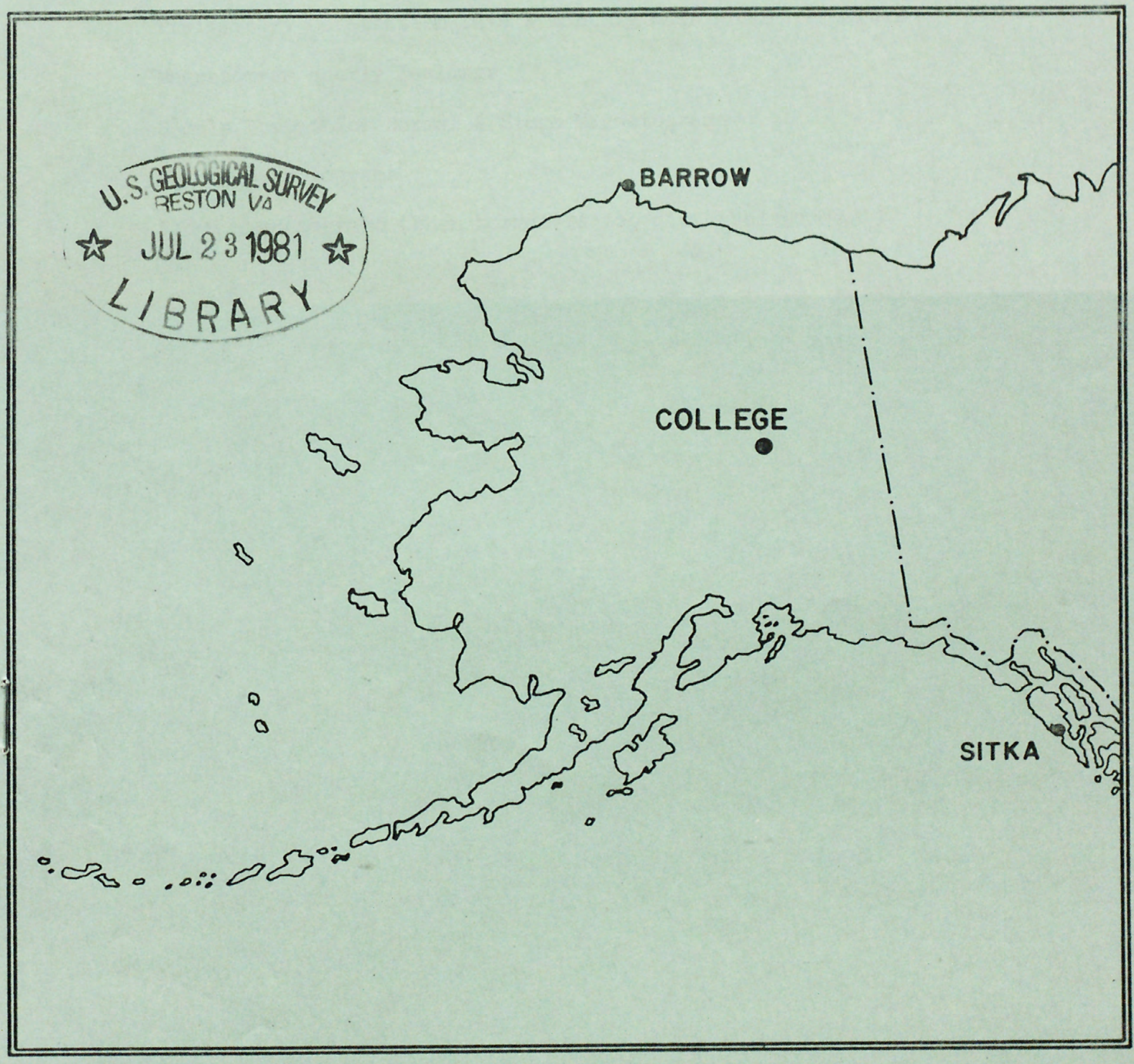
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

MAY 1981 OPEN FILE REPORT 81-300E



ORDER OF CONTENTS

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 AND E.A. SAUTER, AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF ELECTROMAGNETISM AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations, as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

COLLEGE OBSERVATORY
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
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.

NOAA FORM 76-133
(9-72)

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

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

OBSERVATORY: COLLEGE, ALASKA

MONTH AND YEAR: MAY 1981

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	1	2	3	5	5	3	4	2	25	21
2	3	2	2	4	3	1	1	1	17	10
3	2	2	3	2	3	3	0	0	15	08
4	1	1	1	1	1	1	1	0	07	03
5	0	0	0	0	3	1	1	1	06	03
6	2	1	1	0	2	1	1	1	09	04
7	1	2	1	1	0	0	1	1	07	03
8	2	1	1	1	4	2	1	2	14	08
9	5	5	6	3	5	3	2	2	31	34
10	4	4	4	3	4	6	5	5	35	37
11	6	6	6	5	5	3	3	2	36	47
12	2	3	2	1	3	5	3	3	22	16
13	3	4	2	1	2	1	1	1	15	09
14	2	4	3	6	4	4	3	3	29	27
15	4	7	6	5	6	5	5	4	42	62
16	4	5	6	5	5	6	5	3	39	49
17	2	2	1	2	4	4	2	4	21	14
18	4	5	6	5	6	6	5	3	40	53
19	3	3	4	4	5	4	3	3	29	24
20	5	4	7	5	5	5	6	3	40	57
21	3	3	2	4	4	2	2	3	23	15
22	3	2	3	3	2	1	1	1	16	09
23	2	3	6	6	5	4	4	2	32	36
24	3	4	4	5	5	5	3	3	32	30
25	4	4	5	5	4	5	5	4	36	38
26	3	3	3	3	3	1	1	1	18	11
27	1	2	1	1	1	0	2	2	10	04
28	2	4	2	4	3	3	1	2	21	14
29	2	3	3	2	3	0	1	1	15	08
30	1	1	2	2	1	3	2	1	13	06
31	2	3	2	2	3	2	1	1	16	08

TIME SCALE ON MAGNETOGRAMS: 20 mm/hr

SUDDEN COMMENCEMENTS

d	h	m

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

BEGIN d	BEGIN h	BEGIN m	END d	END h	END m

K SCALE USED:

	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.75	7.81		(γ/mm)
LOWER LIMIT FOR K = 9	2560	2510		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

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

NOAA FORM 76-133 SUPERSEDES C&GS FORM 815

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-761-857

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: MAY

YEAR: 1981

DATE	TIME U.T.	NATURE OF PHENOMENON [1]	REMARKS
10	2208	si	
17	2302	ssc*	

IDENTIFIED BY: JEP

VERIFIED BY: EAS

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

MAY 1981

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End	
		day	hr min (UT)	type	D(')	H(γ)	Z(γ)	day	(3 hr - period)	K	D(')	H(γ)	Z(γ)	day	hr
CO	64.6 N	09	00XX	..	..	..	..	09	3	6	231	1330	1150	11	21
								10	6	6					
								11	1, 2, 3	6					
		14	09XX	..	..	..	..	15	2	7	265	1450	1070	17	05
		17	2302	s.c.*	+55	-332	..	20	3	7	246	1330	820	21	03
		23	03XX	..	..	..	..	23	3, 4	6	159	1170	590	26	06

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: MAY 1981

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 5-1-81	2400 U.T., 5-31-81	1.0'/mm	3.7γ/mm	27° 46.7' E
H	0000 U.T., 5-1-81	2400 U.T., 5-31-81	7.8γ/mm		12763 γ
Z	0000 U.T., 5-1-81	2400 U.T., 5-31-81	7.7γ/mm		55138 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 5-1-81	2400 U.T., 5-31-81	7.8'/mm	29.7γ/mm	23° 47.4' E
H	0000 U.T., 5-1-81	2400 U.T., 5-31-81	44.0γ/mm		11516 γ
Z	0000 U.T., 5-1-81	2400 U.T., 5-31-81	48.6γ/mm		54025 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION	
	FROM	TO	SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 03.4' E	13001 γ	55393 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: MAY 3, 4, 5, 6, 7, 8, 27, 29, 30, 31

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

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.

