

UNITED STATES DEPARTMENT OF THE INTERIOR

(200)
R290
No. 78-300 F

GEOLOGICAL SURVEY. *[Reports Open file series]*

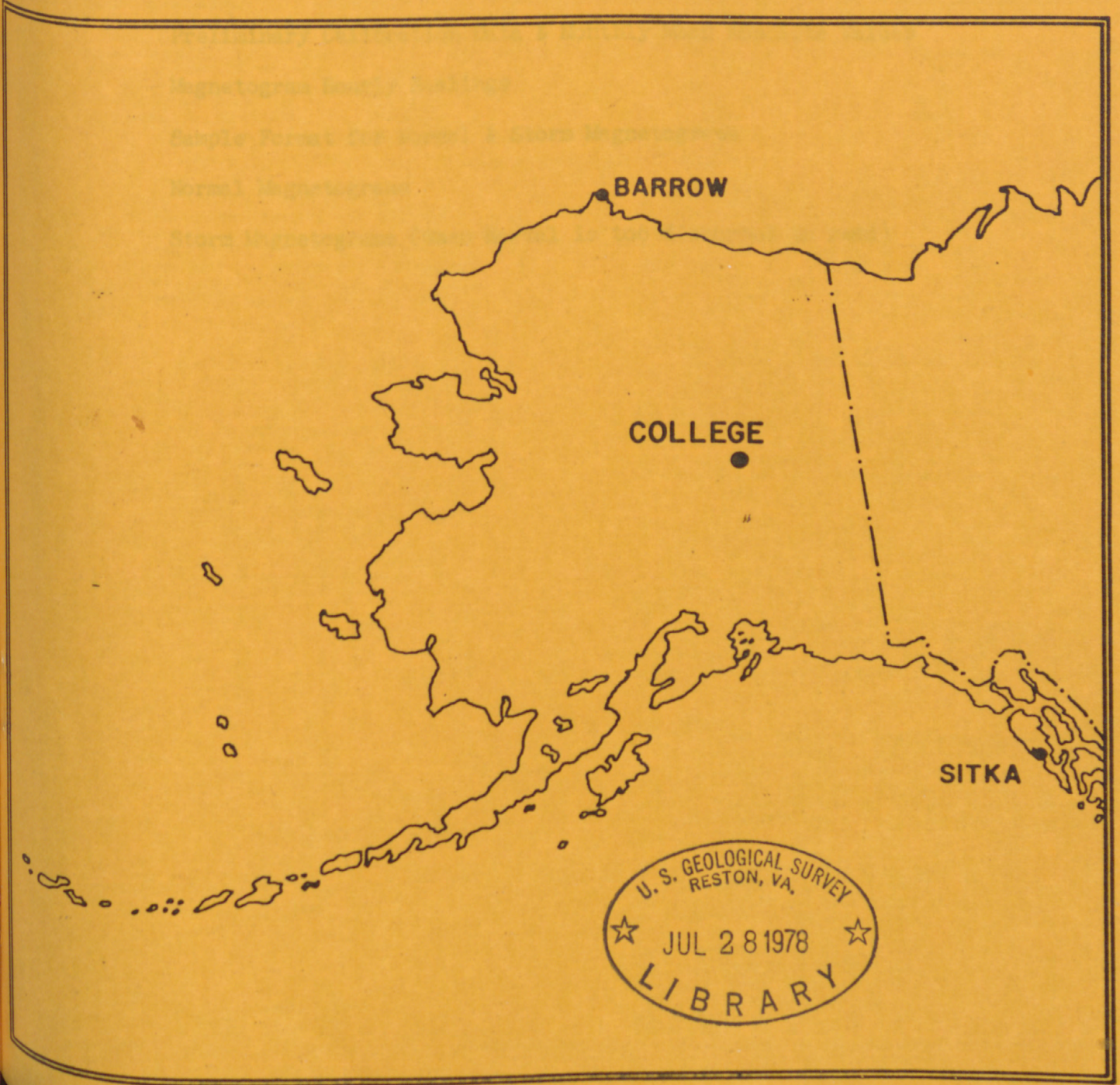
PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

*TM
em*

JUNE 1978

OPEN FILE REPORT 78-300F

no anal



U. S. GEOLOGICAL SURVEY
RESTON, VA.
★ JUL 28 1978 ★
LIBRARY

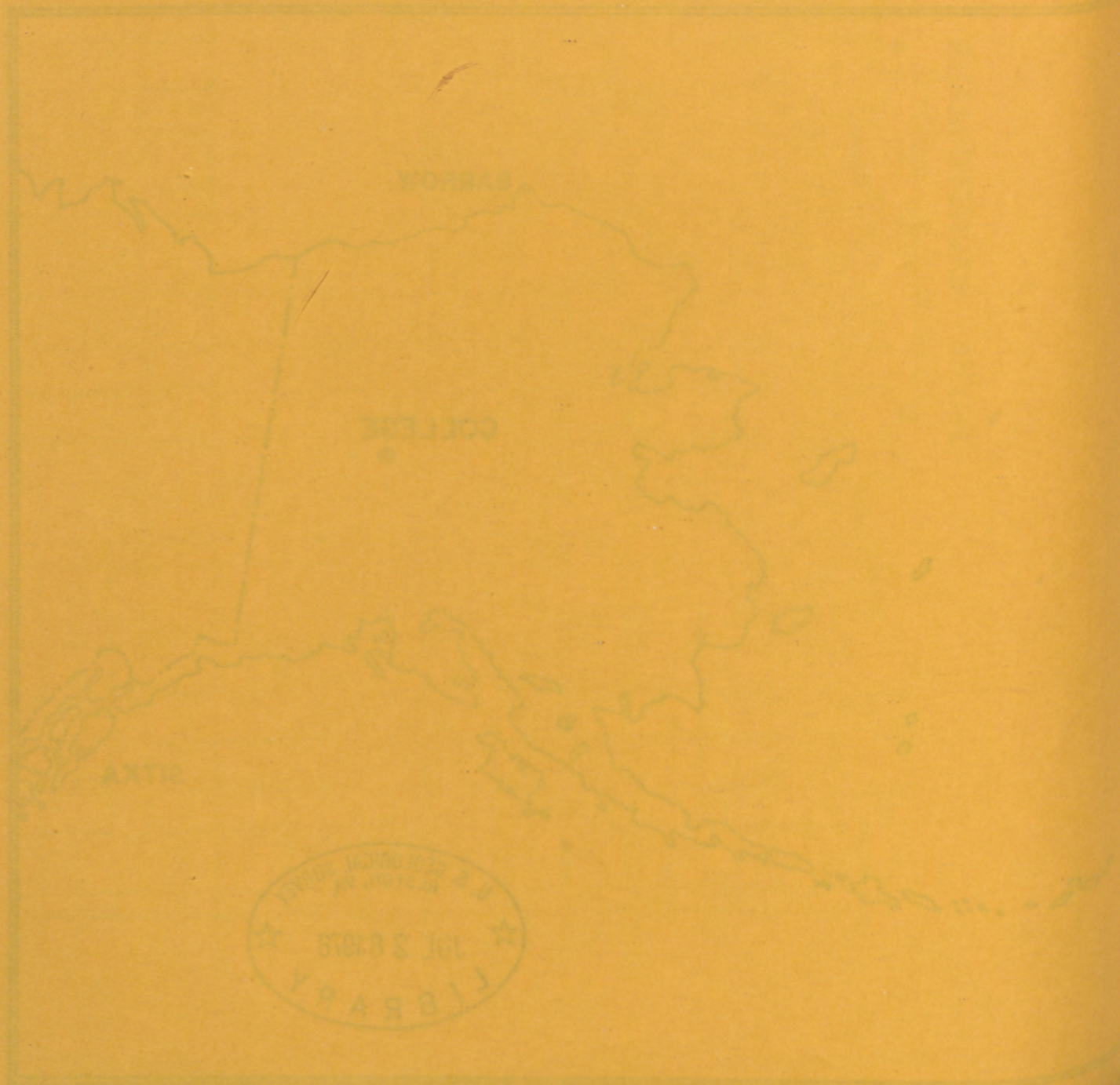
PRELIMINARY GEOMAGNETIC DATA

COLLEGE OBSERVATORY

BARBANKS, ALASKA

OPEN FILE REPORT 73-200F

PLATE 1278



ORDER OF CONTENTS

Explanation of Data & Reports

Magnetic Activity Report

Outstanding Magnetic Effects

Principal Magnetic Storms

Preliminary Calibration Data & Monthly Mean Absolute Values

Magnetogram Hourly Scalings

Sample Format for Normal & Storm Magnetograms

Normal Magnetograms

Storm Magnetograms (When Normal is too disturbed to read)

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, ASST. CHIEF, 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

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

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 10γ 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 (10γ)

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.

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.

