

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA

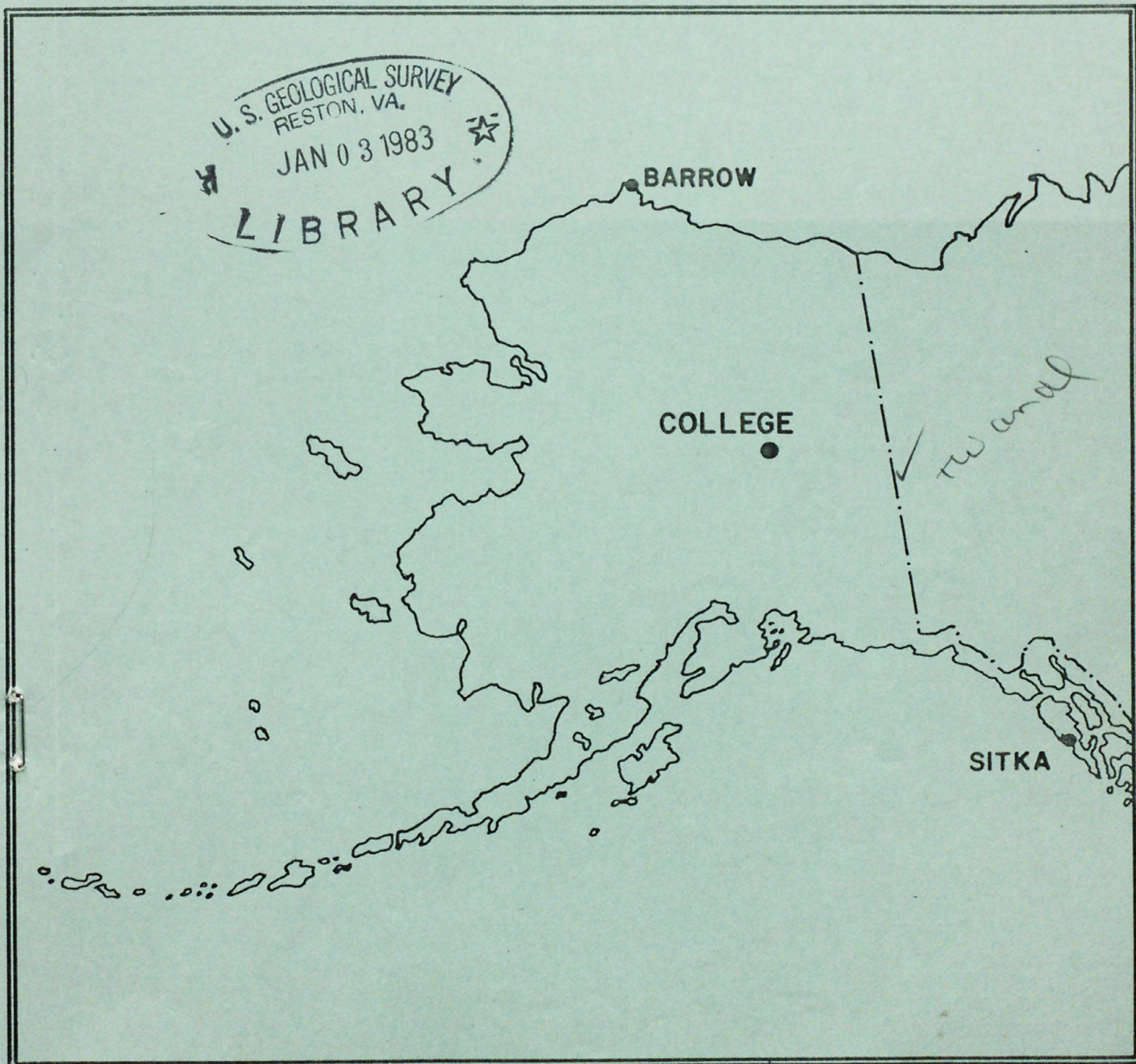
COLLEGE OBSERVATORY

FAIRBANKS, ALASKA

OCTOBER 1982

OPEN FILE REPORT 82-0300J

U.S. GEOLOGICAL SURVEY
RESTON, VA.
JAN 03 1983
LIBRARY



D
MP

12045



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.

ORDER OF CONTENTS

- Explanation of Data and Reports
- Magnetic Activity Report
- Outstanding Magnetic Effects
- Principal Magnetic Storms
- Preliminary Calibration Data and Monthly Mean Absolute Values
- Magnetogram Hourly Scalings
- Sample Format for Normal and Storm Magnetograms
- Normal Magnetograms
- Storm Magnetograms (When Normal is too disturbed to read)

Open-file report
(Geological Survey
(U.S.))

340210

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.....+256.9°
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:

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

where D, H and Z are absolute values;

B_D , B_H and B_Z are base-line values;

S_D , S_H and S_Z are scale values;

and d, h and z are scalings in millimeters.

MAGNETIC ACTIVITY
(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR
October 1982

DATE	K-INDICES									AK	TIME SCALE ON MAGNETOGRAMS 20 mm/hr
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM		
1	2	3	5	6	4	6	5	4	35	42	SUDDEN COMMENCEMENTS d h m
2	3	4	5	6	5	3	4	2	32	33	
3	2	1	4	3	4	4	2	1	21	15	
4	1	3	5	4	5	5	1	2	26	25	
5	2	3	3	1	1	1	2	1	14	07	
6	2	4	4	5	5	5	4	3	32	31	
7	4	5	6	5	4	7	2	3	36	49	
8	3	5	5	5	6	5	3	2	34	39	
9	1	0	1	2	1	2	0	1	08	03	
10	2	1	1	4	4	2	2	3	19	12	
11	3	3	4	4	3	2	2	1	22	15	
12	1	2	2	5	2	3	4	3	22	16	
13	2	3	3	5	6	6	3	4	32	36	
14	4	4	7	6	5	5	5	3	39	54	
15	1	2	2	5	3	1	2	1	17	12	
16	1	1	2	3	4	5	3	3	22	17	
17	4	4	3	5	4	3	3	4	30	25	
18	3	4	4	5	5	7	3	3	34	42	
19	3	2	3	3	4	4	3	3	25	17	
20	3	4	6	5	5	2	1	1	27	29	
21	2	2	2	2	1	2	2	1	14	06	
22	0	1	1	2	1	1	0	0	06	02	
23	0	0	2	2	1	3	2	0	10	05	
24	0	0	0	2	0	1	0	0	03	01	
25	1	4	3	4	5	5	4	2	28	25	
26	6	5	5	4	4	3	1	1	29	31	
27	1	2	4	4	5	5	2	2	25	22	
28	1	1	2	5	4	1	2	2	18	13	
29	2	4	6	6	6	6	4	3	37	50	
30	3	3	5	7	6	5	5	3	37	51	
31	2	3	3	1	3	4	7	4	27	31	

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

BEGIN			END		
d	h	m	d	h	m

K SCALE USED:

LOWER LIMIT FOR K = 9.....

CURRENT SCALE VALUE.....

LOWER LIMIT FOR K = 9.....

D	H	Z
683.8	321.7	
3.73	7.79	
2550	2510	

(mm)
(γ /mm)
(to nearest 10 γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY

OBSERVER IN CHARGE

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY
COLLEGE, ALASKA

MONTH	YEAR
OCTOBER	1982

DATE	TIME U.T.	NATURE OF PHENOMENON ¹	REMARKS
22	14xx	pc4	
24	10xx	pc2	
26	0029	si*	

IDENTIFIED BY: JBT

VERIFIED BY: EAS

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

PRINCIPAL MAGNETIC STORMS

Data from Individual Observatories:

COLLEGE OBSERVATORY, COLLEGE, ALASKA

OCTOBER 1982

WDC-A FOR SOLAR-TERRRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80302 U.S.A.