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

OBSY.	YEAR	MONTH	ELEMENT
CO	81	MAY	D

C	Q or S	Ten Q	Hr Dy	01	02	03	04	05	06	07	08	09	10	11	12	Hr Dy	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	128	120	119	123	129	148	149	120	65	127	120	166	01	234	97	214	283	240	230	278	106	220	170	197	145	3928
			02	120	88	109	135	119	139	160	155	169	125	170	164	02	170	180	200	230	245	262	249	248	209	168	131	105	4050
			03	109	127	109	129	138	127	129	165	203	143	158	155	03	152	170	191	239	258	268	243	241	216	184	163	149	4166
			04	131	121	108	119	139	158	169	164	164	161	151	152	04	157	157	170	240	290	301	258	250	195	190	162	142	4249
			05	106	95	90	113	136	160	174	160	158	154	142	158	05	140	140	172	236	278	303	268	250	220	204	176	138	4171
			06	101	97	90	110	132	167	161	168	159	154	149	157	06	129	150	213	260	279	300	270	269	249	197	160	138	4259
			07	119	84	82	109	130	169	150	146	150	150	159	157	07	140	139	180	219	254	251	269	260	240	200	189	150	4096
			08	135	111	87	102	118	129	149	149	127	129	130	141	08	133	190	199	216	278	268	291	216	180	171	210	136	3995
			09	64	18	-63*	-102*	-63*	-110*	-641*	-80	-102*	1*	194	144	09	113	145	221	305	404	426	324	262	229	176	138	134	2137
			10	132	105	110	166	110	112	180	111	109	122	91	126	10	130	140	268	293	309	395	444	272	291	348	469*	222	5055
			11	74	54	104*	128*	-46*	-324*	-292*	-166*	25*	-14*	-118*	-70*	11	-55*	114	180	212	281	280	272	200	186	126	131	147	1429
			12	140	130	140	144	138	166	155	137	141	139	150	156	12	181	172	168	335	355	321	249	196	138	109	79	147	4186
			13	110	110	148	120	94	113	161	101	130	120	137	143	13	149	169	181	240	271	299	304	239	190	154	128	121	3932
			14	116	115	116	144	147	144	160	120	101	45	52	184*	14	76	204	198	304	392	317	304	253	210	160	147	66	4075
			15	78	99	38	-94*	-395*	60	-570*	-158*	-118*	-14*	7	9	15	65*	222	206	322	413*	462*	370	305	299	287	240	161	2294
			16	114	139	70	49	118	-16	-372*	-213*	-197*	17*	-102*	17*	16	295*	43	125	224	386	596*	-292*	286	128	148	97	55	1715
			17	71	58	91	149	144	150	134	123	143	150	109	130	17	128	140	200	243	296	343	320	320	268	203	252	310	4475
			18	226	45	65	-74	-292*	48*	-538*	-276*	-94*	20	-48	205	18	89*	36	390*	295*	699*	454*	287*	255	187	100	119	88	2286
			19	106	102	102	111	113	135	166	178	105	120	77	198	19	147	152	342*	323	382	372	235	254	220	198	178	163	4479
			20	143	108	107	163	27	-28	-149*	-189*	-45*	37	158	123	20	104*	303*	516*	207*	246	337	318*	293	302	109	128	115	3433
			21	81	60	98	68	90	90	163	160	135	168	129	110	21	100	176	180	215	280	294	317	252	230	210	125	60	3791
			22	28	38	70	71	100	120	140	140	110	138	130	145	22	139	152	200	150	300	328	324	290	229	147	114	110	3713
			23	91	87	70	114	91	169	130	24	25*	36	184*	112*	23	162	164	321	459	437	382	299	242	161	158	116	78	4112
			24	69	67	64	4	15	-57	13	-125*	34	-38*	0	132	24	114	118	228	378	326	287	242	247	276	126	68	180	2768
			25	144	82	112	81	-63*	16	-125*	-380*	1*	96*	16	35	25	41	112	171	237	454*	413	334	361	83	134	138	128	2621
			26	130	91	32	67	65	62	169	130	98	89	89	66	26	97	165	204	239	259	270	253	221	190	159	139	107	3392
			27	102	114	101	111	106	129	141	139	130	141	171	172	27	169	181	219	255	296	304	338	300	149	110	111	100	4089
			28	97	85	84	17	90	186	152	130	123	116	130	105	28	110	140	195	281	280	329	272	209	169	157	117	120	3694
			29	104	112	129	131	156	142	141	130	160	109	128	131	29	100	162	208	268	282	262	251	212	175	109	108	126	3836
			30	124	129	120	136	149	161	150	143	127	141	130	111	30	122	132	220	291	341	309	270	221	219	119	79	71	4015
			31	98	96	103	93	151	131	140	160	121	100	102	97	31	121	118	191	249	303	293	270	209	247	238	85	60	3776

SCALED BY	EAS, JEP
CHECKED BY	JEP, EAS
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 Mgph., converted to Normal Mgph.

MONTHLY SUM	112217
MONTHLY MEAN	151
DATES WITH GAPS:	

GPO 844-251

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day 1 (7:50W M.T.) is hour 11 of the same universal day.
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U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
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DENVER, CO 80225

OBSY.	YEAR	MONTH	ELEMENT
CO	81	MAY	H

C	Q or S	Ten Q	Hr. Day	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	278	279	280	287	321	326	361	386	389	359	359	111	01	-23*	10	253	303	309	251	158	199	283	280	266	268	6293
			02	266	361	389	301	320	343	350	348	350	212	320	310	02	220	291	312	295	279	280	283	271	268	268	275	289	7201
			03	288	275	295	299	302	351	389	410	371	351	319	309	03	322	288	253	269	320	321	319	308	309	291	289	285	7533
			04	269	269	287	297	308	318	323	339	349	329	317	319	04	329	329	313	271	279	310	320	288	268	269	261	270	7231
			05	277	270	274	280	292	305	310	312	332	324	329	334	05	318	240	310	330	342	333	310	301	280	280	270	261	7214
			06	270	282	301	312	330	312	320	340	320	321	327	325	06	284	311	316	320	330	320	323	301	264	260	249	240	7278
			07	249	257	297	304	341	320	301	310	328	330	348	330	07	312	312	322	330	340	340	337	320	306	282	258	260	7434
			08	257	270	304	284	307	320	331	340	342	339	342	348	08	250	222	320	339	350	360	339	311	293	282	291	282	7423
			09	383	380	438	683	671	416*	315*	436	37*	214	192	297	09	73	295	332	340	228	289	297	303	295	280	264	311	7769
			10	331	290	400	589	484	444	444	342	370	348	300	230	10	241	196	146	290	249	-3*	-200*	40	120	206	262	446	6565
			11	438	564	903	520	808	504	810	600	355	276	325	-114	11	-33	122	52	208	254	326	356	312	267	300	292	290	8735
			12	293	270	262	257	322	340	322	322	304	299	289	269	12	260	283	190	-92*	-24	111	172	126	196	263	281	274	5589
			13	421	406	282	337	476	578	351	369	310	325	297	297	13	268	281	302	305	304	295	281	270	264	258	249	247	7773
			14	260	281	286	292	314	458	400	339	372	360	166	-104*	14	121	129	209	94	176	341	310	318	278	296	266	250	6212
			15	267	318	439	908*	325*	465	145*	534	303*	254	271	280	15	-92*	-84	54	-89	-137*	-137*	-184*	-51	177	248	397	420	5031
			16	414	637	479	455	599	517	94*	502	167*	144	19	-42*	16	-335*	-87*	-5	112	135	-268*	-92*	238	240	281	280	339	4823
			17	341	318	332	330	323	298	288	306	330	309	300	291	17	278	244	-47	61	223	249	291	290	269	260	249	247	6380
			18	325	358	278	562	501*	418	308*	351	348	338	279	169	18	-51	36	-285*	-132*	-403*	-381*	-273*	142	155	265	303	292	3903
			19	308	301	286	329	359	388	444	300	326	335	235	90	19	105	71	-200*	28	37	-16	257	288	290	265	276	303	5405.
			20	359	516	661	412	464	545	178*	427*	316	278	275	84	20	-212*	-222*	-363*	77	168	34	-166*	176	343	270	290	315	5225
			21	370	312	365	340	314	333	378	331	311	277	128	55	21	156	271	317	321	297	310	273	270	221	242	330	246	6768
			22	264	300	326	383	390	382	338	313	278	224	304	300	22	280	230	267	279	251	269	267	257	243	240	230	241	6856
			23	260	279	318	307	387	382	382	304	60*	304	-116*	-47*	23	179	-3	-158	-3	-124	29	144	206	260	300	303	350	4303
			24	452	554	529	537	507	575	746	680	560	386	284	229	24	40	68	-2	-144*	258	308	338	303	249	203	279	372	8311
			25	436	660	668	505	650	751	719	550	314	-19	322	233	25	193	176	-36	28	-302*	-205*	18	186	268	289	338	410	7152
			26	520	480	533	446	469	522	381	373	365	310	301	246	26	240	270	271	270	270	260	271	250	232	248	251	240	8019
			27	268	278	292	290	308	321	319	329	339	340	328	327	27	324	308	309	312	319	306	259	232	249	240	247	298	7142
			28	307	308	295	451	549	441	286	297	308	335	329	216	28	219	283	228	278	320	302	310	293	288	284	296	307	7530
			29	311	291	281	362	362	340	319	379	331	323	319	310	29	222	311	305	302	303	313	310	295	289	287	270	278	7413
			30	266	293	287	309	310	292	322	321	341	325	330	300	30	306	300	300	225	253	312	323	267	261	262	269	279	7053
			31	324	288	331	360	310	340	393	339	358	330	332	298	31	296	240	312	319	348	345	311	309	292	276	272	270	7593

SCALED BY	EAS, JEP
CHECKED BY	JEP, EAS
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 Mgph., converted to Normal Mgph.

