

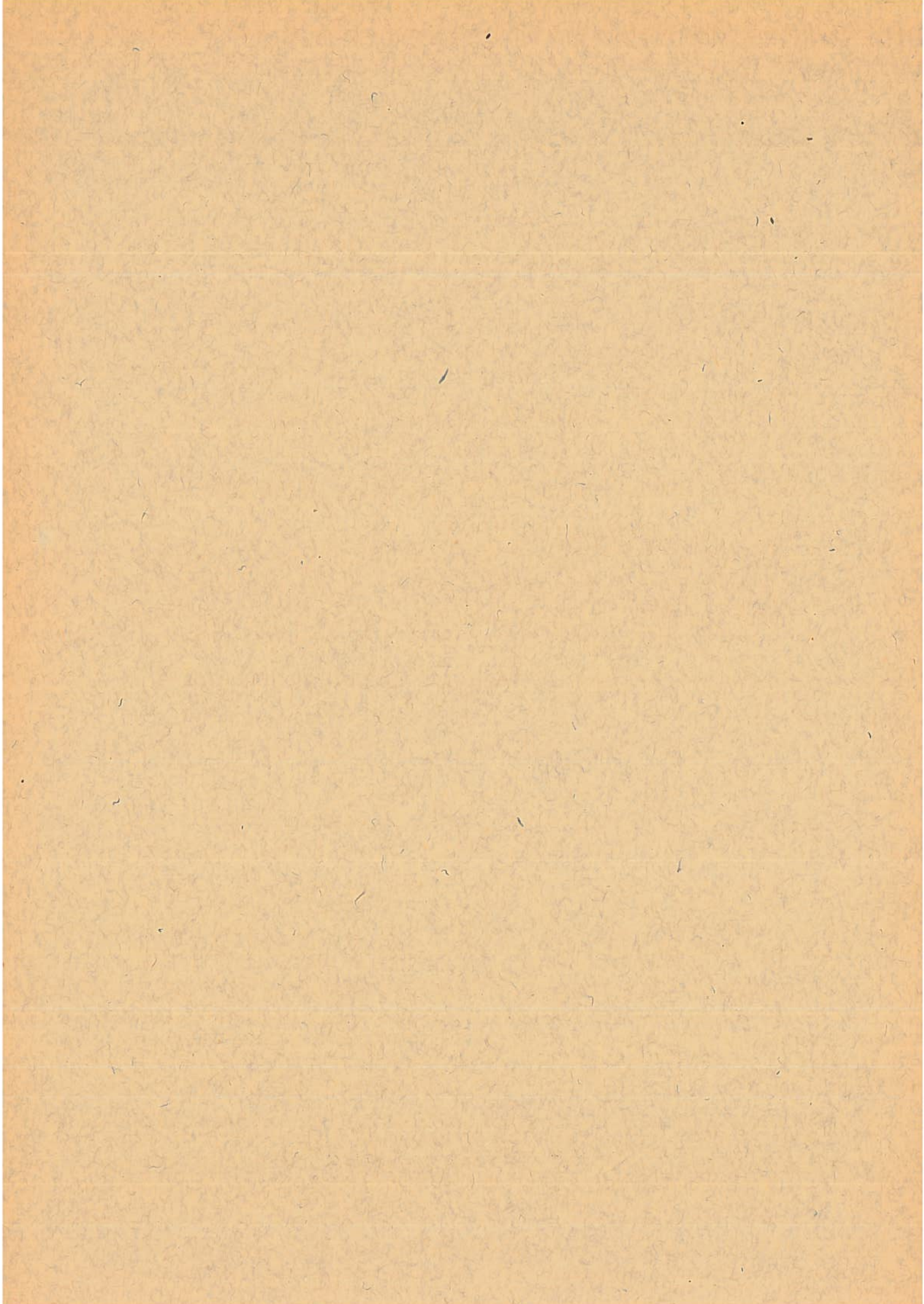
Publikasjoner fra  
DET NORSKE INSTITUTT FOR KOSMISK FYSIKK  
Nr. 32

THE AURORAL OBSERVATORY AT TROMSØ  
( $\varphi = 69^{\circ} 39'.8$  N,  $\lambda = 18^{\circ} 56'.9$  E. Gr.)  
RESULTS OF MAGNETIC OBSERVATIONS  
FOR THE YEAR 1949

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1951

A.S JOHN GRIEGS BOKTRYKKERI, BERGEN



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## THE AURORAL OBSERVATORY AT TROMSØ

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# RESULTS OF MAGNETIC OBSERVATIONS FOR THE YEAR 1949

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### GENERAL REMARKS.

As to the instrumental equipment we are at last in possession of a QHM — (no. 123) and a BMZ — (no. 39) instrument. Both instruments already used for the absolute measurements.

The observations have been made by amanuensis J. FRØSHAUG and director E. TØNSBERG. The reading of the hourly values was performed by amanuensis J. FRØSHAUG and the calculation work by student S. BERGER.

### SCALE VALUES.

The following scale-values have been determined:

D-curves: 1'.45 or 4.72  $\gamma$  per mm  
H-curves: ..... - 5.13  $\gamma$  per mm  
V-curves: ..... - 6.80  $\gamma$  per mm

### BASE-LINE VALUES.

The absolute measurements resulted in the table given below of observed and adopted base-line values.

The measurements with QHM 123 showed the best accordance with our base-line value 11208  $\gamma$ . It is satisfactory to add that measurements on august 8th and 9th with QHM 64 and 129 by the Swedish collegus ÅSLUND and BORG gave respectively 11209  $\gamma$  and 11208  $\gamma$ .

The vertical intensity base-line value 50300  $\gamma$  — kept constant for several years — has unfortunately proved to be some 20  $\gamma$  to high. I think it is impossible to discover when this error came up. Meanwhile have measurements with the BMZ 39 given a mean base-line value of 50280  $\gamma$ , and with the Swedish instrument no. 34 (ÅSLUND) a value of 50277  $\gamma$ .

The vertical base-line value for the year has been succesively reduced from 50 300  $\gamma$  to 50 280  $\gamma$ .

The quiet mean Inclination value for the year was calculated to  $77^{\circ} 33'.6$ .

The temperature coefficient for the H-variometer is  $7.3 \gamma$  per degree Celsius, and for the V-variometer —  $1.3 \gamma$  per degree Celsius.

#### OBSERVED AND ADOPTED BASE-LINE VALUES

Date	<i>D</i> observed	<i>D</i> adopted	Date	<i>H</i> observed	<i>H</i> adopted	Date	<i>V</i> obs.	<i>V</i> adopt.
II 9	1° 16'.8 W	1° 18'.0 W	IV 26	11206 $\gamma$	11208 $\gamma$	VII 6	50280 $\gamma$	50280 $\gamma$
12	17.9	.0	27	09	08	11	80	80
IV 26	18.1	.0	28	07	08	18	82	80
V 20	18.3	.0	30	08	08	19	81	80
21	18.2	.0	V 22	08	08	23	80	80
VIII 11	18.1	.0	23	10	08	25	79	80
16	18.0	.0	X 14	08	08	29	81	80
IX 2	17.8	.0	16	09	08	VIII 8	82	80
8	17.8	.0	19	09	08	XII 5	81	80
X 22	17.8	.0	24	07	08	7	80	80
27	17.8	.0	26	08	08	10	80	80
XII 30	17.5	.0	XII 27	08	08	28	79	80

#### EXPLANATION OF TABLES.

For each of the components *D*, *H* and *V* two series of tables are given. One series gives, in the usual way, the hourly mean values centered at half hours Gr. M. T. In these tables the column headed *M* gives the ordinary diurnal means. *R* designates the range, i. e. the difference between the maximum and minimum value measured on the magnetogram. The horizontal line marked *M* gives the monthly means of the hourly values, and the line marked *QM* gives the monthly means of the *quiet* hourly values. The second series of tables gives the hourly values of the Storminess («average perturbing force» or «activity»). As to the definition of the storminess and the method for separating it, we refer to Nos. 2 and 4 in the present series of publications. In the storminess tables the column headed *M* gives the diurnal means. The columns headed *PS*, *NS* and *AS* give the diurnal sum of the positive, negative and absolute storminess, respectively. The column headed *CH* gives the magnetic character numbers. We consider the diurnal sum of the absolute storminess as the best expression for the magnetic activity during a day, and we will use that quantity for defining the character numbers. Only the strongest perturbed component, the Horizontal Intensity, is used in characterisation. Character number 0 comprises diurnal sum of absolute storminess (*AS*) up to 400  $\gamma$ , character number 1 from 400  $\gamma$  to 1200  $\gamma$ , and character number 2 greater than 1200  $\gamma$ . The horizontal line marked *M* contains the monthly means of the hourly values, and the two lines marked *MPS* and *MNS* give the monthly means of the positive and the negative storminess respectively.

In *D* the storminess is reckoned positive towards magnetic west, in *H* positive towards magnetic north, and in *V* positive downwards.

In addition to the main tables resuming tables, figures, and vector diagrams are given at the end of the year-book.

*E. Tonsberg.*

TABLE 1. Description of L.W. + Tabular Questions expressed in Terms of Minutes

Question	Minutes	Question	Minutes	Question	Minutes	Question	Minutes
1. How many...	10	11. How many...	10	21. How many...	10	31. How many...	10
2. How many...	10	12. How many...	10	22. How many...	10	32. How many...	10
3. How many...	10	13. How many...	10	23. How many...	10	33. How many...	10
4. How many...	10	14. How many...	10	24. How many...	10	34. How many...	10
5. How many...	10	15. How many...	10	25. How many...	10	35. How many...	10
6. How many...	10	16. How many...	10	26. How many...	10	36. How many...	10
7. How many...	10	17. How many...	10	27. How many...	10	37. How many...	10
8. How many...	10	18. How many...	10	28. How many...	10	38. How many...	10
9. How many...	10	19. How many...	10	29. How many...	10	39. How many...	10
10. How many...	10	20. How many...	10	30. How many...	10	40. How many...	10

TABLES

Question	Minutes	Question	Minutes	Question	Minutes	Question	Minutes
1. How many...	10	11. How many...	10	21. How many...	10	31. How many...	10
2. How many...	10	12. How many...	10	22. How many...	10	32. How many...	10
3. How many...	10	13. How many...	10	23. How many...	10	33. How many...	10
4. How many...	10	14. How many...	10	24. How many...	10	34. How many...	10
5. How many...	10	15. How many...	10	25. How many...	10	35. How many...	10
6. How many...	10	16. How many...	10	26. How many...	10	36. How many...	10
7. How many...	10	17. How many...	10	27. How many...	10	37. How many...	10
8. How many...	10	18. How many...	10	28. How many...	10	38. How many...	10
9. How many...	10	19. How many...	10	29. How many...	10	39. How many...	10
10. How many...	10	20. How many...	10	30. How many...	10	40. How many...	10

Question	Minutes	Question	Minutes	Question	Minutes	Question	Minutes
1. How many...	10	11. How many...	10	21. How many...	10	31. How many...	10
2. How many...	10	12. How many...	10	22. How many...	10	32. How many...	10
3. How many...	10	13. How many...	10	23. How many...	10	33. How many...	10
4. How many...	10	14. How many...	10	24. How many...	10	34. How many...	10
5. How many...	10	15. How many...	10	25. How many...	10	35. How many...	10
6. How many...	10	16. How many...	10	26. How many...	10	36. How many...	10
7. How many...	10	17. How many...	10	27. How many...	10	37. How many...	10
8. How many...	10	18. How many...	10	28. How many...	10	38. How many...	10
9. How many...	10	19. How many...	10	29. How many...	10	39. How many...	10
10. How many...	10	20. How many...	10	30. How many...	10	40. How many...	10

Tromsø. Declination. D = 1° W + Tabular Quantities expressed in Tenths of Minutes. Gr. M. T.

JANUARY 1949. HOURLY MEAN VALUES. Table with columns DAY, 1-25, M, R. Rows 1-31.

FEBRUARY. Table with columns DAY, 1-25, M, R. Rows 1-28.

MARCH. Table with columns DAY, 1-25, M, R. Rows 1-31.



Tromsø.

Declination. Storminess. (+ W) Unit Gamma.

Gr. M. T.

Table for January 1949 showing hourly mean values for Declination, Storminess, and Unit Gamma. Includes columns for Day (1-23), M, PS, NS, AS, and summary rows for M, MPS, and WNS.

Table for February 1949 showing hourly mean values for Declination, Storminess, and Unit Gamma. Includes columns for Day (1-23), M, PS, NS, AS, and summary rows for M, MPS, and WNS.

Table for March 1949 showing hourly mean values for Declination, Storminess, and Unit Gamma. Includes columns for Day (1-31), M, PS, NS, AS, and summary rows for M, MPS, and WNS.

Tromsø. Declination. D = 1° W + Tabular Quantities expressed in Tenths of Minutes.

Gr. M. T.

APRIL 1948.

HOURLY MEAN VALUES

Table for April 1948 showing hourly mean values for declination. Columns include Day (1-30), hours (1-24), and monthly totals (M, R, QM).

MAY.

Table for May showing hourly mean values for declination. Columns include Day (1-31), hours (1-24), and monthly totals (M, R, QM).

JUNE.

Table for June showing hourly mean values for declination. Columns include Day (1-30), hours (1-24), and monthly totals (M, R, QM).

Tromsø.

Declination. Storminess. (+ W) Unit Gamma.

Gr. M. T.

APRIL 1949.

HOURLY MEAN VALUES

Table for April 1949 showing hourly mean values for declination, storminess, and unit gamma. Columns include Day (1-30), M, PS, NS, AS, and summary rows for MPS and MNS.

MAY 1949.

Table for May 1949 showing hourly mean values for declination, storminess, and unit gamma. Columns include Day (1-31), M, PS, NS, AS, and summary rows for MPS and MNS.

JUNE 1949.

Table for June 1949 showing hourly mean values for declination, storminess, and unit gamma. Columns include Day (1-30), M, PS, NS, AS, and summary rows for MPS and MNS.

Tromsø. Declination. D = 1° W + Tabular Quantities expressed in Tenths of Minutes.

Gr. M. T.

JULY 1949.

HOURLY MEAN VALUES

Table for July 1949 showing hourly mean values for days 1-31. Columns include Day, hours 1-23, M, and R. Values range from -30 to 300.

AUGUST.

Table for August showing hourly mean values for days 1-31. Columns include Day, hours 1-23, M, and R. Values range from -100 to 300.

SEPTEMBER.

Table for September showing hourly mean values for days 1-30. Columns include Day, hours 1-23, M, and R. Values range from -100 to 300.

Tromsø.

Declination. Storminess. (+ W) Unit Gamma.

Gr. M. T.

JULY 1949.

HOURLY MEAN VALUES

Table for July 1949 showing hourly mean values for declination, storminess, and unit gamma. Columns include Day (1-31), M, PS, NS, AS, and summary rows for M, MFS, and MNS.

AUGUST 1949.

Table for August 1949 showing hourly mean values for declination, storminess, and unit gamma. Columns include Day (1-31), M, PS, NS, AS, and summary rows for M, MFS, and MNS.

SEPTEMBER 1949.

Table for September 1949 showing hourly mean values for declination, storminess, and unit gamma. Columns include Day (1-30), M, PS, NS, AS, and summary rows for M, MFS, and MNS.

Tromsø. Declination. D = 1° W + Tabular Quantities expressed in Tenths of Minutes.

Gr. M. T.

OCTOBER 1949.

HOURLY MEAN VALUES

Table for October 1949 showing hourly mean values for days 1 to 31. Columns include Day, hours 1-23, M, and R. Values range from -77 to 165.

NOVEMBER.

Table for November showing hourly mean values for days 1 to 30. Columns include Day, hours 1-23, M, and R. Values range from -77 to 165.

DECEMBER.

Table for December showing hourly mean values for days 1 to 31. Columns include Day, hours 1-23, M, and R. Values range from -77 to 165.

Tromsø.

Declination. Storminess. (+ W) Unit Gamma.

Gr. M. T.

OCTOBER 1949.

HOURLY MEAN VALUES

Table for October 1949 showing hourly mean values for declination, storminess, and unit gamma. Columns include Day (1-31), M, PS, NS, AS, and summary statistics (MPS, MNS).

NOVEMBER 1949.

Table for November 1949 showing hourly mean values for declination, storminess, and unit gamma. Columns include Day (1-30), M, PS, NS, AS, and summary statistics (MPS, MNS).

DECEMBER 1949.

Table for December 1949 showing hourly mean values for declination, storminess, and unit gamma. Columns include Day (1-31), M, PS, NS, AS, and summary statistics (MPS, MNS).

Tromsø. Horizontal Intensity. H = 11100 + Tabular Quantities expressed in Gamma.

Gr. M. T.

JANUARY 1949.

HOURLY MEAN VALUES

Table for January 1949 showing hourly mean values for horizontal intensity. Columns include Day (1-31), hours (1-24), and summary statistics (M, R).

FEBRUARY.

Table for February showing hourly mean values for horizontal intensity. Columns include Day (1-28), hours (1-24), and summary statistics (M, R).

MARCH.

Table for March showing hourly mean values for horizontal intensity. Columns include Day (1-31), hours (1-24), and summary statistics (M, R).



Tromsø.

Horizontal Intensity. Storminess (+ N). Unit Gamma.

Gr. M. T.

JANUARY 1949.

HOURLY MEAN VALUES

Table for January 1949 showing hourly mean values for Horizontal Intensity, Storminess, and Unit Gamma. Columns include Day (1-31), 24 hours (1-24), M, PS, NS, AS, CH.

FEBRUARY.

Table for February showing hourly mean values for Horizontal Intensity, Storminess, and Unit Gamma. Columns include Day (1-28), 24 hours (1-24), M, PS, NS, AS, CH.

MARCH.

Table for March showing hourly mean values for Horizontal Intensity, Storminess, and Unit Gamma. Columns include Day (1-31), 24 hours (1-24), M, PS, NS, AS, CH.

Tromsø. Horizontal Intensity. H = 11100 + Tabular Quantities expressed in Gamma.

Gr. M. T.

APRIL 1949.

HOURLY MEAN VALUES

Table for April 1949 showing hourly mean values for horizontal intensity. Columns include Day (1-30), hours (1-24), and summary rows M and QM.

MAY.

Table for May showing hourly mean values for horizontal intensity. Columns include Day (1-31), hours (1-24), and summary rows M and QM.

JUNE.

Table for June showing hourly mean values for horizontal intensity. Columns include Day (1-30), hours (1-24), and summary rows M and QM.

Tromsø.

Horizontal Intensity. Storminess (+ N). Unit Gamma.

Gr. M. T.

APRIL 1949.

HOURLY MEAN VALUES

Table for April 1949 showing magnetic observations. Columns include Day (1-30), hours (1-24), and summary statistics (M, PS, NS, AS, CH). Rows show hourly values and monthly totals.

MAY.

Table for May 1949 showing magnetic observations. Columns include Day (1-31), hours (1-24), and summary statistics (M, PS, NS, AS, CH). Rows show hourly values and monthly totals.

JUNE.

Table for June 1949 showing magnetic observations. Columns include Day (1-30), hours (1-24), and summary statistics (M, PS, NS, AS, CH). Rows show hourly values and monthly totals.

Tromsø. Horizontal Intensity. H = 11100 + Tabular Quantities expressed in Gamma.

Gr. M. T.

Table for July 1949 showing hourly mean values for horizontal intensity. Columns include Day (1-31), hours (1-23), and monthly totals (M, R). Values range from -210 to 320.

AUGUST.

Table for August showing hourly mean values for horizontal intensity. Columns include Day (1-31), hours (1-23), and monthly totals (M, R). Values range from -160 to 320.

SEPTEMBER.

Table for September showing hourly mean values for horizontal intensity. Columns include Day (1-30), hours (1-23), and monthly totals (M, R). Values range from -320 to 320.

Tromsø.

Horizontal Intensity. Storminess (+ N). Unit Gamma.

Gr. M. T.

JULY 1949.

HOURLY MEAN VALUES

Table for July 1949 showing magnetic observations. Columns include DAY (1-31), 24 hourly values, M, PS, NS, AS, CH, and summary rows for MPS and MNS.

AUGUST.

Table for August 1949 showing magnetic observations. Columns include DAY (1-31), 24 hourly values, M, PS, NS, AS, CH, and summary rows for MPS and MNS.

SEPTEMBER.

Table for September 1949 showing magnetic observations. Columns include DAY (1-30), 24 hourly values, M, PS, NS, AS, CH, and summary rows for MPS and MNS.

Tromsø. Horizontal Intensity. H = 11100 + Tabular Quantities expressed in Gamma.

Gr. M. T.

OCTOBER 1949.

HOURLY MEAN VALUES

Table for October 1949 showing hourly mean values for horizontal intensity. Columns include Day (1-31), hours (1-24), and monthly totals (M, R, CM).

NOVEMBER.

Table for November showing hourly mean values for horizontal intensity. Columns include Day (1-30), hours (1-24), and monthly totals (M, R, QM).

DECEMBER.

Table for December showing hourly mean values for horizontal intensity. Columns include Day (1-31), hours (1-24), and monthly totals (M, R, QM).

Tromsø.

Horizontal Intensity. Storminess (+ N). Unit Gamma.

Gr. M. T.

OCTOBER 1949.

HOURLY MEAN VALUES

Table for October 1949 showing magnetic observations. Columns include Day (1-31), 24 hourly values (1-24), M, PS, NS, AS, CH. Summary rows for M, PS, NS, AS, CH and MNS are at the bottom.

NOVEMBER.

Table for November 1949 showing magnetic observations. Columns include Day (1-30), 24 hourly values (1-24), M, PS, NS, AS, CH. Summary rows for M, PS, NS, AS, CH and MNS are at the bottom.

DECEMBER

Table for December 1949 showing magnetic observations. Columns include Day (1-31), 24 hourly values (1-24), M, PS, NS, AS, CH. Summary rows for M, PS, NS, AS, CH and MNS are at the bottom.

Tromsø. Vertical Intensity. V = 50400 + Tabular Quantities expressed in Gamma.

Gr. M. T.

JANUARY 1949.

HOURLY MEAN VALUES

Table for January 1949 showing hourly mean values for vertical intensity. Columns include Day (1-31), hours (1-24), and monthly totals (M, R).

FEBRUARY.

Table for February 1949 showing hourly mean values for vertical intensity. Columns include Day (1-28), hours (1-24), and monthly totals (M, R).

MARCH.

Table for March 1949 showing hourly mean values for vertical intensity. Columns include Day (1-31), hours (1-24), and monthly totals (M, R).



Tromsø.

Vertical Intensity. Storminess (+ Down). Unit Gamma.

Gr. M. T.

JANUARY 1949.

HOURLY MEAN VALUES

Table for January 1949 showing magnetic observations. Columns include Day (1-31), Hourly Mean Values (1-23), M, PS, NS, AS, and summary statistics (M, PS, NS, AS).

FEBRUARY 1949.

Table for February 1949 showing magnetic observations. Columns include Day (1-28), Hourly Mean Values (1-23), M, PS, NS, AS, and summary statistics (M, PS, NS, AS).

MARCH 1949.

Table for March 1949 showing magnetic observations. Columns include Day (1-31), Hourly Mean Values (1-23), M, PS, NS, AS, and summary statistics (M, PS, NS, AS).

Tromsø. Vertical Intensity. V = 50400 + Tabular Quantities expressed in Gamma.

Gr. M. T.

APRIL.

HOURLY MEAN VALUES

Table for April showing hourly mean values for vertical intensity. Columns include Day (1-30), hours (1-24), and summary values M and R.

MAY.

Table for May showing hourly mean values for vertical intensity. Columns include Day (1-31), hours (1-24), and summary values M and R.

JUNE.

Table for June showing hourly mean values for vertical intensity. Columns include Day (1-30), hours (1-24), and summary values M and R.

Tromsø.

Vertical Intensity. Storminess (+ Down). Unit Gamma.

Gr. M. T.

APRIL 1949.

HOURLY MEAN VALUES

Table for April 1949 showing magnetic observations. Columns include Day (1-30), M, PS, NS, AS. Rows show hourly values for each day, with a summary row at the bottom.

MAY 1949.

Table for May 1949 showing magnetic observations. Columns include Day (1-31), M, PS, NS, AS. Rows show hourly values for each day, with a summary row at the bottom.

JUNE 1949.

Table for June 1949 showing magnetic observations. Columns include Day (1-30), M, PS, NS, AS. Rows show hourly values for each day, with a summary row at the bottom.

Tromsø. Vertical Intensity. V = 50400 + Tabular Quantities expressed in Gamma.

Gr. M. T.

Table for July 1949 showing hourly mean values for vertical intensity. Columns include Day (1-31), hours (1-24), and monthly totals (M, R). Values range from approximately 80 to 280 Gamma.

AUGUST 1949.

Table for August 1949 showing hourly mean values for vertical intensity. Columns include Day (1-31), hours (1-24), and monthly totals (M, R). Values range from approximately 80 to 320 Gamma.

SEPTEMBER.

Table for September showing hourly mean values for vertical intensity. Columns include Day (1-30), hours (1-24), and monthly totals (M, R). Values range from approximately 80 to 374 Gamma.

Tromsø.  
JULY 1949.

Vertical Intensity. Storminess (+ Down). Unit Gamma.

Gr. M. T.

HOURLY MEAN VALUES

Table for July 1949 showing magnetic observations. Columns: DAY (1-31), 1-24, M, PS, NS, AS. Rows: Hourly mean values and monthly totals (M, PS, NS, AS). Includes VPS and MNS rows at the bottom.

AUGUST 1949.

Table for August 1949 showing magnetic observations. Columns: DAY (1-31), 1-23, M, PS, NS, AS. Rows: Hourly mean values and monthly totals (M, PS, NS, AS). Includes MFS and MNS rows at the bottom.

SEPTEMBER 1949.

Table for September 1949 showing magnetic observations. Columns: DAY (1-30), 1-23, M, PS, NS, AS. Rows: Hourly mean values and monthly totals (M, PS, NS, AS). Includes MFS and MNS rows at the bottom.

Tromsø. Vertical Intensity. V = 50400 + Tabular Quantities expressed in Gamma.

Gr. M. T.

OCTOBER 1949.

HOURLY MEAN VALUES

Table with columns DAY (1-31), 1-25, M, R. Rows contain hourly vertical intensity data for October 1949, including summary rows for M and QM.

NOVEMBER.

Table with columns DAY (1-30), 1-25, M, R. Rows contain hourly vertical intensity data for November 1949, including summary rows for M and QM.

DECEMBER.

Table with columns DAY (1-31), 1-25, M, R. Rows contain hourly vertical intensity data for December 1949, including summary rows for M and QM.

Tromsø.

Vertical Intensity, Storminess (+ Down), Unit Gamma.

Gr. M. T.

OCTOBER 1949.

HOURLY MEAN VALUES

Table for October 1949 showing magnetic observations (DAY 1-31) with columns for hourly values (1-23), M, PS, NS, AS, WPS, and MNS.

NOVEMBER 1949.

Table for November 1949 showing magnetic observations (DAY 1-30) with columns for hourly values (1-23), M, PS, NS, AS, WPS, and MNS.

DECEMBER 1949.

Table for December 1949 showing magnetic observations (DAY 1-31) with columns for hourly values (1-23), M, PS, NS, AS, WPS, and MNS.





Resuming Tables.

Storminess.

Tromsø.

Declination. Unit Gamma. + West.

1949.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
JAN WPS	2	0	2	1	1	1	3	4	4	2	3	5	6	8	10	9	11	20	19	18	12	12	2	6
FEB WPS	0	0	0	0	0	0	2	3	2	3	4	7	9	7	10	12	17	19	9	7	6	2	1	0
MAR WPS	0	0	0	0	0	1	2	3	3	2	6	11	15	19	18	19	30	29	26	21	10	3	1	0
APR WPS	0	0	0	0	0	0	1	1	2	3	3	4	6	9	13	17	20	20	20	15	11	5	2	1
MAY WPS	1	0	0	0	1	2	3	2	3	3	4	4	13	19	21	26	27	20	21	17	10	6	1	
JUN WPS	1	0	0	0	1	1	2	4	6	5	2	2	5	11	15	18	30	30	26	25	21	17	7	2
JUL WPS	1	1	1	1	2	3	4	5	4	5	3	2	2	4	5	9	11	10	12	10	8	5	1	1
AUG WPS	1	1	1	1	2	4	6	4	3	1	1	1	4	10	17	19	21	17	16	19	16	5	1	1
SEP WPS	0	0	0	0	0	1	1	1	3	4	5	5	6	9	13	16	17	19	16	11	4	2	0	0
OCT WPS	1	0	1	0	0	1	1	1	1	2	4	11	12	18	22	33	29	28	22	7	3	1	1	1
NOV WPS	0	0	0	1	1	2	2	3	2	4	4	7	8	13	16	16	16	28	27	11	8	4	4	1
DEC WPS	0	0	0	0	0	2	3	1	1	2	3	3	4	4	4	7	8	11	8	5	3	5	2	2
MEAN	1	0	0	0	1	2	3	3	3	3	3	5	7	10	13	15	20	21	19	16	10	6	3	1
JAN MNS	39	46	25	28	21	17	3	5	4	4	3	4	4	3	5	6	9	4	3	4	4	15	32	31
FEB MNS	37	44	31	24	17	9	5	3	1	0	0	0	0	1	0	0	0	0	0	1	2	12	16	33
MAR MNS	46	50	45	29	19	16	15	6	6	5	4	3	1	1	0	0	0	0	0	0	2	20	26	25
APR MNS	37	28	33	28	15	15	10	10	7	7	7	3	3	1	0	0	0	0	0	1	2	9	15	29
MAY MNS	24	31	39	29	19	9	4	5	7	8	5	5	8	5	1	1	1	0	1	1	2	6	12	21
JUN MNS	26	44	29	22	15	10	11	11	6	6	8	7	5	4	1	1	1	1	0	0	1	1	8	19
JUL MNS	10	12	14	9	3	2	1	1	1	1	2	1	1	1	0	1	1	1	0	0	2	4	7	7
AUG MNS	21	22	19	17	17	14	4	8	5	8	6	6	4	1	0	0	0	0	0	1	3	5	12	21
SEP MNS	39	41	34	23	15	8	4	4	1	1	0	0	0	0	1	1	1	0	1	1	1	10	16	37
OCT MNS	43	54	51	35	21	15	9	8	11	20	16	8	2	1	1	0	0	2	2	0	10	17	29	40
NOV MNS	41	42	31	21	13	6	1	1	2	2	1	1	2	1	1	1	3	3	1	8	10	15	19	23
DEC MNS	20	20	17	12	6	1	0	1	3	0	0	0	1	1	1	0	1	0	3	3	9	6	7	14
MEAN	32	36	31	23	15	10	6	5	4	5	4	3	3	2	1	1	1	1	1	2	3	10	16	25
JAN MPS + MNS	-37	-56	-23	-27	-20	-15	0	-2	0	2	0	1	2	5	5	4	2	16	14	8	-3	-31	-26	-6
FEB MPS + MNS	-37	-44	-31	-24	-17	-9	4	0	1	3	4	7	9	6	10	12	17	19	9	6	4	-10	-15	-33
MAR MPS + MNS	-46	-50	-45	-29	-19	-15	-14	-2	-3	-3	2	7	15	19	19	19	30	29	26	21	8	-17	-26	-25
APR MPS + MNS	-37	-28	-33	-28	-14	-15	-9	-8	-5	-4	-5	1	3	7	13	17	20	20	15	9	-4	-14	-29	
MAY MPS + MNS	-24	-31	-39	-29	-17	-7	-1	-4	-5	-5	-4	-2	-2	8	17	21	25	26	19	20	15	4	-6	-21
JUN MPS + MNS	-25	-44	-29	-22	-15	-9	-8	-8	0	0	-5	-5	1	8	14	17	28	29	26	25	20	17	-1	-17
JUL MPS + MNS	-9	-10	-13	-8	-1	0	3	4	3	5	2	1	1	3	4	7	10	10	11	10	8	3	-3	-6
AUG MPS + MNS	-20	-21	-18	-16	-14	-9	2	-4	-2	-6	-5	-5	0	9	17	18	20	17	15	19	13	-1	-11	-21
SEP MPS + MNS	-38	-41	-34	-23	-15	-7	-3	-3	2	3	5	6	8	12	15	15	18	15	10	3	-8	-18	-37	
OCT MPS + MNS	-43	-54	-50	-35	-21	-14	-7	-6	-10	-19	-14	-3	9	11	17	21	32	26	25	22	-3	-13	-26	-39
NOV MPS + MNS	-41	-42	-31	-20	-12	-3	1	1	-1	1	3	6	7	12	15	15	13	25	26	3	-1	-10	-15	-22
DEC MPS + MNS	-20	-20	-17	-12	-6	1	3	1	2	2	3	3	3	4	3	7	7	8	8	5	-4	-3	-2	-13
MEAN	-31	-36	-30	-23	-14	-9	-3	-3	-2	-2	-1	1	5	8	12	14	18	20	19	11	6	-6	-14	-22

Horizontal Intensity. Unit Gamma.

1949.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
JAN MFS	8	2	2	1	1	2	5	10	7	8	13	16	27	38	46	45	42	39	21	11	7	4	0	1
FEB MFS	0	0	1	1	3	6	7	5	7	8	10	12	24	22	33	45	47	27	20	12	5	1	0	0
MAR MFS	0	0	1	2	1	3	3	6	8	10	20	36	56	74	86	89	71	37	18	10	1	0	0	1
APR MFS	0	1	0	1	3	5	4	3	4	9	20	35	45	51	54	57	65	44	34	21	10	5	1	1
MAY MFS	0	0	1	2	2	6	7	13	24	35	57	73	78	78	84	72	53	44	24	9	3	0	0	0
JUN MFS	1	1	1	3	5	6	5	8	17	30	51	69	76	95	93	87	84	68	50	28	10	2	0	1
JUL MFS	0	1	2	3	4	4	5	9	7	9	15	22	40	74	71	70	65	49	35	28	11	2	1	1
AUG MFS	0	1	1	2	2	4	8	9	11	27	33	33	45	87	112	90	82	53	31	19	9	1	0	0
SEP MFS	0	0	0	1	4	5	7	8	10	18	32	43	60	67	72	59	51	44	15	5	1	0	0	0
OCT MFS	1	0	1	1	4	6	6	9	9	17	36	57	73	89	77	63	56	42	20	5	1	0	0	1
NOV MFS	1	1	1	2	5	5	6	10	12	16	13	20	28	41	59	66	46	32	28	9	7	5	1	0
DEC MFS	2	3	3	2	4	6	5	4	2	5	5	7	8	12	20	28	30	37	31	12	9	9	2	1
MEAN	1	1	1	2	3	5	6	7	9	15	23	34	46	61	67	65	59	44	29	15	7	3	0	1
JAN MNS	86	87	97	72	30	28	19	7	7	4	2	3	1	1	1	4	2	8	34	51	73	108	123	116
FEB MNS	115	107	72	56	39	15	13	5	4	6	6	4	3	1	0	4	3	15	13	21	69	106	112	112
MAR MNS	119	116	65	56	50	42	26	13	9	7	6	3	3	3	1	1	0	26	31	34	53	104	119	89
APR MNS	103	83	91	72	38	18	11	6	4	1	2	3	2	1	2	1	0	6	13	13	33	35	66	93
MAY MNS	97	97	117	62	39	15	8	4	1	1	1	1	0	0	5	7	5	10	1	11	45	73	95	129
JUN MNS	127	123	95	57	32	21	12	7	1	1	0	1	0	0	0	0	0	0	1	10	23	53	99	113

JUL	MNS	48	51	43	29	17	9	6	4	3	4	2	0	0	0	0	0	0	2	1	4	23	35	41	
AUG	MNS	97	85	90	73	59	47	10	12	3	0	0	0	1	0	0	0	0	0	4	8	22	64	82	99
SEP	MNS	134	126	87	53	37	30	12	6	3	1	0	0	1	1	0	0	0	11	33	57	75	90	118	
OCT	MNS	126	138	125	95	48	23	11	4	3	7	2	4	2	3	4	4	9	16	52	79	96	125	132	104
NOV	MNS	120	113	78	48	29	18	8	4	2	1	3	3	1	0	2	1	4	20	30	64	67	82	85	92
DEC	MNS	39	48	36	20	15	7	3	3	3	1	2	1	1	1	0	0	1	3	13	22	25	41	43	
MEAN		101	90	82	58	36	23	12	7	4	3	2	2	1	1	2	2	7	16	25	43	70	89	96	
JAN	MPS + MNS	-78	-85	-95	-71	-29	-25	-13	-3	0	4	8	12	26	37	46	41	40	31	-13	-40	-66	-103	-123	-115
FEB	MPS + MNS	-115	-99	-70	-55	-36	-9	-5	-8	2	4	4	7	20	20	32	45	43	23	5	-1	-15	-68	-136	-112
MAR	MPS + MNS	-119	-116	-64	-54	-49	-39	-23	-7	-1	2	14	33	53	71	85	88	71	11	-13	-24	-54	-104	-119	-88
APR	MPS + MNS	-103	-83	-80	-71	-35	-12	-7	-4	0	8	17	32	43	50	53	56	65	38	24	8	-23	-51	-65	-92
MAY	MPS + MNS	-97	-96	-115	-61	-37	-13	-2	3	12	23	34	56	73	78	74	77	68	43	44	13	-37	-69	-95	-128
JUN	MPS + MNS	-126	-121	-93	-53	-27	-15	-7	0	16	29	51	68	76	95	93	87	84	68	50	18	-13	-51	-98	-115
JUL	MPS + MNS	-47	-50	-41	-26	-14	-6	0	4	7	6	13	22	40	74	71	70	65	49	33	27	7	-20	-34	-40
AUG	MPS + MNS	-96	-84	-89	-72	-58	-43	-2	-3	8	27	32	33	44	67	112	90	82	53	27	11	-14	-62	-82	-99
SEP	MPS + MNS	-134	-126	-86	-52	-34	-26	-5	2	7	18	31	43	59	67	71	59	51	44	4	-27	-57	-75	-90	-117
OCT	MPS + MNS	-127	-138	-124	-93	-44	-18	-5	5	6	10	35	53	72	86	73	59	47	28	-32	-52	-95	-125	-132	-102
NOV	MPS + MNS	-120	-112	-77	-46	-25	-13	-2	6	10	15	10	17	27	40	56	65	42	12	-2	-55	-60	-78	-84	-92
DEC	MPS + MNS	-37	-45	-35	-18	-11	-1	2	1	0	4	3	7	7	11	19	28	28	36	28	0	-13	-16	-38	-42
MEAN		-100	-97	-81	-56	-33	-18	-6	0	5	12	21	32	45	60	65	64	57	36	13	-10	-37	-68	-89	-95

Vertical Intensity. Unit Gamma.

1949.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
JAN	MPS	44	21	24	23	14	9	4	2	5	4	7	6	7	8	11	12	7	6	10	11	25	19	36	52
FEB	MPS	58	53	19	22	14	2	1	1	3	5	6	5	6	8	7	6	6	9	9	3	7	31	44	47
MAR	MPS	64	58	12	21	30	9	10	6	5	10	13	13	15	21	22	19	12	9	10	19	37	47	46	48
APR	MPS	45	32	38	21	13	7	4	5	6	9	13	16	16	19	18	17	13	14	10	13	14	29	30	51
MAY	MPS	39	44	45	30	8	2	1	3	5	6	10	15	12	18	20	14	8	9	5	10	22	34	34	66
JUN	MPS	61	32	18	9	5	4	3	8	11	13	20	25	20	16	15	16	10	7	7	8	17	33	61	62
JUL	MPS	14	17	5	1	0	1	1	3	6	8	10	13	15	12	20	15	10	7	4	4	5	13	16	12
AUG	MPS	36	32	26	23	13	5	8	14	10	12	29	23	26	23	28	30	16	13	13	9	14	22	44	36
SEP	MPS	33	31	17	4	5	0	0	5	8	8	11	17	18	20	22	22	19	11	14	26	31	38	48	40
OCT	MPS	59	46	21	1	0	0	1	4	14	12	11	12	14	16	13	7	4	5	17	21	64	69	56	68
NOV	MPS	65	31	7	4	1	2	4	4	9	11	13	10	8	10	13	7	6	3	8	20	23	27	26	53
DEC	MPS	3	4	1	0	0	0	1	2	3	3	4	4	6	6	5	7	7	5	3	2	1	4	4	6
MEAN		44	32	19	13	9	3	3	5	7	8	12	13	14	15	16	14	10	8	9	12	23	30	37	45
JAN	MNS	19	33	21	27	35	28	20	15	6	5	2	3	5	5	13	20	25	35	29	35	21	18	14	17
FEB	MNS	11	7	15	15	12	13	10	9	5	1	1	2	6	7	10	22	30	17	9	9	4	8	10	10
MAR	MNS	17	20	20	21	10	17	10	4	2	1	2	8	3	5	9	32	47	27	24	4	6	6	7	6
APR	MNS	13	14	15	14	19	10	7	3	5	6	3	5	10	14	9	9	20	14	12	6	2	2	5	8
MAY	MNS	6	13	20	29	21	15	9	4	1	7	4	1	22	27	13	11	15	11	16	8	3	1	3	3
JUN	MNS	10	15	18	23	19	9	4	1	4	6	7	10	17	30	35	38	35	15	9	8	8	4	5	5
JUL	MNS	5	9	11	23	18	10	4	4	3	4	3	1	1	3	0	3	4	8	5	5	2	2	6	6
AUG	MNS	10	10	15	19	17	21	12	3	2	1	0	0	1	8	15	8	12	8	5	10	6	11	7	8
SEP	MNS	12	13	23	29	28	19	11	1	2	1	5	9	20	19	13	6	9	2	2	2	2	7	5	6
OCT	MNS	7	19	28	39	39	25	18	9	3	8	22	23	26	38	42	52	53	32	12	10	6	6	7	10
NOV	MNS	4	12	25	20	23	17	9	3	1	1	1	2	14	19	35	45	57	54	31	12	10	9	10	8
DEC	MNS	20	24	26	25	17	8	6	2	1	2	0	1	0	1	2	6	7	13	14	15	34	23	17	14
MEAN		11	14	20	24	22	16	11	5	3	4	4	5	10	15	17	22	26	20	14	10	9	8	8	8
JAN	MPS + MNS	25	-12	3	-4	-21	-19	-16	-13	-1	-2	-5	3	2	2	-2	-8	-19	-29	-19	-24	5	0	22	36
FEB	MPS + MNS	47	46	4	8	2	-11	-10	-8	-2	3	4	3	0	1	3	-16	-23	-8	0	-6	3	24	34	37
MAR	MPS + MNS	47	18	-8	0	12	-8	-1	1	3	9	11	4	12	16	12	-13	-34	-18	-14	14	31	41	39	41
APR	MPS + MNS	32	18	24	6	-5	-4	-3	2	1	3	10	11	6	5	10	9	-7	0	-2	8	15	28	25	43
MAY	MPS + MNS	33	31	24	1	-13	-13	-8	0	3	-1	5	14	-10	-8	7	3	-7	-2	-11	3	19	33	31	63
JUN	MPS + MNS	53	17	0	-10	-15	-5	-1	8	7	8	13	16	3	-14	-19	-21	-25	-8	-2	0	9	30	56	57
JUL	MPS + MNS	9	7	-6	-21	-18	-9	-4	0	3	4	7	11	14	9	20	11	6	-1	-1	-1	3	10	11	5
AUG	MPS + MNS	26	23	11	4	-4	-16	-11	9	9	11	19	23	25	16	13	22	5	5	7	-1	8	10	36	28
SEP	MPS + MNS	21	18	-6	-24	-23	-19	-10	4	7	6	9	12	9	0	2	9	14	3	12	24	29	31	42	36
OCT	MPS + MNS	52	26	-7	-37	-39	-25	-15	-6	11	4	-11	-11	-14	-22	-29	-45	-48	-26	0	11	59	64	49	53
NOV	MPS + MNS	60	19	-18	-16	-21	-16	-5	1	8	10	11	8	-6	-9	-22	-37	-51	-50	-23	8	12	19	17	45
DEC	MPS + MNS	-17	-19	-25	-24	-17	-8	-5	0	2	0	4	4	6	5	2	1	0	-9	-11	-13	-33	-19	-13	-8
MEAN		32	16	0	-11	-14	-13	-7	0	4	5	7	8	4	0	0	-7	-17	-12	-5	2	13	22	29	36

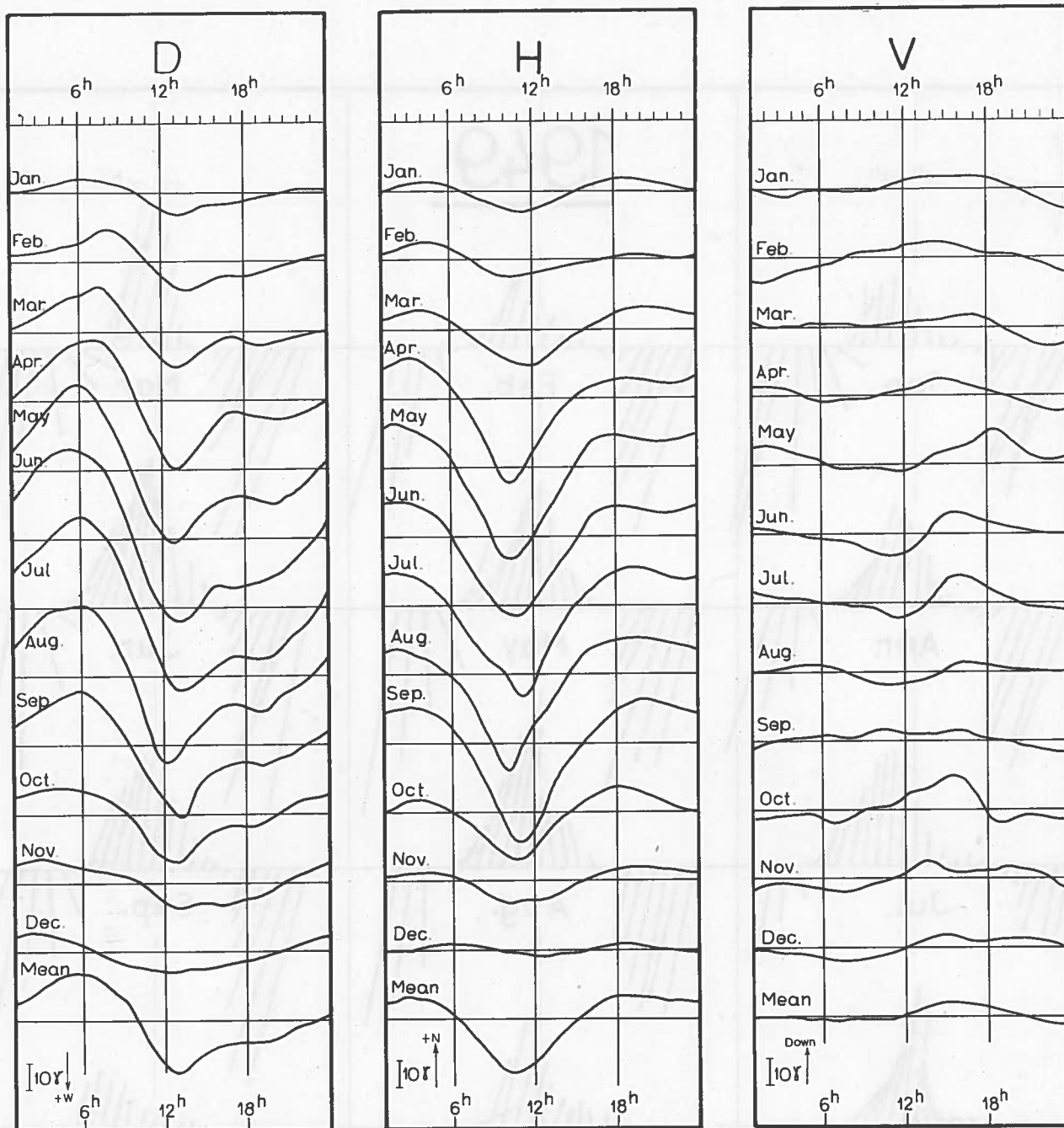


Fig. 1. The Quiet Diurnal Variation, smoothed Values.

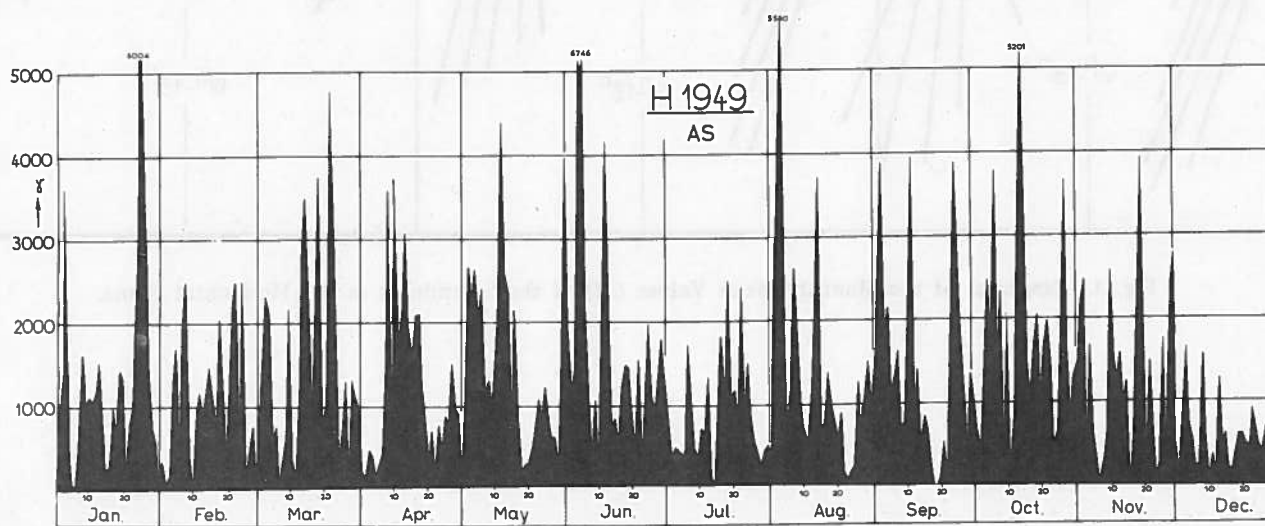


Fig. 2. The Diurnal Sum of the Absolute Storminess of H.

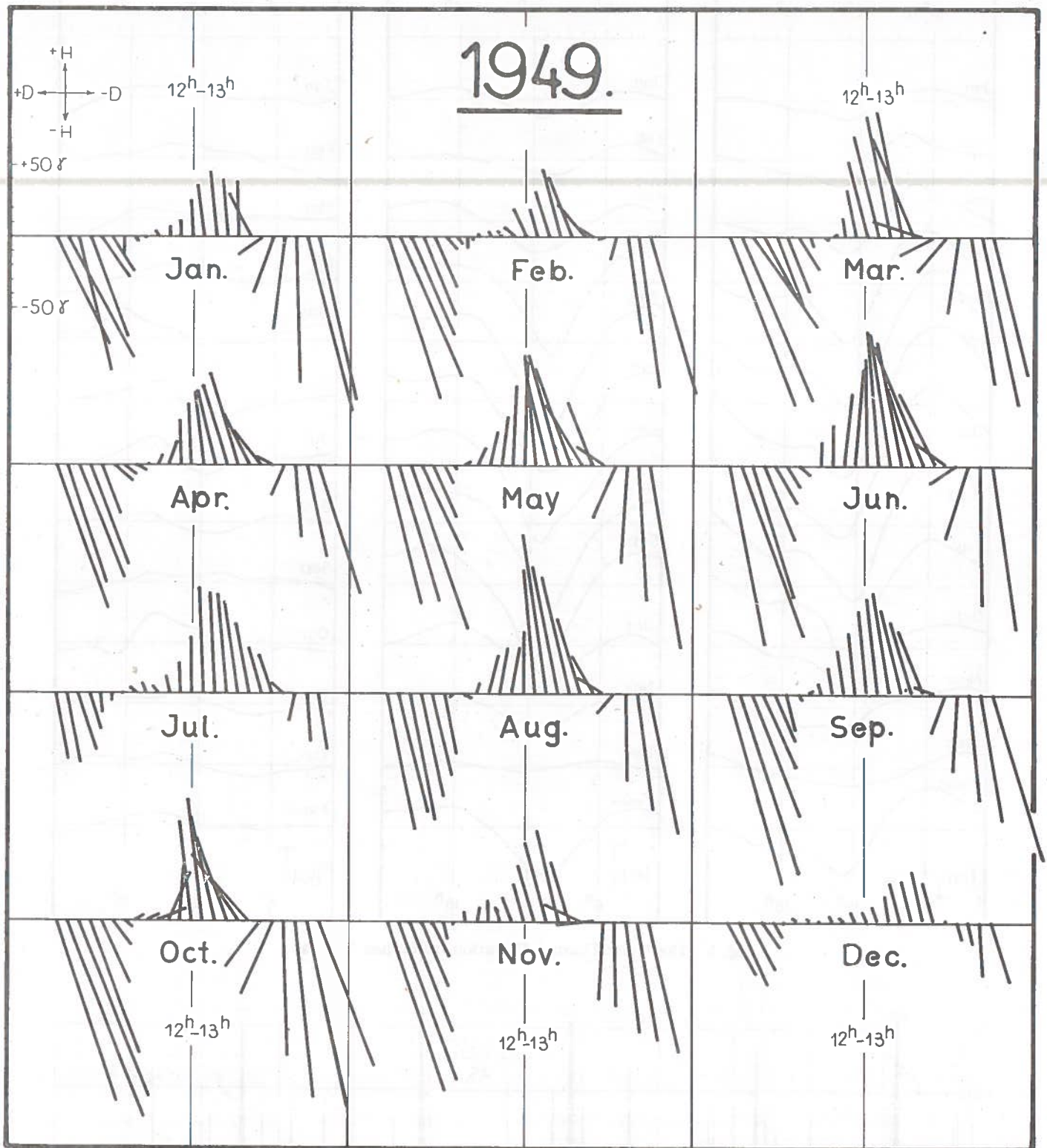


Fig. 3. Diagrams of the Monthly Mean Values ( $M$ ) of the Storminess in the Horizontal Plane.

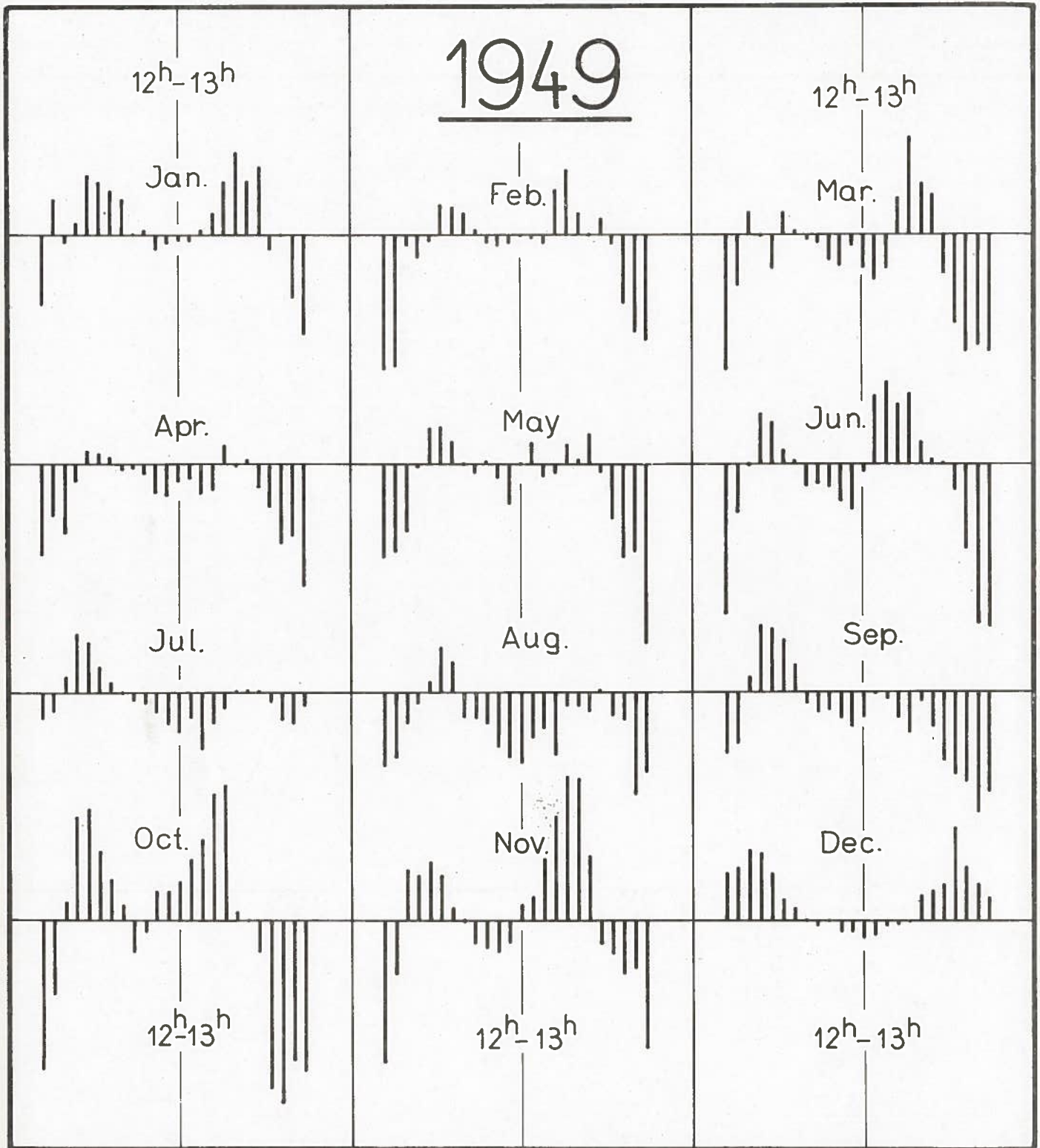


Fig. 4. Diagrams of the Monthly Mean Values (*M*) of the Storminess of the Vertical Intensity.



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