T00:16:10.779	TO	1981-09-09T00:00:07.890
DEC20398.DAT	1981-09-09T00:08:45.899	TO	1981-09-13T00:25:00.492
DEC20399.DAT	1981-09-13T01:08:00.917	TO	1981-09-16T01:07:15.469
DEC20400.DAT	1981-09-16T01:08:10.970	TO	1981-09-20T00:35:59.314
DEC20401.DAT	1981-09-20T00:53:01.332	TO	1981-09-23T01:46:58.134
DEC20402.DAT	1981-09-23T01:41:00.628	TO	1981-09-27T00:17:57.451
DEC20403.DAT	1981-09-27T00:12:10.444	TO	1981-09-30T00:38:41.710
DEC20404.DAT	1981-09-30T01:05:57.741	TO	1981-10-03T23:59:24.177
DEC20405.DAT	1981-10-04T02:01:03.317	TO	1981-10-07T00:00:00.828
DEC20406.DAT	1981-10-07T00:00:02.328	TO	1981-10-11T00:15:57.712
DEC20407.DAT	1981-10-11T00:10:26.205	TO	1981-10-14T00:44:57.538
DEC20408.DAT	1981-10-14T02:46:59.681	TO	1981-10-18T00:26:02.136
DEC20409.DAT	1981-10-18T01:16:27.323	TO	1981-10-21T00:29:27.949
DEC20410.DAT	1981-10-21T00:29:47.950	TO	1981-10-25T00:00:33.606
DEC20411.DAT	1981-10-25T00:06:47.114	TO	1981-10-28T01:45:10.168
DEC20412.DAT	1981-10-28T03:34:59.304	TO	1981-11-01T00:00:00.668
DEC20413.DAT	1981-11-01T00:01:31.669	TO	1981-11-03T23:49:56.316
DEC20414.DAT	1981-11-04T01:32:53.445	TO	1981-11-07T23:03:56.603
DEC20415.DAT	1981-11-08T00:24:53.202	TO	1981-11-10T23:59:58.964
DEC20416.DAT	1981-11-11T00:00:00.589	TO	1981-11-14T18:28:54.674
DEC20417.DAT	1981-11-15T01:16:05.554	TO	1981-11-17T23:40:12.319
DEC20418.DAT	1981-11-18T04:50:14.218	TO	1981-11-21T23:03:56.812
DEC20419.DAT	1981-11-22T01:34:54.899	TO	1981-11-25T00:38:53.470
DEC20420.DAT	1981-11-25T00:38:57.970	TO	1981-11-29T00:44:55.961
DEC20421.DAT	1981-11-29T00:45:15.461	TO	1981-12-01T22:46:55.817
DEC20422.DAT	1981-12-02T00:10:54.914	TO	1981-12-05T23:01:11.095
DEC20423.DAT	1981-12-06T02:29:08.103	TO	1981-12-09T00:55:09.790
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DEC20425.DAT	1981-12-13T01:13:02.090	TO	1981-12-15T23:46:39.736
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DEC20427.DAT	1981-12-20T03:22:59.024	TO	1981-12-22T23:55:57.467
DEC20428.DAT	1981-12-23T03:16:01.893	TO	1981-12-27T00:49:57.861
DEC20429.DAT	1981-12-27T02:04:01.952	TO	1981-12-29T23:41:00.218
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DEC20434.DAT  1982-01-13T03:46:29.098 TO 1982-01-17T00:14:59.218
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DEC20436.DAT  1982-01-20T00:48:05.752 TO 1982-01-23T22:42:56.608
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DEC20439.DAT  1982-01-31T01:37:31.970 TO 1982-02-02T23:35:05.467
DEC20440.DAT  1982-02-03T00:49:00.312 TO 1982-02-06T23:59:56.627
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DEC20442.DAT  1982-02-10T00:00:41.481 TO 1982-02-13T23:55:24.717
DEC20443.DAT  1982-02-14T00:37:40.514 TO 1982-02-17T00:31:00.493
DEC20444.DAT  1982-02-17T01:31:00.569 TO 1982-02-20T22:03:44.557
DEC20445.DAT  1982-02-21T00:16:42.704 TO 1982-02-24T00:18:55.889
DEC20446.DAT  1982-02-24T00:13:52.382 TO 1982-02-28T00:13:59.256
DEC20447.DAT  1982-02-28T01:09:45.574 TO 1982-03-03T00:01:59.765
DEC20448.DAT  1982-03-03T01:07:49.332 TO 1982-03-06T23:36:48.365
DEC20449.DAT  1982-03-07T05:31:58.778 TO 1982-03-10T01:08:08.646
DEC20450.DAT  1982-03-10T02:13:39.351 TO 1982-03-13T23:13:16.240
DEC20451.DAT  1982-03-14T00:32:12.831 TO 1982-03-17T00:26:58.339
DEC20452.DAT  1982-03-17T00:24:02.336 TO 1982-03-21T01:00:05.045
DEC20453.DAT  1982-03-21T01:23:59.573 TO 1982-03-24T00:27:00.605
DEC20454.DAT  1982-03-24T00:25:00.978 TO 1982-03-27T22:58:03.908
DEC20455.DAT  1982-03-28T01:59:12.120 TO 1982-03-30T22:16:57.955
DEC20456.DAT  1982-03-31T03:06:03.297 TO 1982-04-04T00:37:05.586
DEC20457.DAT  1982-04-04T00:30:54.454 TO 1982-04-07T00:41:08.853
DEC20458.DAT  1982-04-07T00:41:19.353 TO 1982-04-11T00:29:31.358
DEC20459.DAT  1982-04-11T00:28:56.357 TO 1982-04-14T00:23:55.654
DEC20460.DAT  1982-04-14T00:23:57.654 TO 1982-04-18T00:00:43.351
DEC20461.DAT  1982-04-18T00:01:47.353 TO 1982-04-21T00:55:23.722

