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PRELIMINARY GEOMAGNETIC DATA

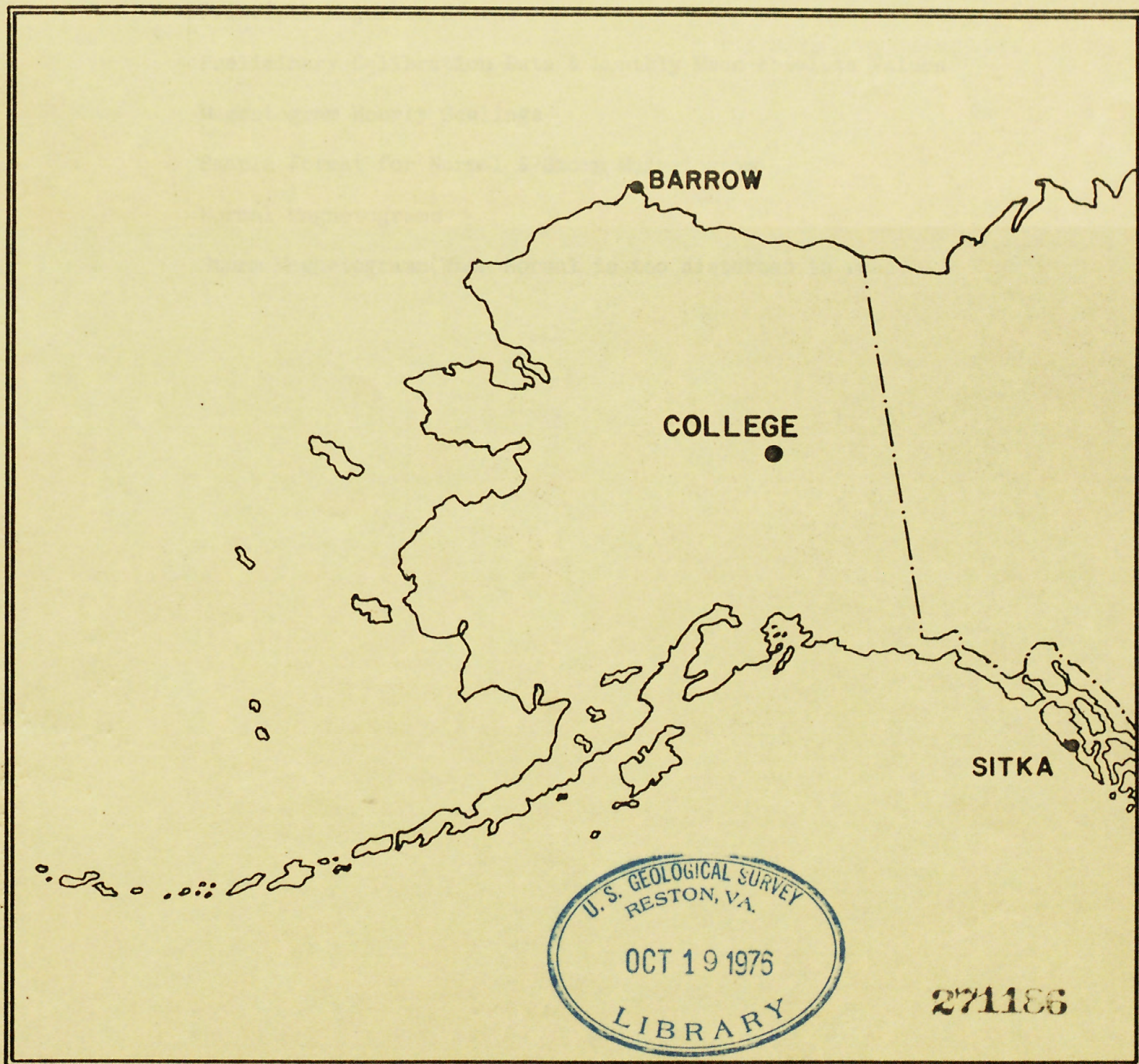
COLLEGE OBSERVATORY

FAIRBANKS, ALASKA

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Journal

MAY 1976

OPEN FILE REPORT 76-300E





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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

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 $\approx$ 11	0
11 $\approx$ 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

MAY 1976

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			20mm/hr		
1	2	2	3	2	3	2	1	2	17	09	SUDDEN COMMENCEMENTS		
2	4	3	2	7	6	4	5	6	37	53	d	h	m
3	6	6	7	7	6	4	3	3	42	72			
4	3	4	5	4	4	5	4	2	31	28			
5	4	3	2	5	3	1	1	1	20	15			
6	2	2	4	5	3	2	1	2	21	15			
7	3	3	2	4	4	3	1	1	21	14			
8	2	2	3	3	3	2	1	1	17	09			
9	2	1	0	1	1	0	0	0	05	02			
10	1	2	1	1	2	5	1	0	13	09			
11	2	2	3	4	2	2	2	2	19	11			
12	3	2	3	5	3	2	0	1	19	14			
13	1	1	1	1	1	1	1	0	07	03			
14	1	1	1	0	0	0	0	0	03	01			
15	0	0	0	0	3	1	0	2	06	03			
16	2	2	0	3	0	0	0	0	07	04			
17	1	1	1	3	1	0	0	0	07	03			
18	1	1	0	0	0	0	0	0	02	01			
19	0	0	1	0	1	2	2	3	09	04			
20	4	5	5	5	4	5	4	2	34	35	POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)		
21	3	2	5	4	5	4	2	1	26	23			
22	2	3	4	1	4	3	2	1	20	13			
23	1	1	6	6	5	4	2	1	26	31			
24	1	2	2	1	1	1	1	1	10	04	BEGIN	END	
25	2	2	2	4	2	3	2	0	17	10	d	h	m
26	2	1	0	1	1	1	1	1	08	03			
27	1	2	1	3	2	1	1	1	12	06			
28	2	3	3	6	5	4	2	2	27	26			
29	3	3	3	7	4	4	3	3	30	34			
30	3	3	3	5	3	3	3	2	25	18			
31	3	3	2	4	2	3	2	2	21	13			
SUM													
K SCALE USED:													
LOWER LIMIT FOR K = 9.....										683.8	321.7	(mm)	
CURRENT SCALE VALUE.....										3.76	7.82	(γ/mm)	
LOWER LIMIT FOR K = 9										2570	2520	(to nearest 10γ)	
SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.										/s/ John B. Townshend			
APPROVED										John B. Townshend, Chief, College Observatory			
										OBSERVER IN CHARGE			

OUTSTANDING MAGNETIC EFFECTS			OBSERVATORY COLLEGE, ALASKA	
			MONTH MAY	YEAR 1976
DATE	TIME U.T.	NATURE OF PHENOMENON ¹	REMARKS	
02	02XX	b	H positive	
10	08XX	pi2		
12	17XX	pc4	with pc3's	
13	09XX	pi2		
13	22XX	pc3		
22	05XX	b	H positive	
26	22XX	pc3		
31	22XX	pc4		
6/01	12XX	pi2		
IDENTIFIED BY: JEP/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

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA
MAY 1976

WDC-A FOR SOLAR-TERRRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80502 U.S.A.

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	02	08XX	..	..	..	..	02 03	4 3,4	7 7	295	1950	1530	03 22

MAY

1976

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 uT, 5-1-76	2400 uT, 5-31-76	1.0/mm	3.8 x/mm	28° 07.1 E
H	0000 uT, 5-1-76	2400 uT, 5-31-76	7.8 x/mm		12758 x
Z	0000 uT, 5-1-76	2400 uT, 5-31-76	7.6 x/mm		55125 x

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 uT, 5-1-76	2400 uT, 5-31-76	7.9/mm	29.8 x/mm	24° 21.8 E
H	0000 uT, 5-1-76	2400 uT, 5-31-76	44.1 x/mm		11503 x
Z	0000 uT, 5-1-76	2400 uT, 5-31-76	48.6 x/mm		54010 x

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION	
	FROM	TO	SCALE VALUE	
D	0000 uT, 5-1-76	2400 uT, 5-31-76	0.3/mm	1.0 x/mm
H	0000 uT, 5-1-76	2400 uT, 5-31-76	1.0 x/mm	
Z	0000 uT, 5-1-76	2400 uT, 5-31-76	2.4 x/mm	

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 22.9 E	13053 x	55361 x

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: MAY 9, 13, 14, 15, 16, 17, 18, 19, 24, 26

