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Data for January 1998

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Number 647

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DATA FOR JANUARY 1998

Hα SOLAR FLARES

JANUARY 1998

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Xray	Opt See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0001	LEAR	01	0132	0132	0139	S22	W69	8124	12	26.9	7	SF		3	E		27		
0002		01	03042	0308	0322	S22	W67	8124	12	27.1	18	1B					4192		
	LEAR	01	0304	0308	0317	S22	W70	8124	12	26.8	13	SN		3	E		43		
	MITK	01	0306	0308	0327	S23	W64	8124	12	27.3	21	1B			C	0308	8340		
0003	LEAR	01	0655	0701	0718	S19	W70	8124	12	27.0	23	SF		3	E		41		
0004	KANZ	01	0826	0830	0838	S26	W71	8124	12	26.9	12	SF		2	C				
0005	KANZ	01	0914	0922	0938	N16	W28	8126	12	30.4	24	SF		2	C				
0006	KANZ	01	0930	0935	0946	S25	W70	8124	12	27.1	16	SF		2	C				
		01	1027		1030	No Flare Patrol													
		01	1220		1227	No Flare Patrol													
		01	1403		1410	No Flare Patrol													
		02	1026		1117	No Flare Patrol													
		02	1134		1138	No Flare Patrol													
0007		02	1143	1151U	1159D	N17	W40	8126	12	30.5	16D	SF					14		F
	KANZ	02	1143	1151U	1151D	N17	W43	8126	12	30.3	8D	SF		2	C				
	RAMY	02	1151E	1151U	1159D	N17	W38	8126	12	30.7	8D	SF		3	E		14		F
0008	RAMY	02	1221	1232	1250	N19	W42	8126	12	30.4	29	SF		4	E		34		F
0009	RAMY	02	1302	1303	1306	S19	W86	8124	12	27.1	4	SF		4	E		21		
0010	RAMY	02	1356	1356	1403	N19	W61		12	29.0	7	SF		4	E		11		H
0011		02	1624	1625	1629	S29	W16	8130	01	1.4	5	SF					14		FH
	RAMY	02	1623E	1625U	1631D	S29	W16	8130	01	1.4	8D	SF		3	E		16		FH
	HOLL	02	1624	1625	1629	S29	W16	8130	01	1.4	5	SF		3	E		13		
		02	2029		2039	No Flare Patrol													
		02	2147		2208	No Flare Patrol													
0012	URUM	03	0435	0443	0451	N22	W55	8126	12	30.1	16	SN			C		48	1.0	D
0013	SVTO	03	1112E	1113U	1121D	N21	W57	8126	12	30.2	9D	SF		2	E		13		F
		03	1724		1752	No Flare Patrol													
		03	2147		2209	No Flare Patrol													
		04	0231		0252	No Flare Patrol													
		04	0418		0500	No Flare Patrol													
		04	0505		0620	No Flare Patrol													
		04	0726		0733	No Flare Patrol													
0014	KANZ	04	0845	0845	0853	N19	W67	8126	12	30.3	8	SF		2	C				
0015	KANZ	04	0921	0925	0925	N18	W67	8126	12	30.4	4	SF		2	C				
		04	1409		1410	No Flare Patrol													
		04	1546		1603	No Flare Patrol													
		04	1641		1713	No Flare Patrol													
		04	2133		2302	No Flare Patrol													
		05	1411		1433	No Flare Patrol													
		05	1916		1927	No Flare Patrol													
		05	1953		2214	No Flare Patrol													
		05	2218		2319	No Flare Patrol													
		06	1606		1613	No Flare Patrol													
		06	2151		2202	No Flare Patrol													
0016	KANZ	08	0824E	0824U	0920	S26	E56	8132A	01	12.7	56D	1F		2	C				U
		08	2337		2400	No Flare Patrol													
		09	0000		0000	No Flare Patrol													
		09	0008		0031	No Flare Patrol													

Hα SOLAR FLARES

JANUARY 1998

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
0017	HOLL	10	1816	1819	1822	S27	E21	8131	01	12.4	6	SF		3	E		10		
		10	1958		2002	No Flare Patrol													
		10	2118		2125	No Flare Patrol													
		10	2204		2213	No Flare Patrol													
		12	0000		0001	No Flare Patrol													
0018	LEAR	12	0211	0222	0235	S26	E12	8131	01	13.0	24	SF		3	E		64		F
0019	KANZ	12	0829	0837	0849	S23	E14	8131	01	13.4	20	SF		2	C				
0020		12	1133	1141	1153	S24	E12	8131	01	13.4	20	SF					52		FH
	KANZ	12	1133	1141	1153	S24	E13	8131	01	13.5	20	SF		2	C				
	SVTO	12	1144E	1148U	1156D	S24	E10	8131	01	13.3	12D	SF		2	E		52		FH
		12	1214		1219	No Flare Patrol													
0021	HOLL	12	1451	1455	1456	S23	E07	8131	01	13.1	5	SF		3	E		24		
0022		12	15029	15127	1528	S24	E08	8131	01	13.2	26	SF					16		
	HOLL	12	1502	1519	1529	S24	E07	8131	01	13.2	27	SF		3	E		21		
	RAMY	12	1511	1512	1527	S23	E09	8131	01	13.3	16	SF		3	E		12		
0023	HOLL	12	1606	1611	1613	S23	E06	8131	01	13.1	7	SF		3	E		11		
0024		12	16295	16408	1650	S23	E05	8131	01	13.1	21	SF					28		E
	HOLL	12	1629	1648	1659	S23	E05	8131	01	13.1	30	SF		3	E		45		
	RAMY	12	1634	1640	1642	S23	E05	8131	01	13.1	8	SF		4	E		11		E
0025	RAMY	12	1645	1647	1654	S22	E05	8131	01	13.1	9	SF		4	E		19		
0026	HOLL	12	1702	1706	1707	S25	W01	8131	01	12.6	5	SF		3	E		15		
0027	HOLL	12	2105	2105	2109	S23	E03	8131	01	13.1	4	SF		3	E		11		
0028	LEAR	13	0156	0158	0211	S24	E01	8131	01	13.1	15	SF		3	E		15		
0029	URUM	13	0351E	0351	0400	S24	W01	8131	01	13.1	9D	SN			P		64	0.7	E
0030	URUM	13	0401	0428	0428D	S20	W02	8131	01	13.0	27D	SF			P		32	0.3	D
0031	KANZ	13	1012	1012	1016D	S23	W05	8131	01	13.0	4D	SF		2	C				
		13	1017		1249	No Flare Patrol													
		13	1326		1420	No Flare Patrol													
		13	1957		2004	No Flare Patrol													
		13	2020		2057	No Flare Patrol													
		13	2156		2218	No Flare Patrol													
0032	URUM	14	0303	0320	0402	S24	W13	8131	01	13.1	59	SN			C		96	1.1	E
0033		14	0836*	08501	0905	S24	W16	8131	01	13.1	29	SN					59	1.5	D
	URUM	14	0836	0851	0925	S24	W17	8131	01	13.0	49	SB			C		129	1.5	D
	SVTO	14	0848	0851	0855	S24	W16	8131	01	13.1	7	SF		2	E		19		
	LEAR	14	0850	0850	0855	S24	W16	8131	01	13.1	5	SF		3	E		28		
		14	1036		1058	No Flare Patrol													
0034	SVTO	14	1150	1152	1156	S24	W19	8131	01	13.0	6	SF		2	E		11		
0035		14	13101	1312	1325	S24	W19	8131	01	13.1	15	SF					56		EF
	SVTO	14	1310	1311U	1317D	S25	W18	8131	01	13.1	7D	SF		2	E		59		F
	RAMY	14	1311	1312	1325	S23	W20	8131	01	13.0	14	SF		4	E		54		E
0036	HOLL	14	1540	1543	1554	S23	W20	8131	01	13.1	14	SF		3	E		13		
0037		14	15576	16006	1623	S25	W18	8131	01	13.3	26	SF					60		FH
	HOLL	14	1557	1600	1626	S26	W18	8131	01	13.3	29	SF		3	E		61		H
	RAMY	14	1603	1606	1620	S24	W18	8131	01	13.3	17	SF		4	E		58		F

Hα S O L A R F L A R E S

JANUARY 1998

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0038	RAMY	14	1844	1846	1851	S22	W21	8131	01	13.2	7	SF			4	E		12		
0039		14	2027	20367	2050	S22	W23	8131	01	13.1	23	SF						39		H
	RAMY	14	2027	2036	2041	S22	W23	8131	01	13.1	14	SF			4	E		24		H
	HOLL	14	2027	2043	2100	S22	W23	8131	01	13.1	33	SF			3	E		54		
0040	HOLL	14	2157	2158	2202	S22	W23	8131	01	13.1	5	SF			3	E		16		F
		14	2216		2239	No Flare Patrol														
		14	2345		2400	No Flare Patrol														
		15	0000		0207	No Flare Patrol														
0041		15	0933	0936	0956	S23	W29	8131	01	13.2	23	1N						216	4.3	E
	LEAR	15	0933	0936	0956	S24	W29	8131	01	13.1	23	SF			1	E		78		E
	URUM	15	0937E	0937U	0937D	S22	W29	8131	01	13.2	23D	1B				P		354	4.3	E
0042	LEAR	15	0957	1001	1015	S24	W29	8131	01	13.2	18	SF			1	E		27		E
		15	1016		1112	No Flare Patrol														
0043	RAMY	15	1128E	1128U	1141D	S22	W30	8131	01	13.2	13D	SF			3	E		20		
0044	RAMY	15	1305	1309	1350	S23	W32	8131	01	13.1	45	SF			4	E		51		
0045	HOLL	15	1437E	1440	1457	S22	W33	8131	01	13.1	20D	1F			3	E		139		
0046	RAMY	15	1754	1759	1805	S22	W34	8131	01	13.1	11	SF			3	E		11		
0047	RAMY	15	1849	1850	1911	S22	W35	8131	01	13.1	22	SF			3	E		16		
0048	RAMY	15	1959	2000	2005	S22	W34	8131	01	13.2	6	SF			3	E		11		
		15	2036		2057	No Flare Patrol														
		15	2142		2146	No Flare Patrol														
		15	2252		2303	No Flare Patrol														
		15	2327		2400	No Flare Patrol														
		16	0000		0311	No Flare Patrol														
		16	0432		0712	No Flare Patrol														
0049	KANZ	16	0835	0847	0859	N14	W14	8136	01	15.3	24	SF			2	C				
0050	KANZ	16	1024	1024	1030D	S25	W39	8131	01	13.4	6D	SF			2	C				
		16	1028		1029	No Flare Patrol														
		16	1031		1042	No Flare Patrol														
		16	1048		1054	No Flare Patrol														
		16	1056		1110	No Flare Patrol														
0051	RAMY	16	1219	1220	1224	S22	W41	8131	01	13.4	5	SF			4	E		12		
		16	1304		1505	No Flare Patrol														
0052	LEAR	17	0109	0112	0125	S19	W50	8131	01	13.2	16	SF			3	E		20		
0053	LEAR	17	0159	0159	0204	S19	W49	8131	01	13.3	5	SF			3	E		14		
		17	0639		0716	No Flare Patrol														
		17	0753		0956	No Flare Patrol														
		17	1044		1116	No Flare Patrol														
		17	2159		2207	No Flare Patrol														
		17	2211		2223	No Flare Patrol														
0054		18	11483	11521	1212	N16	W44	8136	01	15.1	24	SF						22		E
	KANZ	18	1148	1152	1208	N15	W45	8136	01	15.1	20	SF			2	C				
	RAMY	18	1151	1153	1215	N17	W44	8136	01	15.1	24	SF			4	E		22		E
0055	KANZ	18	1152	1152	1156	S20	E70		01	23.8	4	SF			2	C				
		18	2107		2200	No Flare Patrol														

JANUARY 1998

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
0056	URUM	19	0431E	0431U	0437	N16	W53	8136	01	15.2	6D	SN			P		48	0.9	D
		19	1031		1049	No Flare Patrol														
		19	1059		1132	No Flare Patrol														
		19	1137		1145	No Flare Patrol														
		19	1203		1220	No Flare Patrol														
		19	1223		1232	No Flare Patrol														
0057	KANZ	19	1342	1342	1346	S24	E53		01	23.7	4	SF		2	C					
		19	1746		1918	No Flare Patrol														
		19	1943		2127	No Flare Patrol														
		20	1038		1144	No Flare Patrol														
		20	2151		2251	No Flare Patrol														
		21	0946		0951	No Flare Patrol														
		21	1000		1112	No Flare Patrol														
		21	2021		2231	No Flare Patrol														
0058	HOLL	22	1930	1933	1939	S36	E74	8143	01	28.7	9	SF		3	E		29			
0059		22	2027*	20289	2040	S38	E75	8143	01	28.9	13	SF					18			
	RAMY	22	2027	2028	2037	S37	E77	8143	01	29.0	10	SF		4	E		16			
	HOLL	22	2037	2037	2042	S39	E73	8143	01	28.8	5	SF		3	E		20			
0060	HOLL	22	2101	2106	2108	S38	E73	8143	01	28.8	7	SF		3	E		13			
0061	LEAR	23	0110	0111	0115	S37	E73	8143	01	28.9	5	SF		3	E		15			
0062	LEAR	23	0359	0400	0404	S36	E65	8143	01	28.4	5	SF		3	E		27			
		24	0926		0933	No Flare Patrol														
		24	2013		2027	No Flare Patrol														
		24	2032		2045	No Flare Patrol														
		24	2115		2141	No Flare Patrol														
0063	URUM	25	0408	0411	0414	S36	E49	8143	01	29.1	6	SN			C		96	1.7	E	
		25	1031		1122	No Flare Patrol														
		25	1343		1352	No Flare Patrol														
0064	HOLL	25	1530	1530	1536	N21	E25	8147A	01	27.6	6	SF		3	E		11		F	
0065		25	1943	1943	1952	S17	W39	8142	01	22.8	9	SN					51		F	
	RAMY	25	1936E	1936U	1943D	S16	W39	8142	01	22.8	7D	SN		2	E		62			
	HOLL	25	1943	1943	1952	S18	W39	8142	01	22.8	9	SF		3	E		40		F	
0066	HOLL	25	2128	2132	2158	N22	E53	8145	01	30.0	30	1B		3	E		189		FH	
0067	LEAR	26	0351	0352	0402	N25	E45	8145	01	29.6	11	SF		3	E		28			
0068	LEAR	26	0652	0657	0705	S36	E30	8143	01	28.7	13	SF		3	E		20			
0069	URUM	26	0758	0803	0811	S36	E29	8143	01	28.6	13	SB			C		48	0.7	D	
0070		26	09463	09494	0956	S36	E28	8143	01	28.6	10	SN					24	0.4	D	
	URUM	26	0946	0953	0958	S35	E28	8143	01	28.6	12	SN			C		32	0.4	D	
	LEAR	26	0949	0949	0953	S36	E28	8143	01	28.6	4	SF		3	E		16			
		26	1202		1207	No Flare Patrol														
		26	1209		1215	No Flare Patrol														
		26	1309		1343	No Flare Patrol														
0071	KANZ	26	1404	1404	1408	S21	W40	8142	01	23.5	4	SF		2	C					
0072		26	1439	1444	1500	N24	E42	8145	01	29.8	21	SF					32			
	RAMY	26	1439	1444	1500	N22	E42	8145	01	29.8	21	SF		4	E		32			
	KANZ	26	1440E	1444	1448D	N25	E42	8145	01	29.9	8D	SF		2	C					

Hα SOLAR FLARES

JANUARY 1998

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0073		26	1615	16152	1620	S18	W42	8142	01	23.5	5	SF					14		H
	RAMY	26	1615	1615	1620	S18	W42	8142	01	23.5	5	SF		4	E		12		H
	HOLL	26	1615	1617	1620	S19	W43	8142	01	23.4	5	SF		3	E		16		
0074		26	1754	1755	1758	S18	W43	8142	01	23.5	4	SF					28		
	RAMY	26	1754	1755	1758	S18	W42	8142	01	23.5	4	SF		4	E		22		
	HOLL	26	1754	1755	1758	S18	W44	8142	01	23.4	4	SF		3	E		33		
0075	RAMY	26	2107	2108	2110	S17	W44	8142	01	23.5	3	SF		3	E		15		
0076	HOLL	26	2224	2227	2254	S17	W55	8142	01	22.7	30	SN		3	E		95		H
		27	2128		2134	No Flare Patrol													
		27	2209		2216	No Flare Patrol													
		27	2306		2400	No Flare Patrol													
		28	0000		0003	No Flare Patrol													
		28	0239		0333	No Flare Patrol													
		28	0459		0701	No Flare Patrol													
0077	LEAR	29	0147	0150	0207	S33	W05	8143	01	28.7	20	SF		3	E		68		
		29	2056		2114	No Flare Patrol													
		29	2129		2137	No Flare Patrol													
		29	2205		2219	No Flare Patrol													
0078	LEAR	30	0105	0106	0110	S35	W20	8143	01	28.4	5	SF		3	E		22		
		30	0733		0735	No Flare Patrol													
		30	2257		2314	No Flare Patrol													

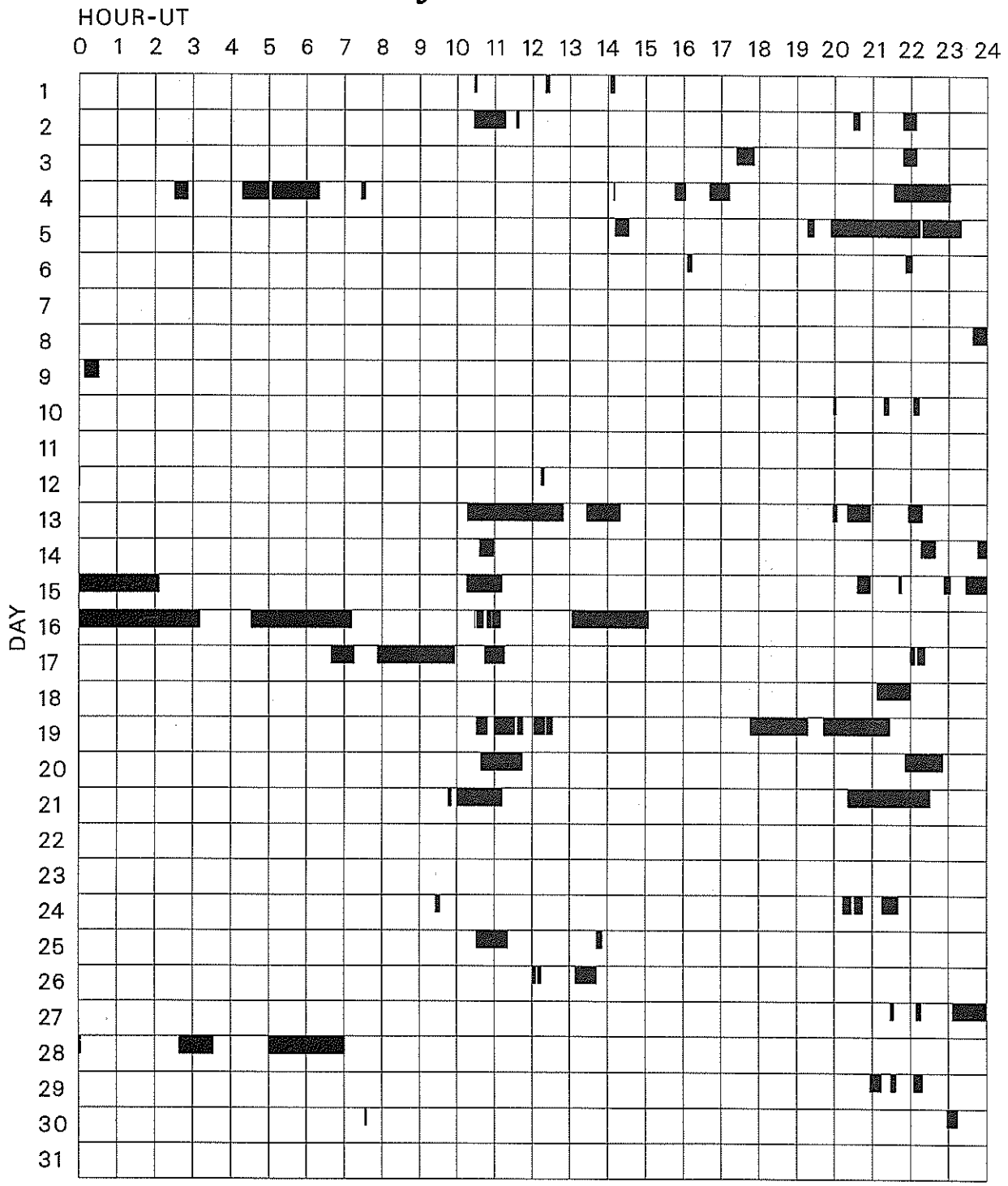
"Remarks"

A = Eruptive prominence whose base is less than 90 degrees from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of Ca II.
P = Flare shows Helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase; important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

Observation Type: C=Cinematographic, E=Electronic, P=Photographic, V=Visual

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE

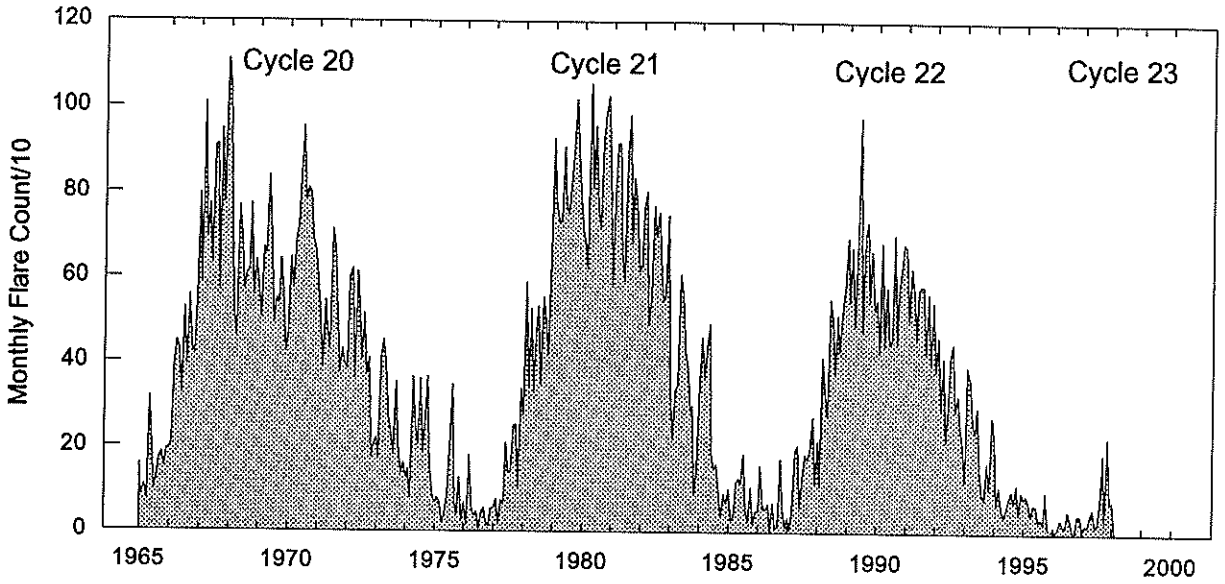
JANUARY 1998



Times of no flare patrol, shown here as shades areas, combine reports from the stations listed below. Portions of a panel completely shaded mark dates and times of no patrol of any kind (neither visual or cinematographic): portions of a panel with only the bottom half shaded mark times of only visual patrol.

Holloman	Kharkov	Mitaka	San Vito	Voroshilov
Kanzelhoehe	Learmonth	Ramey	Urumqi	

Monthly Counts of Grouped Solar Flares
Jan 1965 - Jan 1998



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1965	158	85	110	74	315	231	99	127	173	184	150	193	1899
1966	194	205	390	449	429	323	528	391	558	432	417	543	4859
1967	796	589	1009	694	771	629	907	911	573	946	775	1109	9709
1968	1037	773	519	460	768	697	573	611	616	772	556	640	8022
1969	581	504	669	655	839	694	489	551	540	643	566	422	7153
1970	466	646	578	688	722	836	954	780	811	797	687	667	8632
1971	598	505	387	546	461	430	713	673	518	375	431	394	6031
1972	384	599	621	361	614	541	404	515	371	408	175	210	5203
1973	221	171	410	453	388	270	232	182	353	201	136	163	3180
1974	127	148	79	364	255	204	360	187	270	366	153	81	2594
1975	68	82	69	19	42	85	196	346	68	38	127	25	1165
1976	69	18	180	60	38	48	6	47	57	23	13	55	614
1977	54	77	18	76	64	210	140	140	250	252	107	336	1724
1978	274	588	338	526	330	460	533	346	554	499	418	648	5514
1979	926	781	731	731	907	772	750	821	901	1018	888	786	10012
1980	703	689	621	1092	811	956	763	720	924	988	1027	838	10132
1981	578	782	914	915	658	592	893	982	680	836	773	615	9218
1982	631	766	803	490	553	769	696	753	615	544	564	748	7932
1983	332	220	337	346	609	561	427	389	289	298	88	152	4048
1984	353	461	366	440	492	185	151	161	95	36	92	69	2901
1985	104	29	38	119	129	116	185	53	25	108	19	50	975
1986	51	158	54	56	68	3	71	12	14	174	56	13	730
1987	36	7	52	192	205	61	132	185	172	198	273	114	1627
1988	217	109	413	328	274	551	502	375	513	429	518	587	4816
1989	695	544	672	488	691	977	474	699	733	547	665	526	7711
1990	550	424	684	442	580	445	454	703	449	574	623	682	6610
1991	672	503	625	570	458	574	582	581	425	565	396	544	6495
1992	380	462	287	412	214	271	413	447	287	325	248	206	3952
1993	123	392	357	262	237	296	154	92	82	167	104	275	2541
1994	217	67	111	60	40	56	81	101	72	117	45	99	1066
1995	82	95	77	42	69	66	29	37	23	99	14	6	639
1996	14	3	15	34	21	16	54	31	3	0	44	45	280
1997	8	22	18	43	59	18	26	75	188	31	228	74	790
1998	78												78

The term 'grouped' means observations of the same event by different sites were lumped together and counted as one.

