

UNITED STATES DEPARTMENT OF THE INTERIOR

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no. 82-300-E

GEOLOGICAL SURVEY

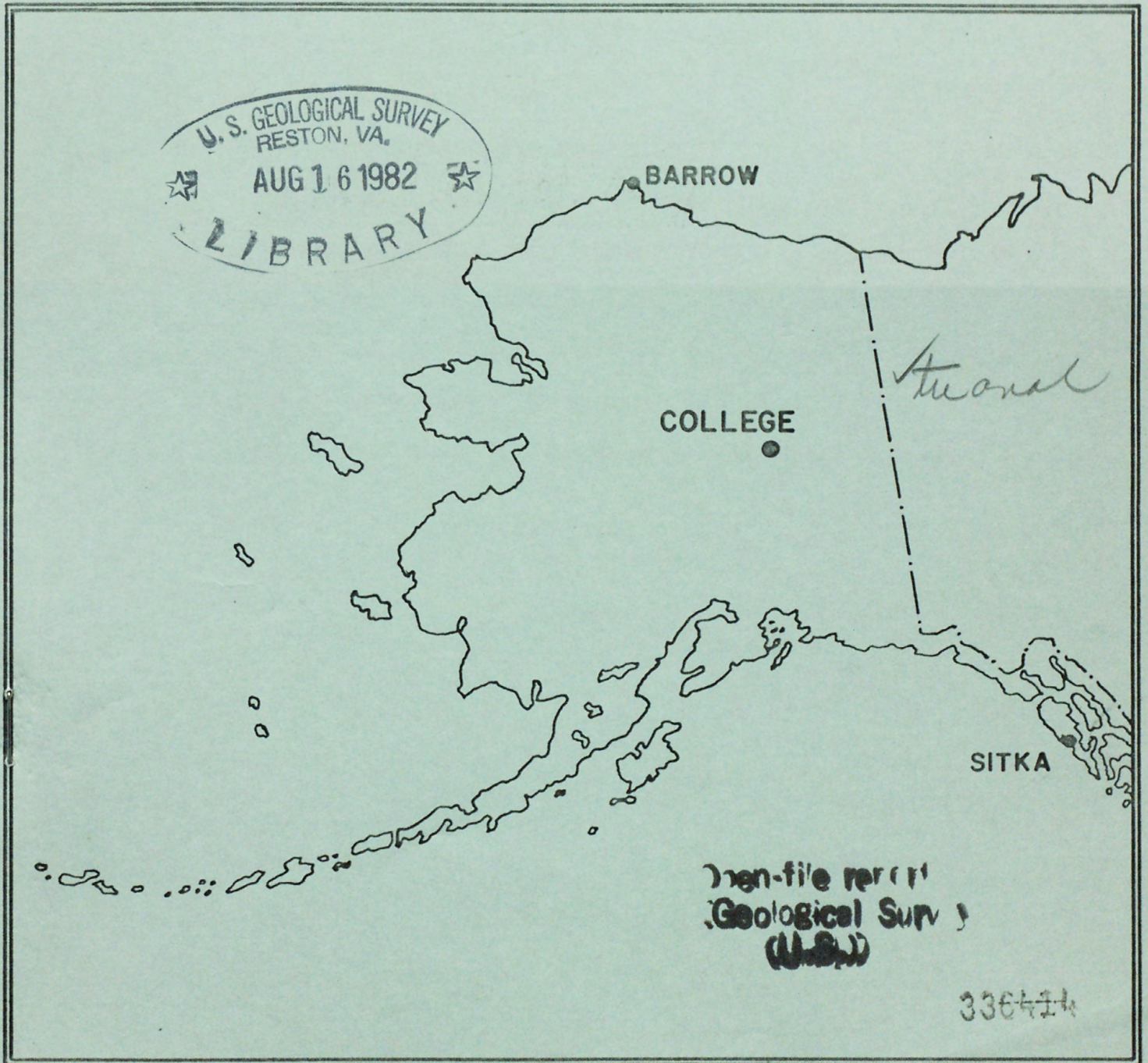
PRELIMINARY GEOMAGNETIC DATA

COLLEGE OBSERVATORY

FAIRBANKS, ALASKA

MAY 1982

OPEN FILE REPORT 82-0300E





THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY, WITH THE ASSISTANCE OF THE OBSERVATORY STAFF MEMBERS: J.E. PAPP, E.A. SAUTER, L.Y. TORRENCE, T.K. CUNNINGHAM AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF ELECTROMAGNETISM AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

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COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

EXPLANATION OF DATA AND REPORTS

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
800 Yukon Drive
Fairbanks, Alaska 99701

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

World Data Center A
NOAA D63, 325 Broadway
Boulder, Colorado 80303

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 and 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:

$$D = B_D + d \cdot S_D; \quad H = B_H + h \cdot S_H; \quad Z = B_Z + z \cdot S_Z$$

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

MAY 1982

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		mm/hr		
1	4	3	6	6	4	6	3	2	34	41	SUDDEN COMMENCEMENTS		
2	4	4	2	4	6	6	7	3	36	50	d	h	m
3	4	5	6	6	6	6	5	3	41	57			
4	3	2	2	6	5	6	2	2	28	31			
5	2	4	5	4	4	5	2	2	28	25			
6	3	2	3	3	3	2	1	1	18	10			
7	1	2	0	2	3	1	0	0	09	04			
8	2	1	0	4	1	1	0	1	10	06			
9	2	3	3	2	2	2	2	1	17	09			
10	2	2	0	0	3	1	1	1	10	05			
11	3	2	1	3	3	3	2	1	18	10			
12	2	2	2	2	1	1	2	0	12	05			
13	1	2	1	1	0	1	1	1	08	03			
14	1	1	1	2	3	1	1	1	11	05			
15	3	2	2	5	6	4	3	1	26	25			
16	3	1	3	3	2	3	2	2	19	11			
17	3	2	2	4	5	5	2	2	25	21			
18	4	4	2	7	4	3	3	3	30	34	POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)		
19	4	3	3	5	5	3	2	2	27	23			
20	2	2	3	3	2	2	1	1	16	08			
21	1	1	3	4	4	3	1	1	18	12			
22	1	1	2	2	0	0	0	1	07	03			
23	2	1	0	0	0	0	0	0	03	01			
24	1	1	2	1	4	1	0	0	10	06	BEGIN	END	
25	2	1	0	1	1	1	2	2	10	04	d	h	m
26	3	4	2	3	5	5	4	3	29	25			
27	4	6	6	5	6	6	6	4	43	63			
28	5	5	5	7	6	6	4	4	42	62			
29	6	5	7	6	5	6	4	4	43	66			
30	5	3	6	6	5	6	4	4	39	51			
31	4	5	7	6	5	4	4	4	39	53			

K SCALE USED: LOWER LIMIT FOR K = 9..... CURRENT SCALE VALUE..... LOWER LIMIT FOR K = 9.....	D	H	Z	(mm) (γ/mm) (to nearest 10γ)
	683.8	321.7		
	3.73	7.79		
	2550	2510		

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY

OBSERVER IN CHARGE

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY
COLLEGE, ALASKA

MONTH
MAY

YEAR
1982

DATE	TIME U.T.	NATURE OF PHENOMENON ¹	REMARKS
07	09XX	pi 2	
22	08XX	pi 2	
23	10XX	pi 2	
24	13XX	bps	
IDENTIFIED BY: JEP		VERIFIED BY: JBT	

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

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

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

Data from Individual Observatories:

COLLEGE OBSERVATORY, COLLEGE, ALASKA
MAY 19 82

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	64.06 N	26	00XX	..	..	..	..	28 29 31	4 3 3	7 7 7	282	1650	1110	Jun 02 16

NORMAL MAGNETOGRAPHE					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 5-1-82	2400 U.T., 5-31-82	1.0/mm	3.78/mm	27° 46.8 E
H	0000 U.T., 5-1-82	2400 U.T., 5-31-82	7.88/mm		127638
Z	0000 U.T., 5-1-82	2400 U.T., 5-31-82	7.78/mm		551448

STORM MAGNETOGRAPHE					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 5-1-82	2400 U.T., 5-31-82	7.9/mm	29.68/mm	23° 41.0 E
H	0000 U.T., 5-1-82	2400 U.T., 5-31-82	44.08/mm		115218
Z	0000 U.T., 5-1-82	2400 U.T., 5-31-82	48.58/mm		540568

RAPID RUN MAGNETOGRAPHE					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		
D					
H					
Z					

MONTHLY MEAN ABSOLUTE VALUES*		
D	H	Z
27° 58.3 E	129808	553808

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: MAY 7, 8, 10, 12, 13, 14, 22, 23, 24, 25

