目　　录
CONTENTS

1990年8月

太阳黑子相对数与面积数 …… (1)
Daily Relative Sunspot Numbers and Sunspot Areas
太阳黑子观测 …… (2)
Daily Sunspot Observations
太阳黑子相对数的平滑值预报 …… (19)
Smoothed (Predicted) Sunspot Numbers
H_α 太阳耀斑 …… (15)
H—Alpha Solar Flares
H_α 耀斑巡视时间 …… (20)
Intervals of H—Alpha Flare Patrol Observation
太阳活动区磁场和速度场观测 …… (21)
Observation of Magnetic and Velocity Fields of Solar Active Regions
太阳射电辐射流量 …… (25)
Solar Radio Emission Flux
太阳射电辐射显著事件 …… (26)
Solar Radio Emission Outstanding Occurrences
太阳射电辐射显著事件图 …… (　)
Profiles of Solar Radio Emission Outstanding Occurrences
太阳射电辐射巡视时间 …… (28)
Intervals of Solar Radio Emission Patrol Observation
宇宙线强度 …… (30)
Cosmic Ray Intensity
突然电离层扰动（D层）…… (33)
Sudden Ionospheric Disturbances (D—Region)
地磁活动指数K和 A_K …… (36)
The Geomagnetic Activity Indices K and A_K
磁暴 …… (37)
Magnetic Storms
论文 …… (38)
Paper

DAILY RELATIVE SUNSPOT NUMBERS AND SUNSPOT AREAS

AUGUST 1990

		Relative-Numbers			Sunspot Areas					
					Drawing			Photographic		
Day	Gro.	N.H.	S.H.	Sum	N.H.	S.H.	Sum	N.H.	S.H.	Sum
1	14	61	96	157	1330	391	1721			
2	15	90	74	164	1580	1098	2678	1282	665	1947
3	14	89	63	152	1659	1010	2669	1753	696	2449
4	12	89	49	138	1373	1190	2563			
5	13	70	68	138	1116	497	1613			
6	11	78	62	140	1014	255	1269	959	173	1132
7	12	80	61	141	821	150	971			
8	12	92	62	154	804	375	1179	774	421	1195
9	14	81	61	142	962	392	1354	380	133	513
10	18	104	85	189	1140	332	1472	719	222	941
11	18	104	86	190	1168	346	1514			
12	19	120	76	196	895	167	1062	1700	57	1757
13	20	141	96	237	931	165	1096	522	66	588
14	17	134	97	231	1304	619	1923	1003	196	1199
15	16	129	96	225	1390	541	1931			
16	16	145	88	233	1507	472	1979	1449	676	2125
17	19	150	109	259	1501	578	2079	2009	581	2590
18	20	129	97	226	1572	1533	3105			
19	22	143	130	273	1615	1940	3555	2345	2850	5195
20	20	140	171	311	1761	2674	4435	2549	3558	6107
21	20	109	190	299	1279	4490	5769	993	4089	5082
22	19	86	225	311	896	5267	6163	937	5315	6252
23	17	67	195	262	756	4967	5723	549	4700	5249
24	14	57	165	222	829	4420	5249	1103	3638	4741
25	13	51	179	230	916	4074	4990	2071	3662	5733
26	15	75	180	255	1030	3177	4207			
27	11	76	130	206	839	2668	3507			
28	12	73	126	199	1030	2426	3456	1798	655	2453
29	12	72	110	182	1029	2451	3480	771	2322	3093
30	15	83	112	195	1042	2056	3098	1094	1619	2713
31	14	80	97	177	1021	825	1846	1031	696	1727
Mean		96.7	110.8	207.5	1164.8	1662.8	2827.6			

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Max	See Remarks
1.00	371	7-26.7	-20	121	69W	AXX	0.95	8	14	7	4
	374	7-28.0	-13	104	52W	CSI	0.82	71	62	55	4
	379	7-29.6	-21	82	34W	DRI	0.70	177	124	59	4
	380	7-29.9	-12	79	28W	HSX	0.53	151	89	89	4
	381	7-30.6	-21	69	16W	BXO	0.53	8	5	2	4
	383	7-30.0	-26	77	26W	AXX	0.64	17	11	5	4
	384	8- 1.4	15	46	5E	CSI	0.17	227	115	109	4
	385	8- 2.4	18	33	17E	CSI	0.36	139	74	68	4
	394	8- 2.3	-8	34	17E	CRI	0.37	80	43	38	4
	395	8- 5.9	-6	346	66E	CRO	0.92	34	43	37	4
	396	8- 6.8	23	334	74E	DHI	0.95	349	582	337	4
	397	8- 6.7	16	335	76E	HHX	0.95	324	540	540	4
	398	7-29.8	10	80	29W	AXX	0.48	8	5	2	4
	399	8- 7.3	6	328	85E	AXX	0.99	4	14	14	4
2.20	374				68W	HRX	0.94	13	19	19	3
	377	7-28.9	11	92	58W	DSI	0.84	147	135	70	3
	379				48W	EKC	0.82	1093	946	488	3
	380				43W	CSO	0.72	101	73	70	3
	384				11W	HSX	0.24	219	113	113	3
	385				2E	CAI	0.22	177	90	82	3
	394				1E	CRO	0.23	42	22	15	3
	395				50E	HRX	0.78	42	34	34	3
	396				58E	DHI	0.85	564	536	280	3
	397				59E	CHI	0.86	564	556	548	3
	398				43W	AXX	0.68	8	6	3	3
	399				68E	AXX	0.92	8	11	5	3
	400	8- 3.7	18	15	19E	BXO	0.36	8	5	2	3
	401	8- 5.6	-17	350	53E	AXX	0.83	4	4	4	3
	402	8- 8.3	23	315	79E	DSO	0.98	55	128	108	3
3.02	374				79W	AXX	0.99	4	14	14	3
	377				70W	DSI	0.93	156	213	86	3
	379				57W	EKC	0.90	849	959	522	3
	380				54W	CSO	0.83	34	30	26	3
	384				22W	HSX	0.39	202	110	110	3
	385				8W	CAI	0.26	147	76	70	3
	394				10W	BXI	0.29	13	7	2	3
	395				37E	HRX	0.63	17	11	8	3

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Whole	Area Max	See Remarks
	396				48E	DHI	0.76	732	562	290	3
	397				49E	CKI	0.75	690	519	506	3
	399				56E	BXO	0.82	13	11	4	3
	400				9E	AXX	0.26	4	2	2	3
	401				38E	AXX	0.69	4	3	3	3
	402				68E	DSO	0.92	130	166	144	3
4.07	377				83E	DRO	0.99	34	111	56	3
	379				70W	EKC	0.97	589	1131	630	3
	380				68W	AXX	0.93	8	12	6	3
	384				35W	CSO	0.59	164	101	99	3
	385				21W	CAI	0.40	151	83	78	3
	388	8- 1.2	-9	48	35W	DRO	0.62	55	35	19	3
	395				24E	BXI	0.46	13	7	2	3
	396				35E	DHI	0.61	770	485	265	3
	397				35E	DHI	0.57	728	445	421	3
	399				42E	BXO	0.67	8	6	3	3
	401				21E	BXO	0.55	8	5	3	3
	402				54E	CSO	0.82	164	142	131	3
5.00	379				80W	HHX	0.99	105	348	348	3
	384				48W	HSX	0.75	93	70	70	3
	385				33W	CSI	0.57	59	36	33	3
	388				49W	DSO	0.78	109	88	64	3
	394				38W	BXO	0.66	8	6	3	3
	395				11E	BXO	0.29	13	7	2	3
	396				22E	DHI	0.46	858	483	279	3
	397				22E	CHI	0.40	707	386	374	3
	399				27E	AXX	0.45	8	5	2	3
	401				8E	CRI	0.40	59	32	21	3
	402				41E	CAI	0.69	198	136	125	3
	403	8- 1.4	-16	46	48W	BXO	0.79	8	7	3	3
	404	8- 9.3	-19	301	57E	BXO	0.87	8	9	4	3
6.02	384				61W	HSX	0.87	84	86	86	4
	385				46W	CRI	0.72	25	18	12	4
	388				63W	DSI	0.91	101	120	100	4
	395				1W	BXO	0.22	13	6	2	4
	396				10E	DHI	0.33	744	395	212	4
	397				9E	CHI	0.23	723	372	363	4

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Max	See Remarks
	399				15E	AXX	0.26	8	4	2	4
	401				5W	DSI	0.40	172	94	32	4
	402				28E	CAI	0.53	236	139	116	4
	403				62W	BXO	0.90	25	28	9	4
	405	8- 6.6	-21	338	7E	BXO	0.48	13	7	5	4
7.08	384				75W	HRX	0.97	17	32	32	4
	385				60W	AXX	0.86	4	4	4	4
	388				78W	CRO	0.98	17	39	30	4
	395				16W	BXI	0.33	17	9	2	4
	396				4W	DHI	0.30	639	335	181	4
	397				5W	CHI	0.18	643	327	323	4
	399				3E	AXX	0.05	4	2	2	4
	400				46W	AXX	0.71	4	3	3	4
	401				20W	DSI	0.51	156	90	44	4
	402				15E	CAI	0.38	219	118	98	4
	405				8W	BXI	0.48	8	5	2	4
	406	8-12.6	-13	258	72E	AXX	0.95	4	7	7	4
8.06	395				31W	BXI	0.54	13	7	2	4
	396				16W	DSI	0.38	660	357	186	4
	397				19W	CHI	0.32	639	338	329	4
	399				12W	BXI	0.21	8	4	2	4
	401				32W	DKI	0.63	484	312	174	4
	402				3E	CAI	0.29	109	57	42	4
	405				24W	DRI	0.60	55	34	24	4
	406				60E	CRI	0.89	17	18	9	4
	407	8- 3.6	30	17	60W	AXX	0.86	4	4	4	4
	408	8- 6.2	18	343	25W	BXO	0.44	8	5	2	4
	409	8- 8.6	-10	310	8E	BXI	0.32	8	4	2	4
	410	8-13.8	13	242	78E	BXI	0.98	17	39	20	4
9.06	396				29W	DSO	0.53	580	342	171	3
	397				30W	CHO	0.51	526	305	302	3
	399				27W	AXX	0.45	4	2	2	3
	400				72W	BXO	0.94	13	19	13	3
	401				45W	DSI	0.77	387	303	142	3
	402				11W	CRI	0.34	17	9	7	3
	405				38W	CRO	0.72	29	21	15	3
	406				47E	CSI	0.76	67	52	45	3

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Max	See Remarks
	409				6W	BXO	0.31	8	4	2	3
	410				64E	DAC	0.89	168	181	99	3
	411	8-11.1	28	277	26E	AXX	0.52	8	5	2	3
	412	8-11.4	-18	274	33E	AXX	0.66	4	3	3	3
	413	8-13.3	-10	248	60E	AXX	0.87	8	9	4	3
	414	8-14.6	12	231	81E	DSO	0.98	42	99	59	3
10.07	395				58W	AXX	0.85	4	4	4	4
	396				42W	DSO	0.68	437	298	155	4
	397				43W	CHO	0.68	383	260	258	4
	399				38W	BXO	0.61	8	5	3	4
	401				58W	DSO	0.89	160	172	63	4
	402				25W	BXI	0.48	13	7	2	4
	405				51W	BXO	0.83	13	11	4	4
	406				33E	CSO	0.61	160	101	95	4
	409				20W	BXO	0.44	8	5	2	4
	410				50E	DAC	0.76	383	294	184	4
	412				20E	BXO	0.52	8	5	2	4
	413				47E	BXO	0.76	8	6	3	4
	414				69E	DSI	0.92	88	112	91	4
	415	8-10.4	25	287	5E	BXI	0.32	8	4	2	4
	416	8-11.9	22	267	24E	BXI	0.47	13	7	2	4
	417	8-13.2	-33	250	37E	CRO	0.80	21	18	11	4
	418	8-14.2	-31	236	51E	BXO	0.91	8	10	5	4
	419	8-16.3	16	208	82E	DRI	0.99	46	153	70	4
11.00	396				54W	DSO	0.80	278	234	124	5
	397				56W	CSO	0.82	257	222	171	5
	401				72W	DSO	0.95	118	196	105	5
	402				40W	BXO	0.68	8	6	3	5
	405				66W	AXX	0.94	4	6	6	5
	406				21E	CSI	0.47	168	95	88	5
	409				31W	BXO	0.57	8	5	3	5
	410				37E	DAC	0.60	450	281	149	5
	411				2E	BXI	0.38	8	5	2	5
	412				5E	BXO	0.41	21	12	9	5
	413				33E	AXX	0.59	8	5	3	5
	414				55E	DSI	0.82	177	153	124	5
	415				17E	BXI	0.39	13	7	2	5
	416				11E	AXX	0.36	4	2	2	5

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Corre. Area Max	See Remarks
	417				26E	BXO	0.74	13	9	3	5
	418				42E	BXO	0.84	8	8	4	5
	419				71E	DSC	0.94	172	258	113	5
	420	8-17.2	-17	196	78E	AXX	0.98	4	10	10	5
12.10	396				68W	DSO	0.92	114	144	91	4
	397				70W	HSX	0.93	105	144	115	4
	401				85W	AXX	0.99	8	28	28	4
	406				7E	CSI	0.34	143	76	74	4
	410				22E	DSC	0.38	387	209	143	4
	411				12W	BXO	0.41	8	5	2	4
	412				10W	BXO	0.44	13	7	5	4
	413				17E	AXX	0.38	4	2	2	4
	414				40E	DAI	0.63	164	106	73	4
	415				26W	AXX	0.49	4	2	2	4
	416				3W	AXX	0.28	8	4	2	4
	417				14E	AXX	0.68	4	3	3	4
	418				30E	AXX	0.75	4	3	3	4
	419				57E	ESC	0.83	227	202	90	4
	420				69E	CRO	0.94	21	31	25	4
	421	8- 7.7	-6	322	58W	BXO	0.85	13	12	8	4
	422	8-14.0	-19	239	27E	BXO	0.59	8	5	3	4
	423	8-15.8	2	215	52E	BXO	0.77	13	10	7	4
	424	8-18.2	22	183	82E	HRX	0.98	29	69	69	4
13.19	396				82W	DSO	0.98	38	89	59	4
	397				84W	HSX	0.99	38	125	97	4
	406				8W	CSI	0.34	101	54	36	4
	410				7E	ESC	0.16	353	179	119	4
	411				27W	BXO	0.57	8	5	3	4
	412				24W	AXX	0.55	8	5	3	4
	413				2E	DRI	0.28	80	42	33	4
	414				20E	EAI	0.36	353	189	90	4
	415				44W	AXX	0.70	4	3	3	4
	416				17W	BXO	0.39	8	5	2	4
	417				0W	BXI	0.62	8	5	3	4
	418				14E	BXO	0.62	8	5	3	4
	419				43E	ESC	0.68	391	266	143	4
	420				55E	CRO	0.85	25	24	20	4
	421				72W	AXX	0.95	8	14	7	4