SOLAR RADIO EMISSION
Outstanding Occurrences

JANUARY 1998

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
01	2804	VORO	1	S	0130.3	0130.7	1.2	0.2			
	2804	VORO	46	C	0305.3	0305.8	5.3	0.5			
	2804	VORO	29	PBI	0310.6		50.0	0.2			
	245	SGMR	8	S	1258.0	1258.0	U	110.0			QL=4 ST=2 TYP=3
	245	SVTO	8	S	1258.0	1258.0	1.0	88.0			QL=4 ST=2 TYP=3
02	204	IZMI	7	C	0658.8	0658.9	0.3	330.0			
	4995	SVTO	8	S	1300.0	1300.0	U	33.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1300.0	1300.0	1.0	95.0			QL=2 ST=2 TYP=3
	15400	SVTO	8	S	1300.0	1301.0	1.0	56.0			QL=2 ST=2 TYP=3
	410	SGMR	8	S	1715.0	1715.0	1.0	22.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	1715.0	1715.0	1.0	120.0			QL=4 ST=2 TYP=3
	245	PALE	4	S/F	1735.0	1738.0	3.0	63.0			QL=4 ST=2 TYP=3
	200	HIRA	42	SER	2228.7	2229.0	3.7	90.0			O
03	200	HIRA	8	S	0123.6	0123.9	0.5	23.0			O
	2800	PENT	3	S	1712.0	1730.0	18.0	22.0			
	2695	SGMR	4	S/F	1713.0	1715.0	3.0	26.0			QL=4 ST=2 TYP=3
	15400	SGMR	8	S	1713.0	1714.0	2.0	31.0			QL=4 ST=2 TYP=3
	1415	SGMR	8	S	1713.0	1715.0	2.0	13.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1713.0	1714.0	2.0	58.0			QL=4 ST=2 TYP=3
	4995	SGMR	4	S/F	1713.0	1714.0	5.0	95.0			QL=4 ST=2 TYP=3
04	2804	VORO	23	GRF	0316.3	0317.5	70.0	0.4			
05	2804	VORO	21	GRF	0151.2	0153.2	79.0	0.4			
06	245	PALE	8	S	0133.0	0134.0	1.0	51.0			QL=4 ST=2 TYP=3
	204	IZMI	42	SER	0831.8	0840.1	12.6	120.0			
07	204	IZMI	8	S	1030.1	1030.2	0.5	60.0			
12	127	TORN	43	NS	1130.0	1314.0	150.0	90.0	3.0		V=1
	235	CUBA	44	NS	1300.0E		530.0D		6.0		
	280	CUBA	44	NS	1300.0E		530.0D		15.0		
	2804	VORO	23	GRF	0206.2	0223.8	174.0	0.4			
	500	HIRA	42	SER	0208.7	0208.7	14.0	18.0			O
	2840	BEIJ	40	F	0217.0	0229.0	14.0	2.1			
	200	HIRA	46	C	0227.7	0242.5	21.0	30.0	6.0		O
	410	LEAR	4	S/F	0231.0	0232.0	4.0	160.0			QL=4 ST=2 TYP=3
	245	LEAR	4	S/F	0231.0	0234.0	7.0	85.0			QL=4 ST=2 TYP=3
	245	PALE	4	S/F	0231.0	0234.0	7.0	100.0			QL=4 ST=2 TYP=3
	410	PALE	4	S/F	0231.0	0232.0	4.0	230.0			QL=4 ST=2 TYP=3
	500	HIRA	46	C	0231.6	0232.0	3.7	30.0	8.0		WR
	500	HIRA	46	C	0236.5	0243.5	10.0	140.0	25.0		MR
	245	LEAR	4	S/F	0239.0	0242.0	6.0	79.0			QL=4 ST=2 TYP=3
	245	PALE	4	S/F	0239.0	0242.0	7.0	89.0			QL=4 ST=2 TYP=3
	410	LEAR	4	S/F	0240.0	0243.0	5.0	170.0			QL=4 ST=2 TYP=3
	410	PALE	4	S/F	0240.0	0243.0	5.0	220.0			QL=4 ST=2 TYP=3
	610	LEAR	8	S	0243.0	0243.0	U	54.0			QL=4 ST=2 TYP=3
	610	PALE	8	S	0243.0	0243.0	1.0	74.0			QL=4 ST=2 TYP=3
	2804	VORO	46	C	0330.0	0336.6	6.9	0.3			
	2840	BEIJ	40	F	0443.0	0458.3	16.0	4.6			
	500	HIRA	46	C	0444.2	0448.7	9.0	120.0	23.0		O
	2804	VORO	1	S	0444.4	0444.7	1.2	0.4			
	200	HIRA	46	C	0448.5	0450.0	4.5	24.0	5.0		O
	2804	VORO	1	S	0457.1	0457.7	1.1	0.5			
	500	HIRA	8	S	0457.7	0458.0	0.7	40.0			WL
	204	IZMI	41	F	0716.0	0716.6	2.0	60.0			
	204	IZMI	7	C	0831.1	0832.3	3.6	75.0			
	3000	IZMI	7	C	0831.1	0832.3	6.3	78.0	39.0		
	127	TORN	4	S/F	0831.3	0832.1	3.5	320.0	40.0		
	33	UPIC	4	S/F	0832.0	0832.7	1.4				
	204	IZMI	41	F	0918.6	0919.2	1.5	50.0			
	204	IZMI	42	SER	1044.2	1045.2	1.6	10.0			
	204	IZMI	42	SER	1121.2	1121.6	16.0	100.0			
	245	SVTO	4	S/F	1508.0	1514.0	8.0	42.0			QL=4 ST=2 TYP=3
	410	SVTO	4	S/F	1508.0	1510.0	6.0	19.0			QL=4 ST=2 TYP=3
	610	SVTO	4	S/F	1510.0	1512.0	4.0	150.0			QL=4 ST=2 TYP=3

SOLAR RADIO EMISSION
Outstanding Occurrences

JANUARY 1998

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
12	410	SGMR	8	S	1511.0	1512.0	1.0	73.0			QL=4 ST=2 TYP=3
	610	SVTO	4	S/F	1511.0	1512.0	5.0	150.0			QL=4 ST=3 TYP=3
	610	SGMR	8	S	1512.0	1512.0	1.0	150.0			QL=4 ST=2 TYP=3
	410	SVTO	8	S	1512.0	1512.0	U	14.0			QL=4 ST=3 TYP=3
	245	SVTO	8	S	1514.0	1514.0	U	31.0			QL=4 ST=3 TYP=3
13	280	CUBA	44	NS	1300.0E		530.0D		13.0		
	235	CUBA	44	NS	1300.0E		530.0D		5.0		
	204	IZMI	8	S	0816.8	0817.1	0.4	240.0			
	204	IZMI	41	F	1000.2	1001.0	1.0	25.0			
14	204	IZMI	43	NS	0700.0		150.0		5.0		
	280	CUBA	44	NS	1300.0E		530.0D		14.0		
	235	CUBA	44	NS	1300.0E		530.0D		6.0		
15	204	IZMI	44	NS	0700.0E		300.0D		5.0		
	280	CUBA	44	NS	1300.0E		530.0D		19.0		
	235	CUBA	44	NS	1300.0E		530.0D		9.0		
16	245	LEAR	43	NS	0111.0	0141.0	169.0	69.0			QL=4 ST=3 TYP=1
	204	IZMI	44	NS	0700.0E		300.0D		5.0		
	245	SVTO	43	NS	1124.0	1149.0	756.0	100.0			QL=4 ST=1 TYP=1
	245	SVTO	43	NS	1221.0	1221.0	U	70.0			QL=4 ST=2 TYP=1
	235	CUBA	44	NS	1300.0E		530.0D		15.0		
	280	CUBA	44	NS	1300.0E		530.0D		26.0		
	245	SGMR	43	NS	1555.0	1631.0	115.0	170.0			QL=4 ST=2 TYP=1
	245	PALE	43	NS	1918.0	2109.0	193.0	190.0			QL=2 ST=2 TYP=1
	245	SGMR	43	NS	2044.0	2047.0	27.0	82.0			QL=4 ST=2 TYP=1
	245	SGMR	8	S	1521.0	1521.0	U	52.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	1831.0	1831.0	U	67.0			QL=4 ST=3 TYP=3
	245	PALE	8	S	1851.0	1851.0	U	100.0			QL=2 ST=2 TYP=3
	245	SGMR	8	S	1851.0	1851.0	2.0	65.0			QL=4 ST=3 TYP=3
	245	SGMR	8	S	2025.0	2026.0	1.0	55.0			QL=4 ST=2 TYP=3
17	245	LEAR	43	NS	0245.0	0245.0	155.0	58.0			QL=4 ST=2 TYP=1
	245	LEAR	43	NS	0651.0	0651.0	76.0	87.0			QL=4 ST=3 TYP=1
	204	IZMI	44	NS	0700.0E		300.0D		30.0		
	245	LEAR	43	NS	0751.0	0651.0	16.0	87.0			QL=4 ST=2 TYP=1
	245	SVTO	43	NS	0817.0	0817.0	10.0	120.0			QL=4 ST=2 TYP=1
	245	SVTO	43	NS	0859.0	0906.0	32.0	80.0			QL=4 ST=3 TYP=1
	280	CUBA	44	NS	1300.0E		530.0D		18.0		
	235	CUBA	44	NS	1300.0E		530.0D		9.0		
	245	SVTO	43	NS	1417.0	1417.0	42.0	75.0			QL=4 ST=3 TYP=1
	245	SGMR	43	NS	1425.0	1431.0	6.0	60.0			QL=4 ST=2 TYP=1
	245	SVTO	43	NS	1425.0	1431.0	34.0	68.0			QL=4 ST=3 TYP=1
	245	PALE	44	NS	1730.0E	1804.0U	45.0D	73.0			QL=2 ST=2 TYP=1
	245	SVTO	8	S	0656.0	0656.0	1.0	170.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	1417.0	1417.0	1.0	78.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	1521.0	1521.0	1.0	93.0			QL=4 ST=3 TYP=3
18	280	CUBA	44	NS	1300.0E		530.0D		14.0		
	235	CUBA	44	NS	1300.0E		530.0D		6.0		
20	245	SVTO	8	S	0934.0	0934.0	1.0	69.0			QL=2 ST=2 TYP=3
21	204	IZMI	5	S	0736.5	0736.8	0.7	550.0			
22	33	UPIC	2	S/F	0840.0	0840.9	2.0				
	204	IZMI	7	C	0846.8	0846.9	0.5	40.0			
	204	IZMI	41	F	1141.7	1142.8	2.3	400.0			
	33	UPIC	45	C	1142.0	1142.3	2.0				
24	204	IZMI	43	NS	0700.0		300.0D		5.0		
	280	CUBA	44	NS	1300.0E		535.0D		18.0		
	235	CUBA	44	NS	1300.0E		535.0D		9.0		
	245	SGMR	8	S	1539.0	1539.0	U	120.0			QL=4 ST=2 TYP=3
25	280	CUBA	44	NS	1300.0E		430.0D		25.0		
	235	CUBA	44	NS	1440.0E		430.0D		14.0		

S O L A R R A D I O E M I S S I O N
Outstanding Occurrences

JANUARY 1998

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
25	204	IZMI	42	SER	1006.7	1014.2	8.9	90.0			
	410	LEAR	8	S	1013.0	1013.0	1.0	270.0			QL=4 ST=2 TYP=3
	245	LEAR	8	S	1013.0	1013.0	U	33.0			QL=4 ST=2 TYP=3
	245	SVTO	8	S	1013.0	1013.0	1.0	210.0			QL=2 ST=2 TYP=3
	410	SVTO	8	S	1013.0	1013.0	1.0	180.0			QL=4 ST=2 TYP=3
	204	IZMI	41	F	1148.8	1149.5	3.0	60.0			
	245	SGMR	8	S	1605.0	1605.0	1.0	55.0			QL=4 ST=2 TYP=3
	245	SGMR	4	S/F	1618.0	1620.0	5.0	110.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2130.0	2131.0	2.0	53.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	2131.0	2132.0	2.0	41.0			QL=4 ST=2 TYP=3
	410	PALE	8	S	2131.0	2131.0	U	39.0			QL=4 ST=2 TYP=3
	1415	PALE	8	S	2131.0	2131.0	1.0	25.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	2131.0	2132.0	2.0	63.0			QL=4 ST=2 TYP=3
	610	PALE	8	S	2131.0	2131.0	1.0	27.0			QL=4 ST=2 TYP=3
	4995	PALE	8	S	2131.0	2132.0	2.0	76.0			QL=4 ST=2 TYP=3
	15400	PALE	4	S/F	2131.0	2132.0	3.0	55.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2157.0	2157.0	U	53.0			QL=4 ST=2 TYP=3
26	204	IZMI	43	NS	0700.0		300.0D		50.0		
	280	CUBA	44	NS	1300.0E		470.0D		18.0		
	235	CUBA	44	NS	1400.0E		470.0D		11.0		
	2840	BEIJ	45	C	0017.0	0018.0	4.0	12.5			
	204	IZMI	41	F	0745.3	0746.2	2.6	35.0			
	204	IZMI	41	F	0903.2	0903.6	0.7	68.0			
	33	UPIC	3	S	0911.2	0911.5	0.8				
	204	IZMI	42	SER	0928.3	0932.8	6.9	570.0			
	245	LEAR	8	S	0932.0	0932.0	1.0	65.0			QL=4 ST=2 TYP=3
	410	LEAR	8	S	0932.0	0932.0	1.0	12.0			QL=4 ST=2 TYP=3
	245	SVTO	8	S	0932.0	0933.0	1.0	100.0			QL=2 ST=3 TYP=3
	410	SVTO	8	S	0932.0	0934.0	2.0	79.0			QL=4 ST=3 TYP=3
	33	UPIC	2	S/F	0945.2	0946.0	1.6				
	33	UPIC	3	S	1005.7	1006.0	0.6				
	204	IZMI	45	C	1012.7	1012.8	0.2	1080.0			
	204	IZMI	41	F	1112.5	1113.3	1.0	365.0			
	33	UPIC	4	S/F	1112.7	1113.5	1.3				
	33	UPIC	3	S	1256.2	1256.7	0.8				
	245	SGMR	8	S	1324.0	1324.0	U	60.0			QL=4 ST=2 TYP=3
	245	SVTO	8	S	1324.0	1324.0	1.0	75.0			QL=2 ST=2 TYP=3
	33	UPIC	4	S/F	1352.5	1353.0	1.3				
	245	SGMR	8	S	1401.0	1401.0	2.0	470.0			QL=4 ST=2 TYP=3
	410	SVTO	8	S	1401.0	1402.0	1.0	50.0			QL=2 ST=2 TYP=3
	610	SVTO	8	S	1401.0	1401.0	2.0	31.0			QL=4 ST=2 TYP=3
	245	SVTO	49	GB	1401.0	1401.0	2.0	500.0			QL=2 ST=3 TYP=6
	1415	SVTO	8	S	1401.0	1401.0	U	12.0			QL=4 ST=2 TYP=3
	33	UPIC	3	S	1401.0	1401.4	0.8				
	410	SGMR	8	S	1402.0	1402.0	U	58.0			QL=2 ST=2 TYP=3
	610	SGMR	8	S	1402.0	1403.0	1.0	31.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	1428.0	1428.0	1.0	82.0			QL=4 ST=2 TYP=3
	245	SVTO	8	S	1428.0	1428.0	1.0	95.0			QL=2 ST=3 TYP=3
	33	UPIC	3	S	1441.0	1441.4	0.8				
	245	SGMR	4	S/F	1544.0	1547.0	5.0	170.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	1701.0	1701.0	U	81.0			QL=4 ST=3 TYP=3
	245	PALE	8	S	1756.0	1756.0	U	120.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	1756.0	1756.0	U	85.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2011.0	2011.0	2.0	110.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	2011.0	2011.0	1.0	100.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2018.0	2019.0	1.0	240.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	2018.0	2019.0	1.0	180.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2051.0	2052.0	1.0	52.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2105.0	2106.0	1.0	460.0			QL=4 ST=2 TYP=3
	410	PALE	8	S	2105.0	2106.0	1.0	40.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	2105.0	2106.0	1.0	210.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2131.0	2131.0	U	210.0			QL=4 ST=2 TYP=3
	1415	LEAR	4	S/F	2220.0	2226.0	8.0	27.0			QL=4 ST=2 TYP=3
	610	LEAR	4	S/F	2222.0	2226.0	8.0	39.0			QL=4 ST=3 TYP=3
	245	LEAR	4	S/F	2222.0	2231.0	10.0	34.0			QL=4 ST=3 TYP=3
	500	HIRA	46	C	2222.0U	2226.5	18.0U	30.0	6.0		O
	2800	HIRA	46	C	2222.0U	2225.6	19.0U	90.0	12.0		O
	4995	LEAR	4	S/F	2223.0	2225.0	7.0	64.0			QL=4 ST=2 TYP=3

SOLAR RADIO EMISSION
Outstanding Occurrences

JANUARY 1998

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
26	2695	LEAR	4	S/F	2223.0	2225.0	7.0	89.0			QL=4 ST=2 TYP=3
	410	LEAR	4	S/F	2223.0	2225.0	7.0	37.0			QL=4 ST=3 TYP=3
	8800	LEAR	4	S/F	2225.0	2226.0	5.0	59.0			QL=4 ST=2 TYP=3
	200	HIRA	46	C	2229.5	2236.0	8.0	60.0	7.0		O
	610	LEAR	4	S/F	2230.0	2234.0	7.0	7.0			QL=4 ST=2 TYP=3
	245	LEAR	4	S/F	2231.0	2236.0	7.0	110.0			QL=4 ST=2 TYP=3
	410	LEAR	4	S/F	2235.0	2236.0	3.0	25.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2235.0	2236.0	1.0	280.0			QL=4 ST=2 TYP=3
	410	PALE	8	S	2236.0	2236.0	U	49.0			QL=4 ST=2 TYP=3
	245	PALE	4	S/F	2332.0	2333.0	4.0	83.0			QL=4 ST=2 TYP=3
	200	HIRA	42	SER	2333.0	2333.4	2.7	15.0			WL
27	204	IZMI	44	NS	0700.0E		300.0D	30.0			
	280	CUBA	44	NS	1310.0E		520.0D		17.0		
	235	CUBA	44	NS	1310.0E		520.0D		15.0		
	245	LEAR	8	S	0159.0	0159.0	U	58.0			QL=4 ST=2 TYP=3
	204	IZMI	42	SER	1031.8	1038.9	12.1	500.0			
	245	LEAR	8	S	1033.0	1033.0	U	76.0			QL=4 ST=2 TYP=3
	204	IZMI	7	C	1202.3	1202.8	0.8	70.0			
	245	SGMR	8	S	1532.0	1532.0	U	60.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	1625.0	1625.0	U	110.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	1957.0	1957.0	U	95.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	1957.0	1957.0	1.0	71.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2005.0	2005.0	U	74.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	2005.0	2005.0	U	81.0			QL=4 ST=2 TYP=3
	245	SGMR	8	S	2042.0	2042.0	1.0	88.0			QL=4 ST=2 TYP=3
28	204	IZMI	44	NS	0700.0E		300.0D		15.0		
	235	CUBA	44	NS	1300.0E		530.0D		10.0		
	280	CUBA	44	NS	1300.0E		530.0D		19.0		
	200	HIRA	46	C	0109.8	0111.0	2.0	90.0	10.0		WR
	245	PALE	8	S	0110.0	0111.0	1.0	240.0			QL=4 ST=2 TYP=3
	245	LEAR	8	S	0111.0	0111.0	U	110.0			QL=4 ST=2 TYP=3
	500	HIRA	42	SER	0111.0	0111.2	1.2	4.0			O
	2840	BEIJ	4	S/F	0231.0	0232.4	2.0	11.9			
	245	LEAR	8	S	0239.0	0240.0	1.0	120.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	0239.0	0240.0	1.0	260.0			QL=4 ST=2 TYP=3
	200	HIRA	42	SER	0239.5	0239.7	13.0	50.0			O
	2804	VORO	1	S	0251.8	0252.2	0.6	1.1			
	2800	HIRA	8	S	0252.1	0252.2	0.2	4.0			O
	245	LEAR	8	S	0927.0	0927.0	1.0	200.0			QL=4 ST=2 TYP=3
	245	SVTO	49	GB	0927.0	0927.0	1.0	580.0			QL=2 ST=2 TYP=6
	204	IZMI	45	C	0927.2	0928.0	1.0	2260.0			
	204	IZMI	7	C	1107.2	1107.7	0.7	250.0			
	33	UPIC	4	S/F	1117.0	1117.5	1.2				
	245	SVTO	8	S	1204.0	1204.0	U	100.0			QL=2 ST=2 TYP=3
	245	SGMR	8	S	1653.0	1653.0	U	110.0			QL=4 ST=2 TYP=3
	245	PALE	4	S/F	1746.0	1747.0	5.0	160.0			QL=2 ST=2 TYP=3
	245	SGMR	8	S	1746.0	1747.0	1.0	140.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	1925.0	1925.0	1.0	53.0			QL=2 ST=2 TYP=3
	245	PALE	8	S	2026.0	2027.0	2.0	59.0			QL=2 ST=2 TYP=3
	245	SGMR	8	S	2026.0	2027.0	1.0	54.0			QL=4 ST=2 TYP=3
	245	PALE	8	S	2030.0	2030.0	U	60.0			QL=2 ST=2 TYP=3
	245	SGMR	8	S	2030.0	2030.0	U	50.0			QL=4 ST=2 TYP=3
29	204	IZMI	44	NS	0710.0E		150.0D		5.0		
	127	TORN	44	NS	0810.0E		250.0D		2.0		V=1
	280	CUBA	44	NS	1330.0E		500.0D		14.0		
	235	CUBA	44	NS	1330.0E		500.0D		7.0		
	2804	VORO	20	GRF	0140.0	0148.0	40.0	0.3			
	204	IZMI	7	C	0821.0	0821.3	1.1	80.0			
	204	IZMI	7	C	1046.1	1046.5	0.9	50.0			
	245	SGMR	8	S	1651.0	1651.0	1.0	77.0			QL=4 ST=2 TYP=3
30	280	CUBA	44	NS	1300.0E		530.0D		14.0		
	235	CUBA	44	NS	1300.0E		530.0D		6.0		
	2840	BEIJ	4	S/F	0552.0	0554.0	28.0	10.4			
	245	SGMR	4	S/F	1724.0	1725.0	396.0	12000.0			QL=4 ST=1 TYP=3

S O L A R R A D I O E M I S S I O N
Outstanding Occurrences

JANUARY 1998

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
31	204	IZMI	43 NS	0700.0		300.0D		5.0		
	204	IZMI	41 F	0733.5	0733.7	1.4	25.0			
	204	IZMI	41 F	1141.4	1141.9	0.8	80.0			

Reports are received routinely from the following observatories:

BERN = Berne	HUMN = Humain	ONDR = Ondrejov	SVTO = San Vito
CRIM = Crimea	IZMI = IZMIRAN	PEKG = Peking	TORN = Torun
CUBA = Havana	KISV = Kislovodsk	PALE = Palehua	TRST = Trieste
GORK = Gorky	KRAK = Krakow	PENT = Penticton	TYKW = Toyokawa
HIRA = Hiraiso	LEAR = Learmonth	POTS = Potsdam	UPIC = Upice
HUAN = Huancayo	NOBE = Nobeyama	SGMR = Sagamore Hill	

Explanation of Type Code:

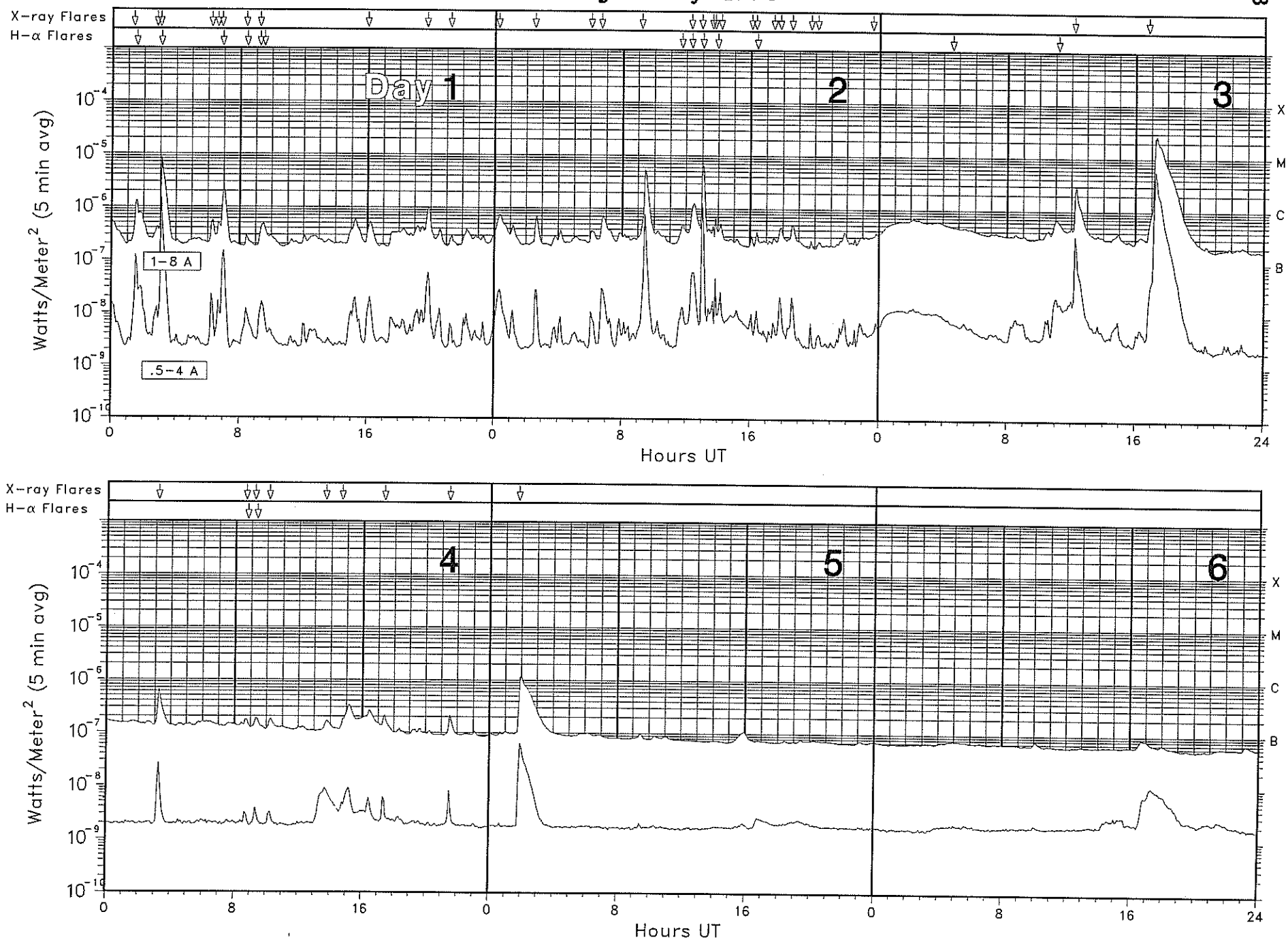
1 Simple 1	7 Minor +	24 Rise	30 Post Burst Increase A	43 Onset of Noise Storm
2 Simple 1F	8 Spike	25 Rise A	31 Post Burst Decrease	44 Noise Storm in Progress
3 Simple 2	20 Simple 3	26 Fall	33 Absorption	45 Complex
4 Simple 2F	21 Simple 3A	27 Rise and Fall	40 Fluctuation	46 Complex F
5 Simple	22 Simple 3F	28 Precusor	41 Group of Bursts	47 Great Burst
6 Minor	23 Simple 3AF	29 Post Burst Increase	42 Series of Bursts	48 Major

1A Simple 1A	4A Simple 2AF	24PF Post Rise F	27F Rise and Fall F
3A Simple 2A	4O Rise Only	16A Fall A	27AF Rise and Fall AF
21A Simple 3A GRF	4OF Rise Only F	26O Fall Only	31A Post Burst Decrease A
2A Simple 1AF	4P Post Rise	26F Fall F	32A Absorption A

RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Penticton, Canada 2800 MHz; and Hiraiso, Japan 500 and 200 MHz.

