

#539

MODELING PROGRAMS

No I.D. Assigned -- Old or New

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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

MODELING PROGRAMS

This data set catalog consists of one 9-track, 1600 BPI, ASCII magnetic tape created on the MODCOMP IV computer. The tape has 5 files of various modeling programs as listed below.

D#

C#

D-62809

C-24038

FILE

PROGRAM NAME

1	PROTON BLOCK DATA
2	IGRF 68'
3	IGRF 75' — SAME AS MG-14B
4	COSMOS COEFFICIENTS
5	MAGTAL

DOCUMENTATION

<u>FILE</u>	<u>PROGRAM NAME</u>	<u>DOCUMENT</u>
1	PROTON BLOCK DATA	
2	IGRF 68'	
3	IGRF 75'	
4	COSMOS COEFFICIENTS	ACCOMPANIES 64-069A-01D DATA
5	MAGTAL	SEE D.S.C. 159

File 1- Proton Block
Data

```
1 // EXEC LINKGO,REGION=30=160K
2 //LINK.OBJECT DD *
3 //GO.FT13F001 DD DUMMY
4 //GO.FT10F001 DD UNIT=2400-9,LABEL=(,BLP),DSNAME=INPIT,DISP=(OLD,KEEP),
5 //          DCB=(DEN=2,RECFM=VBS,LRECL=112,BLKSIZE=11204),
6 //          VOLUME=SER=Z1286
7 //GO.DATAS DD *
8     BLOCK DATA                                LBP00 1
9     DOUBLE PRECISION NAME                      LBP00 2
10    COMMON/AP8MAX /NAME,EPOCH,SCAE,SCAL,SCAB,SCAF,LENGTH,
11    * MAP011(163),MAP012(163),MAP013(163),MAP014(163),MAP015(163),
12    * MAP016(163),MAP017(163),MAP018(163),MAP019(163),
13    * MAP021(163),MAP022(163),MAP023(163),MAP024(163),MAP025(163),
14    * MAP026(163),MAP027(163),MAP028(163),MAP029(163),
15    * MAP031(163),MAP032( 78)
16    DATA NAME /8HPROTONS /                    LBP00 4
17    DATA EPOCH /      1960.000/                LBP00 5
18    DATA SCAE /        32.000/                LBP00 6
19    DATA SCAL /      2048.000/                LBP00 7
20    DATA SCAB /      4096.000/                LBP00 8
21    DATA SCAF /      512.000/                LBP00 9
22    DATA LENGTH/      3174/                  LBP00 10
23    DATA MAP011/                                LBP00 12
24    X   972,   12,   3,   0,   0,   3, 2252,   0,   12, LBP00 13
25    X  2457,  2178,  402,  352,  298,  204,  109,  31,  31, LBP00 14
26    X   31,   32,   14, 2662, 2634,  861,  647,  557,  462, LBP00 15
27    X   302,  164,  66,  39,  38,  38,  502,  15, 2867, LBP00 16
28    X  2904, 1328,  952,  830,  723,  594,  431,  97,  90, LBP00 17
29    X   70,   69,  139,  249,  16, 3072, 3130, 1316, 1573, LBP00 18
30    X  1236, 1060,  987,  713,  359,  172,  127,  77,  77, LBP00 19
31    X   153,  594,  16, 3276, 3305, 1193, 1875, 2152, 1569, LBP00 20
32    X  1223, 1218,  637,  364,  192,  115,  76,  76,  74, LBP00 21
33    X   17,  3481, 3429, 1266, 1987, 2809, 2423, 1717, 1676, LBP00 22
34    X   963,  553,  280,  217,  91,  91,  91,  91,  17, LBP00 23
35    X  3686, 3523, 1415, 2126, 3316, 3285, 2668, 1922, 1646, LBP00 24
36    X   690,  285,  154,  147,  126,  129,  126,  18, 3891, LBP00 25
37    X  3609, 1496, 2294, 3620, 4263, 3936, 2476, 2201, 762, LBP00 26
38    X   622,  151,  149,  160,  193,  193,  217,  18, 4096, LBP00 27
39    X  3688, 1550, 2493, 3953, 4980, 4945, 4171, 2224, 1094, LBP00 28
40    X   347,  289,  289,  292,  295,  295,  298,  18, 4300, LBP00 29
41    X  3796, 1496, 2354, 4013, 5561, 6731, 4978, 3798, 1411, LBP00 30
42    Y   850/                                LBP00 31
43    DATA MAP012/                                LBP00 33
44    X   334,  282,  264,  271,  275,  275,  19, 4505, 3918, LBP00 34
45    X  1379, 2216, 3778, 5964, 8209, 6297, 3116, 3274, 3539, LBP00 35
46    X   218,  218,  218,  222,  226,  222,  235,  19, 4710, LBP00 36
47    X  4003, 1708, 2483, 4293, 6211, 9216, 8162, 4176, 4362, LBP00 37
48    X  3337,  317,  307,  312,  307,  312,  507,  546,  19, LBP00 38
49    X  4915, 4074, 1868, 2827, 5045, 7617, 9669, 9946, 6082, LBP00 39
50    X  4125, 3842,  809,  322,  327,  322,  333,  327, 1137, LBP00 40
51    X   20,  5120, 4119, 2056, 3378, 6355, 9708, 10372, 10040, LBP00 41
52    X  9250, 4832, 3522, 1260,  276,  276,  269,  338,  332, LBP00 42
53    X   338,  395,  20,  5324, 4165, 2008, 3608, 7737, 12712, LBP00 43
54    X 11316, 10992, 10175, 6109, 3354, 1585,  521,  430,  310, LBP00 44
55    X   303,  310,  923, 1233,  20,  5529, 4194, 2194, 3804, LBP00 45
56    X  8658, 15997, 12698, 11964, 11964, 6511, 4648, 1223,  663, LBP00 46
57    X   355,  363,  363,  545,  584,  584,  20,  5734, 4226, LBP00 47
58    X  2104, 3961, 8961, 18785, 15977, 12403, 13248, 7949, 5836, LBP00 48
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59	X	1945,	423,	414,	414,	379,	370,	379,	387,	20,	LBP00	49
60	X	5939,	4238,	2064,	4157,	10241,	20961,	19846,	14202,	13488,	LBP00	50
61	X	7218,	7355,	4773,	333,	333,	342,	333,	587,	734,	LBP00	51
62	Y	734/									LBP00	52
63		DATA MAP013/									LBP00	54
64	X	20,	6144,	4249,	2133,	4158,	10862,	22417,	24377,	17078,	LBP00	55
65	X	15010,	11544,	6888,	2956,	563,	574,	509,	433,	444,	LBP00	56
66	X	433,	455,	20,	6348,	4239,	2269,	4539,	11681,	25907,	LBP00	57
67	X	26445,	19708,	16853,	9472,	10284,	5721,	502,	334,	334,	LBP00	58
68	X	334,	334,	514,	3129,	20,	6553,	4226,	2089,	4270,	LBP00	59
69	X	13021,	30811,	28985,	23611,	19354,	12443,	9473,	4743,	486,	LBP00	60
70	X	473,	486,	499,	841,	828,	854,	20,	6758,	4197,	LBP00	61
71	X	2133,	4756,	14570,	34400,	35308,	24845,	19153,	13532,	14858,	LBP00	62
72	X	2263,	620,	605,	620,	692,	677,	692,	706,	20,	LBP00	63
73	X	6963,	4157,	2096,	5281,	16803,	41614,	40889,	26781,	17465,	LBP00	64
74	X	14833,	16252,	4224,	363,	378,	363,	363,	378,	363,	LBP00	65
75	X	394,	20,	7168,	4113,	2476,	5572,	20567,	50644,	43834,	LBP00	66
76	X	31040,	21651,	14927,	14978,	464,	464,	464,	464,	464,	LBP00	67
77	X	464,	2648,	2855,	19,	7372,	4062,	2656,	6342,	24936,	LBP00	68
78	X	62182,	48956,	24918,	19661,	21906,	10906,	1889,	1066,	1066,	LBP00	69
79	X	1085,	1085,	1085,	3685,	19,	7577,	4005,	2844,	7170,	LBP00	70
80	X	34773,	73507,	41009,	32112,	28172,	20657,	6114,	1158,	1178,	LBP00	71
81	X	1158,	1178,	1178,	1970,	3209,	19,	7782,	3954,	2993,	LBP00	72
82	Y	8714/									LBP00	73
83		DATA MAP014/									LBP00	75
84	X	45903,	81111,	46057,	28827,	30323,	23347,	3807,	1254,	1276,	LBP00	76
85	X	1254,	1276,	1276,	2553,	2773,	19,	7987,	3897,	3283,	LBP00	77
86	X	10682,	55431,	92639,	40896,	34544,	32902,	22077,	1856,	1879,	LBP00	78
87	X	1879,	1903,	1903,	1927,	3331,	3545,	19,	8192,	3842,	LBP00	79
88	X	3542,	12732,	61196,	96235,	48849,	49209,	27364,	18020,	3311,	LBP00	80
89	X	2362,	2387,	2387,	2413,	2516,	3902,	4287,	18,	8396,	LBP00	81
90	X	3792,	3841,	13348,	64169,	97608,	65109,	49689,	36175,	15365,	LBP00	82
91	X	2874,	2902,	2902,	2957,	2985,	3289,	4339,	18,	8601,	LBP00	83
92	X	3738,	4248,	14201,	58914,	112956,	77304,	61974,	37731,	10190,	LBP00	84
93	X	3149,	2882,	2882,	2912,	2912,	3684,	5318,	18,	8806,	LBP00	85
94	X	3689,	4464,	14093,	59370,	119505,	110099,	52164,	36285,	18525,	LBP00	86
95	X	3125,	2615,	2519,	2583,	2583,	3922,	4241,	18,	9011,	LBP00	87
96	X	3650,	4441,	14110,	55619,	131326,	118788,	67645,	48820,	5603,	LBP00	88
97	X	3621,	3246,	3246,	3280,	3314,	5295,	7209,	18,	9216,	LBP00	89
98	X	3594,	4642,	13998,	59611,	152739,	136840,	73902,	28326,	26973,	LBP00	90
99	X	1425,	1462,	1425,	1425,	2924,	3143,	3838,	17,	9420,	LBP00	91
100	X	3555,	4762,	13426,	61082,	168064,	149486,	84852,	33410,	17329,	LBP00	92
101	X	4879,	1483,	1483,	1522,	1483,	7533,	17,	9625,	3507,	LBP00	93
102	Y	4830/									LBP00	94
103		DATA MAP015/									LBP00	96
104	X	12490,	64700,	203925,	148218,	90097,	32017,	17570,	2498,	2498,	LBP00	97
105	X	2248,	2040,	2040,	2082,	17,	9830,	3470,	4879,	11576,	LBP00	98
106	X	65419,	219673,	164899,	91187,	39783,	21732,	2927,	2883,	2040,	LBP00	99
107	X	1996,	2040,	2085,	17,	10035,	3421,	4860,	10758,	77996,	LBP00	100
108	X	256685,	162315,	102013,	37134,	14533,	2218,	2171,	2312,	3114,	LBP00	101
109	X	3067,	3209,	17,	10240,	3379,	5114,	10829,	83627,	287680,	LBP00	102
110	X	174623,	102077,	39958,	8623,	3610,	2156,	2206,	2206,	6919,	LBP00	103
111	X	7320,	17,	10444,	3337,	5160,	9787,	95108,	313303,	195535,	LBP00	104
112	X	91597,	47980,	4681,	4255,	2287,	2341,	2340,	9309,	19202,	LBP00	105
113	X	16,	10649,	3297,	5357,	10150,	110010,	320445,	219851,	95632,	LBP00	106
114	X	43812,	6992,	3778,	3383,	3552,	4511,	4511,	16,	10854,	LBP00	107
115	X	3261,	5374,	9075,	133921,	337041,	231421,	96127,	48720,	3881,	LBP00	108
116	X	3881,	3941,	3881,	5254,	10389,	16,	11059,	3226,	5621,	LBP00	109

117	X	9094,168240,350375,235373, 96877, 47302, 5494, 4989, 4484,	LBP00110
118	X	4737, 5621, 5621, 16, 11264, 3195, 5739, 8475,192385,	LBP00111
119	X	367954,255312, 94491, 42908, 7674, 5472, 5472, 5472, 8208,	LBP00112
120	X	13079, 16, 11468, 3160, 6056, 9789,230352,377395,258592,	LBP00113
121	X	100916, 40423, 8239, 6901, 6900, 6902, 6690, 6761, 16,	LBP00114
122	Y	11673/	LBP00115
123		DATA MAP016/	LBP00117
124	X	3129, 6610, 12477,257707,401265,249909,119643, 34683, 8318,	LBP00118
125	X	8021, 8169, 8170, 12625, 17973, 16, 11878, 3104, 7121,	LBP00119
126	X	15024,288661,414798,252197,133180, 27152, 10720, 10642, 10720,	LBP00120
127	X	10642, 10094, 10642, 16, 12083, 3073, 7660, 17792,349170,	LBP00121
128	X	416796,236487,148102, 20592, 13262, 13427, 13591, 13673, 17957,	LBP00122
129	X	22158, 15, 12288, 3047, 8230, 22179,399906,406491,246562,	LBP00123
130	X	154123, 18973, 15768, 16027, 16201, 16287, 14901, 15, 12492,	LBP00124
131	X	3021, 8738, 34679,405684,457020,259775, 51245, 31221, 31948,	LBP00125
132	X	32859, 33678, 34588, 44146, 15, 12697, 3000, 9462, 41098,	LBP00126
133	X	438124,463643,268762, 57059, 34217, 35172, 36128, 36988, 38039,	LBP00127
134	X	40334, 15, 12902, 2971, 5014, 5014, 5014,997699,284698,	LBP00128
135	X	47333, 37104, 38207, 39210, 40313, 41416, 32792, 15, 13107,	LBP00129
136	X	2935, 11670, 96411,515385,469440,278299, 43738, 40267, 41425,	LBP00130
137	X	42686, 43737, 45104, 54882, 15, 13312, 2849, 15421,216552,	LBP00131
138	X	576297,446322,199809, 42518, 43839, 45051, 46372, 47694, 46924,	LBP00132
139	X	43068, 15, 13516, 2819, 17294,264592,610578,449402,185156,	LBP00133
140	X	45886, 47154, 48652, 50152, 51534, 60413, 96728, 3, 20459,	LBP00134
141	X	0, 3, 32767, 0, 880, 25, 3, 0, 0,	LBP00135
142	Y	3/	LBP00136
143		DATA MAP017/	LBP00138
144	X	2252, 0, 12, 2457, 2137, 402, 352, 298, 204,	LBP00139
145	X	110, 33, 33, 33, 33, 14, 2662, 2593, 861,	LBP00140
146	X	647, 557, 462, 302, 164, 65, 38, 37, 38,	LBP00141
147	X	38, 15, 2867, 2863, 1328, 952, 830, 723, 594,	LBP00142
148	X	431, 97, 90, 70, 69, 165, 321, 16, 3072,	LBP00143
149	X	3089, 1316, 1573, 1236, 1060, 987, 713, 359, 172,	LBP00144
150	X	127, 77, 77, 218, 1041, 16, 3276, 3264, 1193,	LBP00145
151	X	1875, 2152, 1569, 1223, 1218, 637, 364, 192, 117,	LBP00146
152	X	79, 79, 79, 17, 3481, 3388, 1266, 1987, 2809,	LBP00147
153	X	2423, 1717, 1676, 963, 553, 280, 217, 95, 95,	LBP00148
154	X	97, 95, 17, 3686, 3482, 1415, 2126, 3316, 3285,	LBP00149
155	X	2668, 1922, 1646, 690, 285, 154, 150, 133, 136,	LBP00150
156	X	133, 17, 3891, 3568, 1496, 2294, 3620, 4263, 3936,	LBP00151
157	X	2476, 2201, 762, 622, 151, 149, 162, 209, 206,	LBP00152
158	X	18, 4096, 3646, 1569, 2544, 4078, 5054, 4913, 4085,	LBP00153
159	X	2175, 1011, 343, 289, 289, 292, 305, 314, 318,	LBP00154
160	X	18, 4300, 3707, 1678, 2714, 4384, 6341, 6151, 4882,	LBP00155
161	X	3089, 1370, 646, 334, 271, 264, 282, 297, 301,	LBP00156
162	Y	18/	LBP00157
163		DATA MAP018/	LBP00159
164	X	4505, 3820, 1396, 2237, 3774, 5819, 7889, 5908, 2976,	LBP00160
165	X	2660, 2561, 2263, 465, 213, 209, 354, 478, 19,	LBP00161
166	X	4710, 3876, 1737, 2517, 4308, 6069, 8767, 8035, 4127,	LBP00162
167	X	3981, 3879, 746, 302, 307, 307, 312, 776, 1337,	LBP00163
168	X	19, 4915, 3937, 1769, 2711, 4801, 7462, 9447, 9946,	LBP00164
169	X	6231, 3620, 3742, 1741, 510, 322, 322, 394, 416,	LBP00165
170	X	421, 19, 5120, 3975, 1905, 3039, 5697, 8981, 10341,	LBP00166
171	X	9676, 8880, 6355, 3359, 2438, 269, 276, 269, 395,	LBP00167
172	X	495, 495, 19, 5324, 4009, 1860, 3122, 6342, 12465,	LBP00168
173	X	11683, 11387, 10506, 6919, 3347, 1910, 521, 451, 310,	LBP00169
174	X	310, 310, 1938, 19, 5529, 4026, 2036, 3323, 7371,	LBP00170

175	X	15003,	13827,	12185,	12430,	7198,	4672,	1555,	695,	363,	LBP00171
176	X	363,	363,	742,	868,	19,	5734,	4045,	1972,	3521,	LBP00172
177	X	7526,	17025,	17984,	12614,	13838,	8636,	5924,	2113,	423,	LBP00173
178	X	423,	440,	467,	467,	467,	19,	5939,	4036,	1966,	LBP00174
179	X	3854,	9087,	19631,	21088,	14711,	13850,	7727,	7453,	4930,	LBP00175
180	X	342,	333,	333,	342,	841,	1154,	19,	6144,	4035,	LBP00176
181	X	2014,	3844,	9292,	20587,	25731,	17977,	15843,	12086,	7104,	LBP00177
182	Y	2956/									LBP00178
183		DATA MAP019/									LBP00180
184	X	563,	563,	563,	552,	552,	552,	19,	6348,	4017,	LBP00181
185	X	2174,	4180,	10200,	22826,	28415,	20377,	18370,	9532,	10356,	LBP00182
186	X	6283,	669,	346,	358,	346,	358,	346,	19,	6553,	LBP00183
187	X	3993,	2050,	4047,	11208,	26935,	31771,	25240,	20024,	12995,	LBP00184
188	X	9592,	4940,	473,	486,	486,	526,	1301,	1301,	19,	LBP00185
189	X	6758,	3953,	2104,	4511,	12898,	30278,	37830,	26459,	20565,	LBP00186
190	X	13835,	15262,	2090,	605,	620,	634,	937,	951,	951,	LBP00187
191	X	19,	6963,	3905,	2081,	5170,	14943,	37705,	42796,	28689,	LBP00188
192	X	18868,	15085,	16598,	4351,	426,	426,	426,	441,	426,	LBP00189
193	X	441,	19,	7168,	3851,	2459,	5417,	18452,	46637,	46689,	LBP00190
194	X	32330,	22837,	15288,	15580,	464,	464,	464,	464,	464,	LBP00191
195	X	464,	499,	18,	7372,	3784,	2563,	5762,	20110,	54400,	LBP00192
196	X	54812,	28715,	20260,	22130,	13394,	2095,	1066,	1066,	1197,	LBP00193
197	X	1291,	1310,	18,	7577,	3708,	2783,	6581,	26466,	67779,	LBP00194
198	X	48869,	33920,	27928,	22505,	9140,	1361,	1178,	1158,	1300,	LBP00195
199	X	1320,	1300,	18,	7782,	3648,	2905,	7328,	29267,	73739,	LBP00196
200	X	62252,	28541,	30895,	25790,	9990,	1254,	1254,	1298,	1364,	LBP00197
201	X	1386,	1364,	17,	7987,	3579,	3188,	8255,	28239,	82981,	LBP00198
202	Y	63806/									LBP00199
203		DATA MAP021/									LBP00201
204	X	34996,	37184,	26883,	8017,	1879,	1879,	1879,	2260,	2617,	LBP00202
205	X	17,	8192,	3513,	3106,	6417,	16583,	52263,	90819,	50595,	LBP00203
206	X	51031,	27595,	18688,	3337,	2362,	2362,	2387,	6520,	17,	LBP00204
207	X	8396,	3450,	3399,	7019,	15946,	36810,	73151,	70664,	55492,	LBP00205
208	X	48473,	30150,	5334,	2874,	2902,	3593,	3924,	17,	8601,	LBP00206
209	X	3352,	3149,	4961,	10398,	17588,	44594,	95100,	75848,	70412,	LBP00207
210	X	37999,	16845,	3238,	2882,	5585,	8853,	16,	8806,	3285,	LBP00208
211	X	3188,	4687,	9023,	17951,	32140,	64280,	106432,	88959,	45053,	LBP00209
212	X	37497,	6345,	3571,	4815,	16,	9011,	3223,	2767,	2733,	LBP00210
213	X	7858,	15032,	26648,	55687,	134128,	106284,	56131,	36214,	4271,	LBP00211
214	X	3553,	3553,	16,	9216,	3145,	2668,	2668,	6031,	12719,	LBP00212
215	X	29239,	65167,	159975,	111475,	61695,	26571,	19992,	3728,	3765,	LBP00213
216	X	15,	9420,	3066,	2693,	2693,	5659,	12451,	28765,	72869,	LBP00214
217	X	189180,	112095,	69786,	26345,	11553,	9680,	15,	9625,	2958,	LBP00215
218	X	2748,	2789,	5496,	13156,	34390,	96258,	218663,	108915,	60078,	LBP00216
219	X	25314,	9201,	5038,	15,	9830,	2869,	2883,	2839,	5899,	LBP00217
220	X	15257,	42178,	124717,	214884,	127067,	42311,	39828,	5810,	5987,	LBP00218
221	X	14,	10035,	2776,	2878,	2925,	5143,	14297,	49921,	161466,	LBP00219
222	Y	215587/									LBP00220
223		DATA MAP022/									LBP00222
224	X	136316,	49402,	28830,	6889,	14,	10240,	2695,	3058,	3108,	LBP00223
225	X	5766,	17447,	65227,	232480,	195329,	131005,	41462,	16294,	6618,	LBP00224
226	X	14,	10444,	2631,	3245,	3192,	5692,	20745,	79842,	269473,	LBP00225
227	X	190269,	124417,	48565,	19149,	8511,	13,	10649,	2556,	3383,	LBP00226
228	X	3327,	5977,	25318,	109784,	287740,	216806,	102680,	49395,	8684,	LBP00227
229	X	13,	10854,	2487,	3582,	3523,	6627,	31943,	160311,	300859,	LBP00228
230	X	214345,	92126,	49735,	10568,	13,	11059,	2446,	3789,	3726,	LBP00229
231	X	6947,	35682,	204554,	302883,	219774,	90309,	47491,	10357,	13,	LBP00230
232	X	11264,	2407,	3870,	3937,	7007,	41640,	229821,	322377,	235760,	LBP00231

233	X	84748, 39571, 10677, 13, 11468, 2366, 4155, 4085, 8310,	LBP00232
234	X	50282, 274507, 327817, 222958, 99578, 32394, 11549, 13, 11673,	LBP00233
235	X	2327, 4456, 4456, 10249, 63498, 295806, 360864, 202898, 118827,	LBP00234