MONTHLY SUM	209157
MONTHLY MEAN	281
DATES WITH GAPS	

GPO 844-253

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (7:50W M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

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

OBSY.	YEAR	MONTH	ELEMENT
CO	81	MAY	Z

C	Q of S	Ten O	Hr Day	01	02	03	04	05	06	07	08	09	10	11	12	Hr Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	331	341	341	348	350	362	363	356	301	340	361	410	01	365	387	253	292	328	323	290	200	309	314	351	367	7983
			02	387	399	400	374	360	369	367	360	352	293	323	320	02	252	281	330	342	340	329	328	324	319	318	319	326	8112
			03	329	339	339	339	339	340	372	374	329	337	343	338	03	339	337	328	298	322	331	321	327	321	321	323	325	8011
			04	329	333	334	338	340	342	340	349	369	348	327	322	04	328	327	338	331	320	309	314	320	310	314	317	324	7923
			05	328	331	327	326	330	340	341	337	334	338	323	329	05	320	270	306	339	347	347	328	322	316	312	316	318	7825
			06	317	320	324	340	350	358	340	340	339	331	326	320	06	270	298	330	331	324	329	312	320	321	320	329	332	7821
			07	337	333	337	350	361	372	346	331	332	338	342	348	07	331	331	340	348	351	343	339	330	324	320	326	322	8132
			08	322	329	340	350	340	333	340	341	340	341	347	343	08	312	272	303	322	338	340	349	321	328	330	330	321	7932
			09	282	316	355	142	34	-57*	152*	290	525	461	623	513	09	547	390	347	370	372	319	312	304	320	326	348	380	7971
			10	399	411	416	376	379	412	346	310	377	370	360	340	10	338	390	390	328	331	317	84	152	237	321	253*	312	7949
			11	294	341	-213	-322	-165	-253	48	86	76	188	405	582	11	550	654	721	431	368	350	340	346	350	348	363	350	6238
			12	356	348	347	347	355	403	394	370	361	355	350	341	12	347	341	378	446	285	240	300	300	301	320	370	395	8350
			13	370	400	427	389	405	410	406	379	381	360	350	340	13	331	330	344	354	365	357	348	328	320	322	322	327	8665
			14	330	340	351	369	368	380	367	366	366	320	442	551*	14	308	321	300	320	303	309	317	310	304	305	321	340	8308
			15	347	360	358	215*	-82*	18	82*	337	286	424	381	359	15	460	384	426	412	316*	123	58	147	229	332	330	323	6625
			16	309	270	330	369	329	299	152*	278	379	465	390	690*	16	589*	674	635	511	592	779*	405*	220	272	320	331	358	9946
			17	360	367	364	355	360	350	358	359	360	331	342	350	17	341	331	285	245	278	287	303	319	313	318	335	370	7981
			18	319	329	381	336	38	143	44*	264	283	294	326	463	18	476	502	620*	664*	531*	449*	436*	306	359	342	361	370	8636
			19	373	367	366	364	381	417	345	186	283	375	353	276	19	251	356	418*	229	200	170	250	310	329	343	358	363	7663
			20	369	381	318	382	376	270	184*	171*	386	380	400	427	20	378	353	424*	354	338	261	221*	238	310	338	338	354	7951
			21	360	358	372	343	369	360	370	375	351	341	307	402	21	332	297	330	350	350	344	347	329	330	329	350	361	8357
			22	332	341	357	370	380	390	390	362	277	249	318	333	22	327	290	269	310	319	312	318	310	310	304	304	315	7787
			23	320	319	318	341	346	401	375	273	364	326	562*	361*	23	273	302	410	207	188	154	168	266	317	348	342	360	7641
			24	389	387	341	381	437	429	370	264	322	263	347	414	24	320	276	299	258	132	263	280	310	333	317	340	390	7862
			25	418	371	345	362	242	327	168	226	422	394	289	356	25	401	417	465	389	374*	158*	105	251	271	358	350	359	7818
			26	336	410	420	470	449	426	443	381	353	343	340	340	26	307	330	339	340	333	320	320	326	322	319	320	310	8597
			27	306	329	333	349	343	360	358	350	337	342	346	340	27	333	331	333	340	337	330	332	303	269	280	294	310	7865
			28	350	398	350	341	383	425	369	331	321	329	330	304	28	300	292	331	348	345	344	324	310	305	320	330	349	8129
			29	350	358	359	373	410	409	390	358	360	320	331	328	29	270	324	340	334	321	317	321	320	329	317	313	311	8163
			30	325	337	350	369	369	359	343	345	340	324	330	314	30	311	320	340	318	257	270	298	309	307	304	309	320	7768
			31	348	370	380	378	410	368	403	397	361	338	339	329	31	298	239	307	339	346	338	342	322	311	317	318	328	8226

SCALED BY	EAS, JEP
CHECKED BY	JEP, EAS
SIGNS RE-VIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
[ ] No records 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.

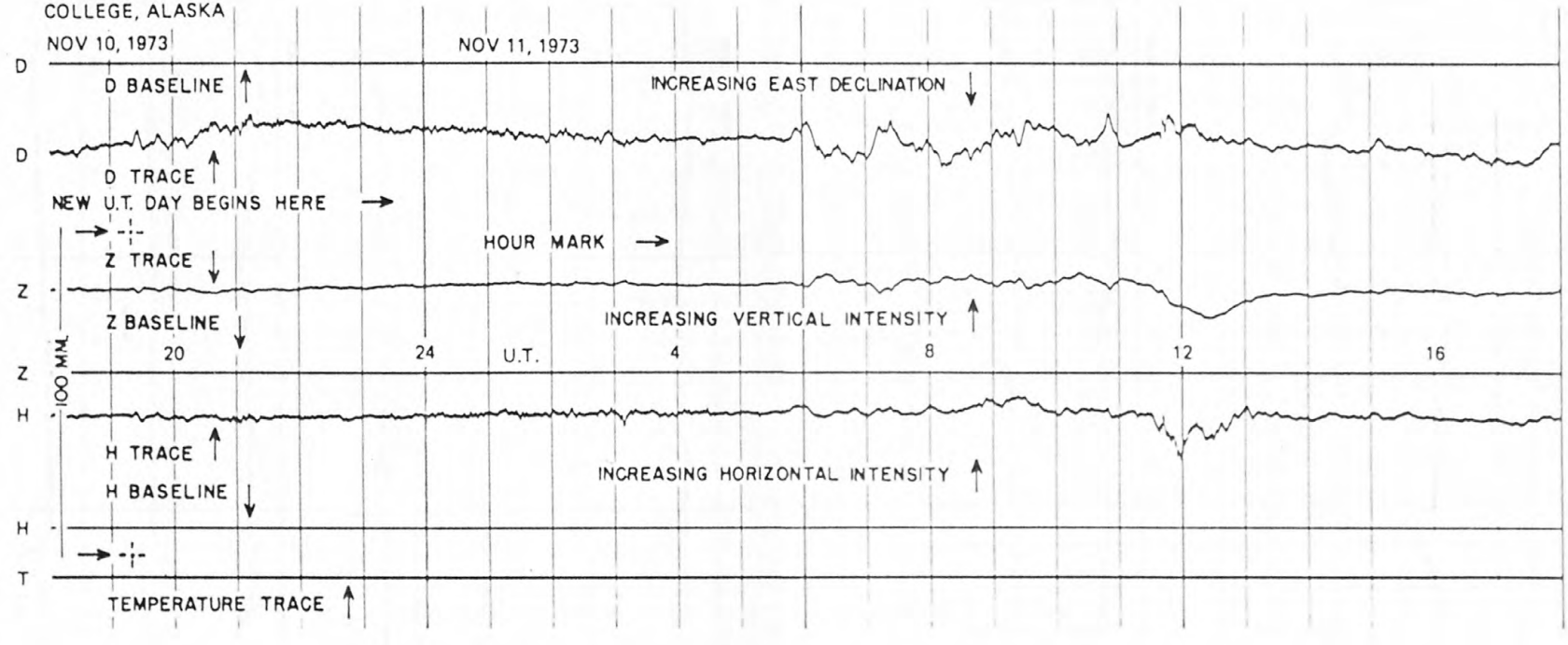
* Derived from STORM Mgph., converted to Normal Mgph.

