

JULY 2009 NUMBER 779 - Part II

Solar-Geophysical Data comprehensive reports



Data for January 2009

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NATIONAL ENVIRONMENTAL SATELLITE,
DATA, AND INFORMATION SERVICE

NATIONAL GEOPHYSICAL
DATA CENTER

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JULY 2009 NUMBER 779 - Part II

Solar-Geophysical Data comprehensive reports

Data for January 2009

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NATIONAL GEOPHYSICAL DATA CENTER

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SOLAR-GEOPHYSICAL DATA

Number 779

(Issued in Two Parts)

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Solar-Terrestrial Physics Division

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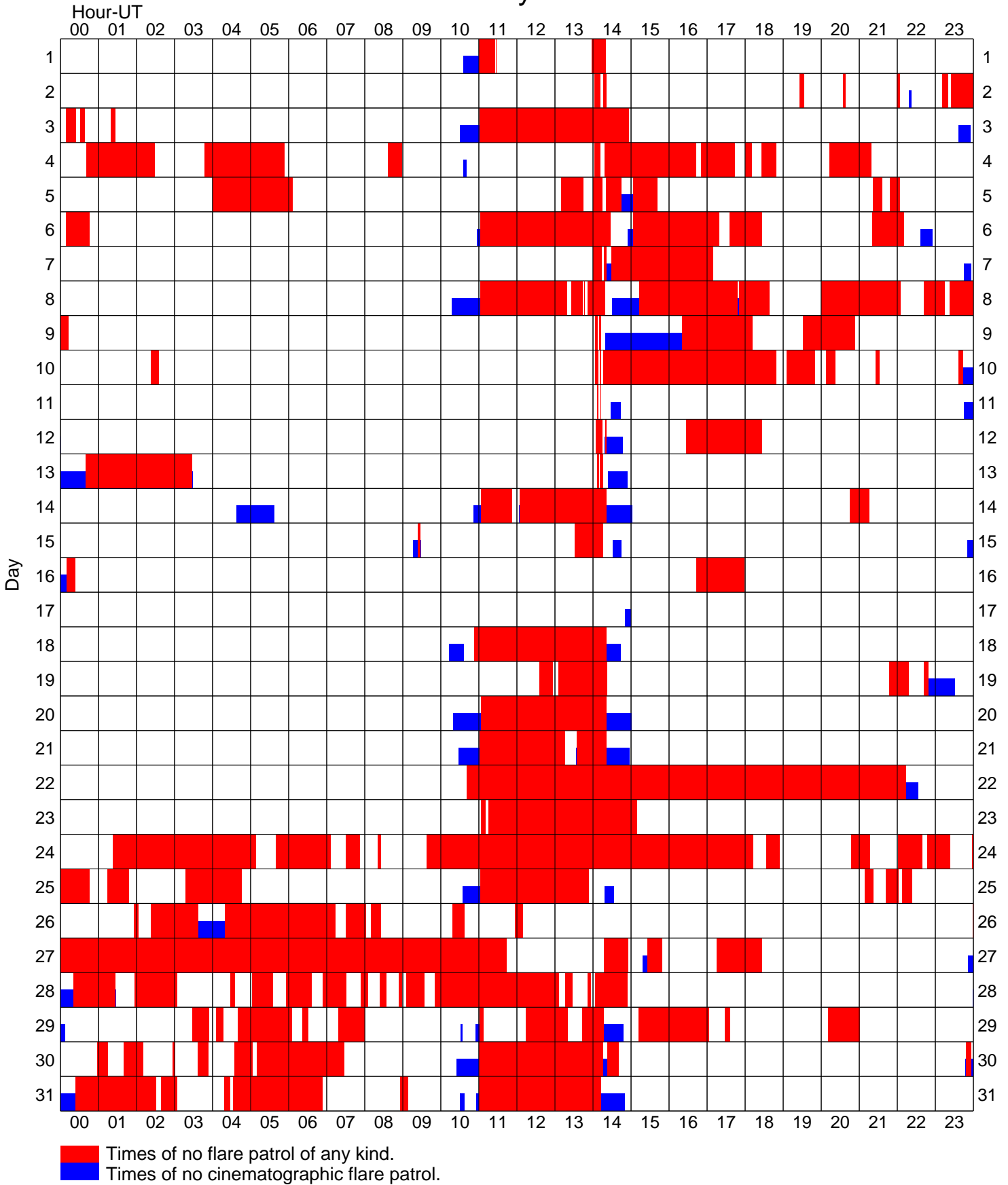
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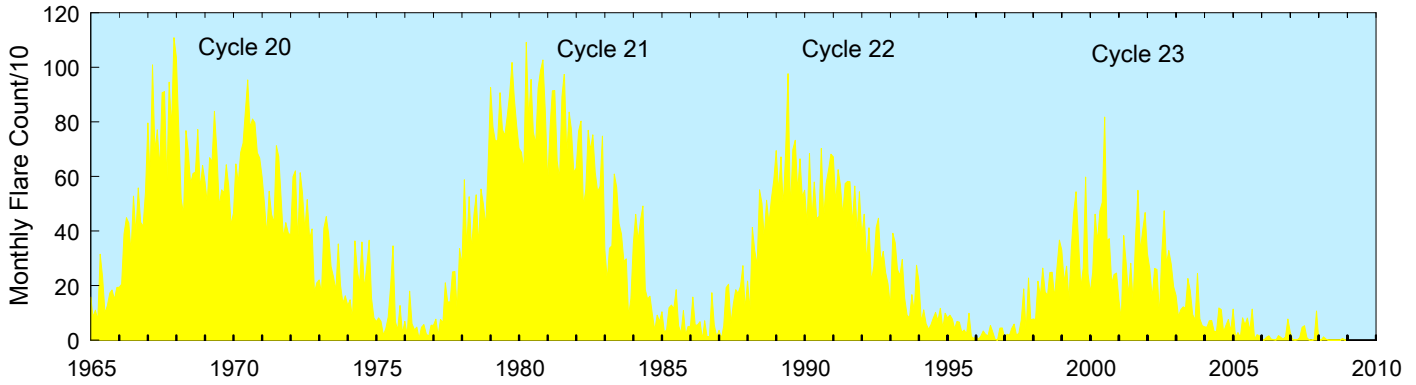
Intervals of No Flare Patrol Observation for Preceding Solar Flare Table

January 2009



Stations participating: Holloman, Learmonth, SanVito, Kanzelhoehe..

Monthly Counts of Grouped Solar Flares Jan 1965 - Jan 2009



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	76	216	161	264	177	164	248	249	155	268	367	2423
1999	330	212	271	145	330	466	544	368	192	264	598	243	3963
2000	175	248	462	362	473	505	818	364	372	208	241	246	4474
2001	147	77	383	284	164	282	137	376	549	325	405	468	3597
2002	318	261	155	263	259	91	318	474	280	329	279	196	3223
2003	164	87	112	122	117	226	181	94	73	245	78	53	1552
2004	49	47	71	72	32	33	118	112	30	54	76	34	728
2005	114	10	28	11	82	56	81	35	114	4	20	16	571
2006	4	0	11	16	4	2	1	17	11	3	12	78	159
2007	29	2	1	2	9	47	53	9	0	0	2	107	261
2008	2	0	12	4	0	0	0	0	0	0	6	0	24
2009	0												0

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

S O L A R R A D I O E M I S S I O N
 Outstanding Occurrences
 JANUARY 2009

Jan 09

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks
							Peak (10 -22 W/m ² Hz)	Mean		
10	245	SGMR	43 NS	1836.0	1900.0	42.0	32000.0			QL=4 ST=2 TYP=1
	245	SGMR	48 C	1836.0	1900.0	27.0	32000.0			QL=4 ST=2 TYP=8
	245	SGMR	48 C	1836.0	1857.0	324.0	7200.0			QL=4 ST=1 TYP=8
	245	SGMR	48 C	1836.0	1857.0	324.0	32000.0			QL=4 ST=1 TYP=8
	245	SGMR	48 C	1906.0	1906.0	8.0	2000.0			QL=2 ST=2 TYP=8
	245	SGMR	48 C	1917.0	1918.0	5.0	140.0			QL=2 ST=2 TYP=8

Reports are received routinely from the following observatories:

