

INPE-388

*TIME-HEIGHT SECTIONS OF TEMPERATURE AND
WIND COMPONENTS OVER NATAL, BRAZIL FOR THE
PERIOD JANUARY 1966 - AUGUST 1973*

September, 1973



PRESIDÊNCIA DA REPÚBLICA
CONSELHO NACIONAL DE PESQUISAS
INSTITUTO DE PESQUISAS ESPACIAIS
São José dos Campos - Estado de S. Paulo - Brasil

*TIME-HEIGHT SECTIONS OF TEMPERATURE AND
WIND COMPONENTS OVER NATAL, BRAZIL FOR THE
PERIOD JANUARY 1966 - AUGUST 1973*

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

Fde Mendonça
Fernando de Mendonça
General Director

ABSTRACT

The time-height sections of temperature, zonal and meridional wind components are presented for the period January 1966 - August 1973 using all the available data from the EXAMETNET Rocket launchings at Barreira do Inferno, Natal, Brasil.

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1 - INTRODUCTION

In Brazil the meteorological rockets are launching from the Barreira do Inferno Range, Natal ($05^{\circ}55'S$, $35^{\circ}10'W$).

The program has been active since January 1966. However, there are a few irregularities in the launchings causing gaps in the data.

This report, to be submitted to the Ninth Annual Meeting of EXAMETNET (Kourou, French Guiana, 1973) contains time sections of temperature and wind components for the period January 1966 - August 1973.

2 - CONSTRUCTION PROCEDURE

The time sections are constructed in accordance with the recommendations of the Scientific Working Group in the Eight Annual Meeting of the EXAMETNET (Mar del Plata, Argentina, 1972).

Extrapolation in the data-void regions are shown as broken lines. Isotherms of 0°C and isopleths of zero wind components are thick. Stratopause is shown as broken line. On temperature time sections vector winds are plotted on the days of launchings at 2km intervals, using the standard meteorological conventions; and on time sections of wind components temperatures are plotted whenever thermodynamic data are available.

Appendices I, II and III are temperature, zonal and meridional wind time sections respectively.

APPENDIX I

TIME HEIGHT SECTION
TEMPERATURE

- IN P E -

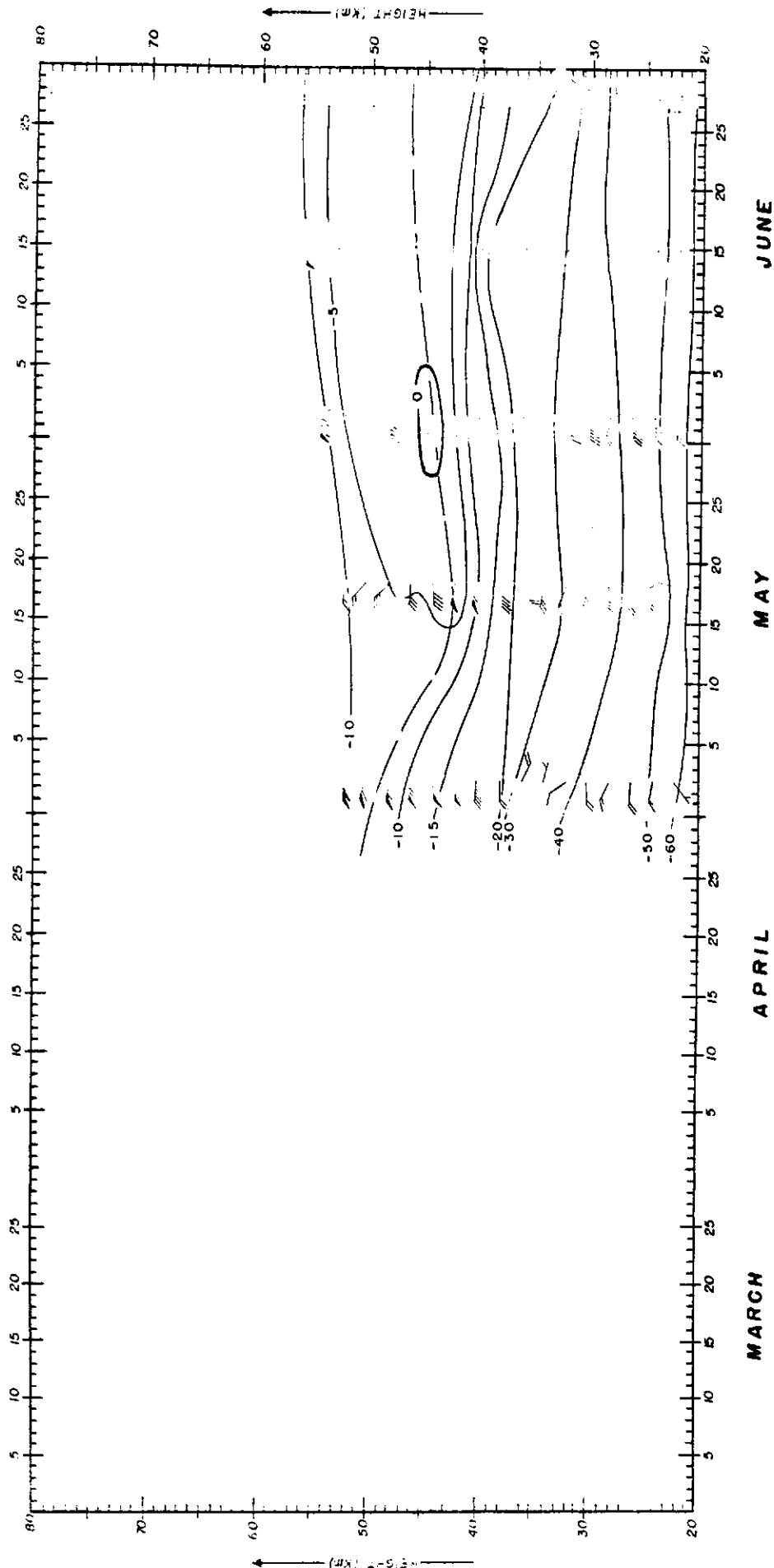
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NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S ; 35° 15' W

1966



TIME HEIGHT SECTION

TEMPERATURE

- I N P E -

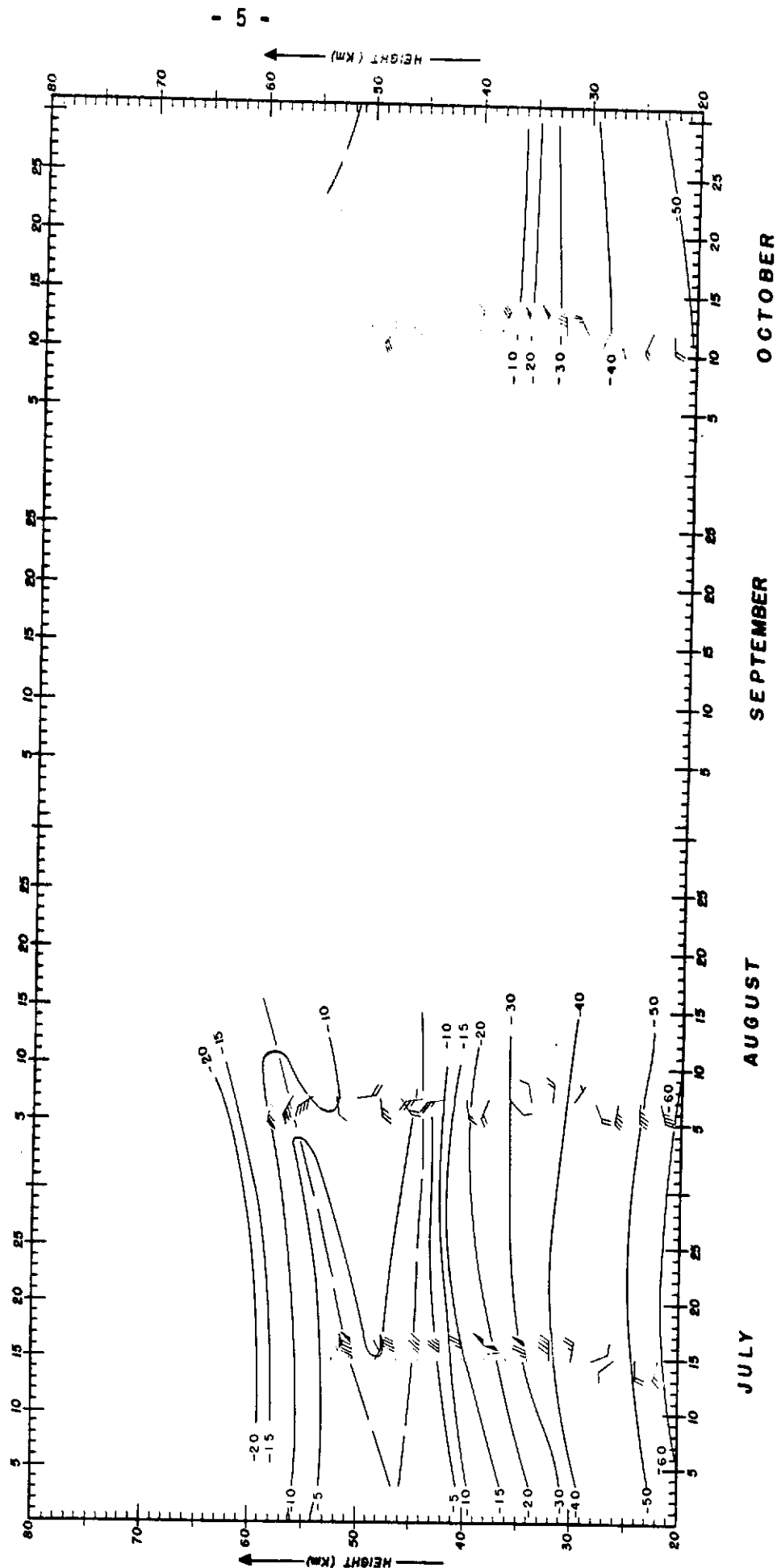
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NATAL, BRAZIL