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80225

OBSY. YEAR MONTH ELEMENT
CO 82 MAY I

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150 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 or S	Trn O	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	86	10	18	32	-31	-51	-80	352*	74	-6	-2	209*	01	272	180	270	495*	534*	328*	56	148	146	71	62	73	3246
				02	52	36	59	56	-21	173	70	50	16	122	74	58	02	118	312*	598*	503*	614*	304*	360*	209	-70	40	90	79	3902
				03	63	45	9	48	-93*	-101*	-93*	-188*	46	126	90	343*	03	446*	518*	201	304*	391*	423*	368*	17	93	132	48	67	3303
				04	17	35	57	72	82	70	80	124	125	27	407*	101	04	92	157	196	162*	249	157	184	176	140	92	74	51	2927
				05	34	32	44	8	28	50	71	45	84	-60	-58	59	05	136	159	184	218	213	213	214	175	137	96	78	79	2239
				06	77	57	47	85	70	80	99	46	81	80	79	66	06	131	136	171	180	229	214	218	202	159	103	93	58	2761
				07	49	62	63	65	95	106	105	105	106	93	106	104	07	105	118	128	189	235	268	254	214	137	103	65	29	2904
				08	24	26	27	23	65	82	88	94	110	83	106	125	08	114	130	175	227	257	266	251	192	124	117	97	42	2845
				09	31	1	-2	27	-8	99	136	117	76	96	108	94	09	118	119	148	188	210	201	204	193	139	129	84	74	2582
				10	46	44	56	76	98	104	109	113	114	105	110	103	10	118	156	158	173	222	217	204	190	153	131	146	119	3065
				11	52	41	57	51	75	103	99	89	80	90	145	153	11	108	115	142	193	227	207	210	202	130	127	102	57	2855
				12	51	63	61	73	80	80	146	83	80	79	119	141	12	115	122	125	167	196	136	228	175	136	102	77	46	2681
				13	53	36	43	37	73	97	93	97	128	87	93	105	13	110	114	122	168	160	186	192	169	109	65	67	64	2468
				14	51	46	57	73	95	106	101	102	106	86	111	118	14	161	118	156	179	186	204	161	137	128	109	90	85	2766
				15	41	35	49	59	94	89	84	98	86	65	134	135	15	64	223	149	241	241	236	231	147	146	116	99	87	2949
				16	71	53	51	56	83	90	97	85	60	212	109	101	16	116	122	159	180	211	253	214	147	146	130	91	51	2888
				17	15	27	25	61	110	100	91	86	89	136	170	82	17	66	105	177	261	200	207	221	178	122	75	48	51	2703
				18	52	53	-22	51	46	56	78	94	101	54	611*	-88*	18	59	123	189	198	202	215	223	176	171	149	122	96	3009
				19	56	51	60	106	81	65	58	60	47	44	107	126	19	143	155	151	239	257	262	255	191	160	107	48	84	2913
				20	66	61	56	72	85	102	105	95	170	179	93	75	20	85	116	139	183	232	246	215	197	143	86	62	40	2903
				21	40	43	44	59	75	94	109	103	30	62	65	53	21	111	174	234	231	246	243	218	188	132	97	84	44	2779
				22	48	50	67	94	104	110	114	113	93	59	78	89	22	102	121	165	210	216	219	205	186	156	131	100	67	2897
				23	56	39	34	90	101	117	111	101	100	101	106	107	23	111	127	155	182	201	213	199	166	120	93	79	45	2754
				24	34	35	36	64	96	101	105	97	75	76	103	94	24	90	96	119	168	215	204	239	211	164	118	60	29	2629
				25	5	10	19	74	97	103	87	84	102	105	98	90	25	92	136	153	156	203	195	244	196	170	134	122	96	2771
				26	13	0	-34	-54	47	45	45	79	79	101	68	84	26	87	167	250	452*	433*	331	328	279	7	198	114	29	3148
				27	16	12	-54	29	-24	-249*	-305*	-290*	-202*	39	40	59	27	52	282*	473*	584*	417*	337*	182	268	202	148	161	18	2195
				28	-2	71	14	-241*	-171*	78	-115*	-70	-12	-52*	-52*	179	28	4	417*	68*	-27*	433*	211*	186	239	202	151	238	26	1775
				29	31	107	-40	6	-75*	-83*	93	-22	-27*	-115*	48	32	29	12*	99*	417*	504*	392*	329	300	266	195	182	241	120	3012
				30	109	35	67	64	26	41	88	52	68	-30	-91*	211*	30	282*	329*	322*	385*	576*	428	252	171	211	146	186	270	4198
				31	158	102	54	-5	147	-123*	-91*	-115*	-179*	4	-60*	84*	31	52*	123	156	248	289	296	232	237	228	113	186	117	2253

SCALED BY TKC, LYT
CHECKED BY EAS, JEP
SIGNS REVIEWED BY JEP
PUNCHED BY

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

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

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 88320
MONTHLY MEAN 119
DATES WITH GAPS:

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80235OBSY. YEAR MONTH ELE-
MENT
00 82 MAY 2Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (250 M.T.) is hour 22 of the 0506 universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q	S	Temp	HT	01	02	03	04	05	06	07	08	09	10	11	12	HT	13	14	15	16	17	18	19	20	21	22	23	24	SUM	
					01	349	359	375	357	336	368	312	130*	197	318	350	327	01	232	420	419	370*	421*	250*	151	272	314	308	328	333	7596
					02	336	347	382	373	362	332	374	347	306	254	310	379	02	396	370*	270*	186*	17*	-17	199*	76	135	224	313	362	6633
					03	374	348	330	354	336	66*	148*	29*	308	442	362	383	03	357*	478*	426	560*	642*	534*	243*	276	303	329	344	389	8381
					04	342	353	338	336	341	332	350	362	333	301	345*	180	04	332	466	445	339*	110	254	319	326	319	326	329	329	7807
					05	332	349	356	341	364	388	418	342	186	229	324	313	05	440	364	333	280	269	303	322	326	323	325	334	332	7893
					06	333	330	340	351	350	348	358	278	271	324	319	292	06	254	248	272	285	285	300	317	316	311	307	315	318	7422
					07	321	336	338	349	351	332	321	319	318	312	322	308	07	247	205	222	240	263	260	282	281	281	292	300	306	7126
					08	318	336	351	366	380	361	353	350	347	329	314	303	08	300	292	299	291	279	281	281	278	277	291	294	291	7562
					09	293	310	366	374	400	407	386	351	320	334	307	294	09	302	309	320	314	305	312	320	313	304	312	309	318	7880
					10	322	342	334	332	341	330	331	321	316	315	312	309	10	293	253	310	324	321	304	309	310	299	300	308	312	7546
					11	319	324	338	332	347	359	339	330	325	320	272	209	11	240	281	304	297	303	304	304	311	299	308	316	327	7408
					12	324	331	343	342	330	345	393	352	354	341	309	284	12	296	309	317	323	309	304	300	292	291	293	301	304	7687
					13	317	329	335	331	344	341	328	320	315	311	314	312	13	311	313	315	320	305	282	292	283	290	302	309	313	7532
					14	316	323	329	341	335	322	319	313	318	311	316	292	14	290	302	315	322	322	310	311	309	298	296	299	312	7521
					15	311	317	361	361	358	333	324	348	315	307	364	353	15	269	370	239	146	233	265	265	198	258	275	296	300	7166
					16	299	308	338	332	323	317	313	328	258	261	276	307	16	293	309	312	293	296	267	261	270	279	287	296	304	7127
					17	303	316	322	373	371	339	322	317	323	325	218	291	17	320	334	407	261	229	292	305	294	289	292	300	309	7452
					18	329	381	368	415	405	409	386	376	353	320	496*	380	18	392	385	346	330	334	326	334	310	319	309	330	359	8692
					19	355	334	362	384	368	353	326	323	304	213	227	259	19	229	282	272	192	276	283	231	242	258	282	279	305	6939
					20	316	338	336	330	320	328	329	326	334	210	262	300	20	291	284	285	265	290	300	299	290	282	282	286	295	7178
					21	291	290	289	294	301	321	343	324	281	309	303	300	21	326	288	245	255	315	324	313	316	304	296	308	311	7247
					22	317	317	311	312	307	312	320	319	315	295	307	302	22	308	308	314	311	300	301	304	302	294	291	294	293	7354
					23	308	312	325	337	307	302	297	293	301	301	303	302	23	299	296	303	309	309	302	299	291	279	271	277	284	7207
					24	289	290	288	292	307	302	301	310	317	328	309	292	24	266	175	236	275	298	316	308	293	298	294	292	291	6967
					25	289	281	288	311	310	306	294	295	301	300	299	300	25	290	279	288	305	308	304	310	287	287	286	292	289	7099
					26	297	330	327	347	366	346	352	367	333	298	262	287	26	328	391	309	278	131	232	271	234	153	224	227	280	6970
					27	316	314	306	395	340	103*	90*	135	254*	404	305	312	27	420	526*	577*	539*	628*	111	18	190	281	321	372	352	7609
					28	333	306	277	103*	-4*	40*	27*	227	121	253	492	570*	28	444*	577*	557*	215	165*	94	192	292	301	300	336	360	6578
					29	332	331*	267*	344	293	236*	376	314	195	277	275	345	29	242	267*	375*	260*	214	250	279	294	306	328	357	363	7120
					30	344	316	348	351	363	371	364	219	240	291	473	474	30	302	431	368	362*	273*	167	208	220	279	300	335	374	7773
					31	318	340	350	300	268	312	72*	266	317	402	330	482*	31	432	333	337	386	334	300	277	306	315	308	339	356	7780
SCALED BY	TKC, LYT		Preliminary base-line and scale values:														() Interpolated		[] Scaling uncertain because of magnetic storm.		MONTHLY SUM	230254									
CHECKED BY	EAS, JEP		Interval Beginning	Base-line Value	Scale Value	[] 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	309																				
SIGNS RE-VIEWED BY	JEP																□ No records; or no values available because of faulty record.		DATES WITH GAPS:												
PUNCHED BY																	* Derived from STORM Mgbh., converted to Normal Mgbh.														