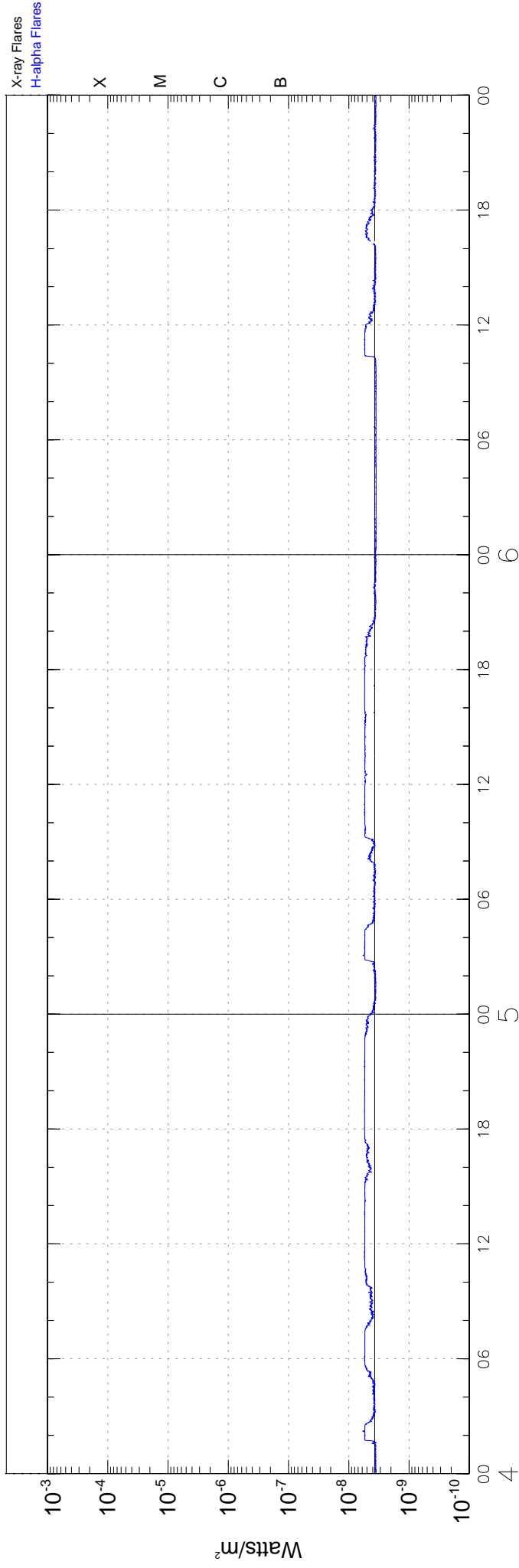
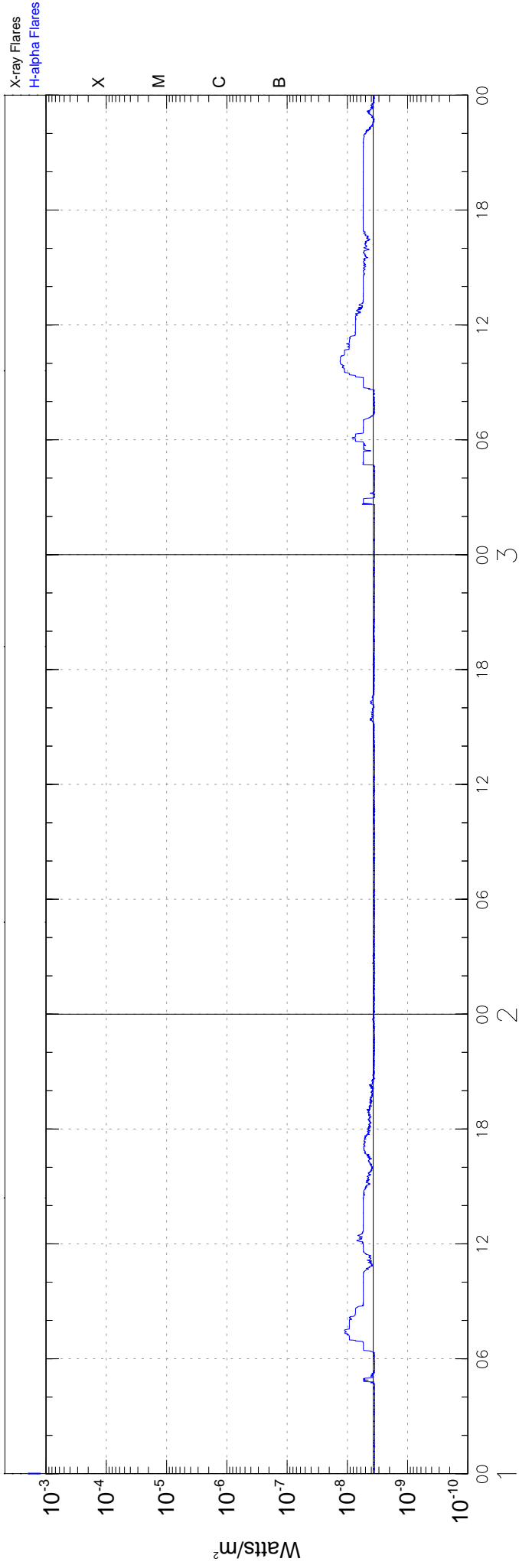
CUBA = Havana	LEAR = Learmonth	SGMR = Sagamore Hill
GORK = Gorky	PEKG = Peking	SVTO = San Vito
HIRA = Hiraiso	PALE = Palehua	TORN = Torun
IZMI = IZMIRAN	PENT = Penticton	UPIC = Upice

Explanation of Type Code:

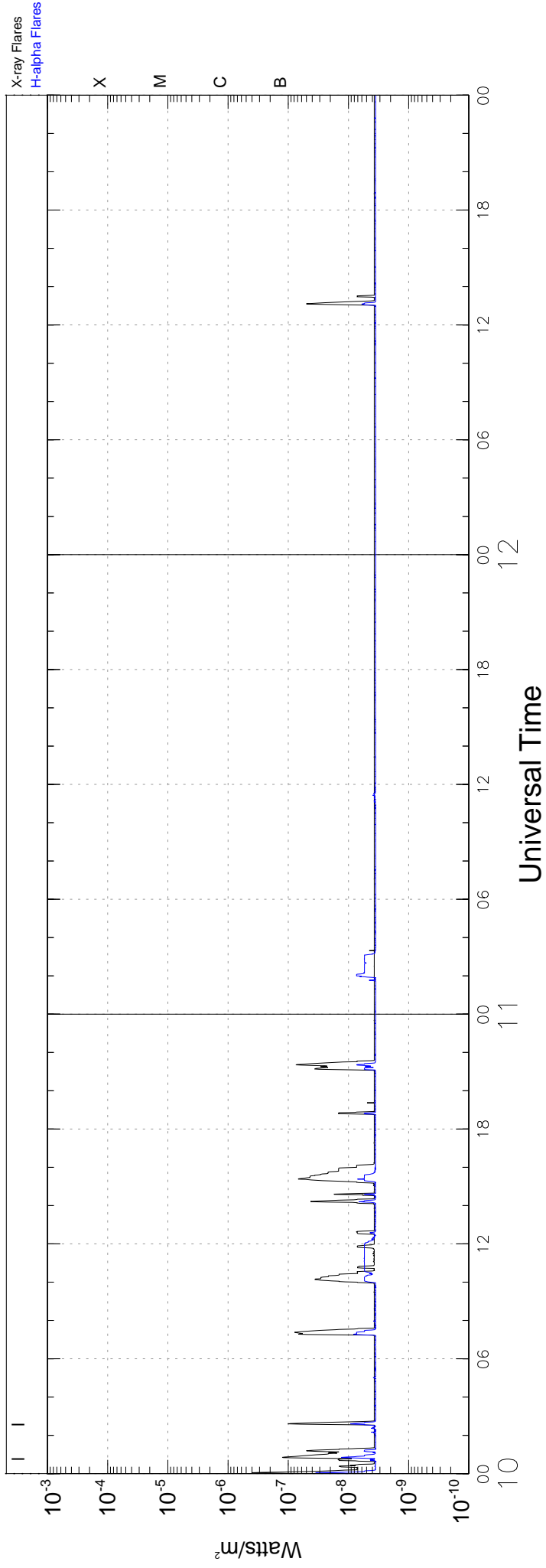
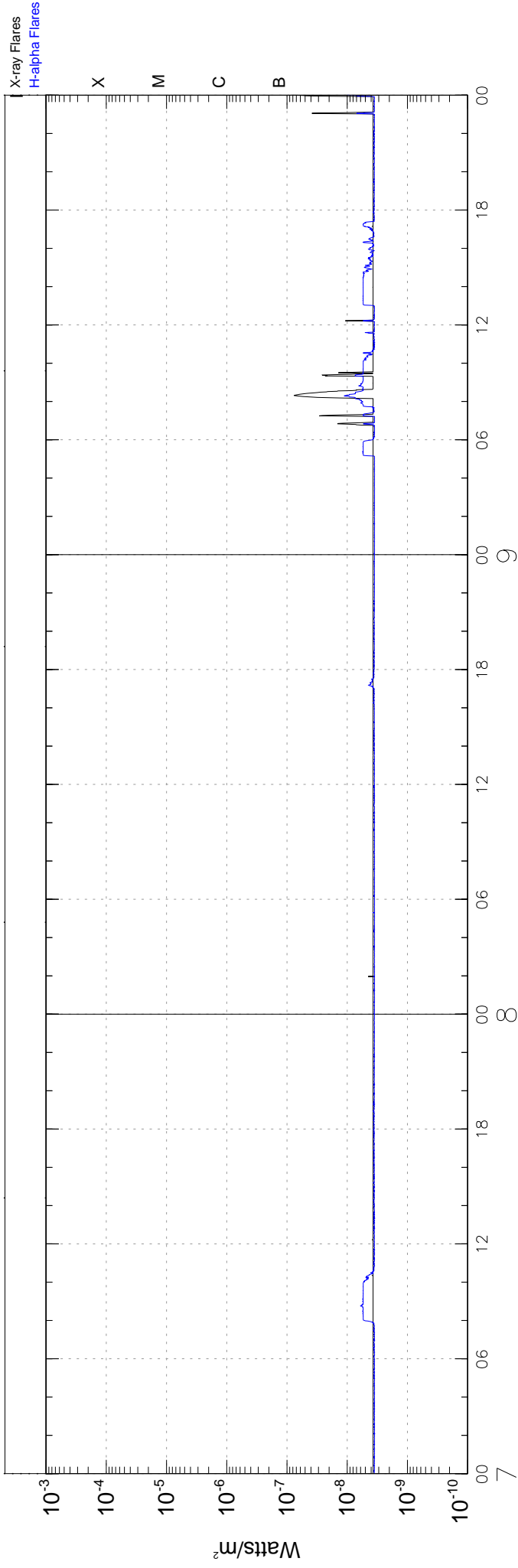
1 Simple 1	7 Minor +	24 Rise	30 Post Burst Increase A	43 Onset of Noise Storm
2 Simple 1F	8 Spike	25 Rise A	31 Post Burst Decrease	44 Noise Storm in Progress
3 Simple 2	20 Simple 3	26 Fall	33 Absorption	45 Complex
4 Simple 2F	21 Simple 3A	27 Rise and Fall	40 Fluctuation	46 Complex F
5 Simple	22 Simple 3F	28 Precursor	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.

