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# UNITED STATES DEPARTMENT OF THE INTERIOR

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78-300D

U.S. GEOLOGICAL SURVEY [Reports-Openfile series]

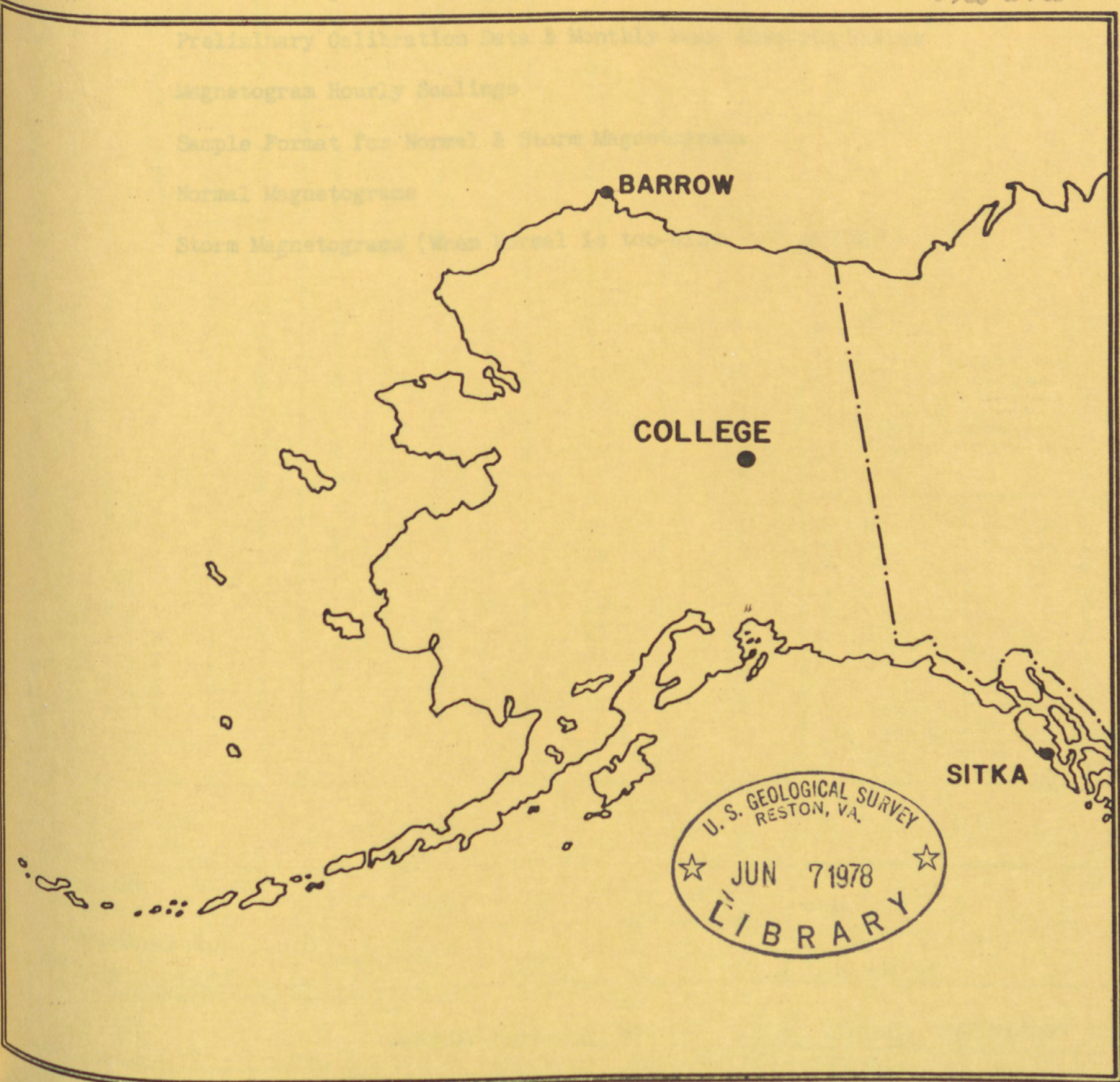
## PRELIMINARY GEOMAGNETIC DATA COLLEGE OBSERVATORY FAIRBANKS, ALASKA

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APRIL 1978

OPEN FILE REPORT

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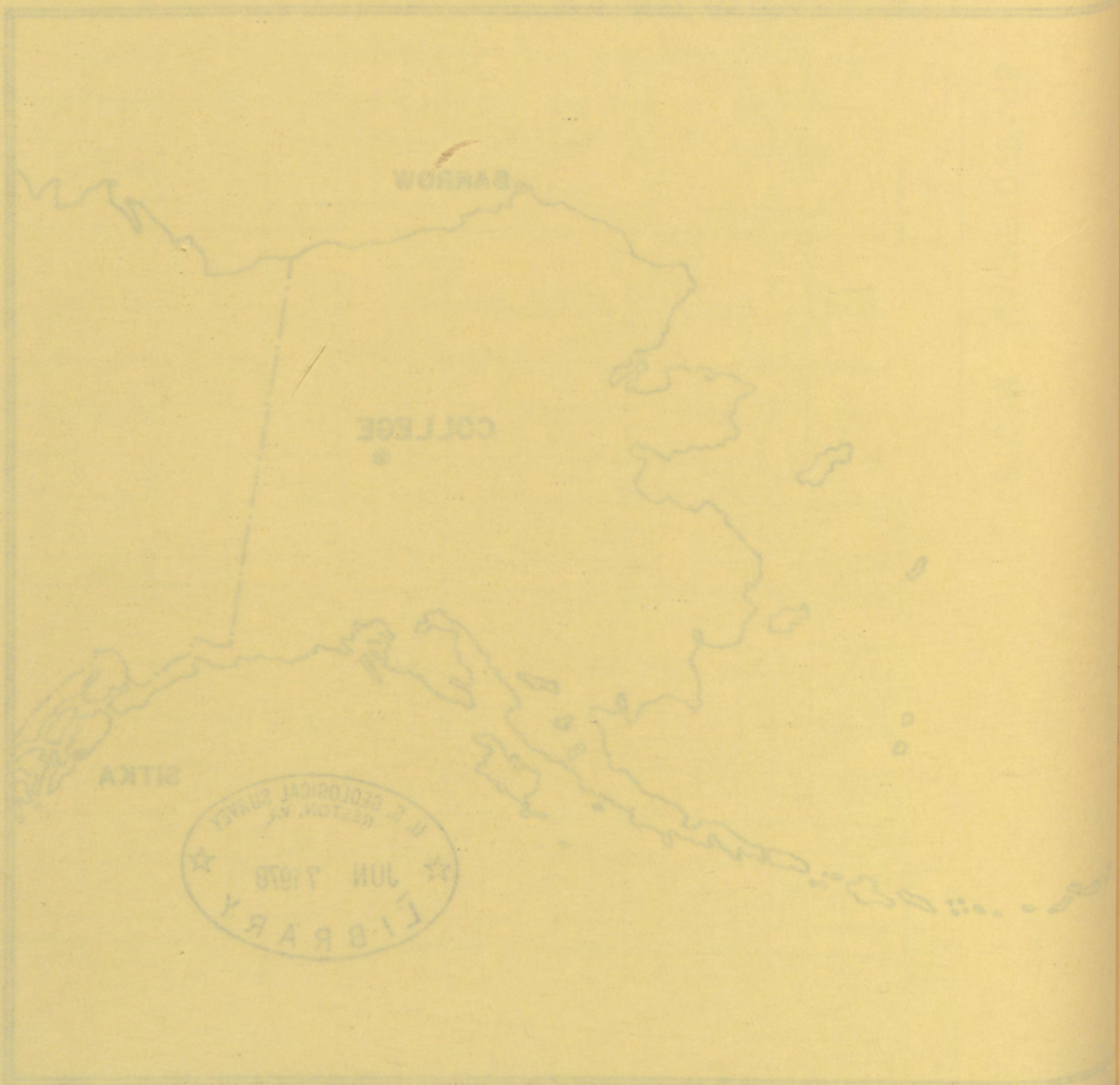
PRELIMINARY GEOMAGNETIC DATA

COLLEGE OBSERVATORY

FAIRBANKS, ALASKA

OPEN FILE REPORT 78-3000

APRIL 1978



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Explanation of Data & Reports

Magnetic Activity Report

Outstanding Magnetic Effects

Principal Magnetic Storms

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Magnetogram Hourly Scalings

Sample Format for Normal & Storm Magnetograms

Normal Magnetograms

Storm Magnetograms (When Normal is too disturbed to read)

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR

APRIL 1978

DATE	K-INDICES								SUM	AK	TIME SCALE ON MAGNETOGRAMS 20 mm/hr	REMARKS
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24				
1	3	4	4	2	1	2	1	2	19	12	SUDDEN COMMENCEMENTS d h m	
2	3	3	0	4	4	2	1	2	19	13		
3	2	4	5	5	5	6	5	5	37	44		
4	3	5	5	3	2	6	6	5	35	43		
5	4	3	2	3	1	1	2	2	18	11		
6	2	3	2	3	4	2	2	1	19	11		
7	1	1	0	0	1	0	2	2	07	03		
8	0	1	0	0	1	1	2	2	07	03		
9	1	2	2	1	0	1	1	1	09	04		
10	1	1	1	0	3	3	3	5	17	13		
11												POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)
12	5	5	6	5	3	4	4	3	35	39		
13	5	2	4	4	2	4	3	2	26	21		
14	3	2	2	3	4	4	4	3	25	18		
15	4	4	5	7	6	4	4	3	37	49		
16	4	3	5	5	4	4	2	1	28	25		
17	3	2	1	3	1	1	2	1	14	07		
18	2	1	2	3	2	0	0	1	11	05		
19	3	4	2	3	3	3	3	2	23	15		
20	1	4	7	5	6	6	5	3	37	55		
21	5	5	3	4	3	4	2	2	28	24		
22	2	2	2	2	5	2	2	2	19	12		
23	2	2	1	1	2	1	2	2	13	06		
24	2	2	3	4	4	6	2	3	26	23		
25	5	6	5	5	4	6	3	2	36	44		
26	4	3	3	3	5	3	2	2	25	19		
27	3	4	7	4	4	3	2	2	29	33		
28	3	2	3	5	3	4	2	3	25	19		
29	4	4	4	3	4	2	1	1	23	17		
30	2	1	2	3	3	2	2	1	16	08		
31	3	4	4	6	6	7	4	3	37	51		

K SCALE USED: LOWER LIMIT FOR K = 9..... CURRENT SCALE VALUE..... LOWER LIMIT FOR K = 9.....	D	H	Z	(mm)
	683.8	321.7		(γ/mm)
	3.75	7.80		(to nearest 10γ)
SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.	2560	2510		

APPROVED JOHN B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY  
OBSERVER IN CHARGE

# OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY  
COLLEGE, ALASKA

MONTH  
APRIL

YEAR  
1978

DATE	TIME U.T.	NATURE OF PHENOMENON <sup>1</sup>	REMARKS
10	1306	ssc*	
17	2344	ssc*	

IDENTIFIED BY: JEP

VERIFIED BY: JBT

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

PRINCIPAL MAGNETIC STORMS

Data from Individual Observatories:

COLLEGE OBSERVATORY, COLLEGE, ALASKA

APRIL 19 78

Obs. 2 letter IAGA 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	02	21XX	..	..	..	..	03 04	6 6, 7	6 6	171	1330	800	05	11
		10	1306	s.c.*	-14	+70	-14	11	3	6	173	1110	500	12	13
		13	08XX	..	..	..	..	14	4	7	264	1540	1120	15	16
		19	04XX	..	..	..	..	19	3	7	155	1210	620	20	18
		23	08XX	..	..	..	..	23 24	6 2, 6	6 6	225	1270	1020	24	19
		30	00XX	..	..	..	..	May 02	3	8	447	2290	2330	May 04	21

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 4-1-78	2400 U.T., 4-30-78	1.0/mm	3.8x/mm	27° 47.1 E
H	0000 U.T., 4-1-78	2400 U.T., 4-10-78	7.8x/mm		12749x
	0000 U.T., 4-11-78	2400 U.T., 4-30-78	"		12758x
Z	0000 U.T., 4-1-78	2400 U.T., 4-30-78	7.8x/mm		55128x

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 4-1-78	2400 U.T., 4-30-78	7.9/mm	29.7x/mm	24° 20.8 E
H	0000 U.T., 4-1-78	2400 U.T., 4-30-78	44.1x/mm		11503x
Z	0000 U.T., 4-1-78	2400 U.T., 4-30-78	48.8x/mm		54026x

RAPID RUN MAGNETOGRAPH

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

MONTHLY MEAN ABSOLUTE VALUES\*

D	H	Z
28° 15.8 E	13038x	55384x

\* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: APR 5, 6, 7, 8, 9, 16, 17, 21, 22, 29

MAGNETOGRAM HOURLY SCALINGS  
(UNIVERSAL TIME)

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

OBSY. YEAR MONTH ELE-  
CO 78 APR 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 same universal day.  
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q	S	Q	11	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	221	187	189	191	181	201	300	281	268	294	290	302	01	304	302	308	322	362	368	361	346	325	300	224	231	6658	
					02	211	169	160	202	269	272	280	277	276	279	297	309	02	272	321	306	320	357	356	364	319	287	365	205	239	6712	
					03	221	215	230	250	223	226	190	243	251	157	306	271	03	469	521	356	403	407	476*	452*	359	363	253	376	303	7521	
					04	254	248	201	172	173	220	159*	224	243	261	253	307	04	321	311	321	339	403	523*	392	429	344	308	391	531*	7328	
					05	336	221	217	191	208	337	279	251	240	262	279	300	05	281	299	290	322	349	349	341	297	262	217	268	272	6668	
					06	258	249	232	221	313	261	270	280	311	312	310	297	06	292	257	321	281	278	332	338	347	333	336	320	298	7047	
					07	272	258	266	262	274	279	290	289	288	289	288	291	07	300	299	287	300	307	339	360	371	310	331	284	261	7095	
					08	246	236	230	240	260	270	269	273	280	284	309	317	08	292	291	298	312	343	355	340	331	348	340	297	269	7030	
					09	245	229	216	236	249	270	281	312	276	311	303	291	09	279	291	291	311	341	360	351	332	359	357	322	282	7095	
					10	259	240	225	240	253	259	265	268	288	290	287	289	10	288	291	299	363	341	371	370	397	438	521	248*	261	7351	
					11	297	320*	193*	198	121*	148	-6*	34*	195	241	316	215	11	291	290	280	288	334	421	440	413	389	355	222	250	6245	
					12	271	296	229	234	232	241	255	347	270	198	405	331	12	278	293	286	364	392	349	340	360	321	299	277	281	7149	
					13	253	221	206	217	232	260	241	246	291	250	253	261	13	321	350	407	438	408	390	370	403	285	399	314	363	7379	
					14	241	142	171	163	213	139	135*	59	271	258	374*	755*	14	683*	366*	367	431	472	469*	448	461*	378	321	291	304	7912	
					15	299	217	182	169	221	200	197	352	215	189	250	308	15	301	376	474	369	343	388	330	326	328	300	280	277	6891	
					16	253	230	242	221	219	250	251	269	249	239	261	325	16	330	311	319	329	336	344	337	359	300	274	263	251	6762	
					17	239	220	221	241	251	269	280	291	261	248	318	299	17	323	321	332	347	351	341	349	348	337	321	290	269	7067	
					18	241	220	190	179	229	297	281	244	263	269	271	254	18	270	284	249	259	298	312	312	300	341	298	280	289	6430	
					19	279	261	256	251	249	162	123	-62*	191	250	270	271	19	319	534*	343*	543*	494*	383*	422	307	267	272	268	317	6969	
					20	270	283	184	179	209	248	258	267	298	278	220	278	20	290	304	313	340	315	326	324	299	324	299	310	267	6683	
					21	257	231	241	240	260	253	300	310	281	257	261	251	21	257	310	248	320	370	378	367	357	348	300	267	247	6911	
					22	218	210	226	241	254	267	276	267	263	276	274	297	22	277	308	294	361	381	388	387	377	381	209	233	217	6882	
					23	203	190	169	239	252	249	279	267	264	241	166	232	23	249	292	292	586*	574	438	488	361	372	311	183	219	7116	
					24	248	245	276	170	182	6*	138	256	213	295	256	475*	24	214	395	381	546*	451*	367	338	332	310	281	292	319	6986	
					25	191	134	179	212	191	239	264	258	339	211	171	301	25	303	310	330	372	400	429	354	331	314	289	280	239	6641	
					26	221	214	150	193	226	151	207	123	253*	213	270	290	26	353	322	339	347	391	419	409	339	336	313	290	269	6638	
					27	231	210	232	203	232	210	261	238	274	240	190	286	27	384	326	331	432	401	335	329	297	325	313	339	272	6891	
					28	227	193	132	198	231	300	271	227	261	161	237	251	28	271	250	303	341	374	380	364	364	350	278	278	241	6483	
					29	200	210	209	231	239	291	270	279	242	261	266	271	29	309	351	341	346	389	401	388	403	339	308	291	272	7107	
					30	261	219	196	179	148	182	169	231	239	236	-30*	-78*	30	57*	112*	241	342*	605*	509*	348	301	328	376	309	193	5673	
					31												31															

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

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

( ) Interpolated

[ ] Scaling uncertain because of magnetic storm.

[ ] Significant portion of hour interpolated.

<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

[ ] No record; or no values available because of faulty record.

\* Derived from STORM Mgb., converted to Normal Mgb.

MONTHLY SUM 207320

MONTHLY MEAN 288

DATES WITH GAPS:



MAGNETOGRAM HOURLY SCALINGS  
(UNIVERSAL TIME)

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

OBSY. YEAR MONTH ELE-  
CO 78 APR 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. Strikazek corrections have been applied. Negative values are in red, with minus signs shown.

C	U <sup>ST</sup> S	T <sup>ST</sup> Q	01	02	03	04	05	06	07	08	09	10	11	12	U <sup>ST</sup> M	13	14	15	16	17	18	19	20	21	22	23	24	SUM	
			369	421	460	450	514	597	517	462	416	387	395	371	01	366	353	355	351	320	310	341	359	343	330	329	366	9482	
			350	378	457	463	369	361	369	373	370	371	378	233	02	140	317	389	390	354	331	321	311	331	314	322	361	8353	
			364	367	361	366	435	553	649	511	376	240	231	271	03	-67	-62	291	251	199	-166*	-86*	167	161	307	440	519	6678	
			509	569	593	611	694	549	497*	680	578	450	395	359	04	330	361	363	379	100	-500*	-359*	-53	242	381	443	559	8730	
			602	519	594	469	528	478	413	437	400	321	349	363	05	369	360	363	361	373	373	356	339	308	346	341	351	9713	
			347	330	342	399	423	369	364	391	377	373	364	297	06	231	340	313	350	356	370	370	379	380	361	361	343	8530	
			341	351	350	358	361	370	370	370	373	373	380	373	07	371	380	379	370	386	381	379	356	369	347	321	323	8732	
			331	339	341	373	369	371	370	379	380	386	384	381	08	390	380	376	374	365	348	339	361	356	346	319	330	8688	
			340	350	364	368	383	371	382	386	406	389	387	382	09	380	370	370	380	385	390	383	369	350	340	333	330	8888	
			330	341	360	371	380	380	380	379	384	389	384	382	10	386	416	379	381	382	341	399	391	351	291	297	430	8904	
			642	790*	722*	575	681	466	425	156*	319	219	26	211	11	313	350	401	400	352	339	253	329	357	279	281	356	9242	
			447	578	361	350	349	383	453	496	381	297	186	280	12	336	362	370	211	174	278	291	371	348	330	320	341	8293	
			329	359	399	398	380	350	387	389	419	413	412	341	13	261	276	160	-6	149	279	346	344	286	270	269	299	7509	
			456	583	466	535	661	712	675	634	442	215	-317*	-725*	14	-407*	91	350	324	327	297	303	331	371	331	319	386	7360	
			523	560	448	524	421	480	541	503	301	442	371	143	15	110	146	77	269	334	329	361	339	345	343	350	351	8611	
			341	409	353	379	391	357	383	374	371	379	289	303	16	344	358	361	353	343	349	350	330	339	336	326	337	8455	
			319	343	361	360	370	370	379	391	390	372	363	321	17	313	361	370	373	366	371	370	363	359	350	331	327	8593	
			330	345	451	631	697	536	363	379	429	380	329	279	18	312	350	379	370	361	367	313	370	370	379	369	350	9439	
			351	349	349	371	411	532	438*	184*	516	457	394	239	19	193	-235*	221	-145*	-66*	189*	299	263	331	361	354	389	6745	
			459	599	567	572	479	384	369	431	426	322	307	240	20	323	249	181	109	208	363	370	360	356	367	350	353	8744	
			372	373	351	363	381	393	413	370	363	364	361	345	21	213	73	154	353	347	370	351	336	313	320	331	321	7931	
			340	343	356	370	370	360	366	371	373	372	386	374	22	371	389	374	360	377	370	361	353	323	304	291	321	8575	
			333	361	380	350	364	397	411	425	482	316	361	224	23	320	400	248	-215*	110	393	339	321	320	320	274	346	7580	
			430	682	872	751	707	510*	537	504	339	112	242	-158*	24	136	144	115	-203*	-29	207	384	379	357	339	349	313	8019	
			326	404	584	440	456	380	330	383	376	311	312	273	25	56	208	306	331	300	260	301	339	333	331	333	341	8014	
			369	354	491	444	431	530	516	470	-67*	398	331	245	26	123	250	340	389	327	299	320	326	329	326	339	342	8222	
			332	420	425	411	377	406	381	460	409	383	64	116	27	106	159	100	130	209	269	361	353	329	306	389	414	7309	
			401	459	527	569	479	324	333	419	415	426	386	336	28	239	299	320	359	319	331	340	322	350	335	347	349	8984	
			350	370	369	360	391	397	391	390	421	428	400	359	29	351	239	338	347	341	310	317	309	336	329	343	331	8517	
			370	452	462	476	580	669	684	551	401	409	311	516	30	221	-108*	-17*	-369*	-470*	317	456	432	369	300	361	379	7753	
															31														

SCALED BY	SPT, JEP	Preliminary base-line and scale values: Interval Beginning      Base-line Value      Scale Value	( ) Interpolated	[ ] Scaling uncertain because of magnetic storm.	MONTHLY SUM	250593
CHECKED BY	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	348
SIGNS RE-VIEWED BY	JEP		[ ] No record; or no values available because of faulty record.		DATES WITH GAPS:	
PUNCHED BY			* Derived from Storm Mgh., converted to Normal Mgh.			