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80225OBSY. YEAR MONTH ELE-
MENT
CO 82 MAY HValues are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150 M.T.) is hour 22 of the 08222 universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q of S	Ten O	HI T.M.	01	02	03	04	05	06	07	08	09	10	11	12	HI T.M.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	372	372	362	275	322	375	517	408	91	318	271	-76*	01	-96	-85	-124	-161*	-371*	-216*	253	282	282	278	259	264	4168
			02	252	378	435	406	479	406	348	340	374	205	254	155	02	122*	-387*	-394*	-309	-246*	59*	-387*	-118	159	267	283	256	3337
			03	344	518	409	407	468	608*	434*	387*	150	133	19	-387*	03	-399*	-189*	84	-70	-535*	434*	-189*	197	306	306	320	278	3165
			04	270	274	274	269	282	292	306	318	310	279	-189*	-14	04	257	92	-161*	-405*	18	319	317	310	284	259	246	250	4457
			05	280	292	315	370	462	533	330	351	185	152	292	178	05	134	126	88	23	244	288	272	244	250	249	240	244	6142
			06	275	293	312	288	297	292	316	280	260	304	299	225	06	149	188	231	204	199	270	269	260	237	220	221	219	6108
			07	239	252	280	303	288	268	276	278	283	293	294	273	07	137	217	225	230	251	279	283	266	248	234	239	241	6177
			08	245	288	302	320	291	288	294	306	300	321	300	232	08	283	257	240	219	228	262	288	282	259	239	231	230	6505
			09	265	290	334	359	398	438	390	340	319	317	284	280	09	256	237	236	264	271	289	271	253	258	249	246	254	7098
			10	271	276	262	290	281	270	272	279	286	299	305	303	10	261	252	311	306	301	304	298	279	280	265	249	260	6760
			11	229	260	273	305	285	315	289	287	298	307	243	159	11	179	209	211	196	299	311	303	279	265	257	256	241	6256
			12	249	268	279	261	274	315	339	335	336	299	262	250	12	282	294	295	281	262	280	290	284	271	269	261	258	6794
			13	259	260	255	308	304	280	279	285	305	294	293	287	13	285	290	288	286	251	252	272	287	303	268	245	252	6688
			14	247	265	267	283	261	280	281	288	294	313	287	276	14	250	323	309	322	307	331	321	307	291	273	265	264	6905
			15	252	294	277	292	303	284	322	338	338	300	110	101	15	253	-107*	14	111	263	312	203	206	248	261	253	257	5485
			16	255	291	290	277	284	293	303	353	427	266	285	264	16	249	259	252	227	211	205	247	255	265	244	241	258	6501
			17	249	271	324	326	298	277	265	292	319	359	108	192	17	219	173	71	-10	271	304	305	269	269	260	276	269	5956
			18	330	301	339	374	451	466	300	298	278	282	-380*	-118*	18	128	294	293	310	251	264	248	300	296	252	236	273	6066
			19	293	311	376	375	320	272	279	306	324	247	87	243	19	171	54	5	220	290	241	247	264	259	254	248	275	5961
			20	272	272	291	265	266	286	309	331	329	259	316	305	20	288	268	266	225	257	275	261	252	250	251	251	262	6607
			21	253	287	269	267	283	295	343	392	395	284	262	239	21	116	129	64	272	320	303	287	251	241	242	254	260	6278
			22	280	284	290	278	277	284	295	296	312	290	282	281	22	284	282	280	287	295	291	275	247	231	231	236	248	6636
			23	268	263	328	263	279	279	277	284	282	290	292	299	23	297	295	302	298	281	280	260	250	240	250	254	256	6667
			24	256	259	263	279	270	280	293	315	335	323	305	314	24	270	136	282	291	319	330	324	300	285	273	268	257	6827
			25	261	275	289	273	277	277	286	292	286	291	310	323	25	299	300	312	319	311	301	308	286	264	246	252	260	6898
			26	240	271	338	498	346	322	349	348	379	315	268	307	26	341	211	86	-42	144	279	262	234	218	214	259	288	6415
			27	280	286	425	388	712	700*	519*	521	236*	20	79	144	27	128	-286*	-257*	-427*	-326*	-64*	54*	128	333	236	141	298	4268
			28	428	719	596	728*	773*	551*	413	275	278	291	-36*	-116*	28	-364*	-427*	-274*	-308*	-331*	80	278	291	292	283	339	130	4898
			29	331	604*	712*	556	637*	495*	379	312	-161*	37*	261	111	29	-314*	-308*	-319*	-269*	29	213	220	281	293	223	264	402	4989
			30	326	341	556	389	332	329	381	298	184	236*	122*	-100	30	-66	-223*	-194*	-206*	-274*	-4	233	292	278	302	275	434	4241
			31	512	470	474	643	552	620	117*	344*	32*	-44	258	-161*	31	71*	292	252	144	95	100	247	290	312	293	294	353	6560

SCALED BY: TKC, LYT
 CHECKED BY: EAS, JEP
 SIGNS REVIEWED BY: JEP
 PUNCHED BY:

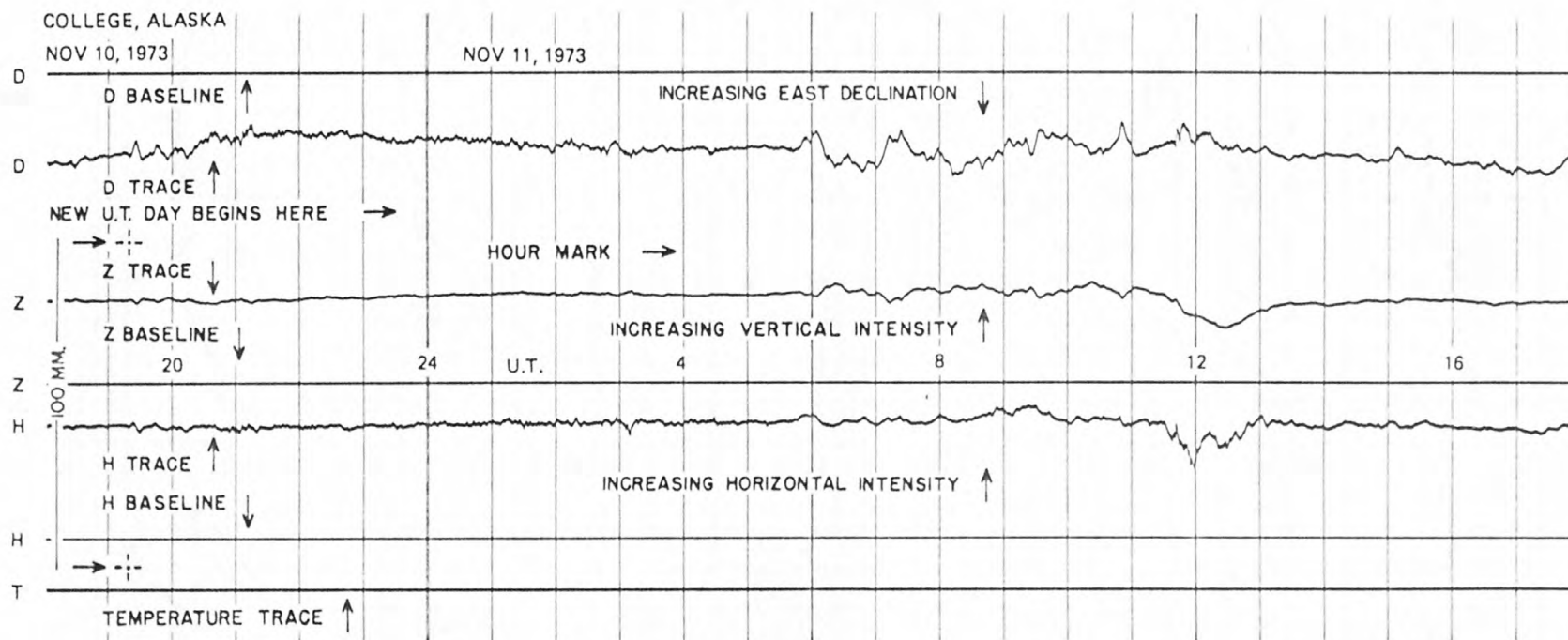
Preliminary base-line and scale values:
 Interval Beginning Base-line Value Scale Value

- () Interpolated
 Significant portion of hour interpolated.
 No record; or no values available because of faulty record.
 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.