MONTHLY SUM	248255
MONTHLY MEAN	334
DATES WITH GAPS:	

GPO 844-207

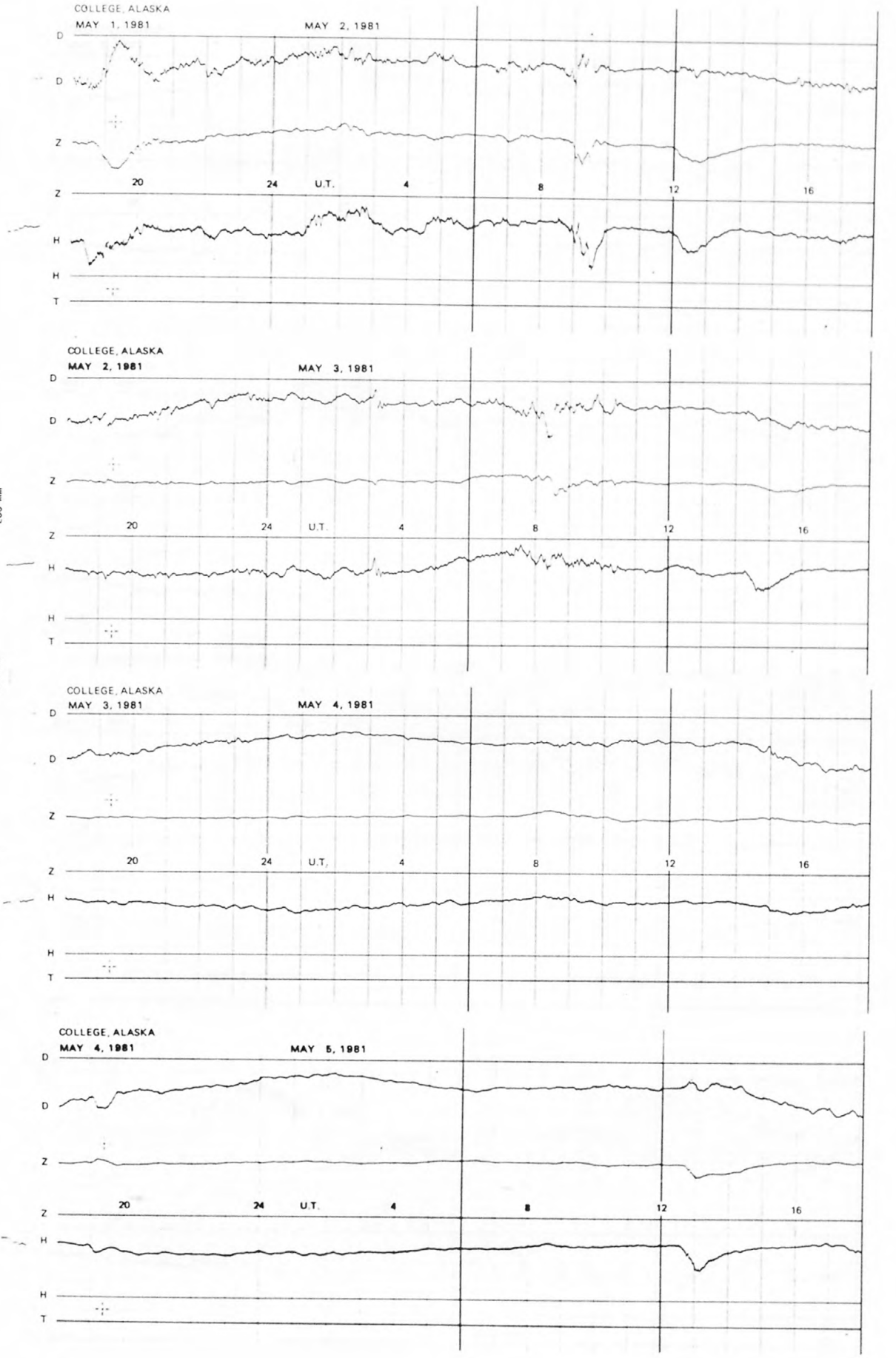
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