FORM CGCS-404a (10-67)		MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)																				U.S. DEPARTMENT OF COMMERCE 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 (150W M.T.) is hour 11 of the same universal day. Strike-slip corrections have been applied. Negative values are in red, with minus signs shown.																						CO	76	MAY	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	104	97	119	112	127	138	134	148	149	169	165	160	01	218	193	248	233	251	223	228	205	180	114	62	58	3835	
02	58	47	71	138	122	133	143	153	111	218	189	-73	02	213	641	241	220	275	261	324	122	37	170	250	285	4349	
03	221	102	-89	-153	-549	-215	-333	-104	316	182	182	-351	03	396	285	412	219	224	278	208	244	140	98	118	98	1959	
04	82	92	88	48	62	192	82	111	193	94	51	228	04	168	222	296	399	219	252	105	133	42	58	62	72	5351	
05	82	108	72	190	118	102	108	116	112	159	204	219	05	133	192	195	193	209	258	225	195	128	129	119	108	3674	
06	93	108	83	104	137	112	115	269	119	80	133	144	06	143	192	209	234	261	228	190	168	152	143	134	76	3627	
07	81	58	98	42	114	138	124	152	194	118	121	159	07	238	203	221	239	251	250	228	175	173	126	123	123	3749	
08	115	119	96	98	113	119	109	173	138	129	148	191	08	219	193	217	215	254	255	219	183	159	128	121	108	3819	
09	90	91	98	100	144	140	143	144	139	148	152	154	09	188	179	204	225	234	228	205	187	159	143	122	113	3730	
10	114	119	133	139	128	139	143	160	142	132	148	153	10	160	184	203	249	299	273	230	193	164	150	138	133	4026	
11	133	128	98	150	123	134	296	144	138	95	172	152	11	172	180	189	203	234	233	233	219	109	47	72	82	3736	
12	89	88	114	128	128	151	143	152	148	118	115	158	12	163	159	228	220	243	259	228	193	174	133	96	83	3711	
13	85	101	119	133	138	137	155	148	152	156	159	154	13	138	163	189	238	257	261	245	229	178	147	108	85	3875	
14	77	87	108	130	153	158	164	183	148	149	152	160	14	155	153	182	218	237	249	230	208	190	166	136	105	3898	
15	91	93	102	123	144	152	151	148	149	148	142	138	15	169	178	192	239	240	241	224	202	168	178	164	80	3856	
16	62	78	87	85	98	128	143	142	139	138	142	199	16	159	175	193	212	230	246	243	209	180	153	128	94	3663	
17	83	87	92	118	144	153	153	157	152	150	147	169	17	172	174	202	214	228	242	235	213	184	145	138	125	3877	
18	109	104	105	112	133	141	155	154	148	145	139	153	18	159	174	198	228	248	244	243	224	203	162	138	120	3942	
19	94	87	93	105	142	151	148	143	149	144	148	174	19	158	188	214	234	251	288	304	244	220	108	57	108	3954	
20	70	37	99	33	31	103	37	150	95	-3	188	128	20	158	183	229	243	314	202	187	213	179	140	132	113	3281	
21	98	88	92	122	129	108	137	185	47	85	118	148	21	165	120	276	345	329	311	292	241	205	171	147	106	4067	
22	94	78	74	89	107	116	101	235	124	126	132	154	22	151	184	196	288	262	231	220	211	168	144	100	103	3688	
23	95	95	107	123	133	148	140	215	255	-67	108	210	23	394	275	372	270	334	269	258	218	164	129	115	91	4251	
24	93	91	108	127	123	167	134	139	148	134	121	125	24	148	166	183	223	250	254	228	193	179	174	129	113	3750	
25	84	67	93	94	114	114	175	192	158	61	148	135	25	185	233	243	265	289	295	286	223	177	138	109	102	3980	
26	102	98	103	119	138	148	144	148	143	148	152	145	26	163	193	220	256	254	249	248	212	165	116	103	99	3886	
27	104	105	113	112	118	166	168	158	132	129	182	157	27	144	182	240	239	253	264	235	185	144	122	89	76	3818	
28	64	60	39	26	27	42	87	59	46	37	57	153	28	204	176	297	274	294	347	224	162	124	117	115	105	3136	
29	94	95	81	70	122	134	147	153	108	182	120	168	29	174	269	202	201	313	260	299	290	124	-20	98	118	3822	
30	43	84	58	73	110	112	221	138	67	127	150	128	30	165	174	178	244	259	287	234	195	196	139	47	56	3485	
31	47	39	57	40	125	79	109	133	175	90	118	149	31	164	178	202	253	263	236	235	228	184	168	95	87	3254	

SCALED BY	SPT	Preliminary base-line and scale values: Interval Base-line Scale Beginning Value Value	() Interpolated	[] Scaling uncertain because of magnetic storm.	MONTHLY SUM	115449
CHECKED BY	MJM, CED		[] 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	155
SIGNED REVIEWED BY	CED		[] No record; or no values available because of faulty record.		DATES WITH GAPS:	
PRINTED BY			* Derived from Storm Mph, converted to Normal Mph.			

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. Strake corrections have been applied. Negative values are in red, with minus signs shown.

CO	76	MAY	H
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C	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
	01	390	368	372	389	387	395	419	442	358	376	392	380	01	318	271	322	318	311	338	366	353	336	305	318	340	8564																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	02	335	413	552	420	359	357	366	375	426	415	120	-319*	02	-155*	-268*	105	308	379	312	105	90	967	353	289	524*	6238																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	03	841*	654*	603*	394*	767*	649*	490*	382*	-223*	-160*	-132*	-454*	03	-256*	-285*	49*	395	359	250	323	339	323	352	371	370	6401																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	04	365	375	422	448	474	486	503	555	292	404	327	183	04	375	384	259	-50	275	272	177	308	282	310	328	360	8114																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	05	394	490	524	466	392	385	376	381	411	381	264	178	05	370	372	385	379	371	340	337	338	322	338	334	349	8871																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	06	375	378	421	431	395	382	442	439	458	122	375	182	06	241	345	352	341	315	332	362	359	345	342	352	358	8444																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	07	430	478	369	437	352	355	395	383	412	391	292	325	07	258	260	261	261	365	371	362	358	345	342	352	360	8614																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	08	375	362	399	433	403	405	496	497	501	426	402	352	08	319	349	388	389	392	393	370	361	354	345	353	358	9422																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	09	389	364	357	382	368	379	381	382	386	388	391	382	09	368	381	381	383	378	371	360	358	366	368	375	372	9010																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	10	368	366	374	376	381	373	385	392	404	411	395	389	10	388	376	340	61	316	388	370	373	370	372	373	382	8729																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	11	382	376	386	382	393	404	433	503	483	396	340	248	11	383	393	407	393	388	352	344	339	320	351	349	342	9093																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	12	385	388	365	376	383	394	392	420	498	426	191	190	12	240	342	328	350	385	379	374	363	353	350	358	363	8593																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	13	371	375	388	390	385	393	376	379	392	389	396	391	13	400	369	374	391	379	383	382	369	362	351	353	359	9091																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	14	378	384	390	396	386	391	382	372	382	386	391	385	14	377	372	366	381	383	385	372	363	352	345	346	356	9021																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	15	369	379	388	390	381	381	381	387	388	390	388	386	15	334	373	374	365	376	346	366	360	352	350	352	305	5881																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	16	351	385	394	390	375	371	382	391	398	412	402	407	16	425	398	399	398	399	392	383	368	361	347	338	341	9187																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	17	350	365	371	374	373	382	388	389	393	396	390	333	17	393	387	384	383	379	376	368	363	360	364	359	364	8784																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	18	360	365	370	385	380	389	387	396	395	392	388	381	18	386	378	384	392	384	378	365	348	347	352	355	355	9020																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	19	355	358	375	388	381	388	402	405	399	395																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

SCALED BY
CHECKED BY
SIGNS RE- VIEWED
PUNCHED BY

SPT
MM
CED

Preliminary base-line and scale values;	
Interval	Base-line
beginning	Value

Value

Scale
ValueScale
ValueScale
Value

() interpolated

☐ Significant portion of

☐ No record; or no values available because of faulty record.

* Derived from Storm Meph., converted to Normal Meph.

[] Scaling uncertain because of magnetic storm.

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

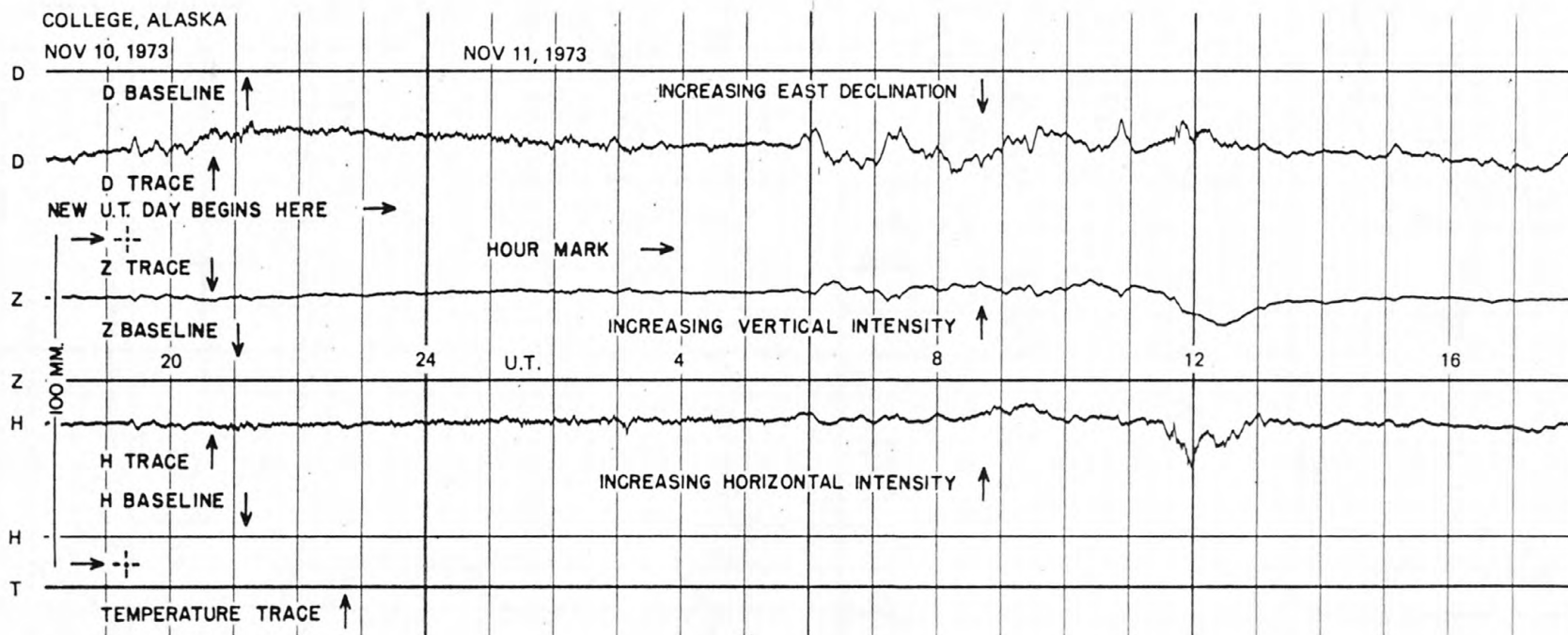
MONTHLY SUM	266496
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MONTHLY MEAN	358
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DATES WITH GAPS

MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)															U.S. DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY GEOMAGNETISM DIVISION										ORBY.	YEAR	MONTH	ELE- MENT															
Values are in tenths of min. and are averages for successive periods of one hour beginning at midnight, 11:00 of local day (150W.M.T.) in hour 11 of the same universal day. Negative corrections have been applied. Negative values are in red, with minus signs shown.																									CO	76	MAY	Z															
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	323	336	335	325	325	339	343	352	271	282	301	269	01	201	140	172	238	260	262	276	284	285	282	300	6786																		
02	301	305	362	392	339	322	315	312	308	309	244	443	02	549*	358*	198	161	260	270	254	221	227	308	374	7510																		
03	92	166	-404*	-277*	-353*	-302*	-61*	180*	180*	263*	574*	256*	03	142*	111*	129*	265	277	242	229	299	282	266	295	3152																		
04	323	322	325	326	361	384	342	324	228	318	220	169	04	204	272	274	225	139	207	194	228	231	279	302	6537																		
05	339	349	345	362	345	340	353	328	309	298	240	200	05	195	265	287	317	322	322	298	287	279	296	308	7321																		
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SCALED BY	SPT		Preliminary base-line and scale values:										☐ Interpolated ☐ Significant portion of hour interpolated. ☐ No record; or no values available because of faulty record.										☐ 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	219388									
CHECKED BY	MIM, CED		Interval Beginning										Base-line Value										Scale Value										MONTHLY MEAN	295									
SIGNS RE- VIEWED BY	CED																																DATES WITH GAPS.										
PUNCHED BY																																											

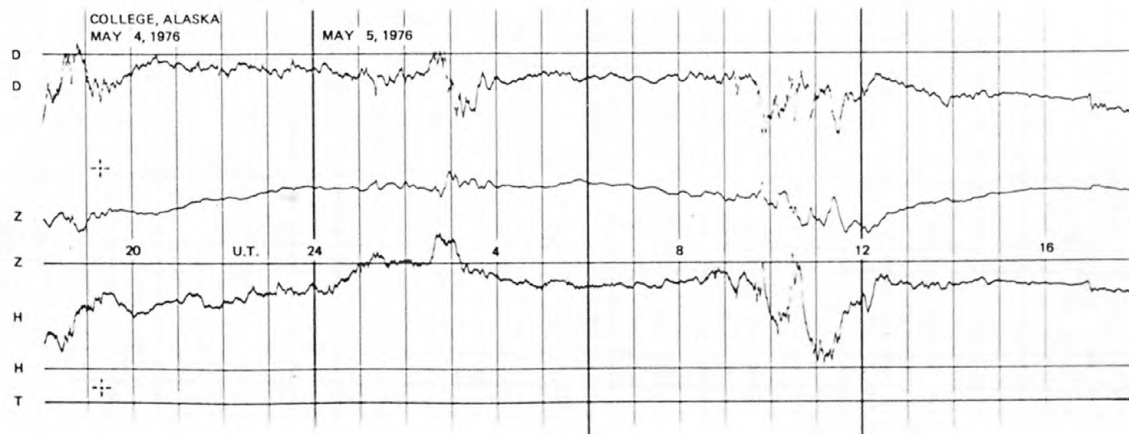
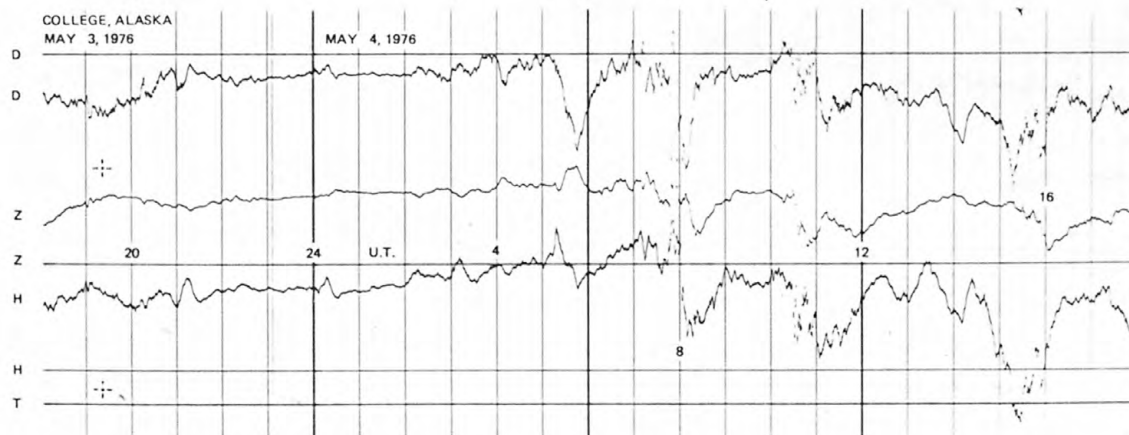
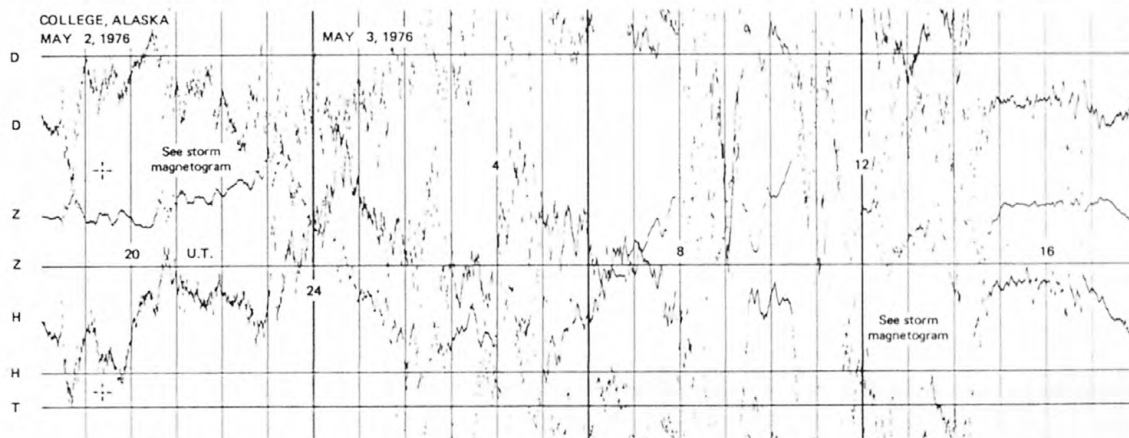
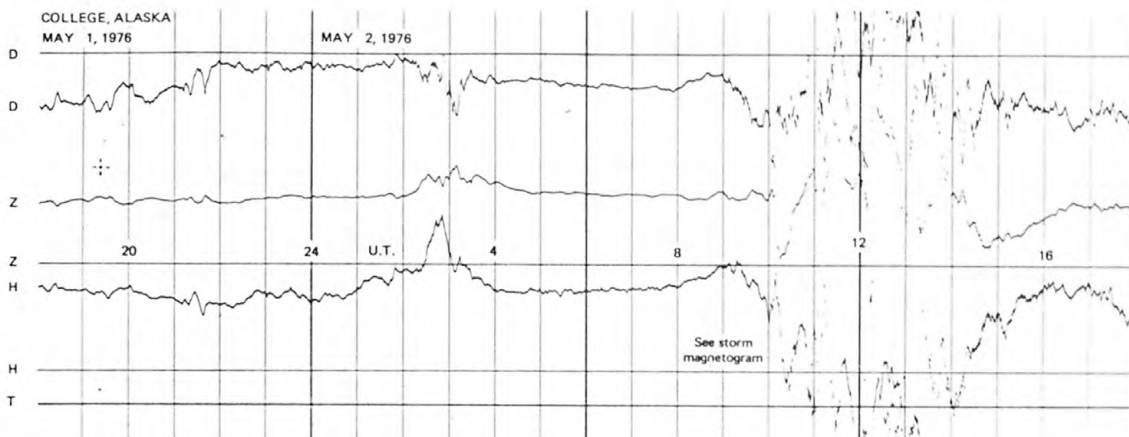
FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)