* Derived from STORM Mgh., converted to Normal Mgh.

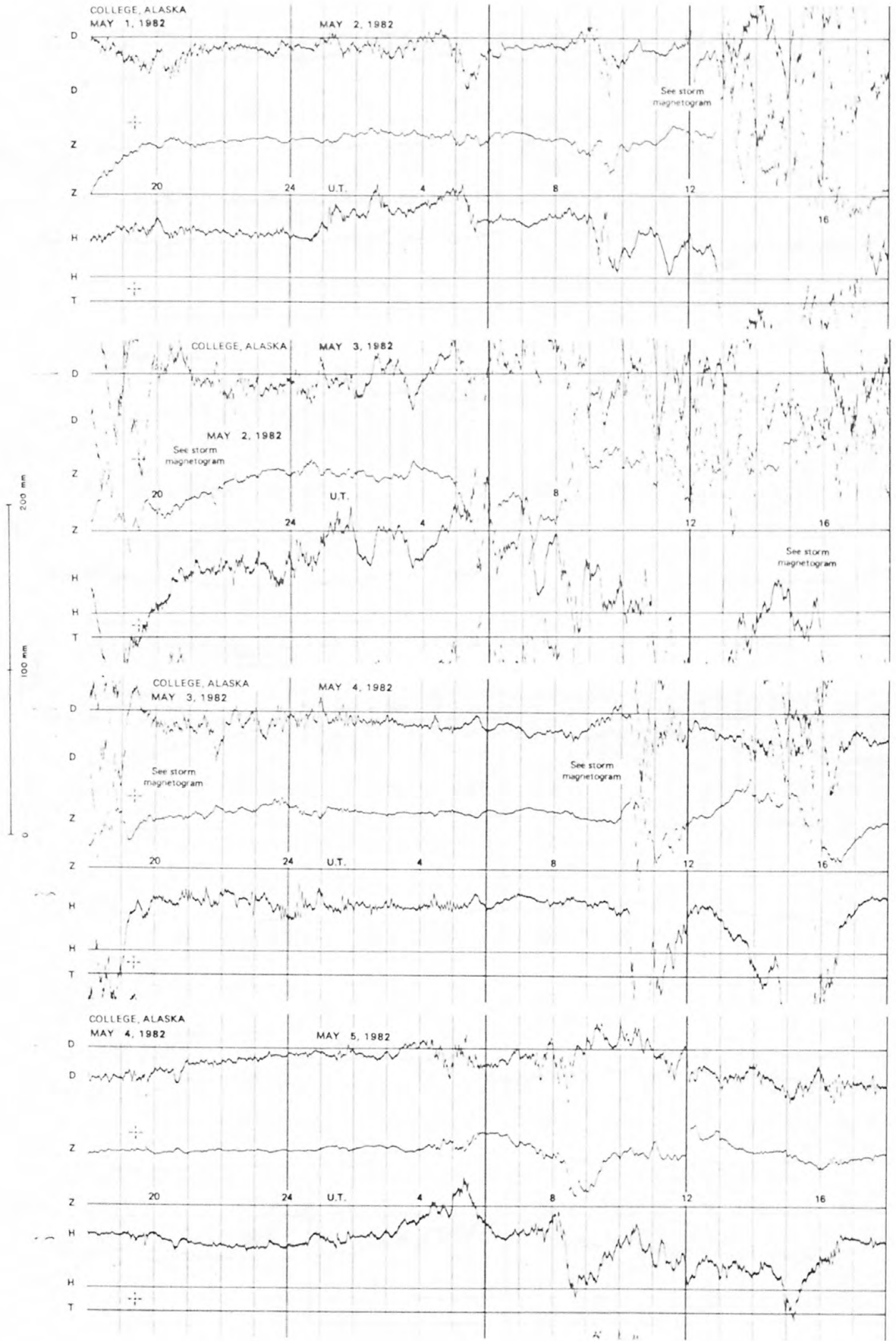
MONTHLY SUM: 181813
 MONTHLY MEAN: 244
 DATES WITH GAPS:

FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)