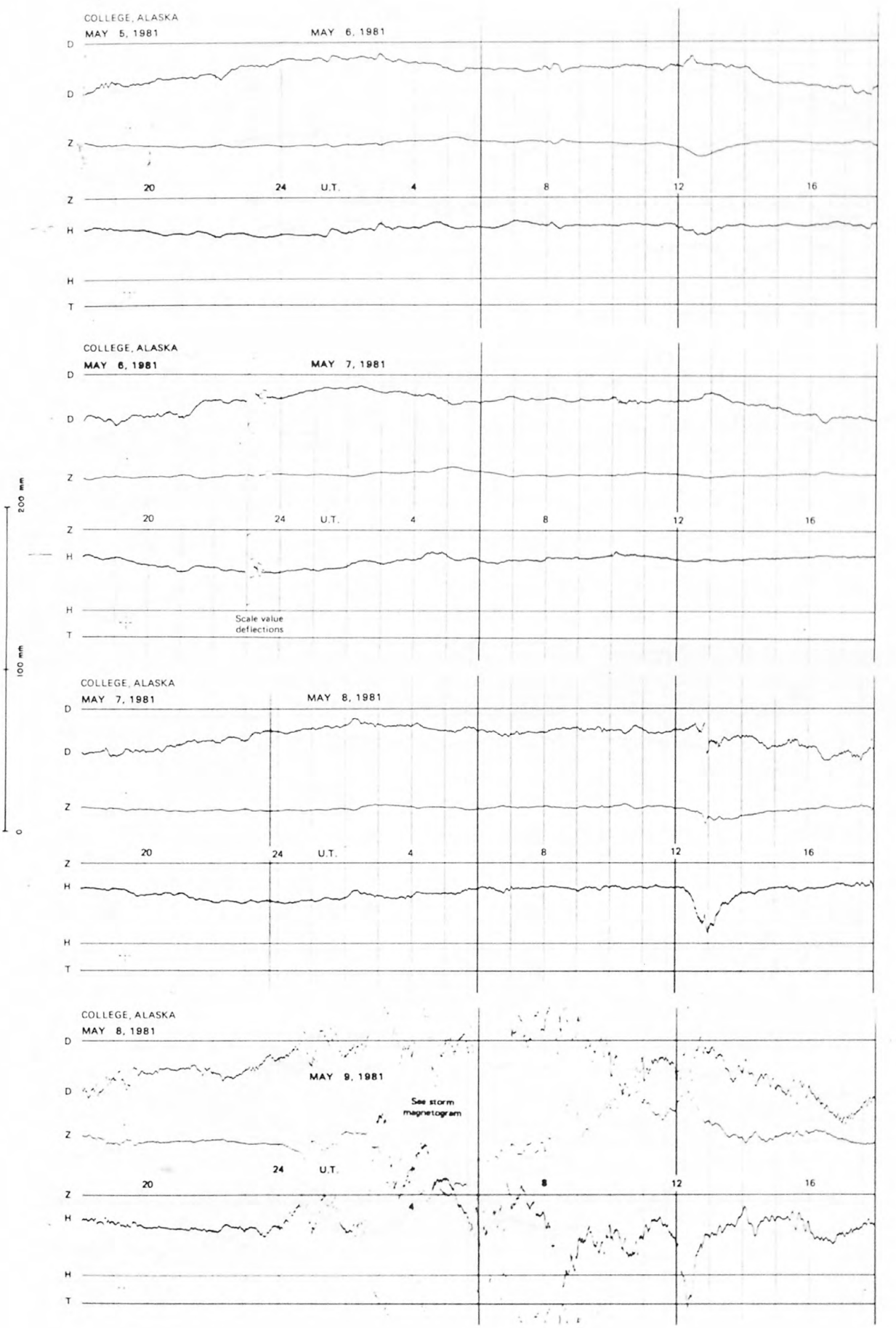


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

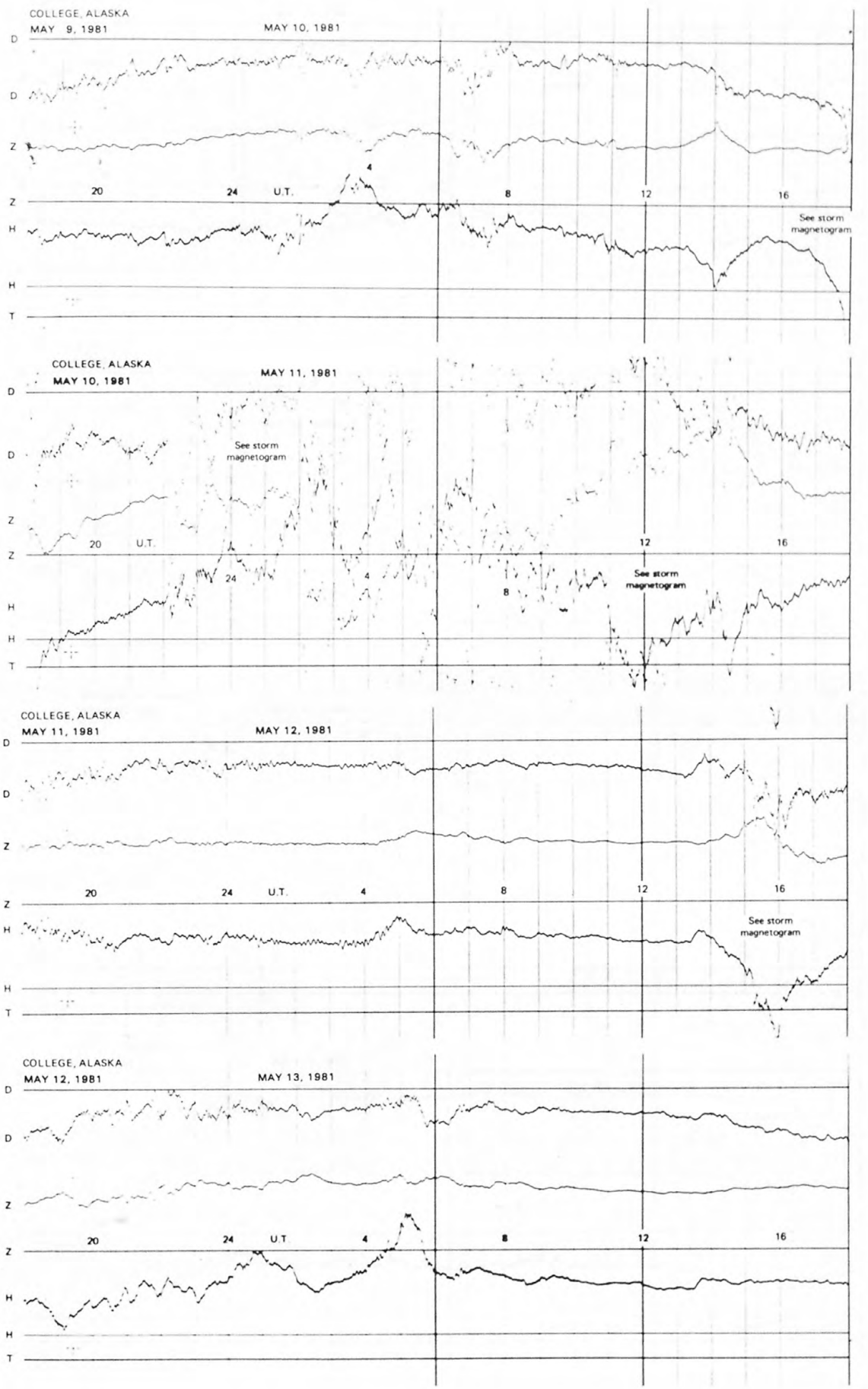
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS

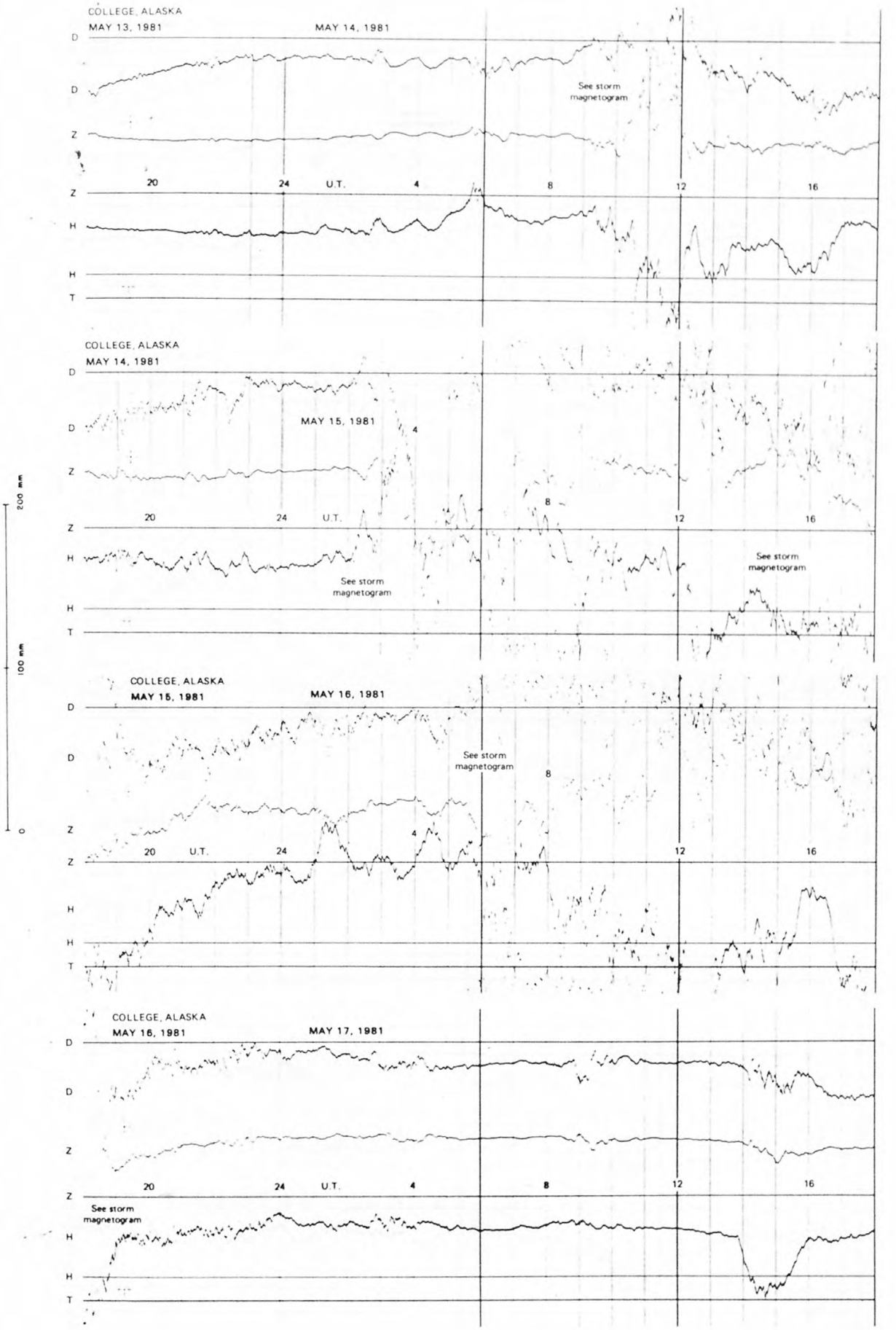


NORMAL MAGNETOGRAMS

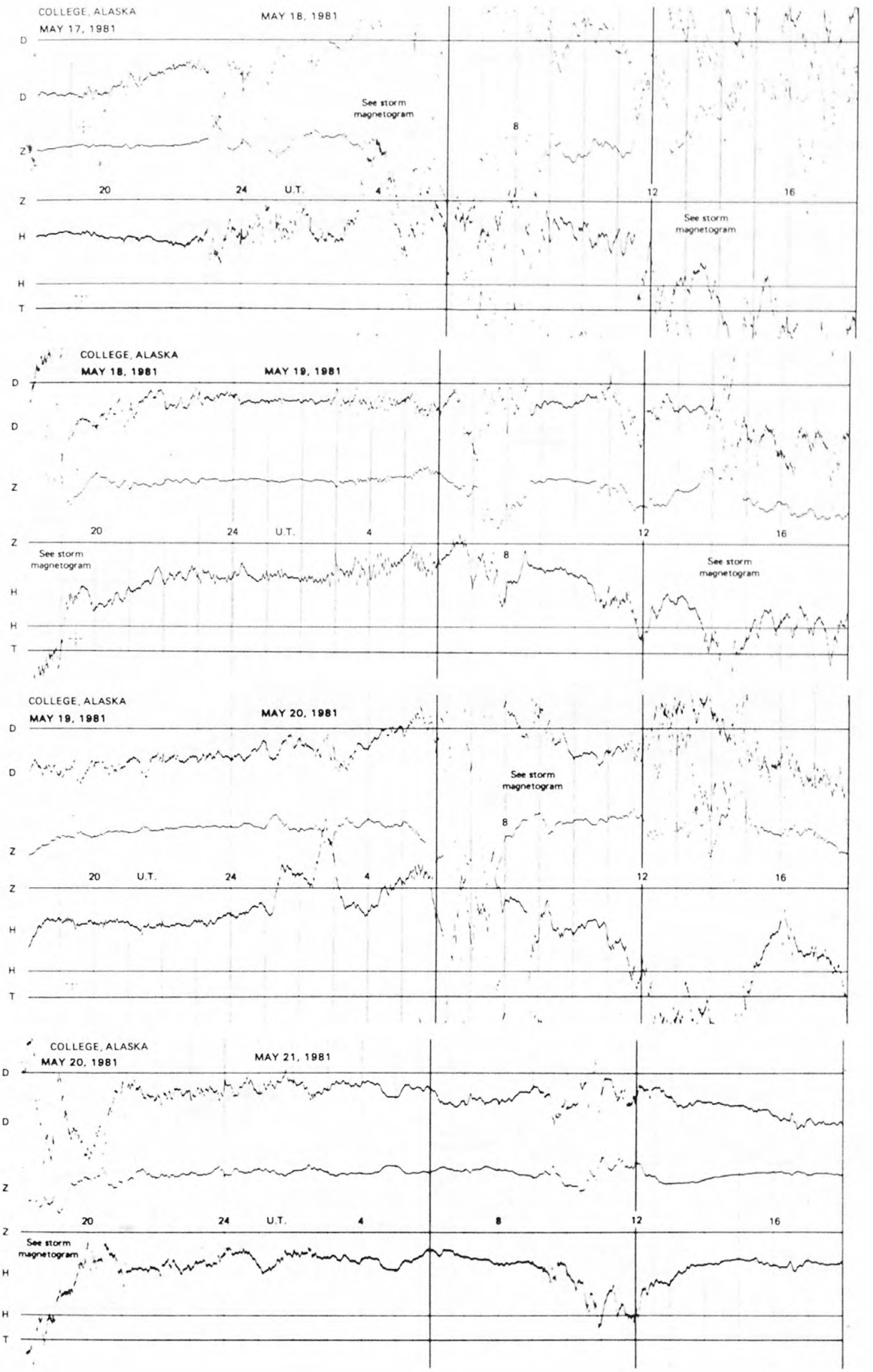


200 mm
100 mm
0

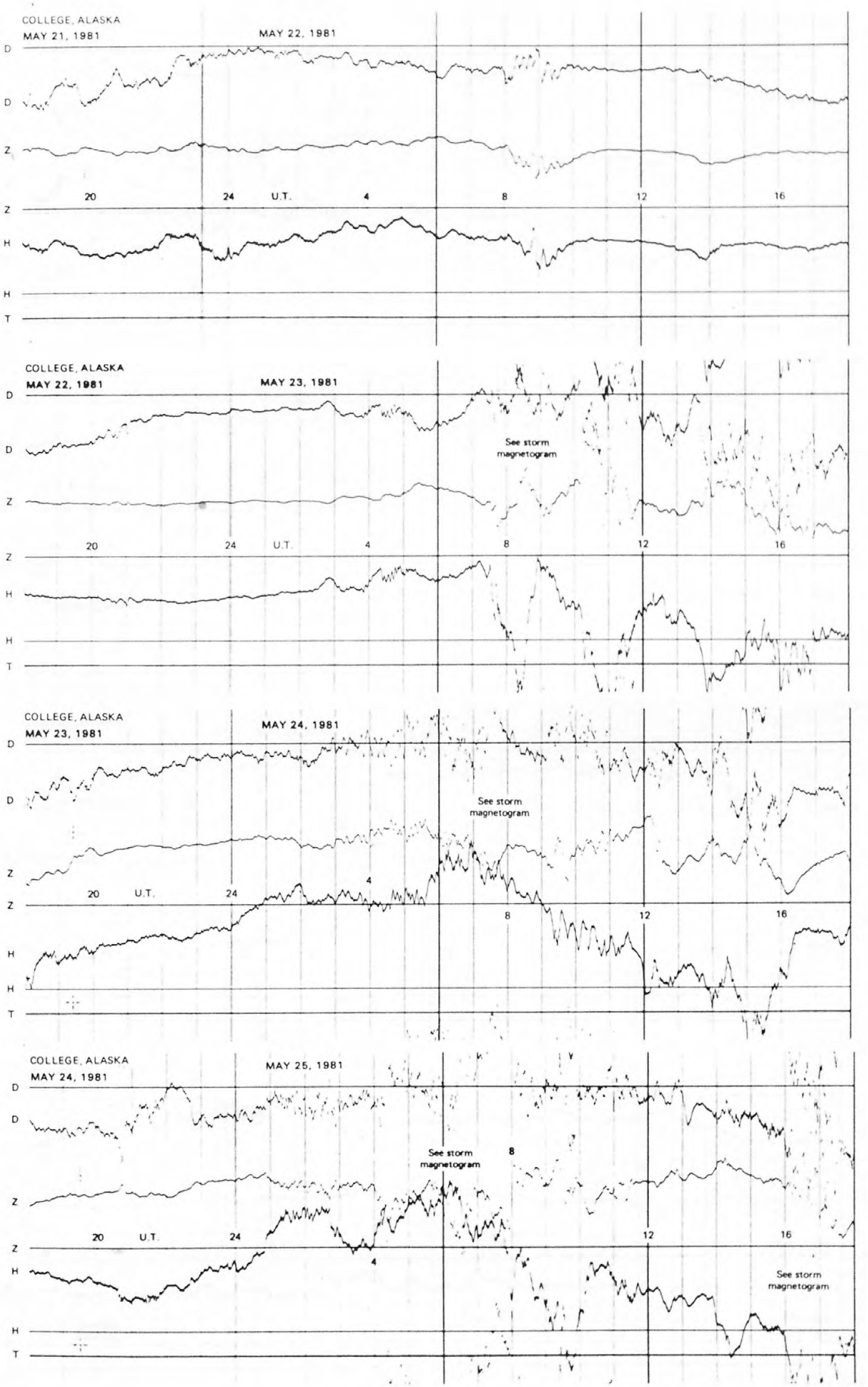
NORMAL MAGNETOGRAMS