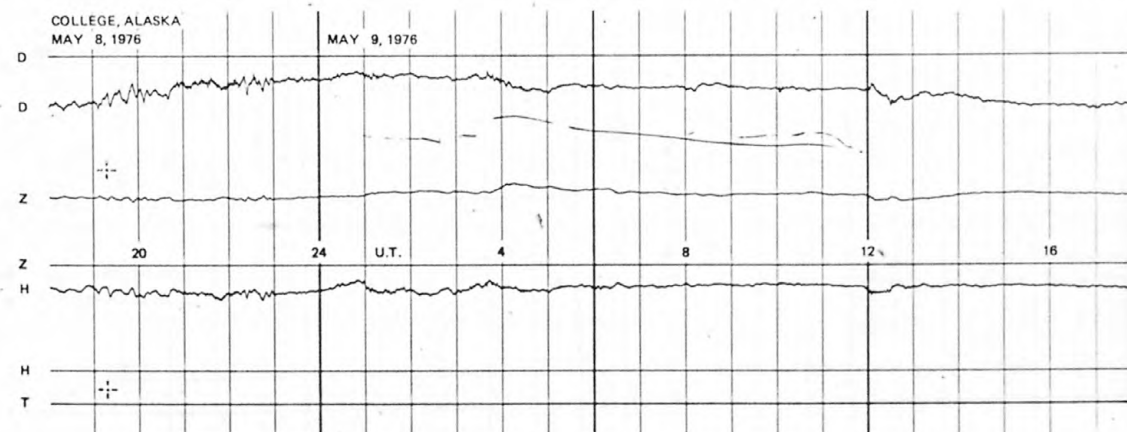
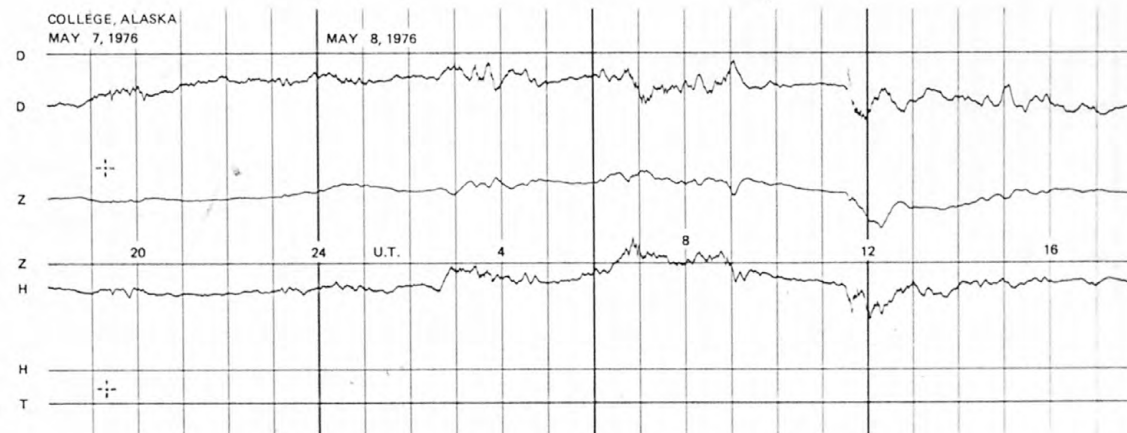
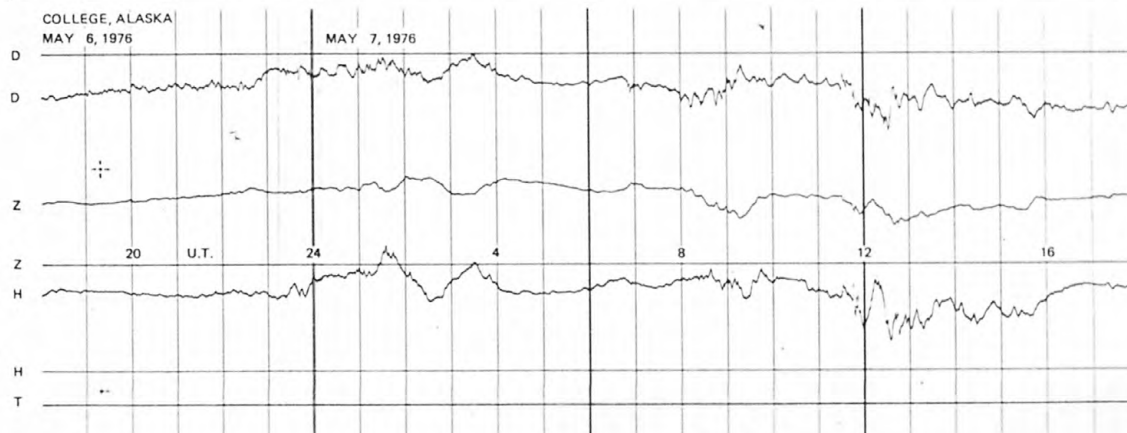
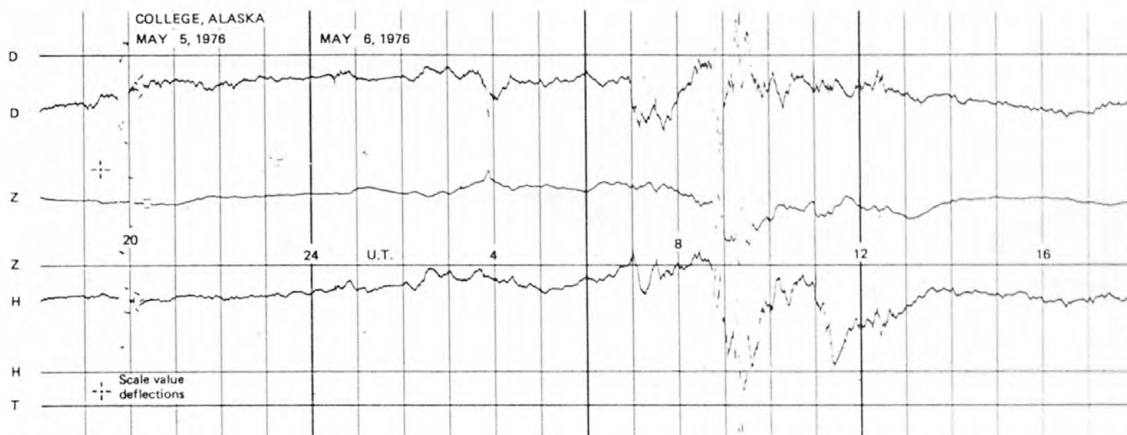
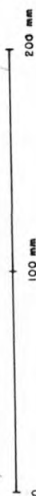
SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

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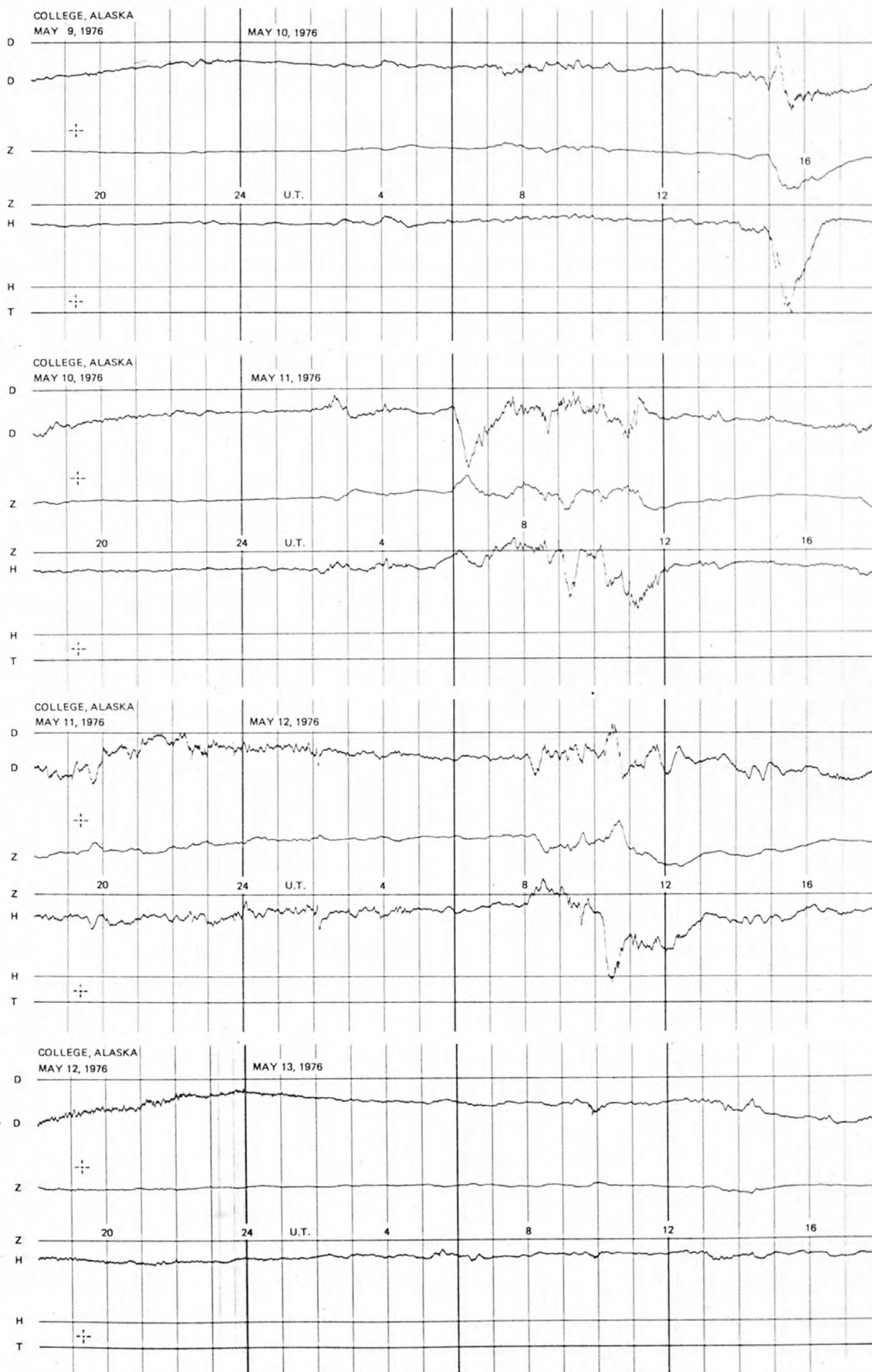