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Corre. Area Max	See Remarks
	422				13E	BXO	0.49	8	5	2	4
	423				35E	BXI	0.60	25	16	3	4
	424				67E	DRO	0.92	42	54	37	4
	425	8-15.3	-8	222	28E	BXI	0.51	8	5	2	4
	426	8-16.3	-3	209	43E	AXX	0.69	8	6	3	4
14.18	406				20W	CAI	0.46	193	109	102	3
	410				5W	DAI	0.13	362	182	127	3
	411				42W	AXX	0.72	8	6	3	3
	412				36W	AXX	0.68	8	6	3	3
	413				11W	CAI	0.34	219	116	94	3
	414				6E	EAC	0.16	492	249	94	3
	419				30E	ESC	0.53	429	253	139	3
	420				41E	CRI	0.72	38	27	15	3
	422				2W	AXX	0.44	8	5	2	3
	423				22E	CRI	0.39	71	39	23	3
	424				54E	DAI	0.82	185	160	109	3
	426				30E	BXI	0.52	29	17	5	3
	427	8-12.9	5	254	17W	BXO	0.29	13	7	2	3
	428	8-17.0	9	200	40E	BXO	0.63	8	5	3	3
	429	8-19.5	-10	167	70E	BXI	0.95	13	21	7	3
	430	8-20.0	-27	160	74E	HSX	0.98	147	345	345	3
	431	8-20.6	9	152	83E	HHX	0.99	114	376	376	3
15.02	406				33E	CSI	0.61	109	69	61	4
	410				17W	DAI	0.30	202	106	90	4
	412				47W	BXO	0.76	8	6	3	4
	413				24W	DAI	0.47	227	129	81	4
	414				7W	EAC	0.16	786	398	164	4
	419				17E	DSI	0.34	345	184	137	4
	420				29E	CRI	0.61	46	29	21	4
	423				10E	CRI	0.17	59	30	17	4
	424				41E	CAI	0.67	168	113	93	4
	426				16E	BXI	0.30	13	7	2	4
	427				30W	BXI	0.49	13	7	2	4
	428				26E	BXO	0.43	8	5	2	4
	429				59E	BXI	0.87	13	13	4	4
	430				62E	HSX	0.93	206	282	282	4
	431				72E	HHX	0.95	328	547	547	4
	432	8-18.1	-22	185	40E	AXX	0.72	8	6	3	4

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Max	See Remarks
16.04	406				45W	CRI	0.75	46	35	25	3
	410				30W	CAI	0.49	118	68	53	3
	412				60W	AXX	0.89	4	5	5	3
	413				37W	DSI	0.63	164	106	68	3
	414				20W	EAC	0.34	997	531	195	3
	419				4E	DSI	0.18	442	225	154	3
	420				16E	CRI	0.46	67	38	12	3
	423				3W	CRI	0.10	67	34	13	3
	424				28E	CAI	0.52	172	101	74	3
	426				3E	AXX	0.17	8	4	2	3
	427				43W	CAI	0.66	97	64	47	3
	428				13E	BXO	0.23	8	4	2	3
	429				46E	BXI	0.75	13	9	3	3
	430				50E	HSX	0.86	273	270	270	3
	431				59E	CHI	0.85	505	480	444	3
	432				27E	BXO	0.64	8	5	3	3
17.02	406				58W	CRI	0.86	34	33	29	4
	410				43W	CSI	0.67	139	93	85	4
	413				50W	DSI	0.78	76	61	4	4
	414				33W	EKI	0.52	1030	602	275	4
	419				8W	DSI	0.18	311	158	113	4
	420				3E	CRI	0.40	46	25	16	4
	423				16W	DSI	0.24	147	76	24	4
	424				15E	DAI	0.39	118	64	48	4
	426				9W	BXI	0.22	17	9	2	4
	427				56W	CRI	0.80	42	35	14	4
	428				1W	BXI	0.03	34	17	4	4
	429				33E	DRI	0.59	88	55	29	4
	430				38E	CHI	0.77	471	369	363	4
	431				47E	CHI	0.72	597	433	418	4
	433	8-16.3	-18	209	10W	BXO	0.45	8	5	2	4
	434	8-17.6	22	192	7E	BXI	0.26	13	7	2	4
	435	8-19.4	-16	168	32E	AXX	0.63	8	5	3	4
	436	8-22.2	12	130	69E	BXI	0.92	13	16	5	4
	437	8-22.7	-17	124	74E	AXX	0.97	8	16	8	4
18.06	406				72E	AXX	0.95	8	14	7	3
	410				57W	CSI	0.82	97	84	80	3

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Max	See Remarks
	413				66W	HSX	0.92	50	64	59	3
	414				45W	EKI	0.69	879	607	308	3
	419				21W	DSI	0.37	307	165	131	3
	420				10W	CRI	0.41	42	23	18	3
	423				29W	DRI	0.52	59	34	12	3
	424				2E	DSI	0.28	93	48	26	3
	426				22W	AXX	0.40	8	5	2	3
	427				70W	BXI	0.93	13	17	6	3
	428				14W	DSI	0.24	198	102	30	3
	429				20E	DSI	0.41	151	83	46	3
	430				25E	CHI	0.67	484	324	316	3
	431				34E	CHI	0.55	761	456	454	3
	433				26W	AXX	0.56	8	5	5	3
	435				18E	BXO	0.47	8	5	2	3
	436				55E	CSI	0.79	59	48	41	3
	437				61E	BXI	0.89	8	9	5	3
	438	8-22.3	21	129	56E	BXI	0.82	13	11	4	3
	439	8-24.3	-11	103	80E	HHX	0.99	303	1001	1001	3
19.15	410				71W	CSI	0.93	84	115	109	4
	413				80W	AXX	0.98	8	20	10	4
	414				59W	DKI	0.85	555	528	296	4
	419				34W	DSI	0.54	231	137	112	4
	420				24W	CRI	0.54	34	20	10	4
	423				44W	CRI	0.72	55	40	30	4
	424				10W	BXI	0.31	29	15	4	4
	426				36W	AXX	0.60	8	5	3	4
	428				30W	DAI	0.49	496	285	150	4
	429				4E	DAI	0.30	315	165	40	4
	430				11E	CHI	0.57	534	326	321	4
	431				19E	CHI	0.32	812	429	422	4
	433				38W	BXO	0.69	13	9	3	4
	434				25W	BXO	0.47	8	5	2	4
	435				3E	BXO	0.39	8	5	2	4
	436				40E	CRI	0.63	59	38	16	4
	437				47E	BXO	0.78	8	7	3	4
	438				41E	BXI	0.66	21	14	6	4
	439				67E	EKI	0.92	765	974	845	4
	440	8-17.9	-34	187	16W	CSI	0.69	101	70	58	4
	441	8-24.2	12	104	66E	AXX	0.90	8	9	5	4

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Whole	Area Max	See Remarks
	442	8-24.7	-20	98	74E	DSI	0.97	177	339	129	4
20.03	410				84W	BXI	0.99	8	28	14	3
	414				72W	DKI	0.94	437	654	390	3
	419				46W	CSI	0.70	177	124	112	3
	420				33W	BXI	0.66	17	11	3	3
	423				56W	BXO	0.83	8	7	4	3
	424				20W	BXI	0.43	21	12	2	3
	428				43W	EKI	0.67	576	386	203	3
	429				8W	EAC	0.33	673	357	134	3
	430				0W	CHI	0.56	564	341	333	3
	431				8E	CHO	0.14	820	414	412	3
	433				48W	CRI	0.80	67	57	42	3
	435				11W	BXO	0.43	8	5	2	3
	436				27E	DRI	0.46	168	95	62	3
	438				27E	BXI	0.48	59	34	5	3
	439				55E	FKI	0.84	1228	1129	955	3
	440				29W	CSI	0.76	122	94	71	3
	441				53E	BXI	0.79	8	7	3	3
	442				60E	ESI	0.91	336	402	131	3
	443	8-25.9	-25	82	77E	DSI	0.99	46	153	97	3
	444	8-26.5	-7	74	84E	HSX	0.99	38	125	125	3
21.06	414				85W	DAI	0.99	71	236	139	3
	419				59W	CSO	0.85	114	108	104	3
	420				46W	BXO	0.78	8	7	3	3
	424				38W	BXO	0.64	8	5	3	3
	428				57W	EAI	0.83	446	397	225	3
	429				21W	EKC	0.46	1577	888	440	3
	430				13W	CHO	0.60	547	341	338	3
	431				6W	CHI	0.11	828	417	406	3
	433				62W	BXI	0.91	17	20	5	3
	435				24W	BXI	0.54	13	7	2	3
	436				14E	DRI	0.26	189	98	48	3
	438				16E	BXI	0.36	13	7	2	3
	439				41E	FKI	0.71	1682	1199	1019	3
	440				40W	DSI	0.83	105	94	52	3
	441				42E	AXX	0.67	8	6	3	3
	442				47E	EKC	0.82	849	735	284	3
	443				64E	DSI	0.94	156	233	113	3

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Max	See Remarks
	444				74E	DHO	0.97	286	549	331	3
	445	8-19.4	10	168	22W	AXX	0.37	8	5	2	3
	446	8-27.1	-26	66	77E	HHX	0.99	126	417	417	3
22.01	419				71W	HSX	0.93	67	92	92	4
	420				60W	AXX	0.90	4	5	5	4
	428				71W	ESI	0.93	206	282	127	4
	429				34W	EKC	0.61	1977	1246	602	4
	430				25W	CHI	0.67	509	341	339	4
	431				18W	CHI	0.31	812	427	420	4
	433				76W	BXI	0.98	8	20	10	4
	435				38W	BXO	0.70	21	15	6	4
	436				3E	DRI	0.10	118	59	17	4
	438				4E	AXX	0.25	8	4	2	4
	439				29E	FKI	0.56	2027	1227	886	4
	440				52W	DRI	0.90	67	76	33	4
	441				30E	BXO	0.49	8	5	2	4
	442				35E	EKC	0.70	1653	1159	1091	4
	443				52E	DSI	0.86	261	257	83	4
	444				60E	DHO	0.89	505	542	330	4
	445				35W	AXX	0.57	4	3	3	4
	446				66E	CHI	0.95	227	379	372	4
	447	8-27.9	12	55	78E	HRX	0.97	13	24	24	4
23.01	419				84W	HSX	0.99	38	125	125	4
	428				81W	DRI	0.99	38	125	42	4
	429				47W	EKC	0.77	1598	1253	560	4
	430				37W	HHX	0.77	437	343	343	4
	431				31W	CHI	0.51	744	431	429	4
	435				54W	AXX	0.84	4	4	4	4
	436				9W	CRI	0.18	105	53	21	4
	438				13W	AXX	0.30	8	4	2	4
	439				16E	FKI	0.41	2145	1178	970	4
	440				64W	DRI	0.95	21	35	14	4
	441				16E	HRX	0.28	17	9	7	4
	442				22E	EKC	0.57	1838	1123	360	4
	443				39E	DSI	0.77	261	204	82	4
	444				46E	DHO	0.75	614	462	357	4
	446				52E	CHI	0.87	349	359	354	4
	447				64E	AXX	0.89	8	9	5	4

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Max	See	Remarks
	448	8-21.1	-29	145	25W	BXO	0.69	8	6	3	4	
24.21	429				64W	EKC	0.91	1262	1506	1280	3	PLAT
	430				52W	HAX	0.86	189	187	187	3	PLAT
	431				46W	HKX	0.71	589	420	420	3	PLAT
	436				23W	AXX	0.40	8	5	2	3	PLAT
	438				22W	AXX	0.44	8	5	2	3	PLAT
	439				0	EKI	0.31	2002	1053	929	3	PLAT
	441				1E	AXX	0.10	8	4	2	3	PLAT
	442				6E	EKC	0.47	1463	830	334	3	PLAT
	443				23E	DSI	0.62	193	123	62	3	PLAT
	444				30E	DAI	0.55	513	308	224	3	PLAT
	446				35E	CHI	0.75	534	402	395	3	PLAT
	449	8-23.5	-23	113	10E	BXI	0.34	21	11	2	3	PLAT
	450	8-29.7	13	31	77E	DAI	0.97	202	388	202	3	PLAT
	451	8-24.8	24	97	7E	BXO	0.30	13	7	2	3	PLAT
25.33	429				78W	EKC	0.98	421	986	986	2	
	430				67W	HHX	0.95	143	239	239	2	
	431				62W	CHO	0.87	412	423	419	2	
	436				39W	AXX	0.63	8	5	3	2	
	438				38W	AXX	0.63	4	3	3	2	
	439				14W	EKI	0.39	2031	1103	937	2	
	442				9W	EHC	0.47	1695	961	439	2	
	443				8E	DSI	0.55	168	101	35	2	
	444				15E	DHI	0.36	601	322	225	2	
	446				23E	CHI	0.64	505	330	313	2	
	449				24W	DRI	0.52	55	32	12	2	
	450				59E	ESC	0.85	505	480	224	2	
	452	8-30.5	16	21	66E	AXX	0.90	4	5	5	2	
26.05	429				84W	HHX	0.99	34	111	111	3	
	430				77W	HHX	0.99	84	278	278	3	
	431				72W	HHX	0.94	303	453	447	3	
	436				51W	BXO	0.77	13	10	7	3	
	439				24W	EKI	0.49	1737	999	847	3	
	442				19W	EHC	0.54	1581	940	475	3	
	443				2W	DSI	0.53	168	99	25	3	
	444				6E	DHI	0.26	757	392	244	3	
	446				13E	CHI	0.59	547	337	335	3	