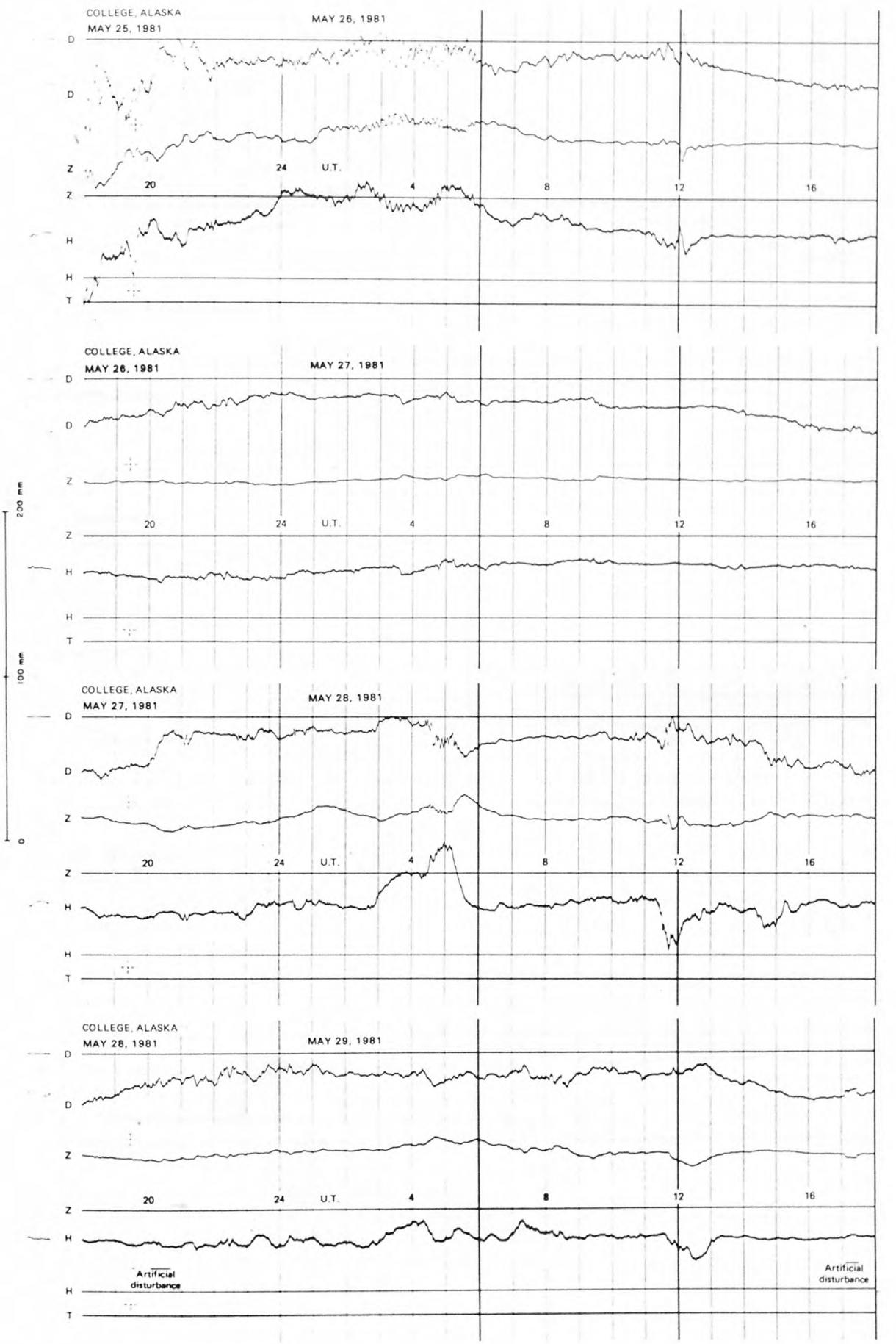
NORMAL MAGNETOGRAMS



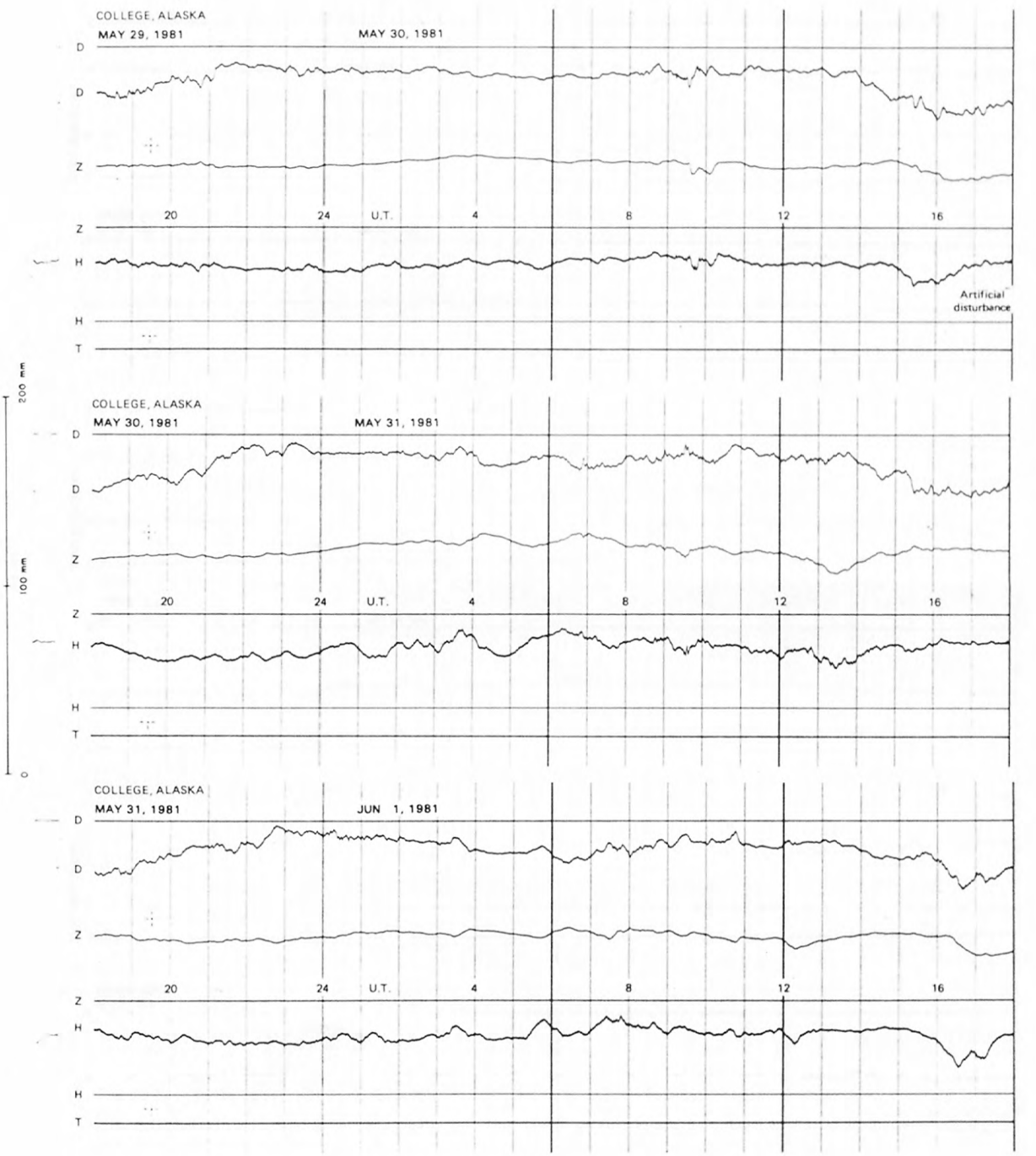
NORMAL MAGNETOGRAMS



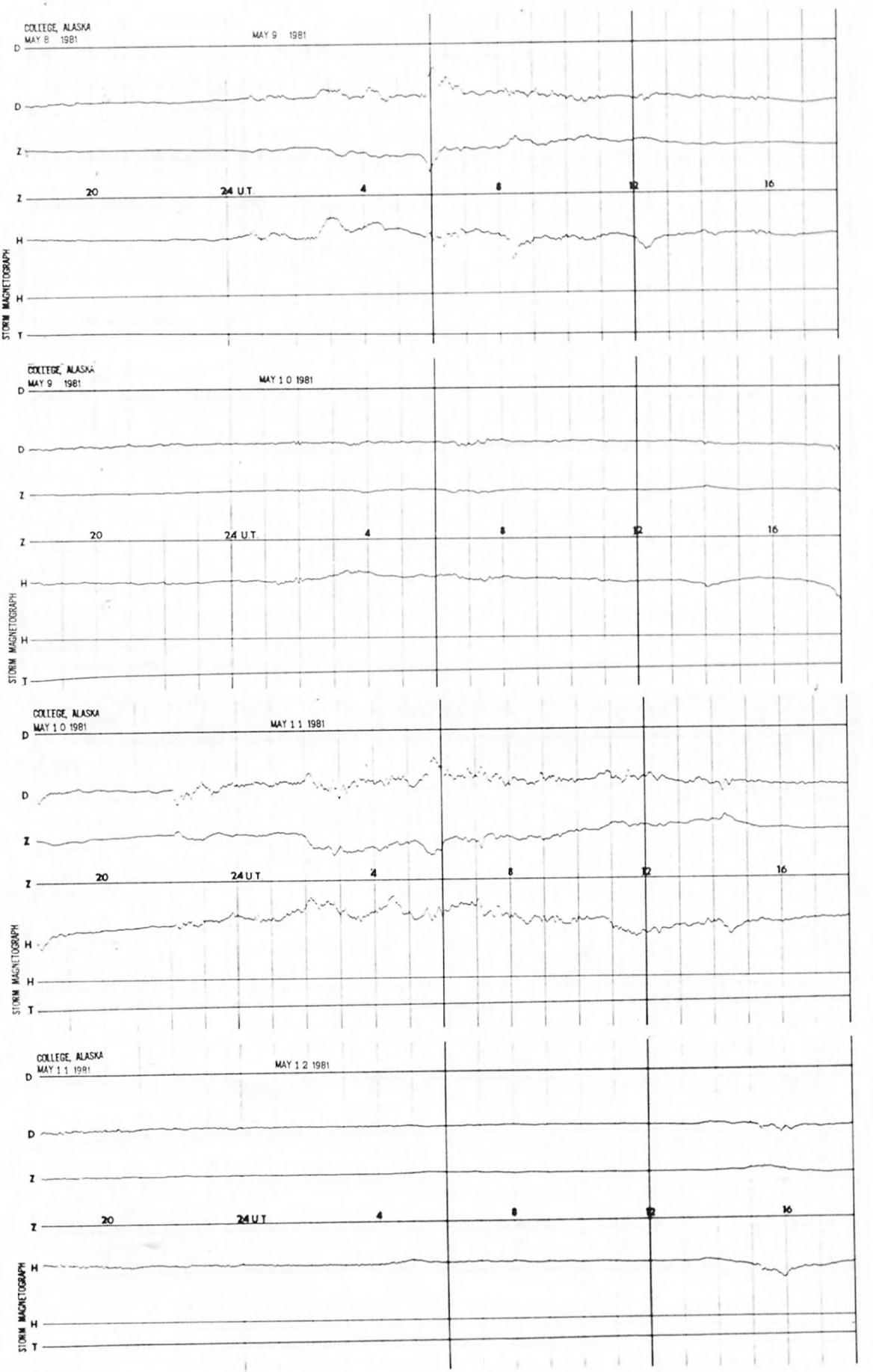