MAGNETOGRAM HOURLY SCALINGS  
(UNIVERSAL TIME)U. S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATIONOBSY. YEAR MONTH ELE-  
CO 78 APR ZValues are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1500M.T.) is hour 11 of the same universal day.  
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	U S	Tr Q	U T	01	02	03	04	05	06	07	08	09	10	11	12	U T	13	14	15	16	17	18	19	20	21	22	23	24	SUM	
			01	331	337	393	387	391	352	380	341	355	346	336	337	01	330	320	320	320	320	299	299	299	301	305	309	333	8041	
			02	333	334	376	411	388	347	333	327	320	322	319	240	02	159	171	286	317	321	310	288	279	275	310	311	333	7410	
			03	321	323	331	330	334	239	116	270	330	238	355	391	03	578	500	236	280	291	348*	197	185	270	312	340	289	7344	
			04	289	266	269	170	205	265	77*	221	331	349	350	349	04	350	325	329	333	369	285*	71	258	333	409	426	277	6906	
			05	244	337	353	430	367	370	404	367	330	338	347	329	05	337	338	331	337	336	336	340	334	333	319	330	326	8213	
			06	335	339	349	349	370	349	346	350	331	310	310	289	06	250	266	261	297	321	336	340	339	333	333	330	332	7765	
			07	330	330	331	330	330	331	331	330	329	329	329	323	07	316	313	309	300	311	328	338	338	320	329	321	326	7802	
			08	336	340	339	341	350	345	339	331	330	330	327	296	08	289	305	310	320	324	324	300	300	314	317	320	327	7754	
			09	330	330	326	334	350	347	347	349	340	346	323	319	09	311	297	289	304	319	325	322	321	323	328	328	327	7835	
			10	326	322	321	331	333	340	338	331	327	314	326	319	10	319	318	302	291	271	281	253	282	295	342	368	427	7677	
			11	466	357*	307*	351	140	238	238	266	273	325	491	310	11	319	329	329	341	341	339	339	280	293	315	310	343	7640	
			12	351	251	364	366	370	370	389	321	256	353	275	279	12	330	324	337	317	247	250	239	340	331	342	351	360	7713	
			13	361	340	357	366	359	358	340	350	363	343	330	348	13	326	313	364	295	173	150	251	350	321	343	340	369	7810	
			14	370	333	371	393	386	291	72*	236	330	356	506*	330*	14	733*	595*	506	431	357	337	303	340	349	336	330	341	8932	
			15	375	340	351	361	381	393	373	343	225	324	366	245	15	181	260	280	320	339	336	325	337	339	347	341	346	7828	
			16	347	343	359	353	361	376	361	351	344	321	270	270	16	272	307	336	340	340	331	328	328	299	300	319	325	7881	
			17	333	336	341	347	350	356	350	354	347	331	332	325	17	334	319	328	336	333	336	337	330	323	327	329	328	8062	
			18	327	334	339	394	385	421	399	352	343	350	327	291	18	297	310	316	337	331	333	336	311	321	332	333	347	8166	
			19	348	341	341	336	334	336	262	306*	329	347	363	439	19	400	665*	293*	557*	419*	159	276	288	306	318	339	370	8472	
			20	386	328	301	320	407	389	369	361	340	251	341	418	20	350	397	413	396	260	288	310	300	321	333	370	380	8329	
			21	374	359	360	354	360	374	408	361	360	339	334	322	21	287	249	195	290	327	333	341	346	346	341	339	337	8036	
			22	338	341	344	351	360	352	349	339	337	338	331	306	22	300	313	320	329	327	330	327	324	329	317	319	337	7958	
			23	349	361	371	374	353	361	374	391	377	326	387	297	23	302	350	373	547*	233	253	311	289	302	307	311	354	8253	
			24	378	204	99	206*	303	-45*	206	345	261	306	411	434*	24	109	267	359	421*	244*	190	283	310	317	320	330	370	6628	
			25	357	339	337	367	406	421	391	337	303	252	260	250	25	253	182	259	300	307	274	280	304	317	327	343	336	7502	
			26	341	350	357	385	390	360	281	267	377*	316	342	356	26	259	239	290	334	341	311	319	318	330	336	356	358	7913	
			27	359	359	370	370	370	360	379	365	359	337	134	236	27	244	299	294	375	293	244	260	299	321	327	363	361	7678	
			28	389	366	356	346	408	388	345	334	290	298	354	340	28	267	263	316	331	341	327	310	301	316	316	330	339	7971	
			29	340	353	340	336	344	373	347	353	359	361	359	343	29	341	267	280	313	327	304	270	276	279	303	333	343	7844	
			30	365	355	368	399	420	461	458	429	353	354	219	332	30	437	548*	469	800*	396*	127	288	329	351	381	423	376	9438	
			31													31														

SCALED BY SPT, JEP

CHECKED BY JEP, SPT

SIGNS RE-  
VIEWED BY JEPPUNCHED  
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.

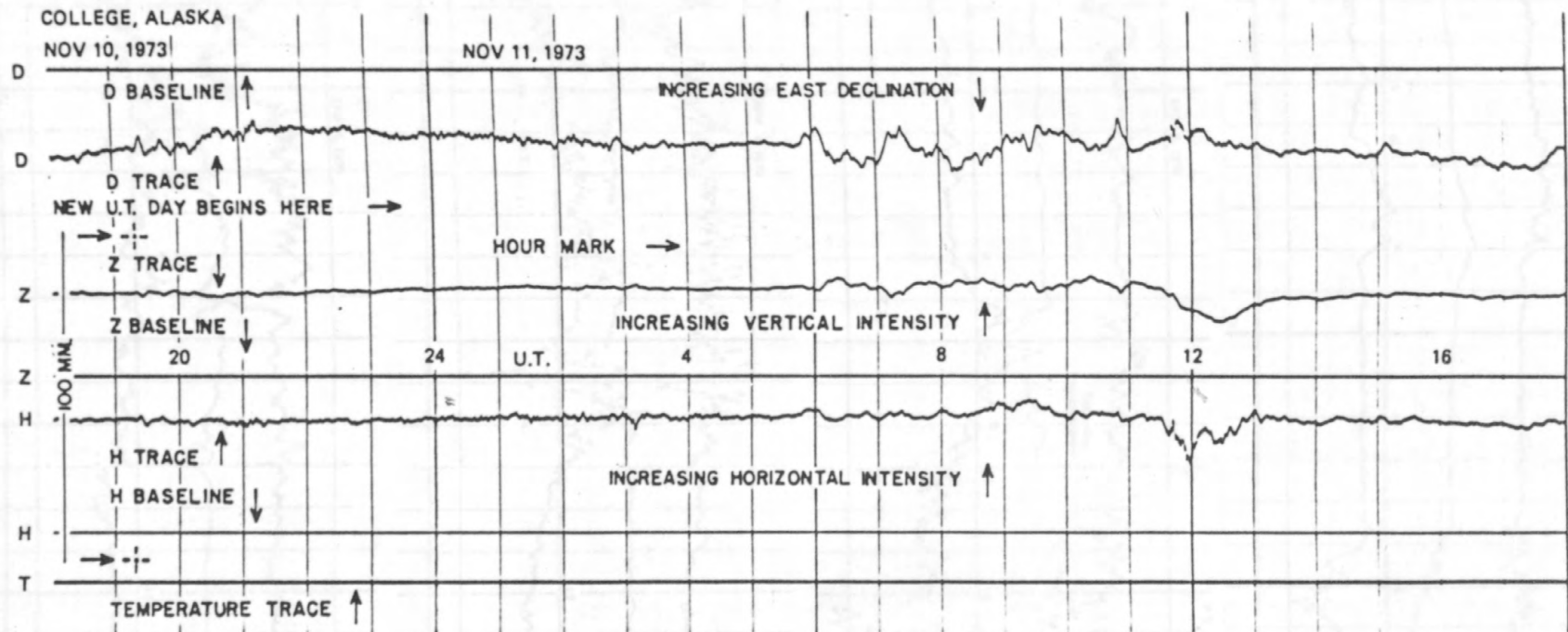
&lt;&gt; Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

MONTHLY SUM 236801

MONTHLY MEAN 329

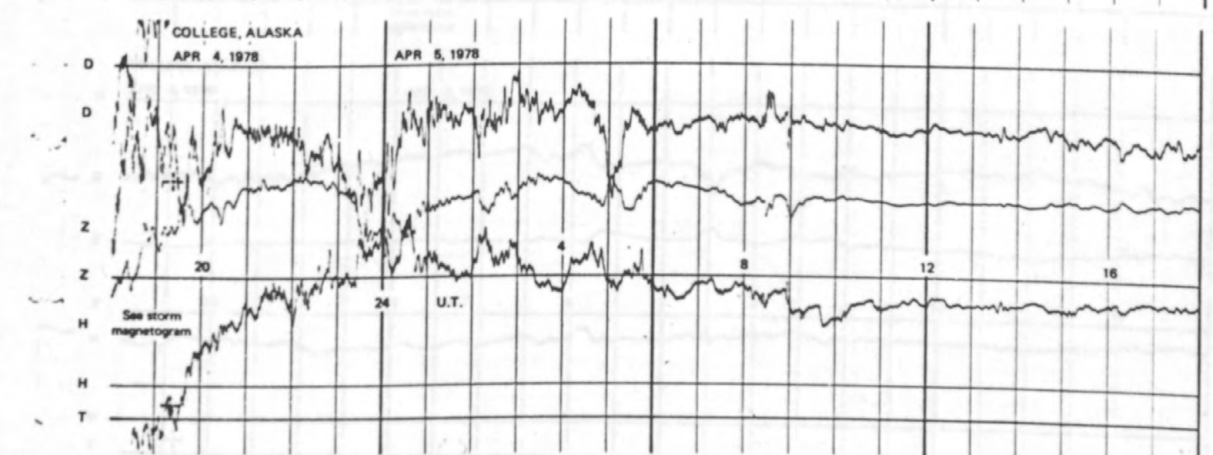
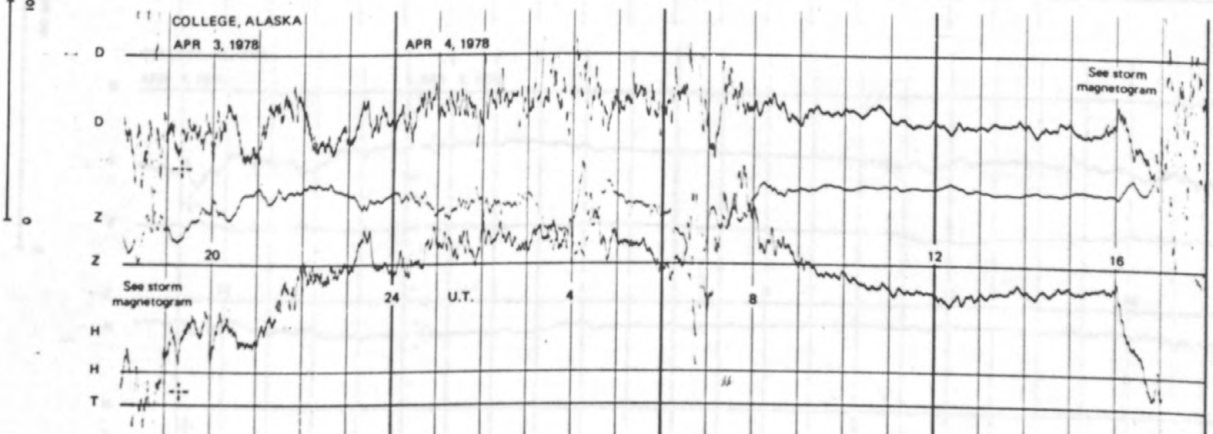
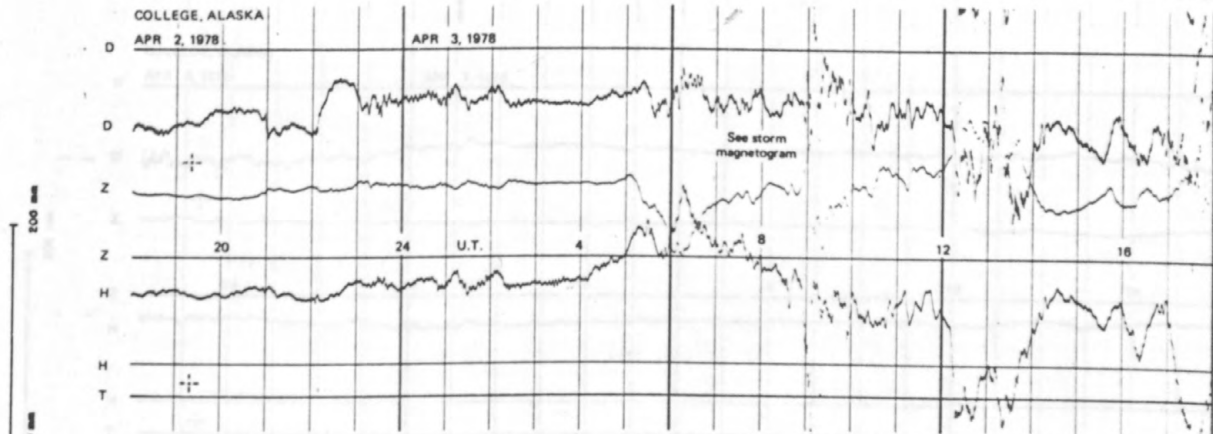
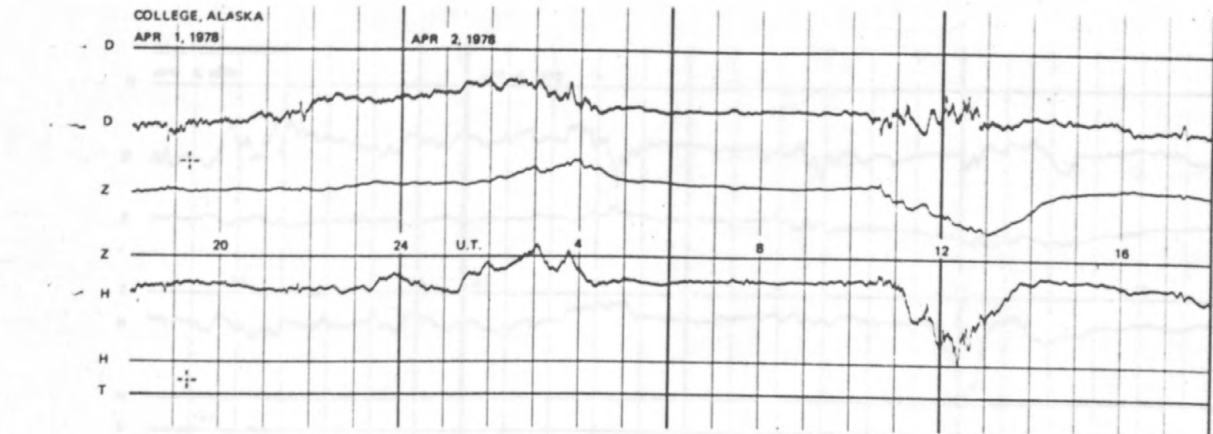
DATES WITH GAPS:

# FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)



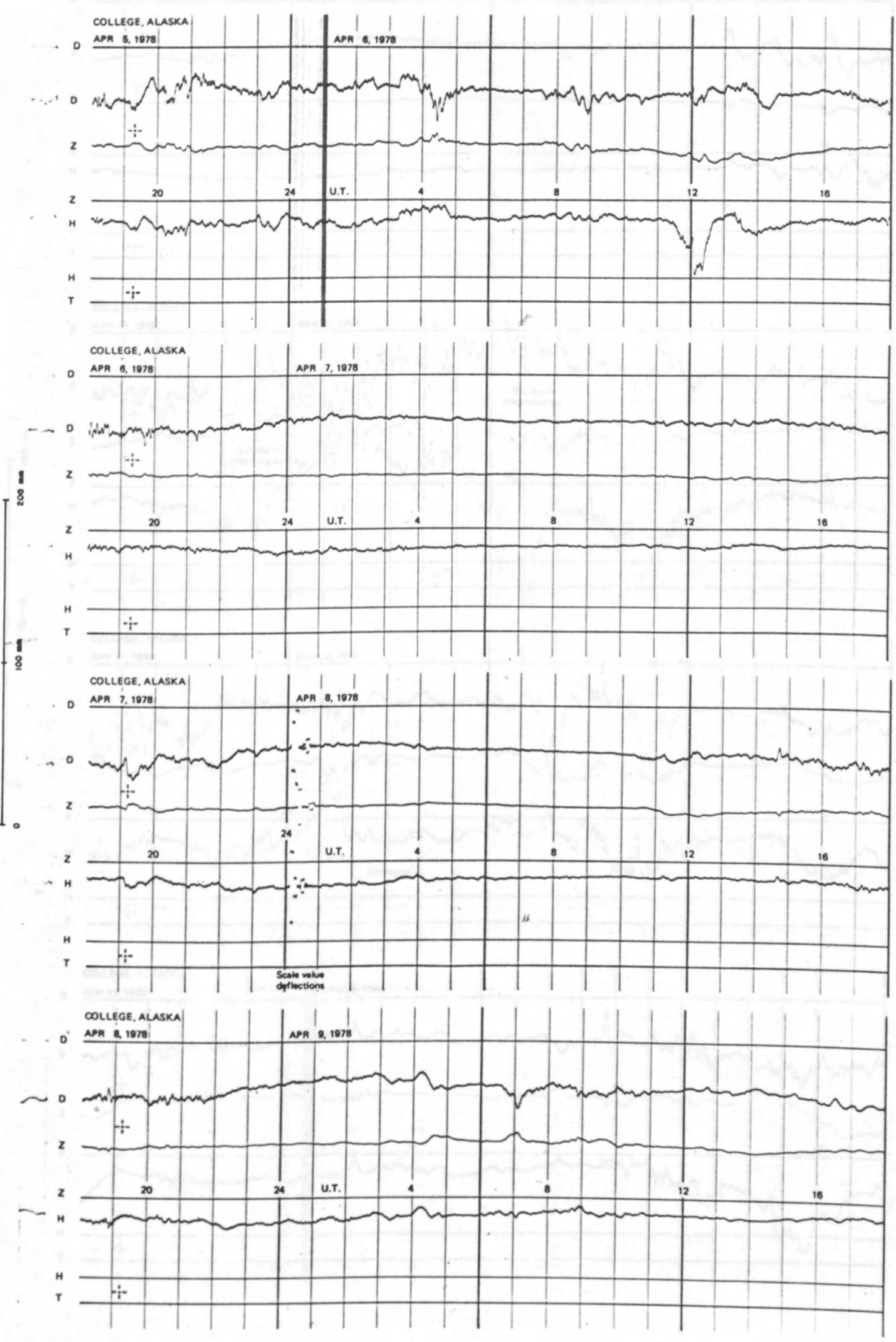
SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS

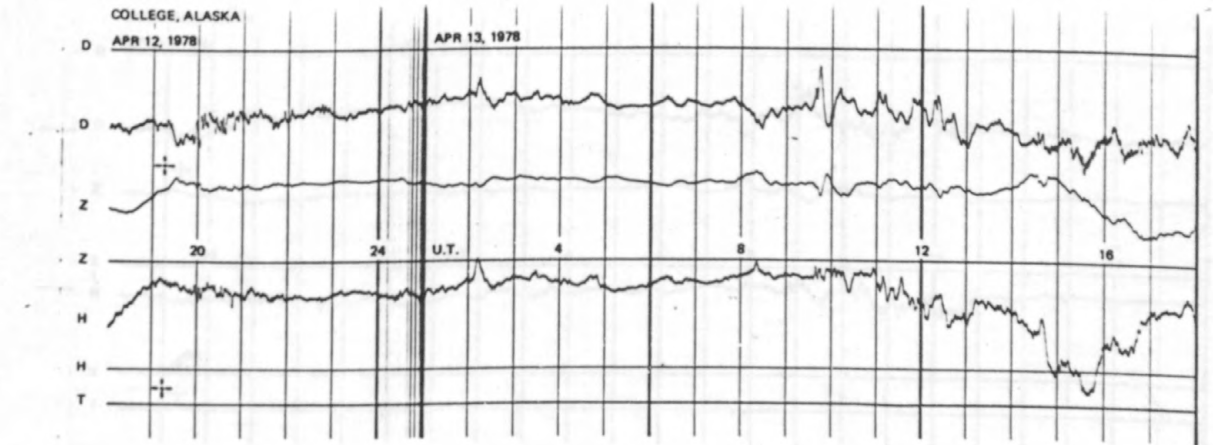
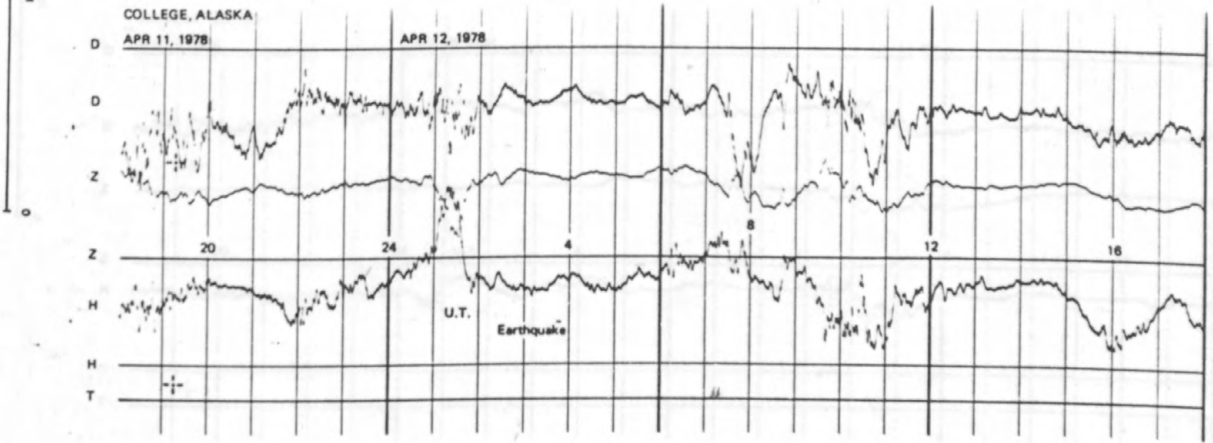
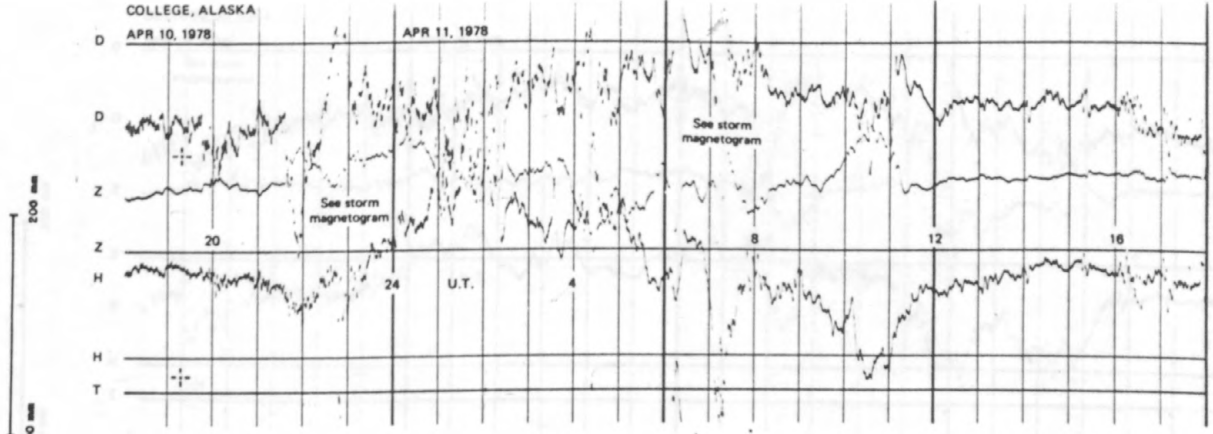
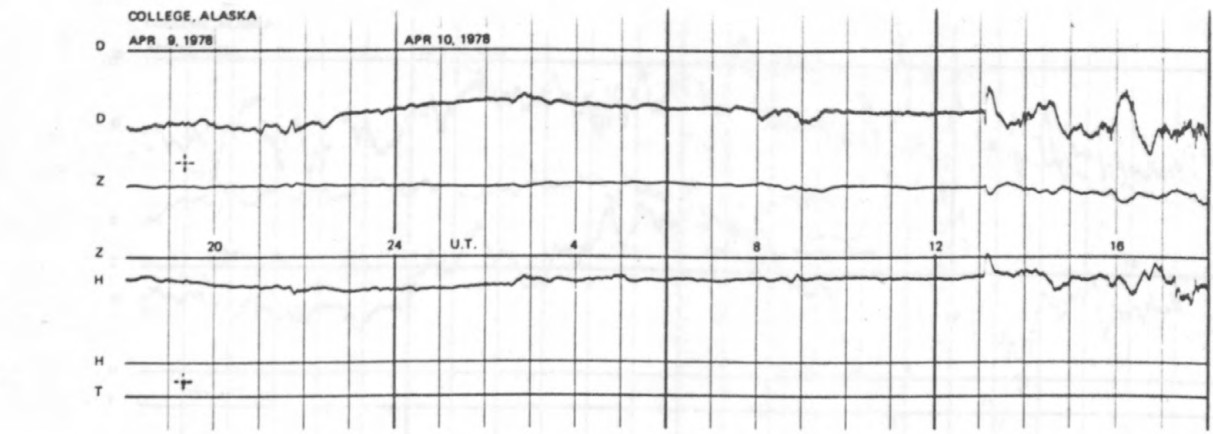