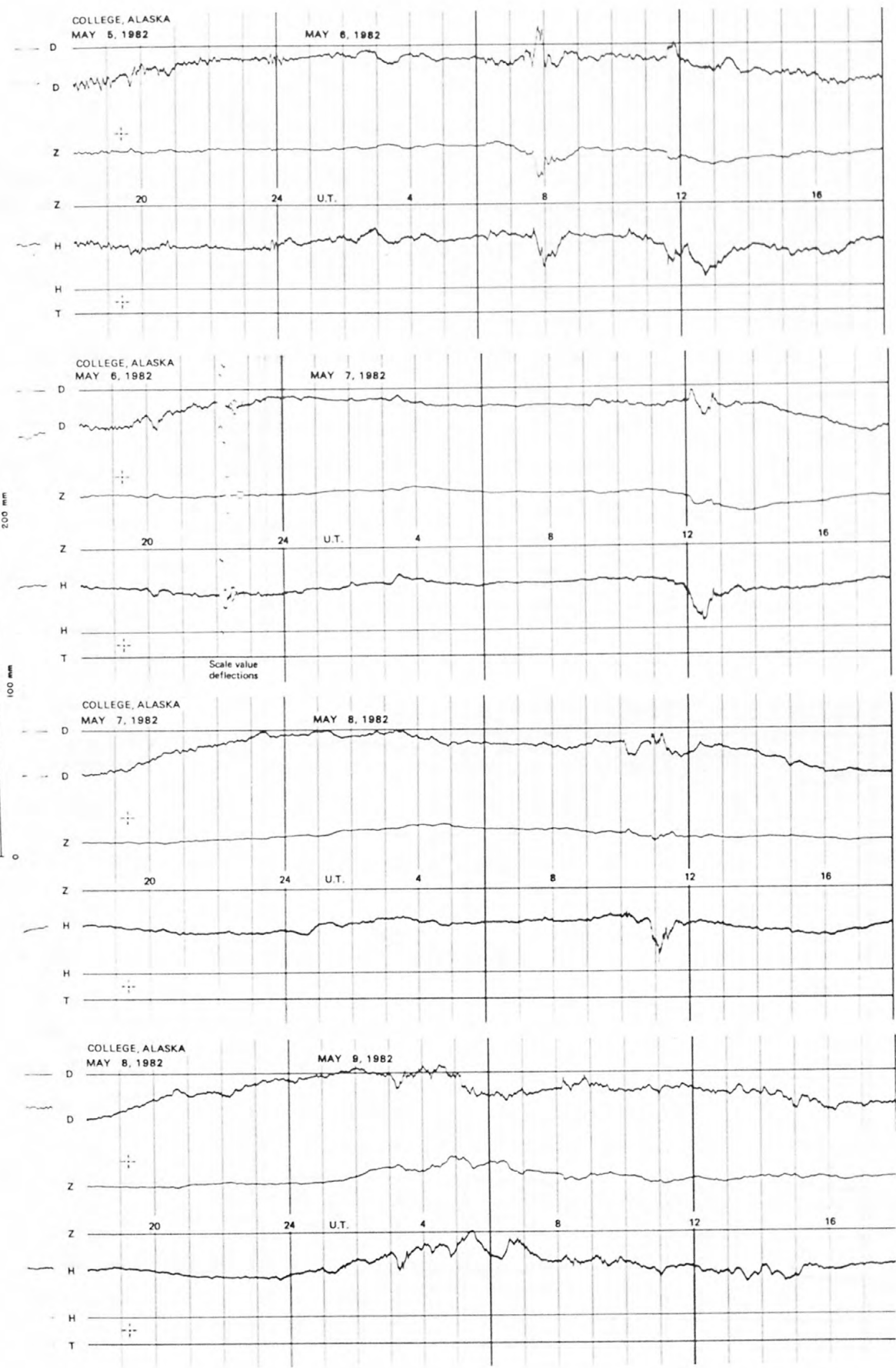


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

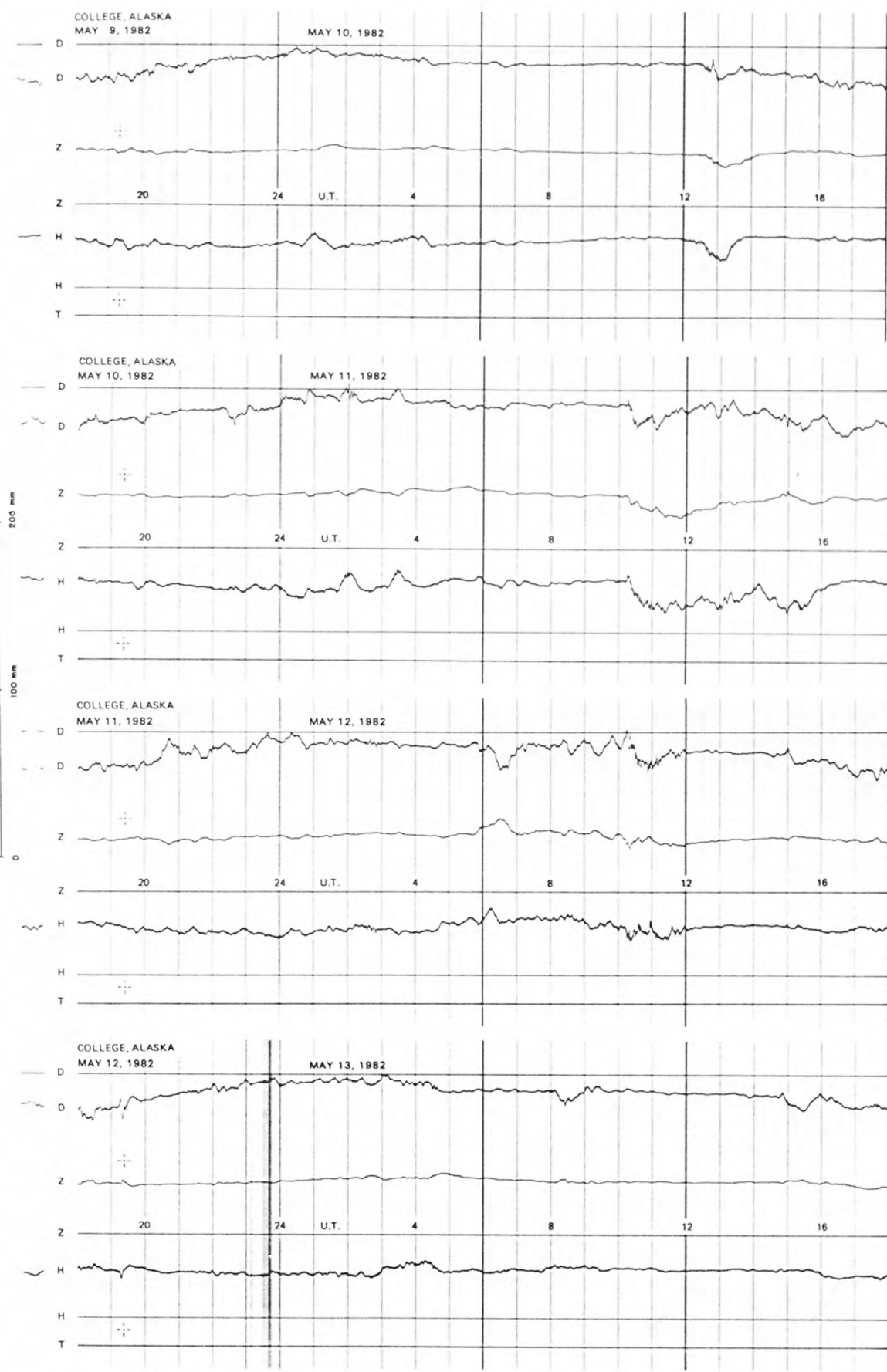
NORMAL MAGNETOGRAMS