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Max	See Remarks
	447				25E	BXI	0.43	8	5	2	3
	449				35W	CRI	0.66	21	14	8	3
	450				49E	EAC	0.75	715	538	253	3
	452				57E	AXX	0.83	8	7	4	3
	453	8-20.8	17	149	69W	BXO	0.93	13	17	12	3
	454	8-22.0	-14	133	53W	AXX	0.83	8	7	4	3
27.13	431				86W	HHX	0.99	50	167	167	3
	436				73W	HRX	0.95	17	28	28	3
	439				38W	EKI	0.68	1472	1001	930	3
	442				32W	EHC	0.67	1346	903	451	3
	443				15W	DSI	0.57	193	118	21	3
	444				8W	DHI	0.28	622	324	230	3
	446				0W	CHI	0.55	526	315	310	3
	447				10E	BXI	0.21	13	6	2	3
	449				49W	BXO	0.79	8	7	3	3
	450				35W	EKC	0.56	1039	629	293	3
	452				44E	BXI	0.69	13	9	6	3
28.01	436				85W	AXX	0.99	4	14	14	4
	439				51W	EKI	0.80	1072	903	797	4
	442				45W	EHC	0.78	942	755	445	4
	443				28W	DSI	0.66	84	56	14	4
	444				20W	DAI	0.40	505	276	108	4
	446				11W	CAO	0.57	400	244	167	4
	447				1W	AXX	0.09	4	2	2	4
	450				22E	EKC	0.38	1632	882	580	4
	452				31E	BXI	0.52	13	7	2	4
	455	9- 1.7	-16	352	64E	BXO	0.92	8	11	5	4
	456	9- 2.6	-13	340	78E	HSX	0.99	55	181	181	4
	457	9- 3.2	15	332	82E	HSX	0.99	38	125	125	4
29.03	439				64W	EKI	0.91	824	984	853	2
	442				58W	EHC	0.89	656	705	452	2
	443				42W	DSI	0.77	93	73	20	2
	444				34W	DHO	0.60	374	233	163	2
	446				25W	CAO	0.66	345	228	173	2
	447				15W	BXI	0.28	8	4	2	2
	449				75W	BXO	0.97	8	16	8	2
	450				9E	EKC	0.17	1800	914	897	2

DAILY SUNSPOT OBSERVATIONS

AUGUST 1990

Day	Group	CMP Mo-Day	Lat	L	CMD	Type	r/R	Sd	Corre. Area Whole	Max	See Remarks
	452				19E	BXI	0.34	8	4	2	2
	455				48E	CRI	0.80	29	25	11	2
	456				64E	CSI	0.92	147	187	177	2
	457				69E	HSX	0.92	84	107	107	2
30.04	439				77W	EHI	0.98	349	819	740	3
	442				72W	EHI	0.97	299	573	404	3
	443				57W	CRI	0.90	46	52	43	3
	444				48W	DSI	0.76	269	207	161	3
	446				37W	CSI	0.75	236	177	142	3
	447				27W	BXO	0.47	8	5	2	3
	450				4W	EKC	0.13	1800	907	710	3
	452				6E	AXX	0.18	8	4	2	3
	455				37E	BXI	0.68	25	17	6	3
	456				49E	CAI	0.79	223	183	173	3
	457				56E	HSX	0.82	143	124	124	3
	458	8-29.9	-18	29	2W	AXX	0.41	4	2	2	3
	459	8-30.1	28	26	1E	AXX	0.36	4	2	2	3
	460	8-30.9	-9	16	11E	AXX	0.33	4	2	2	3
	461	9- 2.2	-19	346	45E	CRI	0.79	29	24	17	3
31.01	439				83W	CSO	0.99	17	56	28	4
	442				79W	DSO	0.99	34	111	83	4
	443				67W	AXX	0.95	4	7	7	4
	444				62W	CSI	0.89	185	199	167	4
	446				49W	CSI	0.85	202	192	172	4
	447				41W	AXX	0.66	4	3	3	4
	450				17W	EKC	0.31	1632	858	686	4
	452				7W	AXX	0.18	4	2	2	4
	455				24E	EXI	0.54	17	10	2	4
	456				34E	CSI	0.63	269	174	163	4
	457				43E	HSX	0.68	181	123	123	4
	461				29E	CSI	0.64	84	55	47	4
	462	9- 4.2	12	320	55E	CRI	0.80	42	35	28	4
	463	9- 4.7	-13	313	64E	HRX	0.92	17	21	21	4

H-ALPHA SOLAR FLARES

AUGUST 1990

Day	Sta	Time Start (UT)	Time Max (UT)	Time End (UT)	Lat	L	CMD	Area Measurement Cen Dist	Area Measurement Appar (Sd)	Area Measurement Corr (Sq)	Imp	Obs Type	A.R.	Rem
1	YUNN	0025	0028	0047	S 7	35	E16	.347	31	0.4	SN	C	394	E
1	YUNN	0102	0104	0120	S24	88	W38	.736	63	1.0	SN	C	379	
2	YUNN	0546	0552	0557	S27	88	W53	.875	31	0.7	SN	C	379	
2	PURP	0550E	0554U	0558D	S25	83	W48	.747	83	1.3	SN	C	379	
2	YUNN	0612	0615	0634	S27	83	W49	.845	94	1.8	SN	C	379	
4	YUNN	0650E	0650U	0650D	S28	91	W83	.998	16		SN	P	379	
5	YUNN	0005E	0103	0124	N43	274	E84	1.				P		AG
6	YUNN	0049E	0052U	0111	N14	331	E13	.260	63	0.7	SN	P	397	
6	YUNN	0124	0135	0153	S21	72	W88	1.				C	379	A
7	URUM	0900	0905	0925	S18	351	W24	.557	48	0.6	SF	C	401	D
8	URUM	0036E	0040U	0050D	N21	321	W 4	.270	321	3.4	1N	C	402	E
9	BEIJ	0005E	0006	0013	N14	238	E67	.908	126		1N	P	410	E
9	PURP	0603E	0605	0624	N13	238	E64	.889	151	3.4	1N	C	410	E
11	YUNN	0624E	0624U	0625D	S13	256	E19	.458	63	0.7	SN	P	406	E
12	URUM	0535	0543	0550	N11	229	E33	.545	48	0.6	SF	C	414	D
13	PURP	0045E	0047U	0049	N23	180	E72	.937	34		SB	P	424	
13	PURP	0052	0101U	0105	N13	228	E24	.356	41	0.5	SF	C	414	
13	PURP	0359	0404	0422	S10	247	E 3	.299	69	0.8	SB	C	413	E
13	PURP	0424	0429	0446	N20	211	E39	.638	83	1.1	SN	C	419	
13	PURP	0633	0635	0642	N23	178	E71	.931	34		SB	C	424	
13	YUNN	0634	0638	0643	N22	167	E82	.984	31		SN	P	424	
14	URUM	0906	0915	0922	N11	230	E 4	.099	64	0.7	SF	C	414	E
15	URUM	0910	0917	0934	N15	242	W21	.383	32	0.4	SF	C	410	E
16	YUNN	0112	0113	0120	S11	160	E52	.814	47	0.8	SN	C	429	
16	YUNN	0142	0156U	0200	S17	198	E14	.458	79	0.9	SN	P	420	
16	YUNN	0209	0211	0230	S10	163	E49	.783	94	1.6	SN	C	429	

H-ALPHA SOLAR FLARES

AUGUST 1990

Day	Sta	Time Start (UT)	Time Max (UT)	Time End (UT)	Lat	L	CMD	Area Measurement Cen Dist	Area Measurement Appar (Sd)	Area Measurement Corr (Sq)	Imp	Obs Type	A.R.	Rem
16	PURP	0210	0215	0228	S11	168	E44	.729	55	0.8	SF	C	429	
16	PURP	0403	0407	0415	S17	196	E15	.471	69	0.8	SN	C	420	
16	URUM	0404E	0404	0420	S19	197	E13	.467	64	0.8	SN	C	420	D
16	YUNN	0725E	0734U	0740	S17	196	E13	.453	63	0.7	SN	P	420	E
17	YUNN	0734	0740	0807	N16	229	W34	.573	31	0.4	SN	C	414	
18	YUNN	0645	0647	0652	N 6	203	W20	.345	157	1.7	SN	C	428	
18	YUNN	0645	0650	0732	S35	187	W 4	.669	47	0.7	SN	C		G
19	YUNN	0306E	0306U	0308	N12	127	E44	.695	126	1.8	SN	P	436	
19	YUNN	0315	0318	0326	S11	106	E65	.919	16		SN	C	439	
19	YUNN	0344	0346	0346D	S 9	105	E66	.926	16		SN	P	439	
19	YUNN	0407E	0408	0432	N23	128	E43	.698	47	0.7	SN	P	438	E
20	URUM	0125	0140	0155	N20	130	E29	.509	16	0.2	SN	C	438	E
20	YUNN	0126	0139	0200	N21	128	E31	.545	63	0.8	SN	C	438	E
20	PURP	0144	0146U	0151D	N20	129	E30	.523	41	0.5	SF	C	438	E
20	URUM	0455	0501	0511	N20	129	E28	.503	64	0.8	SF	C	438	D
20	YUNN	0536	0542	0602	N 6	206	W49	.752	63	1.0	SN	C	428	
20	URUM	0744	0752	0804	N13	128	E27	.452	32	0.4	SN	C	436	D
21	YUNN	0129E	0129U	0131	S13	94	E52	.823	31	0.6	SN	P	439	
21	YUNN	0231	0310	0337	N11	56	E89	1.				C		AG
21	URUM	0309E	0310	0332	N11	65	E81	.983	32		SN	C		A
21	YUNN	0259	0300	0302	S28	83	E62	.934	63		SN	C	443	H
21	BEIJ	0420	0421	0426	N 1	213	W69	.920	210		1B	P		D
21	YUNN	0507	0534	0558D	N13	56	E88	1.				P		AG
21	YUNN	0507	0534U	0550	S17	101	E43	.755	126	2.0	SN	P	442	
21	URUM	0525E	0527	0545	S19	99	E45	.783	16	0.3	SN	C	442	E
22	URUM	0140	0143	0151	S13	94	E38	.682	32	0.5	SN	C	439	D
22	URUM	0354	0357	0410	N 6	203	W73	.951	32		SN	C	428	D
22	BEIJ	0355	0356	0400	N 4	207	W76	.954	84		1B	P	428	D
22	URUM	0410	0413	0421	S13	94	E37	.666	113	1.6	SB	C	439	E
22	BEIJ	0415	0416	0421	S11	93	E38	.667	105	1.5	SN	P	439	E
22	BEIJ	0535	0537	0540	S21	96	E34	.701	168	2.4	1N	P	442	F
22	BEIJ	0623	0624	0628	N 4	207	W77	.954	84		1B	P	428	D
22	YUNN	0651	0706	0722	S16	218	W88	1.				P	433	A

H-ALPHA SOLAR FLARES

AUGUST 1990

Day	Sta	Time Start (UT)	Time Max (UT)	Time End (UT)	Lat	L	CMD	Cen Dist	Area Measurement Appar (Sd)	Area Measurement Corr (Sq)	Imp	Obs Type	A.R.	Rem
22	BEIJ	0750	0755	0800	S21	96	E32	.701	252	3.7	1N	P	442	D
23	YUNN	0125	0128	0139	N 4	209	W90	1.	16		SN	C	428	
23	YUNN	0146	0157	0217	N 2	209	W90	1.				C	428	A
23	BEIJ	0250	0254	0300	S 9	108	E11	.310	84	0.9	SN	P	439	D
23	YUNN	0250	0257	0311	S 7	109	E10	.302	63	0.7	SN	C	439	
23	BEIJ	0458	0500	0543	S27	69	E49	.851	84	1.7	SN	P	446	D
23	YUNN	0502E	0503U	0509	S26	72	E45	.820	157	2.8	1N	P	446	
23	YUNN	0502	0533	0533D	S25	73	E44	.801	31	0.5	SN	P	446	
23	YUNN	0728	0748	0756D	S12	101	E15	.401	79	0.9	SN	P	439	
24	URUM	0137	0145	0200D	S22	97	E 9	.504	16	0.2	SN	C	442	D
24	URUM	0311	0319	0335	S32	75	E30	.747	48	0.8	SN	C	446	D
24	URUM	0430	0432	0435	S28	70	E34	.745	32	0.5	SF	C	446	D
24	URUM	0432	0444	0500	S32	75	E29	.736	64	1.0	SF	C	446	D
24	PURP	0439E	0441	0448	S31	75	E29	.733	75	1.1	SN	C	446	D
24	BEIJ	0434	0437	0450	S10	169	W65	.920	210		1N	P	429	E
24	PURP	0439E	0441	0448	S 7	169	W65	.911	151		1N	C	429	
24	URUM	0440E	0440U	0451	S 7	164	W60	.882	80	1.8	SF	C	429	E
24	URUM	0700E	0700	0705D	S16	106	W 3	.392	32	0.4	SF	C	439	D
24	BEIJ	0829	0835	0845	S24	79	E24	.644	126	1.7	SF	P	443	D
24	BEIJ	0850	0858	0905	S12	97	E 5	.356	168	1.9	SN	P	439	D
24	URUM	1037E	1037	1127	S12	97	E 4	.338	113	1.2	SN	C	439	E
24	BEIJ	2321	2328	2338	S28	77	E17	.632	168	2.2	1N	C	443	D
24	BEIJ	2342	2348	0010	S28	77	E17	.632	252	3.4	1B	C	443	D
26	YUNN	0053	0058	0111	S18	99	W19	.512	47	0.6	SN	P	442	E
26	YUNN	0127E	0130U	0157	S10	108	W28	.545	31	0.4	SN	P	439	
26	URUM	0135E	0136	0149	S 8	108	W29	.545	80	1.0	SF	C	439	E
26	URUM	0156	0159	0206	S18	95	W16	.495	32	0.4	SF	C	442	D
26	YUNN	0206	0214	0255	S12	110	W31	.593	157	2.0	SN	P	439	
26	URUM	0210	0226	0250	S13	110	W31	.600	225	2.9	1B	C	439	E
26	URUM	0314	0336	0400	S10	158	W80	.988	177		1F	C	429	A
26	YUNN	0316	0334	0350D	S12	168	W89	1.				P	429	A
26	YUNN	0350	0407	0442	S18	95	W17	.507	236	2.8	1B	P	442	F
26	URUM	0350	0405	0440	S18	94	W16	.501	193	2.3	1N	C	442	E
26	PURP	0353E	0403	0420D	S18	95	W17	.511	226	2.7	1N	C	442	
26	YUNN	0558	0610	0634	S24	63	E14	.557	47	0.6	SN	P	446	

