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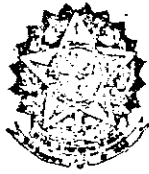
TIME-HEIGHT SECTION OF TEMPERATURE AND WIND
COMPONENTS OVER NATAL, BRAZIL FOR THE
PERIOD AUGUST, 1973 - JULY, 1974

by

Yoshihiro Yamazaki and Praky Satyamurty

September, 1974





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São José dos Campos - Estado de S. Paulo - Brasil

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*This present work contain elements of INPE's research
program and its publication has been approved by,*

Fernando de Mendonça
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General Director

ABSTRACT

The time-height sections of temperature, zonal and meridional wind components are presented. The analysis was made using the data gathered in the period August 1973 to July 1974 from EXAMETNET rocket launchings at Barreira do Inferno, Natal, Brazil.

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I - INTRODUCTION

In Brazil the meteorological rockets are launched from the Barreira do Inferno range, Natal ($05^{\circ}55'S$, $35^{\circ}10'W$). The Experimental Inter-American Meteorological Rocket Network (EXAMETNET) has been active in Brazil since January 12, 1966.

This report, to be submitted to the Tenth Annual Meeting of EXAMETNET (São José dos Campos, Brazil, 1974) contains time-sections of temperature and wind components for the period August 1973 - July 1974.

II - CONSTRUCTION PROCEDURE

The time-height sections enclosed in Appendix I are constructed in accordance with the recommendations of the Scientific Working Group at the Eight Annual Meeting of EXAMETNET (Mar del Plata, Argentina; 1972).

The analysis covers the period August 20, 1973 to July 11, 1974 and consists of 3 diagrams which include:

- a) Analysis of the temperature values associated with plotted vector winds;
- b) Analysis of the zonal wind component associated with plotted temperature values;
- c) Analysis of the meridional wind component associated with plotted temperature values.

The analysis was not made in the gap, namely, September 12, 1973 to March 19, 1974. Isotherms of 0°C and isopleths of zero wind components are thick. Stratopause is shown as broken line. Vector winds are plotted on time sections of temperature on the days of launchings at 2 km intervals. Wind barbs indicate direction from which wind is blowing; a pennant represents a wind of 50 KNOTS a full line 10 KNOTS and a half line 5 KNOTS. Temperatures are plotted on time-height sections of wind components, whenever thermodynamic data are available, at 2 km intervals.

III - ANALYSIS OF TEMPERATURE AND WIND COMPONENTS

The major features apparent on the time-height sections are as follows:

A - TEMPERATURE

- 1 - The height of the stratopause varies between 45 to 52 km.
- 2 - Around middle of May the height of stratopause appears to fall to about 45 km, and rise in the middle of June; a similar features is observed in 1973 time sections over Natal (INPE-388-RI/114)
- 3 - The warmest temperature are found in the vicinity of stratopause, with a maximum value of 5°C in the middle of March at 48 km.

B - ZONAL AND MERIDIONAL WIND COMPONENTS

- 1 - The zonal wind component over Natal throughout the year is predominantely from the east at levels below 35 km. In the vicinity of the stratopause west winds are observed in the period March to June; and east winds are dominant during July and early August. Above stratopause the flow is essentially westerly, increasing with height.
- 2 - The southerly wind component is dominant above 50 km in the period from middle of April to early August, with occasional appearance of weak northerlies. In late March and early April around 57 km there is a strong northerly component. A transition from southerly to northerly flow appears to occur between May and June around 40 km height.

APPENDIX

In the following pages, the time-height sections of temperature, zonal and meridional wind components are presented.