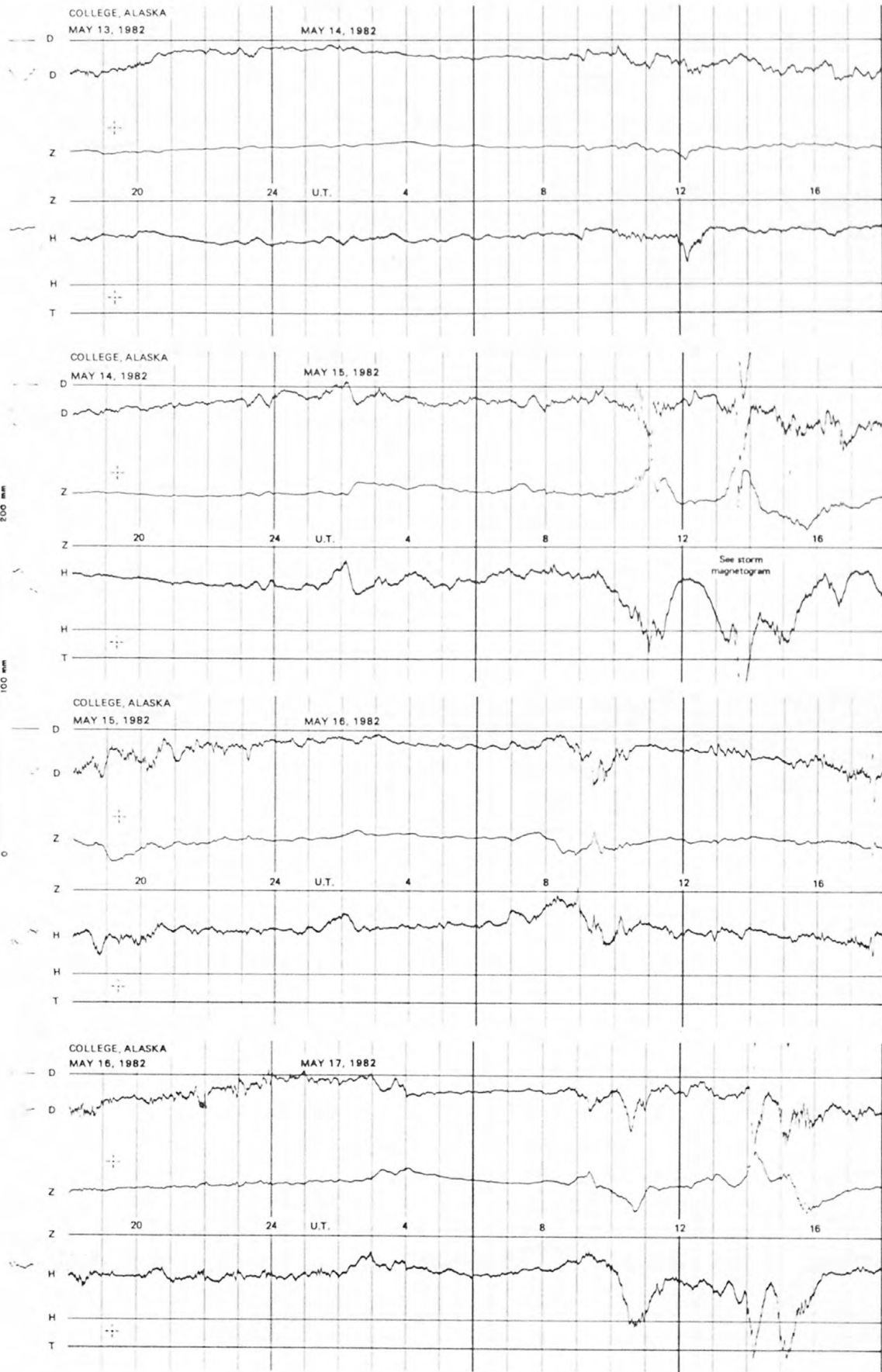
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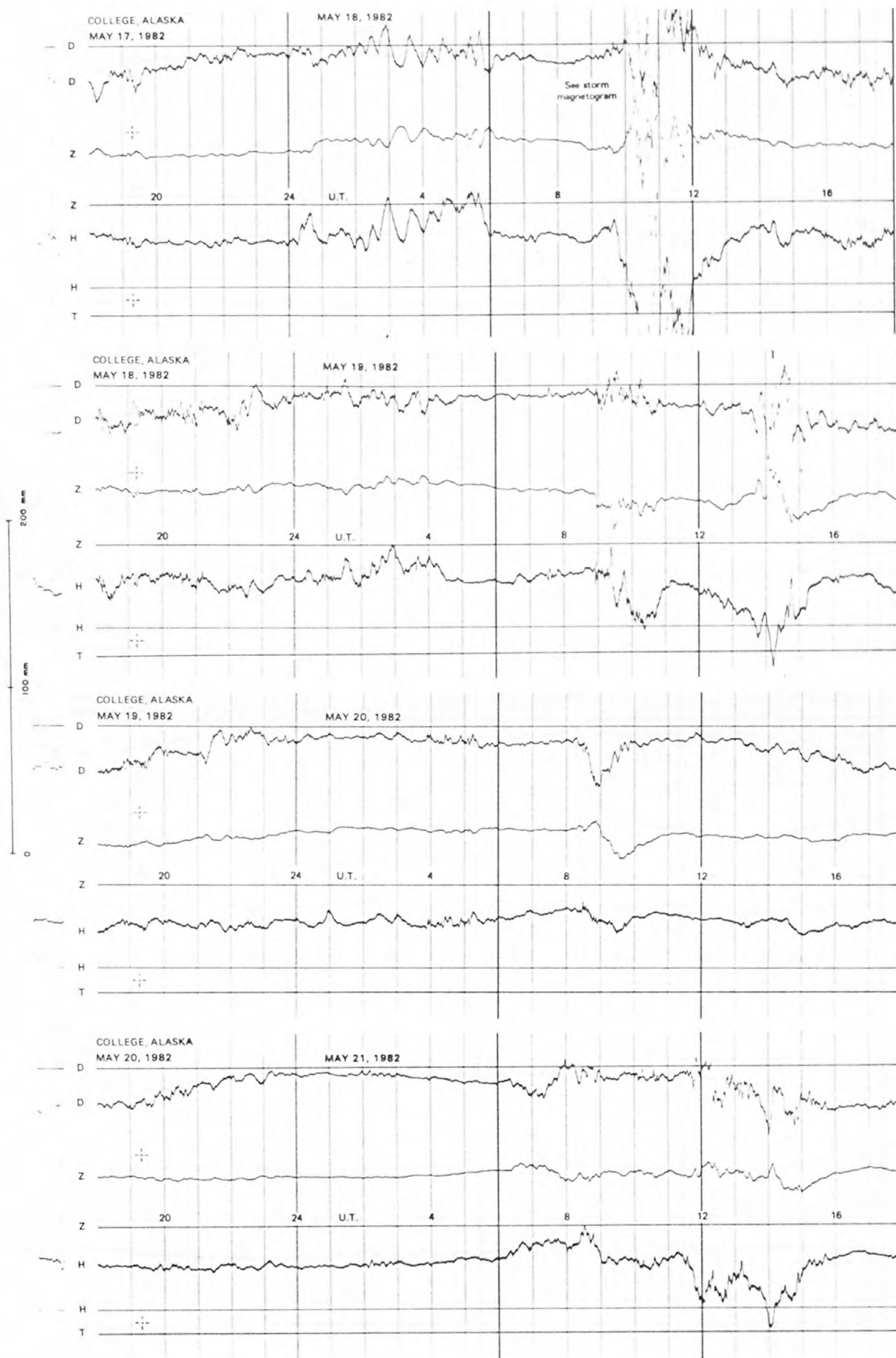
NORMAL MAGNETOGRAMS



