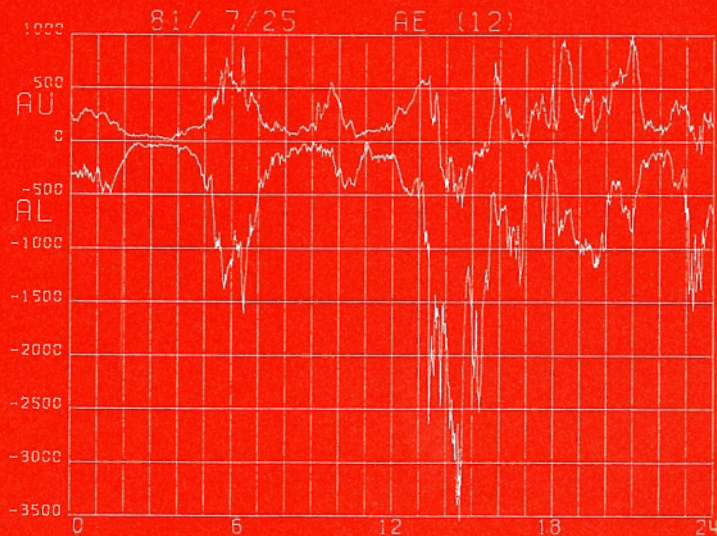


World Data Center C2 for Geomagnetism

DATA BOOK

No. 10

Auroral electrojet indices (AE)
for July-December 1981



NOVEMBER 1984

Data Analysis Center for
Geomagnetism and Spacemagnetism
FACULTY OF SCIENCE
KYOTO UNIVERSITY
KYOTO

Division of
Data Collection and Processing
NATIONAL INSTITUTE OF
POLAR RESEARCH
TOKYO

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PREFACE

The Auroral Electrojet (AE) index was originally introduced by Davis and Sugiura in 1966 as a measure of global electrojet activity in the auroral zone, and it is now widely used for studying geomagnetism, aeronomy and solar-terrestrial physics. The index was first derived at the Geophysical Institute of the University of Alaska, and hourly values were published for the years 1957 to 1964. The production of 2.5 min value was then tried at the Goddard Space Flight Center of NASA, and the results from September 1964 to June 1968 were published.

After that, the index was regularly published at the World Data Center A (WDC-A) in Boulder, Colorado, and the Center published 2.5 min values for the years 1966 to 1974 and 1.0 min values for 1975 and the first 4 months of 1976.

When it became difficult to continue the production of the AE-index at the WDC-A, it was requested that the index be produced at the WDC-C2 for Geomagnetism which is operated by Data Analysis Center for Geomagnetism and Spacemagnetism, Faculty of Science, Kyoto University. We decided to produce the index for two years (1978-1979) during the International Magnetospheric Study (IMS) and have published 1.0 min values as a part of "WDC-C2 for Geomagnetism Data Book" series (No.3 and 4 for 1978, and NO.5 and 6 for 1979).

Although the International Association of Geomagnetism and Aeronomy (IAGA) recommended the continuation of the production of the AE-index at the WDC-C2, we could not extend it to the period after IMS because the available man-power and computing facilities were not sufficient for the continuous derivation.

Increasing demands for the index, however, moved us to resume the production of the AE-index and we published Data Book No.7 which contained the index for the first half of 1980. After that, the possibilities of financial support necessary for the production of the index were explored at the Subcommittee on Solar Terrestrial Physics of the Special Committee for International Cooperation, Japan Science Council, and the support was asked to National Institute of Polar Research (NIPR), Tokyo.

This Data Book No.10 is the third result of the co-operation between Kyoto University and National Institute of Polar Research. The index in this Book was derived at the WDC-C2 for Geomagnetism and the printing and distribution were made by Division of Data Collection and Processing, NIPR.

All inquiries about the Data Book and its distribution including change of address should be sent to

World Data Center C2 for Geomagnetism
Faculty of Science, Kyoto University
Kyoto 606, Japan.

Auroral Electrojet Indices (AE)

for July - December 1981

1. Derivation and Representation

The AE index is derived from the horizontal component of geomagnetic variations observed at some (10-13) observatories along the auroral zone in the northern hemisphere. To normalize the data from each station, a base value of each station for each month is first calculated by averaging all the data of the station on the five international quiet days, and this base value is subtracted from every-day data of the station in that month. Then the largest and smallest values are selected from all the stations. The largest value is called the AU index and the smallest value is called the AL index. These names came from the upper and lower envelopes of the overlapped figure of the data from these stations. The difference between the AU and AL indices gives the AE index, and the mean value of the AU and AL indices gives the AO index. The term "AE indices" is usually used to describe those four indices (AU, AL, AE and AO) in all.

The AU and AL indices are understood to express the strongest current density of the eastward and westward auroral electrojet, respectively. The AE index is understood to represent the overall activity of the electrojets, and the AO index is regarded as a measure of the equivalent zonal current.

In this report we shall present every-day diagrams and hourly values of the AE indices and "Contributing stations plot" of the AE indices which may give more information about the indices. That is, we named stations which give the AU and AL indices "the contributing stations of the AU and the AL index, respectively, and a pair of these AU and AL contributing stations "the contributing stations of AE indices". The plot gives these AE contributing stations on a plane whose coordinates are UT in abscissa and LT in ordinate at the stations. For users who want to check the AE indices precisely, this plot gives information about data availability of each station. Thus the plot will give us an idea which data are to be checked. For these users, we would like to suggest to check our way of derivation of the AE indices and our estimation of errors. Please see Data Book No.3 or No.4 for the estimation of errors of our AE data.

As to the information of our digitizing process and our machine, please see Data Book No. 6.

2. Selection of Observatories

To obtain good AE indices, we must use as many observatories as possible, but we meet two big difficulties: One is that the distribution of observatories in operation is

Table 1. List of AE(12) stations.

Observatory	Abbreviations		Geographic		Geomagnetic	
	IAGA	WDC-A	Lat. (°N)	Long.(°E)	Lat. (°N)	Long.(°E)
Abisko	ABK	AI	68.36	18.82	66.04	115.08
Dixon Island	DIK	DI	73.55	80.57	63.02	161.57
Cape Chelyuskin	CCS	CC	77.72	104.28	66.26	176.46
Tixie Bay	TIK	TI	71.58	129.00	60.44	191.41
Cape Wellen	CWE	UE	66.17	190.17	61.79	237.10
Barrow	BRW	BW	71.30	203.25	68.54	241.15
College	CMO	CO	64.87	212.17	64.63	256.52
Yellowknife	YKC	YEK	62.40	245.60	69.00	292.80
Fort Churchill	FCC	FC	58.80	265.90	68.70	322.77
Great Whale River	GWC	GWR	55.27	282.22	66.58	347.36
Narssarsuaq	NAQ	NAS	61.20	314.16	71.21	36.79
Leirvogur	LRV	LR	64.18	338.30	70.22	71.04

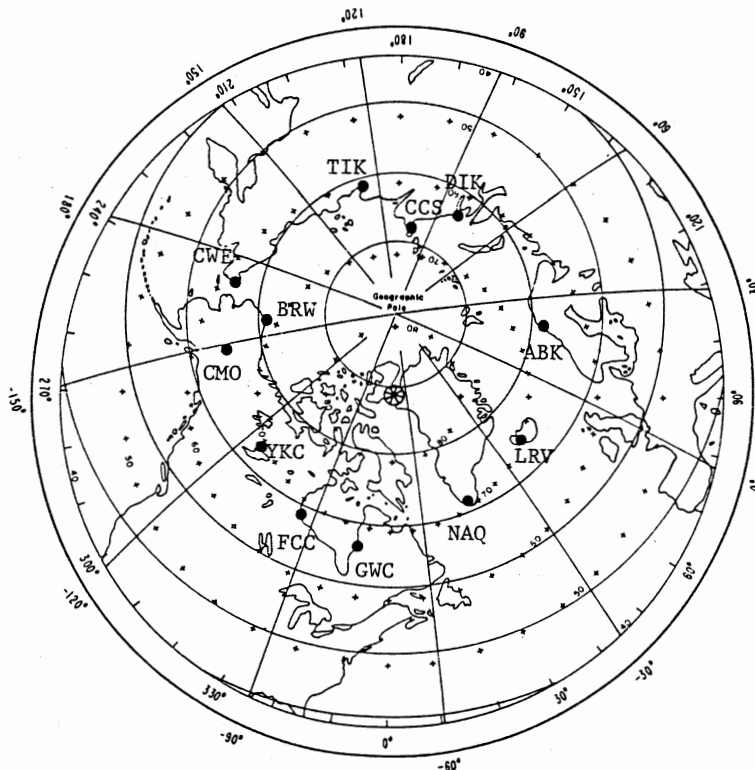


Fig. 1. Distribution of AE(12) stations.

Geographic latitude is indicated by the concentric circles of solid lines. Geomagnetic latitude is indicated by the numbered concentric circles formed by + signs. Geographic longitude is given by the outer circle of numerical values with meridians shown as solid lines every 30°. Geomagnetic longitude is given by the inner circle of numbers and the border of hash-marks at 10° intervals.

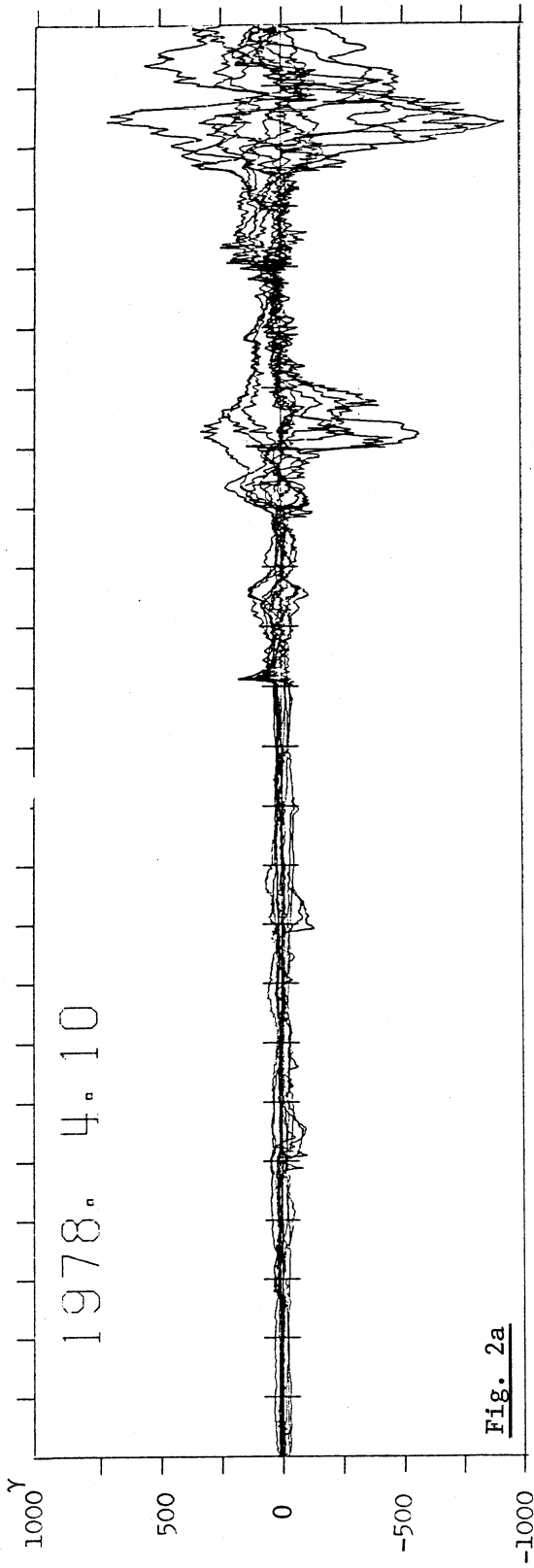


Fig. 2a

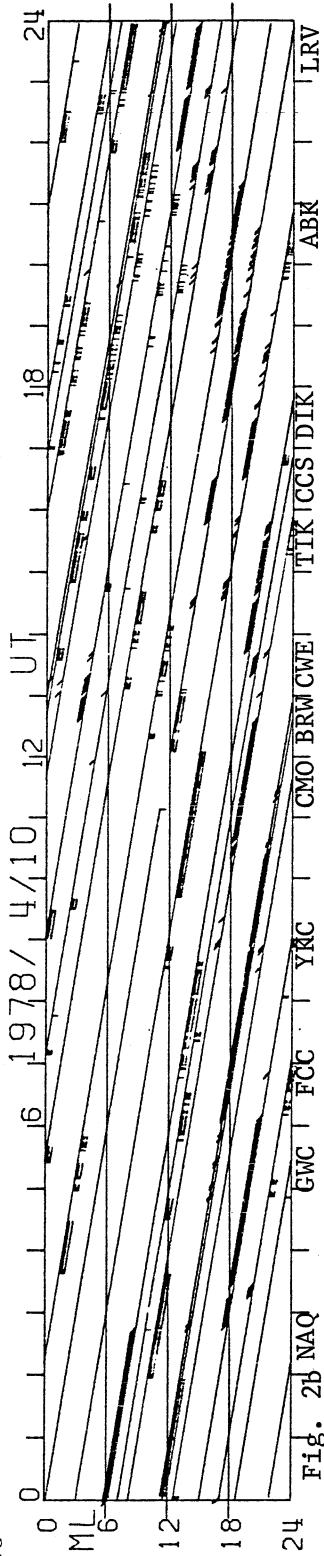


Fig. 2b

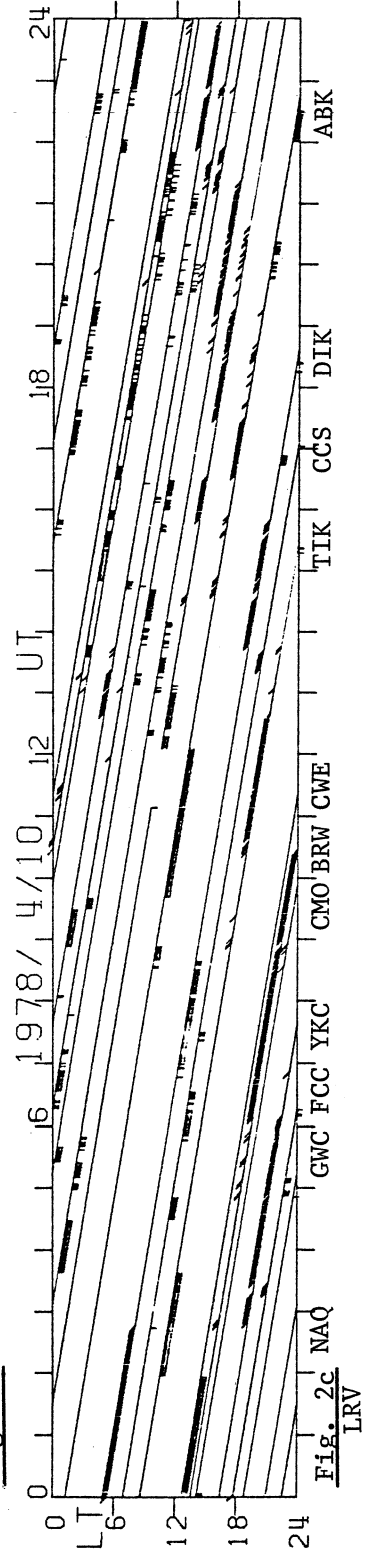


Fig. 2c

not uniform over the auroral zone, and the other is that the digitization of analogue data (magnetograms) is a heavy job.

We used 12 observatories listed in Table 1. Of these, 6 stations are taking digital data directly (called digital stations). Our selection is almost the same as that of the WDC-A (see Fig. 1).

Three of digital stations (Fort Churchill, Great Whale River, and Yellowknife) are stations which give data in the X, Y, Z coordinate system. To make these data more compatible to other stations, we converted the X and Y components to H component by $H=(X^2+Y^2)^{1/2}$, and we treated the resulted H component to be missing for the period either X or Y is missing. For other two digital stations (Barrow and College), we used the original digital H-component data. Narssarssuaq recorded data digitally as test operation since June 1980. We used its H-component values for most of this period.

If a digital station has troubles in digital recording, we digitized its magnetograms on microfilm if they are available. As digital data from College had long missing periods in July and August 1981, we digitized its magnetograms for most of these two months.

We digitized magnetograms on microfilms from non-digital stations except Abisko. We used digitized Abisko data supplied from the station, for most of this period.

3. The Overlapped Plot and the Plot of the Contributing Stations of the AE indices

Fig. 2a shows an example of the overlapped plot of the H traces from the AE stations on April 10, 1978. The upper envelope gives the AU index and the lower envelope gives the AL index, Figs. 2b and 2c show example plots of the contributing stations for the same day as in Fig. 2a, in the geomagnetic (2b) and geographic (2c) local times, where the upper and lower plumes on a diagonal line for each station show the contribution to the AU and AL indices of this station. In Fig. 2b, for example, the data of Dixon Island (DIK) give the AU index from 0000 to 0240 UT and again from 1330 to 1530 UT, and the AL index from 0640 to 0830 UT. It is seen that from 1100 to 1200 UT Leirvogur (LRV) offers no data. Since this is a key station for the AL index at that time, the exact AL values at that time have been lost.

Some explanations are necessary for our trial plots of the contributing stations. On the plots hereafter, the ordinate is the geomagnetic local time (MLT). The MLT is defined by the difference of the geomagnetic longitude of the station and the geomagnetic longitude of the Sun, and it is a function of the geomagnetic longitude of the station, season, and universal time. Figs. 3a, 3b, 3c show the difference between the GLT and the MLT of the stations used to derive AE indices for winter, summer and equinox, respectively. In these figures the GLT is shown by the straight line which runs diagonally, and the MLT is shown by the T (or inverted T) shaped mark. The length of the vertical line between the T (or inverted T) shaped mark and the diagonal line is the difference between GLT and MLT. Note that for some stations the difference between GLT and MLT is as much as 2 hours. The geomagnetic longitude of Cape Wellen (CWE) and Barrow (BRW) are very close, and so it is difficult to separate these two stations on the contributing stations plot. Sometimes, Cape Wellen gives AU and Barrow gives AL, and vice versa. This is thought to be an effect of local current system between the high latitude station and the low latitude station.

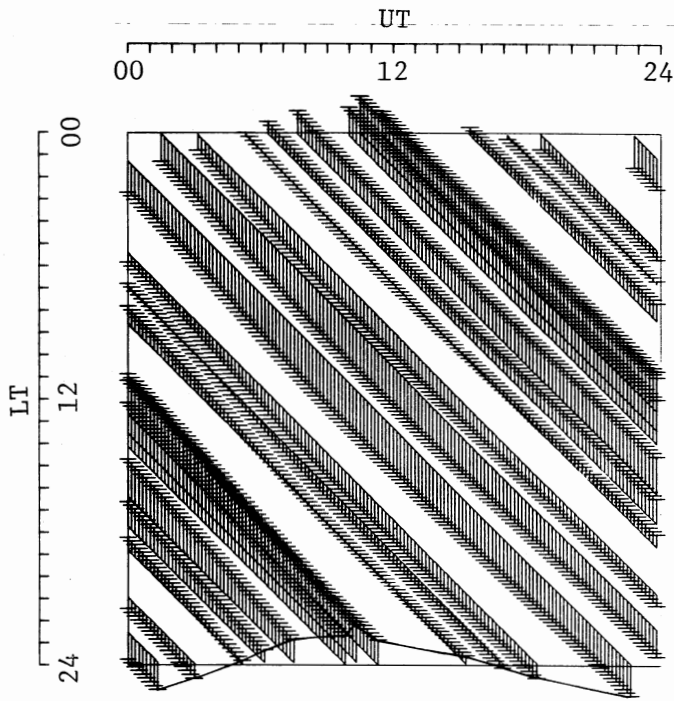


Fig. 3a Difference between GLT and MLT in winter.

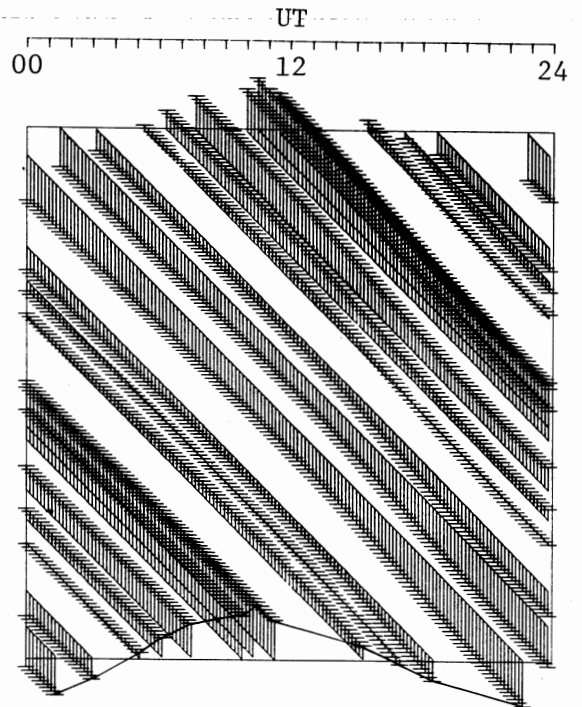


Fig. 3b Difference between GLT and MLT in summer.

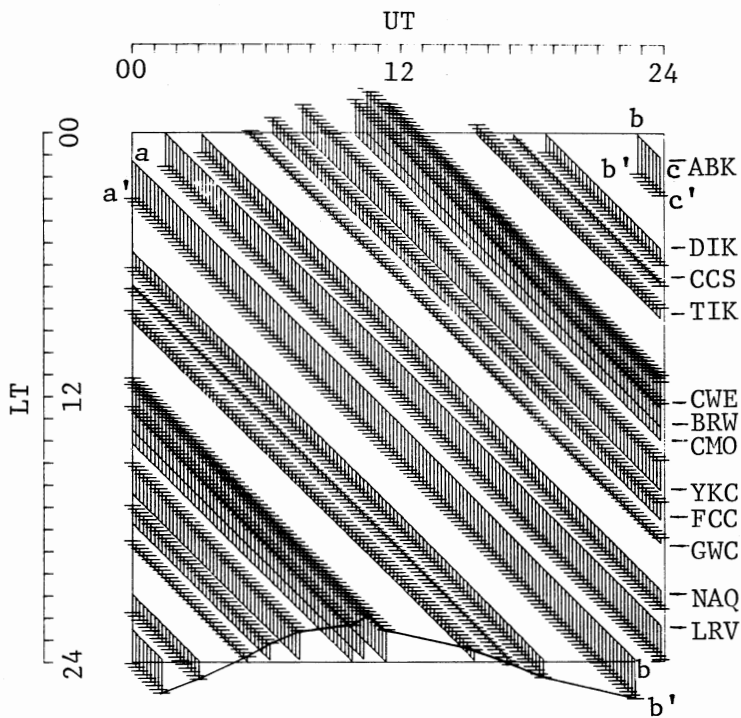


Fig. 3c Difference between GLT and MLT in equinox.

Fig. 3a, 3b and 3c show the difference between the geographic local time (GLT) and the geomagnetic local time (MLT) for winter, summer and equinox, where a-b-c (full line on the top or bottom of the vertical lines) shows the relation between UT and GLT, and a'-b'-c' (crossing of the vertical and horizontal lines) shows the relation between UT and MLT for each of the AE(12) stations.

4. Results

Monthly quiet-time H reference values for July–December 1981 are listed in Table 2. Table 3 gives the hourly average values of AE indices on every day from July to December 1981.

Daily graphs of 1.0-min AE indices (AU, AL, AE and AO) are shown in Fig. 4, and corresponding plots of the contributing stations are given in Fig. 5. Fig. 6 shows the H-traces of magnetograms from AE(12) stations in every month from July to December 1981. Finally, Fig. 7 shows a half year of hourly mean values of each index in one page.

5. Acknowledgements

This volume has been accomplished by the data supply from the AE stations through the World Data Centers. Acknowledgements are due to Ms. Yohko Yamamoto, Mr. Shinji Yokoyama and Dr. T. Iyemori for assistances in digitizing magnetograms and also to Dr. M. Ayukawa and Mr. Y. Katsuta for arrangements for printing and distribution.

TOYOHISA KAMEI
TOHRU ARAKI

Data Analysis Center
for Geomagnetism and Spacemagnetism
Faculty of Science
Kyoto University

* CORRECTION *

Data Book No. 9 had an error in the caption of the graph on page 105.
Please correct the scale value of the graph.

correct: 1500 nT/div wrong: 15000 nT/div

Table 2. Monthly quiet-time H reference values (unit : nT)

(Year 1981)

STATION	July	Aug.	Sep.	Oct.	Nov.	Dec.
Abisko	11788	11772	11772	11768	11778	11776
Dixon Island	6398	6381	6373	6377	6377	6372
Cape Chelyuskin	3446	3427	3422	3423	3420	3415
Tixie Bay	7889	7913	7886	7901	7872	7883
Cape Wellen	14207	14189	14185	14173	14183	14181
Barrow	9806	9782	9784	9773	9772	9761
College	12999	12978	12976	12969	12980	12977
Yellowknife	8757	8745	8740	8719	8738	8711
Fort Churchill	7605	7597	7603	7594	7611	7599
Great Whale River	10721	10697	10718	10720	10747	10753
Narssarssuaq	12122	12125	12126	12115	12128	12130
Leirvogur	12418	12409	12412	12404	12417	12415

TABLE 3

Hourly average AE indices (AU, AL, AE and AO)
for July-December 1981.

AU INDEX (HOURLY VALUES)

JULY

1981

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	214	184	160	142	59	57	55	97	194	192	115	75	97	132	184	153	174	224	234	211	157	165	166	99	147
2	135	85	97	213	353	358	338	195	360	221	141	134	210	155	85	65	77	54	47	53	139	111	161	94	162
3	45	54	44	58	20	18	12	20	12	19	50	67	80	53	25	20	41	53	89	158	207	244	309	308	82
4	260	129	65	58	98	20	7	41	15	37	88	81	89	79	61	46	59	34	33	86	155	347	290	267	102
5	135	99	73	64	102	42	89	67	152	125	213	150	98	134	61	49	134	141	224	233	208	144	131	138	128
6	71	94	218	268	280	279	211	316	283	310	268	229	170	84	69	93	287	406	331	201	106	60	69	75	199
7	89	73	101	142	117	196	275	163	53	33	136	158	143	160	92	115	85	114	151	75	75	75	162	119	119
8	203	143	72	110	275	212	232	194	232	285	145	150	87	61	44	39	39	48	56	58	91	92	87	101	127
9	134	144	140	126	145	100	144	153	140	89	133	130	153	94	71	67	69	53	83	140	169	117	57	62	113
10	77	74	76	89	94	144	108	108	87	40	76	108	68	28	24	38	70	95	100	106	83	86	74	44	79
11	44	37	40	44	62	58	147	181	208	144	222	243	125	82	79	60	66	138	146	102	73	67	74	92	106
12	83	131	173	163	237	170	173	196	201	120	125	174	239	94	66	51	240	271	225	220	208	174	219	276	176
13	296	128	109	51	36	19	17	31	52	40	62	117	108	48	32	52	121	106	94	174	215	123	89	73	91
14	143	130	41	28	64	83	51	40	44	60	100	46	33	33	115	136	65	67	34	48	33	34	49	63	64
15	63	43	39	37	108	75	25	37	46	38	46	65	32	40	43	42	42	46	46	51	49	31	50	74	49
16	83	102	135	67	54	54	143	77	121	171	130	159	79	42	35	35	34	72	91	89	80	60	69	120	88
17	137	57	30	55	38	40	70	166	327	328	471	311	219	162	140	77	69	117	280	290	224	300	436	356	196
18	255	250	206	173	120	113	133	92	42	37	115	82	59	14	17	27	33	35	47	63	89	133	77	129	98
19	148	156	148	75	43	34	16	9	28	74	73	110	80	100	114	75	50	99	148	194	163	119	67	46	90
20	126	84	36	47	91	53	17	9	15	16	44	97	220	272	161	70	54	50	48	58	58	64	60	53	75
21	97	69	85	67	46	54	70	88	80	57	48	62	84	66	43	37	39	37	32	40	36	62	66	44	59
22	87	178	170	270	230	55	48	32	87	205	288	251	299	201	175	251	163	152	132	263	240	224	283	219	188
23	228	220	142	64	30	46	137	383	115	234	94	334	424	534	370	511	379	414	467	413	238	89	85	71	251
24	107	72	33	22	6	5	36	15	15	5	45	28	56	69	97	36	55	102	71	55	61	193	369	306	78
25	247	188	56	37	113	443	474	153	104	343	148	119	334	267	-343	99	180	251	546	308	598	345	247	139	225
26	192	283	228	185	363	247	294	94	62	108	115	66	121	155	74	113	279	230	84	113	71	36	92	197	161
27	66	200	215	303	282	238	267	271	269	326	310	240	202	173	109	46	31	40	57	42	32	36	113	38	163
28	40	39	33	49	65	122	89	100	163	143	125	114	75	45	47	34	24	33	41	42	46	29	30	24	65
29	61	124	104	42	14	9	5	4	5	3	0	0	12	21	19	33	17	27	27	19	19	45	99	99	34
30	28	32	34	34	23	48	174	161	160	177	131	76	158	118	88	120	89	172	216	228	209	191	132	128	124
31	127	160	182	194	166	209	233	200	63	12	32	22	25	40	111	70	90	152	219	281	312	303	142	227	149
MEAN	131	121	105	104	120	116	131	119	120	128	131	128	134	114	76	85	101	125	141	142	143	132	137	133	122
50 MEAN	86	90	88	72	81	76	70	78	71	45	60	73	69	49	40	43	47	51	57	71	71	68	69	64	66
5D MEAN	174	189	134	128	165	202	248	213	175	267	227	214	280	258	70	169	187	222	286	233	232	161	194	160	199

AU INDEX (HOURLY VALUES)

DATE	AUGUST 1981																								MEAN
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
J	260	272	228	263	160	223	313	215	126	255	221	136	137	89	68	94	92	131	366	315	192	164	195	191	196
2	188	252	155	89	40	25	28	67	70	87	127	195	106	121	174	306	199	156	173	100	92	196	287	296	147
3	195	97	75	95	254	385	357	294	352	285	235	138	88	63	135	144	165	191	165	195	142	60	91	144	181
4	82	117	83	225	179	55	110	195	195	124	109	60	38	51	34	48	39	50	68	60	81	43	42	36	88
5	43	31	37	69	112	267	335	215	109	121	132	93	77	85	87	84	123	207	251	265	272	301	329	296	164
6	226	285	263	178	244	286	238	270	245	252	249	265	195	119	128	196	238	230	214	157	97	92	88	93	202
7	101	130	115	73	51	73	48	56	57	138	186	210	206	263	199	207	317	445	466	441	234	162	164	150	187
8	105	97	52	27	20	30	21	21	32	38	30	26	19	22	29	26	13	15	24	38	42	39	72	174	42
9	120	219	174	85	31	21	14	8	7	11	12	21	21	30	28	42	51	60	93	91	108	57	68	66	60
10	57	43	101	138	87	72	84	87	132	178	108	99	91	96	80	76	70	67	60	93	49	85	101	119	89
11	101	67	62	30	20	27	32	37	46	64	51	53	73	91	167	172	164	106	146	245	282	232	145	49	103
12	163	162	161	151	60	85	91	39	26	46	54	48	38	51	60	77	61	81	87	92	93	153	148	180	92
13	127	52	118	114	153	154	89	130	118	117	65	37	39	42	31	40	54	63	51	62	84	161	113	82	87
14	152	205	149	73	53	52	49	64	93	143	209	168	127	125	84	35	35	24	29	70	98	112	165	66	98
15	50	28	40	102	116	120	55	49	74	45	52	44	43	68	57	46	60	43	42	107	200	257	260	253	92
16	112	70	54	90	32	110	52	48	38	36	55	61	72	59	46	35	41	48	53	46	49	46	72	78	58
17	84	97	170	86	68	88	151	230	362	367	346	254	246	128	70	84	80	170	202	256	212	160	200	235	181
18	232	196	212	94	48	25	121	184	254	229	298	272	285	333	356	429	350	265	203	97	234	146	68	62	208
19	69	144	101	97	90	78	85	90	110	70	161	125	163	186	248	125	90	64	59	119	112	111	59	43	108
20	40	52	134	116	86	54	69	103	67	36	31	59	67	53	48	33	52	109	200	123	75	74	110	49	77
21	48	40	80	48	94	159	150	201	165	99	85	147	216	168	107	128	151	213	378	374	317	203	69	44	153
22	49	86	216	205	201	232	131	137	197	188	90	48	53	33	43	39	67	128	290	254	105	75	51	164	129
23	218	251	293	236	298	277	196	232	340	349	410	281	129	416	665	572	269	171	176	143	229	293	96	120	280
24	87	122	293	415	365	142	67	78	117	62	37	19	31	56	145	355	370	308	267	285	226	201	145	185	182
25	217	137	62	42	56	25	106	109	174	141	138	99	55	109	106	132	265	239	198	188	182	115	107	67	128
26	40	29	21	22	22	46	83	89	43	26	30	44	43	28	46	71	110	87	74	60	61	71	71	90	54
27	75	70	64	41	88	32	74	82	122	193	150	213	252	264	311	312	286	472	299	258	277	174	143	104	181
28	175	142	145	261	172	266	168	114	133	193	207	148	101	108	200	234	420	203	174	82	103	130	256	165	179
29	173	240	179	110	194	242	220	290	269	308	475	221	265	408	363	373	331	307	280	137	79	82	73	95	238
30	207	198	245	239	286	217	150	124	198	247	244	276	196	177	190	103	46	57	46	45	93	113	128	73	162
31	157	96	224	270	210	51	68	61	53	37	54	47	76	89	62	62	49	40	40	40	37	33	30	30	80
MEAN	127	129	138	133	124	126	121	126	139	144	150	126	114	126	140	150	150	153	166	154	143	133	127	122	136
50 MEAN	105	124	90	59	27	51	43	46	42	50	67	64	56	52	46	41	50	46	54	61	71	65	89	94	62
50 MEAN	139	147	206	186	173	112	121	161	239	240	248	207	188	239	309	350	271	277	229	207	235	194	130	141	206

SEPTEMBER 1981

AU INDEX (HOURLY VALUES)

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
0 D	35	34	35	37	38	41	43	41	35	42	30	34	54	63	45	37	39	26	33	49	63	43	31	63	41
	89	143	176	173	198	331	259	193	252	333	277	225	167	225	287	353	354	338	272	216	123	87	81	110	219
	98	60	56	40	16	12	31	50	99	39	36	81	51	49	60	65	38	23	32	60	47	47	50	116	52
	82	129	62	20	13	24	25	45	68	106	115	170	212	161	75	55	73	110	143	169	172	235	156	270	112
	245	170	206	200	203	128	97	92	199	128	106	112	111	58	67	90	94	115	86	54	32	96	166	131	124
	98	58	88	74	39	50	68	42	76	71	42	39	43	30	23	28	26	24	30	39	35	50	94	64	51
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	45	47	107	83	97	214	66	16	25	45	26	28	29	24	22	23	20	23	26	29	41	56	92	140	55
	163	151	89	108	78	63	57	89	112	80	87	79	58	33	38	38	32	62	164	145	92	105	64	84	86
	60	76	64	44	27	22	21	20	20	32	48	46	54	42	47	61	105	148	137	108	119	130	150	154	72
D	81	110	142	188	151	195	232	331	290	255	343	213	197	308	236	122	84	47	65	127	116	155	69	48	171
	38	48	70	90	78	39	58	131	163	180	224	232	124	236	168	172	194	213	246	180	160	98	82	69	137
	40	54	46	55	115	235	209	126	201	206	331	259	180	197	229	218	227	112	36	31	36	99	121	81	144
	36	22	15	13	20	40	36	70	79	98	93	131	181	157	113	30	33	32	53	115	179	223	138	89	83
	53	34	34	19	25	72	104	161	198	214	139	30	23	14	38	52	121	201	241	145	95	53	41	40	89
	34	37	57	98	156	173	136	124	89	43	64	66	42	40	43	69	58	57	98	113	112	61	63	77	80
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	40	33	38	20	22	16	23	37	50	41	30	28	28	50	78	45	28	22	43	209	308	354	241	48	76
D	72	78	169	106	103	97	192	281	295	199	139	150	117	121	52	20	12	34	21	52	44	18	58	22	102
	39	58	23	43	17	14	27	20	13	7	9	14	13	13	33	26	9	30	29	81	117	85	132	62	38
	66	30	19	16	14	16	22	21	12	29	17	22	21	22	23	20	24	27	66	83	149	208	218	230	57
21	133	119	110	126	132	148	159	173	165	103	74	34	24	11	10	13	22	22	23	43	100	139	125	187	92
22	138	115	108	47	25	16	14	16	19	21	22	21	15	14	19	31	32	26	23	19	20	19	23	29	35
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D	47	46	68	97	109	40	39	115	190	446	256	139	187	337	279	284	265	273	287	222	224	134	118	174	182
D	190	149	59	194	208	187	151	161	160	125	138	192	139	123	83	130	191	227	226	163	41	42	93	109	149
0	70	77	59	40	45	28	13	10	28	69	40	47	37	29	26	24	39	38	40	41	40	46	53	40	41
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	40	63	88	73	95	141	106	50	48	51	104	155	76	85	52	41	42	66	166	124	74	83	198	149	90
MEAN	74	70	75	73	77	88	80	88	103	108	106	98	85	93	80	83	87	92	101	104	97	100	97	94	90
50 MEAN	67	56	51	36	42	29	22	25	30	49	52	46	42	40	35	35	42	52	65	76	74	54	41	44	46
5D MEAN	95	105	142	151	153	170	174	216	237	271	230	183	161	222	187	181	181	183	174	156	109	87	83	92	164

AU INDEX (HOURLY VALUES)

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2	106	124	94	59	44	86	52	62	88	55	65	98	85	123	64	49	77	100	130	74	134	145	118	70	88
D 3	68	34	44	44	75	118	201	372	239	163	247	248	129	212	282	164	98	106	74	105	120	82	145	147	
4	151	88	52	75	115	156	155	107	53	67	52	101	106	56	29	41	43	115	64	139	143	100	116	95	
Q 5	84	59	49	44	31	40	61	70	123	99	66	71	45	59	59	34	19	16	17	14	14	23	36	40	
6	43	34	23	26	26	28	24	24	25	24	24	50	107	97	61	48	90	72	69	52	39	53	86	104	
7	78	56	93	69	57	44	39	43	108	189	131	193	147	100	78	176	247	288	218	187	224	176	137	154	
8	58	30	55	62	87	158	195	270	321	244	113	133	120	40	24	25	43	88	122	143	116	134	148	101	
9	76	51	55	121	248	293	106	53	46	52	202	218	166	95	48	73	43	17	37	109	69	58	70	99	
10	65	61	52	39	57	92	99	114	138	110	137	203	121	97	135	234	277	397	313	243	157	158	146	190	
D 11	288	187	106	166	308	332	294	264	330	276	313	355	350	376	389	402	403	269	276	185	85	46	94	144	
12	165	121	82	77	139	239	205	219	267	124	72	23	19	0	0	-1	1	9	6	9	4	15	14	22	
13	26	28	40	29	26	29	30	59	112	89	65	60	42	25	16	55	31	96	151	124	168	202	275	328	
D 14	365	328	406	298	300	179	148	213	198	153	153	148	150	30	37	42	69	69	89	185	119	135	180	173	
15	77	61	117	80	83	60	72	94	77	88	59	47	85	198	118	47	117	119	73	96	93	49	48	83	
16	20	16	26	22	62	73	69	73	32	15	22	12	9	12	2	0	4	6	17	22	27	44	42	20	
17	15	32	43	79	99	89	94	113	202	202	94	86	70	62	33	47	32	28	37	46	84	42	33	50	
18	66	41	26	31	38	48	45	43	30	24	23	23	20	18	15	13	13	14	27	26	31	31	39	30	
19	43	41	45	41	42	108	225	172	278	219	213	135	119	99	83	83	60	66	87	169	139	146	195	184	
D 20	121	79	89	86	68	102	163	153	238	183	107	218	168	215	210	0	67	24	13	20	45	62	66	107	
21	29	30	184	159	68	50	79	86	146	28	121	177	96	26	49	149	62	61	28	29	61	113	152	141	
D 22	94	33	18	13	16	84	81	91	135	174	182	238	50	138	36	52	35	6	62	37	13	83	40	60	
23	148	69	56	61	76	116	110	230	273	199	85	29	10	3	11	87	144	94	44	56	128	95	48	16	
24	16	5	3	5	12	7	12	19	12	12	56	174	158	167	220	227	229	158	169	130	99	116	188	94	
25	50	45	51	57	109	117	118	177	130	172	201	111	95	87	76	64	46	45	47	46	32	27	18	14	
26	15	20	24	23	22	27	28	32	79	129	101	54	31	35	39	19	26	23	37	44	60	50	52	63	
27	58	59	59	57	36	43	45	28	39	56	46	37	32	36	34	82	74	84	76	38	80	85	53	105	
28	64	53	68	59	72	47	81	59	99	94	209	112	60	50	39	47	104	118	135	102	165	179	69	49	
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Q 31	108	89	55	44	36	31	34	33	27	26	25	23	21	20	25	26	20	29	29	24	22	24	26	27	34
MEAN	86	67	71	68	82	95	98	112	130	113	111	116	91	86	80	80	84	84	81	82	84	84	91	92	90
50 MEAN	64	47	35	33	38	44	46	48	47	37	32	35	40	47	32	24	29	27	31	27	26	35	45	45	38
50 MEAN	187	132	132	121	153	163	177	218	228	189	200	241	169	194	190	132	134	94	102	106	76	81	105	118	152

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AU INDEX (HOURLY VALUES)

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3	61	59	40	72	26	24	61	68	42	51	66	73	47	33	27	20	17	26	40	58	48	37	24	26	44
4	15	11	13	13	12	21	16	22	19	19	26	27	25	28	39	22	26	52	110	124	103	84	51	43	38
5	40	44	59	63	99	83	99	103	178	211	169	145	100	99	41	11	70	55	45	87	113	60	31	31	85
6	46	48	40	46	41	22	19	19	32	41	55	49	43	34	31	21	19	27	59	58	75	58	56	46	41
7	95	92	59	48	80	183	119	107	156	193	201	161	196	161	86	161	167	97	141	115	83	52	26	28	117
8	15	52	83	95	180	134	123	103	196	253	143	96	41	27	15	21	71	60	29	23	35	20	34	18	78
9	7	9	6	5	3	8	9	12	9	8	23	44	42	16	23	16	15	9	8	11	14	21	26	24	15
10	23	13	9	13	26	61	67	111	83	81	83	154	111	42	28	23	29	25	27	74	99	110	134	185	67
D 11	125	88	101	63	97	157	176	222	214	103	59	68	177	152	275	160	318	375	427	319	175	58	62	52	168
D 12	25	168	233	176	279	297	360	226	163	232	306	74	62	102	57	25	20	22	26	17	16	12	4	2	121
13	2	-1	0	-1	-1	-3	-5	-3	0	-1	2	6	3	6	5	0	1	0	2	3	22	43	46	65	8
D 14	34	24	18	10	19	42	56	73	78	50	27	120	59	129	246	232	129	208	209	77	80	15	38	1	82
15	167	87	53	58	37	105	142	91	63	47	45	36	15	24	16	67	132	103	73	47	46	42	44	44	66
16	46	56	54	64	68	100	104	107	65	60	49	35	54	63	51	23	30	53	45	34	90	131	111	85	66
D 17	55	40	31	29	42	57	45	33	36	73	50	24	89	142	239	177	128	210	140	181	140	106	59	150	95
18	97	69	78	112	85	83	106	131	161	203	238	244	110	147	71	110	177	135	140	146	153	127	46	78	127
19	108	149	85	88	81	89	67	89	76	137	170	98	81	116	60	108	98	109	125	143	43	50	47	99	97
20	86	27	23	19	29	48	79	63	73	164	195	85	80	95	79	60	85	58	51	63	71	48	77	66	72
21	60	62	51	45	44	40	47	42	50	103	155	147	81	79	26	49	88	158	149	171	162	113	76	86	87
22	57	66	83	133	135	127	98	91	117	148	103	93	92	34	8	18	13	13	14	13	23	20	31	39	65
23	51	54	92	77	72	65	122	98	137	285	226	179	142	142	225	234	203	186	243	184	168	163	147	163	152
24	147	99	107	138	130	124	151	115	144	167	207	159	78	98	73	55	54	101	145	207	244	178	122	82	130
D 25	89	106	183	123	140	131	127	83	38	33	32	82	103	77	81	47	33	13	26	14	38	56	64	94	76
26	98	125	141	70	70	71	96	81	63	38	53	64	60	65	70	84	82	97	72	95	24	22	29	27	68
27	34	48	35	24	22	36	41	29	33	33	17	20	20	11	12	10	10	7	4	6	9	13	17	16	21
28	40	84	100	46	29	20	23	32	25	32	25	17	13	15	37	55	41	34	37	27	19	64	104	121	43
29	70	60	81	59	37	33	30	26	26	37	47	33	37	29	23	56	39	20	24	18	25	33	36	24	38
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MEAN	58	60	65	59	66	75	82	75	78	96	97	82	68	67	66	64	72	78	85	80	74	61	55	60	72
50 MEAN	32	34	39	27	22	28	29	24	21	23	25	28	26	18	18	22	18	14	18	23	26	24	27	28	25
5D MEAN	65	85	113	80	115	136	152	127	105	98	94	73	98	120	179	128	125	165	165	121	89	49	45	59	108

AU INDEX (HOURLY VALUES) DECEMBER 1981

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2	51	59	49	45	44	40	38	29	28	46	79	156	75	43	35	30	24	28	32	24	38	53	51	35	47
3	33	35	39	40	39	39	32	34	35	41	39	56	49	59	59	38	24	40	35	100	116	48	88	95	51
4	77	63	88	112	154	109	60	44	45	52	60	87	141	101	58	34	28	34	96	71	71	83	65	102	76
5	97	84	90	67	60	60	48	36	56	77	38	31	25	24	30	27	32	66	99	99	111	92	91	87	64
6	58	71	69	60	44	49	40	68	63	34	23	27	23	22	21	9	31	17	8	13	20	23	33	38	36
7	26	32	46	53	54	40	42	36	35	61	31	19	26	27	14	18	17	22	18	26	27	33	32	42	36
8	50	88	97	100	83	109	145	54	40	29	30	28	27	28	37	116	161	125	107	91	201	96	42	50	81
9	58	51	47	60	62	120	85	94	79	94	111	55	60	3	43	115	84	68	46	95	95	48	38	30	68
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11	47	89	122	153	93	61	45	40	36	40	46	34	33	41	45	56	42	73	160	76	35	45	86	70	65
12	106	175	224	84	64	80	87	104	84	83	47	97	83	170	200	271	222	163	142	148	171	128	69	102	129
13	65	81	85	123	157	310	245	183	93	91	124	188	39	66	52	61	54	45	50	64	47	45	38	43	98
14	49	45	31	34	40	70	83	87	59	28	67	54	54	35	89	68	30	22	22	21	25	27	46	53	47
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18	282	96	49	52	111	53	76	78	92	85	159	124	31	24	41	53	110	84	100	48	41	47	53	45	81
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21	46	44	41	44	41	40	56	54	41	64	42	34	29	40	18	26	43	29	18	23	67	110	35	33	42
22	27	26	23	29	29	32	29	39	42	31	28	31	42	57	23	18	28	18	26	32	43	31	28	27	31
23	29	49	64	99	167	176	107	37	33	30	33	26	30	30	50	56	50	46	27	26	46	69	93	100	61
24	98	60	67	106	123	101	102	112	54	43	32	29	37	65	34	24	55	98	60	50	59	56	89	128	70
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26	67	80	96	110	74	55	43	34	56	49	53	94	54	23	29	25	21	20	22	32	21	26	27	27	47
27	28	47	42	41	40	59	68	61	54	26	36	35	34	20	29	20	28	23	33	31	64	101	100	141	48
28	195	104	96	80	85	62	56	97	110	77	56	51	57	70	85	64	48	119	90	88	58	52	55	58	77
29	61	64	81	71	117	255	198	301	444	415	129	278	186	188	89	43	74	166	145	52	62	77	75	49	151
30	41	47	59	98	190	114	201	360	268	159	236	309	136	135	142	184	129	67	108	49	30	67	39	49	134
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MEAN	65	61	66	69	78	81	75	77	74	75	68	78	55	56	54	59	58	56	56	51	63	63	59	66	65
5Q MEAN	41	43	44	43	40	37	39	46	42	48	40	33	30	35	19	17	27	21	18	23	35	43	30	32	34
5D MEAN	65	89	112	86	115	126	138	182	201	205	142	175	101	114	106	137	125	113	106	74	100	83	52	57	117

AL INDEX (HOURLY VALUES) JULY 1981

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2	-155	-134	-92	-111	-274	-547	-447	-377	-435	-297	-92	-115	-199	-274	-51	-35	-78	-29	-30	-58	-115	-58	-264	-208	-186
3	-74	-68	-61	-55	-60	-49	-42	-53	-50	-76	-50	-62	-82	-70	-72	-34	-22	-25	-67	-170	-347	-436	-453	-416	-121
4	-252	-135	-49	-51	-176	-117	-32	-31	-40	-62	-72	-63	-65	-79	-80	-87	-93	-42	-41	-89	-194	-295	-255	-220	-109
5	-99	-86	-118	-150	-102	-31	-23	-51	-195	-120	-120	-153	-183	-150	-182	-89	-75	-136	-160	-121	-84	-51	-99	-139	-113
6	-99	-92	-136	-372	-434	-331	-161	-325	-280	-244	-349	-252	-216	-74	-27	-57	-257	-452	-432	-104	-49	-33	-52	-55	-204
7	-75	-150	-87	-140	-124	-209	-318	-167	-68	-24	-56	-167	-312	-335	-148	-131	-80	-160	-143	-59	-65	-40	-51	-119	-135
8	-212	-114	-64	-156	-275	-169	-168	-123	-152	-166	-95	-204	-138	-93	-73	-31	-32	-9	-18	-28	-85	-46	-42	-46	-106
9	-58	-79	-203	-166	-121	-78	-152	-84	-52	-36	-41	-34	-212	-63	-58	-42	-24	-22	-47	-111	-146	-75	-16	-42	-82
10	-44	-75	-46	-59	-68	-139	-71	-72	-54	-38	-79	-119	-91	-46	-31	-41	-59	-101	-109	-82	-41	-37	-27	-27	-65
11	-28	-24	-22	-29	-33	-30	-59	-112	-200	-132	-249	-255	-223	-144	-134	-114	-118	-226	-140	-59	-33	-39	-36	-48	-104
12	-43	-71	-148	-100	-314	-406	-292	-253	-239	-98	-78	-108	-392	-211	-129	-94	-148	-514	-496	-158	-162	-97	-281	-391	-218
13	-340	-235	-122	-81	-26	-31	-33	-29	-34	-40	-39	-72	-187	-59	-102	-107	-156	-339	-153	-123	-151	-110	-66	-45	-112
14	-185	-239	-32	-32	-38	-86	-70	-25	-20	-29	-65	-45	-35	-61	-216	-435	-146	-46	-20	-33	-42	-52	-43	-52	-85
15	-64	-56	-48	-38	-115	-104	-33	-13	-17	-26	-36	-76	-71	-50	-104	-88	-75	-45	-45	-42	-53	-62	-90	-92	-60
16	-60	-134	-126	-72	-35	-32	-64	-112	-90	-195	-242	-138	-78	-37	-37	-27	-47	-66	-82	-132	-74	-56	-51	-103	-87
17	-105	-55	-37	-65	-48	-69	-71	-114	-429	-315	-347	-428	-334	-189	-180	-138	-39	-142	-467	-862	-766	-622	-856	-657	-306
18	-443	-372	-147	-39	-45	-23	-63	-64	-22	-37	-51	-64	-79	-62	-45	-56	-72	-24	-32	-35	-65	-127	-66	-87	-88
19	-138	-171	-135	-74	-146	-65	-34	-44	-31	-50	-57	-84	-98	-101	-178	-161	-49	-43	-56	-202	-111	-82	-36	-50	-91
20	-82	-102	-70	-59	-42	-62	-42	-29	-34	-36	-32	-42	-154	-538	-293	-56	-11	-13	-13	-15	-18	-23	-37	-43	-77
21	-46	-41	-110	-76	-35	-58	-73	-69	-60	-91	-34	-46	-47	-24	-24	-26	-23	-33	-11	-25	-32	-72	-56	-34	-48
22	-61	-101	-124	-255	-191	-45	-34	-38	-26	-173	-409	-289	-385	-245	-223	-279	-186	-172	-59	-72	-137	-160	-374	-166	-175
23	-187	-235	-97	-48	-44	-35	-221	-403	-104	-123	-66	-410	-687	-481	-642	-448	-536	-753	-381	-317	-345	-177	-240	-66	-294
24	-76	-72	-71	-77	-37	-24	-34	-118	-55	-35	-41	-42	-52	-57	-74	-58	-43	-65	-29	-28	-40	-237	-489	-361	-92
25	-311	-352	-60	-37	-132	-845	-989	-247	-77	-104	-301	-120	-347	-1388	-2255	-1384	-836	-363	-690	-1016	-552	-265	-258	-966	-579
26	-479	-622	-1196	-805	-917	-808	-540	-156	-46	-71	-125	-153	-202	-202	-145	-99	-284	-209	-73	-116	-65	-70	-107	-357	-327
27	-581	-344	-384	-379	-457	-535	-543	-443	-469	-523	-368	-314	-405	-315	-233	-178	-119	-53	-24	-21	-35	-43	-86	-114	-290
28	-82	-61	-118	-77	-118	-150	-289	-202	-200	-370	-420	-221	-172	-165	-124	-60	-54	-66	-50	-52	-53	-56	-54	-56	-136
29	-105	-116	-221	-120	-37	-43	-39	-34	-38	-46	-51	-52	-63	-58	-55	-61	-49	-37	-27	-47	-66	-77	-120	-192	-73
30	-135	-53	-56	-59	-49	-40	-175	-296	-260	-273	-197	-139	-225	-211	-174	-215	-143	-204	-237	-224	-132	-126	-103	-95	-159
31	-97	-80	-182	-165	-73	-84	-279	-196	-61	-57	-57	-60	-60	-66	-103	-173	-131	-186	-333	-264	-303	-380	-165	-268	-159
MEAN	-168	-159	-147	-130	-149	-170	-175	-139	-130	-131	-137	-140	-189	-192	-210	-163	-134	-151	-148	-159	-143	-131	-161	-181	-156
50 MEAN	-63	-73	-125	-91	-75	-84	-73	-54	-44	-47	-48	-65	-96	-48	-54	-51	-46	-47	-47	-61	-67	-64	-61	-77	-65
5D MEAN	-332	-321	-354	-266	-319	-458	-472	-272	-225	-227	-241	-285	-395	-515	-691	-449	-362	-304	-327	-466	-352	-235	-309	-432	-359

AL INDEX (HOURLY VALUES)

AUGUST 1981

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	-240	-285	-337	-271	-307	-156	-332	-326	-112	-176	-230	-53	-114	-92	-105	-81	-96	-133	-180	-206	-138	-64	-218	-170	-184
2	-124	-193	-119	-43	-26	-25	-23	-20	-99	-51	-48	-167	-105	-95	-157	-224	-139	-106	-181	-97	-49	-137	-391	-333	-123
3	-162	-69	-91	-109	-185	-257	-331	-263	-461	-309	-197	-159	-217	-153	-146	-208	-183	-193	-183	-182	-90	-22	-52	-224	-185
4	-165	-93	-70	-251	-254	-102	-45	-205	-461	-260	-64	-42	-38	-39	-28	-20	-17	-22	-71	-46	-64	-29	-29	-28	-102
5	-41	-48	-37	-42	-53	-326	-435	-314	-99	-45	-158	-57	-115	-64	-52	-77	-77	-309	-427	-282	-292	-318	-247	-330	-177
6	-353	-368	-434	-354	-492	-513	-434	-379	-407	-225	-216	-233	-274	-203	-211	-259	-213	-160	-177	-128	-67	-103	-72	-50	-264
7	-67	-87	-87	-139	-170	-189	-137	-113	-62	-87	-187	-287	-337	-364	-322	-280	-299	-296	-289	-246	-271	-146	-101	-117	-194
8	-109	-99	-40	-38	-22	-28	-26	-33	-36	-73	-37	-47	-29	-37	-24	-21	-30	-25	-15	-21	-23	-28	-42	-185	-44
9	-127	-203	-311	-86	-21	-22	-34	-22	-25	-30	-26	-27	-33	-31	-19	-33	-44	-35	-45	-37	-91	-24	-25	-38	-58
10	-32	-35	-33	-110	-90	-76	-20	-57	-73	-60	-48	-29	-89	-91	-60	-51	-29	-23	-20	-11	-9	-50	-70	-108	-53
11	-62	-22	-19	-22	-25	-25	-23	-32	-34	-41	-39	-63	-75	-119	-276	-462	-228	-171	-134	-291	-307	-187	-79	-47	-116
12	-132	-199	-161	-135	-49	-70	-85	-23	-24	-45	-62	-55	-57	-60	-58	-95	-147	-50	-38	-64	-76	-99	-71	-146	-83
13	-103	-64	-144	-130	-58	-136	-50	-81	-76	-78	-49	-40	-38	-44	-52	-96	-159	-129	-63	-65	-101	-256	-157	-55	-93
14	-137	-179	-103	-37	-38	-94	-77	-44	-43	-95	-293	-237	-213	-153	-113	-86	-75	-52	-60	-92	-109	-99	-163	-52	-110
15	-11	-17	-26	-107	-203	-160	-58	-39	-73	-54	-29	-43	-62	-82	-100	-101	-168	-107	-60	-85	-225	-517	-376	-407	-130
16	-170	-57	-29	-69	-65	-154	-130	-81	-22	-14	-25	-44	-63	-66	-58	-52	-54	-54	-61	-46	-40	-41	-77	-88	-65
17	-69	-113	-142	-111	-63	-42	-45	-167	-308	-474	-473	-283	-208	-181	-63	-38	-55	-158	-215	-214	-131	-173	-241	-359	-180
18	-242	-320	-241	-61	-26	-34	-70	-292	-369	-233	-211	-277	-576	-444	-371	-373	-285	-176	-135	-100	-181	-258	-78	-47	-225
19	-74	-142	-276	-201	-96	-59	-104	-66	-113	-52	-54	-72	-128	-284	-333	-75	-51	-5	-22	-121	-141	-92	-32	-29	-109
20	-50	-66	-260	-254	-141	-71	-56	-155	-113	-19	-26	-33	-36	-30	-34	-38	-32	-66	-332	-120	-45	-29	-70	-43	-89
21	-29	-73	-73	-68	-36	-92	-227	-289	-135	-50	-42	-62	-274	-378	-312	-125	-191	-267	-321	-471	-430	-193	-87	-50	-178
22	-67	-59	-276	-290	-150	-113	-123	-128	-110	-69	-85	-41	-27	-18	-30	-16	-29	-82	-301	-223	-50	-12	-22	-68	-100
23	-291	-373	-400	-368	-268	-215	-219	-251	-414	-494	-364	-290	-155	-450	-668	-370	-427	-157	-156	-109	-229	-495	-805	-308	-345
24	-76	-115	-116	-386	-322	-115	-90	-68	-123	-74	-39	-42	-55	-82	-238	-449	-449	-417	-319	-332	-321	-292	-127	-299	-204
25	-246	-58	-25	-30	-35	-20	-67	-122	-282	-168	-114	-39	-36	-134	-246	-325	-338	-266	-367	-235	-251	-165	-79	-43	-154
26	-39	-40	-40	-27	-18	-17	-64	-100	-52	-31	-31	-30	-45	-44	-103	-115	-258	-193	-100	-100	-35	-37	-47	-115	-68
27	-134	-199	-83	-45	-47	-60	-66	-55	-56	-77	-259	-244	-231	-332	-332	-231	-311	-282	-226	-279	-266	-103	-101	-153	-174
28	-99	-112	-202	-246	-194	-134	-154	-142	-92	-212	-256	-206	-68	-138	-202	-265	-493	-216	-128	-30	-26	-42	-349	-112	-172
29	-138	-214	-139	-67	-93	-198	-240	-301	-300	-356	-384	-106	-231	-267	-328	-456	-240	-216	-251	-165	-72	-53	-27	-25	-203
30	-180	-256	-291	-367	-268	-226	-184	-131	-109	-109	-120	-414	-233	-328	-317	-125	-74	-109	-27	-12	-43	-126	-146	-57	-177
31	-103	-70	-138	-193	-262	-45	-31	-40	-46	-44	-46	-46	-61	-52	-41	-59	-13	-8	-4	-1	-16	-28	-31	-31	-59
MEAN	-124	-135	-153	-150	-131	-121	-126	-139	-152	-132	-135	-121	-136	-156	-174	-167	-168	-144	-158	-140	-135	-136	-142	-132	-142
50 MEAN	-116	-115	-104	-51	-32	-63	-66	-56	-35	-48	-82	-77	-76	-66	-63	-61	-92	-71	-56	-49	-59	-45	-70	-95	-69
50 MEAN	-162	-224	-196	-194	-145	-93	-86	-166	-254	-270	-269	-227	-245	-297	-334	-292	-305	-238	-210	-206	-225	-264	-270	-233	-225

AL INDEX (HOURLY VALUES)

SEPTEMBER 1981

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
0	-26	-22	-20	-23	-24	-25	-24	-18	-29	-38	-45	-44	-53	-92	-70	-43	-30	-38	-26	-27	-47	-43	-36	-60	-38
D	-124	-242	-352	-424	-405	-302	-250	-290	-321	-287	-340	-350	-353	-496	-430	-392	-375	-251	-130	-187	-106	-87	-67	-80	-277
0	-82	-14	-43	-43	-20	-20	-13	-28	-68	-43	-38	-81	-95	-40	-74	-144	-112	-24	-15	-32	-40	-31	-53	-63	-51
4	-51	-99	-38	-38	-31	-27	-26	-94	-77	-66	-53	-85	-275	-276	-170	-115	-110	-152	-169	-74	-98	-186	-168	-301	-116
5	-368	-350	-267	-144	-152	-220	-72	-89	-211	-153	-92	-86	-122	-73	-113	-263	-196	-113	-34	-22	-16	-61	-182	-270	-153
0	-104	-67	-76	-123	-102	-63	-167	-83	-56	-57	-30	-47	-44	-49	-41	-40	-30	-35	-38	-48	-50	-25	-42	-40	-61
7	-70	-25	-25	-22	-36	-131	-40	-40	-34	-35	-37	-44	-44	-48	-61	-123	-264	-259	-174	-166	-76	-48	-31	-79	-79
8	-44	-40	-58	-158	-232	-188	-55	-59	-50	-33	-41	-45	-42	-44	-36	-34	-34	-37	-36	-34	-39	-31	-75	-80	-64
9	-87	-106	-65	-155	-47	-21	-31	-39	-141	-63	-43	-45	-40	-45	-41	-22	-30	-61	-124	-126	-68	-66	-41	-66	-66
10	-60	-44	-29	-25	-24	-15	-15	-15	-21	-41	-40	-46	-44	-34	-32	-64	-158	-227	-272	-53	-39	-134	-110	-83	-68
D	-47	-93	-212	-214	-241	-280	-263	-204	-341	-337	-302	-311	-260	-522	-295	-234	-198	-148	-123	-119	-97	-256	-109	-22	-218
12	-21	-28	-84	-271	-166	-114	-293	-348	-281	-258	-243	-211	-217	-349	-247	-223	-262	-245	-275	-192	-94	-25	-22	-76	-189
13	-40	-58	-189	-73	-229	-270	-204	-135	-183	-323	-379	-313	-303	-354	-350	-284	-190	-131	-35	-10	-11	-34	-83	-96	-178
14	-12	-21	-21	-18	-15	-28	-49	-111	-177	-105	-63	-92	-256	-304	-362	-143	-82	-66	-40	-42	-110	-175	-126	-48	-103
15	-59	-28	-46	-17	-33	-83	-112	-339	-339	-246	-187	-71	-48	-49	-78	-87	-168	-254	-252	-126	-49	-43	-31	-40	-116
0	-36	-66	-128	-188	-206	-173	-189	-176	-86	-142	-76	-78	-68	-58	-56	-178	-66	-43	-106	-95	-122	-44	-46	-76	-104
17	-92	-67	-40	-110	-142	-64	-25	-22	-50	-69	-37	-43	-54	-96	-111	-31	-21	-24	-27	-21	-20	-30	-29	-25	-52
18	-22	-21	-19	-20	-25	-21	-34	-94	-70	-63	-57	-42	-35	-42	-144	-123	-37	-21	-28	-60	-504	-711	-407	-149	-115
D	-94	-87	-167	-83	-28	-18	-106	-315	-304	-235	-246	-143	-88	-97	-56	-44	-40	-36	-34	-42	-31	-21	-64	-35	-100
20	-55	-153	-160	-51	-25	-24	-31	-41	-16	-25	-26	-23	-27	-32	-46	-26	-27	-64	-48	-87	-252	-104	-77	-78	-63
21	-142	-27	-21	-19	-18	-11	-7	-21	-21	-20	-21	-26	-30	-32	-27	-22	-38	-42	-115	-113	-160	-299	-314	-160	-71
22	-157	-120	-96	-177	-314	-311	-330	-230	-157	-95	-50	-32	-19	-29	-12	-15	-13	-18	-16	-31	-111	-120	-90	-154	-112
0	-112	-70	-42	-23	-13	-4	-4	-5	-4	-10	-27	-30	-30	-32	-28	-27	-36	-13	-10	-17	-15	-14	-19	-17	-25
24	-19	-19	-11	-3	-1	-2	-15	-17	-37	-56	-34	-271	-248	-234	-176	-133	-188	-186	-75	-18	-12	-14	-89	-157	-84
25	-64	-94	-248	-139	-138	-205	-96	-57	-40	-91	-50	-101	-253	-409	-123	-235	-452	-97	-13	-13	-29	-27	-18	-3	-125
D	-16	-13	-120	-193	-262	-75	-37	-112	-351	-591	-529	-412	-512	-572	-320	-294	-358	-440	-567	-297	-371	-514	-411	-319	-320
27	-410	-348	-248	-120	-160	-265	-346	-657	-270	-187	-455	-213	-197	-227	-251	-214	-227	-268	-313	-218	-32	-50	-162	-220	-253
0	-142	-106	-110	-53	-20	-25	-14	-10	-26	-101	-67	-40	-42	-61	-52	-35	-105	-174	-64	-35	-26	-65	-115	-103	-66
29	-72	-129	-28	-47	-167	-165	-118	-52	-27	-26	-32	-38	-46	-48	-117	-268	-148	-132	-103	-206	-56	-129	-131	-32	-97
30	-26	-23	-138	-41	-25	-77	-171	-30	-20	-22	-68	-196	-73	-125	-203	-80	-50	-60	-198	-112	-111	-68	-214	-176	-96
MEAN	-88	-86	-103	-100	-110	-108	-104	-124	-126	-126	-123	-118	-130	-162	-137	-129	-130	-122	-118	-87	-96	-116	-112	-102	-115
50 MEAN	-88	-58	-47	-46	-47	-49	-21	-19	-28	-50	-42	-40	-44	-66	-64	-39	-63	-102	-77	-54	-54	-45	-49	-47	-52
5D MEAN	-138	-156	-219	-206	-219	-192	-200	-315	-317	-325	-374	-285	-282	-382	-270	-235	-239	-228	-233	-172	-127	-185	-162	-135	-233

AL INDEX (HOURLY VALUES)