TIME HEIGHT SECTION

TEMPERATURE

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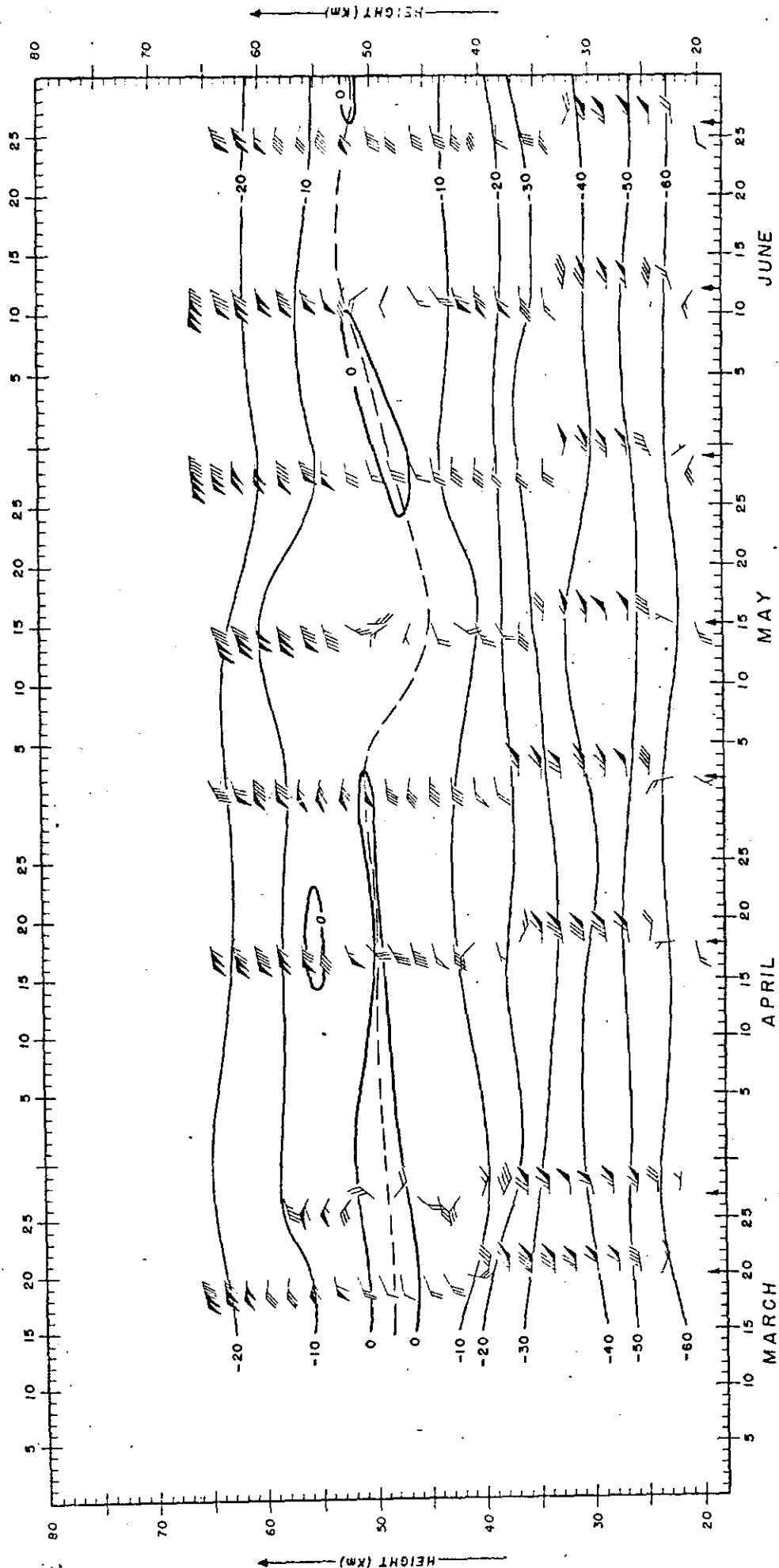
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PROJECT MESA/EXAMETNET

1974

5° 55' S ; 35° 15' W



TIME HEIGHT SECTION

- IN PE -

TEMPERATURE

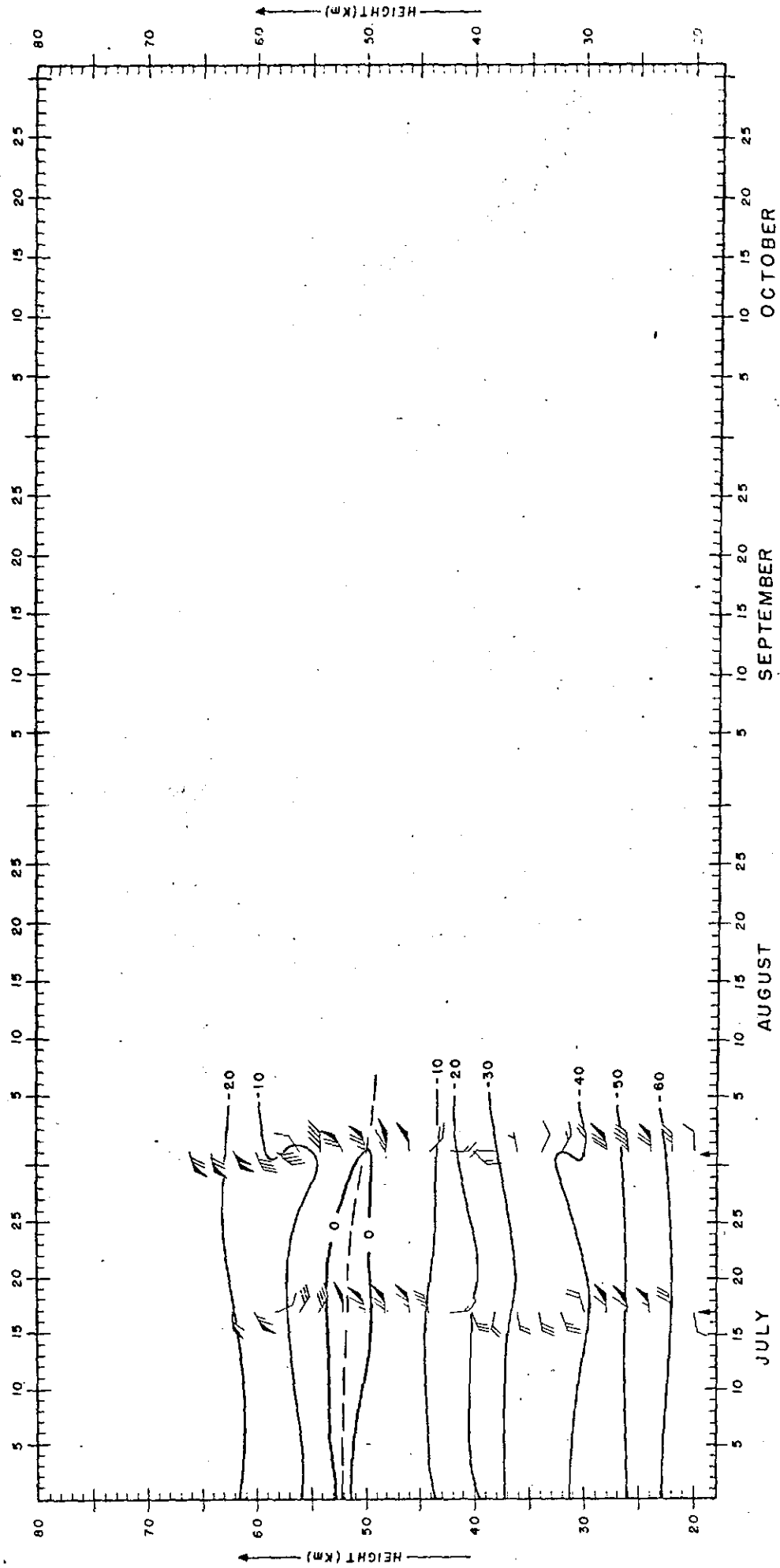
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TIME HEIGHT SECTION

MERIDIONAL COMPONENT

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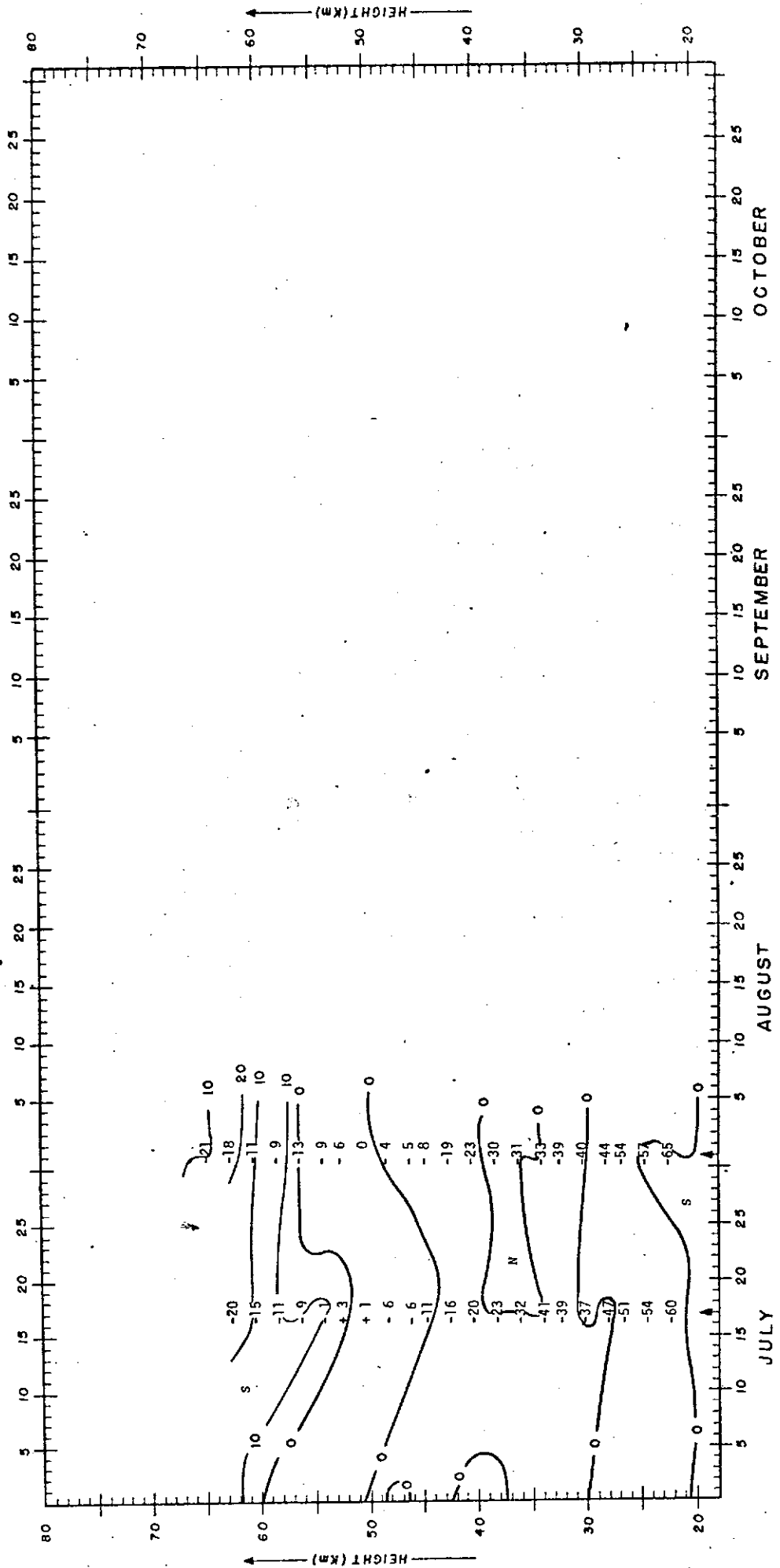
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TIME HEIGHT SECTION

ZONAL COMPONENT

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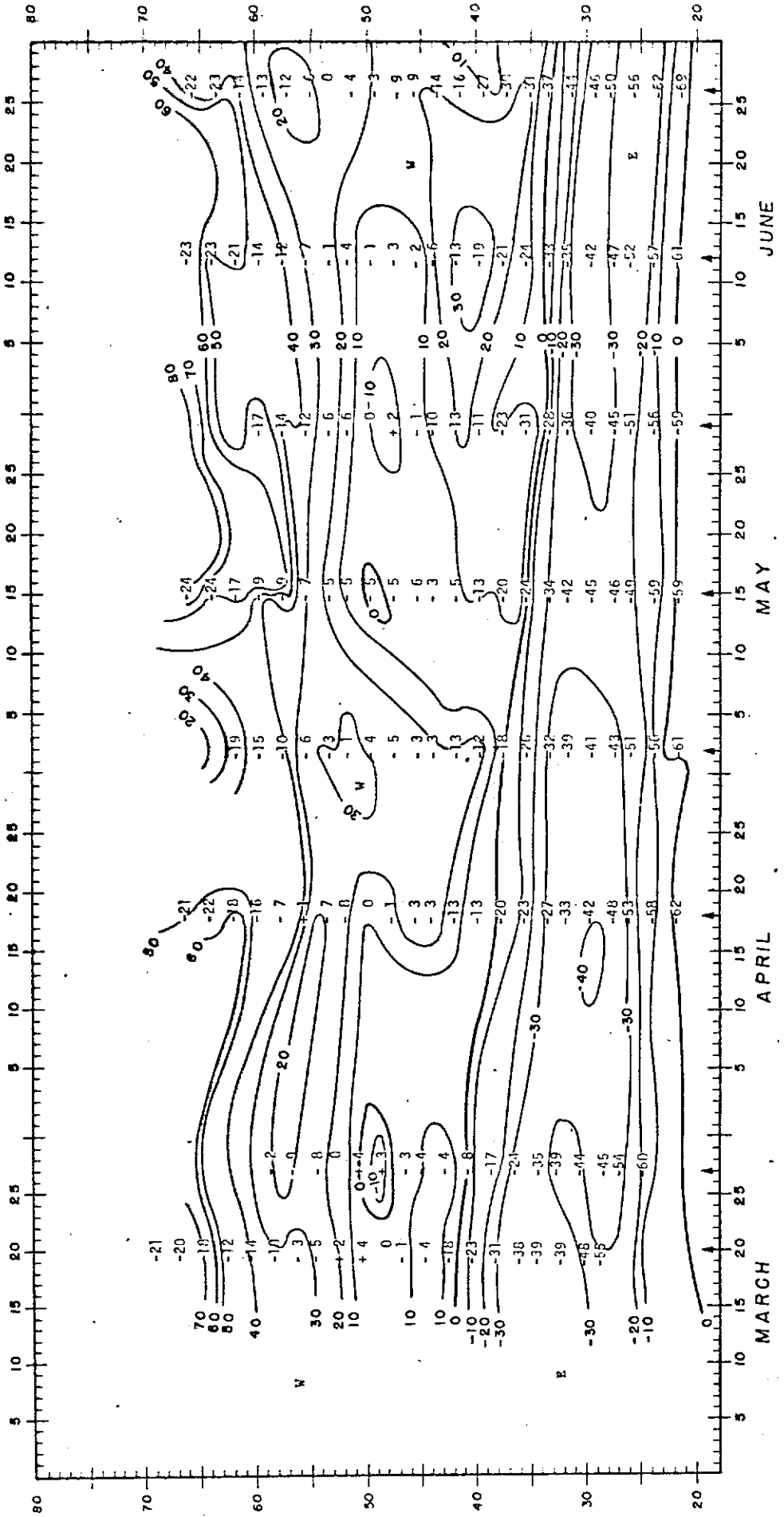
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TIME HEIGHT SECTION

ZONAL COMPONENT

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