H-ALPHA SOLAR FLARES

AUGUST 1990

Day	Sta	Time Start (UT)	Time Max (UT)	Time End (UT)	Lat	L	CMD	Area Measurement Cen Dist	Area Measurement Appar (Sd)	Area Measurement Corr (Sq)	Imp	Obs Type	A.R.	Rem
26	YUNN	0705	0729	0755	N13	35	E41	.651	94	1.3	SN	P	450	
26	PURP	0734E	0739	0752	N13	35	E41	.533	75	0.9	SN	C	450	E
26	YUNN	0821	0827	0838D	N12	38	E38	.607	31	0.4	SN	P	450	
27	PURP	0006E	0014	0028	N12	30	E37	.478	75	0.9	SN	C	450	E
27	URUM	0148	0152	0159	N13	37	E29	.486	80	1.0	SN	C	450	D
27	YUNN	0229E	0235U	0249	S11	96	W30	.567	31	0.4	SN	P	439	
27	YUNN	0329	0334	0336D	N14	38	E27	.467	110	1.3	SN	P	450	
27	URUM	0331	0336	0336D	N14	37	E28	.457	209	2.4	1N	C	450	E
27	URUM	0351E	0354	0435	S17	98	W34	.656	563	7.7	2B	C	442	E
27	YUNN	0353E	0353U	0432	S18	98	W33	.654	629	8.6	2B	P	442	F
27	URUM	0548	0552	0612	N25	96	W33	.587	32	0.4	SF	C		E
27	URUM	0700	0718	0734	S13	113	W51	.809	48	0.9	SN	C	449	E
27	YUNN	0703	0718	0730	S12	113	W50	.800	157	2.7	1B	C	449	
27	YUNN	0714	0720	0746	N14	32	E31	.513	31	0.4	SF	C	450	
27	YUNN	0913E	0913U	0922	N21	19	E43	.690	31	0.5	SN	P	452	
27	YUNN	0925	0930	0937D	N13	21	E41	.651	63	0.9	SN	P	450	
28	YUNN	0050E	0056U	0106	S16	105	W51	.825	16	0.3	SN	P	439	
28	YUNN	0334	0342	0456	N14	33	E19	.334	47	0.5	SB	C	450	FK
28	YUNN	0420E	0423U	0432	S24	80	W28	.667	47	0.7	SN	P	443	
28	YUNN	0603	0620	0647	N15	31	E20	.356	94	1.0	SN	C	450	
28	YUNN	0748	0754	0805	N14	33	E17	.312	47	0.5	SN	P	450	
28	YUNN	0814	0823	0850	N14	34	E16	.290	94	1.0	SN	C	450	
28	YUNN	0900	0907	1000	N15	34	E15	.292	472	5.1	1B	C	450	F
29	URUM	0221	0225	0237	N11	35	E 4	.104	80	0.8	SN	C	450	D
29	URUM	0317	0321	0334	N12	35	E 4	.106	64	0.7	SF	C	450	D
29	URUM	0426	0430	0454	S22	87	W49	.829	113	2.1	1N	C	442	U
29	YUNN	0428	0432	0454	S22	88	W50	.841	393	7.5	2B	P	442	U
29	URUM	0454	0456	0506	N14	30	E 8	.182	96	1.0	SF	C	450	E
29	URUM	0555	0604	0616	S21	86	W49	.824	48	0.9	SF	C	442	E
29	YUNN	0558	0603	0621	S21	88	W50	.837	31	0.6	SN	C	442	
29	URUM	0640	0710	0754	N13	30	E 7	.156	129	1.4	SB	C	450	E
29	YUNN	0652	0713	0756	N13	29	E 8	.162	220	2.3	1B	C	450	
29	URUM	0706	0721	0810	N14	21	E16	.293	96	1.0	SN	C	452	D
29	YUNN	0707	0713	0756	N14	20	E17	.312	94	1.0	SN	C	452	
29	URUM	0806	0830	0856	N15	32	E 4	.146	113	1.2	SB	C	450	F
29	YUNN	0823E	0824U	0850	N14	33	E 3	.126	314	3.3	1N	P	450	

H-ALPHA SOLAR FLARES

AUGUST 1990

Day	Sta	Time Start (UT)	Time Max (UT)	Time End (UT)	Lat	L	CMD	Cen Dist	Area Measurement Appar (Sd)	Area Measurement Corr (Sq)	Imp	Obs Type	A.R.	Rem
29	URUM	0932	0936	0940	S19	87	W51	.841	48	0.9	SF	C	442	D
30	YUNN	0100E	0107U	0312	S11	99	W72	.962	189		1N	P	439	
30	YUNN	0112E	0112U	0120	N14	30	W 3	.134	31	0.3	SB	P	450	
30	YUNN	0158E	0158U	0211	N15	40	W13	.253	173	1.9	SB	P	450	
30	PURP	0201E	0201U	0210	N14	39	W12	.229	34	0.4	SN	P	450	
30	YUNN	0350E	0350U	0410	N15	30	W 4	.157	94	1.0	SN	P	450	
30	YUNN	0407	0412	0417	S23	86	W61	.921	47		SN	C	443	
30	PURP	0422	0435	0447	N13	31	W 6	.149	21	0.2	SN	P	450	
30	YUNN	0422	0457U	0515	N12	33	W 8	.160	220	2.3	1N	P	450	
30	YUNN	0449E	0457	0515D	S29	70	W45	.838	31	0.6	SN	P	446	F
30	PURP	0451E	0451U	0505	S28	67	W42	.701	34	0.5	SN	P	446	
30	URUM	0611	0615	0640	N13	33	W 9	.184	129	1.4	SN	C	450	E
31	YUNN	0235E	0235	0245	N14	39	W26	.444	94	1.1	SN	P	450	
31	URUM	0240E	0240	0245	N29	358	E14	.437	80	0.9	SF	C		DG
31	URUM	0245	0247	0255	N12	327	E46	.709	32	0.5	SF	C	457	D
31	URUM	0307	0314	0318	S 8	76	W64	.909	16		SN	C	444	D
31	YUNN	0311	0315	0323	S 7	79	W66	.924	31		SN	C	444	
31	YUNN	0416E	0416	0431	S22	86	W74	.980	173		1B	P	442	
31	YUNN	0512E	0513	0525	N14	40	W28	.476	236	2.8	1B	P	450	
31	YUNN	0758E	0758U	0818	N14	320	E50	.764	63	1.0	SN	P	462	

SMOOTHED (PREDICTED) SUNSPOT NUMBERS

APRIL 1990 - MARCH 1991

Time	90,04	90,05	90,06	90,07	90,08	90,09	90,10	90,11	90,12	91,01	91,02	91,03
R'	148.1	144.2	141.4	139.9	139.7	140.7	142.4	144.9	147.8	151.2	154.7	158.5
E'	3.0	2.9	5.7	11.2	12.6	16.9	22.8	23.2	28.1	28.7	32.5	31.7

INTERVALS OF H-ALPHA FLARE PATROL OBSERVATION

AUGUST 1990

Day	From	To	From	To	From	To	From	To	From	To	From	To	From	To
1	4	303	541	700	2341	2400								
2	0	4	138	223	307	351	455	727	834	901				
3	0	835												
4	21	48	225	301	554	600	618	650						
5	0	203												
6	49	303	440	520	535	556	605	654	703	720				
7	140	428	439	523	739	820	828	947						
8	36	924												
9	5	13	33	120	135	535	603	702	2233	2400				
10	0	330	530	759	813	820	846	853						
11	35	58	135	141	412	418	431	446	500	526	546	625	635	701
12	234	1010	1033	1041	1120	1146	2321	2327						
13	42	843	2350	2359										
14	0	418	424	750	838	1124	2332	2359						
15	1	315	337	459	535	545	656	700	713	812	841	950	1006	1015
	1057	1144	2334	2359										
16	1	14	30	610	633	757	812	828						
17	201	208	701	847										
18	608	633	645	753	2336	2400								
19	0	654	734	849										
20	58	825												
21	6	17	100	720	836	858	2322	2358						
22	2	937	2325	2400										
23	0	856												
24	5	20	53	736	749	754	805	900	1037	1055	1103	1127	2245	2400
25	0	645												
26	42	849	1044	1115	2330	2341								
27	6	336	351	937										
28	28	303	342	724	748	1000	2350	2400						
29	0	940	1025	1046										
30	0	5	100	256	307	312	350	735	808	855				
31	52	600	640	647	707	710	758	845						

Combined reports from the observatories listed below:

BEIJ PURP URUM YUNN

OBSERVATION OF MAGNETIC AND VELOCITY FIELDS OF SOLAR ACTIVE REGIONS

AUGUST 1990 HUAIROU ST. BEIJING OBS.

Day	L0	Huairou Region	Lat	L	Data
3	24.6	171	24	336	S5, L5, D4, V4
		175	-24	83	S5, L5, D4, V4
4	11.4	170	15	37	S5, L5
		171			S5, L5
5	358.2	170			S5, L5
		171			S5, L5
6	345.0	170			S5, L5
		171			S5, L5, D4, V4
		173	23	(315)	S5, L5
		176	-19	349	S5, L5
8	318.5	171			S5,L5,T5,Q5,U5,D4,V4
		173			S5, L5
		176			S5, L5, D4, V4
		177	-20	341	S5, L5
9	305.3	171			S5,L5,D4,V4,T5,Q5,U5
		176			S5, L5, D4, V4
		173			S5, L5
		177			S5, L5, D4, V4
		178	14	242	S5, L5, D4, V4
		179	- 9	256	S5, L5, D4
10	292.1	171			S5,L5,D4,V4,T5,Q5,U5,V5,L4
		173			S5, L5, D4, V4
		176			S5, L5, D4, V4
		178			S5,L5,D4,V4,T5,Q5,U5,V5,L4
		179			S5, L5, D4, V4
15	226.0	181	19	209	S5, L5
16	212.8	178			S5,L5,T5,U5,Q5,D4,V4
		179			S5, L5
		180	13	230	S5,L5,T5,Q5,U5,D4,V4
		181			S5,L5,T5,Q5,U5,D4,V4
17	199.5	178			S5,L5,T5,U5,Q5

OBSERVATION OF MAGNETIC AND VELOCITY FIELDS OF SOLAR ACTIVE REGIONS

AUGUST 1990 HUAIROU ST. BEIJING OBS.

Day	L0	Huairou Region	Lat	L	Data
		180			S5,L5,D4,V4,T5,Q5,U5
		181			S5,L5,T5,Q5,U5
		182	4	210	S5, L5, D4, V4
		184	11	152	S5, L5, D4, V4
		186	-29	159	S5, L5, D4, V4
		187	-15	196	S5, L5, D4, V4
		188	-10	167	S5, L5, D4, V4
		189	7	197	S5, L5, D4, V4
19	173.1	180			S5, L5, D4, V4
		181			S5,L5,T5,U5,Q5,D4,V4
		184			S5, L5, D4, V4
		186			S5,L5,T5,Q5,U5,D4,V4
		188			S5, L5, D4, V4
		189			S5,L5,T5,Q5,U5,D4,V4
		190	-32	183	S5,L5,D4,V4,T5,Q5,U5
		191	16	133	S5, L5, D4, V4
		192	-20	96	S5, D4, V4, L5
		193	-12	102	S5, L5, D4, V4
20	159.9	189			S5, L5
		190			S5, L5
		192			S5, L5
		193			S5, L5
21	146.7	184			S5,L5,T5,Q5,U5,D4,V4
		188			S5,L5,D4,V4,T5,Q5,U5
		189			S5, L5, D4, V4
		192			S5, L5, D4, V4
		193			S5, L5, D4, V4
22	133.5	184			S5,L5,D4,V4,T5,U5,Q5
		188			S5,L5,D4,V4,T5,Q5,U5
		192			S5, L5, D4, V4
		193			D4,V4,S5,L5,V5
23	120.2	184			S5,L5,Q5,U5,T5,D4,V4
		186			S5, L5
		188			S5,L5,T5,Q5,U5,D4,V4,V5

OBSERVATION OF MAGNETIC AND VELOCITY FIELDS OF SOLAR ACTIVE REGIONS

AUGUST 1990 HUAIROU ST. BEIJING OBS.

Day	L0	Huairou Region	Lat	L	Data
		192			S5,L5,T5,Q5,U5,D4,V4,V5
		193			S5,L5,T5,Q5,U5,V5,D4,V4
		194	- 7	72	S5, L5, D4, V4
		195	-25	(66)	S5, L5, D4, V4
24	107.0	184			S5,L5,D4,V4,V5
		188			S5,L5,D4,V4,V5
		193			S5,L5,D4,V4,T5,Q5,U5,V5
		195			S5, L5, D4, V4
		192			S5,L5,D4,V4,T5,Q5,U5,V5
25	93.8	184			S5, L5
		186			S5, L5
		188			S5, L5, D4, V4
		192			S5,L5,D4,V4,T5,Q5,U5,V5
		193			S5,L5,D4,V4,T5,Q5,U5,V5
		195			S5,L5,D4,V4,T5,U5,Q5
		194			S5, L5, D4, V4
		196	12	29	D4, V4, S5, L5
		197	- 8	(113)	S5, L5, D4, V4
28	54.2	196			S5,L5,D4,V4,T5,Q5,U5
29	41.0	192			S5,L5,D4,V4,V5
		193			S5,L5,D4,V4,V5
		195			S5,L5,D4,V4,V5
		194			S5,L5,D4,V4,V5
		196			D4,V4,S5,L5,T5,Q5,U5
30	27.8	192			S5, L5, D4, V4
		193			D4, V4, S5, L5
		195			S5, L5, D4, V4
		194			S5, L5, D4, V4
		199	-13	340	D4, V4, S5, L5
		196			S5,L5,D4,V4,T5,Q5,U5,V5
31	14.6	192			D4, V4
		195			D4, V4, S5, L5
		194			S5, L5, D4, V4

OBSERVATION OF MAGNETIC AND VELOCITY FIELDS OF SOLAR ACTIVE REGIONS

AUGUST 1990 HUAIROU ST. BEIJING OBS.