236	X	20720, 12700, 12, 11878, 2296, 4773, 4773, 12050, 85448,	LBP00235
237	X	321525, 364875, 203291, 131536, 13146, 12, 12083, 2265, 5025,	LBP00236
238	X	5025, 12932, 102634, 370998, 348017, 205350, 130722, 24052, 12,	LBP00237
239	X	12288, 2238, 5371, 5371, 14901, 118950, 398953, 352864, 212082,	LBP00238
240	X	131858, 30842, 12, 12492, 2212, 5734, 5734, 18295, 139718,	LBP00239
241	X	416424, 363723, 237566, 34224, 25577, 12, 12697, 2191, 6117,	LBP00240
242	Y	6117/	LBP00241
243		DATA MAP023/	LBP00243
244	X	21314, 153496, 432867, 391769, 232346, 38804, 30203, 12, 12902,	LBP00244
245	X	2162, 4011, 3911, 3911, 3911, 662458, 395810, 238469, 37004,	LBP00245
246	X	31789, 12, 13107, 2126, 7360, 7254, 41529, 197343, 503084,	LBP00246
247	X	400995, 223733, 38059, 33960, 11, 13312, 2041, 8702, 8812,	LBP00247
248	X	74571, 301146, 529705, 378580, 158834, 38552, 11, 13516, 2011,	LBP00248
249	X	9569, 10491, 88197, 339069, 553048, 388298, 144805, 40121, 3,	LBP00249
250	X	20459, 0, 3, 32767, 0, 410, 131, 3, 0,	LBP00250
251	X	0, 3, 2252, 0, 11, 2457, 1952, 359, 215,	LBP00251
252	X	148, 121, 98, 77, 73, 73, 14, 2662, 2563,	LBP00252
253	X	781, 530, 475, 347, 292, 223, 210, 173, 99,	LBP00253
254	X	186, 329, 14, 2867, 2811, 1121, 1026, 754, 637,	LBP00254
255	X	458, 373, 263, 219, 210, 138, 215, 15, 3072,	LBP00255
256	X	3025, 1278, 1370, 1289, 1022, 809, 533, 391, 310,	LBP00256
257	X	269, 244, 141, 130, 16, 3276, 3263, 1184, 1468,	LBP00257
258	X	1712, 1684, 1313, 965, 650, 470, 320, 294, 251,	LBP00258
259	X	230, 291, 17, 3481, 3349, 1300, 1936, 2385, 2230,	LBP00259
260	X	1725, 1373, 926, 548, 437, 398, 303, 195, 386,	LBP00260
261	X	695, 17, 3686, 3376, 1543, 2301, 3461, 3194, 2006,	LBP00261
262	Y	1709/	LBP00262
263		DATA MAP024/	LBP00264
264	X	1179, 695, 419, 353, 365, 215, 332, 1242, 17,	LBP00265
265	X	3891, 3364, 1785, 2803, 4756, 4082, 2621, 2156, 1252,	LBP00266
266	X	762, 517, 380, 349, 308, 272, 292, 16, 4096,	LBP00267
267	X	3300, 2243, 3485, 6090, 4935, 3231, 2853, 1283, 777,	LBP00268
268	X	565, 465, 420, 302, 770, 16, 4300, 3232, 2123,	LBP00269
269	X	3946, 6530, 6972, 5324, 3048, 1474, 761, 601, 527,	LBP00270
270	X	460, 382, 1114, 16, 4505, 3156, 1767, 4342, 8739,	LBP00271
271	X	8760, 6395, 3552, 1614, 832, 589, 499, 521, 632,	LBP00272
272	X	692, 15, 4710, 3068, 2166, 4708, 11177, 11231, 6889,	LBP00273
273	X	3547, 1454, 1195, 649, 561, 566, 629, 15, 4915,	LBP00274
274	X	2984, 2534, 6071, 13649, 12757, 7529, 4141, 1475, 715,	LBP00275
275	X	493, 421, 599, 737, 15, 5120, 2894, 3108, 7903,	LBP00276
276	X	17360, 12829, 8793, 3873, 1222, 777, 639, 432, 432,	LBP00277
277	X	439, 14, 5324, 2801, 3572, 9442, 20223, 13585, 10147,	LBP00278
278	X	3622, 1423, 958, 789, 691, 1430, 14, 5529, 2695,	LBP00279
279	X	3978, 6187, 12004, 18530, 16155, 9163, 2912, 1571, 1247,	LBP00280
280	X	1200, 1436, 14, 5734, 2593, 2333, 3310, 4991, 10801,	LBP00281
281	X	24586, 19428, 8732, 3741, 2606, 2614, 3917, 13, 5939,	LBP00282
282	Y	2470/	LBP00283
283		DATA MAP025/	LBP00285
284	X	1203, 1849, 3560, 6700, 14134, 27231, 20511, 12168, 7160,	LBP00286
285	X	4979, 13, 6144, 2346, 1170, 1895, 3953, 6758, 13071,	LBP00287
286	X	30268, 24648, 17089, 11728, 7234, 12, 6348, 2219, 1529,	LBP00288
287	X	2353, 4491, 7214, 16913, 33623, 28619, 18597, 11968, 12,	LBP00289
288	X	6553, 2098, 1905, 2680, 4809, 9565, 19118, 37328, 36908,	LBP00290
289	X	23690, 8961, 11, 6758, 1977, 1701, 3070, 6341, 11961,	LBP00291
290	X	22972, 43219, 42413, 26791, 11, 6963, 1860, 1923, 3815,	LBP00292

291	X	7724,	14817,	32361,	45728,	42339,	13840,	10,	7168,	1700,	LBP00293
292	X	2717,	5090,	10731,	23577,	36440,	56474,	30937,	9,	7372,	LBP00294
293	X	1517,	2114,	3087,	7109,	16275,	31540,	37676,	9,	7577,	LBP00295
294	X	1311,	2397,	3676,	8551,	14746,	35301,	15295,	8,	7782,	LBP00296
295	X	1156,	2399,	3719,	6624,	10166,	11465,	7,	7987,	1006,	LBP00297
296	X	2593,	3616,	5044,	8850,	7,	8192,	852,	1540,	1566,	LBP00298
297	X	3055,	6879,	5,	8396,	471,	2460,	2460,	5,	8601,	LBP00299
298	X	276,	4516,	4724,	4,	8806,	148,	8992,	4,	9011,	LBP00300
299	X	77,	18449,	3,	9216,	0,	3,	32767,	0,	336,	LBP00301
300	X	256,	3,	0,	0,	3,	2252,	0,	11,	2457,	LBP00302
301	X	1858,	380,	213,	147,	121,	93,	78,	82,	83,	LBP00303
302	Y	13/									LBP00304
303		DATA MAP026/									LBP00306
304	X	2662,	2413,	853,	576,	493,	361,	257,	223,	191,	LBP00307
305	X	131,	119,	270,	14,	2867,	2610,	1275,	1111,	827,	LBP00308
306	X	602,	428,	311,	233,	220,	153,	198,	249,	14,	LBP00309
307	X	3072,	2756,	1462,	1604,	1374,	1073,	670,	447,	334,	LBP00310
308	X	282,	253,	157,	139,	15,	3276,	2939,	1317,	1684,	LBP00311
309	X	2059,	1763,	1269,	813,	527,	338,	305,	254,	259,	LBP00312
310	X	351,	15,	3481,	2985,	1373,	2190,	2787,	2373,	1816,	LBP00313
311	X	1164,	668,	471,	420,	309,	183,	185,	15,	3686,	LBP00314
312	X	2979,	1625,	2518,	4130,	3038,	2123,	1571,	891,	500,	LBP00315
313	X	376,	369,	302,	281,	15,	3891,	2927,	1868,	3083,	LBP00316
314	X	5532,	3975,	2745,	1766,	941,	633,	429,	371,	413,	LBP00317
315	X	759,	15,	4096,	2877,	2278,	3745,	6908,	4816,	3433,	LBP00318
316	X	2233,	1027,	696,	501,	456,	565,	648,	15,	4300,	LBP00319
317	X	2824,	2146,	4188,	7421,	6953,	4704,	2669,	1355,	739,	LBP00320
318	X	587,	520,	891,	1930,	14,	4505,	2793,	1789,	4401,	LBP00321
319	X	8927,	8513,	5874,	3539,	1810,	952,	619,	491,	935,	LBP00322
320	X	14,	4710,	2671,	2186,	4830,	12187,	10924,	5894,	3322,	LBP00323
321	X	1634,	1039,	810,	751,	893,	13,	4915,	2522,	2545,	LBP00324
322	Y	6248/									LBP00325
323		DATA MAP027/									LBP00327
324	X	15468,	12374,	5971,	3781,	1536,	798,	676,	660,	13,	LBP00328
325	X	5120,	2389,	3121,	8059,	18651,	12290,	7282,	4155,	1316,	LBP00329
326	X	815,	589,	595,	12,	5324,	2259,	3587,	9816,	21562,	LBP00330
327	X	12930,	8794,	3706,	1444,	979,	817,	12,	5529,	2130,	LBP00331
328	X	3978,	6243,	12430,	19919,	14387,	8492,	3244,	1744,	2123,	LBP00332
329	X	11,	5734,	2006,	2333,	3310,	5026,	11241,	27394,	16030,	LBP00333
330	X	8407,	3222,	11,	5939,	1862,	1203,	1849,	3599,	6817,	LBP00334
331	X	15611,	27739,	18095,	7277,	10,	6144,	1726,	1170,	1895,	LBP00335
332	X	3964,	6844,	14046,	32174,	16980,	10,	6348,	1582,	1529,	LBP00336
333	X	2353,	4539,	7405,	19051,	33981,	8731,	9,	6553,	1449,	LBP00337
334	X	1905,	2694,	4848,	9999,	21903,	31902,	9,	6758,	1313,	LBP00338
335	X	1701,	3070,	6399,	12480,	24499,	11039,	8,	6963,	1186,	LBP00339
336	X	1923,	3815,	7724,	15385,	19641,	7,	7168,	1020,	2717,	LBP00340
337	X	5090,	10748,	18349,	7,	7372,	827,	2114,	3087,	7109,	LBP00341
338	X	13058,	6,	7577,	614,	2397,	3676,	9770,	5,	7782,	LBP00342
339	X	451,	2399,	6271,	5,	7987,	297,	3354,	3402,	4,	LBP00343
340	X	8192,	138,	7778,	3,	8396,	0,	3,	32767,	0,	LBP00344
341	X	269,	512,	3,	0,	0,	3,	2252,	0,	10,	LBP00345
342	Y	2457/									LBP00346
343		DATA MAP028/									LBP00348
344	X	1761,	403,	212,	145,	121,	88,	83,	95,	12,	LBP00349
345	X	2662,	2257,	941,	633,	508,	343,	236,	217,	166,	LBP00350
346	X	101,	213,	13,	2867,	2402,	1488,	1209,	859,	536,	LBP00351
347	X	382,	257,	221,	176,	177,	267,	13,	3072,	2477,	LBP00352
348	X	1735,	1963,	1424,	915,	528,	368,	296,	261,	171,	LBP00353

349	X	149,	14,	3276,	2603,	1492,	2036,	2481,	1765,	1056,	LBP00354
350	X	599,	358,	317,	256,	322,	458,	14,	3481,	2607,	LBP00355
351	X	1455,	2578,	3388,	2472,	1599,	835,	510,	443,	315,	LBP00356
352	X	236,	240,	14,	3686,	2568,	1723,	2855,	4929,	2738,	LBP00357
353	X	2189,	1265,	585,	405,	379,	533,	718,	13,	3891,	LBP00358
354	X	2474,	1961,	3590,	6288,	3837,	2610,	1287,	776,	487,	LBP00359
355	X	413,	580,	13,	4096,	2437,	2320,	4088,	7897,	4569,	LBP00360
356	X	3449,	1553,	870,	600,	513,	818,	13,	4300,	2402,	LBP00361
357	X	2168,	4477,	8405,	6712,	4087,	2357,	1244,	716,	620,	LBP00362
358	X	609,	13,	4505,	2417,	1810,	4465,	9114,	8256,	5379,	LBP00363
359	X	3484,	1951,	1114,	653,	1904,	12,	4710,	2259,	2205,	LBP00364
360	X	4971,	13451,	10158,	5098,	3108,	1795,	893,	1795,	11,	LBP00365
361	X	4915,	2043,	2561,	6437,	17802,	11066,	4790,	3382,	1658,	LBP00366
362	Y	1380/									LBP00367
363		DATA MAP029/									LBP00369
364	X	11,	5120,	1865,	3140,	8241,	20267,	11205,	6085,	4180,	LBP00370
365	X	1786,	1899,	10,	5324,	1696,	3601,	10238,	23246,	11676,	LBP00371
366	X	7673,	3756,	1585,	10,	5529,	1544,	3978,	6298,	12974,	LBP00372
367	X	21143,	12643,	7466,	4506,	9,	5734,	1397,	2333,	3310,	LBP00373
368	X	5062,	11761,	29234,	9921,	8,	5939,	1232,	1203,	1849,	LBP00374
369	X	3629,	6964,	10798,	8,	6144,	1084,	1170,	1895,	3964,	LBP00375
370	X	6952,	8479,	7,	6348,	923,	1529,	2353,	4575,	5423,	LBP00376
371	X	7,	6553,	775,	1905,	2720,	3876,	3942,	6,	6758,	LBP00377
372	X	624,	1701,	3070,	5275,	5,	6963,	488,	1923,	3578,	LBP00378
373	X	5,	7168,	314,	2287,	2339,	4,	7372,	112,	7015,	LBP00379
374	X	3,	7577,	0,	3,	32767,	0,	165,	1603,	3,	LBP00380
375	X	0,	0,	3,	2252,	0,	10,	2457,	1700,	427,	LBP00381
376	X	211,	121,	112,	96,	96,	113,	11,	2662,	2024,	LBP00382
377	X	1340,	592,	288,	159,	110,	93,	96,	229,	12,	LBP00383
378	X	2867,	2148,	2269,	1154,	535,	229,	165,	134,	135,	LBP00384
379	X	168,	200,	12,	3072,	2152,	3404,	1679,	834,	487,	LBP00385
380	X	272,	168,	160,	204,	273,	12,	3276,	2072,	4112,	LBP00386
381	X	2765,	1280,	845,	506,	261,	195,	233,	236,	11,	LBP00387
382	Y	3481/									LBP00388
383		DATA MAP031/									LBP00390
384	X	1968,	4814,	3809,	2113,	1260,	764,	360,	264,	244,	LBP00391
385	X	11,	3686,	1843,	5240,	5123,	3073,	1903,	1101,	655,	LBP00392
386	X	444,	409,	10,	3891,	1700,	6060,	6491,	4376,	2148,	LBP00393
387	X	1301,	836,	655,	10,	4096,	1576,	6074,	8984,	5086,	LBP00394
388	X	2699,	1383,	870,	895,	9,	4300,	1468,	6675,	9088,	LBP00395
389	X	7674,	2988,	1585,	1611,	9,	4505,	1347,	6720,	11364,	LBP00396
390	X	7966,	3881,	1913,	1247,	8,	4710,	1218,	7274,	12168,	LBP00397
391	X	10128,	4210,	2888,	8,	4915,	1072,	8976,	13915,	10877,	LBP00398
392	X	3903,	2539,	7,	5120,	908,	9043,	18049,	9990,	3522,	LBP00399
393	X	6,	5324,	652,	13614,	15565,	5715,	5,	5529,	317,	LBP00400
394	X	11893,	4356,	3,	5734,	0,	3,	32767,	0,	142,	LBP00401
395	X	3200,	3,	0,	0,	3,	2252,	0,	10,	2457,	LBP00402
396	X	1631,	392,	196,	105,	74,	87,	115,	142,	11,	LBP00403
397	X	2662,	1931,	1330,	577,	262,	133,	100,	93,	89,	LBP00404
398	X	290,	12,	2867,	2049,	2237,	1147,	468,	245,	172,	LBP00405
399	X	144,	135,	139,	220,	11,	3072,	2044,	3357,	1681,	LBP00406
400	X	693,	468,	334,	219,	173,	173,	11,	3276,	1953,	LBP00407
401	X	4057,	2635,	1093,	806,	703,	378,	204,	548,	11,	LBP00408
402	Y	3481/									LBP00409
403		DATA MAP032/									LBP00411
404	X	1839,	4634,	3632,	1843,	1231,	1079,	557,	418,	859,	LBP00412
405	X	10,	3686,	1700,	4922,	4899,	2958,	1492,	1557,	994,	LBP00413
406	X	648,	10,	3891,	1550,	5471,	5878,	3837,	2195,	1967,	LBP00414

407	X	1323,	1073,	9,	4096,	1397,	5496,	7749,	4694,	2554,	LBP00415
408	X	2538,	1367,	8,	4300,	1266,	5754,	7544,	6474,	3482,	LBP00416
409	X	2417,	8,	4505,	1125,	5588,	9085,	6425,	4167,	3326,	LBP00417
410	X	7,	4710,	926,	5669,	9221,	8401,	5001,	6,	4915,	LBP00418
411	X	579,	7507,	10084,	5644,	4,	5120,	169,	6217,	3,	LBP00419
412	X	5324,	0,	3,	32767,	0,					LBP00420
413	Y	0/									LBP00421
414	END										LBP00422

TOTAL RECORDS WRITTEN = 415/ 415

WED LPS

File 2 - 1GTF 68'

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1 SUBROUTINE CREAD (TY,L,MAXLN,A)
2 C READS SCHMIDT COEFFS (WITH TRUE SECOND DERIVATIVES)
3 C AND SETS UP FOR GFIELD AND/OR SPHRC
4 COMMON /COEFF/ TG(23,23),CONST(23,23),FM(23),FN(23)
5 DIMENSION G(23,23), GT(23,23), GTT(23,23), AI(7)
6 NAMELIST/PARAMS/A,TZERO,TF,TL
7 IF (L.EQ.0) GO TO 7
8 CALL CON
9 MAXN=0
10 READ (2,9) AI
11 READ (2,PARAMS)
12 1 READ (2,10) LN,LM,GNM,HNM,GTNM,HTNM,GTINM,HTINM
13 N=LN+1
14 M=LM+1
15 IF (LN.LT.0) GO TO 2
16 MAXN=MAX0(N,MAXN)
17 G(N,M)=GNM
18 GT(N,M)=GTNM
19 GTT(N,M)=GTINM
20 IF (LM.EQ.0) GO TO 1
21 G(LM,N)=HNM
22 GT(LM,N)=HTNM
23 GTT(LM,N)=HTINM
24 GO TO 1
25 2 MAXLN=MAXN-1
26 WRITE (6,11) AI,MAXLN,A,TZERO,TF,TL
27 IF (L.GT.1) GO TO 5
28 WRITE (6,12)
29 DO 4 N=2,MAXN
30 LN=N-1
31 DO 4 M=1,N
32 IF (M.EQ.1) GO TO 3
33 LM=M-1
34 WRITE (6,13) LN,LM,G(N,M),G(LM,N),GT(N,M),GT(LM,N),GTT(N,M),GTT(LM
35 +,N)
36 GO TO 4
37 3 WRITE (6,14) LN,LM,G(N,M),GT(N,M),GTT(N,M)
38 4 CONTINUE
39 5 DO 6 N=1,MAXN
40 DO 6 M=1,MAXN
41 CALL CONVRT(G(N,M),N,M,1)
42 CALL CONVRT(GT(N,M),N,M,1)
43 GTT(N,M)=0.5*GTT(N,M)
44 6 CALL CONVRT(GTT(N,M),N,M,1)
45 IF(TY.GT.TL.OR.TY.LT.TF) WRITE (6,15) TY
46 L=0
47 7 T=TY-TZERO
48 DO 8 N=1,MAXN
49 DO 8 M=1,MAXN
50 8 TG(N,M)=G(N,M)+T*(GT(N,M)+T*GTT(N,M))
51 RETURN
52 C
53 9 FORMAT (7A10)
54 10 FORMAT (2I3,6F11.4)
55 11 FORMAT (1H07A10/3X"MXLN="I2,3X"A="F6.1,3X"TZERO="F7.1,3X
56 +"TF="F7.1,3X"TL="F7.1)
57 12 FORMAT (6H0 N M,8X,1HG,10X,1HH,10X,2HGT,9X,2HHT,8X,3HGTT,8X,3HHTT)
58 13 FORMAT (2I3,2F11.2,2F11.3,2F11.4)
```

```
59 14 FORMAT (2I3,F11.2,11X,F11.3,11X,F11.4)
60 15 FORMAT ("0**WARNING,"F7.1," IS OUTSIDE TIME LIMITS")
61 END
62 SUBROUTINE IGRF68 (TY,L,MAXLN,A)
63 C  USES IGRF COEFFS FROM WMS MEETING OCT,1968 IN WASHINGTON,DC
64 COMMON /COEFF/ TG(23,23),CONST(23,23),FM(23),FN(23)
65 DIMENSION G(9,9), GT(9,9)
66 LOGICAL SUBSEQ
67 DATA TZERO,MAXN/1965.,9/
68 DATA SUBSEQ/.FALSE./
69 DATA G/0.,-30339.,-1654.,1297.,958.,-223.,47.,71.,10.,5758.,-2123.
70 +,2994.,-2036.,805.,357.,60.,-54.,9.,-2006.,130.,1567.,1289.,492.,2
71 +46.,4.,0.,-3.,-403.,242.,-176.,843.,-392.,-26.,-229.,12.,-12.,149.
72 +,-280.,8.,-265.,256.,-161.,3.,-25.,-4.,16.,125.,-123.,-107.,77.,-5
73 +1.,-4.,-9.,7.,-14.,106.,68.,-32.,-10.,-13.,-112.,13.,-5.,-57.,-27.
74 +,-8.,9.,23.,-19.,-17.,-2.,12.,3.,-13.,5.,-17.,4.,22.,-3.,-16.,6./
75 DATA GT/0.,15.3,-24.4,.2,-.7,1.9,-.1,-.5,.1,-2.3,8.7,.3,-10.8,.2,1
76 +.1,-.3,-.3,.4,-11.8,-16.7,-1.6,.7,-3.,2.9,1.1,-.7,.6,4.2,.7,-7.7,-
77 +3.8,-.1,.6,1.9,-.5,0.,-.1,1.6,2.9,-4.2,-2.1,0.,-.4,.3,0.,2.3,1.7,-
78 +2.4,.8,-.3,1.3,-.4,0.,-.1,-.9,-.4,2.,-1.1,.1,.9,-.2,-.2,.3,-1.1,.3
79 +,.4,.2,.4,.2,.3,-.6,-.3,.1,-.2,-.3,-.2,-.3,-.4,-.3,-.3,-.5/
80 IF (SUBSEQ) GO TO 5
81 SUBSEQ=.TRUE.
82 CALL CON
83 A=6371.2
84 MAXLN=MAXN-1
85 WRITE (6,7) TZERO,MAXLN,A
86 IF (L.GT.1) GO TO 3
87 WRITE (6,9)
88 DO 2 N=2,MAXN
89 LN=N-1
90 DO 2 M=1,N
91 LM=M-1
92 IF (M.EQ.1) GO TO 1
93 WRITE (6,10) LN,LM,G(N,M),G(LM,N),GT(N,M),GT(LM,N)
94 GO TO 2
95 1 WRITE (6,11) LN,LM,G(N,M),GT(N,M)
96 2 CONTINUE
97 3 DO 4 N=1,MAXN
98 DO 4 M=1,MAXN
99 CALL CONVRT (G(N,M),N,M,1)
100 4 CALL CONVRT (GT(N,M),N,M,1)
101 WRITE (6,8) TY
102 5 T=TY-TZERO
103 DO 6 N=1,MAXN
104 DO 6 M=1,MAXN
105 6 TG(N,M)=G(N,M)+T*GT(N,M)
106 RETURN
107 C
108 7 FORMAT (2X,6HEPOCH=,F7.1,3X5HMXLN=,I2,3X,2HA=,F6.1,3X,6HIGRF68)
109 8 FORMAT (19H0FIRST TIME UPDATE=,F7.1)
110 9 FORMAT (6H0 N M,8X,1HG,10X,1HH,10X,2HGT,9X,2HHT)
111 10 FORMAT (2I3,2F11.0,2F11.1)
112 11 FORMAT (2I3,F11.0,11X,F11.1)
113 END
114 SUBROUTINE CONVRT (G,I,L,K)
115 C K=1 CONVERTS SCHMIDT TO GAUSS,K>1 CONVERTS GAUSS TO SCHMIDT
116 DIMENSION S(23,23)
```

```
117 LOGICAL NEXT
118 DATA NEXT/.FALSE./
119 IF (NEXT) GO TO 2
120 NEXT=.TRUE.
121 S(1,1)=-1.
122 DO 1 N=2,23
123 S(N,1)=S(N-1,1)*FLOAT(2*N-3)/FLOAT(N-1)
124 S(1,N)=0.
125 J=2
126 DO 1 M=2,N
127 S(N,M)=S(N,M-1)*SQRT(FLOAT((N-M+1)*J)/FLOAT(N+M-2))
128 S(M-1,N)=S(N,M)
129 1 J=1
130 2 IF (K.GT.1) GO TO 3
131 G=G*S(I,L)
132 RETURN
133 3 G=G/S(I,L)
134 RETURN
135 END
136 SUBROUTINE CON
137 C SETS UP CONSTANTS FOR USE BY SPHRC (NORMALLY CALLED BY ONE
138 C OF THE SUBROUTINES THAT SETS UP THE COEFFICIENTS TG)
139 COMMON/COEFF/TG(23,23),C(23,23),FM(23),FN(23)
140 FM(1)=0
141 DO 1 N=2,23
142 FM(N)=N-1
143 FN(N)=N
144 DO 1 M=1,N
145 1 C(N,M)=FLOAT((N-2)**2-(M-1)**2)/FLOAT((2*N-3)*(2*N-5))
146 RETURN
147 END
148 SUBROUTINE SPHRC
149 COMMON / GCOM/ ST,CT,SPH,CPH,AOR,BT,BP,BR,NMAX
150 COMMON /COEFF / G(23,23),CONST(23,23),FM(23),FN(23)
151 DIMENSION P(23,23),DP(23,23),SP(23),CP(23)
152 DATA P(1,1),CP(1),DP(1,1),SP(1)/2*1.,2*0./
153 AR=AOR**3
154 GC=G(2,2)*CPH+G(1,2)*SPH
155 BR=-(AR+AR)*(G(2,1)*CT+GC*ST)
156 BT=AR*(GC*CT-G(2,1)*ST)
157 BP=AR*(G(1,2)*CPH-G(2,2)*SPH)
158 IF(NMAX.EQ.2) RETURN
159 BP=BP*ST
160 SP(2)=SPH
161 CP(2)=CPH
162 P(2,1)=CT
163 P(2,2)=ST
164 DP(2,1)=-ST
165 DP(2,2)=CT
166 DO 3 N=3,NMAX
167 SP(N)=SPH*CP(N-1)+CPH*SP(N-1)
168 CP(N)=CPH*CP(N-1)-SPH*SP(N-1)
169 DP(N,1)=CT*DP(N-1,1)-ST*P(N-1,1)-CONST(N,1)*DP(N-2,1)
170 STM=G(N,1)*DP(N,1)
171 SPM=0.
172 P(N,1)=CT*P(N-1,1)-CONST(N,1)*P(N-2,1)
173 SRM=-G(N,1)*P(N,1)
174 P(N,N)=ST*P(N-1,N-1)
```