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	06	01XX	..	..	..	..	07	6	7	172	1390	780	08	22
		13	06XX	..	..	..	..	14	3	7	231	1350	910	14	22
		25	04XX	..	..	..	..	26	1	6	178	980	810	26	14
		29	04XX	..	..	..	..	30	4	7	274	1430	720	30	21
		31	12XX	..	..	..	..	31	7	7	294	1780	910	Nov	
								Nov					03	14	
								01	5	7					
								02	5	7					
								03	3	7					

NORMAL MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 10-1-82	2400 U.T., 10-31-82	1.0/mm	3.78/mm	27° 47.4 E
H	0000 U.T., 10-1-82	2400 U.T., 10-31-82	7.88/mm		127658
Z	0000 U.T., 10-1-82	2400 U.T., 10-31-82	7.58/mm		551328

STORM MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 10-1-82	2400 U.T., 10-31-82	7.9/mm	29.68/mm	23° 41.3 E
H	0000 U.T., 10-1-82	2400 U.T., 10-31-82	44.08		115218
Z	0000 U.T., 10-1-82	2400 U.T., 10-31-82	48.58		540488

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

MONTHLY MEAN ABSOLUTE VALUES*		
D	H	Z
27° 57.6 E	129528	553958

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: OCT 3, 5, 9, 10, 15, 21, 22, 23, 24, 28

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

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

OBSV. CO 82
YEAR 82
MONTH OCT
ELEM-ENT D

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 80th universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q of S	Time	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM	
		01	44	49	-2	-12	33	63	50	31	-43*	-60*	343	201	01	328	281	274	225	261	274	88*	47	106	130	171	33	2915
		02	36	43	44	-7	25	-175*	-72*	-1	5	175*	74	131	02	159*	421*	178	162	192	157	138	70	40	76	67	56	1994
		03	71	84	67	66	62	92	39	34	90	134	137	168	03	171	266	300	200	183	164	188	135	95	84	82	73	2985
		04	72	89	76	92	74	25	11	67	132*	29*	69*	74	04	129	162	219*	96	125	166	175	135	103	110	84	52	2366
		05	74	46	71	41	65	25	39	82	58	71	96	98	05	102	104	113	129	142	151	152	150	149	104	80	48	2190
		06	28	36	20	1	-24	-2	14	2	55	86	75	234	06	166	218	416	214	147	176	172	205	-22	-69	-13	65	2200
		07	40	71	21	58	12	-225*	69*	-225*	-98*	-67*	36*	109	07	219*	196*	166	196*	330*	77	138	135	112	98	80	53	1601
		08	83	64	72	43	134	68	92	97	140	68	123	106	08	102	104	226*	329*	180	232	162	113	82	136	75	52	2883
		09	51	60	77	74	75	71	81	78	83	110	98	108	09	132	116	134	138	146	163	171	162	146	120	83	70	2547
		10	42	52	63	45	64	56	60	72	81	85	82	137	10	210	173	192	165	186	187	165	173	222	138	93	24	2767
		11	53	61	78	42	52	24	2	66	80	82	105	114	11	151	119	156	146	164	143	182	193	102	76	14	61	2266
		12	52	60	56	59	56	35	66	44	64	40	109	192	12	99	123	138	129	147	142	161	208	118	-62*	-36	79	2079
		13	67	51	11	31	-8	-17	26	75	64	164	100	140	13	250	637*	534*	438*	-6*	304	125	-31	11	35	104	108	3213
		14	99	68	94	-6*	78	143	-109*	-148*	-21*	-109*	-21	117	14	391*	411	218	329	282	246	105*	93	14	74	100	92	2540
		15	92	75	64	58	59	72	60	68	70	9	18*	114	15	123	146	106	131	142	139	185	72	74	90	81	80	2182
		16	71	67	75	72	70	65	35	82	66	66	56	89	16	129	172	250	253	254	202	139	146	76	108	12	46	2601
		17	60	32	30	30	12	94	80	63	64	79	68	173	17	136	180	155	125	132	150	125	167	73	88	-49	59	2126
		18	37	33	58	60	64	66	52	50*	130	69	22	175	18	208	376*	114*	258*	114*	150	160	114	73	49	59	64	2555
		19	106	86	71	99	90	63	68	254	70	106	71	106	19	130	218	244	175	176	213	150	100	134	59	61	36	2886
		20	97	64	52	110	90	68	57	101	-124*	90*	67	115	20	194	132	54	137	132	150	145	134	126	84	70	68	2213
		21	62	66	60	70	59	53	81	121	134	100	98	100	21	104	114	116	126	157	199	130	134	120	64	71	70	2409
		22	74	68	52	66	71	70	60	78	89	79	96	120	22	122	122	107	106	122	137	148	146	134	120	104	101	2392
		23	98	90	82	73	68	64	109	81	72	76	83	85	23	102	102	129	152	93	105	147	174	153	106	89	75	2408
		24	66	72	62	48	63	58	65	80	90	98	114	126	24	130	115	121	136	169	184	141	108	109	76	68	70	2369
		25	52	40	30	2	13	-5*	9	56	57	76	135	82	25	213	313*	42*	453	358	196	177	78	14	23	76	70	2560
		26	3*	-20	-2	-13	-180*	-164*	-275*	45	98	72	102	128	26	190	160	136	121	134	168	149	152	155	141	116	102	1518
		27	88	82	62	62	46	32	-1	13	-8	8	231	111	27	119	205	270	57	138	178	156	130	126	115	118	98	2436
		28	77	63	53	32	32	34	92	57	61	72	51*	130*	28	176	190	167	112	123	135	167	195	168	146	103	80	2516
		29	50	54	49	26	5	-21	-5*	-47	11*	20	225*	170*	29	119	361*	59*	678*	170	106	107	112	59*	61	57	72	2498
		30	52	34	54	57	90	74	-21*	50	-28*	122*	51*	170*	30	836*	328*	297*	-36*	424*	265*	-44*	-51	60	47	34	45	2910
		31	80	65	73	86	90	114	163	75	90	86	95	108	31	109	104	147	208	196	138	233*	-124*	11*	86	57	14	2304

SCALED BY LYT
CHECKED BY EAS
SIGNS REVIEWED BY
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 Mgp., converted to Normal Mgp.
- [] 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 75429
MONTHLY MEAN 101
DATES WITH GAPS

MAGNETOGAM 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 (150 M.T.) is hour 11 of the GMT universal day.

Shrinkage corrections have been applied. Negative values are in red, with minus sign shown.

STATION NO.	YEAR	MONTH	DAY	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
416	413	423	451	440	424	390	341	313	206	202	299	01	342	409	484	289	297	290	104	248	367	415	473	434	8470			
426	380	412	432	460	266	246	331	450	651	431	438	02	605	696	406	316	306	353	337	321	350	379	378	385	9755			
405	385	390	384	390	401	396	453	471	448	439	416	03	360	358	346	372	376	397	385	376	368	382	381	379	9018			
400	430	410	429	468	463	425	398	403	399	410	493	04	270	298	342	301	270	334	310	292	267	246	362	395	8835			
384	393	314	292	24	-123	153	265	418	461	519	485	05	632	592	496	612	425	164	302	339	373	379	385	385	8669			
419	398	384	366	380	421	431	395	202	140	265	303	06	365	362	444	297	95	158	193	296	321	370	368	378	7811			
385	386	384	376	376	374	376	379	382	367	369	365	07	343	348	342	333	337	351	359	356	354	349	346	352	8699			
355	375	369	361	362	359	369	376	372	364	338	377	08	357	304	340	340	340	345	340	339	346	320	331	349	8428			
368	364	363	363	355	372	370	316	430	422	386	367	09	336	346	352	325	338	316	328	338	328	345	349	360	8541			
355	361	364	372	360	374	398	385	370	346	528	297	10	312	351	338	327	308	339	331	338	288	282	307	332	8364			
340	354	380	441	388	418	387	408	393	322	222	298	11	450	509	703	482	347	206	235	164	242	345	396	419	8849			
403	400	252	247	330	78	73	165	335	657	558	478	12	683	560	468	269	89	94	44	24	160	290	339	352	7348			
372	378	378	375	375	376	376	376	330	290	315	305	13	371	373	341	351	357	358	355	320	324	334	344	350	8336			
352	352	358	351	351	351	355	376	376	376	330	290	14	361	350	348	373	294	189	258	314	310	325	313	349	7895			
360	368	368	358	355	427	375	364	338	350	358	352	15	443	365	369	340	343	343	337	329	296	315	303	394	8586			
384	380	385	381	378	396	378	309	326	349	484	472	16	580	387	-11	37	*	270	332	346	362	333	385	8343				
377	376	382	382	372	363	402	353	369	345	328	336	17	256	271	281	281	330	360	304	290	260	323	347	394	8158			
222	382	402	416	404	382	342	299	79	386	372	445	18	553	382	311	330	362	342	312	299	314	324	325	341	8620			
367	374	374	383	371	376	396	400	374	390	384	368	19	362	342	343	343	312	299	314	324	325	326	341	348	8543			
356	351	354	372	366	358	360	367	360	345	342	324	20	319	332	332	327	336	343	343	341	342	340	343	349	8302			
349	347	343	345	346	347	366	377	376	372	342	352	21	346	324	320	286	202	188	240	300	322	331	336	336	7793			
341	342	340	343	349	350	355	360	361	356	322	322	22	313	330	333	311	247	229	250	258	278	292	311	332	7666			
338	342	342	351	361	390	277	357	368	255	312	350	23	474	619	376	213	118	25	122	246	342	382	376	364	7807			
358	425	434	422	252	-15	15	280	330	342	344	404	24	445	316	343	337	347	345	323	348	350	354	352	355	7806			
365	366	366	358	360	352	380	366	353	361	262	258	25	346	392	489	254	248	261	270	289	304	339	363	359	8032			
364	363	363	365	360	366	374	383	368	419	364	308	26	366	312	244	309	345	356	358	351	332	330	332	336	8235			
342	351	348	348	348	314	134	112	250	314	440	444	27	512	652	437	405	280	266	304	359	370	386	385	396	8566			
390	376	390	406	401	382	297	362	326	516	516	573	28	516	509	471	311	321	289	61	158	302	363	381	389	9006			
390	376	390	406	401	382	297	362	326	516	516	573	29	516	509	471	311	321	289	61	158	302	363	381	389	9006			