Day	L0	Huairou Region	Lat	L	Data
		196			S5,L5,T5,Q5,U5,D4,V4,V5
		198	-16	357	S5, L5
		199			D4, V4, S5, L5
		200	15	327	D4, V4, S5, L5

NPL SPL

3 9 16 19 23 25 29 30 31

SOLAR RADIO EMISSION FLUX

AUGUST 1990

Day	BEIJ 2840	PURP 2700	URUM 9375	YUNN 2840
1	202		292	179
2	232		345	204
3	220		320	185
4	207		327	179
5	184		308	170
6	175		288	171
7	177		288	164
8	194		310	173
9	205		328	175
10	203		311	174
11	212		310	179
12	208		296	174
13	212		311	177
14	215		309	181
15	209		309	179
16	229		309	193
17	245		314	201
18	262		329	221
19	288		343	238
20	308		384	248
21	327		407	274
22	349		443	288
23	359		416	311
24	362		460	326
25	353		412	290
26	315		392	292
27	317		388	253
28	271		385	233
29	277		391	229
30	256		345	211
31	217		329	175
Mean	251.3		345.1	214.4

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

AUGUST 1990

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak	Rel	Mean
11	2840	BEIJ	3 S	0155.0	0159.0	12.0	26.1	12.3	
13	2840	BEIJ	5 S	0031.0	0035.3	6.0	19.1	9.0	
13	2840	YUNN	3 S	0032.0	0034.4	5.0	13.4		
13	2840	BEIJ	5 S	0424.0	0426.3	15.0	13.9	6.6	
13	2840	YUNN	4 S/F	0921.5	0923.1	5.0	86.8		
13	9375	URUM	25 R	0922.0	0925.2	92.0	188.1	60.5	
14	2840	YUNN	20 GRF	0906.0	0907.3	4.0	13.7		
16	2840	YUNN	4 S/F	0723.0	0725.3	3.7	11.2		
18	2840	YUNN	4 S/F	0929.3	0931.2	11.7	27.6		
20	2840	BEIJ	3 S	0605.0	0606.1	2.0	28.6	9.3	
21	2840	BEIJ	45 C	0929.0	0930.3	4.0	321.4	89.3	
22	2840	BEIJ	45 C	0138.0	0141.0	7.0	13.6	3.9	
22	2840	BEIJ	45 C	0408.0	0408.6	7.0	19.2	5.5	
22	9375	URUM	23 GRF	0410.3	0411.0	9.5	16.3	3.7	
22	2840	BEIJ	5 S	0455.0	0456.0	3.0	11.2	3.2	
23	2840	BEIJ	5 S	0327.0	0328.7	4.0	22.2	6.2	
23	2840	BEIJ	5 S	0500.0	0501.9	3.0	12.4	3.5	
23	2840	BEIJ	3 S	0521.0	0521.2	3.0	32.7	9.1	
23	9375	URUM	8 S	0525.0	0525.5	1.0	36.0	8.7	
23	2840	BEIJ	45 C	0731.0	0739.7	22.0	34.0	9.5	
23	2840	BEIJ	3 S	2336.0	2339.2	4.0	17.1	4.7	
24	9375	URUM	20 GRF	0156.0	0215.5	58.0			
24	2840	BEIJ	20 GRF	0208.0	0212.6	41.0	12.7	3.5	
24	2840	BEIJ	20 GRF	0537.0	0544.0	11.0	4.6	1.3	
24	2840	BEIJ	45 C	2353.0	2356.3	6.0	33.7	9.7	
25	2840	BEIJ	5 S	0245.0	0246.1	4.0	29.6	8.5	
25	9375	URUM	4 S/F	0308.6	0310.0	3.7	111.0	27.0	
25	9375	URUM	23 GRF	0459.0	0500.6	4.4	70.1	17.0	
26	2840	BEIJ	5 S	0053.0	0054.9	9.0	11.4	3.6	
26	2840	BEIJ	40 F	0103.0	0111.0	35.0	23.8	7.6	
26	2840	BEIJ	2 S/F	0150.0	0156.5	9.0	11.4	3.6	
26	2840	BEIJ	45 C	0208.0	0212.4	14.0	19.3	6.1	
26	2840	BEIJ	5 S	0324.0	0325.8	6.0	71.5	22.7	
26	2840	YUNN	4 S/F	0325.0	0326.0	5.0	58.6		
26	2840	BEIJ	5 S	0351.0	0353.7	8.0	90.9	28.8	
26	2840	BEIJ	5 S	0731.0	0733.1	4.0	21.8	6.9	
26	2840	BEIJ	2 S/F	0739.0	0741.3	4.0	24.0	7.6	
27	2840	BEIJ	45 C	0346.0	0349.8	22.0	454.1	143.2	
27	2840	YUNN	46 C	0348.0	0350.0	7.0	287.8		
27	2840	BEIJ	29 PBI	0408.0		54.0	10.2	3.2	

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

AUGUST 1990

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak	Rel	Mean
27	2840	BEIJ	3 S	0618.0	0622.4	11.0	13.6	4.3	
27	9375	URUM	3 S	0620.5	0626.0	20.5	2.7	0.7	
27	9375	URUM	21 GRF	0645.0	0646.0	4.0	11.8	3.0	
28	2840	BEIJ	45 C	0013.0	0014.2	3.0	29.9	11.0	
28	2840	BEIJ	5 S	0304.0	0305.0	4.0	10.3	3.8	
28	2840	BEIJ	45 C	0335.0	0344.1	19.0	125.8	46.4	
28	2840	YUNN	45 C	0338.0	0345.0	11.0	102.5		
28	9375	URUM	3 S	0855.5	0855.9	3.2	14.6	3.8	
28	9375	URUM	47 GB	1000.0	1009.0	22.0	1031.1	267.5	
28	9375	URUM	21 GRF	1022.0	1023.5	3.0	273.5	61.6	
28	9375	URUM	21 GRF	1025.0	1031.8	32.4	223.9	58.1	
28	9375	URUM	47 GB	1057.4	1115.5	68.0	926.8	240.8	
29	9375	URUM	4 S/F	0522.0	0522.5	0.6	30.5	7.8	
30	2840	BEIJ	45 C	0155.0	0157.4	5.0	32.9	12.8	
30	9375	URUM	6 S	0305.9	0306.5	3.5	62.5	18.1	
30	2840	BEIJ	5 S	0449.0	0451.6	4.0	10.2	4.0	
31	9375	URUM	6 S	0407.5	0409.2	2.6	83.6	25.4	
31	9375	URUM	1 S	0508.6	0509.1	0.5	8.9	2.7	
31	9375	URUM	8 S	0831.9	0832.1	0.2	11.6	3.5	

INTERVALS OF SOLAR RADIO EMISSION PATROL OBSERVATION

AUGUST 1990

Day	BEIJ From To 2840	PURP From To 2700	URUM From To 9375	YUNN Form To 2840
1	0000 0710		0110 1125	0000 0835
	2352 2400			
2	0000 0938		0054 1045	0110 0815
	2244 2400			
3	0000 0720		0059 1135	0030 0825
	2357 2400			2330 2400
4	0000 0935		0104 1151	0000 0910
	2250 2400			
5	0000 1000		0115 1202	0030 0550
	2307 2400			
6	0000 1000		0105 1106	0110 0840
	2350 2400			
7	0000 1005		0112 1135	0005 0830
	2225 2400			2355 2400
8	0000 1000		0110 1135	0000 0901
	2214 2400			
9	0000 1000		0108 1150	0009 0930
	2318 2400			2356 2400
10	0000 0957		0059 1130	0000 0830
	2347 2400			
11	0000 0720		0119 1136	0010 0815
	2327 2400			
12	0000 0930		0115 1226	0100 0805
	2349 2400			
13	0000 0720		0101 1112	0030 0950
	2354 2400			2340 2400
14	0000 0905		0100 1132	0000 0915
15	0008 1002		0102 1105	0009 0900
	2345 2400			2350 2400
16	0000 1013		0110 1208	0000 0845
	2331 2400			2345 2400
17	0000 0928		0110 1125	0000 0900
	2312 2400			2340 2400
18	0000 0945		0100 1203	0000 1030
	2245 2400			2315 2400
19	0000 1007		0047 1132	0000 1000
	2235 2400			
20	0000 0633		0108 1128	0000 0820
	2346 2400			2345 2400

INTERVALS OF SOLAR RADIO EMISSION PATROL OBSERVATION

AUGUST 1990

Day	BEIJ From To 2840	PURP From To 2700	URUM From To 9375	YUNN From To 2840
21	0000 1010		0112 1116	0000 0830
	2210 2400			2330 2400
22	0000 0722		0110 1145	0000 0830
	2345 2400			2345 2400
23	0000 1000		0134 1138	0000 0845
	2142 2400			2345 2400
24	0000 0722		0104 0718	0000 0840
	2347 2400			2330 2400
25	0000 0953		0109 1111	0000 0840
	2252 2400			2330 2400
26	0000 0928		0140 1030	0000 0750
	2256 2400			
27	0000 0721		0110 1116	0000 0430
				2350 2400
28	0003 0720		0636 1119	0000 0830
	2349 2400			
29	0000 0715		0120 1126	0000 0830
	2348 2400			
30	0000 0718		0106 1142	0000 0830
	2350 2400			
31	0000 0715		0102 1101	0000 0840

COSMIC RAY NEUTRON INTENSITY

Real Counts: 256 Times (Tabulated Counts Plus 1500)

AUG 1990 U.T. Hours at End of Interval

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean	N
1	326	333	330	333	333	338	337	335	330	334	331	325	327	329	324	322	316	318	312	309	307	305	304	300	323.3	24
2	308	299	301	314	313	311	313	308	300	290	293	293	298	290	294	298	284	288	296	293	292	300	301	308	299.4	24
3	302	301	300	304	298	298	301	298	298	298	304	312	307	304	299	304	303	298	298	306	301	301	300	300	301.5	24
4	301	300	304	312	309	305	308	309	306	312	299	304	298	307	304	305	309	310	305	308	308	313	316	313	306.9	24
5	305	316	309	308	311	312	306	307	308	308	301	307	305	311	314	317	320	312	320	320	323	316	326	324	312.8	24
6	318	311	314	312	309	315	325	320	325	325	322	318	327	324	331	315	315	316	320	313	309	309	304	315	317.2	24
7	308	308	316	313	317	310	317	321	322	332	329	332	327	325	326	329	316	327	320	326	317	325	321	330	321.4	24
8	313	329	329	331	330	323	326	329	331	332	331	332	329	338	323	331	326	318	327	331	324	330	330	336	328.3	24
9	343	335	342	340	337	344	331	331	333	332	333	333	324	336	328	331	329	336	342	342	341	347	347	342	336.6	24
10	338	335	336	336	336	342	343	350	341	344	337	335	342	341	337	332	339	336	328	329	340	336	338	340	338.0	24
11	341	335	336	335	346	337	335	342	338	344	339	339	341	331	334	334	326	338	348	339	337	335	335	343	337.8	24
12	340	352	343	345	354	348	351	348	348	348	350	347	345	341	328	336	334	331	338	347	344	342	347	349	344.0	24
13	346	337	347	345	362	354	356	366	359	360	361	356	354	348	354	343	358	361	354	360	353	350	355	355	353.9	24
14	351	353	346	344	347	343	341	344	341	342	353	346	350	338	347	346	345	339	343	341	338	344	348	344	344.8	24
15	331	337	336	340	339	340	347	347	337	342	331	342	343	346	344	350	339	347	349	345	340	339	341	337	341.2	24
16	335	333	338	331	327	326	323	324	323	323	314	322	317	314	322	314	316	306	307	315	309	301	307	308	319.0	24
17	302	308	309	316	313	312	317	313	315	308	304	312	309	310	298	303	301	306	297	308	300	306	301	314	307.6	24
18	311	306	307	309	308	314	308	308	312	313	308	310	305	305	302	301	311	313	317	306	305	311	311	311	308.8	24
19	307	318	310	317	310	329	313	313	312	304	311	312	312	307	318	314	319	314	319	327	313	313	320	318	314.6	24
20	321	308	329	319	319	325	326	324	333	329	320	326	322	325	328	317	323	315	318	326	321	321	331	322	322.8	24
21	328	332	320	317	328	325	315	317	316	319	317	331	335	331	340	341	334	340	337	322	326	320	319	322	326.3	24
22	321	336	332	339	340	337	342	342	337	333	340	334	335	333	329	337	329	338	343	340	343	333	337	335	336.0	24
23	336	333	332	344	344	345	342	347	356	350	349	343	340	347	348	339	344	351	348	349	348	346	338	345	344.3	24
24	341	344	343	342	345	345	341	337	332	338	336	326	331	331	337	333	337	338	336	345	341	341	334	337	338.0	24
25	349	343	331	344	332	339	330	333	336	331	337	343	340	343	349	343	341	341	340	344	333	339	341	350	339.7	24
26	350	346	344	337	343	343	340	349	357	353	338	342	348	341	339	336	328	325	328	327	329	336	325	329	338.9	24
27	317	309	314	314	320	323	325	308	313	309	305	309	309	308	310	320	321	317	323	321	319	318	324	314	315.4	24
28	329	329	338	334	331	330	335	340	331	332	323	319	322	323	323	334	333	336	341	341	347	344	341	339	333.1	24
29	350	344	331	333	332	338	328	340	330	325	323	320	322	318	326	319	321	325	330	331	327	326	325	333	329.0	24
30	337	332	328	329	328	332	337	342	341	343	338	339	347	339	334	332	330	331	334	329	347	334	344	344	336.3	24
31	334	338	333	339	340	346	351	349	356	340	349	350	334	336	334	328	328	322	324	327	332	328	337	333	337.0	24

MONTHLY MEAN=327.540

MONTHLY MEAN DAILY VARIATION FOR 31 COMPLETE DAYS DEVIATIONS FROM AVERAGE:327.540

(1-12)	-0.48	-0.44	-0.83	0.72	1.52	2.43	1.81	2.81	2.04	1.27	-0.90	0.17
(13-24)	-0.28	-1.09	-0.96	-1.60	-2.54	-1.96	-0.38	0.43	-1.28	-1.44	-0.19	1.17

HARMONIC COMPONENTS (ORDER, COS, SIN, AMPLITUDE, MAX.-HR)

U.T.=(1 0.03 1.54 1.54 5.93) (2 -0.43 -0.61 0.74 7.82) (3 0.07 -0.36 0.36 6.23) (4 0.33 0.27 0.43 0.66)

L.T.=(1 -1.35 -0.75 1.54 13.93) (2 -0.31 0.68 0.74 3.82) (3 0.07 -0.36 0.36 6.23) (4 -0.40 0.15 0.43 2.66)