PREV_LOG_VOL_COVERAGE: 1981-03-15T00:24:30.550 TO 1981-08-12T00:52:00.720

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LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
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REFERENCE="/SOURCE/BPERIGEE.FFD";
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REFERENCE="/SOURCE/BTIMES.FFH";
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REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
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REFERENCE="/SOURCE/FF_IGPP.H";
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REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
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REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
```

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REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT:	USA_NASA_NSSD_IC2D_0005A
LOG_VOL_NSSDC_EXPT_ID:	77-102B-04
LOG_VOL_INITIATION_DATE:	1992-10-01
LOG_VOL_CLOSING_DATE:	1993-10-01
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 4.2

TECHNICAL_CONTACT:
Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:
USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
USA_NASA_NSSD_IC2D_0003B
USA_NASA_NSSD_IC2D_0004A
USA_NASA_NSSD_IC2D_0004B

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth

and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

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PARAMETERS:
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TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1982-04-21T00:55:27.722 TO 1983-01-04T22:43:03.266

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1982-04-21T00:55:27.722 TO 1983-01-04T22:43:03.266

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG VOL FILE TIME COVERAGE:

DEC20462.DAT	1982-04-21T00:55:27.722	TO	1982-04-25T00:38:20.210
DEC20463.DAT	1982-04-25T00:38:25.211	TO	1982-04-28T00:38:56.874
DEC20464.DAT	1982-04-28T00:39:25.625	TO	1982-05-02T00:00:14.071
DEC20465.DAT	1982-05-02T00:01:05.071	TO	1982-05-05T01:26:29.463
DEC20466.DAT	1982-05-05T01:20:01.955	TO	1982-05-09T00:14:01.925
DEC20467.DAT	1982-05-09T00:15:00.801	TO	1982-05-12T00:57:28.258
DEC20468.DAT	1982-05-12T00:57:31.258	TO	1982-05-16T00:24:01.098
DEC20469.DAT	1982-05-16T00:24:04.598	TO	1982-05-19T01:10:01.428
DEC20470.DAT	1982-05-19T01:10:04.928	TO	1982-05-23T00:43:57.421
DEC20471.DAT	1982-05-23T00:44:25.422	TO	1982-05-26T00:04:57.167
DEC20472.DAT	1982-05-26T00:09:00.172	TO	1982-05-29T23:25:09.496
DEC20473.DAT	1982-05-30T00:56:33.099	TO	1982-06-01T23:59:59.602
DEC20474.DAT	1982-06-02T00:00:34.102	TO	1982-06-05T23:17:53.737
DEC20475.DAT	1982-06-06T01:06:37.082	TO	1982-06-08T22:38:38.194
DEC20476.DAT	1982-06-09T01:18:57.857	TO	1982-06-13T00:47:59.946
DEC20477.DAT	1982-06-13T00:48:04.447	TO	1982-06-16T00:48:20.812
DEC20478.DAT	1982-06-16T02:04:59.392	TO	1982-06-20T01:22:29.063
DEC20479.DAT	1982-06-20T01:22:55.064	TO	1982-06-23T00:36:32.416
DEC20480.DAT	1982-06-23T00:37:05.417	TO	1982-06-26T23:59:59.679
DEC20481.DAT	1982-06-27T00:01:26.180	TO	1982-06-30T00:41:21.720
DEC20482.DAT	1982-06-30T00:34:58.714	TO	1982-07-04T01:23:59.115
DEC20483.DAT	1982-07-04T01:23:51.114	TO	1982-07-06T23:57:23.005
DEC20484.DAT	1982-07-07T00:00:25.509	TO	1982-07-11T00:12:05.039
DEC20485.DAT	1982-07-11T00:06:10.033	TO	1982-07-13T23:58:56.865
DEC20486.DAT	1982-07-14T00:18:27.887	TO	1982-07-18T01:35:38.474
DEC20487.DAT	1982-07-18T02:36:13.543	TO	1982-07-20T23:58:02.021
DEC20488.DAT	1982-07-21T00:05:55.281	TO	1982-07-25T01:50:55.711
DEC20489.DAT	1982-07-25T01:53:12.713	TO	1982-07-28T01:27:17.811
DEC20490.DAT	1982-07-28T01:27:41.311	TO	1982-08-01T00:30:51.224
DEC20491.DAT	1982-08-01T01:03:22.763	TO	1982-08-03T23:59:56.563
DEC20492.DAT	1982-08-04T00:00:19.063	TO	1982-08-08T00:41:57.707
DEC20493.DAT	1982-08-08T03:11:57.880	TO	1982-08-11T01:01:59.449
DEC20494.DAT	1982-08-11T00:56:11.942	TO	1982-08-15T01:24:51.019
DEC20495.DAT	1982-08-15T01:25:13.520	TO	1982-08-18T00:02:56.492
DEC20496.DAT	1982-08-18T01:11:59.573	TO	1982-08-22T01:31:17.473
DEC20497.DAT	1982-08-22T02:58:01.572	TO	1982-08-25T00:25:00.122
DEC20498.DAT	1982-08-25T00:24:54.996	TO	1982-08-29T00:58:39.699
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DEC20513.DAT  1982-10-17T00:30:24.508 TO 1982-10-20T01:29:56.956
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DEC20526.DAT  1982-12-01T00:18:05.064 TO 1982-12-05T00:50:58.061
DEC20527.DAT  1982-12-05T08:43:58.603 TO 1982-12-07T23:42:57.332
DEC20528.DAT  1982-12-08T01:30:59.458 TO 1982-12-11T23:05:58.263
DEC20529.DAT  1982-12-12T00:13:04.337 TO 1982-12-14T23:50:59.006
DEC20530.DAT  1982-12-15T00:35:11.557 TO 1982-12-18T22:28:58.296
DEC20531.DAT  1982-12-19T02:00:59.191 TO 1982-12-21T22:32:20.814
DEC20532.DAT  1982-12-22T03:52:28.330 TO 1982-12-25T22:28:34.805
DEC20533.DAT  1982-12-26T00:17:00.433 TO 1982-12-29T00:59:00.128
DEC20534.DAT  1982-12-29T04:46:16.390 TO 1983-01-01T23:49:57.876
DEC20535.DAT  1983-01-02T00:33:41.427 TO 1983-01-04T22:43:03.266

PREV_LOG_VOL_COVERAGE: 1981-08-12T00:57:53.728 TO 1982-04-21T00:55:23.722

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REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
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LOG_VOL_INITIATION_DATE:	1992-10-01
LOG_VOL_CLOSING_DATE:	1993-10-01
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 4.2
TECHNICAL_CONTACT:	Harry Herbert University of California at Los Angeles Institute of Geophysics and Planetary Physics 5833 Slichter Hall Los Angeles, CA 90024-1567 (310) 825-9030 NSI=hherbert@igpp.ucla.edu NSI-DECnet=BRUNET::HARRY
PREV_LOG_VOLS:	USA_NASA_NSSD_IC2D_0001A USA_NASA_NSSD_IC2D_0001B USA_NASA_NSSD_IC2D_0002A USA_NASA_NSSD_IC2D_0002B USA_NASA_NSSD_IC2D_0003A USA_NASA_NSSD_IC2D_0003B USA_NASA_NSSD_IC2D_0004A USA_NASA_NSSD_IC2D_0004B USA_NASA_NSSD_IC2D_0005A

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME:	DECOM Magnetometer Data
DATA_SOURCES:	International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument
SCIENTIFIC_CONTACT:	Dr. Christopher Russell University of California at Los Angeles Institute of Geophysics and Planetary Physics 6871 Slichter Hall Los Angeles, CA 90024-1567 (310) 825-3188 NSI=ctrussel@igpp.ucla.edu NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere,

(2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT ATTRIBUTES:

A. DESCRIPTION OF INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE OF THE INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA SET QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files

include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1983-01-05T04:44:45.665 TO 1983-09-11T00:43:32.174
1983-09-14T02:00:21.329 TO 1983-10-05T00:09:05.102

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1983-01-05T04:44:45.665 TO 1983-09-11T00:43:32.174
1983-09-14T02:00:21.329 TO 1983-10-05T00:09:05.102

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:
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DEC20538.DAT 1983-01-12T00:21:52.425 TO 1983-01-15T23:51:59.711
DEC20539.DAT 1983-01-16T01:08:05.055 TO 1983-01-18T22:27:56.384
DEC20540.DAT 1983-01-19T02:35:30.478 TO 1983-01-22T23:59:55.412
DEC20541.DAT 1983-01-23T00:00:19.912 TO 1983-01-25T23:42:58.691
DEC20542.DAT 1983-01-26T00:23:03.739 TO 1983-01-30T01:03:57.357
DEC20543.DAT 1983-01-30T03:45:21.546 TO 1983-02-02T00:34:46.435
DEC20544.DAT 1983-02-02T00:35:11.935 TO 1983-02-05T22:49:58.644
DEC20545.DAT 1983-02-06T01:46:22.351 TO 1983-02-09T00:43:04.869
DEC20546.DAT 1983-02-09T00:44:45.496 TO 1983-02-13T00:00:04.386
DEC20547.DAT 1983-02-13T00:14:15.902 TO 1983-02-16T00:20:58.083
DEC20548.DAT 1983-02-16T00:21:15.082 TO 1983-02-19T22:48:11.910
DEC20549.DAT 1983-02-20T01:31:13.862 TO 1983-02-22T23:35:59.260
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DEC20552.DAT 1983-03-02T00:14:43.871 TO 1983-03-05T19:45:28.590
DEC20553.DAT 1983-03-06T00:43:58.954 TO 1983-03-08T21:56:03.417
DEC20554.DAT 1983-03-09T00:35:48.107 TO 1983-03-12T23:17:08.895
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DEC20559.DAT 1983-03-27T00:04:01.166 TO 1983-03-29T23:17:41.433
DEC20560.DAT 1983-03-30T00:43:58.036 TO 1983-04-02T21:12:56.633
DEC20561.DAT 1983-04-03T00:29:23.865 TO 1983-04-05T11:01:05.545
DEC20562.DAT 1983-04-06T00:01:33.494 TO 1983-04-09T19:47:08.759
DEC20563.DAT 1983-04-10T00:43:59.748 TO 1983-04-12T23:55:20.110
DEC20564.DAT 1983-04-13T00:53:52.681 TO 1983-04-16T15:05:55.814
DEC20565.DAT 1983-04-17T00:44:03.493 TO 1983-04-20T01:07:59.884
DEC20566.DAT 1983-04-20T01:50:00.065 TO 1983-04-23T18:38:57.647
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DEC20585.DAT  1983-06-26T00:44:08.196 TO 1983-06-29T00:00:03.343
DEC20586.DAT  1983-06-29T01:19:57.929 TO 1983-07-03T01:33:27.320
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DEC20596.DAT  1983-08-03T00:45:59.668 TO 1983-08-06T23:22:55.859
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DEC20598.DAT  1983-08-10T00:45:49.654 TO 1983-08-14T01:00:01.867
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DEC20602.DAT  1983-08-24T00:49:53.006 TO 1983-08-28T02:20:13.714
DEC20603.DAT  1983-08-28T02:13:58.708 TO 1983-08-31T00:15:01.236
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DEC20605.DAT  1983-09-04T01:24:58.315 TO 1983-09-07T00:44:47.267
DEC20606.DAT  1983-09-07T00:45:12.767 TO 1983-09-11T00:43:32.174
DEC20608.DAT  1983-09-14T02:00:21.329 TO 1983-09-18T01:29:24.779
DEC20609.DAT  1983-09-18T01:29:49.279 TO 1983-09-21T01:30:00.043
DEC20610.DAT  1983-09-21T01:30:26.544 TO 1983-09-25T00:15:14.530
DEC20611.DAT  1983-09-25T00:09:04.523 TO 1983-09-28T00:59:59.996
DEC20612.DAT  1983-09-28T01:00:21.996 TO 1983-10-01T23:59:59.922
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/* NOTE:                                                              */
/*  The file below is located on LOG VOL IDENT: USA NASA NSSD IC2D 0009A  */
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REFERENCE="/SOURCE/IGPPFORT.F";
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REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
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REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0006A
LOG_VOL_NSSDC_EXPT_ID: 77-I02B-04
LOG_VOL_INITIATION_DATE: 1992-10-21
LOG_VOL_CLOSING_DATE: 1993-10-01
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT: Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS: USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
USA_NASA_NSSD_IC2D_0003B
USA_NASA_NSSD_IC2D_0004A
USA_NASA_NSSD_IC2D_0004B
USA_NASA_NSSD_IC2D_0005A
USA_NASA_NSSD_IC2D_0005B

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2)
and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT: Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

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The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

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The purposes of the mission were (1) to investigate solar/terrestrial

relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT ATTRIBUTES:

A. DESCRIPTION OF INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE OF THE INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA SET QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT

gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1983-10-05T00:09:27.227 TO 1983-11-20T01:31:04.042
1983-11-23T01:04:02.322 TO 1984-05-16T00:17:56.814

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1983-10-05T00:09:27.227 TO 1983-11-20T01:31:04.042
1983-11-23T01:04:02.322 TO 1984-05-16T00:17:56.814

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:
DEC20614.DAT 1983-10-05T00:09:27.227 TO 1983-10-08T23:44:57.936
DEC20615.DAT 1983-10-09T02:14:52.588 TO 1983-10-12T02:00:16.675
DEC20616.DAT 1983-10-12T01:59:17.674 TO 1983-10-16T00:34:08.605
DEC20617.DAT 1983-10-16T00:34:31.605 TO 1983-10-19T00:29:56.249
DEC20618.DAT 1983-10-19T00:30:16.749 TO 1983-10-23T00:29:59.593
DEC20619.DAT 1983-10-23T00:30:20.594 TO 1983-10-26T00:18:03.791
DEC20620.DAT 1983-10-26T00:18:57.789 TO 1983-10-30T00:14:59.119
DEC20621.DAT 1983-10-30T00:15:00.994 TO 1983-11-02T00:47:00.649
DEC20622.DAT 1983-11-02T01:49:59.215 TO 1983-11-05T23:59:30.686
DEC20623.DAT 1983-11-06T00:00:00.187 TO 1983-11-08T23:59:57.796
DEC20624.DAT 1983-11-09T04:17:25.479 TO 1983-11-13T00:07:22.646
DEC20625.DAT 1983-11-13T00:07:41.646 TO 1983-11-16T00:07:02.636
DEC20626.DAT 1983-11-16T00:07:24.136 TO 1983-11-20T01:31:04.042
DEC20628.DAT 1983-11-23T01:04:02.322 TO 1983-11-27T01:10:00.778
DEC20629.DAT 1983-11-27T01:10:21.778 TO 1983-11-30T00:31:51.366
DEC20630.DAT 1983-11-30T00:32:15.367 TO 1983-12-04T00:00:00.274
DEC20631.DAT 1983-12-04T00:05:00.530 TO 1983-12-07T01:34:42.095
DEC20632.DAT 1983-12-07T01:35:07.595 TO 1983-12-11T00:50:00.190
DEC20633.DAT 1983-12-11T00:44:00.683 TO 1983-12-14T01:29:07.406
DEC20634.DAT 1983-12-14T01:29:39.406 TO 1983-12-18T00:03:58.886
DEC20635.DAT 1983-12-18T00:05:01.887 TO 1983-12-21T00:14:39.290
DEC20636.DAT 1983-12-21T00:15:02.790 TO 1983-12-24T18:06:57.631
DEC20637.DAT 1983-12-25T04:32:02.835 TO 1983-12-28T00:21:33.358
DEC20638.DAT 1983-12-28T00:21:54.943 TO 1983-12-31T23:30:57.074
DEC20639.DAT 1984-01-01T08:06:01.142 TO 1984-01-03T23:59:57.351
DEC20640.DAT 1984-01-04T02:34:12.027 TO 1984-01-07T18:06:20.078
DEC20641.DAT 1984-01-08T03:48:41.148 TO 1984-01-10T22:54:01.089
DEC20642.DAT 1984-01-11T01:48:30.790 TO 1984-01-14T23:43:03.800
DEC20643.DAT 1984-01-15T02:33:20.498 TO 1984-01-17T21:55:56.184
DEC20644.DAT 1984-01-18T00:58:30.397 TO 1984-01-22T00:18:59.931
DEC20645.DAT 1984-01-22T01:06:00.738 TO 1984-01-24T21:15:00.006
DEC20646.DAT 1984-01-25T00:04:04.203 TO 1984-01-29T00:58:00.935
DEC20647.DAT 1984-01-29T01:10:59.950 TO 1984-02-01T01:59:58.242
DEC20648.DAT 1984-02-01T02:00:07.531 TO 1984-02-05T00:22:59.297
DEC20649.DAT 1984-02-05T03:59:42.549 TO 1984-02-07T20:43:57.568
DEC20650.DAT 1984-02-08T02:32:00.479 TO 1984-02-12T00:12:58.020

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DEC20653.DAT  1984-02-19T02:46:30.699 TO 1984-02-21T23:22:58.996
DEC20654.DAT  1984-02-22T00:05:58.546 TO 1984-02-25T23:28:02.458
DEC20655.DAT  1984-02-26T01:30:53.111 TO 1984-02-28T22:16:06.910
DEC20656.DAT  1984-02-29T01:11:53.614 TO 1984-03-03T22:34:00.654
DEC20657.DAT  1984-03-04T00:21:03.778 TO 1984-03-06T22:41:30.690
DEC20658.DAT  1984-03-07T00:13:05.296 TO 1984-03-10T22:50:01.129
DEC20659.DAT  1984-03-11T02:15:33.868 TO 1984-03-13T22:20:57.119
DEC20660.DAT  1984-03-14T01:29:54.837 TO 1984-03-18T00:01:03.935
DEC20661.DAT  1984-03-18T00:59:07.503 TO 1984-03-21T01:40:31.678
DEC20662.DAT  1984-03-21T01:39:37.927 TO 1984-03-25T00:34:04.855
DEC20663.DAT  1984-03-25T01:23:21.412 TO 1984-03-28T00:41:02.857
DEC20664.DAT  1984-03-28T00:35:01.350 TO 1984-03-31T23:45:01.850
DEC20665.DAT  1984-04-01T00:04:58.750 TO 1984-04-03T23:43:02.575
DEC20666.DAT  1984-04-04T00:59:29.663 TO 1984-04-07T22:42:04.624
DEC20667.DAT  1984-04-08T00:00:08.715 TO 1984-04-10T22:46:05.558
DEC20668.DAT  1984-04-11T04:52:57.463 TO 1984-04-15T00:00:01.610
DEC20669.DAT  1984-04-15T01:41:10.723 TO 1984-04-17T23:43:02.840
DEC20670.DAT  1984-04-18T00:04:32.365 TO 1984-04-22T00:04:59.655
DEC20671.DAT  1984-04-22T01:01:52.218 TO 1984-04-24T23:43:00.755
DEC20672.DAT  1984-04-25T00:29:47.183 TO 1984-04-28T22:14:58.158
DEC20673.DAT  1984-04-28T23:57:39.769 TO 1984-05-02T00:02:59.485
DEC20674.DAT  1984-05-02T00:49:04.536 TO 1984-05-06T00:17:40.688
DEC20675.DAT  1984-05-06T01:26:25.738 TO 1984-05-08T23:42:57.561
DEC20676.DAT  1984-05-09T02:29:11.726 TO 1984-05-12T23:54:57.639
DEC20677.DAT  1984-05-13T00:46:01.194 TO 1984-05-16T00:17:56.814

/* NOTE:                                                          */
/*  The file below is located on LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0009A  */
/*   DEC20627.DAT  1983-11-20T01:31:28.542 TO 1983-11-23T00:38:37.918     */

PREV_VOL_LOG_COVERAGE: 1983-01-05T04:44:45.665 TO 1983-09-11T00:43:32.174
                       1983-09-14T02:00:21.329 TO 1983-10-05T00:09:05.102

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LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
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REFERENCE="/SOURCE/BPERIGEE.FFD";
REFERENCE="/SOURCE/BPERIGEE.FFH";
REFERENCE="/SOURCE/BTIMES.FFD";
REFERENCE="/SOURCE/BTIMES.FFH";
REFERENCE="/SOURCE/CONVERT.C";
REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
REFERENCE="/SOURCE/ISEEPRODFF.C";
REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
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REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
```

```
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0006B
LOG_VOL_NSSDC_EXPT_ID: 77-I02B-04
LOG_VOL_INITIATION_DATE: 1992-10-21
LOG_VOL_CLOSING_DATE: 1993-10-01
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT:
Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
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NSI=hherbert@igpp.ucla.edu
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PREV_LOG_VOLS:
USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
USA_NASA_NSSD_IC2D_0003B
USA_NASA_NSSD_IC2D_0004A
USA_NASA_NSSD_IC2D_0004B
USA_NASA_NSSD_IC2D_0005A
USA_NASA_NSSD_IC2D_0005B
USA_NASA_NSSD_IC2D_0006A

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
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DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been

archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1984-05-16T01:12:24.373 TO 1985-02-02T21:37:04.436

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1984-05-16T01:12:24.373 TO 1985-02-02T21:37:04.436

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:
DEC20678.DAT 1984-05-16T01:12:24.373 TO 1984-05-19T23:43:02.436
DEC20679.DAT 1984-05-20T00:14:13.096 TO 1984-05-22T21:47:57.623
DEC20680.DAT 1984-05-23T02:59:23.457 TO 1984-05-27T01:24:44.509
DEC20681.DAT 1984-05-27T01:25:11.009 TO 1984-05-29T23:55:57.009
DEC20682.DAT 1984-05-30T01:18:04.596 TO 1984-06-03T01:38:02.384
DEC20683.DAT 1984-06-03T01:42:00.389 TO 1984-06-05T23:43:00.333
DEC20684.DAT 1984-06-06T00:38:04.391 TO 1984-06-10T00:00:29.945
DEC20685.DAT 1984-06-10T01:11:26.520 TO 1984-06-13T00:44:07.023
DEC20686.DAT 1984-06-13T01:33:00.826 TO 1984-06-16T23:43:03.192
DEC20687.DAT 1984-06-17T00:25:54.238 TO 1984-06-20T00:47:02.790
DEC20688.DAT 1984-06-20T00:50:15.794 TO 1984-06-24T00:58:36.006
DEC20689.DAT 1984-06-24T00:47:38.244 TO 1984-06-27T00:51:01.990
DEC20690.DAT 1984-06-27T00:44:08.984 TO 1984-07-01T00:17:19.470
DEC20691.DAT 1984-07-01T00:17:39.971 TO 1984-07-04T00:51:06.006
DEC20692.DAT 1984-07-04T00:51:26.507 TO 1984-07-08T01:20:29.685
DEC20693.DAT 1984-07-08T01:20:53.686 TO 1984-07-11T01:01:14.659
DEC20694.DAT 1984-07-11T02:40:49.262 TO 1984-07-15T00:25:07.606
DEC20695.DAT 1984-07-15T00:25:30.607 TO 1984-07-18T00:03:38.242
DEC20696.DAT 1984-07-18T00:04:00.492 TO 1984-07-22T01:25:01.774
DEC20697.DAT 1984-07-22T01:24:01.775 TO 1984-07-25T00:52:32.224
DEC20698.DAT 1984-07-25T00:52:57.225 TO 1984-07-29T00:01:12.751
DEC20699.DAT 1984-07-29T01:00:03.689 TO 1984-08-01T01:30:57.854
DEC20700.DAT 1984-08-01T01:31:00.854 TO 1984-08-04T23:36:07.695
DEC20701.DAT 1984-08-05T03:03:04.408 TO 1984-08-08T00:05:03.710
DEC20702.DAT 1984-08-08T03:43:58.438 TO 1984-08-11T23:43:11.021
DEC20703.DAT 1984-08-12T01:47:01.654 TO 1984-08-15T01:13:23.387
DEC20704.DAT 1984-08-15T01:13:28.387 TO 1984-08-19T01:00:00.856
DEC20705.DAT 1984-08-19T01:00:24.356 TO 1984-08-21T22:39:37.446
DEC20706.DAT 1984-08-22T01:20:01.371 TO 1984-08-26T01:16:00.494
DEC20707.DAT 1984-08-26T01:16:23.495 TO 1984-08-28T23:04:39.350
DEC20708.DAT 1984-08-29T01:40:31.179 TO 1984-09-02T02:09:56.688
DEC20709.DAT 1984-09-02T02:55:59.736 TO 1984-09-04T23:58:03.804
DEC20710.DAT 1984-09-05T00:12:59.945 TO 1984-09-09T01:14:14.821
DEC20711.DAT 1984-09-09T01:08:37.815 TO 1984-09-11T23:43:33.755
DEC20712.DAT 1984-09-12T01:09:59.346 TO 1984-09-16T00:59:54.592
DEC20713.DAT 1984-09-16T00:59:56.467 TO 1984-09-19T01:37:22.134
DEC20714.DAT 1984-09-19T01:37:27.134 TO 1984-09-22T23:43:01.397

```
DEC20715.DAT  1984-09-23T02:38:59.582 TO 1984-09-25T23:43:00.548
DEC20716.DAT  1984-09-26T00:16:56.084 TO 1984-09-30T00:50:59.743
DEC20717.DAT  1984-09-30T01:36:58.290 TO 1984-10-03T01:30:00.985
DEC20718.DAT  1984-10-03T01:30:25.986 TO 1984-10-06T12:54:12.130
DEC20719.DAT  1984-10-07T06:58:59.245 TO 1984-10-10T00:52:40.943
DEC20720.DAT  1984-10-10T00:39:00.303 TO 1984-10-14T00:03:27.413
DEC20721.DAT  1984-10-14T00:03:36.913 TO 1984-10-17T00:22:05.779
DEC20722.DAT  1984-10-17T06:18:18.155 TO 1984-10-20T21:02:16.150
DEC20723.DAT  1984-10-21T01:02:00.655 TO 1984-10-23T23:25:59.600
DEC20724.DAT  1984-10-24T01:30:59.233 TO 1984-10-27T23:27:00.021
DEC20725.DAT  1984-10-28T00:57:09.614 TO 1984-10-30T21:40:00.215
DEC20726.DAT  1984-10-31T01:34:59.956 TO 1984-11-03T21:39:59.127
DEC20727.DAT  1984-11-04T01:17:26.371 TO 1984-11-06T22:29:58.696
DEC20728.DAT  1984-11-07T01:42:59.883 TO 1984-11-11T00:11:23.029
DEC20729.DAT  1984-11-11T00:24:24.043 TO 1984-11-13T20:58:08.085
DEC20730.DAT  1984-11-14T03:02:34.110 TO 1984-11-18T00:14:58.199
DEC20731.DAT  1984-11-18T01:24:58.276 TO 1984-11-20T22:38:57.282
DEC20732.DAT  1984-11-21T06:36:59.783 TO 1984-11-25T01:10:52.867
DEC20733.DAT  1984-11-25T01:10:57.367 TO 1984-11-27T22:17:33.480
DEC20734.DAT  1984-11-28T06:11:33.483 TO 1984-12-01T23:32:31.894
DEC20735.DAT  1984-12-02T03:18:14.144 TO 1984-12-04T23:42:00.959
DEC20736.DAT  1984-12-05T09:25:51.580 TO 1984-12-08T23:38:04.898
DEC20737.DAT  1984-12-09T00:50:00.605 TO 1984-12-11T23:41:58.609
DEC20738.DAT  1984-12-12T00:28:08.661 TO 1984-12-16T01:15:05.923
DEC20739.DAT  1984-12-16T01:08:59.416 TO 1984-12-18T22:27:57.608
DEC20740.DAT  1984-12-19T08:13:28.139 TO 1984-12-23T00:04:51.402
DEC20741.DAT  1984-12-23T00:50:22.454 TO 1984-12-25T22:27:59.692
DEC20742.DAT  1984-12-26T01:53:57.925 TO 1984-12-29T22:44:57.764
DEC20743.DAT  1984-12-30T01:12:59.431 TO 1985-01-01T22:33:00.262
DEC20744.DAT  1985-01-02T02:17:07.027 TO 1985-01-05T21:27:58.332
DEC20745.DAT  1985-01-06T01:33:35.611 TO 1985-01-08T22:39:03.346
DEC20746.DAT  1985-01-09T00:59:01.505 TO 1985-01-12T23:51:13.945
DEC20747.DAT  1985-01-13T00:00:00.330 TO 1985-01-15T22:44:57.569
DEC20748.DAT  1985-01-16T01:21:59.748 TO 1985-01-19T23:57:00.261
DEC20749.DAT  1985-01-20T00:04:51.770 TO 1985-01-22T22:50:58.645
DEC20750.DAT  1985-01-23T03:16:49.449 TO 1985-01-27T00:00:09.004
DEC20751.DAT  1985-01-26T23:59:36.502 TO 1985-01-29T23:38:56.451
DEC20752.DAT  1985-01-30T03:12:56.196 TO 1985-02-02T21:37:04.436

PREV_VOL_LOG_COVERAGE: 1983-10-05T00:09:27.227 TO 1983-11-20T01:31:04.042
                       1983-11-23T01:04:02.322 TO 1984-05-16T00:17:56.814

CCSD$$MARKERmarkeracCCSD3RF0000200000001

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LABEL=ATTACHED;
REFERENCE="DECOM2.SFD";

LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
REFERENCE="/SOURCE/BINPUT.DAT";
REFERENCE="/SOURCE/BPERIGEE.FFD";
REFERENCE="/SOURCE/BPERIGEE.FFH";
REFERENCE="/SOURCE/BTIMES.FFD";
REFERENCE="/SOURCE/BTIMES.FFH";
REFERENCE="/SOURCE/CONVERT.C";
REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
REFERENCE="/SOURCE/ISEEPRODFF.C";
REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
```

```
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT:	USA_NASA_NSSD_IC2D_0007A
LOG_VOL_NSSDC_EXPT_ID:	77-I02B-04
LOG_VOL_INITIATION_DATE:	1992-11-09
LOG_VOL_CLOSING_DATE:	1993-10-01
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 4.2

TECHNICAL_CONTACT:
Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:
USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
USA_NASA_NSSD_IC2D_0003B
USA_NASA_NSSD_IC2D_0004A
USA_NASA_NSSD_IC2D_0004B
USA_NASA_NSSD_IC2D_0005A
USA_NASA_NSSD_IC2D_0005B
USA_NASA_NSSD_IC2D_0006A
USA_NASA_NSSD_IC2D_0006B

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT ATTRIBUTES:
A. DESCRIPTION OF INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE OF THE INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA SET QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

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suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

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TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1985-02-03T00:31:12.138 TO 1985-12-10T23:16:59.703

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1985-02-03T00:31:12.138 TO 1985-12-10T23:16:59.703

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:
DEC20753.DAT 1985-02-03T00:31:12.138 TO 1985-02-05T23:03:22.193
DEC20754.DAT 1985-02-06T01:27:38.866 TO 1985-02-09T22:42:59.790
DEC20755.DAT 1985-02-10T02:55:56.085 TO 1985-02-12T22:57:55.795
DEC20756.DAT 1985-02-13T01:50:56.494 TO 1985-02-17T00:15:08.009
DEC20757.DAT 1985-02-17T01:07:59.069 TO 1985-02-19T21:00:59.454
DEC20758.DAT 1985-02-20T02:14:43.817 TO 1985-02-24T01:05:55.858
DEC20759.DAT 1985-02-24T01:55:00.414 TO 1985-02-26T19:00:29.407
DEC20760.DAT 1985-02-27T02:37:07.440 TO 1985-03-02T22:59:03.536
DEC20761.DAT 1985-03-03T06:45:58.714 TO 1985-03-05T20:08:43.223
DEC20762.DAT 1985-03-06T01:04:47.066 TO 1985-03-09T23:17:35.541
DEC20763.DAT 1985-03-10T01:06:21.166 TO 1985-03-13T00:00:30.895
DEC20764.DAT 1985-03-13T05:15:17.646 TO 1985-03-16T06:16:43.069
DEC20765.DAT 1985-03-17T01:14:03.363 TO 1985-03-19T23:38:09.672
DEC20766.DAT 1985-03-20T06:42:07.155 TO 1985-03-24T00:48:01.303
DEC20767.DAT 1985-03-24T01:31:54.853 TO 1985-03-26T23:59:06.996
DEC20768.DAT 1985-03-27T00:50:00.556 TO 1985-03-30T23:29:20.764
DEC20769.DAT 1985-03-31T00:26:51.830 TO 1985-04-03T00:23:33.692
DEC20770.DAT 1985-04-03T01:13:58.748 TO 1985-04-06T23:53:15.077
DEC20771.DAT 1985-04-07T00:43:17.885 TO 1985-04-10T00:47:01.701
DEC20772.DAT 1985-04-10T01:37:52.758 TO 1985-04-14T02:00:36.229
DEC20773.DAT 1985-04-14T03:03:18.798 TO 1985-04-16T23:28:17.368
DEC20774.DAT 1985-04-17T00:20:24.425 TO 1985-04-20T23:59:58.946
DEC20775.DAT 1985-04-21T01:30:13.045 TO 1985-04-23T23:55:15.722
DEC20776.DAT 1985-04-24T00:42:26.772 TO 1985-04-27T22:10:01.960
DEC20777.DAT 1985-04-28T01:44:53.699 TO 1985-04-30T17:06:21.308
DEC20778.DAT 1985-05-01T05:10:24.667 TO 1985-05-05T00:25:00.619
DEC20779.DAT 1985-05-05T00:19:05.613 TO 1985-05-08T00:39:59.864
DEC20780.DAT 1985-05-08T00:34:12.858 TO 1985-05-11T23:42:59.714
DEC20781.DAT 1985-05-12T00:21:11.008 TO 1985-05-15T00:30:02.496
DEC20782.DAT 1985-05-15T00:24:41.491 TO 1985-05-18T23:29:57.169
DEC20783.DAT 1985-05-19T04:18:32.495 TO 1985-05-22T01:59:54.390
DEC20784.DAT 1985-05-22T02:00:18.890 TO 1985-05-26T00:09:37.599
DEC20785.DAT 1985-05-26T00:09:55.223 TO 1985-05-29T01:24:14.857
DEC20786.DAT 1985-05-29T01:24:37.357 TO 1985-06-01T23:37:59.409
DEC20787.DAT 1985-06-02T00:01:54.933 TO 1985-06-05T00:52:00.115
DEC20788.DAT 1985-06-05T01:19:28.271 TO 1985-06-09T00:01:25.836

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DEC20789.DAT  1985-06-09T00:01:46.837 TO 1985-06-12T00:07:02.431
DEC20790.DAT  1985-06-12T00:52:10.980 TO 1985-06-15T20:23:18.798
DEC20791.DAT  1985-06-16T01:14:27.105 TO 1985-06-18T22:06:00.217
DEC20792.DAT  1985-06-19T04:05:00.739 TO 1985-06-22T23:43:02.792
DEC20793.DAT  1985-06-23T00:33:59.845 TO 1985-06-26T00:29:59.871
DEC20794.DAT  1985-06-26T00:23:28.364 TO 1985-06-30T00:08:38.960
DEC20795.DAT  1985-06-30T00:08:42.084 TO 1985-07-03T01:49:19.642
DEC20796.DAT  1985-07-03T01:34:59.127 TO 1985-07-07T01:59:55.610
DEC20797.DAT  1985-07-07T02:00:20.611 TO 1985-07-09T23:43:27.943
DEC20798.DAT  1985-07-09T23:59:59.460 TO 1985-07-14T02:00:26.193
DEC20799.DAT  1985-07-14T02:00:33.193 TO 1985-07-17T01:59:58.642
DEC20800.DAT  1985-07-17T02:00:02.142 TO 1985-07-21T00:10:02.454
DEC20801.DAT  1985-07-21T00:04:20.449 TO 1985-07-24T00:00:41.071
DEC20802.DAT  1985-07-24T02:03:53.702 TO 1985-07-28T00:14:19.922
DEC20803.DAT  1985-07-28T00:14:25.922 TO 1985-07-30T23:13:09.769
DEC20804.DAT  1985-07-31T01:44:51.923 TO 1985-08-03T22:54:00.892
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DEC20841.DAT  1985-12-08T01:34:52.537 TO 1985-12-10T23:16:59.703

PREV_VOL_LOG_COVERAGE: 1984-05-16T01:12:24.373 TO 1985-02-02T21:37:04.436

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REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
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REFERENCE="/SOURCE/WHOWNER.C";
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REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

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LOG_VOL_NSSDC_EXPT_ID:	77-I02B-04
LOG_VOL_INITIATION_DATE:	1992-11-09
LOG_VOL_CLOSING_DATE:	1993-10-01
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 4.2

TECHNICAL_CONTACT:

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NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:

USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
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USA_NASA_NSSD_IC2D_0004A
USA_NASA_NSSD_IC2D_0004B
USA_NASA_NSSD_IC2D_0005A
USA_NASA_NSSD_IC2D_0005B
USA_NASA_NSSD_IC2D_0006A
USA_NASA_NSSD_IC2D_0006B
USA_NASA_NSSD_IC2D_0007A

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME:	DECOM Magnetometer Data
DATA_SOURCES:	International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:

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NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT_ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL_MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED_PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE_OF_THE_INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA_SET_QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA_PROCESSING_OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or

converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type of file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1985-12-11T01:00:00.310 TO 1986-05-14T00:44:48.268

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1985-12-11T01:00:00.310 TO 1986-05-14T00:44:48.268

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

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DEC20844.DAT 1985-12-18T01:37:00.138 TO 1985-12-21T23:53:56.757
DEC20845.DAT 1985-12-22T01:20:56.351 TO 1985-12-24T22:47:59.500
DEC20846.DAT 1985-12-25T09:32:36.609 TO 1985-12-28T23:59:57.903
DEC20847.DAT 1985-12-29T02:20:59.056 TO 1985-12-31T22:44:07.050
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DEC20857.DAT 1986-02-02T01:47:39.894 TO 1986-02-04T23:22:59.603
DEC20858.DAT 1986-02-05T00:51:00.202 TO 1986-02-08T22:47:47.585
DEC20859.DAT 1986-02-09T06:19:57.097 TO 1986-02-11T23:24:03.980
DEC20860.DAT 1986-02-12T02:26:46.821 TO 1986-02-15T22:31:57.230
DEC20861.DAT 1986-02-16T01:56:31.965 TO 1986-02-18T21:26:58.601
DEC20862.DAT 1986-02-19T02:49:07.968 TO 1986-02-21T22:27:18.112
DEC20863.DAT 1986-02-23T02:21:07.429 TO 1986-02-25T22:44:55.896
DEC20864.DAT 1986-02-26T01:31:57.588 TO 1986-03-01T15:53:15.512
DEC20865.DAT 1986-03-02T02:43:27.265 TO 1986-03-04T22:47:56.943
DEC20866.DAT 1986-03-05T01:56:21.159 TO 1986-03-08T22:43:19.162
DEC20867.DAT 1986-03-09T01:59:02.892 TO 1986-03-11T21:41:01.042
DEC20868.DAT 1986-03-12T02:19:48.361 TO 1986-03-15T23:25:30.726
DEC20869.DAT 1986-03-16T06:14:13.193 TO 1986-03-18T21:13:01.513
DEC20870.DAT 1986-03-19T02:42:10.779 TO 1986-03-22T21:21:05.469
DEC20871.DAT 1986-03-23T01:54:18.416 TO 1986-03-25T23:54:33.279
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REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

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LOG_VOL_NSSDC_EXPT_ID: 77-102B-04
LOG_VOL_INITIATION_DATE: 1992-11-24
LOG_VOL_CLOSING_DATE: 1993-10-02
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT:
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Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:
USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
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USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
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USA_NASA_NSSD_IC2D_0005B
USA_NASA_NSSD_IC2D_0006A
USA_NASA_NSSD_IC2D_0006B
USA_NASA_NSSD_IC2D_0007A
USA_NASA_NSSD_IC2D_0007B

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
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NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's

atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT_ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL_MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED_PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE_OF_THE_INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA_SET_QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA_PROCESSING_OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX

binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1986-05-14T00:49:10.023 TO 1986-11-12T00:37:57.676

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1986-05-14T00:49:10.023 TO 1986-11-12T00:37:57.676

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG VOL FILE TIME COVERAGE:
DEC20886.DAT 1986-05-14T00:49:10.023 TO 1986-05-17T23:55:19.937
DEC20887.DAT 1986-05-18T00:00:00.318 TO 1986-05-21T00:23:02.016
DEC20888.DAT 1986-05-21T00:55:17.177 TO 1986-05-25T00:20:54.988
DEC20889.DAT 1986-05-25T00:21:06.739 TO 1986-05-28T00:09:20.810
DEC20890.DAT 1986-05-28T00:10:10.562 TO 1986-06-01T00:59:16.666
DEC20891.DAT 1986-06-01T00:59:30.541 TO 1986-06-03T23:59:59.527
DEC20892.DAT 1986-06-04T00:00:04.151 TO 1986-06-08T00:23:01.049
DEC20893.DAT 1986-06-08T00:23:20.800 TO 1986-06-10T23:48:54.659
DEC20894.DAT 1986-06-11T00:00:16.296 TO 1986-06-14T23:30:10.333
DEC20895.DAT 1986-06-15T00:00:02.242 TO 1986-06-18T00:52:39.886
DEC20896.DAT 1986-06-18T00:52:53.386 TO 1986-06-21T22:56:48.300
DEC20897.DAT 1986-06-22T02:55:50.918 TO 1986-06-24T23:45:00.023
DEC20898.DAT 1986-06-25T00:15:01.555 TO 1986-06-28T23:24:04.997
DEC20899.DAT 1986-06-29T00:18:06.552 TO 1986-07-01T23:51:05.513
DEC20900.DAT 1986-07-02T01:56:46.145 TO 1986-07-05T23:48:18.936
DEC20901.DAT 1986-07-06T00:27:13.478 TO 1986-07-09T00:57:58.119
DEC20902.DAT 1986-07-09T00:56:15.617 TO 1986-07-13T01:07:59.518
DEC20903.DAT 1986-07-13T01:08:01.518 TO 1986-07-15T19:30:05.568
DEC20904.DAT 1986-07-16T02:21:33.480 TO 1986-07-20T00:47:56.870
DEC20905.DAT 1986-07-20T00:48:05.370 TO 1986-07-22T23:30:04.138
DEC20906.DAT 1986-07-23T00:36:52.704 TO 1986-07-27T00:59:56.503
DEC20907.DAT 1986-07-27T01:00:02.003 TO 1986-07-30T00:36:40.638
DEC20908.DAT 1986-07-30T00:38:29.641 TO 1986-08-03T00:42:17.154
DEC20909.DAT 1986-08-03T02:09:46.240 TO 1986-08-06T00:54:59.426
DEC20910.DAT 1986-08-06T00:55:47.427 TO 1986-08-10T00:00:03.272
DEC20911.DAT 1986-08-10T00:00:06.522 TO 1986-08-13T00:10:09.221
DEC20912.DAT 1986-08-13T00:54:01.764 TO 1986-08-16T23:43:16.817
DEC20913.DAT 1986-08-17T01:26:13.418 TO 1986-08-19T23:43:27.008
DEC20914.DAT 1986-08-20T00:12:57.037 TO 1986-08-24T01:00:02.798
DEC20915.DAT 1986-08-24T00:56:04.794 TO 1986-08-26T23:22:27.870
DEC20916.DAT 1986-08-27T00:19:51.934 TO 1986-08-31T00:05:45.967
DEC20917.DAT 1986-08-31T00:05:50.967 TO 1986-09-03T00:54:58.366
DEC20918.DAT 1986-09-03T00:55:01.366 TO 1986-09-07T00:54:00.809
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DEC20920.DAT  1986-09-10T00:50:41.258 TO 1986-09-14T00:55:00.610
DEC20921.DAT  1986-09-14T00:49:11.604 TO 1986-09-17T00:30:08.498
DEC20922.DAT  1986-09-17T00:23:59.992 TO 1986-09-20T23:08:58.167
DEC20923.DAT  1986-09-21T01:43:59.309 TO 1986-09-24T01:04:58.040
DEC20924.DAT  1986-09-24T01:05:01.540 TO 1986-09-27T23:42:46.065
DEC20925.DAT  1986-09-28T03:36:38.125 TO 1986-09-30T23:32:08.283
DEC20926.DAT  1986-10-01T00:13:59.822 TO 1986-10-05T00:21:58.776
DEC20927.DAT  1986-10-05T01:55:59.869 TO 1986-10-08T00:38:59.981
DEC20928.DAT  1986-10-08T00:39:04.606 TO 1986-10-12T00:27:27.313
DEC20929.DAT  1986-10-12T00:21:00.306 TO 1986-10-15T00:14:01.899
DEC20930.DAT  1986-10-15T00:56:59.439 TO 1986-10-19T00:00:18.134
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DEC20932.DAT  1986-10-22T01:09:29.537 TO 1986-10-26T00:12:57.875
DEC20933.DAT  1986-10-26T00:20:58.383 TO 1986-10-28T23:26:06.350
DEC20934.DAT  1986-10-29T02:00:06.006 TO 1986-11-02T00:18:59.341
DEC20935.DAT  1986-11-02T00:13:34.460 TO 1986-11-05T00:14:57.226
DEC20936.DAT  1986-11-05T00:09:05.220 TO 1986-11-09T00:03:46.652
DEC20937.DAT  1986-11-09T00:03:51.152 TO 1986-11-12T00:37:57.676

PREV_LOG_VOL_COVERAGE: 1985-12-11T01:00:00.310 TO 1986-05-14T00:44:48.268

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LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

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REFERENCE="/SOURCE/AAREADME.TXT";
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REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
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REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT: USA_NASA_NSSD_IC2D_0008B
LOG_VOL_NSSDC_EXPT_ID: 77-102B-04
LOG_VOL_INITIATION_DATE: 1992-11-24
LOG_VOL_CLOSING_DATE: 1993-10-02
LOG_VOL_CAPACITY: 1GB/Logical volume
LOG_VOL_FILE_STRUCTURE: Files-11

VOLUME_DIAMETER: 12 inches
VOLUME_DRIVE_MFGR_AND_MODEL: Optimem 1000
COMPUTER_MFGR: Digital Equipment Corporation
OPERATING_SYSTEM: MicroVMS 4.7
COMPUTER_SYSTEM: MicroVAX II
TRANSFER_SOFTWARE: SOAR Version 4.2

TECHNICAL_CONTACT:
Harry Herbert
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
5833 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-9030
NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:
USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
USA_NASA_NSSD_IC2D_0003B
USA_NASA_NSSD_IC2D_0004A
USA_NASA_NSSD_IC2D_0004B
USA_NASA_NSSD_IC2D_0005A
USA_NASA_NSSD_IC2D_0005B
USA_NASA_NSSD_IC2D_0006A
USA_NASA_NSSD_IC2D_0006B
USA_NASA_NSSD_IC2D_0007A
USA_NASA_NSSD_IC2D_0007B
USA_NASA_NSSD_IC2D_0008A

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME: DECOM Magnetometer Data
DATA_SOURCES: International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:
Dr. Christopher Russell
University of California at Los Angeles
Institute of Geophysics and Planetary Physics
6871 Slichter Hall
Los Angeles, CA 90024-1567
(310) 825-3188
NSI=ctrussel@igpp.ucla.edu
NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October

22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT_ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL_MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED_PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE_OF_THE_INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA_SET_QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA_PROCESSING_OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into

meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type of file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1986-11-12T00:32:04.171 TO 1987-07-18T22:52:59.795

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1986-11-12T00:32:04.171 TO 1987-07-18T22:52:59.795