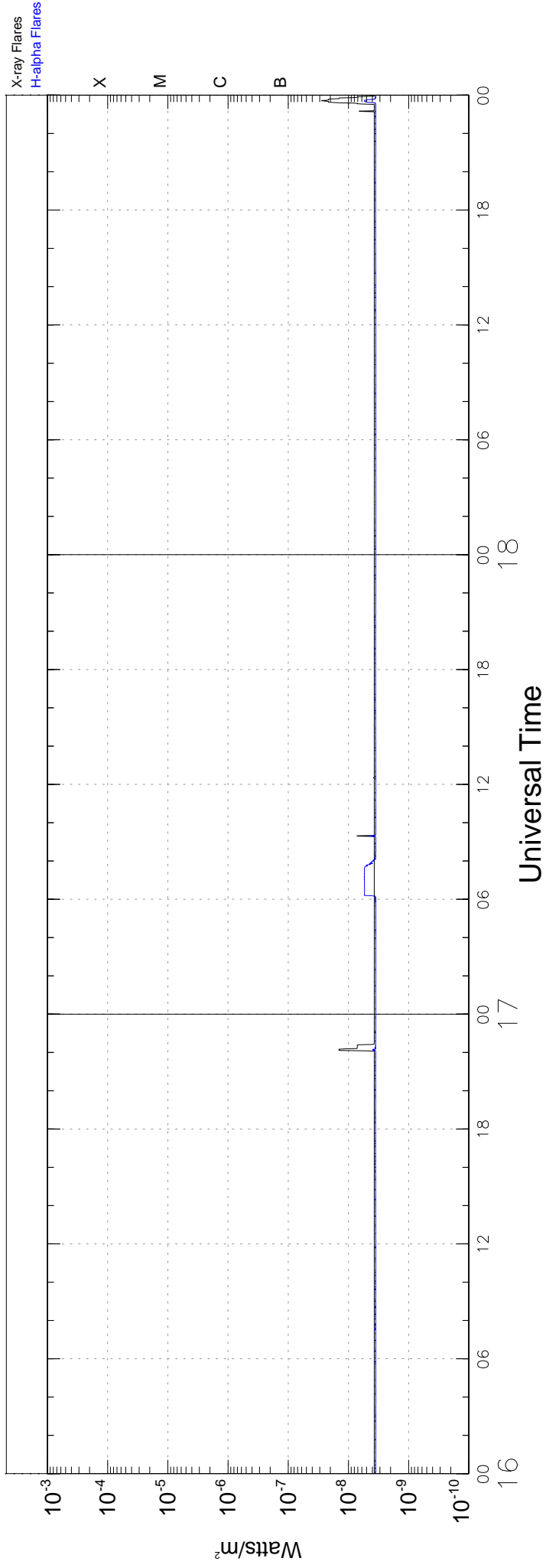
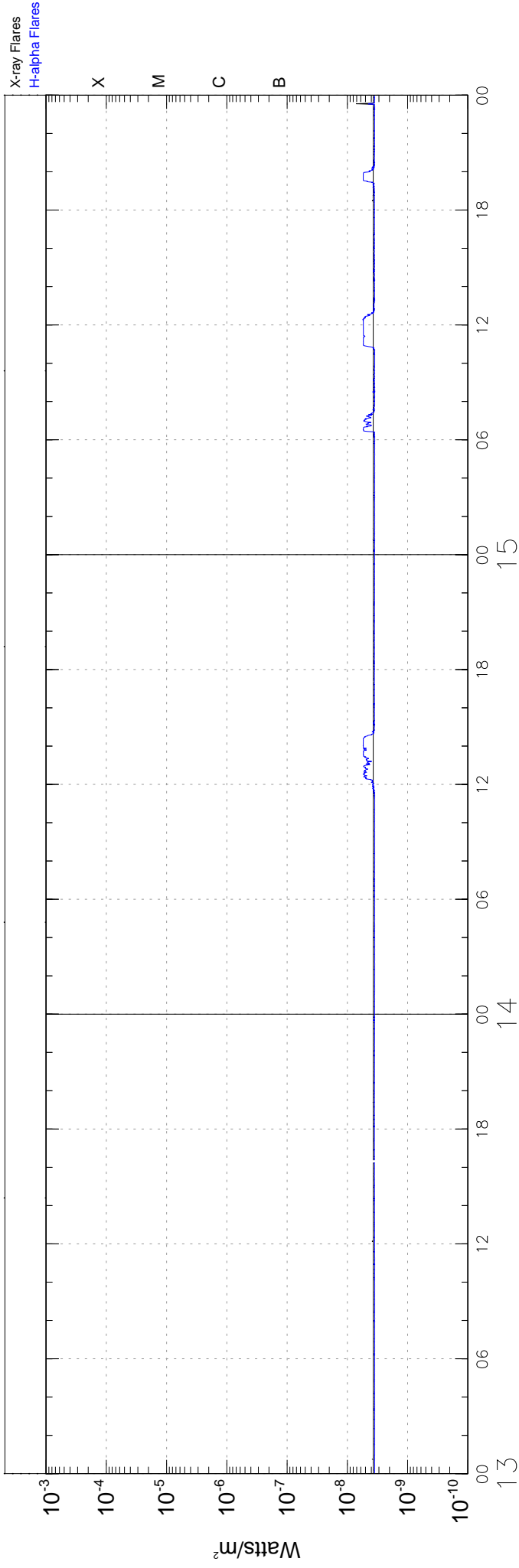
GOES-10 Solar X-Rays (1-Minute Averages) January 2009