COSMIC RAY MESON INTENSITY

Real Relative Intensity: 0.1% Times (Tabulated Value Plus 1000)

AUG 1990

U.T. Hours at End of Interval

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean	N
1	-3	-5	-1	0	-2	-1	-1	-2	-2	-1	-4	-1	-1	-2	-4	-5	-5	-3	-6	-6	-8	-8	-7	-8	-3.6	24
2	-5	-6	-2	-1	0	0	-2	-2	-5	-6	-7	-6	-9	-6	-9	-7	-9	-8	-8	-10	-8	-7	-8	-7	-5.8	24
3	-8	-6	-6	-7	-5	-6	-6	-6	-8	-7	-3	-6	-9	-4	-2	-4	-5	-5	-6	-6	-5	-6	-7	-7	-5.8	24
4	-8	-4	-6	-7	-7	-4	-5	-8	-8	-8	-9	-7	-6	-4	-6	-6	-5	-5	-5	-4	-8	-6	-6	-5	-6.1	24
5	-6	-7	-6	-8	-5	-6	-7	-7	-6	-10	-8	-8	-5	-7	-7	-6	-4	-3	-7	-5	-7	-5	-4	-6	-6.3	24
6	-2	-4	-5	-3	-2	-5	-4	-5	-4	-3	-3	-3	-2	-5	-3	-3	-3	-5	-5	-2	-3	-7	-5	-7	-3.9	24
7	-6	-3	-5	-2	-4	-5	-6	-3	-5	-2	-3	-1	-1	1	-2	-1	-4	-1	-3	-1	-1	-2	-1	-1	-2.6	24
8	-1	1	1	0	1	-1	-1	0	1	2	2	1	0	1	1	2	0	-1	-1	1	0	-1	2	1	0.5	24
9	0	1	1	2	2	4	2	2	1	1	0	2	-2	0	1	1	2	0	1	1	1	1	3	3	1.3	24
10	1	1	3	3	4	4	0	1	2	1	0	0	1	0	0	1	-2	-2	-1	2	-1	0	2	0	0.8	24
11	0	1	-1	-1	1	-2	-2	0	1	2	1	0	1	-1	1	1	0	0	-1	-2	0	0	1	4	0.2	24
12	2	2	2	2	0	1	1	1	-1	1	-1	1	2	3	-1	1	0	0	0	1	0	3	2	5	1.1	24
13	4	3	3	2	3	3	2	0	0	1	0	1	0	1	2	0	4	3	3	3	3	1	1	3	1.9	24
14	2	2	3	1	2	1	1	2	1	1	1	2	2	2	3	3	1	0	4	4	5	4	6	2	2.3	24
15	2	5	5	5	5	5	5	4	4	3	1	0	3	2	3	4	4	4	5	6	2	1	3	3	3.5	24
16	2	4	4	1	0	1	2	-3	-3	0	-4	-2	-3	-2	-1	-1	0	-3	-1	-5	-4	-1	-3	-4	-1.1	24
17	0	-5	-4	-2	-5	-3	-3	-5	-5	-3	-4	-4	-3	-5	-6	-3	-6	-6	-5	-7	-4	-5	-3	-2	-4.1	24
18	-3	-4	-3	-4	-4	-5	-2	-4	-3	-5	-7	-5	-6	-5	-3	-3	-4	-2	-4	-5	-3	-3	-6	-3	-4.0	24
19	-3	-3	-5	-4	-3	-4	-4	-4	-2	-4	-5	-4	-2	-3	-5	-4	-2	-3	-3	-3	-3	-1	-2	-1	-3.2	24
20	1	-4	-1	-3	-2	-1	-3	-3	-2	1	-1	-2	-1	1	0	-2	-3	-3	-1	-2	-3	-3	-2	-2	-1.7	24
21	-2	-3	-3	-4	-3	-5	-6	-7	-5	-5	-5	-2	-3	-1	-3	-1	-1	-4	-2	-4	-3	-4	-5	-2	-3.5	24
22	-4	-2	-5	-2	-4	-3	-3	-5	-5	-5	-4	-4	-3	-5	-3	-1	-2	-2	1	-1	-2	1	0	-1	-2.7	24
23	0	0	-1	-2	-1	0	0	-3	-3	-1	-2	-2	0	-2	0	1	1	1	2	2	2	0	1	1	-0.3	24
24	2	0	-1	0	1	0	-3	-2	-2	-3	-4	0	1	1	1	2	3	3	2	3	2	6	4	5	0.9	24
25	3	5	1	4	1	2	0	2	3	3	1	2	3	5	4	5	4	6	3	4	3	2	3	4	3.0	24
26	6	8	5	3	6	2	3	2	3	0	0	0	1	1	-1	-1	2	1	2	-1	1	1	4	5	2.2	24
27	1	1	1	1	1	2	2	1	-1	1	0	-1	-2	-4	-2	-3	-2	1	-2	-2	-1	-4	-1	-2	-0.6	24
28	-3	-2	0	0	-2	-1	-3	-1	-1	-3	-5	-4	-2	-3	0	-1	-1	2	-1	1	3	3	4	2	-0.8	24
29	1	4	1	0	3	3	2	2	-5	0	0	0	-2	0	0	-2	1	0	1	0	2	0	1	-1	0.5	24
30	1	3	1	4	2	2	3	3	3	2	2	3	5	4	5	3	3	2	3	2	3	1	1	3	2.7	24
31	2	4	5	3	6	5	5	6	3	5	3	4	1	-1	2	0	-1	2	1	3	0	0	3	2	2.6	24

MONTHLY MEAN= -1.046

MONTHLY MEAN DAILY VARIATION FOR 31 COMPLETE DAYS DEVIATIONS FROM AVERAGE: -1.046

(1-12)	0.27	0.63	0.43	0.43	0.69	0.50	-0.02	-0.37	-0.70	-0.31	-1.15	-0.44
(13-24)	-0.31	-0.18	-0.08	0.08	-0.05	0.05	-0.05	-0.02	-0.15	-0.21	0.43	0.53

HARMONIC COMPONENTS (ORDER, COS, SIN, AMPLITUDE, MAX.-HR)

U.T.=(1 0.44 0.05 0.44 0.43) (2 -0.06 0.32 0.32 3.36) (3 0.01 -0.10 0.10 6.11) (4 0.07 -0.04 0.08 5.53)

L.T.=(1 -0.26 0.35 0.44 8.43) (2 0.31 -0.11 0.32 11.36) (3 0.01 -0.10 0.10 6.11) (4 0.00 0.08 0.08 1.53)

COSMIC RAY MESON INTENSITY
VERTICAL COMPONENT
Real Counts: 128 Times (Tabulated Counts Plus 3000)

AUG 1990

U.T. Hours at End of Interval

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean	N
1	39	62	58	66	65	57	66	50	58	60	58	46	43	32	37	22	27	25	26	23	17	26	0	7	40.4	24
2	12	12	3	24	30	32	14	17	20	42	17	26	11	4	11	19	8	12	8	3	-7	27	14	4	15.1	24
3	11	25	28	30	15	37	9	25	16	32	17	24	8	21	18	12	14	14	11	16	19	16	15	16	18.7	24
4	18	24	30	41	37	29	33	32	40	29	24	15	27	28	20	12	8	22	24	24	29	20	24	17	25.3	24
5	25	21	10	15	17	38	29	26	14	2	5	14	18	31	26	22	29	19	4	27	23	14	32	29	20.4	24
6	27	40	43	36	53	38	37	49	42	50	43	41	38	37	48	33	32	19	38	15	24	25	16	11	34.8	24
7	27	31	50	42	49	39	46	33	47	71	48	34	43	48	32	45	26	1	16	22	30	24	29	35	36.2	24
8	22	47	44	44	39	41	30	69	43	63	35	54	40	31	46	42	31	35	19	25	39	31	22	38	38.8	24
9	43	42	46	62	63	52	44	49	55	62	49	45	44	40	41	30	33	29	26	38	27	45	46	39	43.8	24
10	47	47	62	62	68	60	38	52	44	77	66	49	37	35	49	28	47	37	46	29	48	38	38	31	47.3	24
11	50	46	59	60	57	49	42	54	69	66	70	61	52	50	63	36	39	37	50	54	47	29	39	39	50.8	24
12	64	56	36	54	66	46	61	59	55	54	50	53	50	47	46	47	34	38	40	37	44	27	42	38	47.7	24
13	44	47	74	65	61	61	60	63	65	60	50	54	53	44	57	56	57	51	43	55	59	68	58	64	57.0	24
14	51	46	48	55	57	48	55	59	60	63	62	43	41	47	48	44	54	40	48	53	39	49	45	60	50.6	24
15	27	43	48	66	67	70	47	49	53	67	36	48	44	39	35	47	38	37	34	39	19	9	40	41	43.5	24
16	27	60	47	43	36	41	13	25	26	14	25	12	6	26	12	8	17	4	3	11	6	17	7	9	20.6	24
17	22	13	22	30	25	16	14	8	32	19	30	6	25	13	9	-2	-8	5	15	22	11	13	14	4	14.9	24
18	8	27	30	39	25	15	11	22	-18	-22	0	26	27	9	7	18	18	13	27	12	19	7	9	5	13.9	24
19	7	5	8	17	13	22	15	8	11	17	22	8	20	5	15	20	22	17	17	19	12	18	15	8	14.2	24
20	12	26	37	39	47	26	29	34	40	35	45	29	27	25	15	22	7	28	18	24	19	27	30	31	28.0	24
21	12	31	38	41	21	26	16	15	22	35	41	43	18	34	30	25	29	30	41	29	21	20	29	31	28.3	24
22	33	34	61	40	33	27	19	33	26	40	20	24	15	17	16	22	22	30	33	22	33	17	23	24	27.7	24
23	10	38	36	42	51	36	35	29	42	48	39	34	24	26	20	26	27	22	40	39	38	36	29	28	33.1	24
24	27	42	34	52	43	22	28	16	23	27	23	32	16	37	30	32	50	33	32	44	34	55	34	45	33.8	24
25	32	38	49	44	26	35	33	28	42	45	44	50	38	54	43	42	46	45	44	35	46	34	26	19	39.1	24
26	45	57	78	52	48	58	49	42	42	28	29	20	21	31	17	15	21	17	24	32	40	49	57	54	38.6	24
27	37	41	42	59	43	33	46	30	42	36	21	22	14	2	8	4	15	28	27	25	32	26	23	28	28.5	24
28	22	36	40	45	35	44	48	30	35	30	31	17	16	-2	8	12	14	22	27	14	39	34	41	40	28.3	24
29	35	34	58	51	31	38	41	37	41	38	23	20	20	17	4	18	11	22	1	18	12	16	-1	29	25.6	24
30	22	16	31	42	37	48	33	47	64	43	48	43	35	18	21	19	8	24	9	14	12	15	10	14	28.0	24
31	0	23	38	39	41	38	53	41	54	53	41	18	24	13	7	1	17	10	6	22	6	14	17	33	25.4	24

MONTHLY MEAN= 32.199

MONTHLY MEAN DAILY VARIATION FOR 31 COMPLETE DAYS DEVIATIONS FROM AVERAGE: 32.199

(1-12)	-4.52	3.61	9.35	12.87	9.70	7.22	3.09	4.28	6.67	9.22	3.67	0.41
(13-24)	-3.33	-4.49	-5.13	-7.13	-6.62	-7.49	-6.49	-5.04	-5.20	-4.91	-5.65	-4.10

HARMONIC COMPONENTS (ORDER, COS, SIN, AMPLITUDE, MAX.-HR)

U.T.=(1 0.15 8.13 8.13 5.93) (2 -0.91 0.60 1.09 4.88) (3 -1.82 1.98 2.69 2.95) (4 -2.23 -0.71 2.34 3.30)

L.T.=(1 -7.12 -3.94 8.13 13.93) (2 0.98 0.49 1.09 0.88) (3 -1.82 1.98 2.69 2.95) (4 1.73 -1.58 2.34 5.30)

SUDDEN IONOSPHERIC DISTURBANCES (D REGION)

AUGUST 1990

Day	Sta	Start (UT)	Max (UT)	End (UT)	Imp	SPA LF	SPA VLF	SFA LF
01	YUNN	0927	0932	0949	2-	- 3.9		
01	LINT	0926	0938	1034	3	- 7.9D	-22	+ 1.8
02	LINT	0104	0111	0137U	1	- 1.3	- 3	- 0.8
02	LINT	0236	0306	0328D	1	- 1.9	- 9	- 0.9
02	LINT	0329	0334	0350	1-	- 0.5	- 2	0
02	YUNN	0548	0550	0556	1	- 1.5		
02	LINT	0548	0621	0718	2-	- 3.2	-18	+ 0.9
02	YUNN	0903	0906	0911	1+	- 2.2		
02	YUNN	1031	1034	1044	2	- 4.8		
03	YUNN	0235	0237	0248	1-	- 1.0		
03	LINT	0233	0240	0311U	1-	- 0.6	- 6	- 0.8
04	YUNN	0340	0344	0409	1	- 1.4		
04	LINT	0338	0349	0434	1	- 1.5	- 6	- 0.4
04	LINT	0649	0652	0722U	1+	- 2.8	- 7	+ 1.3
04	YUNN	0648	0653	0713	1	- 1.9		
05	LINT	0059	0110	0130	1-	- 0.7	- 4	- 0.5
06	LINT	0904	0918	0950U	2-	- 3.8D	- 6	+ 1.1
07	YUNN	0942	0946	0951	2	- 4.6		
08	LINT	2343	2349	0056	3+	-11.5E	- 5	- 1.0,+ 1.6
09	YUNN	0000	0001	0006	2+	- 5.5		
09	YUNN	1002	1004	1019	2-	- 3.6		
10	LINT	0712	0720	0744	1	- 1.1	- 4	0
10	YUNN	0904	0911	0912	3+	- 8.5		
10	YUNN	0912	0916	0926	1+	- 3.0		
11	YUNN	0051	0054	0104	1	- 1.7		
11	YUNN	0851	0853	0903	2-	- 3.1		
13	YUNN	0036	0040	0100	1+	- 2.5		
13	LINT	0033	0041	0050D	1+	- 3.0	- 3	- 2.2
13	LINT	0053	0108	0140	1	- 2.0	- 7	0
13	YUNN	0358	0359	0401	1	- 1.3		
13	LINT	0404	0412	0434	1-	- 0.7	- 6	0
13	YUNN	0428	0431	0446	1	- 1.2		
13	YUNN	0748	0750	0755	1	- 1.1		
13	YUNN	0925	0929	0949	2-	- 3.7		
13	LINT	0922	0931	1010	3	- 7.4D	-17	- 1.8
14	YUNN	0018	0020	0030	1	- 1.4		
14	YUNN	0710	0712	0722	1-	- 0.7		
14	LINT	0908	0913	0934U	1+	- 2.4D	- 6	- 1.2
14	YUNN	0942	0944	1009	2	- 4.2		
15	LINT	0138	0149	0210	1	- 1.2	- 8	- 0.4