OCTOBER

1981

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	-38	-49	-100	-42	-30	-10	-36	-24	-21	-31	-83	-53	-48	-41	-65	-216	-103	-29	-17	-37	-47	-16	-30	-76	-52
2	-174	-255	-39	-33	-29	-41	-38	-24	-39	-13	-35	-101	-68	-209	-219	-40	-98	-270	-283	-73	-101	-140	-5	-17	-98
D	-14	-17	-22	-40	-96	-121	-186	-253	-130	-178	-388	-243	-164	-648	-947	-393	-141	-269	-184	-124	-198	-137	-343	-295	-230
4	-124	-43	-21	-57	-290	-234	-217	-202	-94	-52	-49	-89	-191	-280	-105	-90	-102	-445	-281	-314	-231	-132	-200	-158	-167
5	-142	-94	-40	-24	-26	-267	-258	-213	-157	-73	-66	-27	-63	-88	-25	-22	-20	-20	-22	-29	-10	-11	-34	-31	-74
6	-21	-24	-27	-23	-19	-18	-61	-49	-30	-29	-20	-52	-278	-240	-153	-148	-271	-118	-45	-33	-25	-12	-125	-236	-86
7	-235	-335	-216	-103	-54	-85	-19	-13	-81	-460	-86	-182	-309	-223	-161	-389	-440	-407	-453	-450	-670	-272	-88	-180	-246
8	-163	-40	-44	-43	-123	-294	-162	-151	-425	-427	-453	-402	-92	-58	-48	-54	-222	-223	-213	-183	-251	-249	-160	-178	-194
9	-291	-288	-214	-323	-396	-426	-107	-40	-41	-47	-505	-375	-206	-59	-59	-304	-75	-58	-24	-113	-214	-64	-45	-28	-178
10	-54	-29	-44	-173	-232	-131	-110	-259	-375	-224	-157	-291	-118	-95	-357	-490	-317	-472	-381	-248	-440	-252	-160	-313	-238
D	-391	-315	-316	-489	-347	-430	-390	-378	-610	-481	-424	-518	-319	-550	-492	-406	-385	-238	-333	-282	-293	-106	-102	-173	-363
12	-343	-247	-251	-291	-230	-185	-180	-167	-141	-36	-36	-39	-44	-34	-41	-51	-40	-37	-35	-34	-34	-33	-28	-29	-108
13	-35	-40	-44	-47	-50	-39	-32	-25	-143	-106	-85	-71	-36	-54	-31	-39	-98	-183	-454	-309	-346	-269	-537	-593	-153
D	-170	-169	-743	-998	-317	-82	-109	-154	-177	-118	-94	-105	-127	-98	-148	-104	-46	-64	-150	-270	-296	-288	-437	-170	-226
15	-88	-67	-85	-116	-149	-114	-79	-97	-371	-251	-175	-104	-303	-656	-164	-42	-205	-258	-168	-114	-31	-22	-31	-24	-155
16	-26	-27	-24	-22	-79	-37	-18	-22	-24	-39	-36	-69	-41	-40	-46	-50	-48	-44	-38	-59	-55	-57	-31	-28	-40
17	-28	-22	-23	-20	-15	-25	-38	-40	-169	-109	-14	-30	-33	-55	-24	-23	-34	-25	-19	-13	-27	-75	-41	-50	-40
18	-141	-53	-22	-19	-22	-15	-14	-16	-14	-18	-20	-34	-35	-34	-32	-32	-33	-31	-21	-19	-15	-11	-17	-21	-29
19	-57	-39	-117	-64	-173	-320	-281	-137	-340	-273	-406	-323	-210	-86	-144	-108	-72	-54	-77	-291	-341	-207	-320	-214	-194
D	-211	-316	-254	-78	-144	-192	-225	-286	-271	-337	-386	-499	-454	-653	-953	-981	-390	-1047	-885	-715	-349	-110	-102	-324	-423
21	-464	-514	-213	-240	-66	-94	-102	-167	-335	-437	-556	-280	-92	-67	-191	-490	-184	-153	-41	-50	-102	-289	-450	-321	-246
D	-182	-53	-36	-25	-20	-68	-77	-84	-229	-498	-478	-370	-340	-802	-931	-548	-970	-841	-798	-604	-422	-573	-478	-587	-417
23	-396	-123	-183	-304	-273	-151	-174	-342	-426	-286	-93	-40	-41	-41	-43	-129	-200	-264	-109	-61	-189	-218	-48	-31	-173
24	-25	-21	-17	-21	-18	-19	-55	-86	-65	-28	-151	-595	-637	-400	-444	-542	-436	-318	-281	-324	-373	-256	-350	-97	-232
25	-97	-165	-261	-387	-406	-202	-337	-338	-194	-229	-208	-325	-450	-271	-260	-195	-127	-93	-34	-19	-3	-10	-10	-6	-193
26	-7	-12	-9	-13	-14	-13	-13	-21	-46	-204	-107	-37	-25	-27	-65	-125	-81	-34	-8	-59	-78	-39	-31	-49	-47
27	-49	-57	-45	-15	-4	-4	-11	-15	-16	-9	-15	-37	-39	-24	-55	-349	-370	-230	-52	-17	-43	-73	-54	-89	-70
28	-13	-9	-57	-88	-26	-15	-46	-107	-269	-184	-354	-86	-72	-41	-120	-187	-289	-202	-138	-114	-481	-279	-30	-12	-134
29	-14	-33	-6	-7	-80	-84	-83	-70	-36	-77	-140	-10	-16	-25	-29	-85	-75	-45	-21	-14	-16	-47	-197	-109	-55
30	-18	-14	-25	-57	-41	-21	-11	-13	-43	-87	-200	-166	-176	-347	-566	-317	-20	-22	-15	-51	-155	-170	-39	-49	-109
31	-74	-86	-20	-4	-3	-7	-12	-13	-12	-13	-16	-17	-24	-24	-21	-23	-16	-100	-72	-6	-5	-9	-10	-6	-25
MEAN	-131	-114	-113	-134	-121	-113	-112	-124	-173	-175	-188	-181	-161	-201	-225	-225	-190	-212	-182	-162	-186	-142	-146	-144	-161
50 MEAN	-80	-56	-26	-18	-29	-20	-74	-71	-58	-51	-33	-47	-81	-80	-68	-55	-78	-62	-39	-29	-22	-20	-43	-64	-50
50 MEAN	-193	-174	-274	-326	-184	-178	-197	-231	-283	-322	-354	-347	-276	-550	-694	-486	-386	-491	-470	-399	-299	-242	-292	-309	-331

AL INDEX (HOURLY VALUES)

NOVEMBER 1981

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
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3	-73	-13	-8	-7	-32	-31	-37	-46	-12	-15	-28	-93	-58	-35	-35	-45	-86	-84	-63	-105	-140	-40	-22	-47	
4	-16	-15	-9	-6	-5	-8	-14	-11	-11	-15	-21	-34	-32	-38	-34	-118	-259	-149	-123	-67	-60	-94	-54	-54	
5	-119	-93	-163	-223	-138	-200	-284	-221	-245	-263	-147	-171	-395	-215	-155	-117	-180	-104	-63	-145	-125	-97	-62	-164	
6	-46	-115	-226	-150	-94	-21	-12	-13	-18	-28	-55	-53	-101	-49	-182	-54	-49	-70	-218	-128	-81	-143	-157	-96	
7	-325	-204	-289	-294	-378	-272	-242	-223	-339	-209	-329	-300	-288	-394	-263	-276	-200	-145	-220	-195	-108	-195	-122	-145	
8	-61	-51	-140	-173	-443	-227	-167	-199	-507	-455	-103	-115	-283	-75	-62	-54	-53	-29	-32	-29	-22	-19	-46	-140	
9	-19	-19	-19	-20	-21	-19	-16	-74	-30	-22	-71	-142	-84	-39	-53	-123	-71	-42	-24	-25	-26	-24	-40	-44	
10	-17	-19	-17	-9	-5	-45	-190	-125	-59	-53	-91	-517	-68	-22	-49	-94	-162	-57	-23	-57	-239	-136	-137	-149	
11	-33	-64	-52	-19	-109	-139	-171	-165	-149	-50	-51	-63	-259	-954	-124	-85	-311	-627	-763	-344	-287	-420	-130	-73	
12	-274	-605	-632	-529	-210	-223	-238	-254	-219	-401	-188	-270	-132	-106	-36	-49	-73	-83	-32	-37	-29	-22	-21	-23	
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14	-39	-34	-32	-23	-19	-22	-27	-81	-226	-92	-61	-429	-485	-673	-668	-444	-308	-476	-311	-428	-243	-569	-351	-321	
15	-140	-36	-25	-105	-151	-269	-150	-227	-117	-120	-325	-129	-40	-136	-193	-291	-381	-237	-132	-79	-103	-103	-85	-54	
16	-143	-221	-403	-327	-170	-168	-133	-69	-138	-124	-21	-88	-233	-276	-222	-180	-226	-171	-91	-16	-84	-126	-309	-134	
17	-190	-59	-57	-17	-127	-38	-19	-19	-38	-147	-714	-944	-418	-518	-611	-429	-638	-614	-306	-451	-343	-257	-271	-386	
18	-129	-155	-133	-141	-119	-169	-265	-181	-211	-331	-501	-585	-472	-452	-213	-269	-336	-332	-556	-304	-173	-173	-205	-218	
19	-313	-186	-121	-169	-126	-155	-154	-162	-180	-215	-263	-172	-447	-213	-160	-475	-373	-253	-362	-345	-35	-51	-58	-226	
20	-247	-20	-44	-68	-111	-150	-200	-327	-392	-456	-442	-418	-451	-376	-229	-165	-144	-137	-88	-60	-273	-202	-446	-305	
21	-185	-59	-92	-75	-27	-19	-39	-135	-293	-247	-259	-242	-282	-160	-229	-261	-278	-433	-353	-404	-576	-474	-409	-155	
22	-118	-139	-231	-243	-180	-175	-177	-243	-335	-372	-142	-131	-136	-77	-46	-132	-242	-122	-31	-45	-44	-49	-57	-186	
23	-164	-92	-80	-104	-130	-184	-206	-176	-226	-242	-327	-504	-463	-437	-572	-811	-769	-575	-436	-417	-358	-281	-165	-300	
24	-143	-139	-189	-196	-218	-244	-232	-215	-260	-221	-203	-256	-262	-367	-194	-186	-239	-312	-323	-289	-272	-175	-106	-117	
25	-71	-27	-70	-36	-41	-284	-129	-96	-221	-31	-85	-183	-87	-52	-33	-27	-37	-51	-35	-22	-33	-61	-203	-290	
26	-168	-115	-43	-13	-9	-99	-82	-5	-8	-14	-107	-55	-51	-29	-127	-235	-235	-264	-267	-32	-27	-36	-24	-6	
27	-7	-3	-8	-41	-88	-73	-55	-48	-169	-108	-11	-26	-13	-18	-16	-18	-17	-14	-13	-10	-10	-11	-7	-12	
28	-60	-156	-36	-2	-1	-3	-4	-4	-4	-10	-6	-10	-10	-13	-48	-174	-101	-60	-20	-10	-17	-130	-198	-80	
29	-34	-35	-142	-27	-5	-3	-5	-9	-4	-2	-3	-6	-16	-14	-26	-43	-27	-39	-49	-23	-21	-12	-5	-3	
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MEAN	-107	-91	-112	-106	-101	-109	-109	-112	-141	-143	-160	-208	-189	-195	-158	-181	-205	-191	-171	-143	-129	-133	-129	-144	
5Q MEAN	-19	-16	-45	-21	-26	-21	-17	-28	-43	-29	-22	-43	-34	-25	-28	-50	-39	-39	-34	-42	-26	-15	-17	-26	
5D MEAN	-121	-157	-168	-124	-101	-141	-116	-123	-130	-144	-219	-377	-278	-460	-294	-206	-273	-370	-289	-256	-187	-265	-195	-218	

DECEMBER 1981

AL INDEX (HOURLY VALUES)

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
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2	-30	-13	-46	-31	-31	-8	-8	-1	-6	-12	-102	-341	-52	-28	-22	-20	-17	-19	-17	-12	-16	-116	-143	-18	-46
3	-5	-7	-2	0	0	0	1	-29	-43	-4	-8	-97	-102	-171	-118	-36	-89	-145	-116	-239	-203	-36	-72	-191	-71
4	-137	-92	-125	-137	-251	-81	-5	-16	-13	-93	-233	-229	-188	-64	-25	-27	-68	-137	-334	-196	-84	-90	-156	-200	-124
5	-141	-94	-118	-156	-80	-63	-133	-112	-139	-140	-21	-19	-19	-17	-56	-215	-231	-287	-220	-159	-166	-140	-191	-113	-126
6	-57	-23	-46	-102	-165	-87	-37	-82	-26	-4	-12	-22	-33	-52	-97	-158	-187	-75	-30	-28	-43	-66	-49	-41	-63
7	-31	-26	-28	-43	-21	-20	-39	-30	-58	-140	-62	-24	-35	-121	-73	-24	-72	-133	-62	-33	-2	-14	-26	-40	-48
8	-64	-102	-149	-107	-151	-149	-147	-35	-49	-54	-56	-126	-110	-39	-38	-248	-260	-99	-172	-386	-284	-131	-43	-89	-129
9	-122	-151	-150	-134	-150	-230	-132	-148	-77	-188	-229	-77	-120	-233	-252	-297	-218	-91	-85	-147	-118	-29	-40	-53	-145
10	-56	-18	-33	-101	-362	-182	-194	-48	-20	-90	-46	-26	-13	-15	-14	-65	-67	-38	-4	-3	-2	-7	-10	-8	-59
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12	-70	-27	-16	14	15	0	-17	-138	-122	-60	-16	-16	-57	-596	-773	-514	-432	-289	-118	-110	-296	-540	-552	-363	-184
13	-78	-83	-223	-211	-147	-181	-124	-99	-146	-60	-135	-158	-278	-173	-248	-239	-101	-41	-40	-29	-15	-29	-20	-22	-120
14	-18	-8	-6	-11	-23	-102	-23	-9	-20	-41	-63	-15	-13	-36	-76	-53	-19	-16	-39	-30	-63	-16	-17	-20	-31
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17	-6	-5	1	3	3	7	6	5	2	-1	-6	-34	-38	-12	-3	-34	-155	-205	-60	-32	-163	-296	-373	-323	-71
18	-224	-26	-7	-11	-47	-106	-86	-95	-213	-256	-232	-218	-105	-275	-151	-254	-389	-221	-213	-81	-33	-18	-42	-106	-142
19	-130	-111	-42	-67	-95	-104	-62	-21	-4	-25	-47	-393	-292	-182	-134	-175	-132	-274	-93	-25	-14	-55	-94	-24	-108
20	-20	-23	-92	-147	-68	2	3	-6	-58	-145	-24	-7	-7	-6	-55	-135	-90	-35	-84	-103	-90	-127	-102	-24	-60
21	-26	-35	-36	-1	0	-18	-25	-54	-35	-19	-28	-78	-101	-92	-217	-152	-170	-160	-77	-56	-175	-130	-18	-5	-71
22	-6	-5	0	2	4	4	3	-9	-62	-65	-68	-82	-113	-118	-77	-107	-178	-28	-12	-13	0	3	2	-1	-38
23	-4	-36	-87	-124	-92	-61	-18	-3	0	0	-3	-7	-13	-24	-28	-35	-11	2	6	-1	-13	-80	-81	-131	-35
24	-123	-193	-207	-153	-36	-32	-69	-1	-1	-6	-12	-13	-32	-22	-14	-79	-187	-242	-85	-16	-7	-13	-203	-117	-78
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26	-11	-44	-66	-4	12	2	4	3	-12	-16	-158	-120	-75	-60	-15	-13	-14	-28	-87	-133	-54	-15	-2	-5	-38
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28	-210	-84	-9	-38	-141	-77	-200	-140	-123	-57	-8	-7	-18	-96	-393	-173	-165	-250	-172	-80	-26	-33	-22	-29	-106
29	-15	-23	-49	-85	-143	-434	-378	-451	-570	-605	-1012	-513	-460	-631	-222	-140	-162	-161	-181	-43	-16	-10	-109	-76	-270
30	-38	-47	-174	-521	-264	-277	-367	-468	-419	-212	-312	-232	-241	-790	-426	-444	-187	-68	-249	-21	-24	-111	-23	-32	-248
31	-36	-33	-38	-48	-28	-16	-16	-56	-383	-410	-214	-145	-175	-372	-249	-253	-38	-160	-65	-27	-142	-132	-152	-55	-135
MEAN	-56	-44	-60	-75	-73	-73	-68	-68	-84	-93	-105	-111	-115	-149	-124	-142	-133	-111	-100	-77	-89	-93	-88	-73	-92
50 MEAN	-24	-17	-21	-28	-35	-23	-19	-35	-41	-73	-53	-47	-60	-79	-96	-91	-124	-82	-36	-26	-46	-49	-36	-22	-48
5D MEAN	-44	-46	-85	-149	-114	-175	-185	-229	-308	-268	-322	-234	-316	-521	-289	-303	-187	-121	-155	-154	-201	-187	-138	-87	-201

JULY 1981

AE INDEX (HOURLY VALUES)

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
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2	290	220	191	325	628	906	786	573	795	519	234	250	410	431	138	101	156	84	77	112	255	171	426	303	349
3	120	124	106	74	81	68	55	75	63	97	101	131	163	125	98	54	64	79	157	328	554	681	763	725	204
4	513	265	115	110	275	139	40	73	56	101	161	146	156	159	142	133	152	77	74	175	350	643	546	488	212
5	235	186	193	215	206	75	114	120	348	246	335	304	282	284	306	139	209	278	386	356	293	195	231	278	242
6	172	187	355	641	715	611	373	642	565	555	618	483	388	160	97	150	545	859	763	306	156	93	122	131	404
7	164	224	190	284	242	406	594	331	122	58	194	326	456	436	241	246	165	275	295	134	141	116	126	282	255
8	416	259	138	267	552	383	402	318	385	453	241	354	226	156	118	71	92	58	75	86	177	138	130	148	234
9	193	224	345	294	268	180	297	238	193	127	176	166	366	158	130	110	94	75	130	252	316	193	75	105	196
10	121	150	124	149	163	184	181	182	142	80	156	228	160	74	56	79	130	197	209	189	124	124	102	71	145
11	72	62	63	74	95	89	207	295	409	277	472	498	348	226	213	174	184	365	286	162	107	107	110	140	210
12	128	203	322	264	552	577	466	450	440	219	204	283	631	306	196	145	388	785	722	379	372	272	501	668	395
13	637	364	232	134	62	50	51	60	87	80	103	190	296	108	135	160	277	445	248	298	367	234	156	119	204
14	329	371	74	61	103	171	122	67	66	90	166	93	70	96	331	571	211	114	54	81	75	86	93	115	150
15	128	100	88	75	224	180	59	51	63	64	84	142	105	92	148	131	117	91	90	94	103	95	141	166	110
16	143	237	262	140	90	87	209	190	212	367	373	298	159	81	73	63	82	138	174	222	154	117	121	224	176
17	243	114	68	120	88	110	143	281	757	644	819	741	554	352	321	215	108	259	748	1152	991	923	1293	1013	502
18	698	623	354	213	167	137	198	157	64	76	167	147	139	78	63	83	106	60	80	99	155	261	144	216	187
19	288	328	284	150	190	100	51	54	60	125	131	196	179	201	293	236	99	143	205	397	275	201	104	97	183
20	210	188	107	108	134	116	60	40	49	54	78	140	375	811	455	126	66	65	62	74	78	88	98	97	153
21	143	110	196	144	82	114	144	158	141	149	84	109	133	92	68	64	64	71	44	65	68	134	123	79	108
22	148	280	295	526	422	100	82	71	115	379	698	542	685	447	399	532	350	324	192	336	379	385	658	385	364
23	417	457	240	113	75	81	359	788	220	358	161	746	1112	1016	1013	960	916	1167	849	731	585	268	327	138	546
24	184	146	105	101	43	30	71	134	71	42	87	72	110	128	173	95	99	167	102	84	102	431	859	669	171
25	559	542	118	75	246	1289	1464	401	183	449	450	239	682	1656	1911	1483	1017	615	1236	1325	1151	611	507	1106	805
26	672	906	1425	992	1281	1056	836	251	109	181	241	220	324	358	221	213	564	500	157	229	137	107	200	555	489
27	648	545	599	682	739	774	811	715	739	849	679	556	608	490	342	224	150	93	81	64	68	80	200	153	454
28	123	100	152	127	185	273	379	303	364	514	547	336	248	212	173	94	79	100	91	94	99	86	84	80	202
29	167	241	327	163	52	53	44	39	45	50	52	53	76	80	75	94	66	64	55	67	87	123	220	291	108
30	209	82	89	94	72	89	350	459	421	451	329	216	384	330	263	335	232	376	453	453	342	318	236	224	284
31	224	242	366	360	240	294	513	398	126	70	90	84	86	108	215	244	221	340	553	545	616	684	307	497	309
MEAN	300	281	254	236	270	288	308	259	251	261	270	270	325	308	288	249	236	277	290	302	287	265	299	314	279
50 MEAN	150	165	216	165	157	162	145	133	116	94	110	139	168	99	95	95	94	99	105	133	139	133	132	142	133
50 MEAN	507	512	490	396	485	662	722	487	401	496	470	500	656	774	761	619	551	526	614	700	586	397	505	593	559

		1981																								
		AUGUST																								
AE INDEX (HOURLY VALUES)		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	500	558	567	535	468	379	646	542	239	432	452	191	252	183	175	176	190	265	547	522	332	229	414	361	381	
2	313	445	275	133	68	51	52	88	170	139	176	363	213	217	332	532	339	264	356	198	143	334	679	630	271	
3	357	166	167	205	440	642	688	558	813	595	433	298	306	218	282	352	349	386	350	378	234	83	144	369	367	
4	248	211	153	477	434	157	156	401	658	385	174	102	77	90	62	68	57	73	141	107	146	73	73	65	191	
5	86	80	76	113	167	594	771	531	209	166	291	151	193	151	141	163	201	518	680	548	565	620	578	627	342	
6	580	655	698	534	738	800	673	650	653	478	465	499	471	323	339	456	452	392	392	322	287	165	161	143	467	
7	168	200	202	213	221	262	186	169	119	226	373	497	543	629	523	489	616	742	757	689	506	308	266	268	382	
8	215	197	93	66	44	59	47	54	69	113	68	75	48	59	53	48	44	42	40	61	66	68	115	360	88	
9	247	422	486	172	53	44	49	32	33	41	38	48	54	62	48	77	96	97	139	129	201	82	95	105	119	
10	90	80	135	249	177	148	105	144	206	238	157	129	181	189	141	129	101	91	81	62	60	137	173	229	143	
11	164	90	82	53	46	52	56	69	81	106	91	117	148	212	445	634	393	278	282	282	536	590	226	97	220	
12	296	362	323	287	109	155	178	62	51	91	116	104	95	112	119	172	208	132	127	157	171	253	220	327	176	
13	230	117	263	245	211	290	140	212	195	196	116	79	77	86	84	137	214	193	116	128	187	418	271	137	181	
14	289	386	252	111	72	148	127	109	136	238	503	406	341	279	199	122	111	78	91	163	209	212	328	119	210	
15	62	47	67	210	320	280	114	89	149	99	81	87	105	150	157	148	229	151	103	194	427	775	636	661	222	
16	283	128	84	159	98	265	183	130	62	51	81	105	135	126	104	87	97	103	116	116	93	90	88	151	167	124
17	153	211	312	197	132	130	197	397	670	841	820	538	455	311	134	123	136	329	329	418	471	345	441	595	362	
18	475	517	454	155	75	60	192	477	623	462	510	550	862	778	727	802	636	442	340	199	417	404	148	110	434	
19	143	287	379	299	187	138	191	156	224	123	216	198	291	470	582	200	142	70	83	242	254	204	92	73	218	
20	91	119	395	370	227	125	126	258	182	56	57	93	104	83	82	73	105	177	177	533	244	121	180	93	167	
21	77	114	154	118	131	252	378	490	301	150	127	210	491	547	420	254	343	481	700	847	748	397	157	94	333	
22	117	146	493	495	351	345	255	266	308	258	176	90	82	52	74	57	98	211	593	479	157	88	74	233	229	
23	510	626	694	665	567	493	416	483	755	844	775	572	285	867	1334	943	697	330	333	254	459	790	902	429	626	
24	164	239	411	802	689	258	98	146	241	137	77	62	87	138	385	804	820	727	588	619	548	494	274	485	387	
25	464	196	89	73	93	46	174	232	456	310	253	138	92	244	353	458	604	506	567	425	434	280	188	110	283	
26	80	69	61	50	41	63	148	189	96	58	62	74	88	73	151	187	369	280	175	112	98	109	119	205	123	
27	209	270	147	87	136	93	141	137	179	270	410	459	484	597	644	545	598	754	527	539	544	277	244	257	356	
28	275	254	348	508	367	401	323	257	226	405	463	354	171	247	403	499	914	420	303	114	131	173	605	278	352	
29	313	454	318	177	288	441	460	592	569	665	859	327	496	676	692	830	572	525	532	304	152	136	100	120	442	
30	388	455	538	607	555	444	334	256	308	357	364	691	430	506	508	230	121	167	74	57	137	240	274	130	340	
31	261	167	363	464	473	97	100	102	100	81	100	94	137	142	103	122	63	50	50	45	42	54	62	61	139	
MEAN	253	266	292	284	257	248	248	267	292	277	286	248	251	284	316	319	319	299	326	296	280	270	270	256	279	
50 MEAN	222	240	195	111	61	115	110	102	79	100	150	141	133	119	111	104	143	120	112	111	132	111	161	191	132	
50 MEAN	302	372	403	381	319	206	208	328	493	510	518	436	434	538	644	643	577	516	441	416	462	459	401	375	433	

SEPTEMBER 1981

AE INDEX (HOURLY VALUES)

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
Q	62	57	55	61	63	67	67	60	65	81	77	79	108	156	116	81	71	66	60	77	110	87	68	123	80
D	213	386	529	597	604	634	510	485	574	622	617	576	521	722	718	747	730	590	403	404	230	174	148	190	497
Q	181	74	100	84	36	32	46	80	169	84	74	163	148	90	135	210	151	48	48	93	88	79	103	180	104
D	134	229	100	58	45	52	53	141	147	174	169	257	488	438	245	171	184	263	313	243	270	421	325	572	239
Q	615	521	473	345	356	349	171	182	412	283	200	199	234	132	181	355	291	228	121	76	49	157	349	402	278
D	203	125	165	198	142	114	237	126	134	130	73	87	94	79	66	69	58	61	69	88	85	75	137	104	113
Q	118	54	45	50	80	161	61	60	57	61	95	101	85	81	91	108	203	416	457	393	357	201	110	79	147
D	89	88	165	242	330	404	122	76	76	80	69	73	73	70	67	60	56	60	62	63	80	89	168	221	120
Q	251	257	155	264	126	85	90	129	254	145	131	124	99	80	80	61	63	124	289	272	160	171	106	151	153
D	121	120	93	70	51	38	37	36	43	74	90	93	99	76	81	127	265	376	409	161	159	265	260	238	141
Q	129	204	354	403	392	476	497	537	633	593	647	526	459	830	532	357	283	197	188	247	214	412	179	71	390
D	60	76	155	363	245	155	352	480	446	439	469	444	342	586	416	395	457	459	521	373	255	123	104	146	328
Q	81	113	236	129	345	506	414	262	385	531	712	573	483	552	581	503	419	244	73	42	48	134	204	177	323
D	49	44	36	31	35	69	86	183	258	204	157	225	438	463	477	174	116	99	93	158	289	399	264	138	187
Q	112	62	80	37	60	156	217	501	539	461	327	103	73	65	117	140	290	457	493	272	144	97	72	81	206
D	70	104	185	287	362	347	326	302	177	186	141	146	111	98	100	248	125	101	204	208	234	106	109	154	185
Q	139	96	74	140	206	99	50	65	98	161	151	118	122	164	167	69	44	46	61	76	80	69	67	67	101
D	63	54	58	41	47	38	59	133	121	106	88	71	64	93	223	169	66	44	71	269	813	1065	648	198	192
Q	167	166	337	191	132	116	298	597	601	425	387	295	207	219	109	65	52	71	55	95	76	39	123	58	203
D	94	213	183	95	43	39	59	63	30	33	36	37	41	46	80	53	37	95	78	168	370	190	210	141	101
Q	209	58	41	36	33	27	30	43	34	50	39	49	51	54	51	44	63	71	182	197	310	507	532	390	129
D	291	240	207	304	447	460	491	405	323	200	125	67	44	41	23	30	36	41	41	75	211	259	215	342	205
Q	251	185	151	71	39	21	19	22	25	32	51	52	47	48	48	60	70	40	33	37	36	34	42	47	61
D	47	44	37	32	28	31	41	55	62	78	96	381	346	278	233	219	293	312	139	72	51	46	146	253	138
Q	106	147	324	199	228	308	162	120	98	163	123	227	385	550	194	376	637	156	53	45	55	52	52	34	200
D	64	59	189	291	373	116	77	229	543	1039	787	552	701	910	600	579	625	713	856	519	595	649	529	494	504
Q	601	498	408	314	369	473	498	818	431	314	594	406	338	352	335	344	419	497	540	382	74	92	256	330	403
D	213	184	170	94	66	54	28	21	56	172	109	88	81	90	79	61	146	214	105	77	66	112	169	143	108
Q	115	177	65	107	254	275	223	135	95	108	124	85	92	125	181	403	222	264	237	375	140	254	205	78	181
D	66	87	226	114	121	219	278	81	70	74	174	352	150	212	256	121	93	127	365	236	186	151	412	325	187
MEAN	163	157	179	174	188	197	186	214	231	236	231	218	217	256	219	213	218	216	220	193	194	216	210	197	206
50 MEAN	156	115	99	83	90	80	45	45	60	101	96	87	88	107	100	75	106	156	143	132	129	100	91	91	99
5D MEAN	234	262	363	359	374	363	376	533	556	598	606	471	445	606	458	418	421	413	408	329	237	273	247	228	399

		OCTOBER																								1981	
		AE INDEX (HOURLY VALUES)																									
DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN		
D	122	131	184	129	102	54	98	67	56	84	146	125	121	81	112	280	141	63	47	76	106	62	85	163	110		
D	281	380	134	93	74	128	91	87	128	70	101	200	153	332	284	90	175	372	415	148	235	286	124	88	186		
D	84	51	66	85	173	241	388	626	370	342	636	492	274	860	1229	588	240	376	259	230	319	221	489	461	378		
D	276	132	74	133	407	392	373	310	149	120	102	191	298	337	135	131	146	561	345	453	376	233	318	308	262		
D	227	154	90	68	56	67	329	329	337	257	140	138	73	154	148	60	42	38	40	44	25	35	72	72	125		
D	65	58	50	49	46	47	86	74	56	54	45	103	386	338	214	197	362	191	115	87	65	66	212	342	138		
D	314	392	310	173	112	130	60	56	190	650	218	381	457	323	239	566	688	696	673	638	895	449	226	335	382		
D	223	71	100	106	212	453	358	423	746	672	566	536	212	99	73	79	265	311	335	326	368	384	309	281	313		
D	369	340	270	446	645	720	214	94	88	100	707	594	372	155	109	377	119	56	62	223	285	123	116	89	278		
D	120	91	97	213	291	224	211	374	513	335	295	495	239	193	492	724	595	869	695	492	598	411	308	504	391		
D	681	504	423	657	656	764	685	643	940	757	738	873	669	927	882	810	788	508	609	468	319	153	197	319	624		
D	509	368	333	369	369	425	386	388	409	161	108	63	64	33	41	49	42	46	41	44	38	49	42	51	185		
D	62	68	86	77	77	68	62	85	256	196	152	132	79	80	49	95	129	279	607	434	516	472	813	923	242		
D	536	499	1150	1297	619	262	259	368	375	271	248	254	277	129	185	147	116	134	240	456	416	425	618	329	400		
D	167	129	203	197	233	174	152	192	448	340	234	152	389	855	284	90	323	377	241	211	125	71	80	66	239		
D	47	43	51	46	142	112	89	97	57	55	59	82	51	53	49	48	53	50	56	82	82	102	74	49	68		
D	43	55	67	101	115	115	133	154	372	311	109	118	105	118	57	70	67	53	57	60	112	118	76	101	112		
D	208	96	49	51	61	65	61	61	45	43	44	58	57	53	48	46	47	46	49	46	47	43	58	57	60		
D	101	81	163	105	217	430	507	310	619	493	619	459	330	185	228	192	133	121	164	461	481	354	517	399	320		
D	334	396	344	165	214	296	390	439	510	520	493	717	622	869	1164	981	458	1071	898	735	395	173	169	392	531		
D	495	545	398	400	135	144	182	253	481	466	678	458	189	94	241	640	247	214	69	80	165	403	604	464	335		
D	278	87	54	39	37	152	160	176	365	673	660	609	391	941	967	601	1005	848	860	643	435	657	519	648	492		
D	546	194	241	367	349	268	284	572	701	485	179	70	53	44	55	217	345	358	154	117	318	314	96	47	266		
D	41	26	20	26	32	28	67	106	79	41	207	770	795	567	664	770	666	478	451	455	473	373	539	193	328		
D	148	211	313	445	517	320	456	516	325	402	410	436	545	359	337	259	173	140	83	66	36	39	29	21	274		
D	22	33	34	36	37	42	43	54	126	334	210	92	57	63	105	146	108	57	46	104	139	91	85	113	91		
D	108	117	106	74	41	48	58	44	56	67	62	75	73	62	89	432	445	314	128	55	124	160	109	196	127		
D	78	64	126	147	98	63	128	167	369	279	563	199	134	92	159	234	393	322	274	217	647	459	100	63	224		
D	61	106	53	47	147	163	187	191	144	190	228	75	58	69	66	110	96	75	54	42	49	100	286	174	115		
D	76	75	93	119	101	72	43	58	103	167	334	267	280	443	759	451	94	63	43	90	224	224	98	123	183		
D	183	176	75	48	41	40	47	47	41	40	42	41	46	45	46	49	37	131	101	30	27	33	37	35	60		
MEAN	219	183	185	203	205	209	212	237	304	289	301	298	253	288	306	306	275	297	264	245	272	228	238	238	252		
50 MEAN	146	105	63	52	69	66	122	121	107	89	66	84	122	128	101	80	108	91	72	57	49	55	90	111	90		
5D MEAN	382	307	407	448	339	343	376	450	512	512	555	589	446	745	885	619	521	587	573	506	376	325	398	429	485		

NOVEMBER 1981

AE INDEX (HOURLY VALUES)

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN		
Q	1	26	36	59	175	114	40	35	44	49	72	310	309	87	57	89	190	290	170	170	122	74	96	92	89	118	
	2	55	50	100	43	48	55	58	46	55	33	43	47	45	52	56	69	91	114	120	219	138	64	66	144	75	
	3	136	73	50	81	59	56	99	115	55	68	94	167	107	69	63	66	103	111	104	163	189	78	47	48	92	
	4	33	28	23	20	18	29	24	37	31	35	49	62	59	67	74	141	286	201	234	192	163	178	107	147	93	
	5	160	138	223	287	239	284	384	325	423	474	316	317	497	315	197	129	251	159	108	233	239	159	94	52	250	
	6	93	163	267	197	135	44	32	33	50	70	111	103	145	84	215	76	68	97	277	186	158	203	214	283	138	
	7	421	297	350	344	459	456	362	331	495	402	530	461	464	556	350	438	369	243	361	311	191	248	150	175	365	
	8	77	105	224	269	625	361	291	304	704	709	247	212	325	104	78	76	125	89	62	53	57	39	81	37	219	
Q	9	28	28	26	25	25	28	26	87	41	31	96	187	128	56	77	140	87	52	33	37	41	46	67	48	60	
	10	41	32	27	23	32	107	259	237	143	135	174	671	181	65	78	118	192	83	50	131	338	246	272	335	165	
D	11	159	154	154	84	207	298	349	389	364	154	112	132	447	1106	400	246	631	1003	1190	664	463	479	193	126	396	
D	12	300	774	866	705	491	522	599	481	383	633	495	345	195	210	94	74	93	105	59	54	46	35	26	25	317	
	13	29	19	24	20	19	15	13	17	22	25	41	75	36	46	52	53	57	53	51	42	74	83	195	218	53	
D	14	75	59	51	35	39	65	84	155	306	143	89	550	545	802	915	678	438	684	521	506	324	584	390	322	348	
	15	308	124	79	164	189	375	293	319	181	167	371	166	56	162	210	358	513	340	206	126	151	147	130	99	218	
	16	190	277	459	393	239	270	238	177	204	184	70	124	288	341	275	204	256	225	137	50	175	258	422	221	237	
	17	246	99	89	47	170	96	66	54	75	221	765	968	507	660	850	607	766	825	446	632	483	364	331	537	413	
D	18	227	225	213	254	205	253	372	313	373	535	740	830	583	599	285	379	513	467	698	451	326	301	253	298	404	
	19	422	336	207	258	208	246	222	253	256	352	434	271	528	331	221	584	471	363	488	488	79	102	107	326	315	
	20	335	49	69	89	142	199	279	390	466	621	637	504	532	472	309	226	230	135	139	124	345	251	524	372	312	
	21	247	122	145	122	73	60	87	179	344	351	416	390	364	240	256	310	367	592	503	575	740	588	486	242	325	
	22	176	206	315	378	317	303	276	336	453	521	246	224	229	112	55	151	256	136	46	58	68	71	89	226	219	
	23	216	147	174	181	204	251	329	275	365	528	554	684	605	579	798	1045	974	763	680	602	527	444	313	463	488	
	24	292	239	296	335	350	370	385	332	404	388	410	416	340	465	268	242	294	414	468	497	516	353	229	201	354	
D	25	161	135	254	160	182	415	257	181	61	64	118	266	190	130	115	75	72	65	62	37	71	118	267	385	160	
	26	267	241	185	85	80	172	179	86	72	53	161	120	112	96	198	321	318	361	340	68	52	58	54	35	155	
Q	27	42	52	43	67	111	110	97	78	203	143	30	47	33	29	28	28	27	22	18	17	20	25	25	28	55	
	28	101	242	137	49	26	22	26	37	30	44	33	28	24	29	86	230	143	94	58	38	37	195	303	202	92	
Q	29	104	96	225	88	43	36	35	36	31	40	51	40	54	45	51	100	68	59	74	42	47	47	42	27	62	
Q	30	35	36	34	28	19	21	22	23	20	23	27	44	54	43	27	29	22	22	22	24	23	24	25	27	27	28
MEAN		166	152	178	166	168	185	192	189	221	240	259	292	258	264	225	246	279	271	257	224	205	196	186	191	217	
5Q MEAN		52	52	85	50	49	50	47	54	66	54	49	73	62	45	47	73	59	53	53	67	54	41	45	54	55	
5D MEAN		188	244	282	206	217	279	271	252	237	243	315	452	376	561	474	336	400	536	455	378	277	316	241	279	326	

AE INDEX (HOURLY VALUES)

DECEMBER 1981

DATE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
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2	83	73	97	77	76	48	46	32	35	58	183	498	128	73	58	51	41	48	50	37	55	169	195	54	94
3	40	43	42	40	39	38	31	64	79	46	48	154	152	232	178	74	114	186	152	339	319	85	162	287	123
4	215	156	215	250	406	192	66	60	59	146	294	318	330	166	84	62	97	172	431	268	156	173	223	303	202
5	239	179	209	225	141	128	181	149	196	218	60	52	45	42	87	243	265	354	319	258	277	233	284	201	191
6	116	96	116	164	211	138	77	151	89	39	94	50	57	75	118	168	219	94	39	41	64	89	82	79	100
7	58	60	76	97	76	61	82	67	94	202	96	44	62	149	88	43	89	156	80	59	30	49	89	83	82
8	115	191	247	208	235	259	294	90	90	85	88	156	139	68	76	365	423	224	280	478	487	227	87	141	210
9	180	203	199	196	214	352	218	243	157	282	340	133	181	237	297	413	302	160	132	243	213	78	80	84	214
10	85	39	65	171	453	248	258	70	63	143	103	97	59	80	47	110	89	58	23	24	27	35	42	42	101
11	62	95	196	214	88	55	41	41	40	46	58	50	49	55	73	184	246	188	270	144	54	58	141	137	108
12	177	203	240	70	48	81	106	243	201	143	64	256	681	945	714	705	513	282	252	444	713	681	433	288	354
13	145	164	310	335	305	493	371	284	241	152	259	346	319	240	302	301	156	87	91	94	63	74	59	66	219
14	68	54	39	46	65	174	108	98	81	70	131	70	68	72	165	122	49	39	62	51	89	44	64	74	79
15	85	53	36	29	33	39	31	58	40	75	56	46	47	47	40	38	30	29	27	55	339	388	93	57	74
16	52	46	41	30	28	21	25	39	60	192	175	85	53	43	37	35	35	34	21	25	34	59	116	47	55
17	40	34	28	26	25	21	23	26	28	32	32	61	63	34	29	63	178	228	90	74	265	400	579	631	125
18	507	123	56	64	159	159	162	173	306	342	392	342	137	301	193	308	500	305	314	130	74	66	95	153	223
19	186	152	82	127	165	203	180	93	29	71	88	479	375	275	193	207	165	312	118	65	58	90	122	52	162
20	61	63	145	207	124	50	36	51	107	182	54	33	30	31	93	225	151	70	110	143	190	202	184	89	110
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23	34	86	153	224	260	239	126	40	34	30	36	35	45	55	79	92	61	43	20	27	60	150	174	232	97
24	223	254	275	260	160	134	172	113	56	49	45	43	70	88	50	103	242	341	146	66	65	69	292	246	148
25	160	116	87	151	68	51	37	31	33	39	46	208	231	203	243	227	308	208	106	74	139	245	85	99	133
26	79	126	163	116	62	52	38	31	68	66	212	216	130	85	45	39	35	49	110	166	76	41	31	34	86
27	37	68	76	53	83	135	153	109	52	32	56	82	174	104	79	87	98	102	285	75	124	227	190	230	113
28	347	190	106	119	228	140	258	237	234	136	66	59	76	168	479	238	215	369	262	169	84	86	78	89	185
29	77	88	132	157	262	690	578	754	1015	1021	1141	791	646	820	312	183	237	328	327	96	79	87	184	126	422
30	80	95	234	620	456	392	570	829	689	373	549	542	378	927	568	629	317	136	358	72	56	179	63	82	383
31	103	107	142	129	152	90	77	148	553	752	487	314	251	425	312	327	81	206	95	58	182	180	190	95	227
MEAN	122	106	127	145	152	155	145	146	160	169	175	190	172	208	179	203	192	168	156	129	153	157	148	141	158
50 MEAN	66	63	67	72	76	61	58	82	84	122	94	81	92	115	115	110	152	104	54	50	82	92	67	55	84
5D MEAN	110	136	199	236	250	302	325	412	510	474	465	411	419	637	396	441	314	235	262	229	303	270	191	146	319

JULY 1981

AO INDEX (HOURLY VALUES)

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2	-9	-24	-2	50	38	-94	-53	-91	-37	-37	24	9	5	-59	16	14	0	11	8	-2	11	23	-51	-56	-12
3	-14	-7	-8	-17	-18	-14	-14	-16	-18	-27	0	2	-1	-7	-22	-6	8	13	10	-6	-69	-95	-71	-53	-19
4	4	-2	7	2	-38	-48	-12	4	-12	-11	8	8	11	0	-9	-20	-16	-4	-3	-1	-19	25	17	23	-3
5	17	6	-21	-42	0	4	32	7	-20	2	46	-1	-41	-8	-29	-19	28	2	31	55	61	45	15	0	7
6	-13	1	40	-51	-76	-25	24	-3	1	32	-40	-11	-22	4	20	17	14	-22	-50	47	27	12	7	9	-2
7	7	-38	7	0	-3	-6	-20	-2	-7	4	39	-4	-84	-86	-27	-7	2	-22	3	7	4	16	11	20	-7
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18	-93	-60	29	66	36	44	34	13	9	0	31	9	-9	-23	-13	-14	-19	4	6	13	11	2	5	20	4
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25	-31	-81	-2	0	-9	-201	-256	-46	13	118	-76	0	-7	-560	-1299	-642	-327	-56	-71	-352	23	39	-5	-413	-177
26	-143	-169	-483	-309	-276	-279	-122	-30	7	18	-4	-43	-40	-23	-35	6	-2	39	5	-1	3	-16	-7	-79	-82
27	-257	-71	-83	-38	-86	-148	-137	-85	-99	-98	-29	-36	-101	-70	-61	-65	-43	-6	15	10	-1	-3	12	-37	-63
28	-20	-10	-42	-13	-26	-14	-99	-50	-18	-113	-146	-52	-48	-59	-37	-12	-14	-16	-4	-4	-3	-13	-11	-15	-35
29	-21	4	-58	-38	-11	-16	-16	-14	-16	-21	-25	-26	-25	-17	-17	-13	-15	-4	0	-13	-23	-15	-10	-45	-19
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MEAN	-18	-18	-20	-13	-14	-27	-21	-10	-4	-1	-3	-5	-26	-38	-66	-38	-16	-13	-3	-8	0	0	-12	-24	-17
50 MEAN	11	8	-18	-9	2	-4	-1	11	13	-1	6	4	-12	1	-7	-4	0	1	4	4	1	1	3	-6	0
50 MEAN	-79	-65	-109	-68	-76	-127	-111	-29	-24	19	-6	-35	-67	-128	-309	-140	-87	-40	-20	-116	-59	-36	-57	-135	-79

AO INDEX (HOURLY VALUES)

AUGUST 1981

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3	16	13	-7	-6	34	64	12	15	-53	-11	18	-9	-64	-44	-5	-31	-9	-1	-9	6	25	18	19	-39	-2
4	-41	11	6	-12	-37	-23	32	-5	-132	-67	22	8	0	5	2	13	9	13	-1	6	8	6	6	3	-6
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16	-28	6	11	10	-15	-21	-38	-16	7	10	14	8	4	-3	-5	-7	-6	-3	-4	0	4	2	-2	-5	-3
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50 MEAN	-5	3	-7	4	-2	-5	-10	-4	3	1	-7	-6	-9	-5	-8	-9	-20	-11	-1	5	5	8	8	0	-3
5D MEAN	-11	-37	5	-3	13	9	17	-2	-7	-14	-10	-9	-27	-28	-12	28	-16	19	9	0	4	-34	-69	-45	-9

AO INDEX (HOURLY VALUES)

SEPTEMBER 1981

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	-16	-48	-87	-124	-102	14	4	-48	-33	22	-31	-61	-92	-134	-71	-19	-9	43	70	14	8	0	6	14	-28
	3	23	6	-1	-2	-3	8	10	15	-1	0	0	-21	4	-6	-38	-36	0	8	13	3	7	-1	25	0
	4	15	14	11	-8	-1	0	-24	-3	19	30	41	-31	-56	-46	-29	-18	-20	-12	46	36	24	-5	-15	-1
	5	-61	-89	-29	27	25	-45	12	1	-6	-12	7	12	-5	-22	-85	-50	1	25	15	7	16	-8	-68	-14
	6	-3	6	-24	-31	-5	-49	-20	10	6	5	-3	-2	-8	-8	-5	-1	-5	-3	-4	-7	12	25	11	-4
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AO INDEX (HOURLY VALUES)

OCTOBER

1981

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AO INDEX (HOURLY VALUES)

NOVEMBER 1981

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5D MEAN	-28	-36	-27	-22	7	-2	17	2	-12	-22	-62	-151	-89	-169	-57	-39	-73	-101	-61	-66	-47	-107	-73	-78	-54	

AO INDEX (HOURLY VALUES) DECEMBER 1981

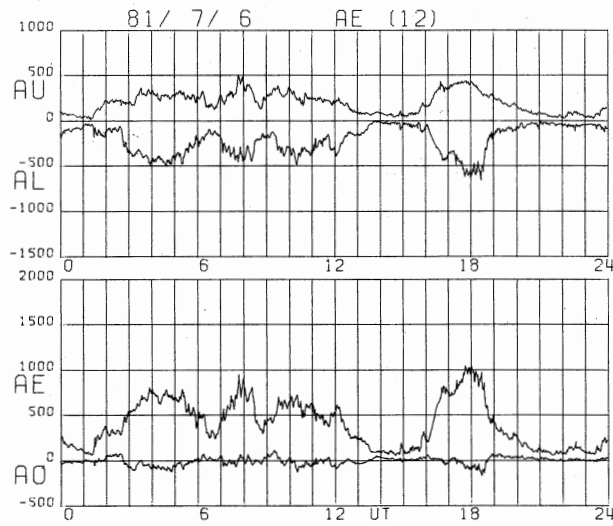
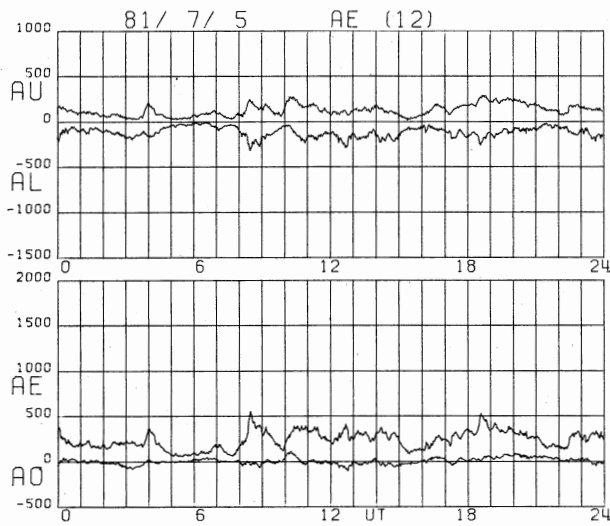
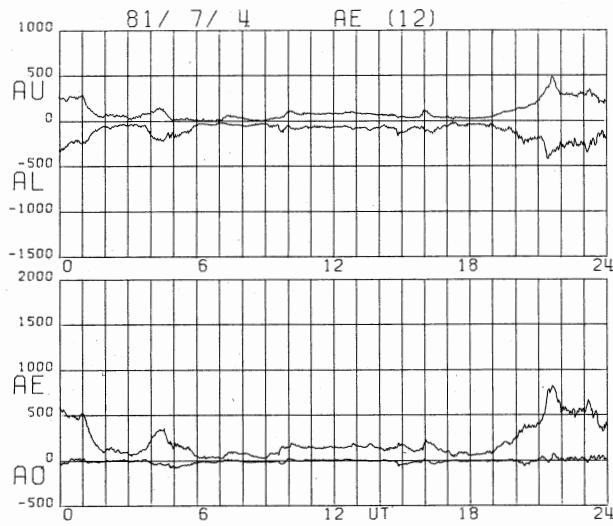
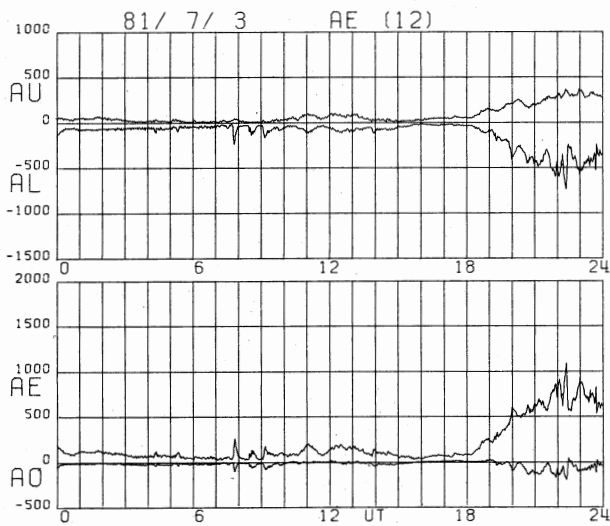
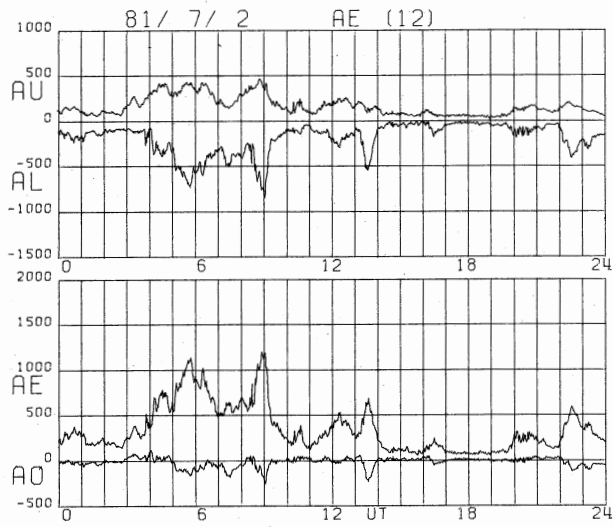
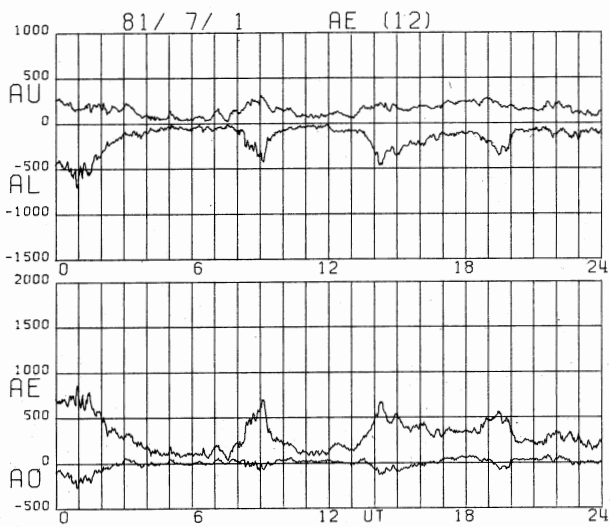
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15	31	18	19	15	15	18	13	6	11	2	3	10	9	8	6	7	4	4	9	8	-97	-5	24	20	7
16	22	22	22	18	18	14	15	17	2	-44	-10	11	5	8	1	1	1	2	9	11	2	-10	-34	-2	4
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18	29	34	20	19	31	-26	-5	-8	-60	-84	-36	-46	-36	-125	-54	-99	-139	-67	-56	-16	4	14	5	-29	-30
19	-36	-35	-1	-4	-13	-2	26	24	9	9	-3	-153	-104	-44	-36	-71	-49	-117	-33	7	14	-10	-33	1	-27
20	9	7	-20	-44	-6	27	21	19	-5	-54	2	8	6	8	-8	-22	-14	0	-29	-30	4	-26	-10	19	-5
21	9	4	2	21	20	10	15	0	3	22	6	-21	-35	-25	-99	-62	-62	-64	-29	-15	-54	-10	7	13	-14
22	9	10	10	15	16	18	16	14	-9	-16	-19	-24	-34	-30	-26	-43	-74	-4	6	9	22	17	15	12	-3
23	12	5	-11	-12	36	57	43	17	16	14	14	8	7	2	10	10	19	24	16	12	16	-5	5	-15	12
24	-11	-66	-69	-23	43	33	16	55	26	18	9	7	2	21	9	-27	-65	-71	-12	16	25	20	-56	5	-3
25	30	33	31	26	33	35	26	18	17	16	16	-33	-29	0	-22	-33	-27	-15	11	12	9	-49	3	7	5
26	27	17	14	53	43	28	24	19	21	16	-52	-12	-9	-17	6	5	3	-3	-32	-50	-15	5	12	10	4
27	10	12	4	13	-1	-7	-7	6	27	10	8	-5	-52	-30	-10	-22	-20	-27	-107	-5	2	-12	5	26	-7
28	-37	10	43	20	-27	-6	-71	-20	-5	10	23	21	19	-12	-152	-53	-58	-65	-40	3	15	9	16	14	-14
29	22	19	15	-7	-13	-89	-89	-74	-62	-93	-440	-116	-136	-220	-65	-48	-43	1	-18	4	22	33	-17	-13	-59
30	1	0	-56	-211	-36	-81	-82	-54	-74	-26	-37	38	-52	-326	-141	-129	-28	0	-70	13	2	-21	7	8	-56
31	15	19	32	15	47	27	21	17	-106	-34	29	11	-49	-159	-93	-89	2	-56	-16	1	-51	-41	-56	-7	-21
MEAN	4	8	2	-2	1	4	3	4	-5	-9	-18	-16	-29	-46	-34	-40	-36	-27	-21	-12	-12	-14	-14	-3	-13
50 MEAN	7	12	10	7	2	6	9	5	0	-12	-6	-6	-14	-21	-37	-36	-47	-29	-9	-1	-5	-3	-3	4	-6
50 MEAN	9	21	13	-31	0	-24	-23	-23	-52	-31	-89	-28	-106	-202	-91	-82	-30	-4	-24	-40	-50	-51	-42	-14	-41

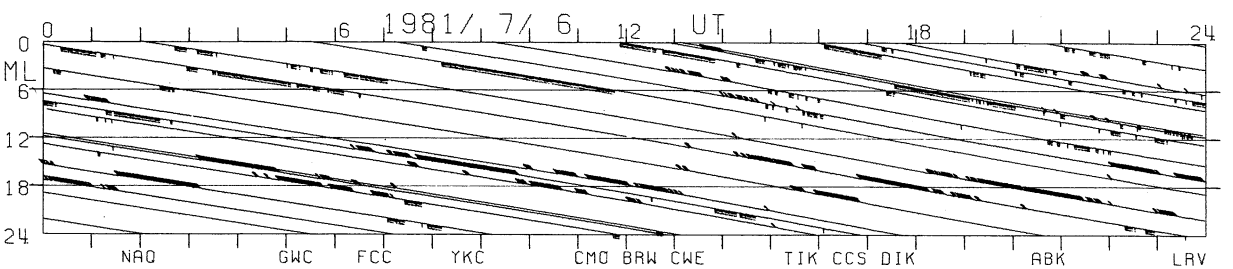
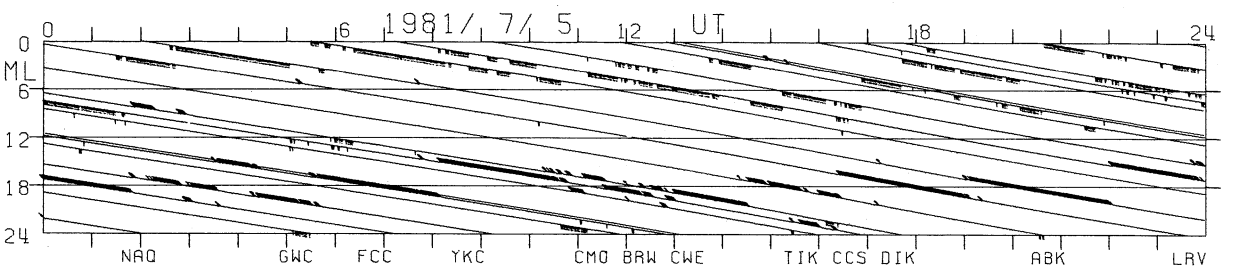
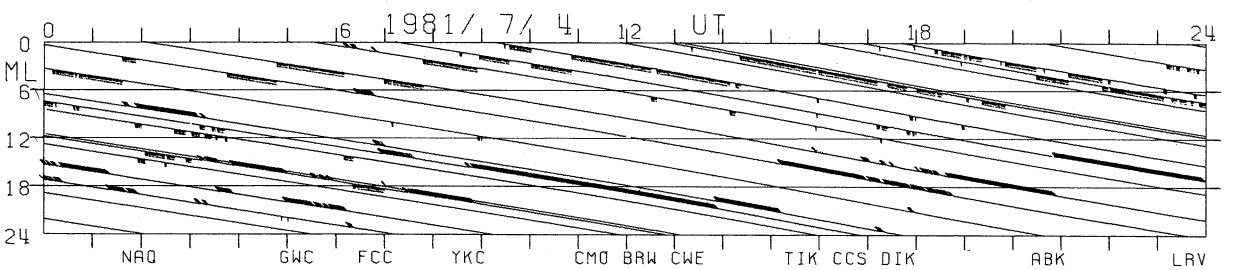
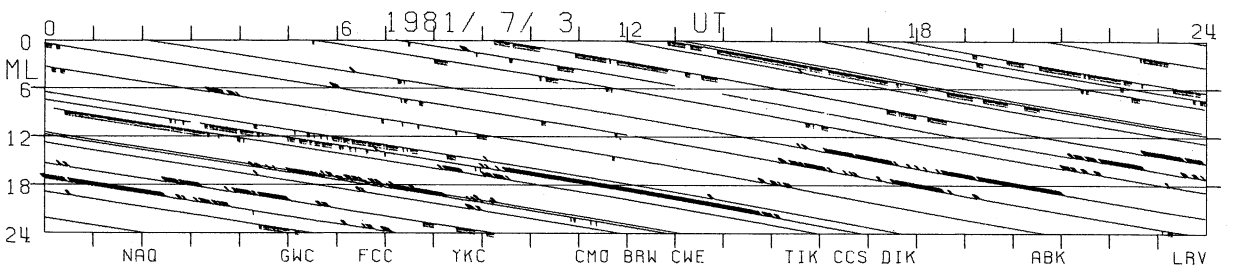
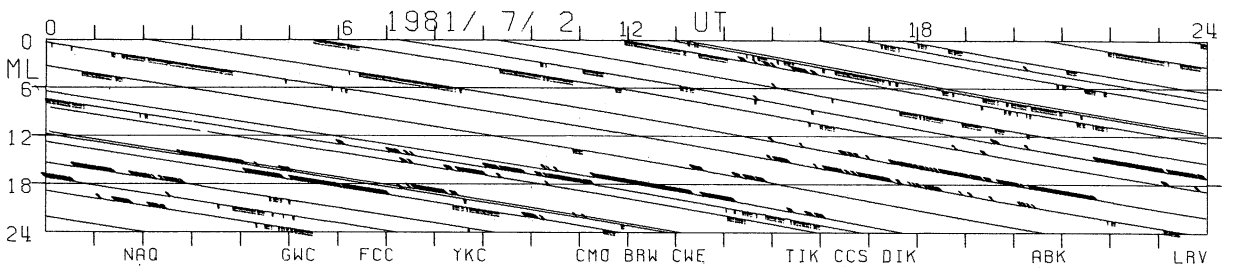
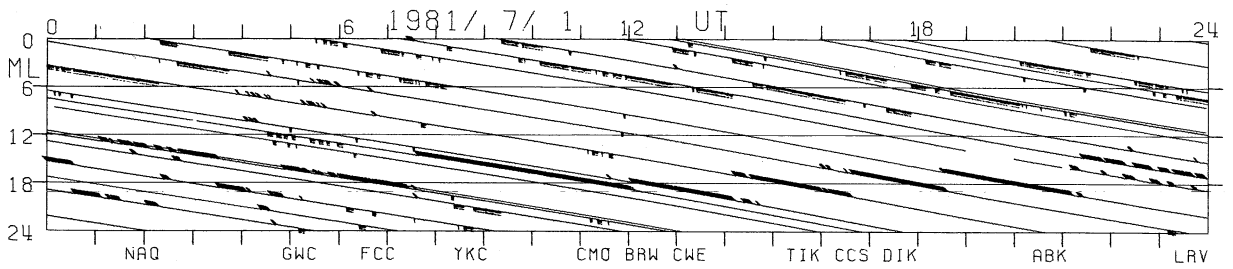
FIGURE 4 (on even pages)

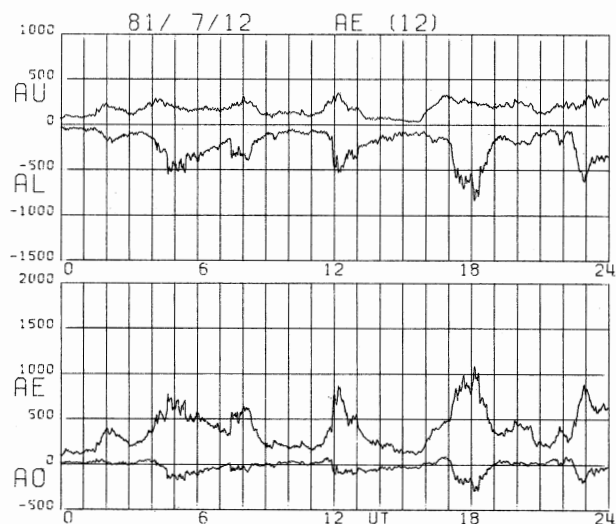
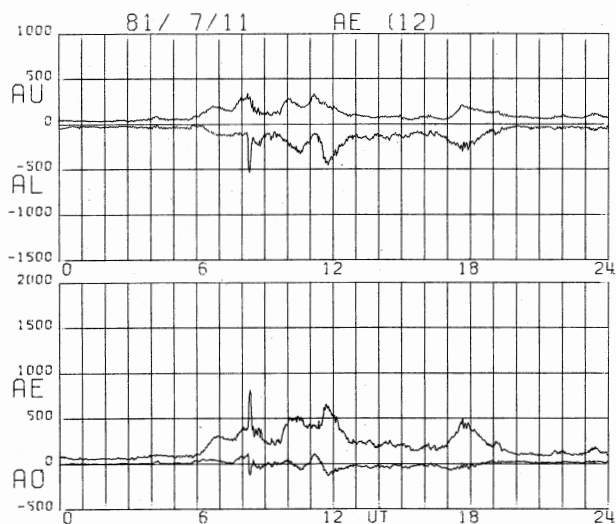
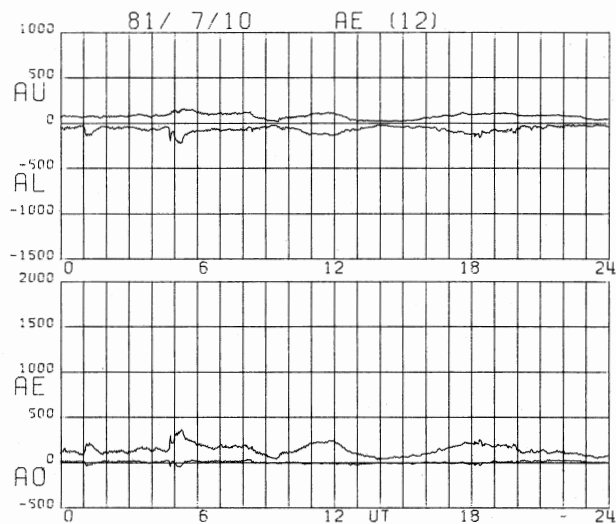
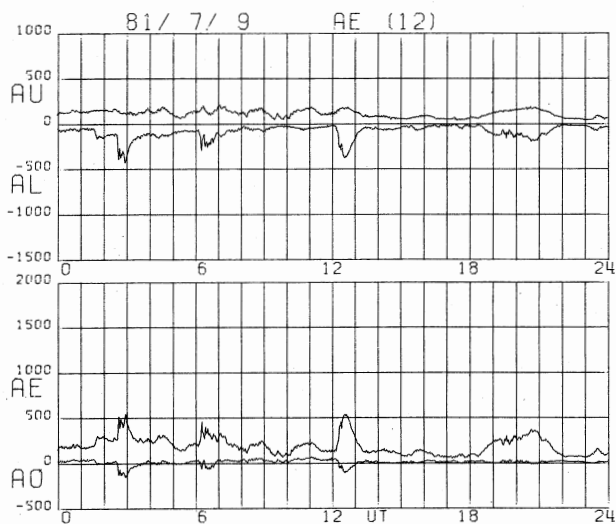
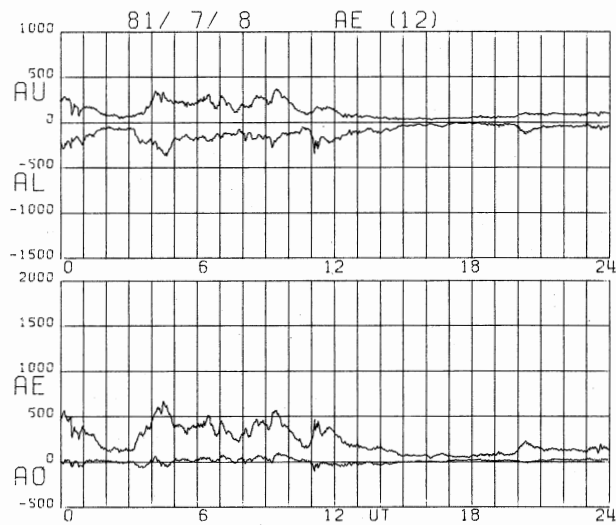
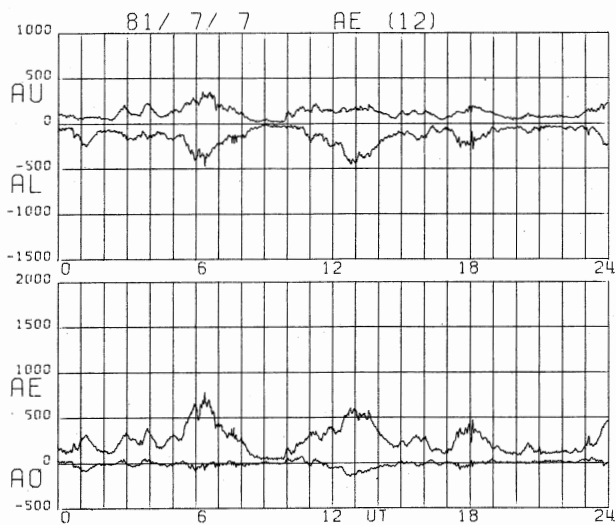
Daily graphs of 1.0-min AE indices (AU, AL, AE and AO) for July-December 1981. Graphs on very disturbed days (July 25, and Nov 17) are reproduced on page 98.