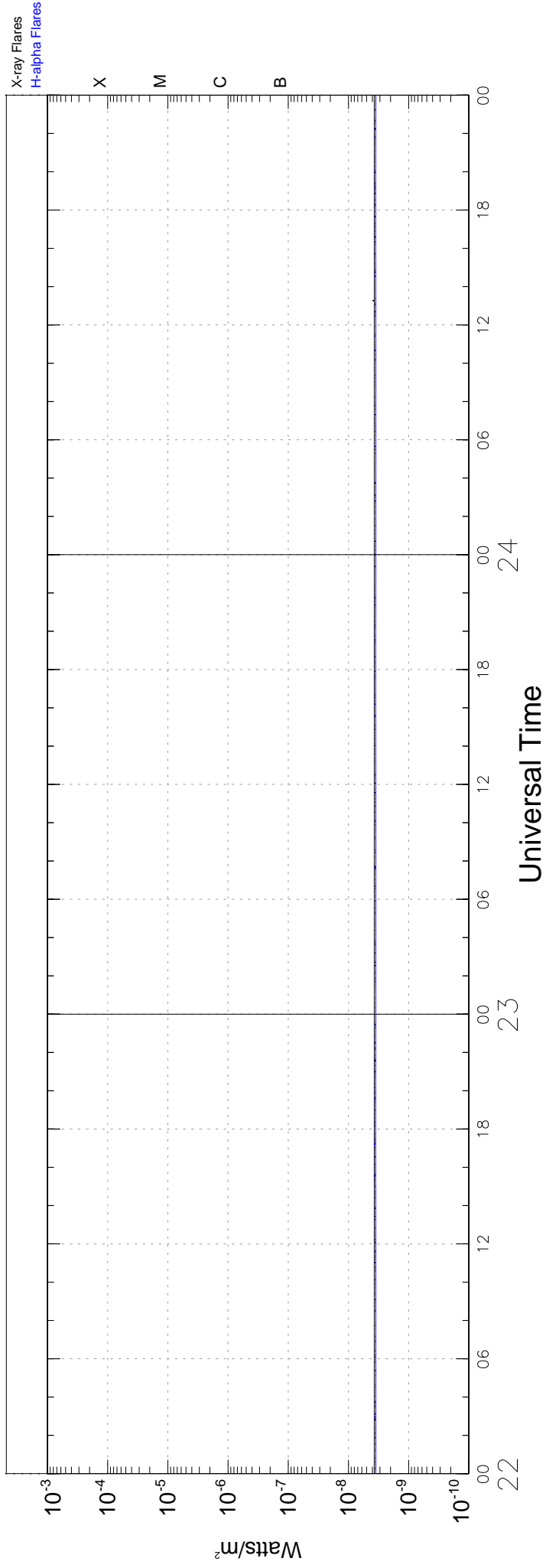
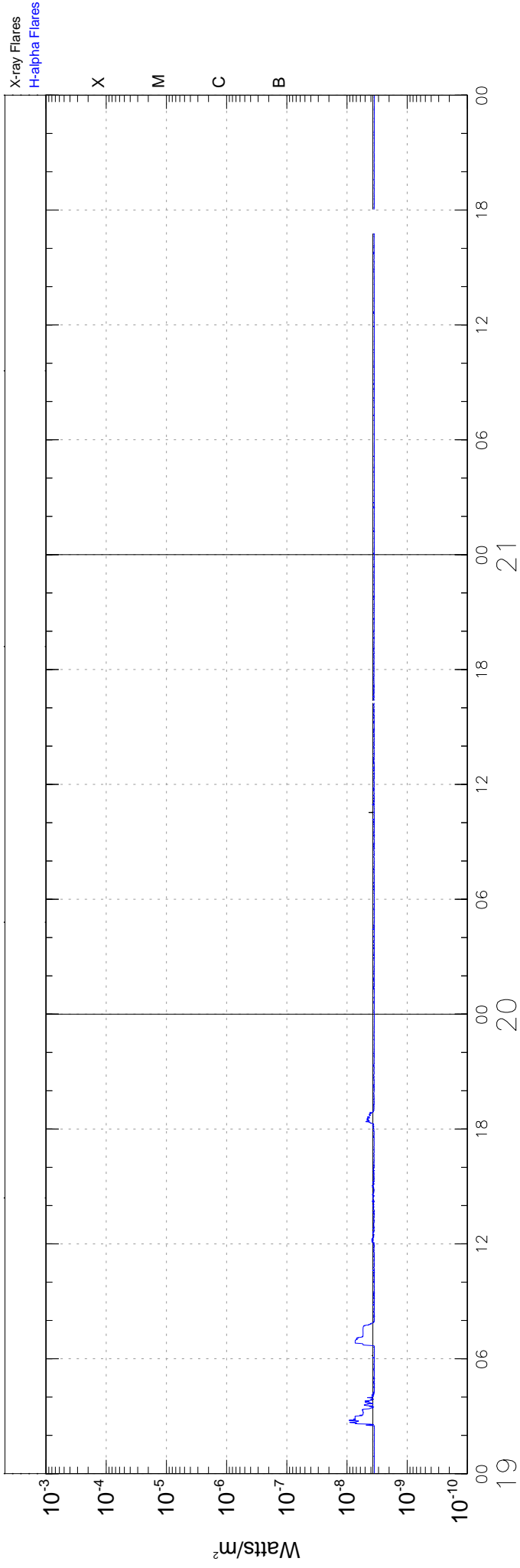
GOES-10 Solar X-Rays (1-Minute Averages) January 2009



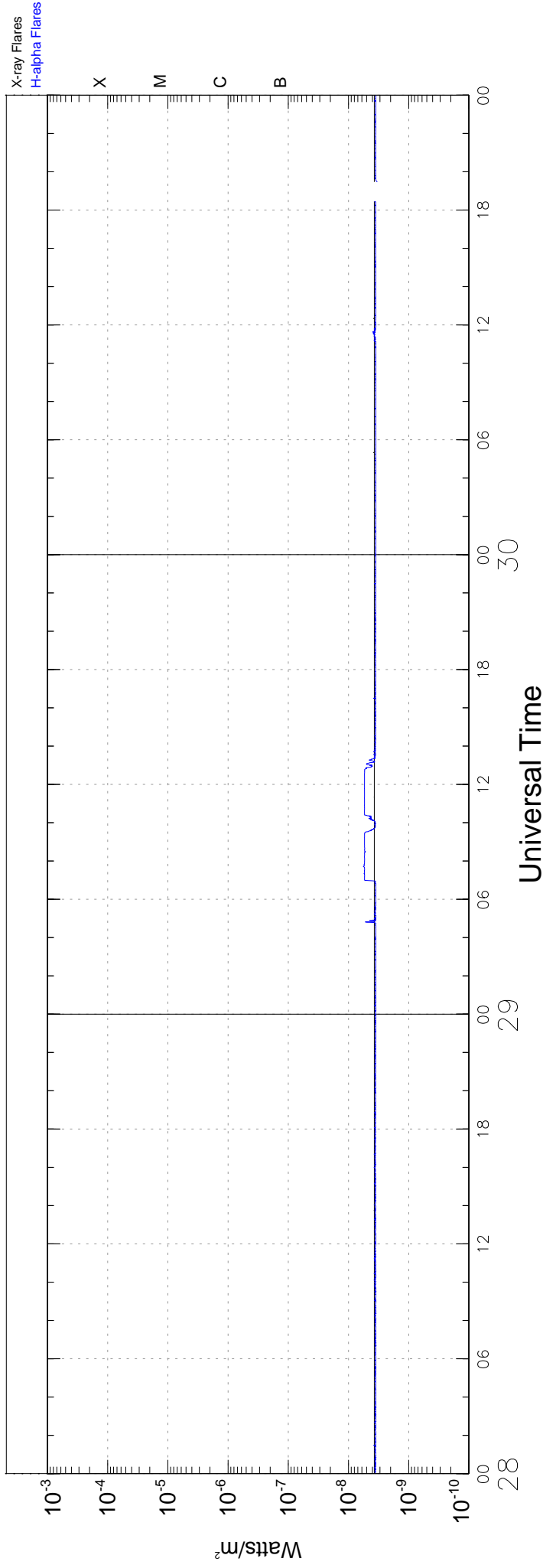
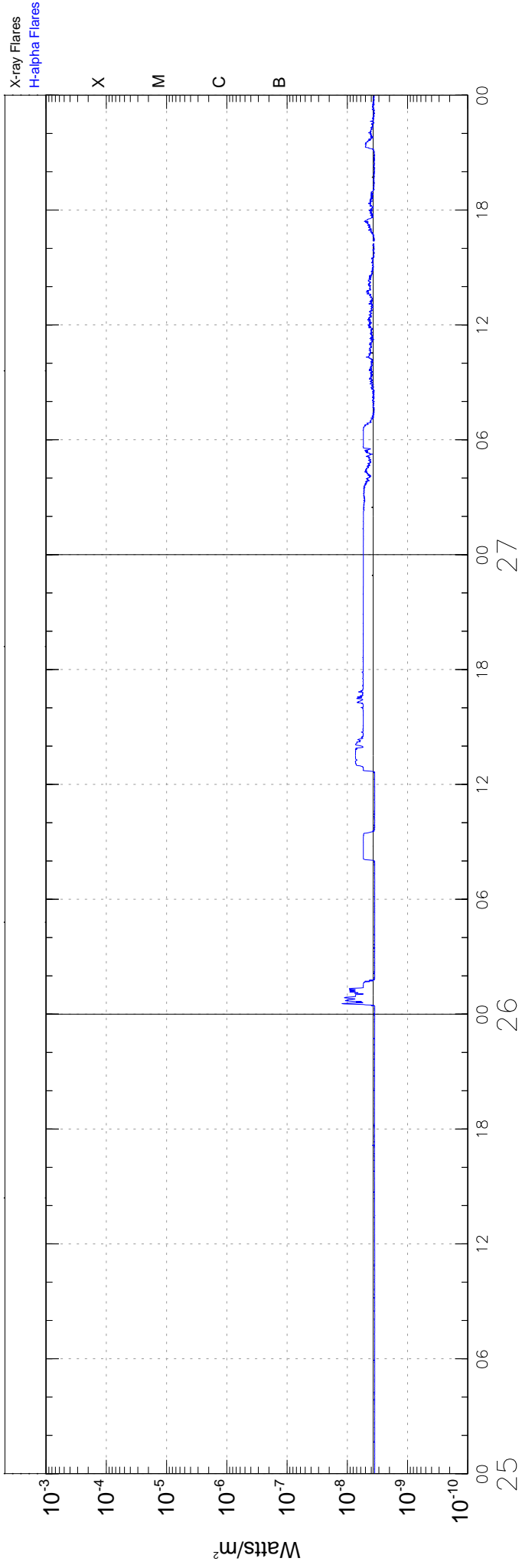
GOES-10 Solar X-Rays (1-Minute Averages) January 2009