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR

JUNE 1978

DATE	K-INDICES								SUM	AK	TIME SCALE ON MAGNETOGRAMS 20 mm/hr
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24			
1	2	2	3	3	1	2	2	3	18	10	SUDDEN COMMENCEMENTS d h m
2	2	2	4	7	5	6	7	4	37	60	
3	5	6	3	5	3	2	3	1	28	29	
4	3	3	2	4	6	3	3	4	28	25	
5	5	6	6	4	3	2	3	2	31	35	
6	2	1	2	4	3	1	1	2	16	09	
7	3	3	3	4	2	2	2	2	21	13	
8	3	4	3	0	2	3	2	1	18	11	
9	1	1	1	1	0	0	1	1	06	02	
10	2	1	3	5	4	3	2	3	23	17	
11	5	4	5	6	3	1	1	2	27	29	
12	1	3	1	5	5	3	2	1	21	18	
13	1	2	2	5	4	2	1	1	18	13	
14	1	1	1	1	0	1	1	1	07	03	
15	2	3	5	4	3	3	1	1	22	17	
16	1	2	1	2	2	2	2	2	14	06	
17	2	3	2	5	2	2	2	2	20	13	
18	2	2	3	5	5	3	2	1	23	19	
19	3	3	3	5	3	3	3	3	26	19	
20	3	3	3	3	3	2	2	2	21	12	
21	5	4	4	6	5	5	3	3	35	39	
22	4	4	2	4	4	4	2	1	25	19	
23	4	2	3	4	3	4	2	3	25	18	
24	4	4	5	4	5	3	2	2	29	26	
25	3	3	5	4	4	3	4	3	29	24	
26	4	5	5	5	4	6	6	3	38	47	
27	4	3	4	3	3	2	2	2	23	15	
28	3	3	2	4	4	5	2	2	25	19	
29	1	3	3	3	3	3	3	5	24	18	
30	3	4	5	5	4	3	4	1	29	26	
31											

POSSIBLE SOLAR-FLARE
EFFECTS BASED ON
INSPECTION OF GRAMS
ALONE (WITHOUT
REFERENCE TO DATA
FROM OTHER SOURCES)

BEGIN			END		
d	h	m	d	h	m

K SCALE USED:

LOWER LIMIT FOR K = 9.....

CURRENT SCALE VALUE.....

LOWER LIMIT FOR K = 9.....

D

683.8

3.75

2560

H

321.7

7.80

2510

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 1978
---------------	--------------

DATE	TIME U.T.	NATURE OF PHENOMENON ¹	REMARKS
01	2143	ssc*	
09	11XX	pi2	
10	0842	ssc	
16	11XX	pi2	

IDENTIFIED BY: 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

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA
JUNE 1978

Obs. 2 letter IASA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End	
		day	hr min (UT)	type	D(')	H(γ)	Z(γ)	day	(3 hr - period)	K	D(')	H(γ)	Z(γ)	day	hr
CO	64.6 N	01	2143	s.c.*	+17	-56	+14	02	4, 7	7	248	1790	990	03	12
		04	23XX	..	..	..	..	05	2, 3	6	148	880	760	05	13
		10	0842	s.c.*	-8	+150	-22	11	4	6	69	920	340	11	12
		26	04XX	..	..	..	..	26	6, 7	6	245	1410	820	26	20
		29	20XX	..	..	..	..	29 30	8 3, 4	5 5	132	920	490	30	20

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 6-1-78	2400 U.T., 6-30-78	1.0/mm	3.88/mm	27° 47.1 E
H	0000 U.T., 6-1-78	2400 U.T., 6-30-78	7.88/mm		127638
Z	0000 U.T., 6-1-78	2400 U.T., 6-30-78	7.88/mm		551188

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 6-1-78	2400 U.T., 6-30-78	7.9/mm	29.78/mm	24° 18.9 E
H	0000 U.T., 6-1-78	2400 U.T., 6-30-78	44.1		115208
Z	0000 U.T., 6-1-78	2400 U.T., 6-30-78	48.8		540198

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		
D	RAPID RUN MAGNETOGRAPH DISCONTINUED 1800 U.T., 4-1-78				
H					
Z					

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 14.1 E	130478	553818

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: JUN 1, 6, 7, 8, 9, 13, 14, 16, 17, 20

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OSBY. YEAR MONTH ELEMENT
CO 78 JUN D

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, Hour 01 of local day (1500 M.T.) is hour 11 of the 68000 universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q	S	Tr	Q	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM			
					01	232	232	242	249	279	251	250	240	229	210	211	216	01	244	292	300	347	401	390	376	351	316	279	309	174	6620	
					02	172	209	229	239	270	288	241	258	204	-30*	97*	18*	02	321	241	200*	796*	661*	685*	899*	446*	185*	266	240	158	7293	
					03	172	254	159	153*	242	221	197	151	224	224*	272*	280	03	282	301	362	428	458	470	438	351	282	239	223	204	6587	
					04	190	188	192	209	232	251	262	251	241	244	258	226	04	327	323	358	338	462	460	448	380	419	347	329	275	7210	
					05	181	142	226	173	168	169*	-276*	109	263	239	228	194	05	251	244	271	310	373	419	418	394	370	308	256	213	5643	
					06	141	142	147	117	250	260	247	258	244	228	205	289	06	269	309	303	332	402	428	431	416	392	304	250	224	6608	
					07	197	170	189	200	210	217	321	261	257	240	222	261	07	298	308	347	399	420	467	458	381	312	281	178	200	6794	
					08	189	157	151	178	141	255	234	260	269	259	269	278	08	280	279	311	353	370	407	379	840	294	232	210	190	6285	
					09	190	195	219	226	261	273	259	239	239	233	232	233	09	248	268	220	366	399	387	368	340	311	239	232	200	6477	
					10	190	194	230	231	251	244	245	247	172	137	270	257	10	240	311	379	410	539	419	327	331	309	320	349	206	6808	
					11	141	171	198	124	189	220	138	208	163	156	234	279	11	198	230	262	301	362	370	354	311	289	238	219	220	5575	
					12	226	229	250	268	274	279	261	259	251	222	279	395	12	417	270	278	333	427	428	361	334	301	337	230	250	7159	
					13	250	223	230	251	267	261	261	259	268	220	263	262	13	231	267	270	330	360	340	361	337	302	269	231	219	6532	
					14	215	230	250	263	279	273	263	259	252	270	264	259	14	274	299	320	319	341	370	377	348	330	281	264	199	6799	
					15	192	206	211	212	217	229	211	181	249	187	203	171	15	237	271	348	348	398	427	408	341	297	261	228	198	6331	
					16	180	203	221	240	261	262	251	248	233	228	238	259	16	258	272	304	360	394	368	367	348	261	253	211	149	6369	
					17	199	197	203	230	206	226	261	238	241	222	195	223	17	209	230	258	360	413	399	409	375	281	241	224	214	6254	
					18	214	206	194	211	251	267	322	251	260	220	252	272	18	204	219	309	379	411	457	442	390	311	323	279	213	6857	
					19	191	179	131	201	211	179	234	348	191	181	351	321	19	281	280	330	384	467	480	369	371	350	298	327	191	6846	
					20	178	171	169	162	190	243	238	253	190	210	221	207	20	280	294	330	396	448	490	471	429	370	313	237	192	6682	
					21	150	92	70	97	126	153	80	164	220	209	202	128*	21	161	267	319	431	344	444	478	451	351	244	215	236	5632	
					22	230	158	110	133	180	241	231	229	230	217	248	195	22	199	211	320	332	391	442	480	447	327	278	259	237	6325	
					23	182	158	203	196	187	229	254	210	189	264	261	211	23	236	269	318	391	441	443	470	369	330	306	270	313	6700	
					24	241	210	112	121	139	151	40*	182	187	198	176	228	24	197	291	279	320	381	430	457	431	380	324	272	250	5997	
					25	230	170	164	209	210	208	217	251	251	150	188	198	25	253	300	284	427	441	516	466	371	399	342	278	159	6682	
					26	161	140	132	128	65*	-46*	142	104*	32*	48*	161	207	26	208	290	351*	604*	470*	589*	557*	342	371	388	225	180	5849	
					27	151	127	160	179	249	190	201	261	268	241	211	215	27	210	242	283	291	372	424	436	328	318	256	231	241	6085	
					28	220	201	194	220	216	267	243	258	234	240	200	235	28	336	265	280	371	381	461	444	378	369	319	254	226	6812	
					29	209	209	221	250	270	301	249	201	228	221	224	229	29	230	241	237	388	451	481	438	321	307	764	566	169	7405	
					30	33	121	176	197	241	210	207	-31*	49	223*	105	160	30	278	211	267	248	344	440	492	362	311	299	267	238	5448	
					31													31														

SCALED BY SPT
CHECKED BY JEP
SIGNS REVIEWED BY JEP
PUNCHED BY

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 Storm Mgh., converted to Normal Mgh.
- [] Scaling uncertain because of magnetic storm.
- <> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

MONTHLY SUM 194664
MONTHLY MEAN 270
DATES WITH GAPS:

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OBSY. YEAR MONTH ELEMENT
CO 78 JUN H