NORMAL MAGNETOGRAMS



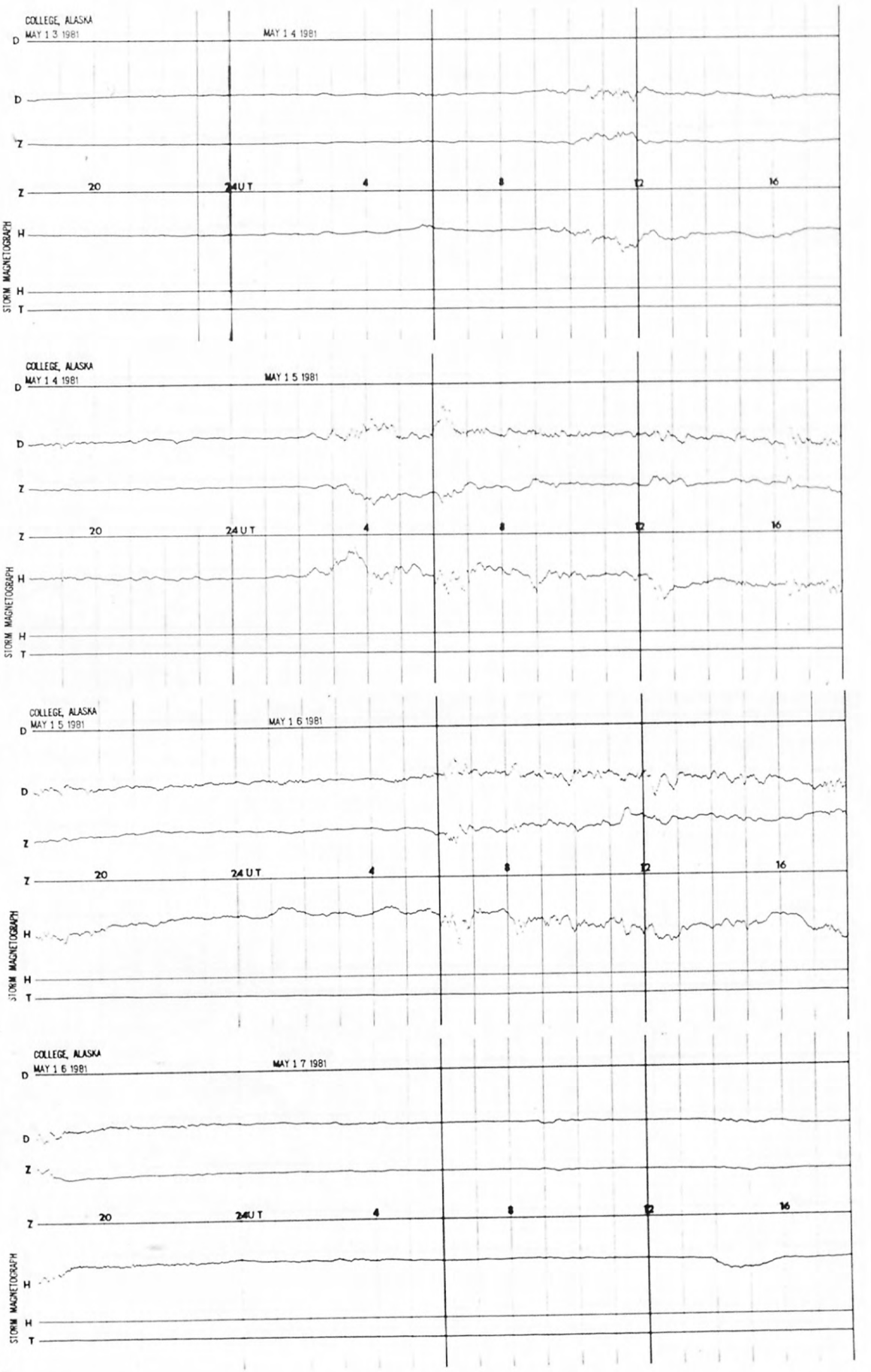
NORMAL MAGNETOGRAMS



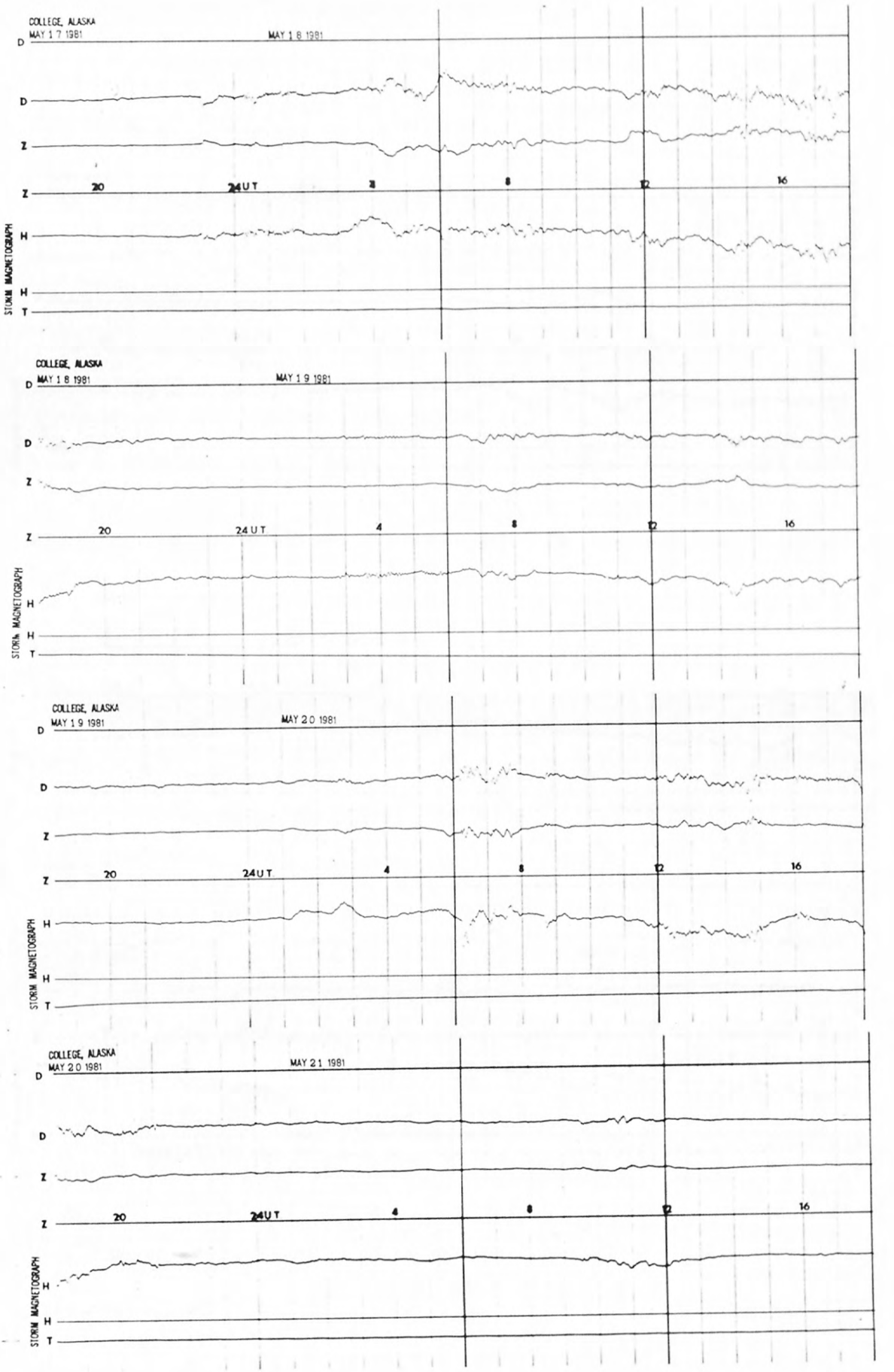
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS