

UNITED STATES DEPARTMENT OF THE INTERIOR

11
GEOLOGICAL SURVEY

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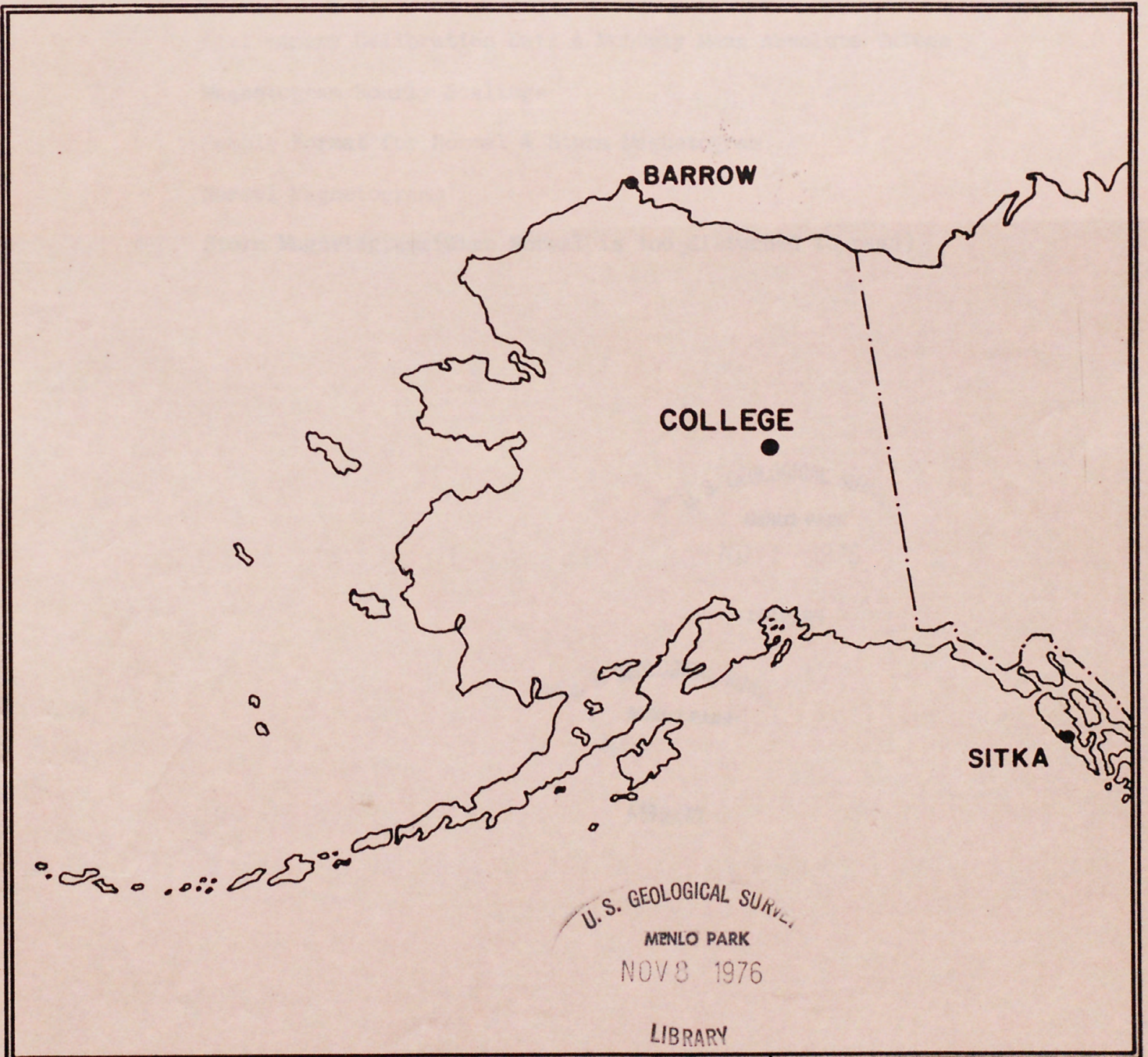
Us. 76-300-I

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

[Reports, open file]

SEPTEMBER 1976

OPEN FILE REPORT 76-300 I



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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, C. E. DEADMON, 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.

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
SEPTEMBER 1976

DATE	K-INDICES									AK	TIME SCALE ON MAGNETOGRAMS
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM		
1	2	1	1	0	5	5	2	1	17	15	SUDDEN COMMENCEMENTS d h m
2	2	4	6	6	5	4	2	2	31	35	
3	2	2	4	5	4	2	1	2	22	17	
4	2	3	4	4	4	3	1	2	23	16	
5	2	3	2	5	4	2	1	1	20	15	
6	2	2	2	3	3	2	1	1	16	08	
7	1	2	3	3	3	3	1	0	16	09	
8	1	2	0	4	4	0	2	0	13	09	
9	2	1	2	4	4	2	0	0	15	10	
10	2	0	1	1	2	3	2	1	12	06	
11	0	1	1	0	3	3	0	0	08	05	
12	1	1	2	4	3	3	2	1	17	10	
13	1	1	3	3	0	0	1	1	10	05	
14	1	1	3	4	5	3	1	1	19	15	
15	0	4	4	5	5	0	1	1	20	20	
16	1	2	1	1	1	1	1	1	09	04	
17	1	2	1	2	1	1	2	3	13	06	
18	2	6	7	5	6	3	1	1	31	47	
19	1	1	2	6	5	6	2	3	26	30	
20	3	6	6	7	7	5	4	3	41	68	
21	3	2	3	6	5	6	2	2	29	32	
22	3	3	4	6	6	4	2	2	30	32	
23	0	1	5	6	5	2	1	1	21	24	
24	1	0	1	4	3	1	1	2	13	08	
25	2	2	6	6	5	5	3	3	32	38	
26	3	2	1	4	5	2	3	2	22	16	
27	2	2	3	5	3	3	2	1	21	15	
28	2	2	1	0	0	1	1	1	08	03	
29	1	1	2	3	1	1	1	1	11	05	
30	0	1	0	3	3	2	2	3	14	08	
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

SUM

K SCALE USED: LOWER LIMIT FOR K = 9..... CURRENT SCALE VALUE..... LOWER LIMIT FOR K = 9	D	H	Z	
	683.8	321.7		(mm)
	3.76	7.82		(γ/mm)
	2570	2520		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN B. TOWNSEND, CHIEF, COLLEGE OBSERVATORY

OBSERVER IN CHARGE

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY COLLEGE, ALASKA	
MONTH SEPTEMBER	YEAR 1976

DATE	TIME U.T.	NATURE OF PHENOMENON ¹	REMARKS
06	07XX	pi2	
08	1132	bps	
12	1311	si	
13	0843	bps	
17	17XX	pc5	
24	08XX	pi2	
24	1049	bps	
24	2345	ssc*	
29	13XX	pc4	

IDENTIFIED BY: MJM

VERIFIED BY: JBT

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

NOAA FORM 86-500
(11/73)

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

SEPTEMBER

1976

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	17	21XX	..	..	..	..	18	3	7	159	1710	940	18 16
		19	09XX	..	..	..	..	20	4,5	7	262	1480	980	21 20
		24	2345	SC*	+7	-26	+9	25	3,4	6	175	940	620	25 21

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 uT, 9-1-76	2400 uT, 9-30-76	1.0/mm	3.8γ/mm	28°07.0E
H	0000 uT, 9-1-76	2400 uT, 9-30-76	7.8γ/mm		12774γ
Z	0000 uT, 9-1-76	2400 uT, 9-30-76	7.6γ/mm		55124γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 uT, 9-1-76	2400 uT, 9-30-76	7.9/mm	29.8γ/mm	24°21.2E
H	0000 uT, 9-1-76	2400 uT, 9-30-76	44.1γ/mm		11520γ
Z	0000 uT, 9-1-76	2400 uT, 9-30-76	48.6γ/mm		54011γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION	
	FROM	TO	SCALE VALUE	
D	0000 uT, 9-1-76	2400 uT, 9-30-76	0.3/mm	1.0γ/mm
H	0000 uT, 9-1-76	2400 uT, 9-30-76	1.0γ/mm	
Z	0000 uT, 9-1-76	2400 uT, 9-30-76	2.4γ/mm	

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28°21.8E	13050γ	55355γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: SEPT. 6, 10, 11, 13, 16, 17, 24, 28, 29, 30

MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)														U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION COAST AND GEODETIC SURVEY GEOMAGNETISM DIVISION				OBST.	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 (150°W.L.T.) is hour <u>11</u> of the <u>SRME</u> universal day. Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.														CO	76	SEPT	D											
C	Q	Ten	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	
			84	84	63	86	128	143	125	128	122	130	148	143	142	143	361	284*	261	227	198	139	143	119	114	87	3602	
			67	70	100	132	90	12	218	95*	67	62	191*	135*	170	242	195	189	219	220	205	164	152	93	57	84	3229	
			122	134	129	127	162	288	176	205	145	148	122	151	182	153	177	183	214	208	193	184	164	100	102	108	3877	
			112	119	129	150	133	264	129	233	99	92	119	104	125	165	255	183	202	205	191	161	134	94	122	92	3612	
			113	108	104	107	132	128	131	129	116	175	188	170	139	224	188	192	212	221	200	157	128	108	102	104	3576	
			110	98	93	129	148	139	132	151	216	150	169	180	175	178	248	219	233	205	179	144	123	107	104	110	3740	
			117	103	116	102	104	112	108	169	247	144	133	138	147	169	181	208	234	210	188	173	149	114	109	95	3568	
			92	89	118	107	134	142	144	147	148	153	158	157	159	151	152	175	181	192	149	153	150	138	133	129	3431	
			112	107	123	132	152	138	139	123	138	134	208	221	175	193	178	179	188	197	182	161	146	130	127	139	3722	
			143	128	150	148	153	150	154	125	122	113	133	147	154	140	138	199	263	260	212	149	135	122	112	110	3660	
			123	137	142	145	144	129	108	130	129	142	148	150	170	174	199	225	238	222	208	188	157	136	120	101	3765	
			89	99	119	109	120	113	143	137	189	152	167	193	162	192	199	264	289	254	233	195	148	107	80	85	3838	
			109	132	142	143	147	144	143	132	193	128	119	147	151	160	179	195	211	213	209	202	161	138	113	97	3708	
			108	133	133	125	122	173	117	148	147	141	144	250	283	340	355	243	269	255	247	222	178	142	95	95	4465	
			96	107	123	119	89	88	33	130	113	63	93	162	53	128	183	198	188	193	192	191	135	89	85	102	2953	
			113	123	124	128	130	207	122	148	149	121	124	137	160	172	204	197	219	235	223	192	154	133	112	118	3745	
			124	118	95	109	112	119	120	123	123	144	142	156	160	172	180	191	189	193	164	146	138	48	17	82	3165	
			130	104	67	43	79	-107*	-203*	-115*	-28*	-123*	107*	192	186*	322	347	180	213	203	180	151	129	118	127	128	2430	
			138	142	141	143	148	131	109	112	107	85	218*	290*	410	236	277	293	305*	268	158	173	125	20	97	66	4192	
			90	129	104	47	233	171*	323	113	73	4*	-370*	123*	210*	91*	464	215	198	242	191	44	27	73	107	138	3040	
			124	111	138	191	159	165	114	128	212	416	128	344	43*	268	212	335	377*	103	126	102	99	112	114	117	4238	
			124	127	134	162	195	270	300	132	114	175	139	262*	332	199	248	269	268	212	168	148	122	92	104	118	4414	
			134	133	140	141	147	142	137	144	356	121	189	512*	148	374	373	273	215	179	158	134	95	73	93	130	4541	
			132	122	133	123	136	140	137	137	138	158	120	132	135	162	168	189	198	192	189	174	148	139	125	119	3546	
			107	67	54	67	82	107	137	138	285	186*	202	189	437	269	734*	525	379	255	154	94	17	53	81	93	4712	
			61	109	121	114	119	140	133	133	143	144	146	182	205	174	208	236	230	248	204	171	141	123	118	117	3720	
			113	116	115	117	119	127	172	173	178	125	103	167	195	218	239	218	220	205	188	163	149	137	113	114	3784	
			118	113	124	134	134	130	188	164	142	144	152	153	160	164	170	174	189	199	207	188	167	131	123	122	3690	
			134	128	122	117	113	148	122	121	123	158	208	180	200	174	209	172	183	200	199	167	164	150	128	120	3740	
			109	102	104	110	114	112	122	133	130	188	160	152	192	220	213	212	209	204	190	176	67	-6	41	88	3342	
SCALED BY	SPT		Preliminary base-line and scale values:												<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 STORM Mgph., converted to Normal Mgph.				<input type="checkbox"/> Scaling uncertain because of magnetic storm. <input type="checkbox"/> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.				MONTHLY SUM	111065				
CHECKED BY	CED, MJM, JEP		Interval Beginning	Base-line Value		Scale Value														MONTHLY MEAN	154							
SIGNS REVIEWED BY	CED		DATES WITH GAPS:																									
PUNCHED BY																												

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY
GEOMAGNETISM DIVISION

OBSY. YEAR MONTH ELEMENT
CO 76 SEPT 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 of S	Time	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	336	351	377	378	382	370	367	366	371	374	366	370	01	328	294	111	66	291	368	346	331	345	346	348	345	7927
		02	332	375	376	376	411	534	581	294	491	381	31	115	02	201	13	-84	237	382	365	340	352	326	323	325	322	7419
		03	356	358	375	366	364	363	383	366	328	366	301	-170	03	278	366	364	335	332	355	328	324	325	326	340	359	7786
		04	364	357	363	394	395	399	408	376	404	377	376	242	04	282	331	216	262	367	352	337	335	336	338	347	365	8323
		05	355	322	363	380	368	359	351	356	403	386	282	234	05	80	258	232	343	322	318	328	340	338	345	316	356	7745
		06	366	382	371	371	372	358	355	362	367	316	265	277	06	308	208	258	334	353	346	322	340	353	351	360	359	8091
		07	368	355	359	349	365	362	371	381	390	388	338	295	07	299	359	323	274	335	357	350	348	342	351	349	345	8353
		08	335	351	349	381	346	343	348	353	353	352	362	276	08	351	372	359	361	341	329	306	333	358	343	351	363	8295
		09	362	343	349	361	367	357	368	385	372	361	312	238	09	87	224	280	325	302	341	331	332	346	358	362	366	7826
		10	371	378	346	355	351	355	359	363	358	361	363	355	10	363	362	346	267	322	361	352	355	349	343	346	353	8434
		11	356	358	363	371	372	365	369	371	374	365	362	366	11	346	267	255	298	371	376	373	360	353	342	341	342	8416
		12	341	355	372	363	371	392	419	422	371	373	316	173	12	305	193	241	343	348	310	313	344	342	328	339	353	8027
		13	362	363	366	365	368	373	371	376	392	349	347	373	13	368	369	365	364	351	340	339	339	337	332	333	329	8581
		14	353	359	366	365	364	370	431	426	368	366	382	265	14	87	75	191	351	363	386	365	353	347	351	348	350	7982
		15	355	361	359	373	403	530	596	512	440	351	184	197	15	26	351	378	362	359	353	339	324	319	333	346	359	8508
		16	356	349	360	367	366	366	372	362	370	368	371	380	16	380	369	353	367	375	355	355	350	341	343	346	351	8678
		17	351	358	357	356	367	369	369	368	373	384	366	365	17	369	363	365	363	361	346	336	327	281	278	273	368	8433
		18	359	345	385	401	429	640*	510	266	-67*	114*	108	206	18	-226*	-107	93	385	399	368	366	369	372	362	358	373	6808
		19	360	357	353	352	352	360	358	368	393	414	-10*	-163*	19	38	264	250	74*	-140*	278	279	271	300	305	331	353	6097
		20	440	402	410	585	549	447*	165*	507	315	41*	-360*	-123*	20	-388*	-163*	-9	306	276	266	70	243	319	336	373	401	5474
		21	399	372	386	384	405	407	382	380	431	325	152	-186*	21	-90*	40	241	-44*	-217*	245	335	352	349	353	371	363	6105
		22	365	371	375	368	368	367	369	379	315	403	157	-241*	22	-146*	-38	180	319	275	293	345	335	341	322	351	368	6535
		23	360	362	360	361	365	363	363	383	328	376	97*	-21*	23	268	-73	149	322	359	353	352	345	326	326	346	357	6917
		24	363	364	353	361	359	363	360	366	368	366	360	269	24	335	362	352	348	342	333	341	351	352	353	358	365	8444
		25	368	323	365	392	389	416	413	401	182*	-151*	336	64	25	-56	-88	-214*	-46	99	244	247	346	298	355	366	359	5388
		26	345	363	385	386	368	380	369	366	362	363	362	134	26	61	328	363	333	324	271	278	329	342	341	355	363	7871
		27	378	359	375	389	388	398	396	438	392	343	42	337	27	279	241	208	273	356	352	359	352	341	340	351	341	8028
		28	356	353	356	372	375	362	360	374	361	357	355	358	28	359	358	355	352	345	348	342	339	335	332	343	351	8498
		29	354	355	362	367	369	366	383	382	399	403	359	351	29	355	362	360	363	365	369	339	339	338	341	343	339	8653
		30	349	355	357	355	371	366	361	362	369	378	381	366	30	315	354	375	384	371	359	355	337	274	311	359	338	8502
		31													31													

SCALED BY SPT
CHECKED BY CED, MIM, JEP
SIGNS REVIEWED BY CED
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 23244
MONTHLY MEAN 322
DATES WITH GAPS:

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY
MAGNETISM DIVISION

OBSY. YEAR MONTH ELEMENT
CO 76 SEPT Z

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, 1 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	U	S	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	318	323	323	349	389	343	352	333	319	311	314	301	264	214	174	281	228	245	271	268	292	290	304	317	7123		
				02	326	335	363	340	305	288	155	148	211	349	238	59	02	265	436	165	130	262	301	301	287	296	303	310	320	6488	
				03	333	331	327	326	355	390	331	306	164	207	258	206	03	233	269	303	302	301	299	292	305	300	306	318	523	7085	
				04	324	326	352	362	364	349	308	258	245	271	314	268	04	198	264	281	244	274	295	303	299	298	291	314	303	7105	
				05	327	336	321	358	351	330	323	319	325	213	173	264	05	224	180	228	283	290	271	254	281	298	303	309	315	6876	
				06	319	331	369	380	381	341	328	331	277	227	224	228	06	272	203	197	244	271	298	292	291	301	304	305	310	7024	
				07	314	334	356	364	343	337	353	338	218	285	280	248	07	243	280	283	232	217	249	283	303	304	301	317	328	7110	
				08	335	349	334	325	341	328	324	321	323	325	318	254	08	231	309	311	311	309	295	267	266	285	303	312	322	7398	
				09	330	322	325	335	335	338	334	354	379	351	325	263	09	284	212	225	263	265	283	296	298	305	313	315	321	7371	
				10	325	336	334	324	323	318	318	315	321	325	328	310	10	304	301	288	227	220	253	234	242	270	294	308	312	7130	
				11	315	310	308	309	325	322	331	328	323	322	313	307	11	283	244	190	184	227	273	288	292	293	293	301	301	6988	
				12	304	313	318	323	338	368	385	384	333	319	284	218	12	278	235	191	240	262	298	209	240	266	281	290	298	6981	
				13	308	314	310	312	309	311	313	313	330	224	241	295	13	301	304	305	304	303	295	294	293	290	294	299	302	7164	
				14	308	311	304	306	320	363	384	413	342	309	301	285	14	370	406	269	248	258	295	304	296	286	285	291	295	7555	
				15	299	301	305	312	354	348	305	338	331	288	389	305	15	177	235	312	310	309	311	311	309	298	291	294	308	7340	
				16	312	321	323	318	318	354	315	323	314	313	308	321	16	308	307	298	289	291	293	295	293	292	295	297	301	7399	
				17	308	308	312	330	320	308	303	305	315	325	318	309	17	306	303	301	302	299	298	289	288	292	267	255	318	7279	
				18	342	302	301	341	355	90*	39	109	443	438	487	491	18	617*	433	335	258	318	318	308	312	312	314	313	312	7889	
				19	321	320	318	319	318	320	339	345	324	284	192*	120	19	330	293	366	356	201	130	176	213	262	273	322	332	6774	
				20	380	384	333	366	340	228	53	23	178	312	541*	678	20	725*	214	369	272	306	273	275	198	255	331	329	359	7722	
				21	362	338	349	361	341	379	363	351	331	227	-17	222	21	509	348	339	340	361	175	225	252	286	318	322	331	7413	
				22	330	329	335	347	340	365	298	302	199	278	332	272	22	178	-18	56	198	254	255	283	299	298	309	318	325	6482	
				23	331	324	323	326	331	329	332	331	107	224	266	293*	23	47	95	33	171	242	271	265	288	294	291	316	323	6153	
				24	331	334	335	321	318	318	319	333	334	314	299	201	24	261	290	306	308	309	299	288	283	289	295	298	302	7285	
				25	305	319	356	363	358	391	383	368	178	13	207	229	25	272	339	370*	225	233	157	160	216	227	266	318	332	6632	
				26	339	346	324	338	355	348	333	338	336	331	323	303	26	207	285	295	308	292	262	257	252	276	292	308	309	7301	
				27	312	329	346	333	335	345	364	291	301	224	-5	233	27	250	278	295	250	269	291	305	299	299	306	305	316	6869	
				28	318	321	322	324	321	327	344	313	318	316	315	312	28	311	310	312	311	309	301	308	303	306	303	308	312	7545	
				29	313	315	318	318	320	349	335	333	345	346	277	287	29	305	298	295	307	312	313	302	298	299	296	301	306	7488	
				30	309	313	319	331	328	326	324	321	326	327	319	318	30	254	254	284	298	299	295	301	300	283	262	296	312	7299	
				31													31														