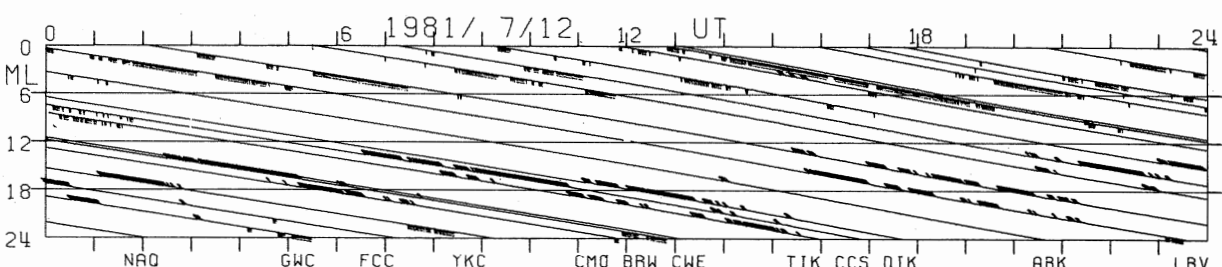
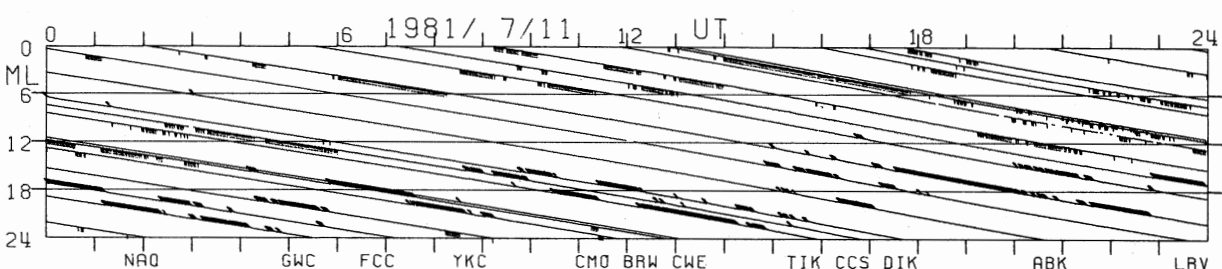
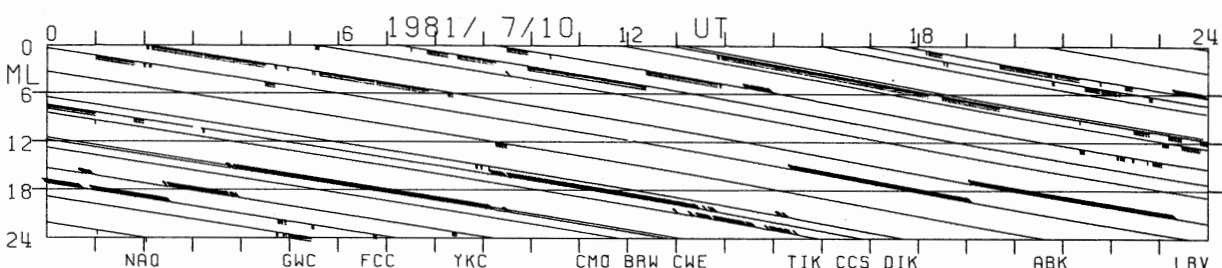
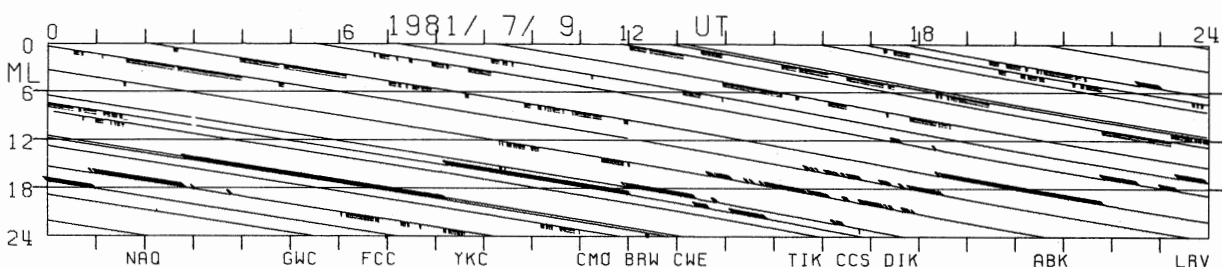
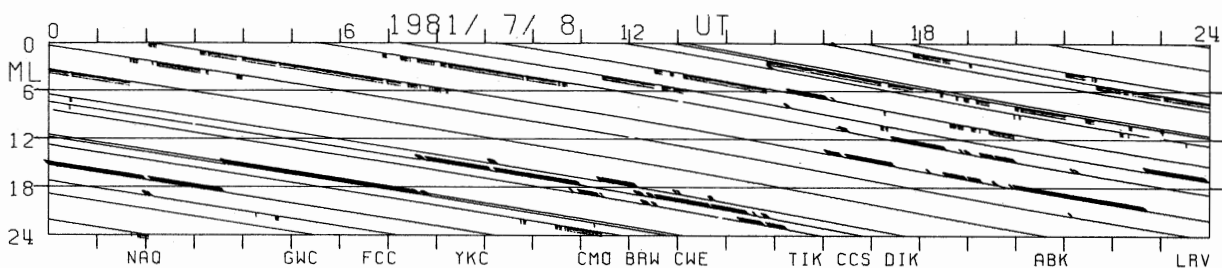
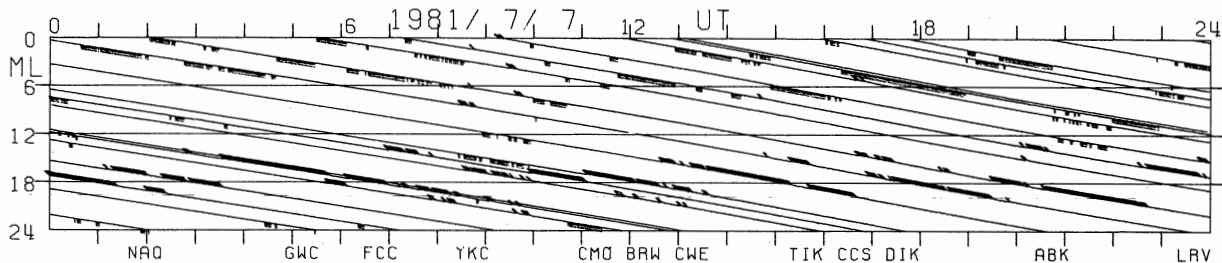
FIGURE 5 (on odd pages)

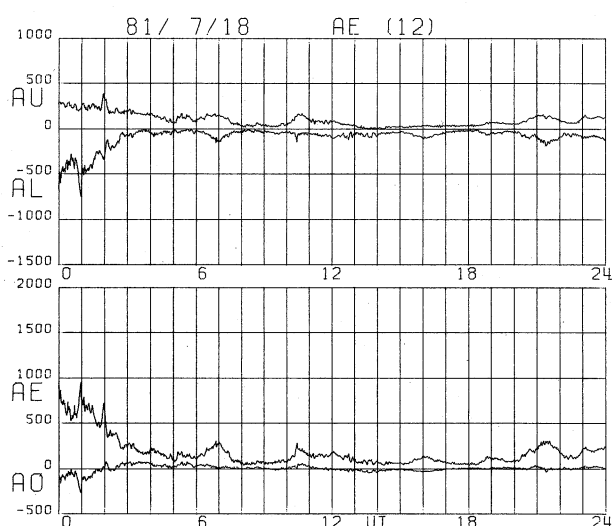
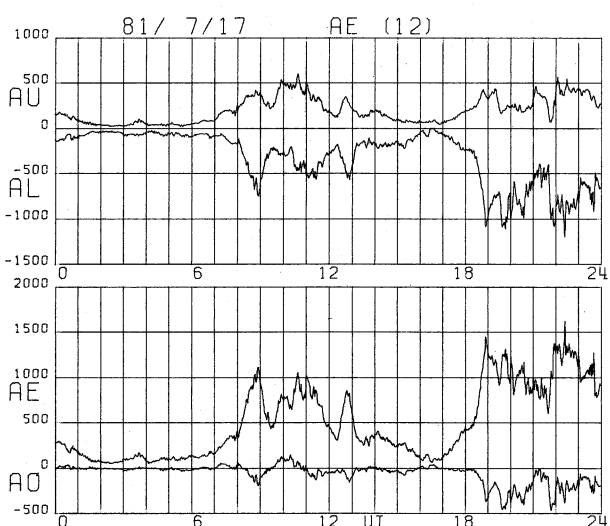
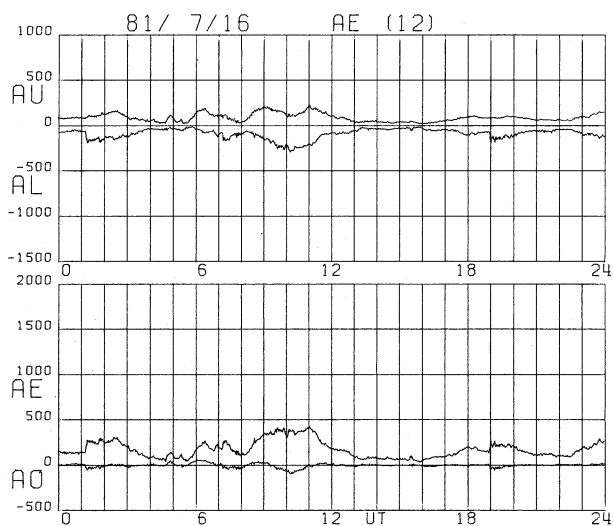
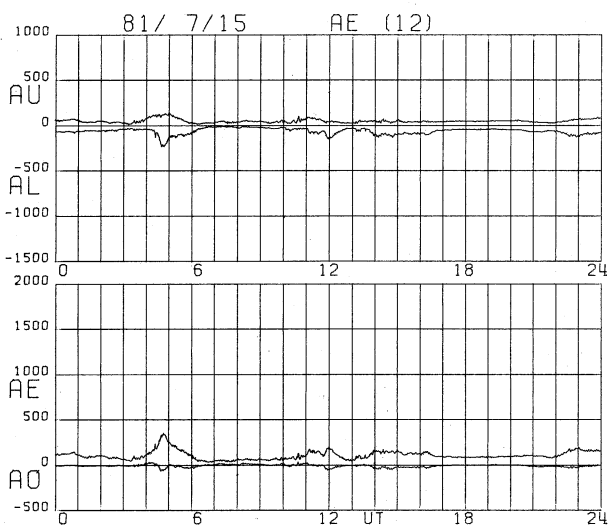
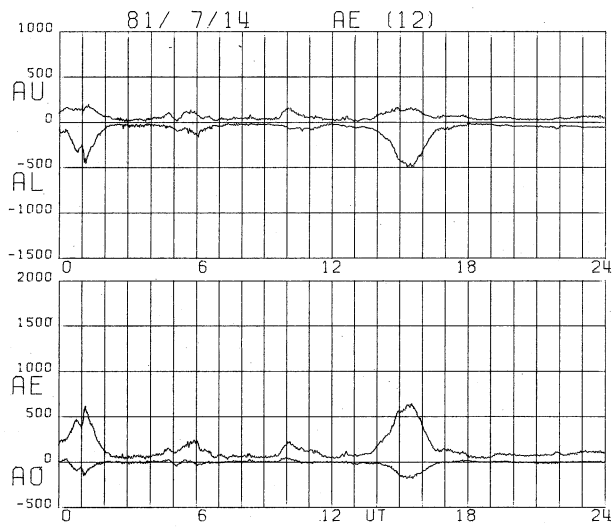
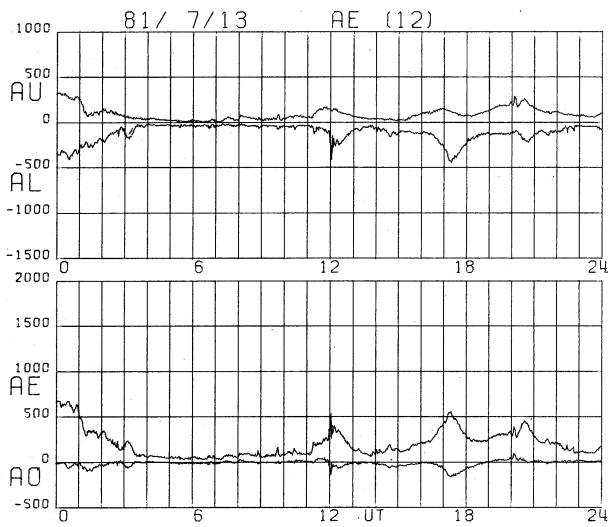
Plots of the contributing stations to the AU (upper plumes) and AL (lower plumes) indices, where you can see which station contributes to these indices at each UT minute.

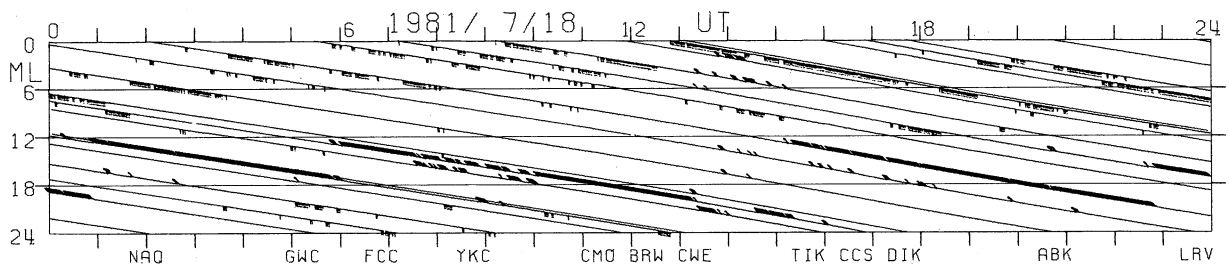
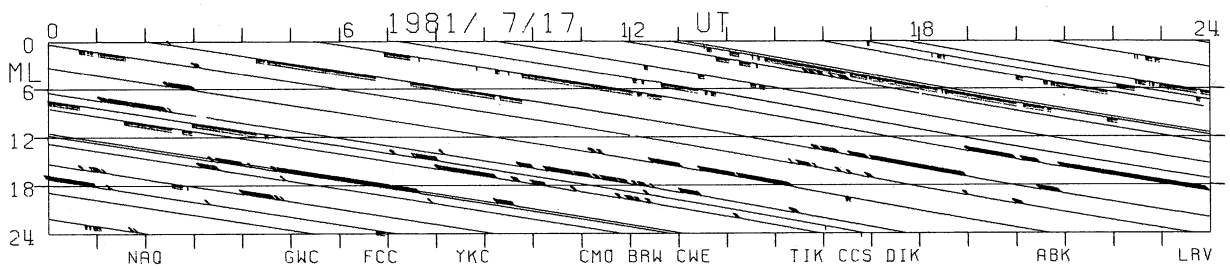
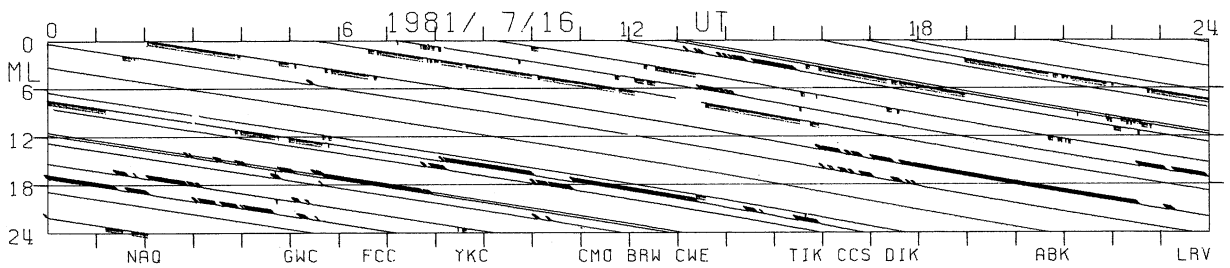
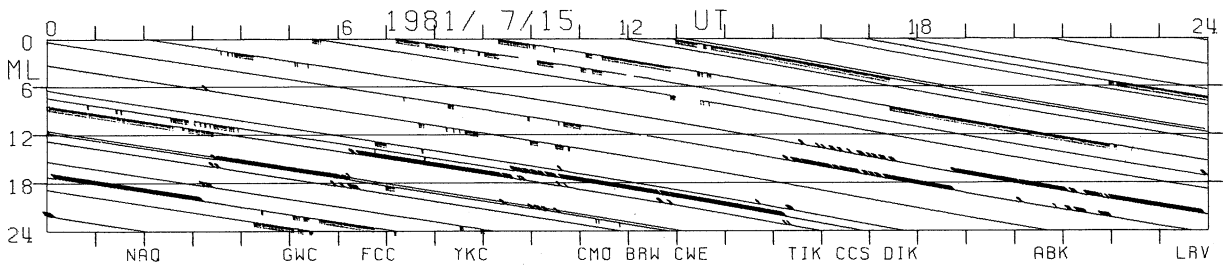
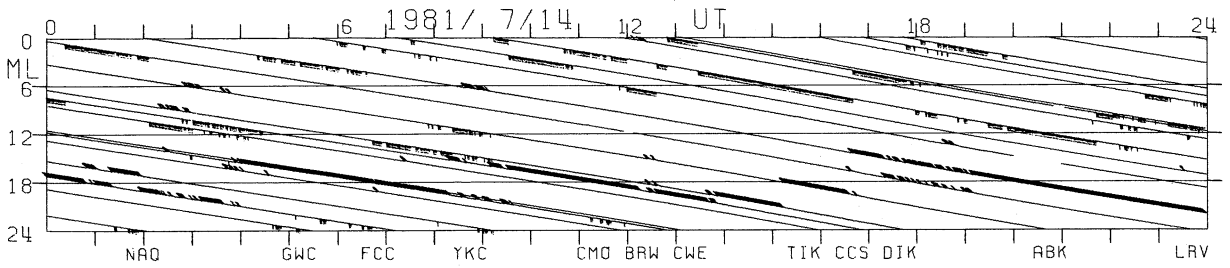
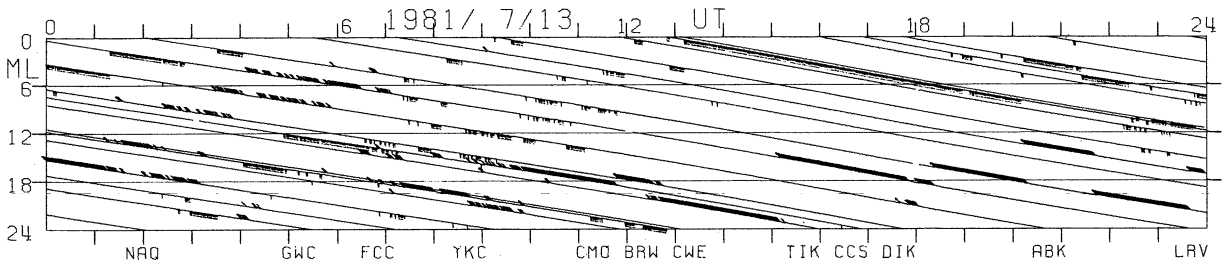


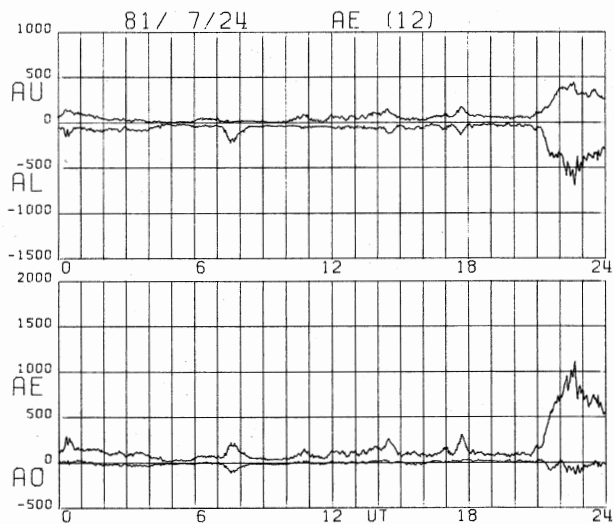
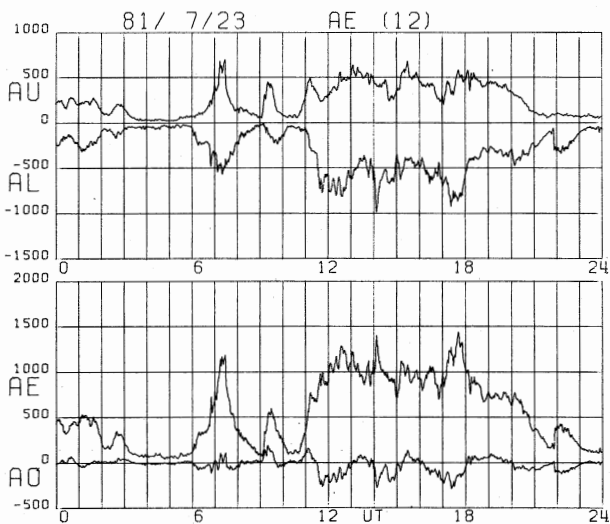
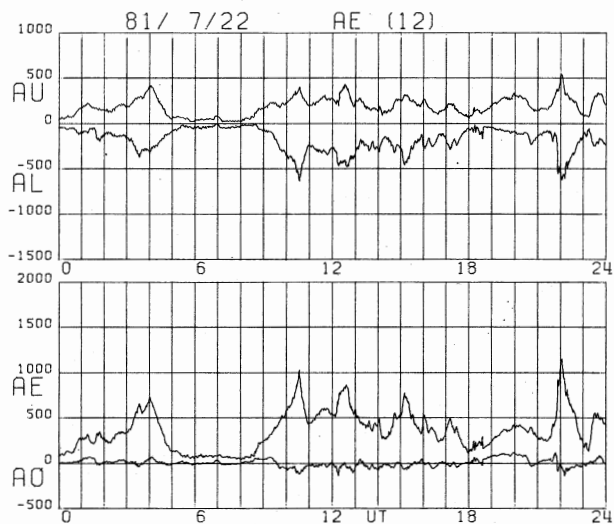
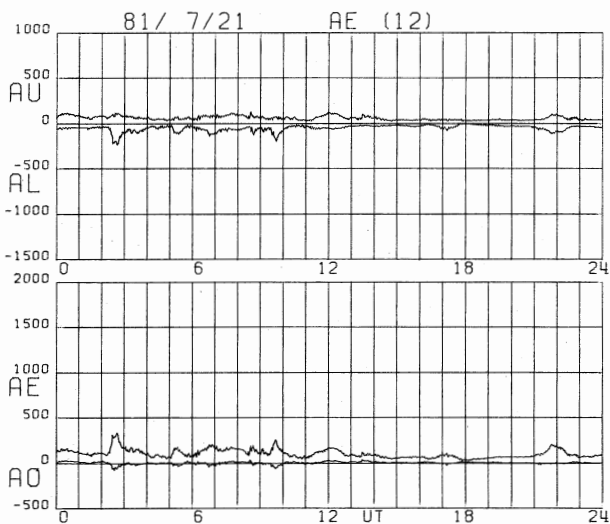
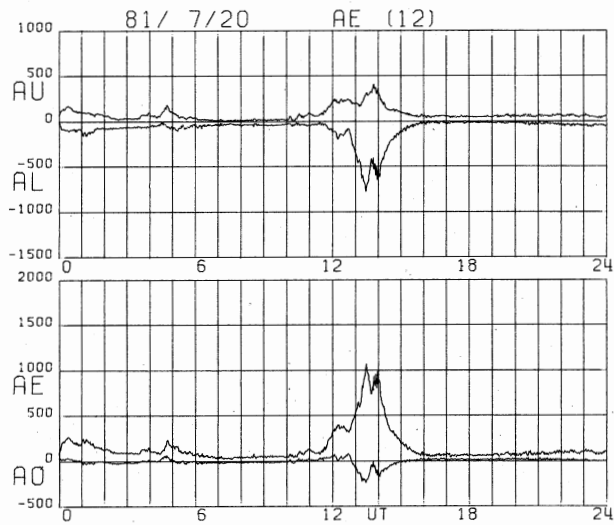
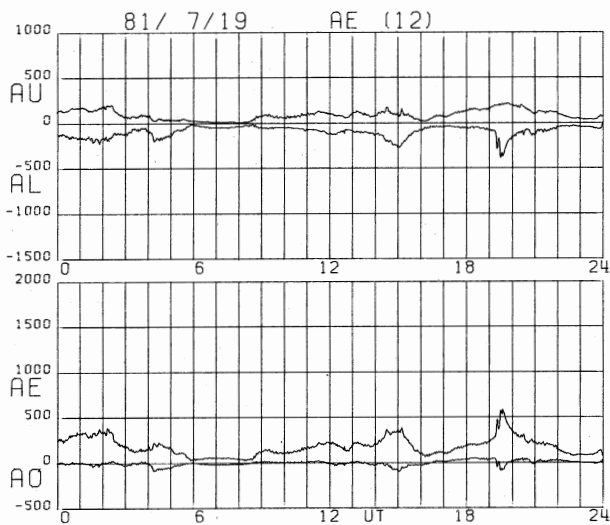


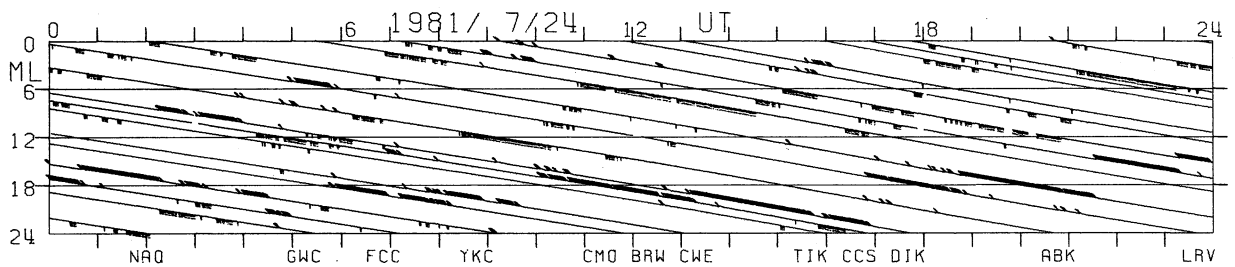
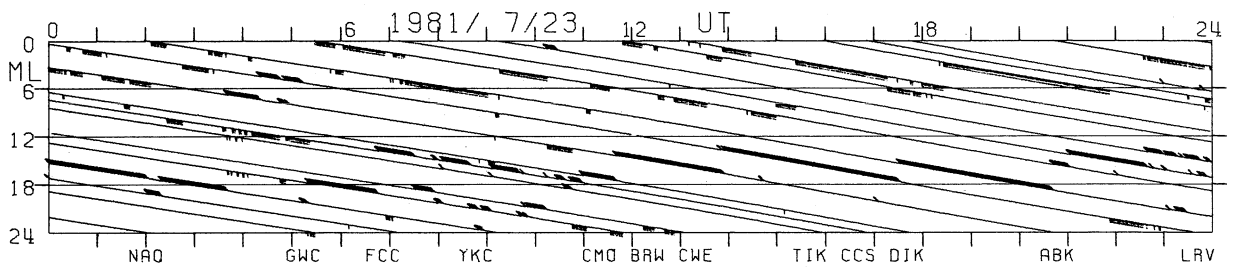
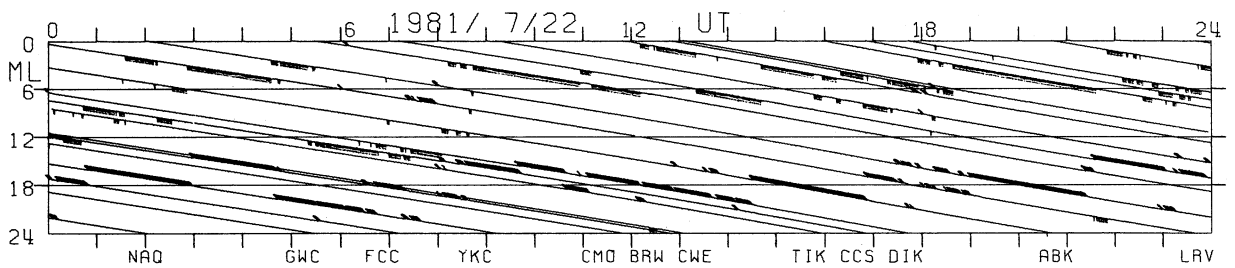
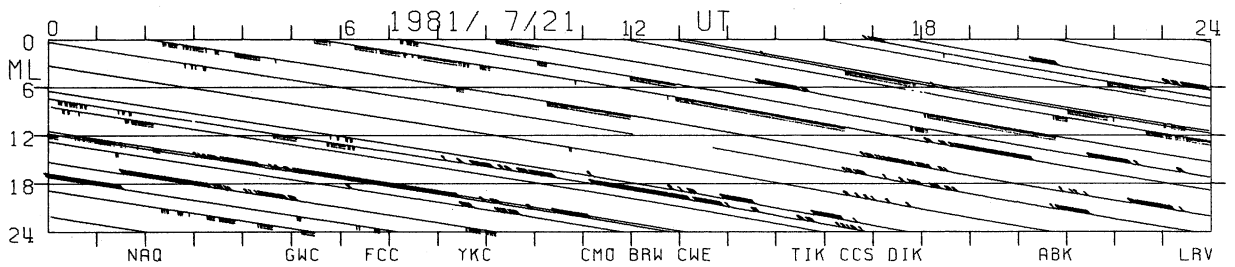
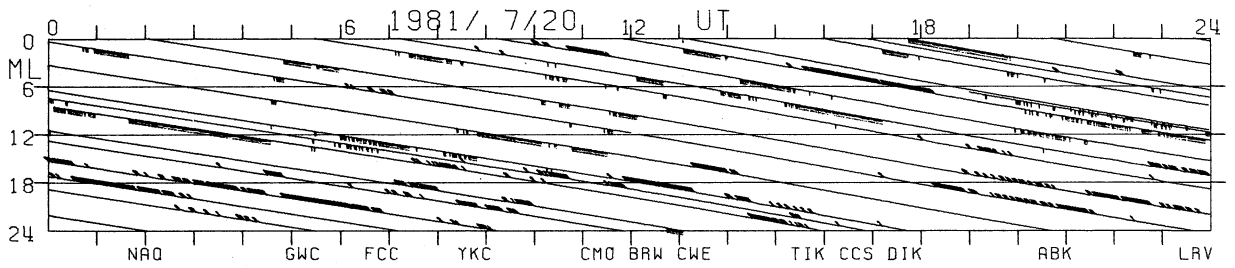
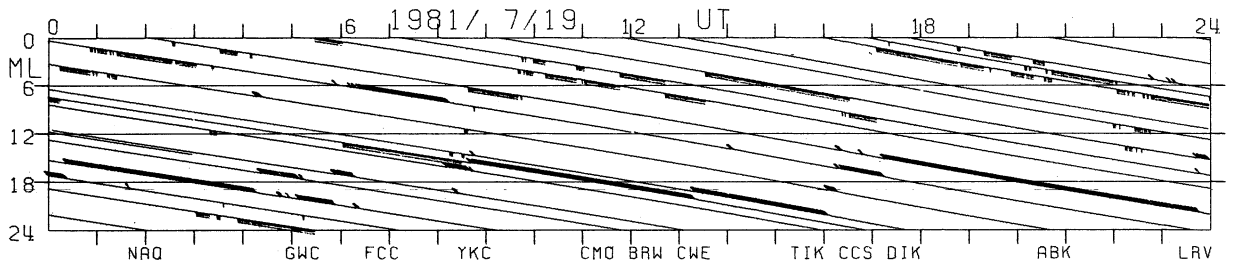


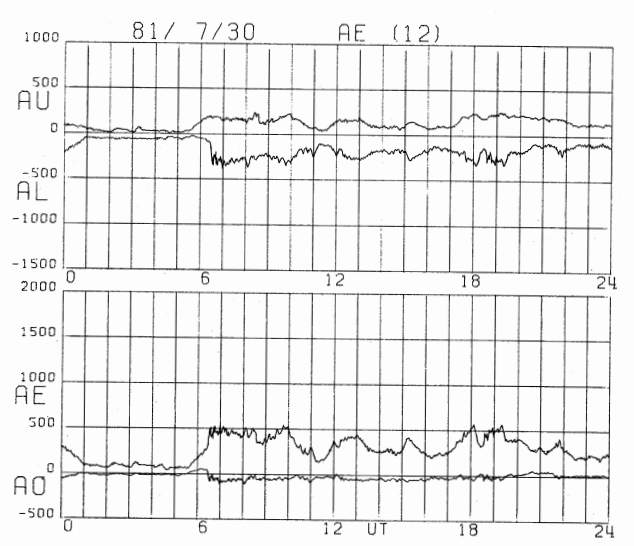
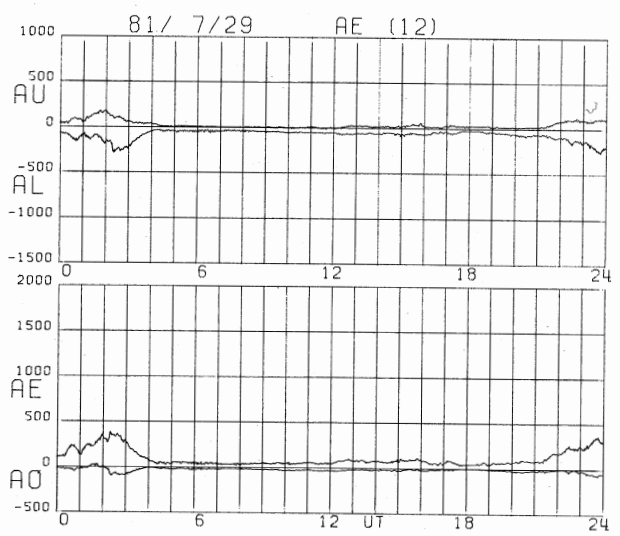
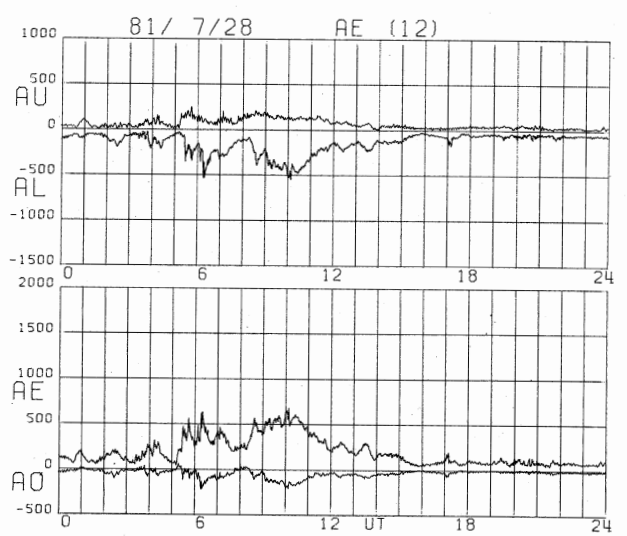
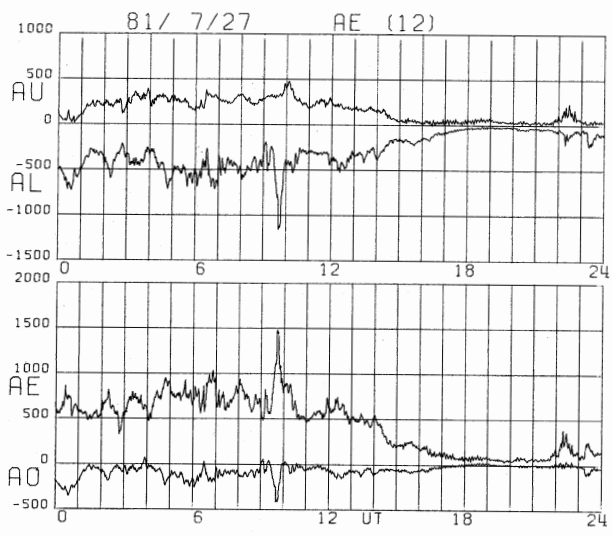
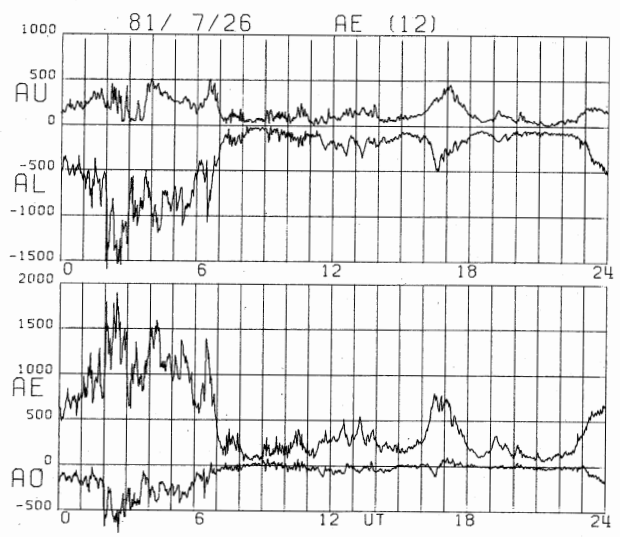
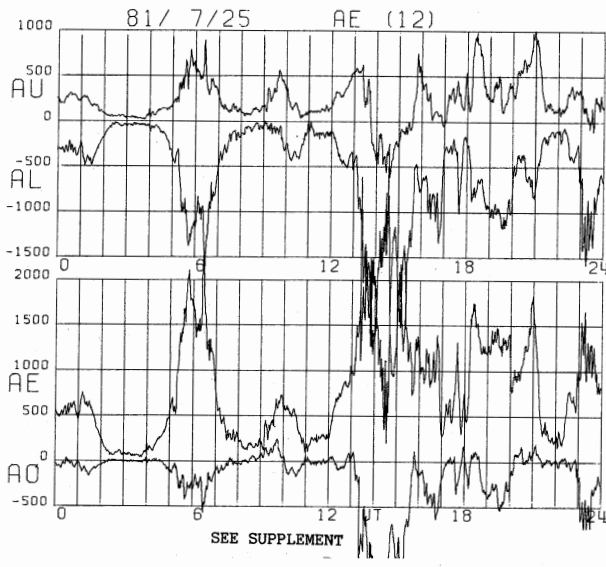


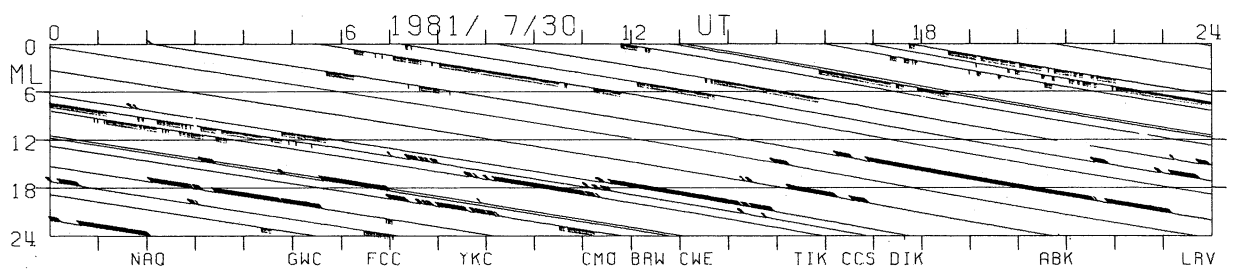
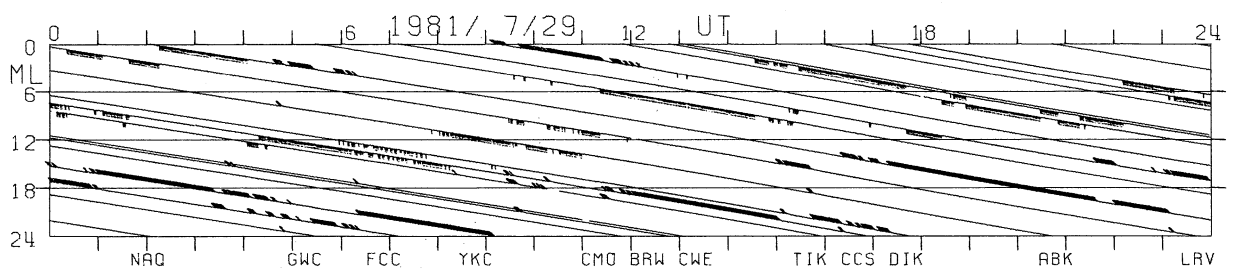
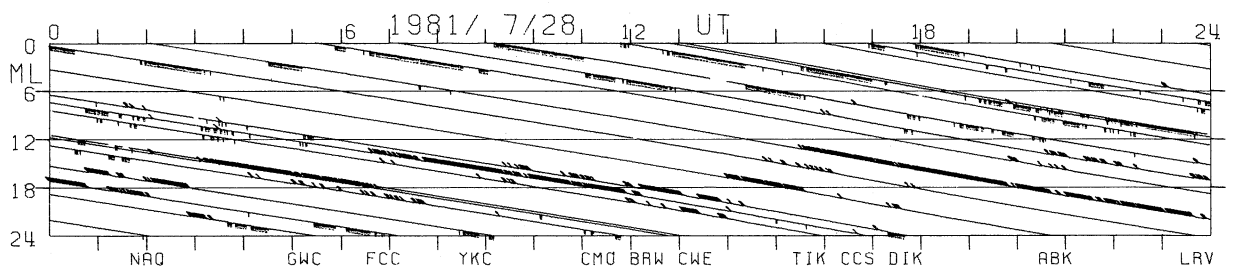
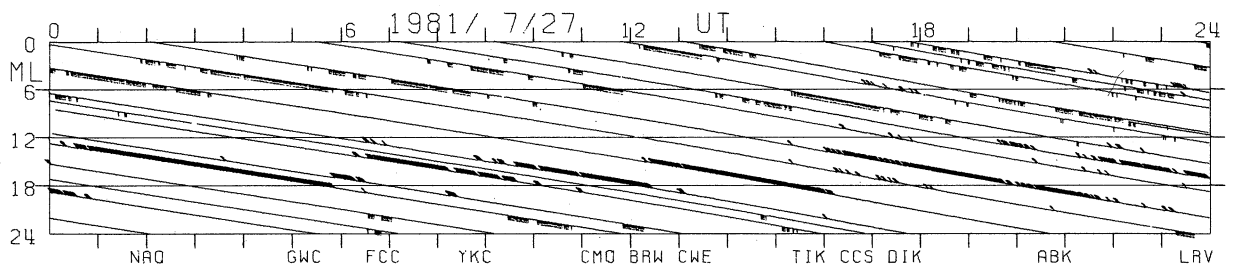
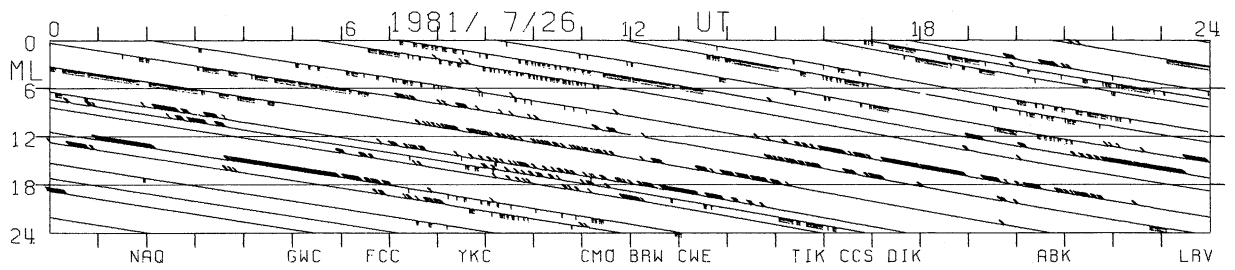
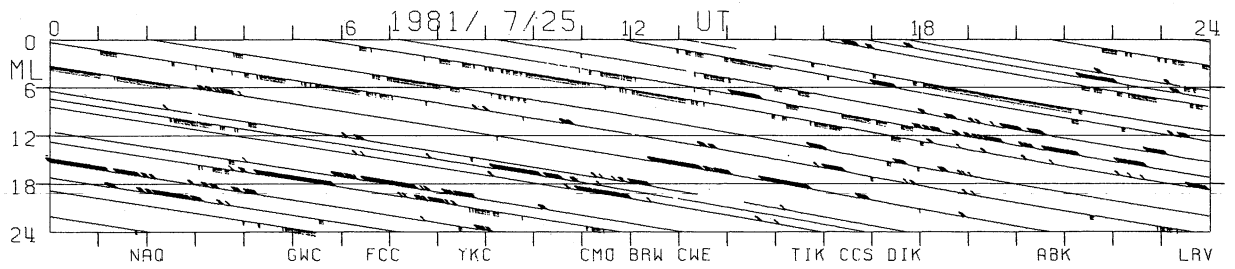


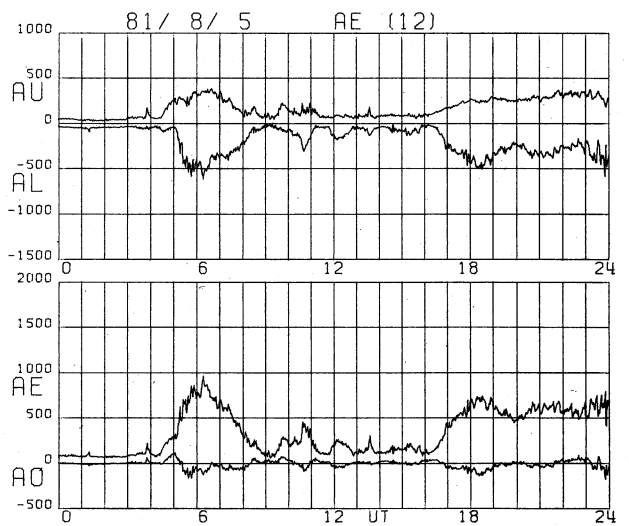
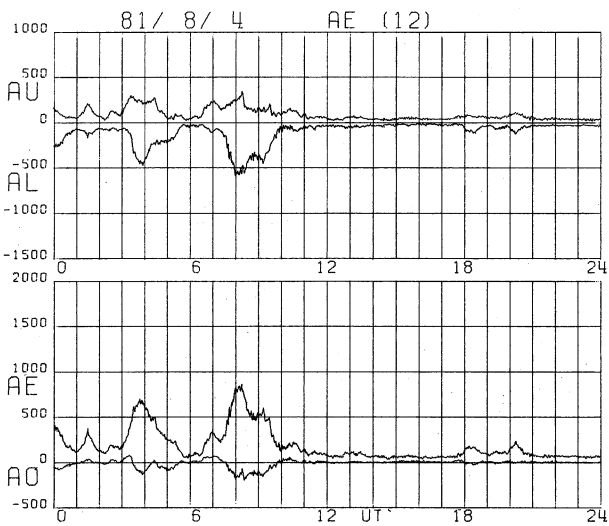
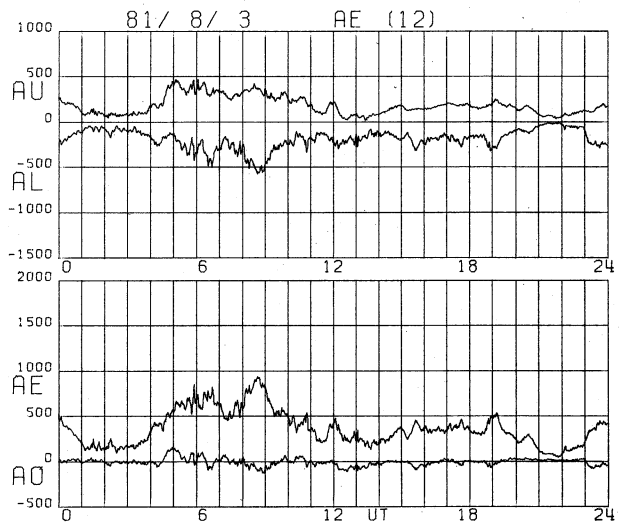
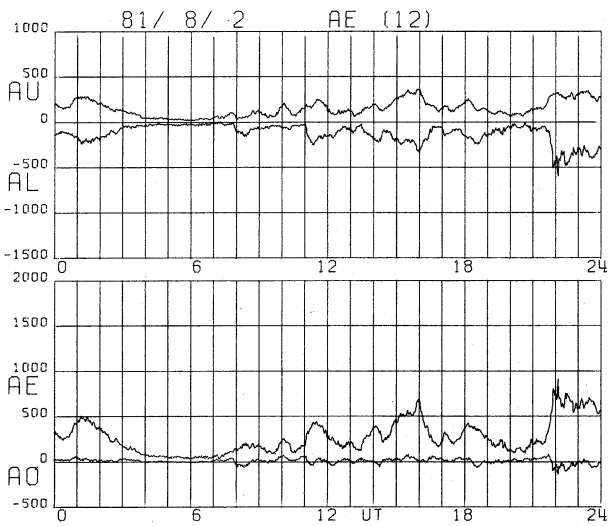
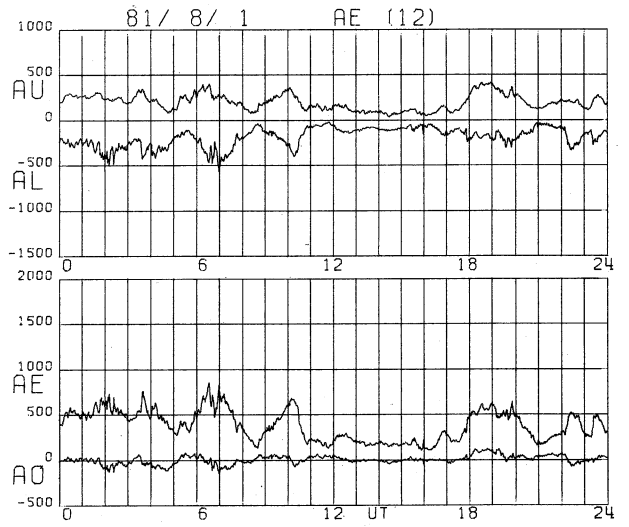
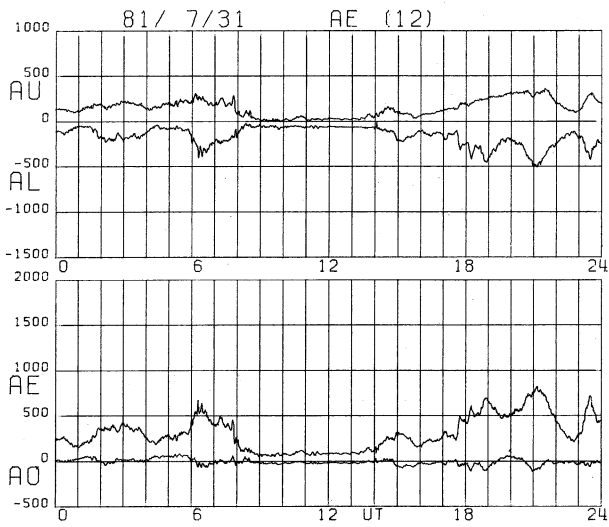


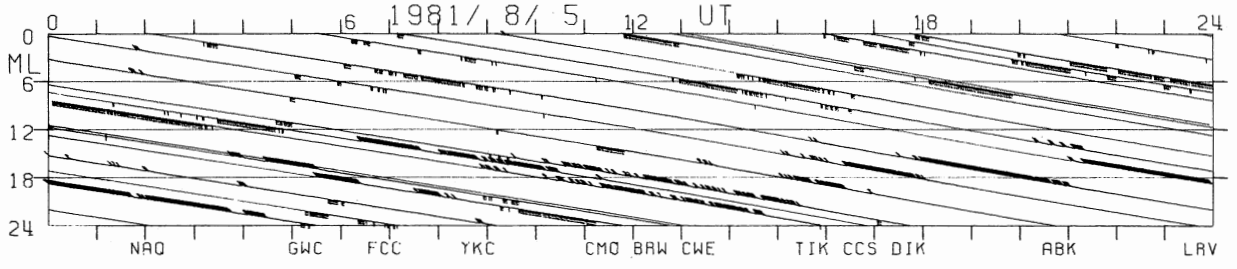
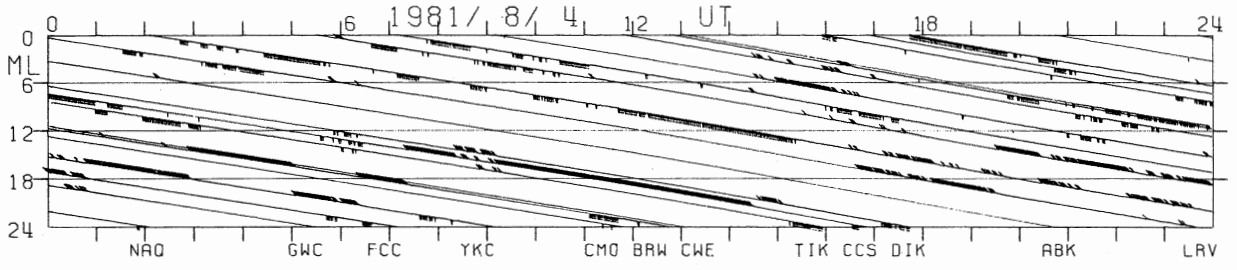
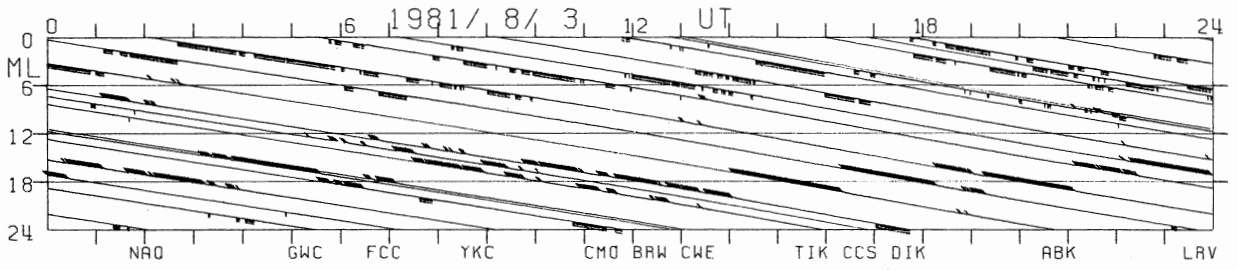
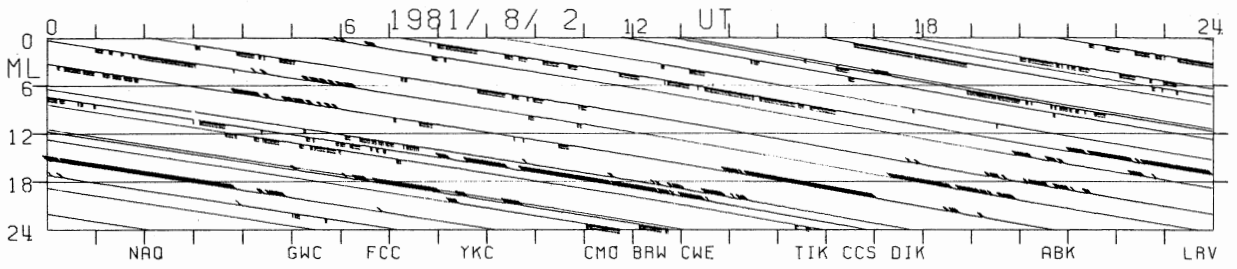
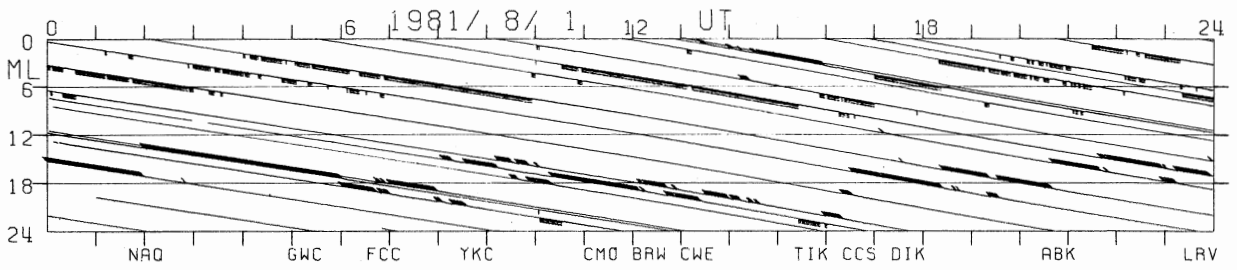
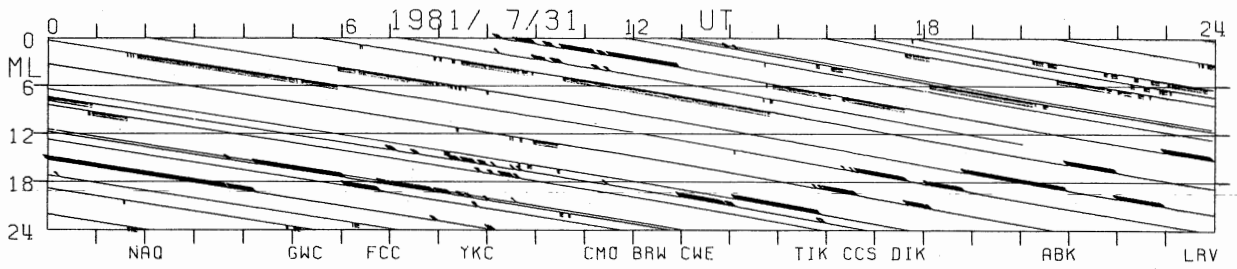


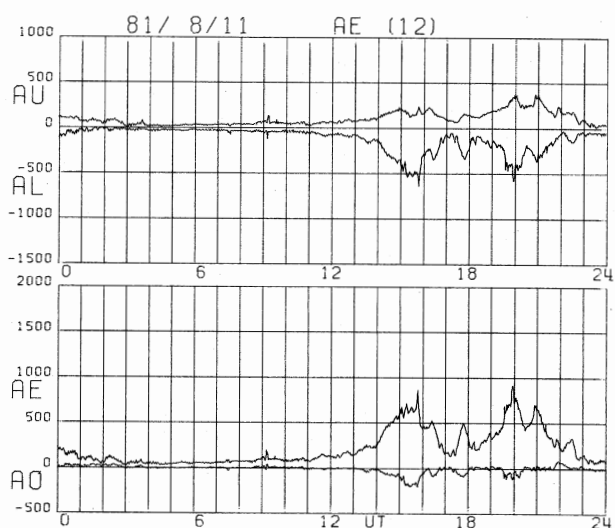
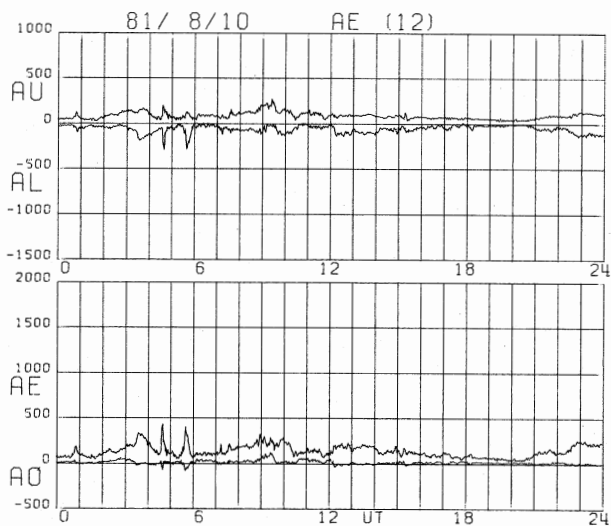
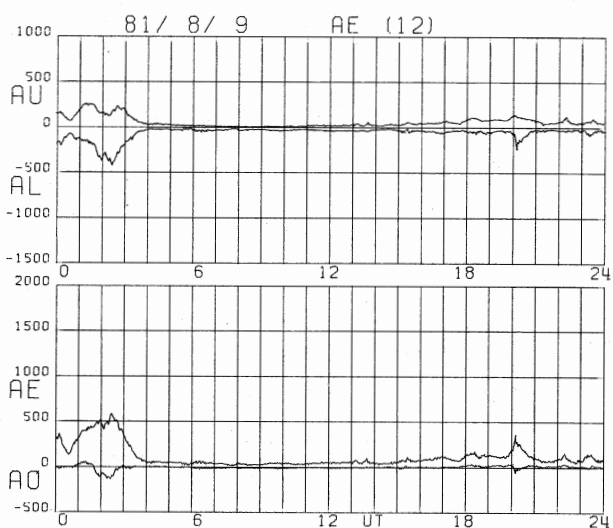
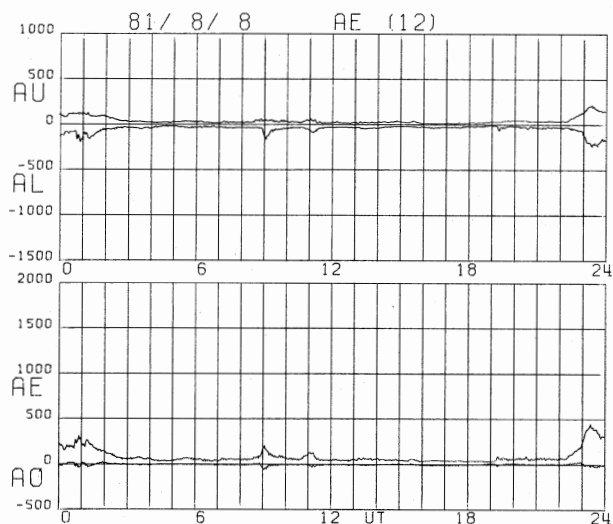
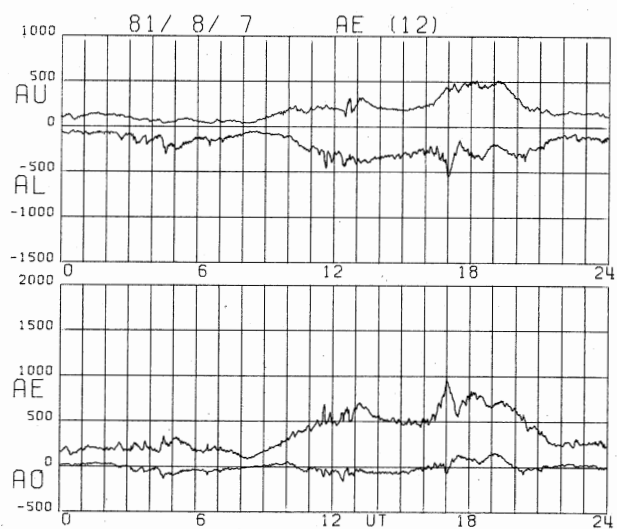
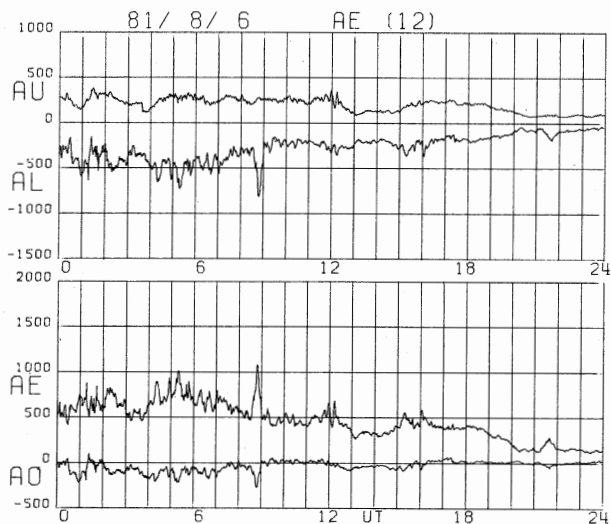


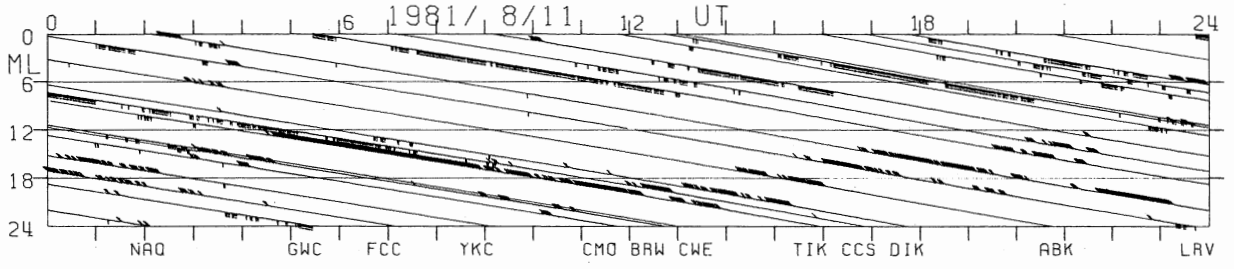
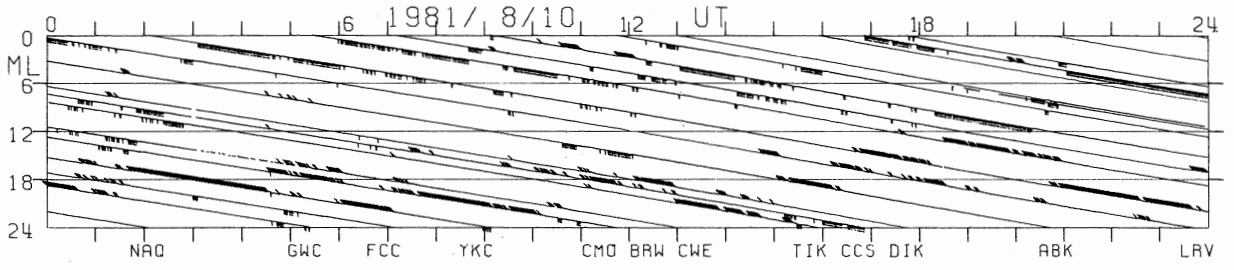
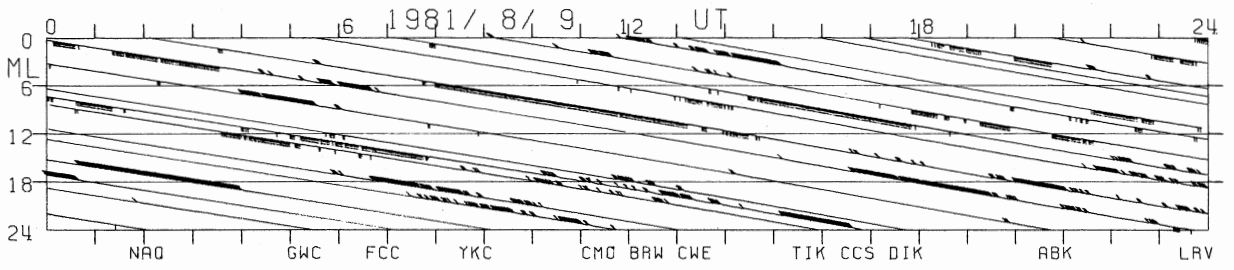
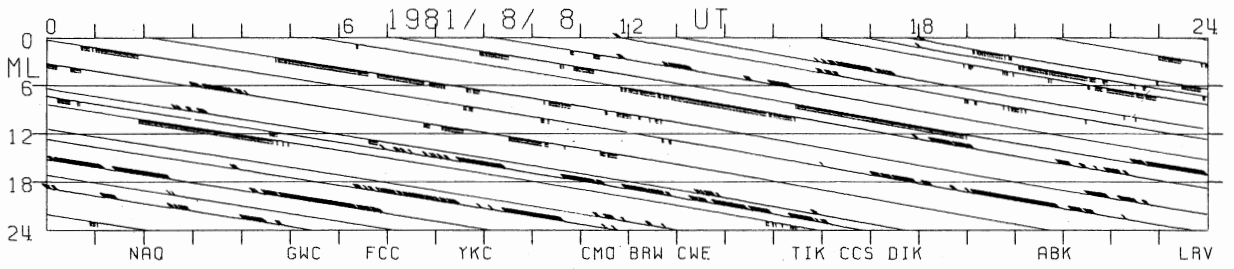
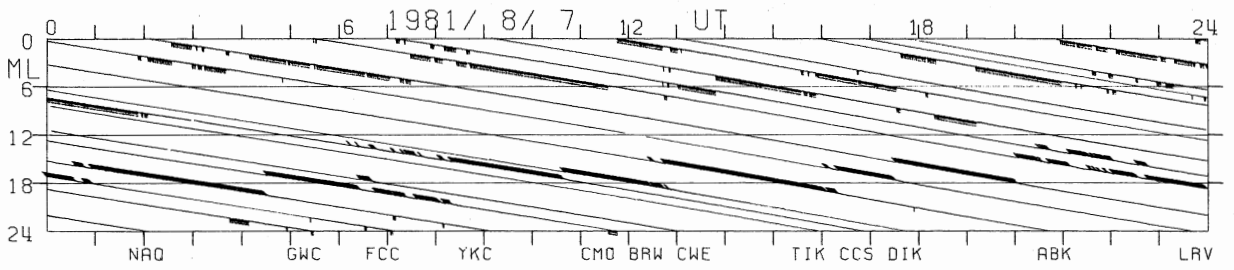
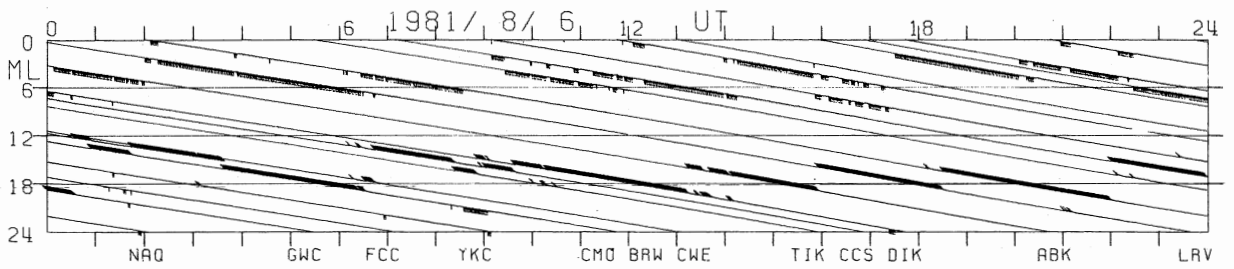