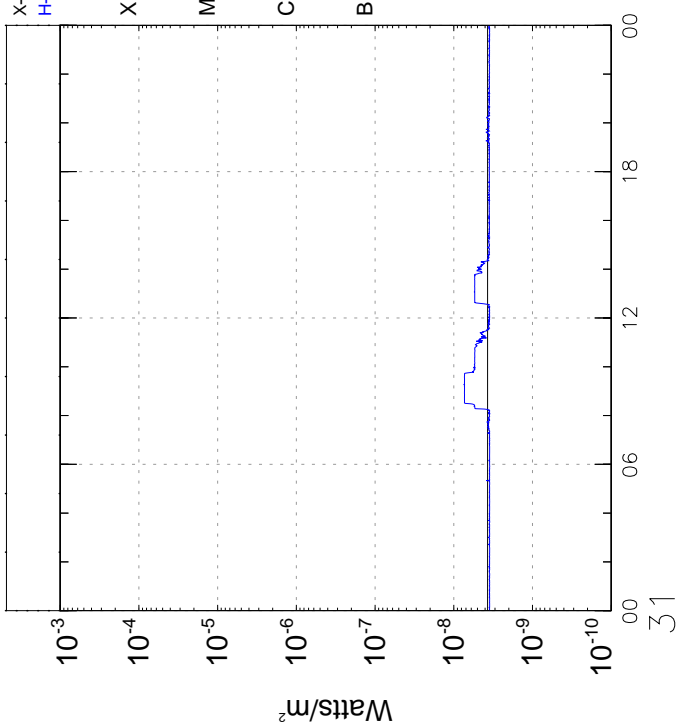
GOES-10 Solar X-Rays (1-Minute Averages) January 2009



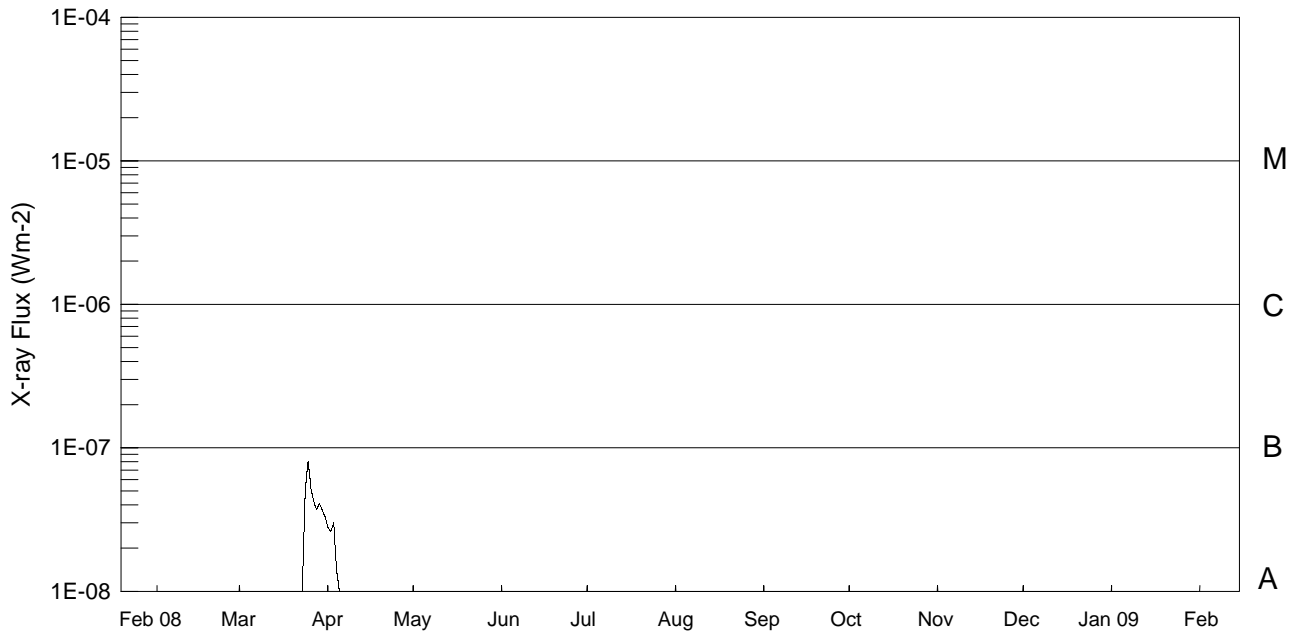
GOES-10 Solar X-Rays (1-Minute Averages) January 2009



X-ray Flares
H-alpha Flares



Preliminary GOES Satellite Daily X-Ray Background Feb 2008 - Jan 2009



Day	Feb 08	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 09
1	<A1.0	<A1.0	A2.8	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
2	<A1.0	<A1.0	A2.6	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
3	<A1.0	<A1.0	A3.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
4	<A1.0	<A1.0	A1.4	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
5	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
6	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
7	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
8	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
9	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
10	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
11	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
12	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
13	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
14	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
15	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
16	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
17	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
18	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
19	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
20	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
21	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
22	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
23	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
24	<A1.0	A5.1	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
25	<A1.0	A8.1	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
26	<A1.0	A5.2	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
27	<A1.0	A4.2	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
28	<A1.0	A3.7	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
29	<A1.0	A4.1	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
30		A3.7	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
31		A3.3		<A1.0		<A1.0	<A1.0		<A1.0		<A1.0	<A1.0

Levels below B1.0 are unreliable.