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, Hour 01 of local day (150W M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q ^m	Q ^s	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	13 th	14 th	15 th	16 th	17 th	18 th	19 th	20 th	21 th	22 th	23 th	24 th	SUM			
			01	331	347	370	460	429	416	444	399	454	386	351	361	01	359	352	360	375	371	357	370	354	351	336	349	329	9011	
			02	346	349	359	361	360	396	582	581	477	367	-139*	450*	02	416	501	521	-127*	-139*	-89*	-219*	48*	369	399	437	392	6998	
			03	523	384	387	518*	451	448	449	486	426	295	44	101	03	319	399	361	353	340	313	292	274	363	350	339	335	8550	
			04	360	391	446	442	459	407	353	370	379	373	336	169	04	139	-156*	272	421	341	349	331	324	296	251	344	480	7877	
			05	500	581	821	858	711*	428*	614*	472	147	129	247	249	05	287	351	391	397	380	377	379	367	349	341	334	359	10069	
			06	343	310	359	341	353	351	373	372	389	410	397	263	06	269	279	351	359	340	349	348	339	321	309	329	341	8195	
			07	371	416	409	360	370	481	424	354	367	390	311	226	07	309	347	331	350	339	300	256	261	307	316	317	359	8271	
			08	303	401	450	486	591	679	471	413	360	351	361	359	08	353	309	327	299	237	230	340	356	340	326	316	320	8978	
			09	329	351	373	422	439	430	370	367	358	370	371	359	09	361	366	363	370	370	370	368	340	311	300	313	337	8708	
			10	339	360	373	360	359	366	369	369	437	556	439	127	10	409	314	306	358	301	271	309	323	322	317	363	321	8368	
			11	376	471	459	639	601	456	500	533	350	379	229	-28*	11	391	340	345	400	404	423	410	391	367	361	324	341	9462	
			12	341	350	357	350	360	393	351	362	365	410	287	4	12	15	163	319	361	273	305	350	380	381	331	330	325	7463	
			13	350	347	330	341	383	361	364	376	403	243	336	395	13	360	247	257	376	402	391	379	351	344	333	340	339	8348	
			14	341	361	369	369	356	350	361	376	387	383	381	375	14	375	380	370	363	347	317	351	348	339	341	359	351	8650	
			15	365	390	360	371	425	459	487	527	344	440	386	339	15	210	256	220	321	360	374	389	376	350	351	351	356	8807	
			16	371	351	370	386	380	369	380	376	384	400	400	361	16	390	389	410	406	411	379	370	352	340	339	353	359	9026	
			17	380	360	369	400	466	513	426	419	403	406	309	128	17	402	363	358	360	356	380	379	379	399	371	344	353	9023	
			18	340	324	326	365	359	392	472	480	434	411	381	231	18	-81	158	388	330	400	424	381	386	359	346	350	342	8298	
			19	373	380	420	330	399	471	588	499	521	479	187	159	19	360	420	381	326	246	239	328	370	361	336	356	401	8930	
			20	431	406	376	395	469	416	451	450	461	394	390	335	20	321	361	374	366	371	330	319	301	330	320	340	370	9077	
			21	403	479	621	925	785	764	577	606	463	433	369	93	21	121	289	171	-198*	157	336	253	307	290	298	341	403	9286	
			22	544	469	529	521	511	380	416	409	360	345	309	86	22	221	379	189	129	349	330	353	356	356	346	343	353	8583	
			23	359	478	509	351	352	356	353	386	443	397	289	251	23	340	289	376	337	200	171	271	298	304	303	379	451	8243	
			24	503	580	641	583	567	664	447	509	496	431	419	227	24	257	-62*	28*	406	351	347	333	326	335	324	340	376	9428	
			25	389	399	491	538	401	384	416	430	229	446	379	249	25	239	72	219	217	355	231	271	402	359	350	331	279	8076	
			26	365	296	374	443	695	905	709	542	412	398	269	208	26	229	131	-5	-368*	-414*	-301*	-170*	270	360	306	384	400	6438	
			27	336	352	516	590	514	483	617	552	400	396	367	329	27	250	166	261	328	320	319	329	319	365	364	331	360	9164	
			28	335	297	371	436	301	437	404	360	419	360	299	307	28	109	270	223	115	379	362	388	379	370	369	320	330	7940	
			29	313	320	339	360	399	439	452	497	441	425	431	420	29	406	426	231	351	370	401	373	347	336	188	256	429	8950	
			30	338	300	291	330	336	527	549	524	364	-22*	260	231	30	137	293	165	291	249	207	221	303	394	373	359	370	7390	
			31													31														

SCALED BY	SPT	Preliminary base-line and scale values: Interval Beginning Base-line Value Scale Value	<input type="checkbox"/> Interpolated <input type="checkbox"/> Significant portion of hour interpolated. <input type="checkbox"/> No record; or no values available because of faulty record. * Derived from <u>Storm</u> Mgh., converted to Normal Mgh.	<input type="checkbox"/> Scaling uncertain because of magnetic storm. <> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.	MONTHLY SUM	255607
CHECKED BY	JEP				MONTHLY MEAN	355
SIGNS REVIEWED BY	JEP				DATES WITH GAPS:	
PUNCHED BY						

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OBSY. CO 78
YEAR 78
MONTH JUN
ELEMENT Z

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1500 M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q	S	Err	Q	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM			
					01	341	340	348	385	426	409	422	406	352	346	340	343	01	356	356	360	370	370	350	338	337	336	339	340	320	8630	
					02	326	338	343	356	359	380	416	389	320	266	521*	654*	02	459	388	547*	806*	477*	508*	654*	180*	189	269	271	291	9656	
					03	281	351	318	320*	410	381	356	288	286	390	390*	94	03	262	338	360	351	349	336	311	290	281	299	320	331	7693	
					04	341	342	360	400	395	386	368	364	351	350	336	324	04	238	287	181	311	331	311	300	276	306	338	378	453	8027	
					05	441	369	261	163	119*	-58*	18*	259	308	376	386	398	05	457	376	357	382	367	350	349	338	328	310	310	324	7288	
					06	341	342	339	363	360	349	341	352	346	339	261	193	06	243	240	273	309	331	331	330	319	329	320	320	334	7605	
					07	359	381	401	381	360	371	369	359	341	334	327	308	07	267	277	299	302	310	300	251	230	240	268	279	320	7634	
					08	332	338	385	390	361	347	419	413	369	347	340	334	08	325	271	267	281	234	207	277	302	319	319	323	331	7831	
					09	346	352	361	377	411	407	388	359	356	349	347	331	09	337	348	349	350	350	336	331	327	326	320	322	325	8405	
					10	331	338	361	359	351	336	333	331	300	313	231	209	10	330	371	309	311	297	226	239	302	315	318	319	321	7451	
					11	361	369	389	369	350	377	349	239	271	310	439	338	11	330	341	309	353	367	360	355	337	332	330	336	341	8252	
					12	350	356	364	369	360	378	356	349	341	340	321	256	12	341	328	331	354	311	276	289	317	350	320	317	320	7994	
					13	340	359	354	351	361	350	344	340	346	240	301	339	13	319	284	250	312	340	349	351	341	340	342	340	348	7941	
					14	354	357	361	360	361	350	339	336	339	349	343	340	14	340	339	339	343	340	326	297	307	314	312	319	324	8089	
					15	331	360	389	370	369	391	391	337	247	346	351	343	15	319	320	360	310	309	317	321	317	318	321	329	330	8096	
					16	327	340	339	347	370	377	359	352	341	342	346	328	16	307	329	350	361	356	340	327	323	319	330	347	351	8775	
					17	347	369	363	384	391	419	429	371	361	349	276	270	17	295	319	317	343	339	333	330	319	301	308	319	329	8181	
					18	359	340	342	350	361	350	381	368	390	358	340	411	18	245	281	296	304	329	337	330	316	308	321	327	319	8063	
					19	339	364	359	418	391	381	390	370	359	320	204	110	19	212	330	342	330	285	243	241	289	300	313	361	400	7651	
					20	410	403	357	349	371	386	393	390	356	351	360	340	20	327	301	331	343	338	330	310	293	291	301	320	341	8292	
					21	349	341	361	183	268	207	260	336	357	320	339	418	21	276	280	346	399	266	281	323	300	299	303	313	367	7492	
					22	390	369	360	379	359	381	360	333	372	350	287	65	22	172	270	295	281	280	321	330	331	303	304	321	344	7557	
					23	366	371	436	400	357	355	355	334	333	240	291	290	23	301	346	354	357	269	161	206	273	289	309	369	389	7751	
					24	389	391	413	377	350	347	228	399	386	373	360	431	24	349	441	259	253	329	330	330	315	310	318	334	370	8382	
					25	381	358	401	409	407	391	381	389	240	329	366	351	25	317	377	280	238	290	290	251	256	279	281	289	284	7835	
					26	306	331	332	376	380	136	31	11	0	192	382	391	26	358	432	572	566*	315*	265*	346*	241	356	416	391	407	7533	
					27	400	421	414	364	460	451	377	367	410	390	355	368	27	391	361	340	339	365	341	315	291	319	331	340	361	8871	
					28	384	371	371	407	427	411	411	383	365	277	359	396	28	407	351	400	471	349	339	330	321	332	339	351	346	8898	
					29	346	341	340	347	370	417	397	424	426	401	396	364	29	351	356	381	359	331	339	302	291	300	419	410	506	8914	
					30	446	411	407	421	420	370	222	223	329	479*	528	551	30	662	473	524	369	362	340	341	237	305	327	340	344	9431	
					31												31															

SCALED BY SPT
 CHECKED BY JEP
 SIGNS REVIEWED BY JEP
 PUNCHED BY

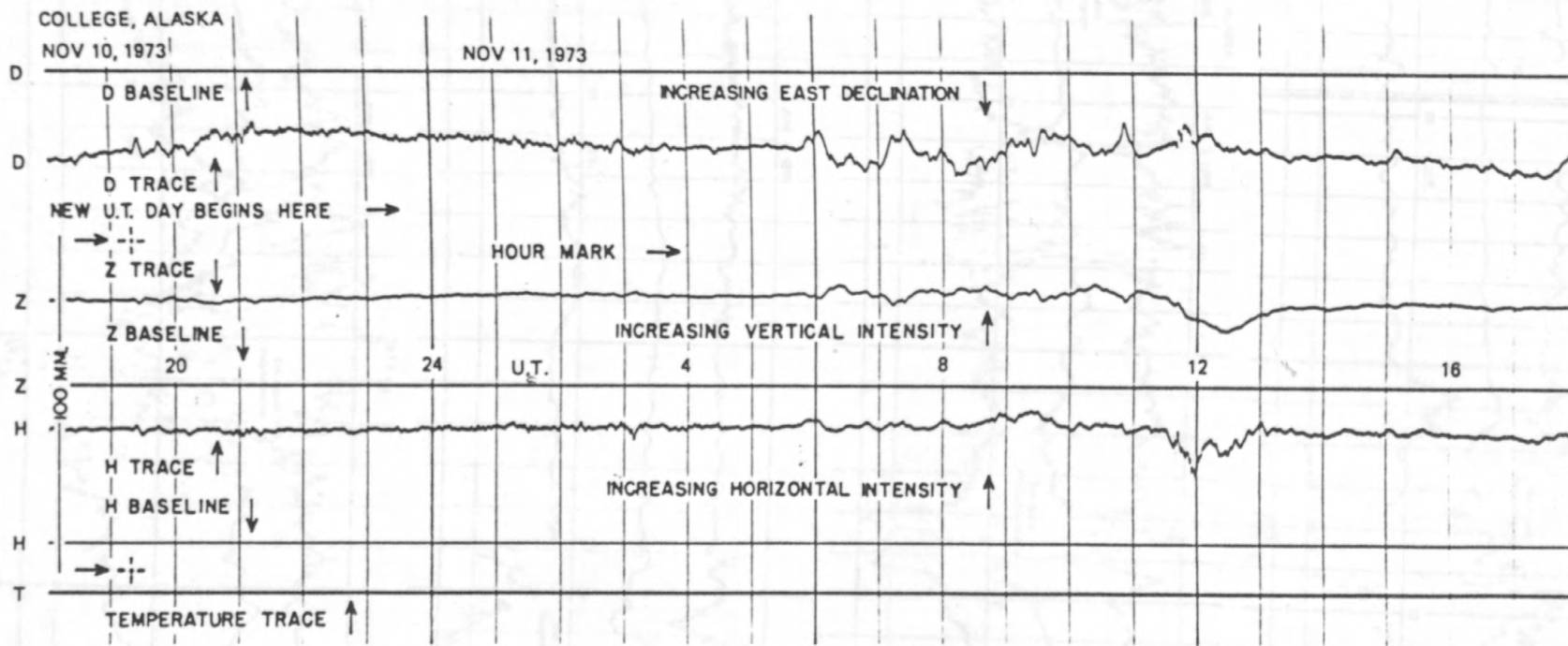
Preliminary base-line and scale values:
 Interval Beginning Base-line Value Scale Value

() Interpolated
 Significant portion of hour interpolated.
 No record; or no values available because of faulty record.
 * Derived from Storm Mgh., converted to Normal Mgh.

[] Scaling uncertain because of magnetic storm.
 <> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

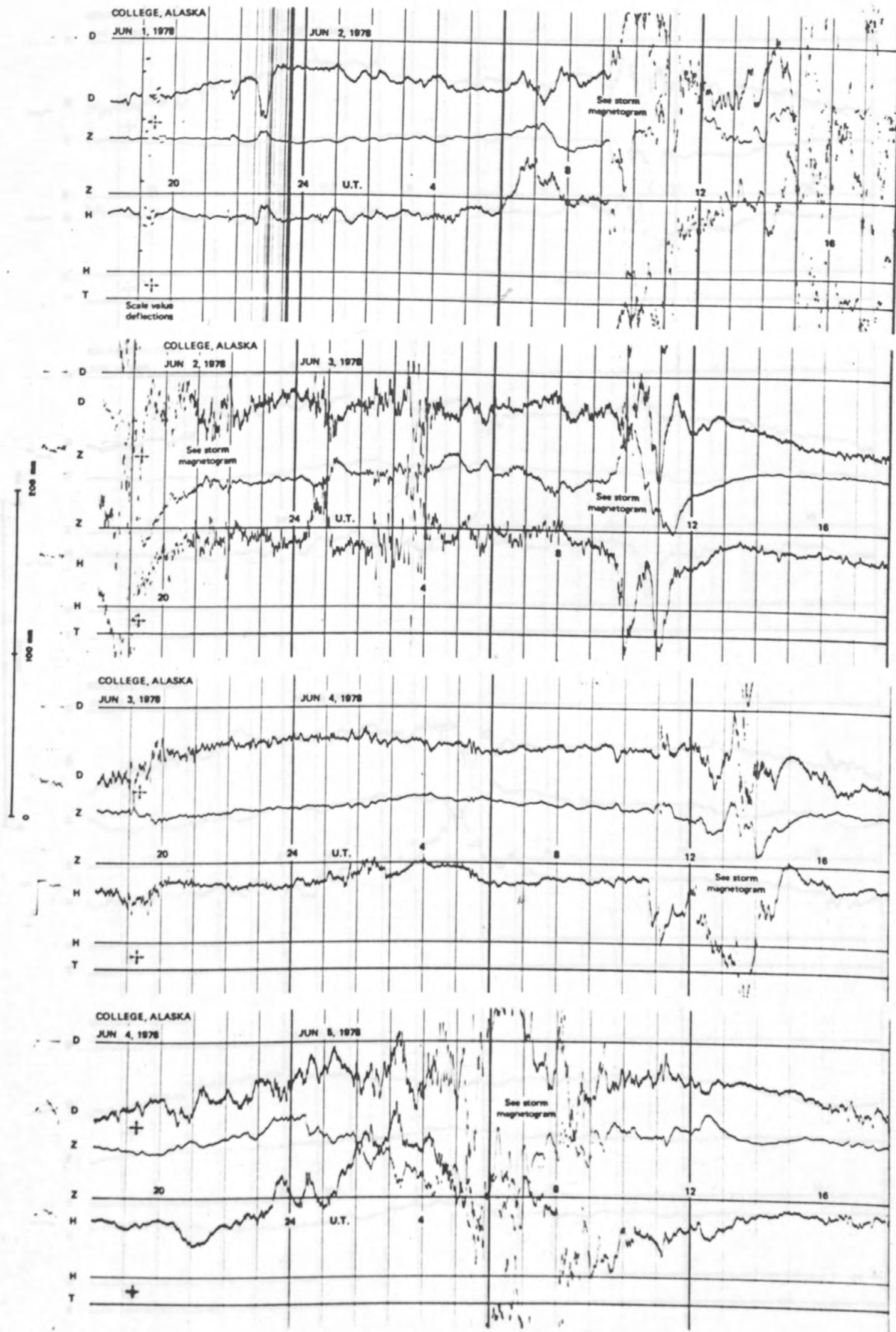
MONTHLY SUM 244218
 MONTHLY MEAN 339
 DATES WITH GAPS:

FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)

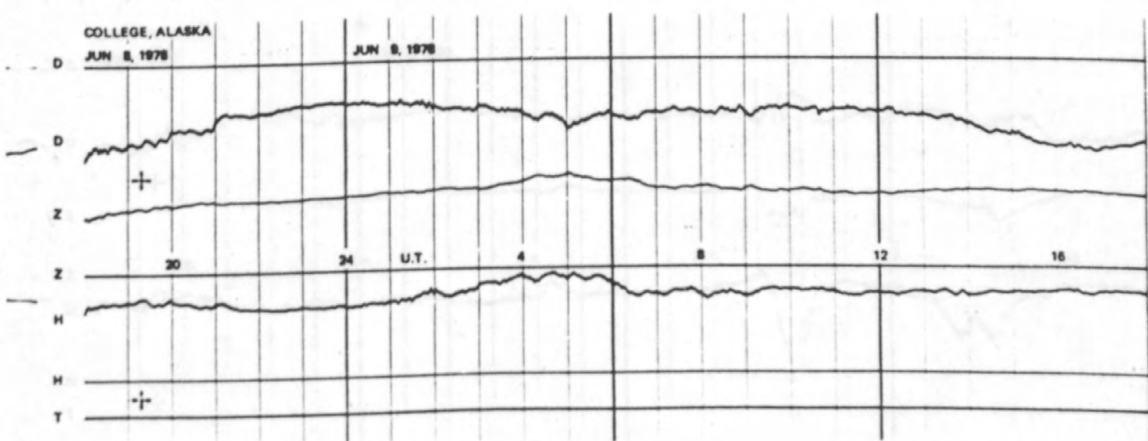
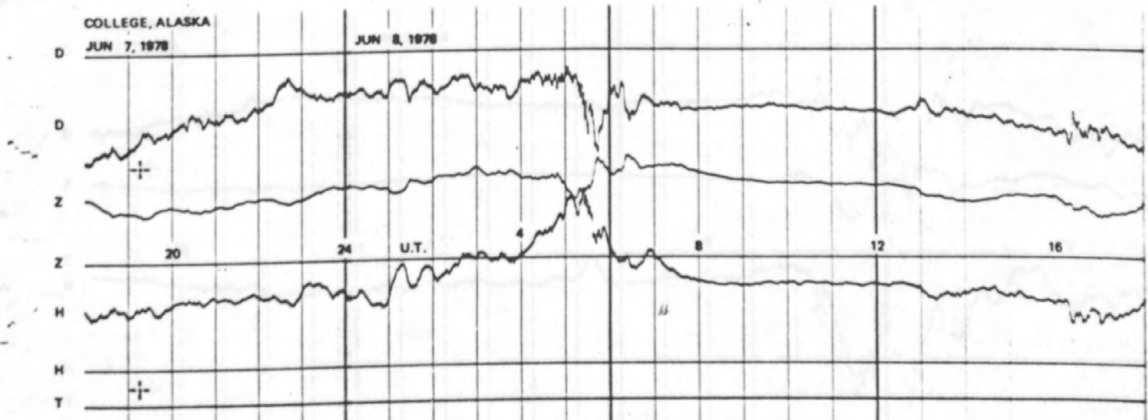
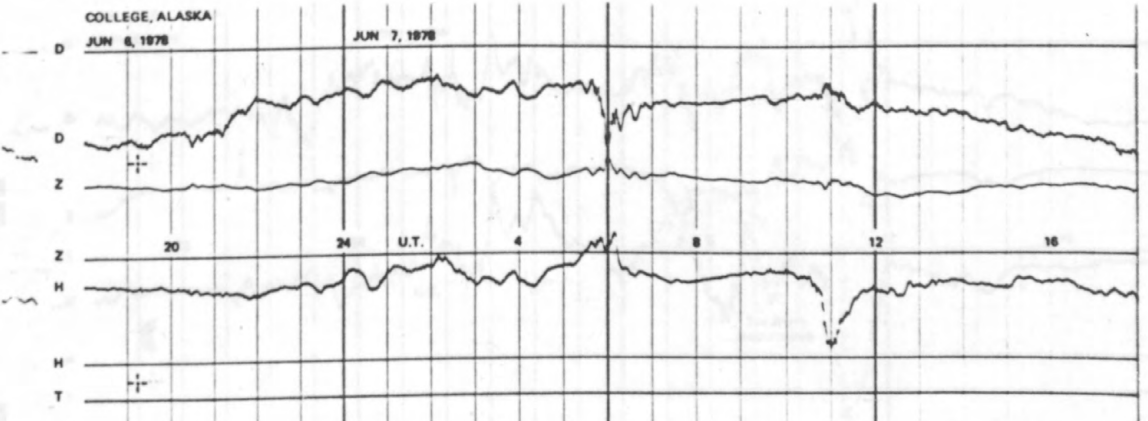
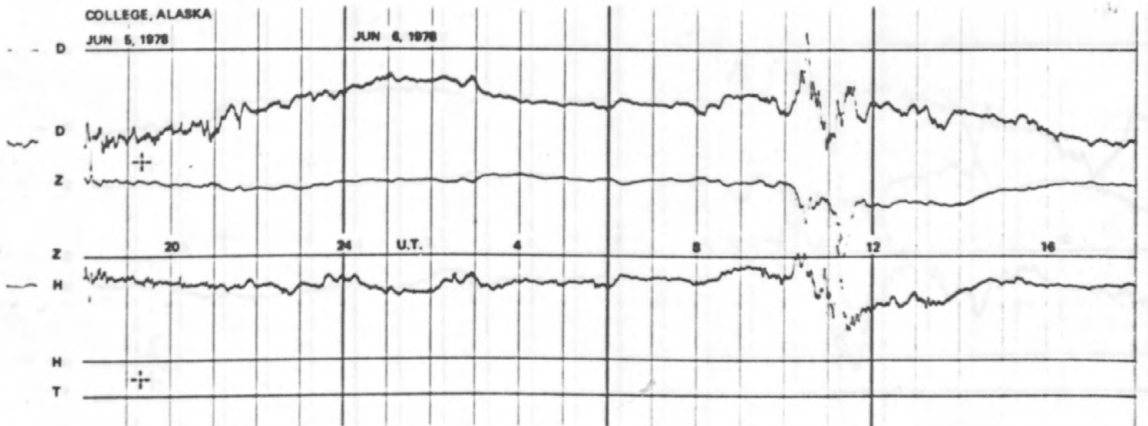


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

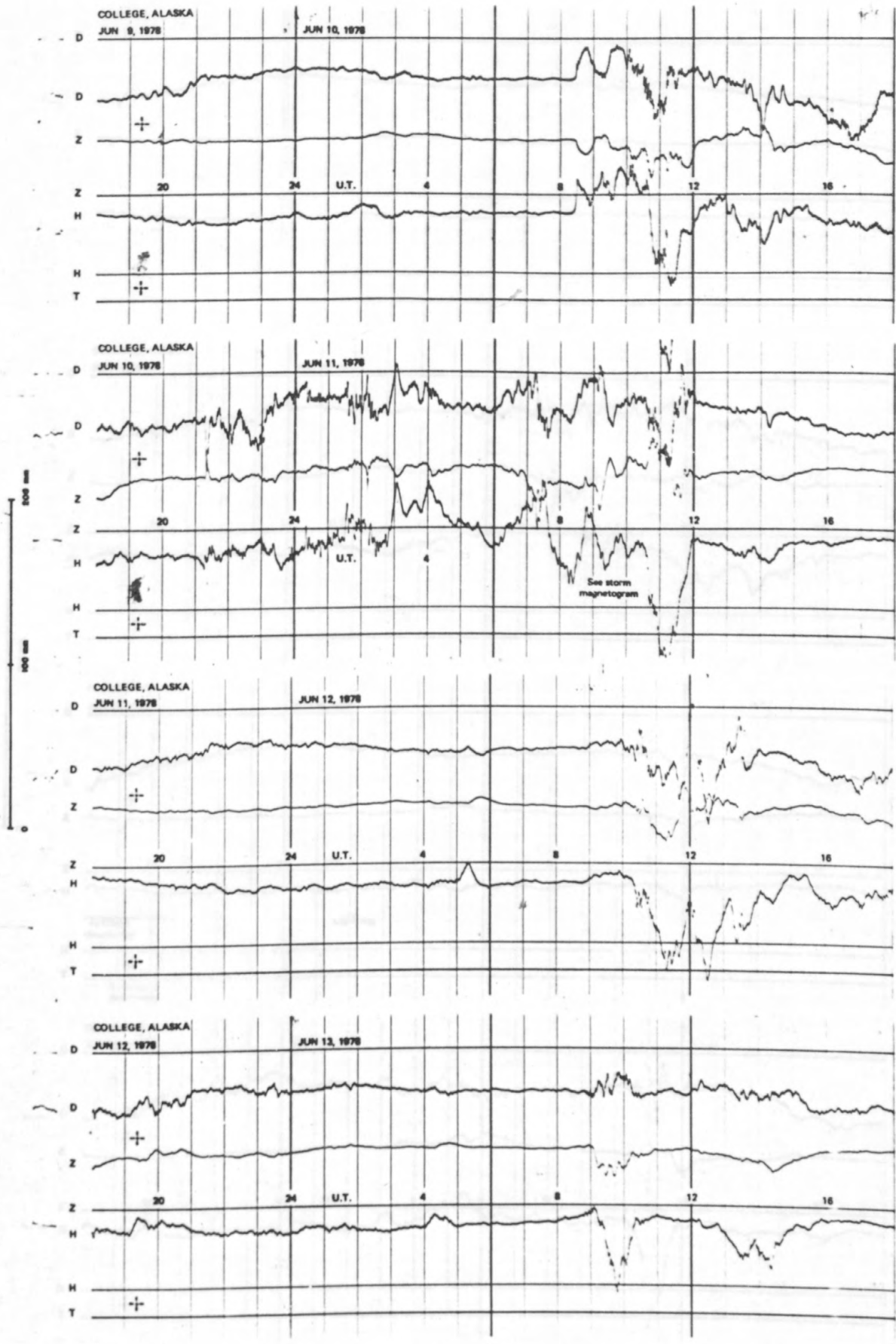
NORMAL MAGNETOGRAMS



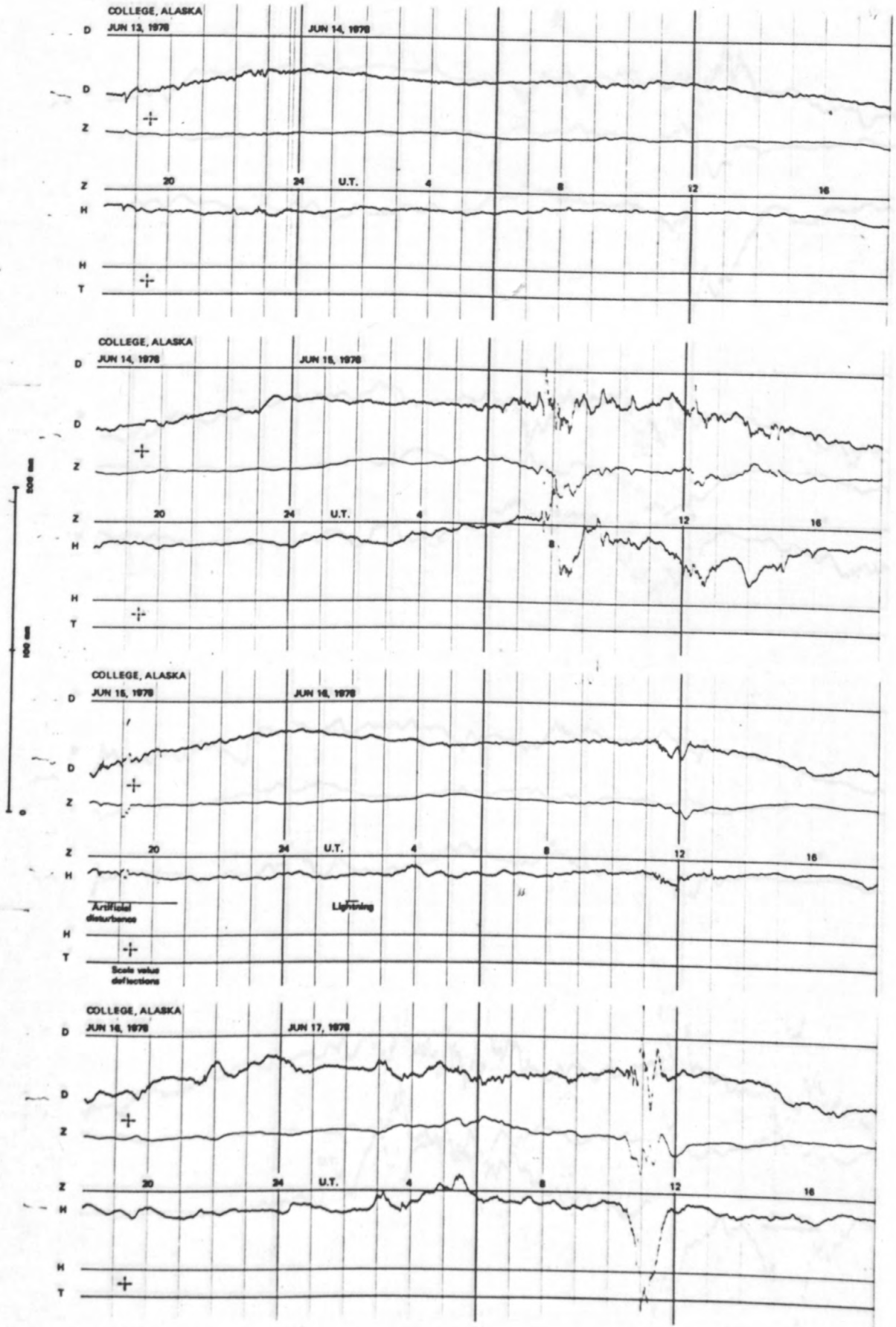
NORMAL MAGNETOGRAMS



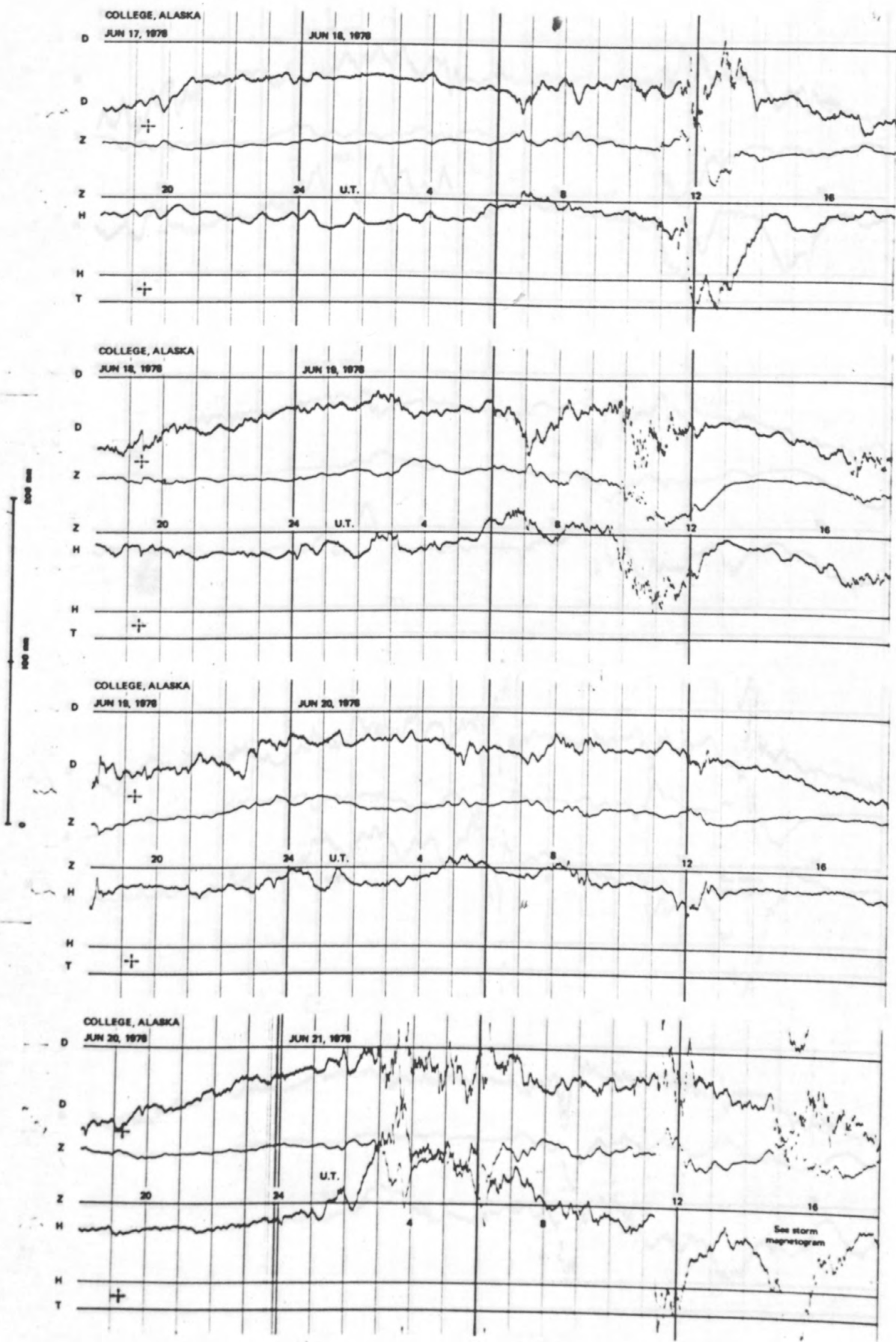
NORMAL MAGNETOGRAMS



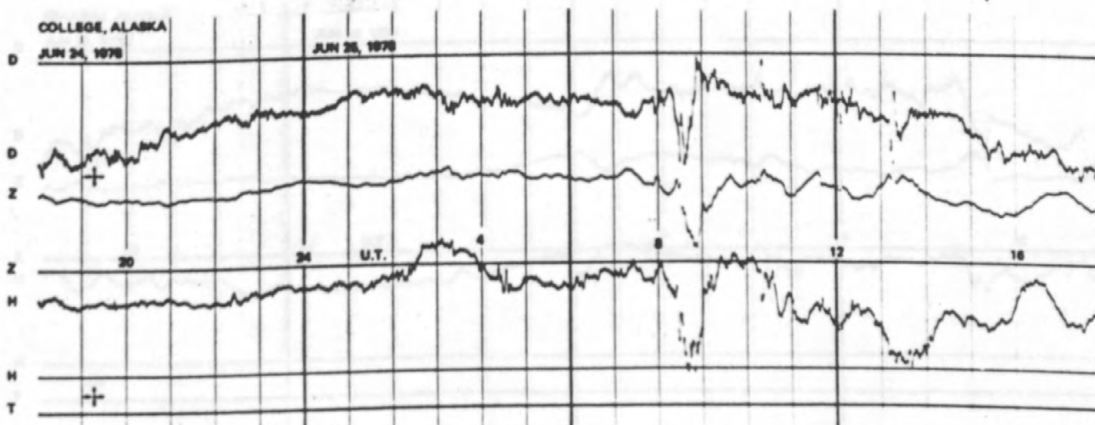
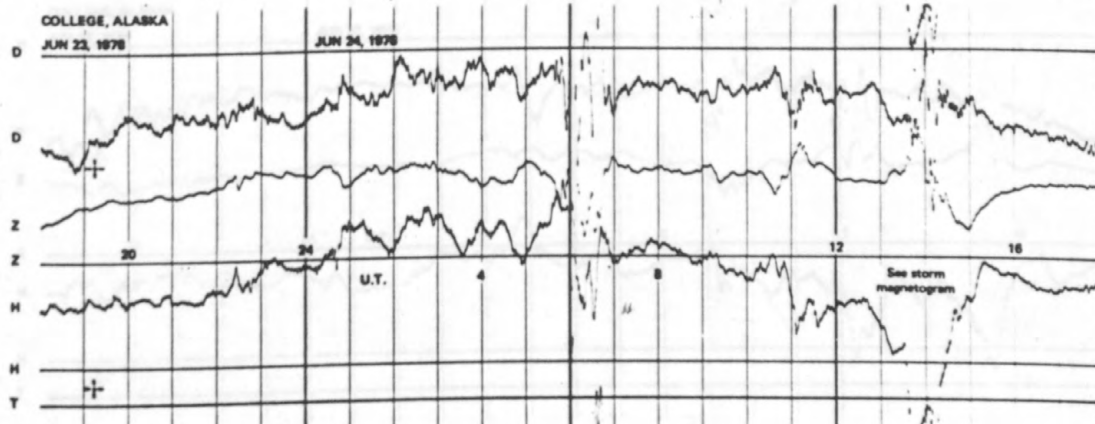
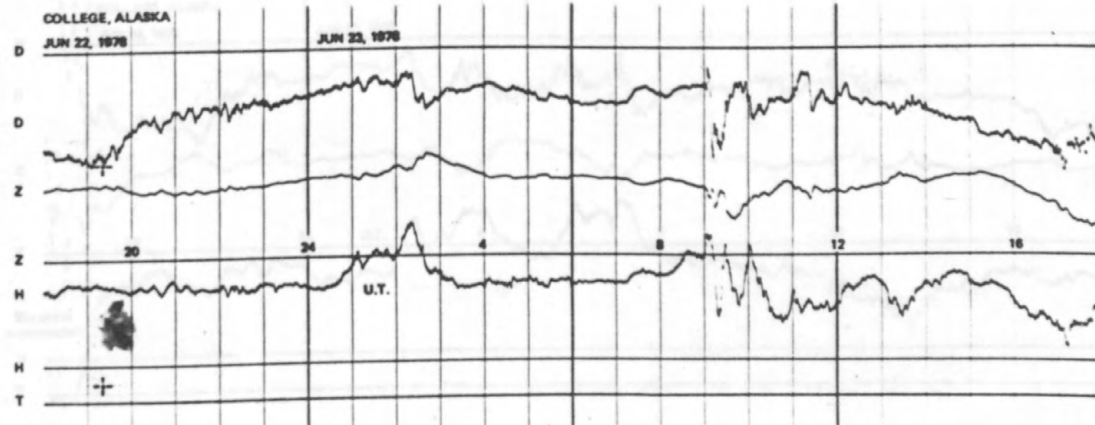
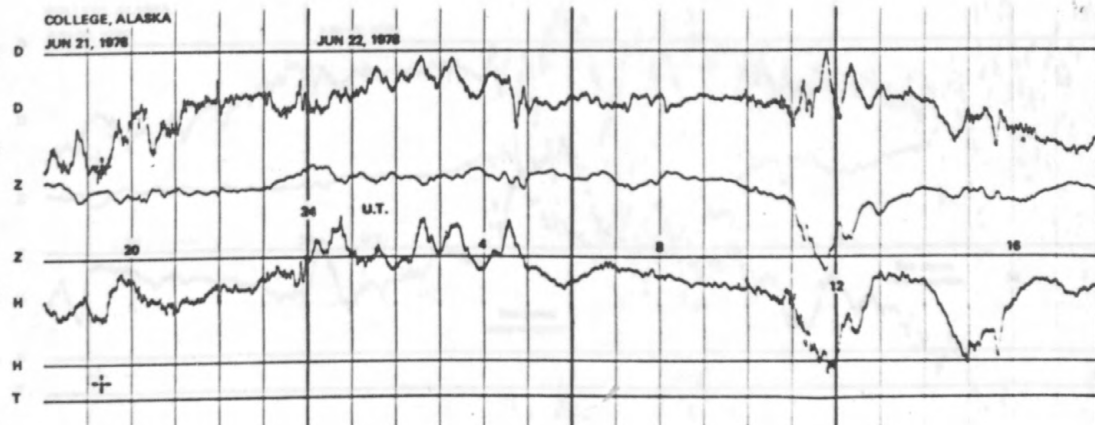
NORMAL MAGNETOGRAMS