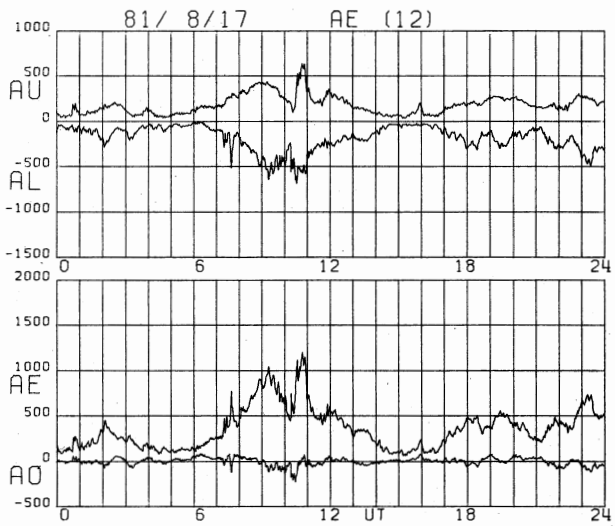
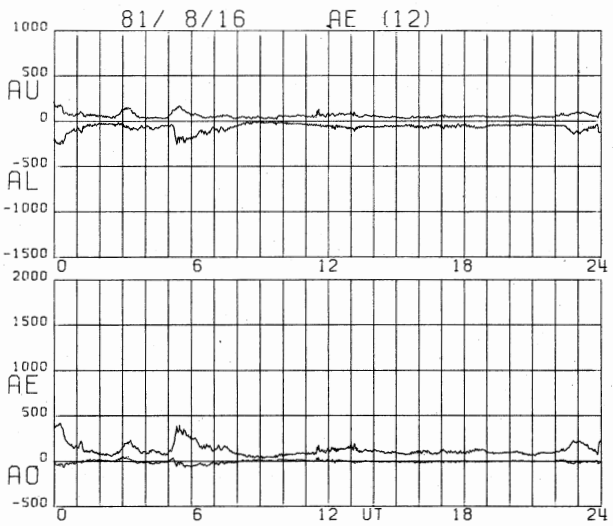
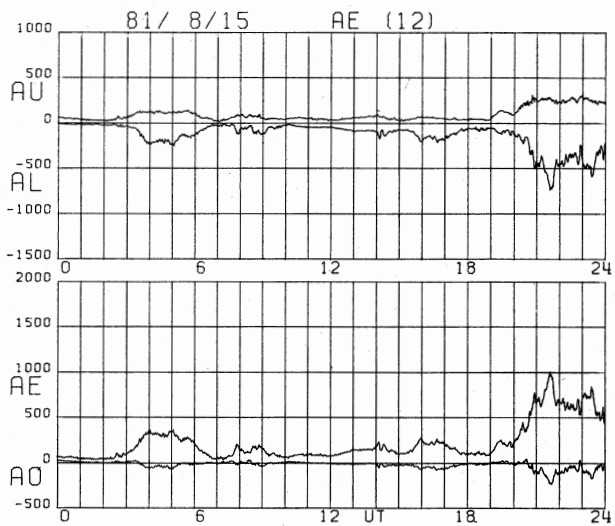
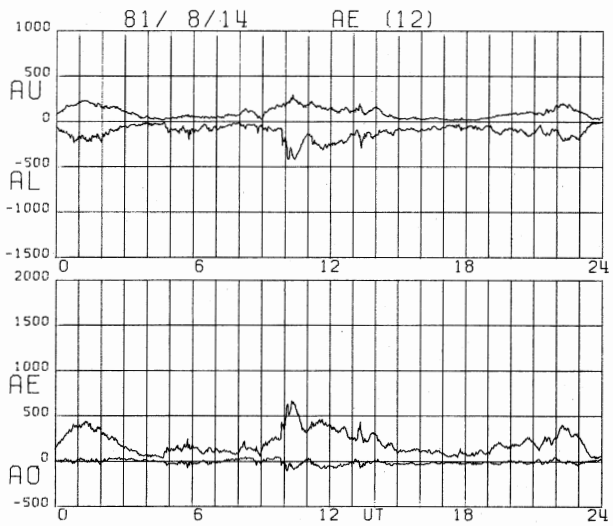
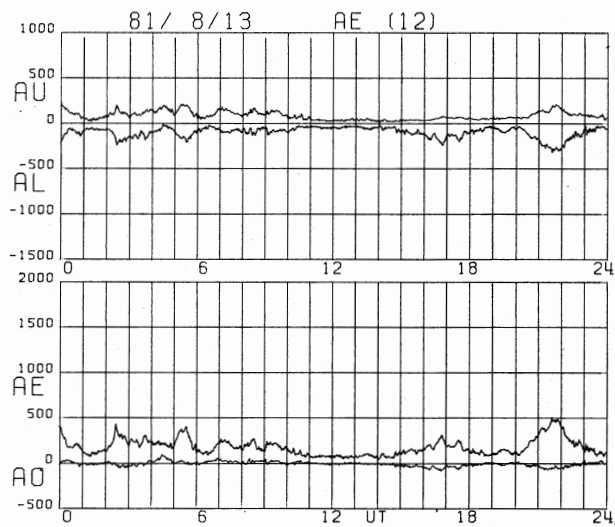
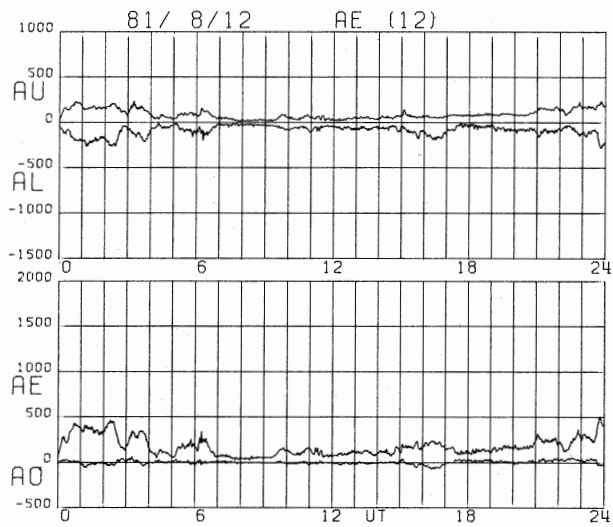


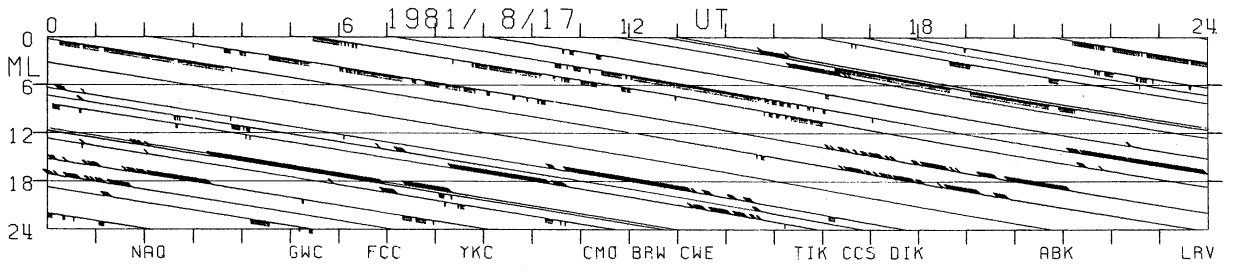
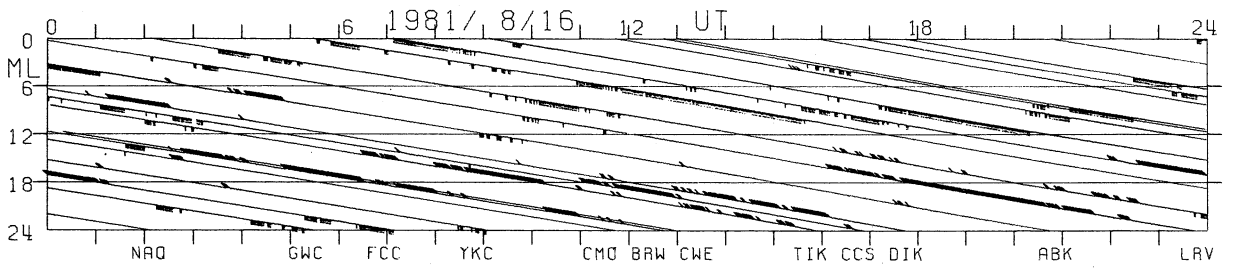
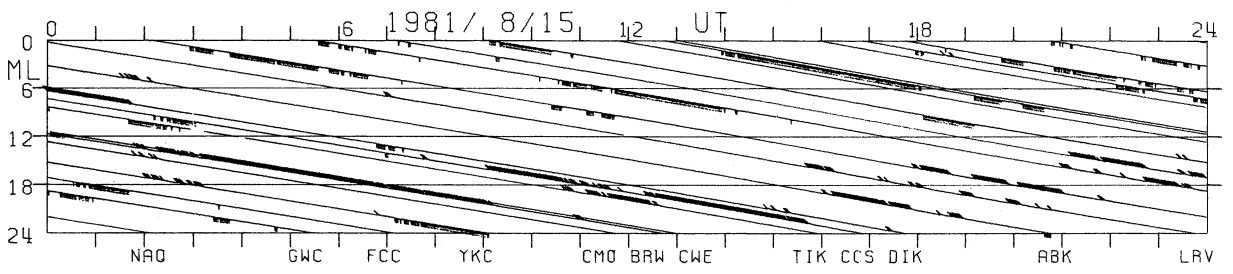
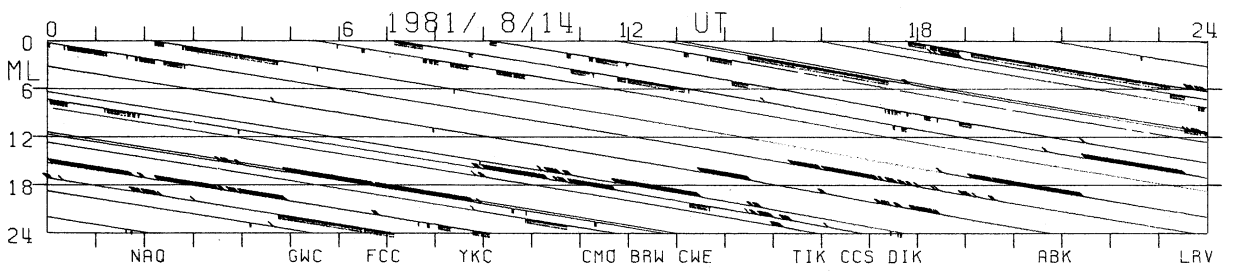
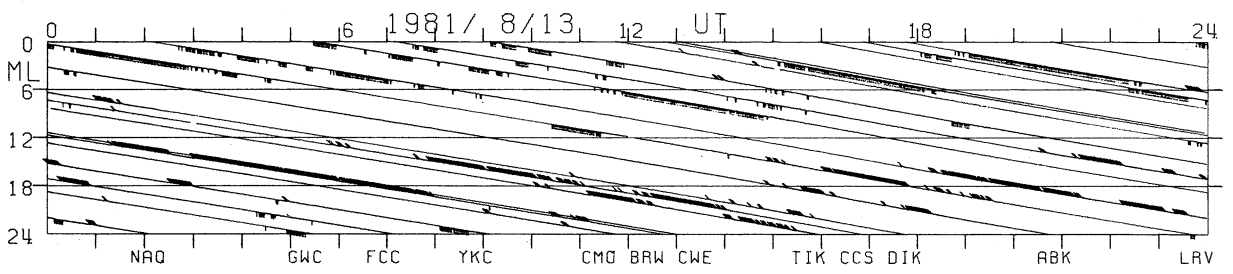
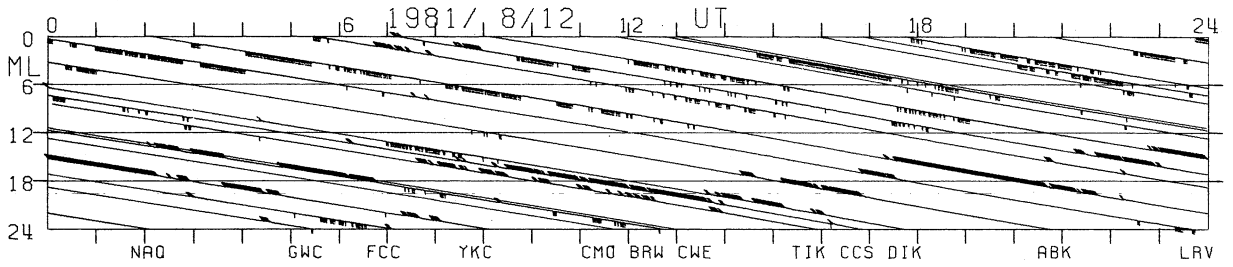


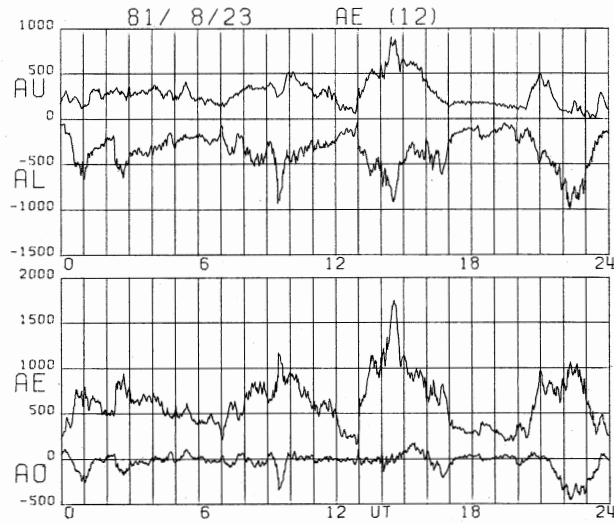
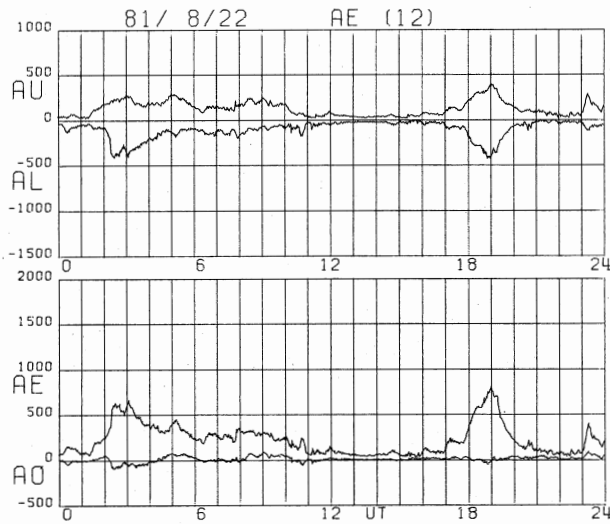
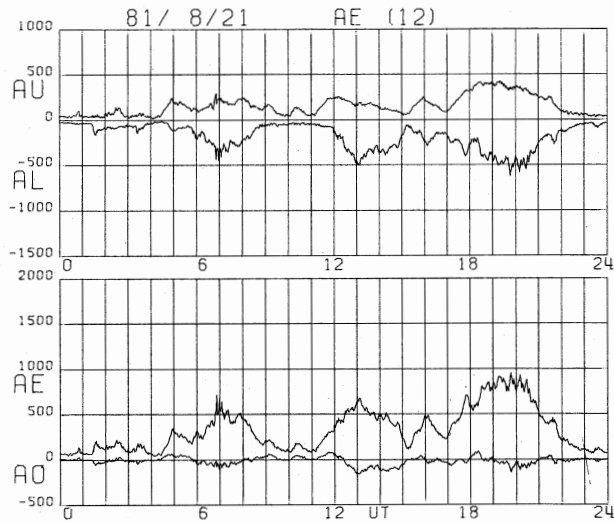
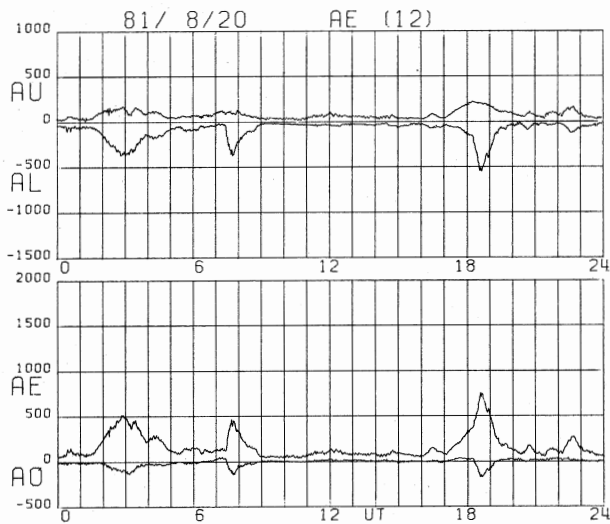
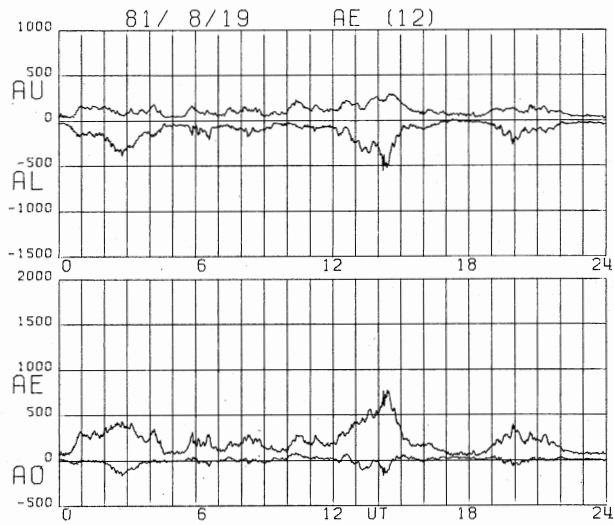
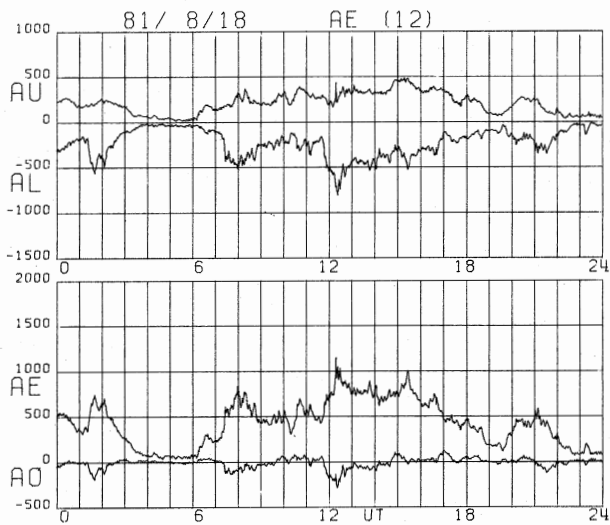


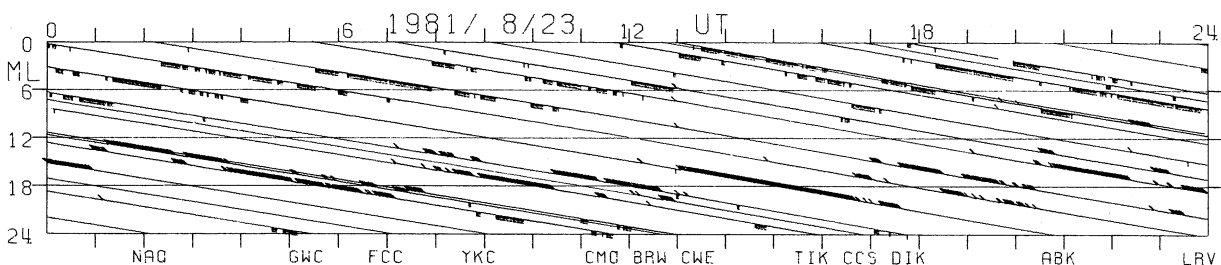
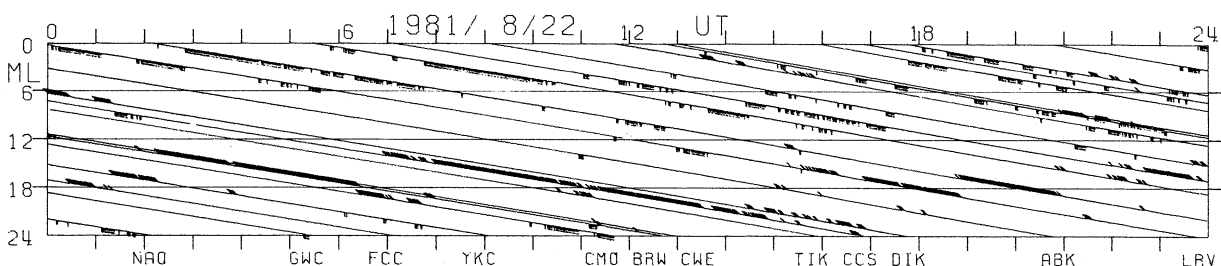
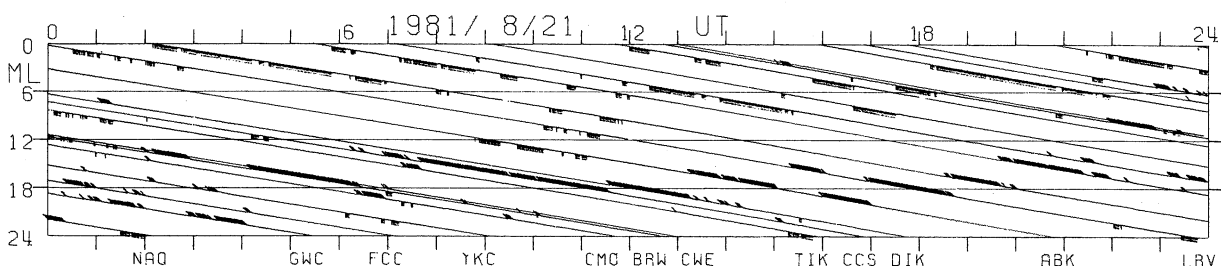
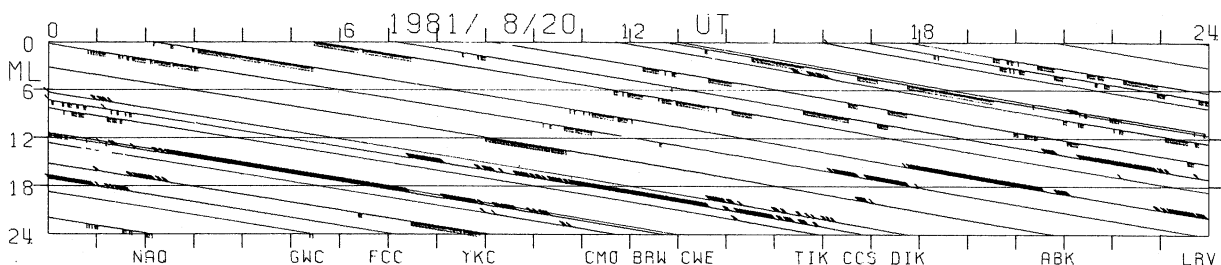
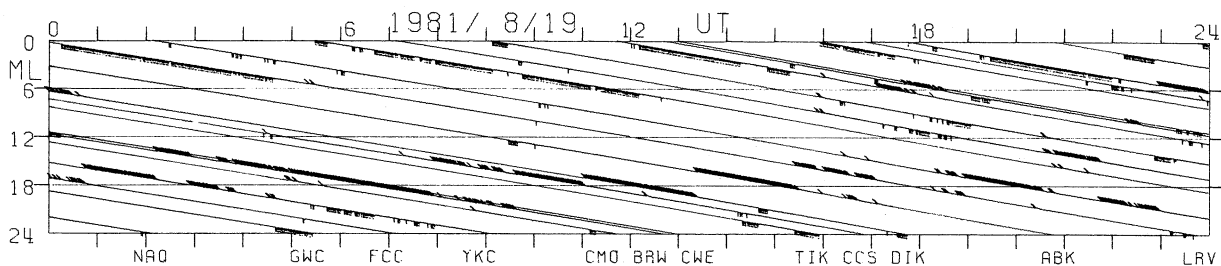
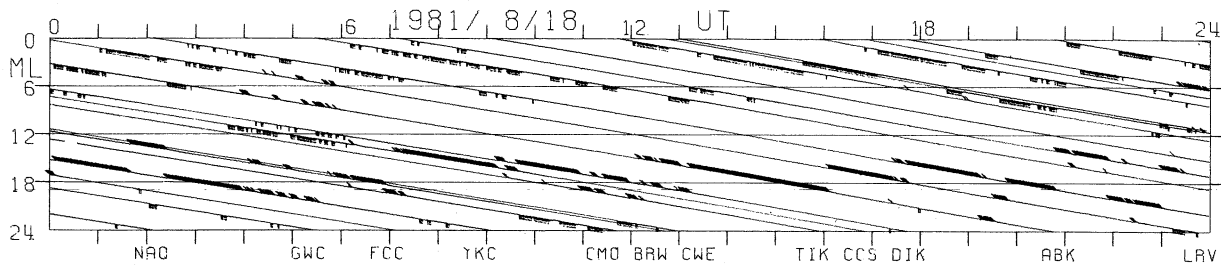


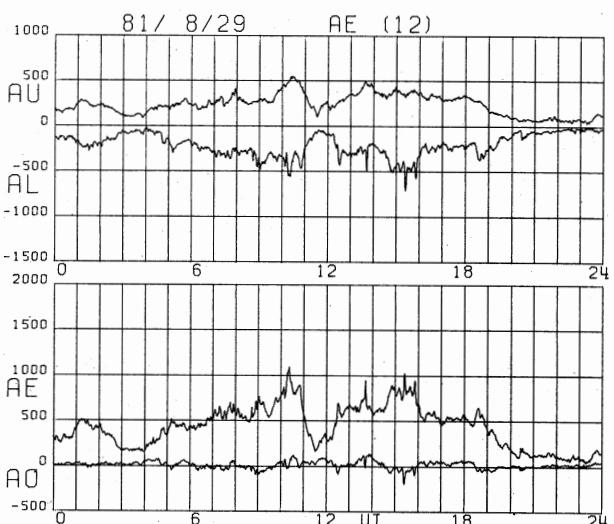
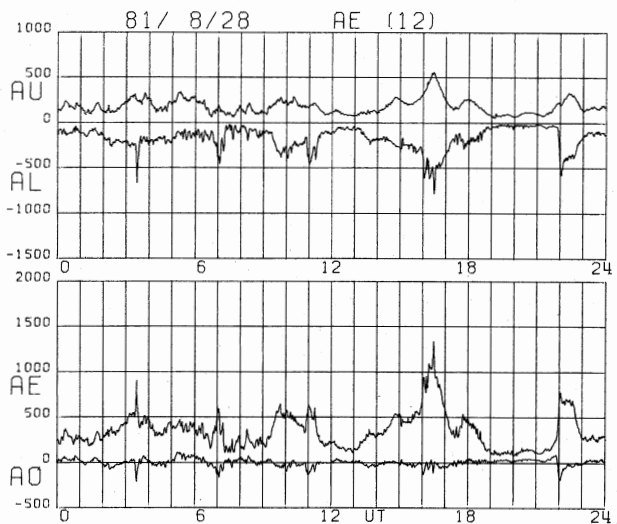
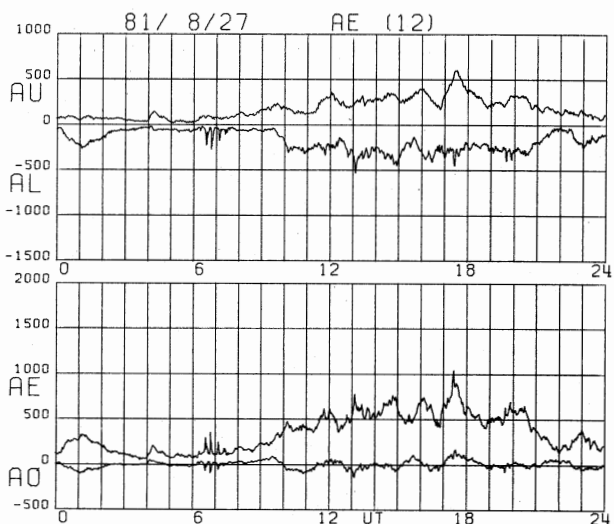
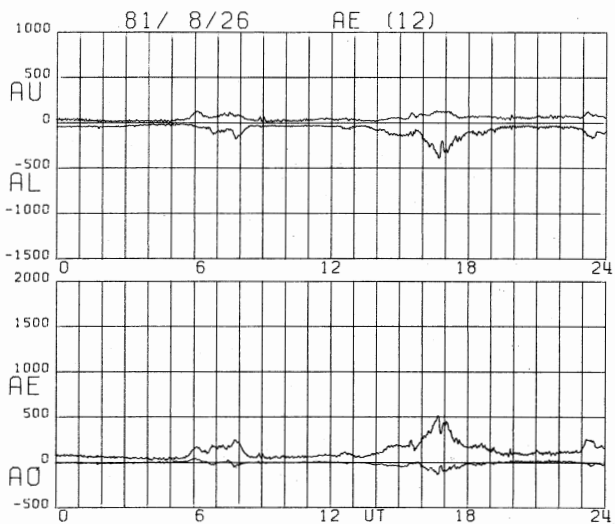
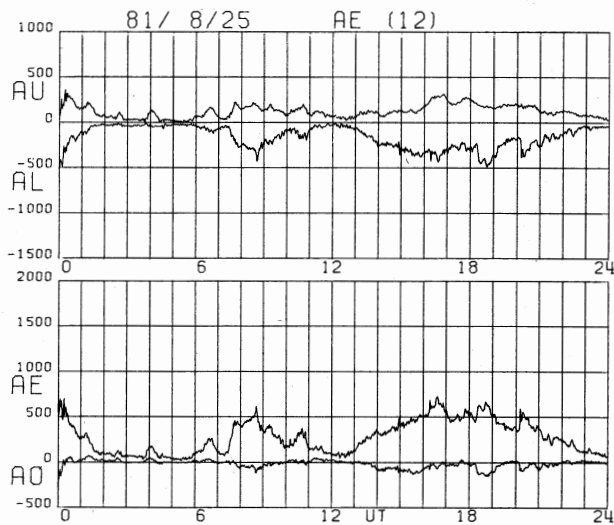
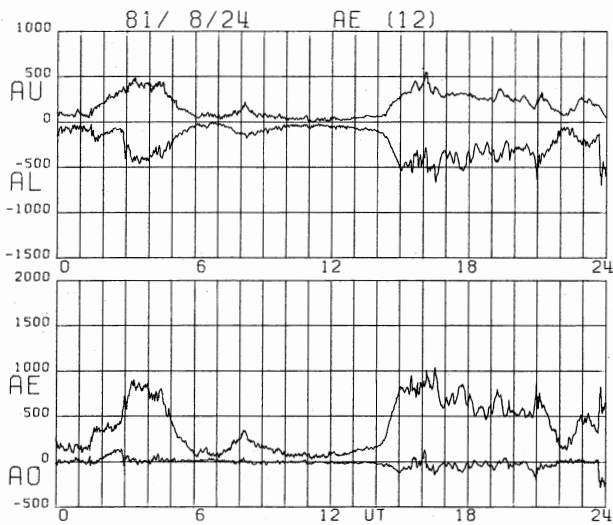


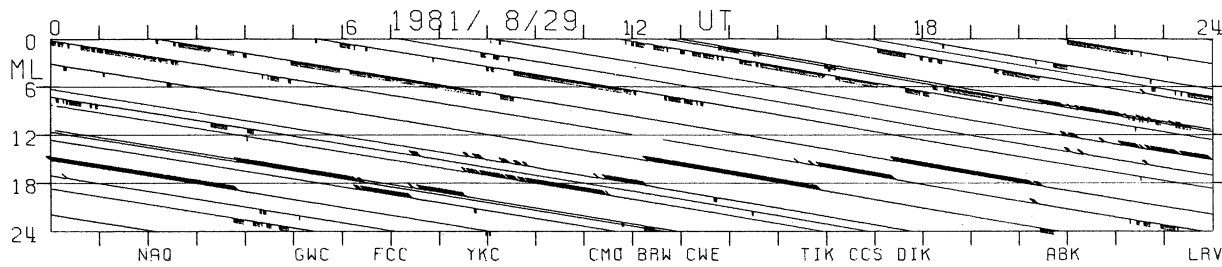
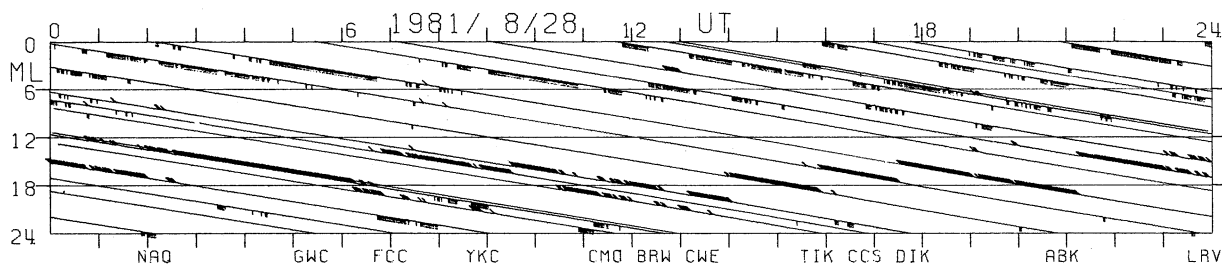
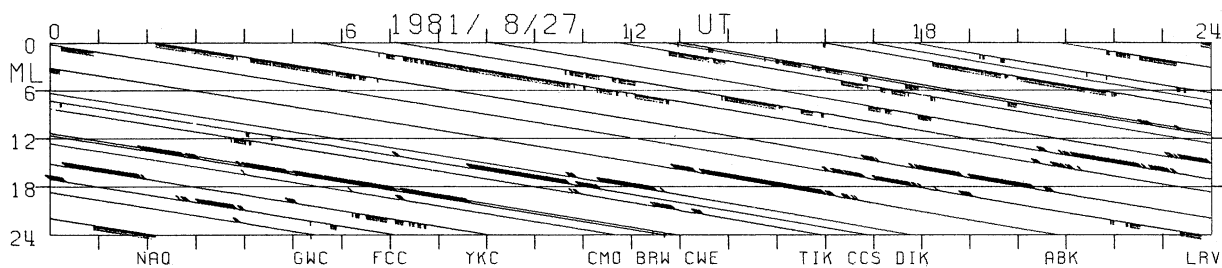
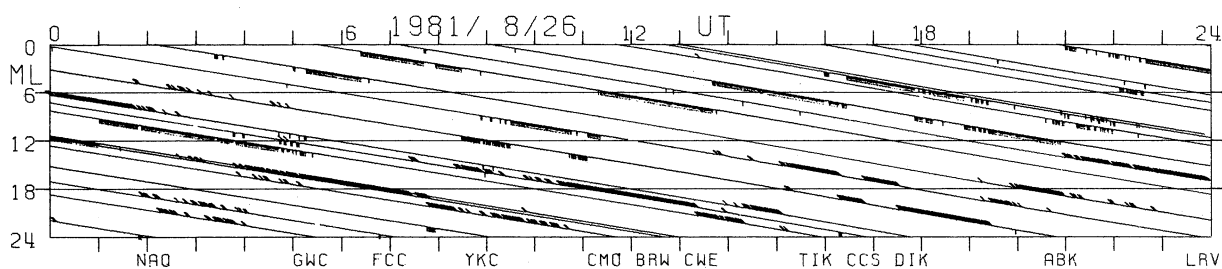
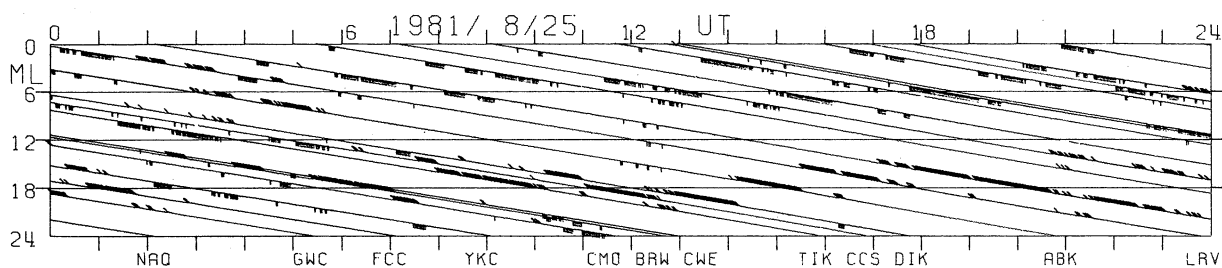
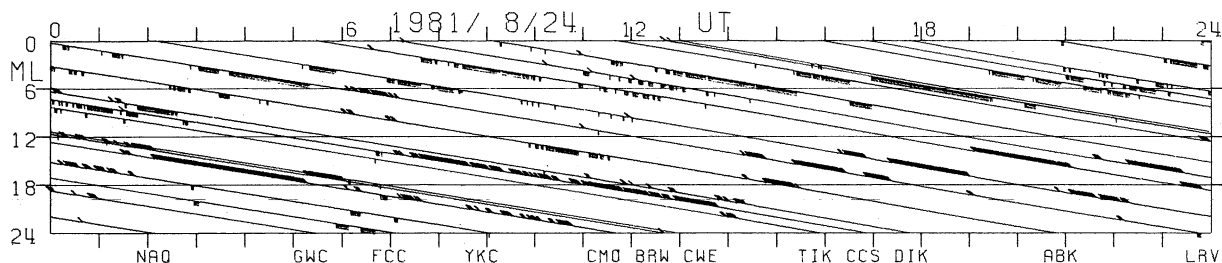


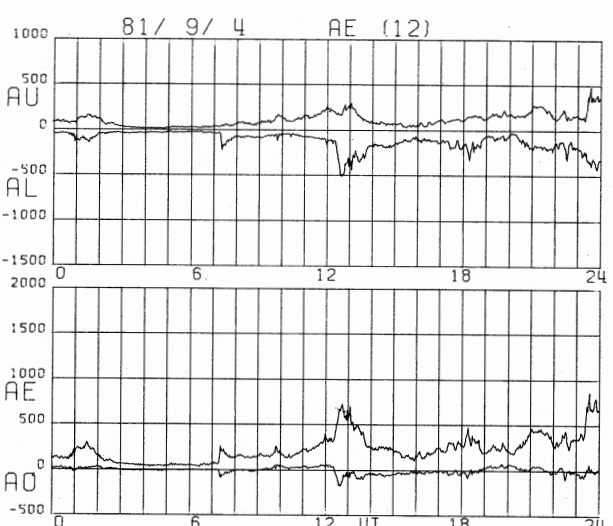
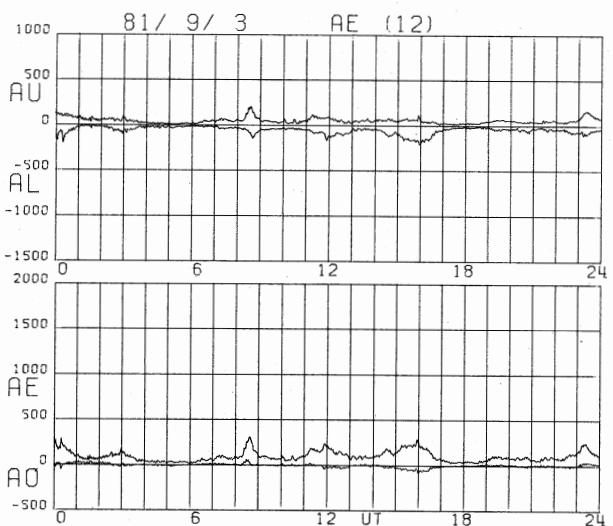
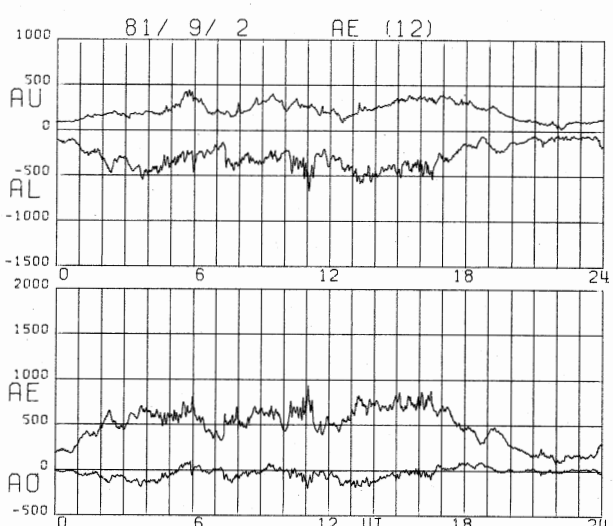
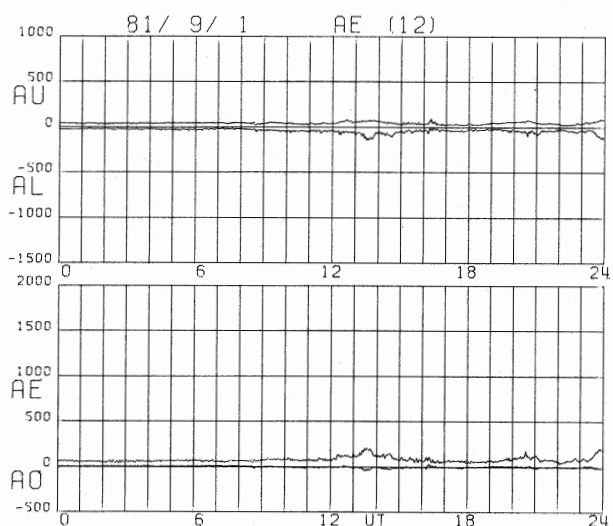
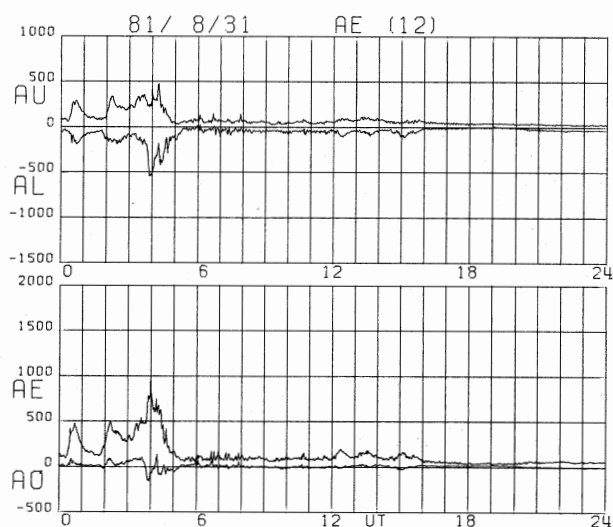
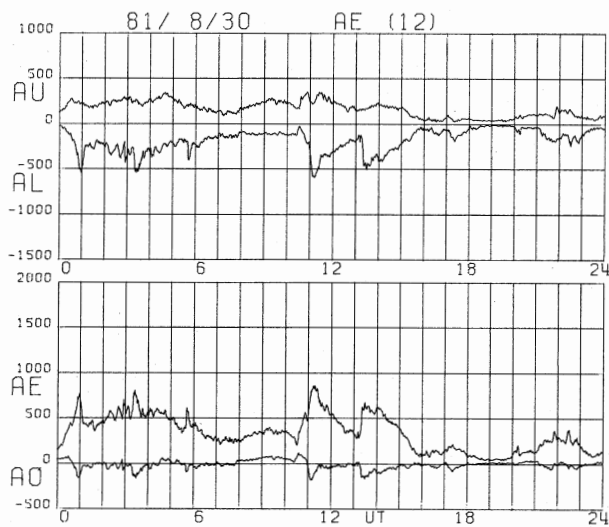


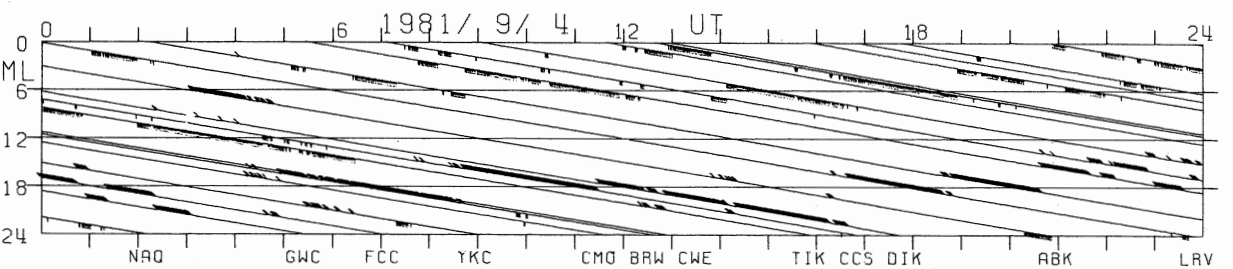
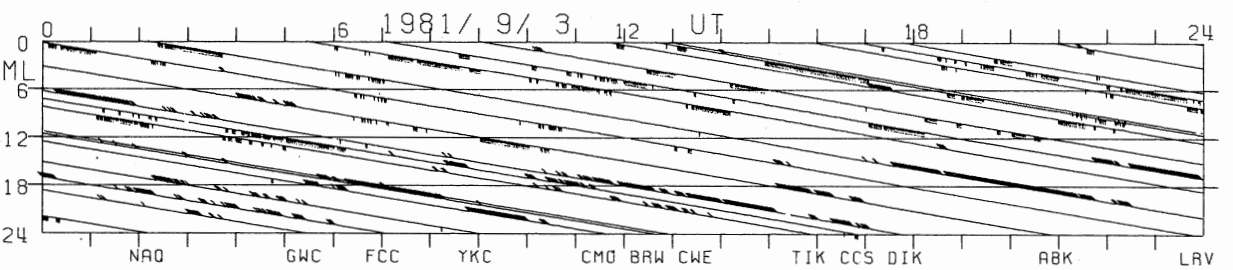
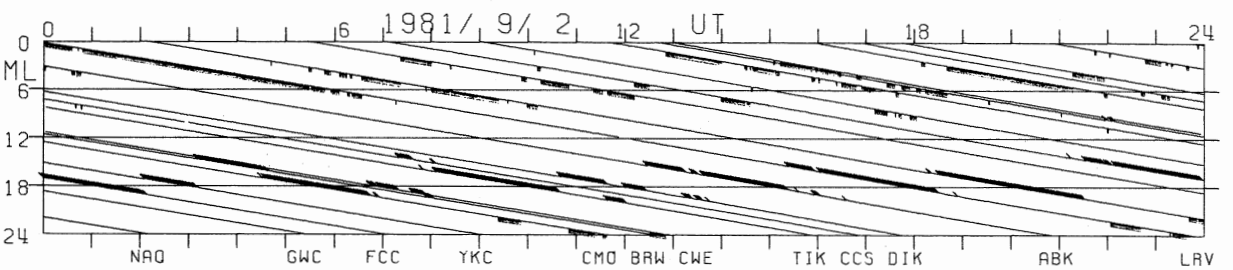
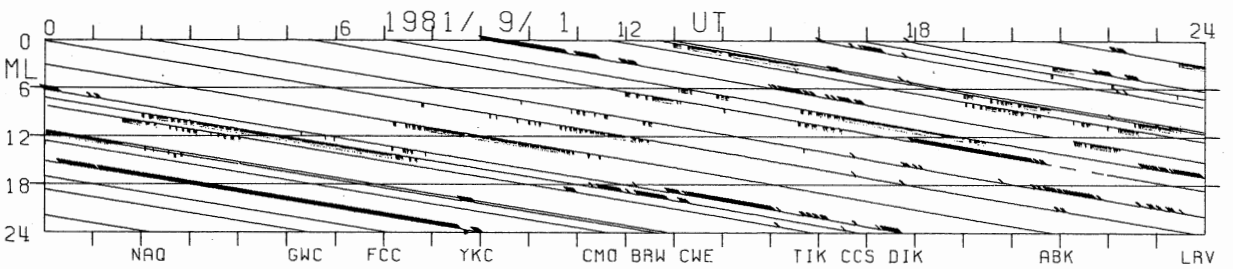
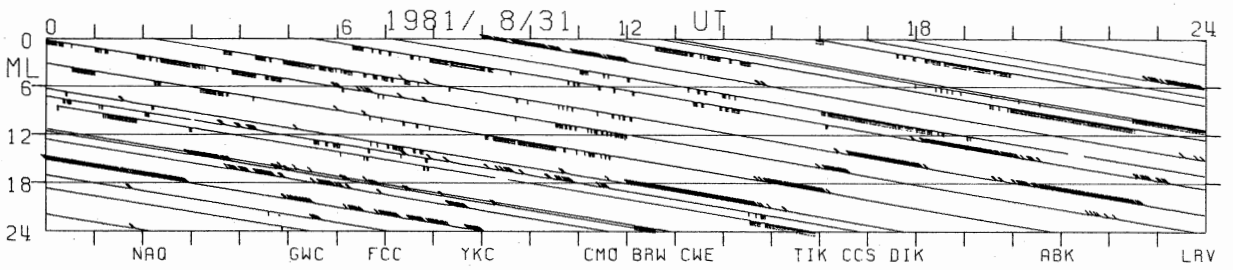
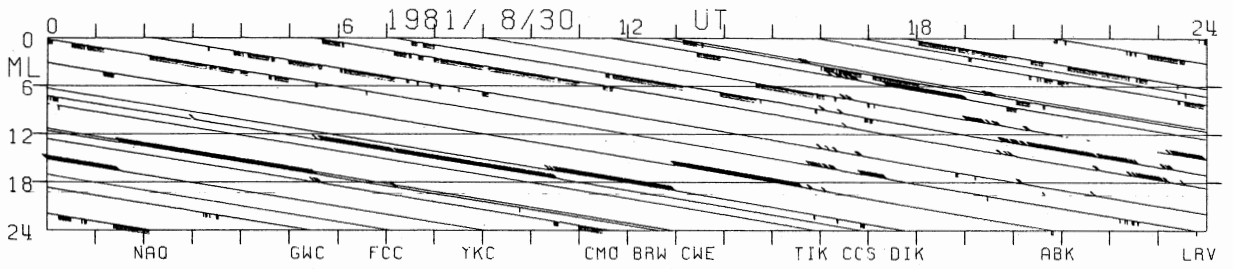


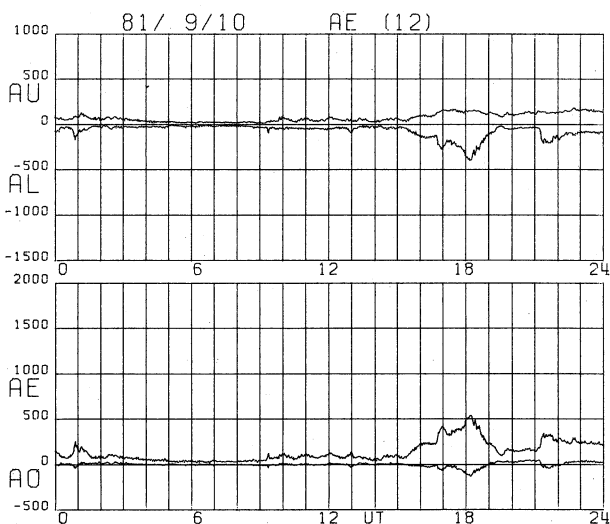
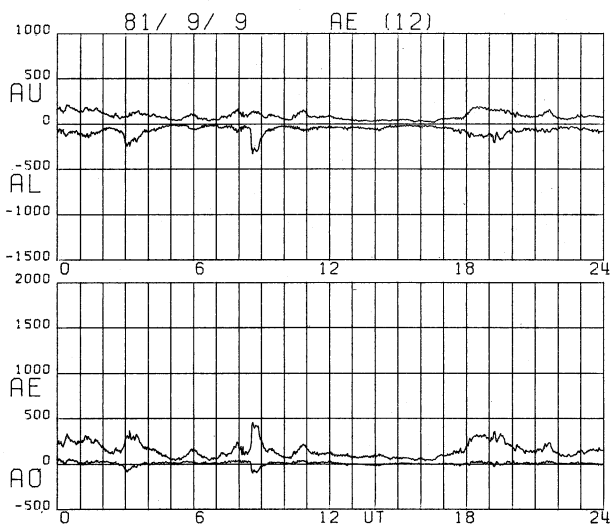
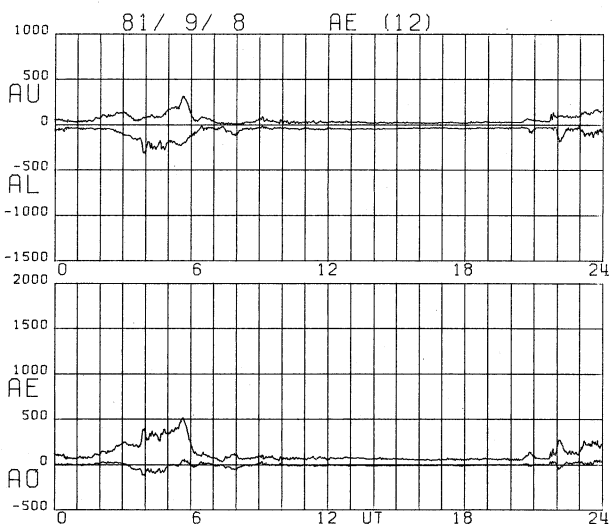
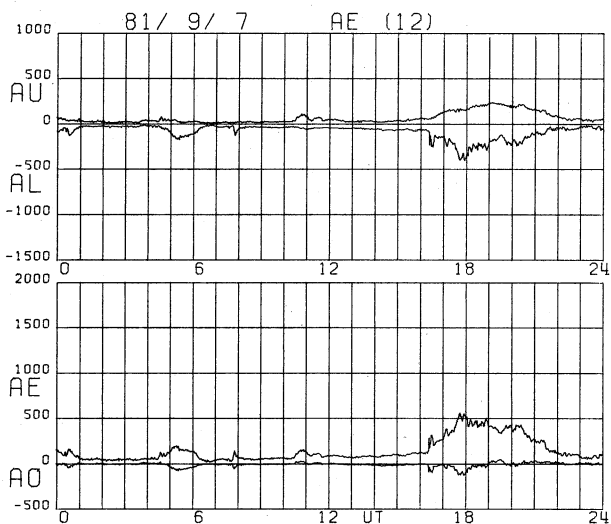
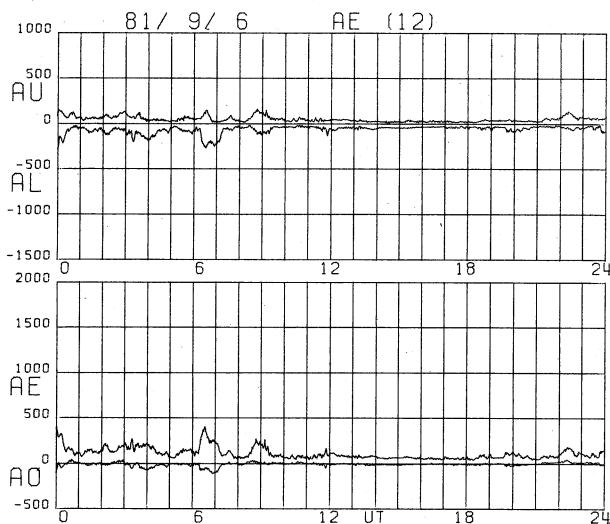
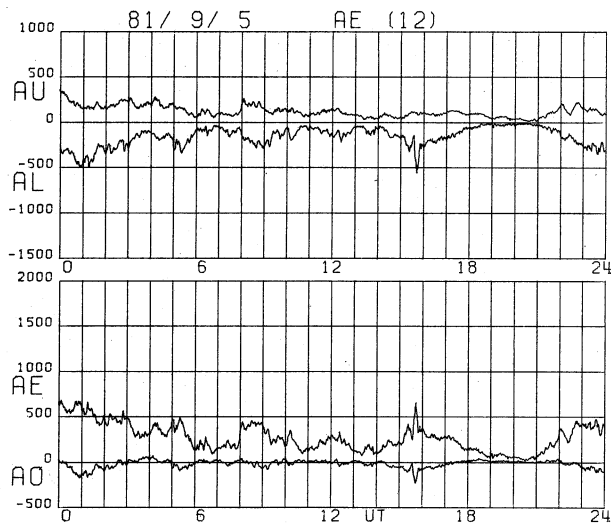


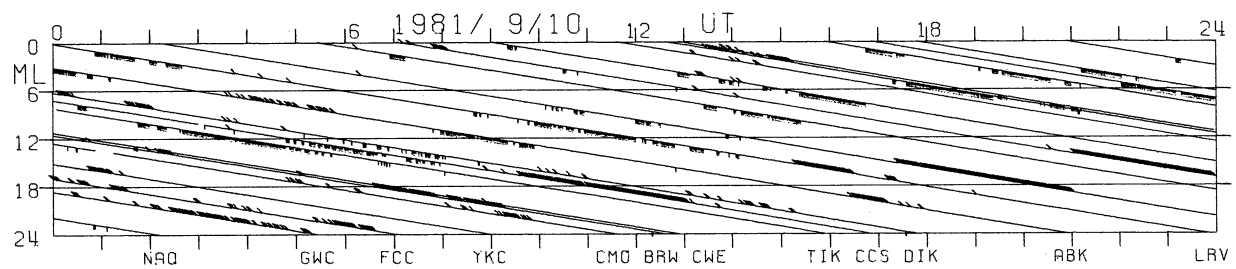
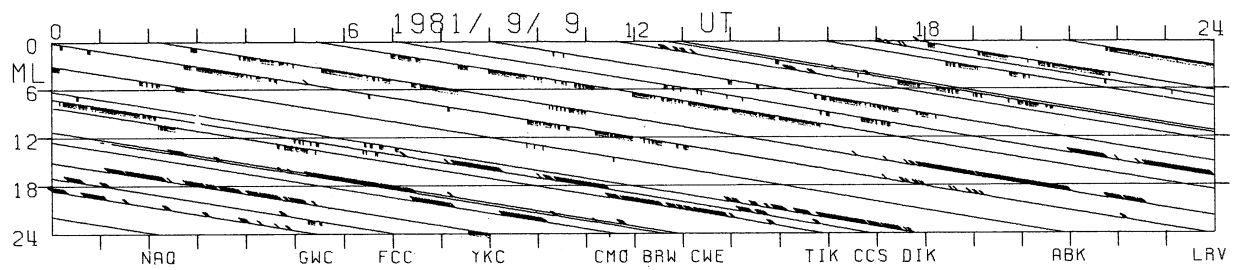
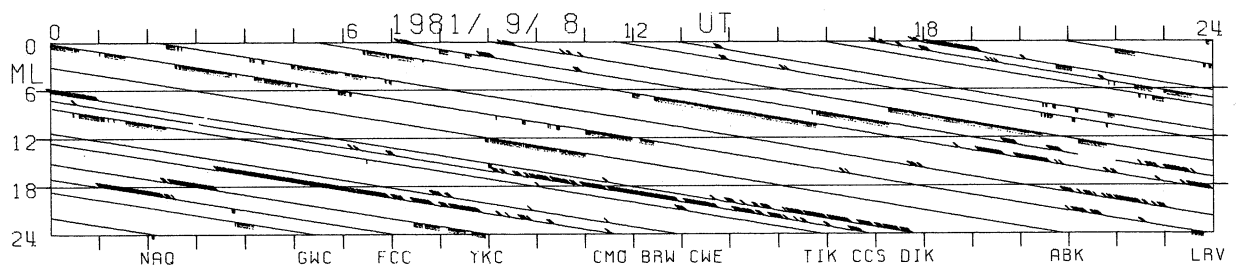
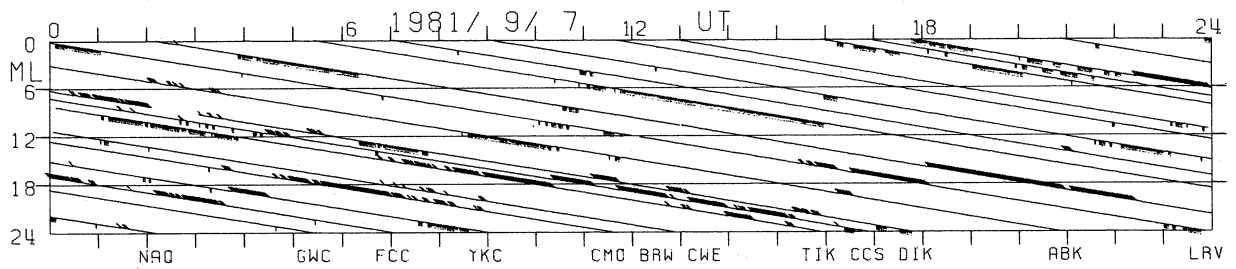
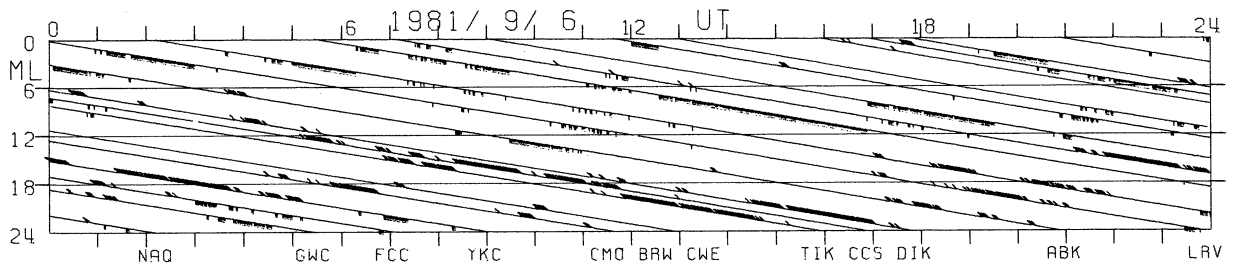
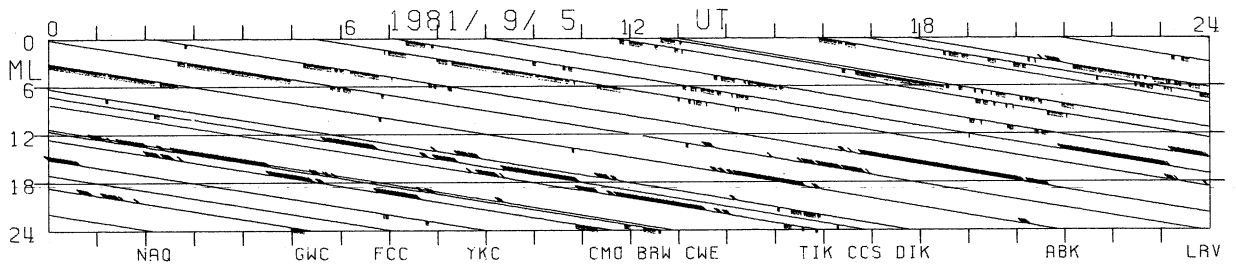


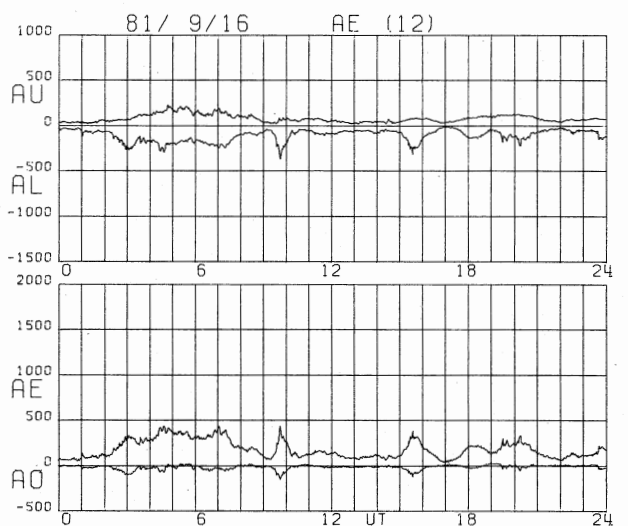
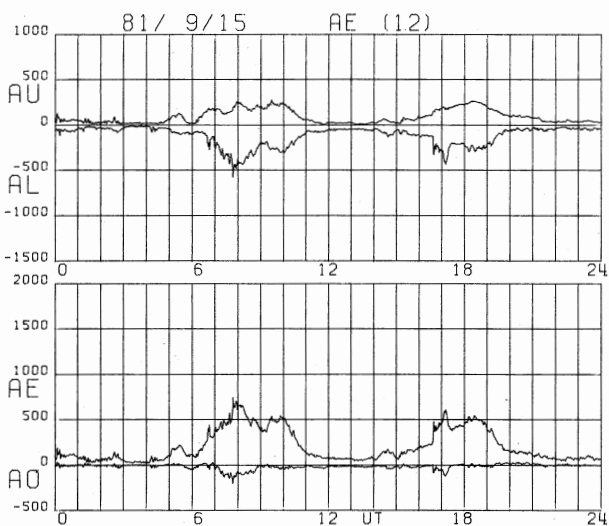
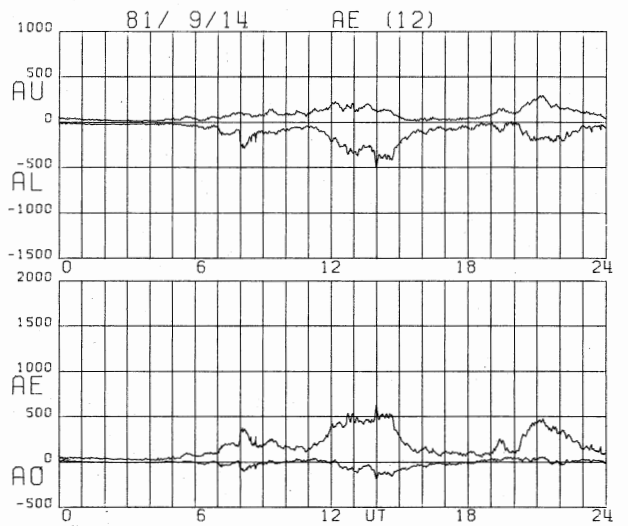
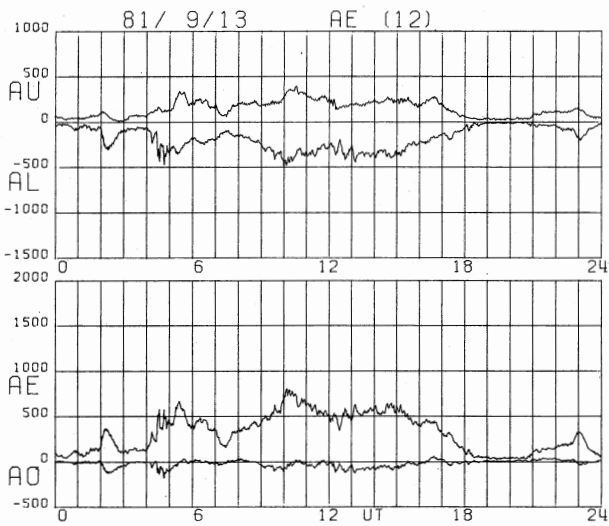
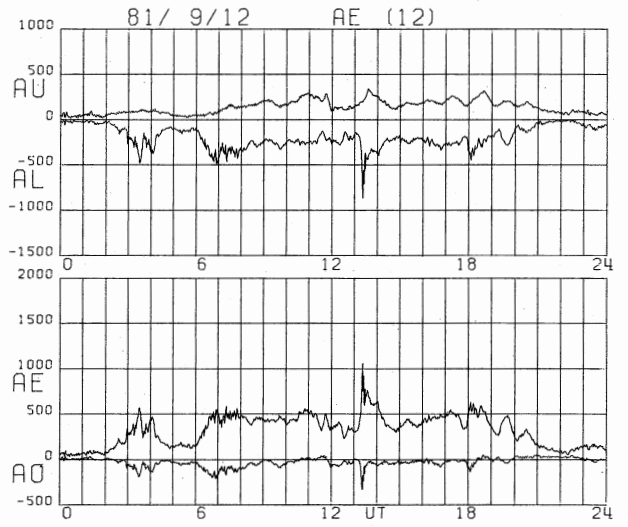
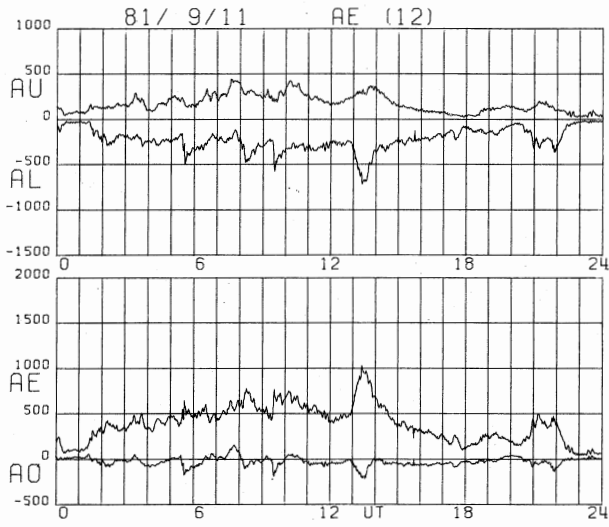