SUDDEN IONOSPHERIC DISTURBANCES (D REGION)

AUGUST 1990

Day	Sta	Start (UT)	Max (UT)	End (UT)	Imp	SPA LF	SPA VLF	SFA LF
15	LINT	0210	0228	0300	1-	- 0.4	0	+ 0.3
16	YUNN	0014	0016	0036	1	- 1.7		
16	LINT	0144	0148	0156	1-	- 0.9	- 5	- 0.7
16	LINT	0403	0407	0456	1-	- 0.7	- 4	- 0.2
17	LINT	0058	0103	0116U	1-	- 0.7	- 4	+ 1.5
17	LINT	0128	0132	0144	1-	- 0.2	0	+ 0.4
17	LINT	0150	0200	0210	1-	- 0.4	0	+ 0.8
17	LINT	0220	0231	0242U	1-	- 0.4	0	+ 0.6
17	YUNN	0945	0948	0959	2+	- 5.8		
17	LINT	2337	2347	0040	2	- 4.5E	- 6	+ 2.5
18	LINT	0204	0230	0310U	1-	- 0.9	-11	+ 3.8
18	LINT	0320	0400	0450	1-	- 0.4	- 4	- 0.8
18	YUNN	0515	0521	0548	1	- 1.7		
18	LINT	0511	0524	0635	1+	- 2.5	-18	- 0.4,+ 0.8
19	YUNN	0152	0203	0228	2-	- 3.2		
19	LINT	0150	0203	0316	2	- 4.9	- 7	- 2.3,+ 0.9
19	YUNN	0949	0953	1010	3-	- 6.9		
20	LINT	0138	0149	0202D	1	- 1.2	- 3	
20	LINT	0202	0210	0228U	1-	- 0.6	0	- 0.3
20	LINT	0228	0238	0250U	1-	- 0.7	- 4	+ 0.1
21	LINT	0325	0328	0340	1-	- 0.5	0	- 0.4
21	YUNN	0411	0419	0516	1	- 2.0		
21	LINT	0408	0428	0506D	2-	- 3.8	-16	- 0.9,+ 2.1
21	YUNN	0516	0518	0615	1-	- 1.0		
21	LINT	0511	0556	0527	1	- 1.7	-13	+ 4.9
21	YUNN	0932	0937	0947	2-	- 3.4		
22	YUNN	0141	0143	0203	1+	- 2.4		
22	LINT	0140	0144	0244	2-	- 3.1	0	- 1.9
22	LINT	0409	0414	0454	1+	- 2.4	-12	- 0.4
22	YUNN	0411	0415	0458	1	- 1.3		
22	LINT	0457	0500	0536	1	- 1.3	- 4	+ 0.8
22	YUNN	0458	0500	0517	1	- 1.5		
22	YUNN	0755	0759	0820	1	- 1.7		
22	LINT	0748	0800	0825	2-	- 3.3	- 8	0
23	LINT	0126	0132	0242	2	- 4.3	- 8	- 2.2,+ 2.2
23	YUNN	0136	0141	0158	1+	- 2.2		
23	YUNN	0316	0320	0345	1	- 1.3		
23	YUNN	0442	0444	0554	1	- 1.5		
23	YUNN	0739	0741	0811	1	- 1.6		
23	LINT	0737	0747	0802	1	- 1.4	- 3	- 1.1

SUDDEN IONOSPHERIC DISTURBANCES (D REGION)

AUGUST 1990

Day	Sta	Start (UT)	Max (UT)	End (UT)	Imp	SPA LF	SPA VLF	SFA LF
24	LINT	2355	0006	0132	3+	- 9.4	- 4	+ 5.1
24	LINT	0133	0142	0206	1	- 1.9	- 5	- 1.7
24	LINT	0212	0218	0300	1-	- 0.3	- 4	- 0.7
24	LINT	0857	0924	1000	3	- 7.7D	-22	- 0.8
25	LINT	0240	0258	0402	1+	- 2.2	- 8	- 2.3
26	YUNN	0008	0010	0020	1+	- 2.3		
26	YUNN	0325	0334	0354	1	- 1.5		
26	YUNN	0735	0741	0806	1	- 1.9		
26	LINT	0735	0742	0831	2	- 4.1	-11	- 1.9
26	LINT	0854	0906	0952	2-	- 3.4D	- 9	+ 1.6
27	LINT	0007	0020	0101	1+	- 2.3	- 4	+ 4.8
27	YUNN	0351	0358	0459	3-	- 6.2		
27	LINT	0349	0400	0521	3	- 7.8	-40	- 4.0,+ 7.3
28	LINT	0239	0250	0321D	1	- 1.7	- 5	- 2.5
28	YUNN	0339	0347	0417	1+	- 2.6		
28	LINT	0338	0349	0500	2	- 4.3	-13	- 1.0,+ 3.5
28	LINT	0505	0517	0536	1-	- 0.9	-10	+ 1.7
28	LINT	0817	0827	0850	1	- 1.5	- 6	+ 0.5
28	YUNN	0904	0908	1003	2	- 4.3		
28	LINT	0900	0913	1026	3+	-14.6D	-40	+ 1.2
29	YUNN	0055	0059	0119	2	- 4.5		
29	YUNN	0429	0432	0512	1+	- 2.2		
29	YUNN	0518	0520	0525	1	- 1.9		
29	YUNN	0708	0718	0808	1+	- 2.3		
29	YUNN	0808	0818	0843	1	- 1.2		
30	YUNN	0011	0014	0018	2-	- 3.5		
30	YUNN	0522	0525	0530	1	- 1.2		
31	YUNN	0123	0127	0137	2-	- 4.0		

GEOMAGNETIC ACTIVITY INDICES K AND A_K

AUGUST 1990 BGMO

Day	Three-Hourly Indices K 0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	Sum	A_K
1	0	2	5	3	5	4	4	4	27	25
2	2	1	3	1	1	0	0	1	9	4
3	0	1	2	3	3	2	2	2	15	8
4	1	2	3	0	2	1	2	0	10	5
5 Q	0	1	2	1	1	2	0	2	9	4
6	0	2	2	2	1	3	3	2	15	8
7	2	1	2	2	2	1	1	0	11	5
8 Q	2	2	1	0	1	1	0	0	7	3
9 Q	0	1	1	2	1	3	2	0	10	5
10 Q	1	1	1	1	1	2	3	1	11	5
11	2	3	3	3	2	2	1	1	17	9
12	1	3	1	2	2	1	0	0	10	5
13	2	3	3	3	4	3	3	1	22	14
14	1	2	6	5	3	3	2	1	23	22
15	2	2	2	4	5	4	3	2	24	18
16	2	3	4	4	3	3	2	2	23	15
17	3	3	3	2	3	3	3	2	22	13
18	2	3	3	2	2	3	1	1	17	9
19	3	2	2	1	3	2	1	1	15	8
20	3	3	3	3	2	2	2	1	19	11
21 D	1	2	3	3	5	5	6	6	31	37
22 D	3	4	4	5	5	4	4	3	32	29
23 D	2	3	4	5	6	5	4	2	31	32
24	4	4	3	3	4	2	1	0	21	15
25	0	0	0	0	1	1	1	1	4	2
26 D	0	4	7	6	6	5	4	3	35	52
27	3	4	4	3	4	3	2	2	25	18
28 Q	3	3	3	2	3	1	0	1	16	9
29	3	2	2	4	3	2	4	1	21	14
30 D	0	2	3	3	6	5	2	2	23	22
31	4	3	2	3	2	1	1	1	17	10
									Sum	436
									Mean	14.1

MAGNETIC STORMS

AUGUST 1990

BGMO

Time of Magnetic Begining Day	h	m	Ending Day	h	Type	Sudden Com. Amplitude D	HnT	ZnT	Deg. of Acti.	Maximum Acti. on K-scale Day	3hour Int.	k Index	Maximum Range D	HnT	ZnT
1	07	41	02	09	SC	0.8	20	2	m	1	5	5	13.0	125	47
14	06	00	16	20	GC			2	m	15	5	5	10.3	116	34
21	04	00	24	15	GC				ms	23	5	6	16.7	156	56
26	05	00	27	18	SC	1.7	37	2	ms	26	3	7	14.5	175	45
30	06	00	31	11	GC				ms	30	5	6	14.1	121	34

M、X级X射线耀斑与活动区磁场

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我们对1988年4月到12月的18个活动区在日面期间产生的79个M、X级X射线耀斑与相应活动区磁位形的关系作了统计分析。我们采用极性反转线作为活动区磁场的特征参量，并以 $\nabla H_{\parallel} \geqslant 0.03G/KM$ 确定极性反转线及其长度。另外，利用北京天文台怀柔工作站提供的活动区磁图，北京天文台太阳观测组的太阳黑子照片以及SGD part I 给出的X射线耀斑的日面位置，把79个M、X级X射线耀斑确定在相应活动区的磁图上，然后分析耀斑附近极性反转线的特征，进而寻出耀斑发生前极性反转线的前兆变化。

我们发现79个M、X级X射线耀斑发生前，它们附近的磁极性反转线确有变化，大致可归纳为5类：

（1）极性反转线（长度≥10万公里）弯曲成“S”型，明显处，曲率增加一倍或更多。例如，AR4990 从4月15日到16日的磁图（图1－1中箭头所示），4月16日2124 UT产生1个M1.2级X级耀斑。

（2）极性反转线合并（合并后长度≥10万公里）。例如，AR5227 从11月13日到14日的磁图（图1－2）A和B两块磁流合并，从而使极性反转线合二为一。14日0415 UT和1206 UT分别产生1个M1.3级X射线耀斑。

（3）极性反转线闭合或包围一磁通量的70%或更多，极性反转线的长度达7万公里或更长。例如，AR5278（图1－3）12月13日到14日的磁图。12月14日1337 UT和1743 UT分别产生M2.1和M1.3级X射线耀斑。

（4）极性反转线（长度≥5万公里）被截断或分叉，走向改变。例如 AR5175，10月8日到9日的磁图（图1－4）。10月10日1803 UT产生一个M2.7级X射线耀斑。

（5）极性反转线（长度≥5万公里）由闭合转为开放。例如 AR5175，10月11日到12日的磁图（图1－5）。12日0457 UT和13日2030 UT分别产生了X2.5和M6.4级X射线耀斑。

每个活动区在日面期间产生的M、X级耀斑及与之有关的极性反转线特征列于表1（见英文稿）。

79个M、X级耀斑中，78个在产生前，它们附近的极性反转线有上述一种或几种前兆特征。而没有产生过强X射线耀斑的活动区，极性反转线一般都短而碎，如图2中的AR5158。今后我们将用更多的资料分析证实M、X级耀斑与上述五种极性反转线的密切关系以用于短期X射线耀斑的预报。

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CLASS M,X X-RAY FLARES AND MAGNETIC FIELD OF ACTIVITY REGIONS

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ABSTRACT

The relation between class M,X flares and magnetic configurations of the activity regions is analyzed for 79 class M,X flares in 18 activity regions in April 1988 –December 1988. We adopt the magnetic polarity inversion lines as the magnetic feature parameter. The polarity inversion lines and its lengths are determined by $\nabla H\|\sim 0.03$ G/km.

The locations of 79 class M,X x-ray flares are recognized on the magnetograms using sunspot photographs observaded in Beijing Astronomical Observatory, magnetograms of the activity regions observaded at Huairou Station in BAO and heliographic coordinates of the flares given in SGD Part 2. Then, the polarity inversion lines near x-ray flares are analyzed and characteristics of the variation of polarity inversion lines before class M,X x-ray flares are found out.

The variation of the relevant polarity lines before the occurence of the 79 class M,X x-ray flares can be divided into five types:

1) The polarity inversion line (the length $\geq$ 100000 km) is twisted as " S", the curvature increases by 100% or more in the remarkable area, for example, as seen in the magnetograms of AR4990 from 15 April to 16 April (Fig 1–1, indicating by an arrow). A M1.2 x-ray flare occured at 2124 UT on 16 April.

2) The polarity inversion lines connecte with each other. Its length after the connection is $\geq$ 100000 km. For example, it can be seen in the magnetogams of AR5227 from 13 November to 14 November(Fig1–2). Two M1.3 x-ray flares occured at 0415UT and at 1206UT on 14 November, separately.

3)The polarity inversion line envelops or encircles 70% of a magnetic flux or more. The length of the inversion lines is $\geq$ 70000 km, for example, in the magnetograms of AR5278 from 13 December to 14 December (Fig 1–3). A M2.1 and a M1.3 x-ray flares occured at 1337UT and at 1743 UT on 14 December, separately.

4) The polarity inversion line (the lehgth $\geq$ 50000 km) is cut off or branches, the trend of the line changes, for example, as seen in the magnetograms of AR5175 from 8 October to 9 October (Fig 1–4). A M2.7 x-ray flare occured at 1803UT on 10 October.

5) The polarity inversion line (the length $\geq$ 50000 km) changes from closing to opening, for example, the magnetograms of AR5175 from 11 October to 12 October(Fig 1–5). A X2.5 x-ray flare occured at 0457UT on 12 October and a M6.4 x-ray flare occured at 2030UT on 13 October.

Class M,X x-ray flares studied and the characteristics of the variation of the polarity inversion lines in the relevant activity regions are listed in Table 1.

Table 1.

Activity regions	Normal	A	B	C	D	E	Class M,X flares
AR4990		1		6	2	2	8
AR5027		2	3	1			7
AR5060+5066				4			10
AR5131	1		1				2
AR5159					1		1
AR5171				5	2		9
AR5175				1	1	2	3
AR5200					1		2
AR5212			2				2
AR5227			2				3
AR5229		1	1	3	3	1	13
AR5254				1			1
AR5265				1			3
AR5273+5275		1	4				6
AR5278+5280				7		1	9

In Table 1. A,B,C,D,E represent the changing characteristics 1,2,3,4 and 5 separatel,as mentioned above.