200 mV  
100 mV  
0

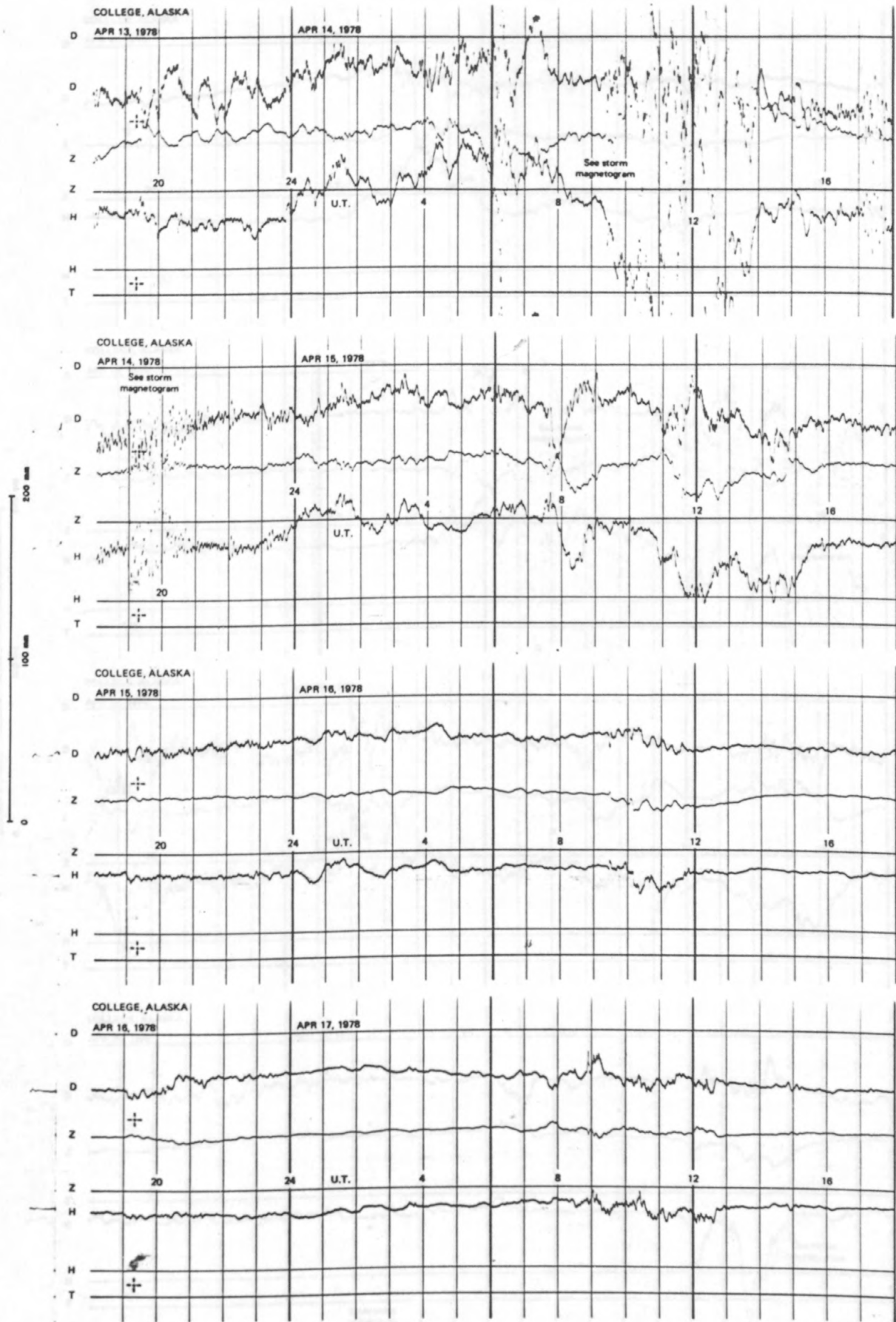
NORMAL MAGNETOGRAMS



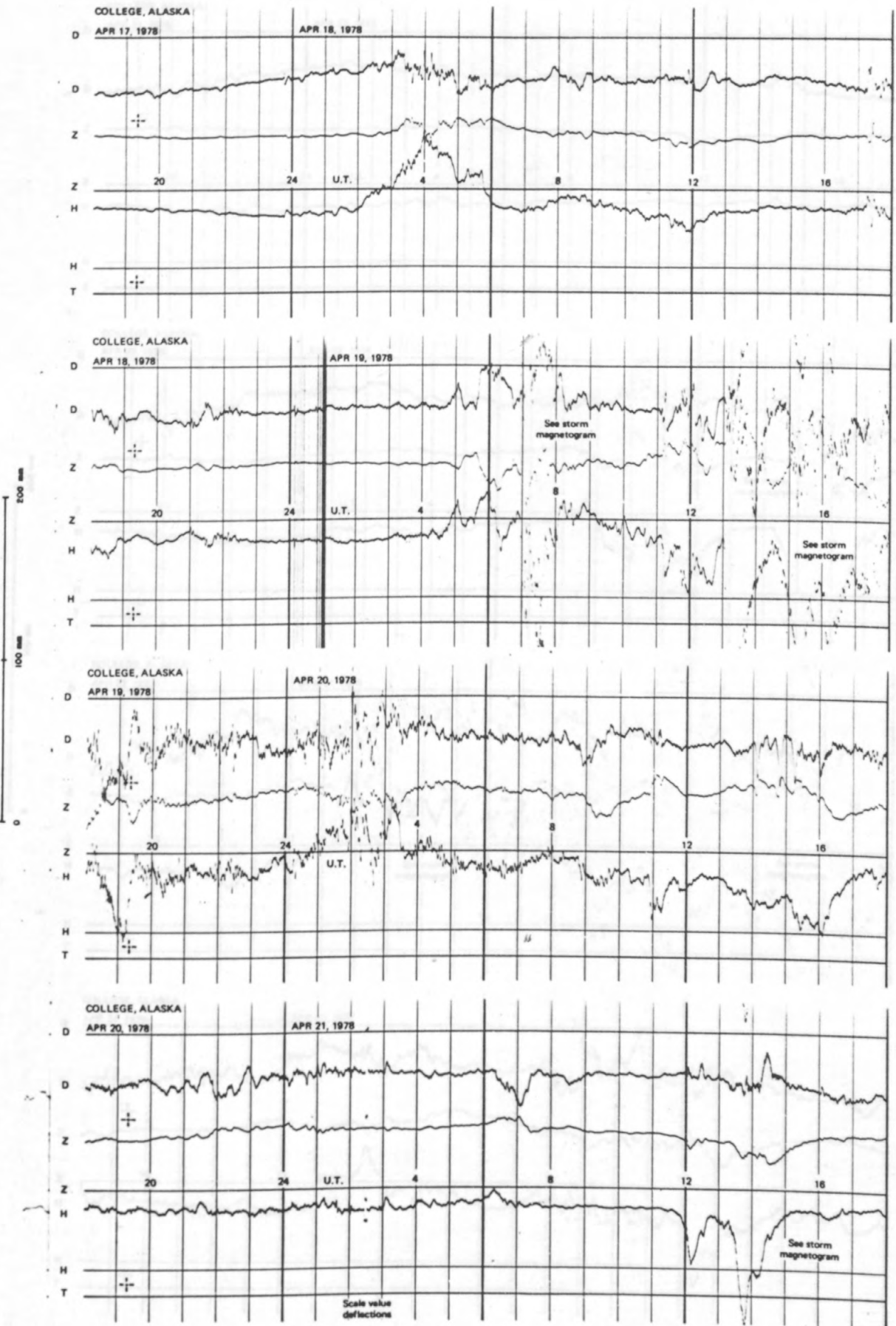
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS

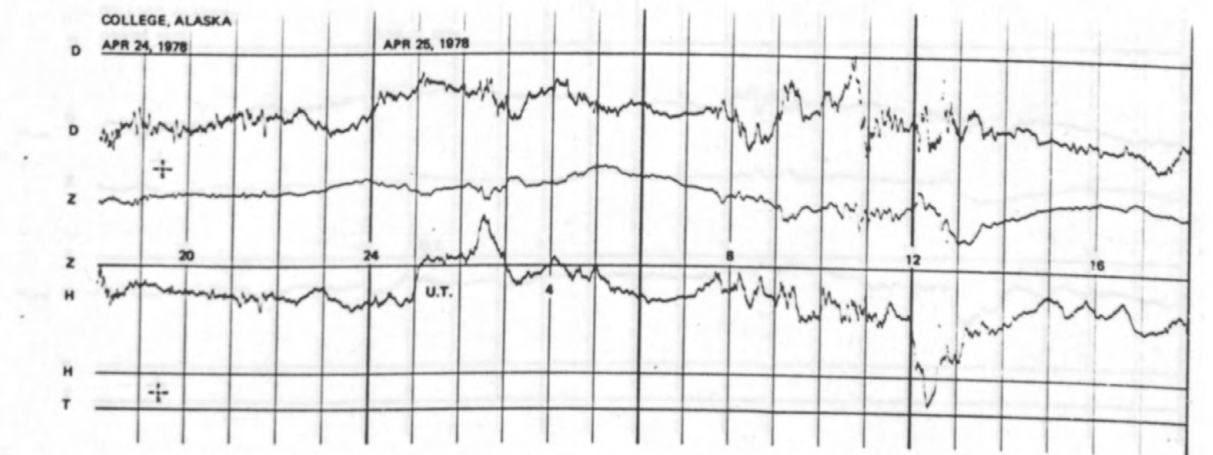
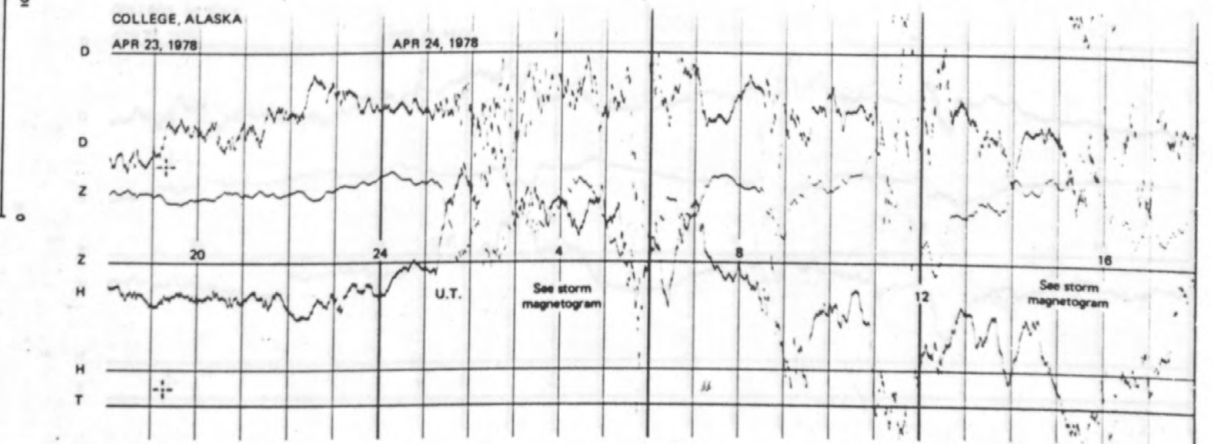
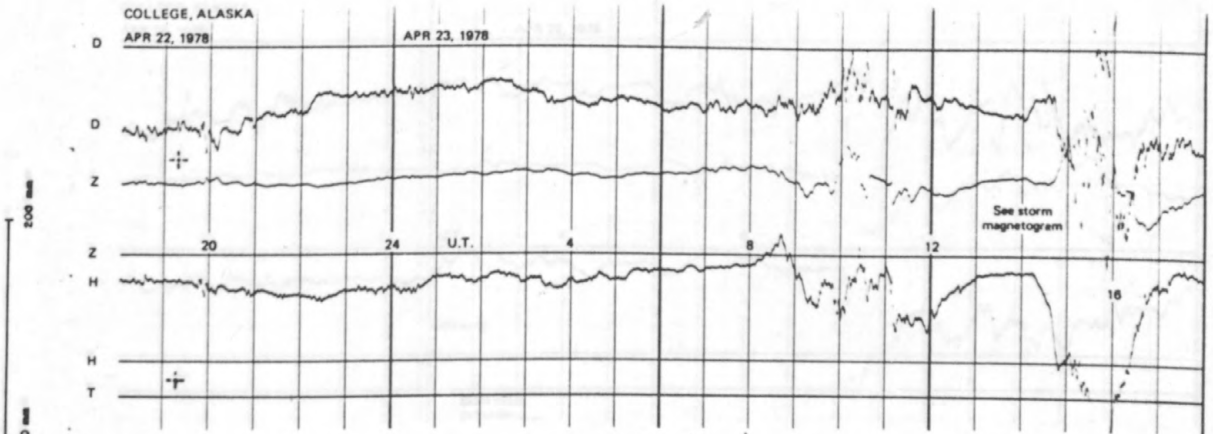
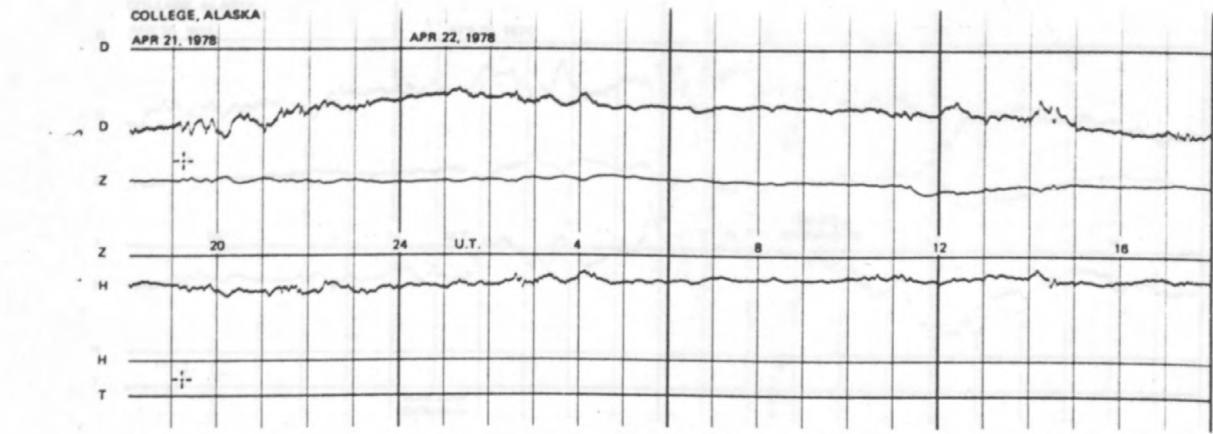


NORMAL MAGNETOGRAMS

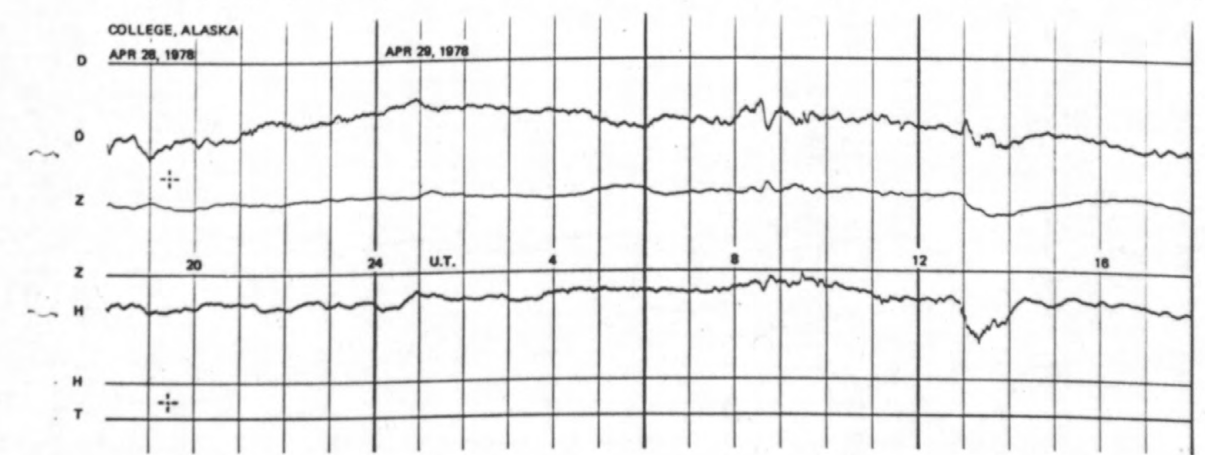
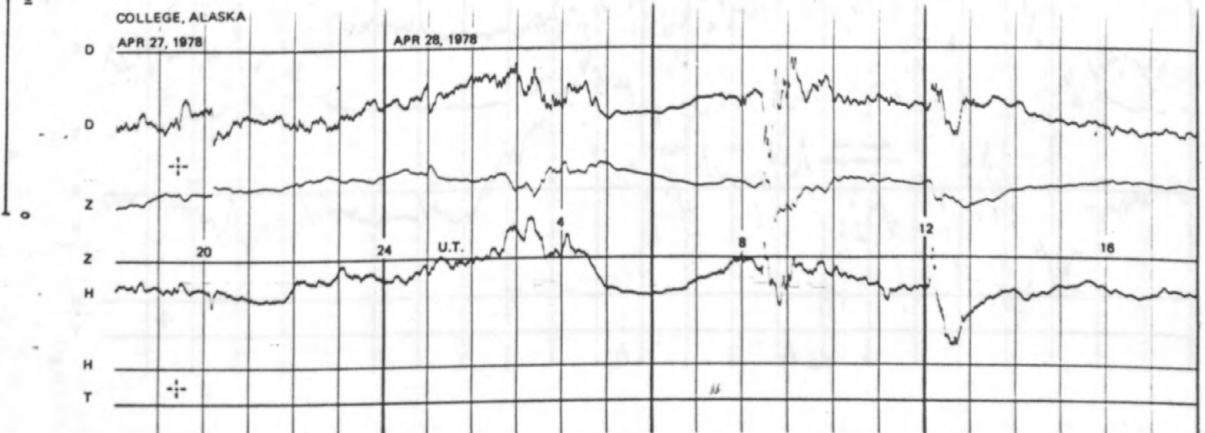
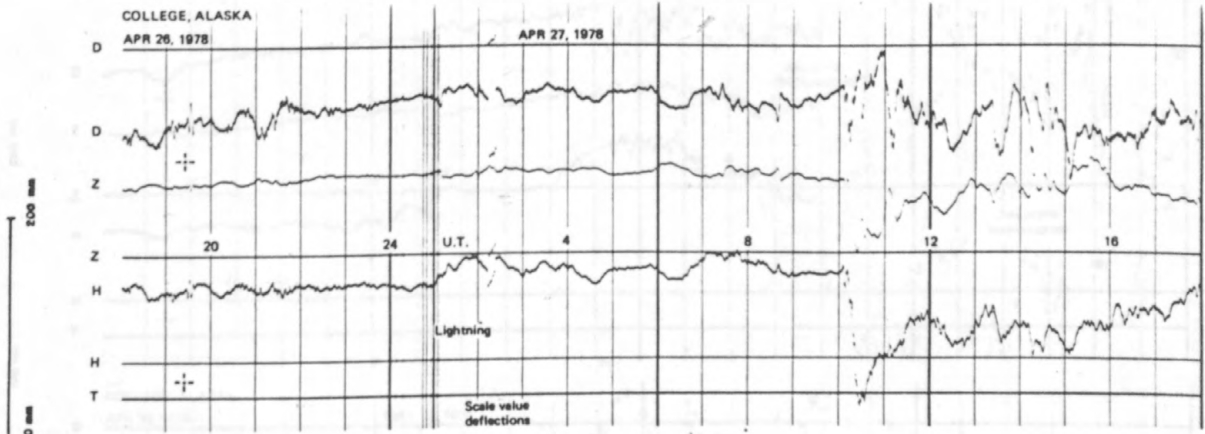
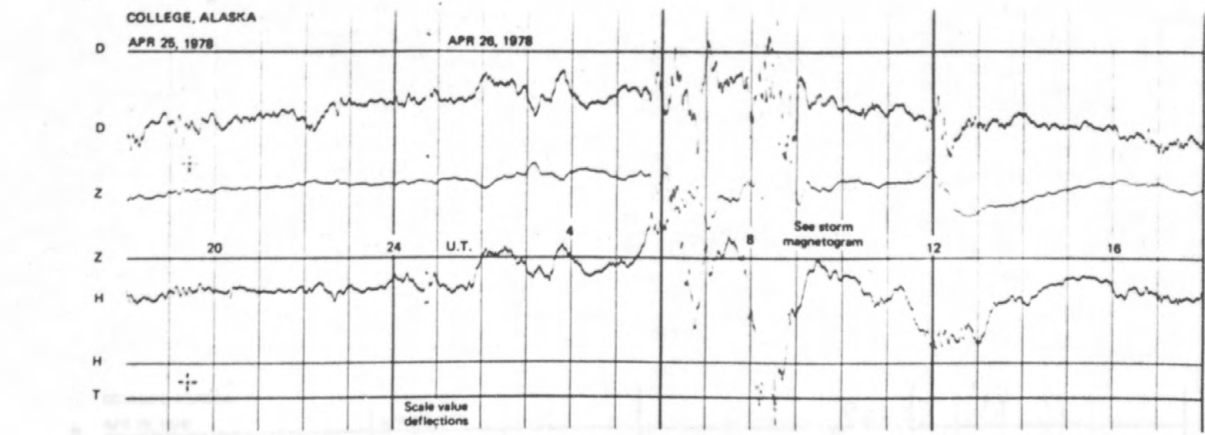