SCALING BY LYT

CHECKED BY EAS

SIGNATURE BY

REVIEWED BY

BY

Interpolated
Beginning Value
Preliminary box-line and scale values
Scale Value

() Interpolated
[] Signified portion of hour interpolated.
<> Record of hour, if value is given, curve was estimated for missing part.
* Deleted from STORM Mapb., converted to Normal Mapb.

MONTHLY SUM 261476
MONTHLY MEAN 351
DATES WITH GAPS

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80225

OBSY. YEAR MONTH FILE-

00 82 OCT H

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 8400 universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Cor	Sec	Time	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM	
			01	261	256	283	309	262	254	282	301	231	39*	-23*	-58	01	-109	-160	-228*	217	179	-185*	224*	217	224	205	273	378	2921
			02	366	391	262	269	302	540	362	124	130	-382*	73	112	02	-36	-234*	-71*	152	166	110	14	144	214	214	211	239	3672
			03	257	229	245	258	265	264	311	362	275	83	83	82	03	22	-100	26	144	225	254	232	225	203	206	194	222	4567
			04	225	209	218	223	236	290	418	368	184*	99	-6	75	04	22	25	-59*	117	298	256	226	212	224	223	214	232	4539
			05	224	239	218	255	389	353	354	333	255	240	236	238	05	234	242	245	245	232	212	232	239	214	221	204	215	6069
			06	243	246	272	262	342	474	468	420	304	255	184	-144*	06	60	-40	-247*	-63	280	259	141	-40	-36	115	179	238	4172
			07	306	330	509	466	535*	409	8*	189	237	14*	-37*	74	07	-24	48	64	-54*	461*	42	299	282	237	233	228	262	4196
			08	251	213	266	324	496	271	260	266	145	-50	230	273	08	244	220	-184*	297*	-80	-51	146	220	240	206	217	218	4044
			09	243	222	222	242	242	251	248	258	254	274	273	273	09	223	238	228	209	252	251	237	226	221	217	219	236	5724
			10	223	241	251	265	255	263	262	266	278	303	280	180	10	134	252	232	252	257	253	241	237	221	206	216	222	5790
			11	233	232	236	267	259	298	538	416	365	323	264	211	11	182	245	180	247	217	236	243	225	204	214	214	212	6261
			12	241	233	258	258	264	291	298	335	314	300	-39	111	12	265	254	235	219	212	237	228	152	72	119	238	241	5336
			13	227	248	269	296	332	358	403	322	292	278	5	-32	13	-86*	337*	359*	409*	290*	-121*	-51	0	67	126	304	345	2127
			14	354	372	452	473	456	452	276	335	-1*	-545*	182	188	14	222*	-195*	-32	-217*	-45	-132	-64*	31	184	256	252	258	3068
			15	240	239	262	263	274	248	258	299	322	352	219	299	15	251	218	250	254	248	248	210	227	251	252	250	251	6185
			16	246	252	248	254	260	263	303	323	298	330	306	332	16	226	166	72	-118*	-78*	121	243	224	243	206	222	242	5184
			17	256	280	344	504	336	294	258	323	325	112	169	26	17	110	113	192	246	266	249	232	182	178	123	188	266	5572
			18	272	263	306	274	404	321	312	402	328	337	300	99	18	-90	-471*	-523*	-563*	-94*	322	298	235	206	235	247	247	3622
			19	260	239	244	281	275	278	349	299	280	275	176	175	19	158	177	132	189	231	179	150	205	196	189	180	216	5333
			20	247	296	318	301	301	428	432	286	17*	204	283	166	20	-121	-94	244	240	267	260	248	245	233	237	233	242	5513
			21	250	240	234	268	295	272	285	307	318	293	267	249	21	244	234	243	222	175	192	191	218	221	231	235	240	5924
			22	240	249	246	255	274	268	267	267	280	254	268	240	22	250	257	238	250	261	256	242	224	220	226	234	235	6001
			23	238	241	248	257	256	260	261	284	312	290	255	274	23	258	244	229	146	100	209	248	249	244	238	229	228	5798
			24	237	248	258	262	264	268	274	273	280	278	278	240	24	262	260	256	238	221	255	251	257	247	246	240	230	6123
			25	242	248	266	286	344	461	432	424	312	287	188	104	25	-17	-165*	-284*	-131*	-106	-10	136	249	308	293	254	252	4373
			26	312	303	293	429	652	328	522	425	312	291	250	212	26	158	178	200	224	252	178	220	248	248	241	242	231	6949
			27	243	251	261	270	274	296	376	472	434	420	294	257	27	273	135	-58*	71	220	249	234	231	254	252	236	258	6203
			28	247	252	256	269	269	284	312	321	332	319	118	-89	28	-42	103	228	288	283	284	276	274	273	256	252	245	5615
			29	255	270	268	287	369	279	356	287	-80*	60	-165*	-58*	29	117	-103*	-476*	-225*	62	131	303	277	265	245	294	274	3289
			30	295	317	280	333	288	346	341	295	157	343*	-213*	-275*	30	-609*	-84*	-174*	-179*	-371*	-332*	-42	214	286	252	212	268	1262
			31	274	274	242	244	282	367	304	275	267	253	243	237	31	226	244	255	170	247	228	-310*	-270*	201	155	179	233	4820

SCALED BY
CHECKED BY
SIGNS REVIEWED BY
PUNCHED BYLYT
EASPreliminary 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 Mgpb., converted to Normal Mgpb.

[] Scaling uncertain because of magnetic storm.

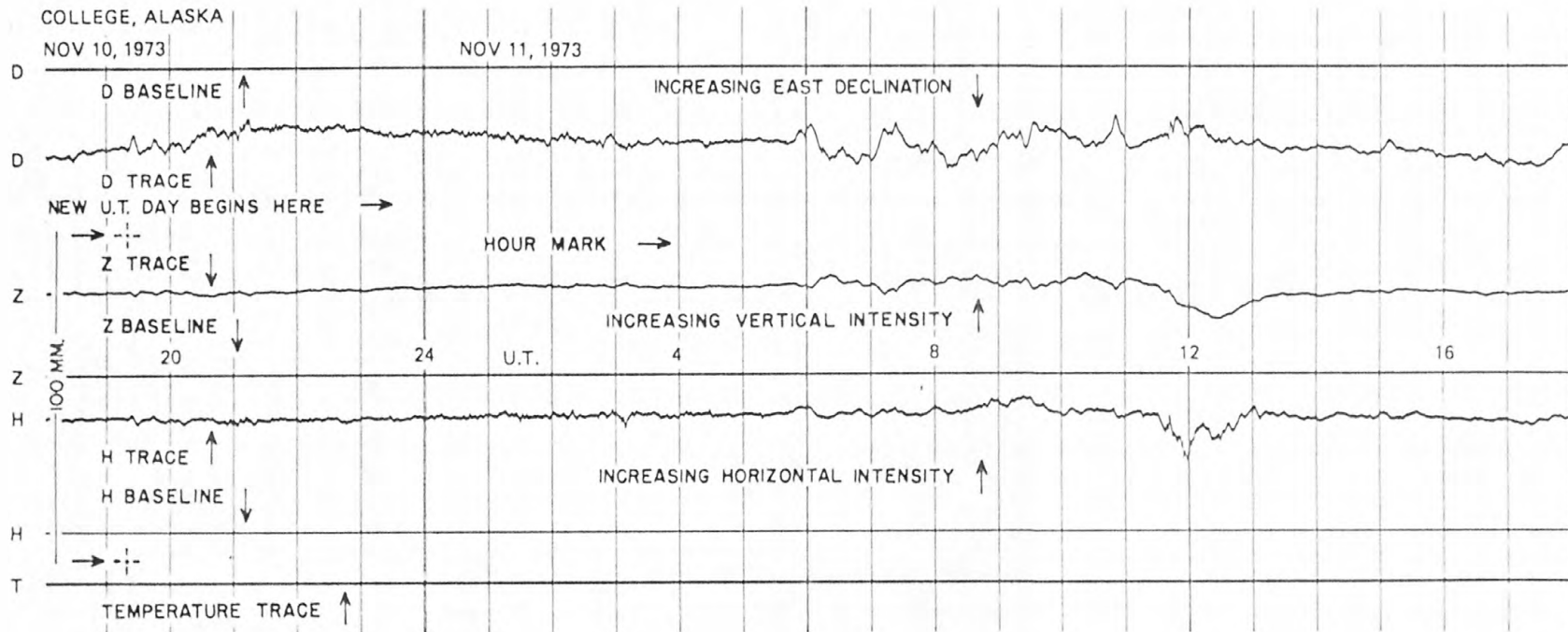
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

MONTHLY SUM 150252

MONTHLY MEAN 202

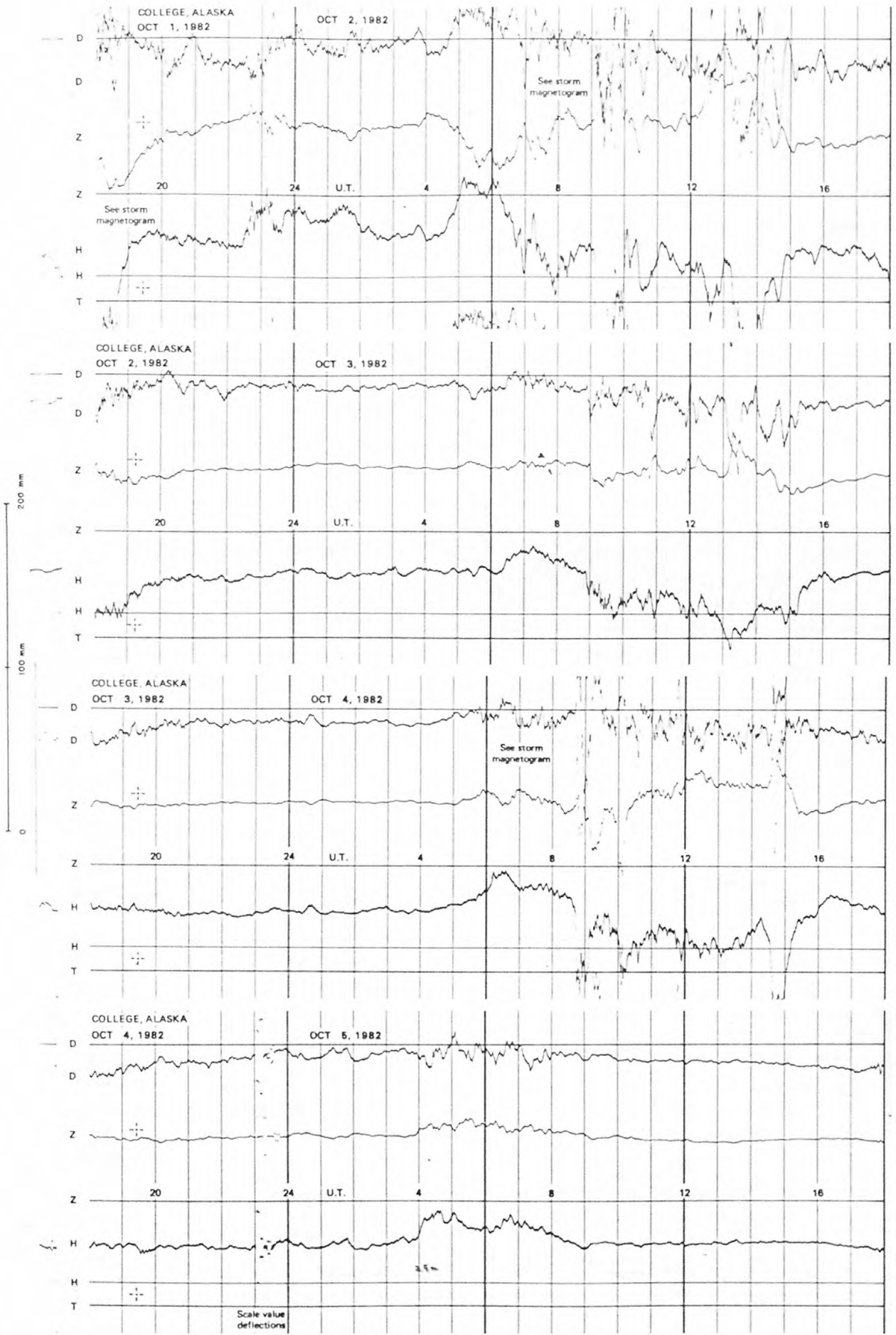
DATES WITH GAPS

FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)

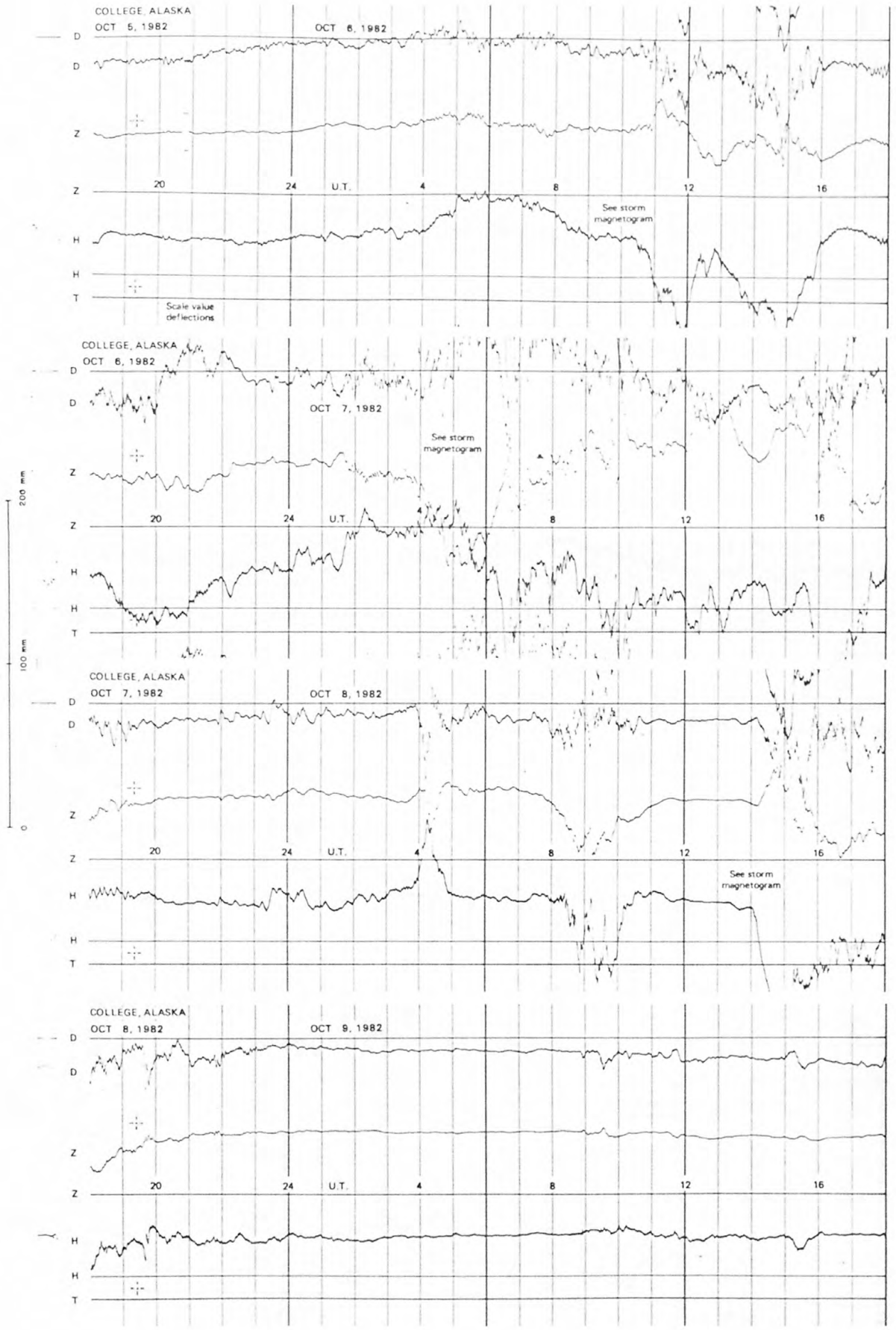


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS



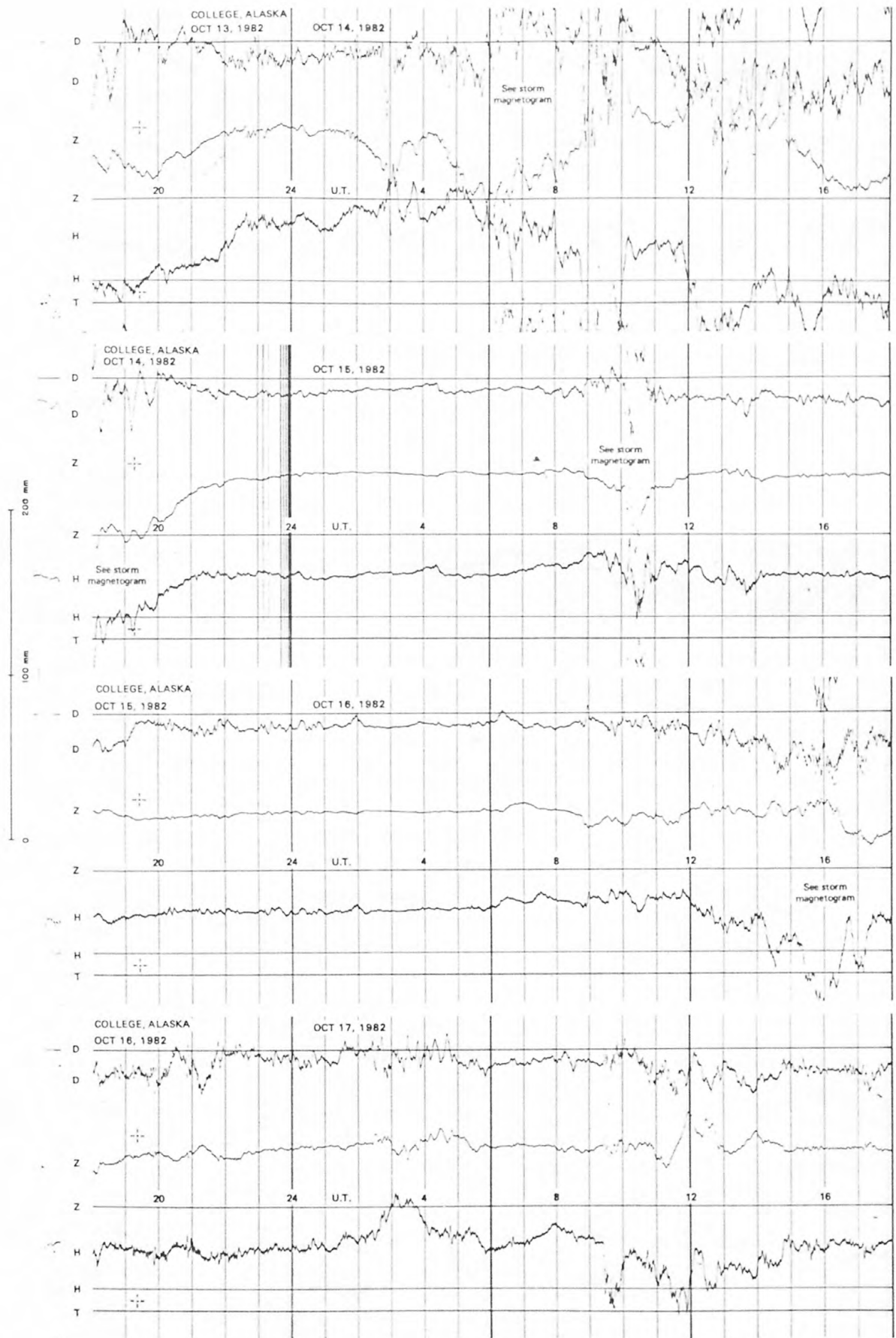
NORMAL MAGNETOGRAMS



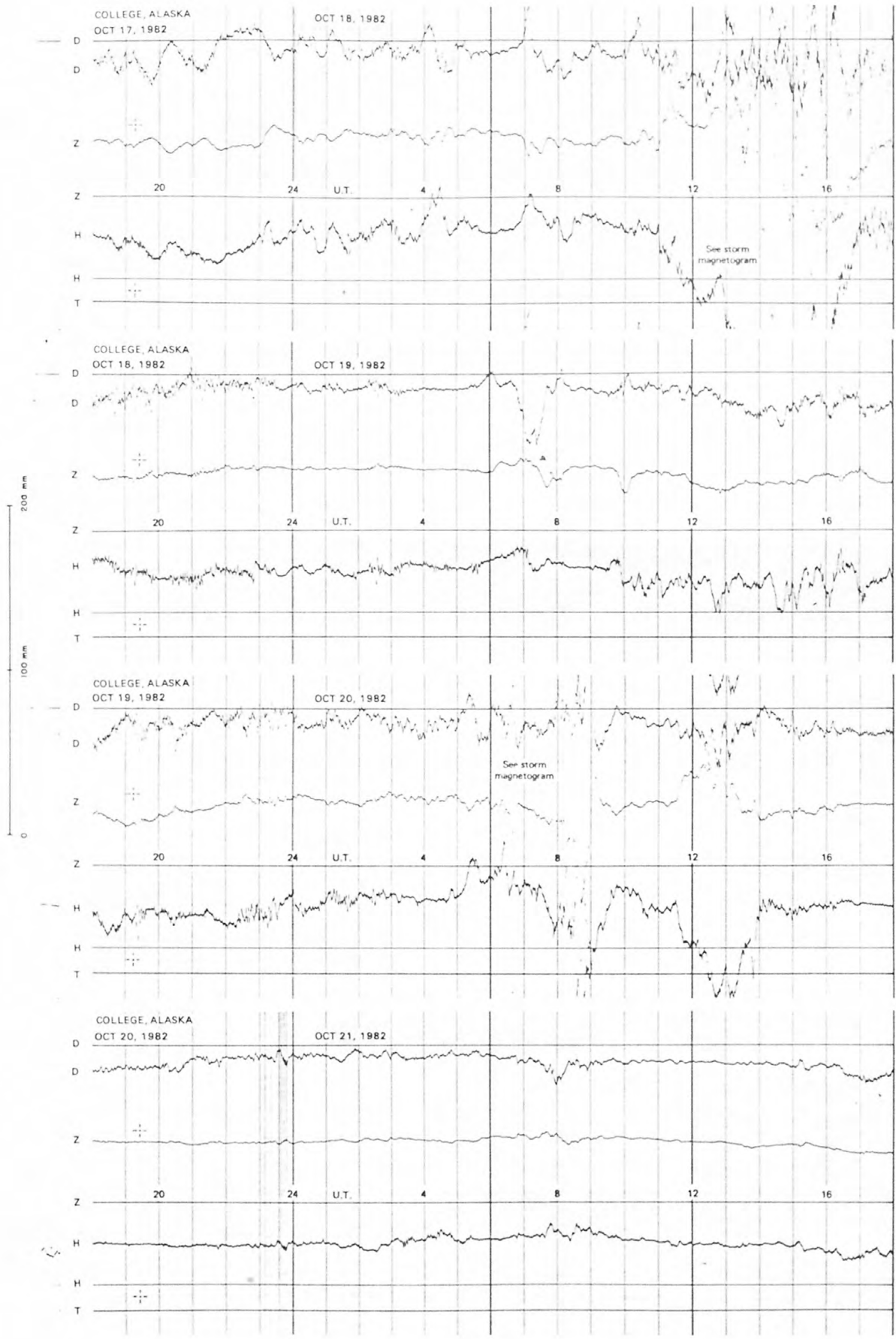
NORMAL MAGNETOGRAMS



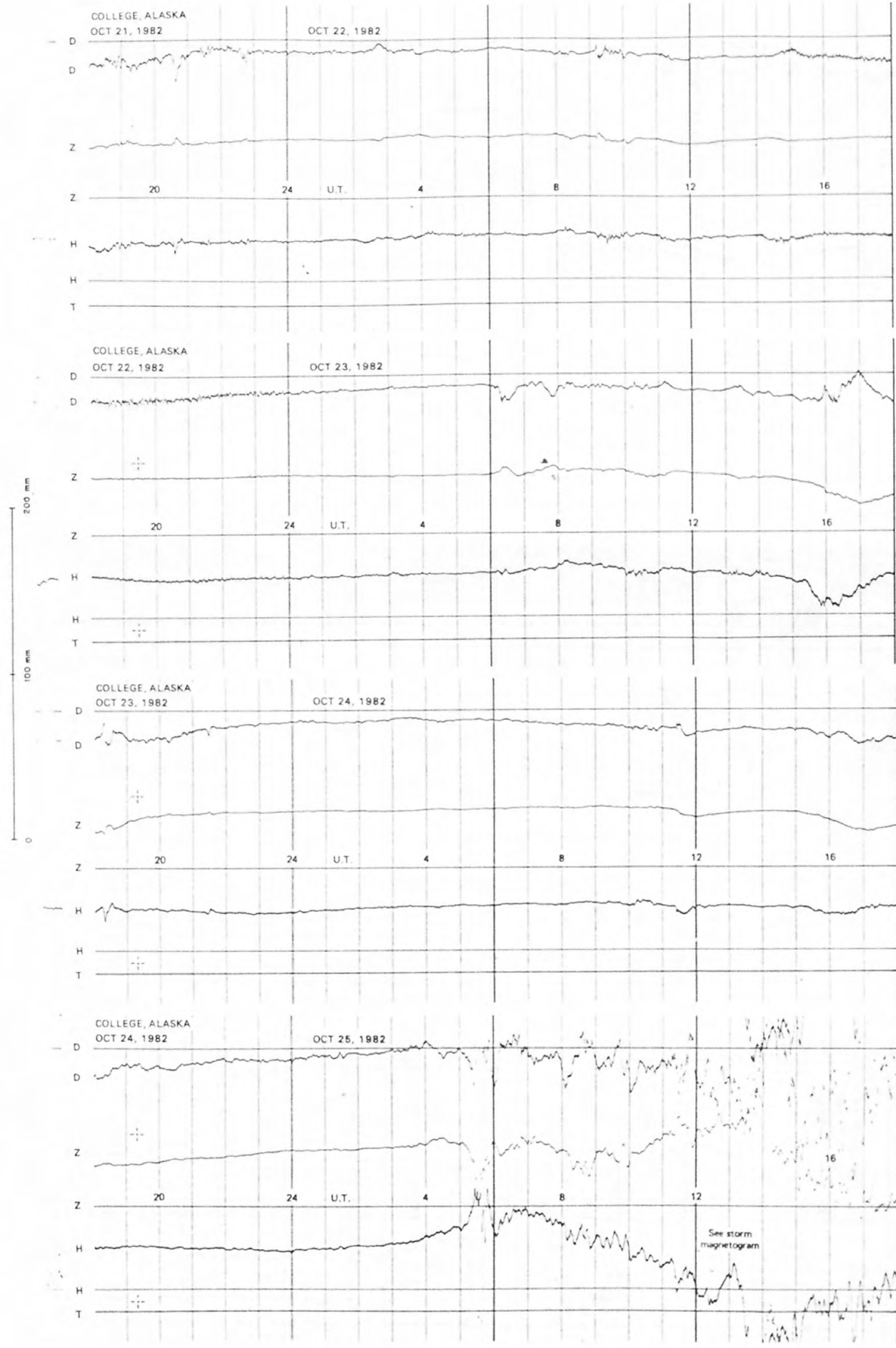
NORMAL MAGNETOGRAMS



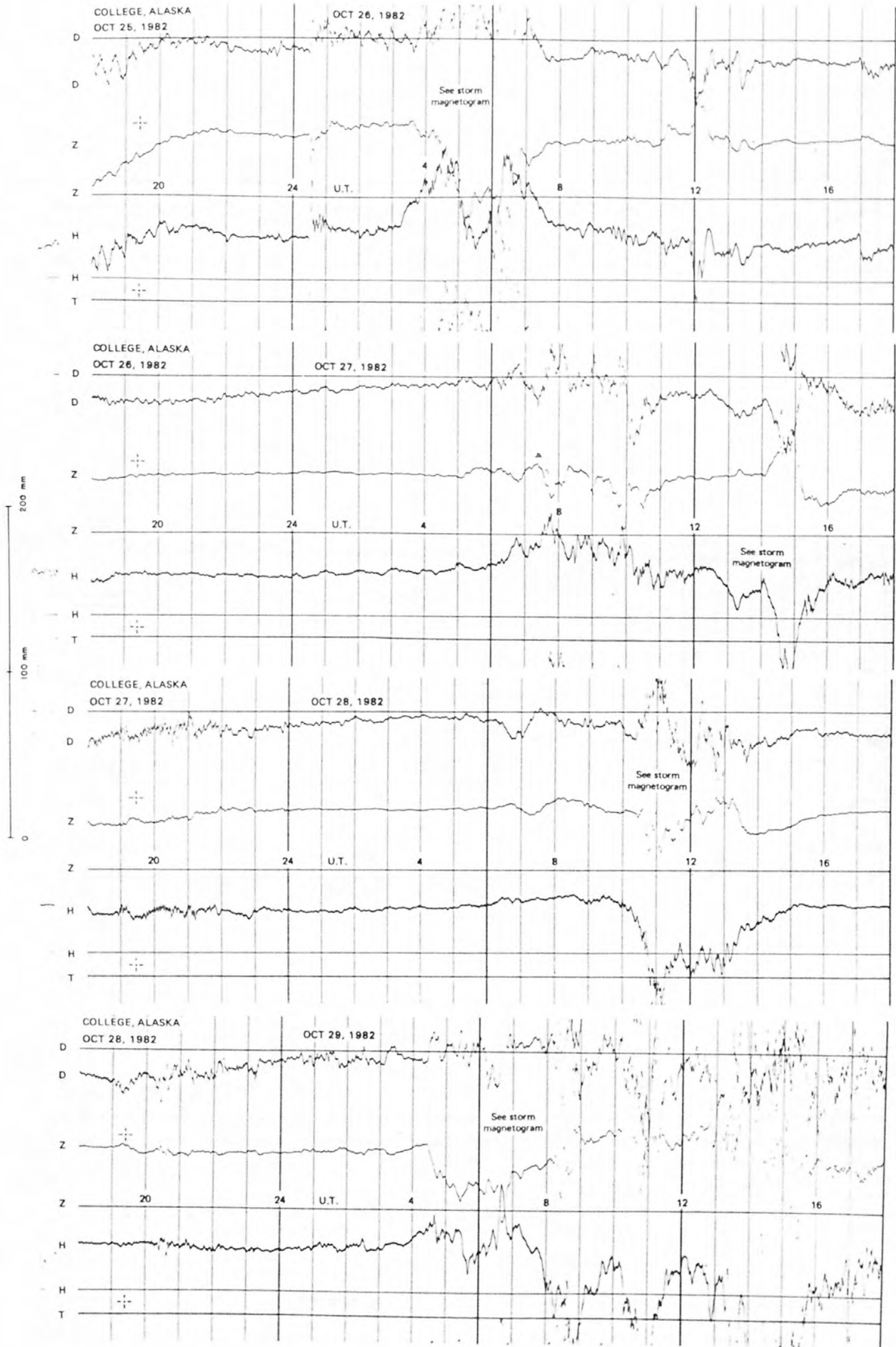
NORMAL MAGNETOGRAMS