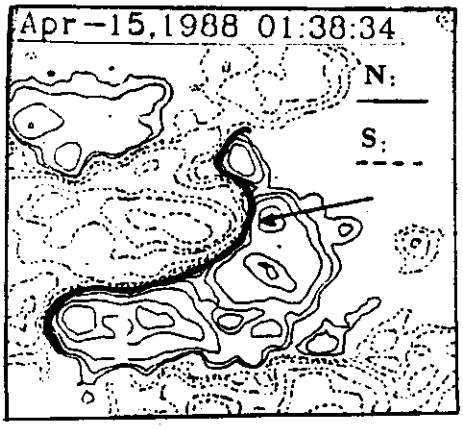
Only one class M flare did not correlate with the characteristic inversion lines before it occured. The activity regions, in which class M,X x-ray flares did not occur , had generally short and attered polarity inversion lines, for instance, AR5158 in Fig 2. We will further confirm the relation between class M,X x-ray flares and the preperties of polarity inversion lines in order to use them to the prediction of x-ray flares.

Acknowlegement

Huairou station in BAO provide us with the magnetograms of the active regions. Comrade Bao Kehan and Duan Shulin provide us with sunspot photographs.

References

[1] SGD Part 2, No.530–No538.



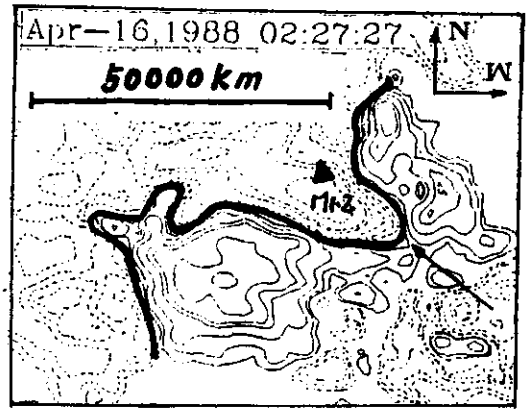
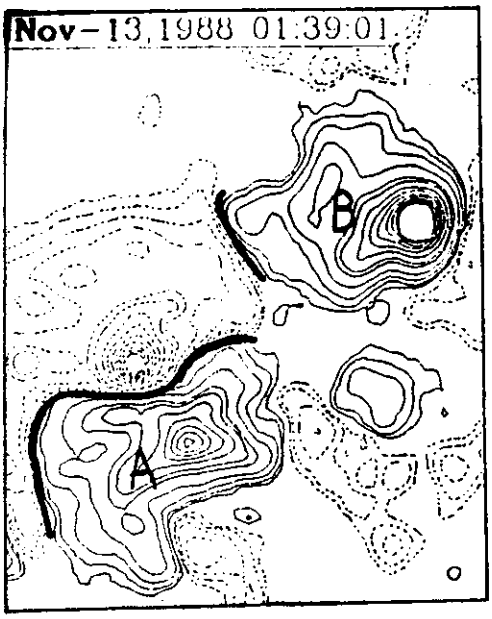


Fig 1-1. AR4990



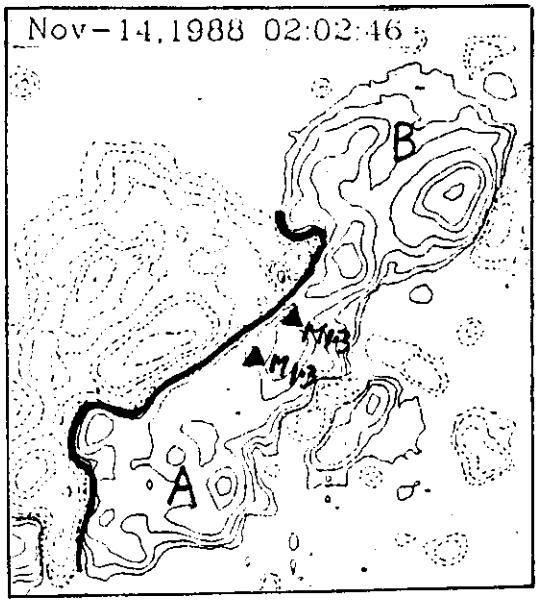
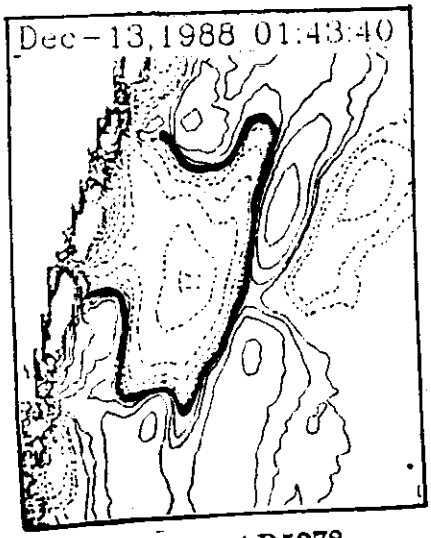


Fig 1-2. AR5227



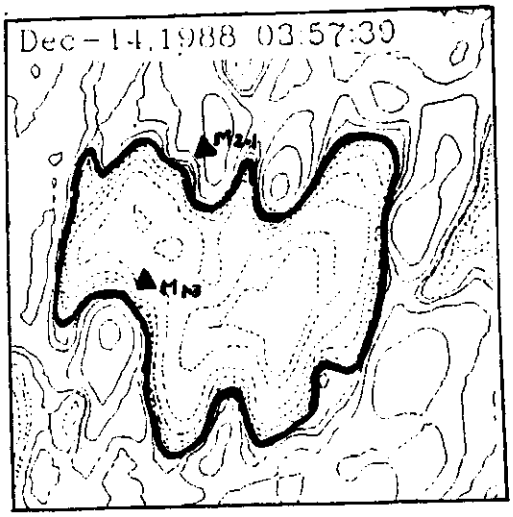


Fig 1-3. AR5278

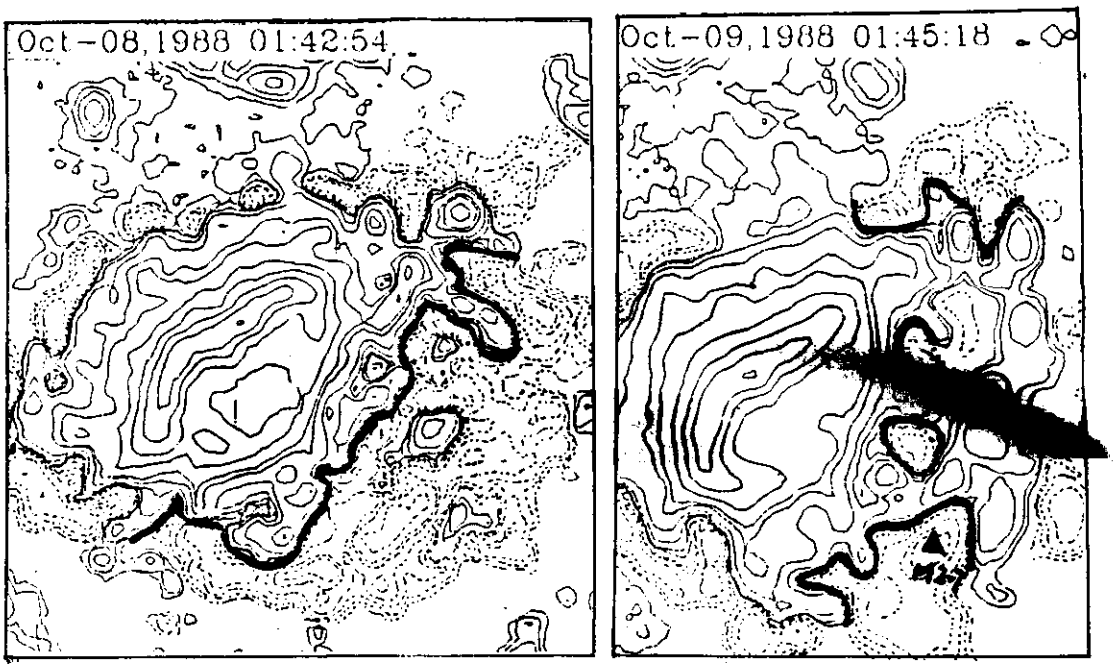


Fig 1–4. AR5175

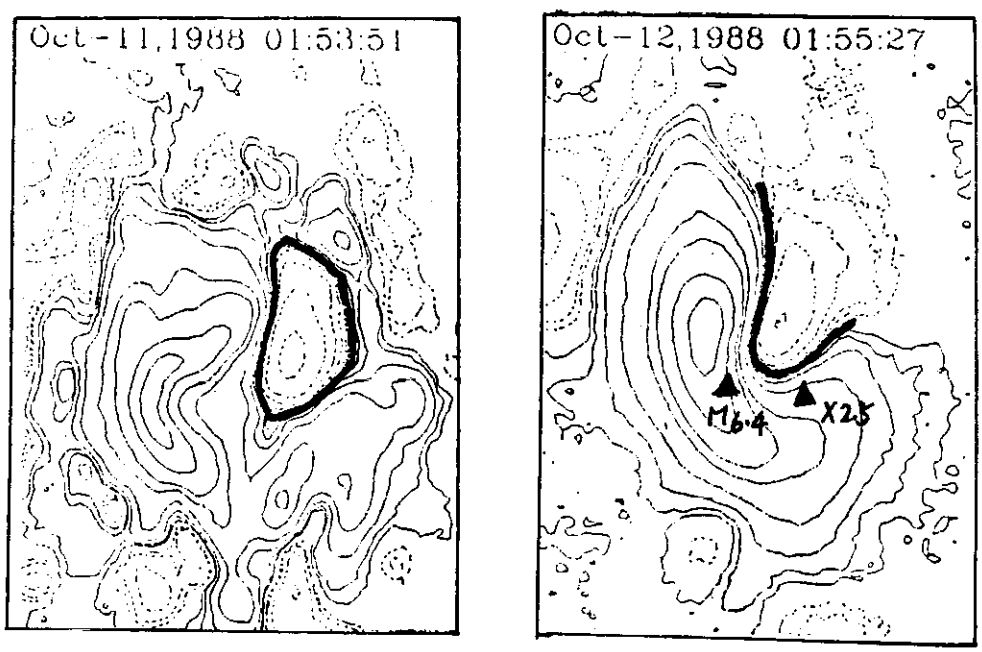


Fig 1–5. AR5175

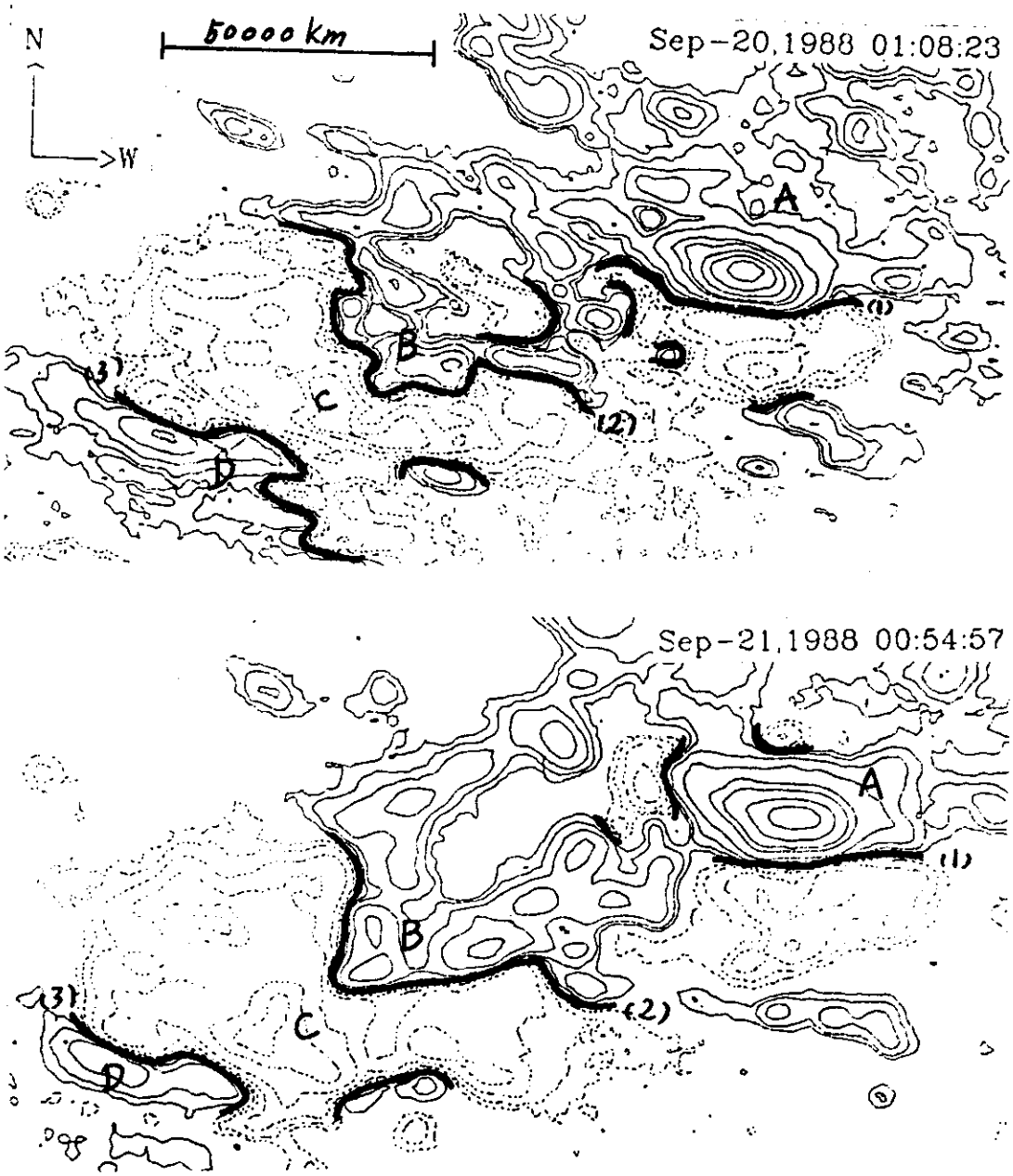

N
W
50000 km
Sep-20,1988 01:08:23
A
B
C
D
(1)
(2)
(3)
Sep-21,1988 00:54:57
A
B
C
D
(1)
(2)
(3)

Fig 2. AR5158

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