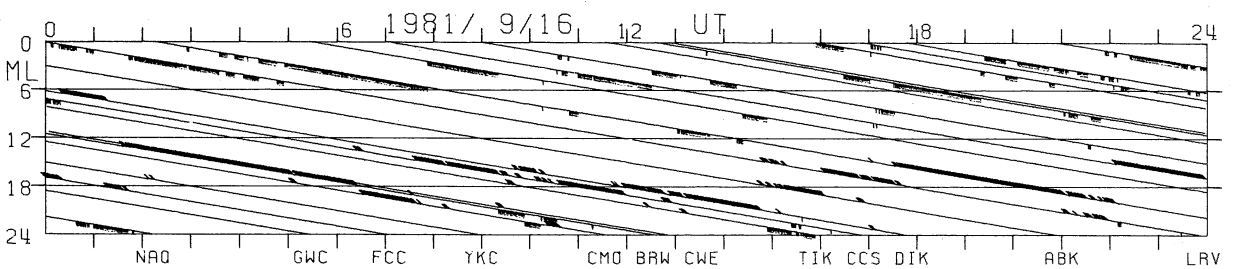
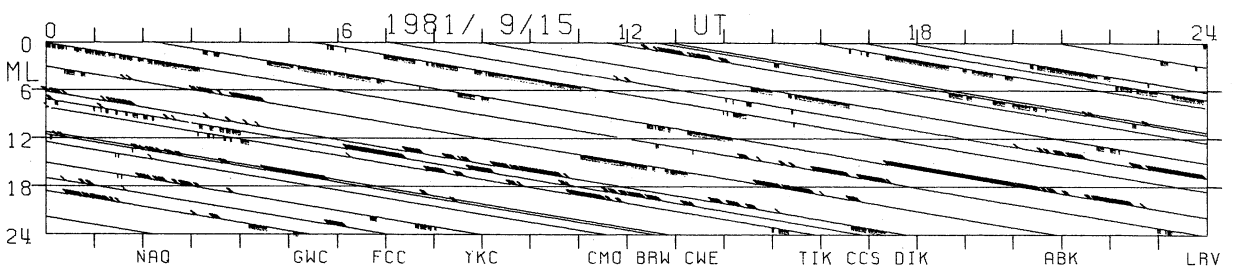
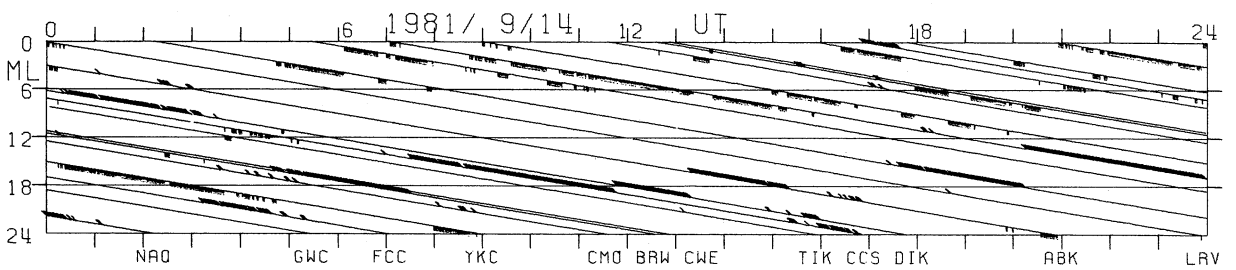
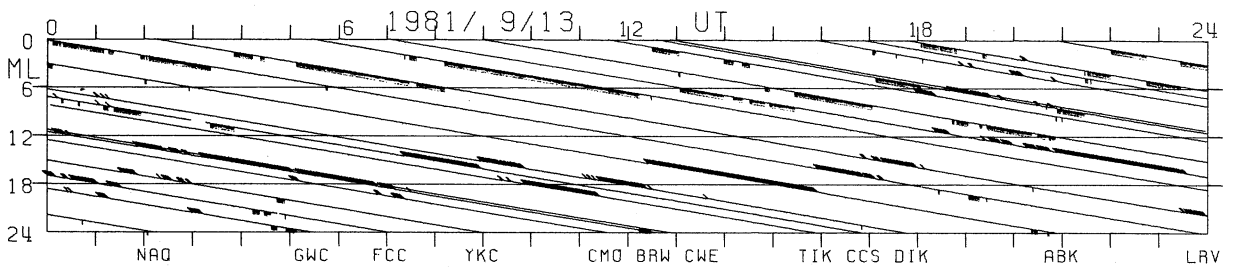
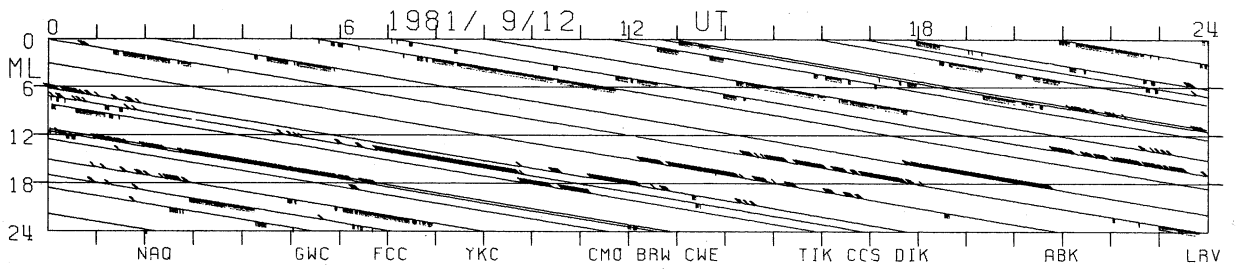
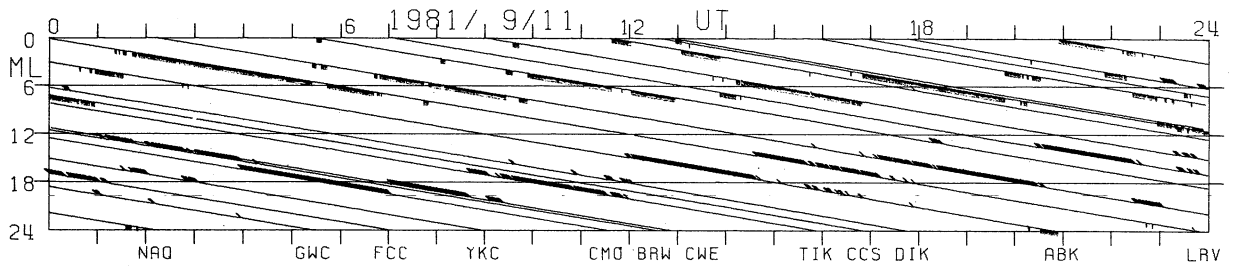


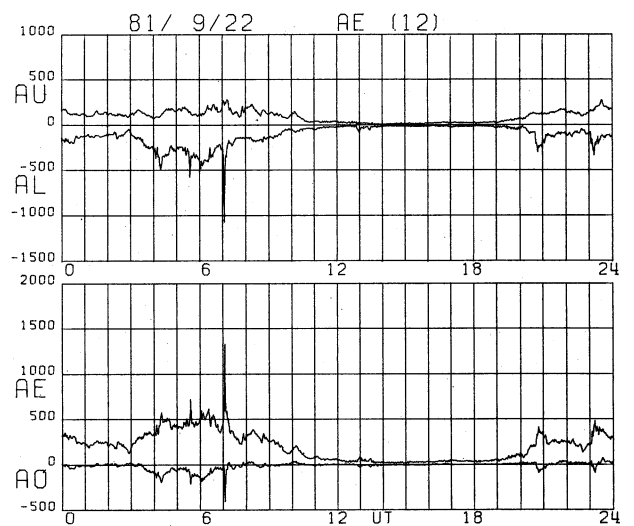
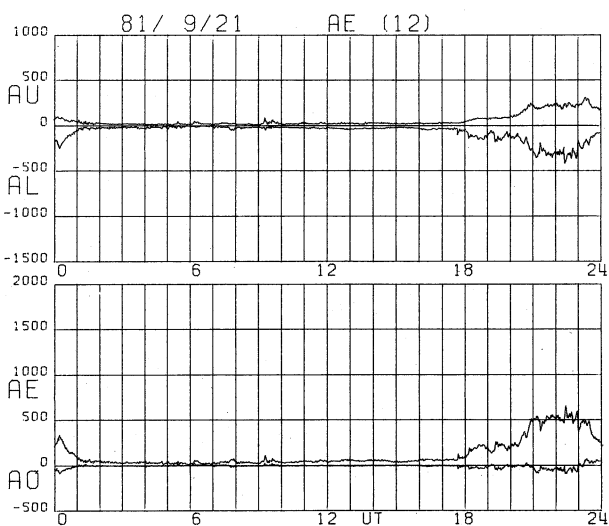
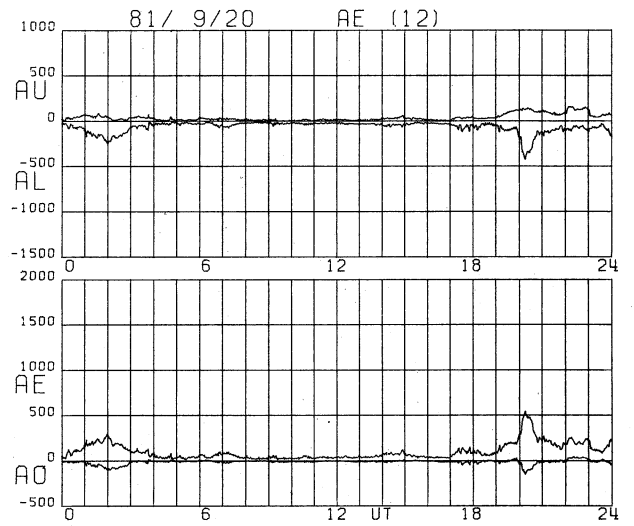
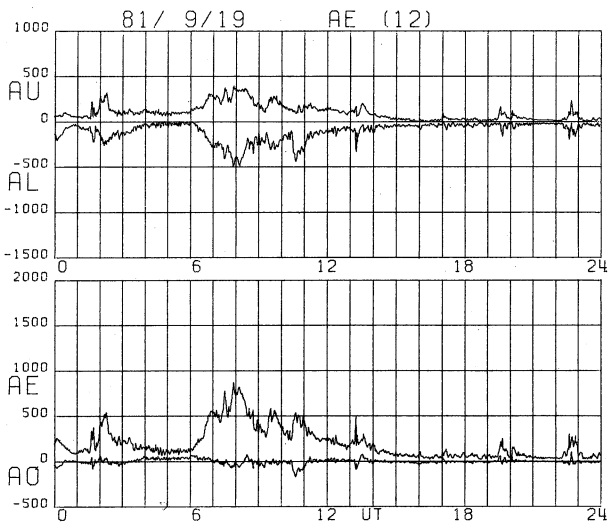
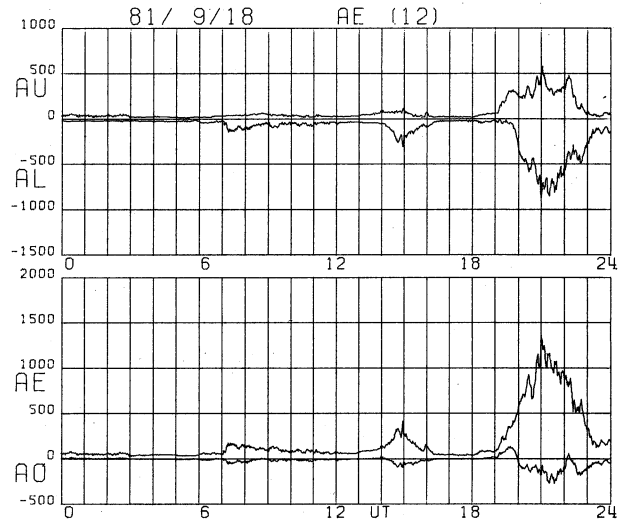
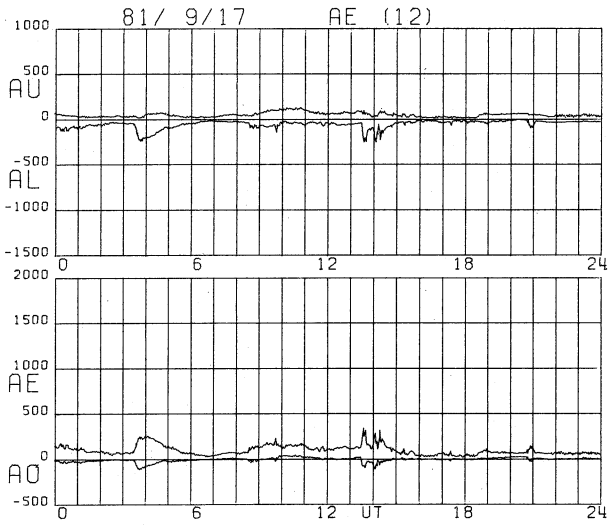


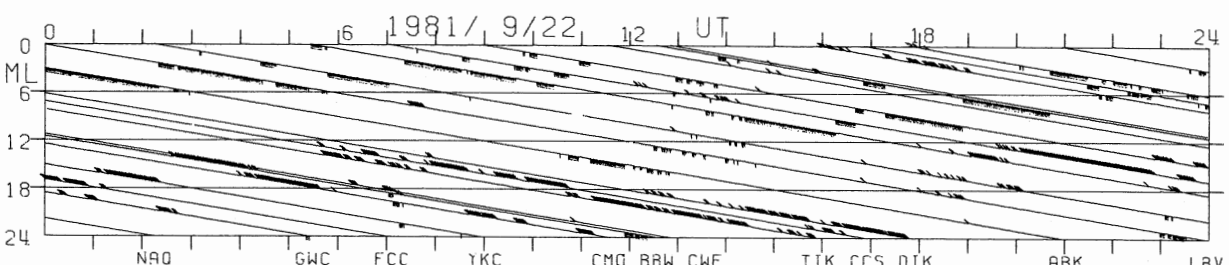
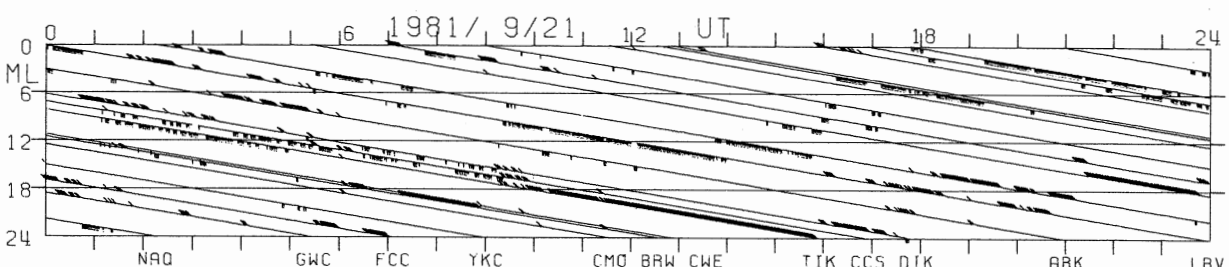
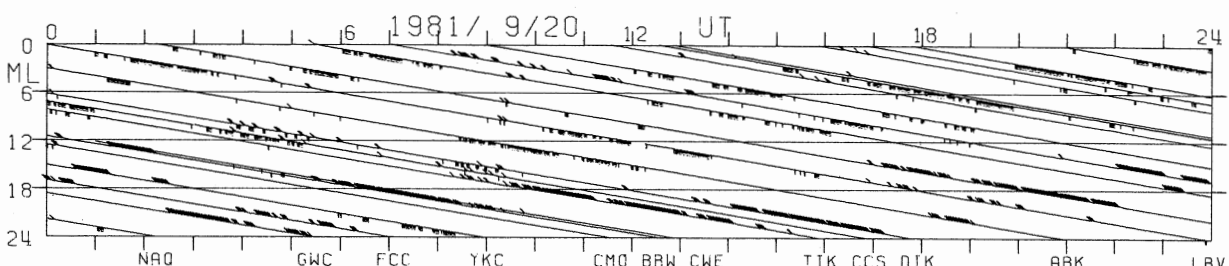
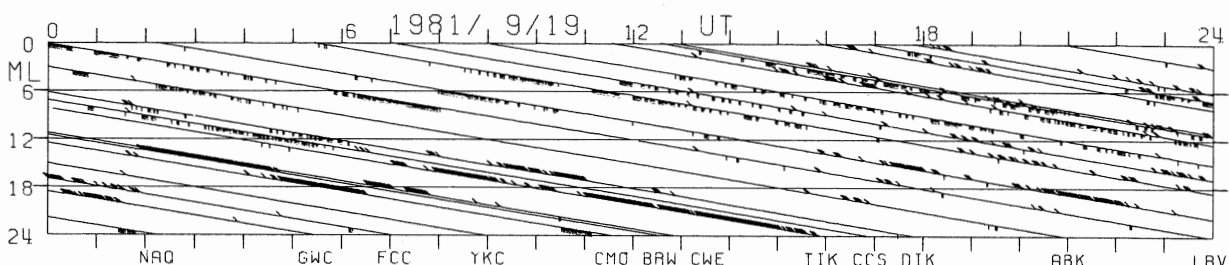
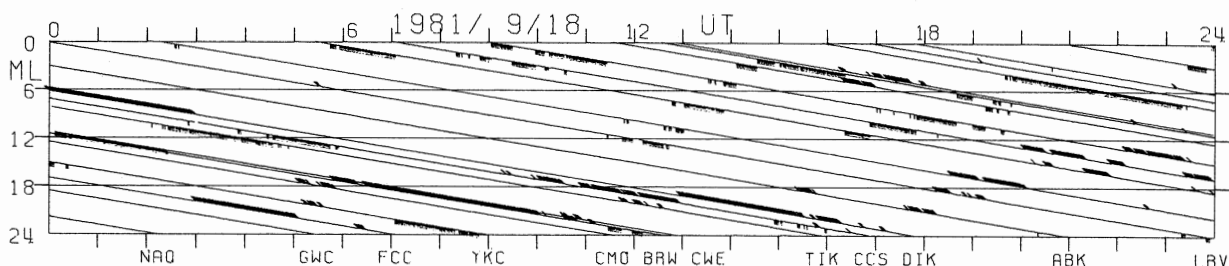
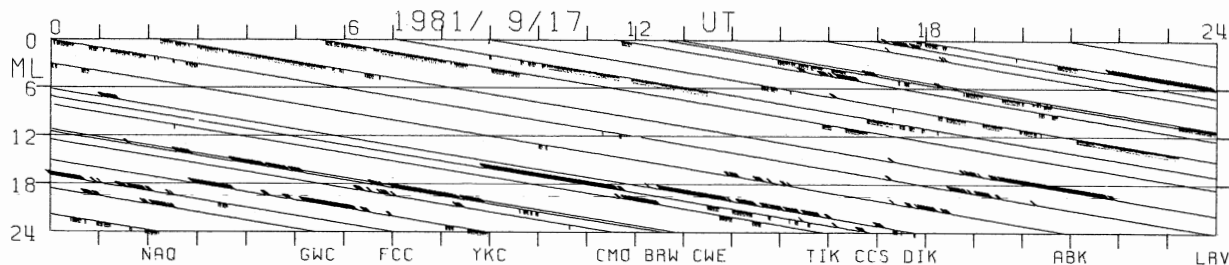


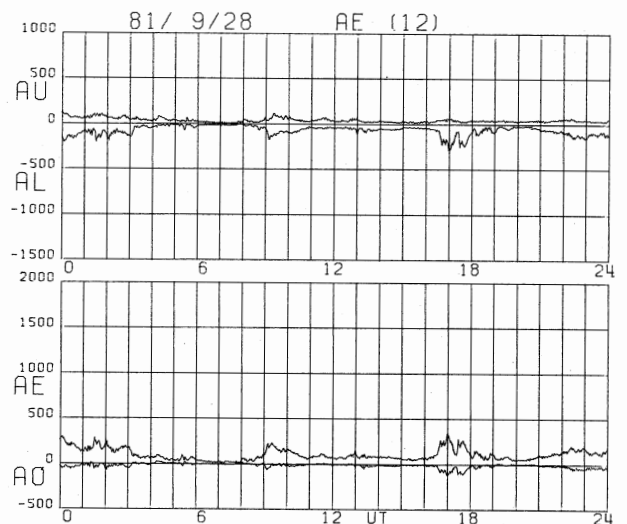
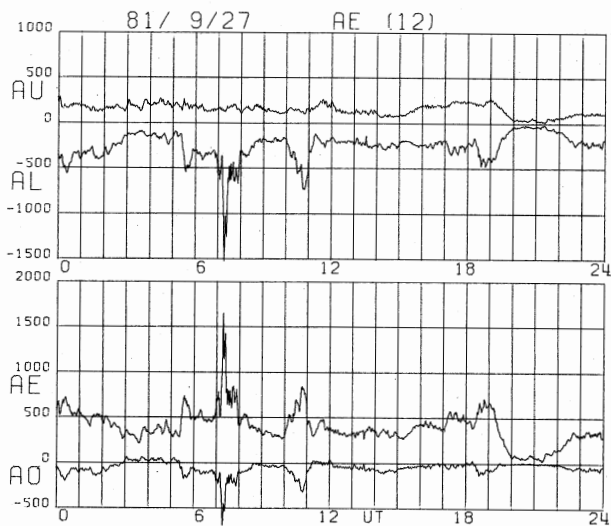
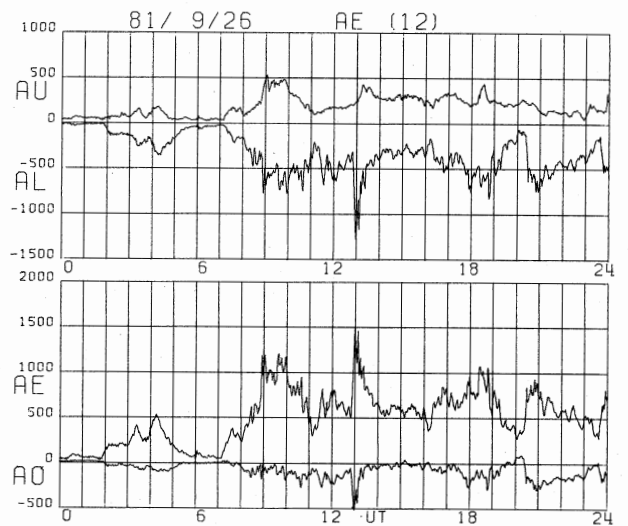
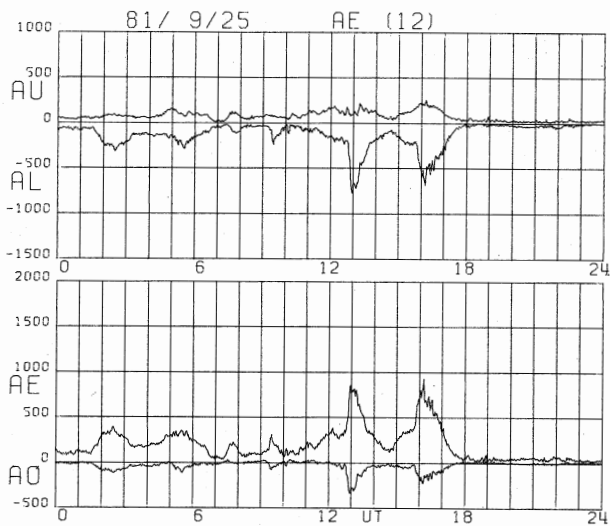
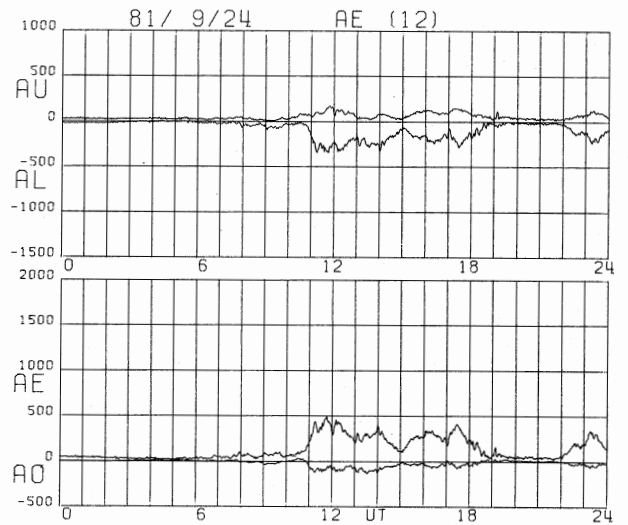
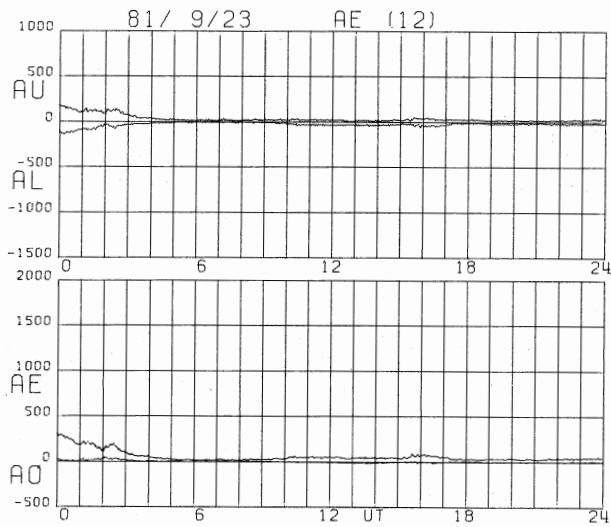


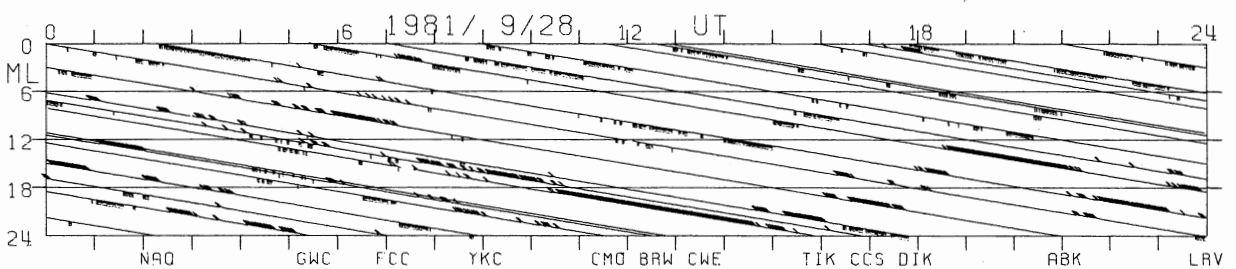
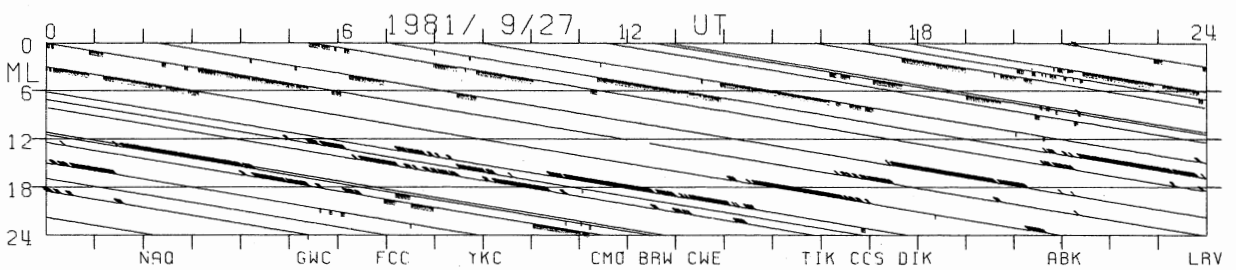
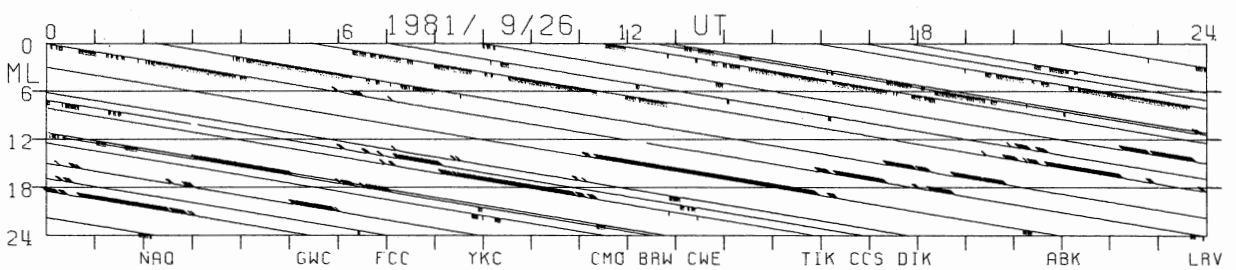
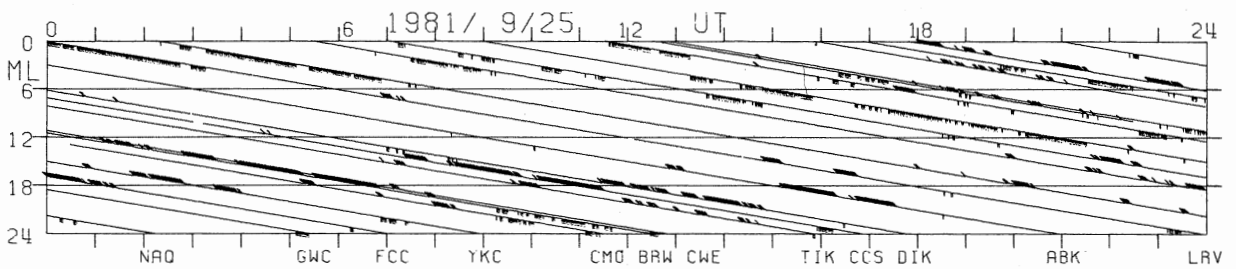
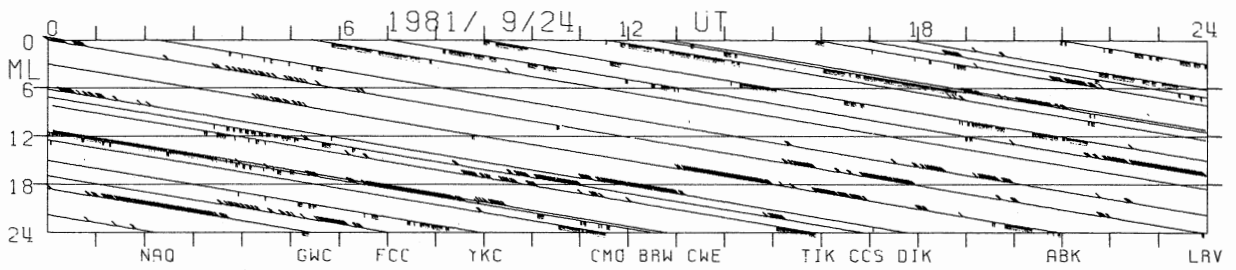
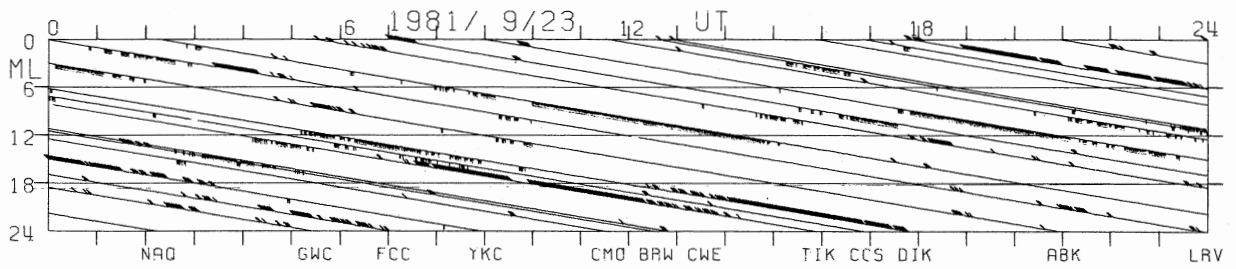


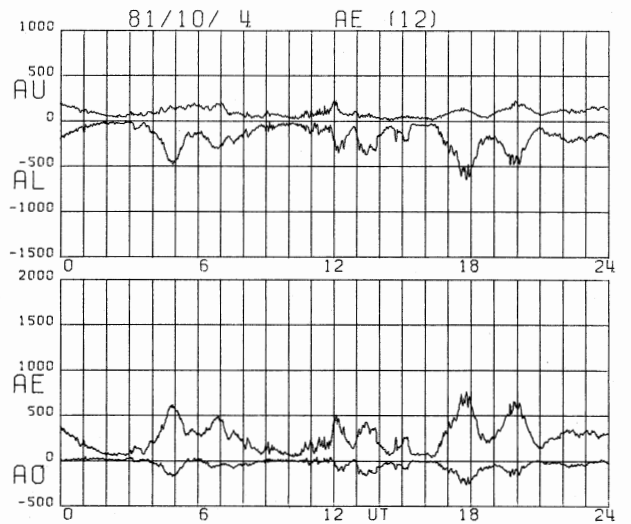
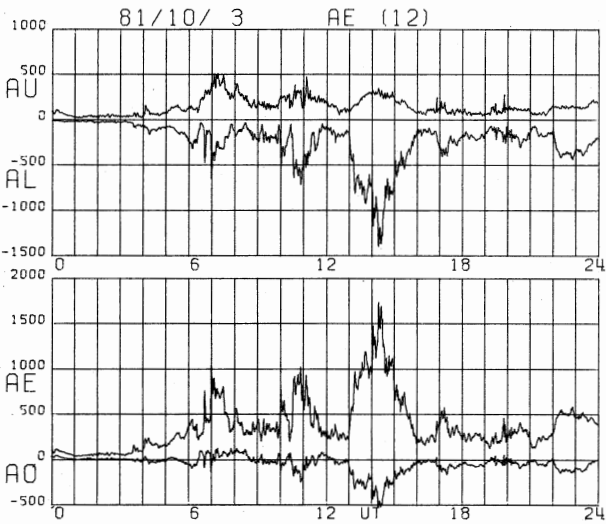
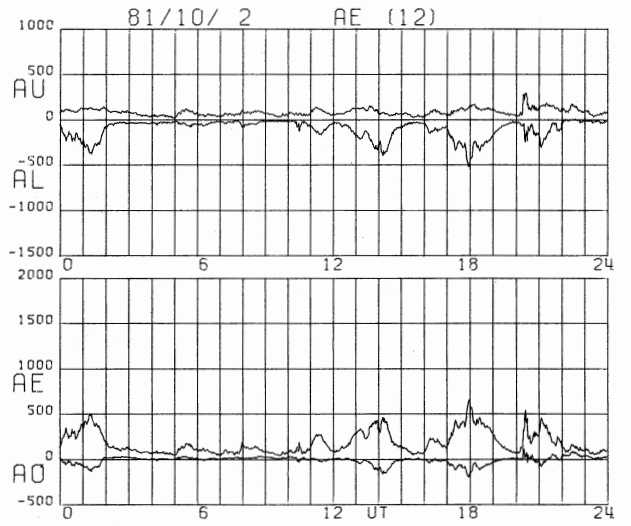
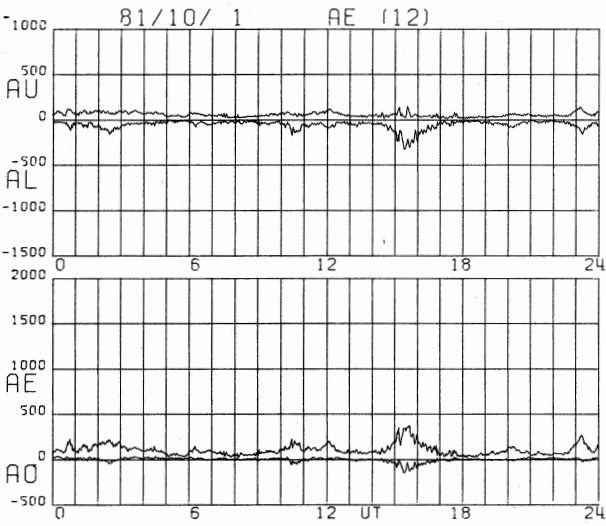
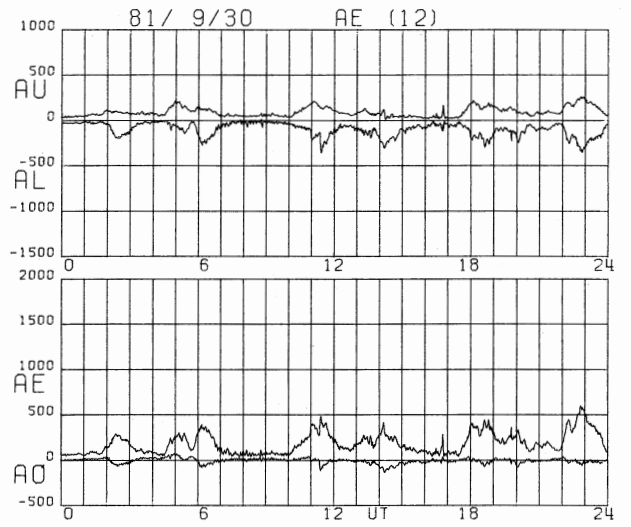
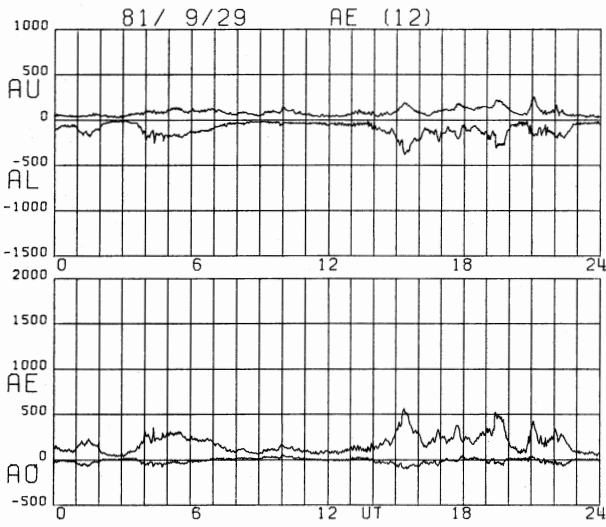


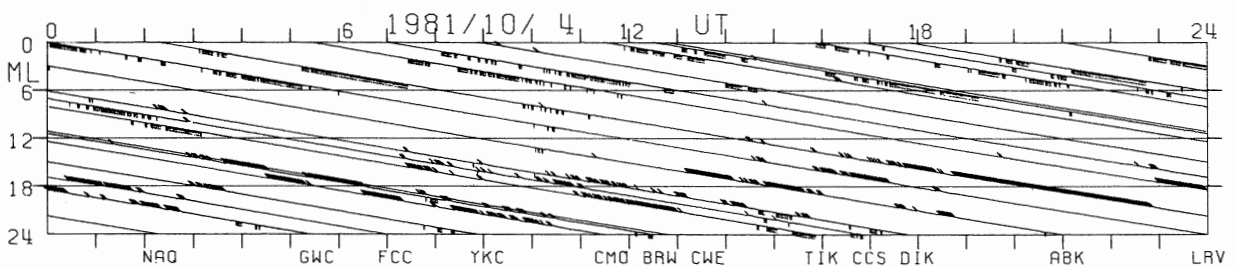
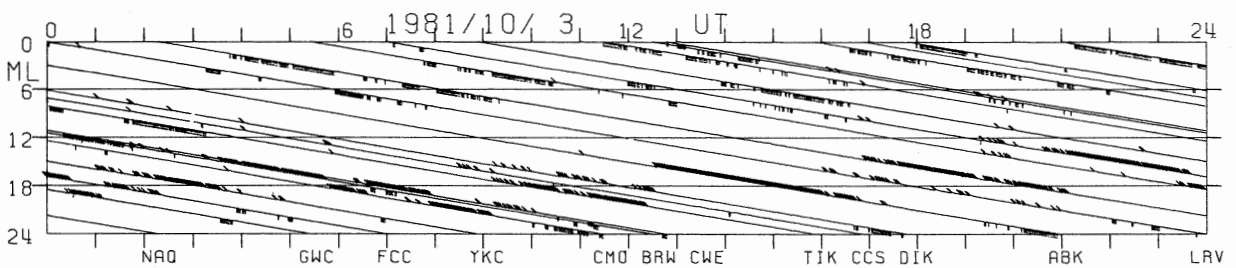
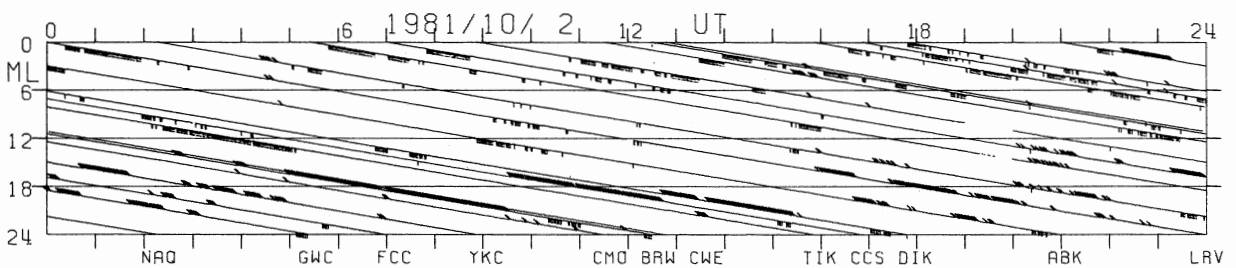
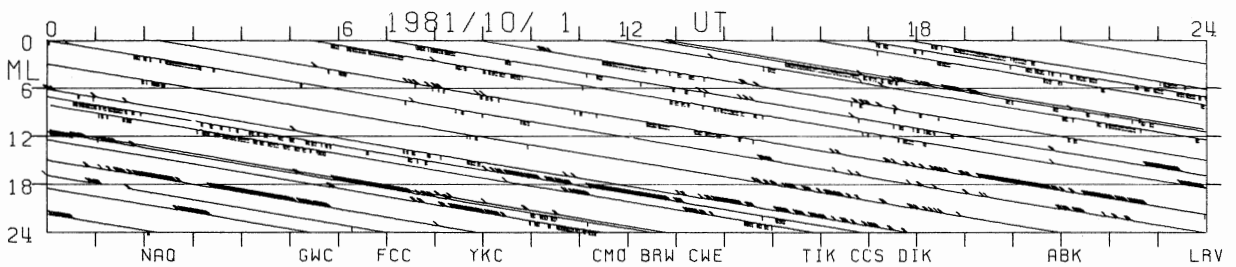
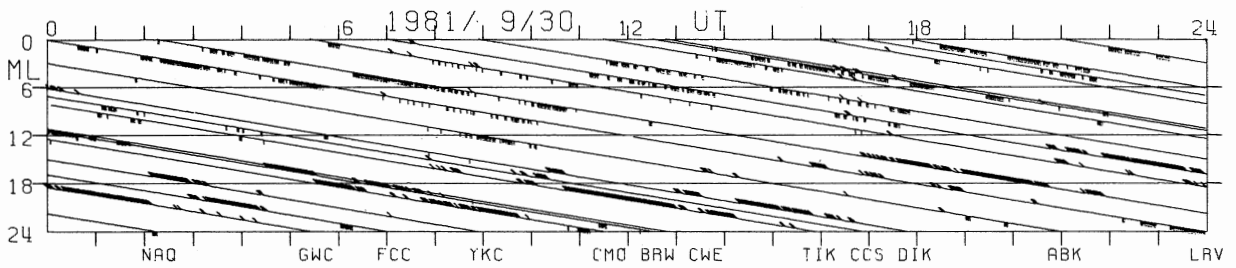
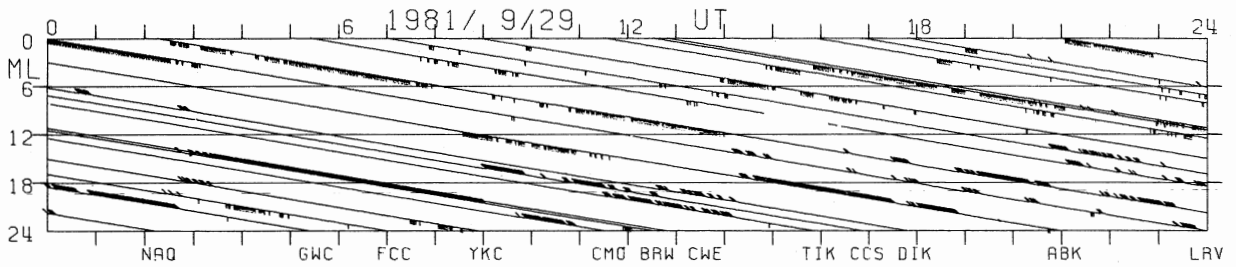


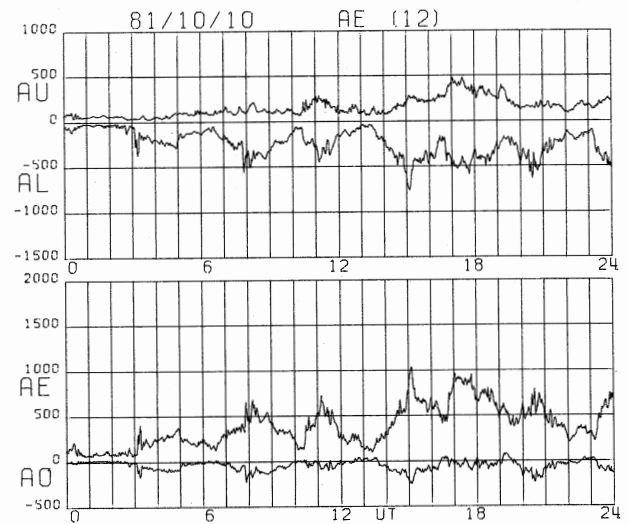
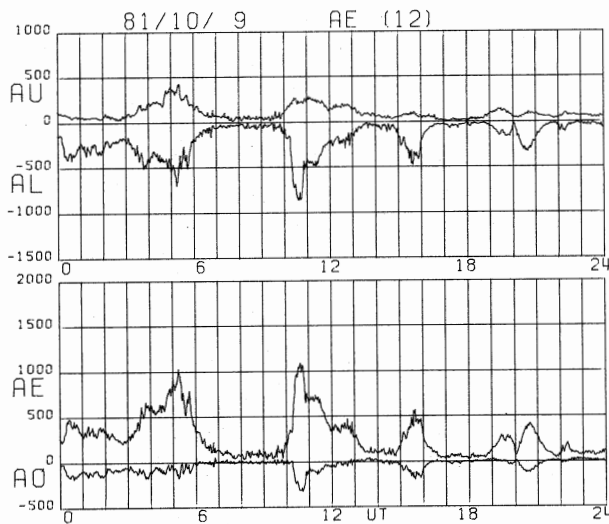
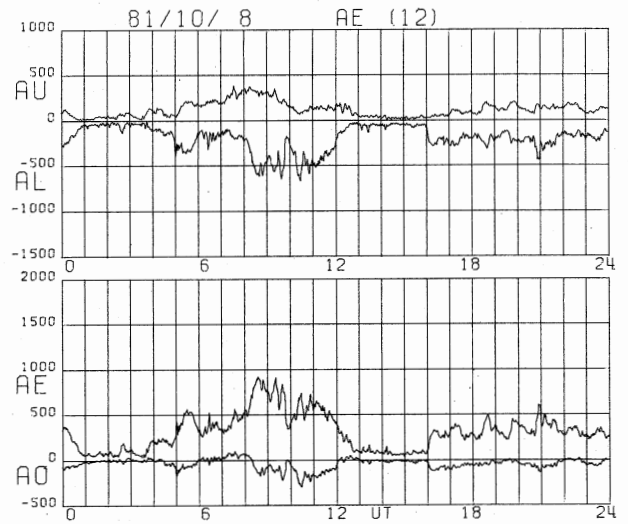
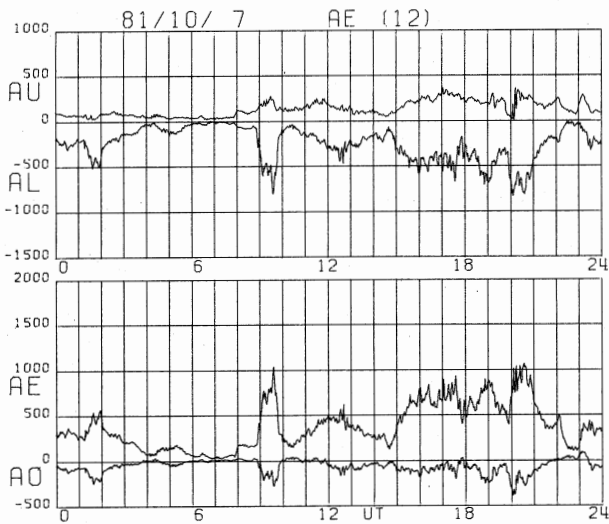
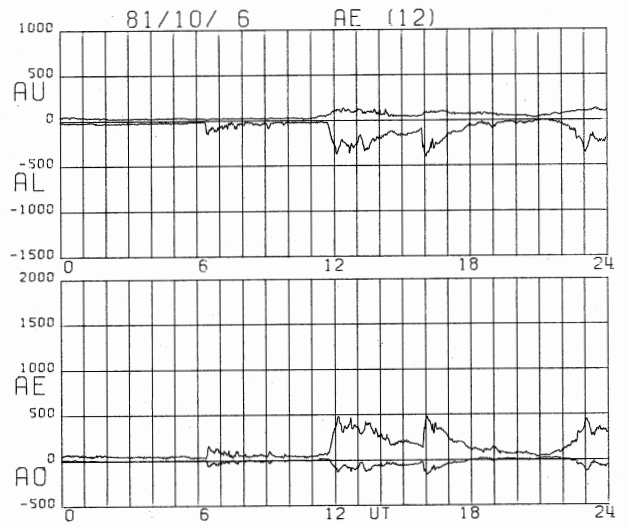
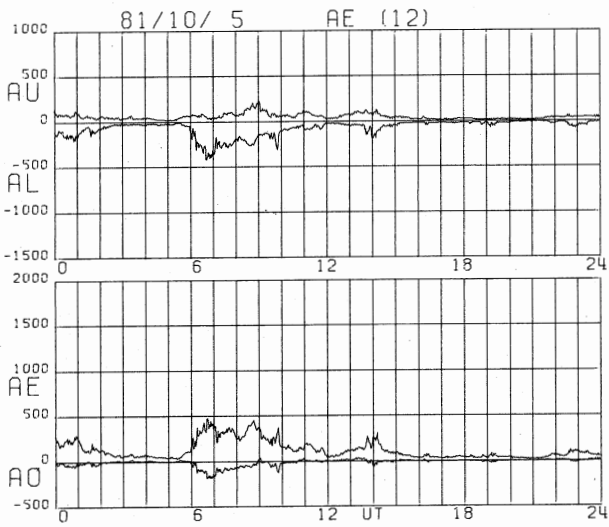


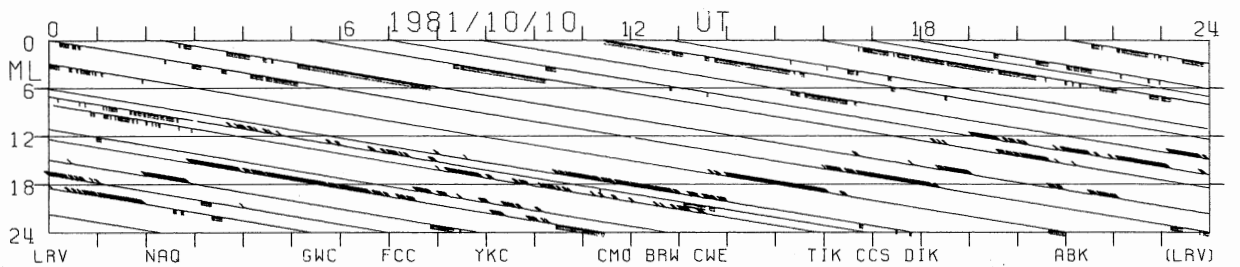
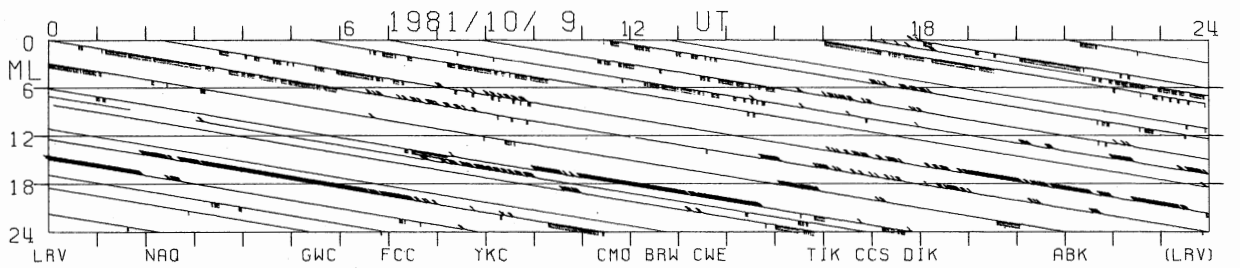
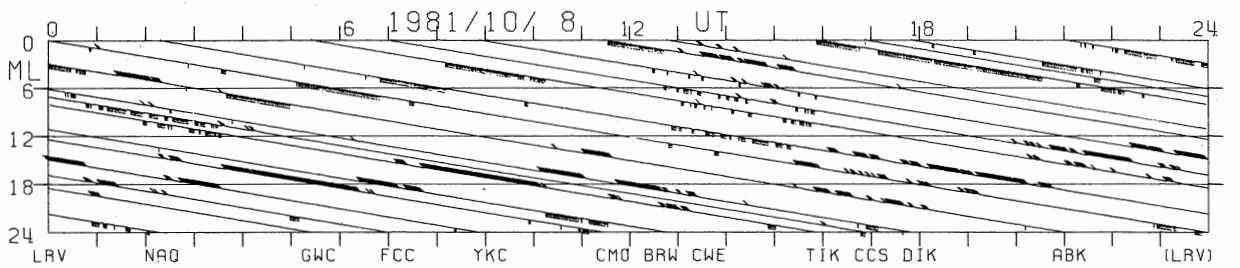
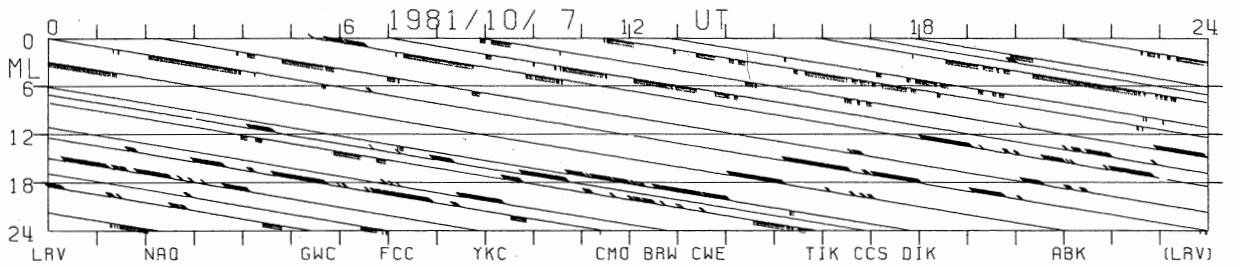
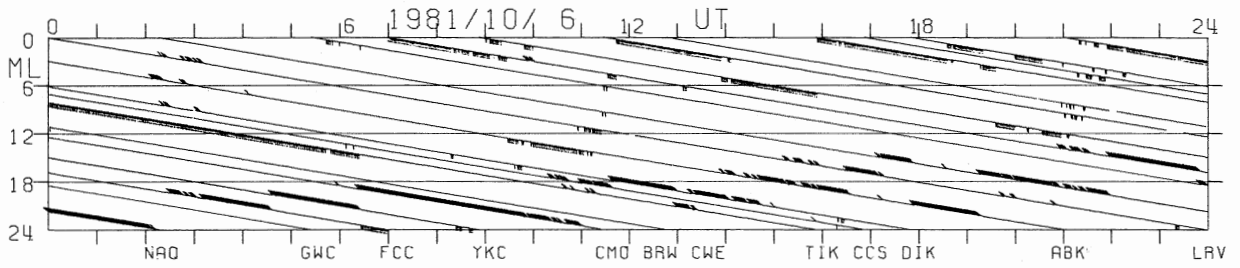
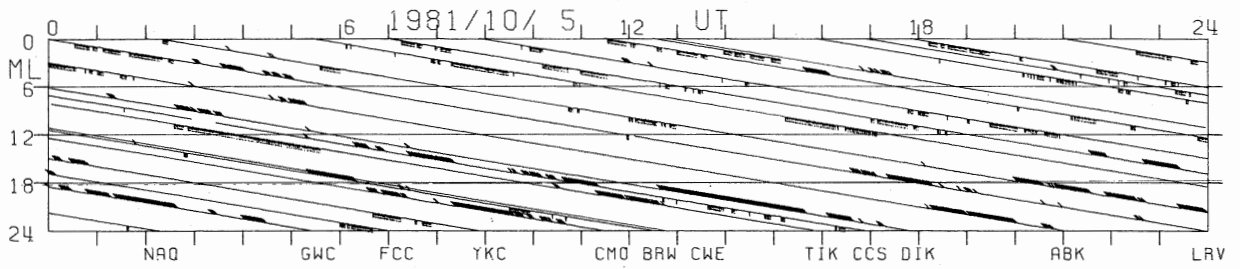


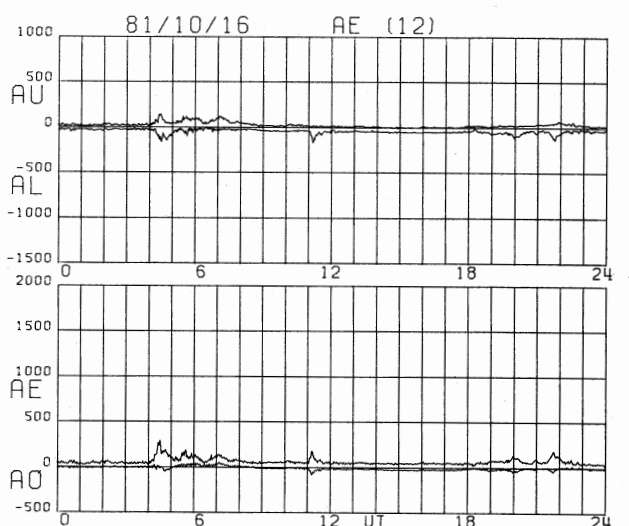
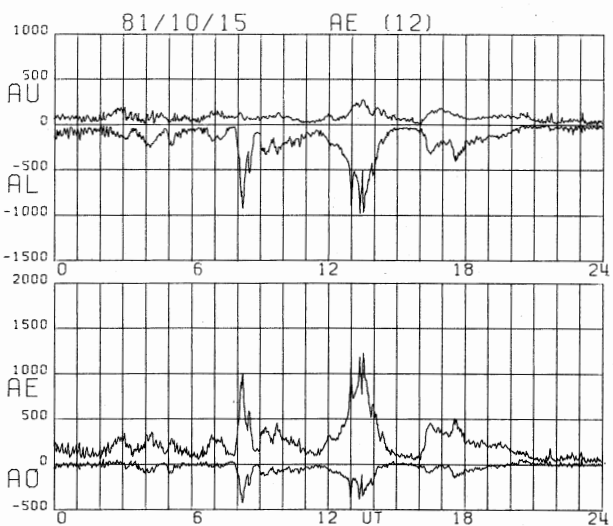
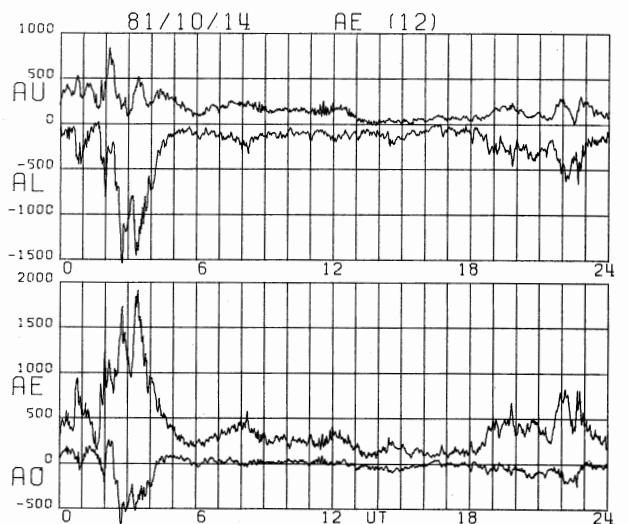
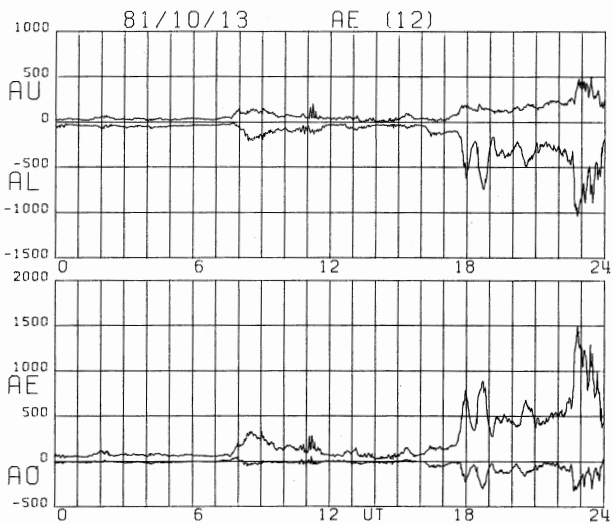
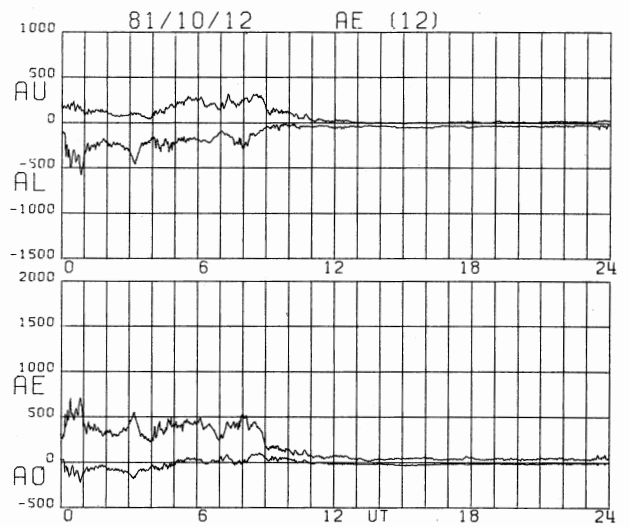
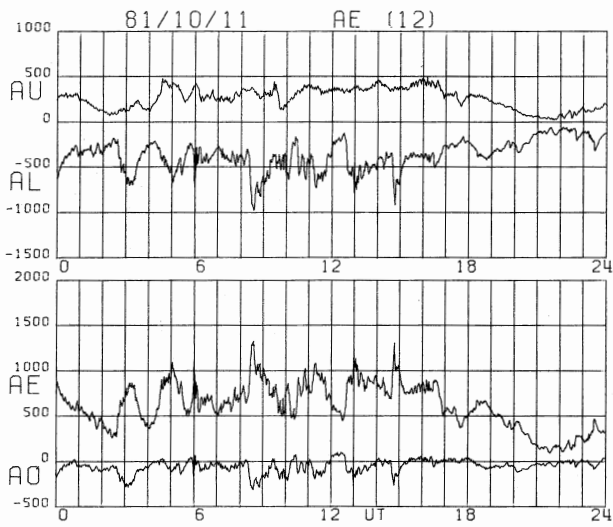