SCALED BY SPT
CHECKED BY CED, MIM, JEP
SIGNS REVIEWED BY CED
PUNCHED BY

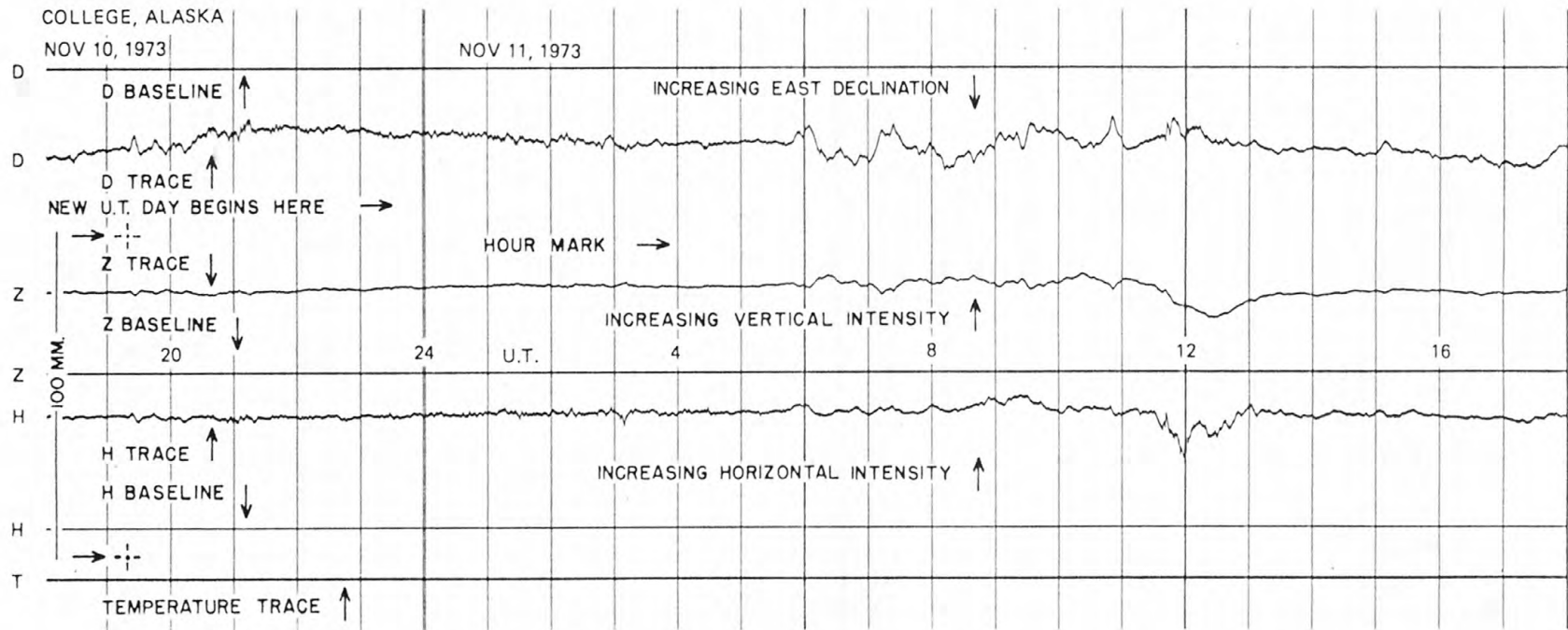
Preliminary base-line and scale values:
Interval Beginning Base-line Value Scale Value

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

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.

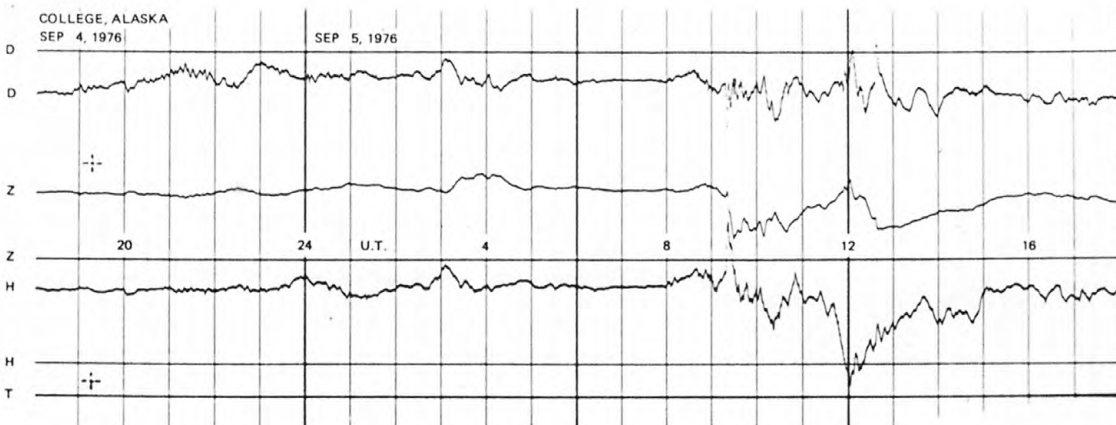
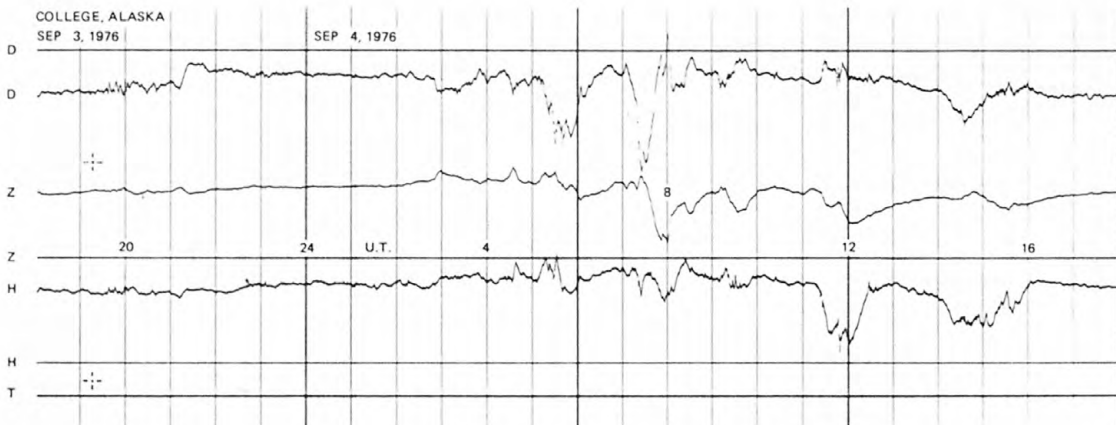
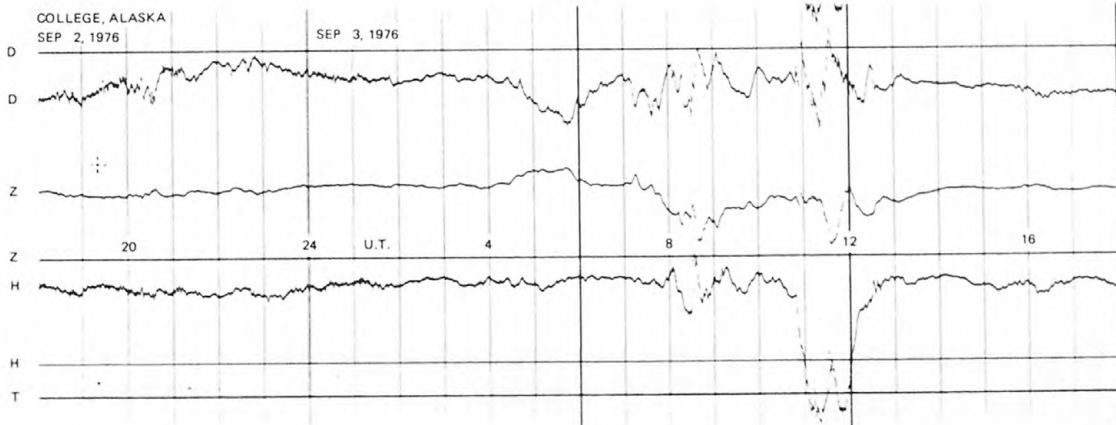
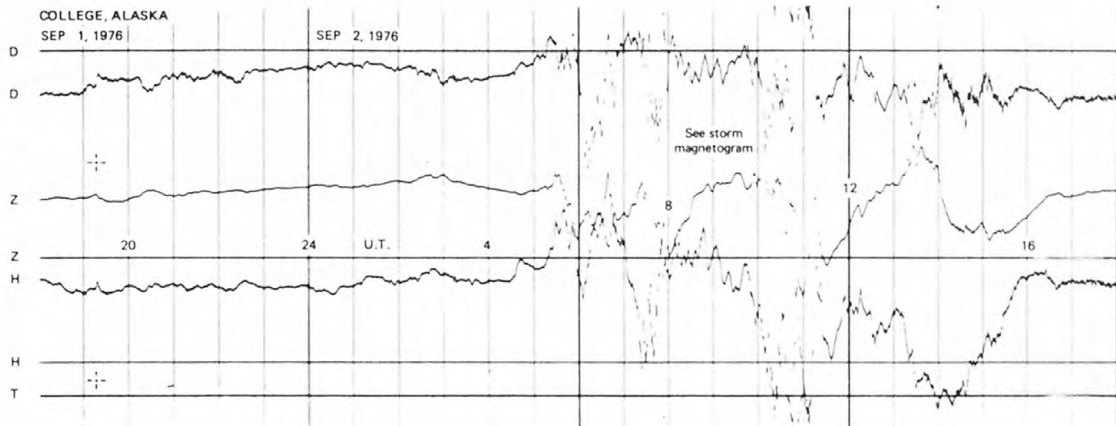
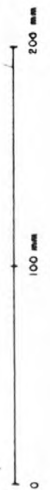
MONTHLY SUM 214268
MONTHLY MEAN 298
DATES WITH GAPS:

FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)

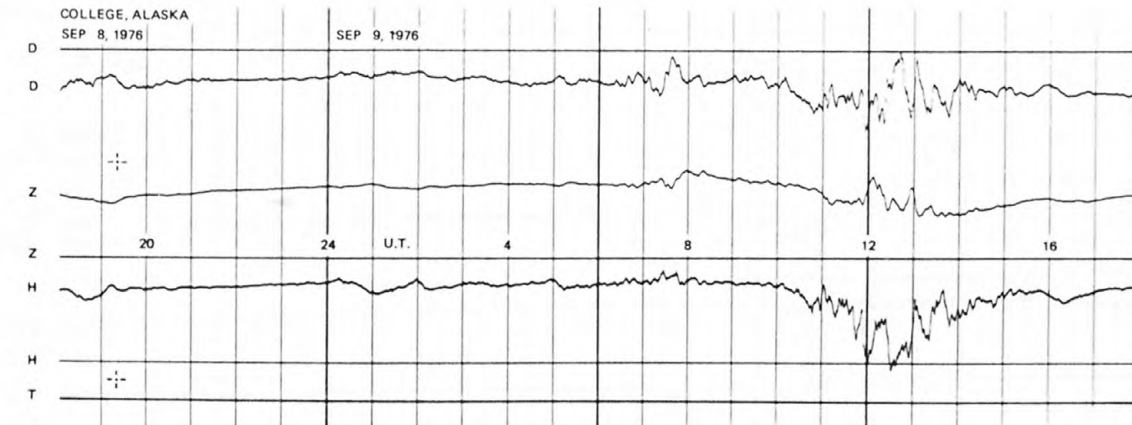
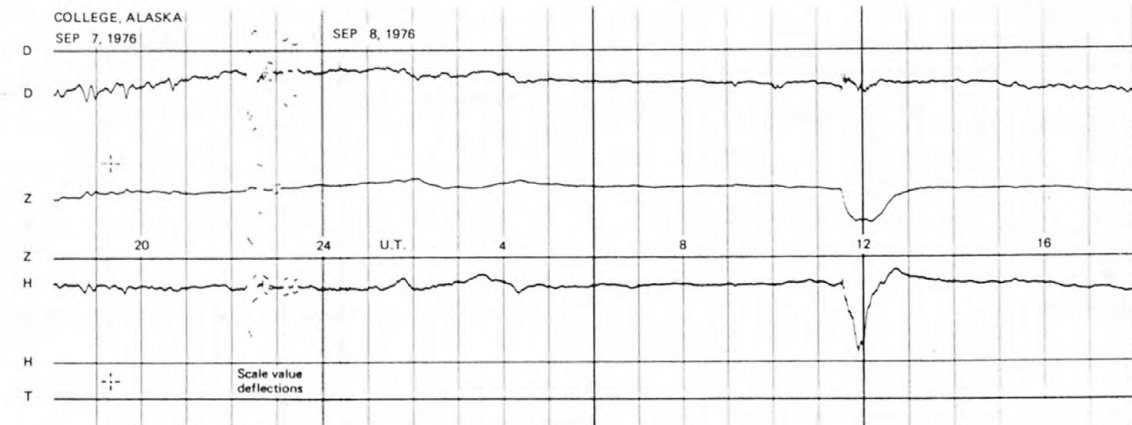
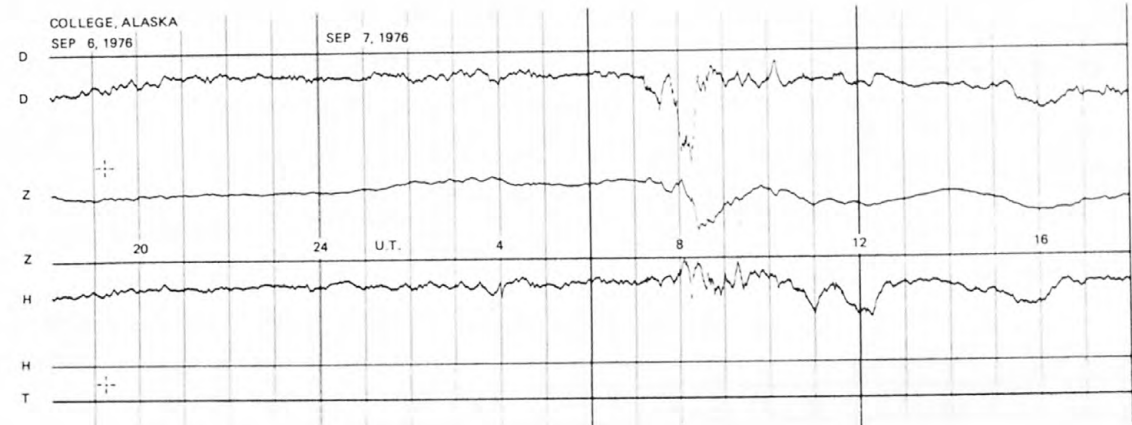
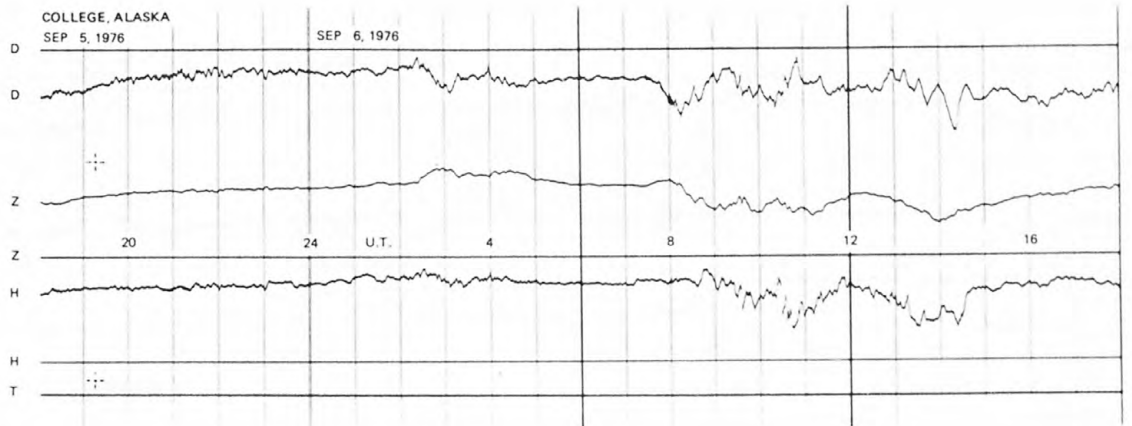


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

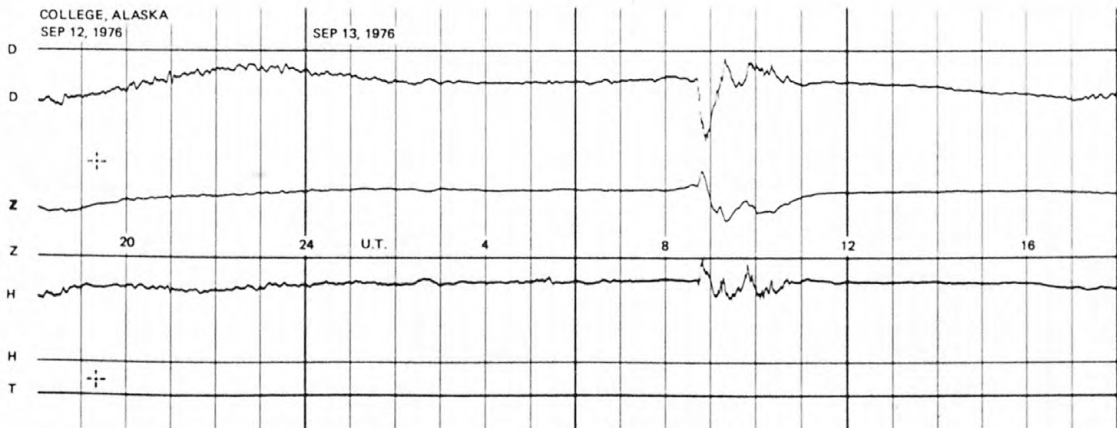
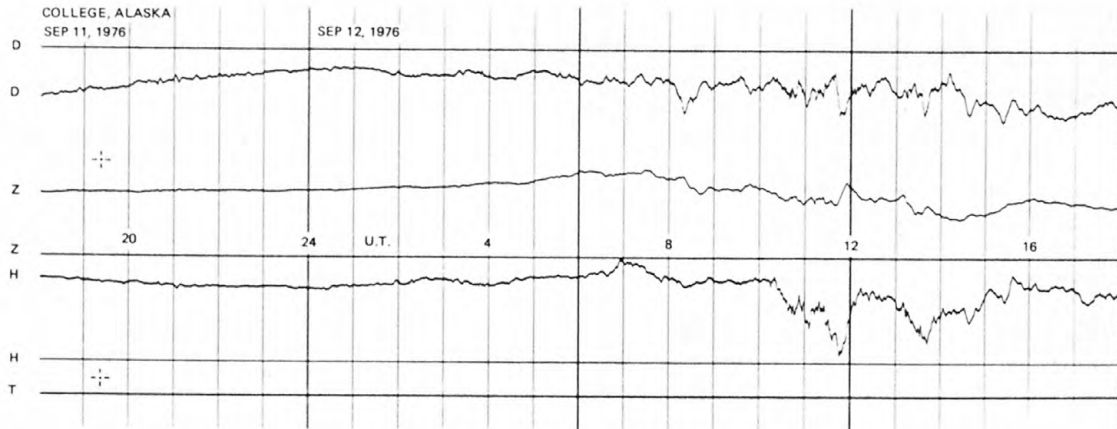
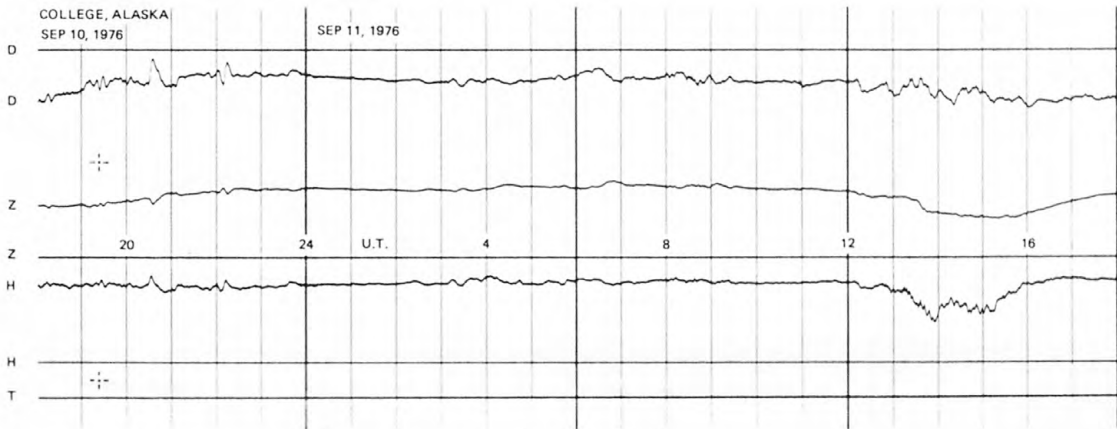
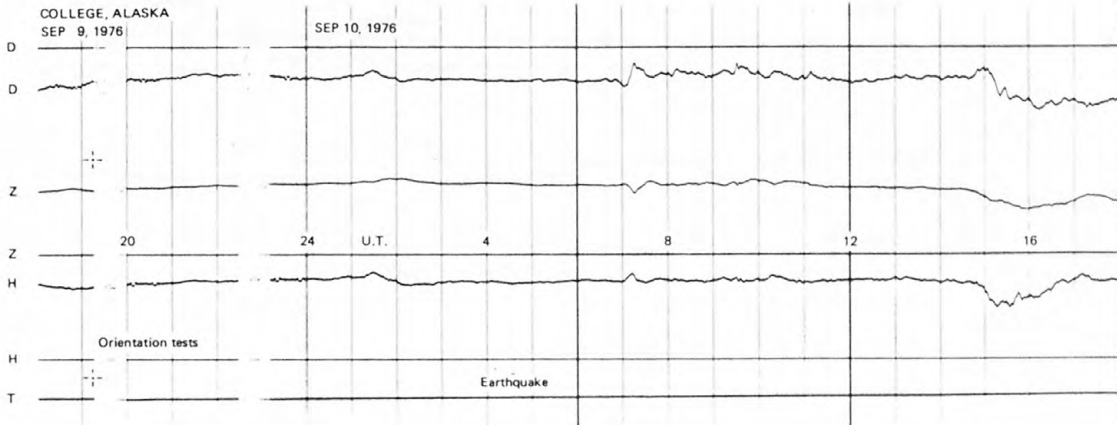
NORMAL MAGNETOGRAMS