JANUARY 2009

Day	Event Type	Start (UT)	End (UT)	Lat	CMD	CMP Mo	Day	Imp	Extent	Blue Shift (.1 A)	Red Shift (.1 A)	Obs Type	Sta	NOAA/USAF Reg#	Remarks
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No Reports

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

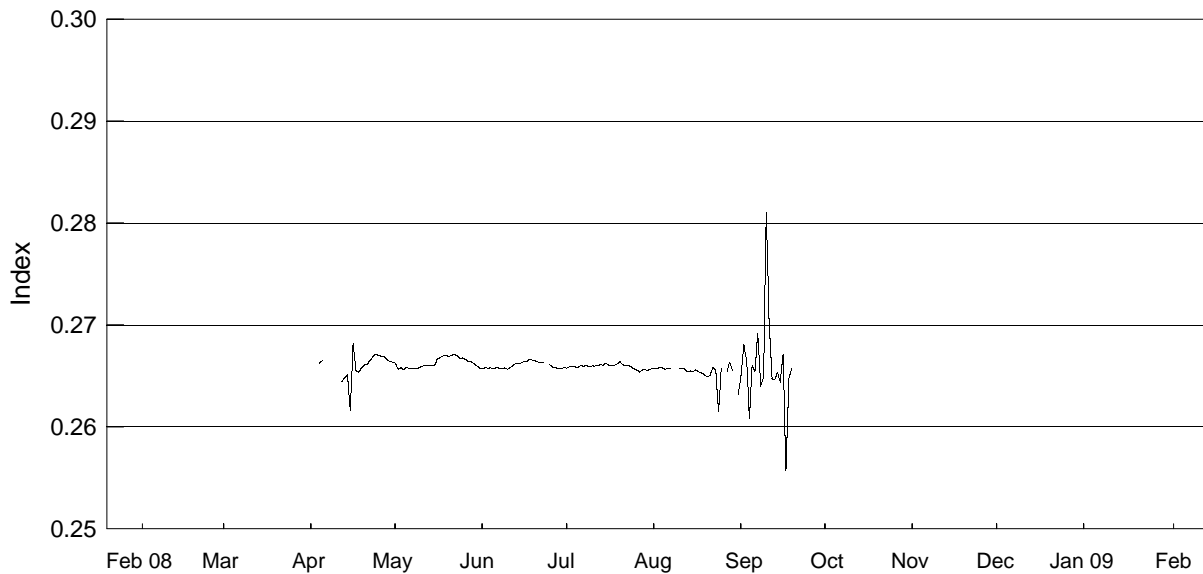
ABST = Abastumani	HOLL = Holloman	RAMY = Ramey
ATHN = Athens	KHAR = Kharkov	SVTO = San Vito
BUCA = Bucharest	LEAR = Learmonth	VORO = Voroshilov
CATA = Catania	PALE = Palehua	VALA = Valasske Mezirici
		WROC = Wroclaw

NOTE: The U.S. Air Force solar observing sites (HOLL, LEAR, RAMY, AND SVTO) have changed operational requirements and will only report the following: BSL, EPL, LPS, SPY, and DSF's.

NOAA Solar Ultraviolet (UV) MgII Core-to-Wing Index

Feb 2008 - Jan 2009

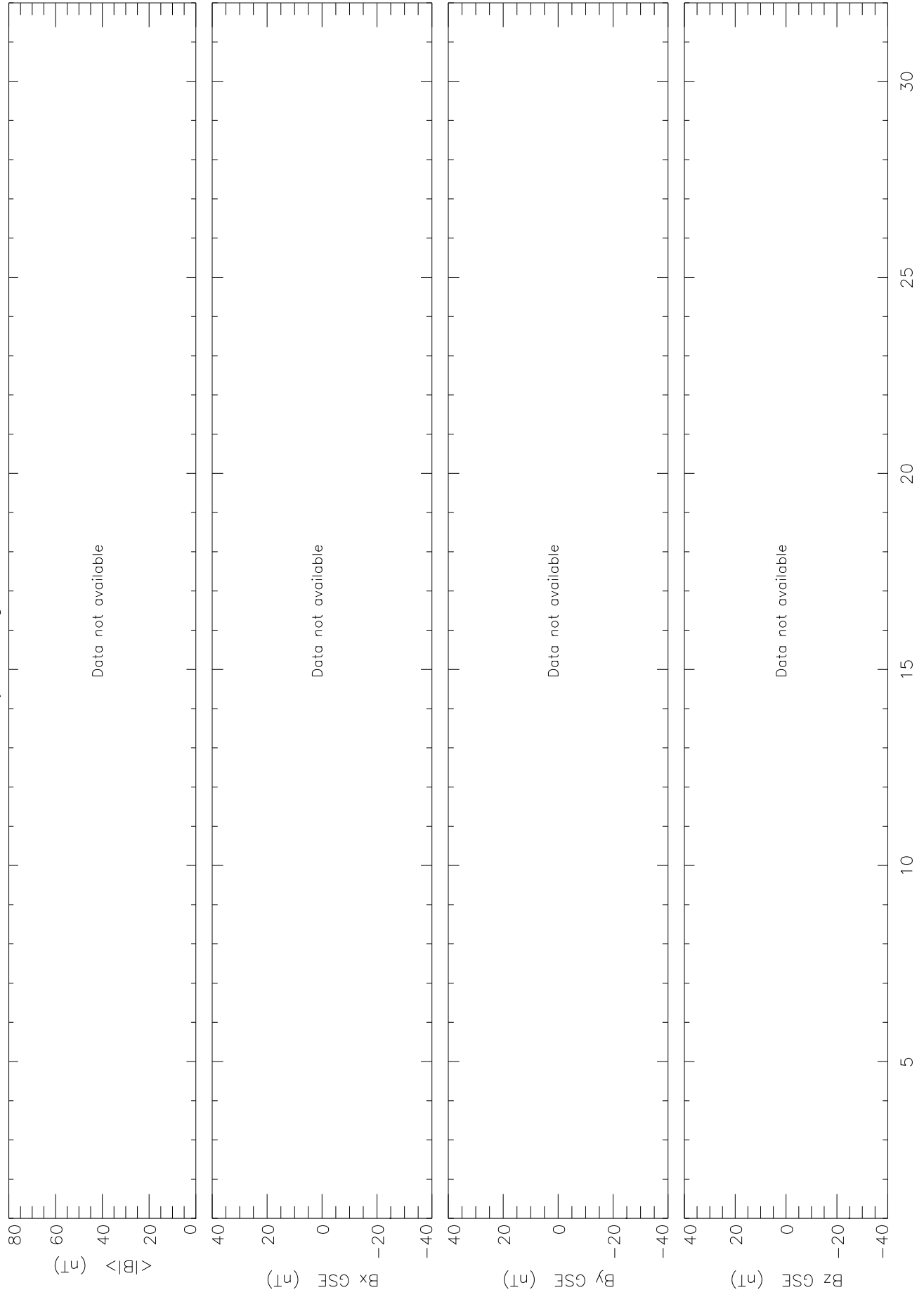
Version 9.1



Day	Feb 08	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 09
1	---	---	---	0.2663	0.2657	0.2658	0.2657	0.2650	---	---	---	---
2	---	---	---	0.2657	0.2658	0.2659	0.2657	0.2681	---	---	---	---
3	---	---	---	0.2658	0.2658	0.2660	0.2658	0.2664	---	---	---	---
4	---	---	0.2663	0.2656	0.2658	0.2659	0.2658	0.2608	---	---	---	---
5	---	---	0.2665	0.2659	0.2657	0.2658	0.2657	0.2661	---	---	---	---
6	---	---	---	0.2657	0.2659	0.2661	0.2657	0.2655	---	---	---	---
7	---	---	---	0.2657	0.2658	0.2659	0.2657	0.2692	---	---	---	---
8	---	---	---	0.2657	0.2658	0.2660	---	0.2640	---	---	---	---
9	---	---	---	0.2658	0.2658	0.2659	---	0.2649	---	---	---	---
10	---	---	---	0.2659	0.2657	0.2660	0.2658	0.2810	---	---	---	---
11	---	---	---	0.2660	0.2658	0.2660	0.2657	0.2704	---	---	---	---
12	---	---	0.2644	0.2660	0.2661	0.2660	0.2657	0.2648	---	---	---	---
13	---	---	0.2649	0.2660	0.2663	0.2661	0.2654	0.2646	---	---	---	---
14	---	---	0.2651	0.2660	0.2662	0.2661	0.2655	0.2654	---	---	---	---
15	---	---	0.2617	0.2661	0.2663	0.2663	0.2654	0.2644	---	---	---	---
16	---	---	0.2682	0.2667	0.2665	0.2660	0.2656	0.2671	---	---	---	---
17	---	---	0.2655	0.2668	0.2665	0.2660	0.2654	0.2557	---	---	---	---
18	---	---	0.2654	0.2670	0.2667	0.2660	0.2653	0.2647	---	---	---	---
19	---	---	0.2658	0.2670	0.2665	0.2662	0.2651	0.2658	---	---	---	---
20	---	---	0.2661	0.2669	0.2665	0.2664	0.2649	---	---	---	---	---
21	---	---	0.2662	0.2670	0.2664	0.2661	0.2650	---	---	---	---	---
22	---	---	0.2665	0.2672	0.2664	0.2660	0.2659	0.2637	---	---	---	---
23	---	---	0.2669	0.2670	0.2664	0.2660	0.2656	---	---	---	---	---
24	---	---	0.2671	0.2667	---	0.2659	0.2615	---	---	---	---	---
25	---	---	0.2670	0.2668	0.2661	0.2657	0.2657	0.2561	---	---	---	---
26	---	---	0.2669	0.2666	0.2659	0.2656	---	---	---	---	---	---
27	---	---	0.2669	0.2664	0.2659	0.2654	0.2654	---	---	---	---	---
28	---	---	0.2666	0.2664	0.2657	0.2656	0.2664	---	---	---	---	---
29	---	---	0.2664	0.2662	0.2657	0.2656	0.2655	---	---	---	---	---
30	---	---	0.2664	0.2662	0.2658	0.2656	---	---	---	---	---	---
31	---	---	---	0.2660	---	0.2656	0.2632	---	---	---	---	---
Mean	---	---	0.2660	0.2663	0.2660	0.2659	0.2651	0.2654	---	---	---	---