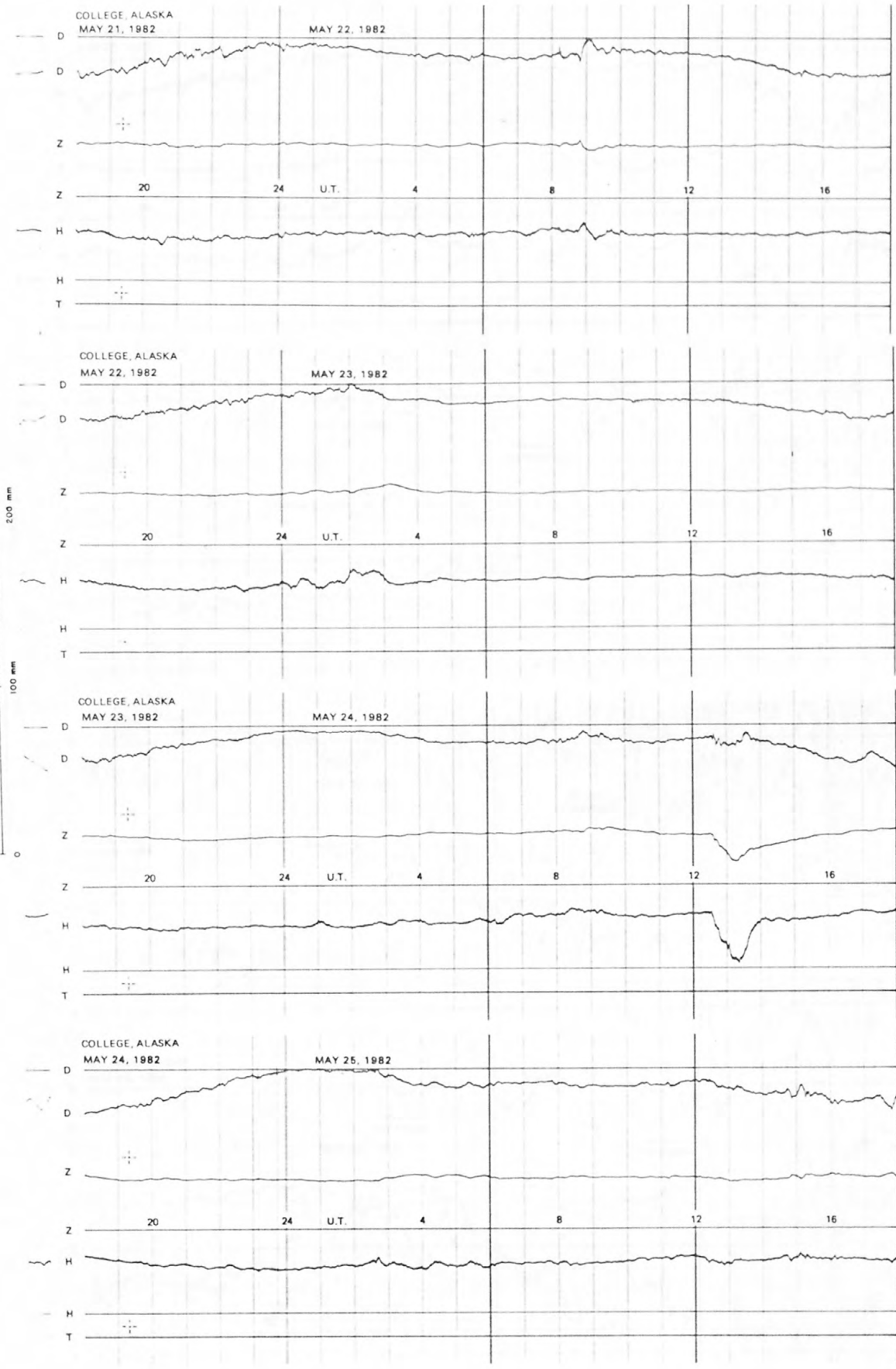
NORMAL MAGNETOGRAMS



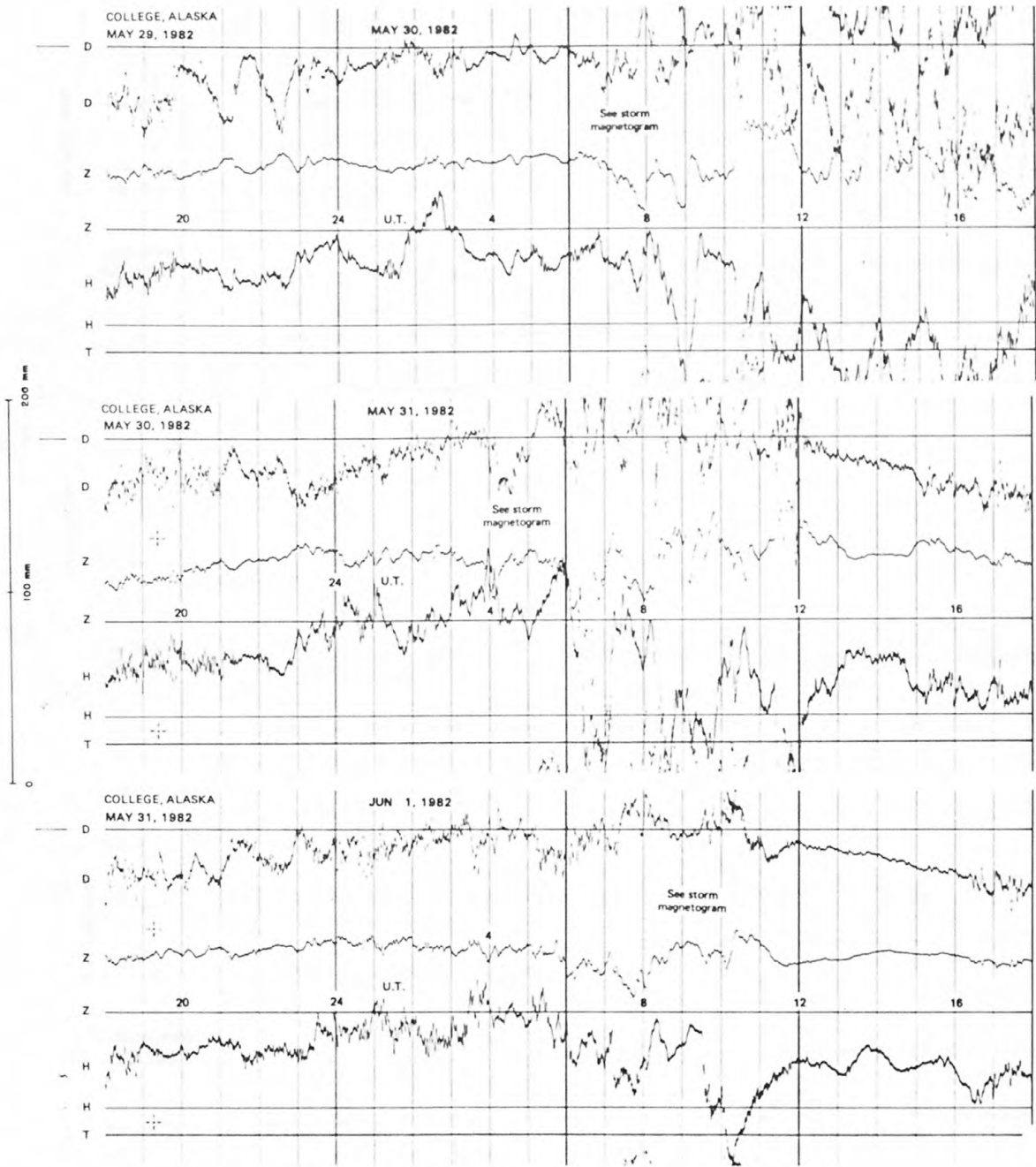
NORMAL MAGNETOGRAMS



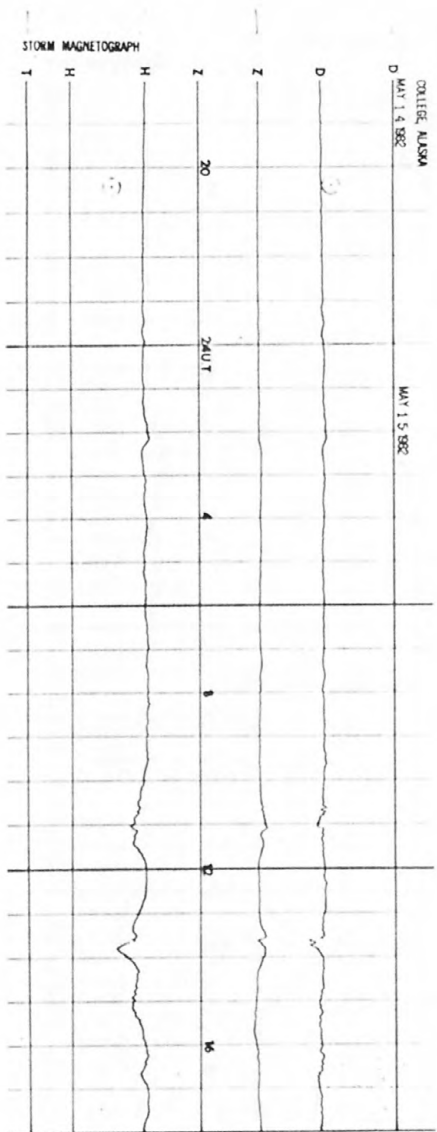
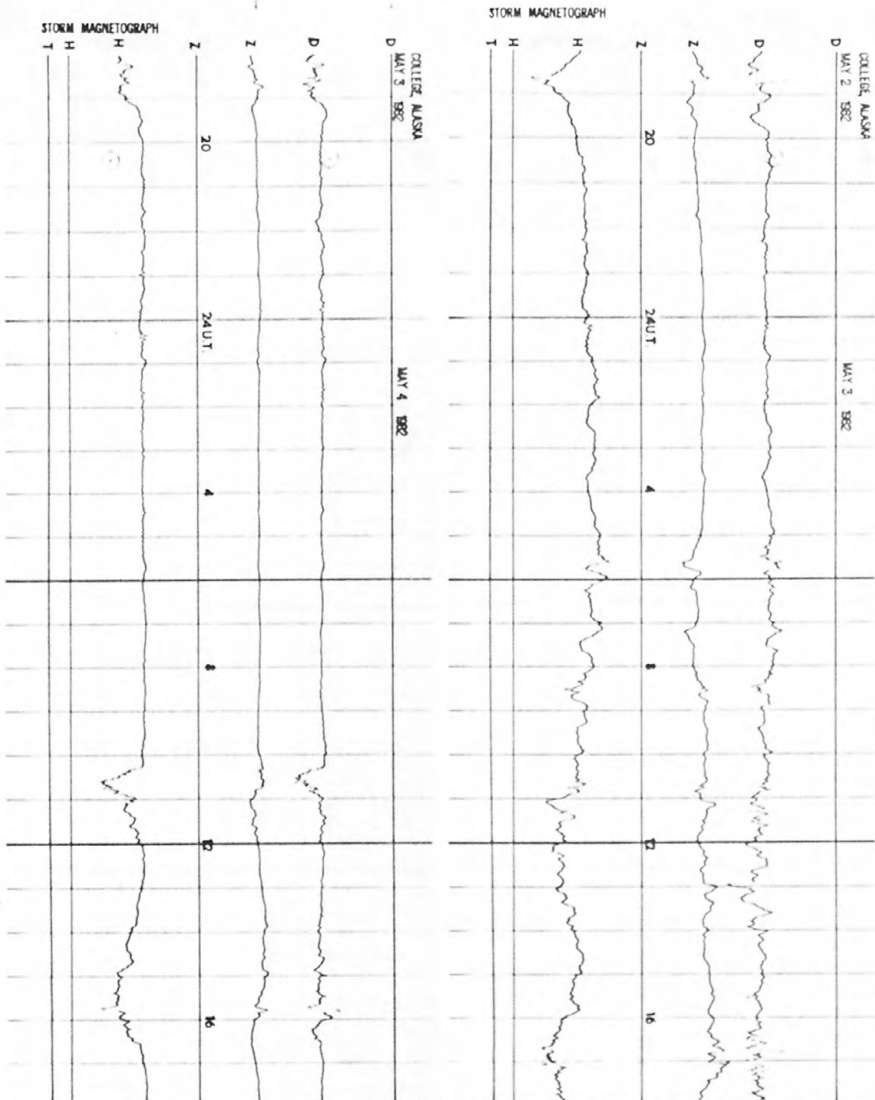
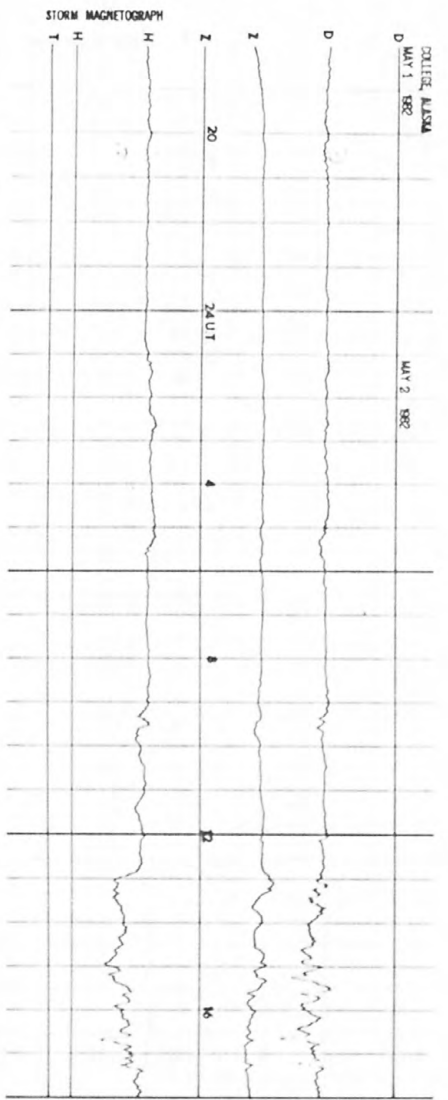
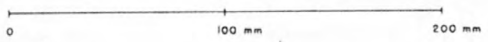
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS

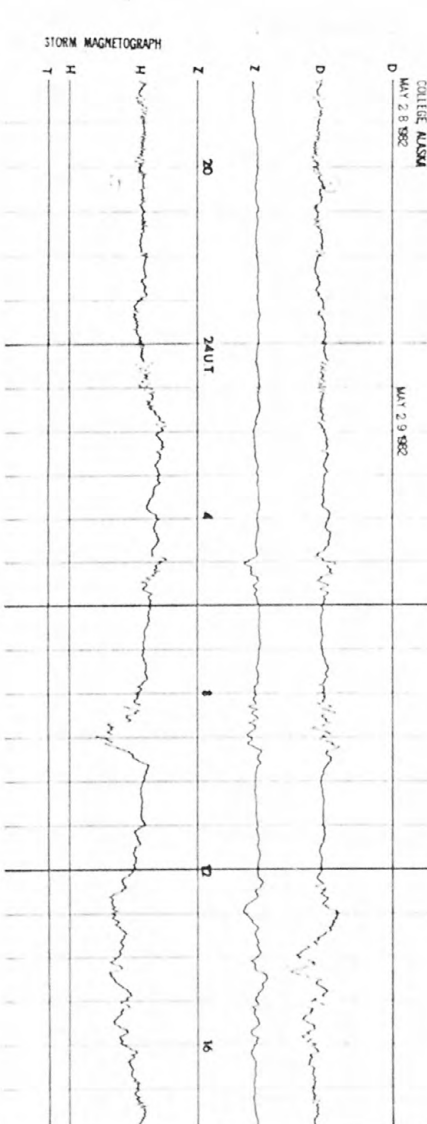
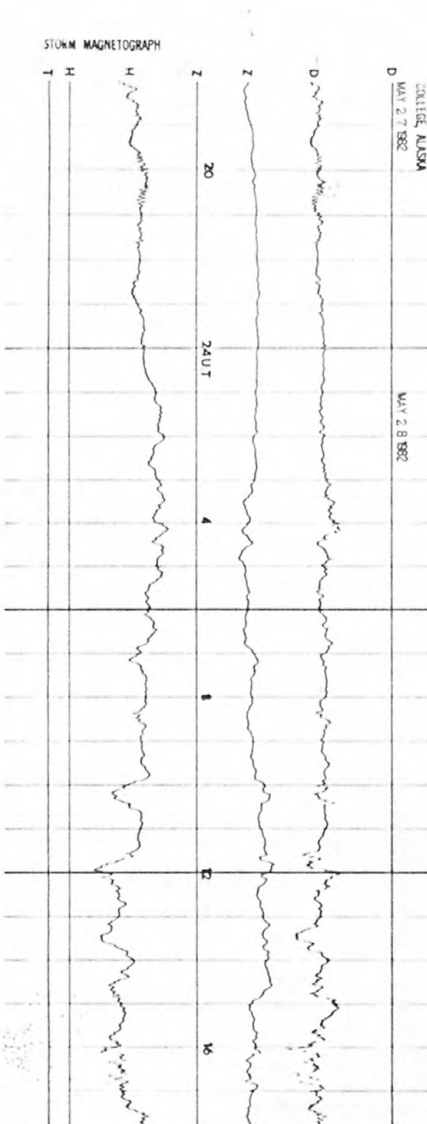
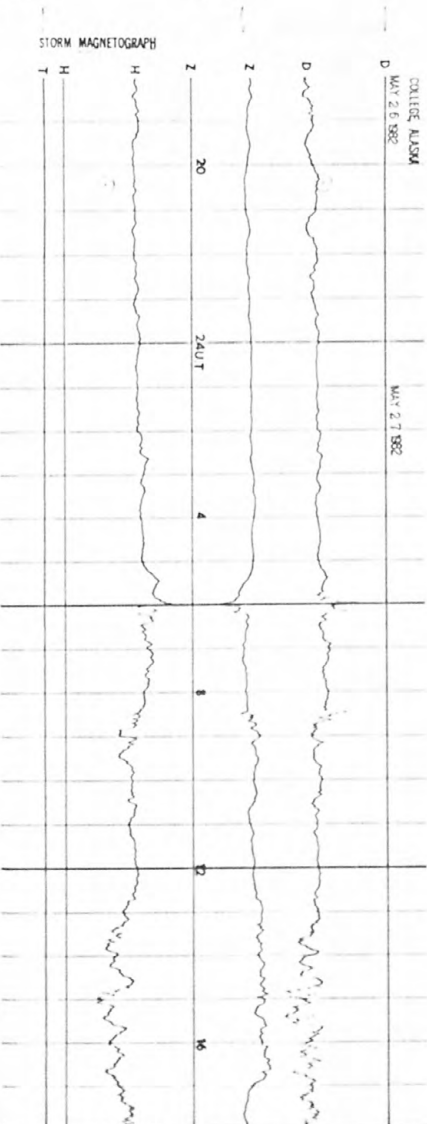


STORM MAGNETOGRAMS

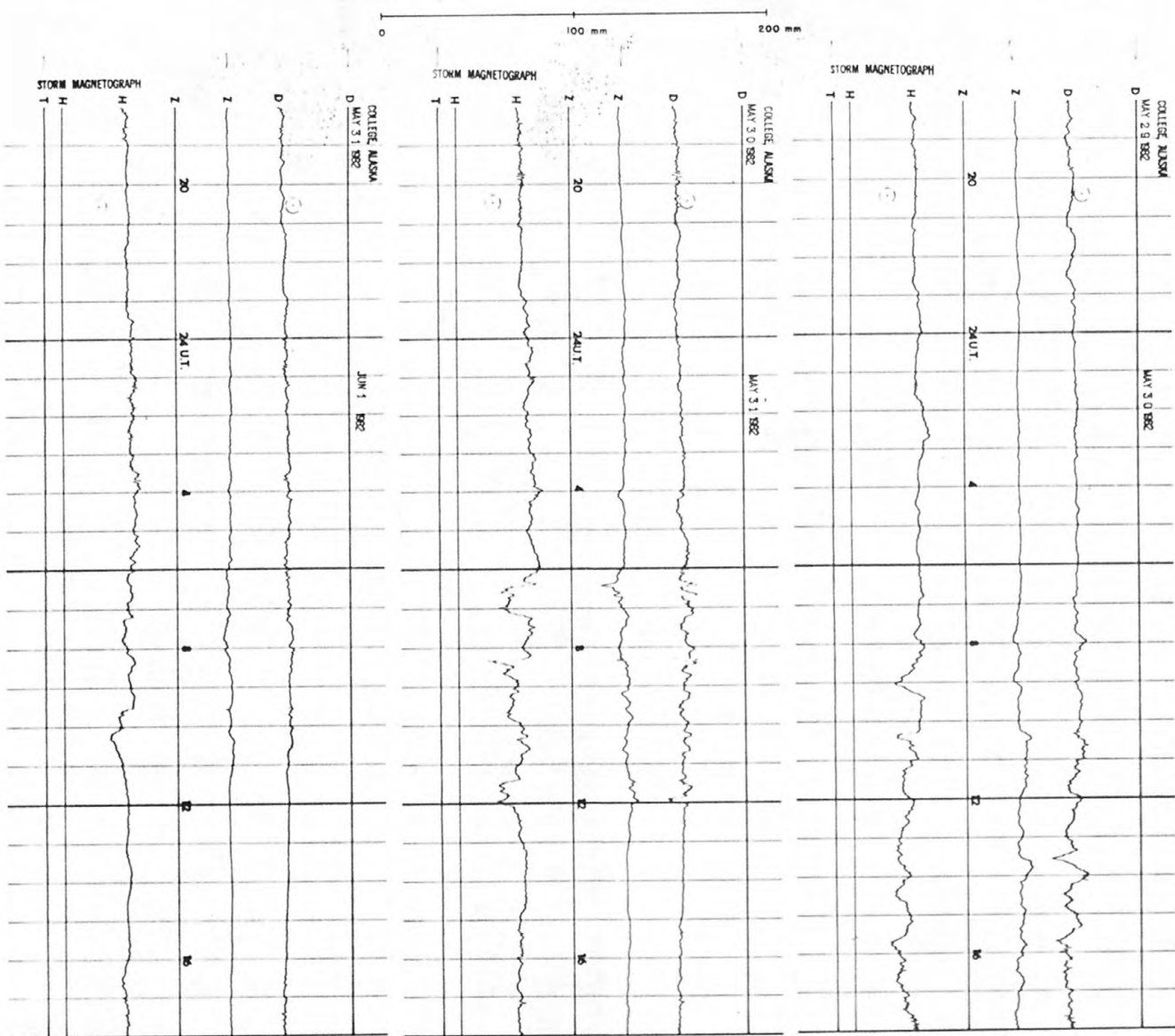


STORM MAGNETOGRAMS

0 100 mm 200 mm



STORM MAGNETOGRAMS



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