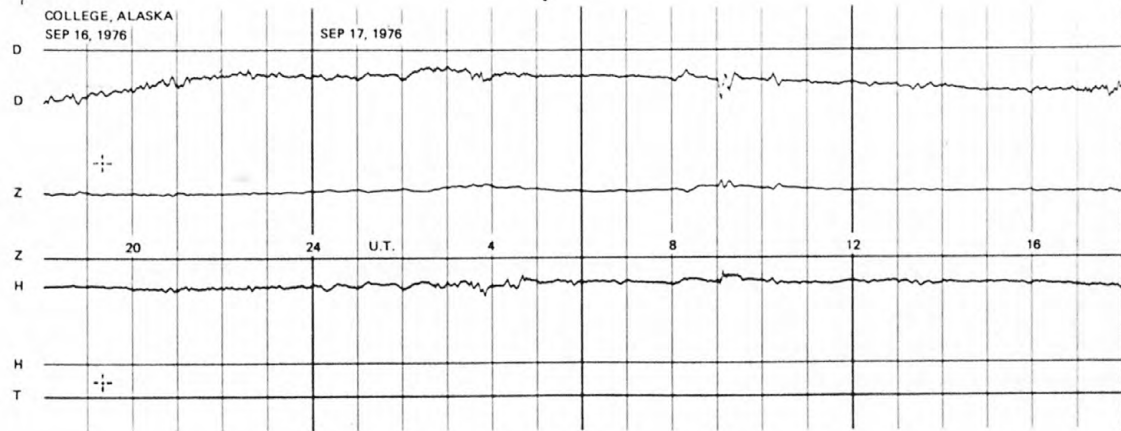
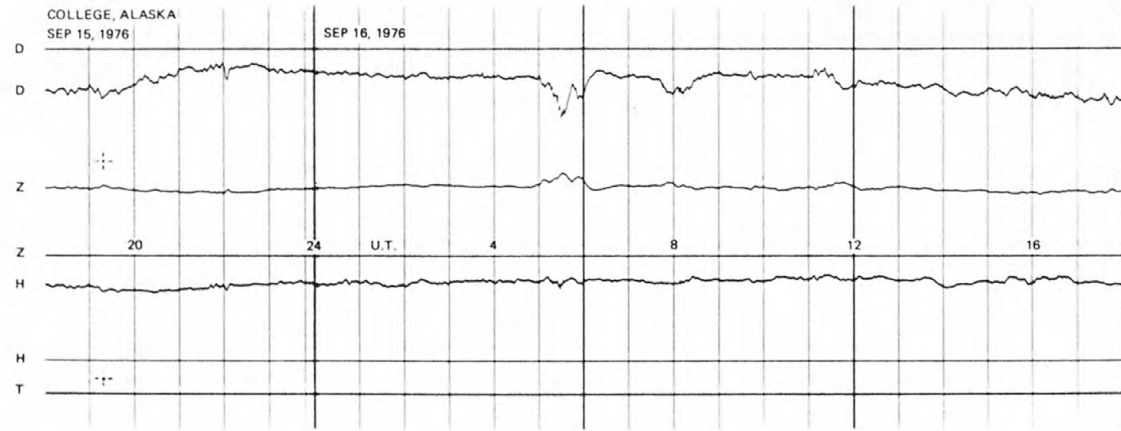
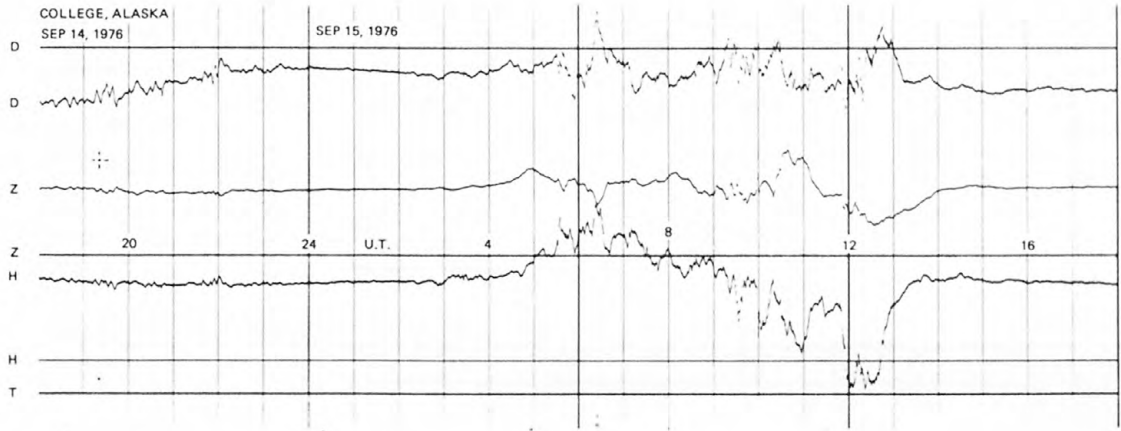
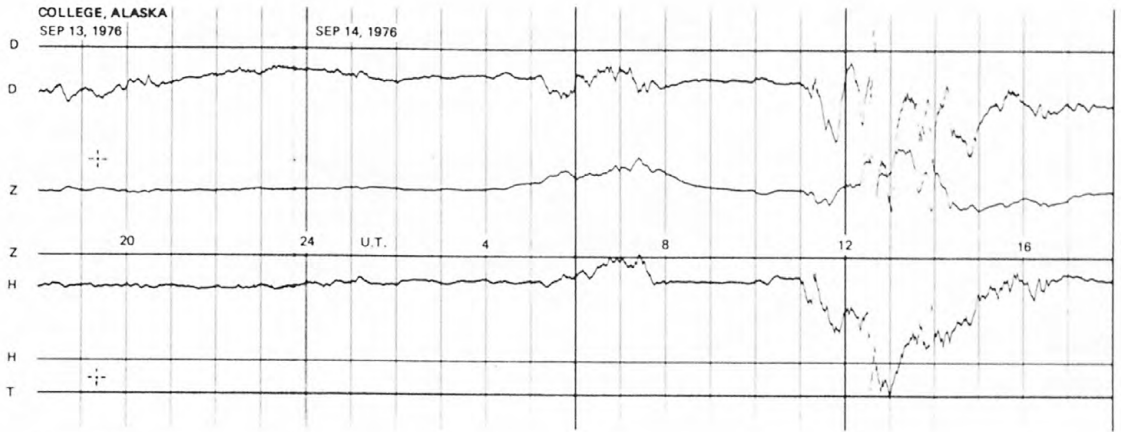
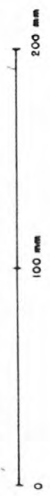
NORMAL MAGNETOGRAMS