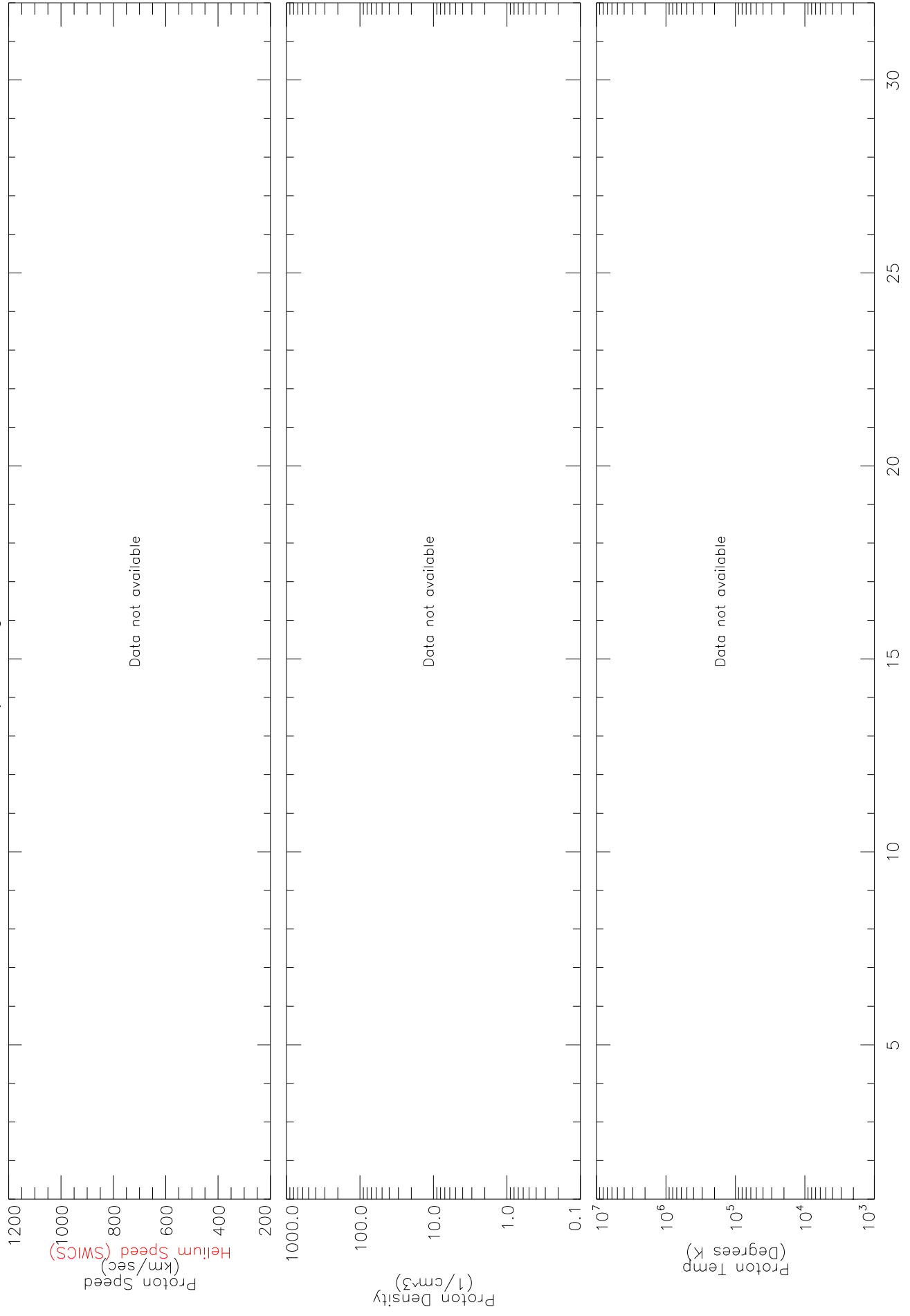
Data at: <http://www.swpc.noaa.gov/ftpmenu/sbuw.html>

ACE LEVEL2 DATA Interplanetary Magnetic Field
Hourly Averages for JANUARY 2009, from MAG



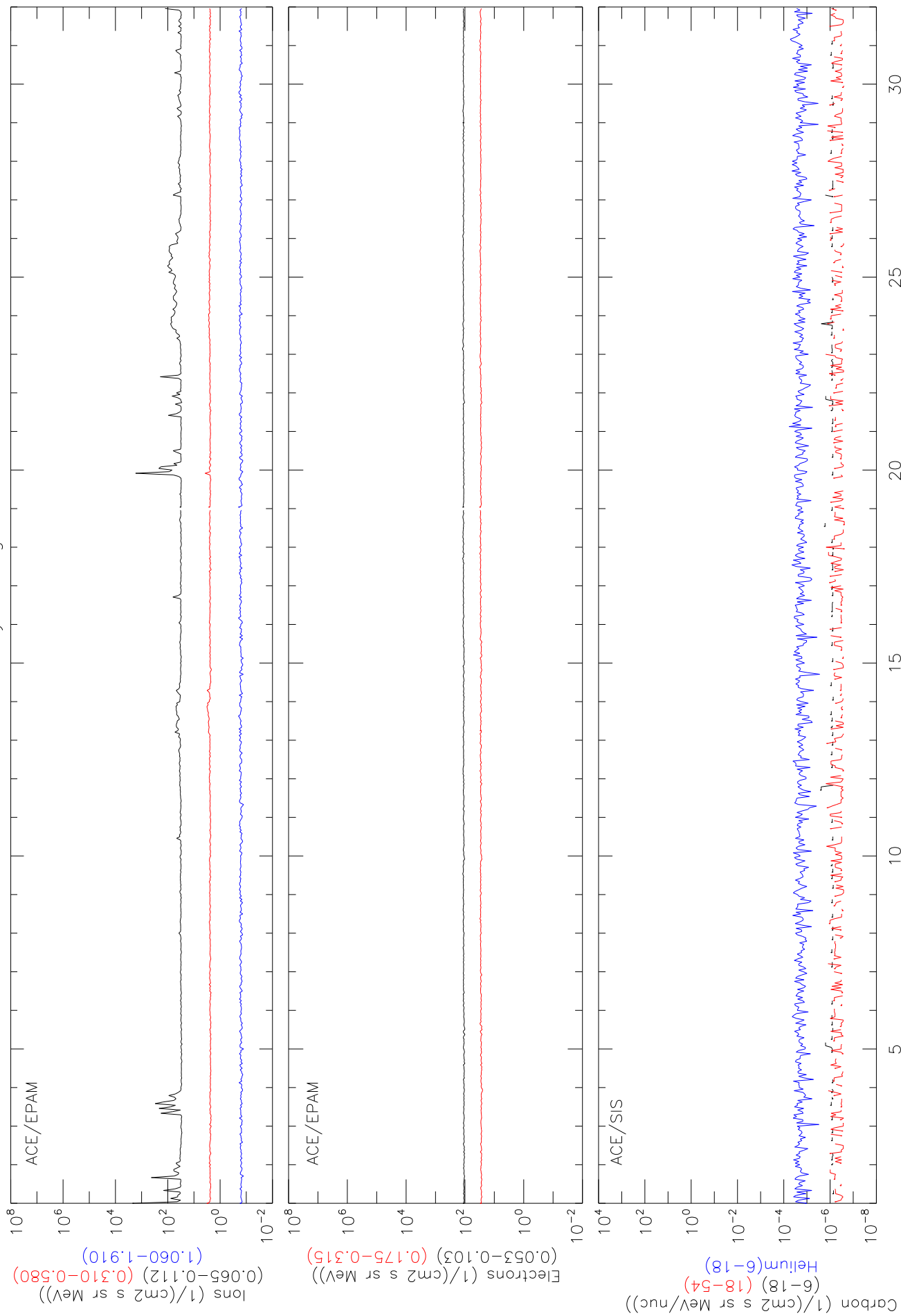
DAYS OF JANUARY 2009

ACE LEVEL2 DATA Solar Wind Plasma Hourly Averages for JANUARY 2009, from SWEPM



DAYS OF JANUARY 2009

Solar Energetic Particles ACE LEVEL2 DATA Hourly Averages for JANUARY 2009



SOLAR CORONAL MASS EJECTIONS (CMEs) FROM SOHO/LASCO

<http://cdaw.gsfc.nasa.gov/>

Center for Solar Physics and Space Weather (CSPSW) – The Catholic University of America/NRL/NASA
JANUARY 2009