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:
DEC20938.DAT 1986-11-12T00:32:04.171 TO 1986-11-14T19:40:08.749
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DEC20940.DAT 1986-11-19T00:54:58.714 TO 1986-11-23T00:30:58.871
DEC20941.DAT 1986-11-23T01:19:57.420 TO 1986-11-26T01:09:00.893
DEC20942.DAT 1986-11-26T01:53:00.314 TO 1986-11-29T23:04:58.989
DEC20943.DAT 1986-11-30T00:01:59.046 TO 1986-12-02T23:28:11.796
DEC20944.DAT 1986-12-03T00:23:58.852 TO 1986-12-06T23:28:00.159
DEC20945.DAT 1986-12-07T00:12:00.580 TO 1986-12-09T11:54:59.734
DEC20946.DAT 1986-12-10T03:47:59.710 TO 1986-12-14T01:15:00.716
DEC20947.DAT 1986-12-14T01:57:59.260 TO 1986-12-16T23:51:58.976
DEC20948.DAT 1986-12-17T01:43:59.091 TO 1986-12-21T00:46:34.493
DEC20949.DAT 1986-12-21T00:46:38.993 TO 1986-12-24T01:16:57.130
DEC20950.DAT 1986-12-24T04:25:05.324 TO 1986-12-28T01:30:59.688
DEC20951.DAT 1986-12-28T03:17:34.792 TO 1986-12-31T00:11:00.449
DEC20952.DAT 1986-12-31T00:11:01.699 TO 1987-01-04T00:12:03.815
DEC20953.DAT 1987-01-04T03:59:50.804 TO 1987-01-07T00:04:57.349
DEC20954.DAT 1987-01-07T00:05:01.350 TO 1987-01-11T00:00:48.901
DEC20955.DAT 1987-01-11T00:00:53.401 TO 1987-01-14T00:23:56.287
DEC20956.DAT 1987-01-14T01:08:58.836 TO 1987-01-18T00:39:54.120
DEC20957.DAT 1987-01-18T00:39:59.120 TO 1987-01-20T22:51:58.276
DEC20958.DAT 1987-01-21T01:43:05.469 TO 1987-01-25T00:12:10.754
DEC20959.DAT 1987-01-25T01:07:00.693 TO 1987-01-27T21:17:59.071
DEC20960.DAT 1987-01-28T01:59:43.390 TO 1987-02-01T00:07:22.262
DEC20961.DAT 1987-02-01T00:07:27.263 TO 1987-02-03T22:49:42.070
DEC20962.DAT 1987-02-04T04:21:33.942 TO 1987-02-08T00:25:32.414
DEC20963.DAT 1987-02-08T01:03:59.958 TO 1987-02-11T01:29:58.932
DEC20964.DAT 1987-02-11T01:30:01.932 TO 1987-02-15T01:34:57.059
DEC20965.DAT 1987-02-15T01:59:21.087 TO 1987-02-17T21:02:02.079
DEC20966.DAT 1987-02-18T02:26:41.591 TO 1987-02-22T00:51:55.799
DEC20967.DAT 1987-02-22T02:22:28.903 TO 1987-02-24T23:28:57.188
DEC20968.DAT 1987-02-25T01:33:27.830 TO 1987-02-28T23:35:06.305
DEC20969.DAT 1987-03-01T01:27:47.069 TO 1987-03-03T23:34:16.049
DEC20970.DAT 1987-03-04T02:00:26.718 TO 1987-03-07T23:23:56.255

```
DEC20971.DAT  1987-03-08T01:28:36.401 TO 1987-03-10T23:40:55.810
DEC20972.DAT  1987-03-11T02:17:31.491 TO 1987-03-14T21:56:00.582
DEC20973.DAT  1987-03-15T01:52:02.359 TO 1987-03-17T22:04:58.644
DEC20974.DAT  1987-03-18T00:26:10.809 TO 1987-03-21T23:01:06.788
DEC20975.DAT  1987-03-22T02:14:10.014 TO 1987-03-24T22:11:50.612
DEC20976.DAT  1987-03-25T02:04:15.141 TO 1987-03-29T00:18:35.898
DEC20977.DAT  1987-03-29T00:17:30.398 TO 1987-03-31T22:00:32.858
DEC20978.DAT  1987-04-01T01:50:27.613 TO 1987-04-04T20:59:12.389
DEC20979.DAT  1987-04-05T01:47:19.810 TO 1987-04-07T21:15:00.290
DEC20980.DAT  1987-04-08T03:05:54.150 TO 1987-04-11T23:01:58.817
DEC20981.DAT  1987-04-12T02:11:28.037 TO 1987-04-14T21:26:00.557
DEC20982.DAT  1987-04-15T01:40:07.798 TO 1987-04-18T22:02:42.120
DEC20983.DAT  1987-04-19T06:54:56.646 TO 1987-04-21T23:47:07.670
DEC20984.DAT  1987-04-22T01:54:58.820 TO 1987-04-25T23:17:04.280
DEC20985.DAT  1987-04-26T01:19:00.918 TO 1987-04-28T23:42:35.879
DEC20986.DAT  1987-04-29T00:08:04.661 TO 1987-05-02T23:05:19.014
DEC20987.DAT  1987-05-03T01:12:19.158 TO 1987-05-05T23:42:59.086
DEC20988.DAT  1987-05-06T00:22:16.631 TO 1987-05-09T22:22:12.242
DEC20989.DAT  1987-05-10T01:24:42.448 TO 1987-05-12T21:39:43.721
DEC20990.DAT  1987-05-13T03:42:39.905 TO 1987-05-16T20:06:05.979
DEC20991.DAT  1987-05-17T01:58:21.868 TO 1987-05-19T23:38:13.406
DEC20992.DAT  1987-05-20T01:13:20.512 TO 1987-05-23T23:09:02.064
DEC20993.DAT  1987-05-24T00:08:09.630 TO 1987-05-26T22:21:09.713
DEC20994.DAT  1987-05-27T01:10:27.899 TO 1987-05-31T01:03:36.054
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DEC20996.DAT  1987-06-03T00:06:30.185 TO 1987-06-06T23:59:59.791
DEC20997.DAT  1987-06-07T00:00:17.792 TO 1987-06-09T23:59:55.980
DEC20998.DAT  1987-06-10T00:00:20.980 TO 1987-06-14T00:00:03.756
DEC20999.DAT  1987-06-14T00:00:20.506 TO 1987-06-17T01:00:01.583
DEC21001.DAT  1987-06-17T01:00:05.583 TO 1987-06-21T00:30:01.225
DEC21002.DAT  1987-06-21T00:30:04.224 TO 1987-06-24T00:00:01.289
DEC21003.DAT  1987-06-24T00:00:08.289 TO 1987-06-28T00:20:50.064
DEC21004.DAT  1987-06-28T00:20:55.064 TO 1987-07-01T01:59:12.710
DEC21005.DAT  1987-07-01T02:00:05.211 TO 1987-07-05T01:00:06.666
DEC21006.DAT  1987-07-05T02:06:35.235 TO 1987-07-08T02:21:23.532
DEC21007.DAT  1987-07-08T02:21:23.657 TO 1987-07-12T01:20:01.737
DEC21008.DAT  1987-07-12T01:14:09.731 TO 1987-07-15T01:37:49.662
DEC21009.DAT  1987-07-15T01:37:53.662 TO 1987-07-18T22:52:59.795

PREV_LOG_VOL_COVERAGE: 1986-05-14T00:49:10.023 TO 1986-11-12T00:37:57.676

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LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
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REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
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REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
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REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
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REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT:	USA_NASA_NSSD_IC2D_0009A
LOG_VOL_NSSDC_EXPT_ID:	77-102B-04
LOG_VOL_INITIATION_DATE:	1992-12-07
LOG_VOL_CLOSING_DATE:	1993-10-02
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 4.2

TECHNICAL_CONTACT:

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NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:

USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
USA_NASA_NSSD_IC2D_0003B
USA_NASA_NSSD_IC2D_0004A
USA_NASA_NSSD_IC2D_0004B
USA_NASA_NSSD_IC2D_0005A
USA_NASA_NSSD_IC2D_0005B
USA_NASA_NSSD_IC2D_0006A
USA_NASA_NSSD_IC2D_0006B
USA_NASA_NSSD_IC2D_0007A
USA_NASA_NSSD_IC2D_0007B
USA_NASA_NSSD_IC2D_0008A
USA_NASA_NSSD_IC2D_0008B

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME:	DECOM Magnetometer Data
DATA_SOURCES:	International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:

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SOURCE_CHARACTERISTICS:

A. DESCRIPTION_OF_SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT_INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:

The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION_OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT_ATTRIBUTES:
A. DESCRIPTION_OF_INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL_MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED_PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE_OF_THE_INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA_SET_QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA_PROCESSING_OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs

read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: 1977-11-18T00:00:19.882 TO 1977-11-23T01:02:30.810
1977-11-23T03:39:58.536 TO 1977-11-27T23:59:57.209
1978-12-27T01:17:43.223 TO 1978-12-30T23:33:58.721
1979-01-03T02:12:55.984 TO 1979-01-07T01:04:59.351
1980-04-02T00:38:14.823 TO 1980-04-06T00:37:11.297
1980-04-09T00:26:16.834 TO 1980-04-12T23:50:14.316
1983-09-11T00:34:02.288 TO 1983-09-14T01:59:55.828
1983-11-20T01:31:28.542 TO 1983-11-23T00:38:37.918
1987-07-19T00:17:35.882 TO 1987-09-26T06:11:22.703

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data 1977-11-18T00:00:19.882 TO 1977-11-23T01:02:30.810
1977-11-23T03:39:58.536 TO 1977-11-27T23:59:57.209
1978-12-27T01:17:43.223 TO 1978-12-30T23:33:58.721
1979-01-03T02:12:55.984 TO 1979-01-07T01:04:59.351
1980-04-02T00:38:14.823 TO 1980-04-06T00:37:11.297
1980-04-09T00:26:16.834 TO 1980-04-12T23:50:14.316
1983-09-11T00:34:02.288 TO 1983-09-14T01:59:55.828
1983-11-20T01:31:28.542 TO 1983-11-23T00:38:37.918
1987-07-19T00:17:35.882 TO 1987-09-26T06:11:22.703

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE:
DEC20006.DAT 1977-11-18T00:00:19.882 TO 1977-11-23T01:02:30.810
DEC20007.DAT 1977-11-23T03:39:58.536 TO 1977-11-27T23:59:57.209
DEC20116.DAT 1978-12-27T01:17:43.223 TO 1978-12-30T23:33:58.721
DEC20118.DAT 1979-01-03T02:12:55.984 TO 1979-01-07T01:04:59.351
DEC20248.DAT 1980-04-02T00:38:14.823 TO 1980-04-06T00:37:11.297
DEC20250.DAT 1980-04-09T00:26:16.834 TO 1980-04-12T23:50:14.316
DEC20607.DAT 1983-09-11T00:34:02.288 TO 1983-09-14T01:59:55.828
DEC20627.DAT 1983-11-20T01:31:28.542 TO 1983-11-23T00:38:37.918
DEC21010.DAT 1987-07-19T00:17:35.882 TO 1987-07-22T00:08:33.851
DEC21011.DAT 1987-07-22T00:08:41.851 TO 1987-07-26T00:30:09.566
DEC21012.DAT 1987-07-26T00:37:58.574 TO 1987-07-29T01:12:22.359
DEC21013.DAT 1987-07-29T01:12:27.359 TO 1987-08-02T00:30:01.510
DEC21014.DAT 1987-08-02T00:30:02.510 TO 1987-08-05T00:10:19.201
DEC21015.DAT 1987-08-05T00:10:26.201 TO 1987-08-09T00:10:01.529
DEC21016.DAT 1987-08-09T00:10:04.529 TO 1987-08-12T00:09:03.947
DEC21017.DAT 1987-08-12T00:09:05.697 TO 1987-08-16T02:19:41.969

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DEC21018.DAT  1987-08-16T02:19:42.469 TO 1987-08-18T22:16:12.311
DEC21019.DAT  1987-08-19T03:34:43.468 TO 1987-08-23T02:13:41.820
DEC21020.DAT  1987-08-23T02:13:42.320 TO 1987-08-26T01:00:00.187
DEC21021.DAT  1987-08-26T06:06:02.422 TO 1987-08-30T01:56:40.572
DEC21022.DAT  1987-08-30T01:56:46.073 TO 1987-09-02T00:29:59.768
DEC21023.DAT  1987-09-02T01:31:05.328 TO 1987-09-06T00:38:00.032
DEC21024.DAT  1987-09-06T00:38:05.157 TO 1987-09-09T02:18:48.916
DEC21025.DAT  1987-09-09T02:18:49.416 TO 1987-09-13T02:18:39.539
DEC21026.DAT  1987-09-13T02:18:40.039 TO 1987-09-16T01:15:32.661
DEC21027.DAT  1987-09-16T01:15:38.161 TO 1987-09-20T01:09:58.517
DEC21028.DAT  1987-09-20T01:04:00.010 TO 1987-09-23T01:24:28.462
DEC21029.DAT  1987-09-23T01:24:28.962 TO 1987-09-26T06:11:22.703

/* NOTE:                                                              */
/*  The files below are located on this logical volume instead of in  */
/*  their normal sequence on previous logical volumes:                */
/*   DEC20006.DAT  1977-11-18T00:00:19.882 TO 1977-11-23T01:02:30.810 */
/*   DEC20007.DAT  1977-11-23T03:39:58.536 TO 1977-11-27T23:59:57.209 */
/*   DEC20116.DAT  1978-12-27T01:17:43.223 TO 1978-12-30T23:33:58.721 */
/*   DEC20118.DAT  1979-01-03T02:12:55.984 TO 1979-01-07T01:04:59.351 */
/*   DEC20248.DAT  1980-04-02T00:38:14.823 TO 1980-04-06T00:37:11.297 */
/*   DEC20250.DAT  1980-04-09T00:26:16.834 TO 1980-04-12T23:50:14.316 */
/*   DEC20607.DAT  1983-09-11T00:34:02.288 TO 1983-09-14T01:59:55.828 */
/*   DEC20627.DAT  1983-11-20T01:31:28.542 TO 1983-11-23T00:38:37.918 */

PREV_LOG_VOL_COVERAGE: 1986-11-12T00:32:04.171 TO 1987-07-18T22:52:59.795

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REFERENCE="DECOM2.SFD";

LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";
REFERENCE="/SOURCE/BINPUT.DAT";
REFERENCE="/SOURCE/BPERIGEE.FFD";
REFERENCE="/SOURCE/BPERIGEE.FFH";
REFERENCE="/SOURCE/BTIMES.FFD";
REFERENCE="/SOURCE/BTIMES.FFH";
REFERENCE="/SOURCE/CONVERT.C";
REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
REFERENCE="/SOURCE/FLATCOM.F";
REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
REFERENCE="/SOURCE/ISEEPRODFF.C";
REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
REFERENCE="/SOURCE/TIME_IGPP.H";
REFERENCE="/SOURCE/WHOWNER.C";
REFERENCE="/SOURCE/YAMS.F";
REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
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CCSD3ZF0000100000001CCSD3VS00002markeraa

LOG_VOL_IDENT:	USA_NASA_NSSD_IC2D_0009B
LOG_VOL_NSSDC_EXPT_ID:	77-102B-04
LOG_VOL_INITIATION_DATE:	1992-12-07
LOG_VOL_CLOSING_DATE:	1993-10-02
LOG_VOL_CAPACITY:	1GB/Logical volume
LOG_VOL_FILE_STRUCTURE:	Files-11
VOLUME_DIAMETER:	12 inches
VOLUME_DRIVE_MFGR_AND_MODEL:	Optimem 1000
COMPUTER_MFGR:	Digital Equipment Corporation
OPERATING_SYSTEM:	MicroVMS 4.7
COMPUTER_SYSTEM:	MicroVAX II
TRANSFER_SOFTWARE:	SOAR Version 4.2

TECHNICAL_CONTACT:

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NSI=hherbert@igpp.ucla.edu
NSI-DECnet=BRUNET::HARRY

PREV_LOG_VOLS:

USA_NASA_NSSD_IC2D_0001A
USA_NASA_NSSD_IC2D_0001B
USA_NASA_NSSD_IC2D_0002A
USA_NASA_NSSD_IC2D_0002B
USA_NASA_NSSD_IC2D_0003A
USA_NASA_NSSD_IC2D_0003B
USA_NASA_NSSD_IC2D_0004A
USA_NASA_NSSD_IC2D_0004B
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USA_NASA_NSSD_IC2D_0005B
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USA_NASA_NSSD_IC2D_0006B
USA_NASA_NSSD_IC2D_0007A
USA_NASA_NSSD_IC2D_0007B
USA_NASA_NSSD_IC2D_0008A
USA_NASA_NSSD_IC2D_0008B
USA_NASA_NSSD_IC2D_0009A

CCSD$$MARKERmarkeraaCCSD3SS00002markerab

DATA_SET_NAME:	DECOM Magnetometer Data
DATA_SOURCES:	International Sun-Earth Explorer 2 (ISEE-2) and Fluxgate Magnetometer Instrument

SCIENTIFIC_CONTACT:

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NSI-DECnet=BRUNET::CTRUSSELL

SOURCE_CHARACTERISTICS:

A. DESCRIPTION OF SPACECRAFT:
The Explorer-class spacecraft, ISEE-1 and ISEE-2 were part of the mother/daughter/heliocentric mission which consisted of ISEE-1, ISEE-2, and ISEE-3 spacecraft. These were spin stabilized spacecraft with their spin axes usually normal to the ecliptic plane. The spin axis of ISEE-1 was within 1 degree of the ecliptic pole throughout the mission. The spin axis of ISEE-2 was usually close to the ecliptic pole but was up to 90 degrees from the ecliptic pole on a few occasions. Solar panels provided the power for the instruments.

B. ORBIT INFORMATION:
The mother/daughter portion of the mission consisted of two spacecraft, one with station-keeping capability, in a highly eccentric earth orbit with apogee at 23 earth radii. The spacecraft maintained a small, but variable, separation distance and made simultaneous coordinated measurements to permit separation of spatial from temporal irregularities in the near-earth solar wind, the bow shock, and inside the magnetosphere. The spin rate of ISEE-1 was set at 19.75 rpm, differing slightly from that of the ISEE-2 spacecraft, whose spin rate was set at 19.8 rpm

C. PERFORMANCE:
The ISEE-1 and ISEE-2 spacecraft operated continuously from launch on October 22, 1977 to September 27, 1987 when they both reentered the Earth's atmosphere.

INVESTIGATION OBJECTIVES:
The purposes of the mission were (1) to investigate solar/terrestrial relationships at the outermost boundaries of the earth's magnetosphere, (2) to examine in detail the structure of the solar wind near the earth and the shock wave that forms the interface between the solar wind and earth, and (3) to continue the investigation of cosmic rays and solar flares in the interplanetary region near 1 AU.

INSTRUMENT ATTRIBUTES:
A. DESCRIPTION OF INSTRUMENT:
In this triaxial fluxgate magnetometer, three ring-core sensors in an orthogonal triad were enclosed in a flipper mechanism at the end of the magnetometer boom. The electronics unit was on the main body of the spacecraft at the foot of the boom. For a complete description of the instrument see the paper Geoscience Electronics GE-16, 239-242, 1978.

B. OPERATIONAL MODE:
The magnetometer had two operating ranges of plus or minus 8192 nT and plus or minus 256 nT in each vector component. The data were digitized and averaged within the instrument to provide increased resolution and to provide Nyquist filtering. There were two modes for the transmission of the averaged data. In the double-precision mode of operation, 16-bit samples of data were transmitted. This provided a maximum resolution of plus or minus 1/4 nT or 1/128 nT in the low-sensitivity and high-sensitivity ranges. In the single-precision mode, any 8 consecutive bits of the above 16-bits were selected by ground command for transmission and the telemetry bandwidths of the magnetometer were doubled. This bandwidth varied from 2 Hz for the low-telemetry rate, double-precision experiment mode to 32 Hz for the high-telemetry rate, single precision mode.

C. MEASURED PARAMETERS:
The instrument measured 3 components of the magnetic field. The data were despun to give the magnetic field along the spin axis, Bz, and the two components in the spin plane. The component along the projection of the sun-earth line onto the spin plane was called the Bx component.

D. PERFORMANCE OF THE INSTRUMENT:
The instruments continued to function with undiminished accuracy until re-entry. Variation of the zero levels has been removed in processing. Occasionally latch up of a sensor occurred during range changes. Because three components of the field could be measured from the two remaining sensors due to the spin of the spacecraft this latch up does not usually affect the calculation of low temporal resolution data.

E. RESOLUTION:
The temporal resolution of the data is generally 4 or 16 samples per second. A single precision mode giving lower amplitude resolution but twice the temporal resolution was seldom used. The analog to digital converter of the magnetometer had a resolution of +/- 2 nT and +/- 1/16 nT in high range and low range. Averaging was used to increase the resolution to +/- 1/8 nT and +/- 1/256 nT. The accuracy of the analog to digital conversion was +/- 1/2 nT and +/- 1/64 nT.

PARAMETERS:
The archive includes the original DECOM magnetometer data as received from Goddard Space Flight Center.

DATA SET QUALITY:
The data submitted on this disk is of the same quality as was originally received from GSFC. During the copying process from magnetic tape to disk, a very small number of unrecoverable tape errors (parity errors) occurred which would result in the loss of 1 tape block of data.

DATA PROCESSING OVERVIEW:
The DECOM data was received on 9-track magnetic tapes written at 1600 BPI, usually with three or four days of data on each tape. These tapes were copied to 9-track magnetic tapes at 6250 BPI with two to four weeks of data per copy tape. No changes were made to the data itself so the data retained its original blocking factor and data format. These copy tapes were then written to optical disk, with one disk file for each three or four days of data, without any alteration of the data. Thus, the data contained on this optical disk is as close as possible to the original DECOM data that was received from GSFC.

At UCLA the DECOM data are processed on Sun/UNIX workstations by the FORTRAN

programs makeprod_a (ISEE-1) and makeprod_b (ISEE-2). The makeprod programs read the DECOM data for their respective spacecraft, and convert them into meaningful magnetic field values. The output of the programs is a UNIX binary file. This file may be written to magnetic tape for storage or converted into a UCLA-IGPP flat files or into ASCII text files. The entire suite of UCLA programs to read and interpret the DECOM data have been archived on this disk in the directory [SOURCE]. The file AAREADME.TXT gives an overview of the various files. The individual source code files include more complete documentation.

DATA_USAGE:
The data in this archive are stored in IBM integer format. Because the data is raw information from the magnetometer instrument, a computer program is required to unpack and convert the data into a format that is scientifically meaningful. The complete suite of UCLA Sun/UNIX DECOM processing programs have been archived on this disk to demonstrate how to interpret these datasets.

DATA_ORGANIZATION:
Each logical volume, one side of an optical disk, includes as much ISEE-1 or ISEE-2 DECOM data as would comfortably fit on that logical volume. The only separation criteria that was used was that if a data group did not fit on the current logical volume it became the first data group of the next logical volume with the groups being placed on logical volumes in ascending order. Occasionally, a problem would occur with either the Write-Once media or the magnetic tapes holding the original DECOM data that would necessitate skipping a data group at the time of writing adjacent data groups to the WORM disk. At the end of the archival process, these data groups were written to the final logical volume for their respective spacecraft.

TYPE_OF_FILE_RELATIONSHIPS:
There is only one type_of_file, which is the original DECOM data from the magnetometer instrument.

CCSD$$MARKERmarkerabCCSD3KS00002markerac

LOG_VOL_TIME_COVERAGE: None

TYPE_OF_FILE_TIME_COVERAGE:
DECOM Magnetometer Data None

FILE_NAMING_CONVENTION:
File names are of the form DEC#XXXX.DAT where DEC is the type of data (DECOM), # is a "1" for ISEE-1 data or a "2" for ISEE-2 data and XXXX is the four digit ISEE group number with leading zeroes as needed. Groups were sequentially numbered chunks of DECOM data. Groups 1 through 12 varied in length from 3 to 8 days. Starting with group 13 and continuing through the end of the mission, groups alternated between 3 days and 4 days of data.

LOG_VOL_FILE_TIME_COVERAGE: None

/* NOTE: */
/* This logical volume is empty, it does not contain any data files. */

PREV_LOG_VOL_COVERAGE: 1977-11-18T00:00:19.882 TO 1977-11-23T01:02:30.810
1977-11-23T03:39:58.536 TO 1977-11-27T23:59:57.209
1978-12-27T01:17:43.223 TO 1978-12-30T23:33:58.721
1979-01-03T02:12:55.984 TO 1979-01-07T01:04:59.351
1980-04-02T00:38:14.823 TO 1980-04-06T00:37:11.297
1980-04-09T00:26:16.834 TO 1980-04-12T23:50:14.316
1983-09-11T00:34:02.288 TO 1983-09-14T01:59:55.828
1983-11-20T01:31:28.542 TO 1983-11-23T00:38:37.918
1987-07-19T00:17:35.882 TO 1987-09-26T06:11:22.703

CCSD$$MARKERmarkeracCCSD3RF0000200000001

REFERENCETYPE=$CCSDS2;

LABEL=ATTACHED;
REFERENCE="DECOM2.SFD";

LABEL=NSSD3IF0018800000001;
REFERENCE="/ISEE2DEC/DEC2*.DAT";

LABEL=CCSD3SF0000200000001;
REFERENCE="/SOURCE/AAREADME.TXT";
REFERENCE="/SOURCE/AINPUT.DAT";
REFERENCE="/SOURCE/APERIGEE.FFD";
REFERENCE="/SOURCE/APERIGEE.FFH";
REFERENCE="/SOURCE/ATIMES.FFD";
REFERENCE="/SOURCE/ATIMES.FFH";

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REFERENCE="/SOURCE/BINPUT.DAT";
REFERENCE="/SOURCE/BPERIGEE.FFD";
REFERENCE="/SOURCE/BPERIGEE.FFH";
REFERENCE="/SOURCE/BTIMES.FFD";
REFERENCE="/SOURCE/BTIMES.FFH";
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REFERENCE="/SOURCE/CONVERT.FOR";
REFERENCE="/SOURCE/CTIME.C";
REFERENCE="/SOURCE/FF_IGPP.C";
REFERENCE="/SOURCE/FF_IGPP.H";
REFERENCE="/SOURCE/FLAT.F";
REFERENCE="/SOURCE/FLAT2ASCII.C";
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REFERENCE="/SOURCE/ICAT.F";
REFERENCE="/SOURCE/IGPPFORT.F";
REFERENCE="/SOURCE/IGPPLIB.C";
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REFERENCE="/SOURCE/ISEE-TAR.Z";
REFERENCE="/SOURCE/JTLIB.F";
REFERENCE="/SOURCE/MAKEFILE.";
REFERENCE="/SOURCE/PARMEDIT.F";
REFERENCE="/SOURCE/PARMLIST.C";
REFERENCE="/SOURCE/QBMS.F";
REFERENCE="/SOURCE/QBS1.F";
REFERENCE="/SOURCE/QBS2.F";
REFERENCE="/SOURCE/QBS3.F";
REFERENCE="/SOURCE/TIME_IGPP.C";
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REFERENCE="/SOURCE/WHOWNER.C";
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REFERENCE="/SOURCE/YAS1.F";
REFERENCE="/SOURCE/YAS2.F";
REFERENCE="/SOURCE/YAS3.F";

/* EOF */
```