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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

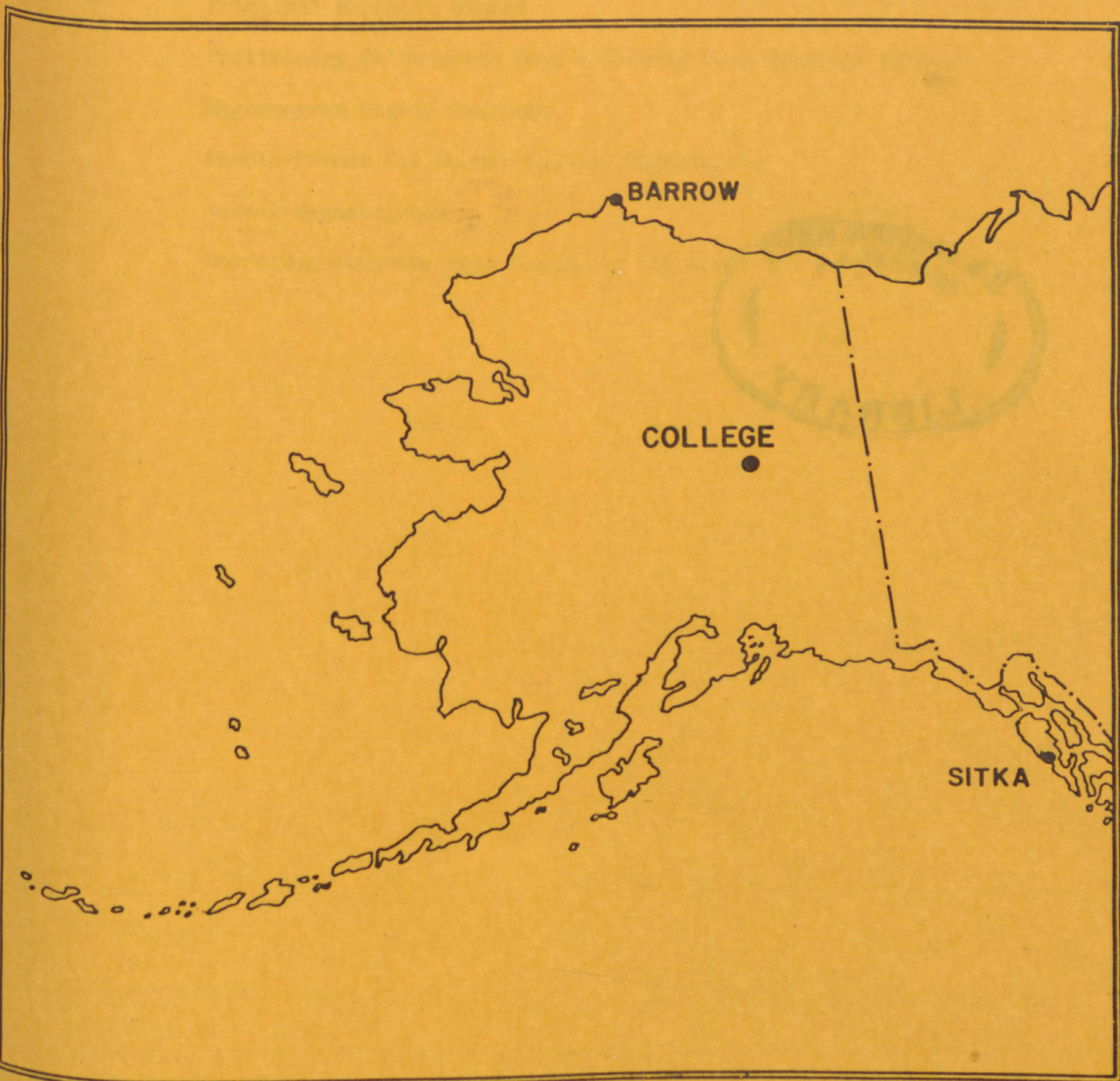
PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

U.S. Geological Survey

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open entry*

JUNE 1977

OPEN FILE REPORT, 77-300F



UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA

COLLEGE OBSERVATORY

FAIRBANKS, ALASKA

OPEN FILE REPORT 77-3007

JUNE 1977



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THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY WITH THE ASSISTANCE OF OBSERVATORY STAFF MEMBERS J. E. PAPP, M. J. MOORMAN, AND S. P. TILTON, AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF ELECTROMAGNETISM AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations, as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

Chief, College Observatory
U.S. Geological Survey
Yukon Drive on West Ridge
Fairbanks, Alaska 99701

Requests for copies of the magnetograms except for the current month should be addressed to:

World Data Center A-NOAA
Environmental Data Service
Boulder, Colorado 80302

GEOMAGNETIC DATA

Normal, Storm, and Rapid Run magnetograms and appropriate calibration data are processed daily at the observatory and are available for analysis or copying. Also available are mean hourly scalings, K-Indices, selected magnetic phenomena reports, and on a real-time basis are recordings from a 3-component fluxgate magnetometer and F-component proton magnetometer.

Magnetic Activity

The K-Index. The K-Index is a logarithmic measurement of the range of the most disturbed component (D or H) of the geomagnetic field for eight intervals beginning 0000-0300, 0300-0600...2100-2400 UT. It is a measure of the difference between the highest and lowest deviation from a smooth curve to be expected for a component on a magnetically quiet day, within a three hour interval.

The Equivalent Daily Amplitude, AK. The K-Index is converted into an equivalent range, ak, which is near the center of the limiting gamma ranges for a given K. The average of the eight values is called equivalent daily amplitude AK. The unit 10 γ has been chosen so as not to give the illusion of an accuracy not justified.

The schedule for converting gamma range to K, and K to ak is as follows:

Gamma Range	K - Index	ak*
0 < 25	0	0
25 < 50	1	3
50 < 100	2	7
100 < 200	3	15
200 < 350	4	27
350 < 600	5	48
600 < 1000	6	80
1000 < 1650	7	140
1650 < 2500	8	240
2500+	9	400 (10 γ)

The Magnetic Daily Character Figure, C. To each Universal day a character is assigned on the basis C=0, if it is quiet; C=1 if it is moderately disturbed; C=2 if it is greatly disturbed. The method used to assign characters at the College Observatory is based on AK as follows:

AK Range	C
0-11	0
11-50	1
50+	2

Routine assignment of C was discontinued at College on January 1, 1976.

OBSERVATORY LOCATION

The College Observatory, operated by the U. S. Geological Survey, is located at the University of Alaska, Fairbanks, Alaska. It is near the Auroral Zone and the northern limit of the world's greatest earthquake belt, the circum-Pacific Seismic belt. Although the observatory's basic operation is in geomagnetism and seismology, it cooperates with other scientists and organizations in areas where the facility and personnel can be of service.

The observatory is one of three operated by the USGS in Alaska. The others are located at Barrow and Sitka.

The position of the observatory site is:

Geographic latitude.....64°51.6'N
Geographic longitude.....147°50.2'W
Geomagnetic latitude.....+64.6°
Geomagnetic longitude.....+256.5°
Elevation.....200 meters

Selected Phenomena & Outstanding Magnetic Effects

Prior to January 1, 1976, the Normal & Rapid Run records were reviewed at the observatory for selected magnetic phenomena and the events identified were forwarded to the IUGG Commission on Magnetic Variations and Disturbances. This was discontinued on January 1, 1976, but a report on Outstanding Magnetic Effects is prepared monthly for this report.

Principal Magnetic Storms

Gradual and sudden commencement magnetic disturbances with at least one K-Index of 5 or greater, which are believed to be part of a world-wide disturbance, are classified as principal magnetic storms. The time of the storm beginning and ending; direction and amplitude of sudden commencements; period of maximum activity; and storm range are reported. Monthly reports of these data are forwarded to the World Data Center A in Boulder, Colorado.

Magnetogram Hourly Scalings

Magnetogram hourly scalings are averages for successive periods of one hour for the D, H, and Z elements. The value in the column headed "01" is the average for the hour beginning 0000 and ending 0100. Note that the values on the scaling sheets are in tenths of mm with the decimal point omitted. The user of these scalings should keep in mind that the tabular values are hourly means and if he is interested in the detailed morphology of the magnetic field, he should refer directly to the magnetograms.

Magnetograms

The normal magnetograms in this report are reproduced at about one-third the size of the originals. Preliminary base-line values and scale values adopted for use with the original magnetograms are included. For days when the magnetic field is too disturbed for the Normal magnetogram to be readable, Storm magnetograms are reproduced.

Absolutes, Base-lines, and Scale Values

To determine the absolute value of the magnetic field from the hourly means or from point scalings the following equations should be used:

$D = B_D + d \cdot S_D$; $H = B_H + h \cdot S_H$; $Z = B_Z + z \cdot S_Z$
where D, H, and Z are absolute values;
 B_D , B_H and B_Z are base-line values;
 S_D , S_H and S_Z are scale values;
and d, h, and z are scalings in millimeters.

COLLEGE, ALASKA

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR

JUNE 1977

DATE	K-INDICES								SUM	AK	TIME SCALE ON MAGNETOGRAMS		
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24			20 mm/hr		
1	2	2	2	1	2	2	2	2	15	07	SUDDEN COMMENCEMENTS d h m		
2	3	4	2	4	6	3	1	2	25	23			
3	1	2	2	3	1	0	1	1	11	05			
4	2	2	1	2	2	1	1	0	11	05			
5	2	2	1	5	5	3	1	1	20	17			
6	2	1	2	0	3	0	0	1	09	04			
7	1	1	1	2	2	0	2	1	10	04			
8	1	1	2	2	3	1	1	1	12	06			
9	2	1	1	1	1	1	1	2	10	04			
10	4	2	2	3	1	0	1	1	14	08			
11	2	2	1	0	0	0	1	1	07	03			
12	2	2	1	0	0	0	1	1	07	03			
13	2	2	1	1	2	0	1	2	11	05			
14	3	3	2	3	2	1	1	1	16	09			
15	1	2	0	1	0	0	0	0	04	02			
16	1	1	2	1	3	2	2	2	14	07	POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)		
17	2	3	4	3	3	2	1	1	19	12			
18	1	2	5	4	4	4	3	2	25	20			
19	3	4	4	4	3	3	1	2	24	17			
20	3	3	5	4	4	1	1	1	22	18			
21	1	2	2	2	3	1	0	1	12	06			
22	1	2	1	2	5	3	2	1	17	12			
23	3	3	2	3	3	2	2	1	19	11			
24	2	3	4	1	0	0	1	1	12	07			
25	1	1	1	1	2	1	1	1	09	04			
26	1	2	1	1	1	3	1	1	11	05	BEGIN	END	
27	3	2	2	2	2	1	2	1	15	07			
28	2	2	2	5	2	2	2	2	19	12			
29	3	2	2	2	2	0	1	1	13	06			
30	2	2	1	3	1	2	2	2	15	07			
31													

K SCALE USED:

LOWER LIMIT FOR K = 9.....

CURRENT SCALE VALUE.....

LOWER LIMIT FOR K = 9.....

D

683.8

3.76

2570

H

321.7

7.82

2520

Z

(mm)

(γ/mm)

(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED

John B. Townshend, Chief, College Observatory

OBSERVER IN CHARGE

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY
College, Alaska

MONTH
JUNE

YEAR
1977

DATE	TIME U.T.	NATURE OF PHENOMENON ¹	REMARKS
03	13XX	pi2	
04	21XX	pc4	
06	12XX	pi2	
07	10XX	pi2	With bay
08	10XX	pi2	
10	02XX	pc5	Possible pg
10	11XX	pc5	Possible pg
12	21XX	pc5	
13	23XX	pc1	
18	15XX	pc3	
26	09XX	pi2	
26	1515	si	
IDENTIFIED BY: MJM/JEP VERIFIED BY: JBT			

1. NATURE OF PHENOMENON: ssc, ssc*, si, si*, b, bp, bs, bps, pc1, pc2 - - - pc5, pg, pi 1, pi 2, sfe.

PRINCIPAL MAGNETIC STORMS

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80302 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

JUNE

19 77

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End day hr
		day	hr min (UT)	type	D(')	H(γ)	Z(γ)	day	(3 hr - period)	K	D(')	H(γ)	Z(γ)	
CO	64°6 N	NO PRINCIPAL MAGNETIC STORMS WERE OBSERVED AT THE COLLEGE OBSERVATORY FOR THE MONTH OF JUNE.												

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASLINE
D	0000 U.T., 6-1-77	2400 U.T., 6-30-77	1.0/mm	3.88/mm	27° 46.3 E
H	0000 U.T., 6-1-77	2400 U.T., 6-5-77	7.88/mm		127608
	0000 U.T., 6-6-77	2400 U.T., 6-30-77	7.88/mm		127658
Z	0000 U.T., 6-1-77	2400 U.T., 6-25-77	7.78/mm		551298
	0000 U.T., 6-26-77	2400 U.T., 6-30-77	7.78/mm		551248

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASLINE
D	0000 U.T., 6-1-77	2400 U.T., 6-30-77	7.9/mm	29.88/mm	24° 21.5 E
H	0000 U.T., 6-1-77	2400 U.T., 6-30-77	44.18/mm		115068
Z	0000 U.T., 6-1-77	2400 U.T., 6-30-77	48.98/mm		539908

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION	
	FROM	TO	SCALE VALUE	
D	0000 U.T., 6-1-77	2400 U.T., 6-30-77	0.3/mm	1.08/mm
H	0000 U.T., 6-1-77	2400 U.T., 6-30-77	1.08/mm	
Z	0000 U.T., 6-1-77	2400 U.T., 6-30-77	2.48/mm	

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 18.0 E	130578	553628

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED:

JUNE 4, 6, 7, 9, 11, 12, 13, 15, 25, 26

MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)														U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SERVICE SERVICE ADMINISTRATION COAST AND GEODETIC SURVEY GEOMAGNETISM DIVISION										OBJ.	YEAR	MONTH	ELE- MENT
Values are in tenths of mm, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (LST, M.T.) is hour 11 of the 1900 universal day.																								CO	77	JUN	D
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM			
01	234	231	271	298	303	317	307	305	295	294	300	309	340	362	395	415	463	438	410	385	350	260	251	239	7778		
02	230	230	250	222	255	350	311	280	300	326	299	295	379	528	417	437	465	479	491	454	379	360	306	251	8294		
03	248	252	270	268	274	350	285	307	307	291	309	310	320	360	390	400	417	423	417	391	380	337	292	267	7865		
04	250	249	254	270	288	310	311	318	309	310	310	302	360	320	356	403	412	420	419	400	383	310	281	262	7817		
05	250	250	254	240	259	300	289	291	300	262	266	331*	458*	417	460	394	465	449	410	380	342	290	271	273	7901		
06	281	270	250	267	262	280	310	292	301	291	301	298	295	359	377	409	433	433	410	389	345	322	300	277	7752		
07	270	271	263	267	287	303	301	321	293	278	307	421	369	361	360	400	396	406	416	413	371	270	288	290	7922		
08	271	270	282	300	310	310	318	321	290	281	339	320	330	329	396	429	436	440	422	409	376	350	300	280	8109		
09	250	260	265	275	285	290	299	310	308	310	309	318	311	317	341	375	398	408	382	376	336	327	333	252	7635		
10	234	218	221	233	313	268	316	287	277	290	260	392	336	344	378	391	390	369	369	346	334	339	297	258	7460		
11	237	240	250	274	303	299	319	300	298	308	309	305	319	316	340	370	389	395	411	379	369	331	292	263	7604		
12	236	210	190	201	238	306	319	319	319	318	310	303	314	331	369	382	395	407	410	371	339	321	276	258	7442		
13	239	218	242	261	289	309	290	292	289	275	273	298	334	378	410	410	425	441	431	405	389	299	278	247	7122		
14	226	221	202	193	206	176	320	289	232	295	343	311	351	352	358	367	381	388	403	400	363	290	262	236	7245		
15	222	232	262	274	300	321	316	316	317	308	307	333	330	348	372	393	420	429	422	387	349	289	273	256	7776		
16	241	224	242	250	270	271	309	293	303	287	278	290	303	332	433	432	434	452	443	422	403	284	271	253	7720		
17	248	241	247	248	283	267	244	286	306	311	292	303	379	304	363	402	461	437	428	403	374	297	269	273	7666		
18	272	271	276	291	293	328	257	231	248	315	311	306	312	317	331	360	379	432	444	418	346	299	281	250	7568		
19	258	282	277	271	252	318	313	317	304	293	304	311	337	371	393	398	399	421	409	374	333	299	291	307	7832		
20	296	246	252	221	258	271	326	296	244	311	276	344	334	326	350	389	399	408	416	361	346	326	297	284	7577		
21	282	280	273	267	256	279	316	291	306	296	298	356	311	333	351	372	404	422	407	386	351	329	287	284	7737		
22	273	249	260	281	292	304	301	292	289	284	288	339	333	320	422	439	435	457	454	387	350	321	296	271	7943		
23	237	220	248	301	247	269	357	312	291	291	292	340	343	360	347	360	399	443	461	404	382	346	319	279	7848		
24	248	230	232	247	270	271	339	376	322	317	292	297	319	336	347	379	408	427	419	396	343	317	289	241	7662		
25	227	237	253	267	291	320	339	307	297	291	281	294	316	328	358	377	448	446	447	414	383	322	267	227	7737		
26	229	227	259	281	297	301	292	275	288	287	239	283	309	311	343	391	431	441	436	412	362	273	231	247	7445		
27	237	222	233	253	262	234	301	291	284	266	262	281	299	328	367	401	426	430	432	427	351	272	239	238	7402		
28	237	242	262	277	301	291	333	291	274	346	224	337	318	320	408	453	486	472	458	422	322	237	224	193	7728		
29	186	211	247	230	208	226	273	269	261	320	251	279	321	341	357	382	409	418	421	390	330	281	240	223	7074		
30	260	266	277	269	280	290	310	296	289	290	256	374	331	330	362	402	438	470	448	419	335	296	219	227	7734		
31																											

SCALED BY	SPT, MJM, JEP	Preliminary base-line and scale values: Interval Base-line Scale Beginning Value Value	() Interpolated	[] Scaling uncertain because of magnetic storm.	MONTHLY SUM 230995 MONTHLY MEAN 321 DATES WITH GAPS:
CHECKED BY	MJM, JEP, SPT		☐ Significant portion of hour interpolated.	<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.	
SIGNS REVIEWED BY	JEP		☐ No record; or no values available because of faulty record.		
PUNCHED BY			* Derived from <u>Storm</u> Mph., converted to Normal Mph.		

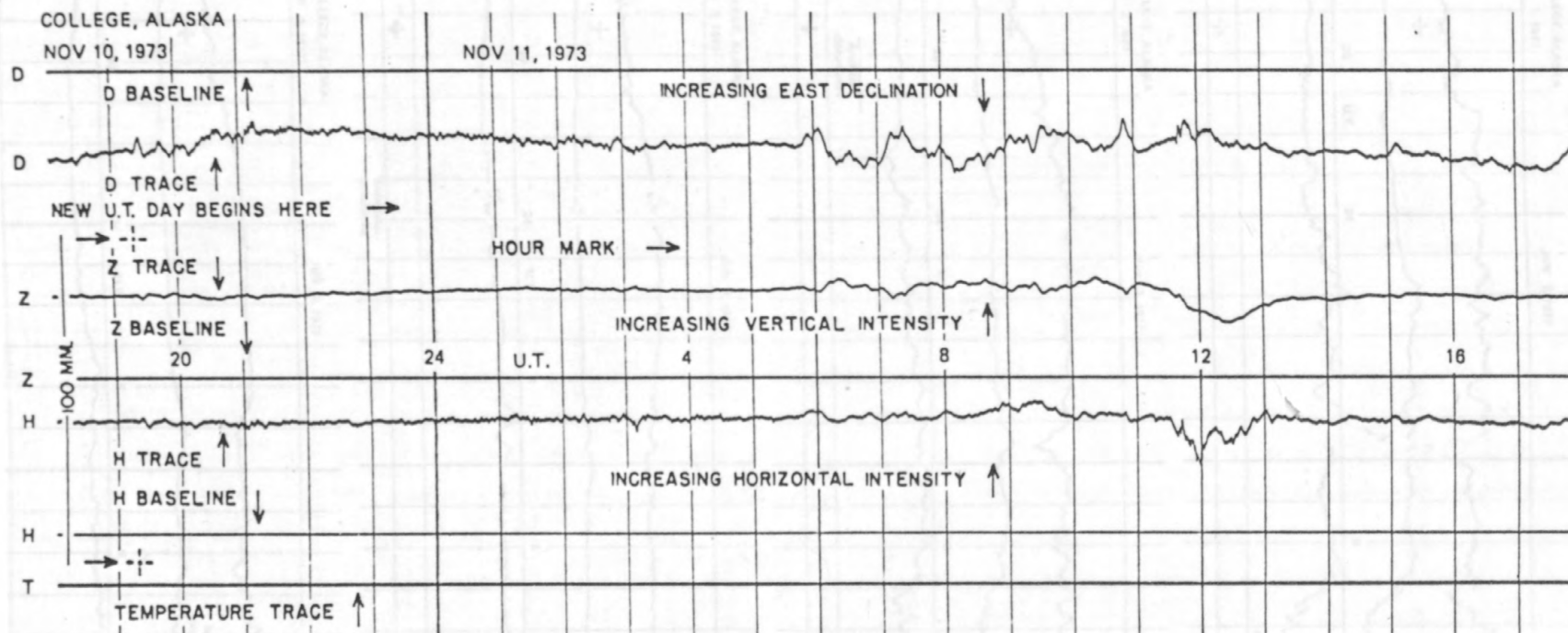
MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)														U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION COAST AND GEODETIC SURVEY GEOMAGNETISM DIVISION										OBSY.	YEAR	MONTH	ELE- MENT
Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1200N.T.) is hour 11 of the 1950 universal day. No magnetic corrections have been applied. Negative values are in red, with minus signs shown.														CO	77	JUN	H										
STATION	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TIME		
01	359	370	390	397	393	386	409	410	408	400	399	380	01	386	334	361	351	327	351	360	352	349	331	351	339	8913	
02	393	462	429	435	416	538	391	410	423	295	285	370	02	86	-103*	208	190	240	258	361	353	362	352	311	354	7819	
03	363	372	370	401	430	425	443	440	400	326	374	380	03	390	390	399	410	403	389	371	350	328	329	346	349	9178	
04	358	371	397	390	411	401	382	385	393	389	400	380	04	346	351	382	413	417	401	380	353	339	340	340	344	9063	
05	360	363	390	430	410	402	408	415	418	440	352	78	05	-97*	-4	105	336	415	440	410	378	360	351	349	360	7869	
06	370	400	403	394	401	410	420	410	390	390	389	394	06	370	290	390	410	416	409	401	381	370	354	350	359	9271	
07	370	380	372	377	390	380	400	397	400	400	388	349	07	342	391	400	411	416	407	380	370	353	350	351	346	9120	
08	350	366	386	385	382	407	411	417	429	412	387	373	08	294	320	378	391	391	399	389	360	356	350	350	346	9029	
09	349	370	379	389	390	386	391	381	390	397	400	390	09	393	369	381	380	371	370	376	373	370	356	344	336	9031	
10	361	389	411	451	463	441	440	397	384	400	364	359	10	388	379	374	372	381	380	364	369	357	343	359	352	9280	
11	368	379	397	429	448	407	390	372	378	373	372	369	11	359	366	372	379	378	366	353	343	338	340	349	363	8988	
12	380	412	427	445	433	362	353	368	367	371	371	370	12	367	367	378	380	372	368	349	319	350	333	332	343	8917	
13	341	391	377	378	406	422	431	430	403	397	401	388	13	371	341	358	380	367	370	361	369	367	361	350	346	9106	
14	400	396	469	503	544	555	456	431	430	407	383	334	14	373	389	399	377	370	369	350	336	350	360	373	367	9721	
15	354	352	353	374	376	381	389	383	380	389	377	379	15	371	364	366	365	371	380	366	352	338	350	351	363	8824	
16	374	371	370	399	383	398	378	404	413	408	400	393	16	339	279	356	431	411	399	381	361	353	353	359	372	9085	
17	381	389	397	420	411	469	578	520	440	379	332	353	17	301	400	388	343	357	387	396	371	369	360	352	369	9462	
18	364	374	376	380	421	422	482	364	373	269	347	373	18	364	387	335	164	320	319	360	349	374	369	365	339	8590	
19	353	393	421	404	443	529	514	567	453	346	338	277	19	285	231	291	240	354	410	401	389	376	364	369	364	9112	
20	384	406	372	428	405	410	464	436	353	359	375	236	20	157	360	400	411	401	396	366	364	364	369	359	360	8995	
21	364	371	373	380	412	409	402	409	404	384	366	360	21	376	286	355	365	364	361	383	380	363	350	344	341	8902	
22	350	360	359	383	401	393	380	389	390	399	409	369	22	404	379	159	354	387	371	379	370	361	360	356	358	8820	
23	361	406	464	434	389	397	413	396	380	381	383	330	23	346	310	338	378	374	326	341	371	361	350	342	344	8915	
24	350	386	394	433	447	460	452	356	384	400	383	381	24	383	385	391	369	365	369	370	371	359	340	340	345	9213	
25	344	351	366	400	401	387	390	383	381	384	396	400	25	371	323	390	390	396	391	373	349	330	330	333	343	8902	
26	367	364	358	373	383	379	380	401	400	396	396	392	26	386	406	384	310	370	389	376	363	341	334	340	361	8949	
27	391	339	401	384	406	374	380	404	389	401	400	377	27	354	390	404	400	394	380	363	349	317	321	330	347	6995	
28	371	387	382	400	381	411	420	420	412	298	-6	275	28	386	366	404	399	380	348	331	315	303	330	358	357	8428	
29	360	411	447	471	496	487	444	446	422	426	400	386	29	366	349	353	359	349	347	340	333	339	350	351	359	9391	
30	379	379	367	407	411	410	409	410	418	410	354	298	30	393	386	388	389	380	359	356	329	335	327	344	370	9008	
31													31														

SCALED BY	SPT, MJM, JEP	Preliminary base-line and scale values: Interval Beginning Base-line Value Scale Value () Interpolated ☐ Significant portion of hour interpolated. ☐ No record; or no values available because of faulty record. * Derived from <u>Storm</u> Mph., converted to Normal Mph.	☐ Scaling uncertain because of magnetic storm. <> Rec'd off sheet for part or all of hour; if value is given, curve was estimated for missing part.	MONTHLY SUM	268896
CHECKED BY	MJM, JEP, SPT			MONTHLY MEAN	373
SIGNS RE- VIEWED BY	JEP			DATES WITH GAPS:	
PUNCHED BY					

FORM C&S-46a		MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)																				U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION COAST AND GEODETIC SURVEY RECHINAUTIC DIVISION				OBSY.	YEAR	MONTH	ELE- MENT
Values are in units of mG, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day 050N M.T. is hour 11 of the 0000 universal day. No scale corrections have been applied. Negative values are in red, with minus signs shown.																						00	77	JUN	Z				
STATION	DATE	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SLIM			
	01	310	309	320	324	320	323	334	342	339	327	318	300	01	297	268	255	280	266	237	256	260	263	256	270	294	7068		
	02	306	353	377	349	348	376	341	332	340	190	190	241	02	201	206	181	230	220	210	242	264	259	281	300	330	6667		
	03	320	316	324	320	331	370	340	368	330	253	273	300	03	309	313	310	308	313	314	312	310	310	300	300	300	7544		
	04	304	310	310	309	313	333	338	320	317	311	310	280	04	238	229	252	294	315	310	303	300	300	296	301	305	7198		
	05	309	311	312	323	360	366	336	351	354	340	320	328	05	312*	371	213	269	276	300	300	300	301	300	301	307	7500		
	06	313	322	336	346	330	336	352	320	330	315	318	310	06	299	242	269	304	316	311	299	294	290	297	300	300	7449		
	07	301	312	318	310	313	320	317	335	318	312	311	244	07	203	256	300	310	318	310	303	301	302	287	300	301	7202		
	08	305	306	310	317	310	310	324	347	343	329	290	299	08	293	251	278	300	301	300	296	300	290	290	289	290	7268		
	09	293	300	300	308	306	306	307	313	316	310	290	300	09	299	270	286	301	310	301	296	297	288	287	292	287	7163		
	10	296	316	306	334	401	347	393	349	320	314	298	258	10	286	310	313	311	307	313	312	309	306	306	299	299	7603		
	11	308	319	318	335	345	348	352	331	319	316	304	304	11	298	289	306	313	313	308	310	301	302	300	303	309	7551		
	12	320	329	359	401	401	380	327	311	310	306	303	303	12	307	307	304	305	307	304	301	280	271	289	295	310	7630		
	13	312	310	342	330	330	351	370	312	348	320	316	320	13	311	283	278	281	281	275	256	236	247	241	257	264	7231		
	14	290	336	371	381	432	419	427	359	351	316	273	260	14	258	283	303	311	304	312	319	301	287	269	273	287	7722		
	15	287	291	297	300	321	321	316	311	311	311	316	316	15	304	297	291	294	302	306	306	296	285	276	280	289	7224		
	16	304	309	321	326	331	329	337	327	339	322	304	293	16	256	193	192	260	300	301	306	293	291	266	284	296	7080		
	17	300	306	307	317	343	366	342	358	362	320	262	272	17	207	249	298	305	277	278	293	301	302	298	300	306	7269		
	18	304	316	318	319	331	386	335	178	333	343	293	306	18	311	321	324	261	250	281	257	286	289	300	304	310	7256		
	19	316	326	337	340	347	359	337	328	349	291	261	286	19	297	277	261	269	251	314	313	307	300	293	300	306	7371		
	20	336	339	350	333	367	347	353	356	292	301	290	249	20	93	219	280	311	320	326	317	297	290	287	290	299	7242		
	21	293	303	312	311	318	353	339	320	332	281	300	276	21	277	229	259	283	296	299	296	291	287	287	296	297	7141		
	22	306	296	306	308	320	334	324	310	304	309	316	270	22	280	279	231	222	263	272	261	264	271	281	292	300	6919		
	23	304	299	366	372	345	367	356	316	321	317	313	261	23	241	248	217	281	313	283	267	267	279	286	291	297	7207		
	24	297	300	309	333	341	367	367	216	258	324	319	316	24	213	313	316	318	314	312	307	302	291	287	292	299	7411		
	25	304	316	313	317	340	351	341	318	308	304	300	307	25	274	200	267	307	313	310	306	300	301	290	292	294	7273		
	26	300	310	310	308	322	316	311	309	332	277	293	307	26	308	307	313	259	269	291	297	296	300	291	298	310	7234		
	27	314	319	317	333	356	356	332	320	324	320	319	307	27	262	247	305	319	313	306	305	304	286	278	288	293	7423		
	28	297	303	313	323	339	341	356	358	341	275	62	184	28	259	260	307	309	298	279	264	263	253	249	270	295	6798		
	29	294	301	330	339	383	410	396	377	336	330	286	303	29	294	288	289	300	300	297	302	297	281	278	282	281	7574		
	30	310	330	327	320	346	367	368	350	338	331	286	236	30	261	290	300	309	310	310	290	289	271	270	269	277	7355		
	31													31															

SCALED BY	SPT, MJM, JEP	Preliminary base-line and scale values: Interval Beginning Base-line Value Scale Value	() Interpolated	[] Scaling uncertain because of magnetic storm.	MONTHLY SUM	218573	
CHECKED BY	MJM, JEP, SPT		☐ Significant portion of hour interpolated.	<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.		MONTHLY MEAN	304
SIGNS REVIEWED BY	JEP		☐ No record; or no values available because of faulty record.			DATES WITH GAPS:	
PUNCHED BY			* Derived from Storm Mph., converted to Normal Mph.				

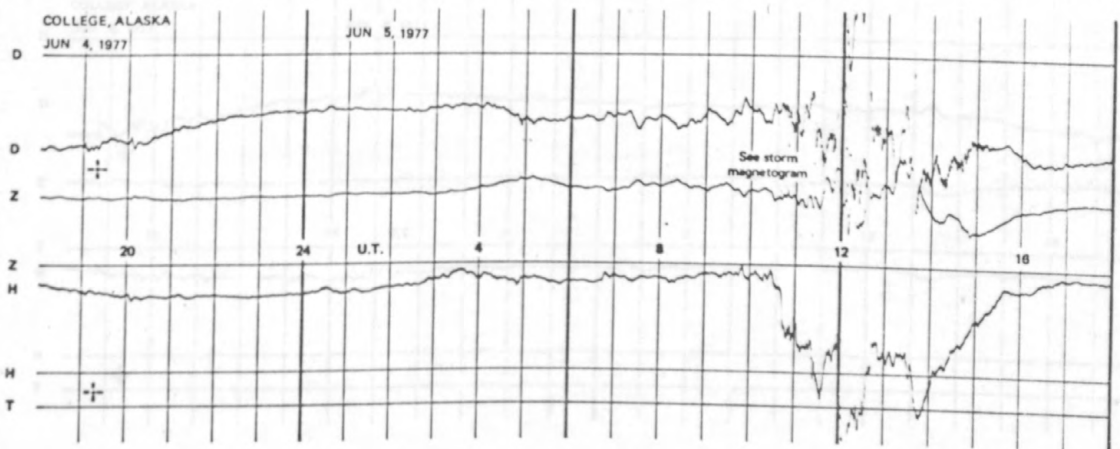
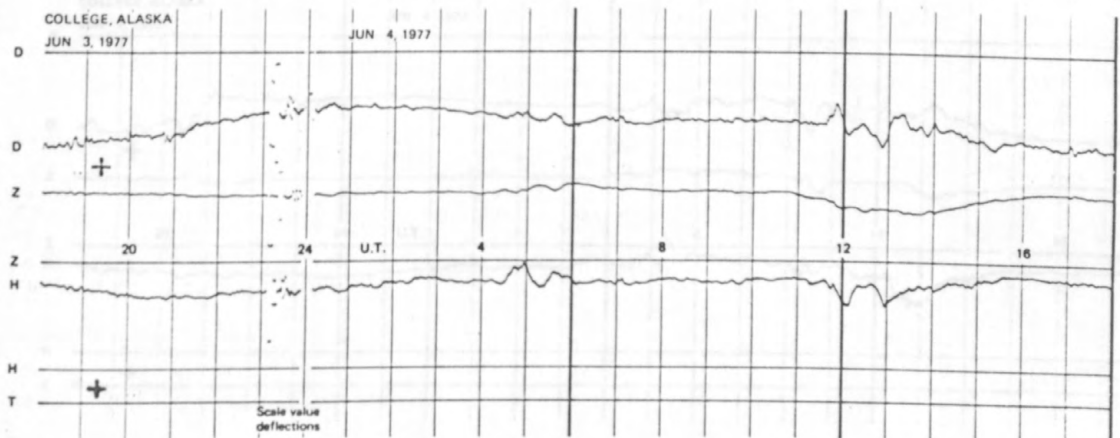
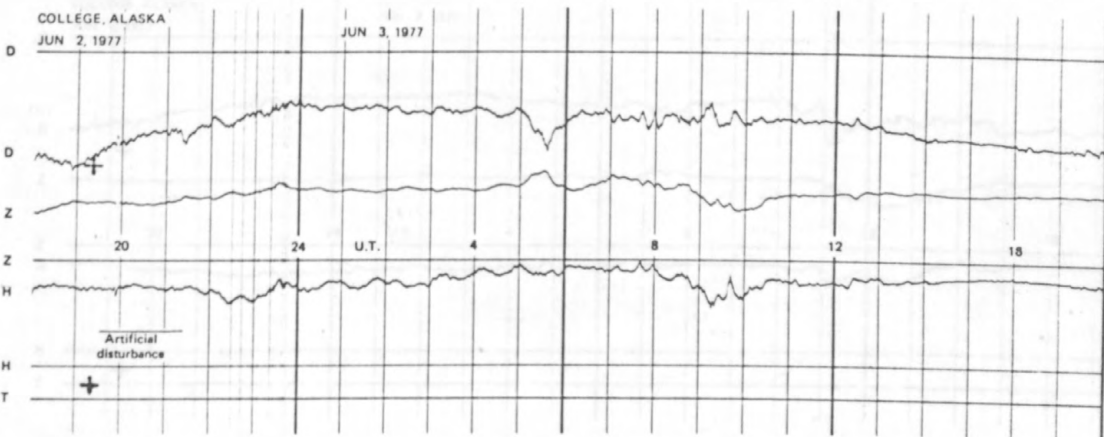
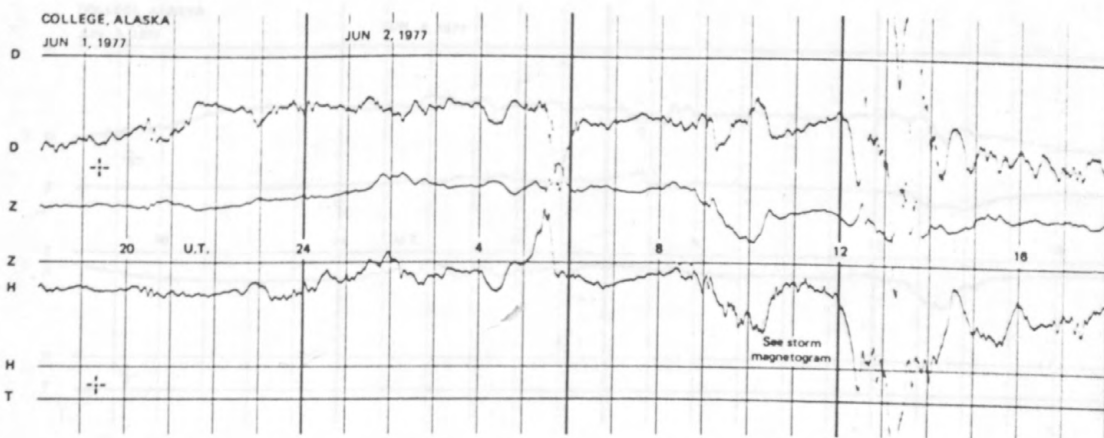
FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)



SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

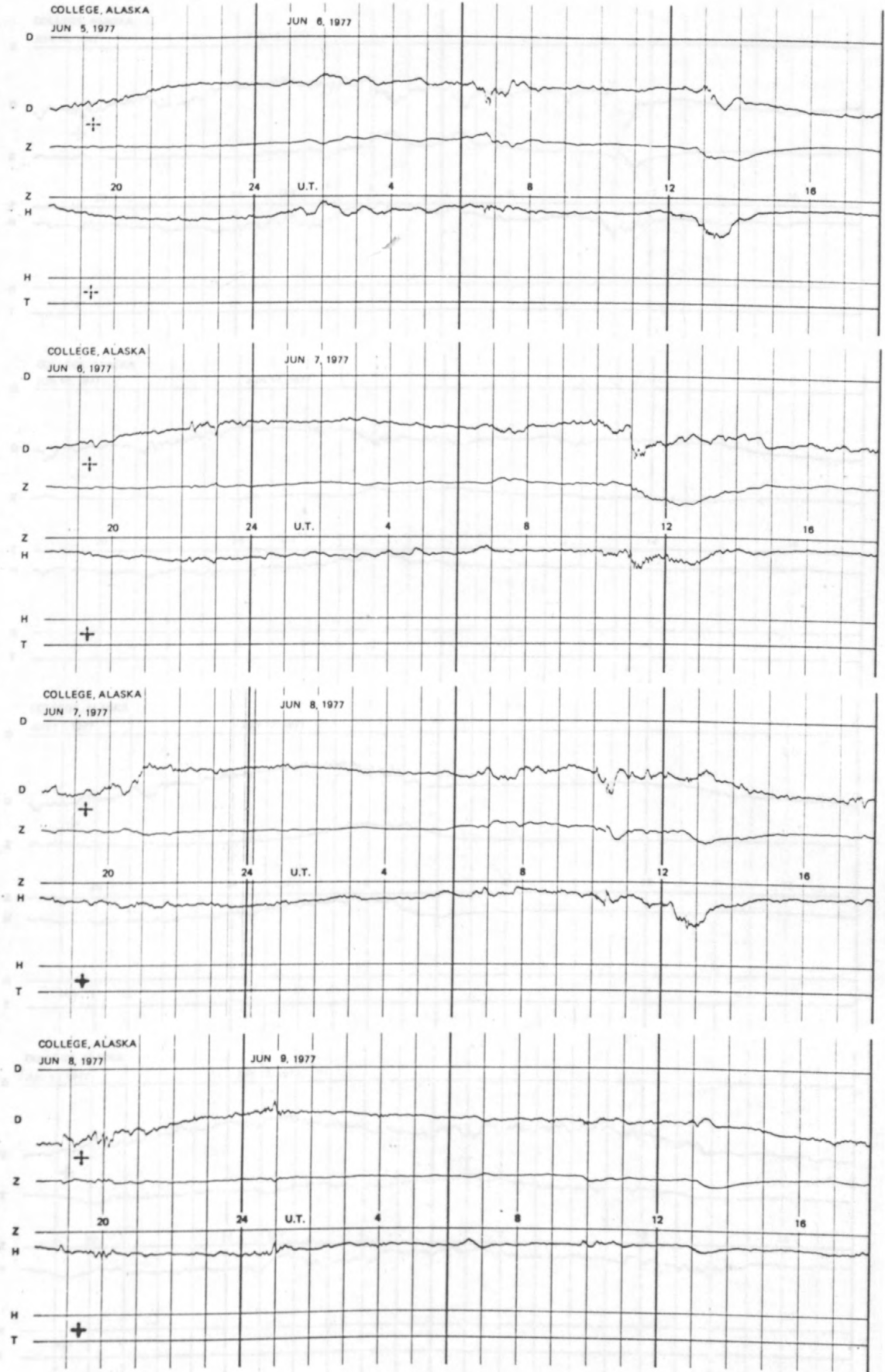
NORMAL MAGNETOGRAMS

200 mm
100 mm
0



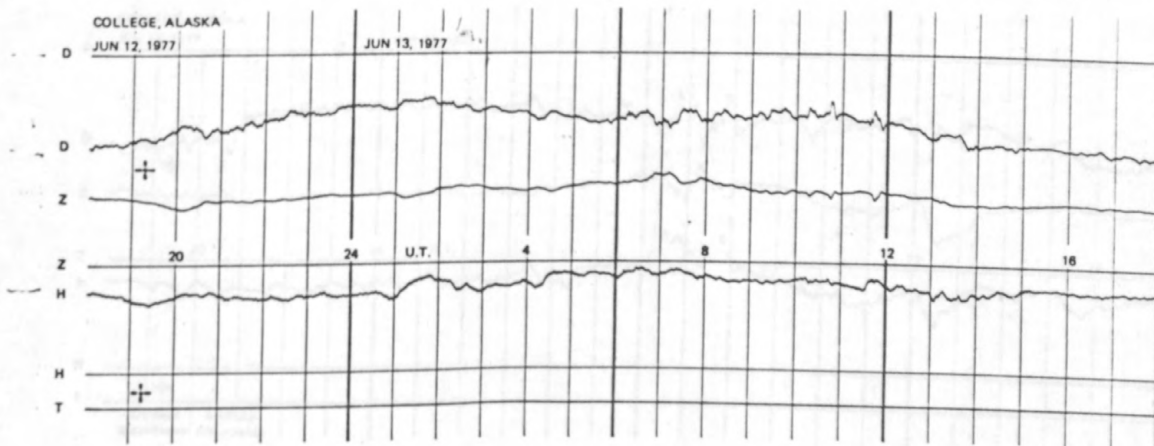
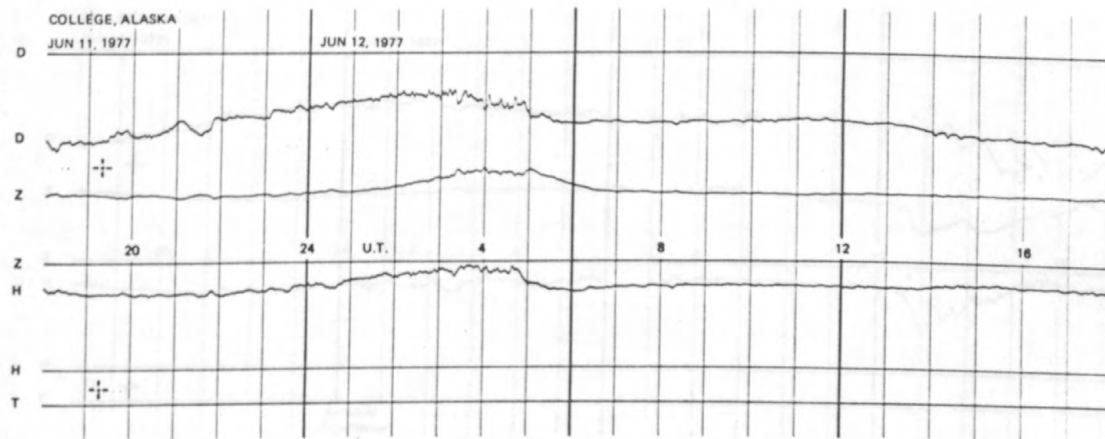
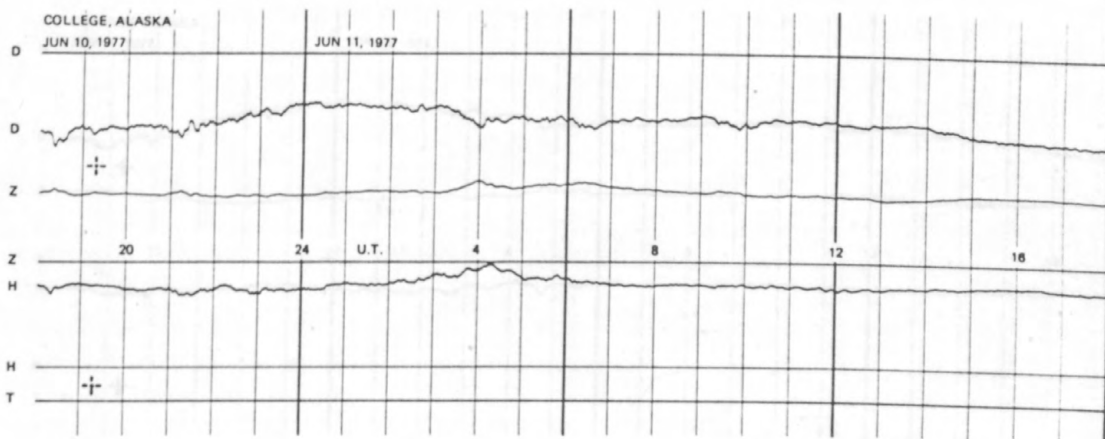
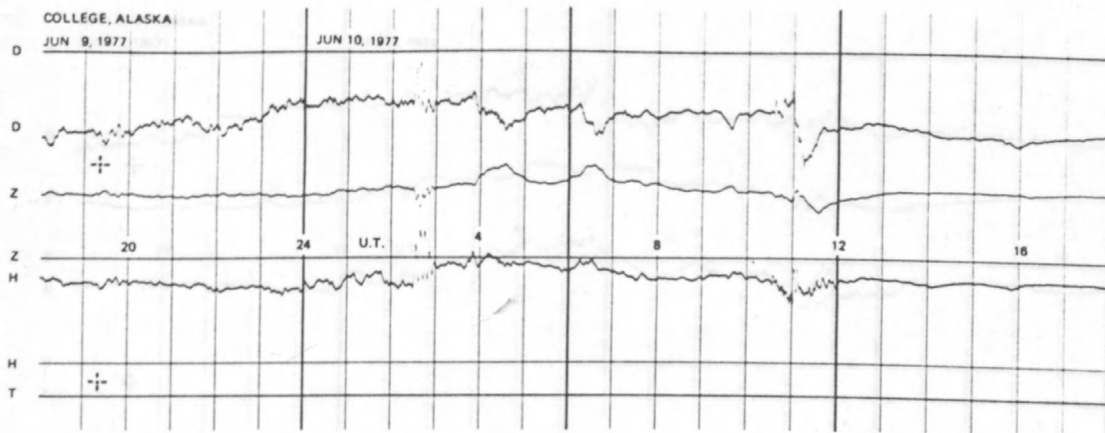
NORMAL MAGNETOGRAMS

200 mV
100 mV
0

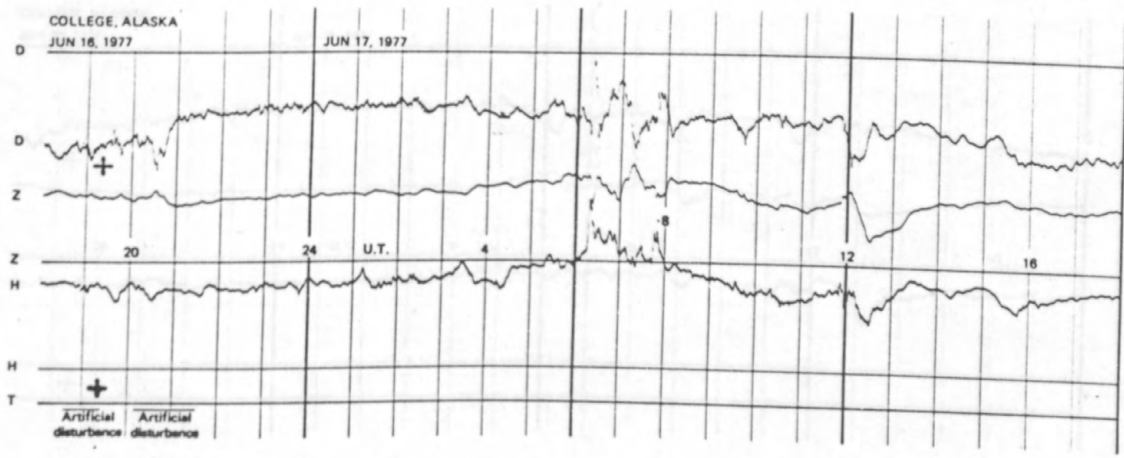
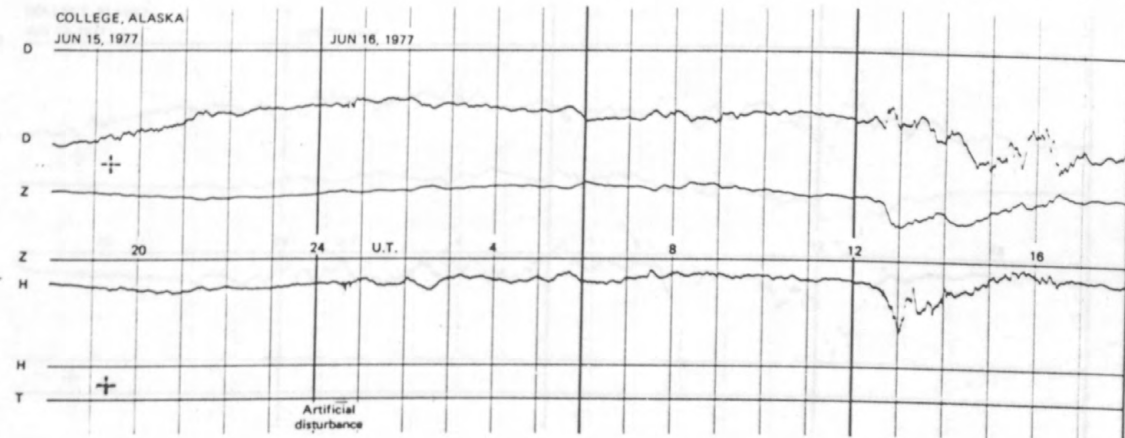
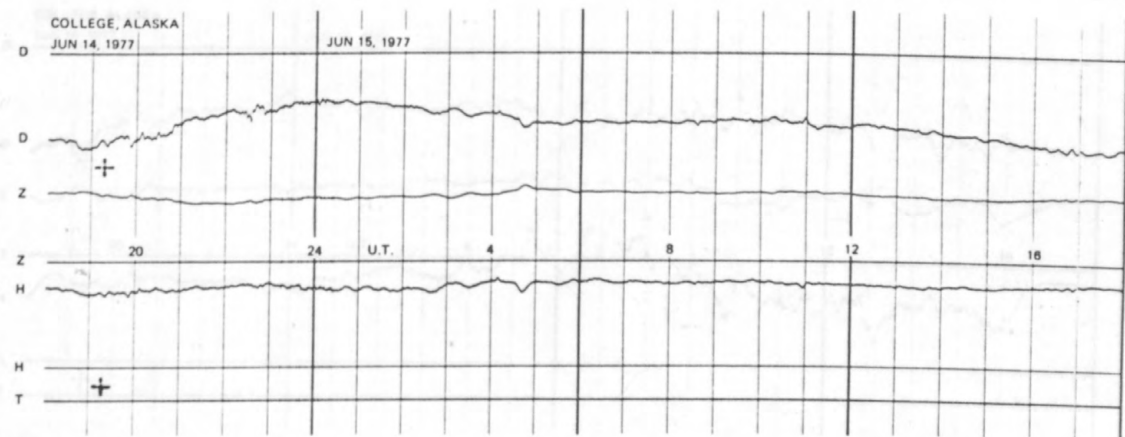
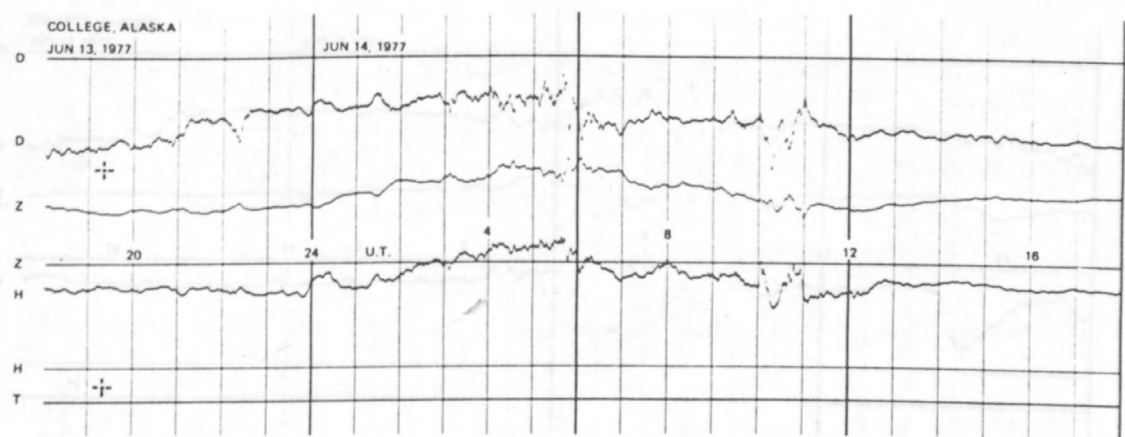
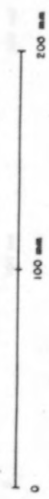


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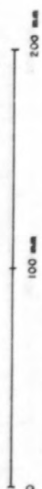
200 mV
100 mV
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NORMAL MAGNETOGRAMS

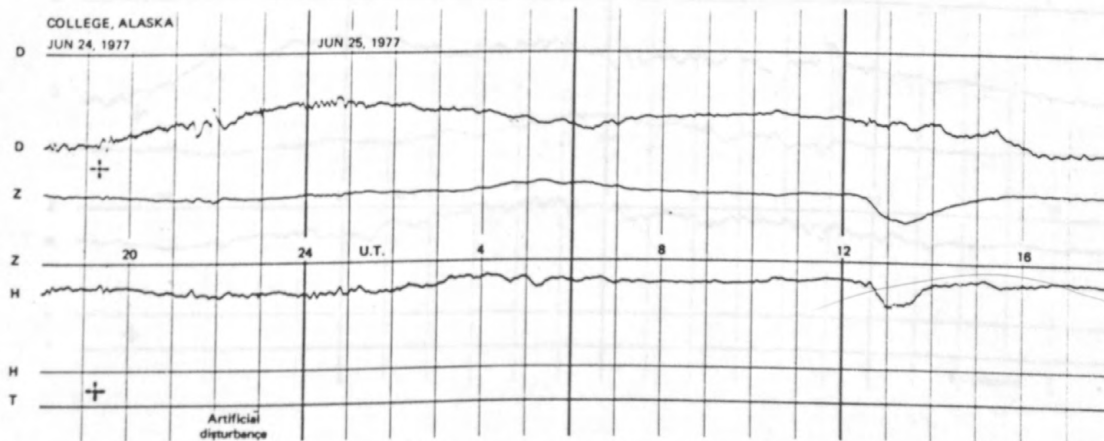
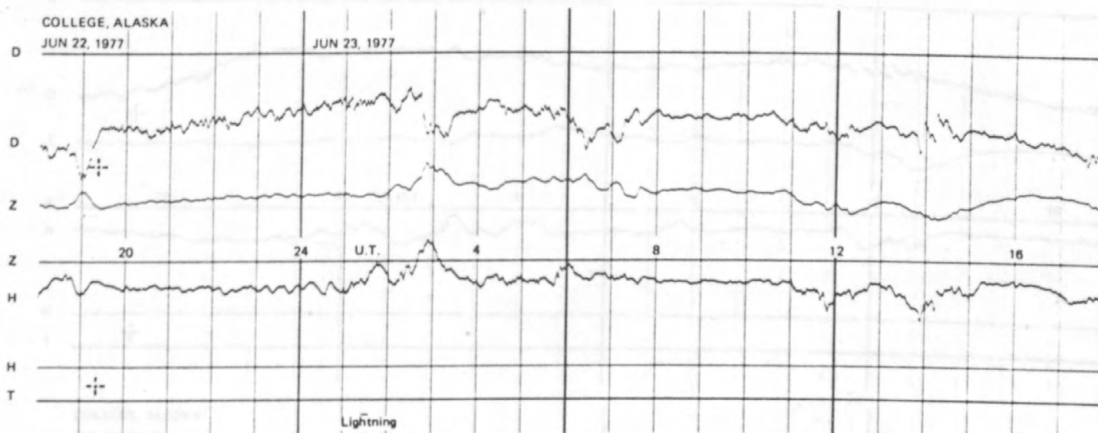
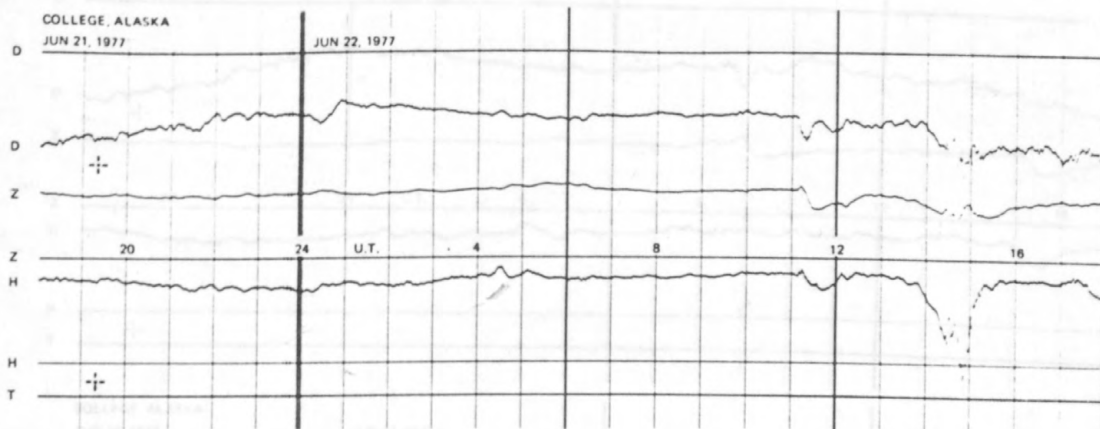


NORMAL MAGNETOGRAMS

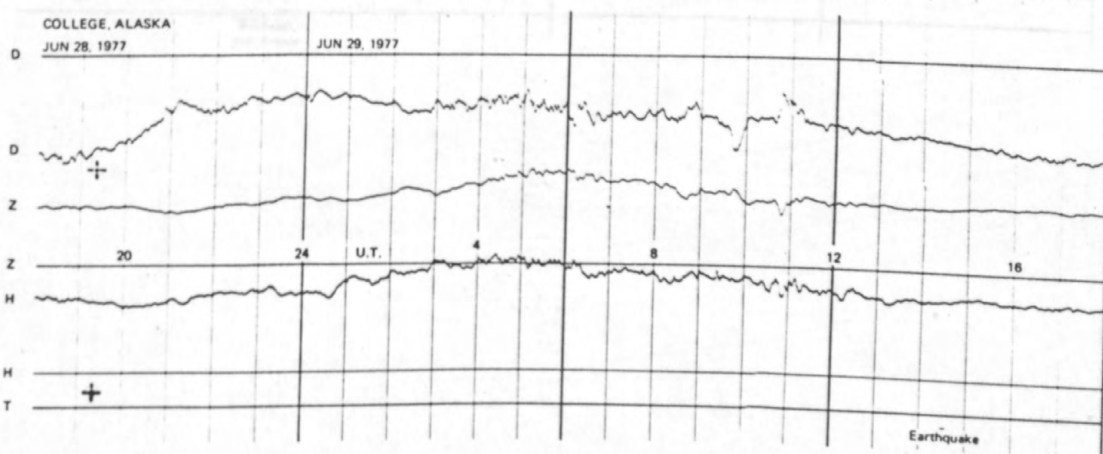
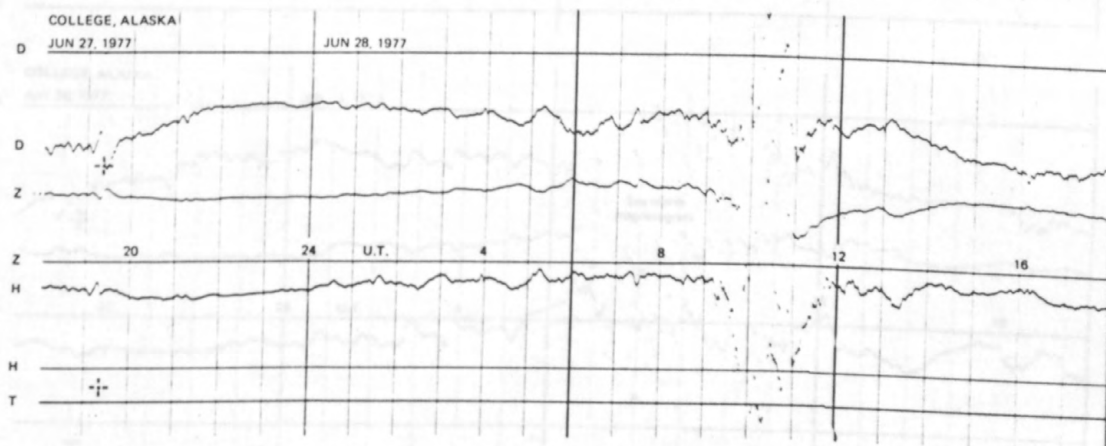
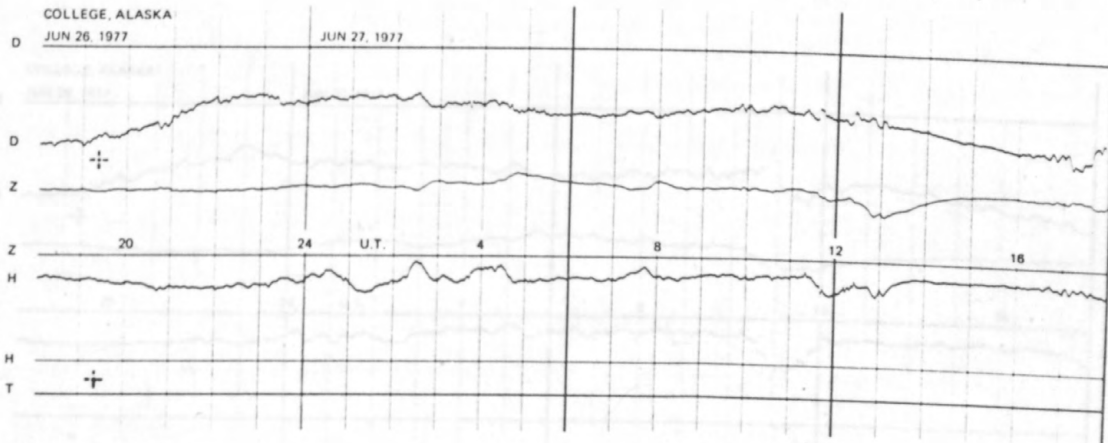
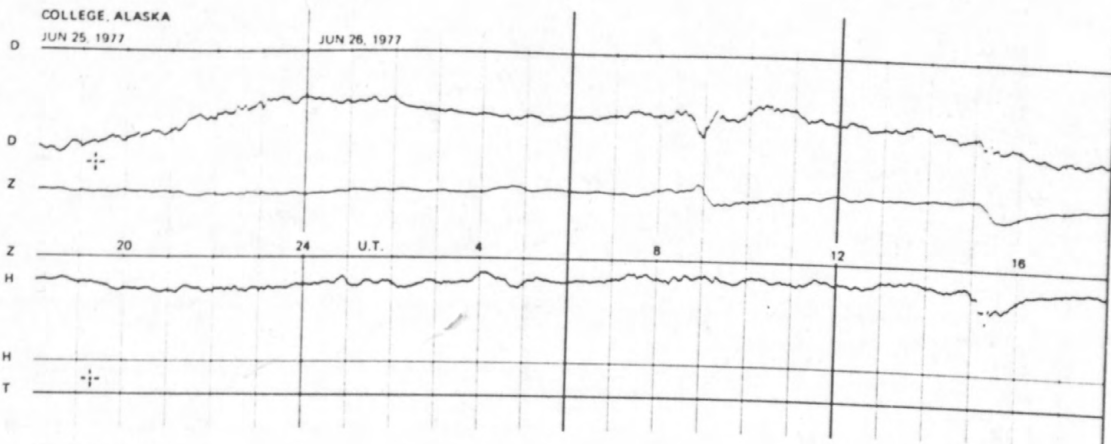
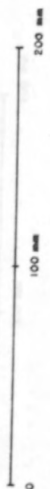


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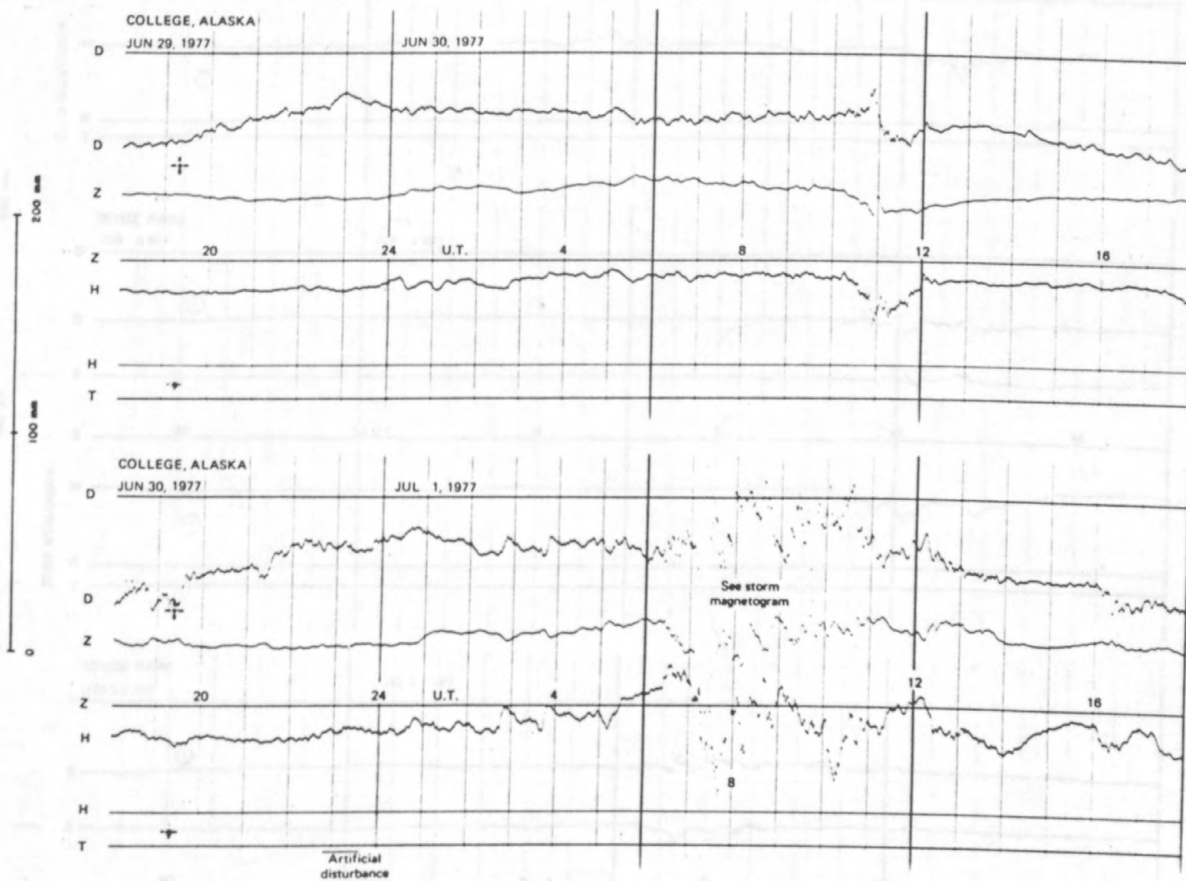
200 mm
100 mm
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NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS