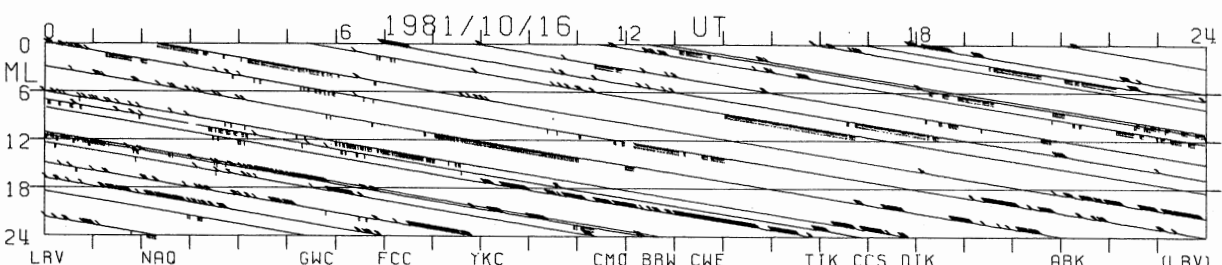
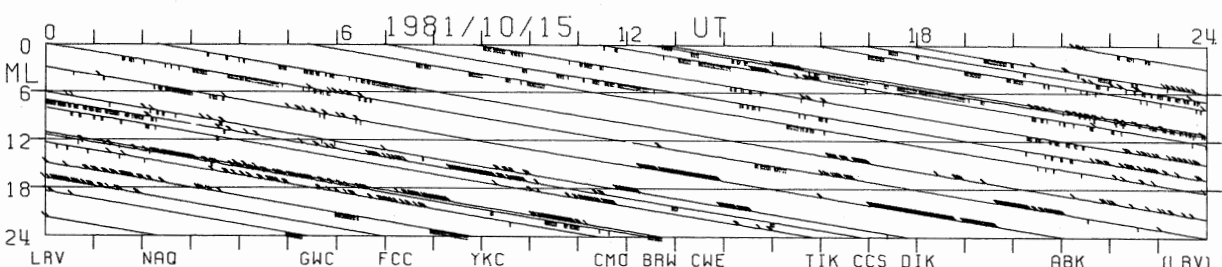
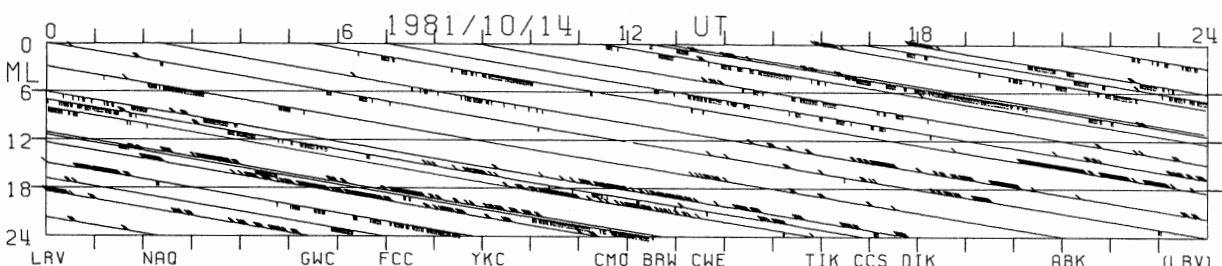
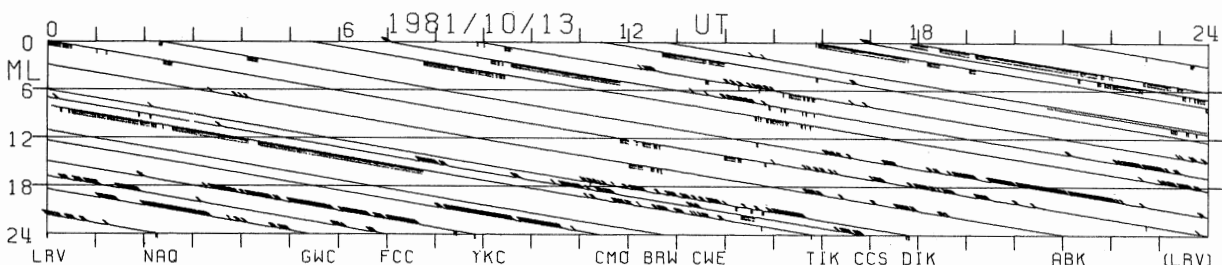
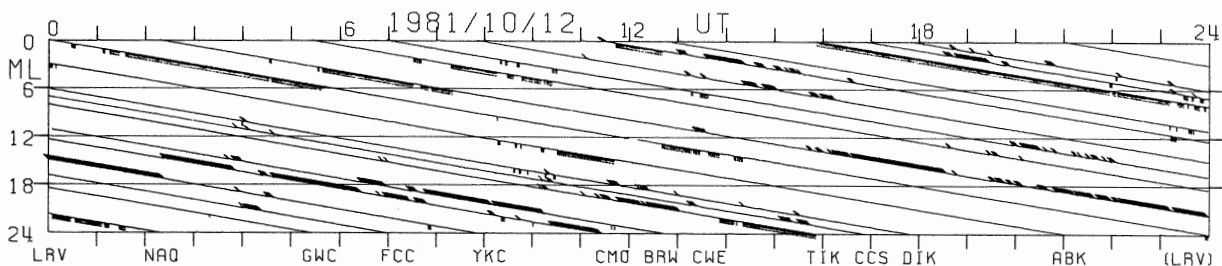
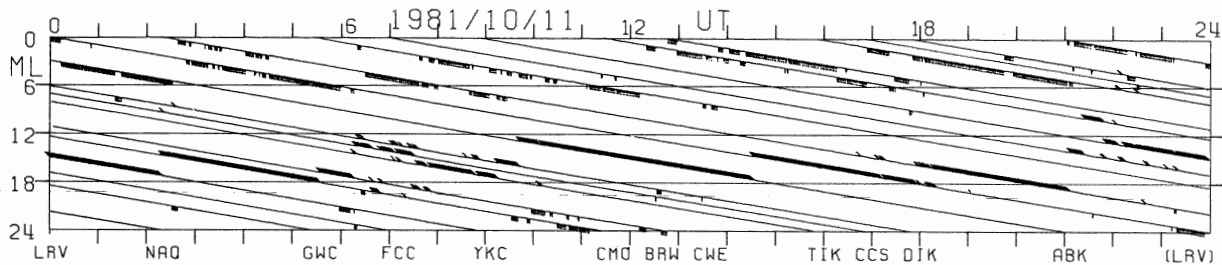


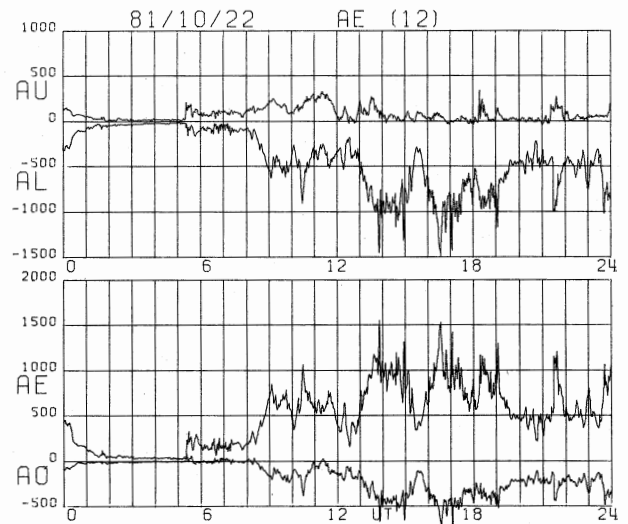
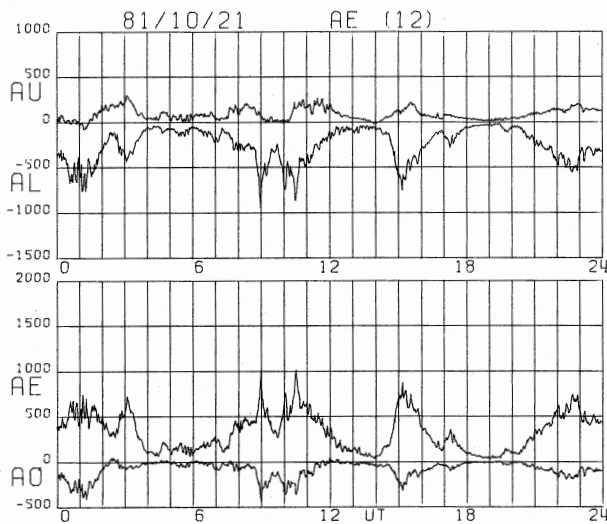
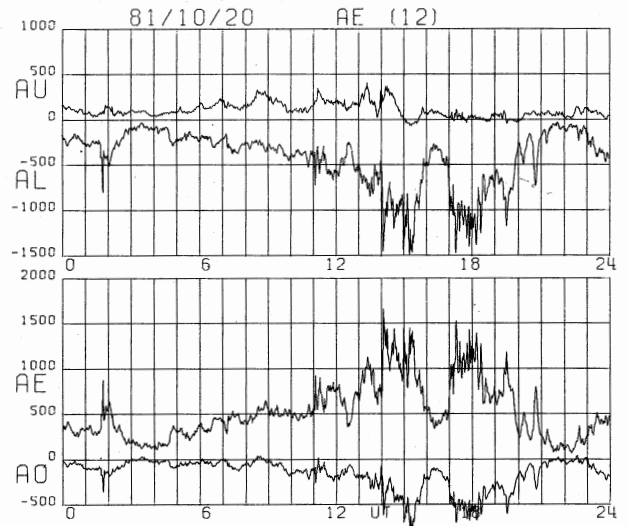
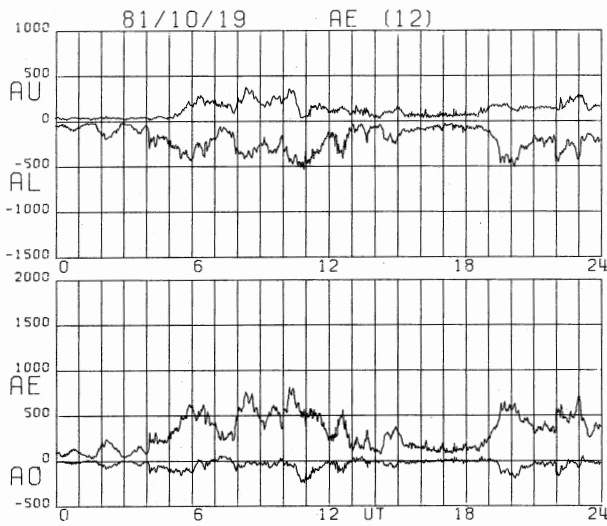
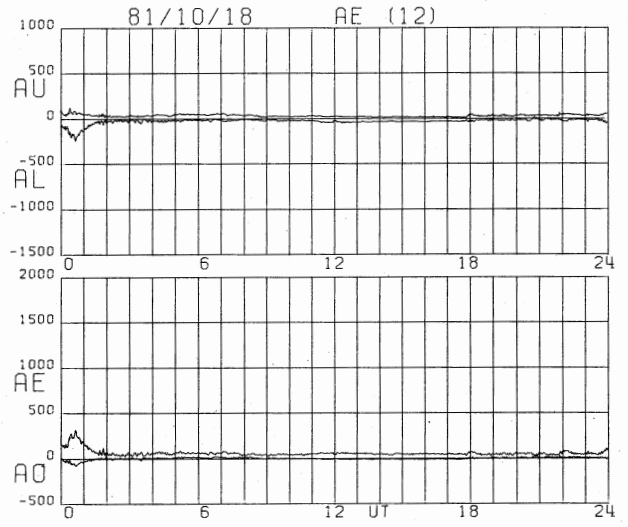
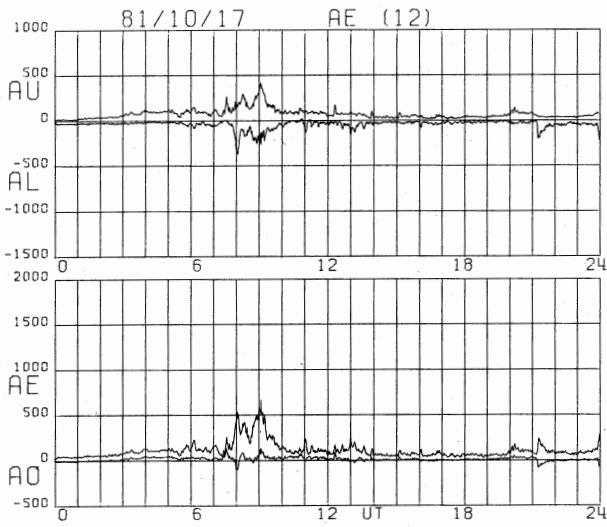


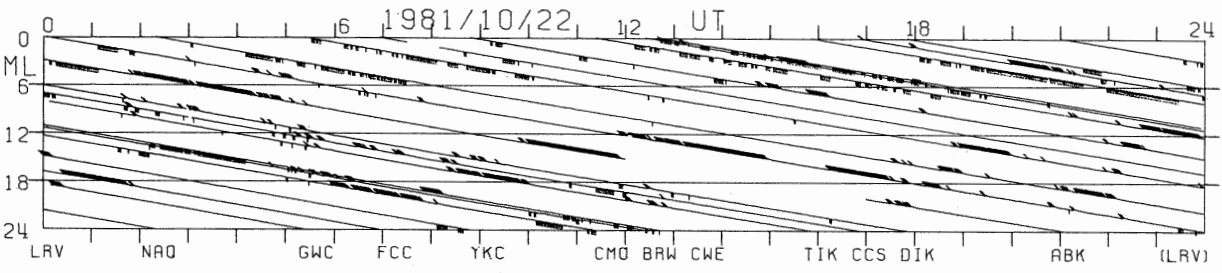
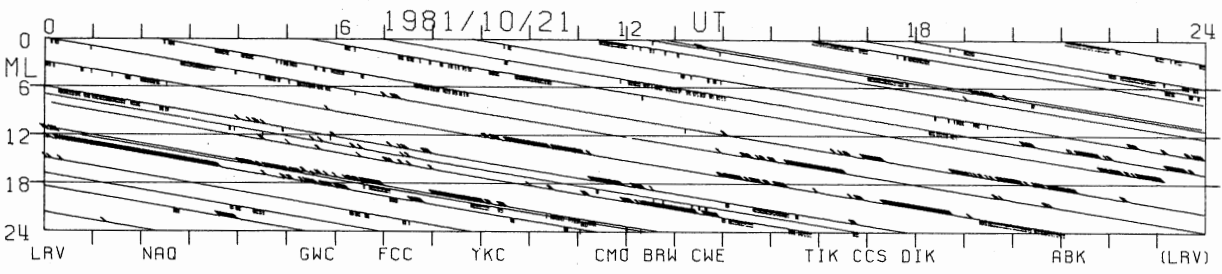
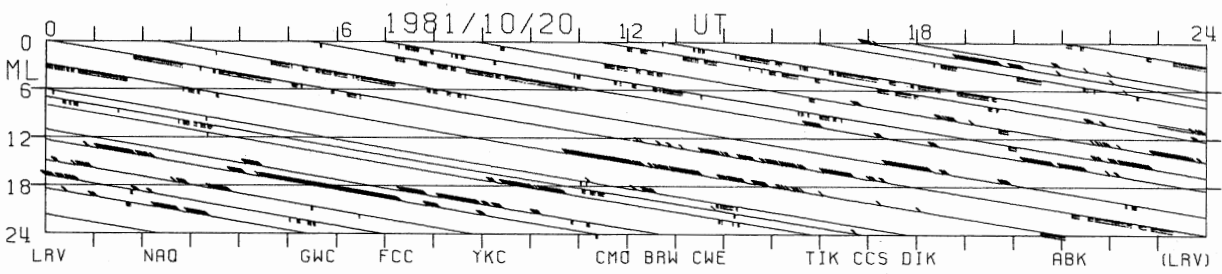
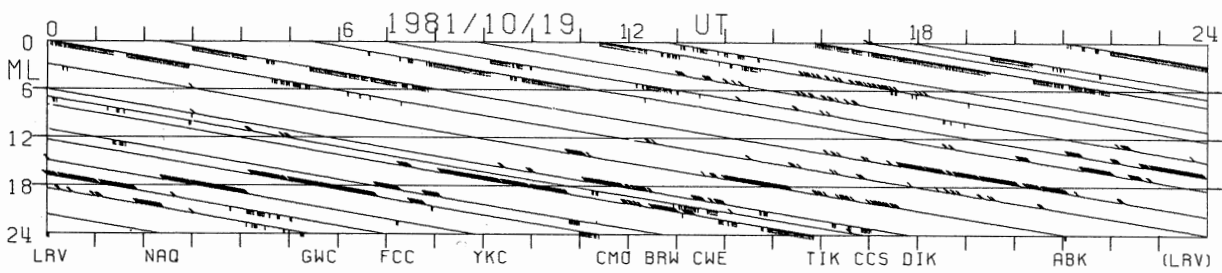
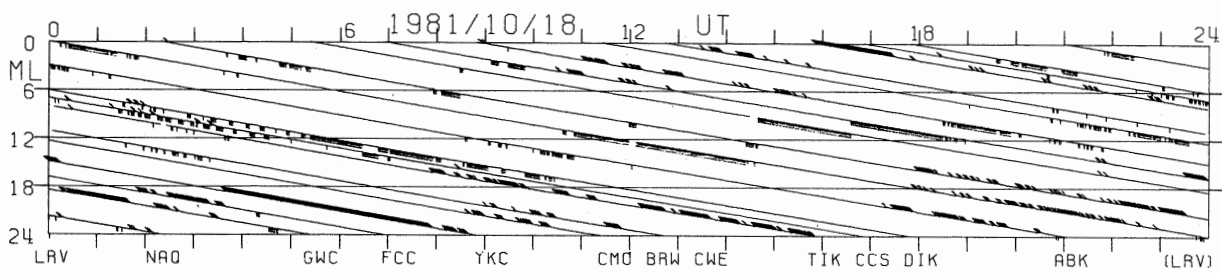
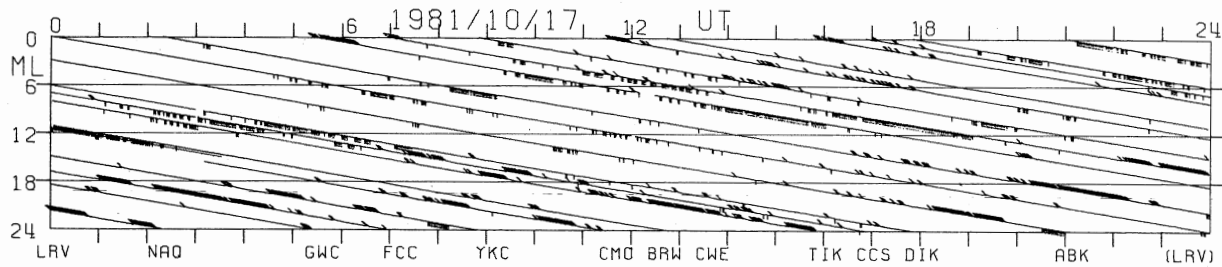


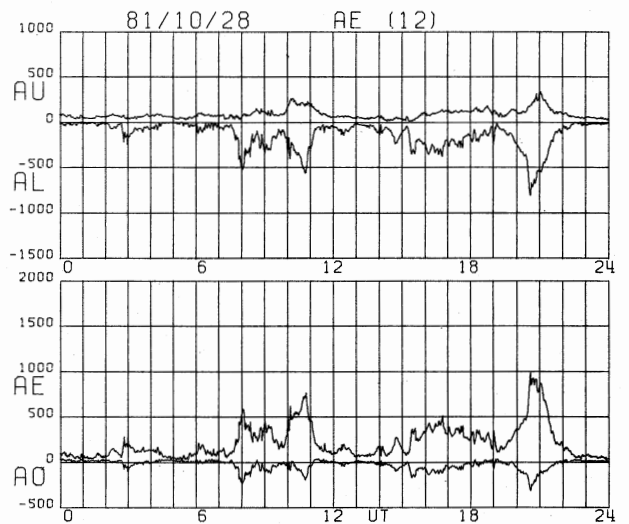
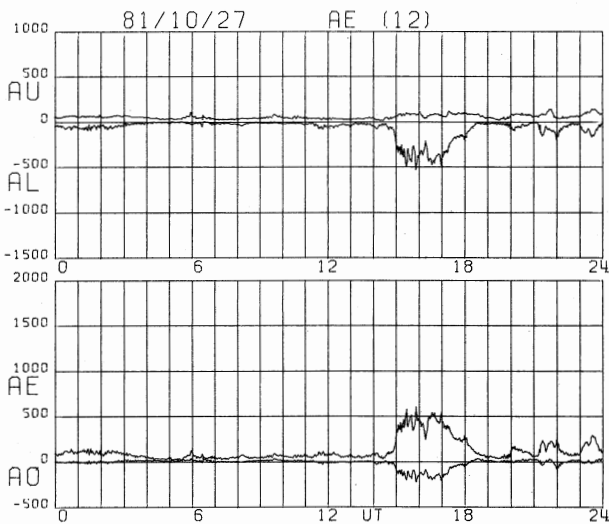
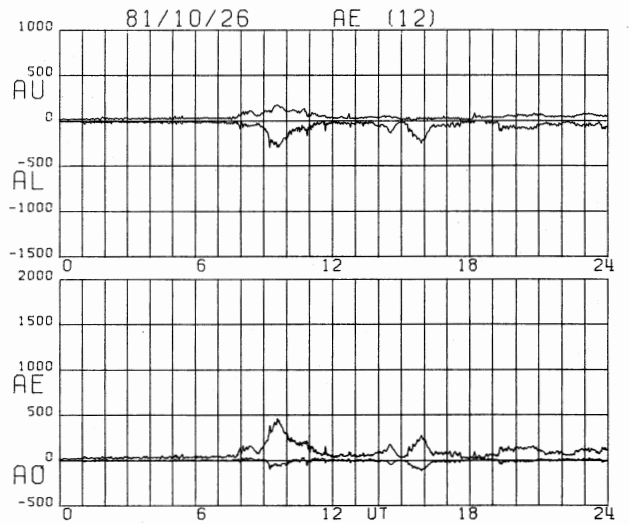
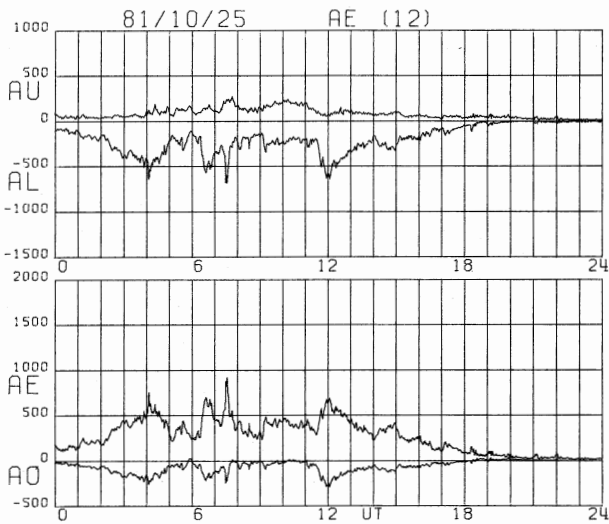
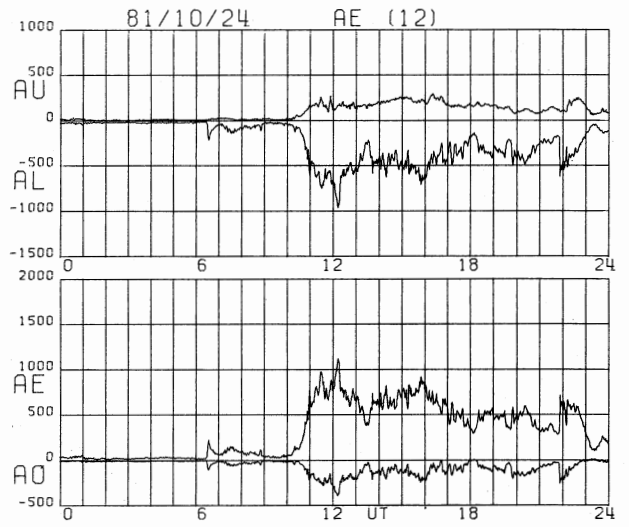
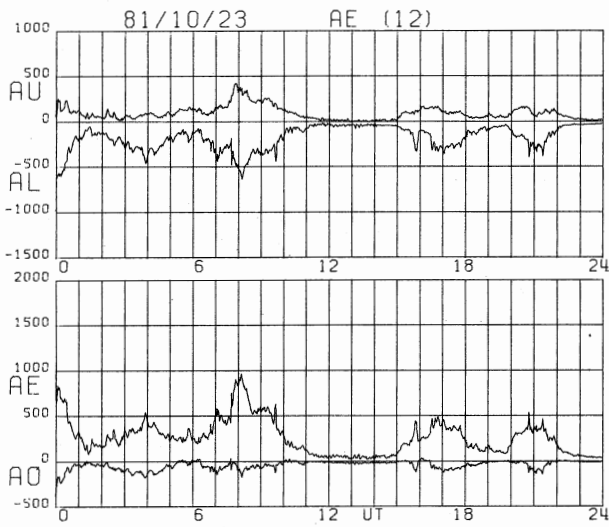


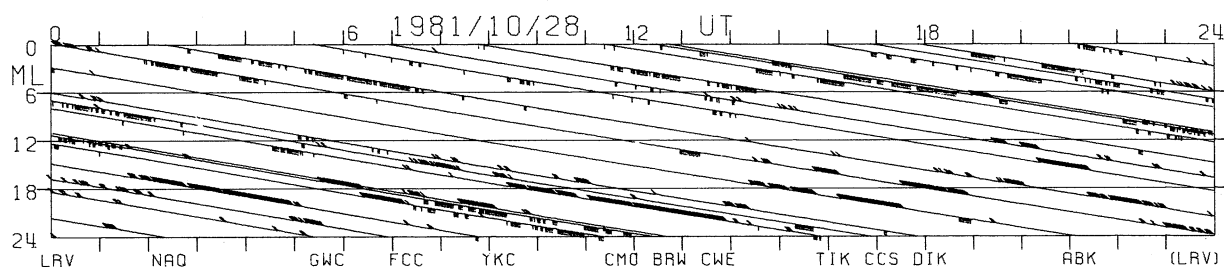
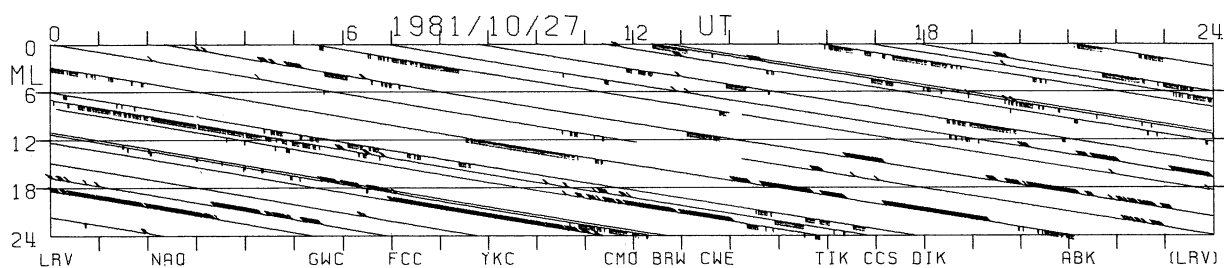
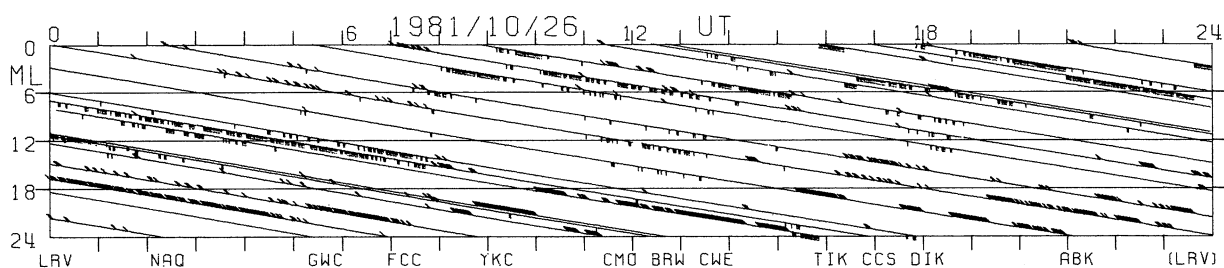
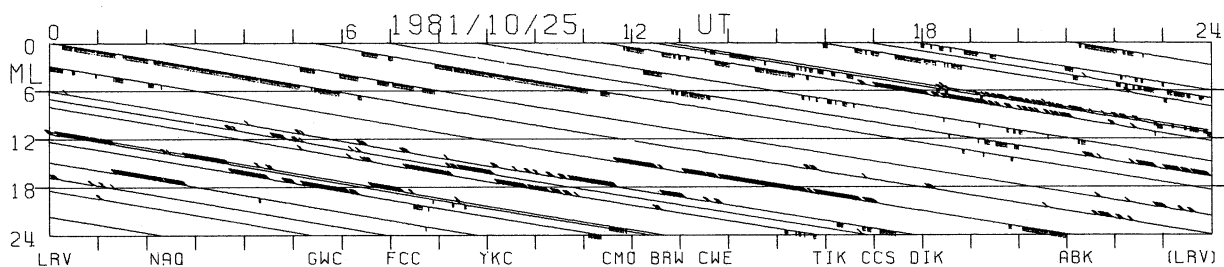
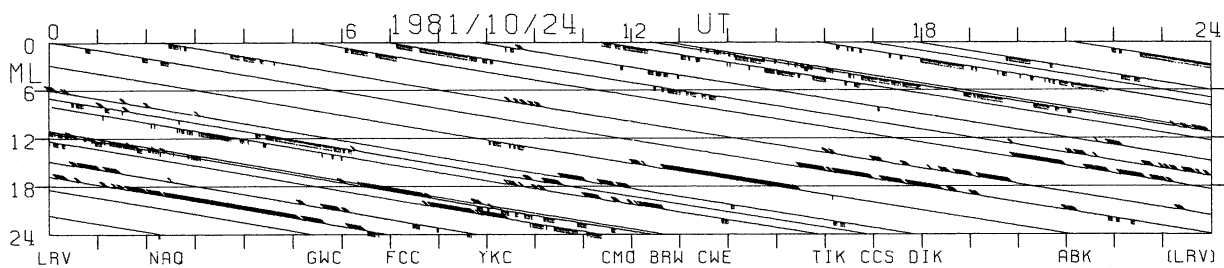
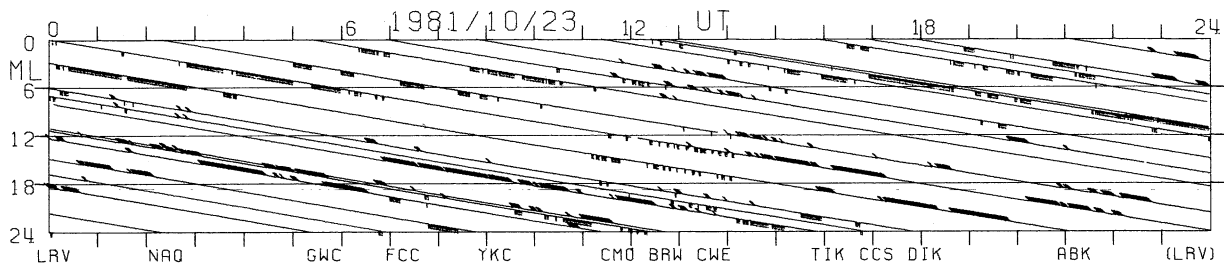


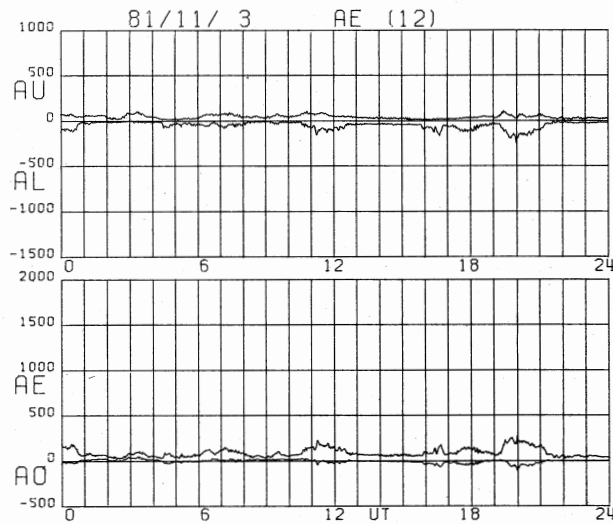
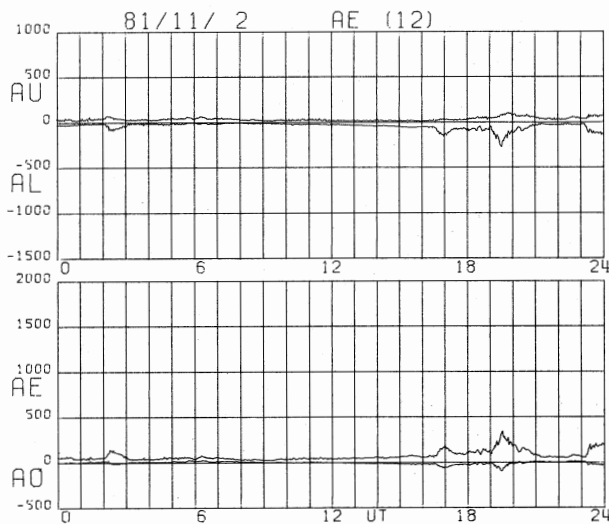
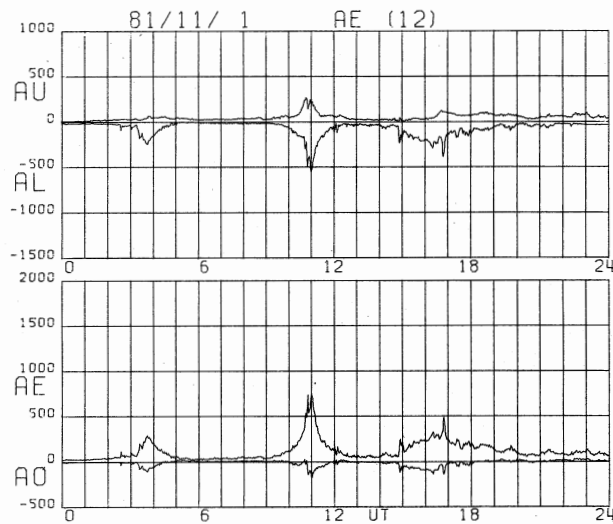
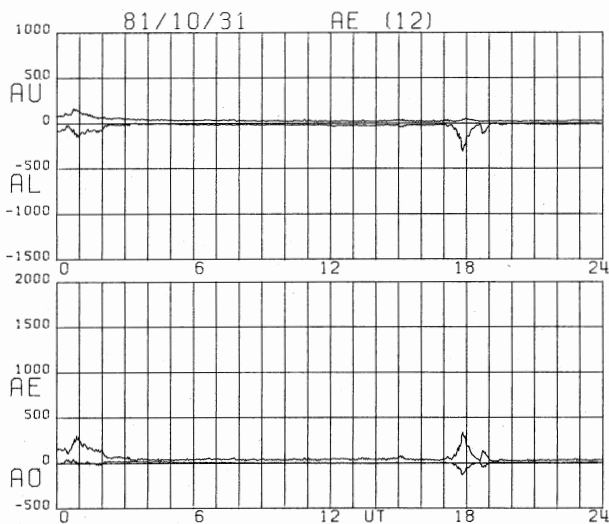
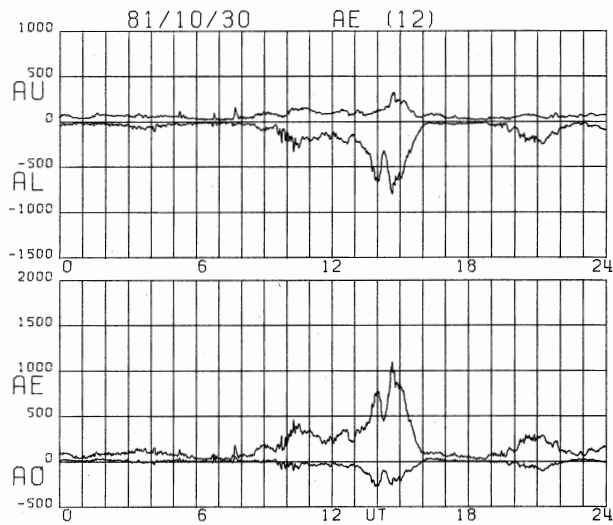
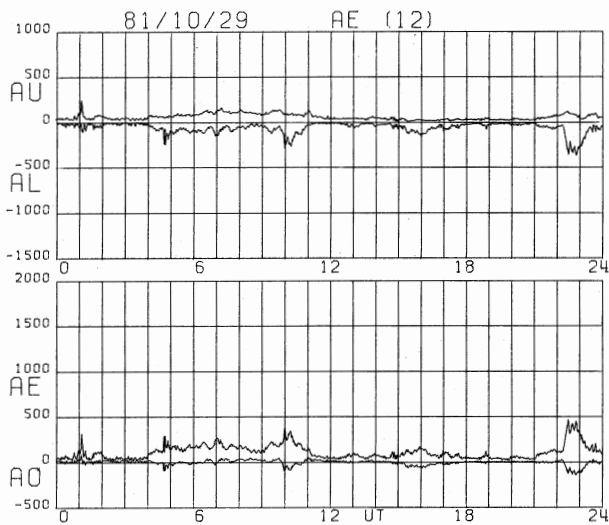


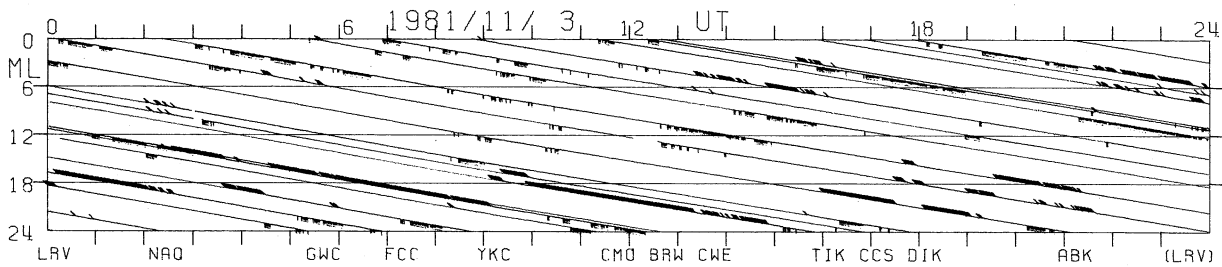
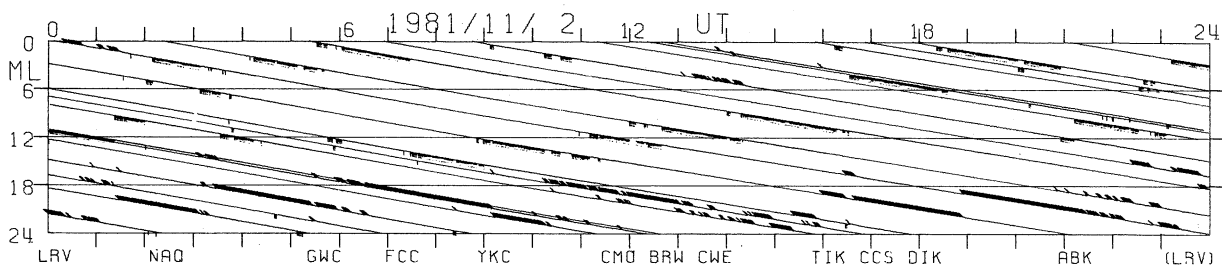
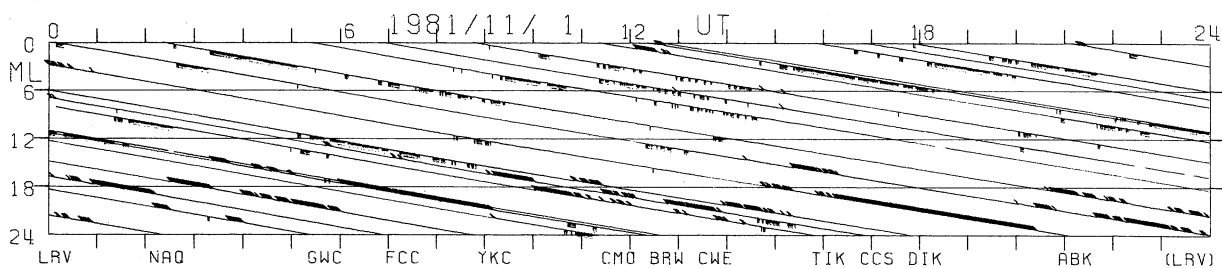
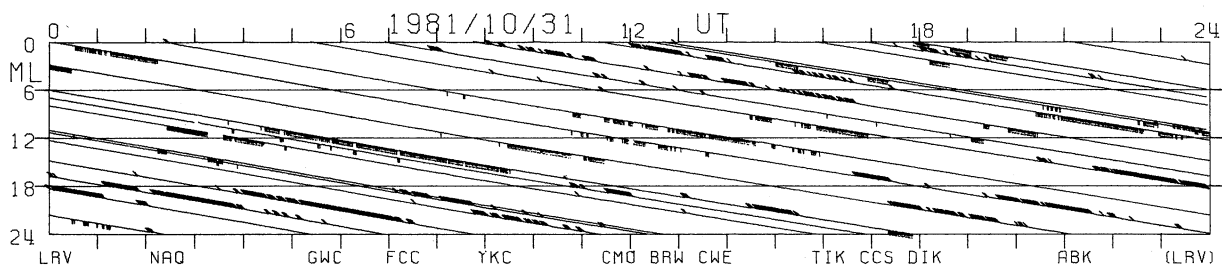
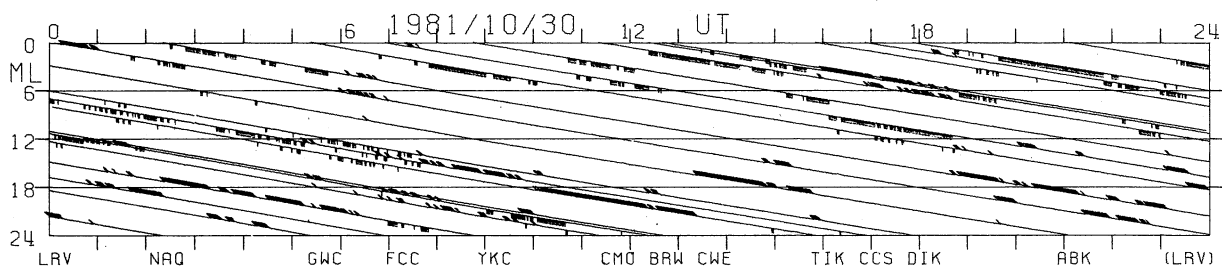
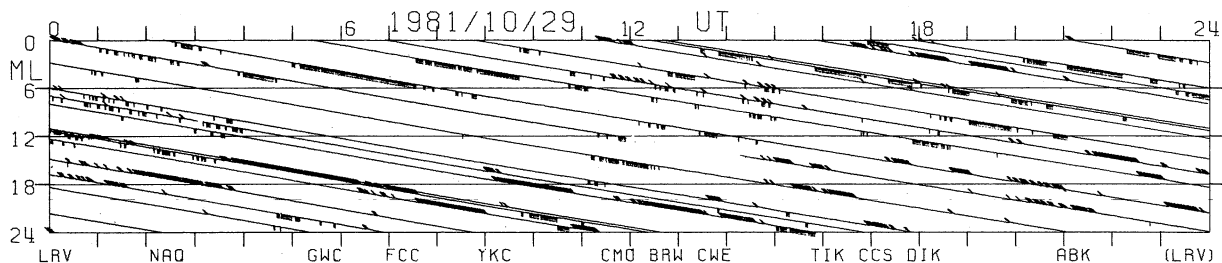


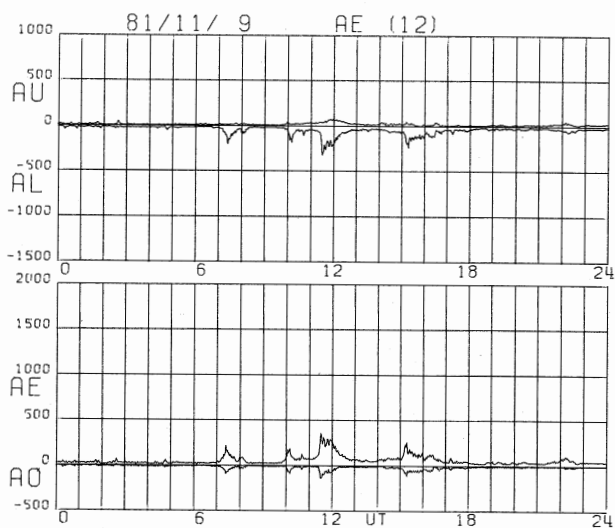
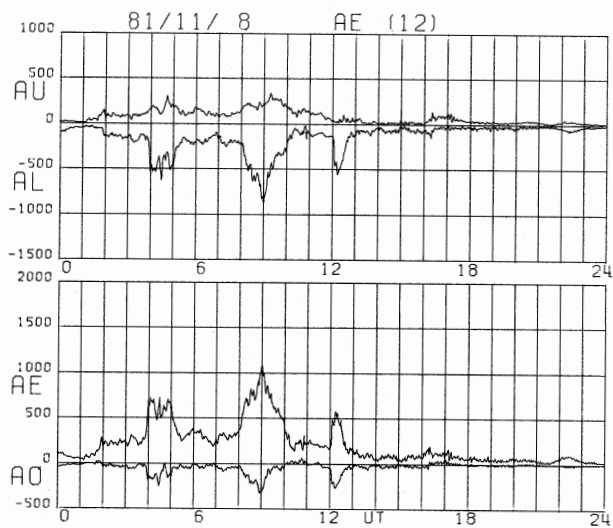
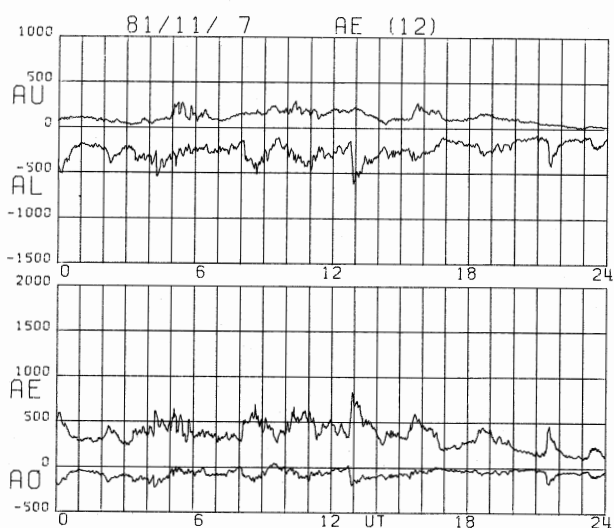
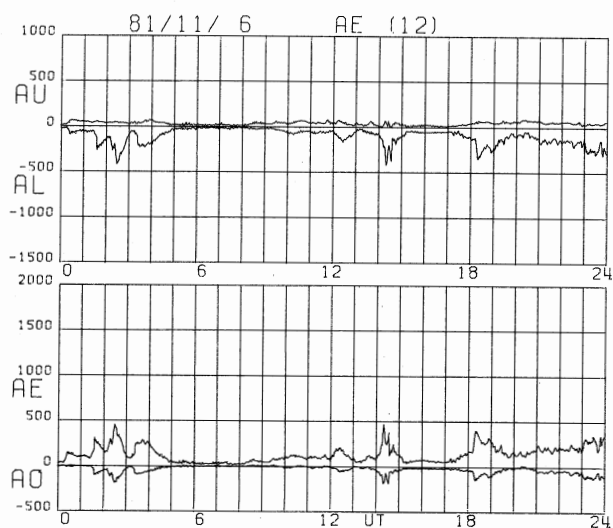
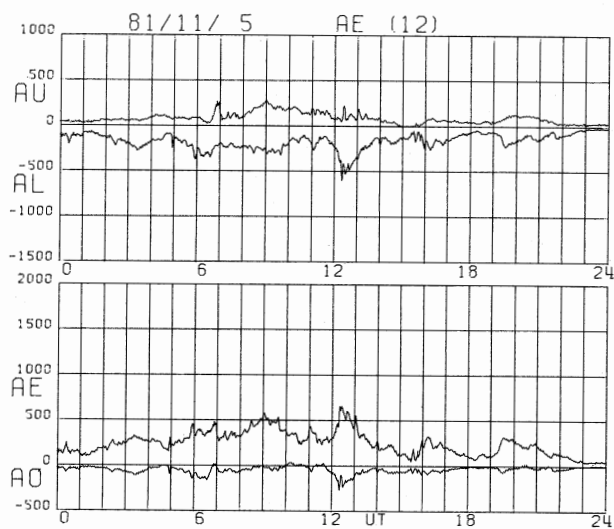
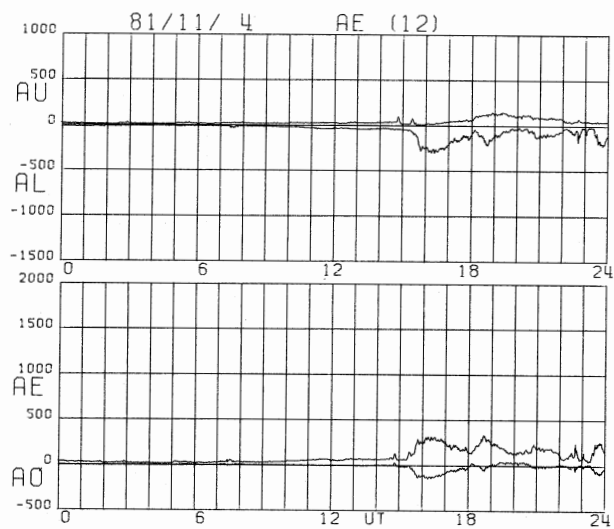


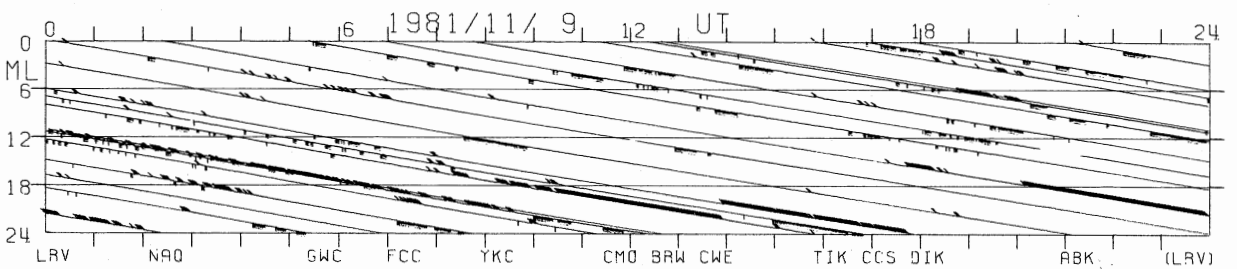
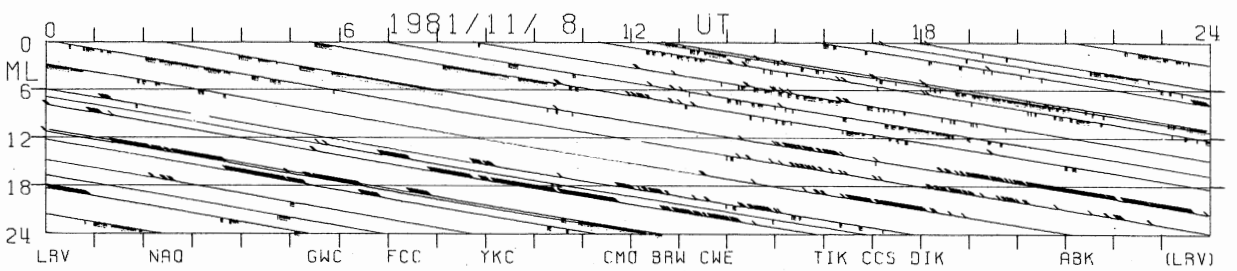
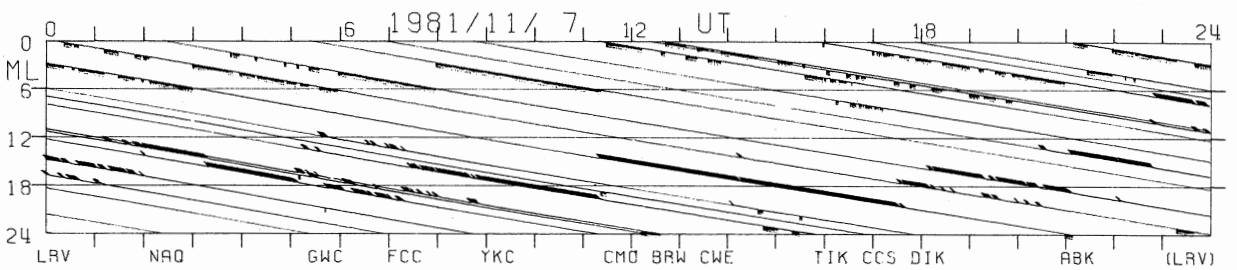
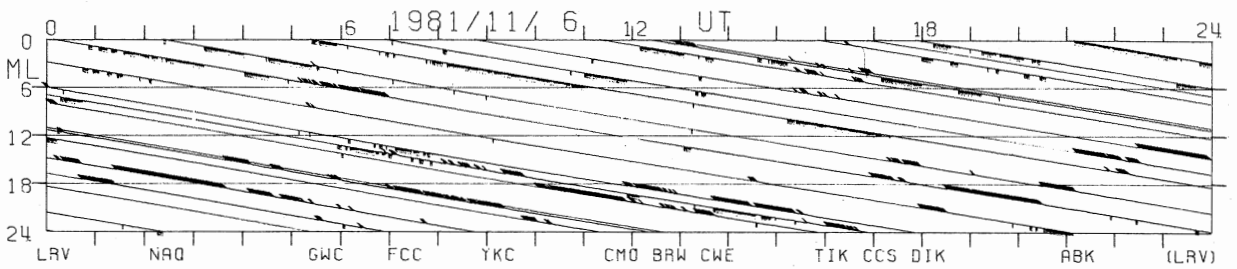
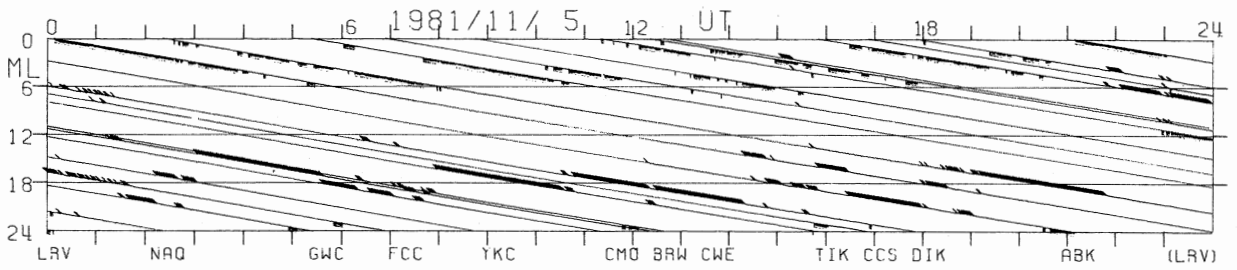
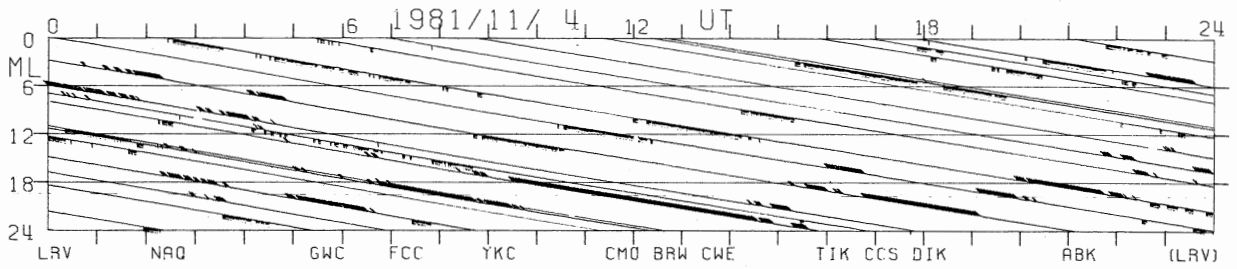


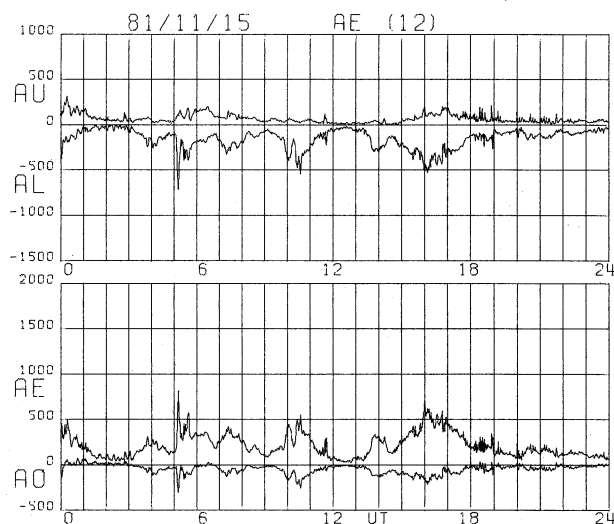
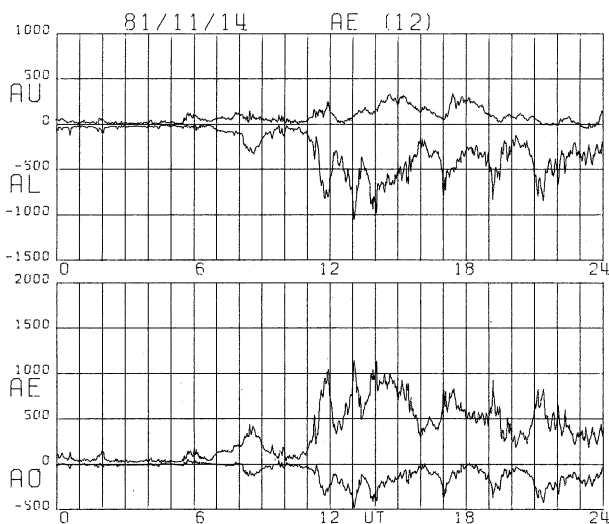
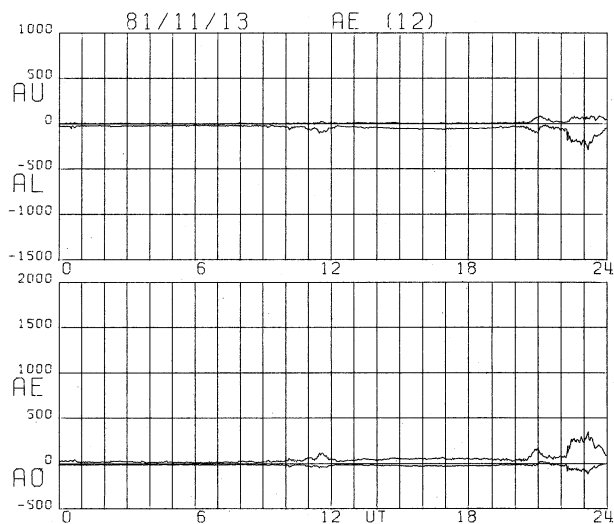
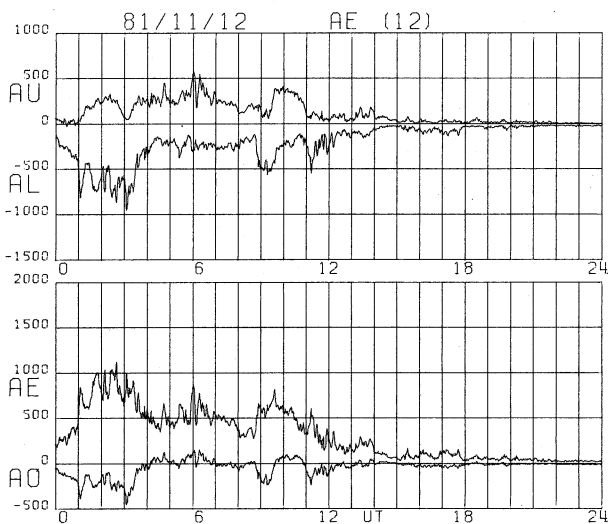
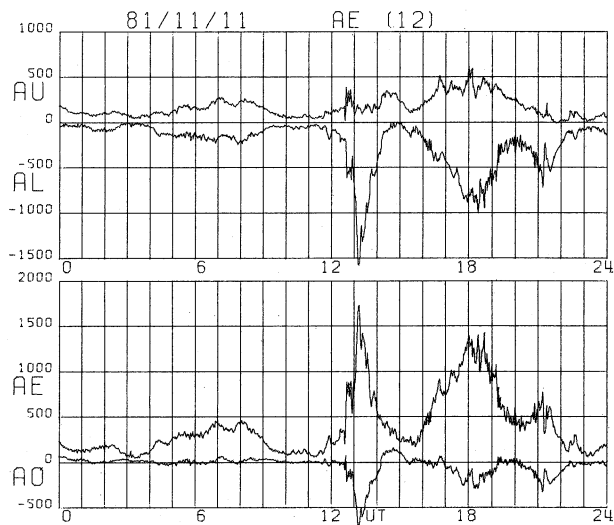
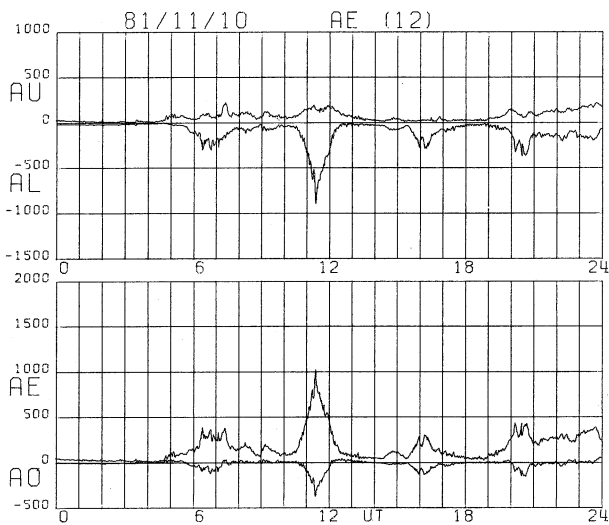


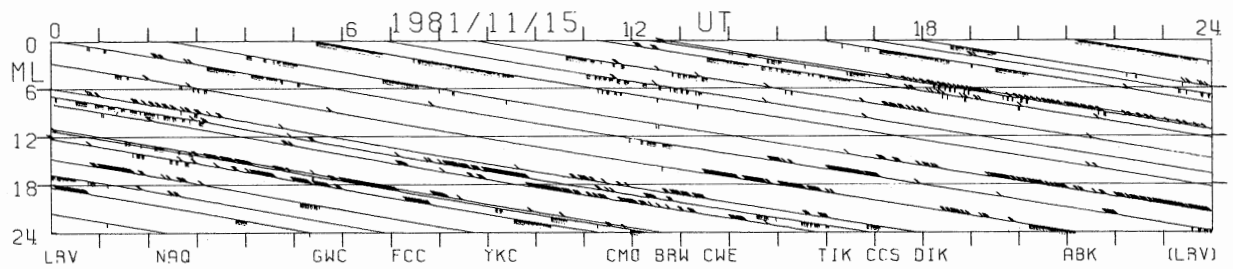
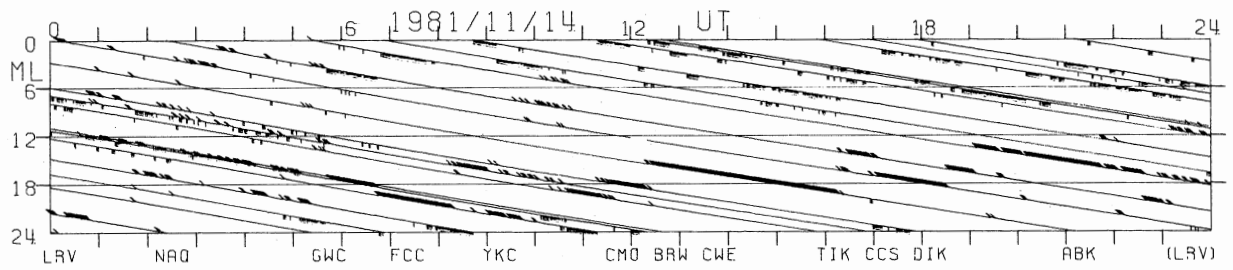
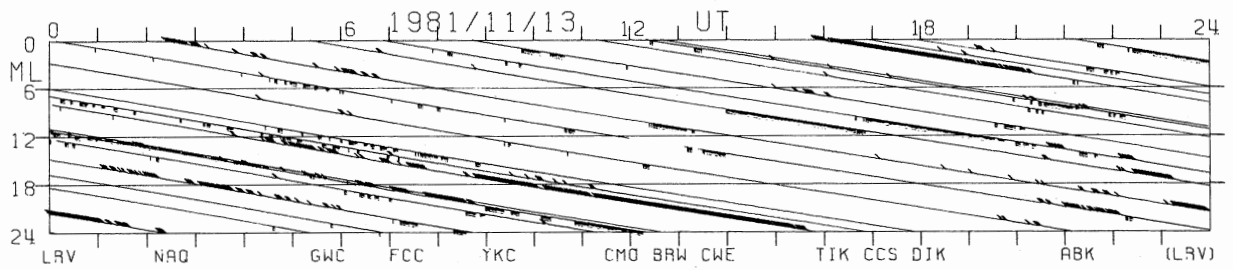
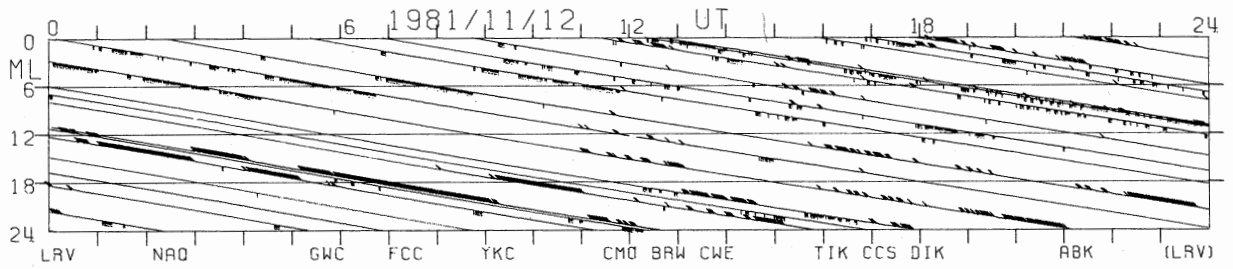
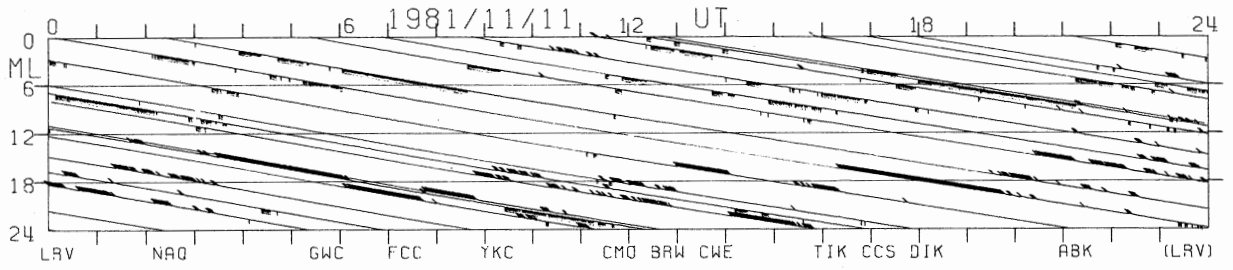
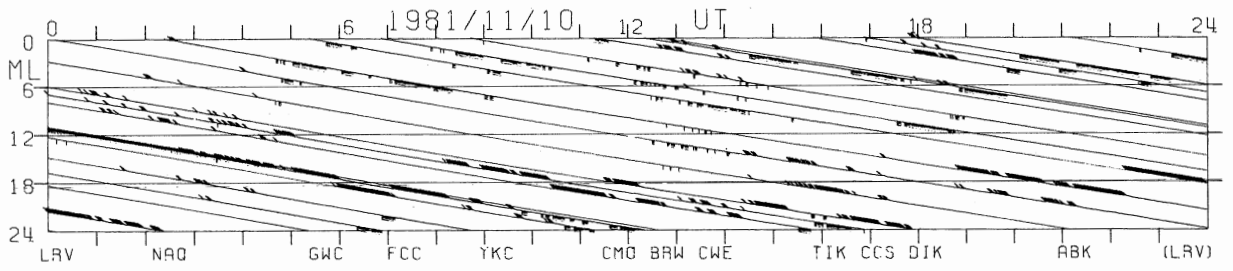