First C2 Appearance		Central Width			Linear Fit			----2nd order speed----		Accel	Measurement	
Date	Time UT	Position Angle degree	Angular Width degree	Speed km/s	Initial km/s	Final km/s	20R km/s		m/s ²	Position Angle degree	Remarks	
2009/01/01	00:30:03	269	12	250	170	328	332		3.9*	274	Very Poor Event	
2009/01/01	05:06:03	287	18	302	125	481	498		10.0*	285	Very Poor Event	
2009/01/01	20:30:04	250	17	244	238	249	264		0.5*	260	Very Poor Event	
2009/01/02	00:30:03	66	7	359	436	275	0		-20.3*	71	Very Poor Event	
2009/01/02	13:31:37	26	4	201	40	378	1971		163.6*	34	Very Poor; 3 pts; Only C2	
2009/01/02	15:06:03	30	8	204	299	113	0		-34.3*	34	Very Poor Event; Only C2	
2009/01/02	17:54:03	29	8	291	157	413	1179		56.3*	33	Very Poor Event; Only C2	
2009/01/02	21:08:02	32	7	483	358	609	1329		69.6*	40	Very Poor Event; Only C2	
2009/01/03	06:30:03	3	6	284	111	444	1158		55.1*	5	Very Poor Event; Only C2	
2009/01/03	11:54:03	63	29	302	324	278	0		-4.5*	65	Poor Event	
2009/01/04	15:54:03	178	8	453	495	413	0		-22.8*	176	Very Poor Event; Only C2	
2009/01/04	20:30:03	274	38	247	218	276	391		4.4*	278	Poor Event	
2009/01/05	15:30:03	271	13	187	180	196	201		0.4*	279	Very Poor Event	
2009/01/05	20:30:03	261	13	290	284	295	369		2.3*	262	Very Poor Event; Only C2	
2009/01/06	01:31:39	195	10	497	318	694	2105		182.3*	195	Very Poor; 3 pts; Only C2	
2009/01/06	05:30:27	2	8	188	96	276	902		33.9*	5	Very Poor Event; Only C2	
2009/01/06	08:30:03	270	24	166	135	203	354		4.4*	269	Very Poor Event	
2009/01/06	15:06:03	4	8	230	312	147	0		-57.1*	7	Very Poor; 3 pts; Only C2	
2009/01/08	15:30:03	9	7	241	276	208	0		-9.3*	13	Very Poor Event; Only C2	
2009/01/08	22:30:03	105	87	146	96	193	240		2.1*	102	Very Poor Event	
2009/01/10	01:54:03	59	9	249	397	116	0		-39.0*	65	Very Poor; 3 pts; Only C2	
2009/01/10	06:54:03	191	10	586	804	388	0		-192.4*	192	Very Poor; 3 pts; Only C2	
2009/01/10	07:30:03	148	6	409	511	301	0		-58.2*	143	Very Poor; 3 pts; Only C2	
2009/01/11	05:30:03	263	36	331	275	392	475		6.4*	263		
2009/01/11	08:30:04	264	21	205	128	279	367		5.2*	273	Very Poor Event	
2009/01/11	14:30:03	105	29	128	142	114	0		-2.5*	103	Very Poor Event; Only C2	
2009/01/11	22:30:03	260	18	177	232	128	0		-5.5*	259	Very Poor Event	
2009/01/11	23:30:03	344	9	428	566	292	0		-78.4*	342	Very Poor Event; Only C2	
2009/01/12	06:54:03	256	21	178	188	167	137		-0.7*	261	Very Poor Event	
2009/01/14	05:54:04	179	4	439	567	313	0		-69.6*	179	Very Poor Event; Only C2	
2009/01/14	06:06:03	74	104	298	221	377	358		3.3	76		
2009/01/15	12:06:03	278	58	266	30	560	537		11.7*	279		
2009/01/16	01:54:03	272	10	260	276	240	245		-0.7*	262		
2009/01/16	02:06:03	161	9	337	211	463	1114		49.4*	159	Very Poor Event; Only C2	
2009/01/16	04:54:03	161	5	186	164	206	534		10.8*	159	Very Poor Event; Only C2	
2009/01/16	22:30:03	276	40	251	140	370	380		5.2*	274		
2009/01/17	04:30:03	92	84	85	0	217	247		2.5*	76		
2009/01/18	16:30:03	280	36	320	125	515	722		20.7*	276	Poor Event	
2009/01/18	20:58:38	23	11	448	372	528	1100		46.9*	35	Very Poor; 3 pts; Only C2	
2009/01/19	13:31:42	225	11	339	154	541	2101		187.7*	233	Very Poor; 3 pts; Only C2	

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SOLAR CORONAL MASS EJECTIONS (CMEs) FROM SOHO/LASCO

<http://cdaw.gsfc.nasa.gov/>

Center for Solar Physics and Space Weather (CSPSW) – The Catholic University of America/NRL/NASA
JANUARY 2009

First C2 Appearance		Central Width			Linear Fit			----2nd order speed----	Accel	Measurement	
Date	Time UT	Position Angle degree	Angular Width degree	Speed km/s	Initial km/s	Final km/s	20R km/s	m/s ²	Position Angle degree	Remarks	
2009/01/20	05:06:03	256	55	149	0	355	346	5.0	254		
2009/01/20	18:30:03	198	5	426	574	279	0	-82.7*	202	Very Poor Event; Only C2	
2009/01/20	21:30:06	140	11	343	234	462	1595	105.8*	135	Very Poor; 3 pts; Only C2	
2009/01/21	18:54:03	253	73	220	107	352	348	4.5*	261		
2009/01/22	18:06:03	255	10	304	277	332	366	2.4*	261	Poor Event	
2009/01/23	18:30:03	248	5	254	66	434	845	34.5*	251	Very Poor Event	
2009/01/23	20:54:05	165	3	504	669	350	0	-147.5*	163	Very Poor; 3 pts; Only C2	
2009/01/24	12:30:03	67	13	145	118	174	246	1.9*	75	Very Poor Event	
2009/01/25	02:30:03	70	26	268	75	439	553	12.4*	73		
2009/01/25	06:30:03	174	9	527	546	507	185	-11.2*	171	Very Poor Event; Only C2	
2009/01/25	09:54:03	99	74	67	63	71	90	0.2*	94	Very Poor Event	
2009/01/26	06:54:03	171	7	308	266	353	802	24.2*	167	Very Poor; 3 pts; Only C2	
2009/01/26	07:31:39	3	6	329	55	749	3016	389.4*	6	Very Poor; 3 pts; Only C2	
2009/01/26	12:30:03	108	21	190	231	146	0	-3.4*	110	Poor Event	
2009/01/26	22:30:03	141	8	121	132	110	0	-4.4*	137	Very Poor Event; Only C2	
2009/01/27	07:06:04	262	39	301	297	306	312	0.4*	268	Poor Event	
2009/01/28	20:54:03	22	10	275	380	173	0	-57.8*	26	Very Poor Event; Only C2	
2009/01/29	10:30:42	60	9	341	454	231	0	-45.2*	67	Poor Event; Only C2	
2009/01/29	19:30:03	103	15	194	153	234	331	3.7*	100	Very Poor Event	
2009/01/30	16:00:38	252	11	190	152	228	506	9.7*	256	Very Poor Event; Only C2	
2009/01/30	23:06:04	308	7	102	0	252	246	2.7*	282		
2009/01/31	02:30:03	81	38	268	237	296	302	1.5	91		

* Acceleration is uncertain due to either poor height measurement or a small number of height-time measurements.