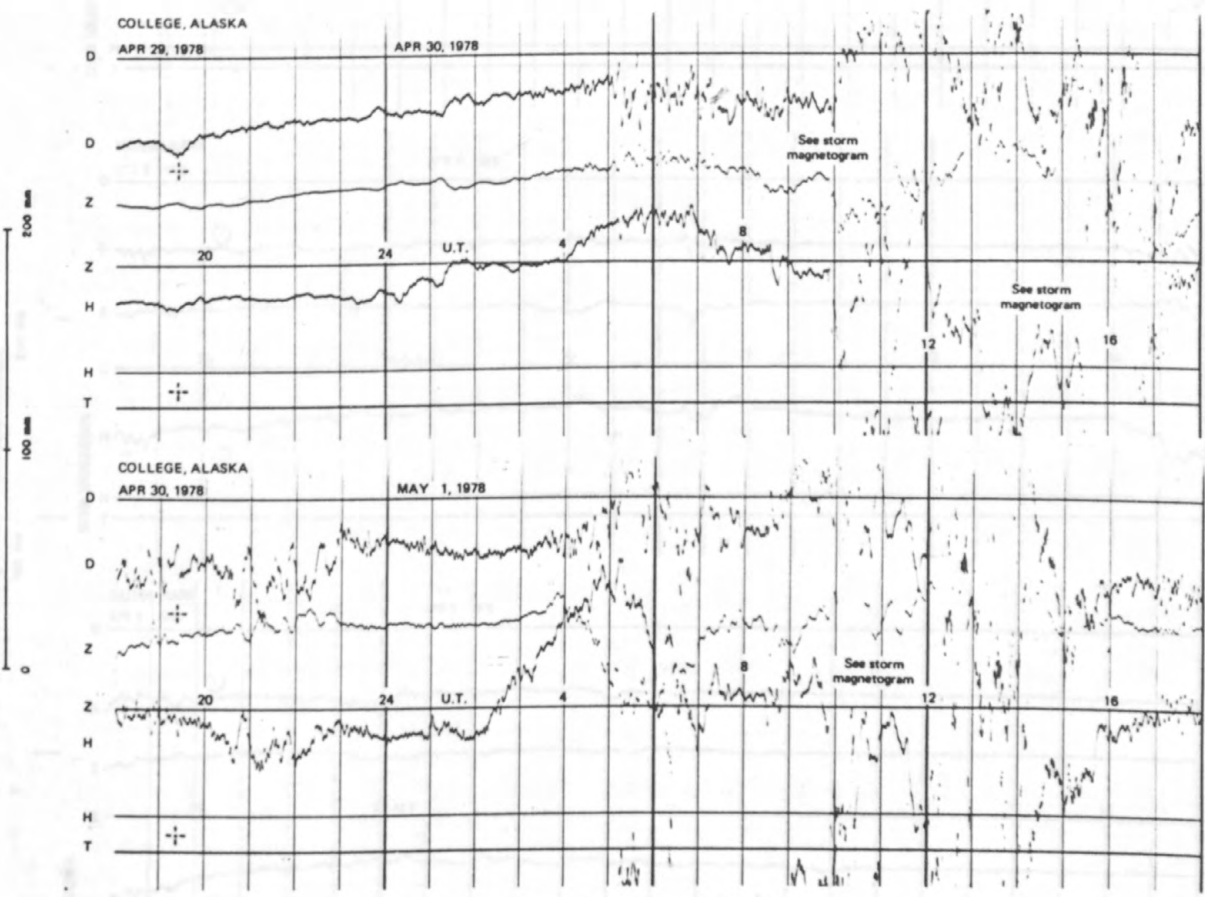
NORMAL MAGNETOGRAMS



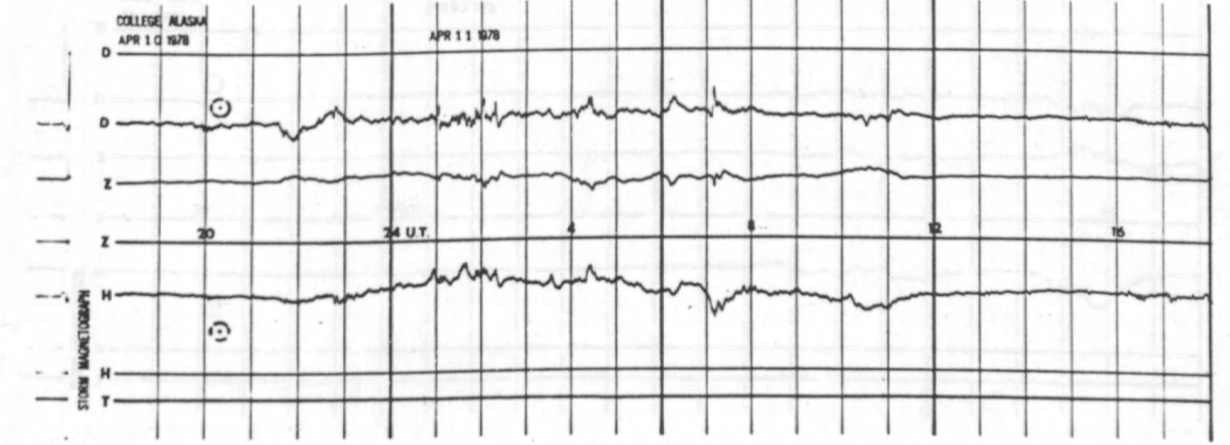
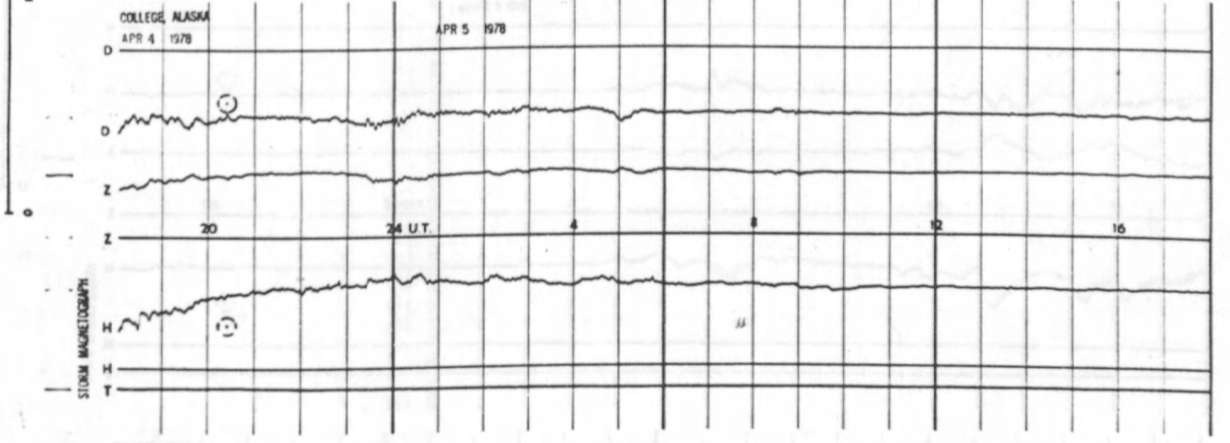
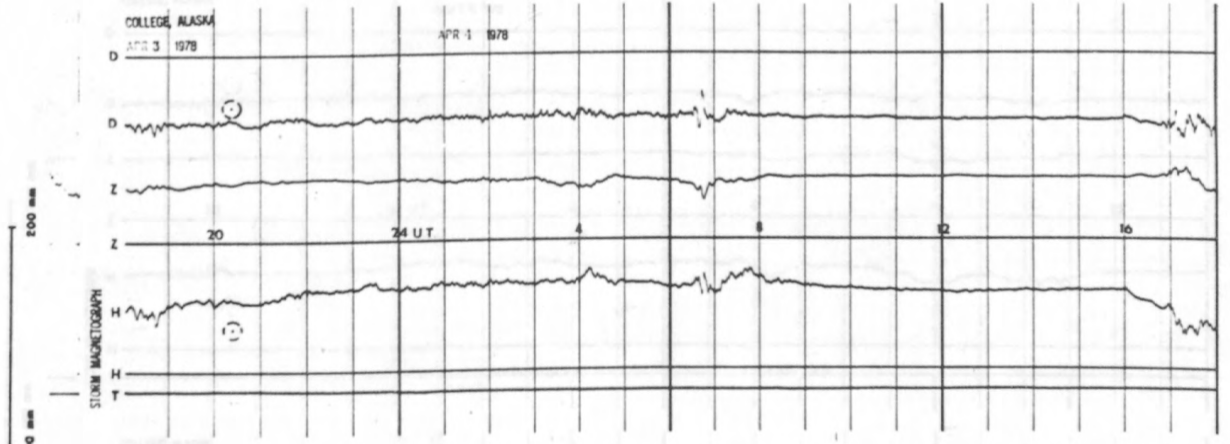
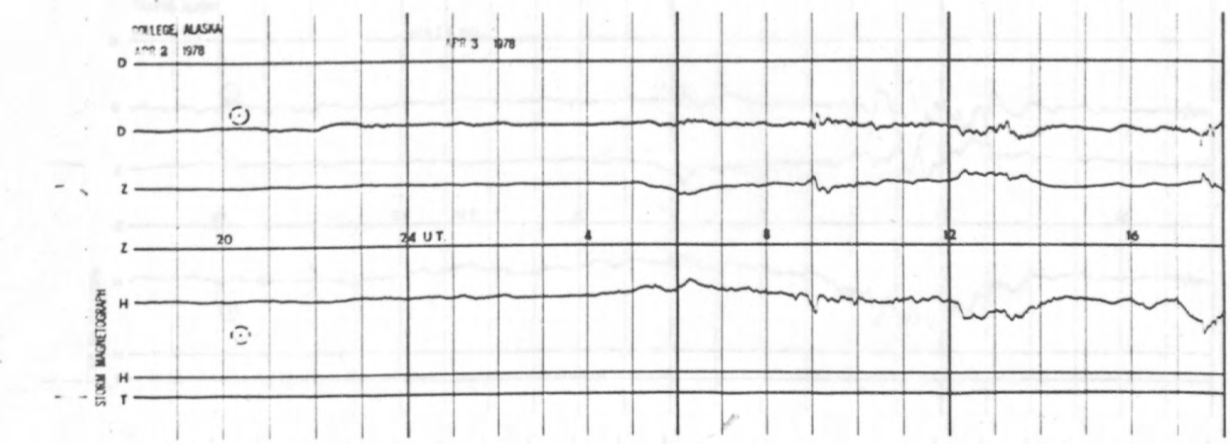
NORMAL MAGNETOGRAMS



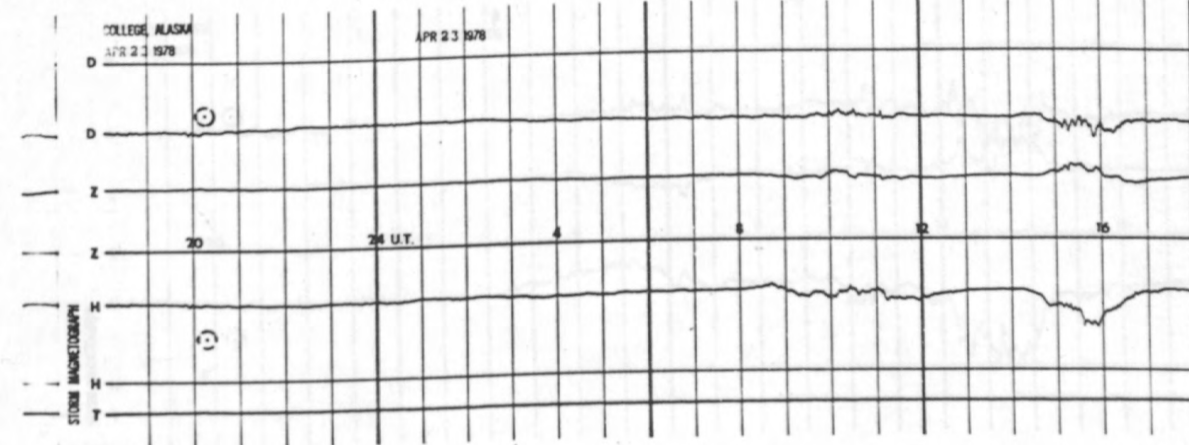
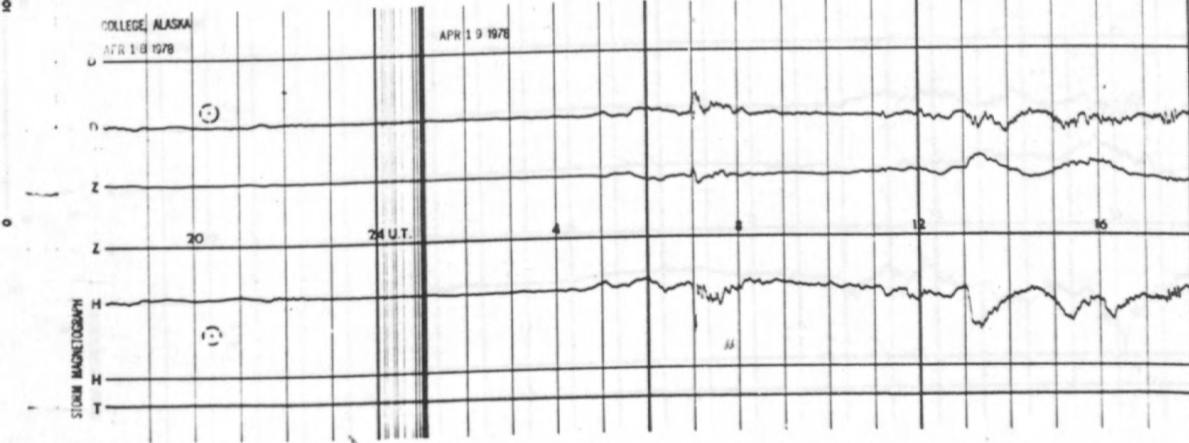
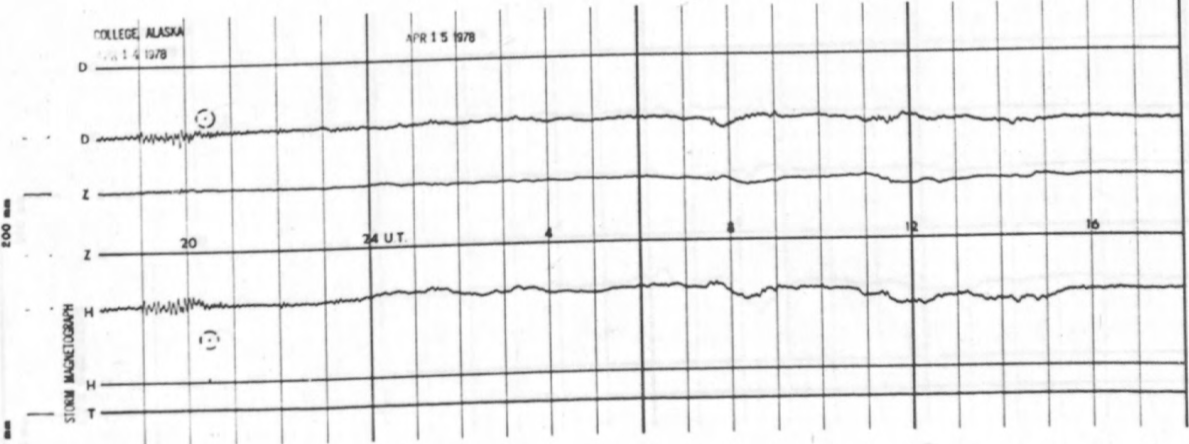
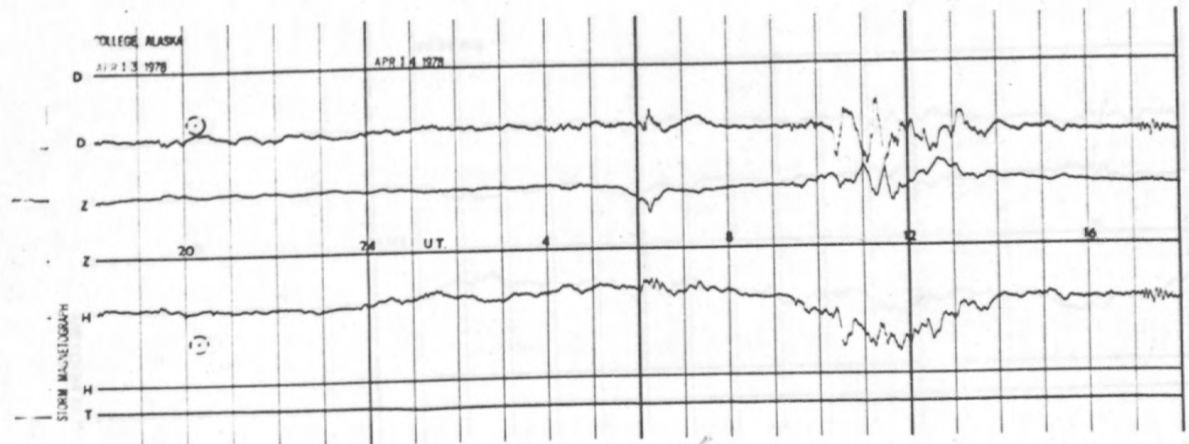
NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS

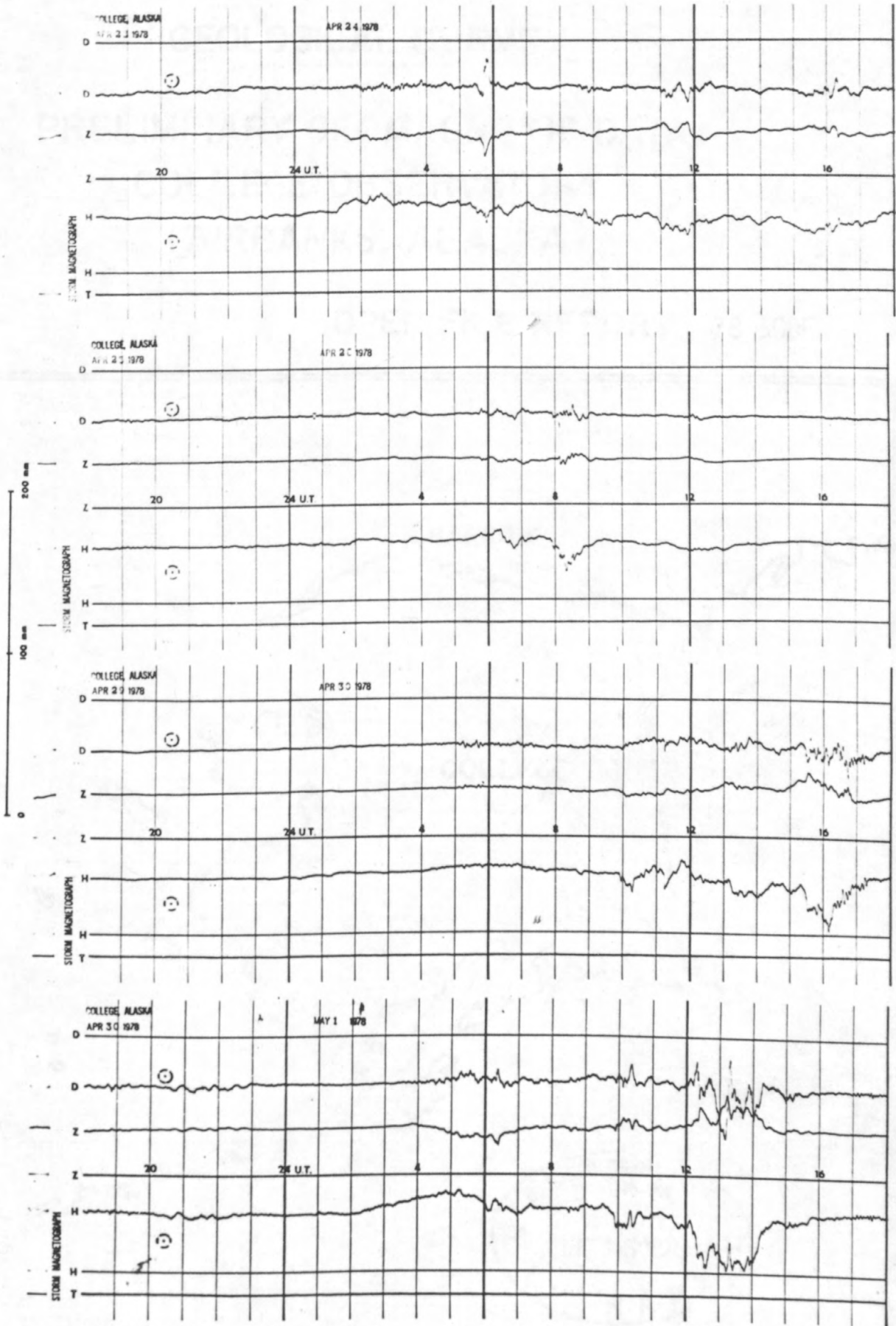


STORM MAGNETOGRAMS



200 nm  
100 nm  
0

STORM MAGNETOGRAMS



# STORM MAGNETOGRAMS