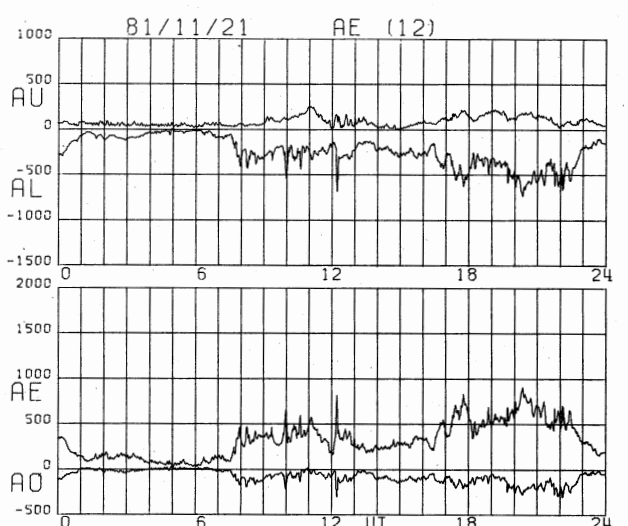
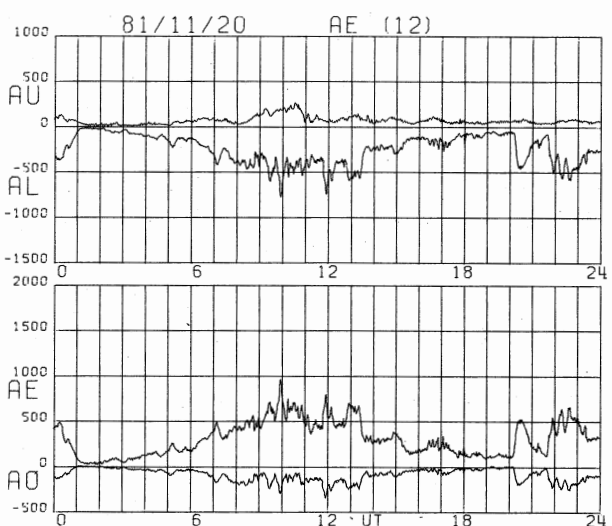
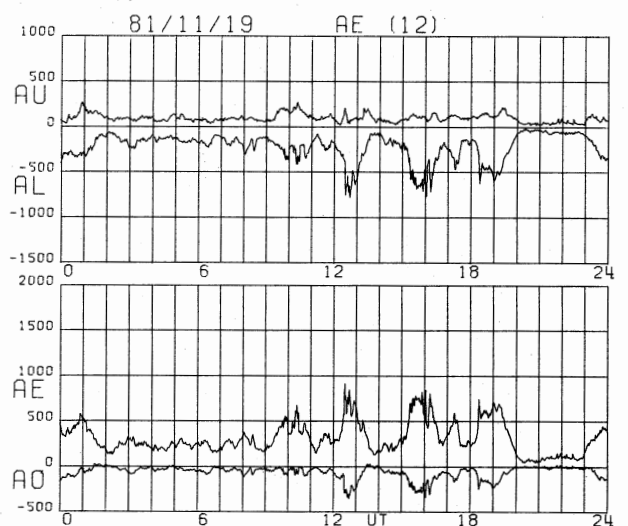
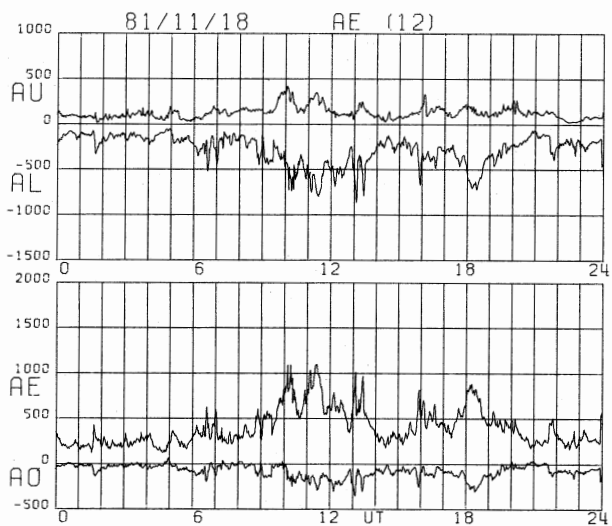
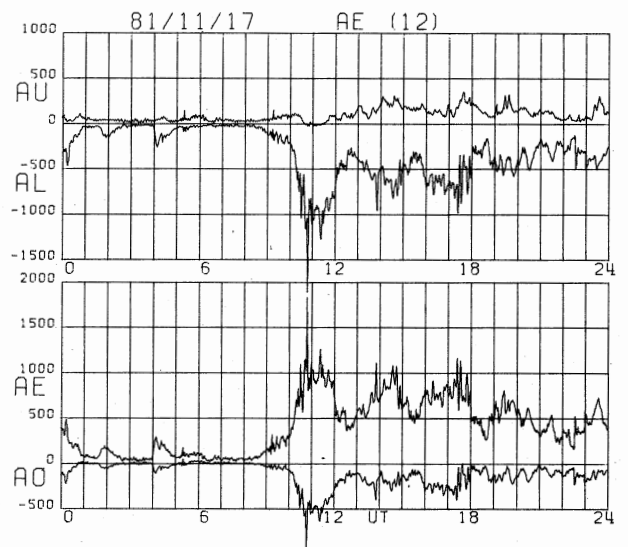
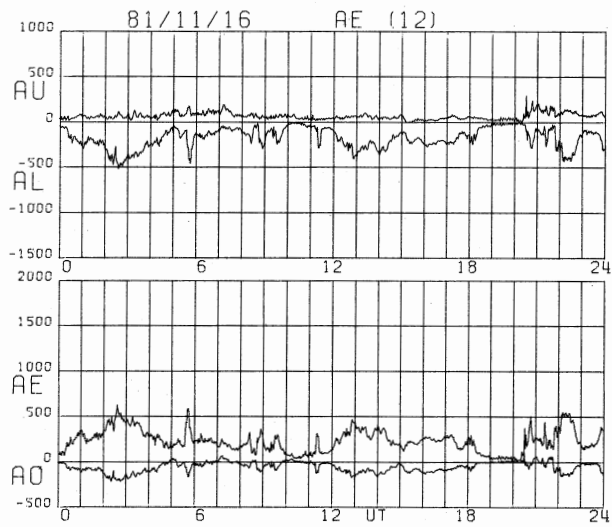


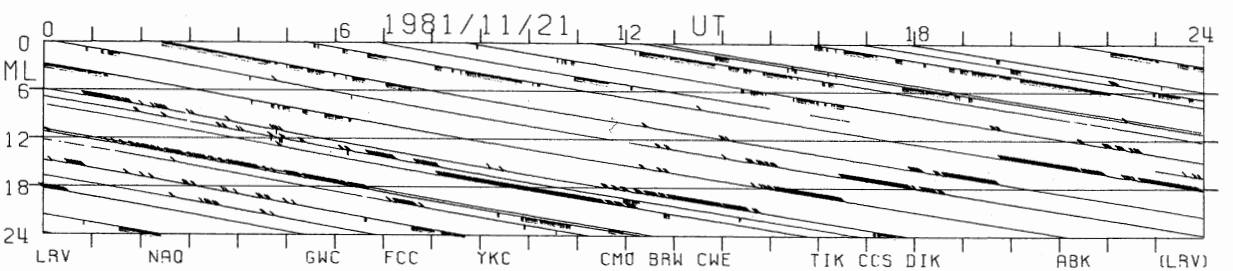
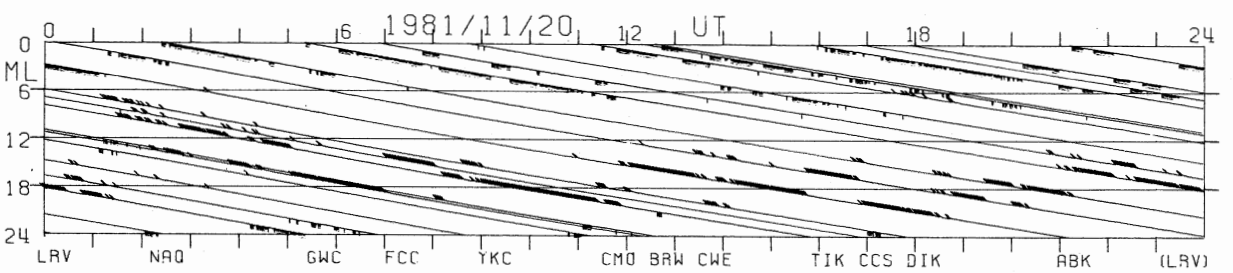
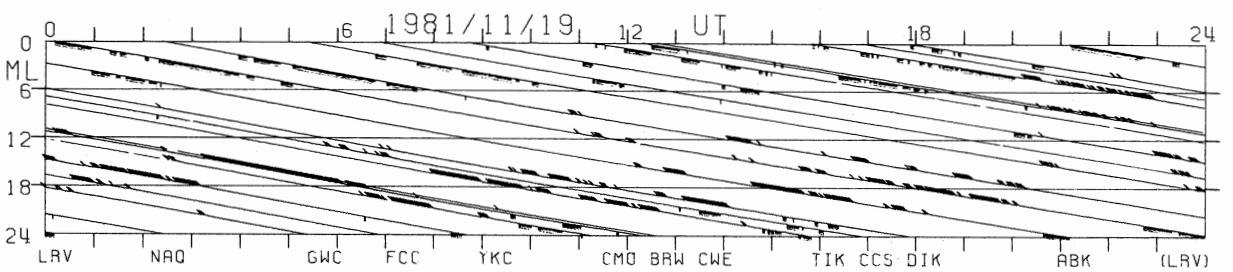
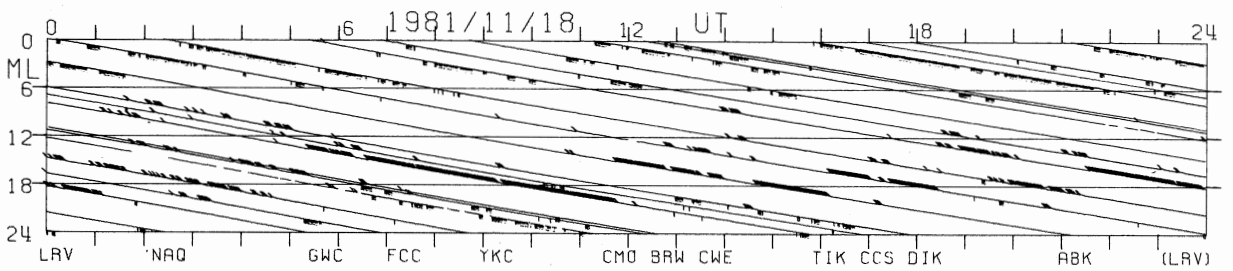
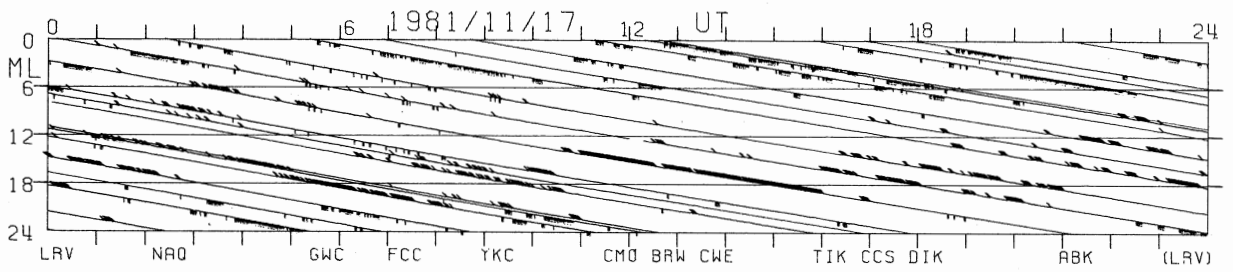
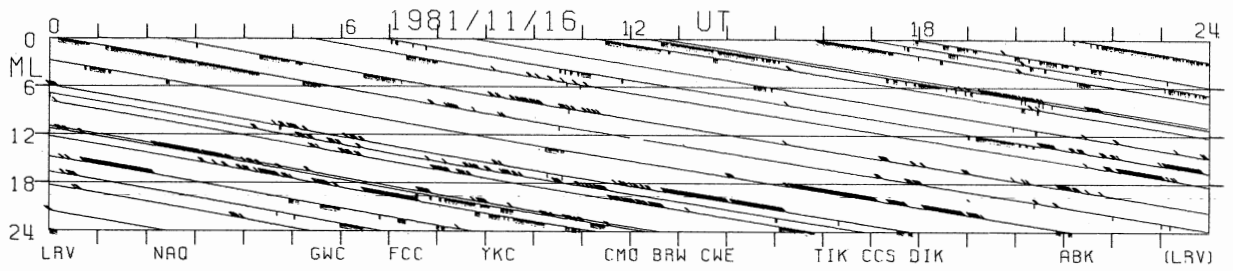


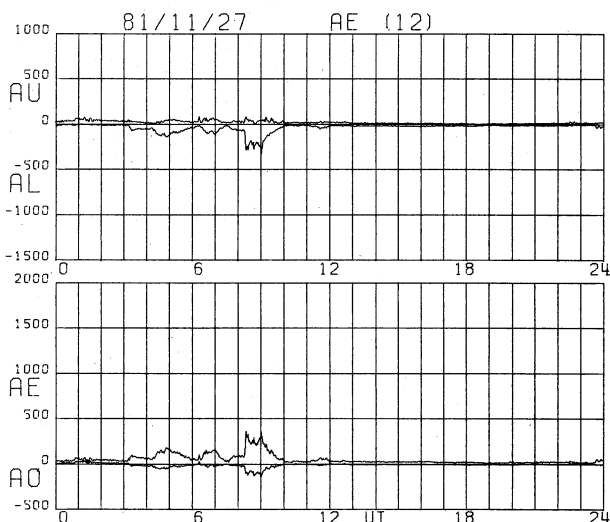
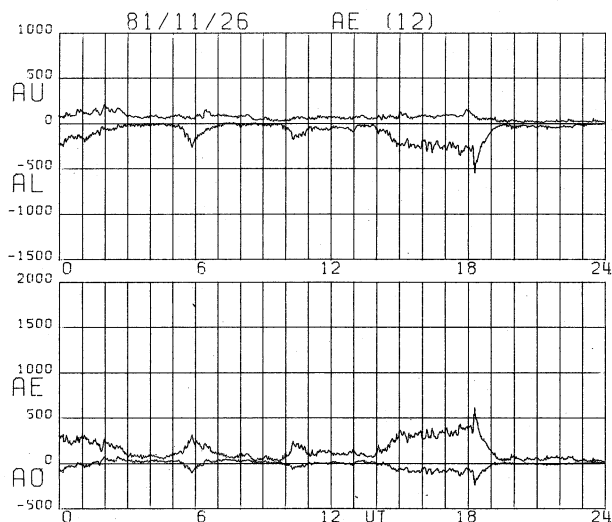
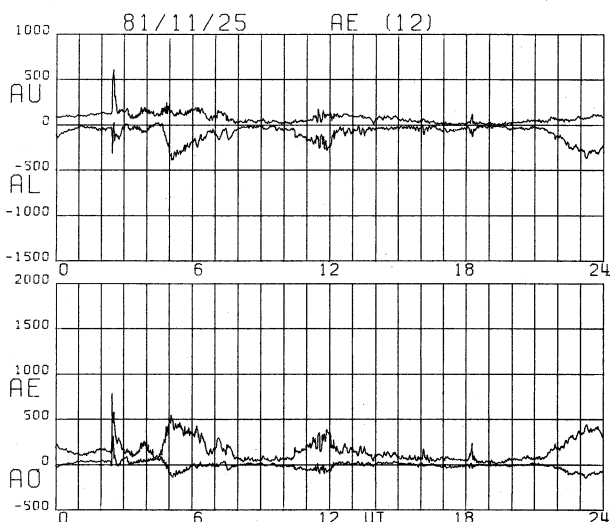
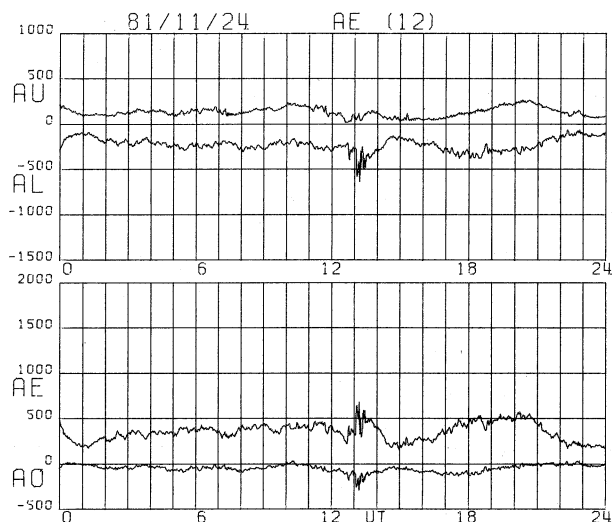
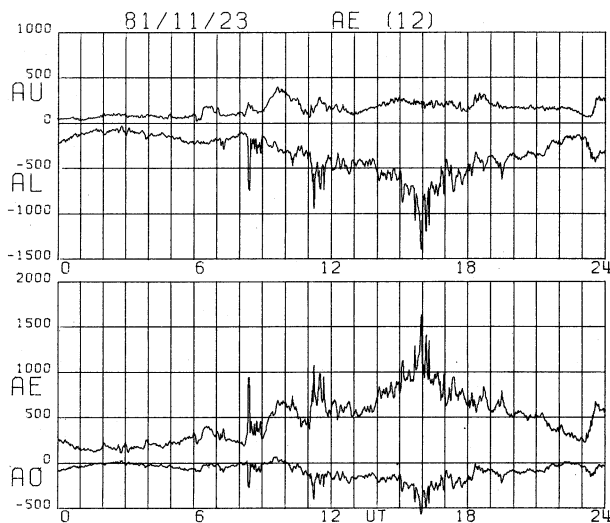
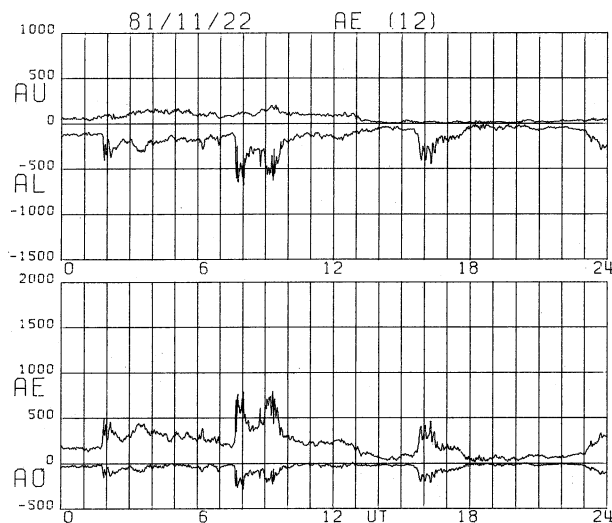


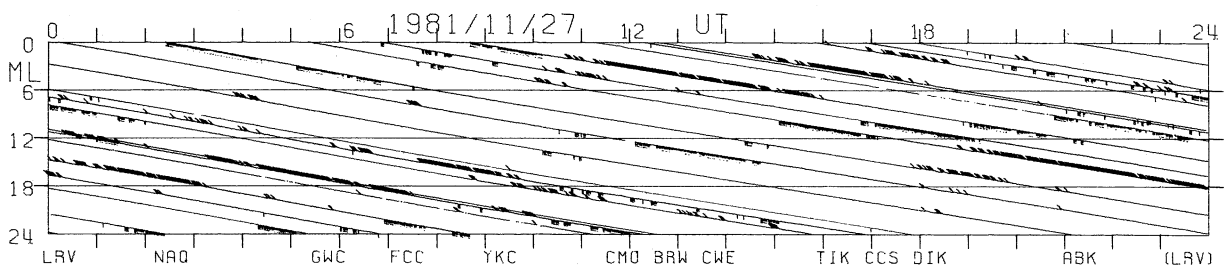
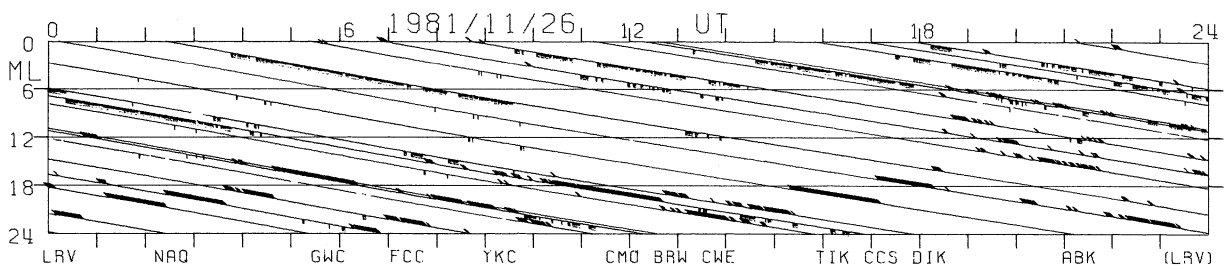
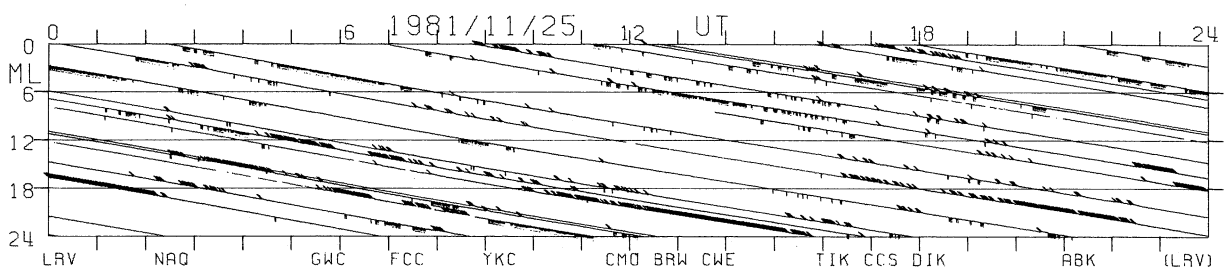
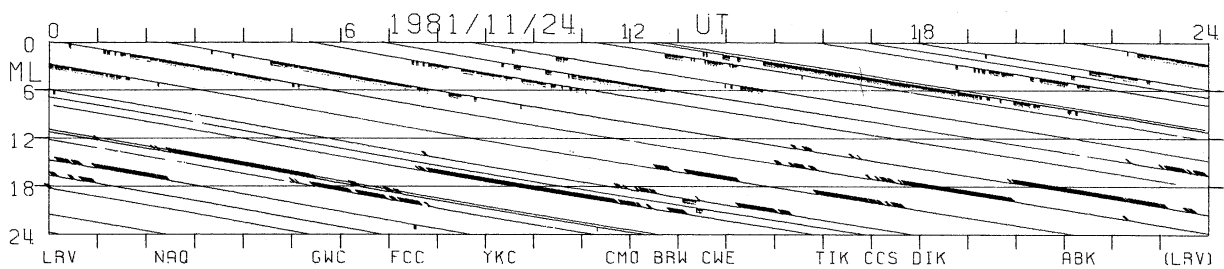
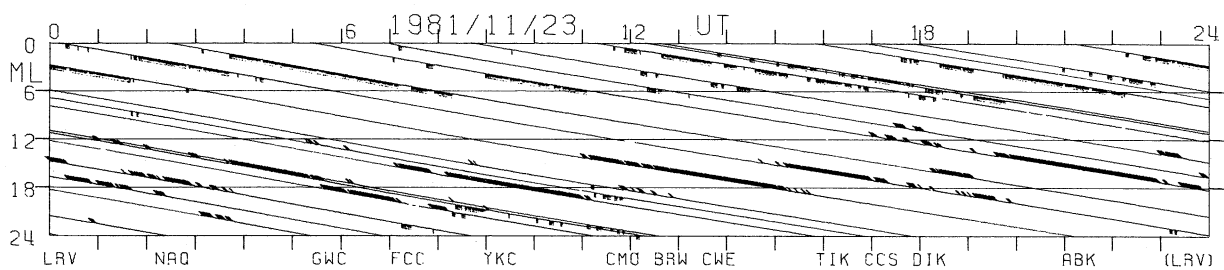
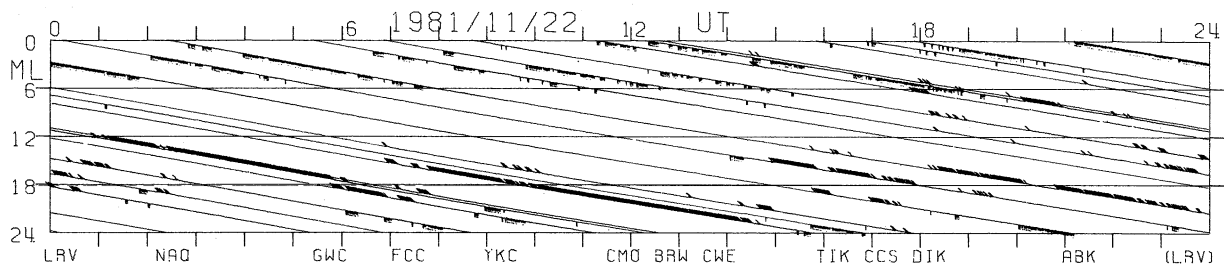


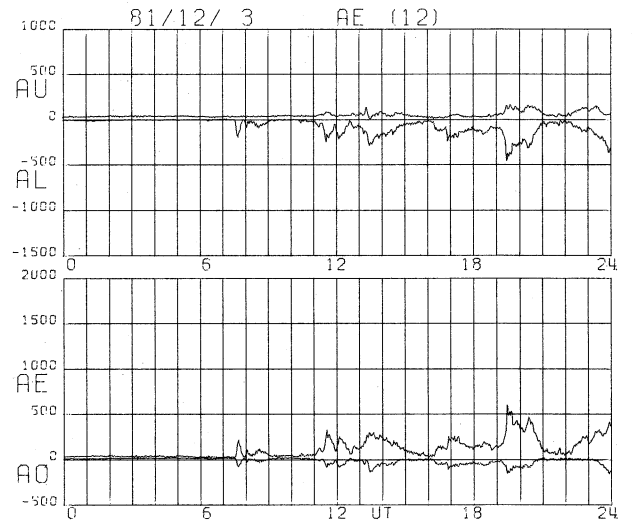
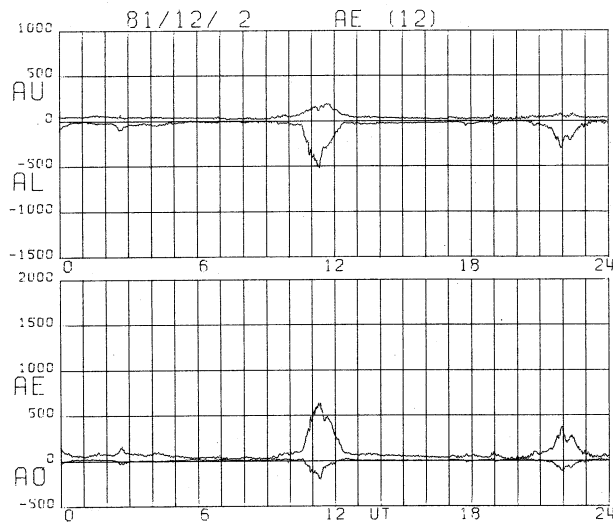
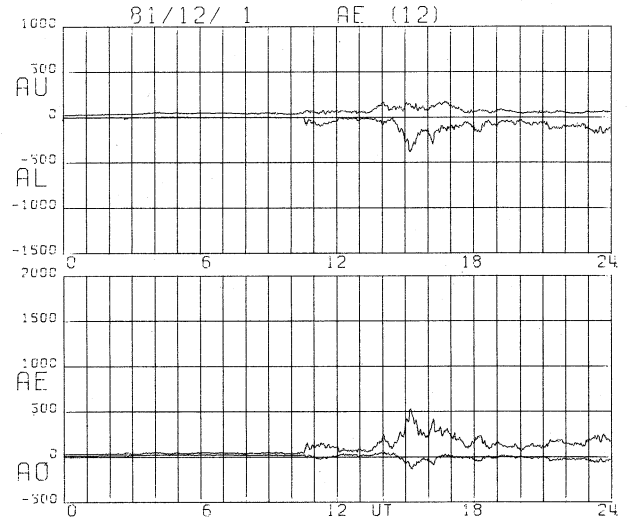
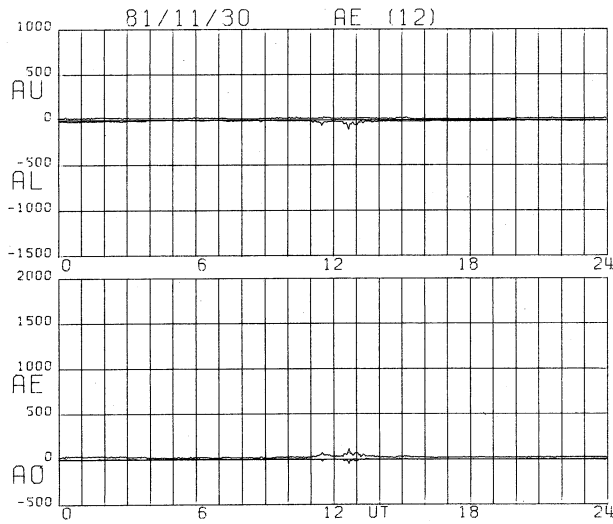
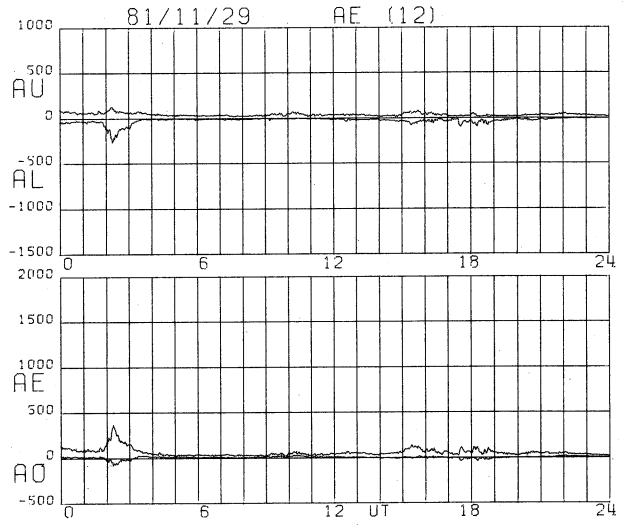
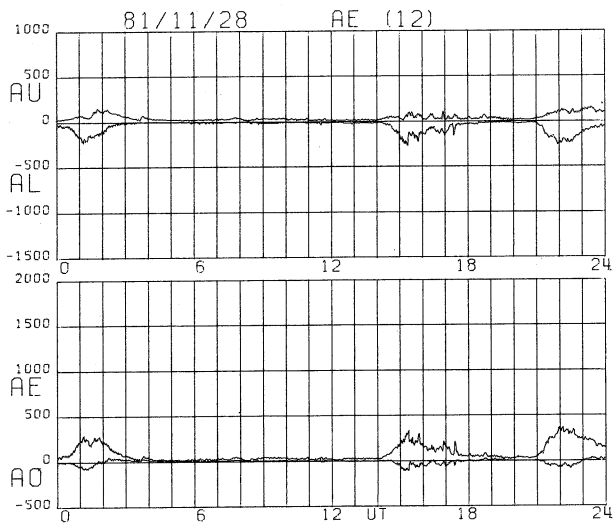


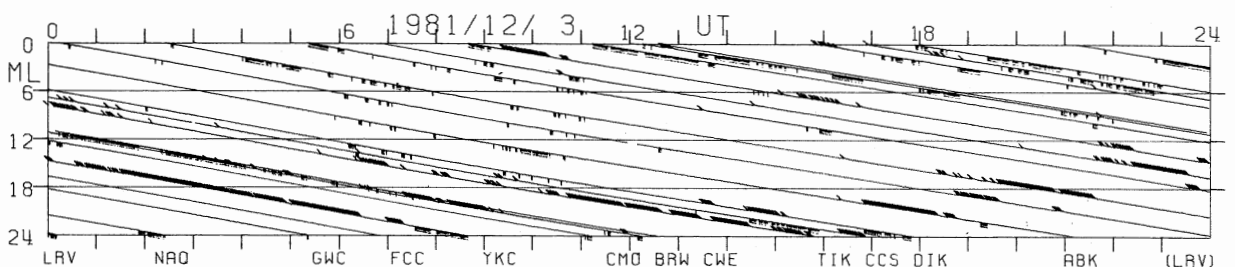
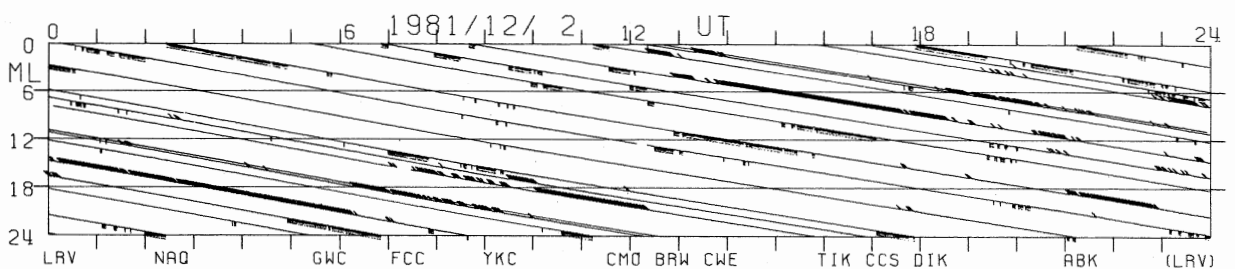
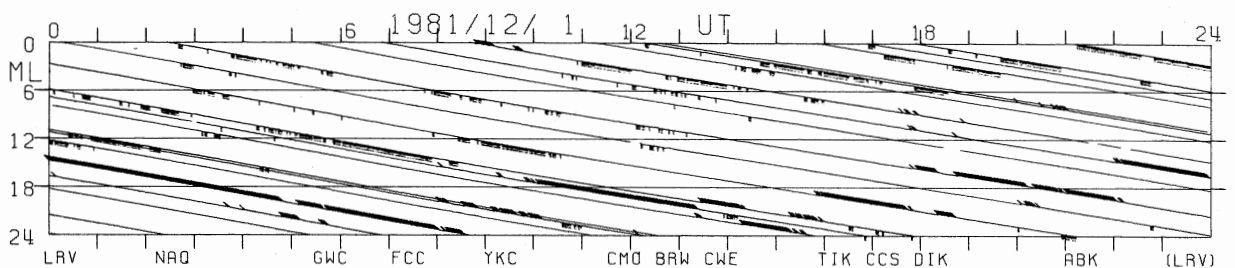
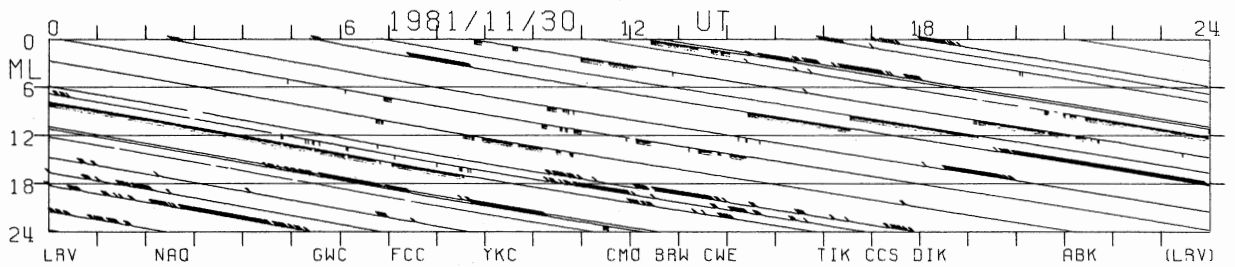
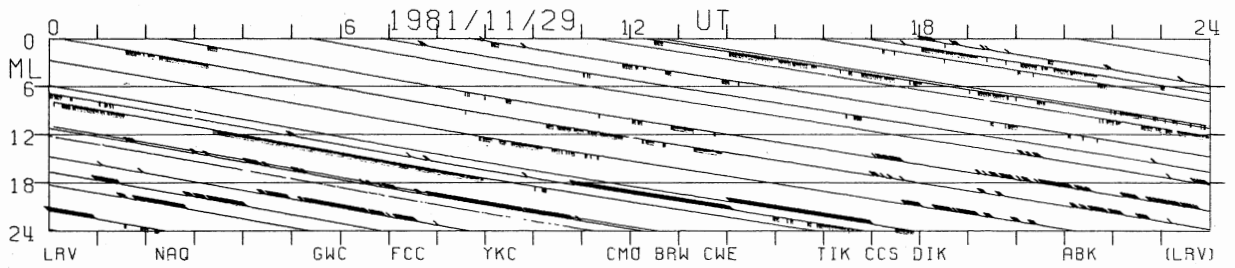
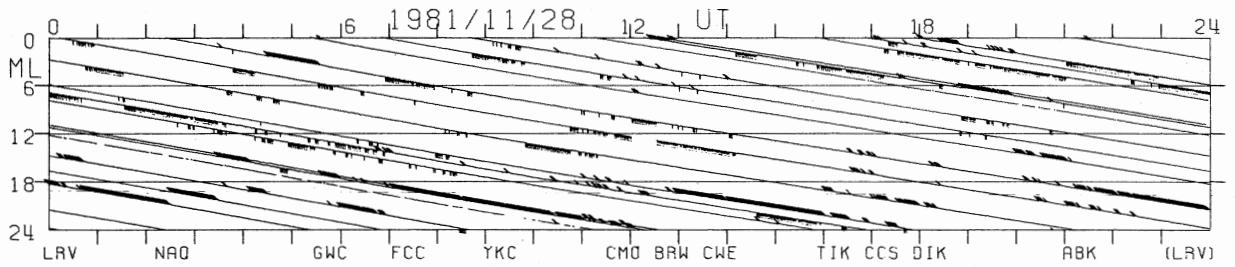


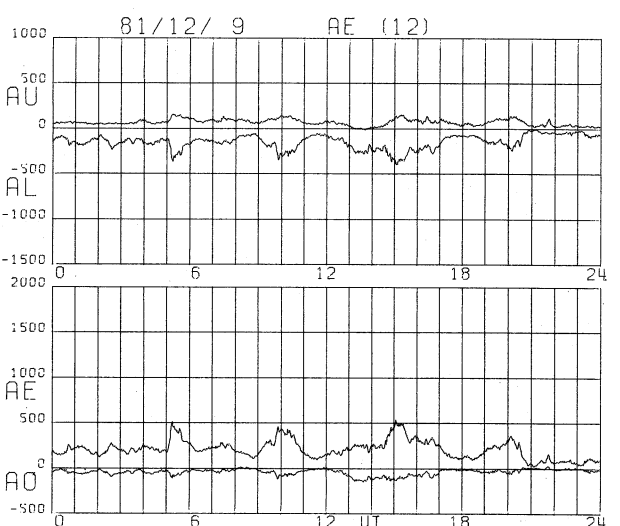
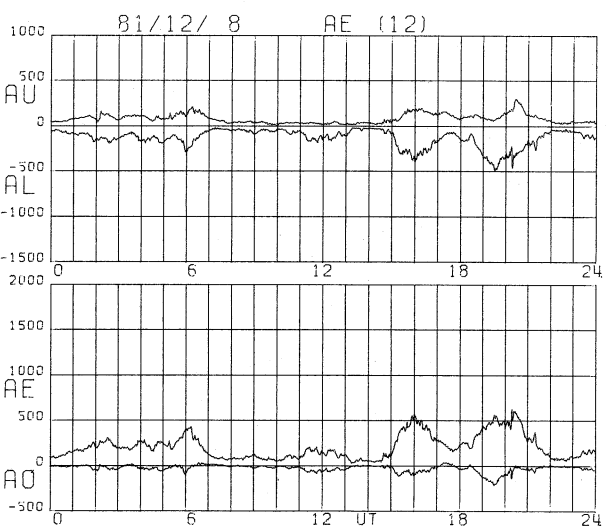
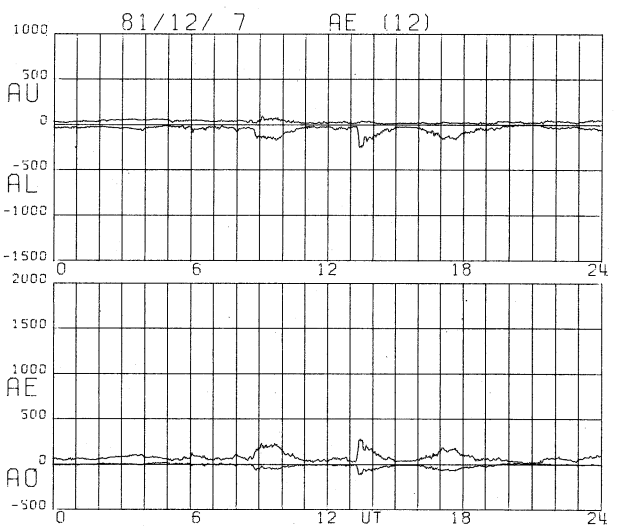
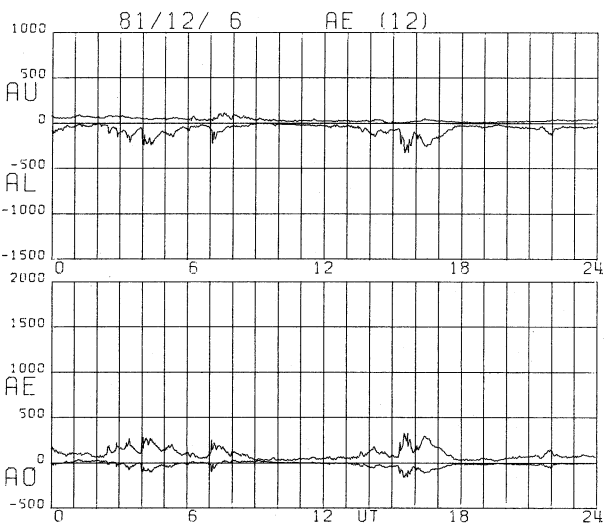
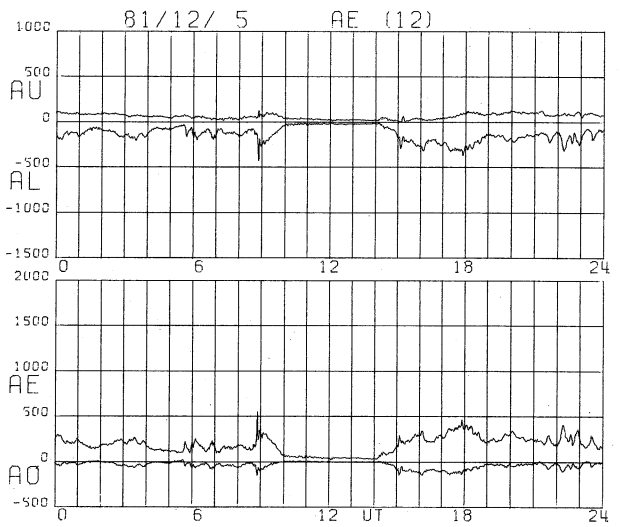
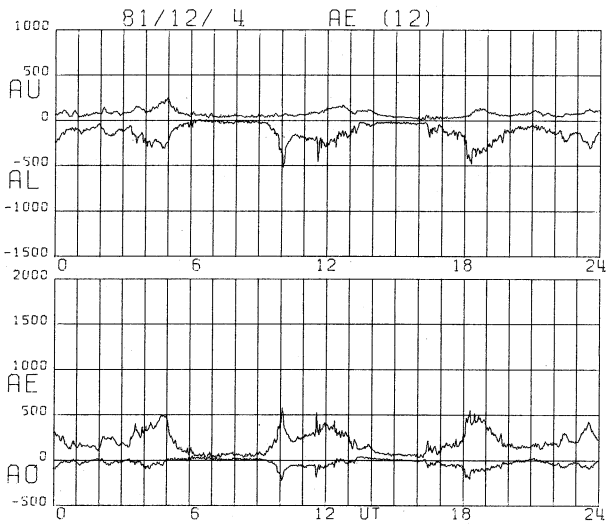


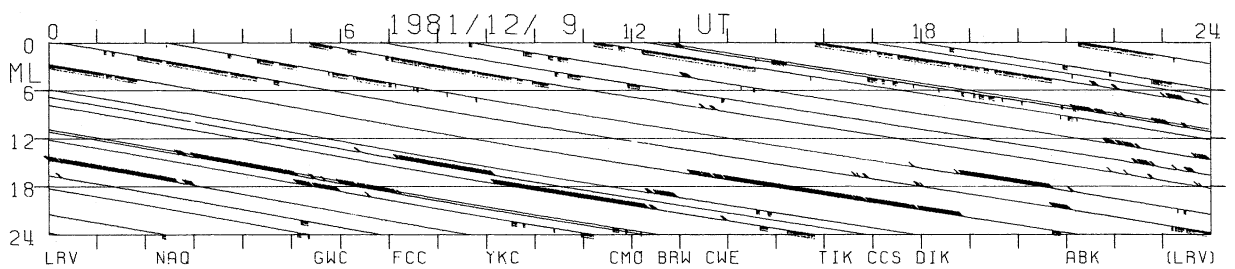
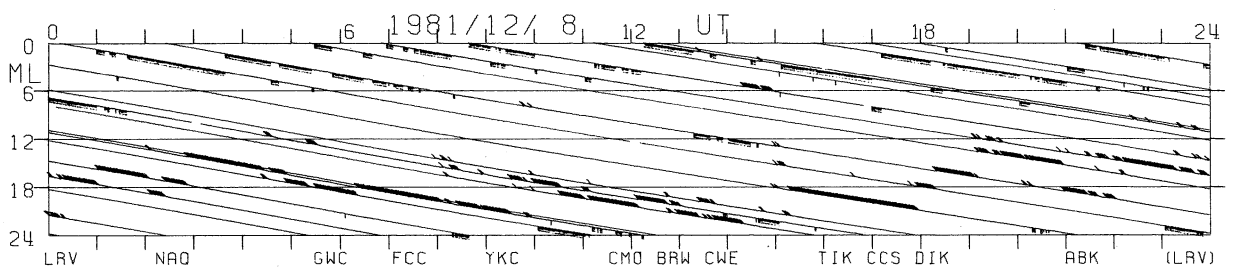
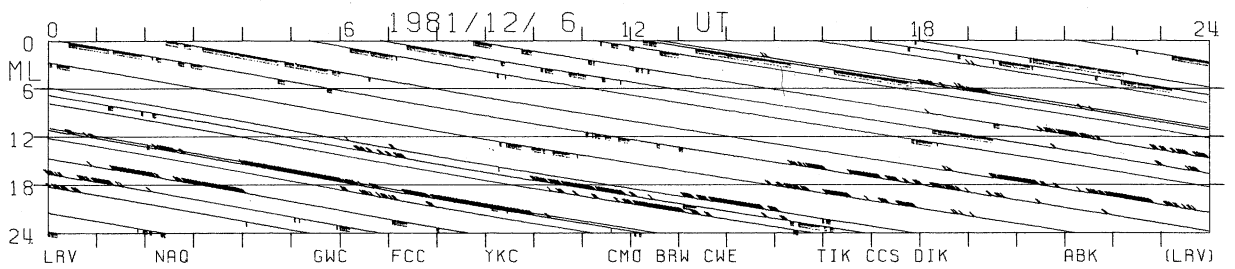
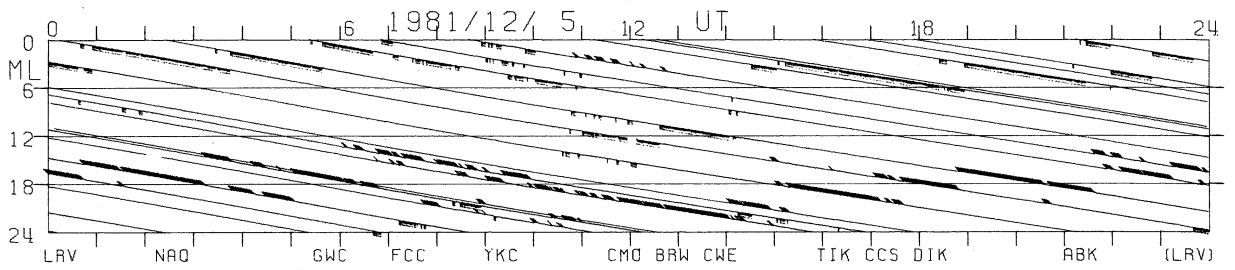
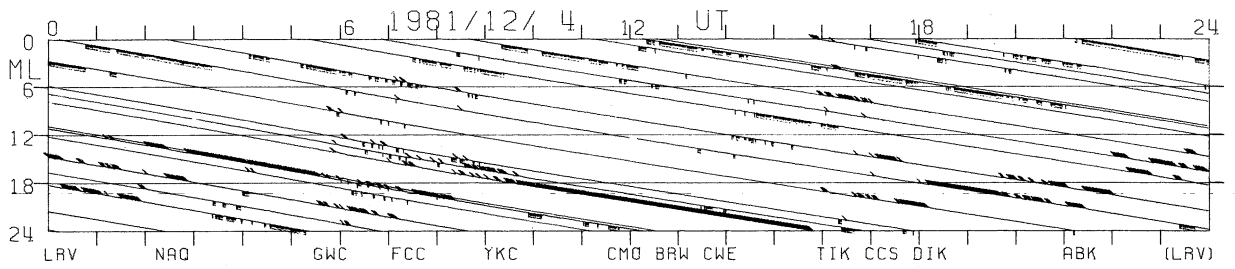


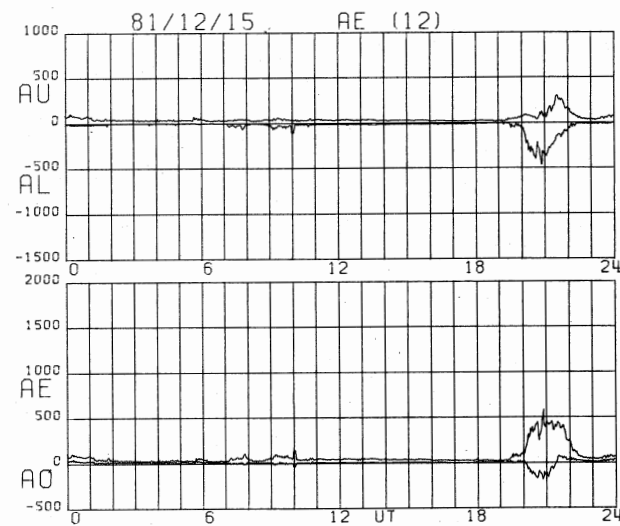
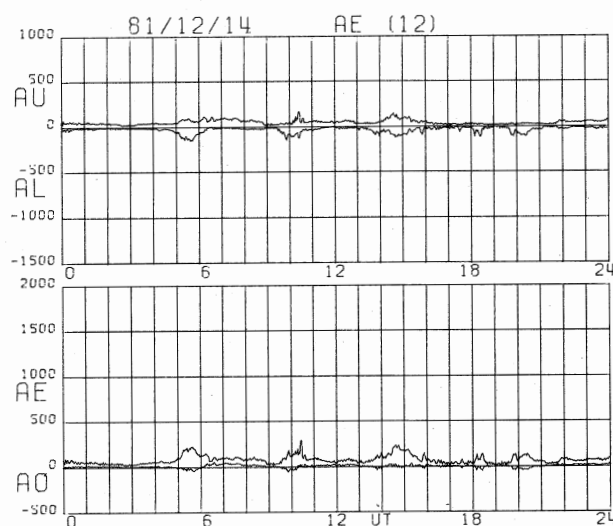
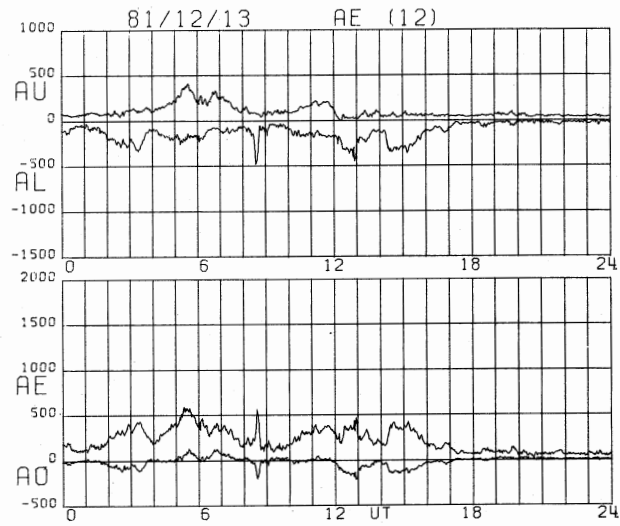
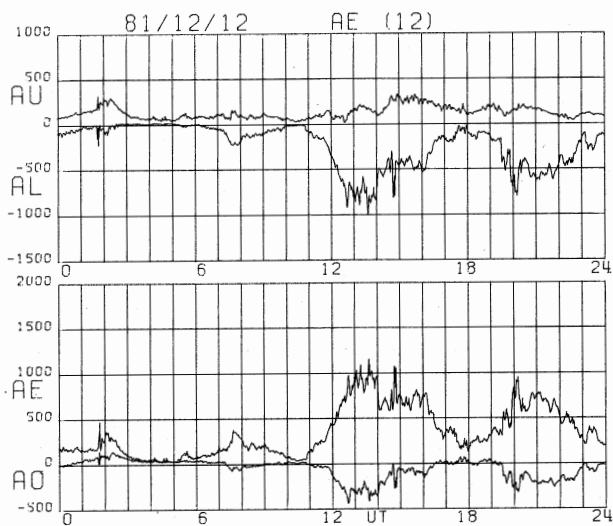
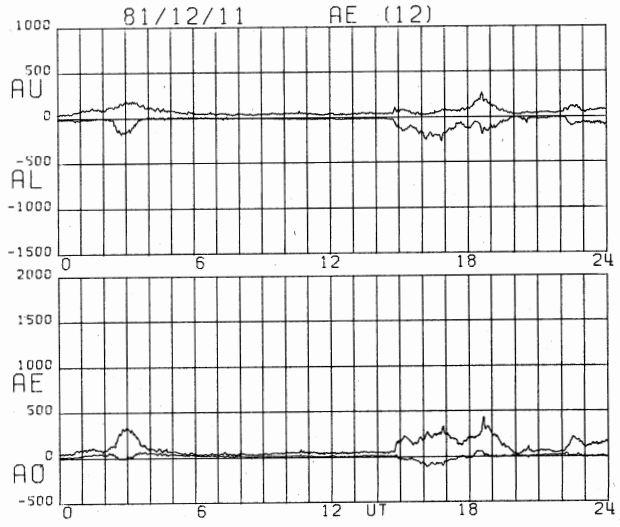
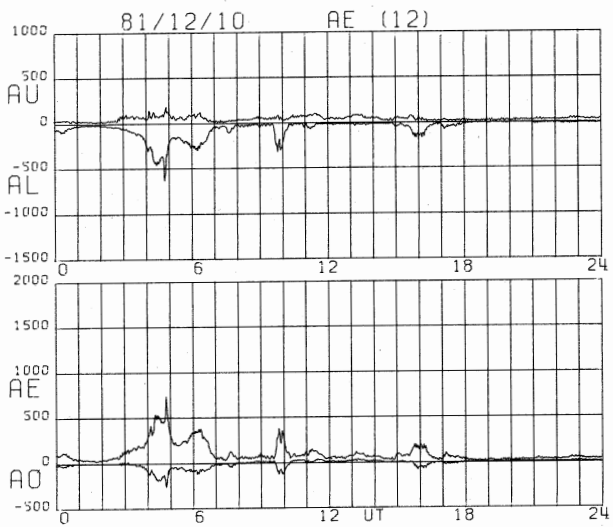


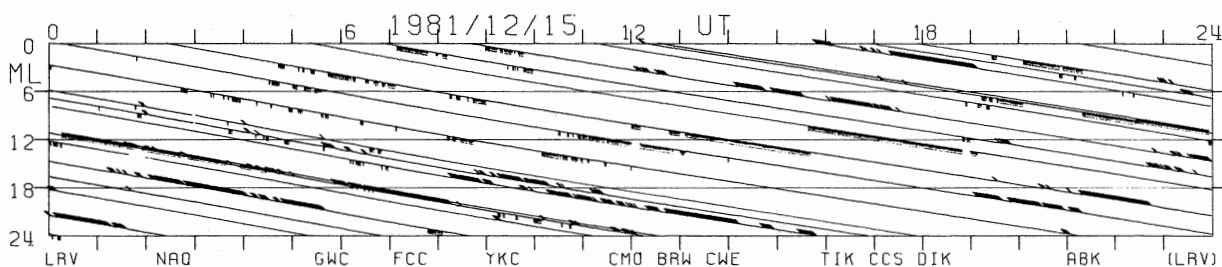
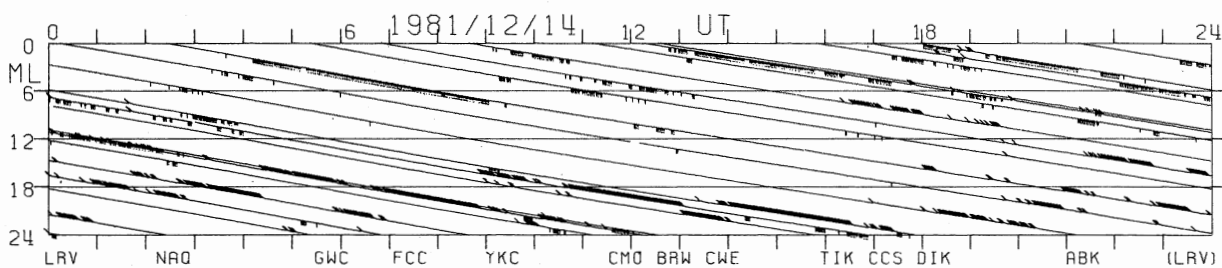
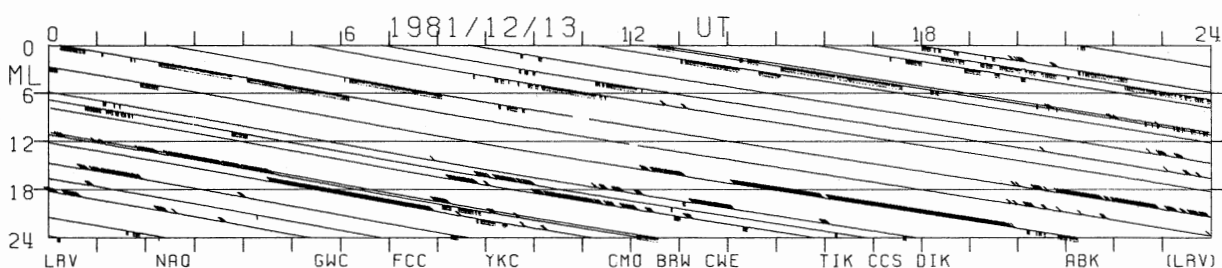
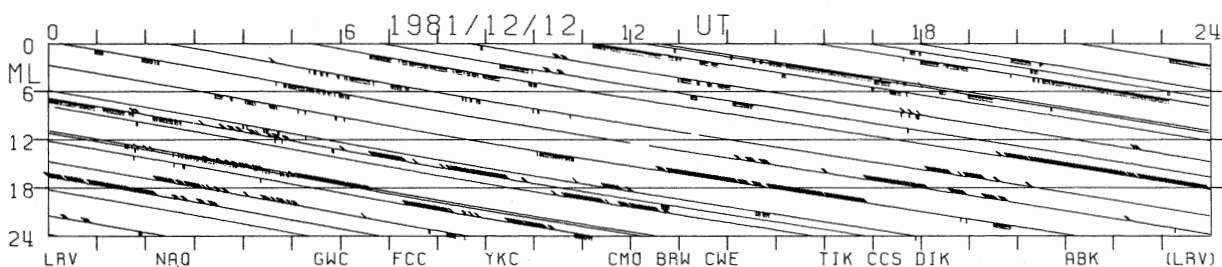
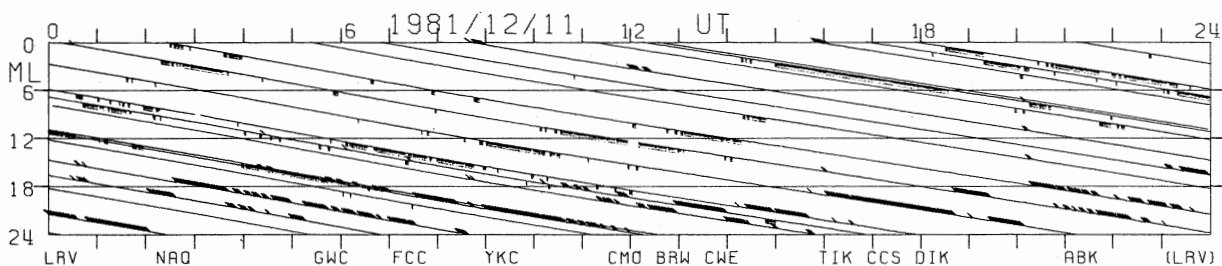
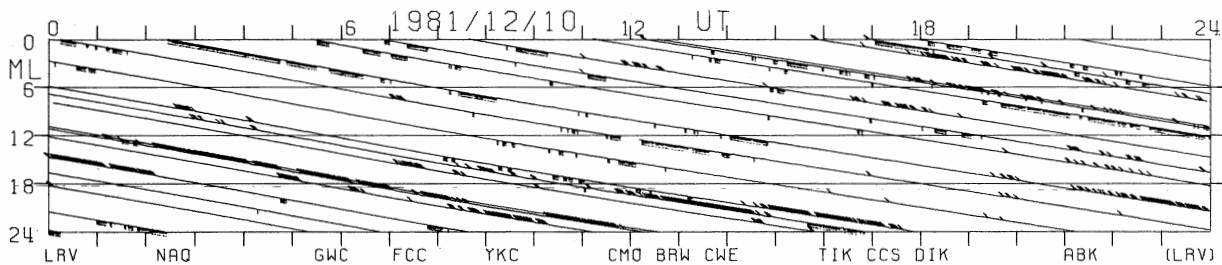


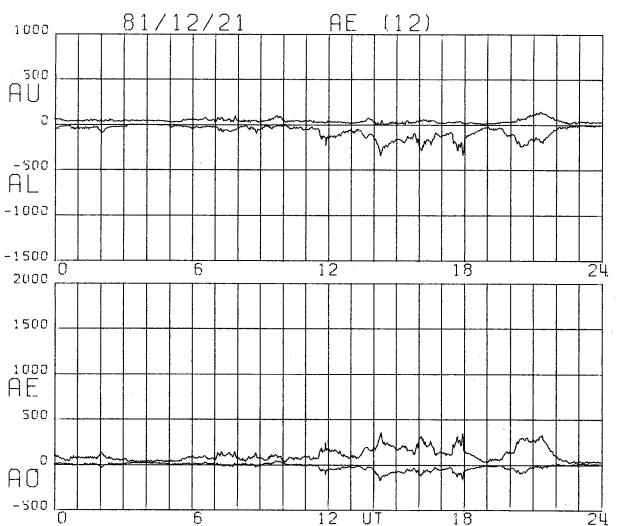
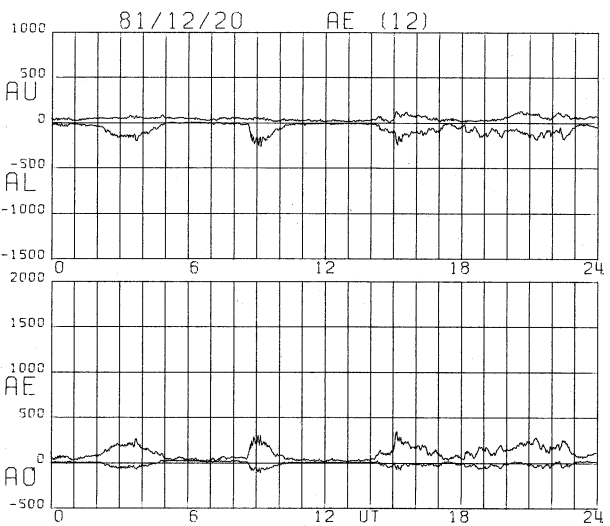
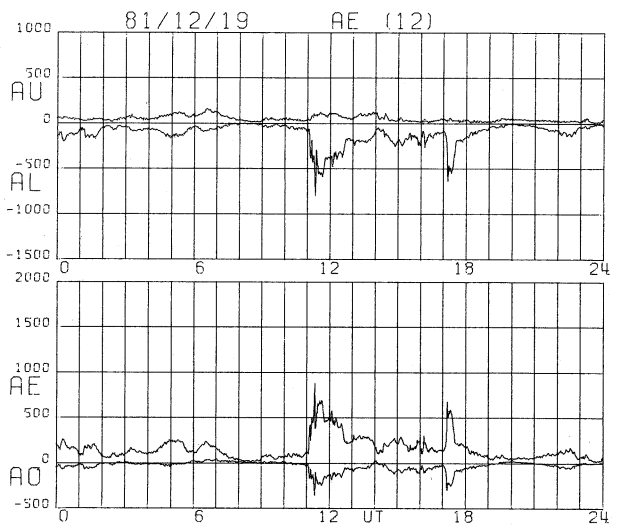
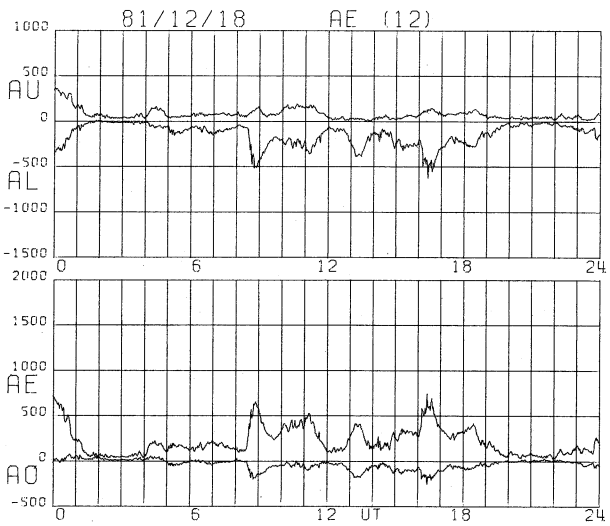
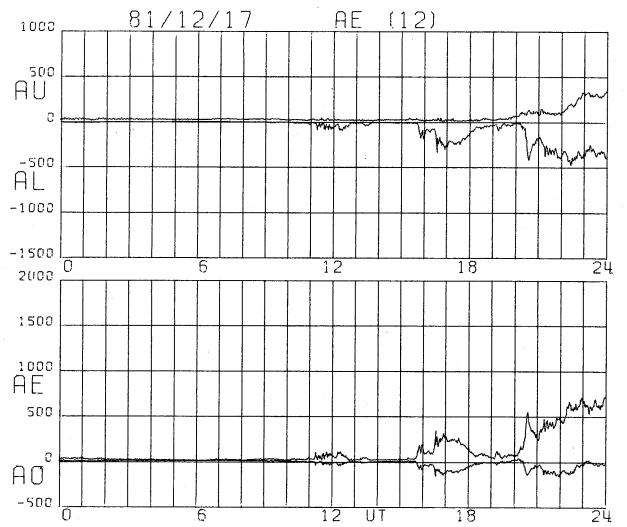
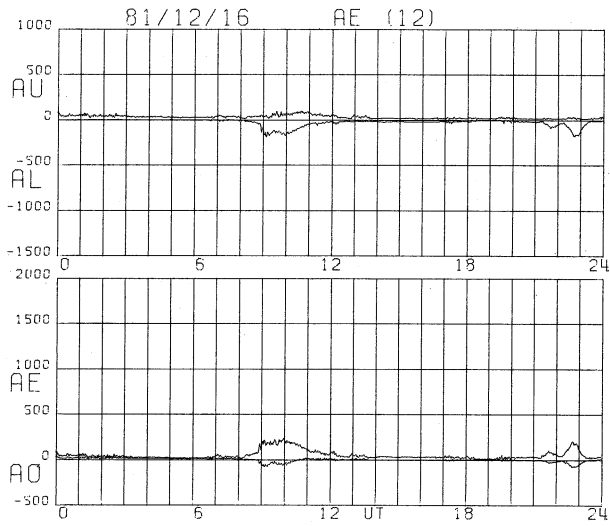


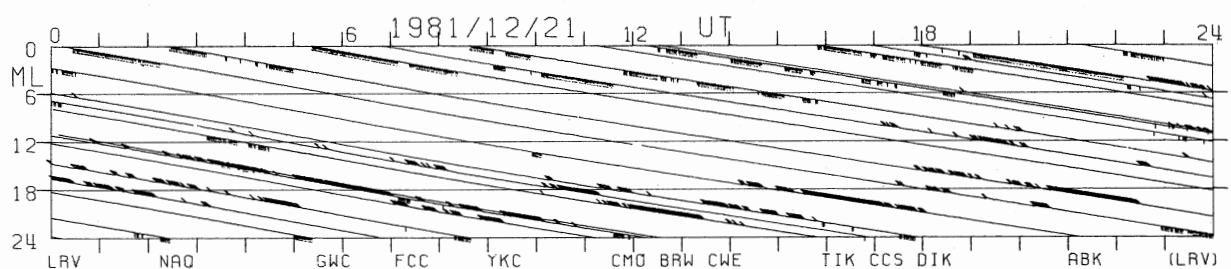
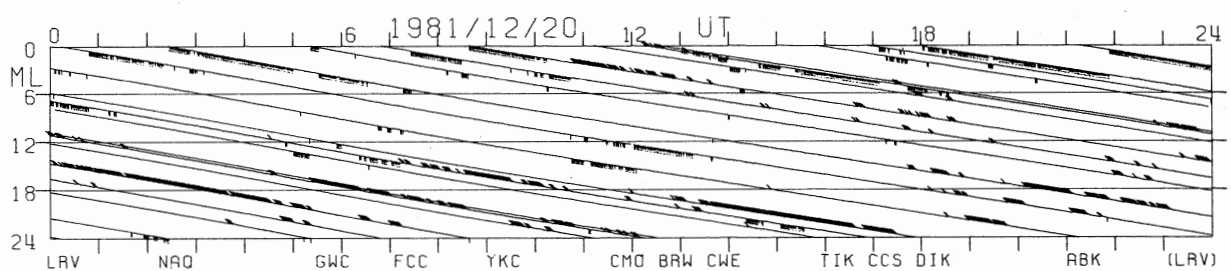
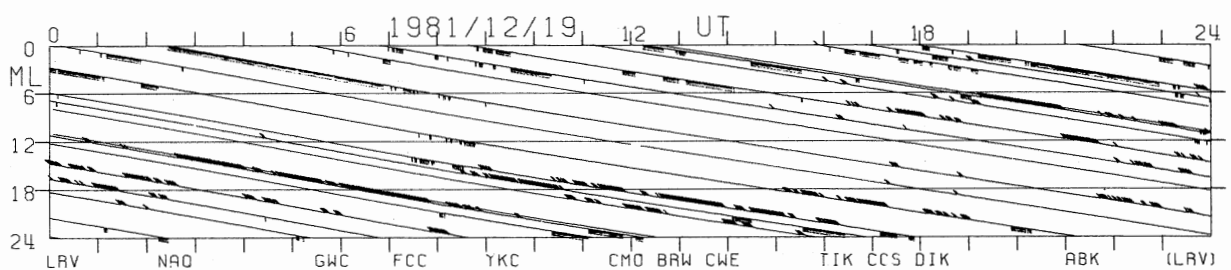
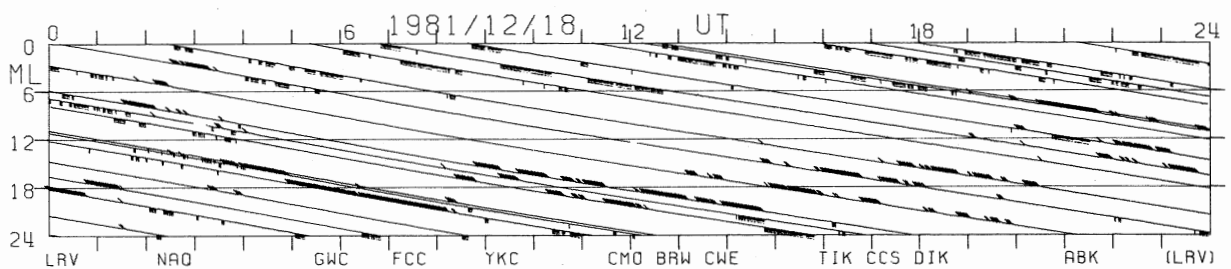
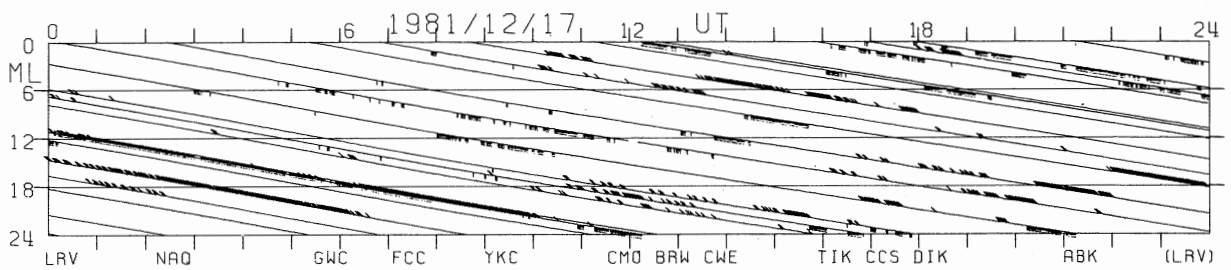
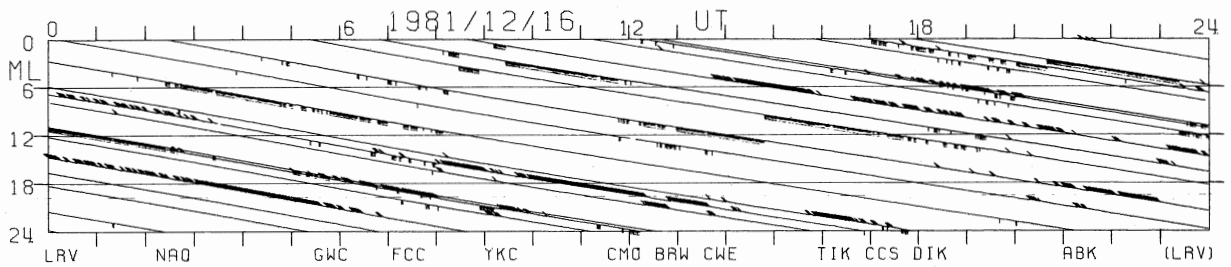


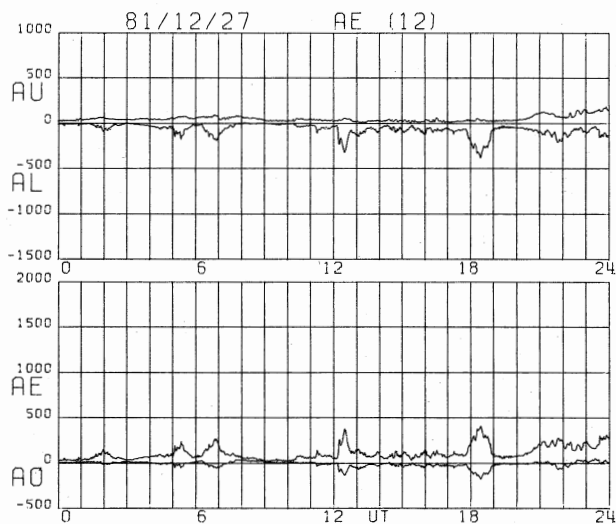
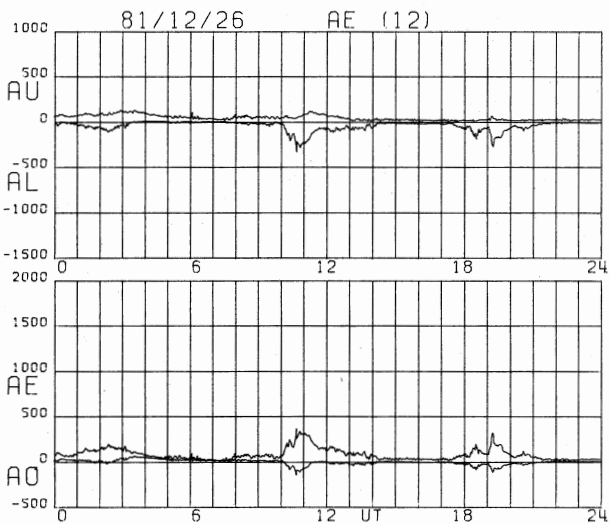
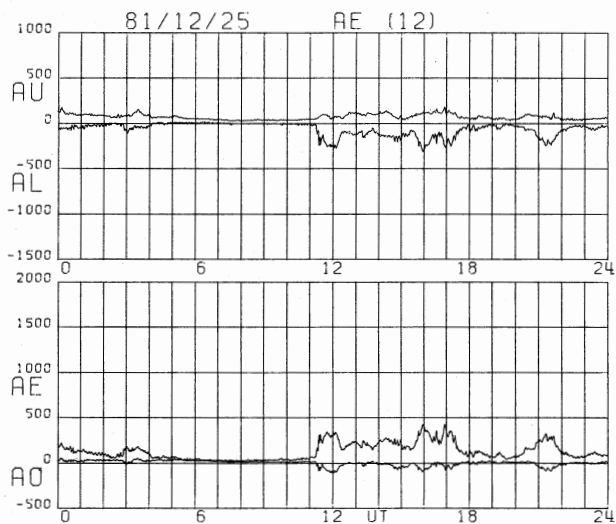
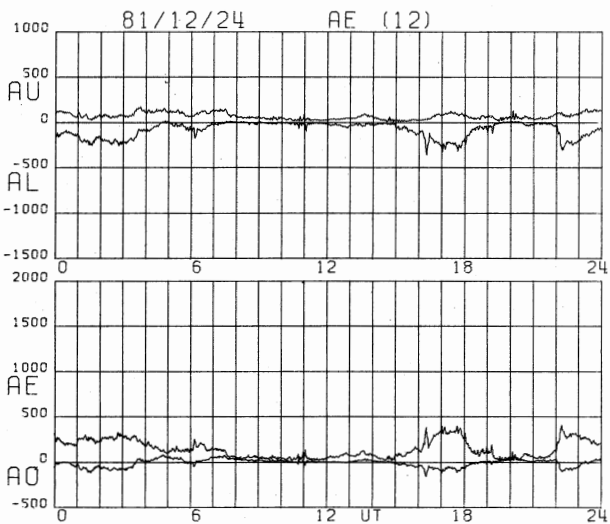
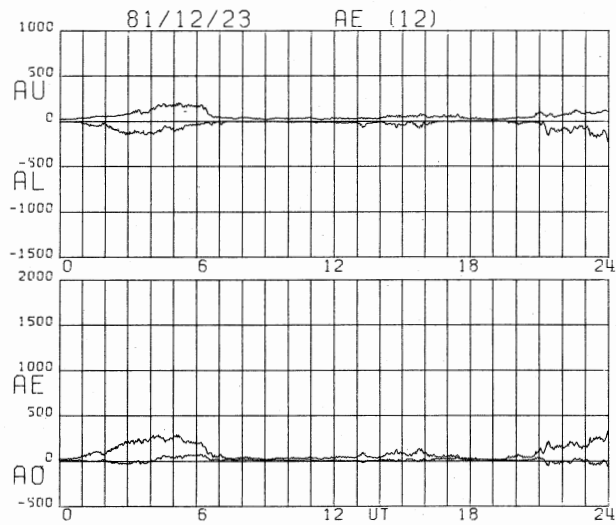
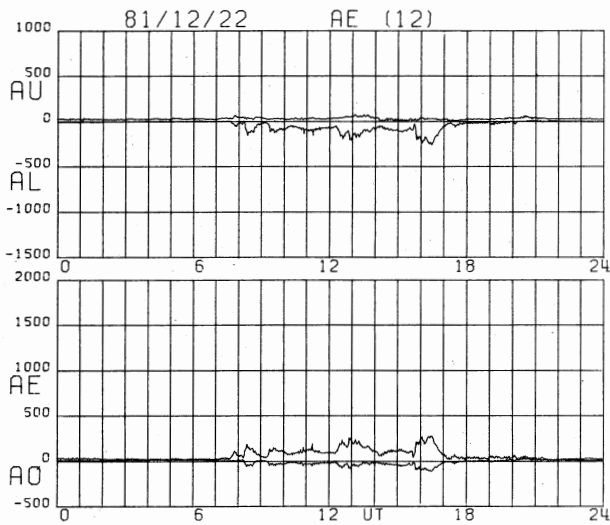


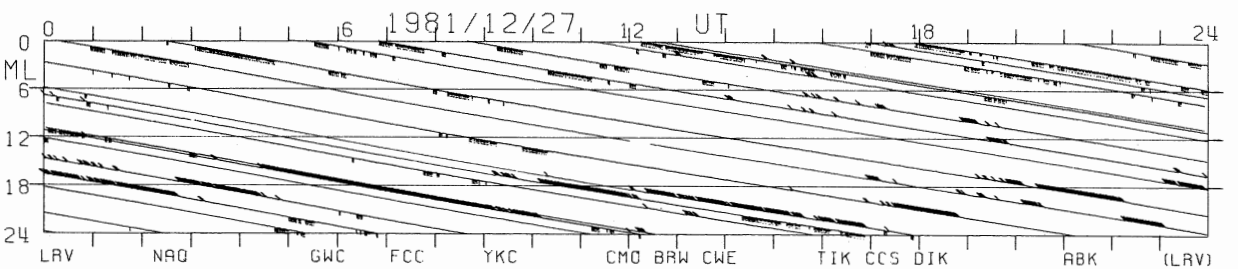
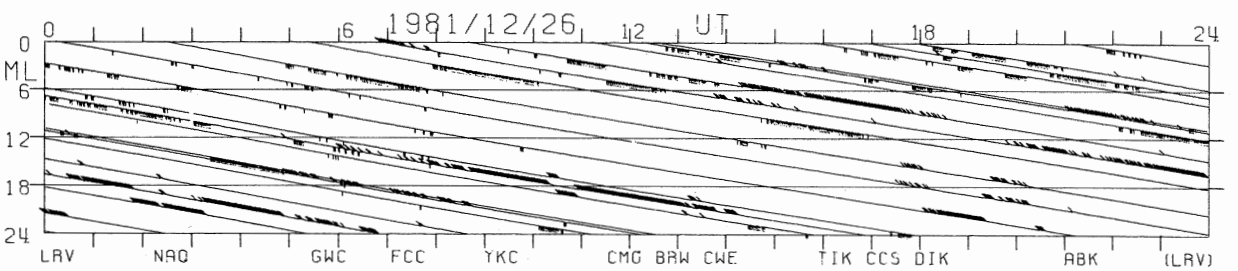
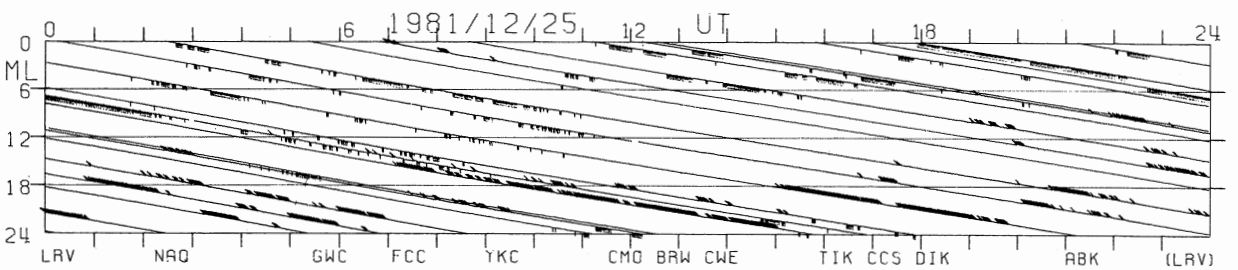
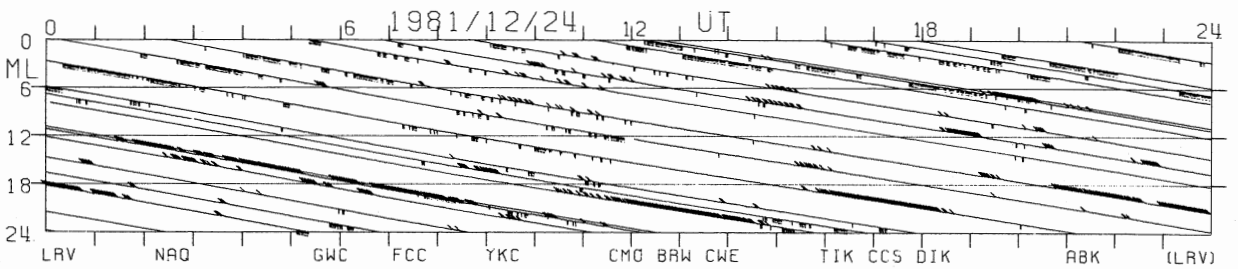
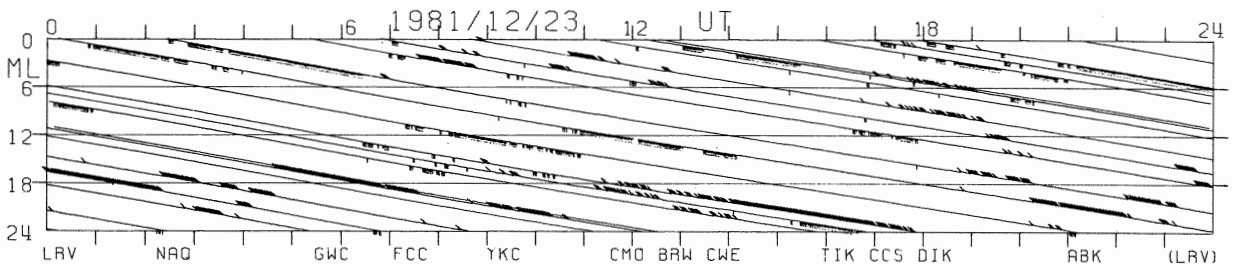
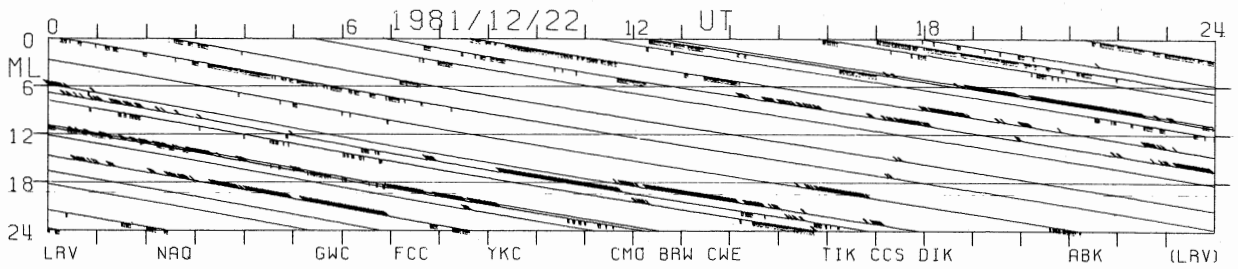


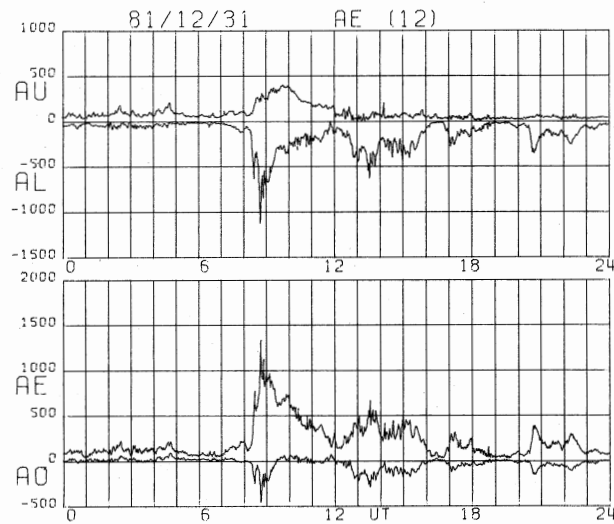
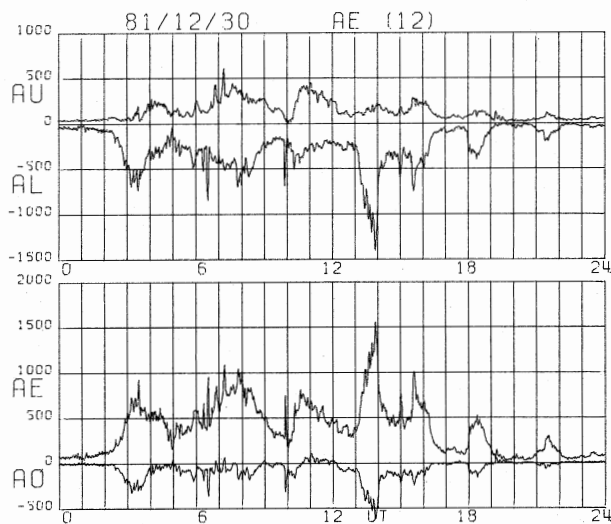
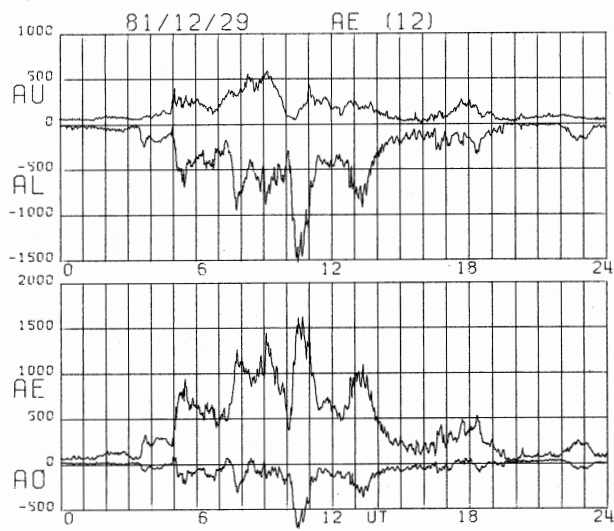
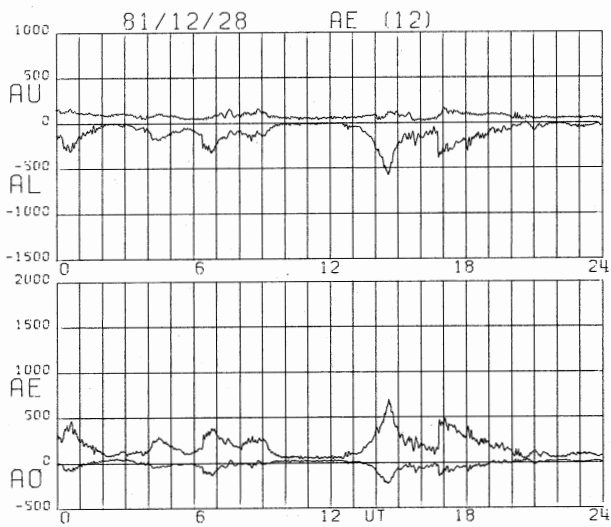


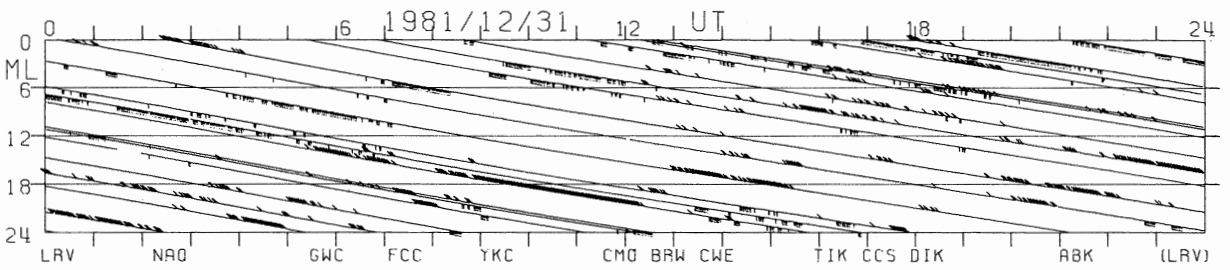
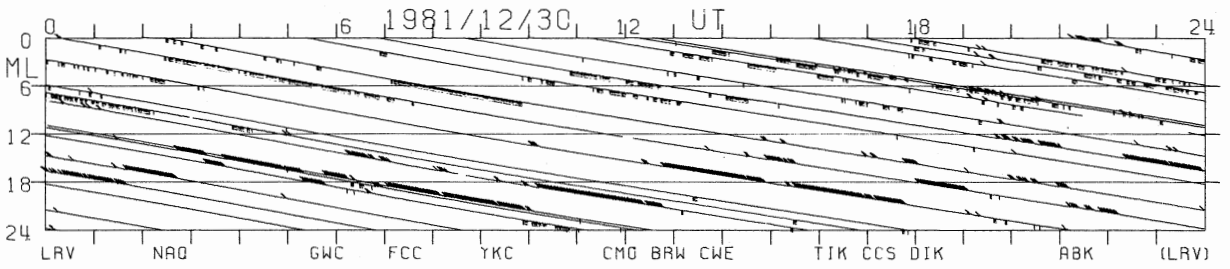
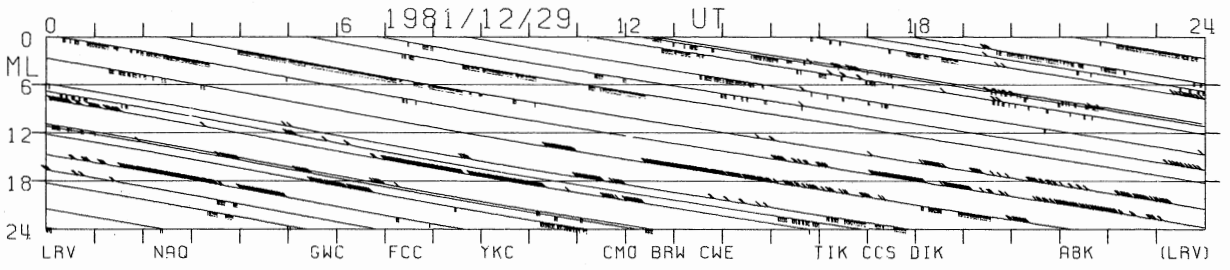
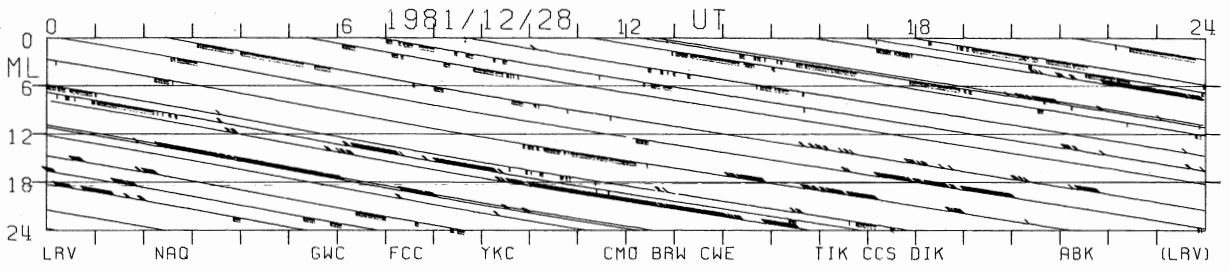












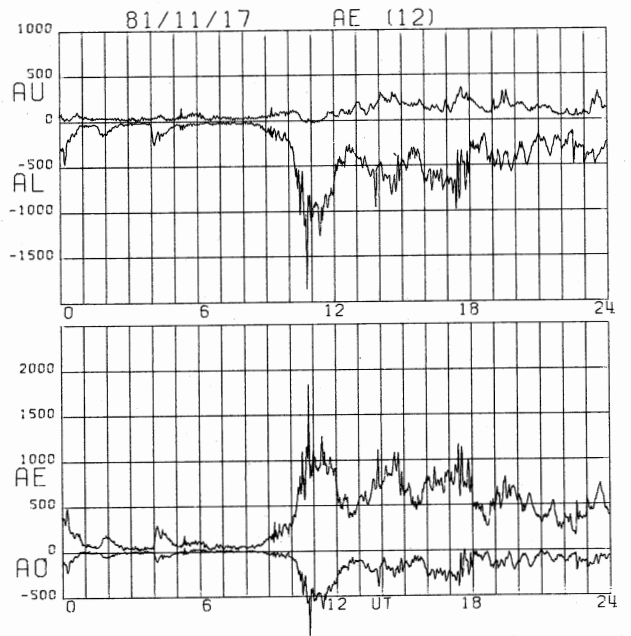
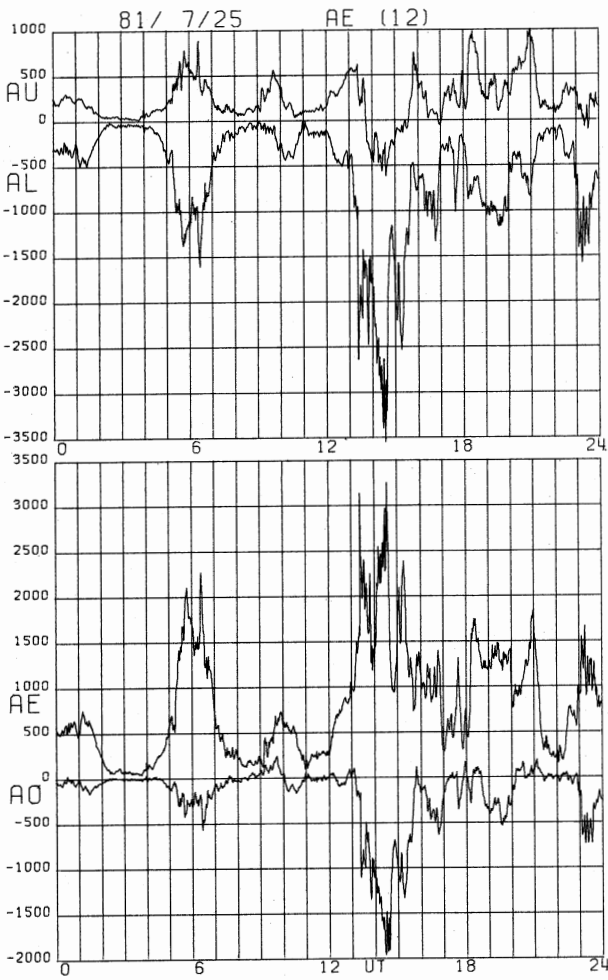
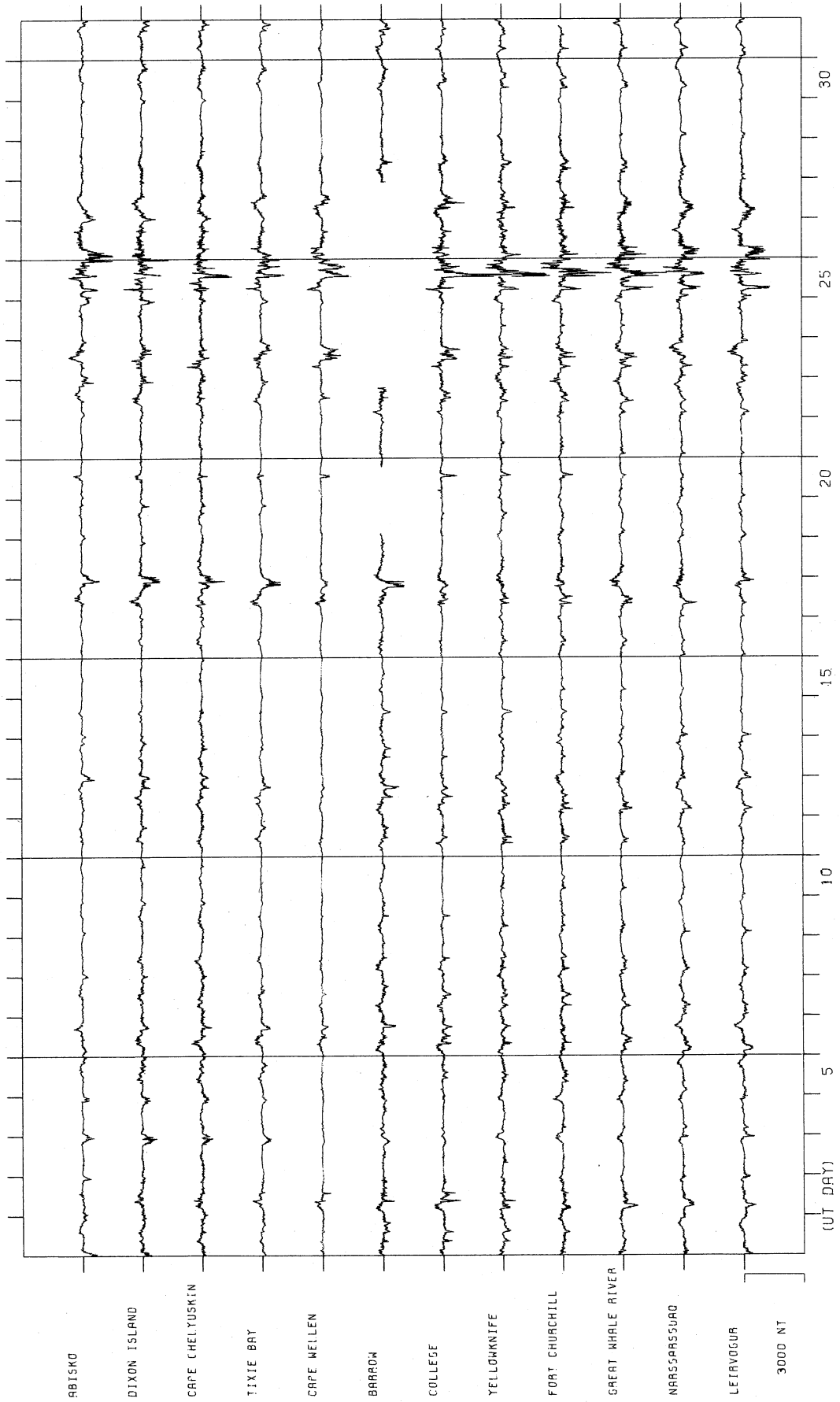


FIGURE 6

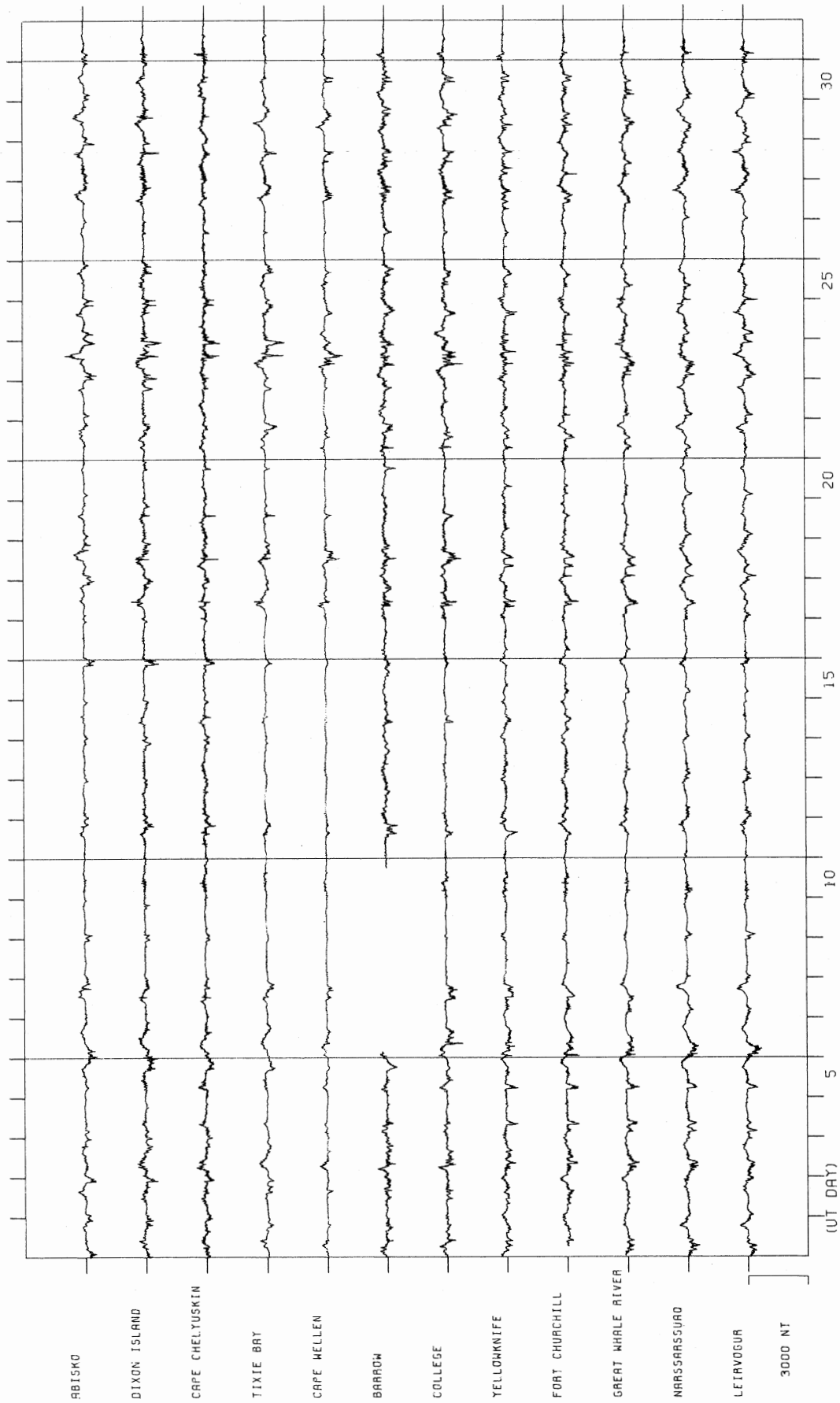
The H traces of magnetograms from AE(12) stations in every month from July to December 1981.

FIGURE 7

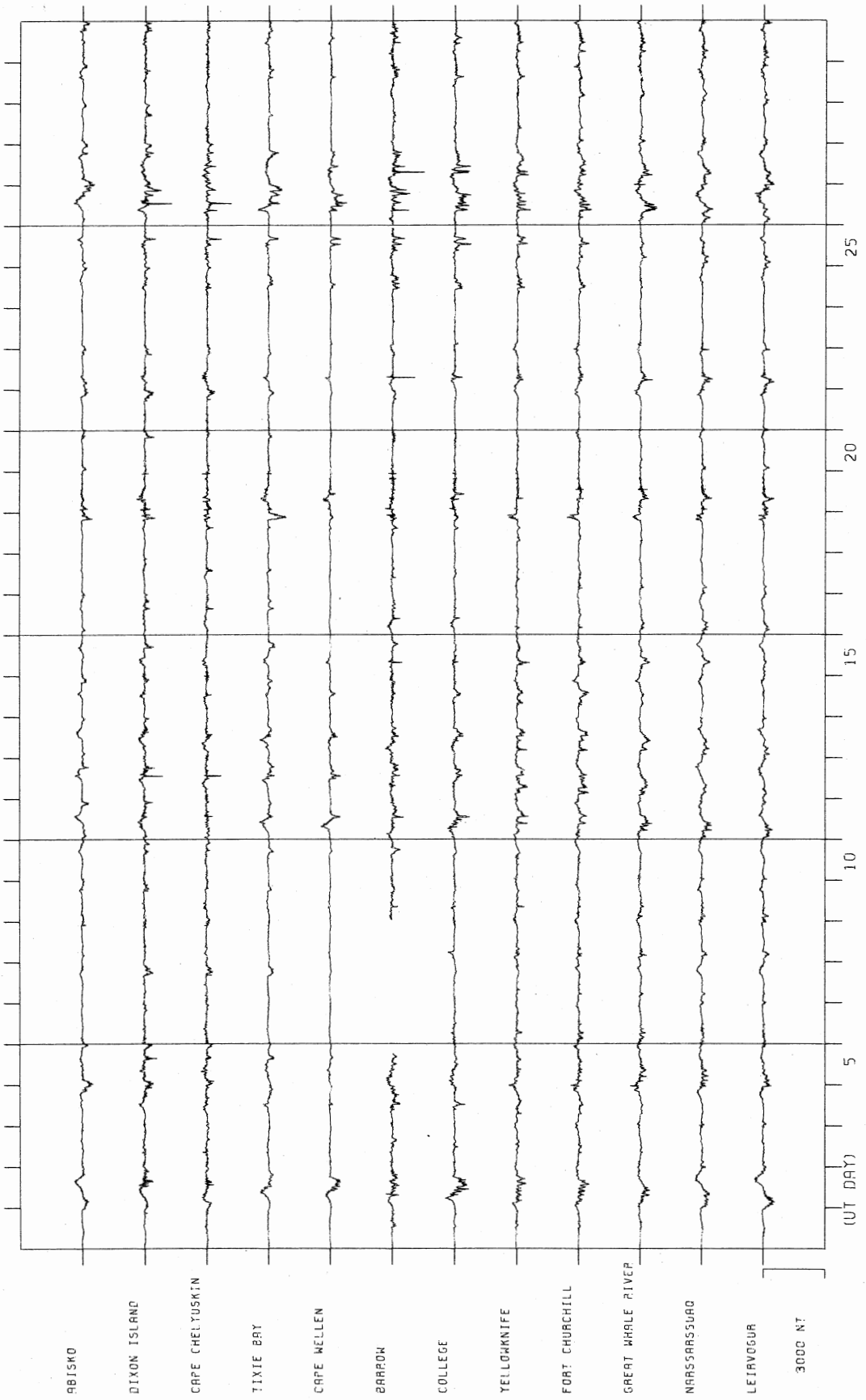
Plots of hourly values for each index from July to December 1981.



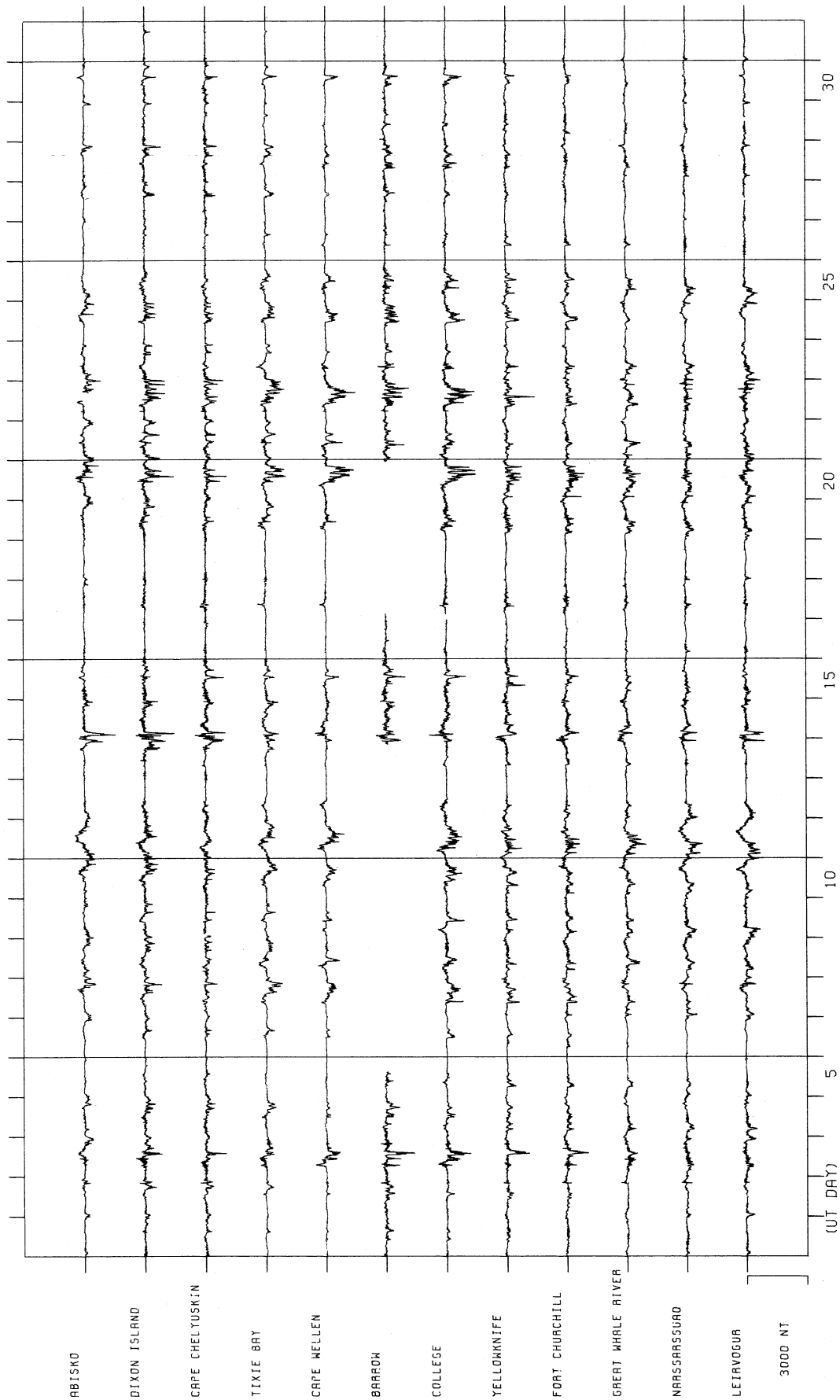
STACKED COMMON SCALE MAGNETOGRAMS FOR JULY 1981



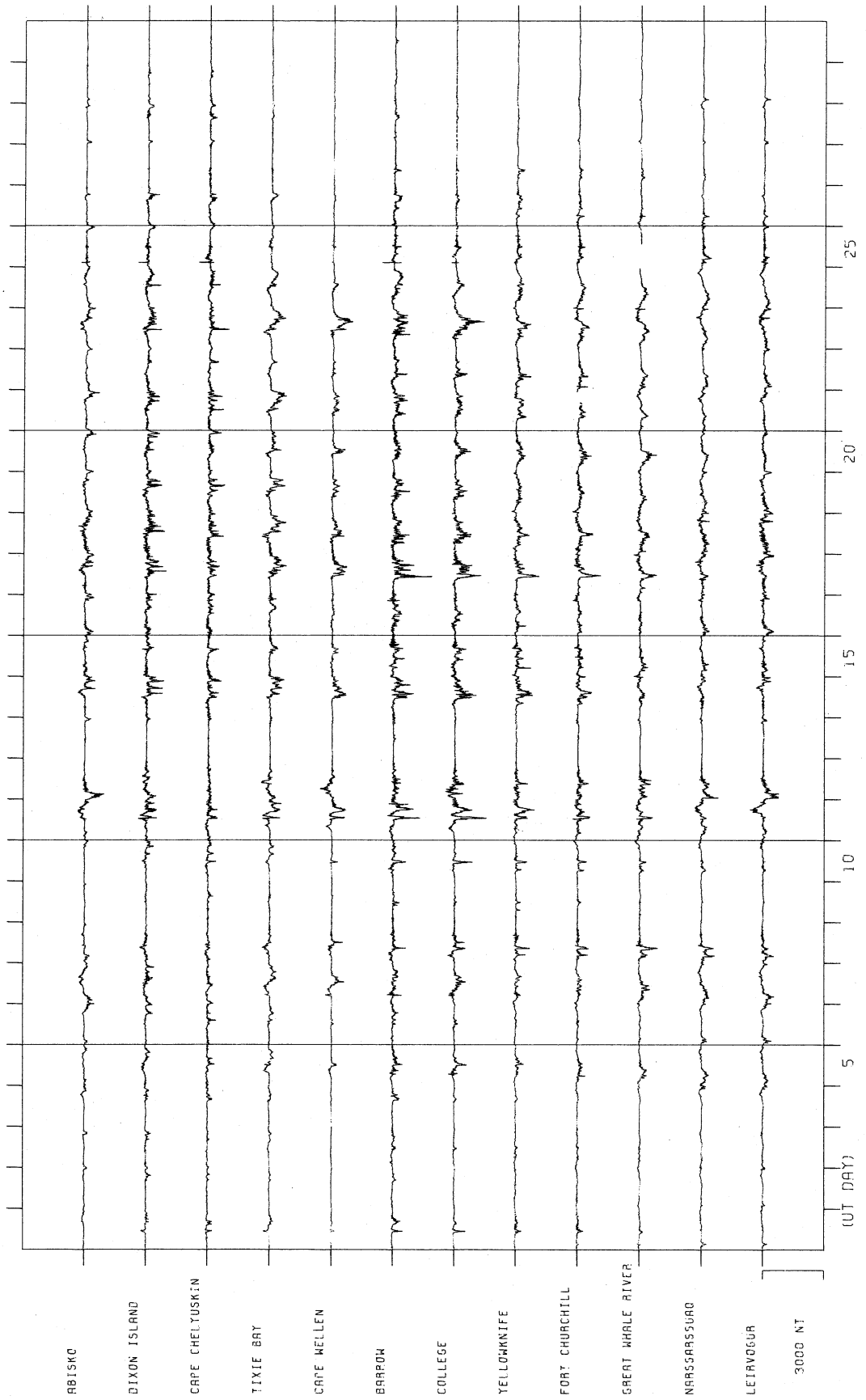
STACKED COMMON SCALE MAGNETOGRAMS FOR AUGUST 1981



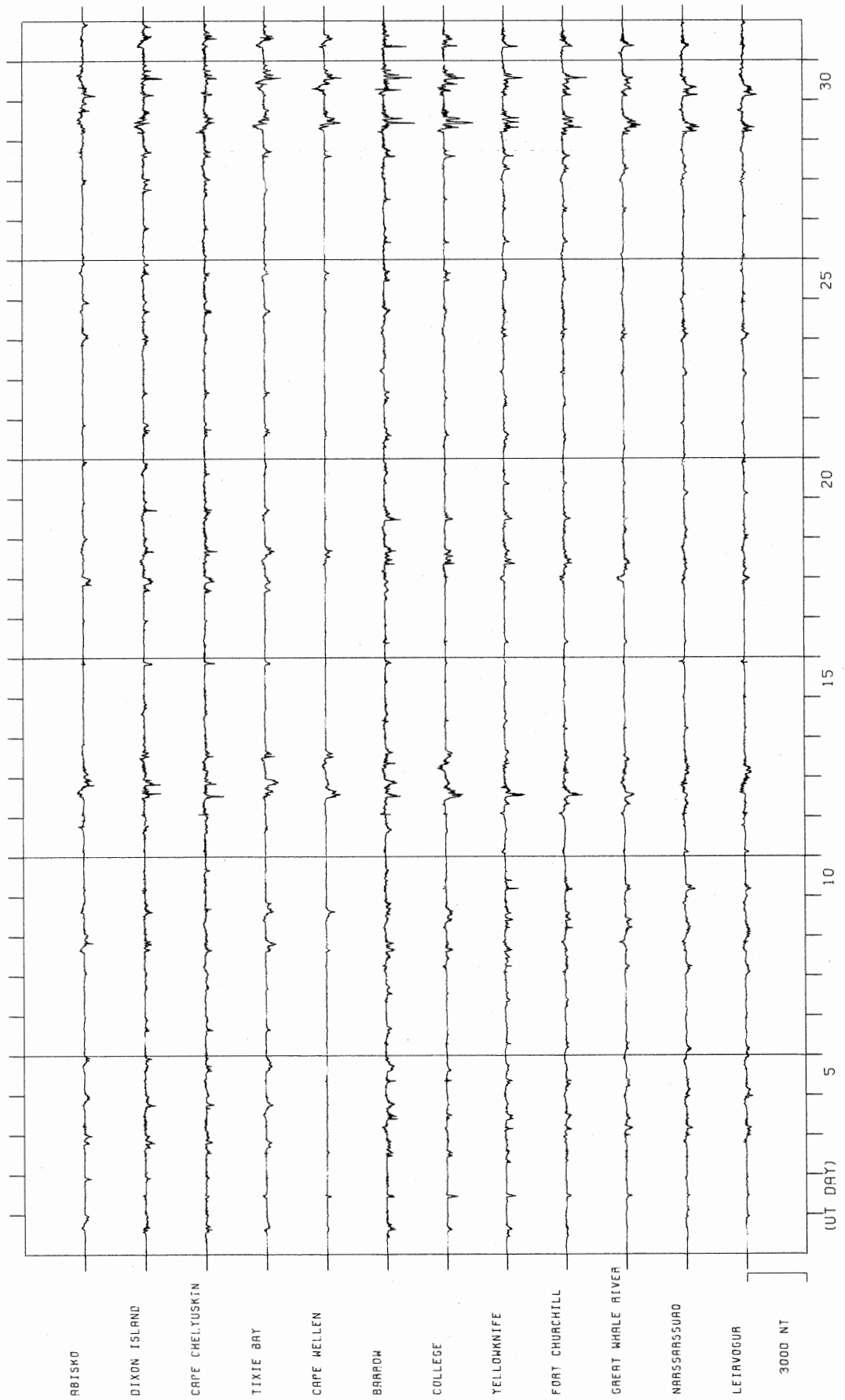
STACKED COMMON SCALE MAGNETOGRAMS FOR SEPTEMBER 1981



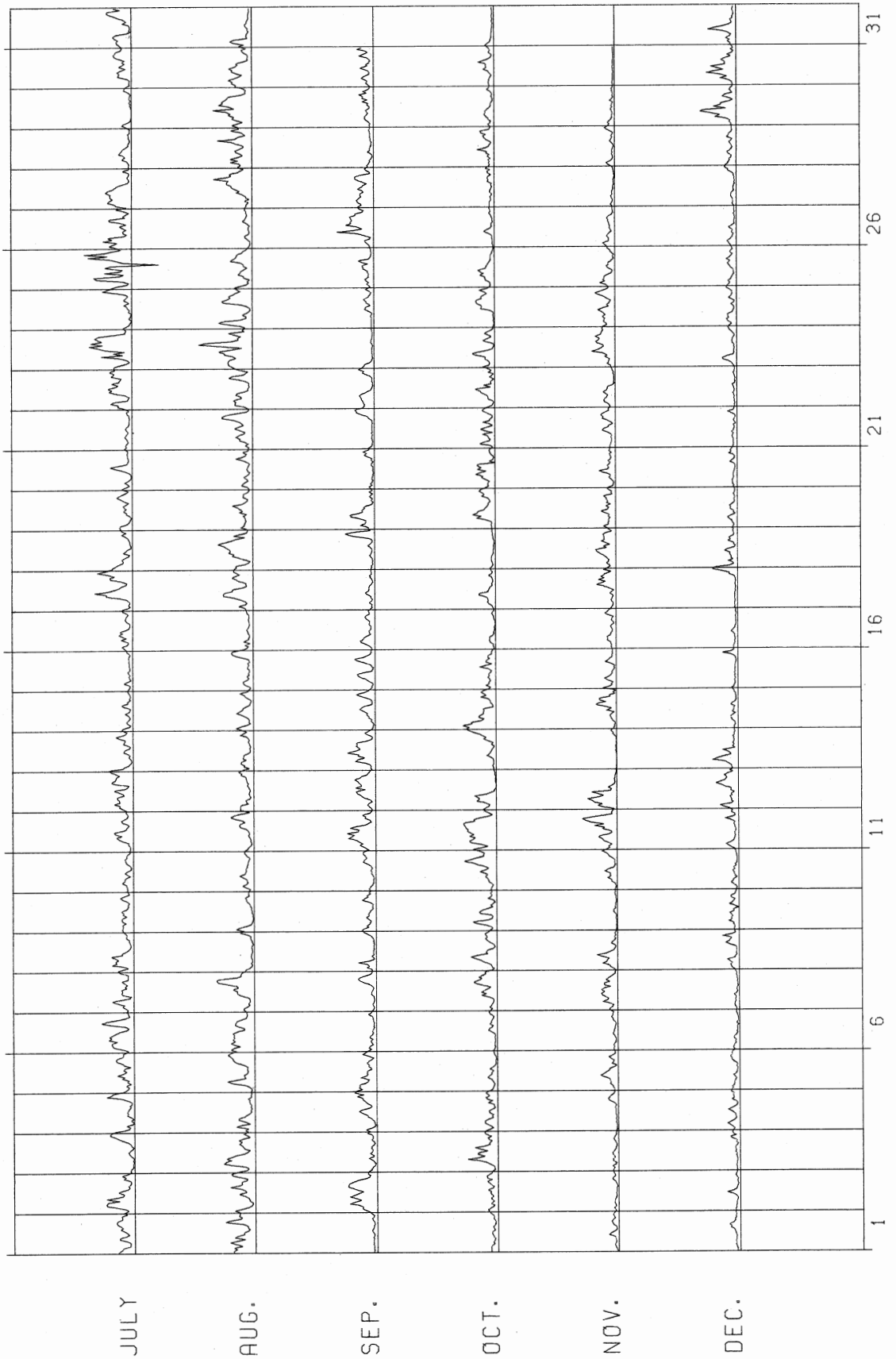
STACKED COMMON SCALE MAGNETOGRAMS FOR OCTOBER 1981



STACKED COMMON SCALE MAGNETOGRAMS FOR NOVEMBER 1981



STACKED COMMON SCALE MAGNETOGRAMS FOR DECEMBER 1981



AU HOURLY VALUES FOR THE LAST HALF OF 1981 (15000T/DIV)

JULY

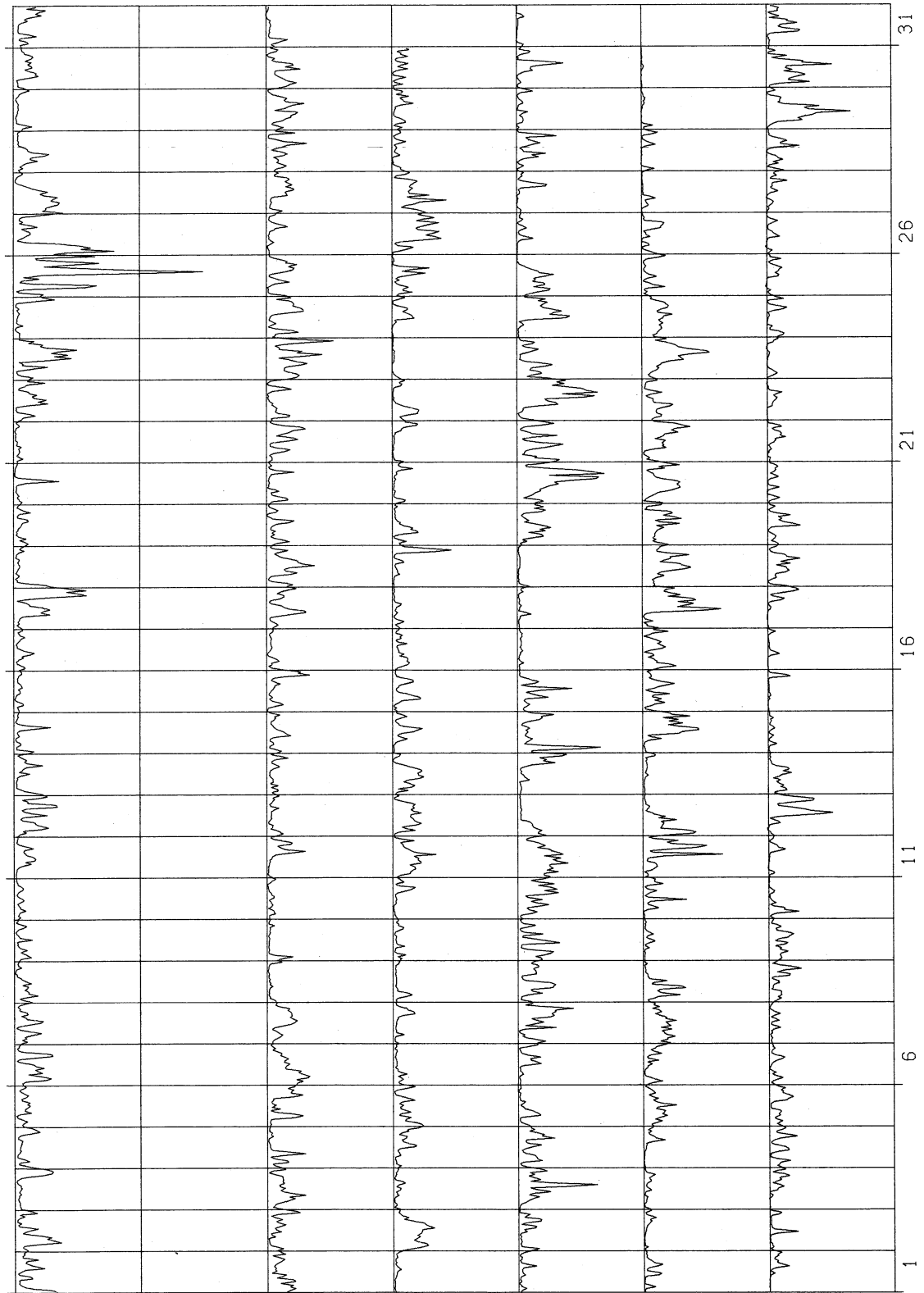
AUG.

SEP.

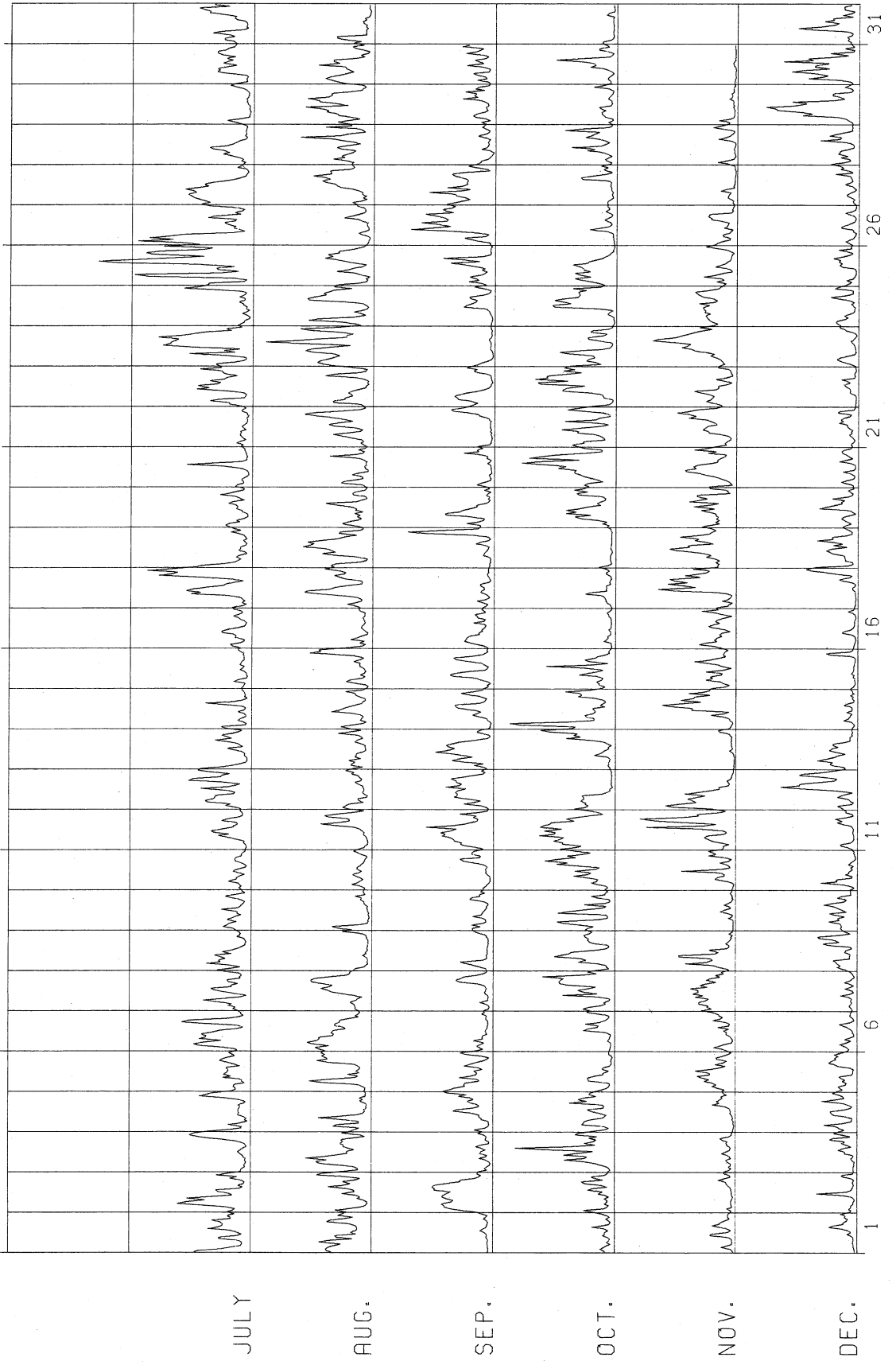
OCT.

NOV.

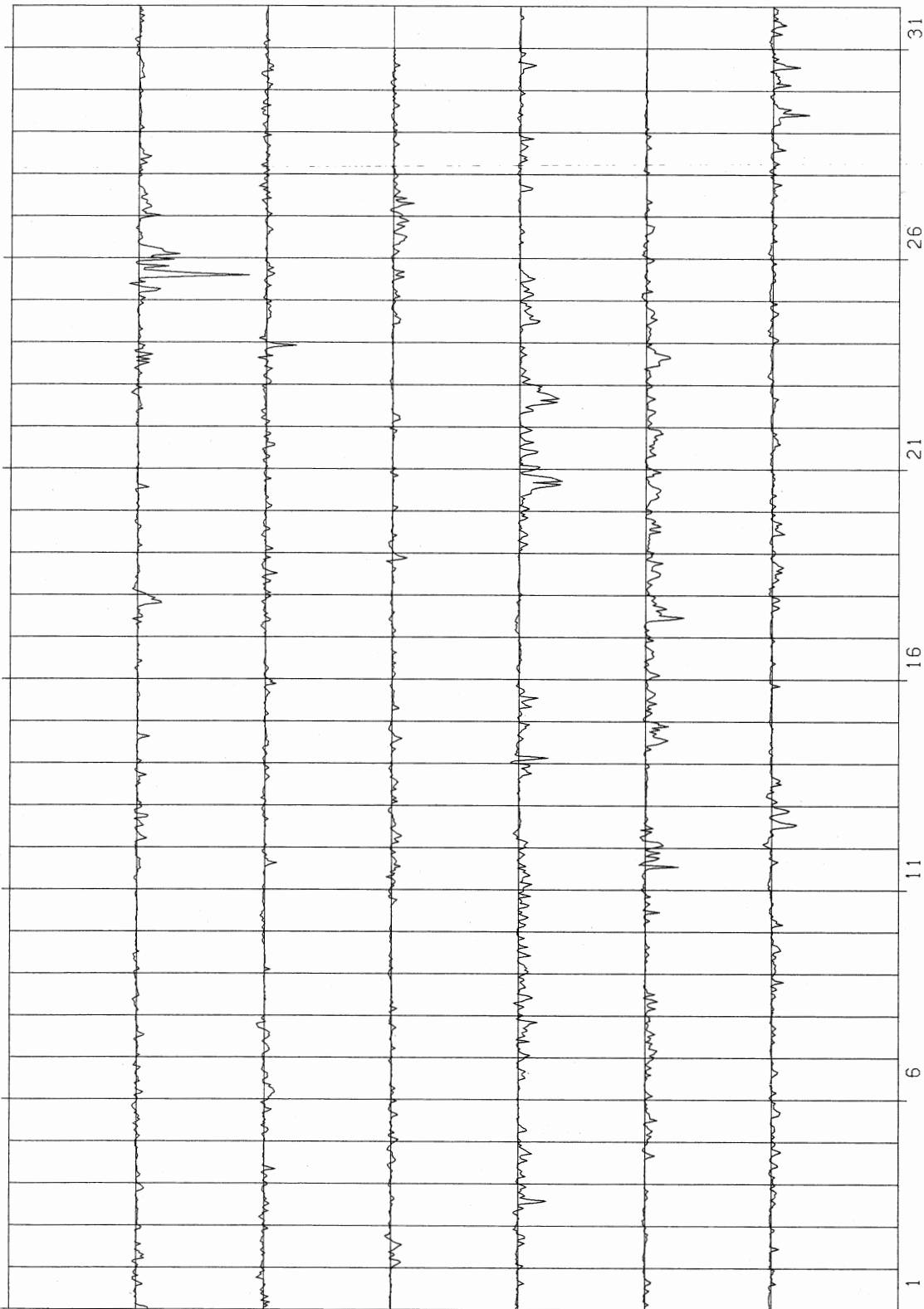
DEC.



AL HOURLY VALUES FOR THE LAST HALF OF 1981 (1500NT/DIV)



AE HOURLY VALUES FOR THE LAST HALF OF 1981 (1500NT/DIV)



AO HOURLY VALUES FOR THE LAST HALF OF 1981 (1500NT/DIV)

Publications by the World Data Center C2 for Geomagnetism.

1. Data Catalogue

	Published in
Data Catalogue of World Data Center C2 for Geomagnetism	1984

2. Data Book

No. 1	Equivalent current systems of the daily geomagnetic variations in December 1964	1978
No. 2	Electric fields and neutral winds in the ionospheric dynamo region as deduced from the daily geomagnetic variations in December 1964	1979
No. 3	Auroral electrojet indices (AE) for January-June 1978	1981
No. 4	Auroral electrojet indices (AE) for July-December 1978	1981
No. 5	Auroral electrojet indices (AE) for January-June 1979	1982
No. 6	Auroral electrojet indices (AE) for July-December 1979	1982
No. 7	Auroral electrojet indices (AE) for January-June 1980	1983
No. 8	Auroral electrojet indices (AE) for July-December 1980	1983
No. 9	Auroral electrojet indices (AE) for January-June 1981	1984

3. Others

Report of Aeromagnetic Survey in Japan	1966
Japanese WMS Magnetic Charts for 1965	1966
WMA Inventory ; First Issue (compiled by M. Ota)	1970
WMA Inventory ; Second Issue (compiled by M. Ota)	1971

(WMA ; World Magnetic Archives, WMS ; World Magnetic Survey)

The publications above are available on request. The request should be sent by mail to:

WDC-C2 for Geomagnetism
Faculty of Science, Kyoto University
Kyoto 606, Japan

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