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175      DP(N,N)=FM(N)*CT*P(N-1,N-1)
176      DO 2 M=2,N
177      IF (N.EQ.M) GO TO 1
178      P(N,M)=CT*P(N-1,M)-CONST(N,M)*P(N-2,M)
179      DP(N,M)=CT*DP(N-1,M)-ST*P(N-1,M)-CONST(N,M)*DP(N-2,M)
180      1 GC=G(N,M)*CP(M)+G(M-1,N)*SP(M)
181      STM=STM+GC*DP(N,M)
182      SPM=SPM+(G(M-1,N)*CP(M)-G(N,M)*SP(M))*FM(M)*P(N,M)
183      2 SRM=SRM-GC*P(N,M)
184      AR=AOR*AR
185      BT=BT+STM*AR
186      BP=BP+SPM*AR
187      3 BR=BR+SRM*FN(N)*AR
188      BP=BP/ST
189      RETURN
190      END
191      SUBROUTINE GFIELD (DLAT,DLONG,ALT,MLN,A,X,Y,Z,F)
192      COMMON / GCOM/ ST,CT,SPH,CPH,AOR,BT,BP,BR,NMAX
193      DATA RE,TLAST,PI/2*0.,3.14159358979/
194      IF(RE.EQ.6378.16) GO TO 1
195      RE=6378.16
196      DRAD=PI/180.
197      FLAT=1.-1./298.25
198      A2=RE**2
199      A4=A2**2
200      B2=(RE*FLAT)**2
201      A2B2=A2*(1.-FLAT**2)
202      A4B4=A4*(1.-FLAT**4)
203      1 SINLA=SIN(DLAT*DRAD)
204      RLONG=DLONG*DRAD
205      CPH=COS(RLONG)
206      SPH=SIN(RLONG)
207      SINLA2=SINLA**2
208      COSLA2=1.-SINLA2
209      DEN2=A2-A2B2*SINLA2
210      DEN=SQRT(DEN2)
211      FAC=((((ALT*DEN)+A2)/(((ALT*DEN)+B2)))**2
212      =S -3&1 - & & C- + & -A
213      ST=SQRT(1.-CT**2)
214      NMAX=MLN+1
215      AOR=A/R
216      CALL SPHRC
217      F=SQRT(BT**2+BP**2+BR**2)
218      C TRANSFORMS FIELD TO GEODETIC DIRECTIONS
219      SIND=SINLA*ST-SQRT(COSLA2)*CT
220      COSD=SQRT(1.0-SIND**2)
221      X=-BT*COSD-BR*SIND
222      Y=BP
223      Z=BT*SIND-BR*COSD
224      RETURN
225      C
226      END
227      POGO(5/74) ONE ITER RING CORR DATA FROM POGO(8/73)
228      $PARAMS A=6371.,TZERO=1970.,TF=1965.7,TL=1970.8 $
229      1 0-30220.1073 23.5433
230      1 1 -2061.4133 5729.3102 11.3052 -10.3268
231      2 0 -1778.1970 -23.5166
232      2 1 3000.8740 -2039.1183 0.5289 -4.6841

