

地殻傾斜観測資料集（1）（岡部・近又・野田沢地 殻活動観測施設：1978年5月～12月）

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Data Report of Crustal Tilt Observation (1)
[Okabe, Chikamata and Nodazawa : May-December, 1978]

By

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地殻傾斜観測資料集 (1)

【岡部・近又・野田沢地殻活動観測施設：1978年5月～12月】

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国立防災科学技術センターは、1978年2月から静岡県志太郡岡部町において、ボアホール型傾斜計（力平衡型振子式）による地殻傾斜の群列観測（3カ所）を開始した。3観測井は、駿河湾から北西約12kmの内陸に位置し、一辺約2.5kmの正三角形に配置されている。3観測井の地質は古第三紀の瀬戸川層群に属する。この地殻傾斜観測と併行して、微小地震観測・地中温度観測・雨量及び気圧観測を行なっている。本資料集では、1978年5月から12月までの間の地殻傾斜・地中温度・気圧・雨量の観測データを示す。

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1. Introduction

A crustal tilt observation with an array of borehole-type tiltmeters was started at Okabe-machi, Shida-gun, Shizuoka-ken in February, 1978. Observations of tilt, underground temperature, barometric pressure and precipitation during the interval between May and December, 1978 are reported. The geology around the observation site, the structure of the observation wells, the installation of the instruments and the initial data of tilt were reported in detail in "An array system for observation of the crustal tilt(I)" [H. Sato and H. Takahashi: The Report of National Research Center for Disaster Prevention(1978), 20, 39-62].

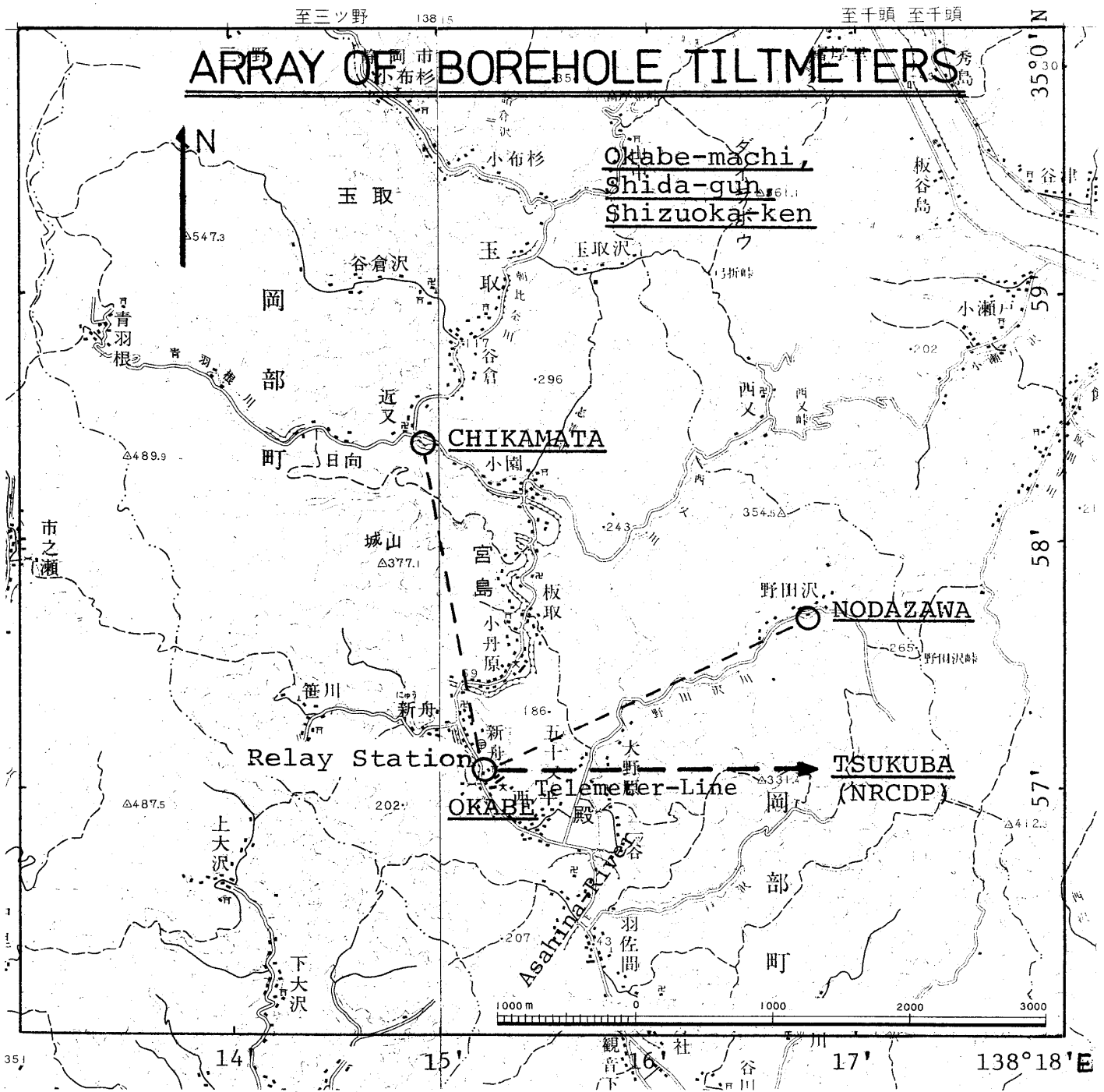
2. List of stations

Station	Long. (E)	Lat. (N)	Altitude		Well depth
			ground	surface sensor	
Okabe	138°15'13.8"	34°57'00.0"	72m	-30m	101.8m
Chikamata	138°14'55.5"	34°58'19.9"	105m	51m	54.2m
Nodazawa	138°16'47.0"	34°57'37.7"	135m	82m	53.2m

3. List of instruments

Station	At the bottom of the well	On the ground
Okabe	Tiltmeter, Seismometer, Thermometer	
Chikamata	Tiltmeter, Thermometer	Rain gauge
Nodazawa	Tiltmeter, Thermometer	Barometer

Sensor	Type	Sensitivity	Resolution
Tiltmeter	Force balanced pendulum type	100mV/sec.	10 ⁻³ sec.
Seismometer	Moving coil type (T ₀ = 1 sec)	2V/kine (h=0.65)	
Thermometer	Quartz oscillator type	Digital output	0.1°C
Rain gauge	Tipping bucket type	Digital output	1mm
Barometer	Quartz oscillator type	Digital output	0.5mb



Plotted on the topographical map by the Geographical Survey Institute.

4. Telemetering and recording system

-Telemetering system-

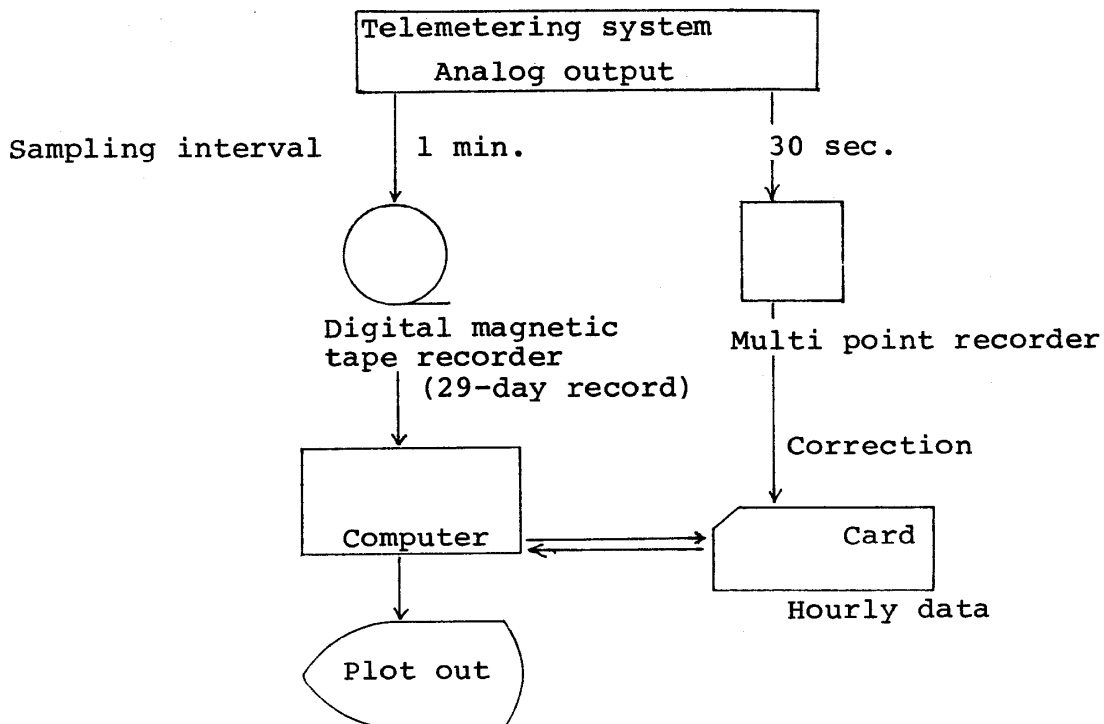
Transmission method	Pulse code modulation
Transmission speed	2400bps and 300bps
Sampling interval	6 sec.

Comp.	Digital data	Analog output(10V f.s.)
Tilt	16bit 1.22×10^3 sec/digit	80 sec f.s. (Low gain) 1.25 sec f.s. (High gain)
Temp.	10bit 4.88×10^3 °C/digit	5.00 °C f.s.
Precip.	10bit 0.195 mm/digit	200 mm f.s.
Baro.	10bit 9.77×10^{-2} mb/digit	100 mb f.s.

-Recording system(10V f.s.)-

Recorder	Sampling interval	Remarks
Multi point recorder	30 sec.	164mm (Chart width) 12.5mm/h (Chart speed)
Digital magnetic tape recorder	1 min.	12bit (A/D)

5. Data gathering



6. Tilt steps

Earthquakes occasionally cause tilt steps probably because of the instability of the instruments at the bottom of the boreholes. Remarkable tilt steps which are listed in the following table are eliminated from the yearly and monthly plot of the tilt data except for the step on October 7.

Table of tilt steps

Date	Okabe		Chikamata		Nodazawa		N,E ground down +, Unit(sec)		Earthquake and Remarks
	d	h m	NS	EW	NS	EW	NS	EW	
JUN 12 17 14	0.09	0.13	-0.07	0.05	0.12	-0.11	Off Miyagi Pref.(M=7.4)		
OCT 07 05 45	0.	0.	0.	0.	-1.04	1.25	SW Nagano Pref.(M=5.3)		
NOV 18 10 30	0.	0.	0.	0.	0.31	0.41	Instrumental ?		
DEC 03 22 15	0.	0.	0.	0.	0.03	-0.03	Near Oshima(M=5.4)		

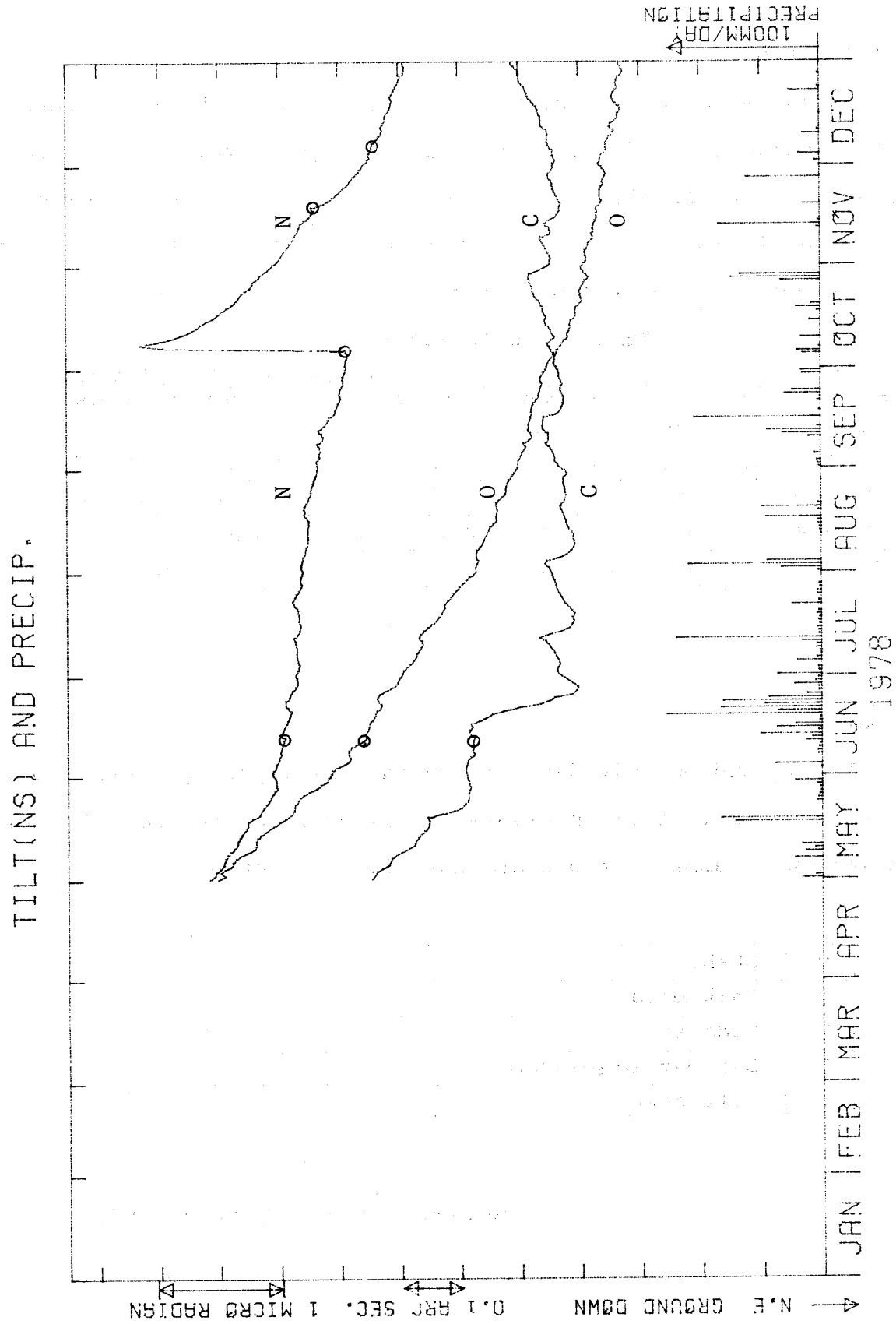
7. Data

Yearly and monthly data of crustal tilt, precipitation, temperature and barometric pressure are illustrated in the following. The following abbreviations are used in the figures.

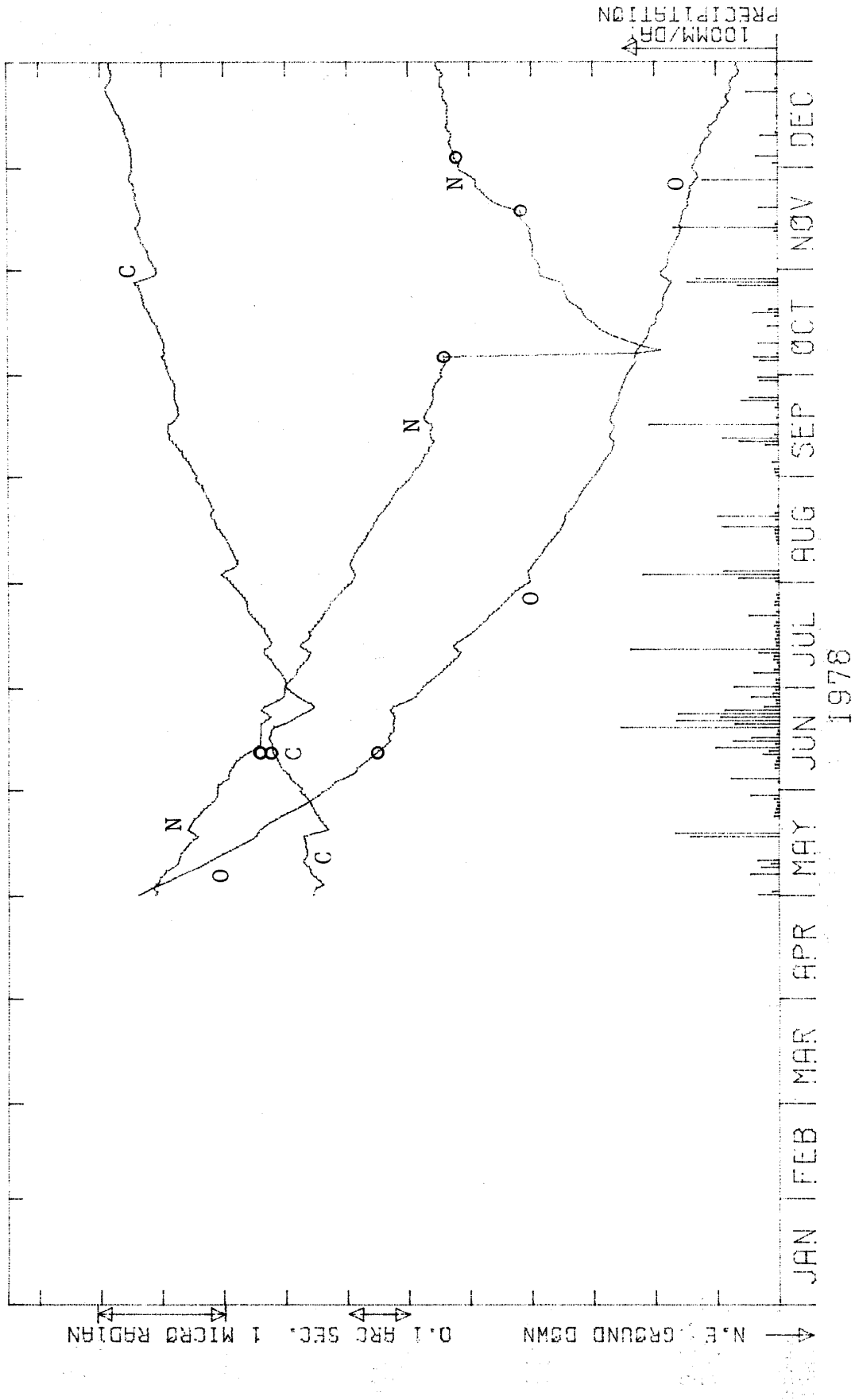
O	Okabe
C	Chikamata
N	Nodazawa
B	Barometric pressure
o	Tilt step

(Manuscript received April 16, 1979)

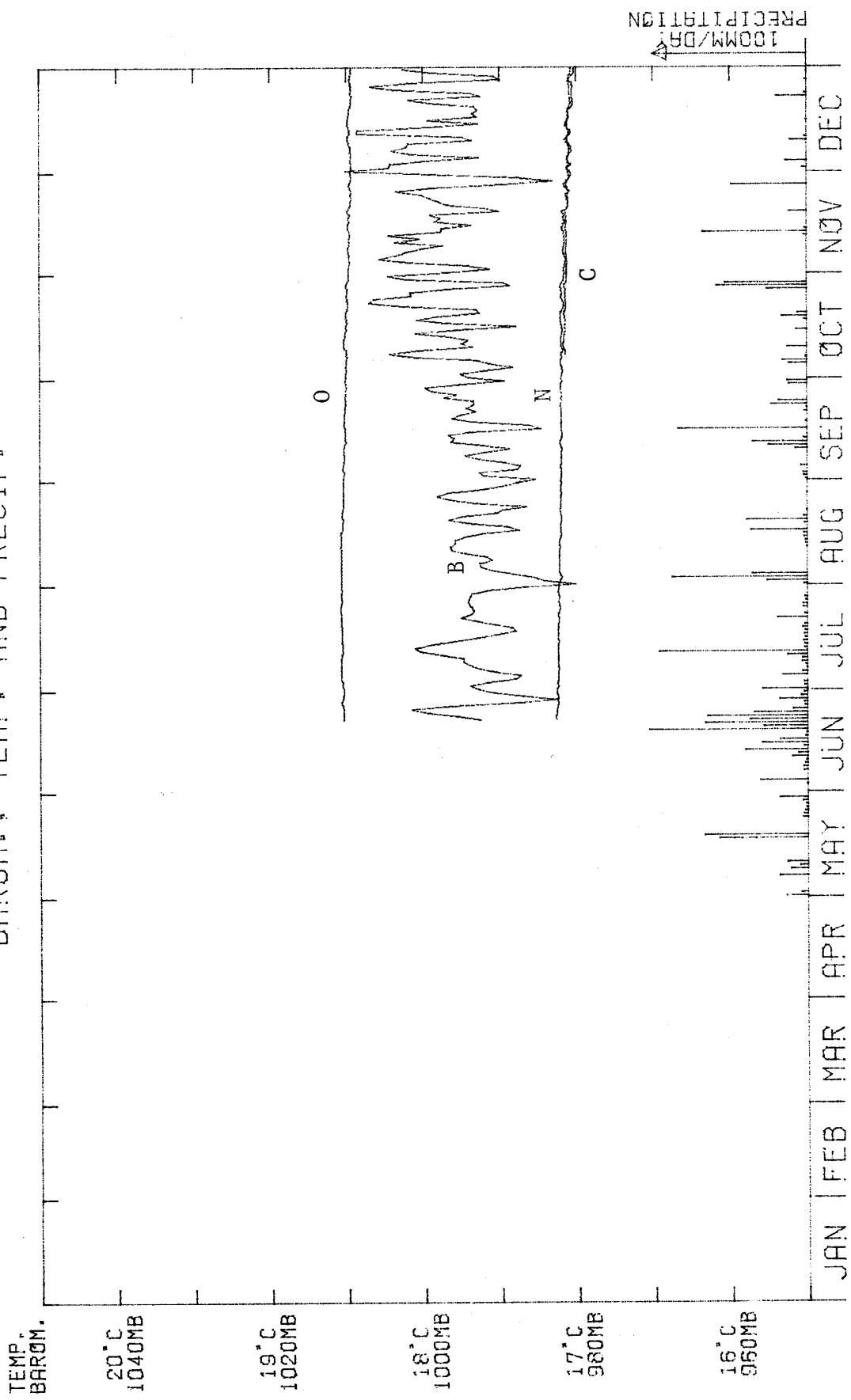
[YEARLY DATA]



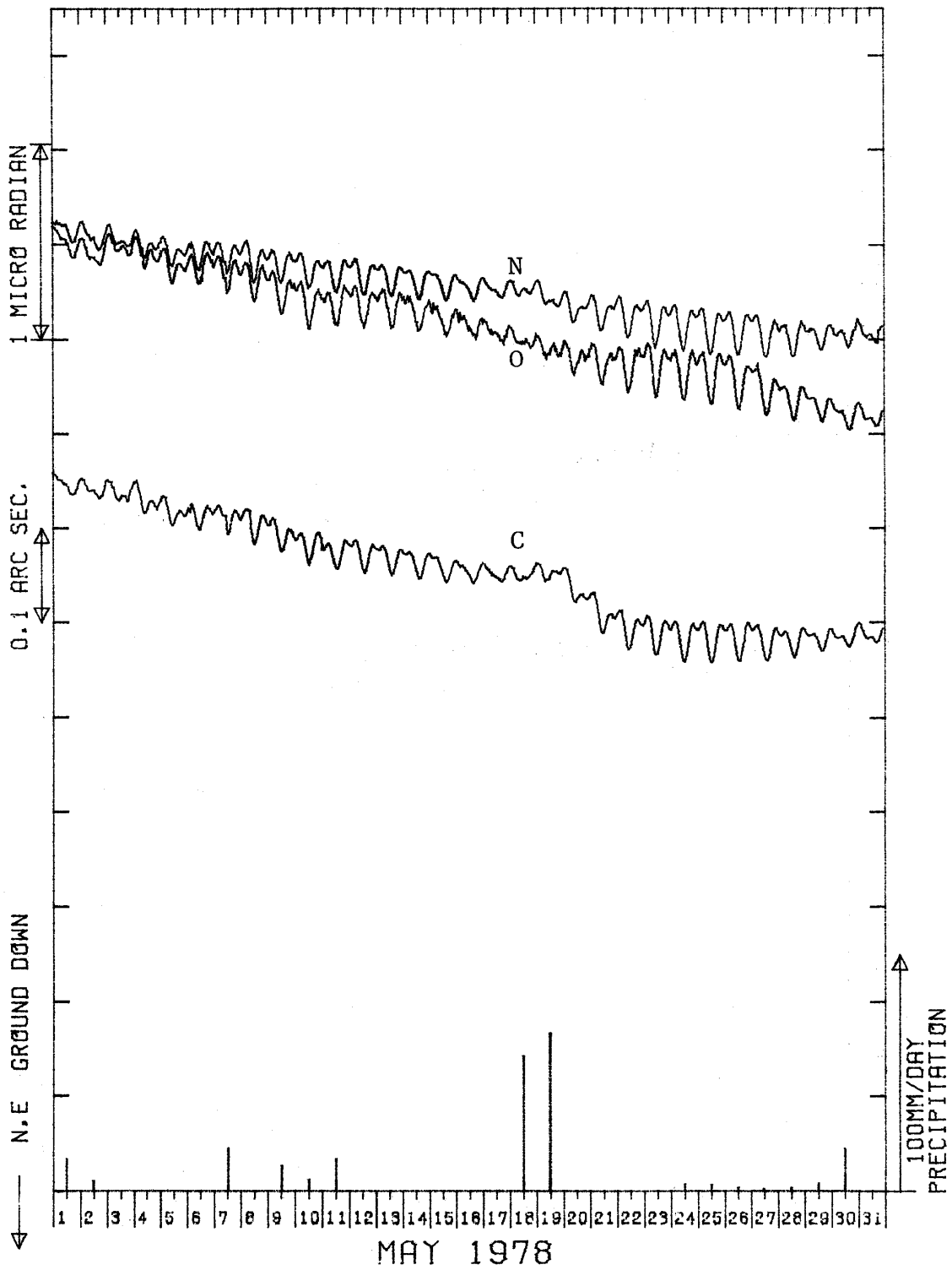
TILT(EW) AND PRECIP.



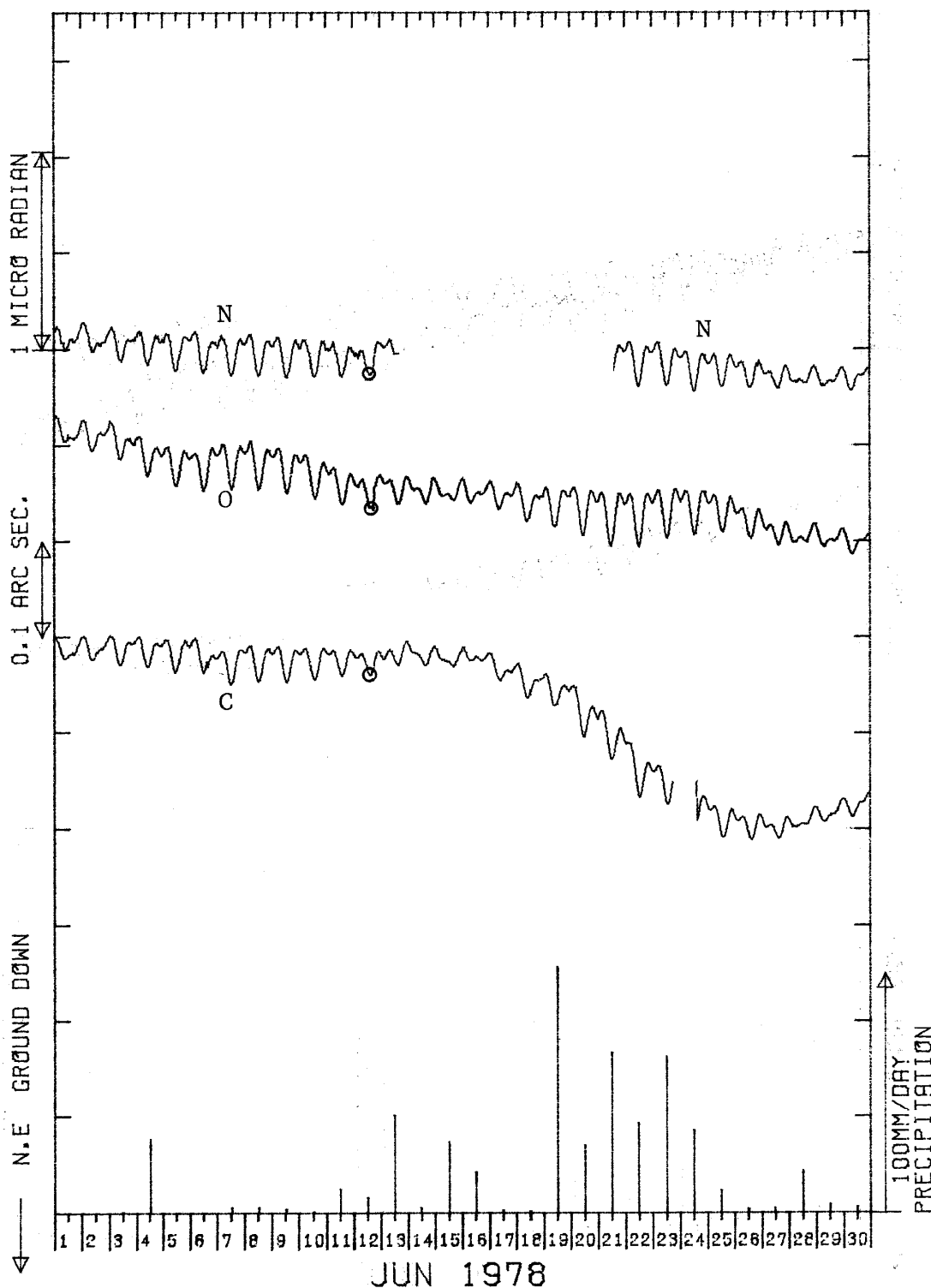
BAROM., TEMP. AND PRECIP.



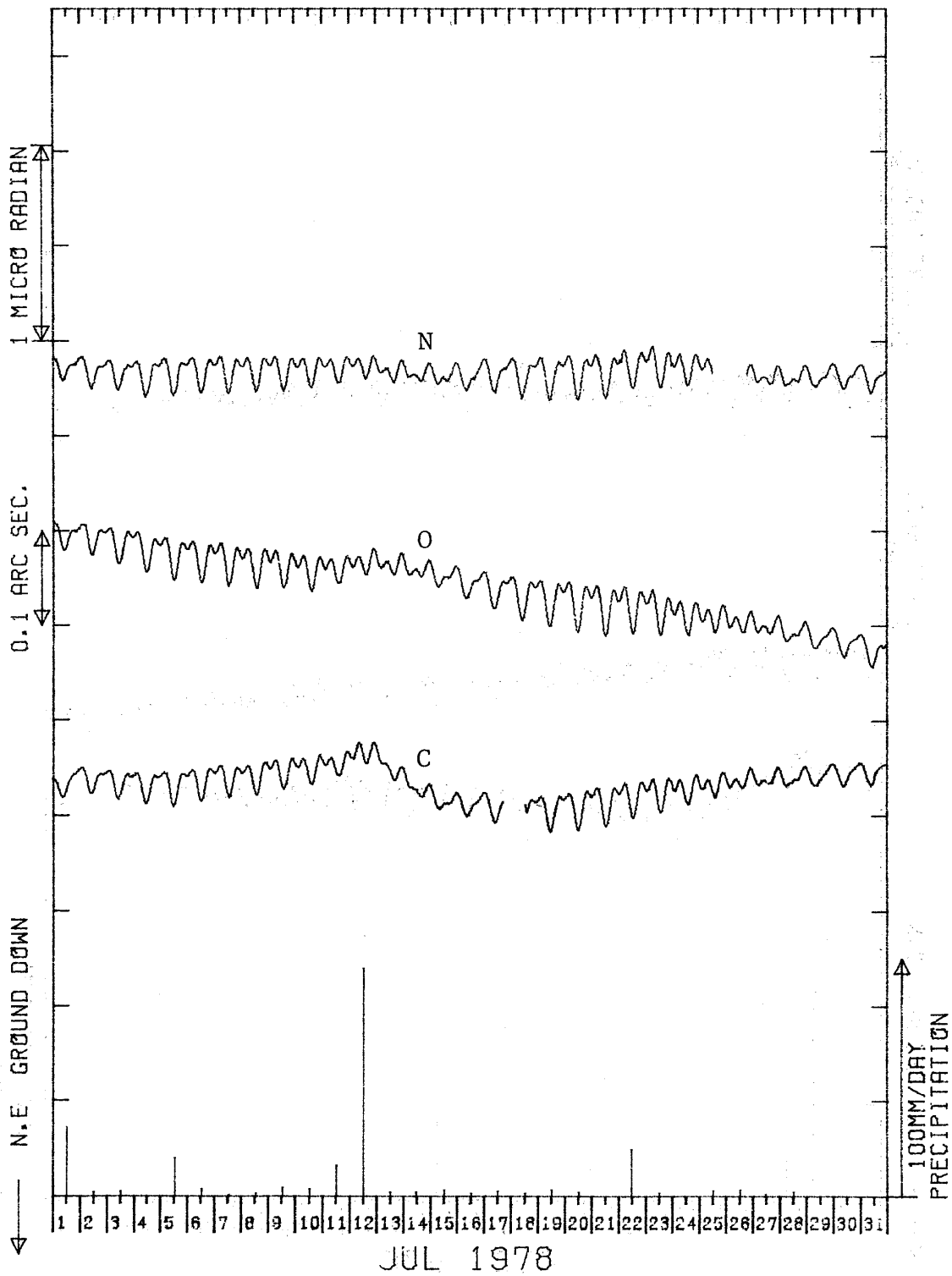
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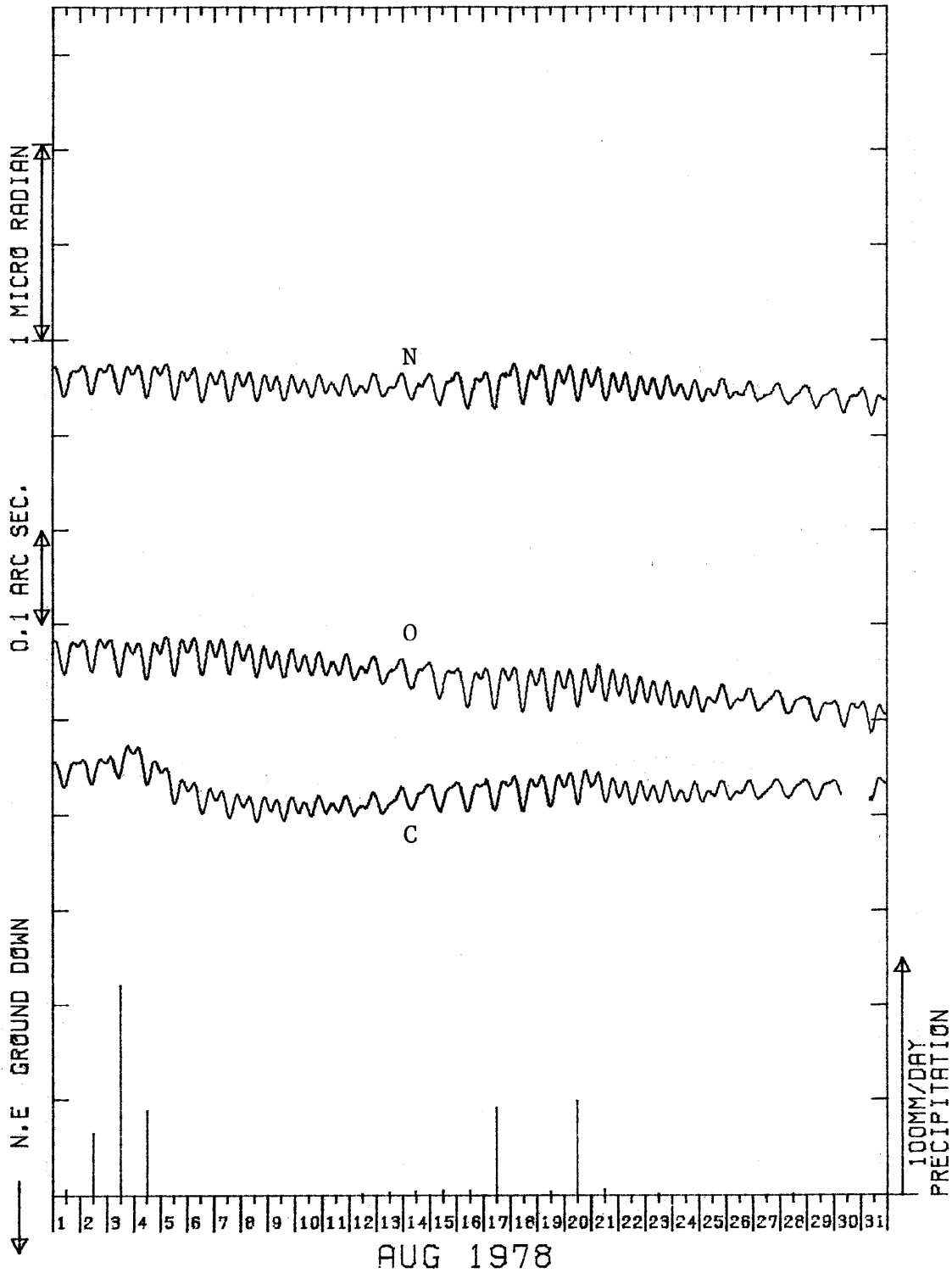
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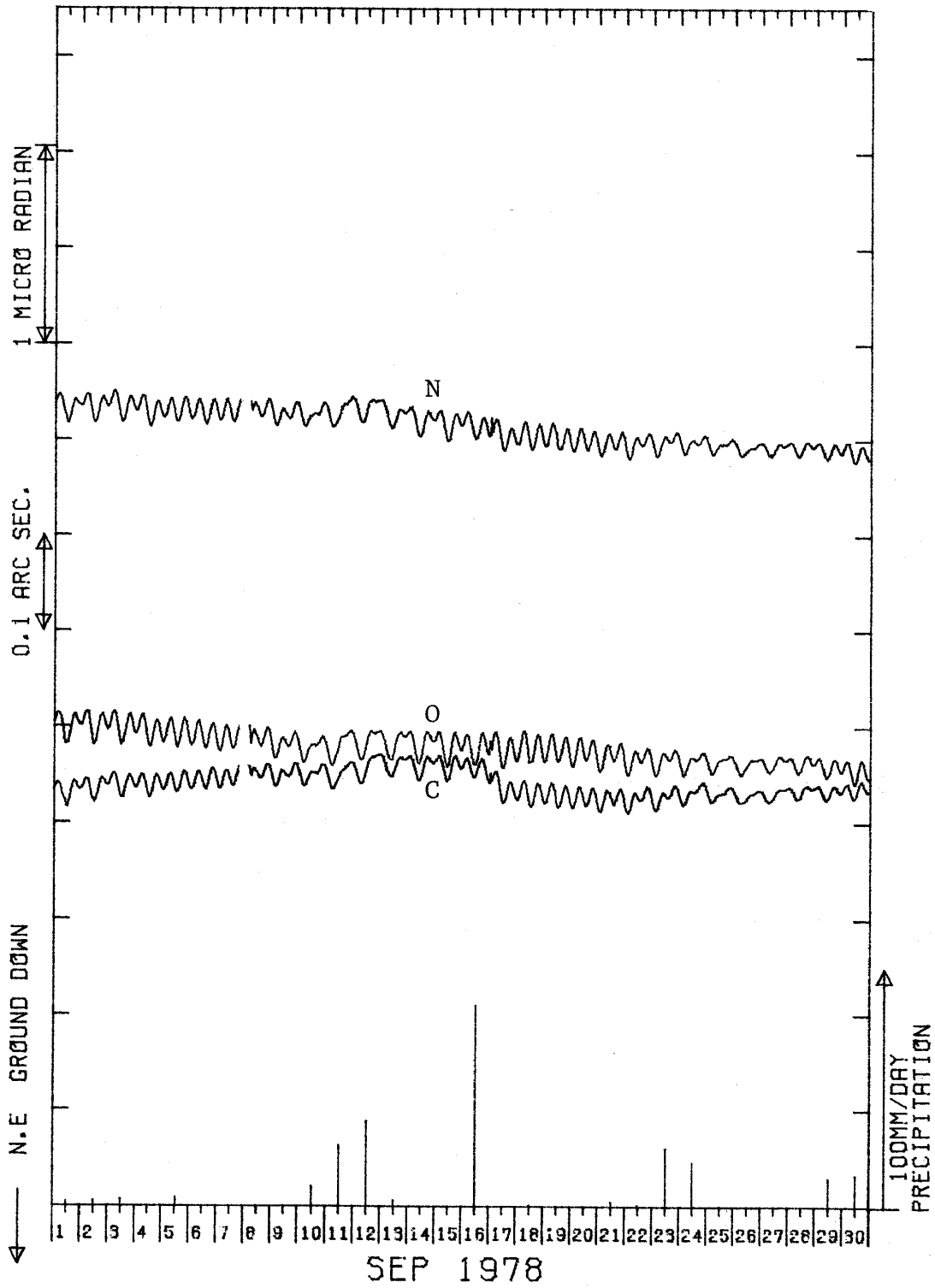
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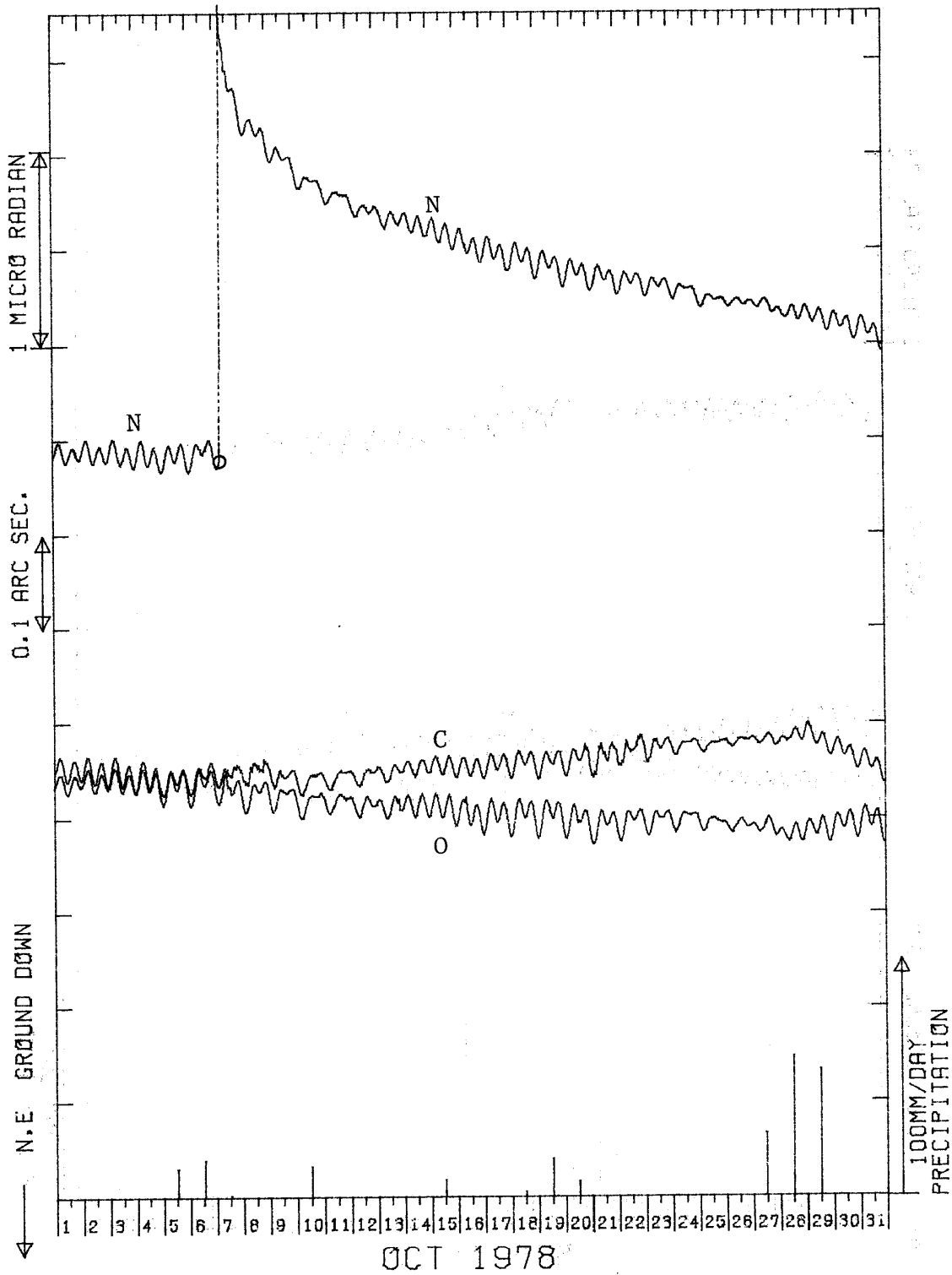
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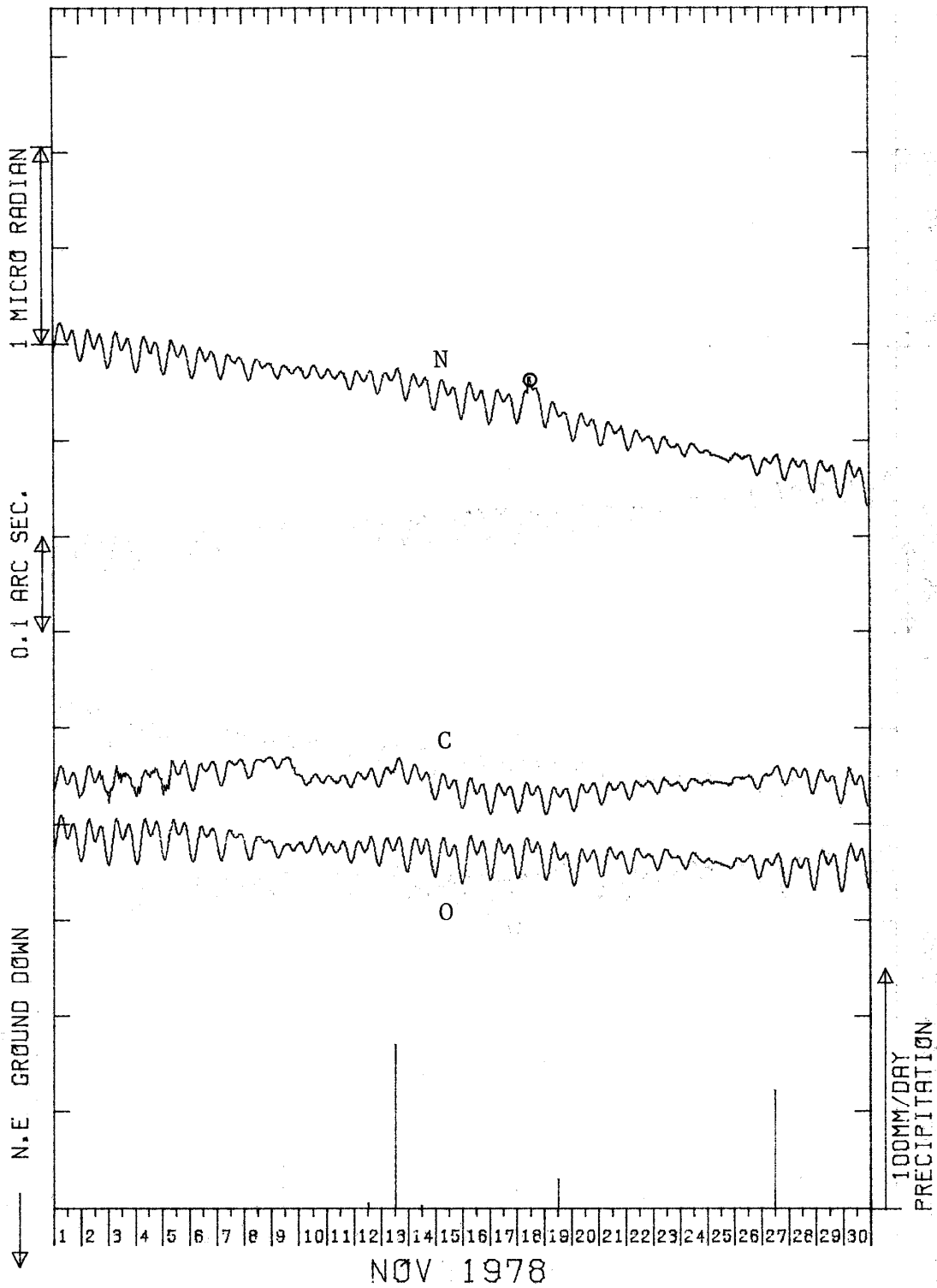
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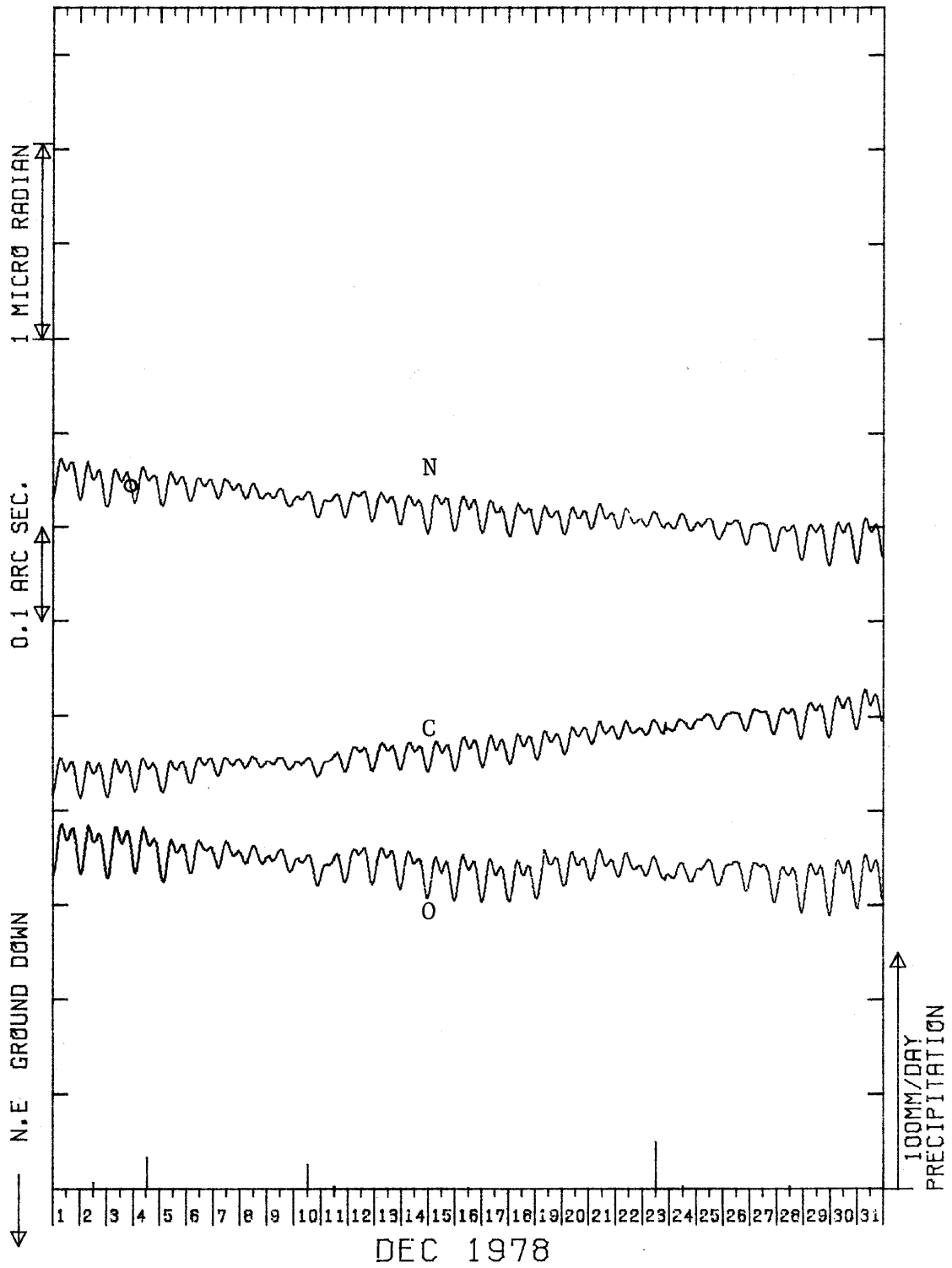
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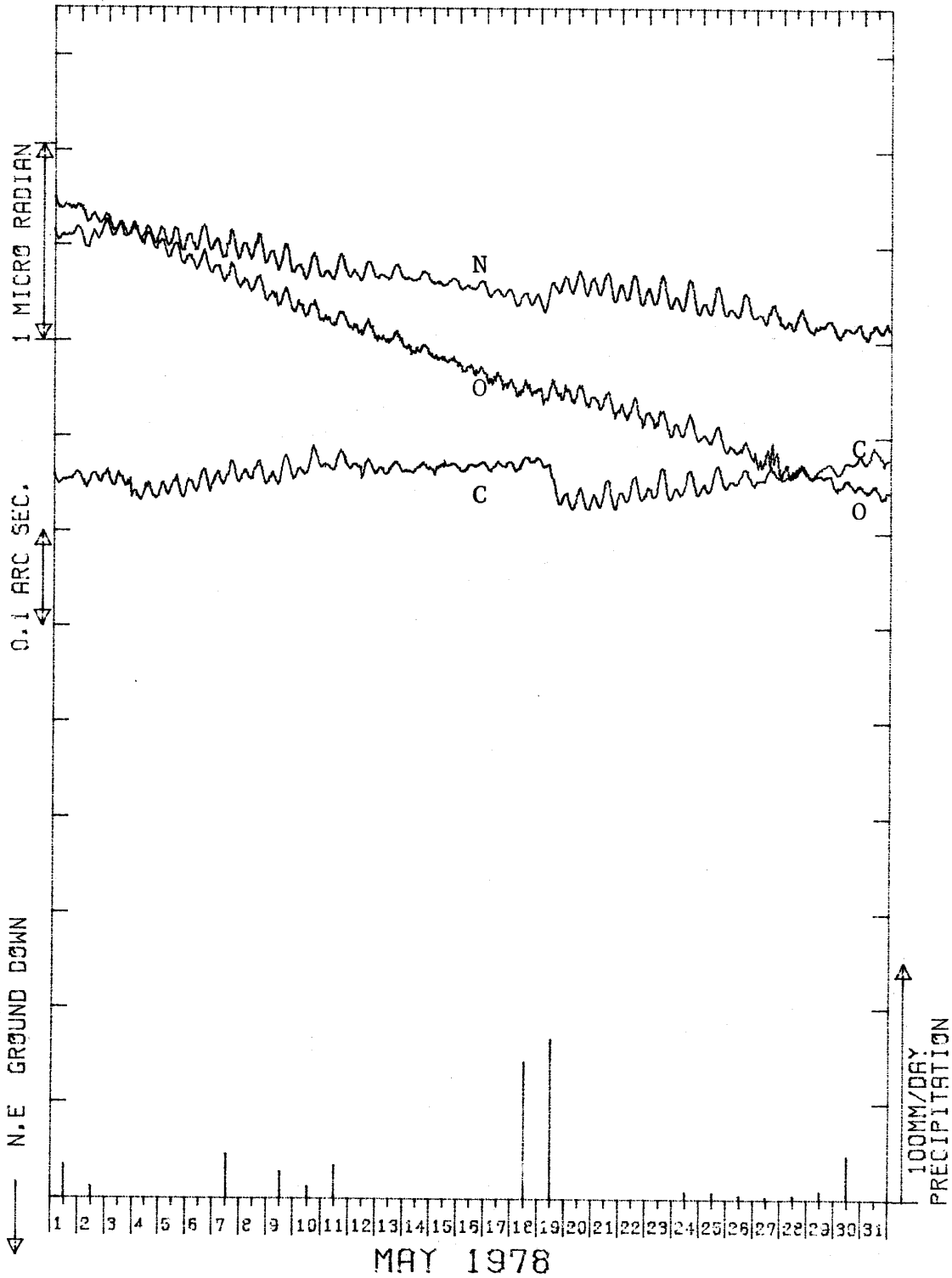
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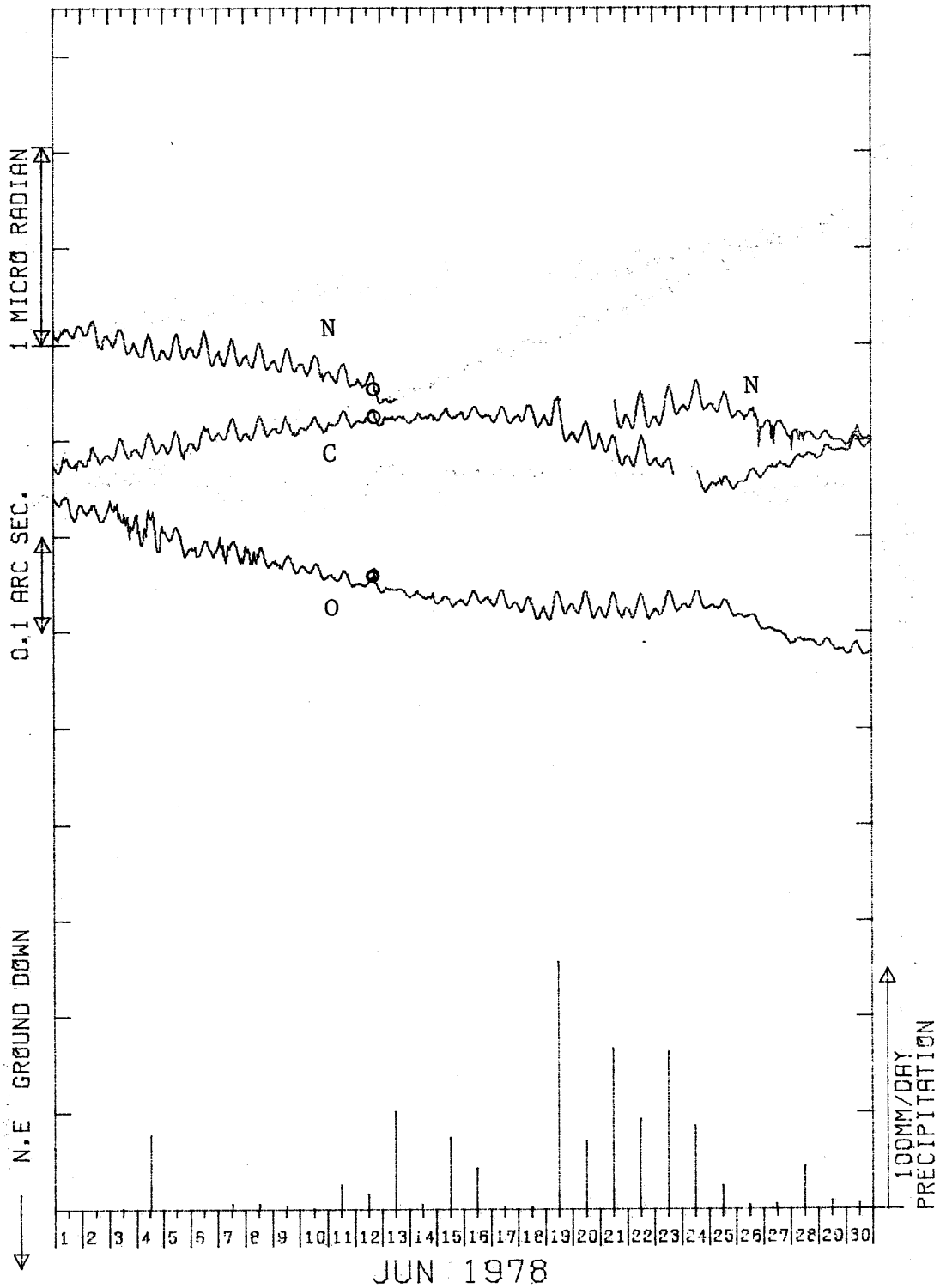
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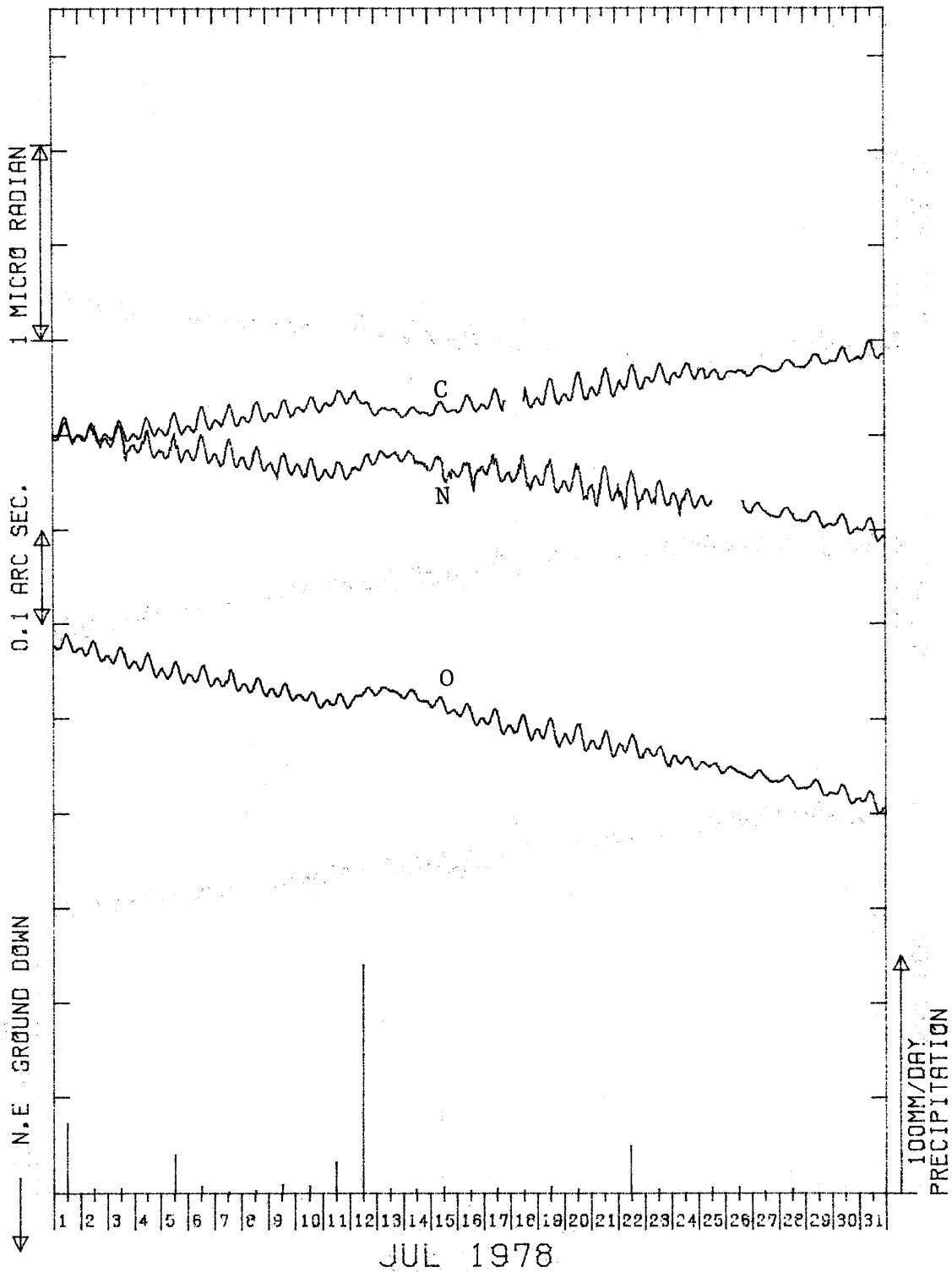
TILT(EW) AND PRECIP.



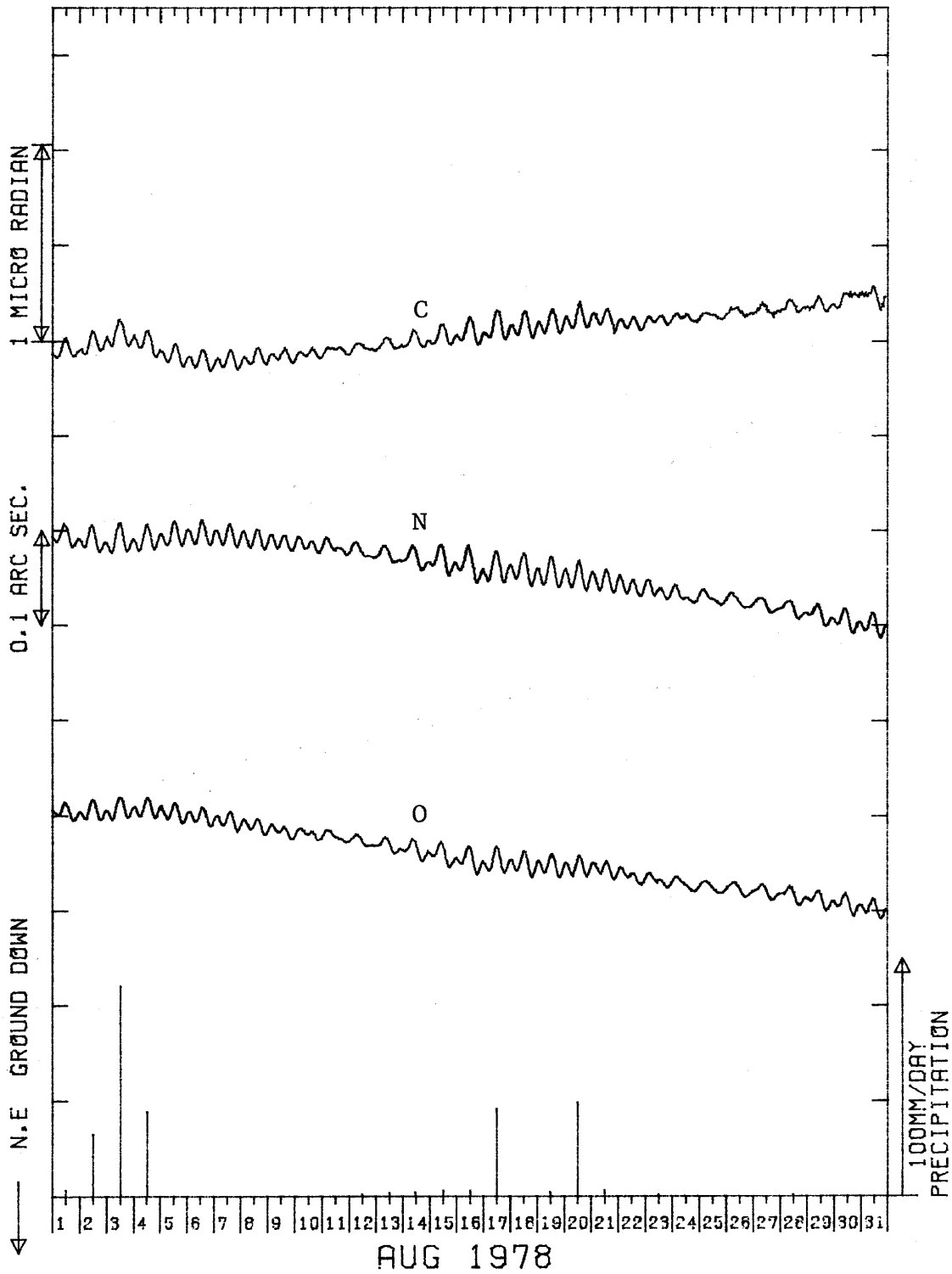
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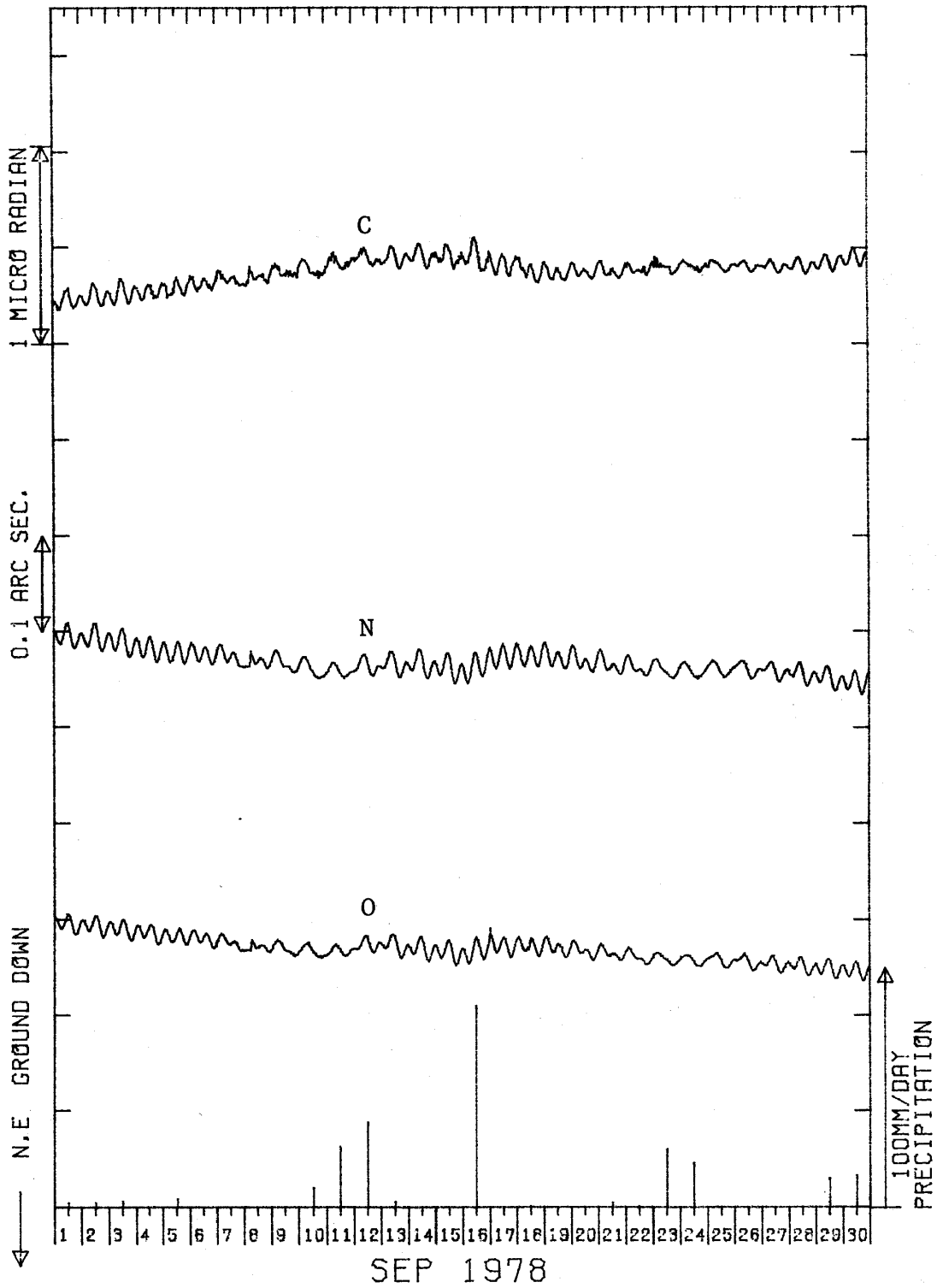
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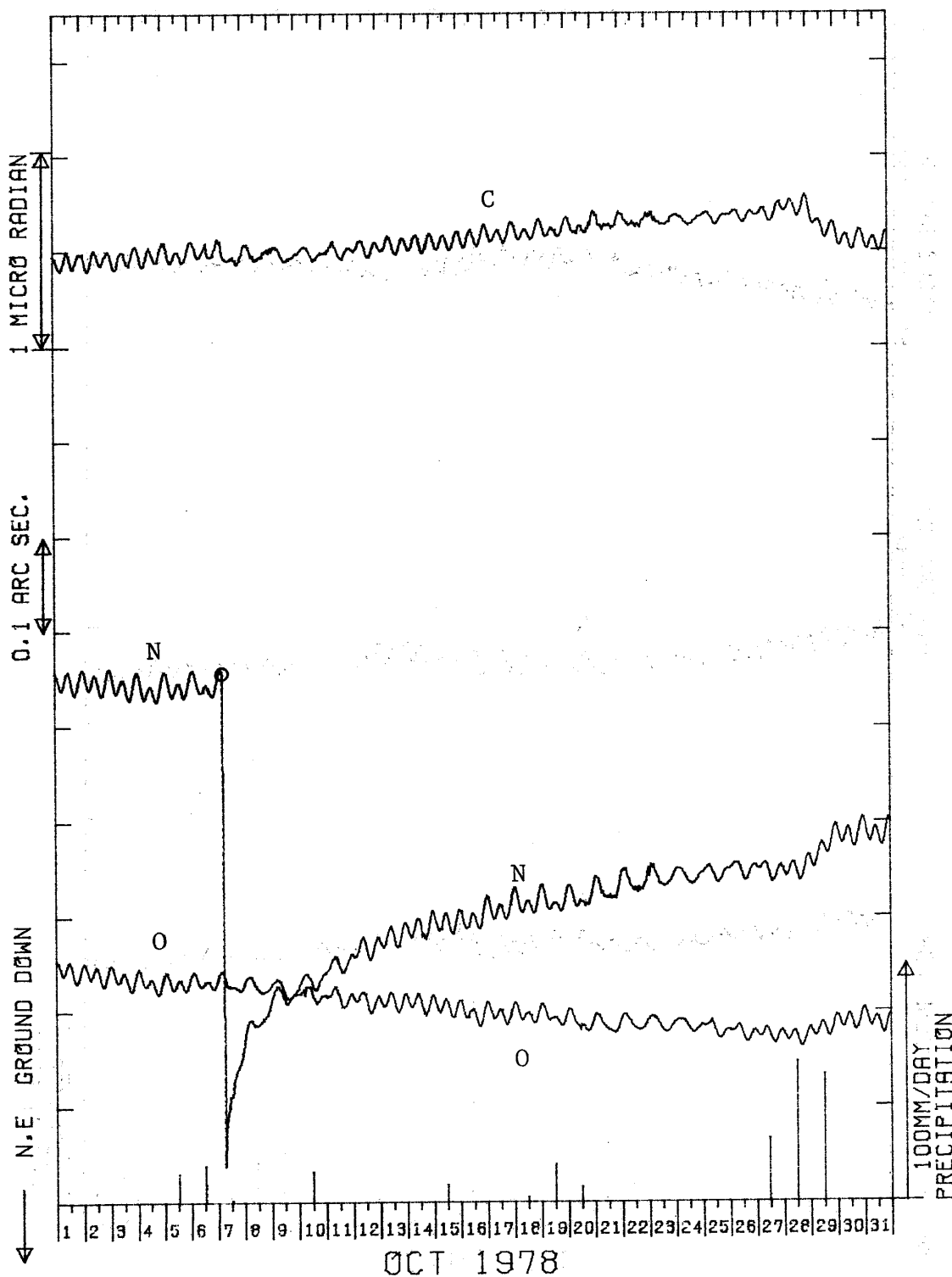
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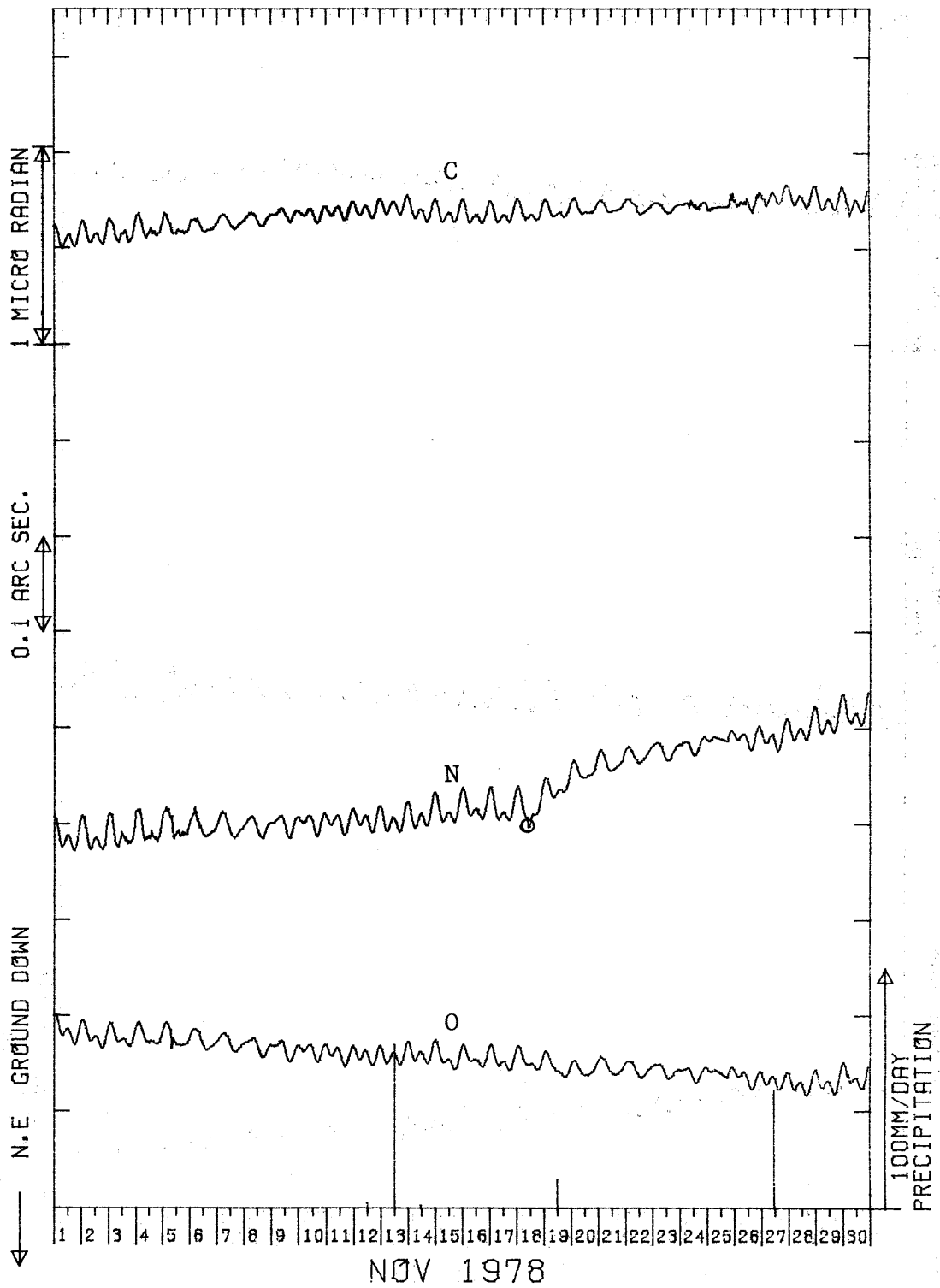
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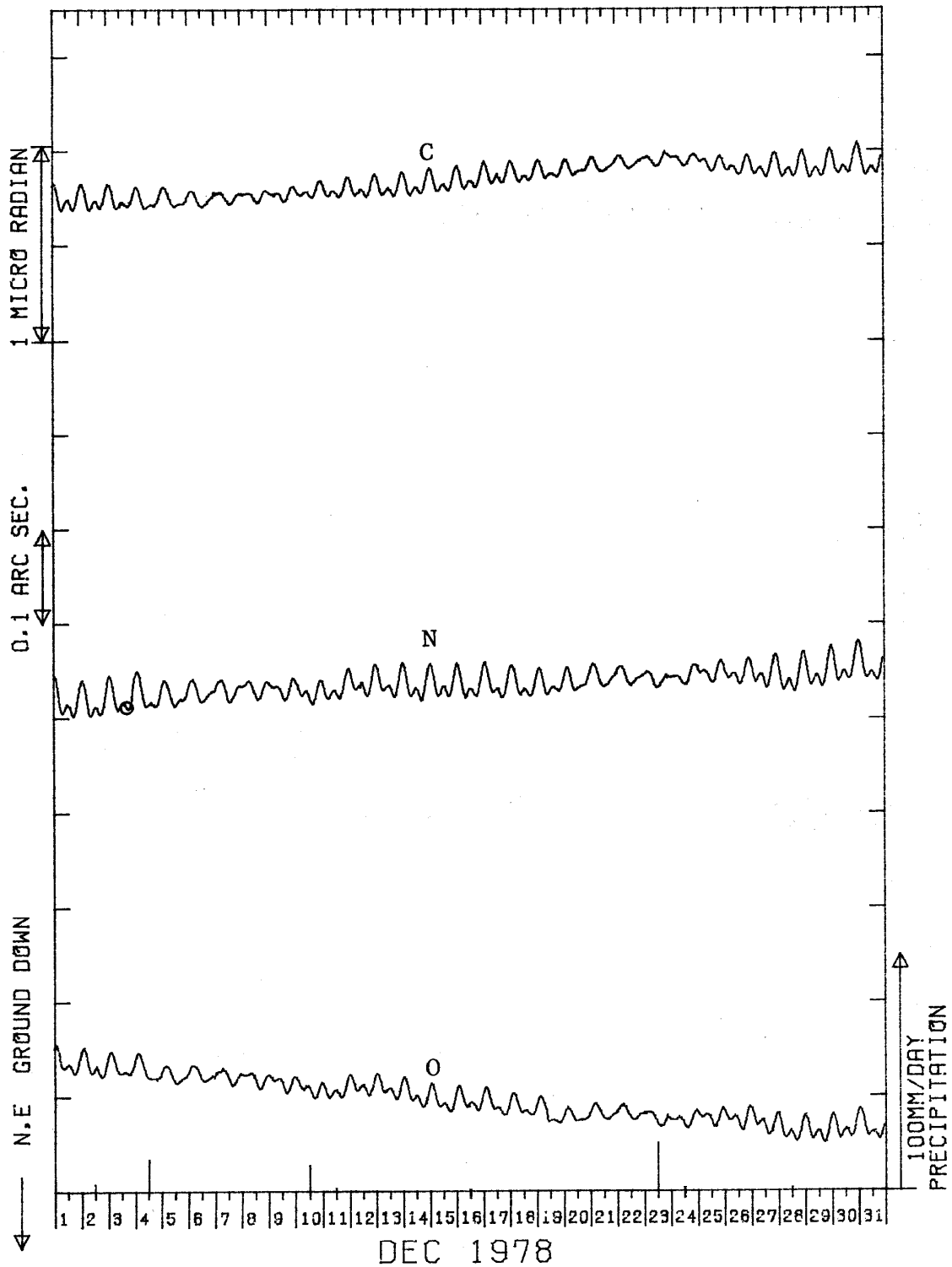
TILT(EW) AND PRECIP.



TILT(EW) AND PRECIP.

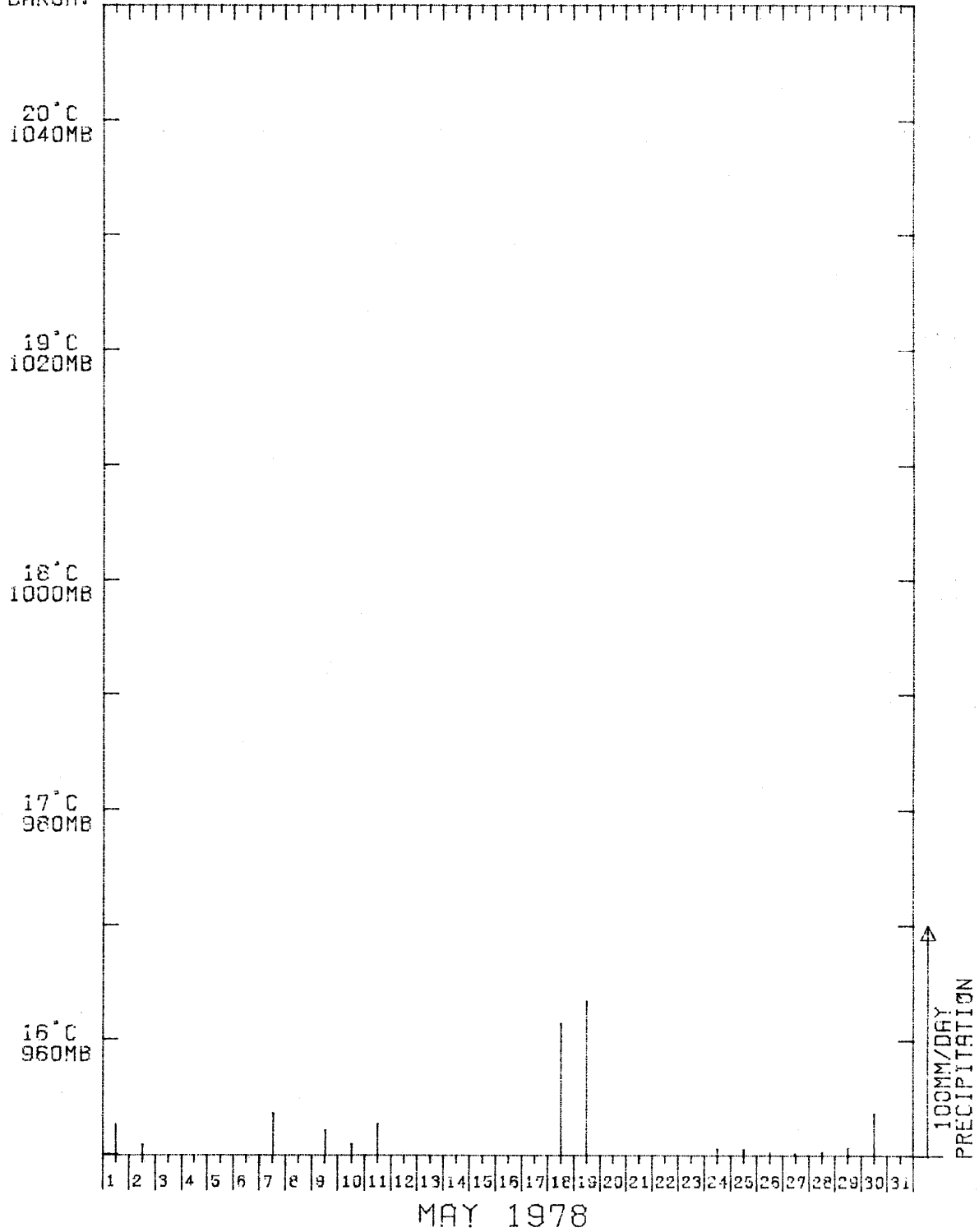


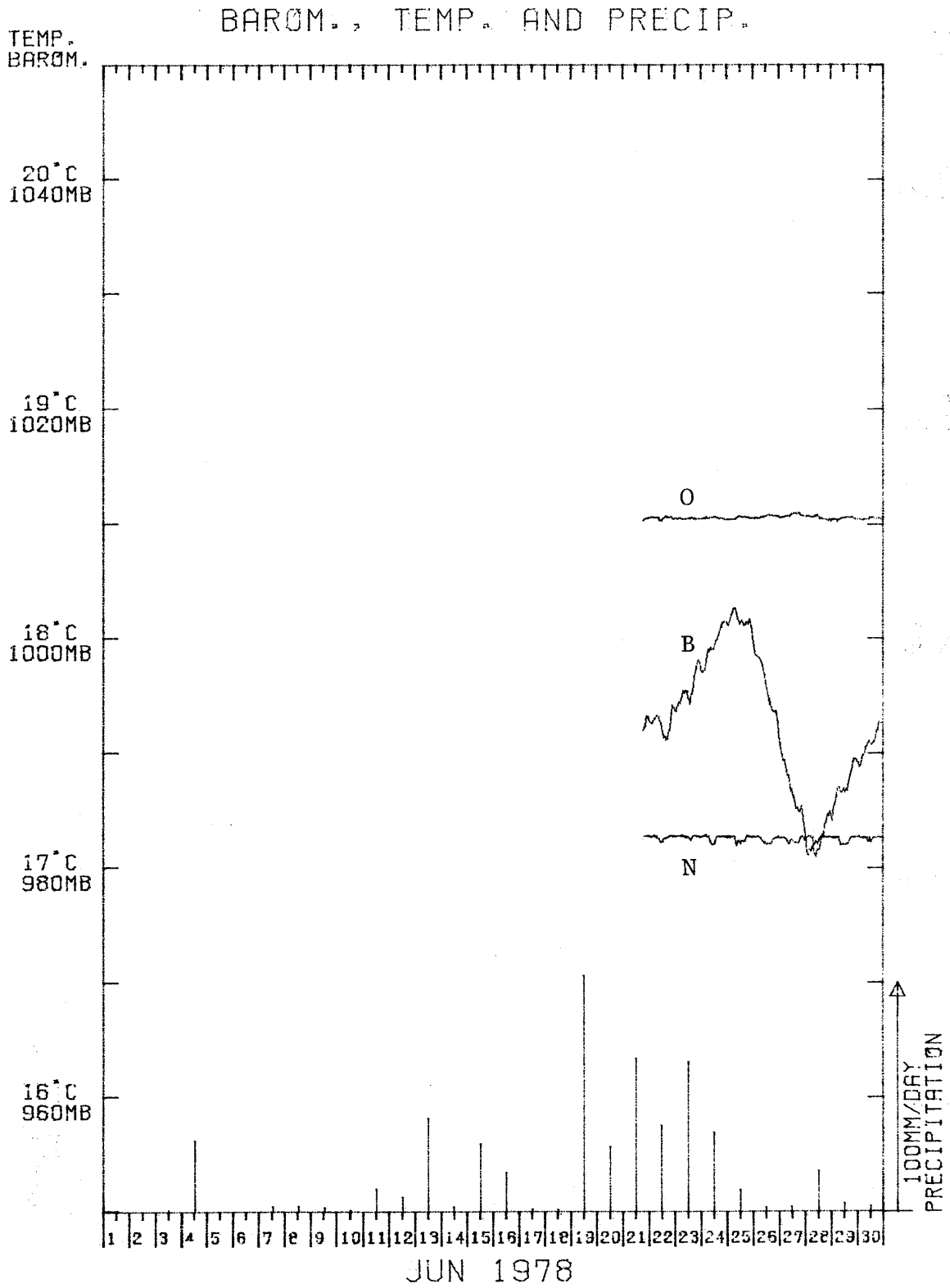
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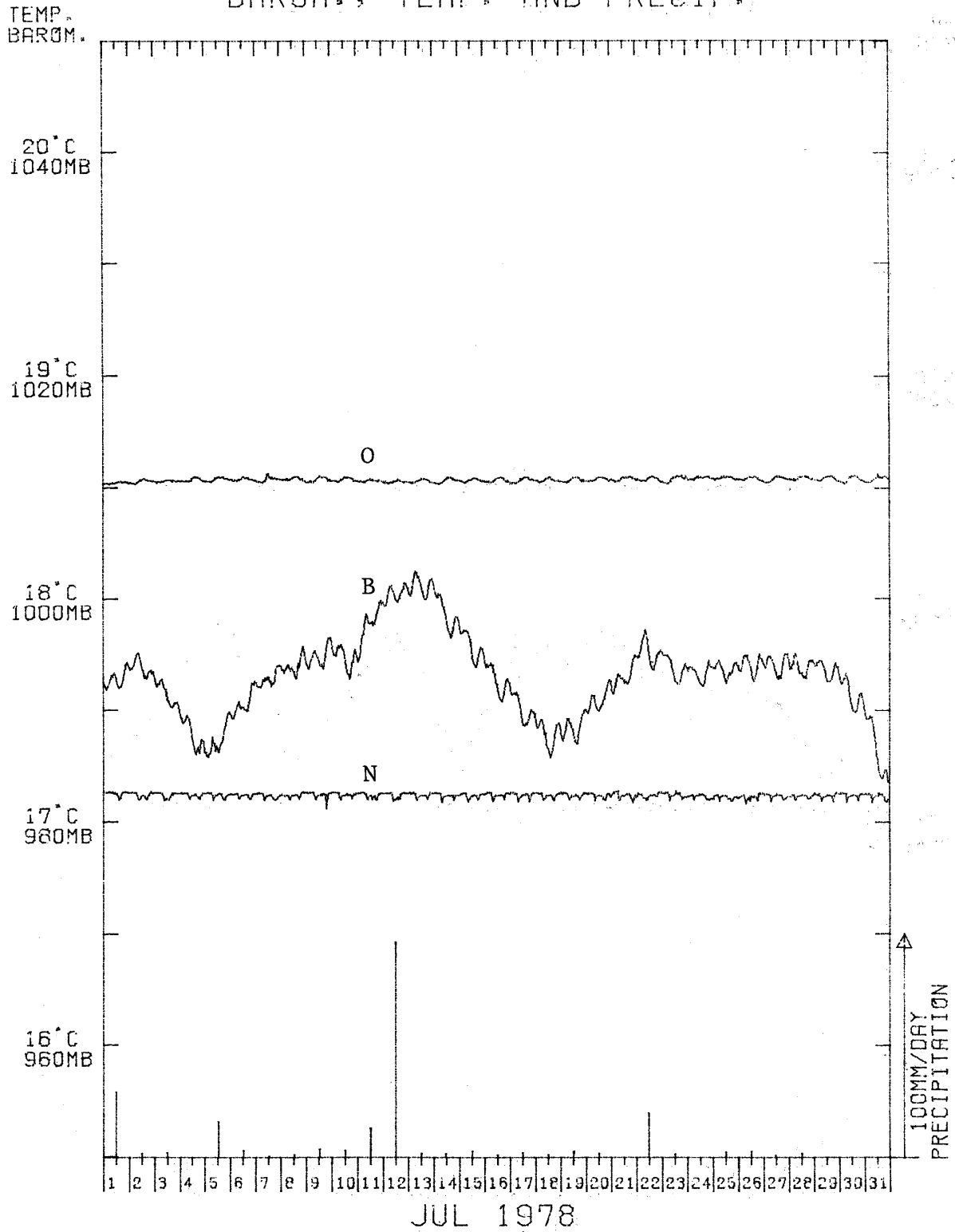
BAROM., TEMP. AND PRECIP.

TEMP.
BAROM.



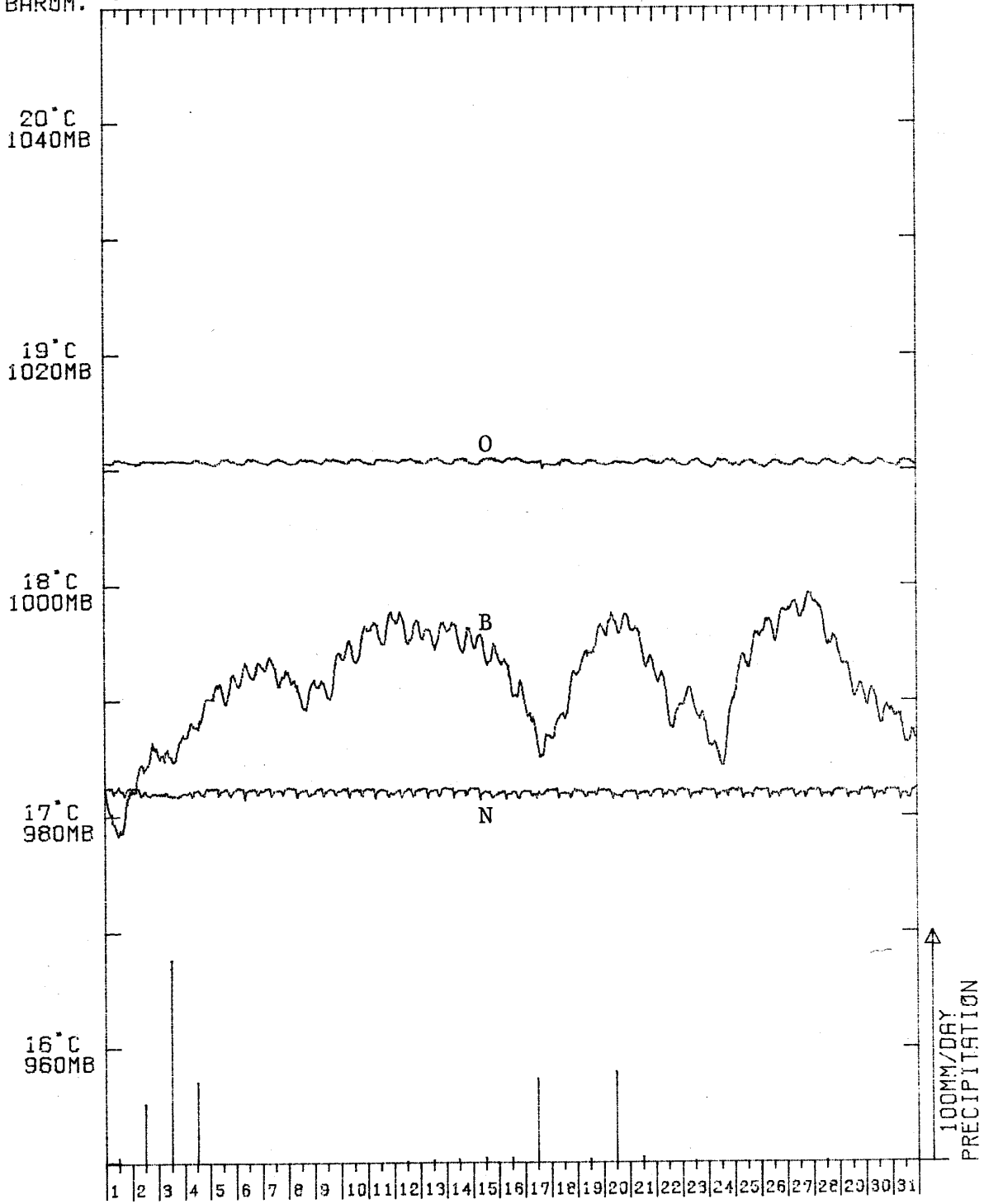


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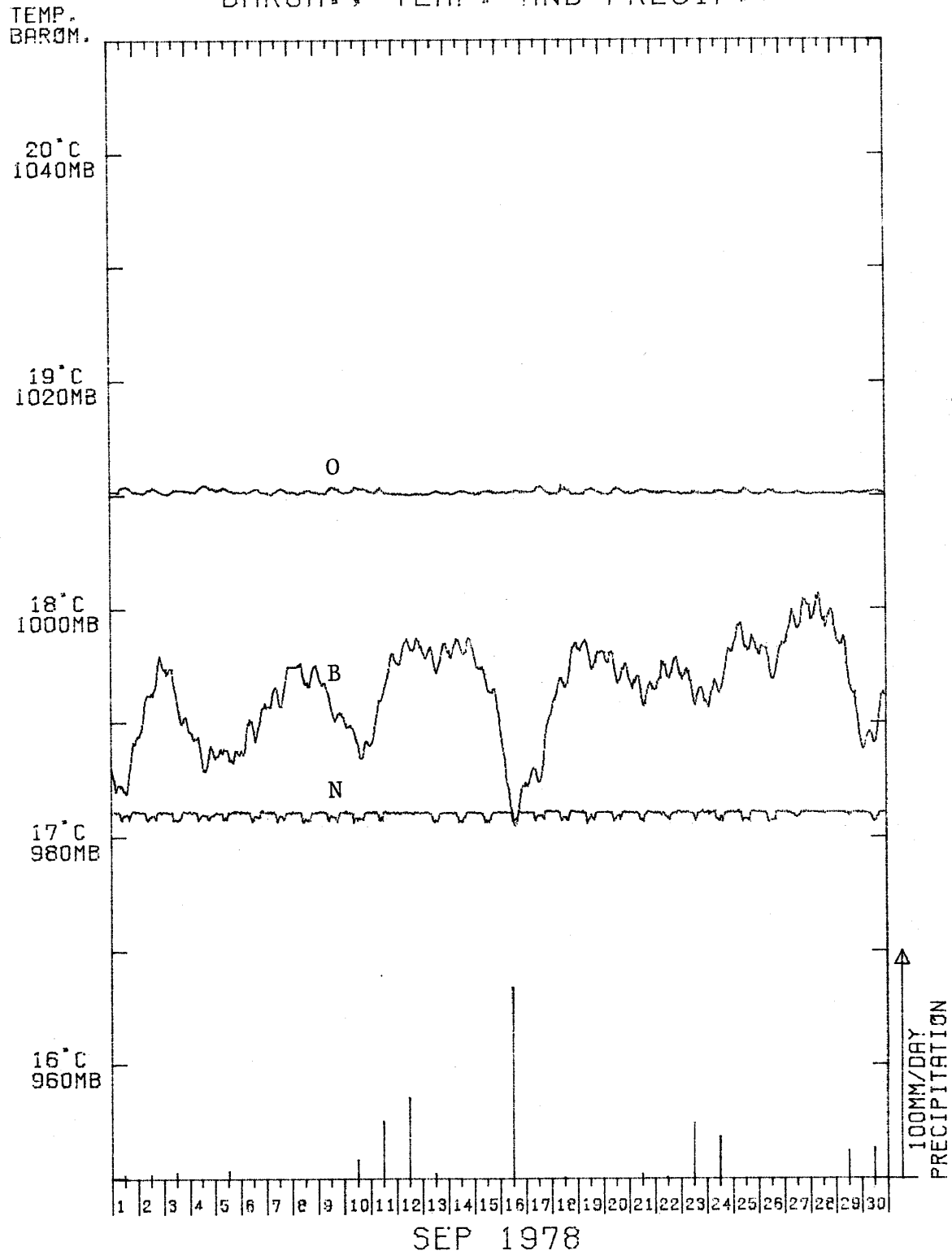
BAROM., TEMP. AND PRECIP.

TEMP.
BAROM.



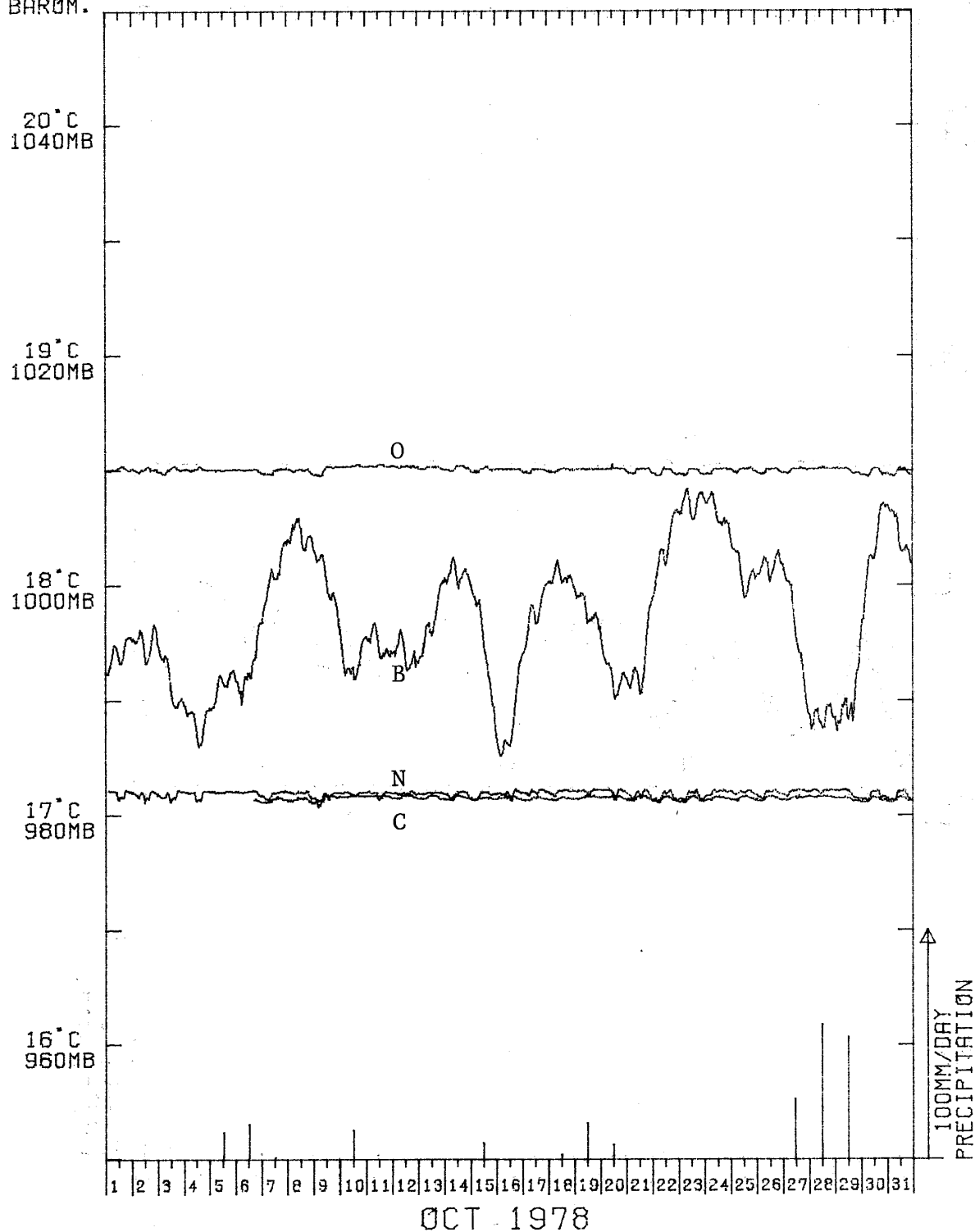
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BAROM., TEMP. AND PRECIP.



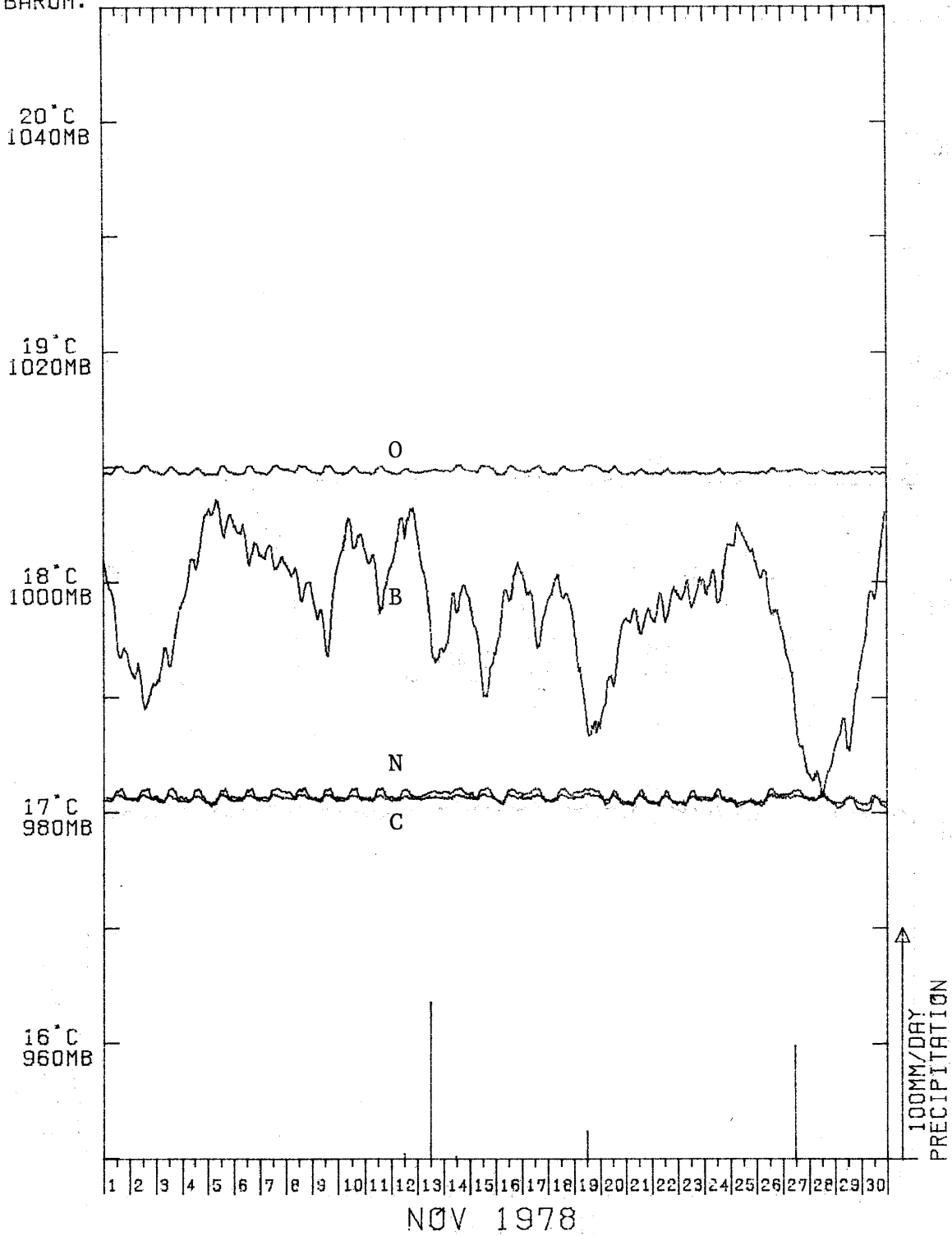
BAROM., TEMP. AND PRECIP.

TEMP.
BAROM.



BAROM., TEMP. AND PRECIP.

TEMP.
BAROM.



BAROM., TEMP. AND PRECIP.

TEMP.
BAROM.