NORMAL MAGNETOGRAMS



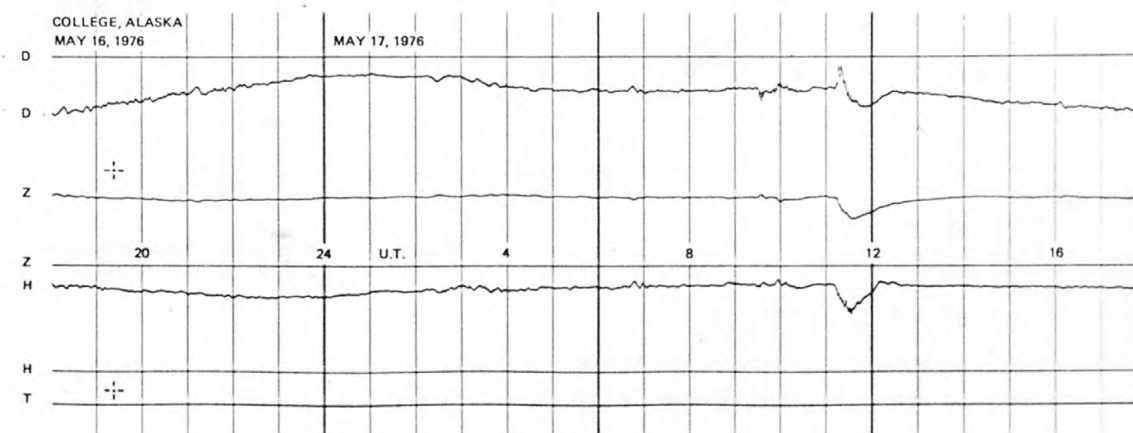
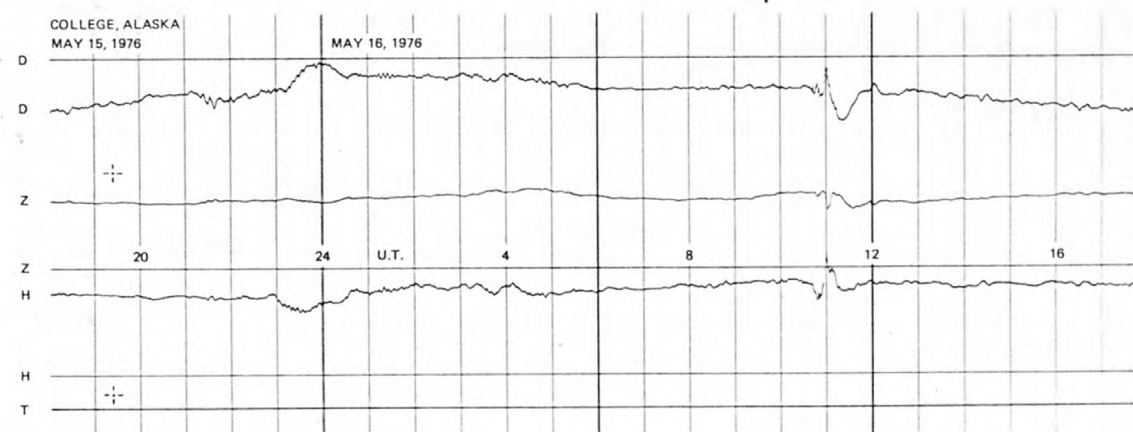
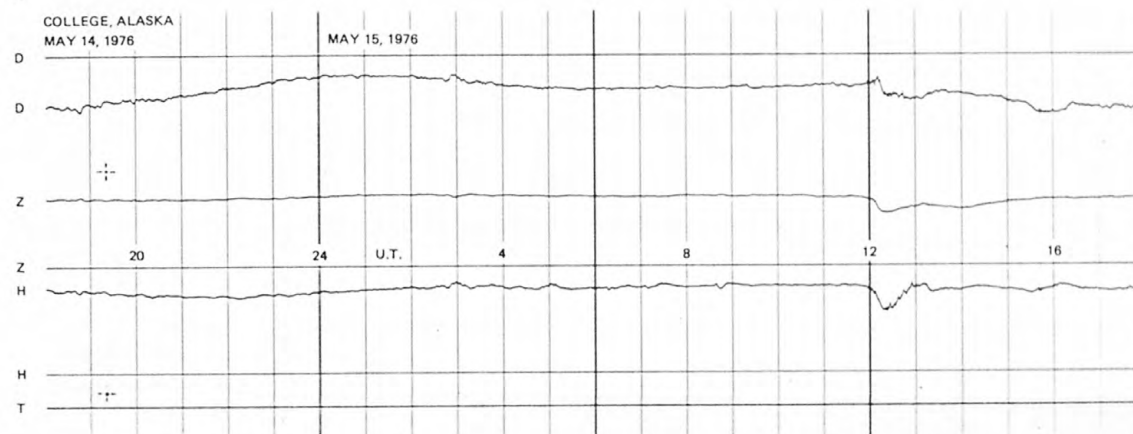
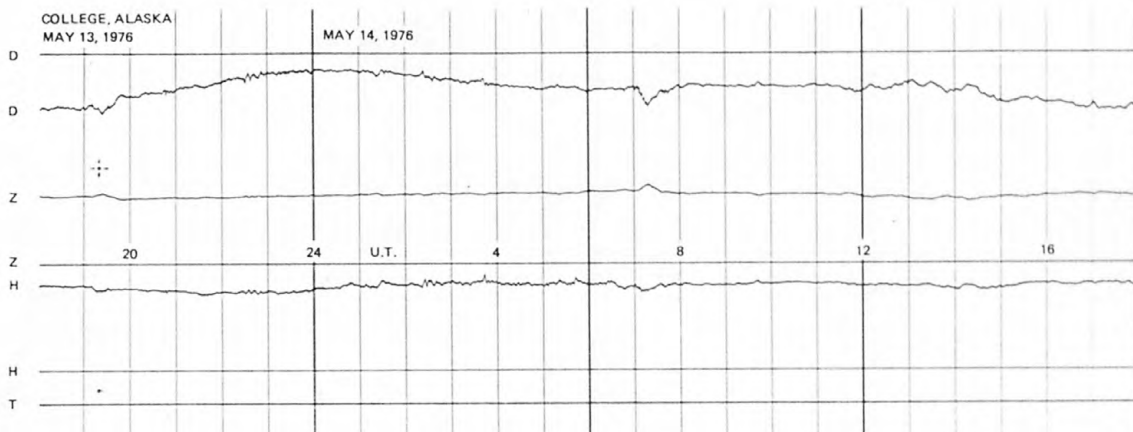
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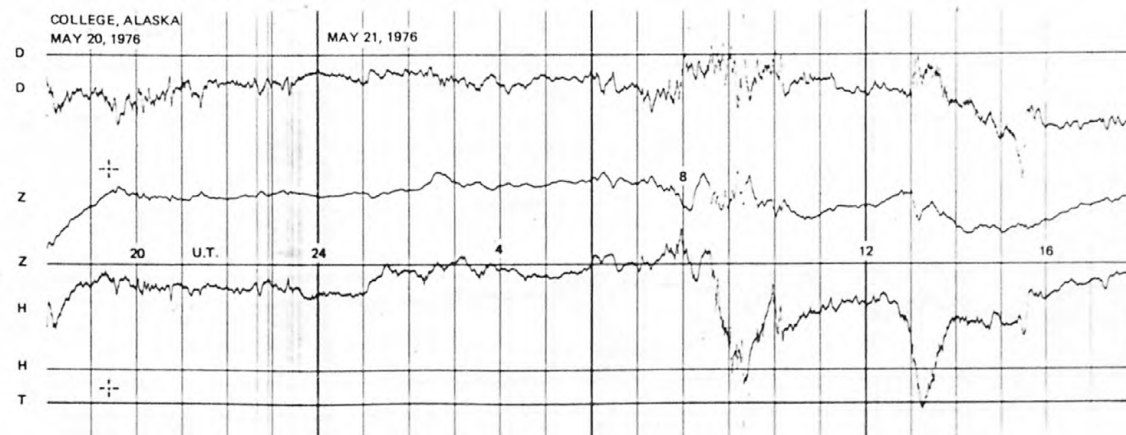
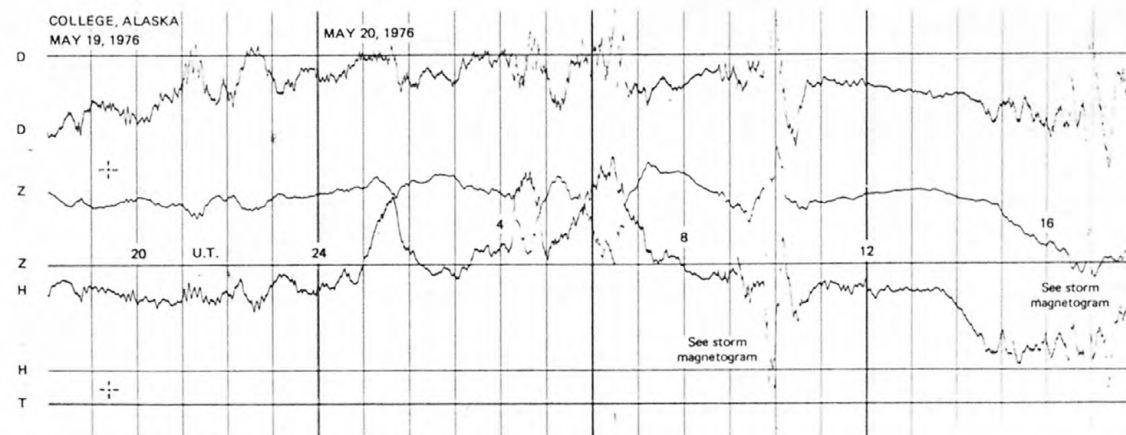