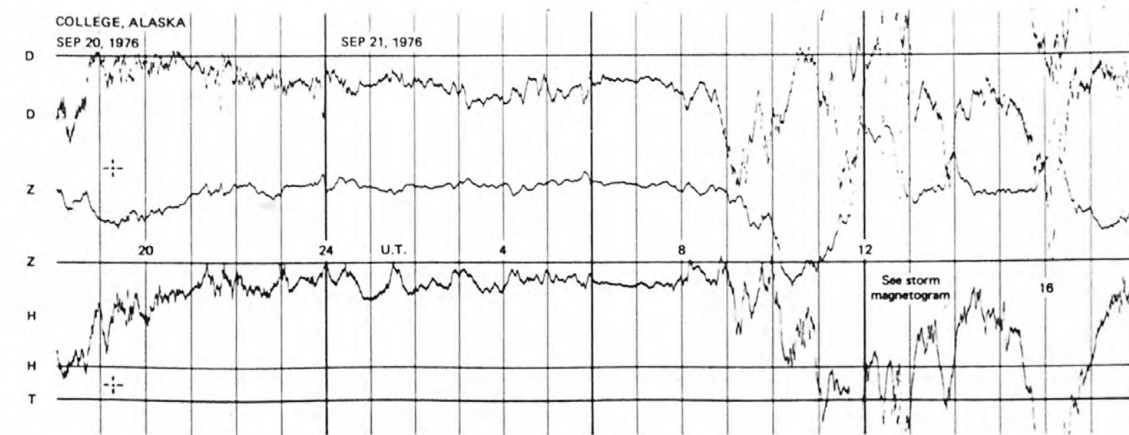
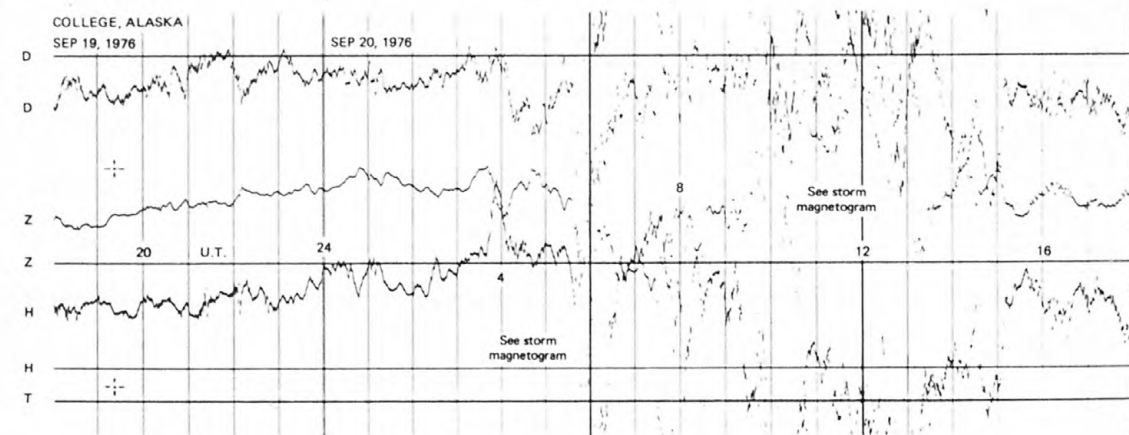
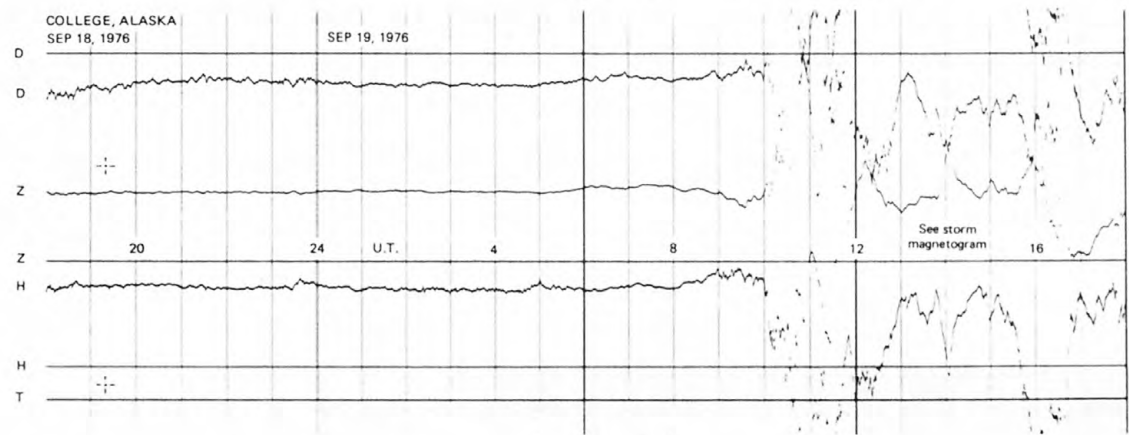
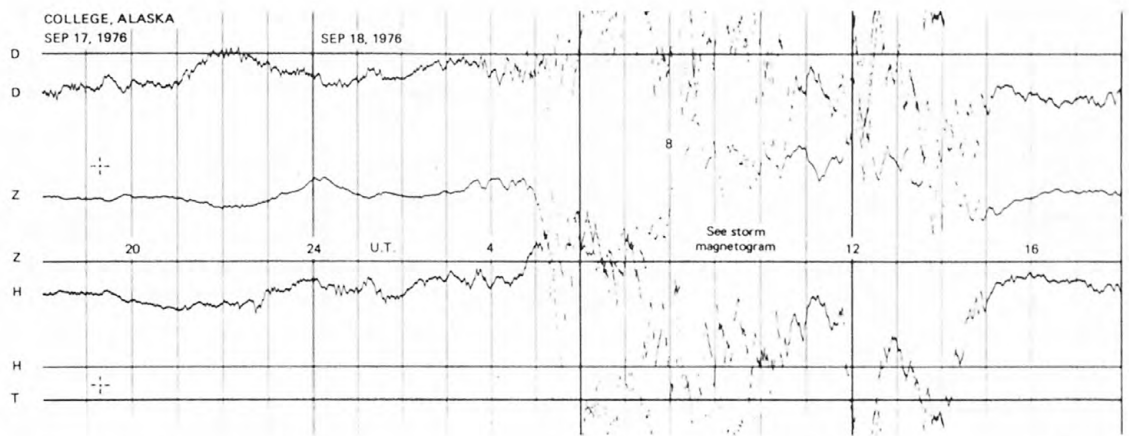
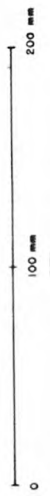
NORMAL MAGNETOGRAMS



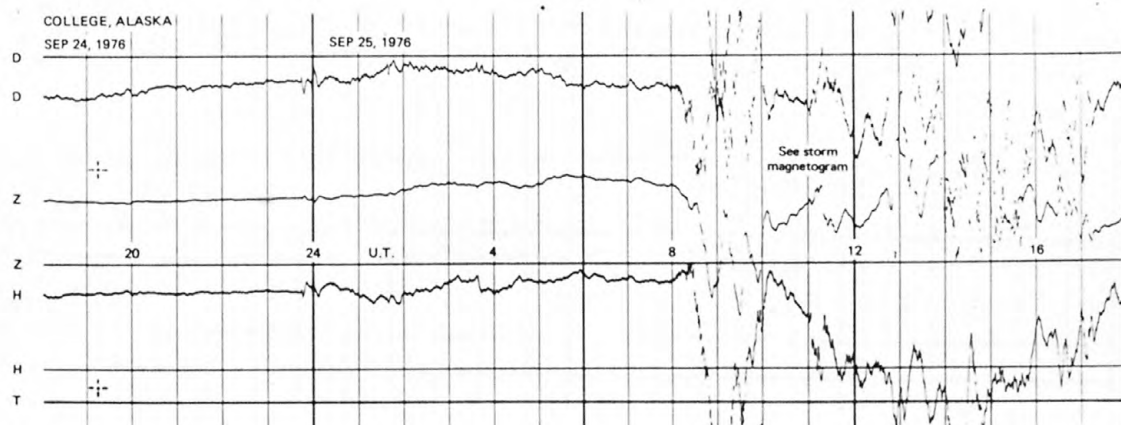
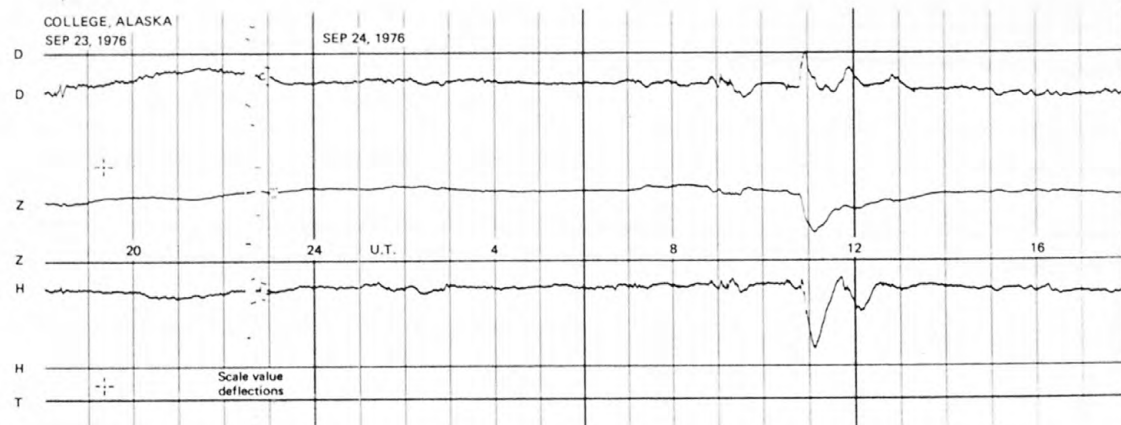
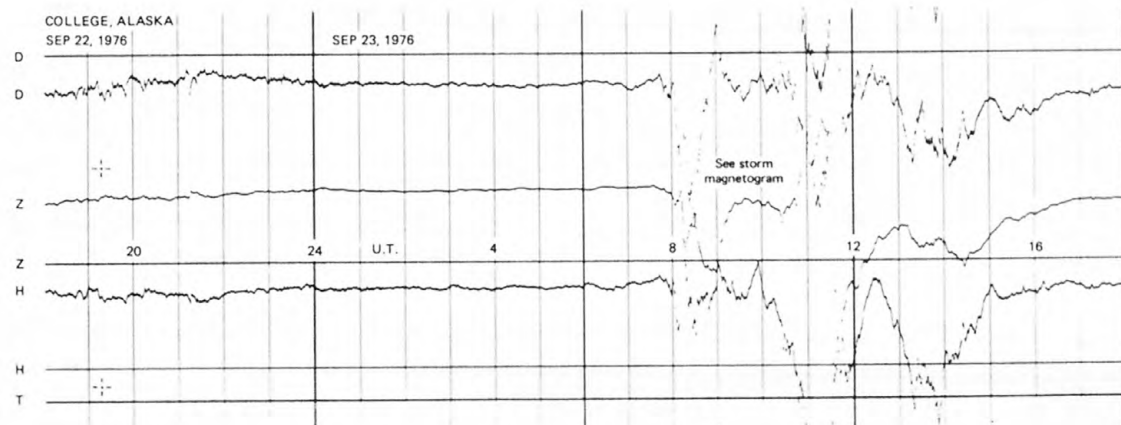
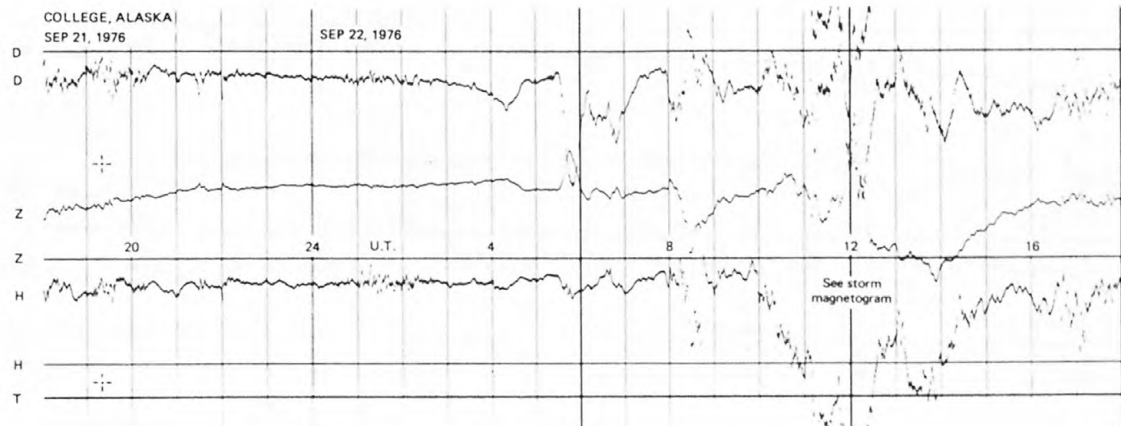
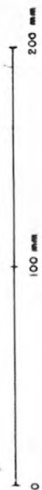
NORMAL MAGNETOGRAMS



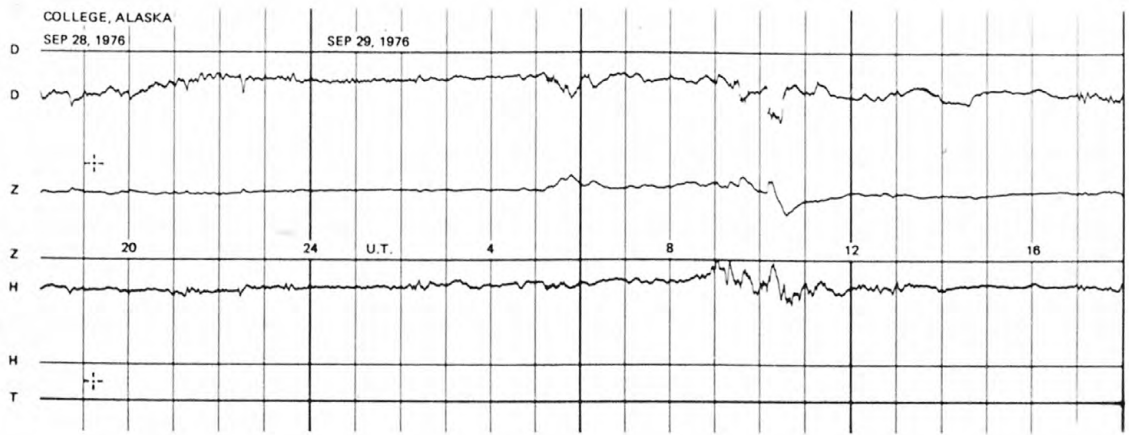
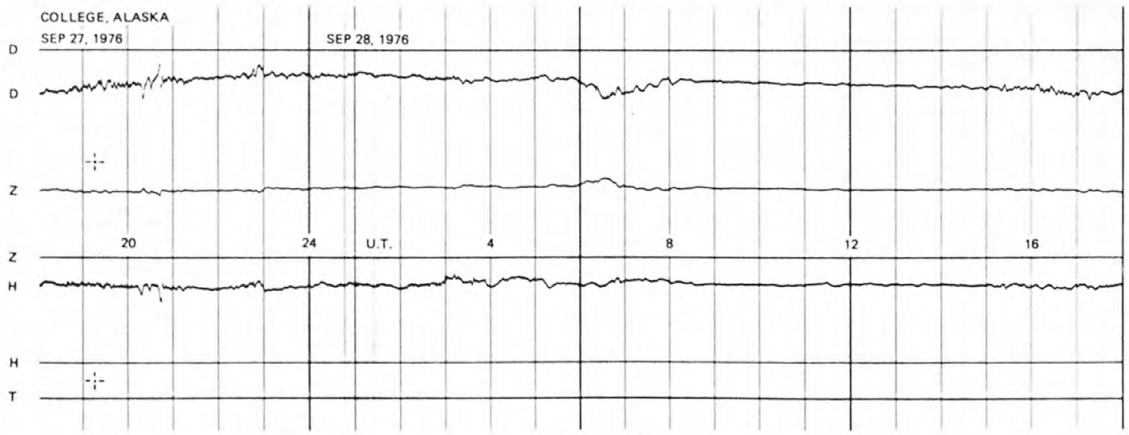
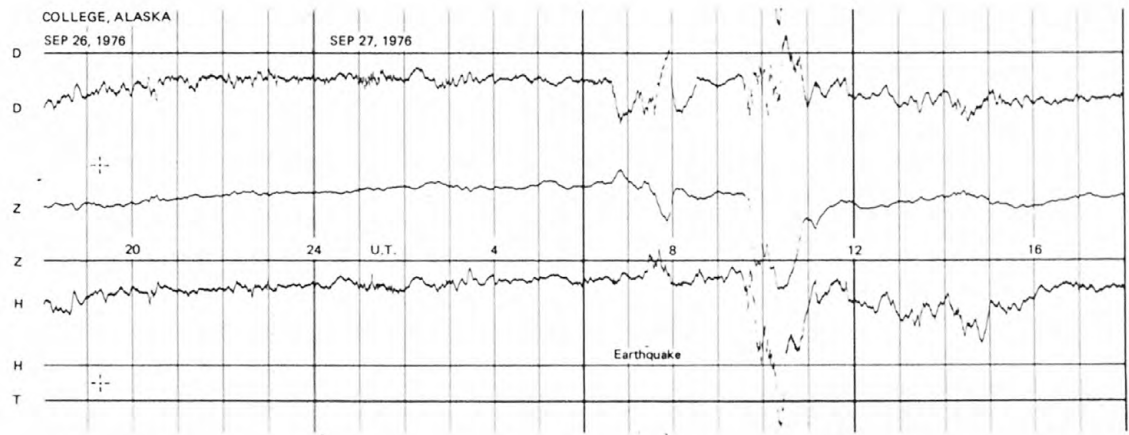
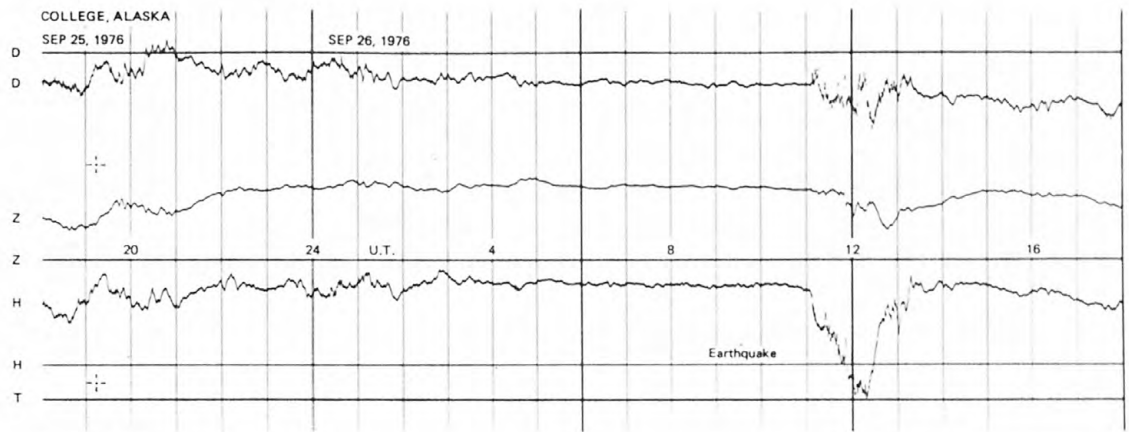
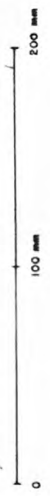
NORMAL MAGNETOGRAMS