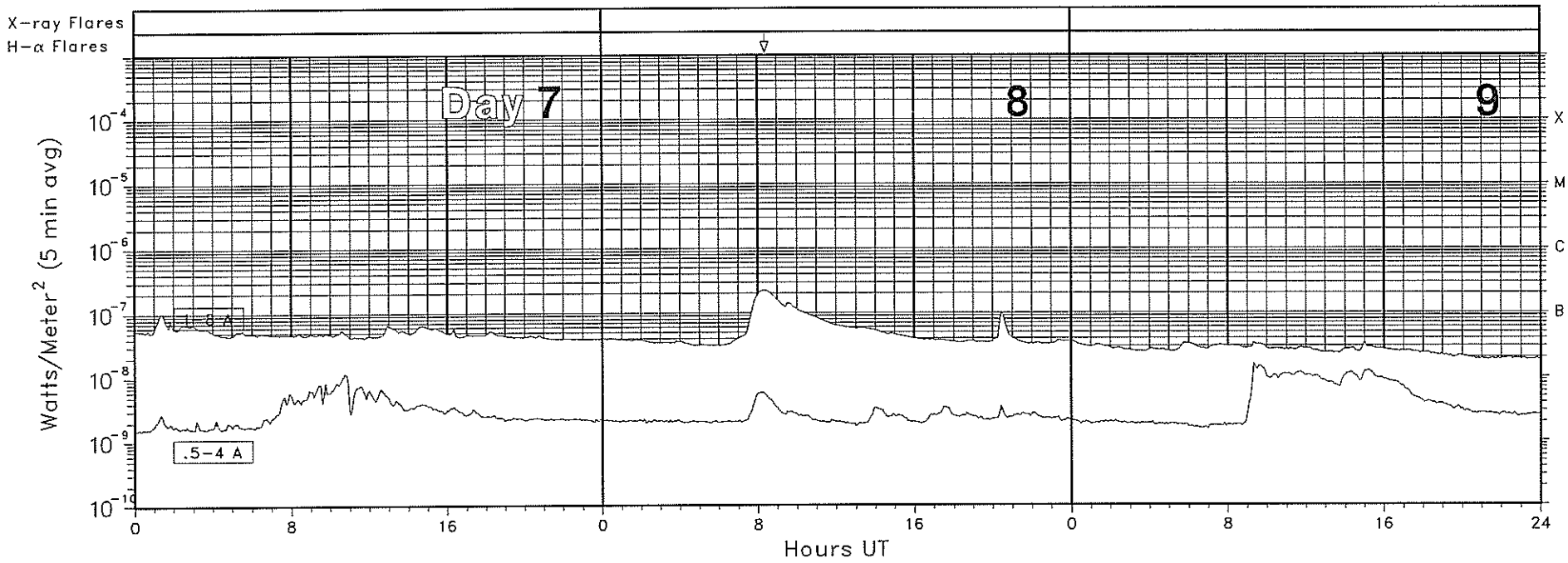
GOES X-RAY DETECTOR

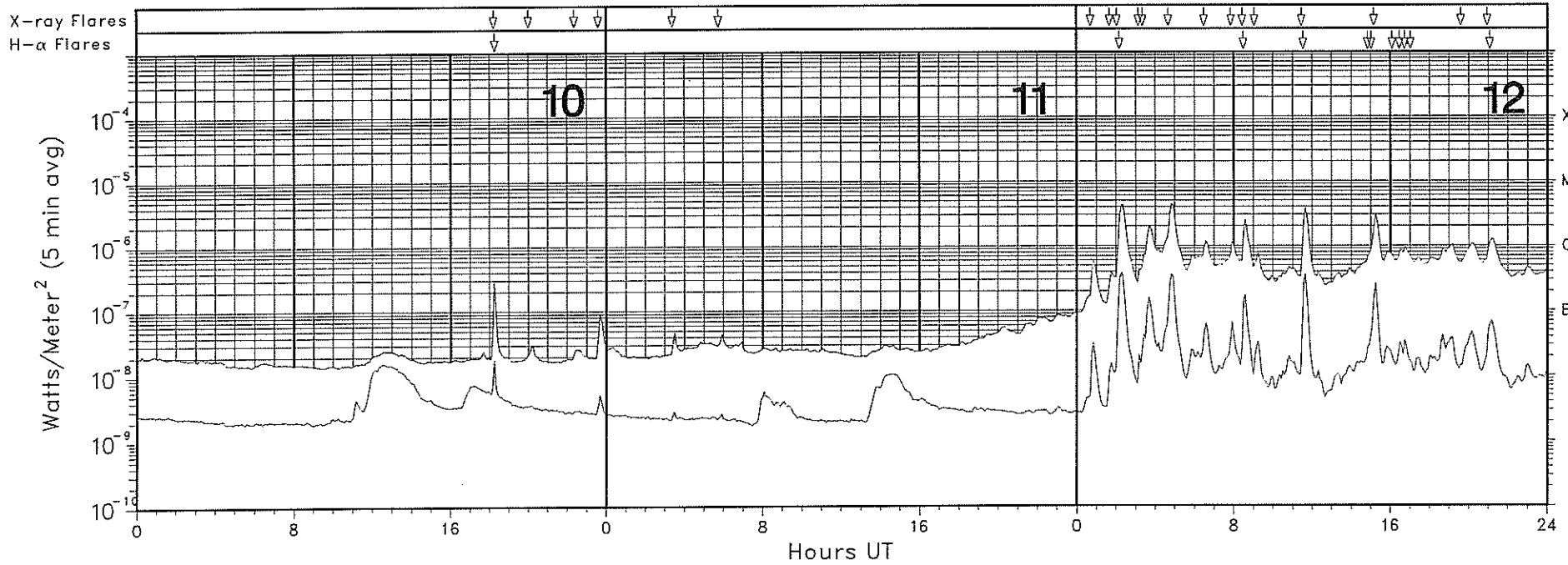
January 1998



GOES X-RAY DETECTOR

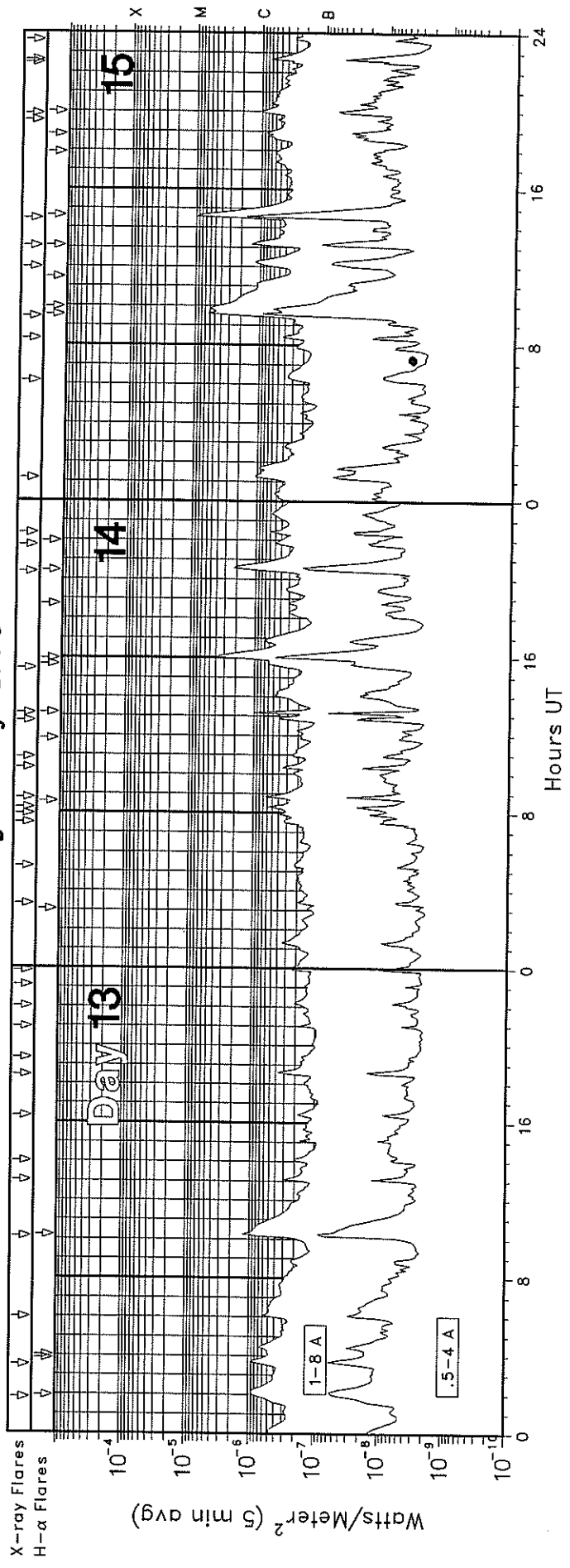
January 1998





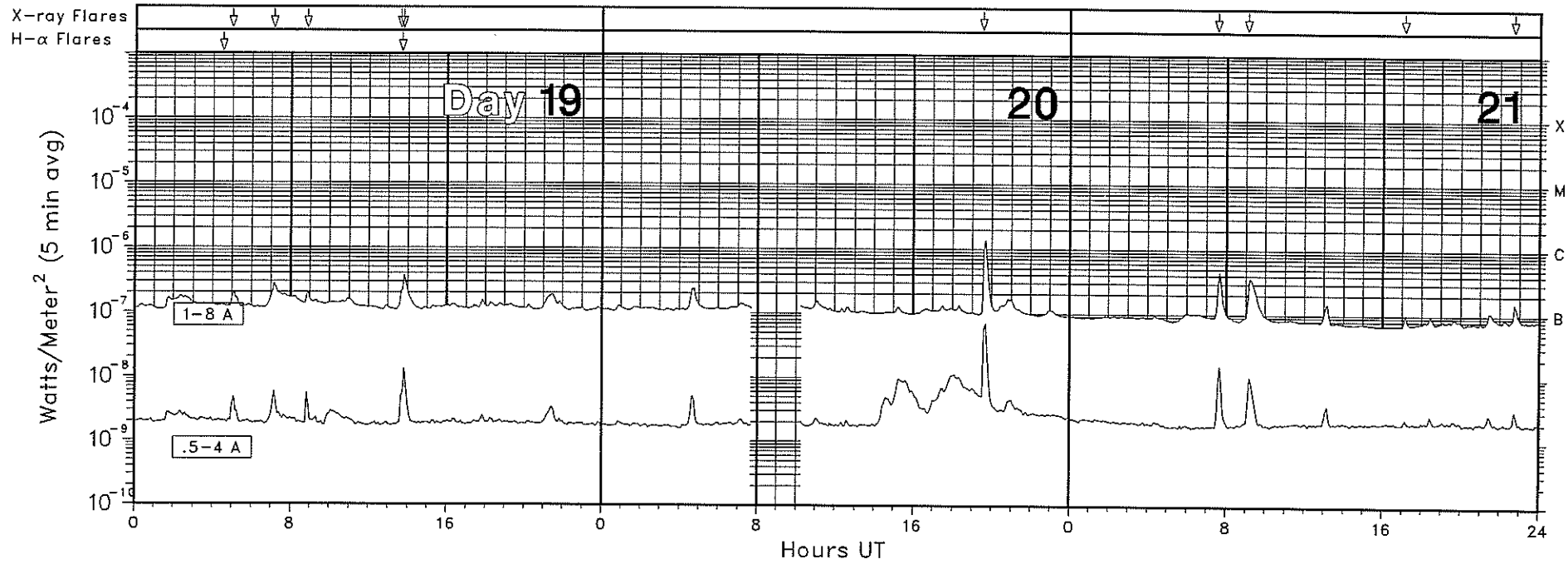
GOES X-RAY DETECTOR

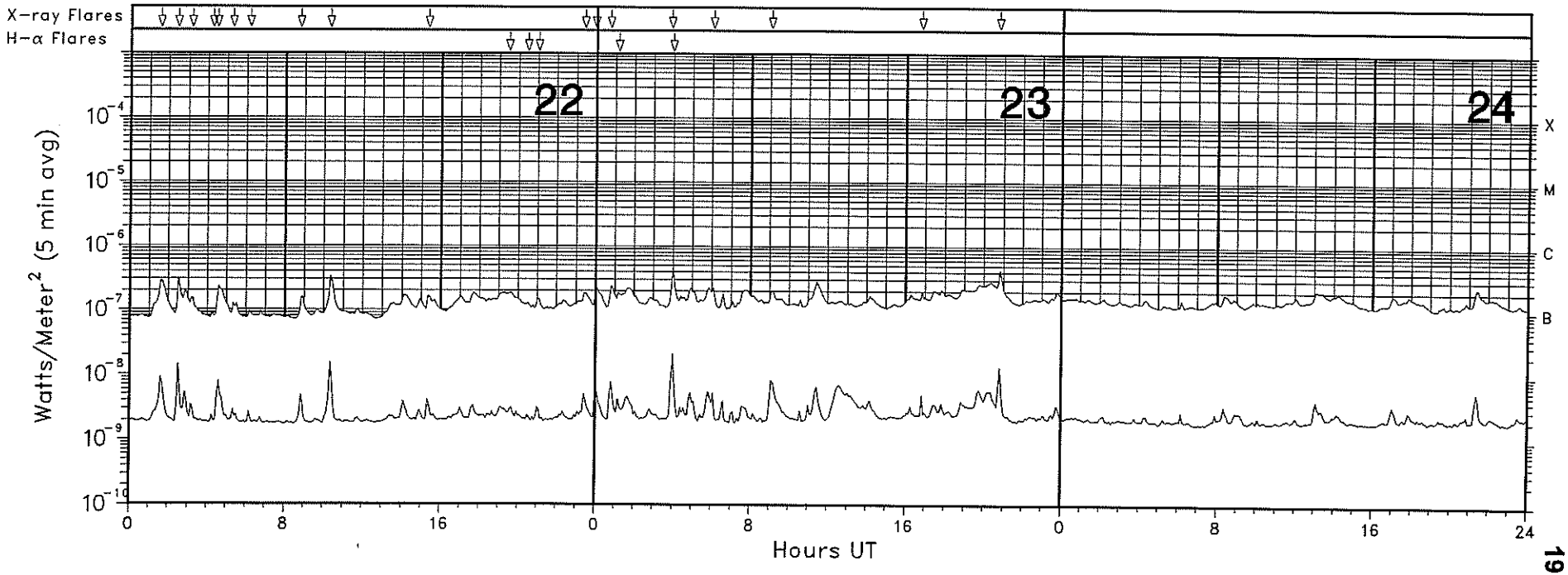
January 1998



GOES X-RAY DETECTOR

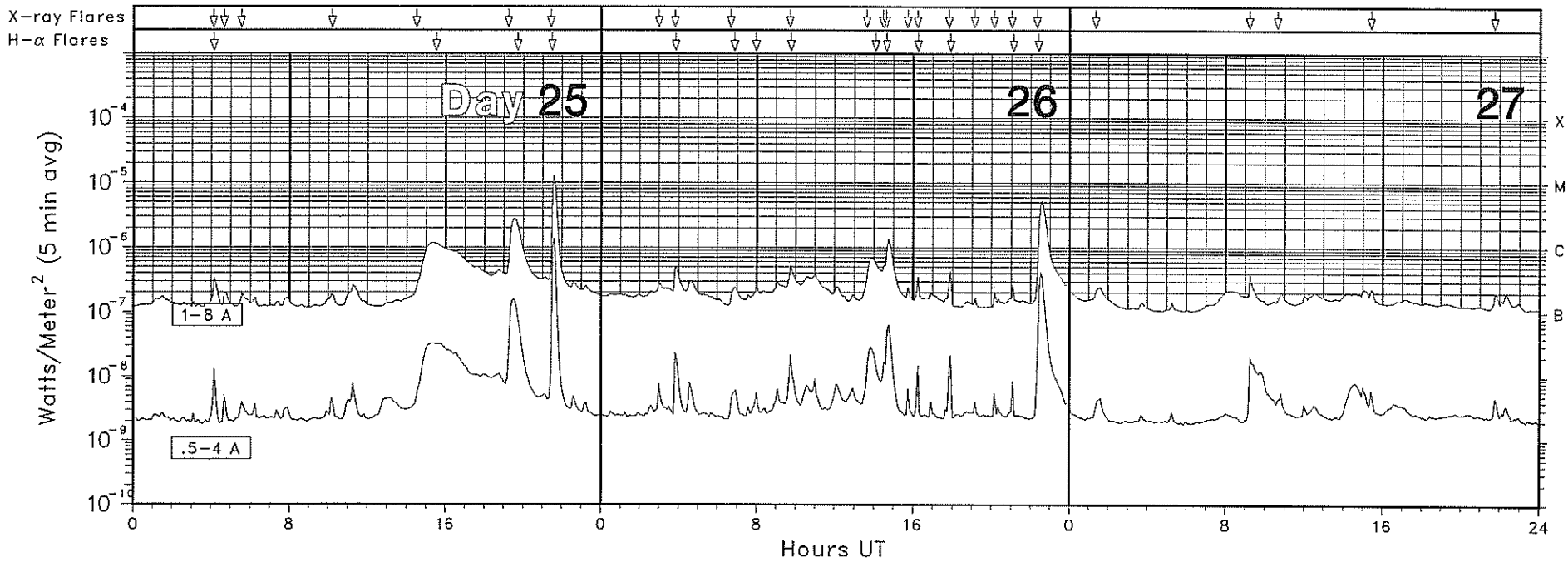
January 1998

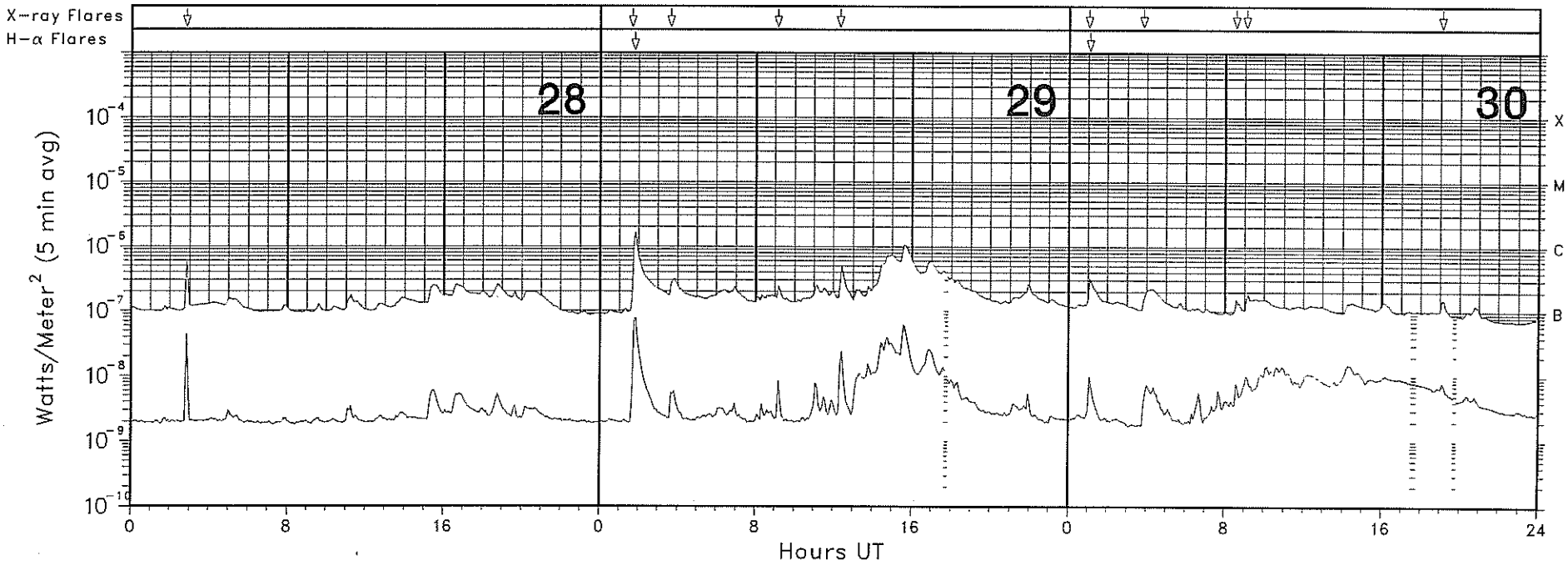




GOES X-RAY DETECTOR

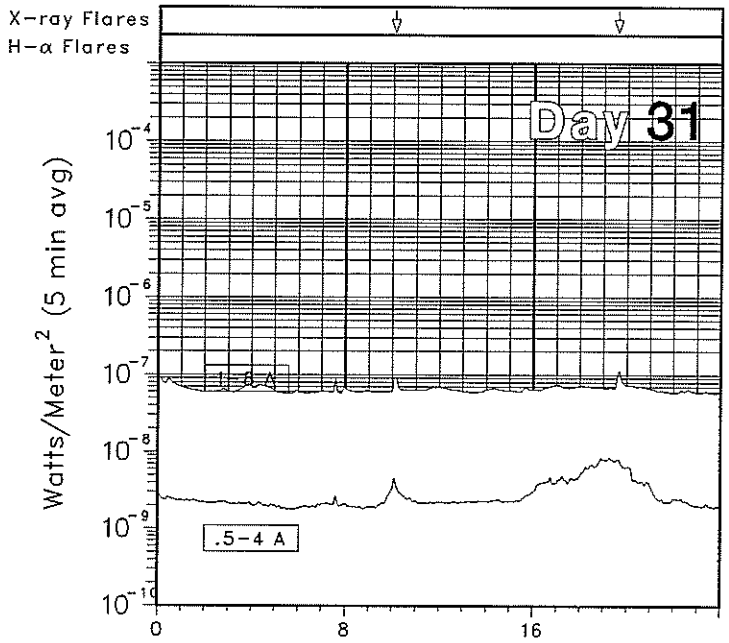
January 1998





GOES X-RAY DETECTOR

January 1998



GOES S O L A R X-RAY F L A R E S
Preliminary Listing

January 1998

Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Opt	Imp	Xray	NOAA/ USAF Region	Flux
01	0120	0134	0139	S22	W69	SF	C1.8		8124	9.8E-04
01	0247	0250	0255				B3.9			1.7E-04
01	0301	0307	0311	S22	W70	SN	M1.1		8124	3.3E-03
01	0613	0619	0625				B6.5			3.6E-04
01	0636	0643	0650				B5.4			3.7E-04
01	0652	0704	0710	S19	W70	SF	C2.4		8124	1.8E-03
01	0823	0828	0833				B3.1			1.6E-04
01	0915	0930	0939				B5.2			5.9E-04
01	1559	1613	1621				B5.4			5.8E-04
01	1945	1952	1959				C1.0			7.3E-04
01	2115	2119	2123				B3.4			1.4E-04
02	0015	0025	0028				B7.2			5.0E-04
02	0233	0239	0247				B7.9			4.8E-04
02	0603	0607	0620				B4.0			3.6E-04
02	0641	0650	0703				B7.5			7.7E-04
02	0913	0928	0935				C6.4			3.6E-03
02	1218	1232	1241	N19	W42	SF	C1.2		8126	1.4E-03
02	1257	1303	1307	S19	W86	SF	M1.2		8124	3.4E-03
02	1337	1340	1344				B5.5			1.9E-04
02	1347	1351	1354				B8.5			2.4E-04
02	1409	1413	1415				B6.7			1.9E-04
02	1603	1608	1610				B3.4			1.3E-04
02	1620	1626	1629	S29	W16	SF	B4.3		8130	1.8E-04
02	1725	1728	1731				B3.3			1.1E-04
02	1749	1753	1759				B5.2			2.7E-04
02	1833	1840	1843				B6.1			2.9E-04
02	1944	1947	1950				B3.1			9.2E-05
02	2010	2014	2024				B2.5			2.0E-04
02	2335	0225	0630				B6.4			1.3E-02
03	1212	1220	1226				C3.3			1.8E-03
03	1649	1719	1743				M2.7			3.8E-02
04	0310	0316	0324				B6.7			4.2E-04
04	0840	0843	0848				B1.9			8.6E-05
04	0913	0924	0932				B2.1			1.9E-04
04	1006	1016	1023				B1.8			1.6E-04
04	1338	1345	1356				B1.6			1.7E-04
04	1439	1512	1526				B3.3			6.6E-04
04	1720	1725	1730				B2.3			1.2E-04
04	2126	2132	2138				B2.2			1.3E-04
05	0148	0159	0227				C1.2			1.9E-03
10	1812	1817	1820	S27	E21	SF	B3.3		8131	1.0E-04
10	2000	2013	2019				B3.3			3.0E-05
10	2222	2226	2229				B2.7			1.0E-05
10	2335	2341	2352				B9.6			7.0E-05
11	0324	0332	0334				B5.8			2.3E-05
11	0545	0554	0559				B5.3			3.0E-05
12	0043	0052	0101				B6.0			4.9E-04
12	0140	0145	0159				B4.2			3.9E-04
12	0202	0220	0230	S26	E12	SF	C4.5		8131	4.7E-03
12	0308	0314	0318				B5.0			2.5E-04
12	0321	0341	0356				C2.0			2.7E-03
12	0440	0453	0502				C4.4			4.6E-03
12	0629	0638	0643				C1.2			9.0E-04
12	0752	0758	0804				C1.1			7.4E-04
12	0826	0837	0845				C2.5			2.0E-03
12	0904	0907	0909				B6.0			1.6E-04
12	1128	1142	1149	S24	E10	SF	C3.8		8131	2.8E-03
12	1509	1518	1524	S24	E07		C3.2		8131	2.2E-03
12	1937	2007	2028				C1.0			2.6E-03
12	2057	2113	2124	S23	E03	SF	C1.3		8131	1.7E-03
13	0150	0208	0221	S24	E01	SF	B9.3		8131	1.5E-03
13	0331	0343	0354				B9.3			1.0E-03
13	0559	0605	0615				B6.1			5.0E-04
13	1007	1016	1045				C1.3			2.0E-03
13	1301	1306	1311				B3.3			1.4E-04
13	1400	1409	1413				B2.0			1.5E-04
13	1621	1624	1631				B1.9			1.0E-04
13	1828	1838	1844				B4.0			2.8E-04
13	1921	1924	1927				B1.8			5.9E-05
13	2057	2101	2106				B1.8			8.2E-05
13	2201	2213	2221				B1.9			2.0E-04
13	2306	2309	2311				B1.7			4.6E-05
13	2352	2358	0012				B2.6			2.5E-04
14	0319	0324	0332				B2.1			1.4E-04
14	0514	0518	0527				B2.4			1.7E-04
14	0729	0735	0746				B3.4			3.1E-04
14	0756	0759	0801				B5.5			1.2E-04
14	0816	0820	0823				B6.9			2.2E-04
14	0846	0850	0855	S24	W16	SF	B7.4		8131	2.9E-04
14	1019	1022	1028				B4.2			1.8E-04
14	1052	1102	1123				B2.4			4.1E-04
14	1244	1254	1259				B5.3			2.9E-04
14	1308	1311	1315	S23	W20	SF	C1.2		8131	3.5E-04
14	1526	1603	1615	S26	W18	SF	C4.1		8131	4.2E-03
14	2022	2038	2048	S22	W23	SF	C2.3		8131	2.2E-03
14	2144	2151	2206	S22	W23	SF	B5.0		8131	5.7E-04
14	2221	2224	2229				B7.0			2.7E-04
15	0109	0118	0136				C1.1			1.5E-03
15	0610	0624	0646				B3.5			6.7E-04
15	0818	0825	0833				B4.4			3.3E-04
15	0926	0936	1006	S24	W29	SF	C6.8		8131	1.1E-02
15	1159	1217	1226				C1.1			1.5E-03
15	1303	1312	1324	S23	W32	SF	C1.4		8131	1.2E-03
15	1428	1438	1447	S22	W33	1F	M1.0		8131	7.0E-03
15	1932	1935	1938				B6.4			2.0E-04
15	1953	1959	2009	S22	W34	SF	C1.1		8131	8.6E-04
15	2228	2232	2236				B4.0			1.6E-04
15	2237	2243	2247				B8.6			3.7E-04
15	2337	2345	2348				B3.5			2.0E-04
16	0020	0025	0033				B5.1			3.2E-04
16	0253	0257	0303				B2.5			1.4E-04
16	0438	0444	0447				B5.4			1.9E-04
16	1020	1031	1035				B2.9			2.2E-04
16	1409	1412	1429				B2.4			2.6E-04
17	0155	0159	0202	S19	W49	SF	B3.5		8131	1.1E-04
17	0751	0755	0758				B3.8			1.3E-04
17	1106	1113	1120				B4.0			2.6E-04
17	2244	2306	2315				B4.8			6.8E-04
18	1042	1111	1115				B2.8			4.3E-04
18	1143	1150	1159	N17	W44	SF	B3.4		8136	2.4E-04

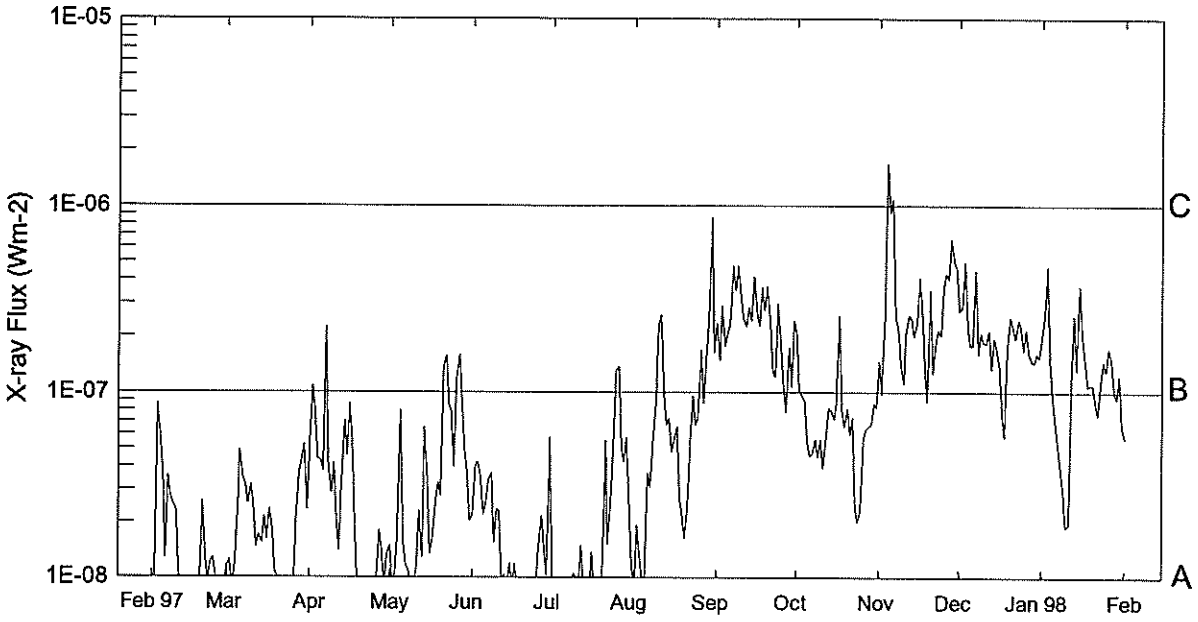
GOES S O L A R X-RAY F L A R E S
Preliminary Listing

January 1998

Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Opt	Imp Xray	NOAA/ USAF Region	Flux
19	0500	0505	0508				B2.4		9.5E-05
19	0707	0711	0714				B3.0		1.1E-04
19	0850	0854	0858				B2.5		9.9E-05
19	1338	1341	1344				B2.5		7.0E-05
19	1346	1351	1356				B3.9		1.9E-04
20	1932	1940	1946				C1.5		8.2E-04
21	0734	0740	0746				B5.0		2.6E-04
21	0905	0914	0930				B3.8		4.5E-04
21	1707	1710	1714				B1.1		4.2E-05
21	2242	2245	2251				B1.7		7.4E-05
22	0133	0138	0146				B3.1		2.1E-04
22	0226	0231	0237				B3.7		1.6E-04
22	0310	0314	0317				B1.5		5.8E-05
22	0415	0418	0420				B1.0		2.7E-05
22	0428	0436	0453				B2.4		2.8E-04
22	0517	0521	0528				B1.3		7.6E-05
22	0610	0613	0616				B1.2		3.6E-05
22	0846	0855	0900				B1.8		1.2E-04
22	1017	1022	1029				B3.6		2.1E-04
22	1519	1524	1527				B2.1		7.9E-05
22	2324	2328	2334				B2.1		1.1E-04
22	2358	0004	0017				B2.3		2.2E-04
23	0045	0052	0100				B2.5		1.9E-04
23	0355	0400	0405	S36	E65	SF	B4.9	8143	2.0E-04
23	0602	0605	0607				B2.8		7.0E-05
23	0903	0908	0914				B1.8		1.1E-04
23	1647	1651	1653				B2.3		6.9E-05
23	2046	2052	2057				B4.4		2.5E-04
25	0406	0413	0418				B3.7		2.1E-04
25	0438	0444	0452				B2.1		1.6E-04
25	0532	0536	0543				B1.7		1.1E-04
25	1011	1014	1016				B2.6		6.3E-05
25	1429	1512	1700	N21	E25	SF	C1.1		7.8E-03
25	1914	1936	1951	S18	W39	SF	C2.8	8142	4.6E-03
25	2126	2136	2143	N22	E53	1B	M1.3	8145	8.3E-03
26	0259	0303	0307				B3.1		1.4E-04
26	0349	0352	0359	N25	E45	SF	B7.1	8145	3.0E-04
26	0642	0657	0706	S36	E30	SF	B2.6	8143	3.1E-04
26	0942	0947	0951	S36	E28	SF	B5.7	8143	2.6E-04
26	1338	1354	1415				B6.9		1.3E-03
26	1427	1430	1432				B7.6		1.7E-04
26	1436	1447	1456	N22	E42	SF	C1.3	8145	1.3E-03
26	1543	1546	1548				B2.9		7.1E-05
26	1613	1616	1618	S18	W42	SF	B4.8	8142	1.1E-04
26	1750	1755	1757	S18	W42	SF	B7.8	8142	1.8E-04
26	1909	1912	1914				B2.0		5.0E-05
26	2008	2012	2014				B2.8		6.8E-05
26	2103	2106	2108	S17	W44	SF	B3.4	8142	7.7E-05
26	2219	2235	2247	S17	W55	SN	C5.4	8142	5.6E-03
27	0121	0136	0142				B2.5		2.9E-04
27	0913	0916	0921				B4.4		1.6E-04
27	1039	1051	1056				B2.2		1.9E-04
27	1525	1528	1532				B2.9		1.0E-04
27	2143	2148	2157				B2.0		1.6E-04
28	0249	0253	0255				C1.1		2.1E-04
29	0140	0150	0158	S33	W05	SF	C1.8	8143	1.1E-03
29	0338	0352	0403				B3.2		4.1E-04
29	0908	0912	0917				B2.6		1.2E-04
29	1219	1227	1234				B5.0		3.4E-04
30	0101	0107	0119	S35	W20	SF	B3.4	8143	2.9E-04
30	0349	0419	0446				B2.2		6.8E-04
30	0833	0837	0840				B1.6		6.2E-05
30	0905	0910	0914				B2.2		9.7E-05
30	1905	1909	1912				B1.7		6.6E-05
31	1005	1009	1012				B1.1		4.2E-05
31	1935	1940	1946				B1.2		7.0E-05

*****EDITOR's NOTE: Only GOES X-ray times now appear in this table, beginning with the July 1997 data. These data are from the NOAA Space Environment Center on-line archives (see http://www.sec.noaa.gov).