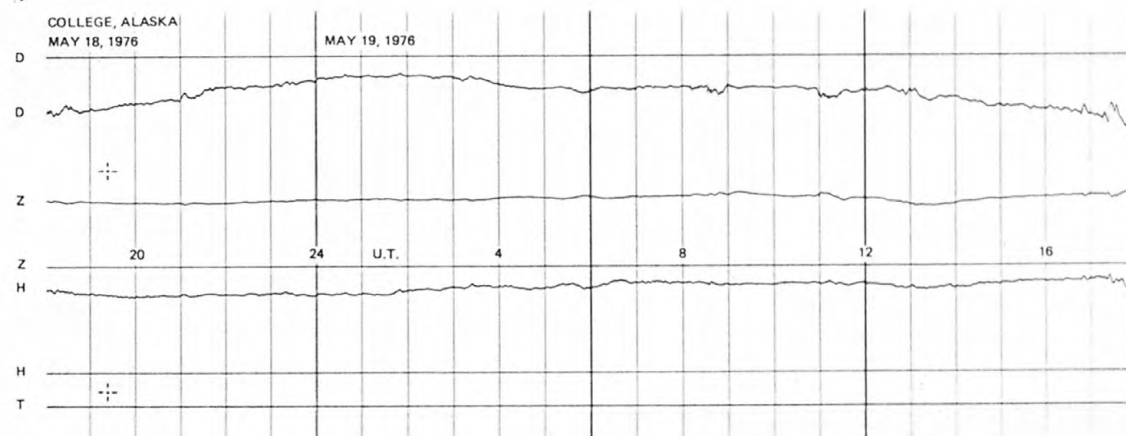
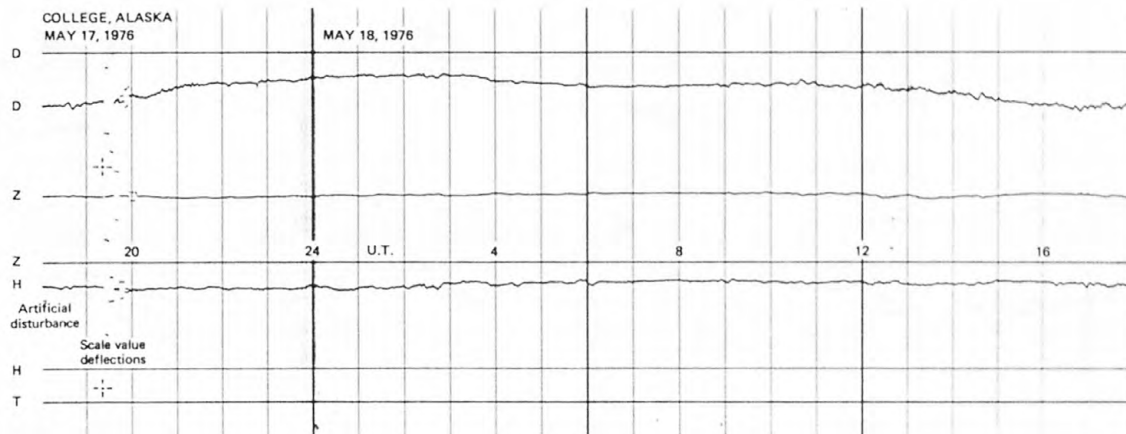
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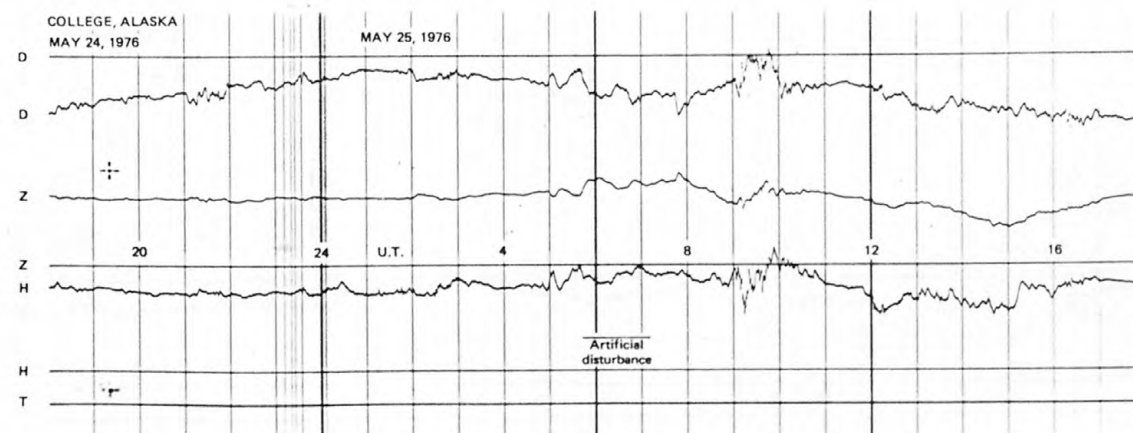
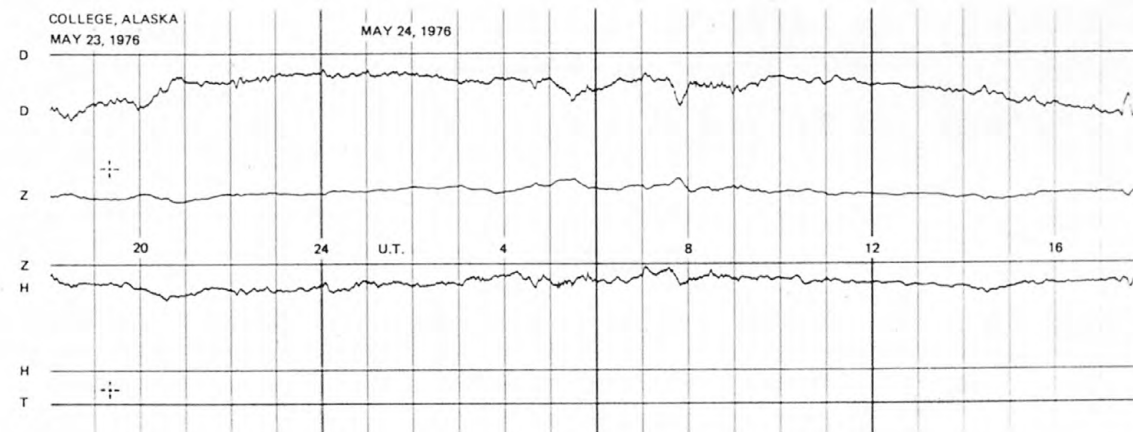
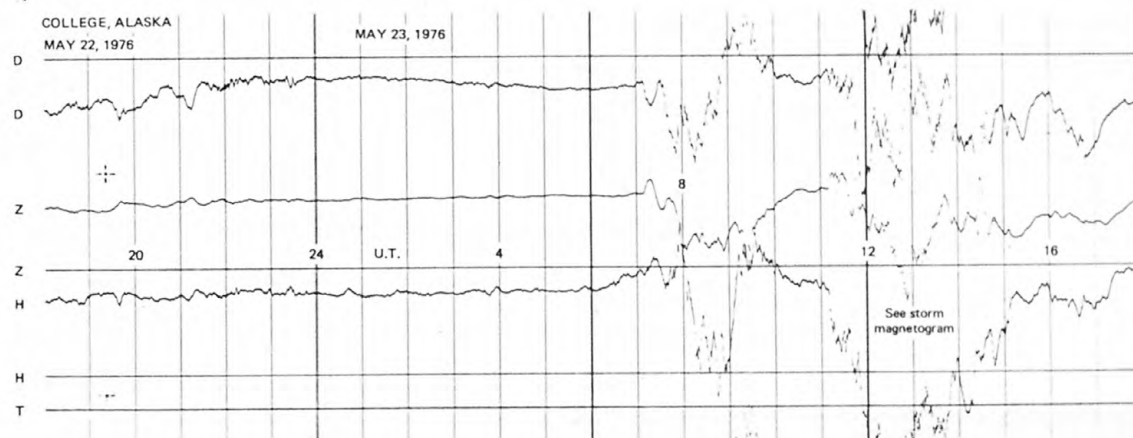
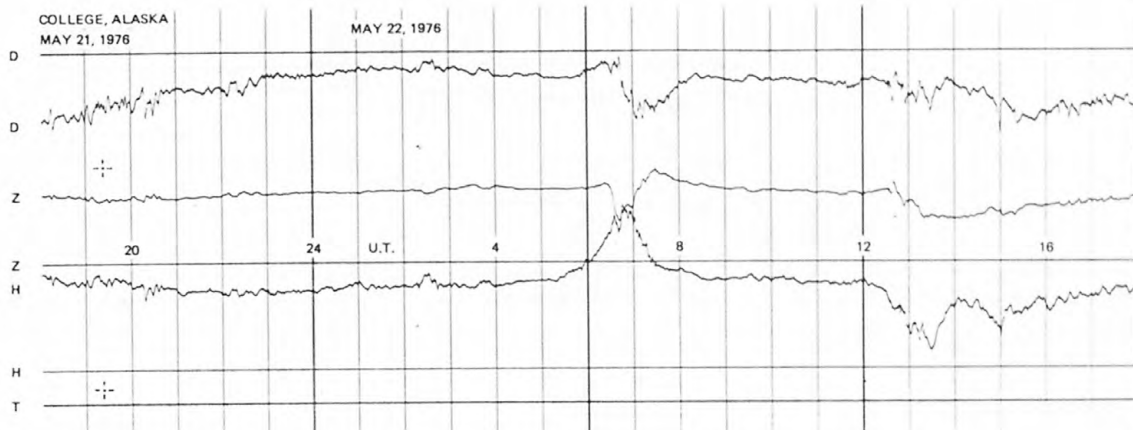
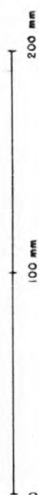


NORMAL MAGNETOGRAMS

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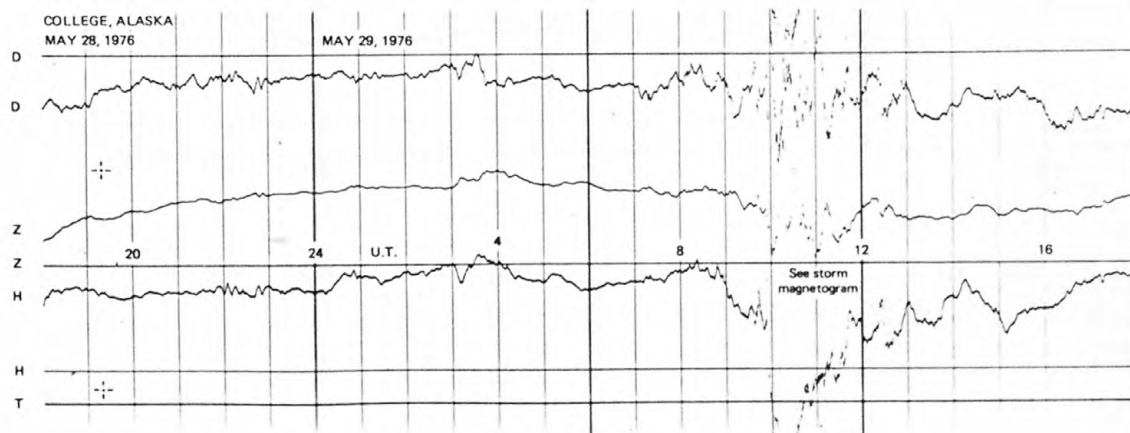
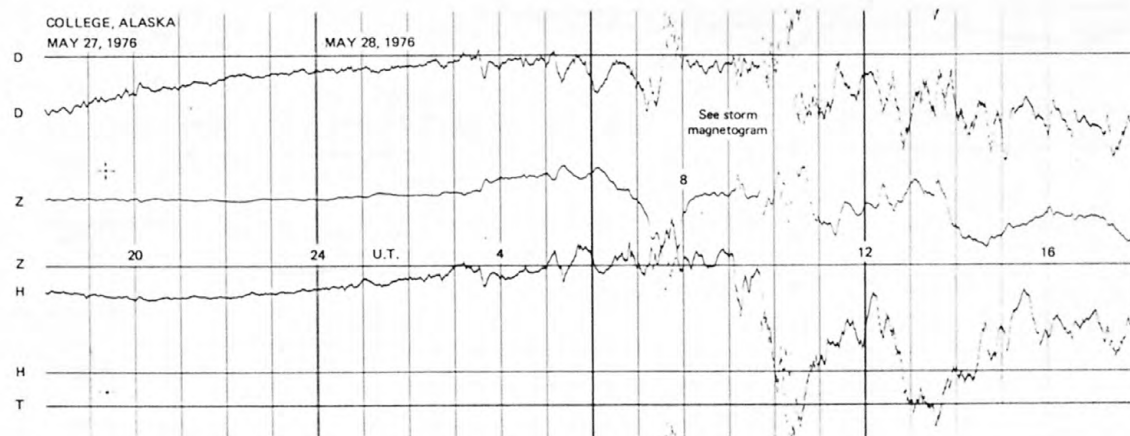
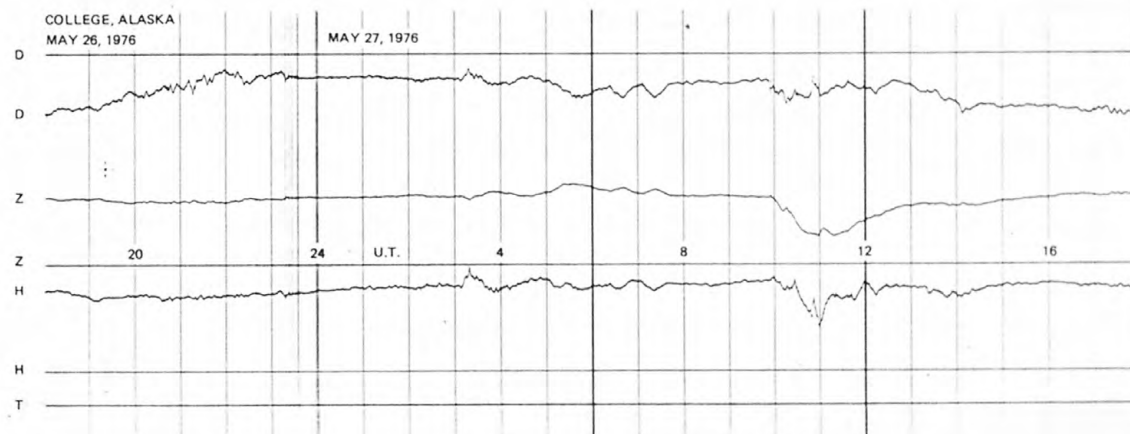
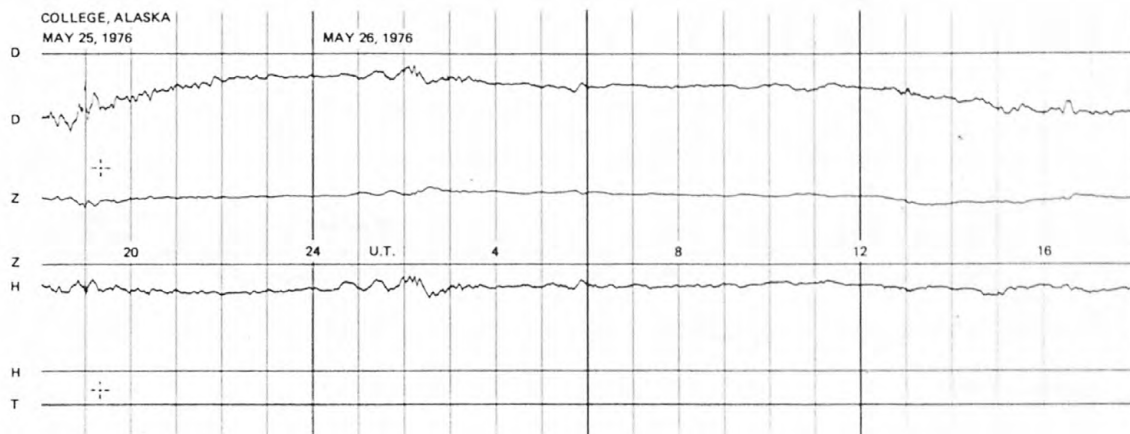


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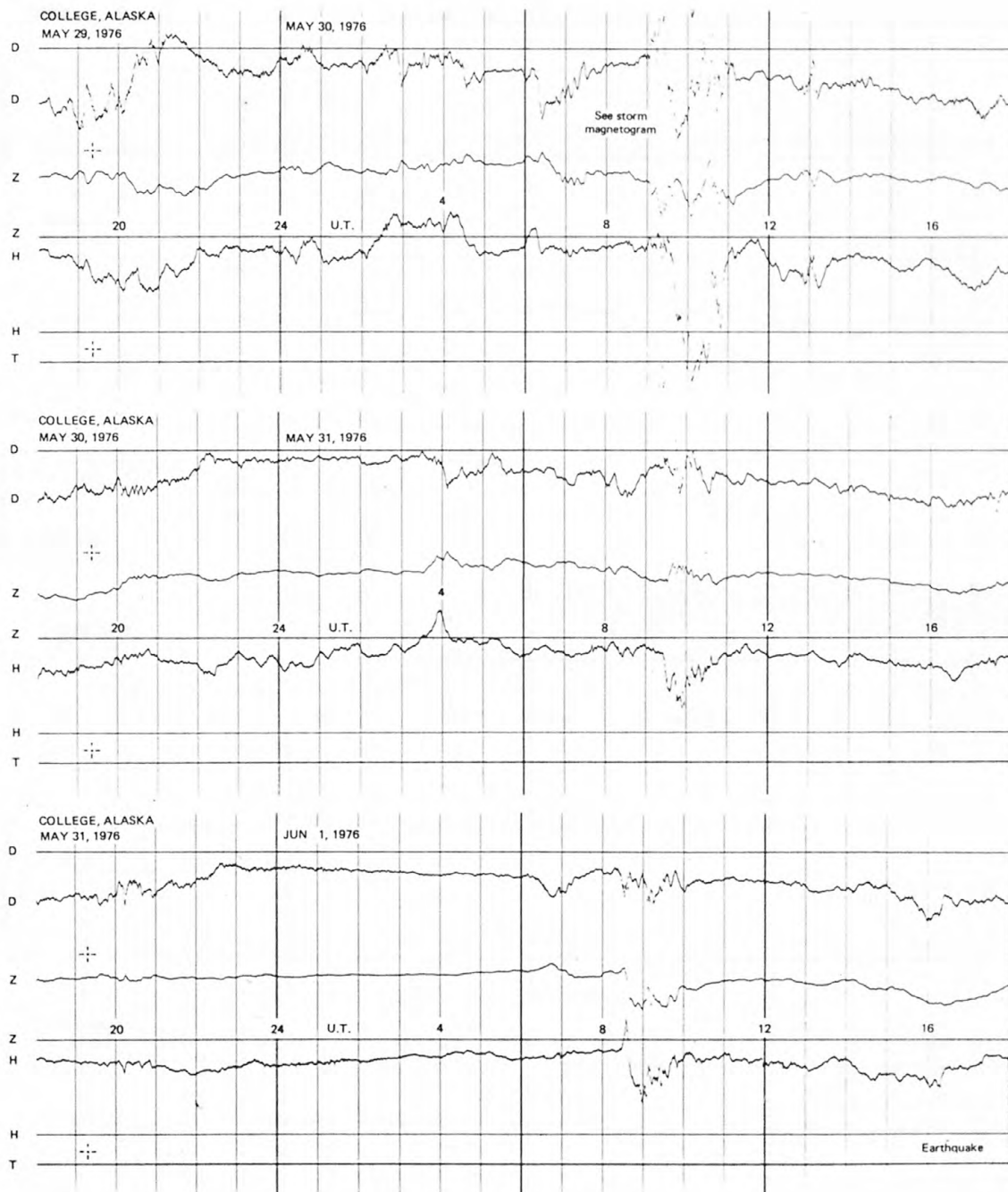
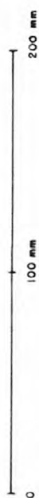


NORMAL MAGNETOGRAMS

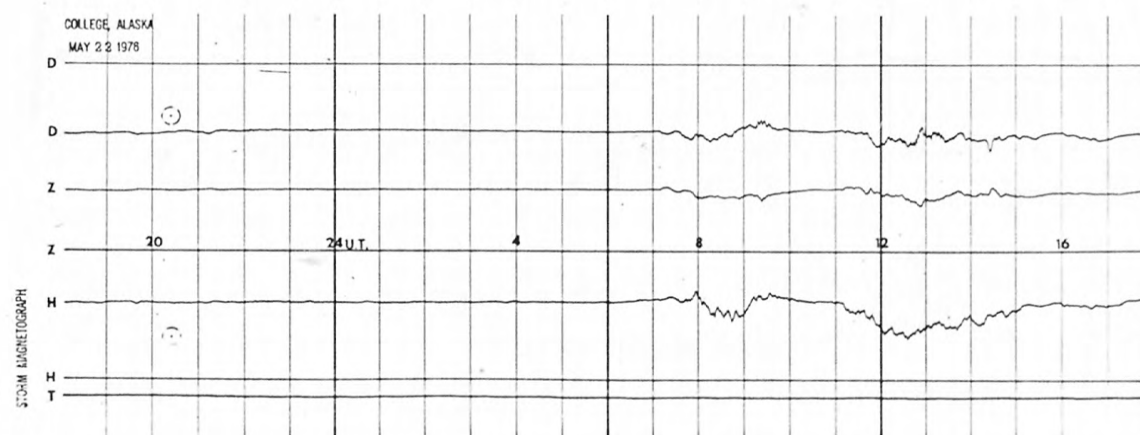
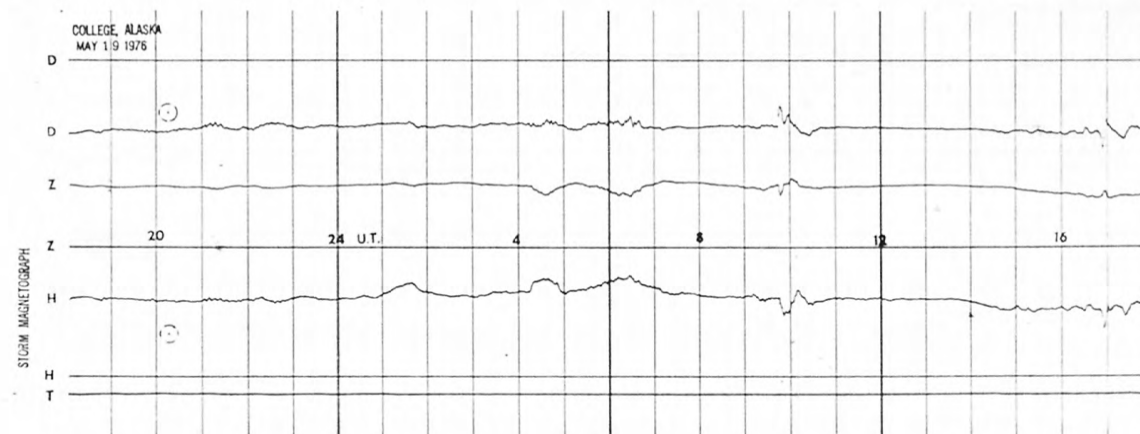
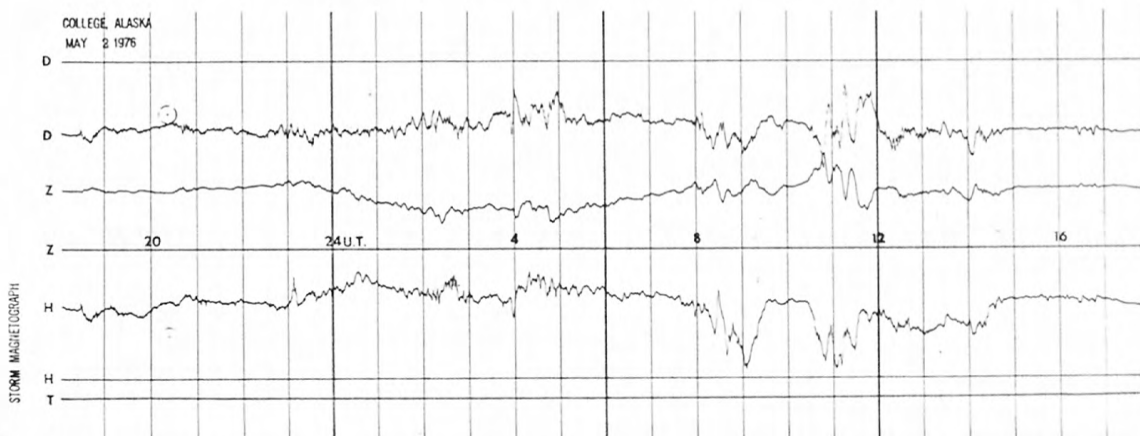
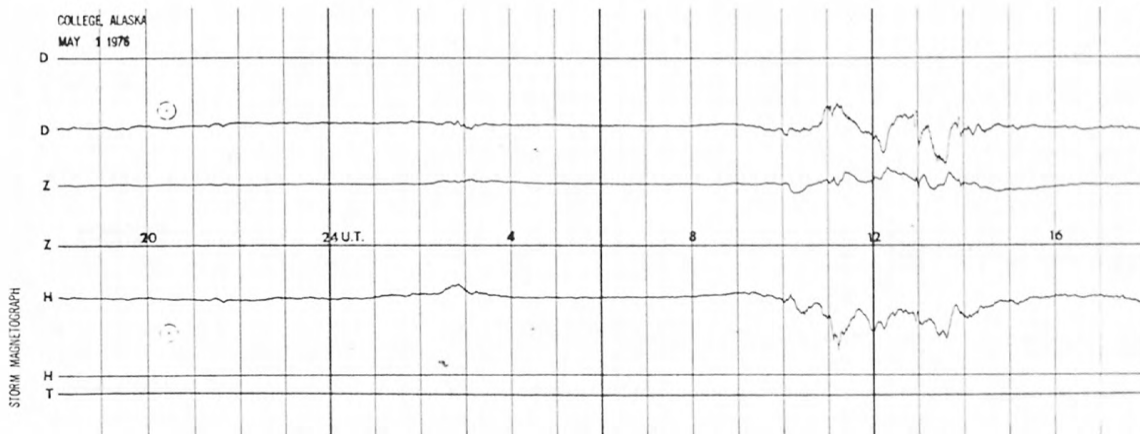
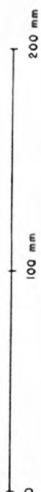
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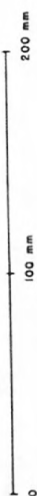
NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



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