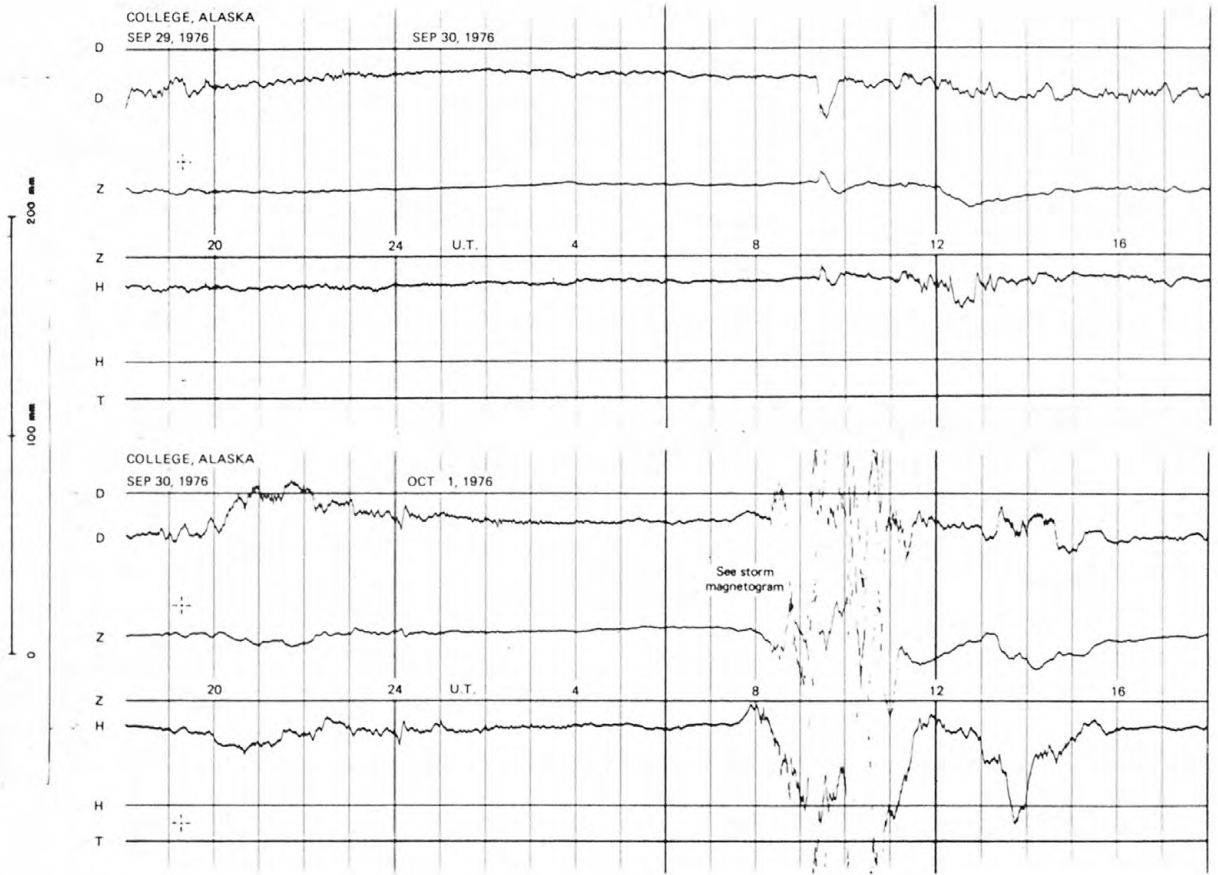
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS

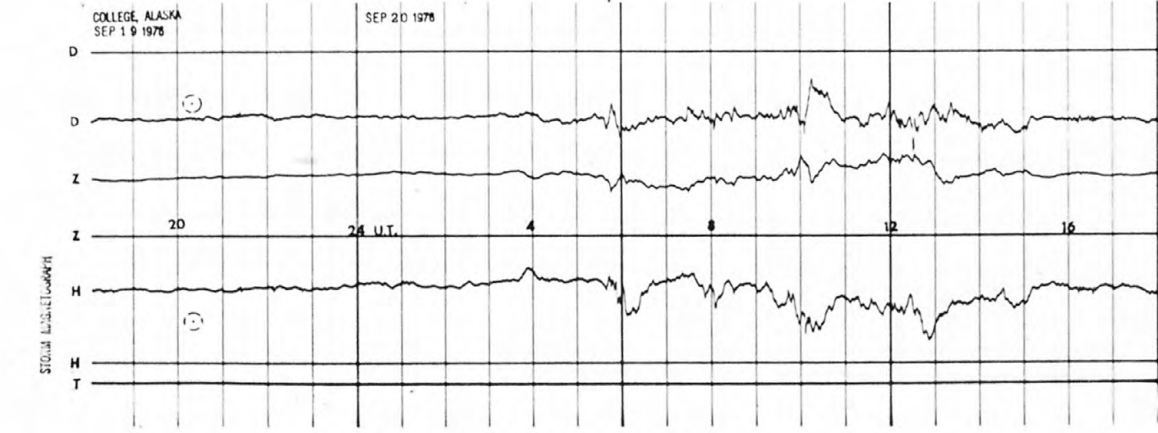
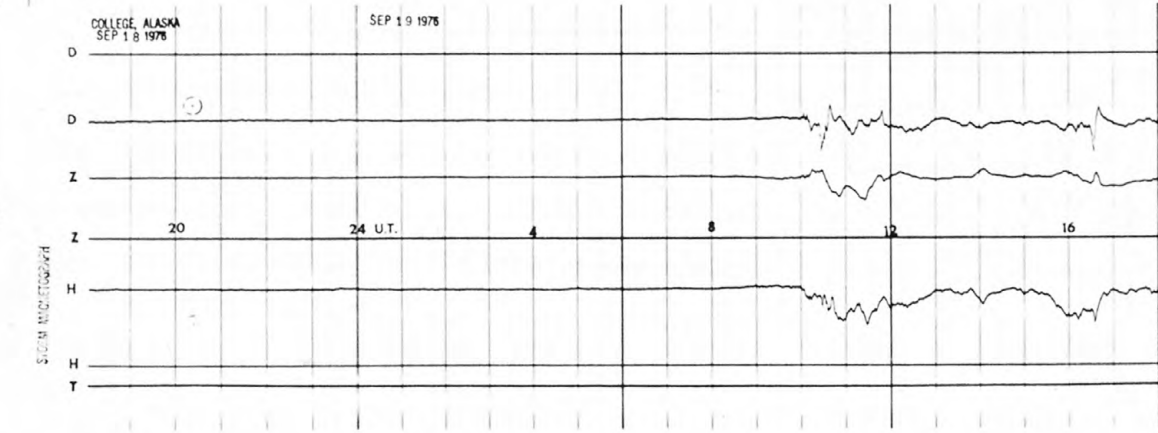
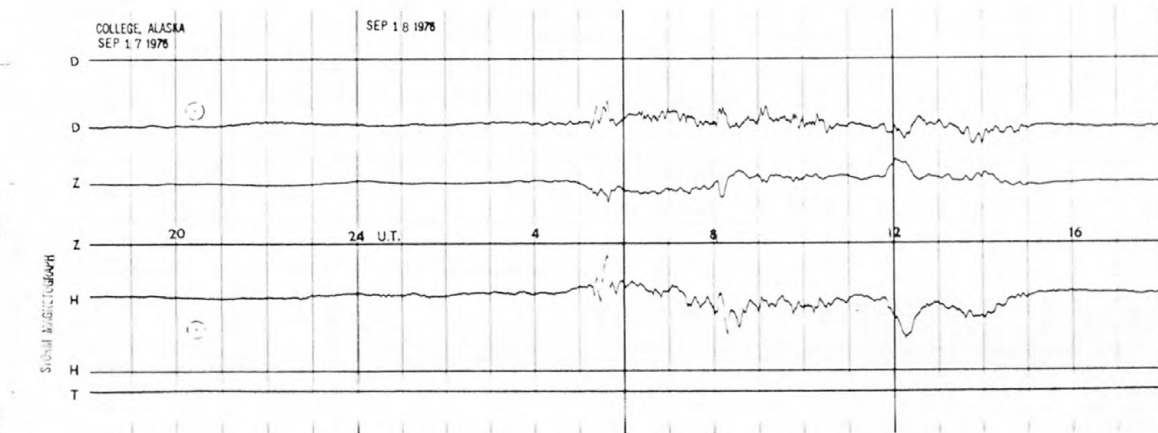
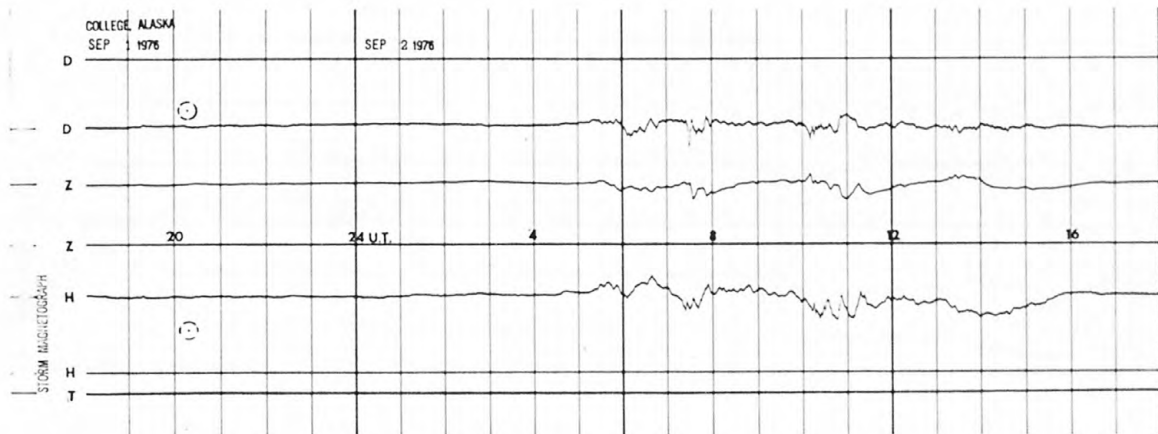


NORMAL MAGNETOGRAMS

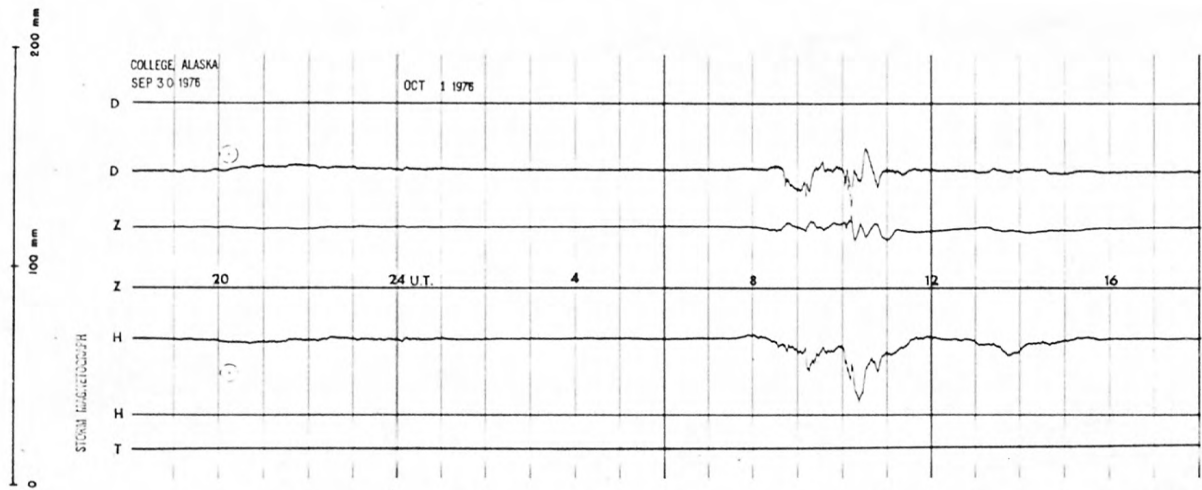


STORM MAGNETOGRAMS

200 mm
100 mm
0



STORM MAGNETOGRAMS



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