Preliminary GOES Satellite Daily X-Ray Background
Feb 97 - Jan 98



Day	Feb 97	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 98
1	A1.1	A4.6	A1.4	A2.2	<A1.0	<A1.0	B2.3	B2.0	B1.4	B1.4	B2.7	B1.9
2	A1.2	B1.0	<A1.0	A4.0	<A1.0	A1.9	B1.4	B1.0	A9.7	A9.7	B2.8	B2.6
3	<A1.0	A7.9	A1.0	A4.2	<A1.0	A1.3	B2.8	A9.4	B2.6	B2.6	B4.9	B4.7
4	A1.0	A4.3	A1.8	A3.6	<A1.0	<A1.0	B1.7	A8.9	C1.6	C1.6	B2.2	B1.4
5	A2.3	A4.3	A7.9	A2.2	<A1.0	<A1.0	B2.0	A5.3	B9.1	B9.1	B1.7	A9.4
6	A4.9	A3.8	A1.5	A2.5	<A1.0	A3.6	B2.3	A4.5	C1.0	C1.0	B1.7	A6.5
7	A3.4	B2.2	A1.1	A3.3	<A1.0	A3.0	B4.7	A4.6	B2.4	B2.4	B4.4	A5.0
8	A3.2	A4.1	A1.1	A3.6	<A1.0	A5.2	B3.5	A5.5	B2.2	B2.2	B1.5	A3.8
9	A2.5	A2.8	<A1.0	A1.5	A1.0	A8.8	B4.8	A4.4	B1.4	B1.4	B2.0	A2.9
10	A3.2	A4.1	<A1.0	A2.3	A1.0	B2.3	B3.3	A5.5	B1.1	B1.1	B1.8	A1.8
11	A2.4	A2.0	A1.1	A2.2	<A1.0	B2.5	B2.4	A3.9	B2.0	B2.0	B1.8	A1.9
12	A1.4	A1.4	A2.2	<A1.0	A1.4	A9.5	B2.2	A5.8	B2.5	B2.5	B2.1	B1.1
13	A1.7	A3.2	A1.2	A1.0	<A1.0	A6.6	B2.8	A8.2	B2.4	B2.4	B1.3	B2.5
14	A1.5	A6.9	A6.4	<A1.0	<A1.0	A7.2	B2.4	A7.9	B1.9	B1.9	B1.9	B1.3
15	A2.1	A4.5	A3.3	A1.2	<A1.0	A4.7	B4.1	A7.1	B2.3	B2.3	B1.6	B3.6
16	A1.6	A8.6	A1.3	<A1.0	A1.3	A5.7	B2.6	A8.6	B4.1	B4.1	B1.3	B2.0
17	A2.3	A5.5	A1.5	A1.1	<A1.0	A6.5	B2.2	B2.5	B2.6	B2.6	A7.5	B1.5
18	A1.9	A1.9	A2.5	<A1.0	<A1.0	A2.7	B3.6	A8.0	B1.3	B1.3	A5.7	B1.0
19	A1.0	<A1.0	A3.2	<A1.0	A1.0	A2.1	B2.7	A6.5	A8.9	A8.9	B1.7	B1.0
20	A1.0	<A1.0	A2.7	<A1.0	<A1.0	A1.6	B3.7	A8.1	B3.5	B3.5	B2.4	B1.0
21	<A1.0	<A1.0	B1.3	<A1.0	A5.5	A2.4	B2.3	A5.8	B1.2	B1.2	B2.2	A8.6
22	<A1.0	<A1.0	B1.5	<A1.0	A1.5	A5.5	B1.2	A7.2	B1.7	B1.7	B1.9	A7.4
23	<A1.0	<A1.0	A8.5	<A1.0	A2.6	A9.5	B1.2	A2.4	B2.1	B2.1	B2.4	B1.1
24	<A1.0	<A1.0	A7.8	<A1.0	A5.0	A6.6	B2.9	A2.0	B2.0	B2.0	B2.2	B1.4
25	<A1.0	<A1.0	A3.9	<A1.0	B1.2	A7.2	B1.7	A2.3	B3.6	B3.6	B1.6	B1.2
26	<A1.0	<A1.0	B1.1	A1.4	B1.3	B1.6	B1.0	A5.5	B4.3	B4.3	B2.1	B1.7
27	A2.0	A1.8	B1.5	A2.1	A5.0	A8.7	A7.8	A6.3	B3.9	B3.9	B1.6	B1.5
28	A3.7	A1.4	A8.4	A1.4	A4.2	B1.4	B1.7	A6.5	B6.6	B6.6	B1.4	A9.9
29	A4.3	<A1.0	A4.8	A1.0	A5.6	B2.3	B1.0	A6.7	B5.0	B5.0	B1.4	A9.1
30	A5.2	A1.3	A3.6	A5.7	A2.7	B8.6	B2.4	A8.6	B4.6	B4.6	B1.6	B1.2
31	A2.3		A2.0		A1.1	B1.6		A8.2			B1.5	A6.6

ACTIVE PROMINENCES AND FILAMENTS

JANUARY 1998

Day	Event Type	Start (UT)	End (UT)	Lat	CMD	CMP Mo	CMP Day	Imp	Extent	Blue Shift (.1 A)	Red Shift (.1 A)	Obs Type	Sta	NOAA/ USAF Reg#	Remarks
01	DSD	1246E	1836D	S29	W07	01	1.0		03	9	9	E	RAMY	8130	
01	DSD	1535E	1608D	N21	W33	12	30.2		01	9	9	E	RAMY	8126	
01	DSD	1905E	2015	N21	W35	12	30.2		02	7	3	E	RAMY	8126	
02	DSD	0312E	0512D	S28	W12	01	1.2		02	9	9	E	LEAR	8130	
02	ADF	0400E	1025	N25	E52	01	6.2	1	06	5	9	E	LEAR		
02	DSD	0615E	1025	N22	W59	12	28.8		04	9	9	E	LEAR		
02	ASR	0635E	1025	S19	W90	12	26.5			7	9	E	LEAR	8124	
02	ADF	0815E	1025	N36	W15	01	1.1		15	7	9	E	LEAR		
02	DSF	1025U	2209U	N44	E21	01	4.2	2	15	0	0	E	LEAR		
02	BSD	1356	1436D	N20	W63	12	28.9		03	9	9	E	RAMY		Flare Associated
02	ADF	1422E	2120	N37	W20	01	1.0	1	15	8	9	E	HOLL		
02	DSD	1608E	1648D	S29	W15	01	1.5		01	9	9	E	RAMY	8130	
02	DSD	1617	1636	S30	W16	01	1.4		02	9	9	E	HOLL	8130	
02	DSD	1626E	1641D	S30	W15	01	1.5		02	7	4	E	RAMY	8130	Flare Associated
02	ASR	2240E	0600D	S17	W90	12	27.2			7	8	E	LEAR	8124	
03	ADF	0010E	0900D	N47	W03	01	2.7	1	13	7	7	E	LEAR		
03	ASR	0235E	0600D	N28	E73	01	8.8			5	5	E	LEAR		
03	ADF	0307E	1022D	N28	W46	12	30.6		05	4	9	E	LEAR	8126	
03	DSF	1035U	2210U	N31	W09	01	2.7	2	14	0	0	E	LEAR		
04	ADF	0738E	1447	N32	W51	12	31.3	1	20	8	8	E	SVTO	8126	
04	AFS	0745E	1134D	S27	W33	01	1.7		02	9	9	E	SVTO	8130	
04	AFS	0830E	1447	S06	E03	01	4.6		01	7	7	E	SVTO		
04	ADF	1150E	1447	S35	W40	01	1.3	1	08	9	9	E	SVTO	8130	
05	BSD	0152	0218	S28	W48	01	1.3		03	9	9	E	LEAR	8130	
05	DSD	1153E	1249D	S21	W44	01	2.1		01	9	9	E	SVTO	8130	
05	DSD	1320E	1410	N26	W47	01	1.9		01	9	9	E	SVTO	8129	
05	AFS	1600E	2217	N27	W49	01	1.8		01	8	5	E	HOLL	8129	
05	ADF	1600E	2126	N31	W68	12	31.3	1	12	8	7	E	RAMY	8126	
05	ASR	1620E	2217	N20	W90	12	29.9			7	6	E	HOLL	8126	
05	APR	1630E	2217	N31	W90	12	29.7	1		9	9	E	HOLL		
06	APR	1704	0004	N31	W90	12	30.7	1		9	9	E	HOLL		
06	APR	2306E	1045	N30	W90	12	31.0			9	9	E	LEAR	8129	
07	BSD	1620	1626	N26	W76	01	1.8		04	0	0	E	HOLL	8129	
07	BSD	1624E	1646D	N24	W73	01	2.0		08	4	5	E	RAMY	8129	
07	ASR	2342E	1053	N31	W90	12	31.9			9	9	E	LEAR	8129	
08	ASR	0805E	1134D	N22	W90	01	1.4			9	9	E	SVTO	8129	
08	APR	1700E	1807D	N20	E90	01	15.6	1		5	8	E	RAMY		
09	ADF	0525E	1041	S27	E42	01	12.5	1	06	5	6	E	LEAR		
09	ADF	2030E	0005	S33	E37	01	12.8	1	05	9	9	E	HOLL		
09	DSD	2050E	2153D	S30	E37	01	12.8		02	0	0	E	HOLL		
09	DSD	2100E	2240D	S33	E33	01	12.5		03	7	6	E	HOLL		
10	AFS	0042E	1035	S29	E29	01	12.3		01	4	6	E	LEAR		
10	AFS	0805E	1406D	S27	E27	01	12.4		02	9	9	E	SVTO		
10	ADF	0810E	1513	S28	E28	01	12.5	1	22	9	9	E	SVTO		
10	DSF	1035U	2223U	S27	E27	01	12.5	2	07	0	0	E	LEAR	8131	
10	AFS	1836	0005	S27	E21	01	12.4		01	9	8	E	HOLL	8131	
10	AFS	2003E	2022	S25	E20	01	12.4		01	5	5	E	RAMY	8131	
10	DSF	2022U	1115U	S23	E23	01	12.6	2	05	0	0	E	RAMY	8131	
10	ADF	2030E	0004	S33	E37	01	13.8	1	05	9	9	E	HOLL		
10	DSD	2050E	2153D	S30	E37	01	13.8		02	0	0	E	HOLL		
10	DSD	2100E	2240D	S33	E33	01	13.5		03	7	6	E	HOLL		
10	DSD	2345	0219	S23	E26	01	13.0		02	0	0	E	LEAR	8131	
11	ASR	0309E	1025	N08	E90	01	17.9			9	9	E	LEAR		
11	AFS	0324	0958D	S01	E35	01	13.7		01	4	3	E	LEAR		
11	ASR	0735E	1514	N11	E88	01	17.9			9	9	E	SVTO		
11	AFS	0903E	1514	S20	E09	01	12.1		02	9	9	E	SVTO		
11	AFS	1115E	1955	S19	E08	01	12.1		01	8	9	E	RAMY		
11	ASR	1201E	1600D	N13	E81	01	17.6			5	5	E	RAMY		
11	DSD	1330E	1420D	S18	E08	01	12.2		01	5	7	E	RAMY		
11	ASR	1635E	1955	N13	E79	01	17.6			4	5	E	RAMY		

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Day	Event Type	Start (UT)	End (UT)	Lat	CMD	CMP Mo	CMP Day	Imp	Extent	Blue Shift (.1 A)	Red Shift (.1 A)	Obs Type	Sta	NOAA/ USAF Reg#	Remarks
12	DSD	0756E	0815D	S24	E14	01	13.4		03	9	9	E	SVTO	8131	
12	AFS	0756E	1501	S24	E09	01	13.0		02	9	9	E	SVTO	8131	
12	DSD	0829E	1501	S24	E14	01	13.4		05	9	9	E	SVTO	8131	Flare Associated
12	ASR	0830E	1430D	N26	W90	01	5.4			9	9	E	SVTO		
12	DSD	0913E	0923D	S24	E06	01	12.8		03	9	9	E	SVTO	8131	Flare Associated
12	DSD	1130E	2023	S24	E05	01	12.9		03	9	9	E	RAMY	8131	
12	DSD	1144E	1311D	S25	E05	01	12.9		05	9	9	E	SVTO	8131	Flare Associated
12	AFS	1215E	2023	S23	E06	01	13.0		02	9	9	E	RAMY	8131	
12	AFS	1219E	1851D	S19	W05	01	12.1		01	5	5	E	RAMY	8132	
12	AFS	1230E	1430D	S20	W07	01	12.0		01	9	9	E	SVTO	8132	
12	DSD	1301E	1609D	S23	E12	01	13.5		02	9	9	E	RAMY	8132	
12	AFS	1302E	2023	S23	E09	01	13.2		01	9	9	E	RAMY	8131	
12	AFS	1423E	0007	S23	E06	01	13.1		02	9	9	E	HOLL	8131	
12	DSD	1559	1633	S23	E09	01	13.3		01	9	9	E	HOLL	8131	
12	DSD	1826	1900	S16	E01	01	12.8		04	9	9	E	HOLL	8131	
12	DSD	2152	2330	S20	E06	01	13.4		02	7	9	E	HOLL	8131	
13	DSD	0133E	0600D	S22	E02	01	13.2		02	9	9	E	LEAR	8131	
13	ASR	0500E	D	S22	E82	01	19.5			7	7	E	LEAR		
13	APR	0600E	1015	N37	W90	01	6.0			7	7	E	LEAR		
13	DSD	0812	0817	S19	W20	01	11.8		01	9	9	E	LEAR	8132	
13	AFS	1255E	1837D	S19	W19	01	12.1		01	5	6	E	RAMY	8132	
13	AFS	1423E	0008	S23	W08	01	13.0		02	7	6	E	HOLL	8131	
13	DSD	1548	1720	S22	W06	01	13.2		02	9	9	E	HOLL	8131	
13	DSD	1558E	2154	S21	W07	01	13.1		02	9	9	E	RAMY	8131	
13	AFS	1558E	2154	S22	W05	01	13.3		01	9	9	E	RAMY	8131	
13	BSD	1600	1621	S19	E79	01	19.7		08	9	9	E	HOLL	8135	
13	AFS	1712	0008	S19	W77	01	7.8		02	9	9	E	HOLL	8135	
13	DSD	1822	1847	S22	W08	01	13.1		03	9	8	E	HOLL	8131	Flare Associated
13	ADF	2330E	1025D	S21	W13	01	13.0		03	9	9	E	LEAR	8131	
14	AFS	0007E	1025D	S21	W11	01	13.2		02	9	9	E	LEAR	8131	
14	DSD	0805	0810	S22	W18	01	12.9		02	9	9	E	LEAR	8131	
14	AFS	0812E	1411	S22	W16	01	13.1		05	9	9	E	SVTO	8131	
14	ADF	1000E	1411	S20	W26	01	12.4	1	10	9	9	E	SVTO	8131	
14	AFS	1129E	2155	S22	W16	01	13.2		02	9	9	E	RAMY	8131	
14	DSD	1228E	1656D	S20	W29	01	12.3		02	9	9	E	RAMY	8132	
14	DSD	1406E	1656D	N15	E39	01	17.5		03	9	9	E	RAMY	8134	
14	DSD	1410E	2155	S23	W20	01	13.0		02	9	9	E	RAMY	8131	
14	BSD	1619	1725D	S25	W16	01	13.4		05	9	9	E	HOLL	8131	Flare Associated
14	AFS	1710E	0009	S22	W22	01	13.0		01	9	9	E	HOLL	8131	
14	BSD	2034	2105D	S22	W19	01	13.4		02	9	9	E	RAMY	8131	Flare Associated
14	AFS	2250E	0009	N15	E04	01	15.2		01	7	6	E	HOLL		
15	ADF	0208E	1015	S20	W39	01	12.1	1	03	4	5	E	LEAR	8132	
15	AFS	0208E	1015	S22	W27	01	13.0		02	7	7	E	LEAR	8131	
15	DSD	1158E	2035	S22	W32	01	13.0		03	9	9	E	RAMY	8131	
15	AFS	1526E	2035	N15	W05	01	15.3		01	9	9	E	RAMY		
15	AFS	1605E	2326	S22	W32	01	13.2		01	9	9	E	HOLL	8131	
15	AFS	1915E	2035	S22	W35	01	13.1		01	9	9	E	RAMY	8131	
15	AFS	2135E	2326	N16	W08	01	15.3		01	7	8	E	HOLL		
16	DSD	0727E	0846	S23	W42	01	13.1		02	0	0	E	LEAR	8131	
16	AFS	0727E	1027	N15	W15	01	15.2		01	8	8	E	LEAR		
16	AFS	0727E	1027	S17	E17	01	17.6		01	3	5	E	LEAR		
16	AFS	0727E	1027	S21	W42	01	13.1		01	4	4	E	LEAR	8131	
16	AFS	1127E	2119	N15	W15	01	15.3		01	9	9	E	RAMY	8136	
16	AFS	1128E	2119	S16	E16	01	17.7		01	9	9	E	RAMY	8137	
16	DSD	1205E	2119	S22	W41	01	13.3		03	9	9	E	RAMY	8131	
16	AFS	1506E	0010	N16	W19	01	15.2		01	9	9	E	HOLL	8136	
16	AFS	1506E	0010	S17	E13	01	17.6		01	4	4	E	HOLL	8137	
16	AFS	1506E	0010	S19	E32	01	19.1		01	6	5	E	HOLL	8135	
16	DSD	1550E	2119	S43	W47	01	12.8		03	9	9	E	RAMY	8138	
16	AFS	1552E	2119	S42	W46	01	12.9		01	9	9	E	RAMY	8138	
16	DSD	1623	1634	S20	E32	01	19.1		02	0	0	E	HOLL	8135	
16	DSD	1640E	0010	S41	W49	01	12.7		03	9	9	E	HOLL	8138	
16	DSD	1640E	2119	S19	E32	01	19.1		01	6	9	E	RAMY	8135	
16	AFS	2308E	0011	N17	W21	01	15.4		01	6	7	E	LEAR	8136	
16	AFS	2308E	1035	S19	W49	01	13.2		01	5	5	E	LEAR	8131	

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Day	Event Type	Start (UT)	End (UT)	Lat	CMD	CMP Mo	CMP Day	Imp	Extent	Blue Shift (.1 A)	Red Shift (.1 A)	Obs Type	Sta	NOAA/ USAF Reg#	Remarks
16	DSD	2308E	2334	S20	W47	01	13.4		04	0	0	E	LEAR	8131	
16	AFS	2345	1035	S39	W51	01	12.8		01	4	5	E	LEAR	8138	
16	DSD	2354	0322	N11	E53	01	21.0		03	9	9	E	LEAR		
17	DSD	0101	1035	S20	W49	01	13.3		03	9	9	E	LEAR	8131	
17	AFS	0328	1035	N16	W23	01	15.4		01	4	5	E	LEAR	8136	
17	AFS	1230E	1943	S19	E21	01	19.1		01	5	4	E	RAMY	8135	
17	DSD	1324	1943	S25	W58	01	13.1		01	9	9	E	RAMY	8131	
17	AFS	1422E	2210	S19	E21	01	19.2		01	7	6	E	HOLL	8135	
18	DSD	1257E	1630D	N22	W44	01	15.1		03	9	9	E	RAMY	8136	
18	ASR	1257E	1910D	S20	W88	01	11.8			5	6	E	RAMY		
18	ASR	1259E	1630D	S50	W89	01	11.0			4	5	E	RAMY		
18	AFS	1422E	0012	S17	E04	01	18.9		01	6	7	E	HOLL	8135	
18	AFS	1425E	1500	S12	W41	01	15.5		01	9	9	E	SVTO		
18	AFS	1815E	2036	N17	W48	01	15.1		01	5	5	E	RAMY	8136	
18	DSD	1827E	2002D	S15	W14	01	17.7		02	6	6	E	RAMY	8137	
18	AFS	2315E	0758D	S16	E01	01	19.0		02	5	6	E	LEAR	8135	
18	ASR	2345E	1012	N30	W87	01	12.1			7	9	E	LEAR		
19	AFS	0138E	1030	S09	W48	01	15.5		02	9	9	E	LEAR		
20	AFS	1306E	1631D	S16	W19	01	19.1		01	5	6	E	RAMY	8135	
20	DSD	1346E	2008D	N14	E06	01	21.0		01	5	6	E	RAMY	8139	
20	AFS	1540E	2125	N23	E41	01	23.8		01	5	4	E	HOLL	8141	
20	AFS	1604E	2150	N24	E41	01	23.8		01	9	9	E	RAMY	8141	
20	DSD	2043E	2150	N25	E34	01	23.5		02	9	9	E	RAMY	8141	
20	DSF	2150U	1139U	S52	E18	01	22.4	2	35	0	0	E	RAMY		
21	ADF	0100E	0959	S19	W26	01	19.0		03	6	6	E	LEAR	8135	
21	ADF	0130E	0523	N22	E35	01	23.7		03	6	6	E	LEAR	8141	
21	AFS	0359	0833	N14	W03	01	20.9		01	4	4	E	LEAR	8139	
21	DSF	0400	0603	S57	E19	01	22.8	2	35	0	0	E	LEAR		
21	DSD	1338E	1616D	N26	E28	01	23.7		01	9	9	E	RAMY	8141	
21	ADF	1401E	1615D	N17	W07	01	21.0	1	07	9	9	E	RAMY	8139	
21	ASR	1450	1630D	N18	W90	01	14.8			9	9	E	RAMY	8136	
21	ASR	1545E	2020	S12	W90	01	14.9			6	6	E	RAMY	8140	
21	DSF	2150U	1139U	S52	E18	01	23.4	2	35	0	0	E	RAMY		
21	ASR	2236E	0538	S12	W90	01	15.2			5	6	E	LEAR	8140	
21	ASR	2236E	1052	S36	E85	01	28.8			6	9	E	LEAR		
22	ADF	0010E	0444	N15	W14	01	20.9		02	7	6	E	LEAR	8139	
22	ASR	0130E	1052	N26	W90	01	15.1			5	7	E	LEAR	8136	
22	ASR	0640E	1052	N12	E89	01	29.0			7	9	E	LEAR		
22	BSL	1017U	1030	N23	W90	01	15.6	1	02	9	9	V	KHAR		
22	BSL	1033	1110	N12	E90	01	29.3	1	03	9	9	V	KHAR		
22	ASR	1248E	1420D	N24	W90	01	15.6			9	9	E	RAMY	8136	
22	AFS	1307E	1715D	S21	E11	01	23.4		01	5	3	E	RAMY	8142	
22	ASR	1308E	1955D	N11	E90	01	29.3			9	9	E	RAMY		
22	DSD	1323E	1812D	S21	E12	01	23.5		02	9	9	E	RAMY	8142	
22	ASR	1547E	2049	N26	E90	01	29.6			9	9	E	RAMY		
22	DSD	1934	2015D	S37	E78	01	29.1		02	9	9	E	RAMY	8143	Flare Associated
22	DSD	2111E	0016	N27	E12	01	23.8		03	7	8	E	HOLL	8141	
23	AFS	0830E	1451	N20	E00	01	23.3		05	9	9	E	SVTO	8142	
23	ADF	1100E	1451	S38	E66	01	28.8	1	05	9	9	E	SVTO	8143	
23	AFS	1202E	2155	S21	W02	01	23.3		01	9	9	E	RAMY	8142	
23	DSD	1204E	2155	S35	E65	01	28.7		02	9	9	E	RAMY	8143	
23	AFS	1204E	2155	S37	E66	01	28.8		01	8	6	E	RAMY	8143	
23	AFS	1433E	2306	S23	W05	01	23.2		02	8	8	E	HOLL	8142	
23	AFS	1545E	2306	S37	E66	01	29.0		02	9	8	E	HOLL	8143	
23	AFS	1806E	2306	N24	E01	01	23.8		02	9	9	E	HOLL	8141	
23	DSD	1922E	2155	S21	W07	01	23.3		02	9	9	E	RAMY	8142	
23	DSD	2050	2102	S36	E55	01	28.3		04	9	9	E	HOLL	8143	Flare Associated
24	DSD	0118E	0212	N27	E49	01	27.9		02	0	0	E	LEAR		
24	AFS	1145E	2151	S21	W16	01	23.3		01	7	4	E	RAMY	8142	
24	DSD	1225E	2151	S19	W18	01	23.1		01	9	9	E	RAMY	8142	
24	AFS	1515E	0018	S20	W19	01	23.2		01	9	9	E	HOLL	8142	
24	AFS	1517E	0018	S25	E16	01	25.9		01	9	9	E	HOLL		

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Day	Event Type	Start (UT)	End (UT)	Lat	CMD	CMP Mo	CMP Day	Imp	Extent	Blue Shift (.1 A)	Red Shift (.1 A)	Obs Type	Sta	NOAA/ USAF Reg#	Remarks
24	AFS	1520E	0018	S41	E53	01	29.0		01	6	5	E	HOLL	8143	
24	ADF	1532E	2151	S21	W18	01	23.3	1	03	9	9	E	RAMY	8142	
24	AFS	1605E	2151	S24	E16	01	25.9		01	6	4	E	RAMY		
24	AFS	1608E	2151	S37	E56	01	29.2		01	6	5	E	RAMY	8143	
24	DSD	1615E	2049D	N13	E66	01	29.6		02	9	9	E	RAMY	8146	
24	ADF	1715E	0018	S25	W21	01	23.1	1	09	9	9	E	HOLL	8143	
24	ADF	2250E	0740D	S37	E56	01	29.5		04	8	9	E	LEAR	8143	
24	AFS	2250E	1015	S19	W08	01	24.3		01	9	9	E	LEAR	8142	
24	AFS	2250E	1015	S37	E60	01	29.8		02	9	9	E	LEAR	8143	
24	AFS	2320E	1000	S18	W22	01	23.3		02	9	9	E	LEAR	8142	
24	AFS	2322E	1000	S38	E48	01	28.8		02	7	8	E	LEAR	8143	
25	DSD	0230	1000D	N13	E58	01	29.5		02	8	9	E	LEAR	8146	
25	AFS	0808E	1324	S21	W25	01	23.4		02	9	9	E	SVTO	8142	
25	AFS	0808E	1324	S37	E41	01	28.6		02	9	9	E	SVTO	8143	
25	DSF	0945U	2323U	N24	E27	01	27.5		10	0	0	E	LEAR		
25	AFS	1145E	1943	S19	W30	01	23.2		02	9	9	E	RAMY	8142	
25	AFS	1146E	1943	S18	E43	01	28.8		02	9	9	E	RAMY	8143	
25	AFS	1148E	1903D	S22	E06	01	25.9		02	4	5	E	RAMY	8147	
25	BSD	1228	1607D	S37	E45	01	29.1		01	7	8	E	RAMY	8143	
25	AFS	1235E	1636D	N24	W22	01	23.8		02	4	5	E	RAMY	8141	
25	AFS	1330E	1943	N13	E54	01	29.6		01	7	8	E	RAMY	8146	
25	AFS	1550E	0118	S20	W34	01	23.0		01	9	9	E	HOLL	8142	
25	AFS	1555E	0118	N13	E53	01	29.7		01	9	9	E	HOLL	8146	
25	ADF	1610E	2130D	S16	W35	01	23.0	1	05	9	9	E	HOLL	8142	
25	DSD	1635E	1943	S36	E34	01	28.4		01	9	9	E	RAMY	8143	
25	ADF	1809E	1943	S17	W32	01	23.3	1	05	9	9	E	RAMY	8142	
25	DSD	2141	2205	N23	E52	01	29.9		03	9	9	E	HOLL	8145	Flare Associated
25	AFS	2307E	1042	S20	W37	01	23.1		03	9	9	E	LEAR	8142	
25	AFS	2325E	1042	N13	E48	01	29.6		02	9	9	E	LEAR	8146	
26	DSD	0701E	1042	N24	E45	01	29.8		02	9	6	E	LEAR	8145	
26	DSD	0912	0930	S36	E36	01	29.1	1	02	0	9	V	KHAR		
26	AFS	0915E	1015	S17	W38	01	23.5		02	9	9	E	SVTO	8142	
26	AFS	0917E	1015	S31	E40	01	29.5		04	9	9	E	SVTO	8143	
26	DSD	0956	1008	S34	E27	01	28.5	1	03	9	9	V	KHAR		
26	DSD	1013U	1023	N28	E45	01	29.8	1	02	9	9	V	KHAR		
26	ADF	1102U	1115D	S38	E36	01	29.2	1	07	0	9	V	KHAR		
26	AFS	1229E	1703D	S18	W44	01	23.2		01	7	7	E	RAMY	8142	
26	AFS	1231E	2155	S38	E29	01	28.9		01	9	9	E	RAMY	8143	
26	AFS	1233E	2155	N27	E44	01	29.9		02	5	8	E	RAMY	8145	
26	AFS	1240E	2155	N13	E42	01	29.7		01	5	5	E	RAMY	8146	
26	AFS	1244E	1953D	S23	W08	01	25.9		01	7	6	E	RAMY	8147	
26	BSD	1300E	1304D	S38	E33	01	29.2		01	7	6	E	RAMY	8143	
26	AFS	1420E	0019	N12	E41	01	29.7		01	9	9	E	HOLL	8146	
26	AFS	1420E	0019	S21	W43	01	23.3		01	9	9	E	HOLL	8142	
26	AFS	1420E	0019	S37	E23	01	28.4		01	5	6	E	HOLL	8143	
26	DSD	1552	1601	S20	W44	01	23.3		03	0	0	E	HOLL	8142	
26	DSD	1614	1953D	S18	W42	01	23.5		04	9	9	E	RAMY	8142	Flare Associated
26	DSD	2017E	2155	S37	E22	01	28.6		01	9	9	E	RAMY	8143	
26	DSD	2330	2243	S22	W57	01	22.6		10	9	9	E	HOLL	8142	Flare Associated
27	AFS	0015E	0708	S19	W52	01	23.0		01	9	9	E	LEAR	8142	
27	AFS	0015E	0708	S34	E14	01	28.1		02	5	7	E	LEAR	8143	
27	DSD	0415E	0432	S35	E15	01	28.4		02	0	0	E	LEAR	8143	
27	AFS	0913E	1430	S35	E11	01	28.3		04	9	9	E	SVTO	8143	
27	AFS	1208E	1950	N14	E27	01	29.5		01	9	9	E	RAMY	8146	
27	AFS	1208E	1950	S34	E10	01	28.3		02	9	9	E	RAMY	8143	
27	DSD	1208E	1950	S35	E11	01	28.4		02	9	9	E	RAMY	8143	
27	AFS	1215E	1430	N13	E27	01	29.5		03	9	9	E	SVTO	8146	
27	AFS	1419E	2305	S36	E09	01	28.3		02	9	9	E	HOLL	8143	
27	AFS	1426E	1950	S36	E17	01	29.0		01	9	9	E	RAMY	8143	
27	DSD	1531	1552D	S37	E20	01	29.2		06	9	9	E	RAMY	8143	
28	DSF	0437U	0143U	N10	E09	01	28.9	2	01	0	0	E	LEAR	8144	
28	AFS	0918E	1510	N11	E10	01	29.1		02	7	7	E	SVTO	8145	
28	DSD	0951	0958	S35	E24	01	30.2	1	02	9	9	V	KHAR		
28	DSD	1004	1015	S34	E27	01	30.5	1	01	0	9	V	KHAR		
28	DSD	1022	1036	S37	E29	01	30.6	1	03	2	9	V	KHAR		
28	DSD	1040	1055	S35	E24	01	30.3	1	03	9	9	V	KHAR		

ACTIVE PROMINENCES AND FILAMENTS

JANUARY 1998

Day	Event Type	Start (UT)	End (UT)	Lat	CMD	CMP Mo	CMP Day	Imp	Extent	Blue Shift (.1 A)	Red Shift (.1 A)	Obs Type	Sta	NOAA/ USAF Reg#	Remarks
28	AFS	1225E	2200	N14	E13	01	29.5		01	7	8	E	RAMY	8146	
28	DSD	1237E	2200	S34	W07	01	28.0		05	9	9	E	RAMY	8143	
28	ADF	1405E	1510	N22	E12	01	29.5	1	08	9	9	E	SVTO	8144	
28	ADF	1405E	1510	N25	E18	01	30.0	1	04	9	9	E	SVTO	8145	
28	DSD	1405E	1510	S39	E06	01	29.1		04	9	9	E	SVTO	8143	
28	DSD	1421E	2200	N28	E17	01	29.9		02	9	9	E	RAMY	8145	
28	AFS	1508E	0022	N13	E10	01	29.4		02	6	5	E	HOLL	8146	
28	DSD	1508E	2010	N26	E16	01	29.9		02	7	6	E	HOLL	8145	
28	DSD	1644	0022	S31	W12	01	27.7		03	9	9	E	HOLL	8143	
28	DSD	2048	2149	N25	E10	01	29.6		03	9	9	E	HOLL	8145	
29	AFS	0034E	0408	N14	E06	01	29.5		01	5	6	E	LEAR	8146	
29	AFS	0034E	0408	N27	E11	01	29.9		02	5	6	E	LEAR	8145	
29	ASR	0207E	0408	N24	W87	01	22.4			9	9	E	LEAR	8141	
29	ASR	0207E	0408	S21	W88	01	22.3			6	6	E	LEAR	8142	
29	ADF	0918E	1133	N30	E07	01	29.9	1	04	9	9	E	SVTO	8145	
29	ASR	0920E	1133	N23	W90	01	22.4			9	9	E	SVTO	8141	
29	AFS	1417E	0021	N14	W01	01	29.5		02	9	9	E	HOLL	8146	
29	AFS	1417E	0021	N28	E04	01	29.9		01	6	5	E	HOLL	8145	
29	AFS	1417E	0021	S34	W16	01	28.3		01	6	6	E	HOLL	8143	
29	AFS	1420E	2035	N10	W01	01	29.5		01	4	4	E	RAMY	8146	
29	AFS	1421E	2035	N26	E05	01	30.0		01	5	4	E	RAMY	8145	
29	DSD	1429	1730D	S26	W48	01	25.9		03	7	7	E	RAMY	8147	
29	ASR	1440	2035	N22	W90	01	22.7			9	9	E	RAMY	8141	
29	DSD	1559E	1900D	N29	E02	01	29.8		02	0	0	E	RAMY	8145	
29	AFS	1711E	2035	N14	W01	01	29.6		02	6	5	E	RAMY	8144	
29	AFS	2339E	1003	N27	W01	01	29.9		02	7	9	E	LEAR	8145	
30	DSD	1741E	1640D	S32	W37	01	27.8		04	6	7	E	HOLL	8143	
30	ADF	1750E	0011	N23	W13	01	29.7	1	04	6	5	E	HOLL		
30	AFS	2315E	0218D	S35	W25	01	29.0		02	8	6	E	LEAR	8143	
31	AFS	0844E	1008D	S21	W18	01	30.0		03	9	9	E	SVTO		
31	AFS	2358E	1041	N27	W28	01	29.8		02	9	9	E	LEAR	8145	

ADF = Active Dark Filament
AFS = Arch Filament System
APR = Active Prominence
ASR = Active Surge Region
BSD = Bright Surge on Disk
BSL = Bright Surge on Limb
CAP = CAP Prominence (Tandberg-Hanssen)
CRN = Coronal Rain
DSD = Dark Surge on Disk
DSF = Disappearing Solar Filament
EPL = Eruptive Prominence on Limb
LPS = Loops
MDP = Mound Prominence
SDF/DSF = Sudden Disappearing Filament
SPY = Spray
SSB = Solar Sector Boundary

For SOLAR SECTOR BOUNDARY REPORTS, the latitude field contains the Carrington longitude of the point where a neutral line crosses the solar equator. The comments field may contain the Carrington longitude and central meridian distance of two more intersection points.

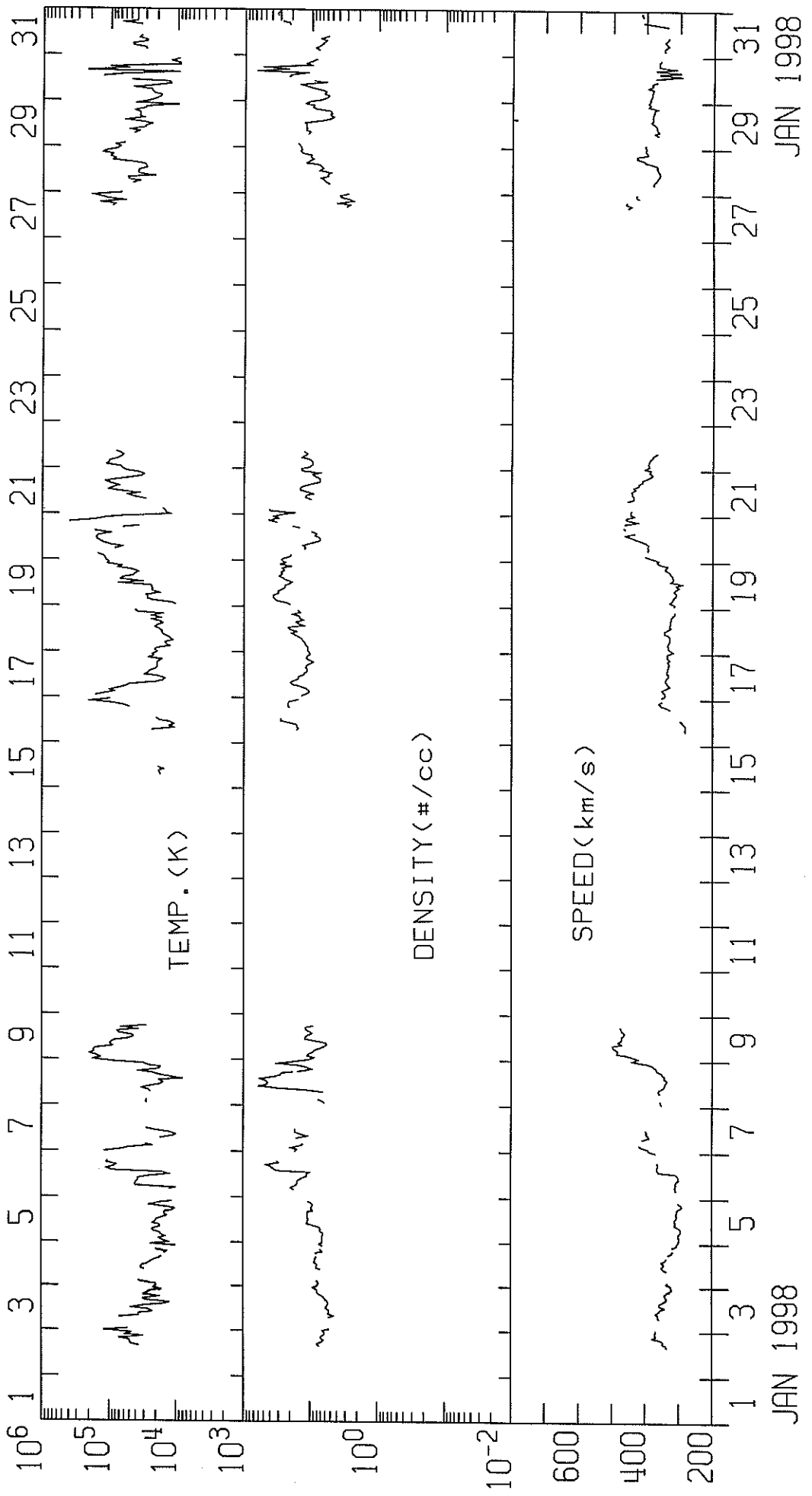
The EXTENT field for limb events is the radial extent above the limb in hundredths of solar radius. For disk events this field contains the heliographic extent in whole degrees.

The remark "Bright Emission 1/3" indicates that bright emission was observed 1/3 of time.
The remark "Normal Emission 1/3" indicates that normal emission was observed 1/3 of time.

Observation Type: C= Cinematographic, E= Electronic, P= Photographic, V= Visual.

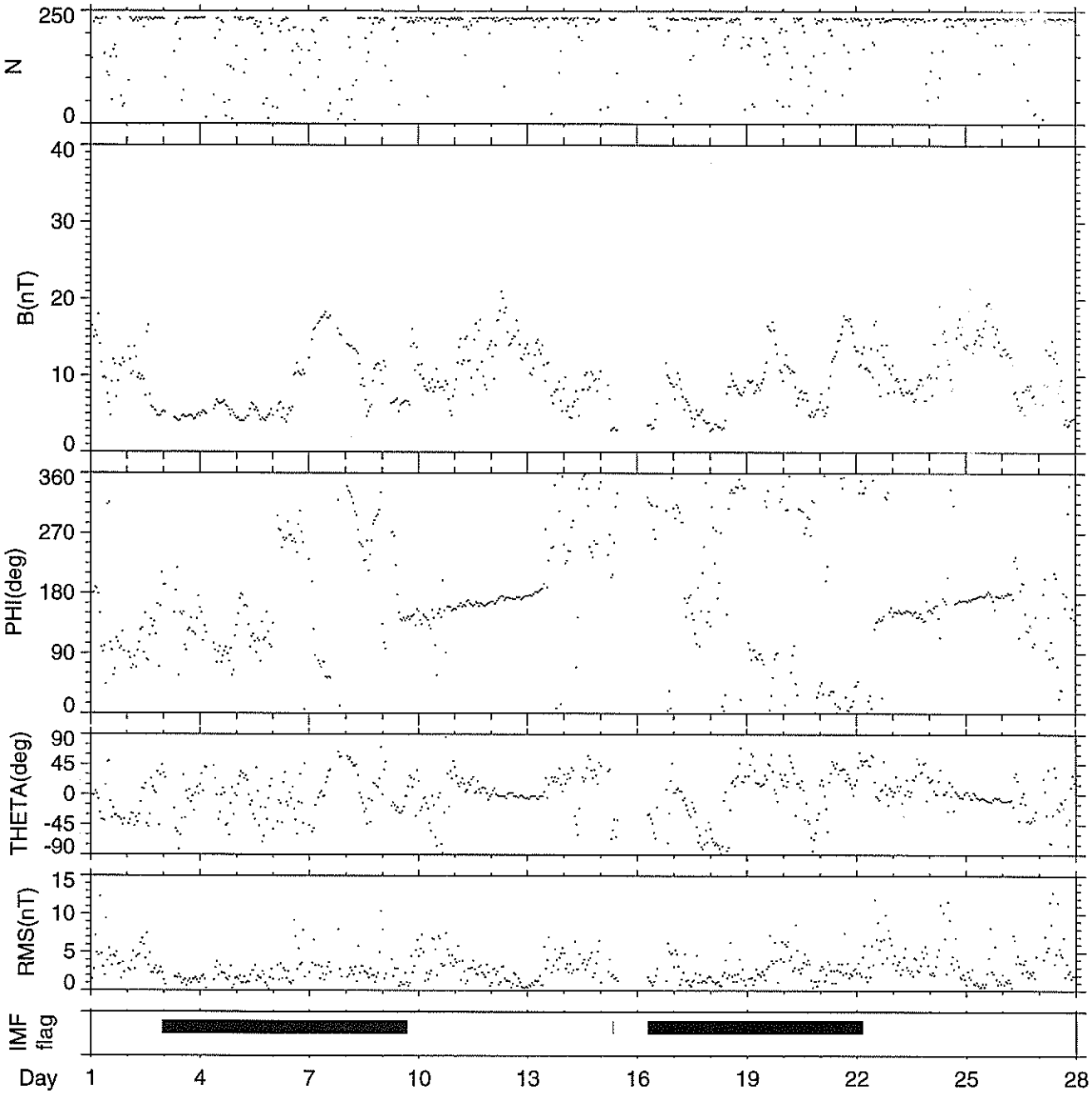
ABST = Abastumani
ATHN = Athens
BUCA = Bucharest
CATA = Catania
HOLL = Holloman
KHAR = Kharkov
LEAR = Learmonth
PALE = Palehua
RAMY = Ramey
SVTO = San Vito
VORO = Voroshilov
VALA = Valasske Mezirici
WROC = Wroclaw

IMP 8 SOLAR WIND PLASMA
JANUARY 1998



IMP-8 Magnetic Field Data in GSE Coordinates

1 Hour Averages (c) DOY 1 - 28 January 1 1998 - January 28 1998

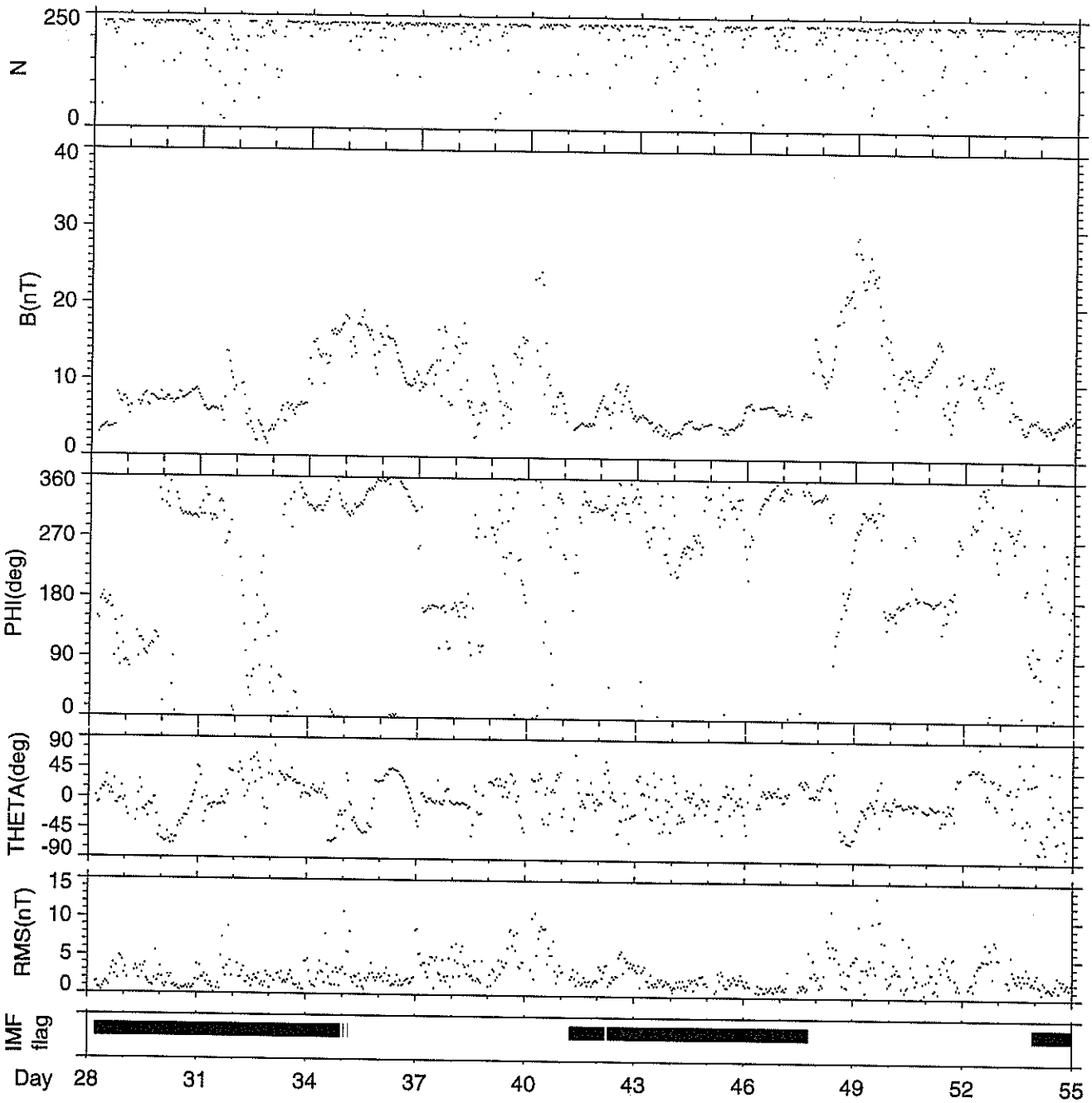


Generation Date : Mon May 11 12:48:18 1998

NOTE: The IMF "flag" (black boxes at the bottom of the plots) indicates where the interplanetary magnetic field regions are according to a dynamic model of the location of the bow shock. At all other times IMP-8 is in the magnetosphere.

IMP-8 Magnetic Field Data in GSE Coordinates

1 Hour Averages (c) DOY 28 - 55 January 28 1998 - February 24 1998



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NOTE: The IMF "flag" (black boxes at the bottom of the plots) indicates where the interplanetary magnetic field regions are according to a dynamic model of the location of the bow shock. At all other times IMP-8 is in the magnetosphere.

CONTENTS

Comprehensive Reports Number 647 Part II

MISCELLANEOUS DATA

Notes on Interplanetary Fluxes of Energetic Particles from SAMPEX.

This issue contains new interplanetary measurements of the flux of energetic electrons, protons, helium nuclei, and heavy ions with Z>6 for the period January to December 1997. These plots are derived from measurements made on NASA's Solar, Anomalous, and Magnetospheric Particle Explorer (SAMPEX). The first of these series of plots appeared in March 1994, along with the original version of these notes.

Two main revisions have occurred since March 1994. One revision is to the 0.5 - 6.6 MeV/nuc He flux, where it has since been recognized that a time-dependent correction is necessary to account for variations in the instrumental efficiency for detecting He. This change was implemented in the republication of data from January to June 1993 and the new publication of data from July to December 1993.

The medium energy proton rate undergoes a change between April and May 1994. Up through April, the data are derived as before from the MAST M12 counting rate, covering an energy range of ~5-10 MeV. The rate for May and later is derived from the MAST Z1sec counting rate, covering a range from ~7-13 MeV. Caution should be used in comparing the absolute fluxes of the medium energy proton rate from before and after the change. The (older) M12-derived rate is systematically higher than the Z1sec-derived rate, both because the older rate included He and heavy ion counts and because of the different energy range. In addition, however, the geometry factor and efficiency factor used for the M12 rate may have been slightly underestimated; the Z1sec rate is expected to be more reliable. This revision was implemented in the publication of the plots from 1994. We have no plans to revise the previously published data, however.

For the convenience of the user, we repeat the following description of these plots, essentially as published in March 1994, with revisions for the current data set.

SAMPEX, the first of NASA's Small Explorer series, was launched in July 1992 into an 82° inclination orbit with an altitude of 520 x 670 km. SAMPEX carries four instruments designed to measure heavy ion composition from ~0.4 to 300 MeV/nuc, proton intensity from ~2 to 85 MeV, and electron intensity from ~0.5 to 30 MeV. The Heavy Ion Large-area Telescope (HILT), built by the Max Planck Institut (Garching) and the Aerospace Corp., is a gas proportional counter, silicon solid-state detector, and scintillating crystal detector system that measures particle energy loss (ΔE) and total energy. The Low-energy Ion Composition Analyzer (LICA), built by the University of Maryland, uses microchannel plates and silicon detectors to measure time-of-flight and total energy. The Mass Spectrometer Telescope (MAST) and the Proton Electron Telescope (PET), built by Caltech and Goddard Space Flight Center, are all-silicon detector stacks which measure ΔE - total energy. The instruments and spacecraft are more fully described in IEEE Transactions on Remote Sensing, volume 31, issue 3, 1993.

SAMPEX has access to interplanetary fluxes of solar energetic particles and galactic cosmic rays over the polar portions of its orbit. The intensities displayed here are obtained by averaging selected counting rates (time resolution of 6 seconds) over two polar cap passes, one north and one south, of one orbit, giving a ~90 minute average with a typical duty cycle of ~20%. For the proton, helium, and heavy ion fluxes, the polar cap was defined by averaging data above 70° invariant latitude. For the electron intensity and the 3.2 - 11 MeV proton intensity, the polar cap was defined by averaging above 78° invariant latitude in order to avoid contributions from particles in the radiation belts. Note that because some orbits do not reach 78° latitude, there are periodic gaps in the electron and 3.2 - 11 MeV proton data.

To derive these particle fluxes, the instrument count rates were divided by the appropriate energy interval (in MeV or MeV/nuc) and the effective geometry factor (in cm^2 sr). Each point represents one or more complete orbits. When fluxes are low enough so that fewer than 25 counts are accumulated in a given rate, a point may represent more than one orbit. A horizontal bar indicates the appropriate time interval. The first onset of high intensities is always plotted as an independent point. When an instrument is off or data are not available from an orbit, no point is plotted. Vertical error bars represent statistical uncertainties only.

The user of these data should be warned that while an effort has been made to ensure that the absolute flux levels displayed here are correct, there may be instrumental background that affects the lowest measured flux levels, and instrumental dead-time effects at the very highest flux levels reported here (see also discussion below). As a result, these data are appropriate for identifying the occurrence and magnitude of solar and interplanetary particle events, but caution should be exercised in any quantitative application of the plotted fluxes.

There are several instrumental and spacecraft operations issues that affect the availability of data. Operation of MAST and PET often includes periodic turnoffs for periods of 12 or 24 hours. The HILT sensor is sometimes turned off for a month or more to conserve proportional counter gas. Because of its large geometry factor, HILT cannot operate at the peaks of the largest solar particle events observed.

Since February 1996 SAMPEX has been rotating at 1 RPM in order to investigate angular distributions of trapped particles. All rates have been corrected by a factor of 0.64 to account for the reduction of exposure to interplanetary particles.

- The **2 - 6 MeV electron** flux is derived from the PET ELO rate, based on coincidences between the front two 2-mm-thick silicon detectors with pulse-height limits designed to select electrons exclusively. There is possible background from radiation belt electrons when on some orbits the > 78° invariant latitude selection does not exclude them.
- The **3.2 - 11 MeV proton** flux is derived from the HILT PCFE rate, based on measurements in a gas proportional counter which responds to all ions, and to electrons with a much smaller efficiency. HILT has now used up its consumable gas.
- The **7 - 13 MeV proton** flux is based on the MAST Z1sec rate, based on coincidences between the 2nd and 3rd 115 μm silicon detectors in the MAST detector stack, with a pulse-height and range limit. This rate responds almost exclusively to protons
- The **19 - 28 MeV proton** flux is derived from the PET PLO rate, based on coincidences between the front two 2-mm silicon detectors with pulse height restrictions designed to select protons exclusively.
- The **0.5 - 6.6 MeV/nuc helium** flux is derived from the LICA LOPRI rate. This rate responds to lower-energy heavy ions ($Z \geq 3$) as well as to helium. In some types of solar energetic particle events, these heavy ions may compose up to 50% of the "helium" flux. There is some saturation at peak intensities in the large solar energetic particle event in October-November 1992. The plotted intensity has not been corrected for this effect.
- The **8 - 15 MeV/nuc helium** flux is derived from the MAST Z2 rate, which responds only to helium nuclei.
- The **0.5 - 8.2 MeV/nuc heavy ion** flux is derived from the LICA HIPRI rate, which responds only to nuclei with $Z \geq 3$ and is typically dominated by C, N, and O. The quoted energy range is for oxygen nuclei.
- The **8.2 - 42 MeV/nuc heavy ion** flux is derived from the HILT HiZ1 rate, which responds primarily to nuclei with $Z \geq 6$ and is typically dominated by C, N, and O. The HILT sensor has used up its consumable gas and its rates appear only briefly in the most recent plots.
- The **18 - 50 MeV/nuc heavy ion** flux is derived from the combination of the MAST HIZR1, HIZR2, and HIZR3 rates, which respond only to nuclei with $Z \geq 3$ and are typically dominated by C, N, and O. The quoted energy range is for oxygen nuclei.

Further information is available at: http://lepsam.gsfc.nasa.gov/www/sampex.html. For specific questions on:

MAST, PET or these plots:
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HILT:
Berndt Klecker
Max Planck Institut
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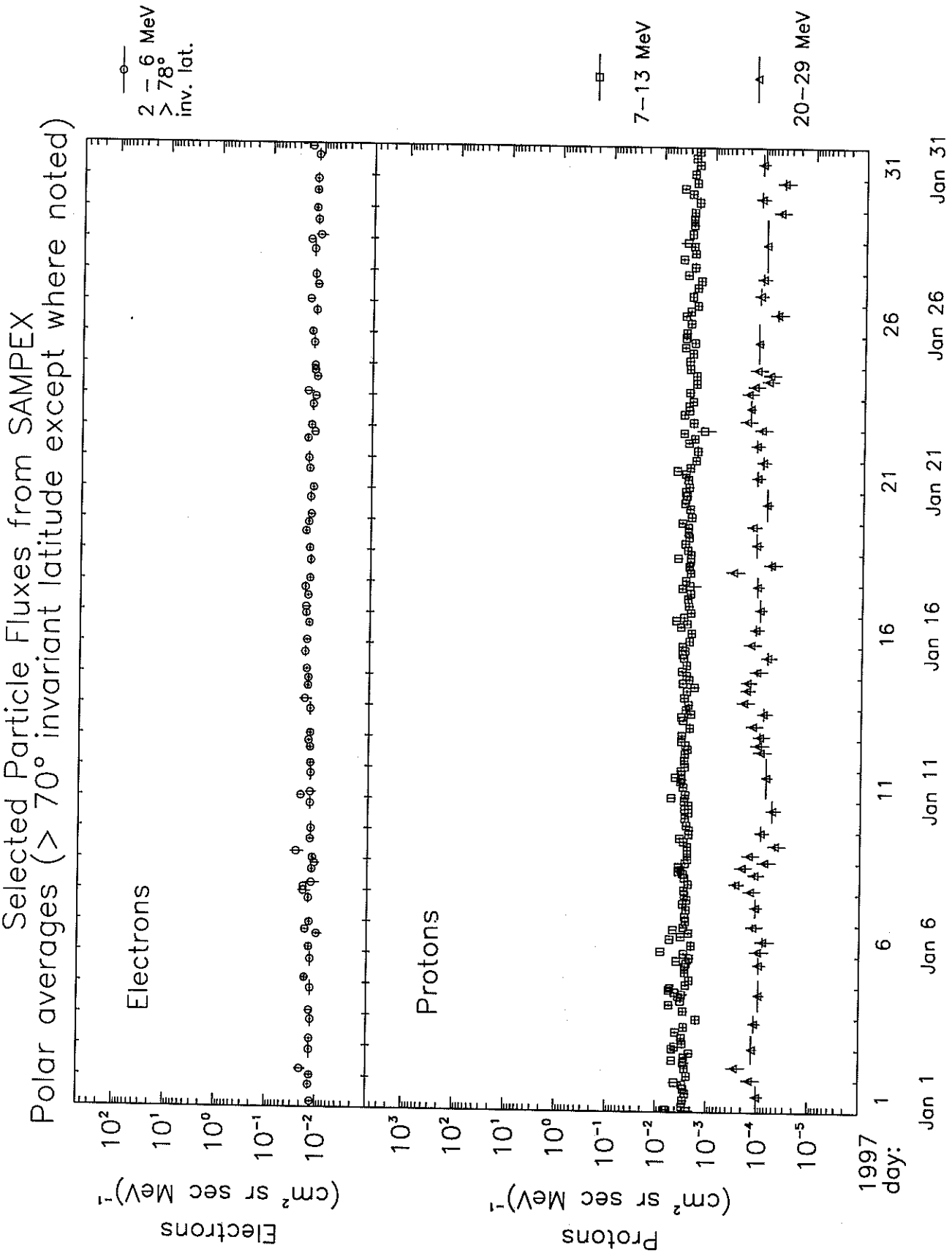
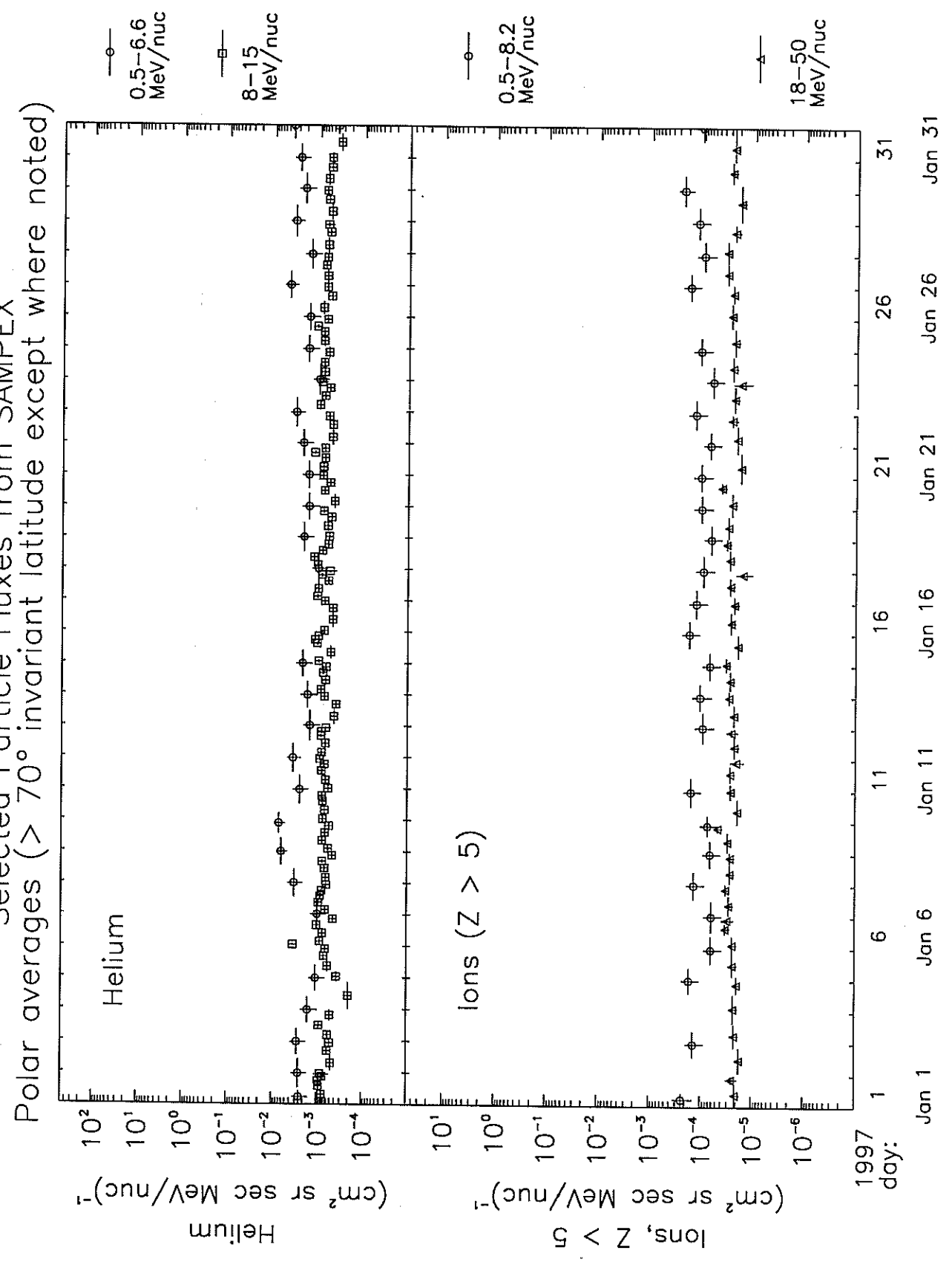
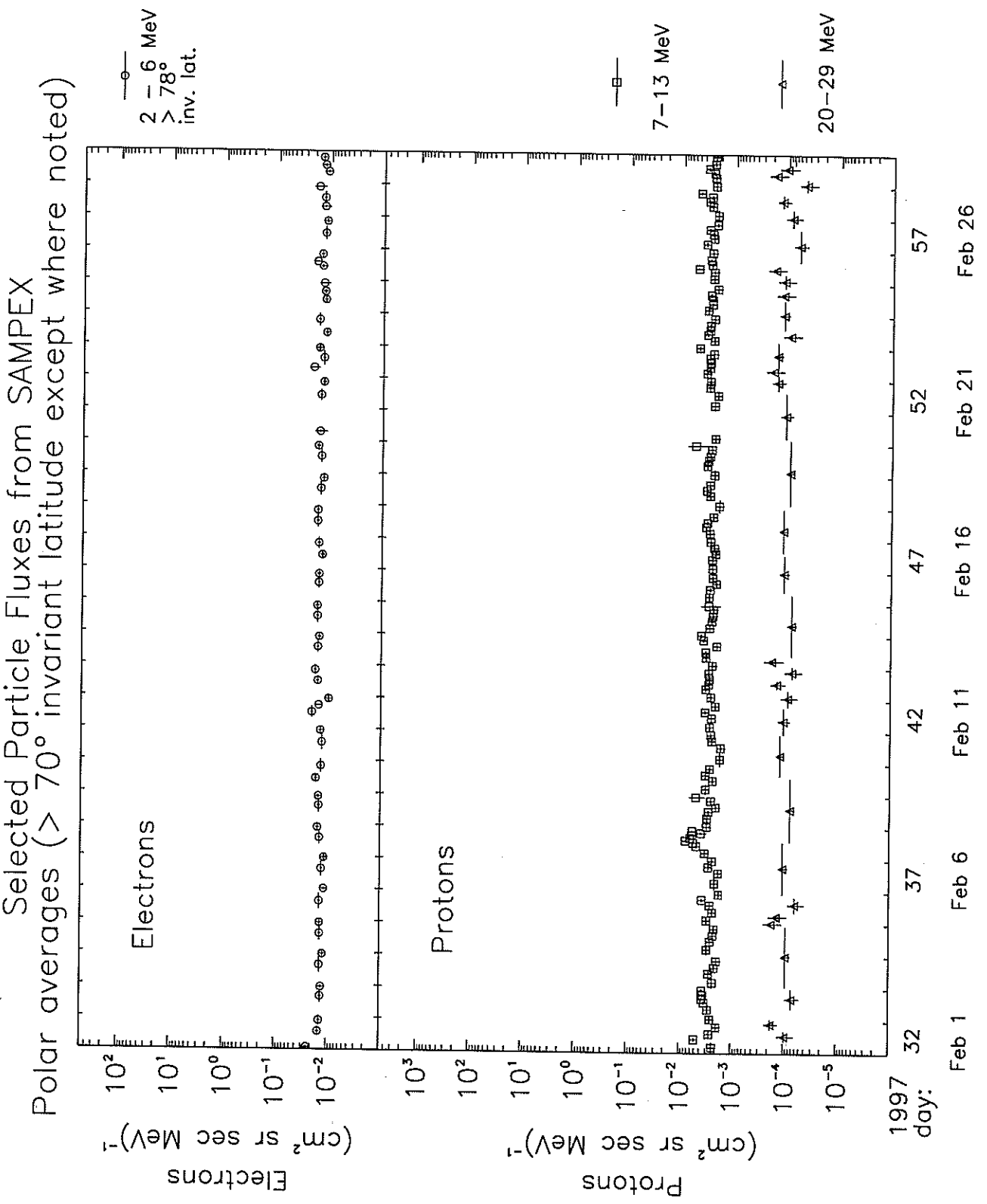
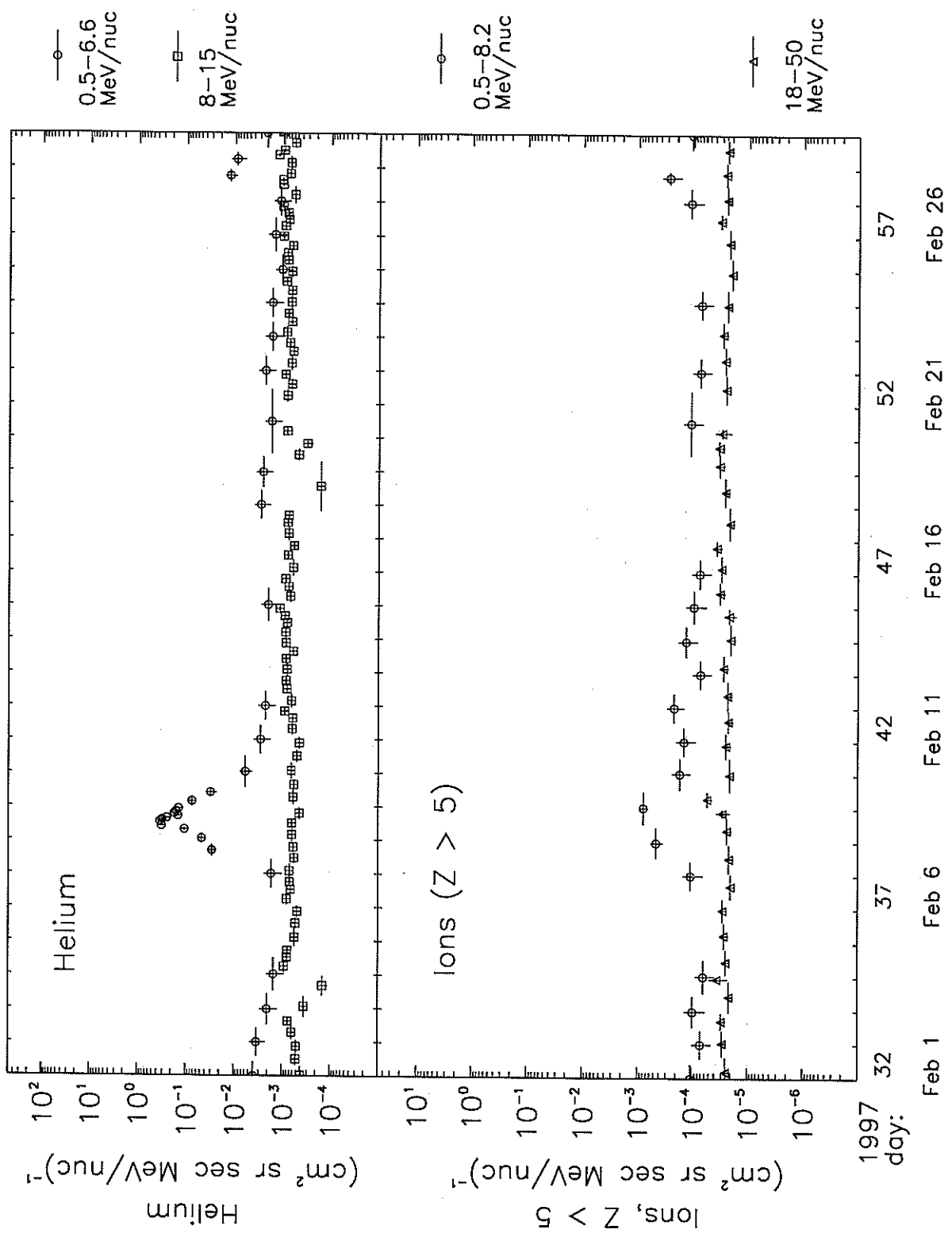
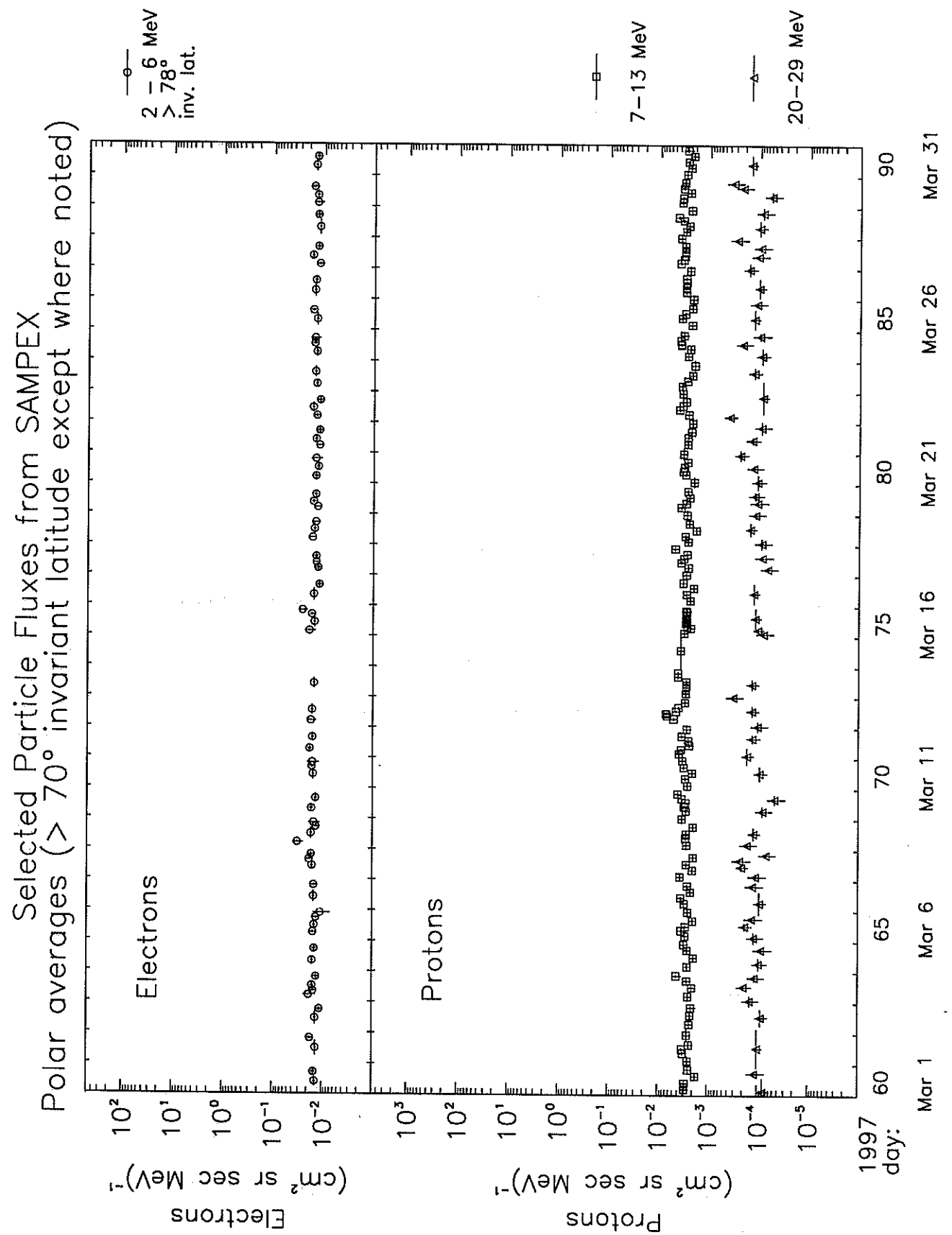
Germany
klecker@sampx2.umd.edu

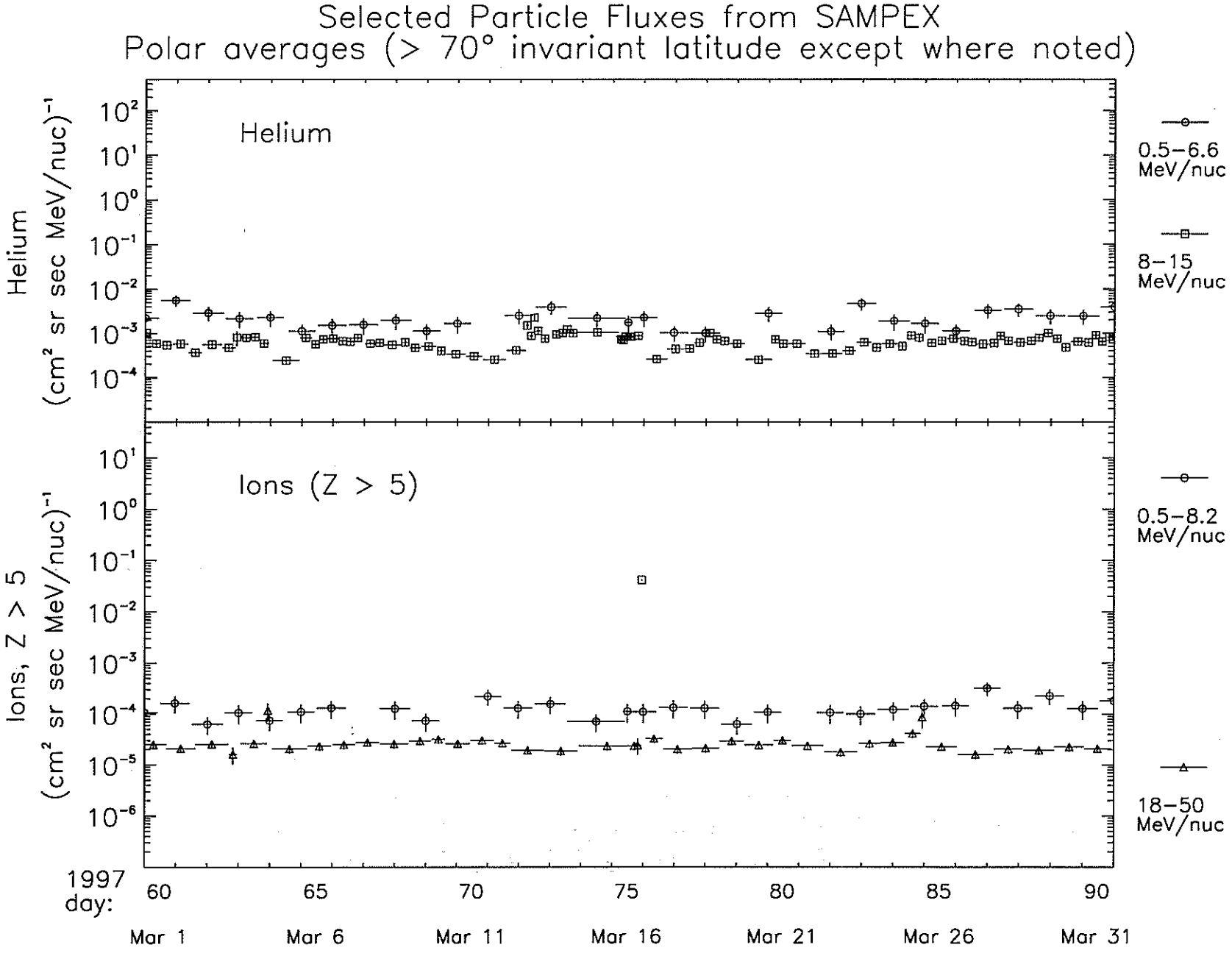

Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 – 6 MeV
> 78°
inv. lat.
7–13 MeV
20–29 MeV
Electrons
Protons
Electrons
(cm² sr sec MeV)⁻¹
Protons
(cm² sr sec MeV)⁻¹
1997
day:
Jan 1
Jan 6
Jan 11
Jan 16
Jan 21
Jan 26
Jan 31


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
Helium
Ions (Z > 5)
0.5–6.6 MeV/nuc
8–15 MeV/nuc
0.5–8.2 MeV/nuc
18–50 MeV/nuc
Helium (cm² sr sec MeV/nuc)⁻¹
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
1997 day:
Jan 1
Jan 6
Jan 11
Jan 16
Jan 21
Jan 26
Jan 31


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 – 6 MeV
> 78°
inv. lat.
7–13 MeV
20–29 MeV
Electrons
Protons
Electrons
(cm² sr sec MeV)⁻¹
Protons
(cm² sr sec MeV)⁻¹
1997
day:
32
37
42
47
52
57
Feb 1
Feb 6
Feb 11
Feb 16
Feb 21
Feb 26


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
Helium
0.5–6.6 MeV/nuc
8–15 MeV/nuc
Ions (Z > 5)
0.5–8.2 MeV/nuc
18–50 MeV/nuc
Helium (cm² sr sec MeV/nuc)⁻¹
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
1997 day: 32 37 42 47 52 57
Feb 1 Feb 6 Feb 11 Feb 16 Feb 21 Feb 26


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 – 6 MeV
>.78°
inv. lat.
7–13 MeV
20–29 MeV
Electrons
Protons
Electrons
(cm² sr sec MeV)⁻¹
Protons
(cm² sr sec MeV)⁻¹
1997
day:
60
65
70
75
80
85
90
Mar 1
Mar 6
Mar 11
Mar 16
Mar 21
Mar 26
Mar 31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Polar averages (> 70° invariant latitude except where noted)
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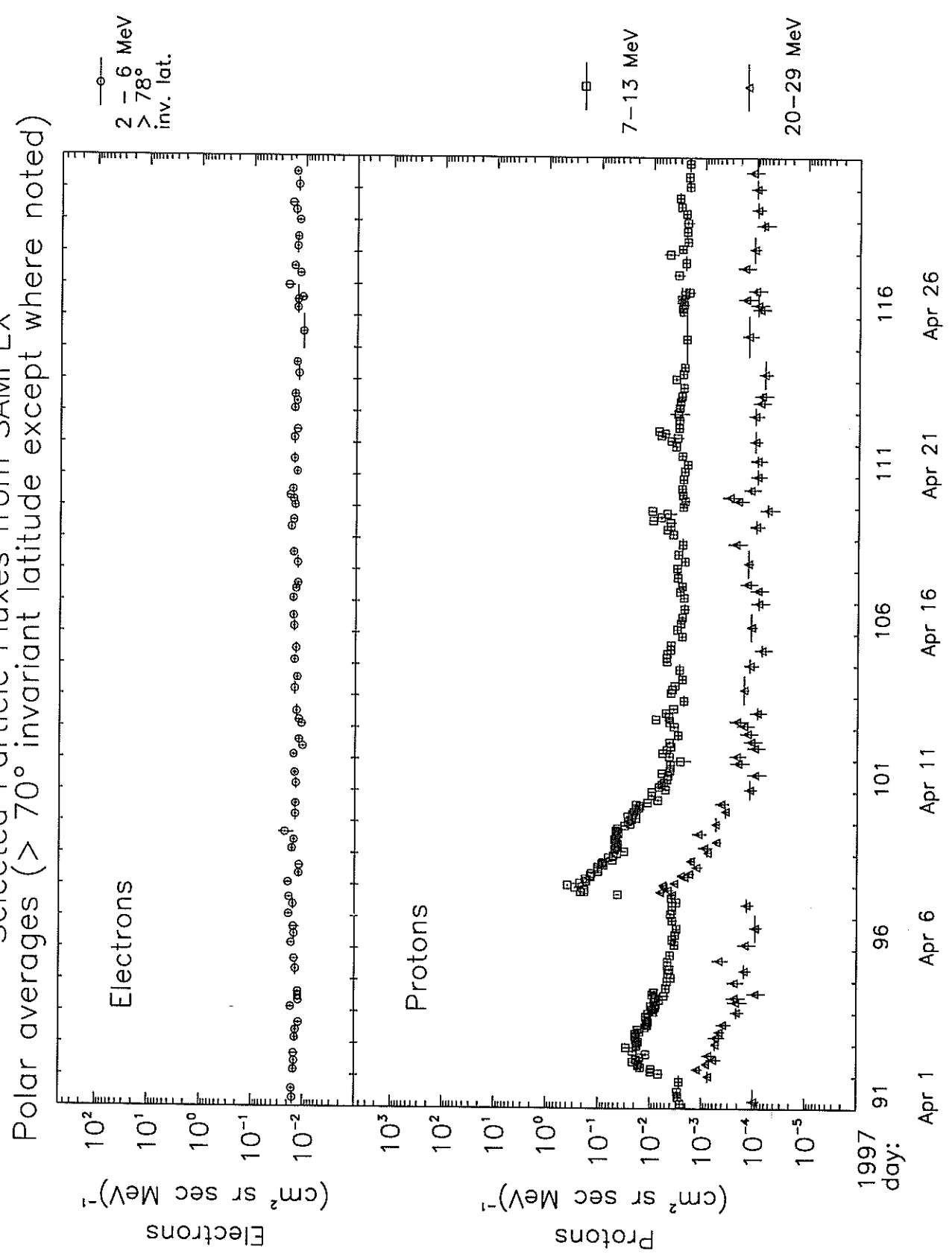
Helium (cm² sr sec MeV/nuc)⁻¹
Ions (Z > 5)
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
0.5–6.6 MeV/nuc
8–15 MeV/nuc
0.5–8.2 MeV/nuc
18–50 MeV/nuc
1997 day:
60
65
70
75
80
85
90
Mar 1
Mar 6
Mar 11
Mar 16
Mar 21
Mar 26
Mar 31


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 – 6 MeV
> 78°
inv. lat.
7–13 MeV
20–29 MeV
Electrons
Protons
Electrons
(cm² sr sec MeV)⁻¹
Protons
(cm² sr sec MeV)⁻¹
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day:
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96
101
106
111
116
Apr 1
Apr 6
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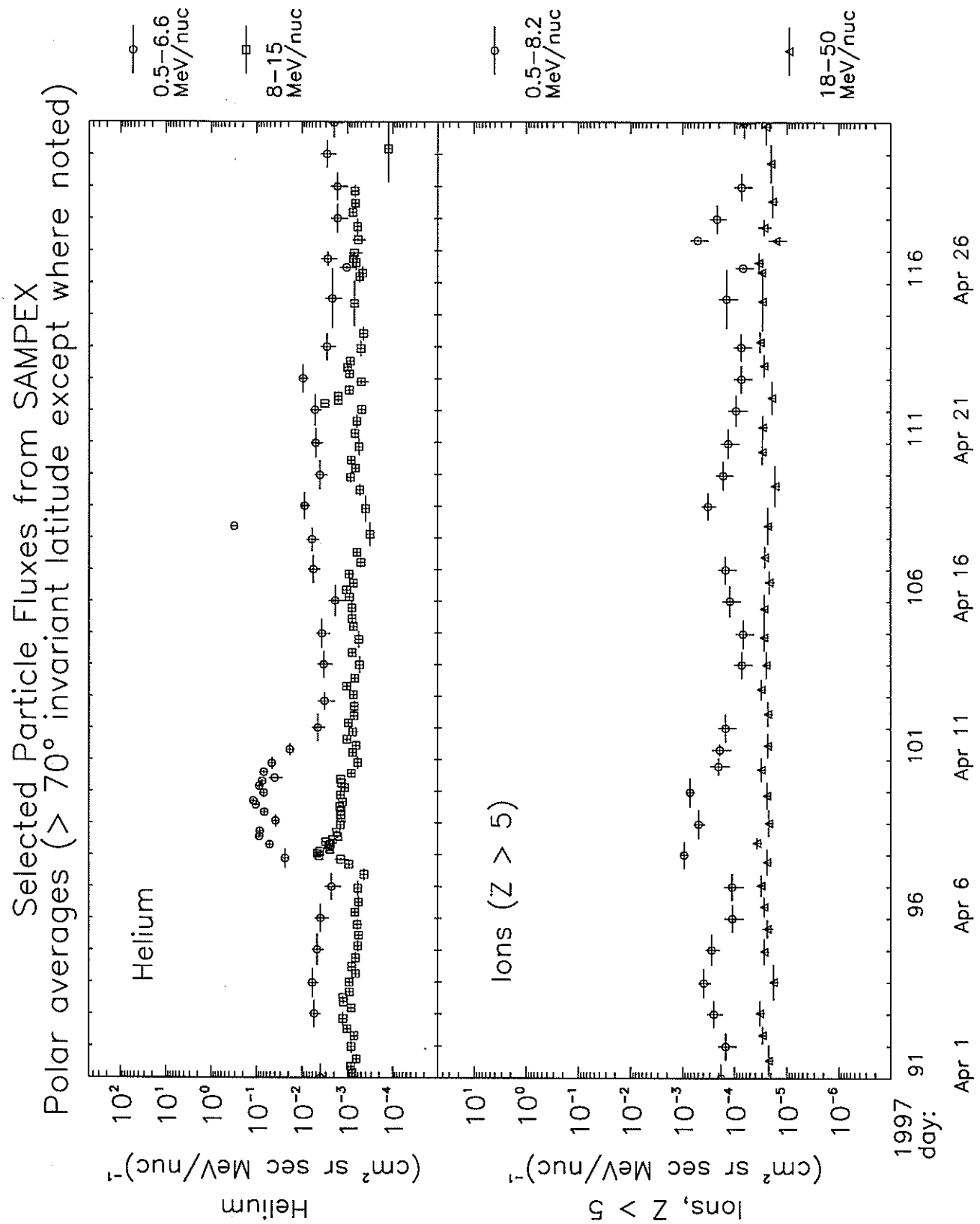
Apr 16
Apr 21
Apr 26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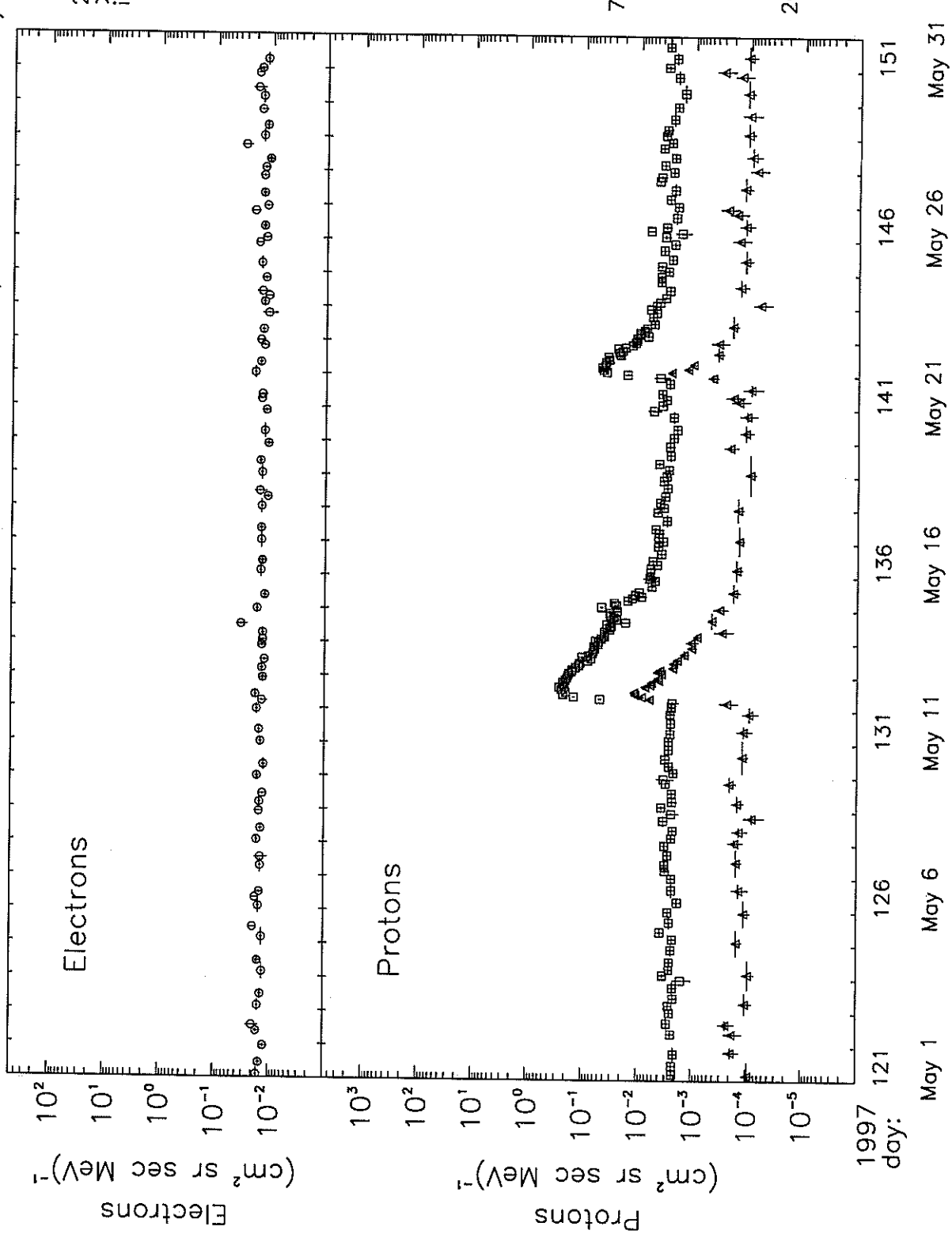
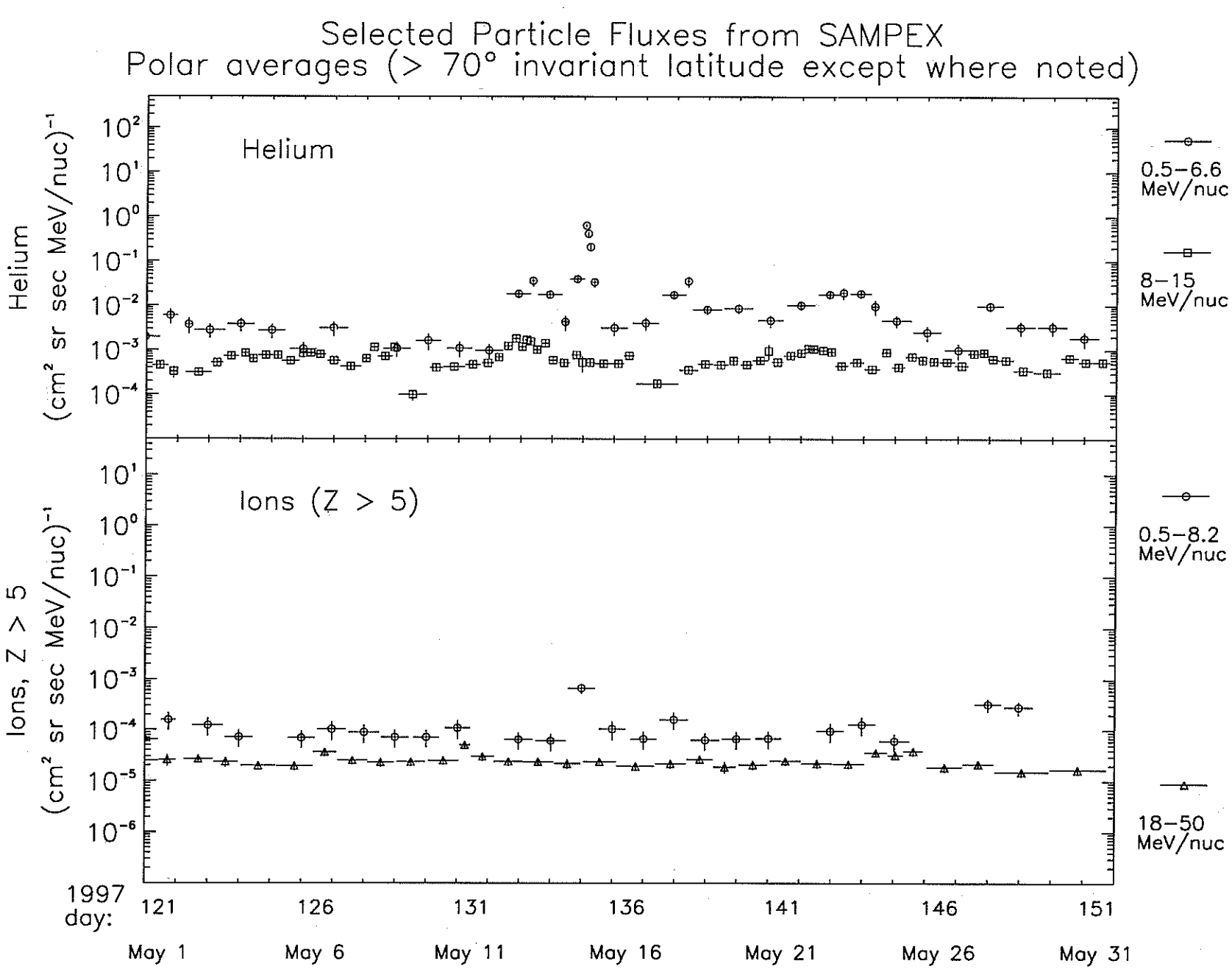
Polar averages (> 70° invariant latitude except where noted)
Helium
0.5–6.6 MeV/nuc
8–15 MeV/nuc
Ions (Z > 5)
0.5–8.2 MeV/nuc
18–50 MeV/nuc
Helium (cm² sr sec MeV/nuc)⁻¹
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
1997 day:
91 96 101 106 111 116
Apr 1 Apr 6 Apr 11 Apr 16 Apr 21 Apr 26


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 – 6 MeV
> 78°
inv. lat.
7–13 MeV
20–29 MeV
Electrons
Protons
Electrons
(cm² sr sec MeV)⁻¹
Protons
(cm² sr sec MeV)⁻¹
1997
day:
121
126
131
136
141
146
151
May 1
May 6
May 11
May 16
May 21
May 26
May 31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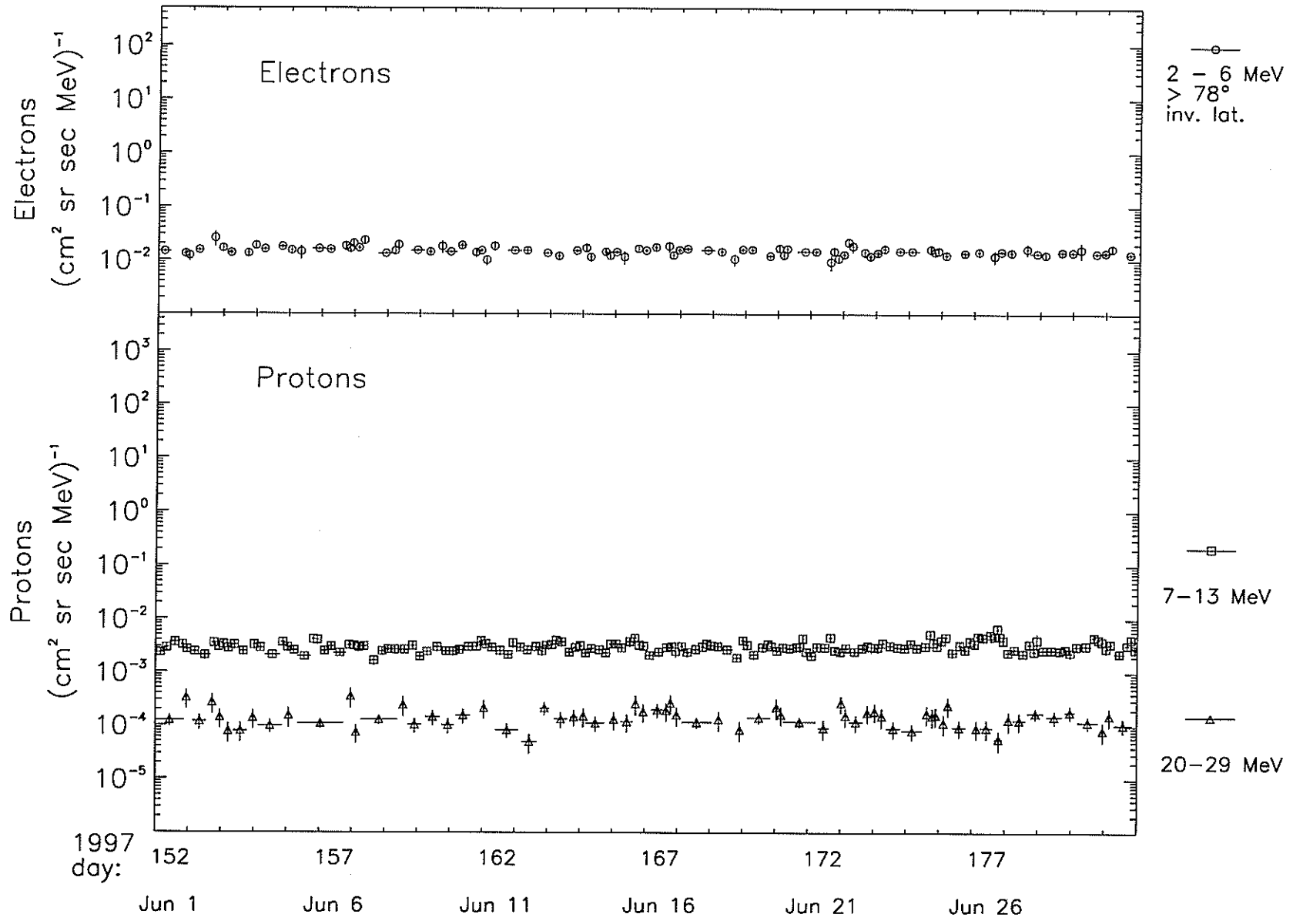
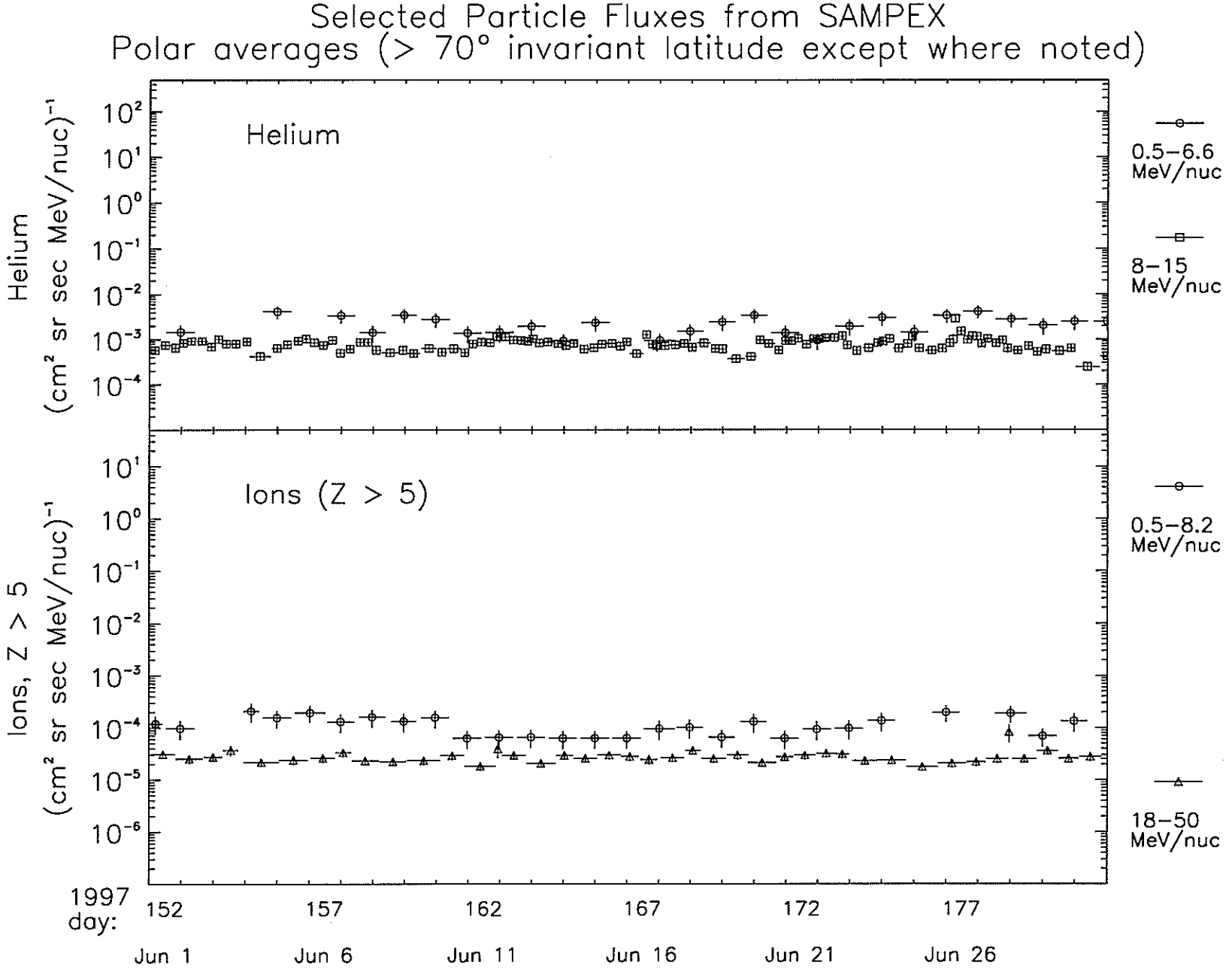
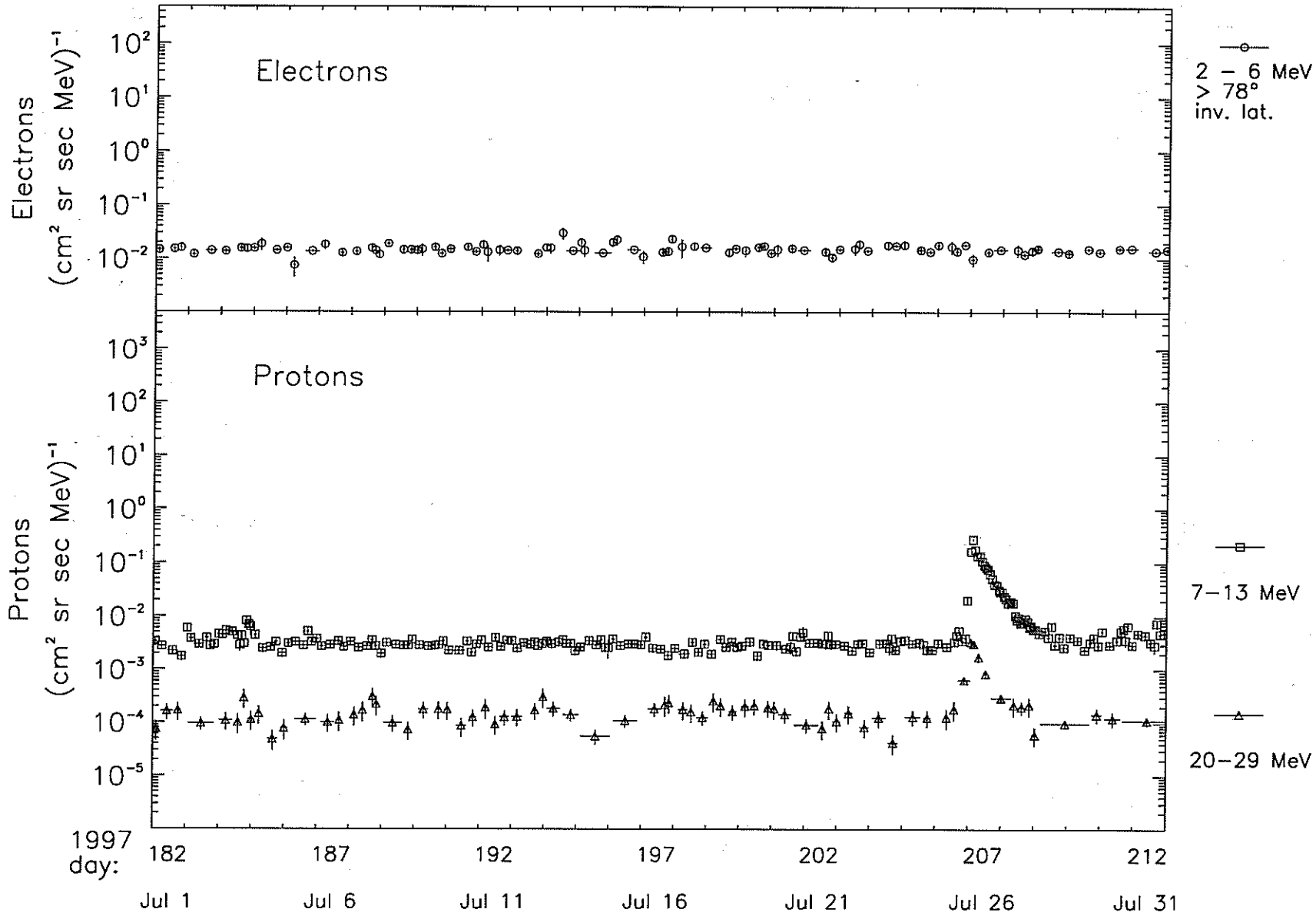
Polar averages (> 70° invariant latitude except where noted)
Helium
Helium (cm² sr sec MeV/nuc)⁻¹
Ions (Z > 5)
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
0.5–6.6 MeV/nuc
8–15 MeV/nuc
0.5–8.2 MeV/nuc
18–50 MeV/nuc
1997 day:
121
126
131
136
141
146
151
May 1
May 6
May 11
May 16
May 21
May 26
May 31

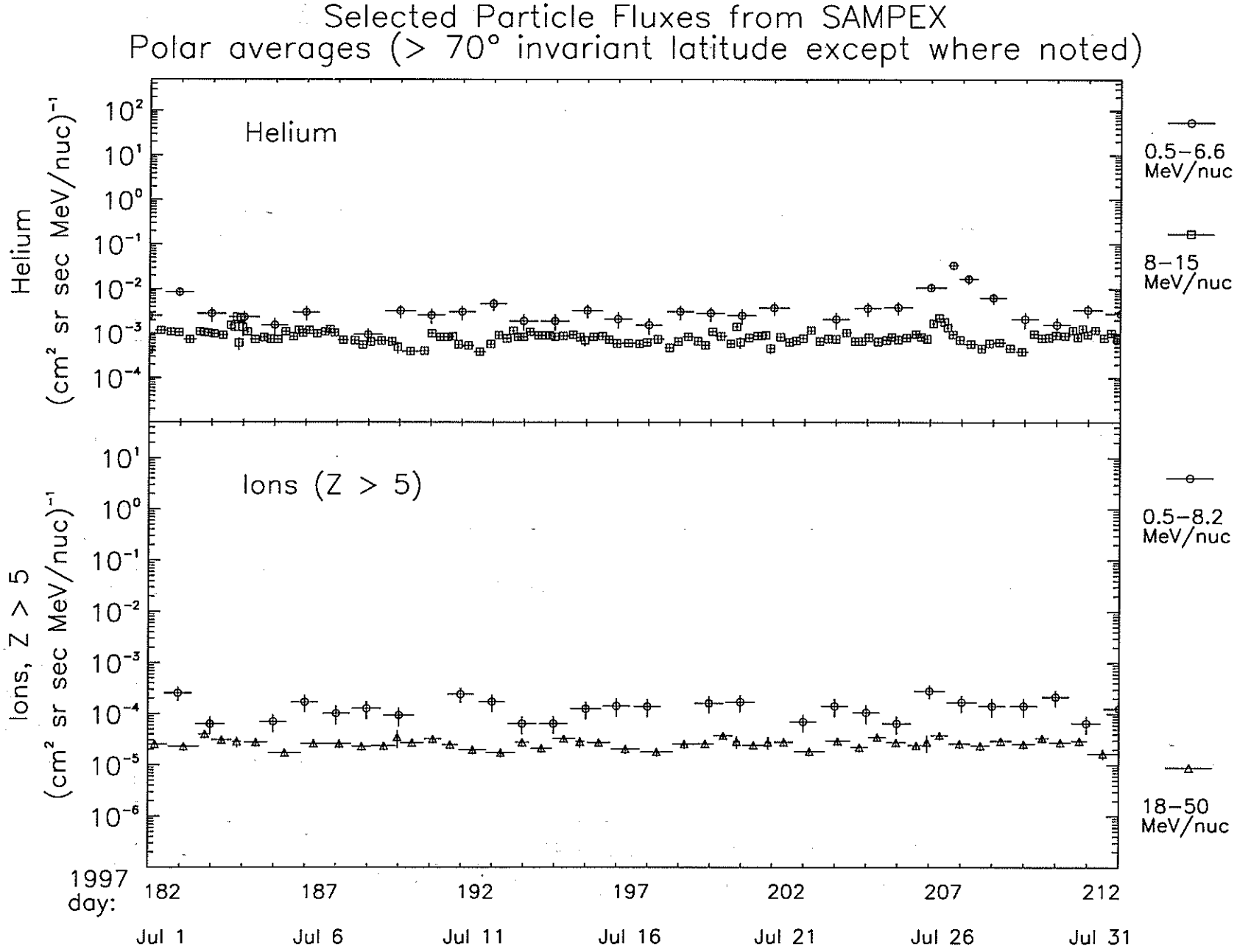
Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)

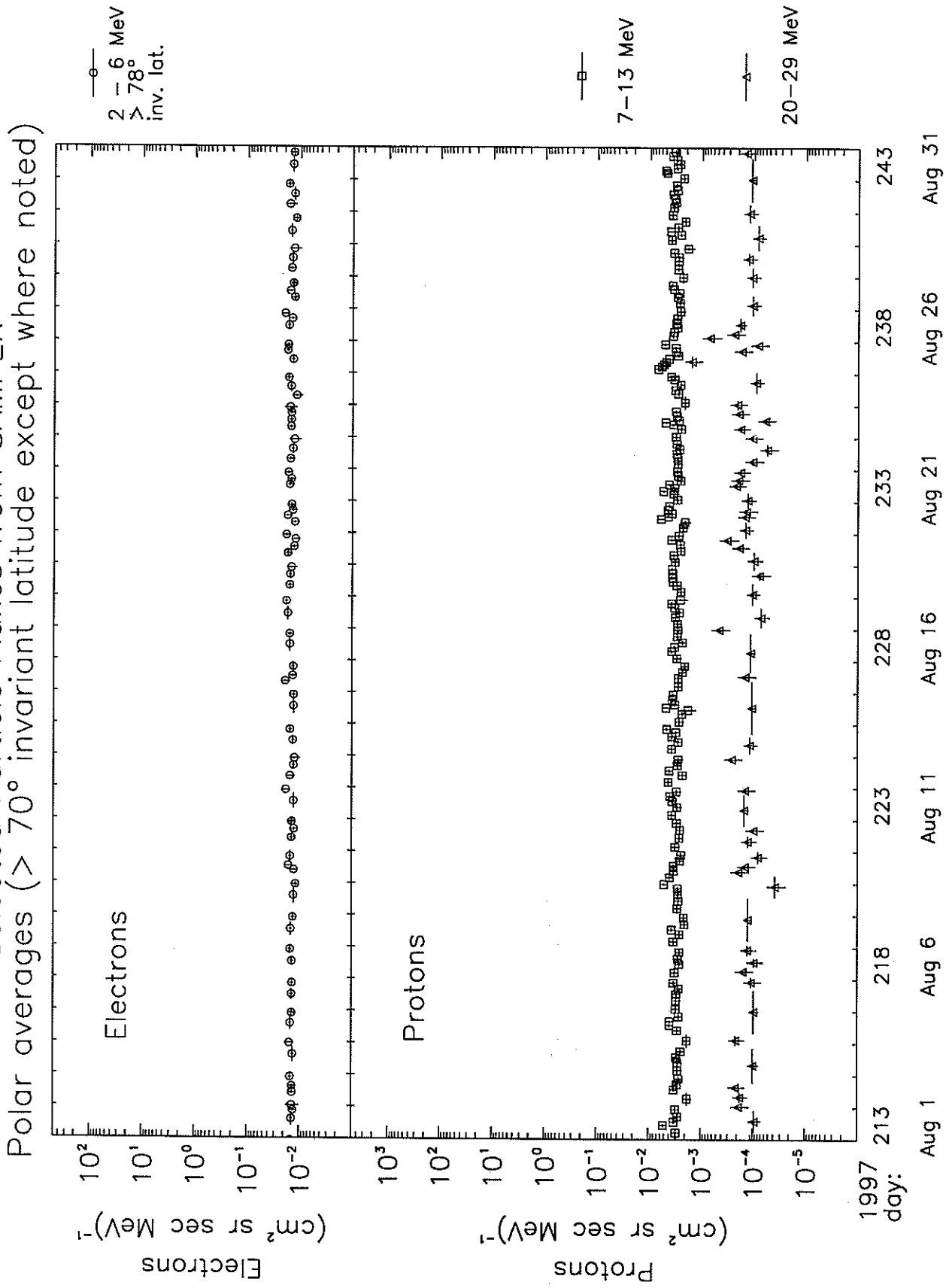


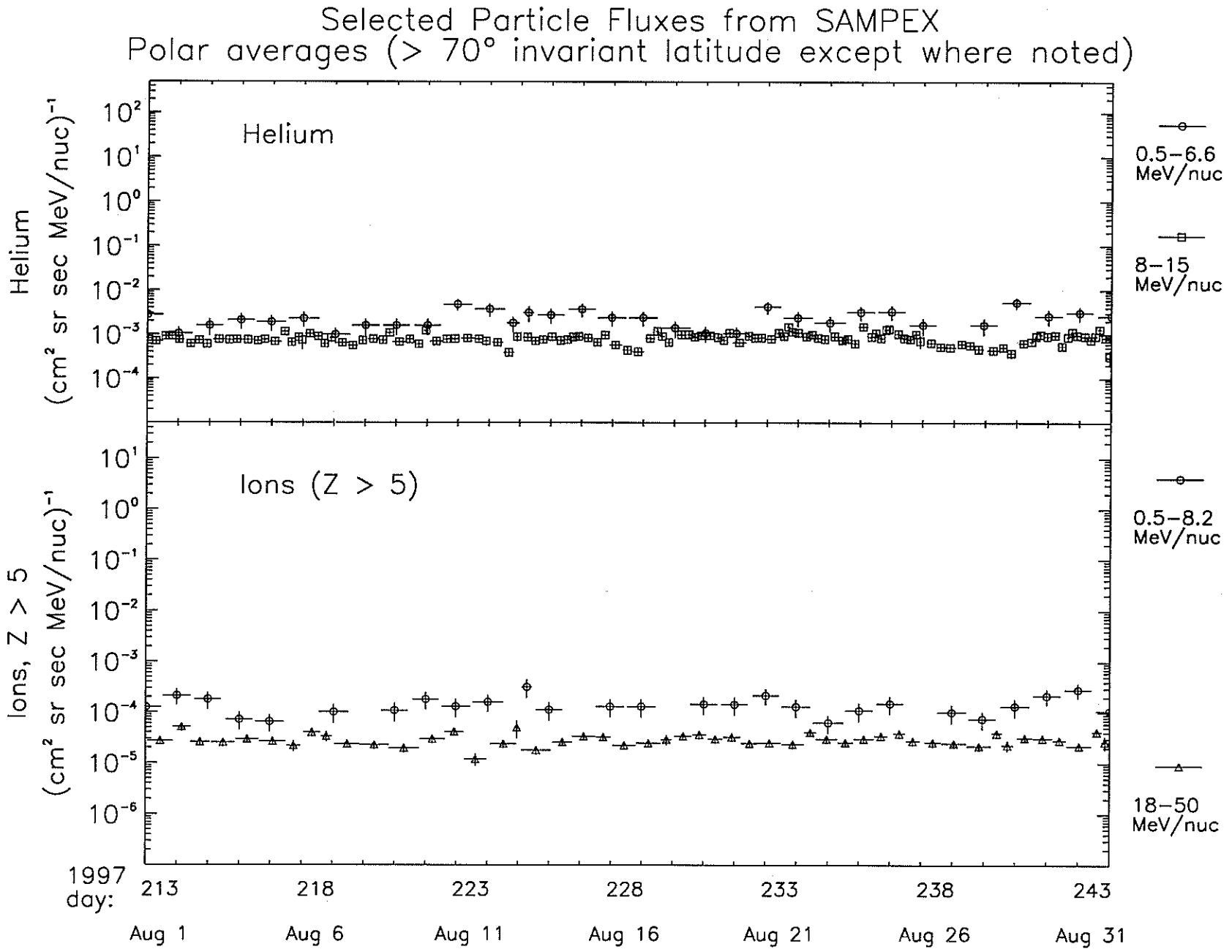

Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
Helium
Helium (cm² sr sec MeV/nuc)⁻¹
Ions (Z > 5)
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
0.5–6.6 MeV/nuc
8–15 MeV/nuc
0.5–8.2 MeV/nuc
18–50 MeV/nuc
1997 day:
152
157
162
167
172
177
Jun 1
Jun 6
Jun 11
Jun 16
Jun 21
Jun 26

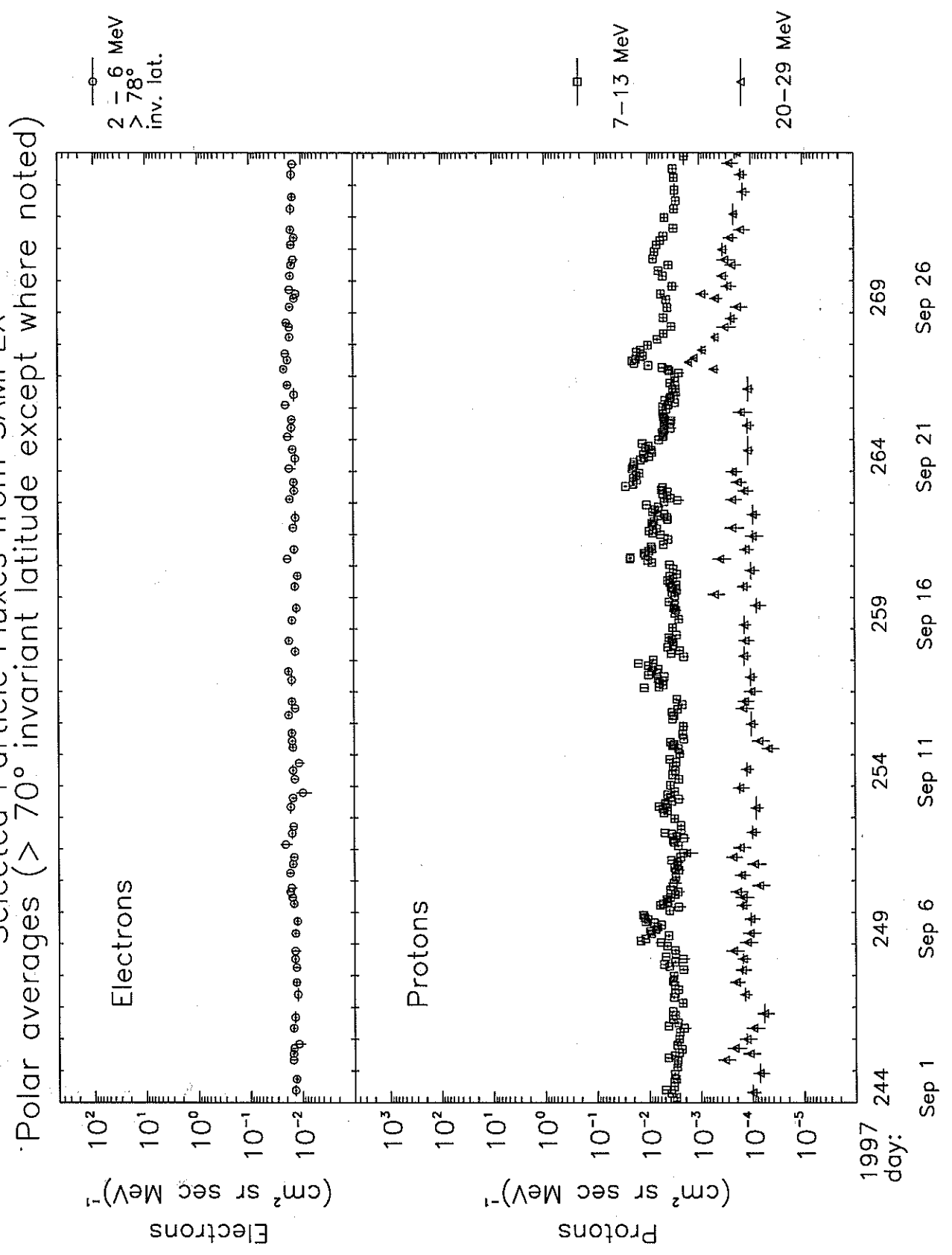
Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)

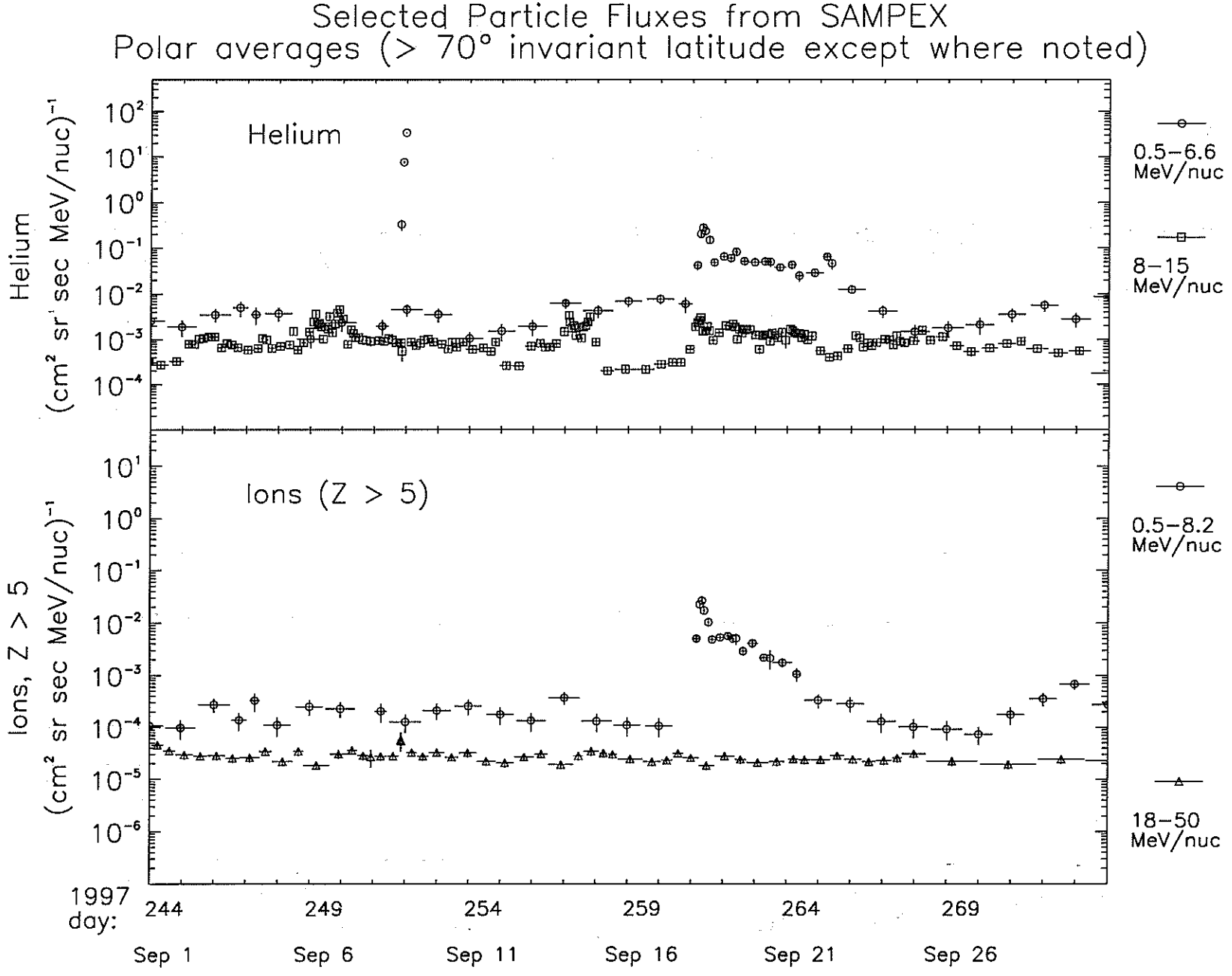


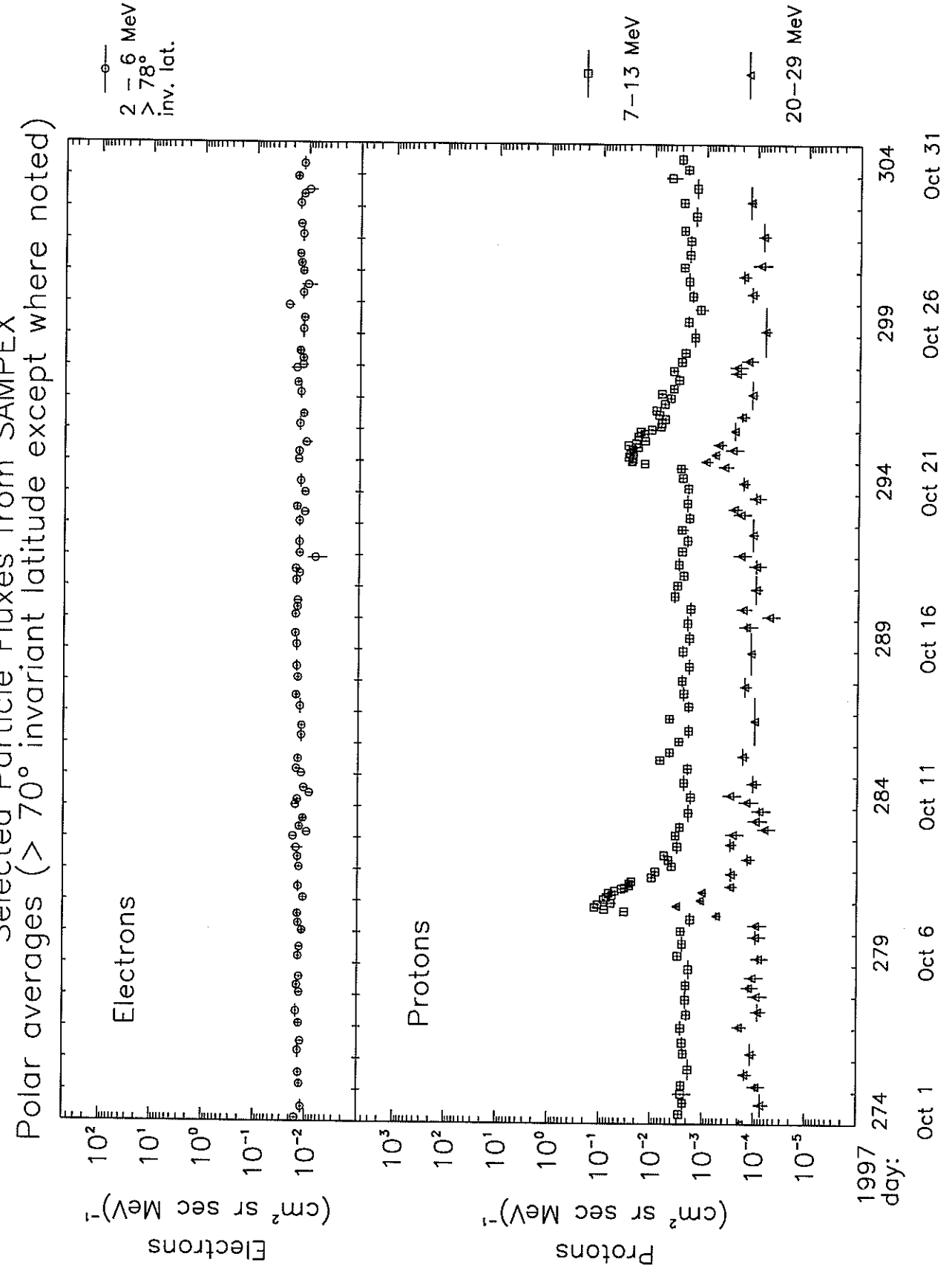

Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
Helium
Helium (cm² sr sec MeV/nuc)⁻¹
Ions (Z > 5)
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
0.5–6.6 MeV/nuc
8–15 MeV/nuc
0.5–8.2 MeV/nuc
18–50 MeV/nuc
1997 day:
182
187
192
197
202
207
212
Jul 1
Jul 6
Jul 11
Jul 16
Jul 21
Jul 26
Jul 31

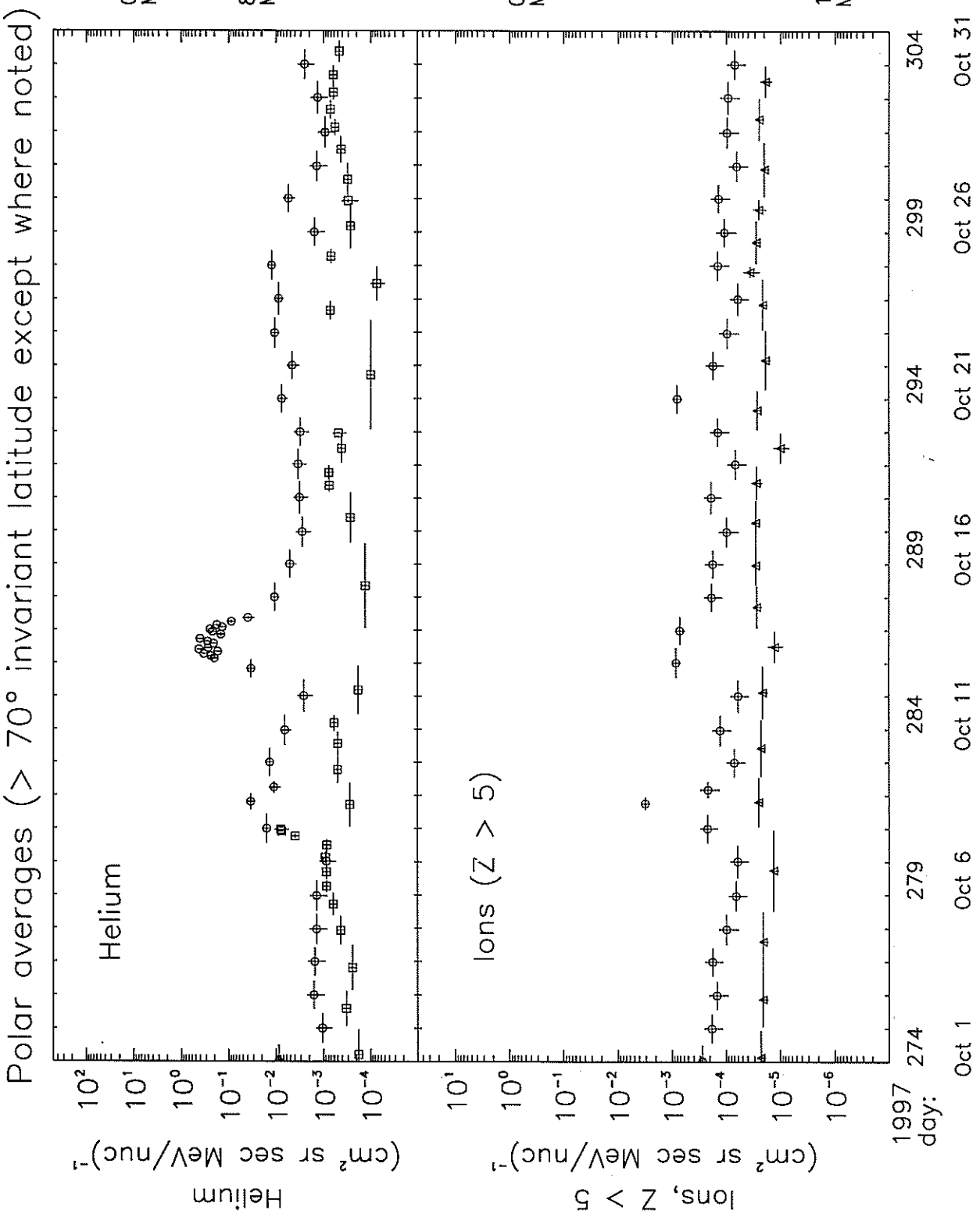

Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 – 6 MeV
> 78°
inv. lat.
7–13 MeV
20–29 MeV
Electrons
Protons
Electrons
(cm² sr sec MeV)⁻¹
Protons
(cm² sr sec MeV)⁻¹
1997
day:
213
218
223
228
233
238
243
Aug 1
Aug 6
Aug 11
Aug 16
Aug 21
Aug 26
Aug 31

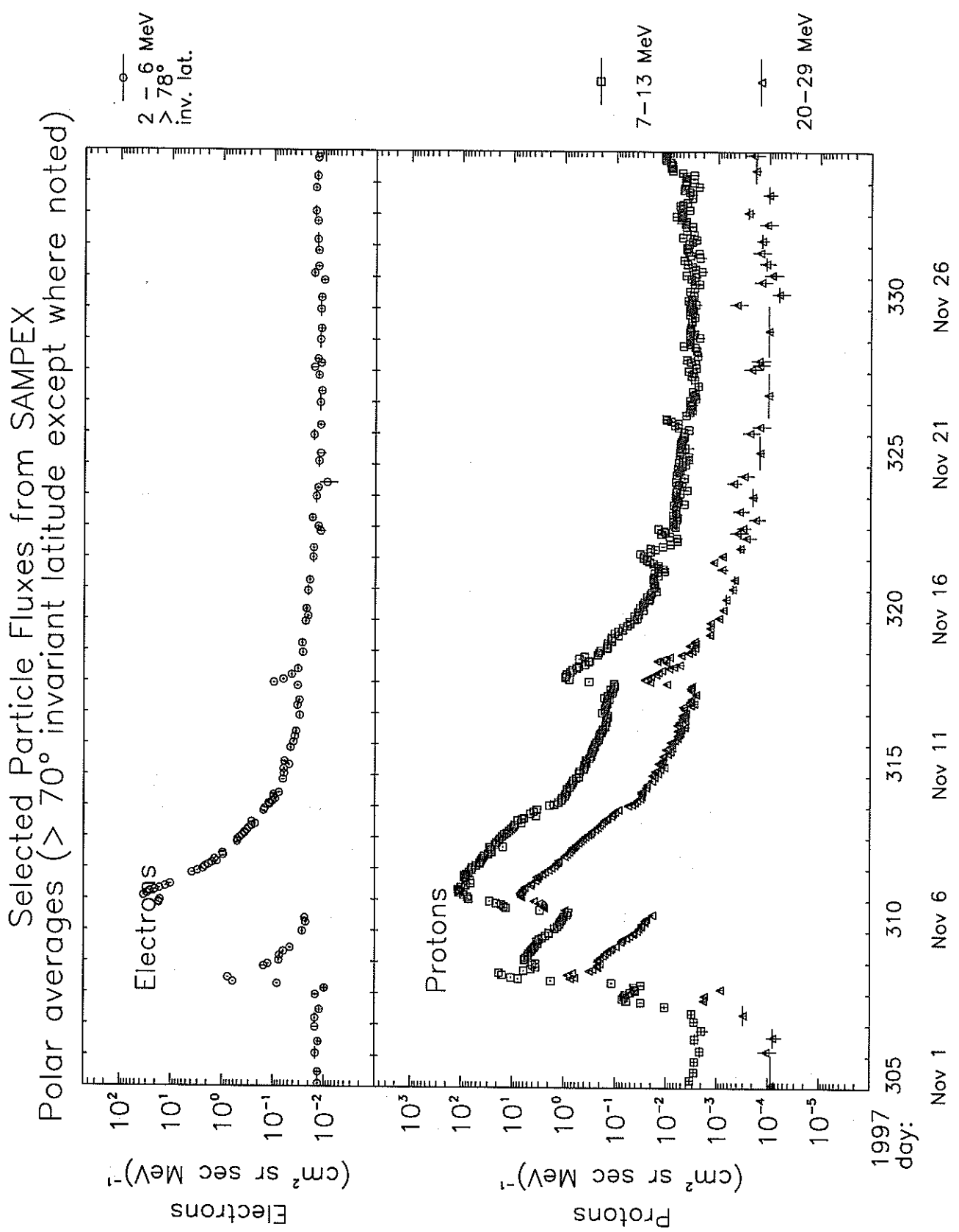

Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
Helium
Helium (cm² sr sec MeV/nuc)⁻¹
Ions (Z > 5)
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
0.5–6.6 MeV/nuc
8–15 MeV/nuc
0.5–8.2 MeV/nuc
18–50 MeV/nuc
1997 day:
213
218
223
228
233
238
243
Aug 1
Aug 6
Aug 11
Aug 16
Aug 21
Aug 26
Aug 31

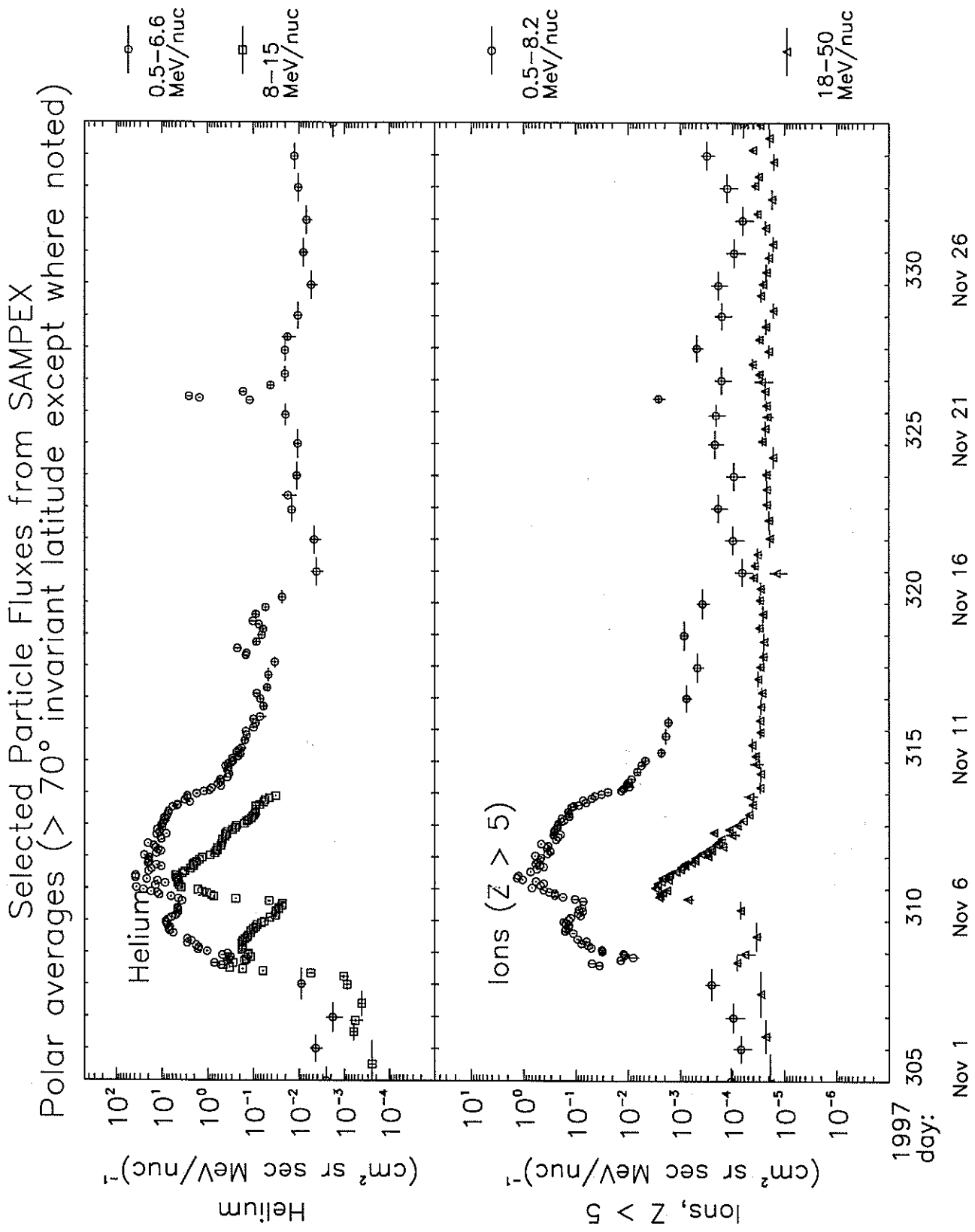

Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 - 6 MeV
> 78°
inv. lat.
7-13 MeV
20-29 MeV
Electrons
Protons
Electrons
(cm² sr sec MeV)⁻¹
Protons
(cm² sr sec MeV)⁻¹
1997
day:
244
249
254
259
264
269
Sep 1
Sep 6
Sep 11
Sep 16
Sep 21
Sep 26

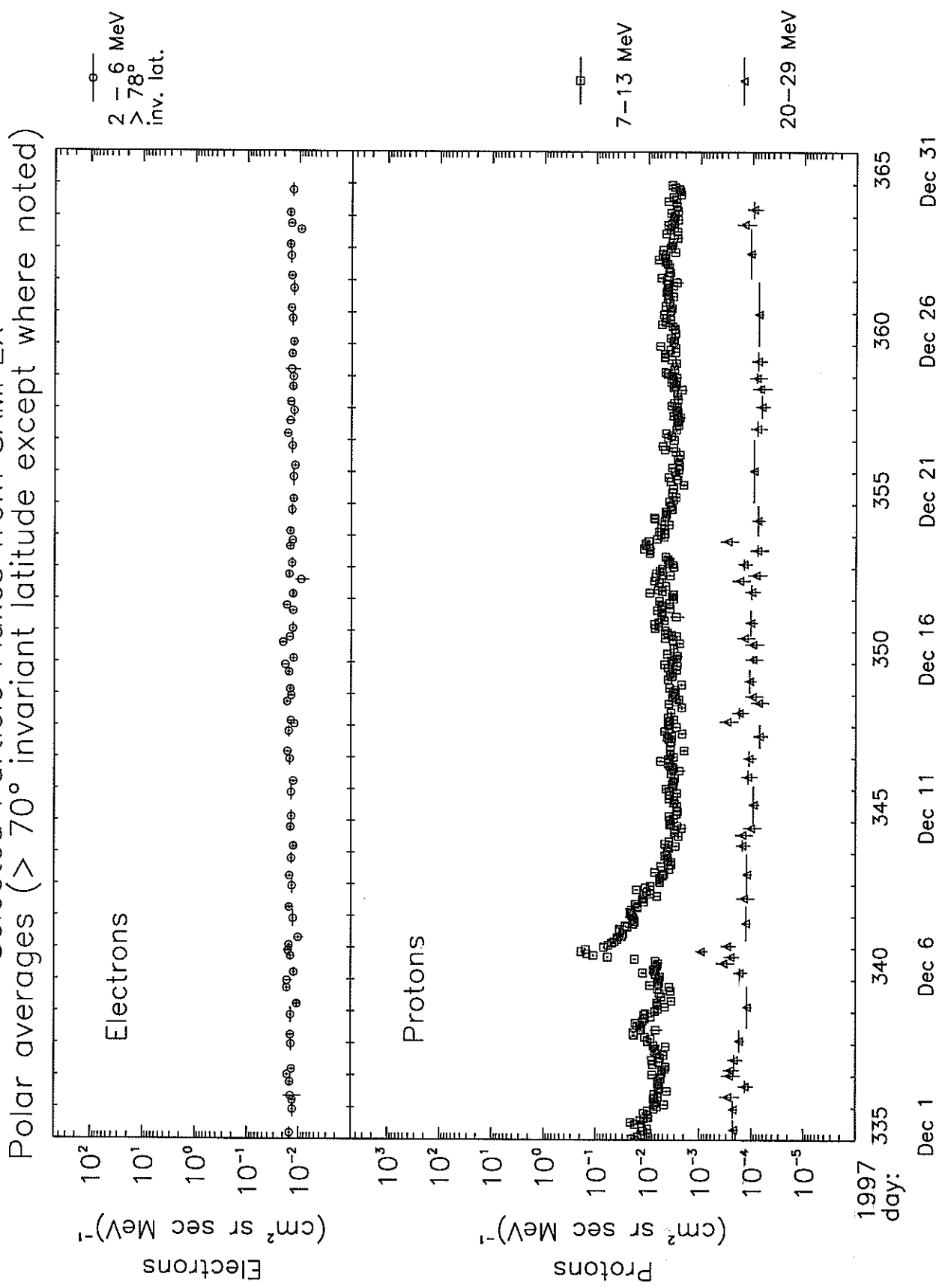

Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
Helium
Helium (cm² sr sec MeV/nuc)⁻¹
Ions (Z > 5)
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
0.5–6.6 MeV/nuc
8–15 MeV/nuc
0.5–8.2 MeV/nuc
18–50 MeV/nuc
1997 day:
244
249
254
259
264
269
Sep 1
Sep 6
Sep 11
Sep 16
Sep 21
Sep 26

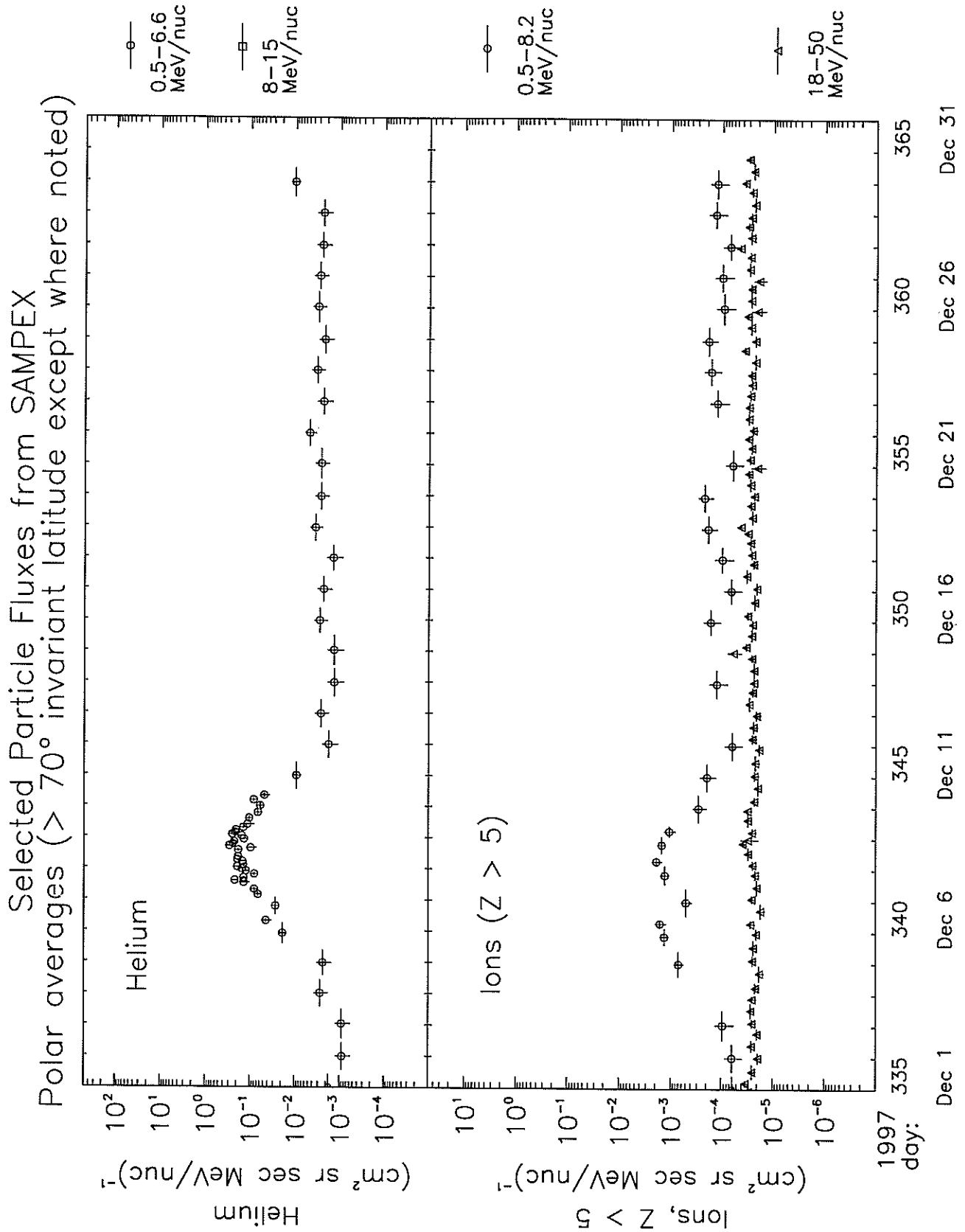

Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 – 6 MeV
> 78°
inv. lat.
7–13 MeV
20–29 MeV
Electrons
Protons
Electrons
(cm² sr sec MeV)⁻¹
Protons
(cm² sr sec MeV)⁻¹
1997
day:
Oct 1
274
Oct 6
279
Oct 11
284
Oct 16
289
Oct 21
294
Oct 26
299
Oct 31
304


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
Helium
Ions (Z > 5)
0.5–6.6 MeV/nuc
8–15 MeV/nuc
0.5–8.2 MeV/nuc
18–50 MeV/nuc
Helium
Ions, Z > 5
(cm² sr sec MeV/nuc)⁻¹
1997 day:
Oct 1
274
Oct 6
279
Oct 11
284
Oct 16
289
Oct 21
294
Oct 26
299
Oct 31
304


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 – 6 MeV
> 78°
inv. lat.
7–13 MeV
20–29 MeV
Electrons
Protons
Electrons
(cm² sr sec MeV)⁻¹
Protons
(cm² sr sec MeV)⁻¹
1997
day:
305
310
315
320
325
330
Nov 1
Nov 6
Nov 11
Nov 16
Nov 21
Nov 26


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
0.5–6.6 MeV/nuc
8–15 MeV/nuc
0.5–8.2 MeV/nuc
18–50 MeV/nuc
Helium
Ions (Z > 5)
Helium (cm² sr sec MeV/nuc)⁻¹
Ions, Z > 5 (cm² sr sec MeV/nuc)⁻¹
1997 day:
305 310 315 320 325 330
Nov 1 Nov 6 Nov 11 Nov 16 Nov 21 Nov 26


Selected Particle Fluxes from SAMPEX
Polar averages (> 70° invariant latitude except where noted)
2 – 6 MeV
> 78°
inv. lat.
7–13 MeV
20–29 MeV
Electrons
Protons
(cm² sr sec MeV)⁻¹
Electrons
Protons
1997
day:
335
340
345
350
355
360
365
Dec 1
Dec 6
Dec 11
Dec 16
Dec 21
Dec 26
Dec 31



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WORLD DATA CENTER A

FOR

SOLAR-TERRESTRIAL PHYSICS

The ICSU Panel on WDCs has recommended that it would be appropriate courtesy to acknowledge in publications that data were obtained from the originating station or investigator through the intermediary of the WDCs. The following statement is suggested:

"Data used in this study were provided by WDC-A for Solar-Terrestrial Physics, NOAA E/GC2, 325 Broadway, Boulder Colorado 80303, USA."