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233	2	2	1599.0426	24.5629	0.7807	-17.3301
234	3	0	1280.7440		-2.4070	
235	3	1	-2098.5621	-361.1086	-11.5780	8.7601
236	3	2	1285.1569	250.5624	-1.6970	2.6833
237	3	3	835.4530	-188.1193	-4.0778	-2.8863
238	4	0	950.7916		-1.0164	
239	4	1	800.2608	168.9358	-1.3745	3.4643
240	4	2	464.7954	-266.2065	-3.6242	0.8191
241	4	3	-392.6788	24.0924	-1.0177	0.9435
242	4	4	236.4851	-277.7865	-1.8644	-1.8782
243	5	0	-213.2528		0.9987	
244	5	1	360.9338	20.9297	0.1606	0.7942
245	5	2	257.8992	137.4949	1.3707	1.9723
246	5	3	-38.6845	-140.6968	-1.4525	-2.9630
247	5	4	-162.5751	-92.2468	-1.2967	1.1137
248	5	5	-49.2977	82.9776	3.3451	-1.1030
249	6	0	45.5531		-0.0348	
250	6	1	62.4375	-12.5771	0.4620	-0.5275
251	6	2	15.0837	101.7864	1.6624	-0.4011
252	6	3	-214.7830	73.0055	2.8330	1.0411
253	6	4	2.4006	-39.5640	0.2217	-1.0620
254	6	5	2.4838	-5.1159	-0.0577	1.6817
255	6	6	-111.7839	-1.2654	-0.4374	-0.6804
256	7	0	69.2120		-0.1798	
257	7	1	-54.2488	-69.0244	-0.2323	-1.5379
258	7	2	1.3670	-26.1138	-0.0470	0.0469
259	7	3	15.3401	-6.1549	0.4454	0.1822
260	7	4	-22.4390	11.2416	1.1561	0.7733
261	7	5	-3.4243	21.0905	-0.0293	-0.2223
262	7	6	16.9102	-20.0004	1.4152	1.0903
263	7	7	-9.2946	-9.9044	-3.5490	2.9157
264	8	0	12.5690		0.3661	
265	8	1	6.2929	8.2129	0.1771	-0.2434
266	8	2	-0.8876	-14.8525	0.3673	-0.3188
267	8	3	-10.9362	4.5793	0.0749	-0.3448
268	8	4	-5.4207	-18.7778	-0.4121	-0.4428
269	8	5	5.6061	5.0416	0.0623	-0.3462
270	8	6	-1.8899	20.6149	0.3127	0.1940
271	8	7	13.7823	-7.6147	0.5656	-0.7924
272	8	8	4.6381	-13.3783	-0.4957	2.2235
273	9	0	8.5048		-0.2956	
274	9	1	8.8506	-22.8681	0.1333	-0.0670
275	9	2	0.6232	14.8771	-0.3203	-0.0195
276	9	3	-12.2239	6.3657	-0.0850	0.3494
277	9	4	10.2249	-3.7905	-0.4002	-0.3755
278	9	5	-0.9515	-4.5052	-0.3420	-0.1797
279	9	6	-2.5886	7.4409	-0.6659	-0.7543
280	9	7	5.6482	10.2706	1.0484	-0.5831
281	9	8	0.9938	-5.0199	-0.5209	-1.0305
282	9	9	6.5390	1.6155	1.1433	0.2347
283	10	0	-1.7787		0.0295	
284	10	1	-3.2135	1.7414	-0.1259	-0.1220
285	10	2	2.3135	0.9381	0.1419	0.0506
286	10	3	-4.6944	1.7955	-0.0521	0.1548
287	10	4	-1.3039	6.1010	0.2038	0.1891
288	10	5	5.5444	-4.2107	-0.3365	-0.0818
289	10	6	4.5372	0.4369	-0.1320	-0.1524
290	10	7	-1.1361	-1.9413	-0.5655	-0.0111