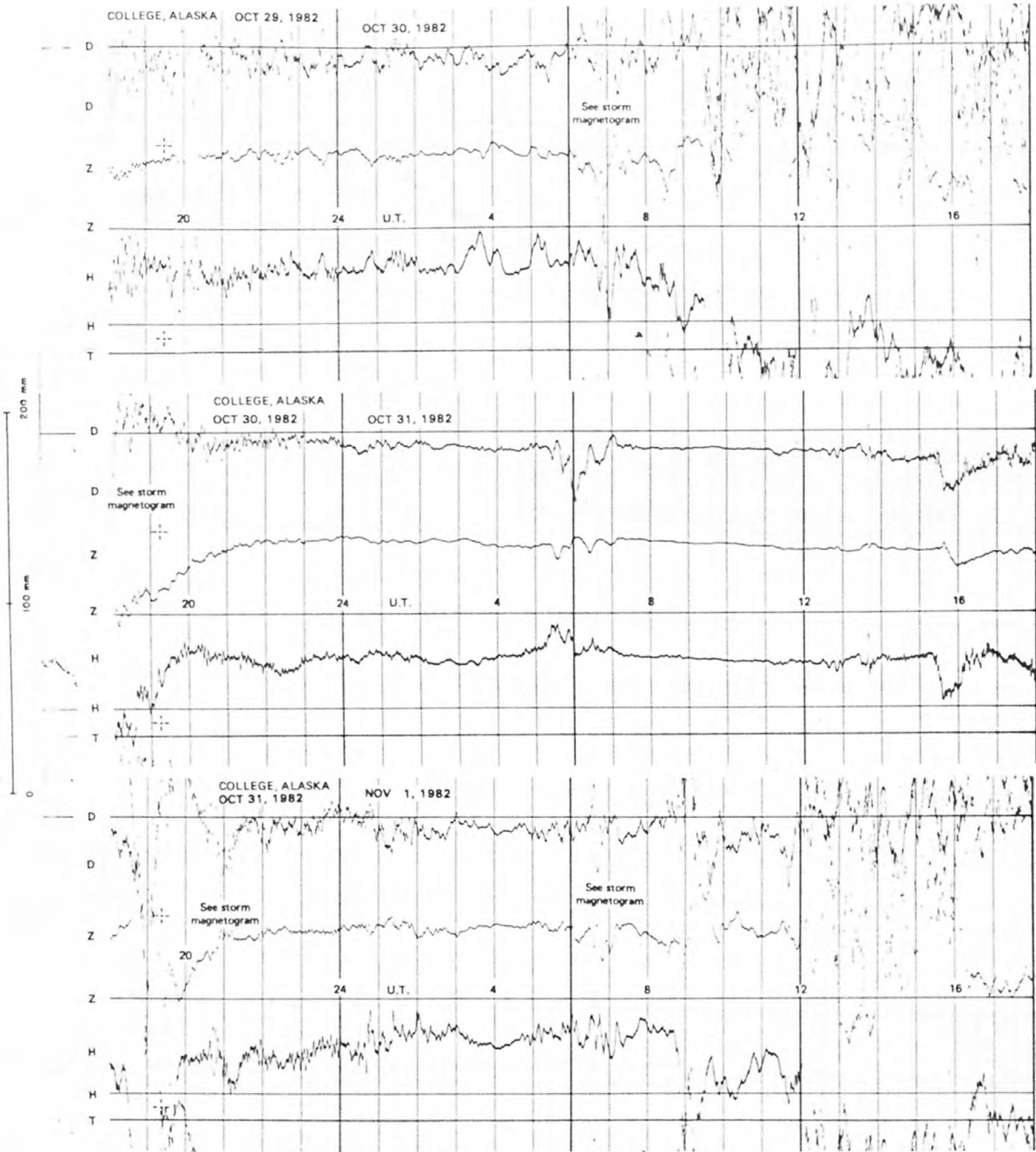
NORMAL MAGNETOGRAMS



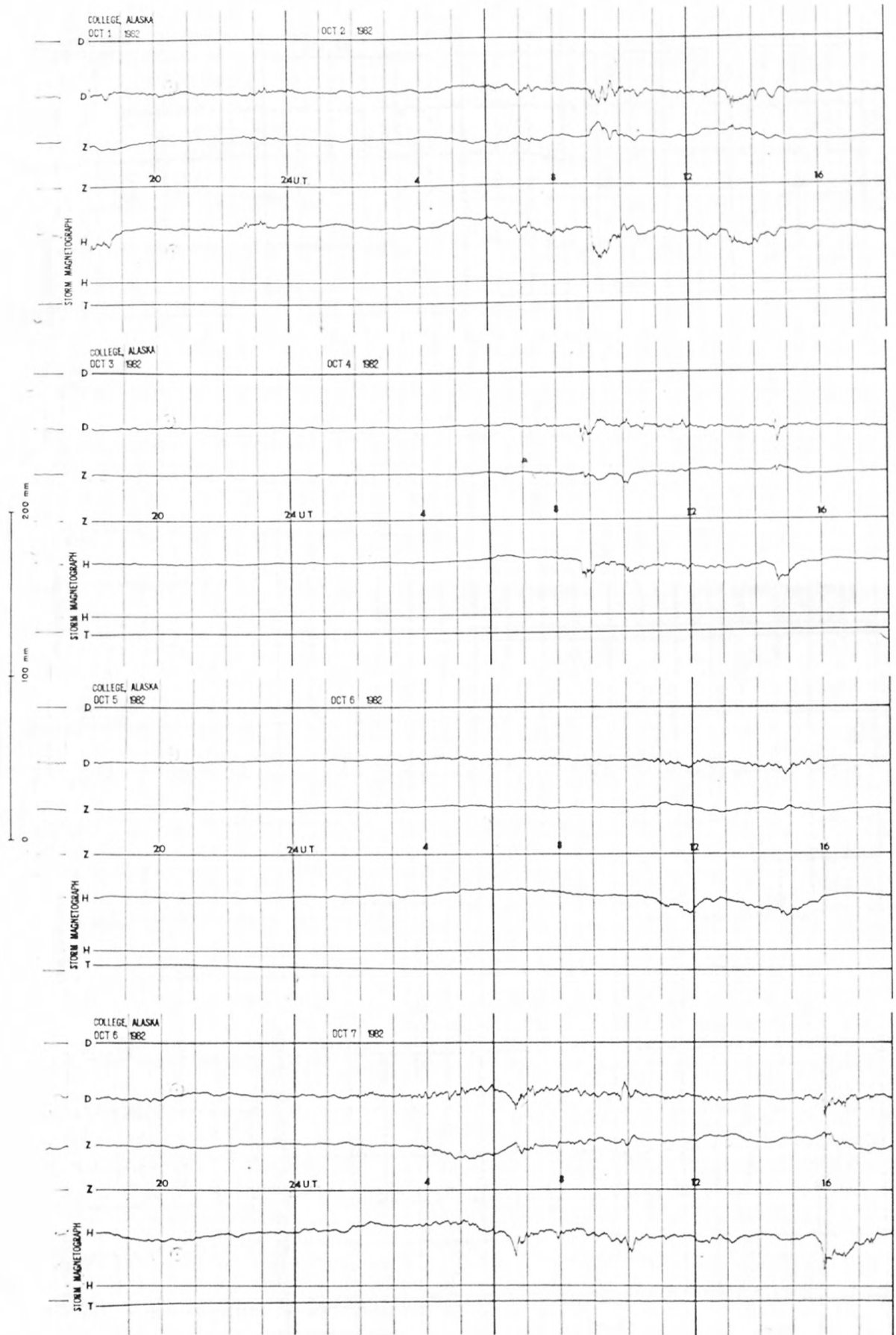
NORMAL MAGNETOGRAMS



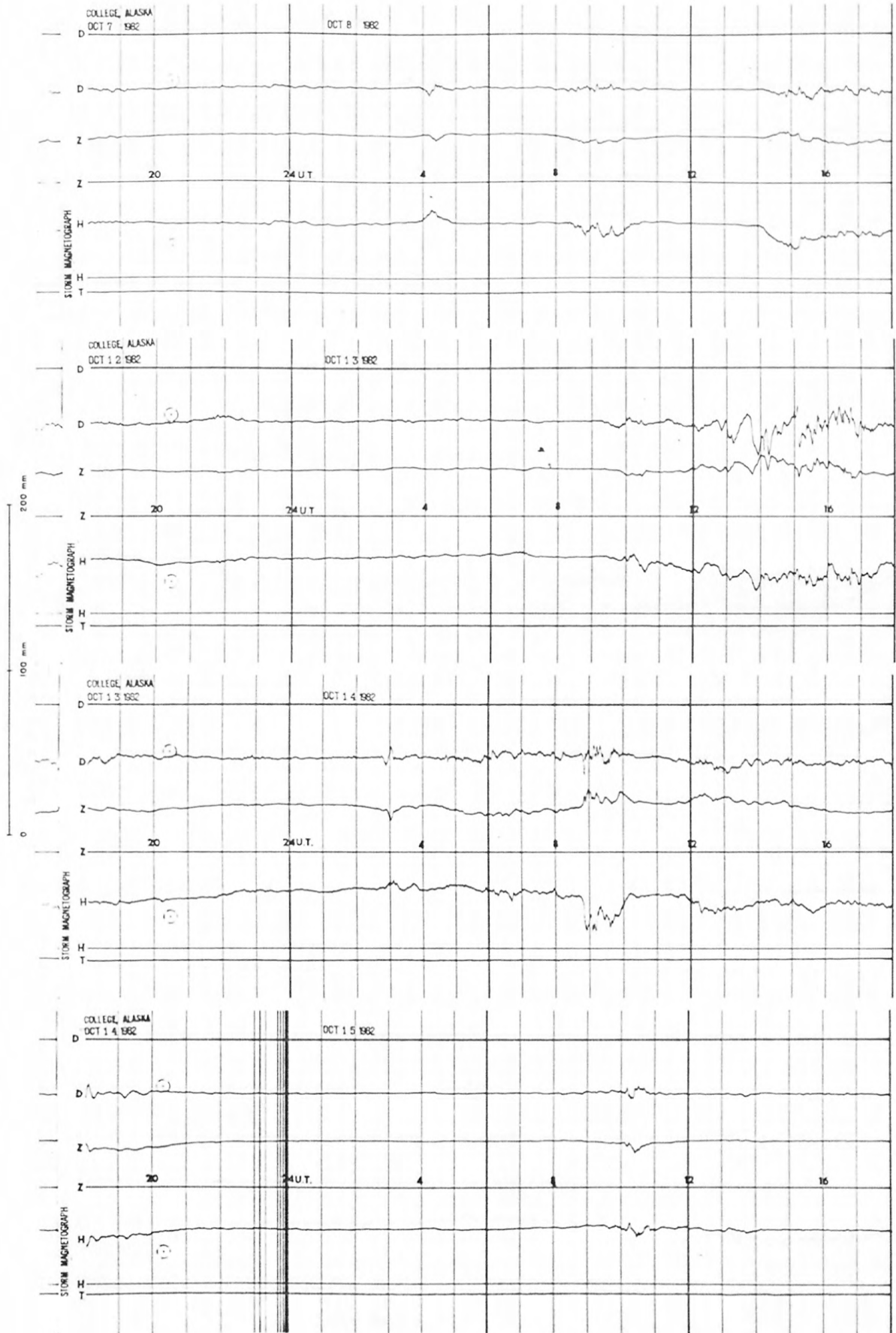
NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



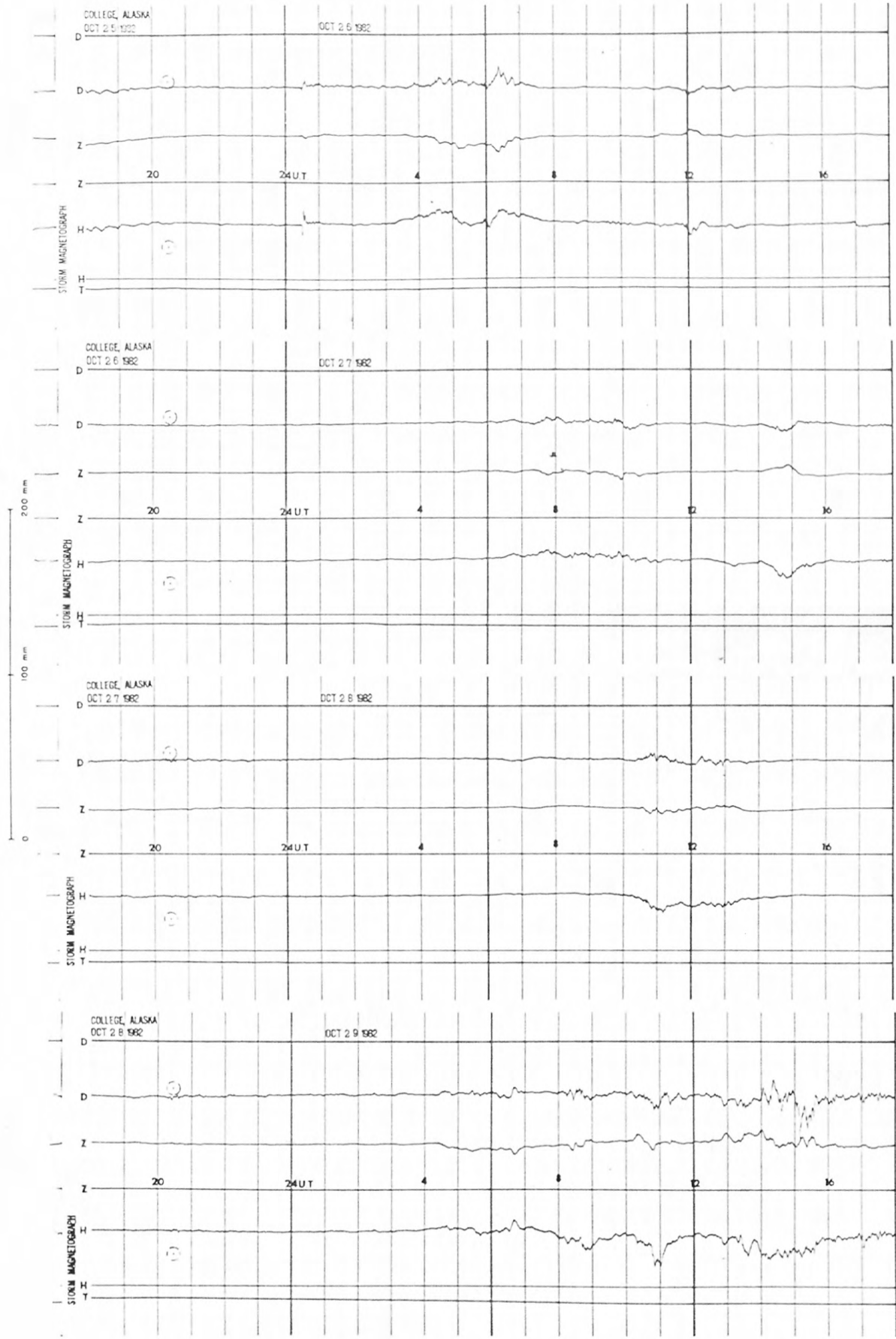
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



USGS LIBRARY RESTON



3 1818 00043862 0