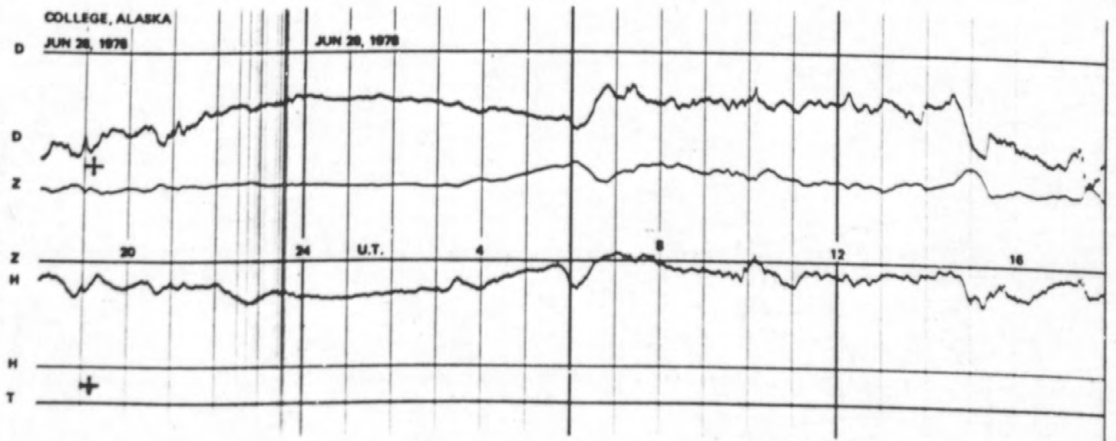
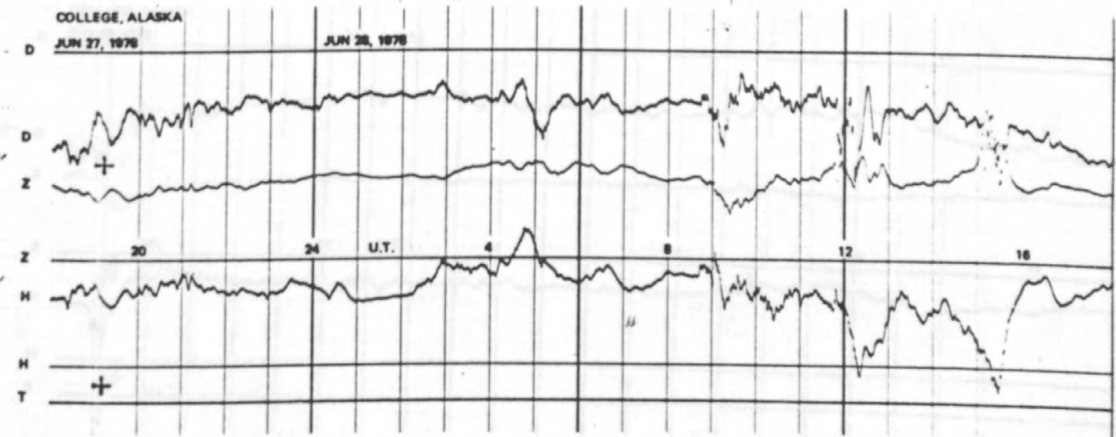
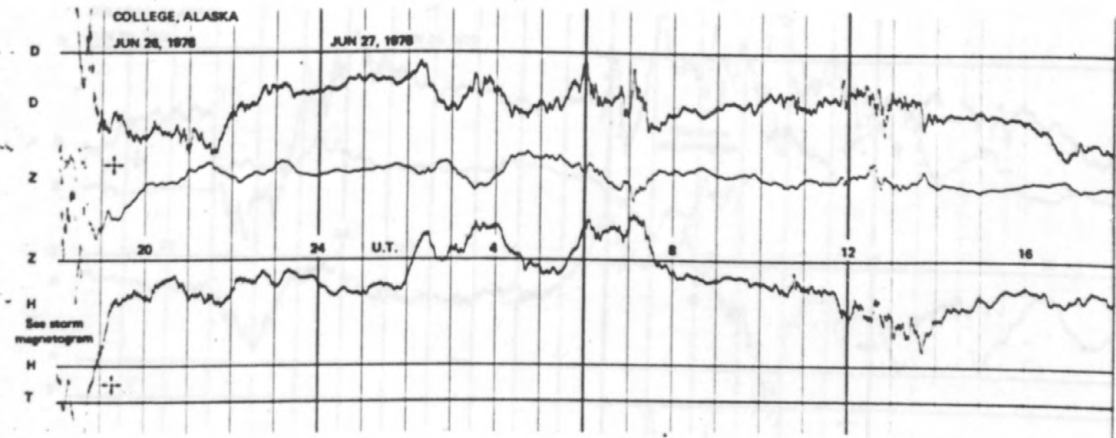
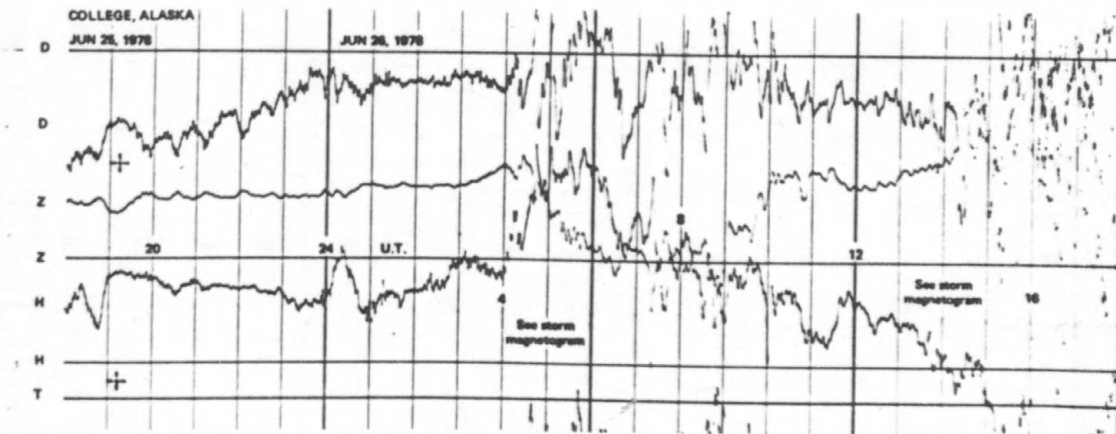
NORMAL MAGNETOGRAMS



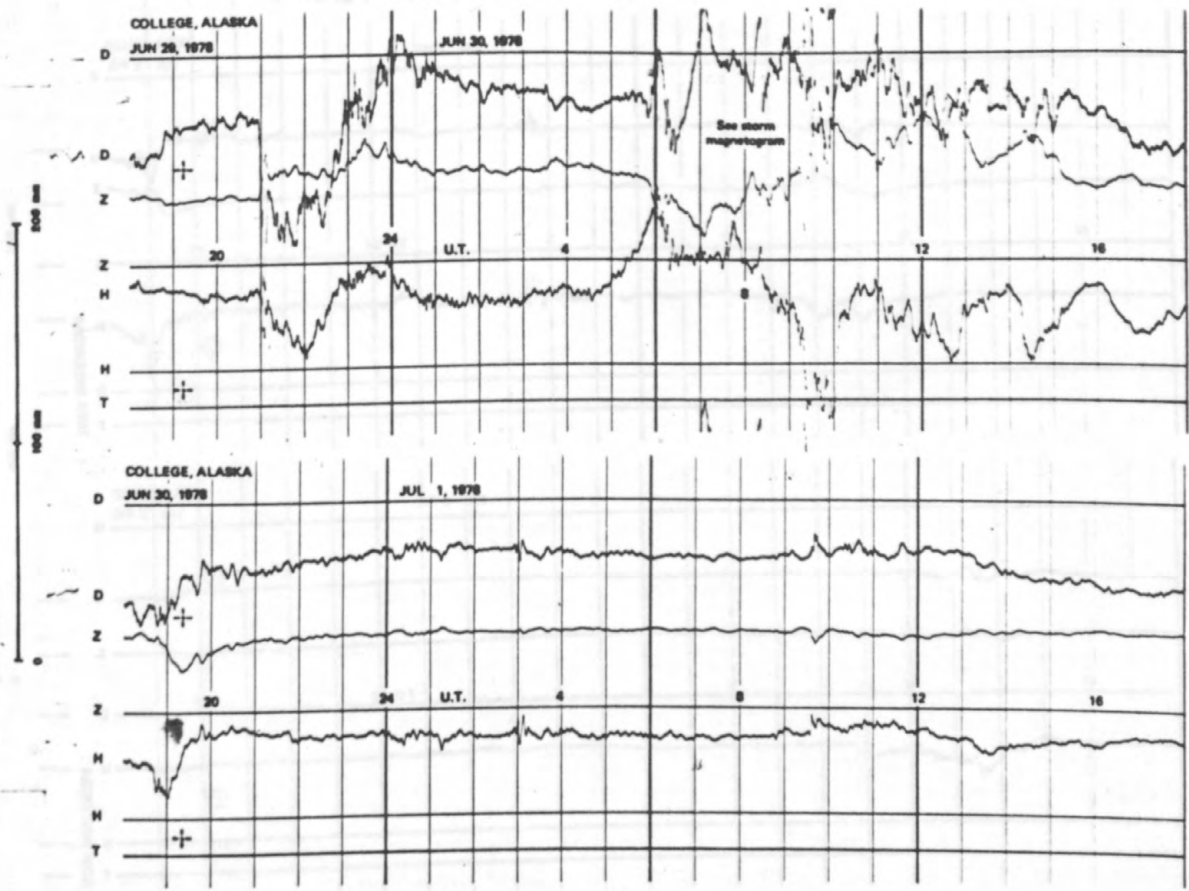
NORMAL MAGNETOGRAMS



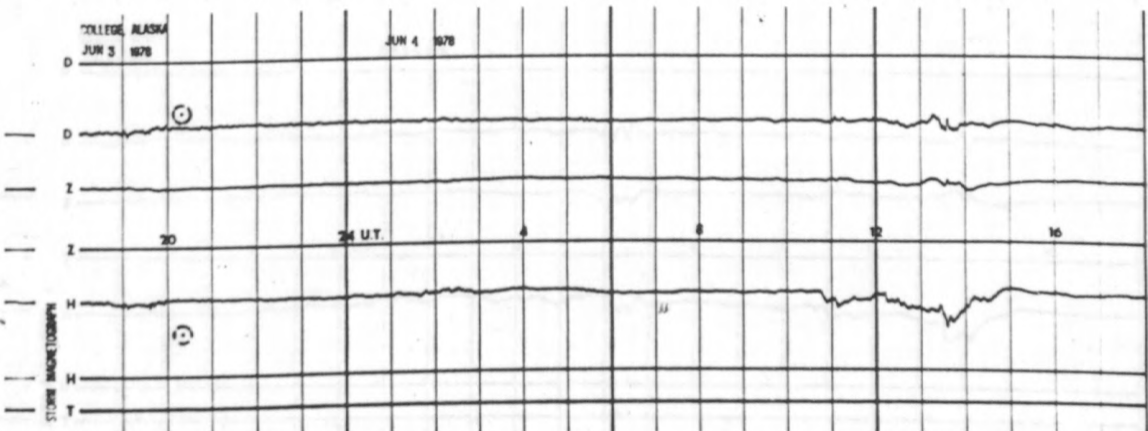
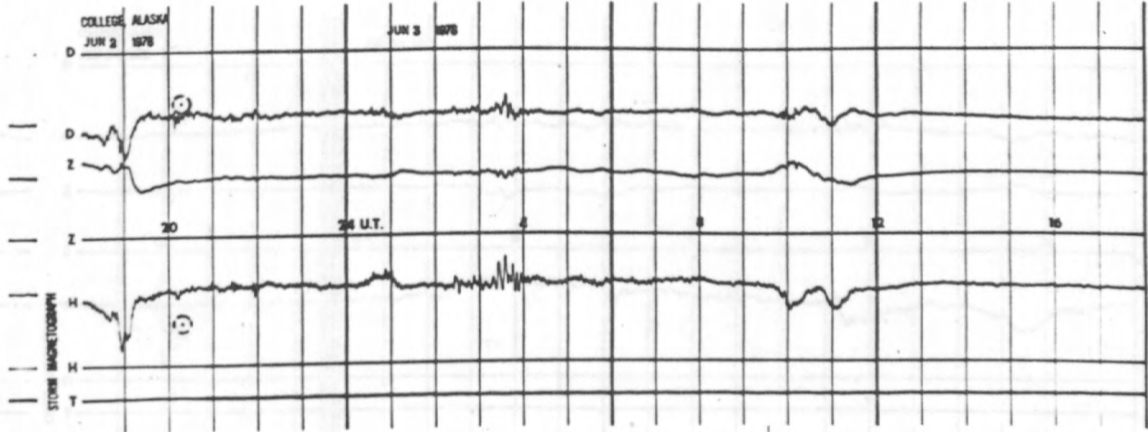
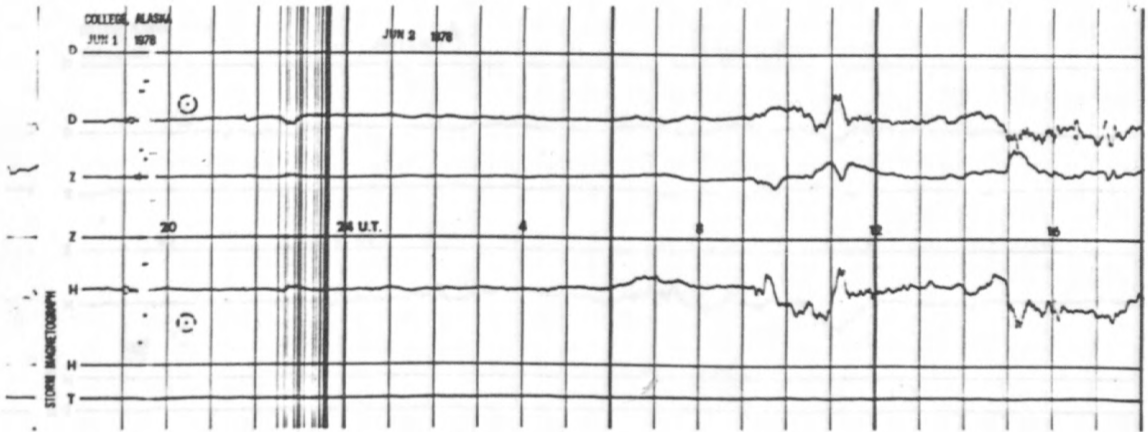
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS

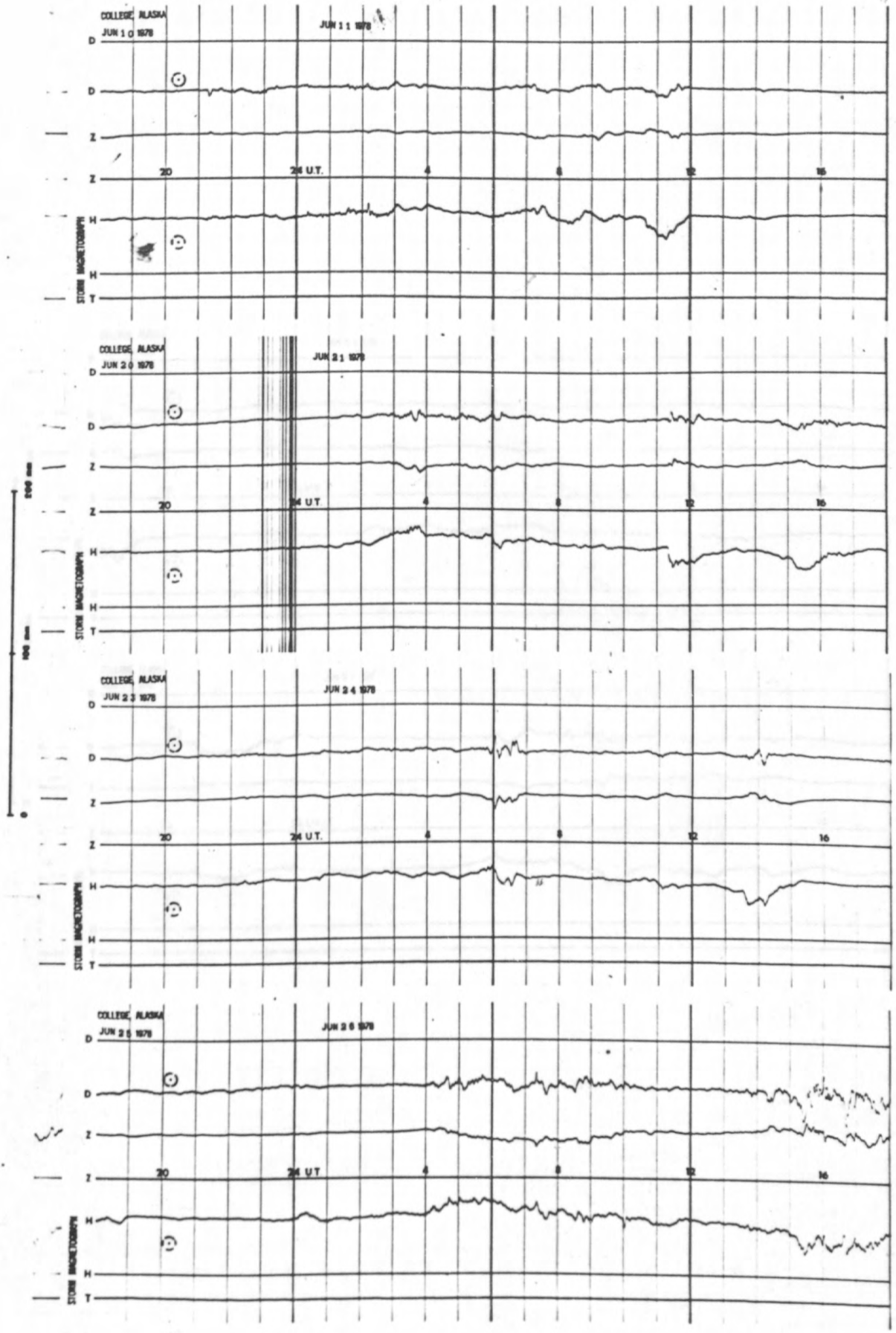


STORM MAGNETOGRAMS



1000 nm
100 nm
0

STORM MAGNETOGRAMS



STORM MAGNETOGRAMS