291	10	8	0.8569	2.4982	0.3332	-0.4468
292	10	9	3.2293	1.1663	-0.2565	0.2645
293	10	10	0.7238	-4.7436	0.3015	-0.5241
294	11	0	2.4550		-0.0011	
295	11	1	-0.9292	1.3265	-0.0070	-0.0553
296	11	2	-1.8223	2.9275	0.0025	-0.0249
297	11	3	3.3952	-1.8735	-0.0579	-0.0080
298	11	4	-0.4212	-2.3053	0.1369	0.1536
299	11	5	0.2710	0.2708	0.1122	-0.1332
300	11	6	0.4183	0.6481	0.2636	0.2759
301	11	7	1.4554	-1.4908	-0.1094	-0.0172
302	11	8	2.5350	0.5383	0.0781	0.3224
303	11	9	-2.5388	-2.3610	-0.2481	0.0312
304	11	10	2.0825	1.4754	0.0412	0.3733
305	11	11	-1.3390	-0.8216	-0.8085	0.3513
306	12	0	-1.7398		-0.0886	
307	12	1	-0.1430	0.0591	-0.0181	-0.1214
308	12	2	-0.5489	0.9196	-0.0209	0.0967
309	12	3	0.0008	2.1151	0.0329	-0.0272
310	12	4	0.2989	-0.6097	-0.1626	-0.0605
311	12	5	0.4832	-0.2344	0.0756	-0.0171
312	12	6	-1.0592	-0.0166	-0.1679	-0.0371
313	12	7	-0.0988	-0.0360	0.2186	0.2217
314	12	8	0.1917	0.5493	-0.0781	0.0253
315	12	9	-0.3686	-0.0533	0.1354	-0.0649
316	12	10	-0.7030	-1.1198	-0.2297	0.1164
317	12	11	0.2986	-0.9229	0.5033	-0.1220
318	12	12	3.2995	1.6030	-0.4071	0.1710
319	13	0	0.0616		-0.1043	
320	13	1	-0.9004	-0.5261	-0.0452	-0.0628
321	13	2	0.5843	0.3800	-0.0533	-0.0475
322	13	3	-0.9433	1.1764	-0.0943	0.0194
323	13	4	0.1661	-0.1894	0.0383	0.0237
324	13	5	0.5356	-0.0788	0.0046	-0.0134
325	13	6	-0.3871	-0.9029	-0.0905	-0.1743
326	13	7	-0.0947	0.5744	0.0115	-0.0555
327	13	8	-0.7475	-0.6069	-0.2017	-0.0491
328	13	9	0.1001	0.7090	-0.0813	0.0080
329	13	10	-0.0695	-1.5405	-0.0775	-0.3914
330	13	11	1.3966	0.1357	0.2539	-0.4379
331	13	12	0.8992	0.2153	0.4993	0.2781
332	13	13	0.8197	0.5299	0.0380	0.1489
333	14	0	-0.2334		-0.0430	
334	14	1	-0.0238	-0.0825	-0.0558	-0.1926
335	14	2	0.0513	-0.5482	-0.0100	-0.0512
336	14	3	0.0435	0.0136	0.0412	-0.0097
337	14	4	-0.0424	0.3029	-0.0184	0.0786
338	14	5	0.3415	-0.0789	-0.0347	-0.0194
339	14	6	-0.3570	0.2818	-0.0571	-0.0584
340	14	7	-0.1032	0.2456	-0.0837	-0.0497
341	14	8	0.1339	0.3271	0.1168	0.0434
342	14	9	-0.1017	0.1298	-0.0894	0.0278
343	14	10	0.3374	0.0705	0.0041	0.0008
344	14	11	-0.0467	0.1741	-0.0698	-0.1158
345	14	12	0.1775	-0.1011	0.0781	0.0133
346	14	13	-0.2459	1.3378	-0.1065	-0.4760
347	14	14	-0.5165	0.7017	0.0542	-0.1414
348	15	0	0.2423			

349	15	1	0.3586	0.2982
350	15	2	0.0116	0.1020
351	15	3	0.4397	0.0753
352	15	4	-0.0148	0.1397
353	15	5	0.1130	-0.0195
354	15	6	0.0534	0.0231
355	15	7	-0.0184	0.2004
356	15	8	0.1909	-0.0257
357	15	9	0.0281	0.0900
358	15	10	-0.4925	0.2637
359	15	11	-0.0061	-0.1419
360	15	12	-0.1950	-0.2444
361	15	13	0.2895	-0.3395
362	15	14	0.9204	1.3171
363	15	15	-0.9236	2.3105
364	16	0	0.0228	
365	16	1	0.0652	0.1643
366	16	2	-0.2384	0.2078
367	16	3	0.0001	0.2032
368	16	4	-0.0135	-0.0712
369	16	5	-0.1096	-0.0762
370	16	6	-0.0040	-0.1477
371	16	7	-0.0135	-0.1262
372	16	8	0.1776	0.0225
373	16	9	-0.1130	0.0310
374	16	10	0.0001	0.0202
375	16	11	0.0959	-0.1894
376	16	12	-0.2834	0.1358
377	16	13	-0.0997	-0.8200
378	16	14	-0.0088	-0.2865
379	16	15	1.4411	0.4663
380	16	16	0.1493	3.0191
381	17	0	-0.0275	
382	17	1	-0.0559	-0.0836
383	17	2	-0.0347	-0.3184
384	17	3	0.1999	-0.1034
385	17	4	0.2089	-0.0982
386	17	5	-0.0939	-0.0849
387	17	6	0.0585	0.0222
388	17	7	-0.0880	-0.2826
389	17	8	0.1622	0.0130
390	17	9	0.0224	-0.1088
391	17	10	0.1649	-0.2397
392	17	11	-0.1653	0.1677
393	17	12	0.0828	0.1285
394	17	13	-0.3533	0.0233
395	17	14	-0.2828	-0.4821
396	17	15	-0.0707	0.0762
397	17	16	0.0459	-0.1960
398	17	17	1.5869	1.3247
399	18	0	0.0997	
400	18	1	-0.0015	-0.1155
401	18	2	0.0928	0.1001
402	18	3	0.0722	-0.0920
403	18	4	-0.0634	0.0906
404	18	5	0.0290	-0.0447
405	18	6	0.1691	0.0365
406	18	7	-0.0925	-0.1755

407	18	8	-0.0263	-0.0196
408	18	9	-0.0891	-0.1423
TOTAL RECORDS WRITTEN =			409/	409

File 3 - IGRF 75'

1 1975.0INTERNATIONAL GEOMAGNETIC REFERENCE FIELD (IGRF.1975)

2	2	1	-30186.		25.6	
3	2	2	-2036.	5735.	10.0	-10.2
4	3	1	-1898.		-24.9	
5	3	2	2997.	-2124.	0.7	-3.0
6	3	3	1551.	-37.	4.3	-18.9
7	4	1	1299.		-3.8	
8	4	2	-2144.	-361.	-10.4	6.9
9	4	3	1296.	249.	-4.1	2.5
10	4	4	805.	-253.	-4.2	-5.0
11	5	1	951.		-0.2	
12	5	2	807.	148.	-2.0	5.0
13	5	3	462.	-264.	-3.9	0.8
14	5	4	-393.	37.	-2.1	1.7
15	5	5	235.	-307.	-3.1	-1.0
16	6	1	-204.		0.3	
17	6	2	368.	39.	-0.7	1.2
18	6	3	275.	142.	1.1	2.3
19	6	4	-20.	-147.	-1.6	-2.0
20	6	5	-161.	-99.	-0.5	1.3
21	6	6	-38.	74.	1.0	1.1
22	7	1	46.		0.2	
23	7	2	57.	-23.	0.5	-0.5
24	7	3	15.	102.	2.0	-0.1
25	7	4	-210.	88.	2.8	-0.2
26	7	5	-1.	-43.	0.0	-1.3
27	7	6	-8.	-9.	0.9	0.7
28	7	7	-114.	-4.	-0.1	1.7
29	8	1	66.		0.0	
30	8	2	-57.	-68.	0.0	-1.4
31	8	3	-7.	-24.	0.0	-0.1
32	8	4	7.	-4.	0.6	0.3
33	8	5	-22.	11.	0.9	0.3
34	8	6	-9.	27.	0.3	-0.7
35	8	7	11.	-17.	0.3	0.1
36	8	8	-8.	-14.	-0.5	0.8
37	9	1	11.		0.2	
38	9	2	13.	4.	0.3	-0.2
39	9	3	3.	-15.	0.0	-0.4
40	9	4	-12.	2.	0.2	-0.2
41	9	5	-4.	-19.	-0.4	-0.3
42	9	6	6.	1.	-0.3	0.4
43	9	7	-2.	18.	0.6	-0.3
44	9	8	9.	-6.	-0.3	-0.6
45	9	9	1.	-19.	-0.1	0.3

46 //

47 /*

TOTAL RECORDS WRITTEN = 48/ 48

File 4 - COSMOS
COEFFICIENTS

1	00	1960.0	COSMOS-49(12/70)						
2	2	1	-30427.7136	0.0	14.0300	0.0	-0.0620	0.0	
3	2	2	-2142.3985	5832.1338	8.7600	-3.7100	0.1140	-0.0430	
4	3	1	-1422.8090	0.0	-23.2900	0.0	-0.1540	0.0	
5	3	2	3000.3962	-1956.8627	-0.0900	-14.3100	-0.0180	0.0540	
6	3	3	1648.7523	164.0755	-4.5600	-16.6200	-0.2530	-0.0160	
7	4	1	1249.6465	0.0	-0.9300	0.0	-0.1230	0.0	
8	4	2	-2001.7402	-445.0099	-10.6200	5.2000	-0.0270	0.0950	
9	4	3	1297.0478	225.5697	2.3100	2.5300	0.0280	-0.0070	
10	4	4	849.7838	-84.6272	-5.8900	-6.9800	-0.1830	0.0790	
11	5	1	1032.8434	0.0	1.4500	0.0	0.0010	0.0	
12	5	2	814.0563	161.6864	0.9000	-2.1900	-0.0440	0.0040	
13	5	3	479.3648	-262.9662	-1.7500	-0.1400	0.0170	0.0560	
14	5	4	-392.8758	2.3216	0.6600	1.8800	0.0070	-0.0350	
15	5	5	309.2235	-243.0094	-3.0100	-6.5200	-0.0970	-0.0470	
16	6	1	-259.3263	0.0	1.6100	0.0	0.0450	0.0	
17	6	2	355.8392	12.3234	0.6000	2.2400	0.0010	-0.0460	
18	6	3	223.4253	110.9279	3.3400	1.5900	0.0750	0.0070	
19	6	4	-22.1611	-127.4461	-0.0400	-2.6100	0.0080	-0.0070	
20	6	5	-156.7284	-115.5051	-0.6000	0.5000	0.0150	0.0010	
21	6	6	-46.5009	90.3724	1.7600	-0.1200	0.0560	-0.0240	
22	7	1	117.8245	0.0	-0.4200	0.0	-0.0060	0.0	
23	7	2	62.5693	-18.4374	0.8200	0.0500	0.0150	0.0200	
24	7	3	9.4497	97.0399	0.8200	0.0900	0.0100	-0.0110	
25	7	4	-242.7621	56.8168	2.3500	2.5500	0.0500	0.0150	
26	7	5	-12.6980	-23.1568	0.8300	-1.1900	-0.0110	-0.0290	
27	7	6	-5.1292	-15.3592	0.0100	0.3300	0.0260	0.0290	
28	7	7	-86.4958	-35.1856	0.2300	0.8400	0.0230	-0.0100	
29	8	1	49.2010	0.0	-0.5700	0.0	-0.0140	0.0	
30	8	2	-53.7061	-63.0575	-0.3400	-0.9600	-0.0060	-0.0140	
31	8	3	17.0436	-32.0162	-1.4400	0.0100	-0.0340	0.0160	
32	8	4	12.9052	-3.1805	-0.9000	0.4300	-0.0040	0.0140	
33	8	5	-27.5324	12.2846	0.0300	0.7500	-0.0060	0.0050	
34	8	6	-4.0870	21.7764	-0.6000	-0.3300	-0.0270	-0.0080	
35	8	7	17.4935	-21.6618	-0.1700	0.4900	-0.0010	0.0160	
36	8	8	-2.6809	-27.9340	-0.6400	0.9000	-0.0040	0.0110	
37	9	1	40.0505	0.0	0.3500	0.0	0.0060	0.0	
38	9	2	7.1399	12.5033	0.5000	-0.5000	0.0080	-0.0150	
39	9	3	-12.5205	-14.2136	1.7000	-0.2100	0.0390	-0.0120	
40	9	4	-10.1841	2.6726	-0.1100	0.0300	-0.0080	0.0050	
41	9	5	-2.6357	-14.4598	0.3400	-0.7900	0.0150	-0.0110	
42	9	6	8.8552	7.1375	-0.0700	0.0500	-0.0020	0.0	
43	9	7	-14.0102	26.1697	0.4300	0.1000	0.0050	-0.0030	
44	9	8	18.7343	-0.5721	-0.1500	-0.3600	-0.0080	-0.0090	
45	9	9	11.7026	-17.3027	-0.4200	-0.4300	-0.0070	-0.0030	
46	10	1	1.5821	0.0	0.0	0.0	0.0	0.0	
47	10	2	9.3491	-23.4225	0.0	0.0	0.0	0.0	
48	10	3	2.0050	8.7125	0.0	0.0	0.0	0.0	
49	10	4	-14.7196	4.2049	0.0	0.0	0.0	0.0	
50	10	5	12.5480	-4.1745	0.0	0.0	0.0	0.0	
51	10	6	1.0155	-2.2229	0.0	0.0	0.0	0.0	
52	10	7	-2.0469	8.3199	0.0	0.0	0.0	0.0	
53	10	8	3.4333	11.6772	0.0	0.0	0.0	0.0	
54	10	9	5.8378	-3.0689	0.0	0.0	0.0	0.0	
55	10	10	1.0982	2.1284	0.0	0.0	0.0	0.0	
56	11	1	9.6956	0.0	0.0	0.0	0.0	0.0	
57	11	2	-1.3908	0.2526	0.0	0.0	0.0	0.0	
58	11	3	3.1946	-1.4793	0.0	0.0	0.0	0.0	

59	11	4	-3.5563	-0.7089	0.0	0.0	0.0	0.0
60	11	5	-3.6939	6.7024	0.0	0.0	0.0	0.0
61	11	6	5.9856	-4.9267	0.0	0.0	0.0	0.0
62	11	7	7.2208	-0.3670	0.0	0.0	0.0	0.0
63	11	8	-1.7866	-3.2358	0.0	0.0	0.0	0.0
64	11	9	-0.5540	4.3172	0.0	0.0	0.0	0.0
65	11	10	2.1615	1.3712	0.0	0.0	0.0	0.0
66	11	11	-0.1447	-7.6487	0.0	0.0	0.0	0.0
67	0							
TOTAL RECORDS WRITTEN =			68/	68				

File 5-MAGTAL

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1 SUBROUTINE MAGTAL(RR,SINTH,COSTH,SINPHI,COSPHI,RO,R1,R2,BCS,
2 1 BR,BTHETA,BPHI)
3 C FORTRAN IV PROGRAM TO COMPUTE THE EARTHS DIPOLE FIELD DISTORTED BY
4 C THE SOLAR WIND AND GEOMAGNETIC TAIL (JGR 69, 1181, 1964 AND 70,
5 C 3017, 1965). SOLAR WIND IS ASSUMED PERPENDICULAR TO DIPOLE AXIS.
6 C INPUT ARE GEOCENTRIC DISTANCE IN EARTH RADII (RR), GEOMAGNETIC
7 C COLATITUDE(SINTH,COSTH), AND LOCAL TIME MEASURED FROM NOON MERIDI-
8 C AN (SINPHI, COSPHI), SUBSOLAR DISTANCE TO MAGNETOPOUSE (RO), DIS-
9 C TANCE TO FRONT AND BACK EDGE OF TAIL CURRENT SHEET (R1 AND R2),
10 C AND MAGNITUDE OF TAIL FIELD ADJACENT TO SHEET (BCS). THUS SUBSOLAR
11 C POINT IS THETA = 90., PHI = 0. OUTPUT ARE THREE COMPONENTS OF
12 C DISTORTED FIELD, INCLUDING DIPOLE, IN GAMMAS.
13 DIMENSION GG(7,7)
14 DIMENSION G(7,7),CONST(7,7),P(7,7),DP(7,7),SP(7),CP(7)
15 IF(JFIRST - 13) 10,15,10
16 10 JFIRST = 13
17 C SET UP INITIAL CONSTANTS THE FIRST TIME AROUND
18 DO 5 N=1,7
19 DO 5 M=1,7
20 5 GG(N,M) = 0.
21 NMAX = 7
22 C THE FOLLOWING COEFFICIENTS ARE SCHMIDT-NORMALIZED
23 GG(2,1) = -0.25111 E5
24 GG(3,2) = -0.12424 E5
25 GG(4,1) = -0.00716 E5
26 GG(4,3) = -0.02333 E5
27 GG(5,2) = -0.02397 E5
28 GG(5,4) = -0.00163 E5
29 GG(6,1) = 0.00569 E5
30 GG(6,3) = -0.01078 E5
31 GG(6,5) = -0.00103 E5
32 GG(7,2) = 0.00126 E5
33 GG(7,4) = -0.00187 E5
34 GG(7,6) = -0.00041 E5
35 P(1,1) = 1.0
36 DP(1,1) = 0.
37 SP(1) = 0.
38 CP(1) = 1.
39 DO 12 N=3,NMAX
40 FN = N
41 N2 = N - 2
42 DO 12 M=1,N2
43 FM = M
44 12 CONST(N,M) = ((FN-2.)*2 - (FM-1.)*2) / ((2.*FN-3.)*(2.*FN-5.))
45 DIMENSION SHMIDT(7,7)
46 SHMIDT(1,1) = 1.0
47 DO 820 N=2,7
48 FN = N
49 SHMIDT(N,1) = SHMIDT(N-1,1)*(FN+FN-3.0)/(FN-1.0)
50 FACT = 2.0
51 DO 820 M = 2,N
52 FM = M
53 SHMIDT(N,M) = SHMIDT(N,M-1)*SQRT ((FN-FM+1.0)*FACT/(FN+FM-2.0))
54 820 FACT = 1.0
55 15 IF(RO-ROOLD) 16,20,16
56 16 ROOLD = RO
57 DIMENSION FAC(7)
58 FAC(2) = RO**3
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59      DO 17 N=3,NMAX
60      17 FAC(N) = RO * FAC(N-1)
61      DO 18 N=2,NMAX
62      DO 18 M=1,N
63      18 G(N,M) = SHMIDT(N,M) * GG(N,M) / FAC(N)
64      20 CONTINUE
65      C      BEGIN CALCULATION FOR SPECIFIED INPUT
66      30 CT = COSTH
67      ST = SINTH
68      SP(2) = SINPHI
69      CP(2) = COSPHI
70      C      CALCULATE SIN(M*PHI) AND COS(M*PHI)
71      DO 41 M=3,NMAX
72      SP(M) = SP(2)*CP(M-1) + CP(2)*SP(M-1)
73      41 CP(M) = CP(2)*CP(M-1) - SP(2)*SP(M-1)
74      R = RR
75      A = 1.
76      RA = R/A
77      ROA = 1.
78      BR = 0.
79      BTHETA = 0.
80      BPHI = 0.
81      FN = 1.
82      C      CALCULATE SPHERICAL HARMONICS FOR CAVITY FIELD
83      DO 50 N=2,NMAX
84      SUMR = 0.
85      SUMT = 0.
86      SUMP = 0.
87      FM = 0.
88      C      DEVELOP LEGENDRE FUNCTIONS AND THEIR DERIVATIVES BY RECURSION FORMULAE
89      DO 49 M=1,N
90      IF(N-M-1) 44,43,42
91      42 P(N,M) = CT*P(N-1,M) - CONST(N,M)*P(N-2,M)
92      DP(N,M) = CT*DP(N-1,M) - ST*P(N-1,M) - CONST(N,M)*DP(N-2,M)
93      GO TO 45
94      43 P(N,M) = CT * P(N-1,M)
95      DP(N,M) = CT*DP(N-1,M) - ST*P(N-1,M)
96      GO TO 45
97      44 P(N,N) = ST * P(N-1,N-1)
98      DP(N,N) = ST*DP(N-1,N-1) + CT*P(N-1,N-1)
99      45 CONTINUE
100     TS = G(N,M) * CP(M)
101     SUMR = SUMR + P(N,M)*TS
102     SUMT = SUMT + DP(N,M)*TS
103     SUMP = SUMP + FM*P(N,M)*G(N,M)*SP(M)
104     FM = FM + 1.
105     49 CONTINUE
106     BR = BR - ROA*FN*SUMR
107     BTHETA = BTHETA - ROA*SUMT
108     BPHI = BPHI + ROA*SUMP
109     ROA = ROA * RA
110     FN = FN + 1.
111     50 CONTINUE
112     BPHI = BPHI / ST
113     C      ADD DIPOLE FIELD TO CAVITY FIELD
114     R3 = R**3
115     BR = BR - 62000. * COSTH / R3
116     BTHETA = BTHETA - 31000. * SINTH / R3
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117 C    CALCULATE TAIL FIELD
118      IF(BCS.EQ.0.) RETURN
119      RCT = R * CT
120      RCT2 = RCT**2
121      RSC = R * ST * CP(2)
122      TOP = R2 + RSC
123      BOT = R1 + RSC
124      BX = -BCS * (ATAN(TOP/RCT) - ATAN(BOT/RCT)) / 3.14159265
125      BPHI = BPHI + BX * SP(2)
126      BRHO = -BX * CP(2)
127      BY = BCS * ALOG((RCT2+TOP**2)/(RCT2+BOT**2)) / 6.28318531
128      BR = BR + BRHO*ST - BY*CT
129      BTHETA = BTHETA + BRHO*CT + BY*ST
130      60 RETURN
131      END
TOTAL RECORDS WRITTEN = 132/ 132
WEO LPS
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