5° 55' S : 35° 15' W

1966



TIME HEIGHT SECTION TEMPERATURE

-INPE-

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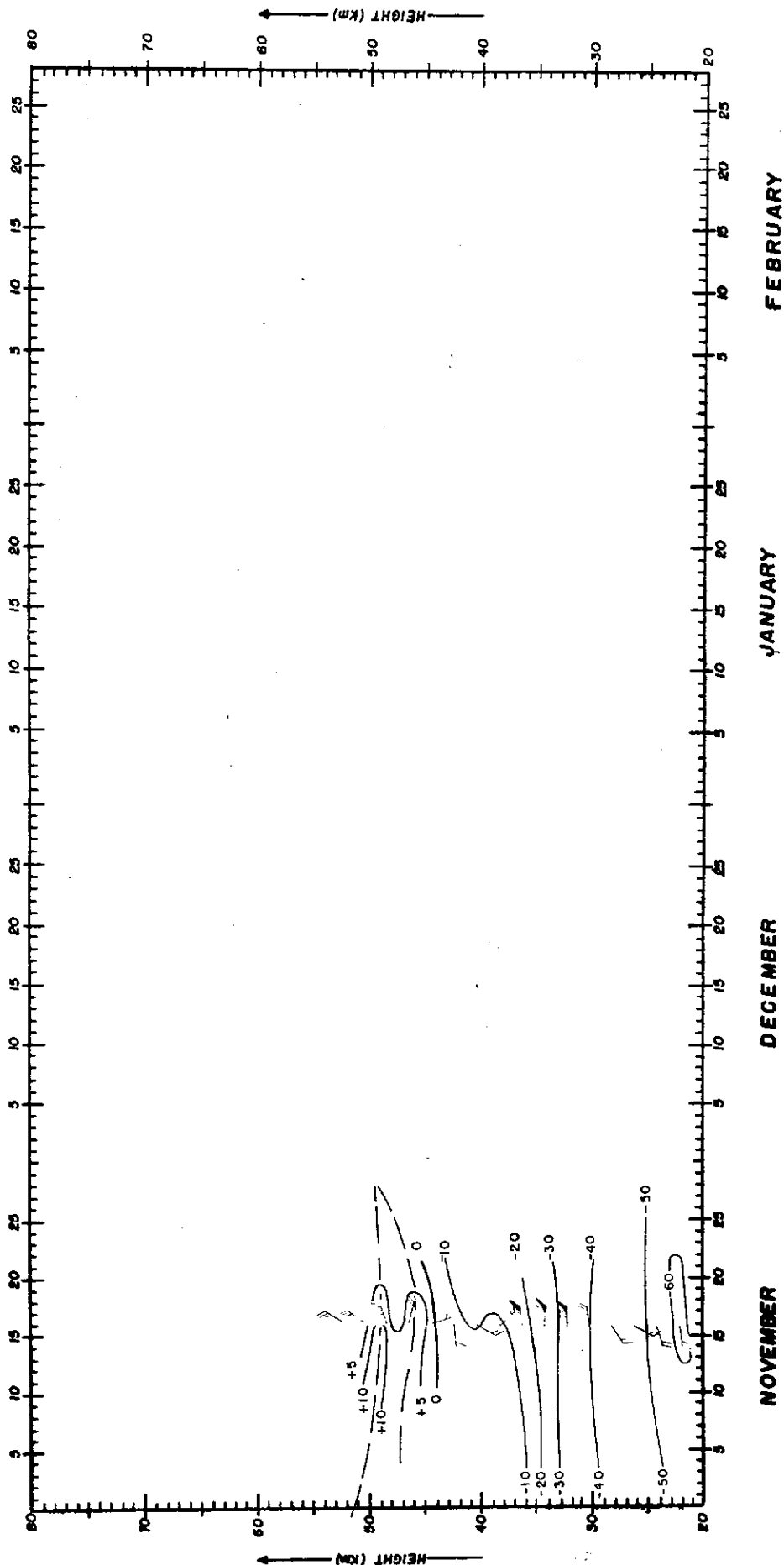
NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S : 35° 15' W

1966

1967



TIME HEIGHT SECTION
TEMPERATURE

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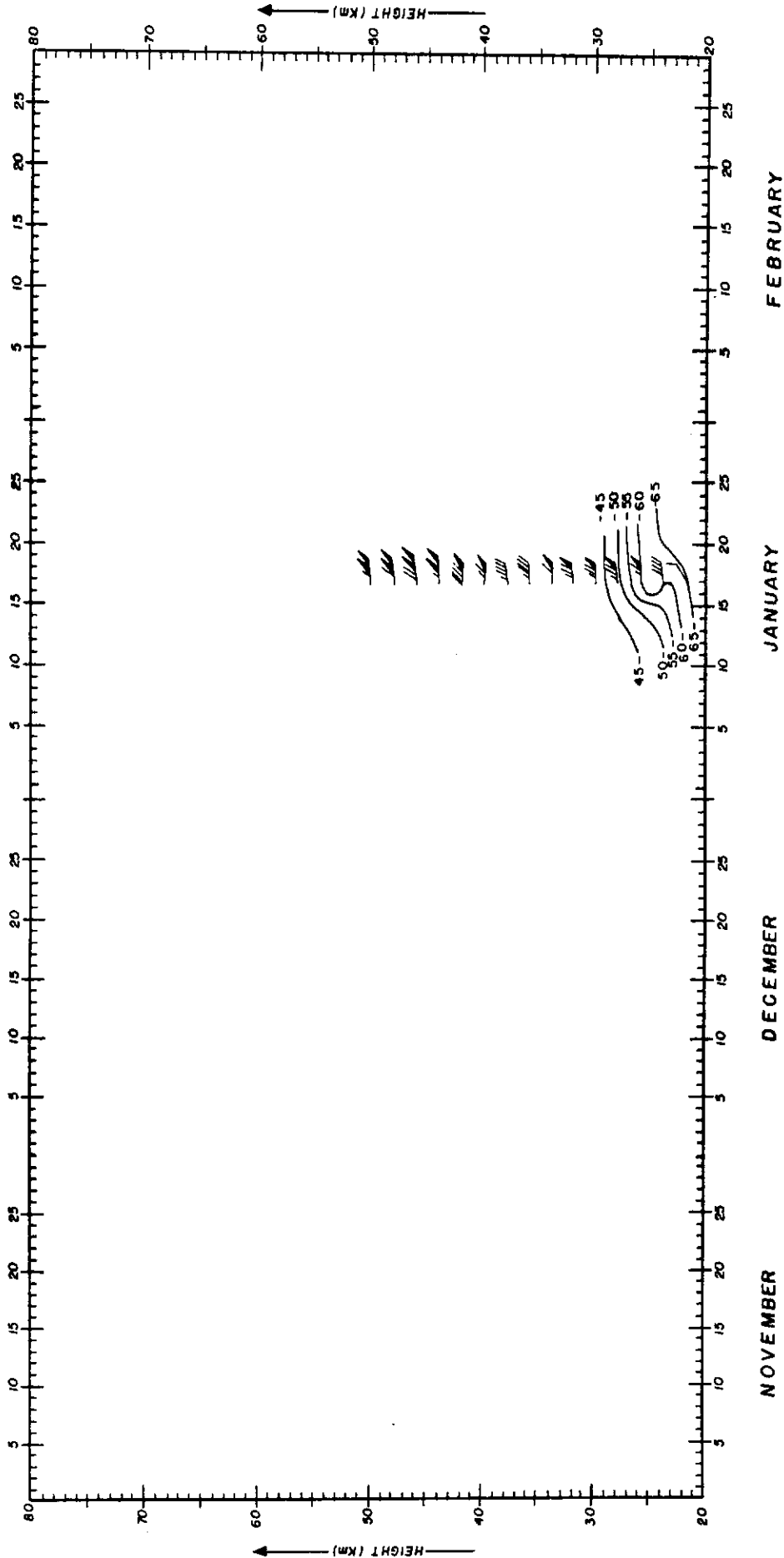
NATAL. BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S ; 35° 15' W

1967

1968



TIME HEIGHT SECTION

TEMPERATURE

--INPE--

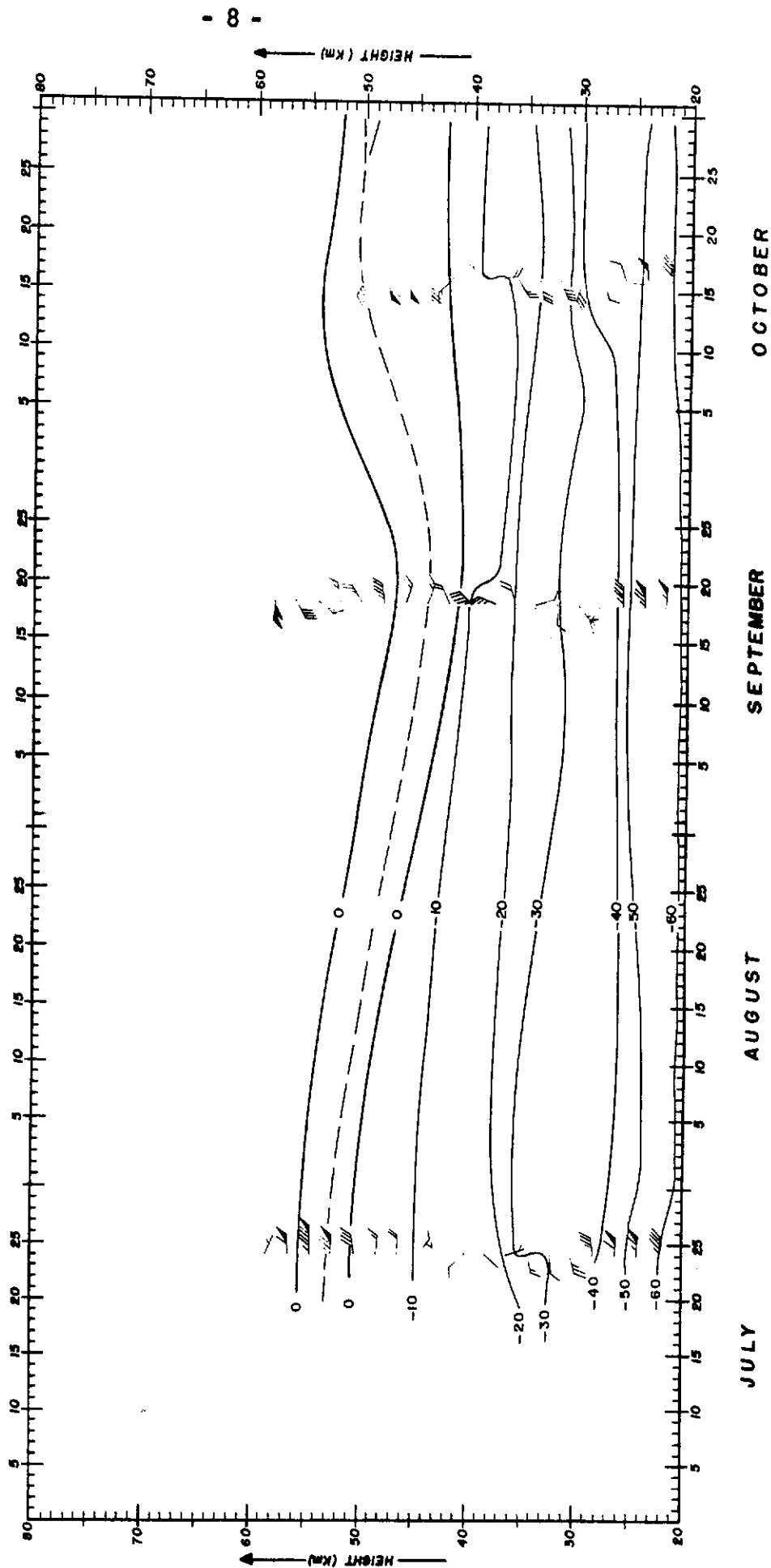
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1968



TIME HEIGHT SECTION

TEMPERATURE

- I N P E -

INSTITUTO DE PESQUISAS ESPACIAIS

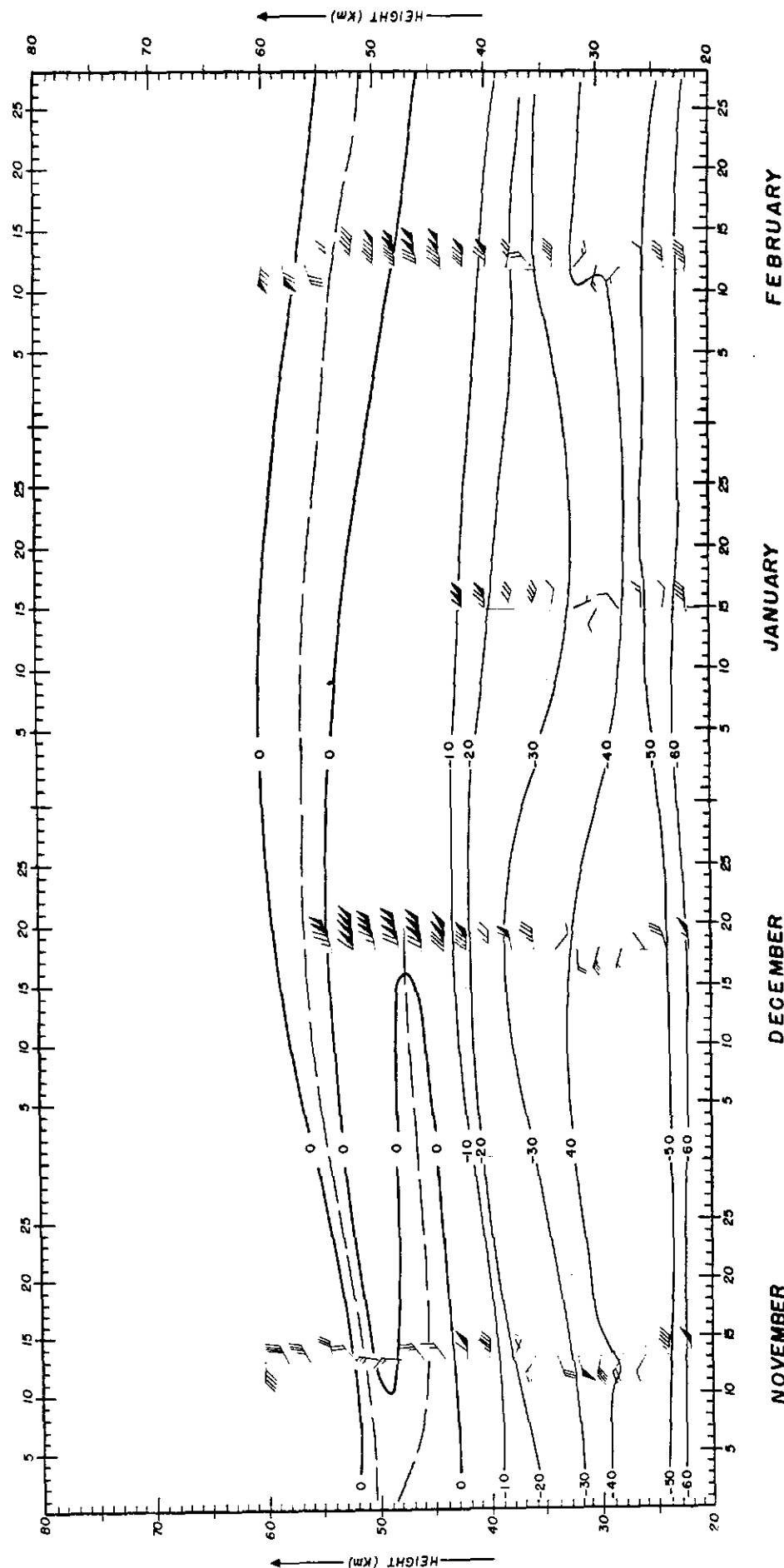
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NATAL, BRAZIL

5° 55' S ; 35° 15' W

1968

1969



TIME HEIGHT SECTION
TEMPERATURE

- I N P E -

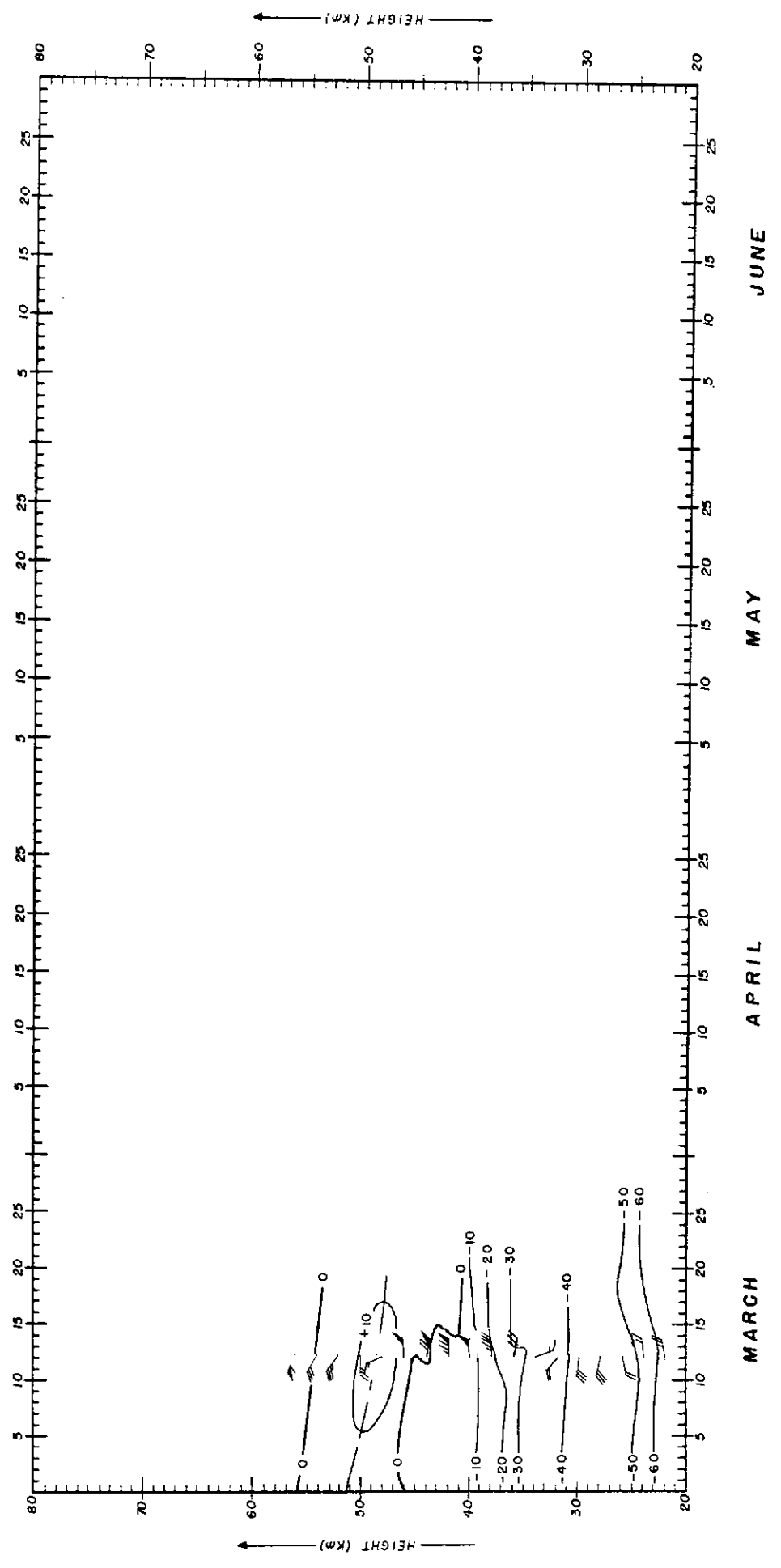
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NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S ; 35° 15' W

1969



TIME HEIGHT SECTION

TEMPERATURE

-INPE-

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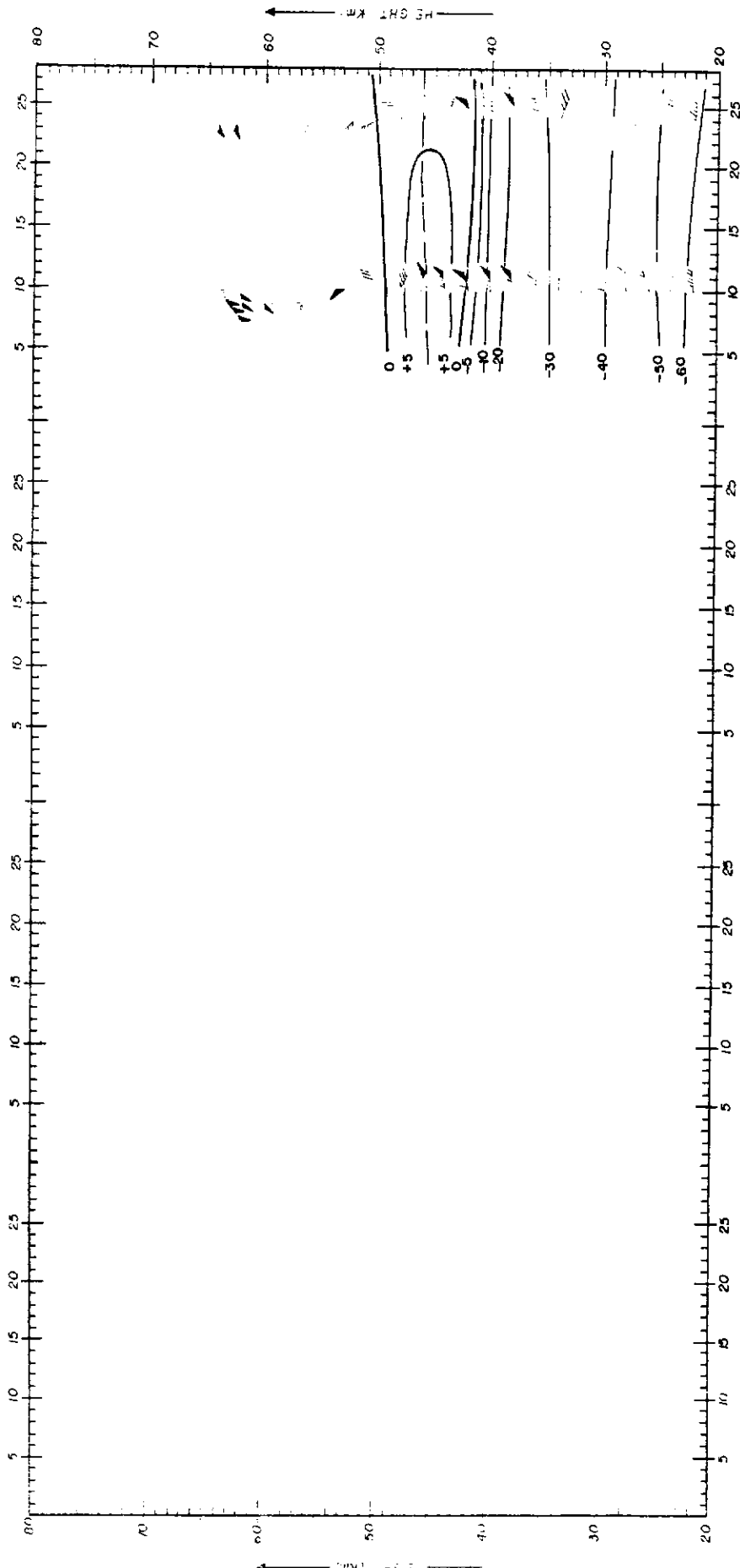
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NATAL, BRAZIL

5° 55' S : 35° 15' W

1970

1971



TIME HEIGHT SECTION

TEMPERATURE

- I N P E -

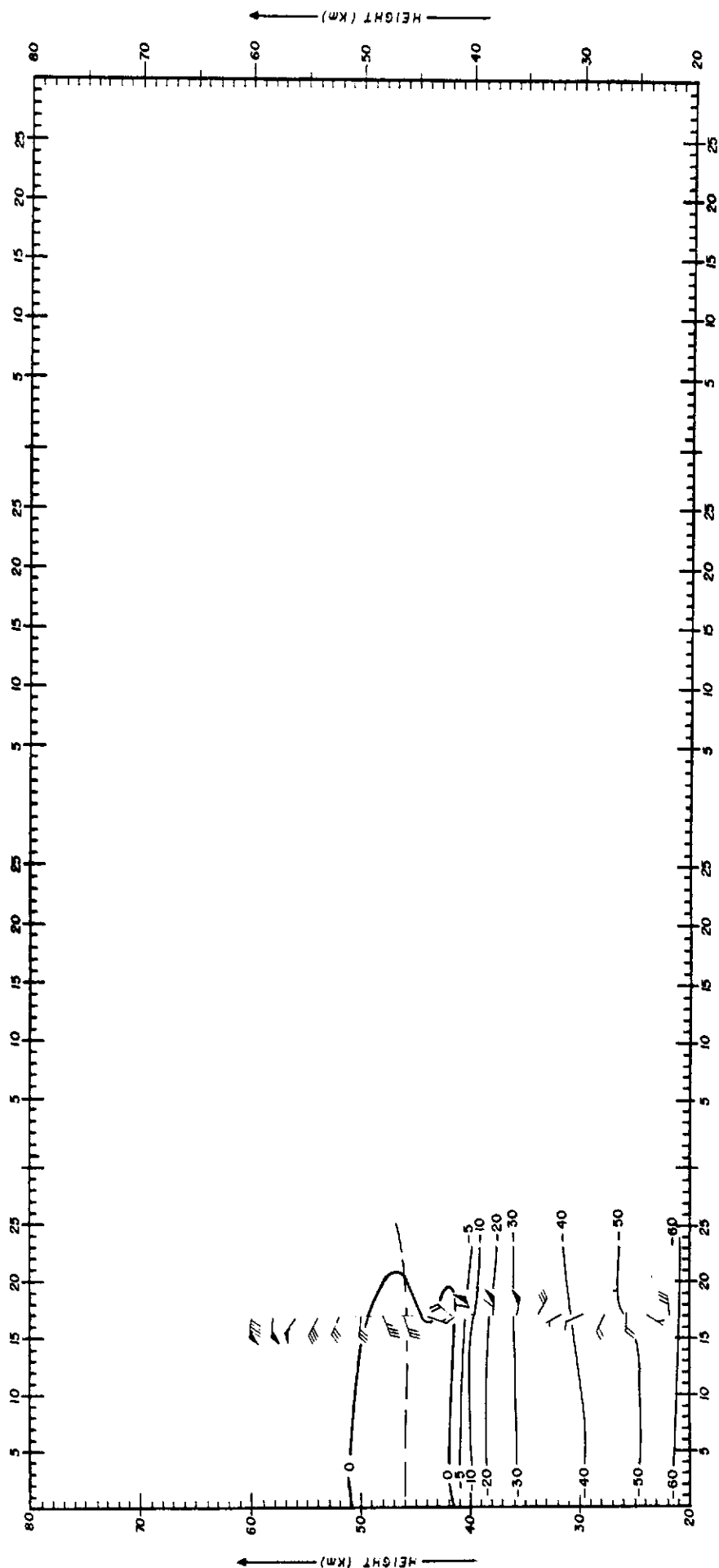
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NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S : 35° 15' W

1971



MARCH

APRIL

MAY

JUNE

TIME HEIGHT SECTION

TEMPERATURE

- I N P E -

INSTITUTO DE PESQUISAS ESPACIAIS

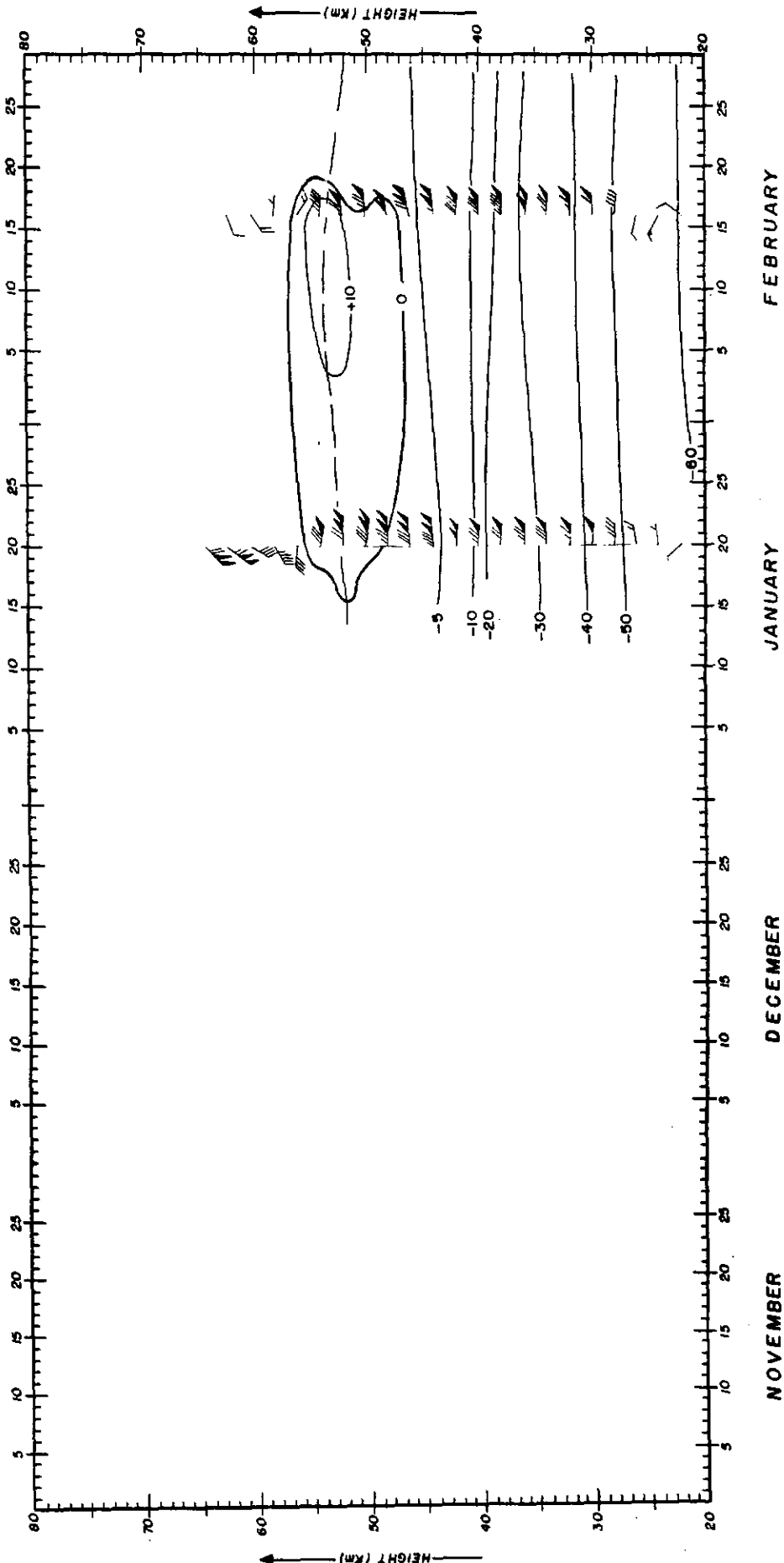
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NATAL, BRAZIL

5° 55' S : 35° 15' W

1971

1972



TIME HEIGHT SECTION
TEMPERATURE

- I N P E -

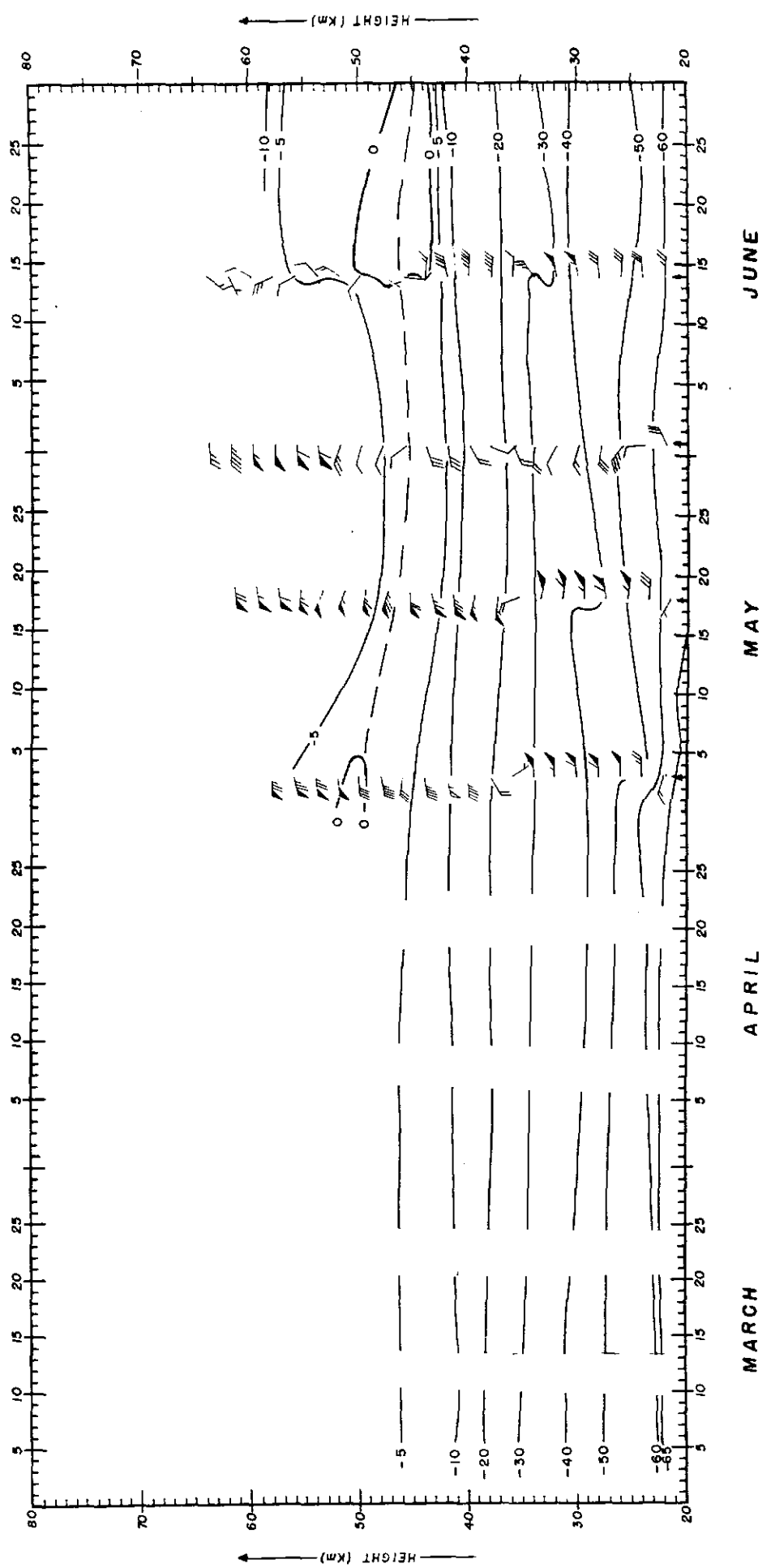
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1972



TIME HEIGHT SECTION
TEMPERATURE

- I N P E -

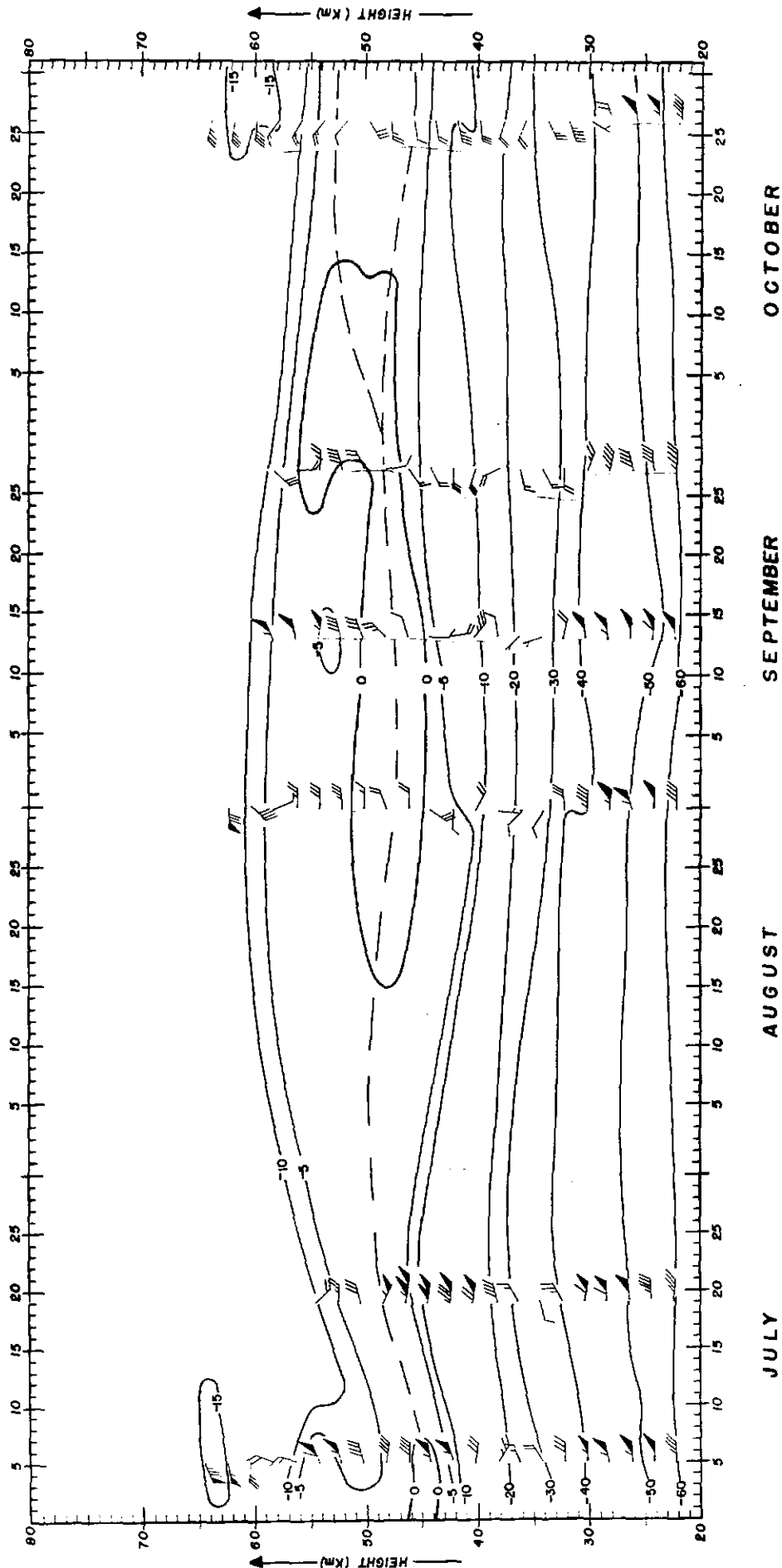
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5° 55' S : 35° 15' W

1972



TIME HEIGHT SECTION TEMPERATURE

—IN PE—

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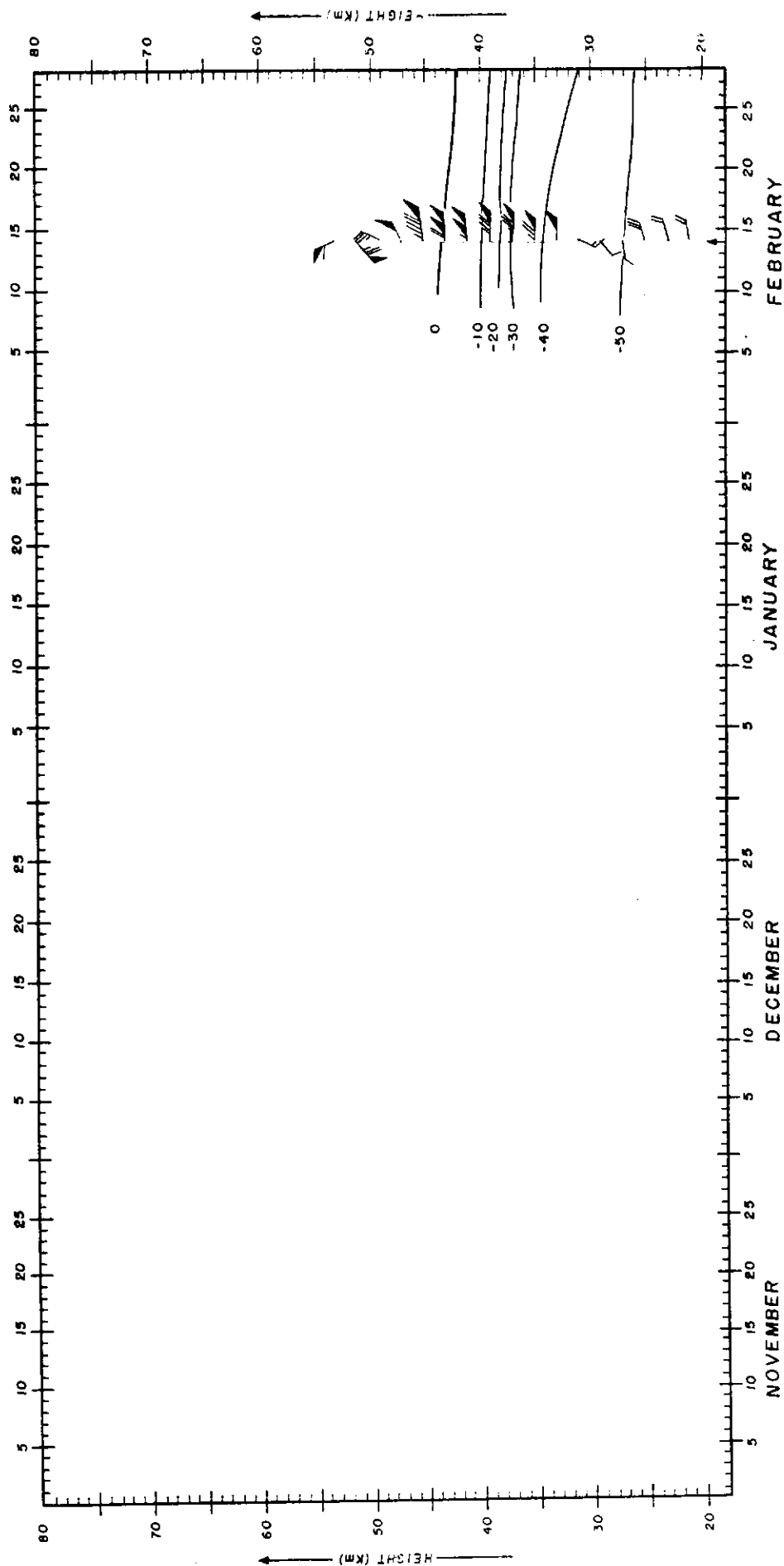
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NATAL, BRAZIL

5° 55' S ; 35° 15' W

1972

1973



TIME HEIGHT SECTION
TEMPERATURE

-INPE-

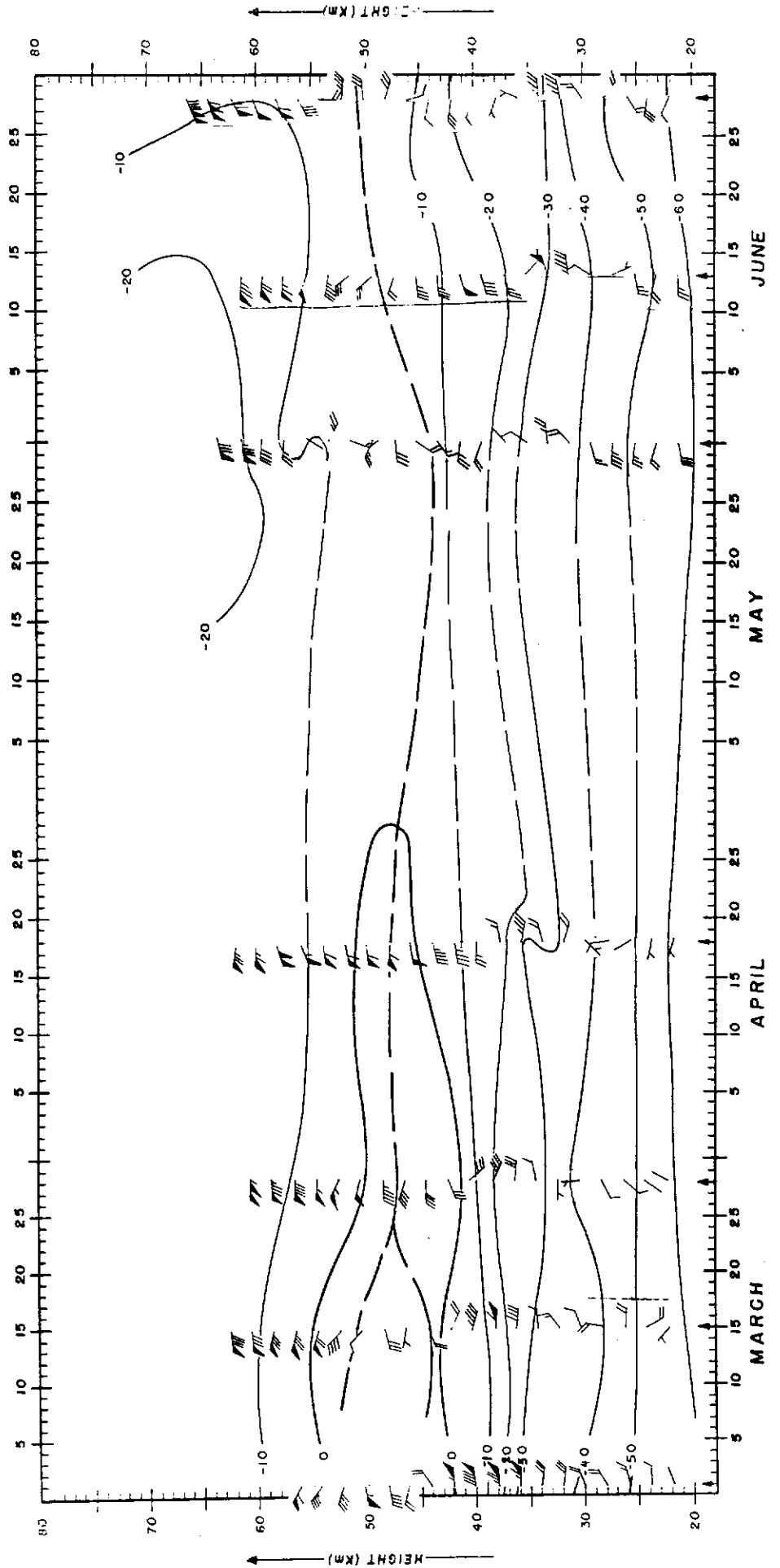
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PROJECT MESA/EXAMETNET

5° 55' S; 35° 15' W

1973



TIME HEIGHT SECTION
TEMPERATURE

— IN PE —

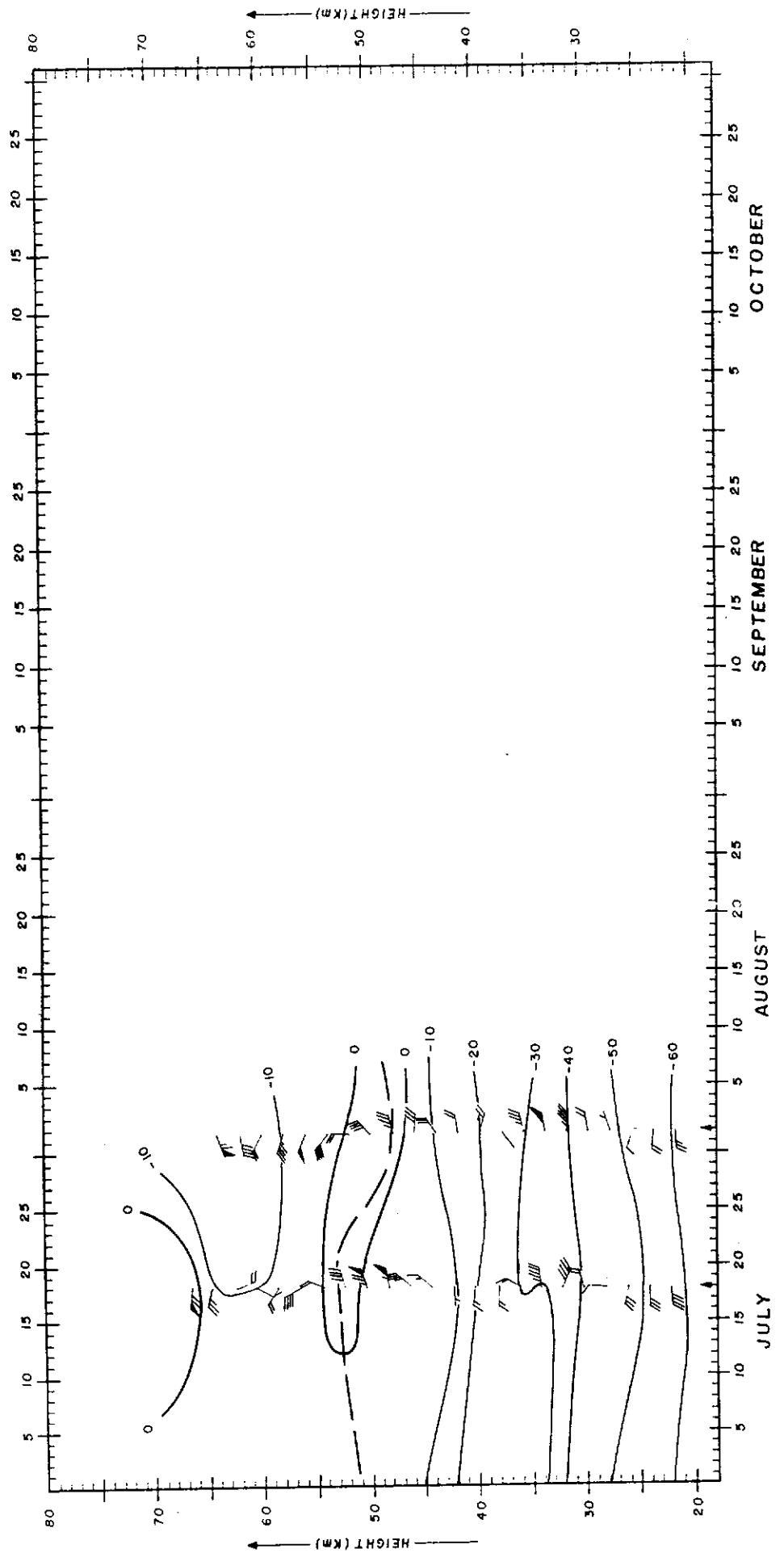
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NATAL, BRAZIL

5° 55' S ; 35° 15' W

1973



APPENDIX II

TIME HEIGHT SECTION

ZONAL COMPONENT

- I N P E -

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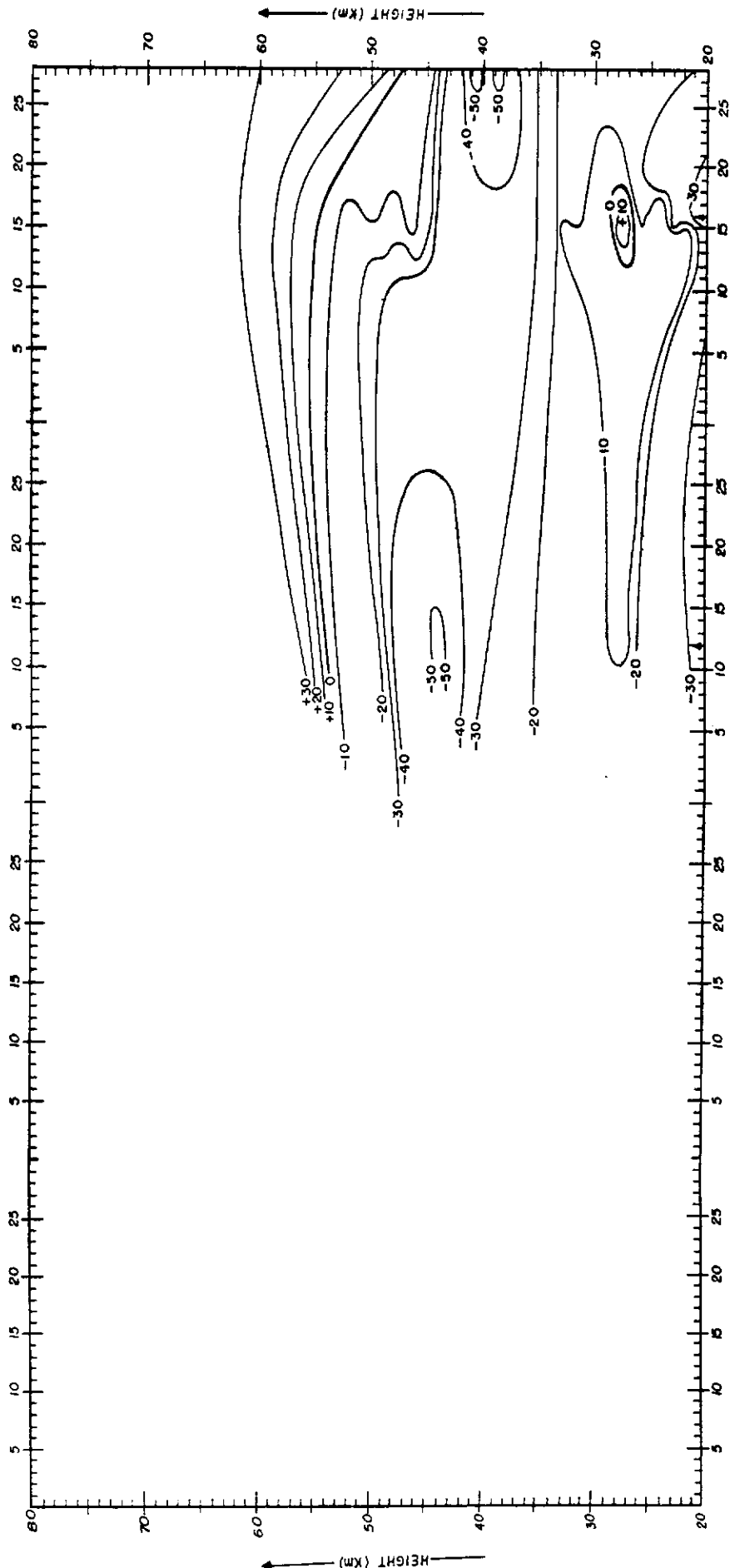
PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1965

1966



TIME HEIGHT SECTION ZONAL COMPONENT

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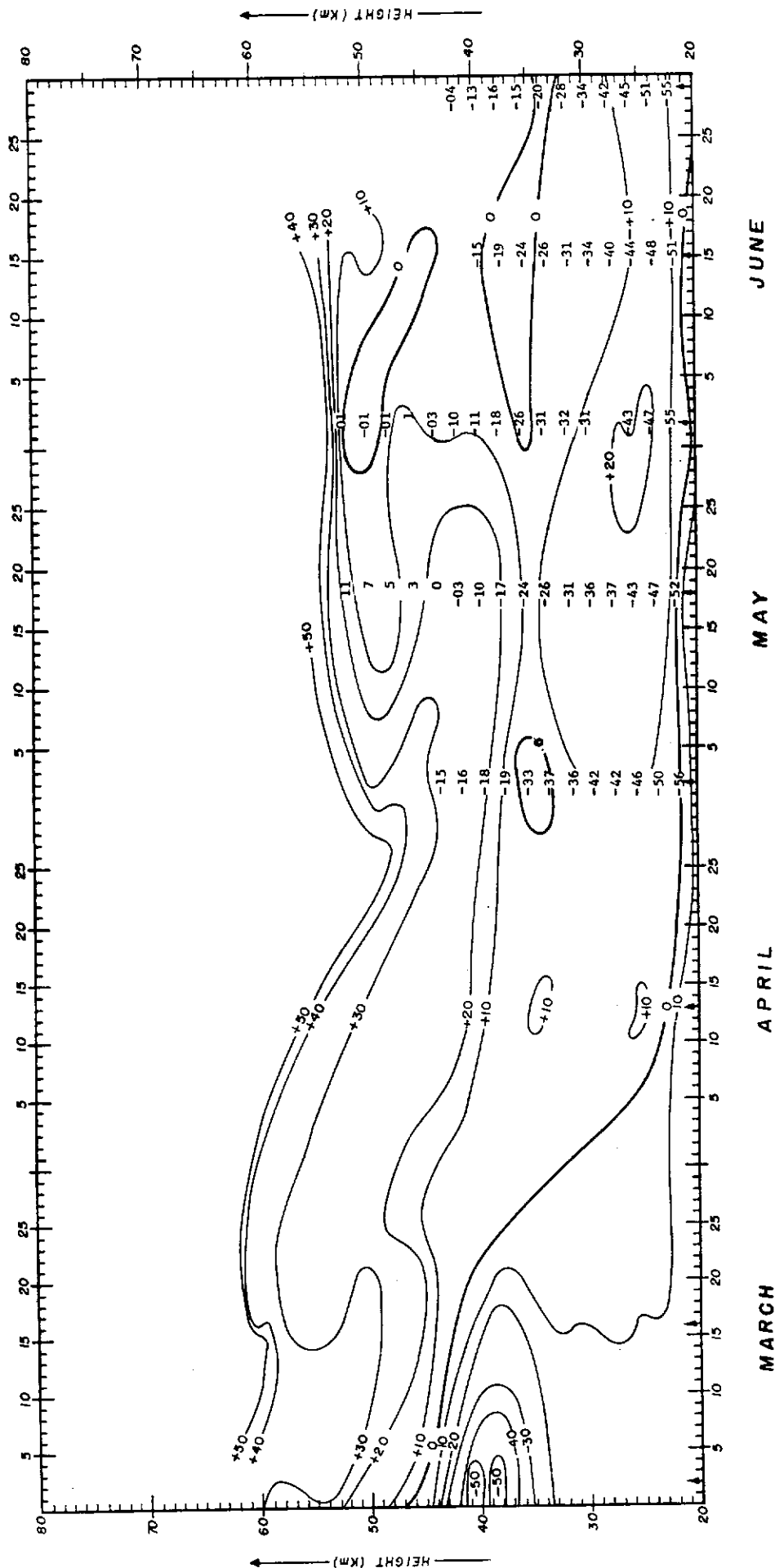
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1966



TIME HEIGHT SECTION

ZONAL COMPONENT

-INPE-

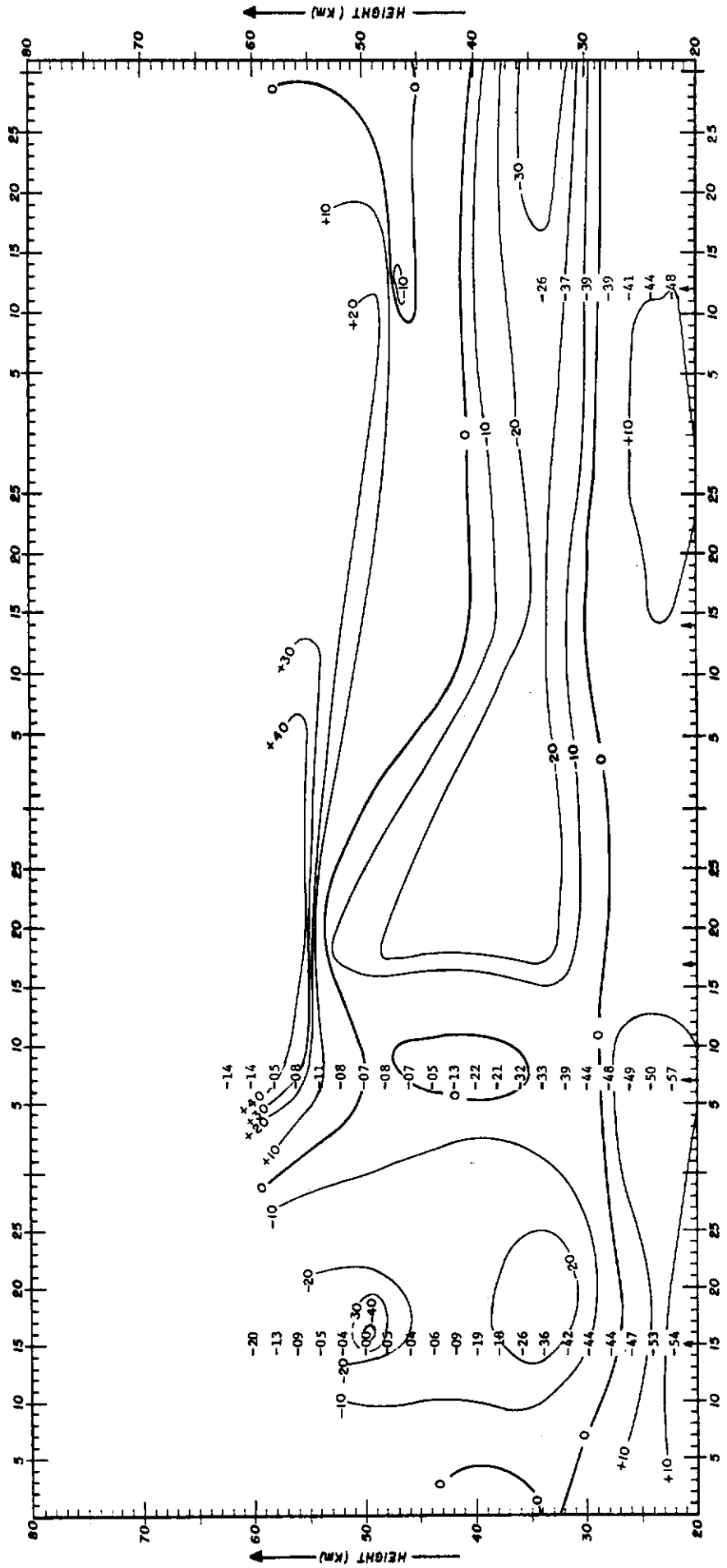
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NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S : 35° 15' W

1966



JULY

AUGUST

SEPTEMBER

OCTOBER

TIME HEIGHT SECTION

ZONAL COMPONENT

- I N P E -

INSTITUTO DE PESQUISAS ESPACIAIS

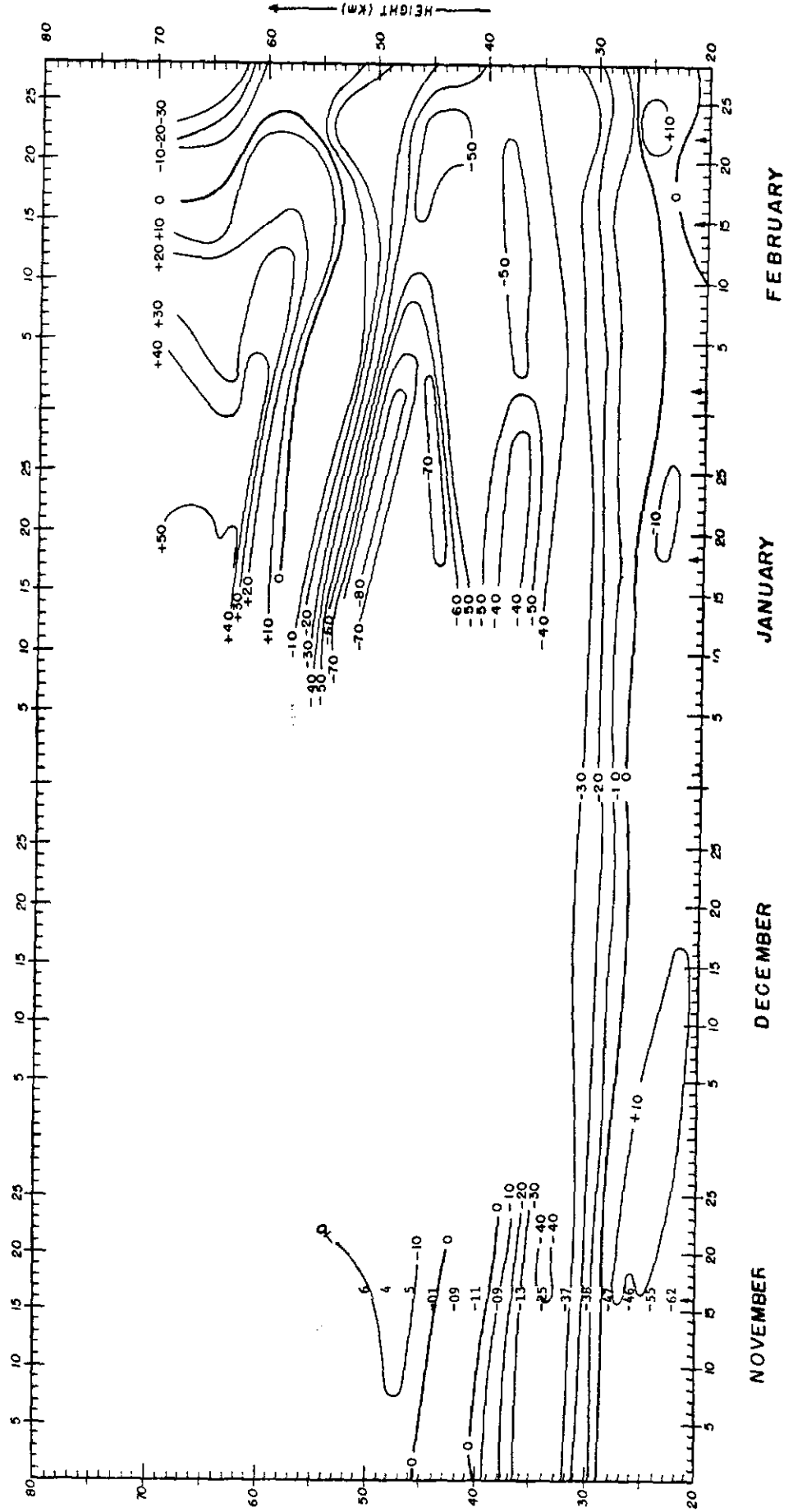
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NATAL, BRAZIL

5° 55' S : 35° 15' W

1966

1967



TIME HEIGHT SECTION

ZONAL COMPONENT

-INPE-

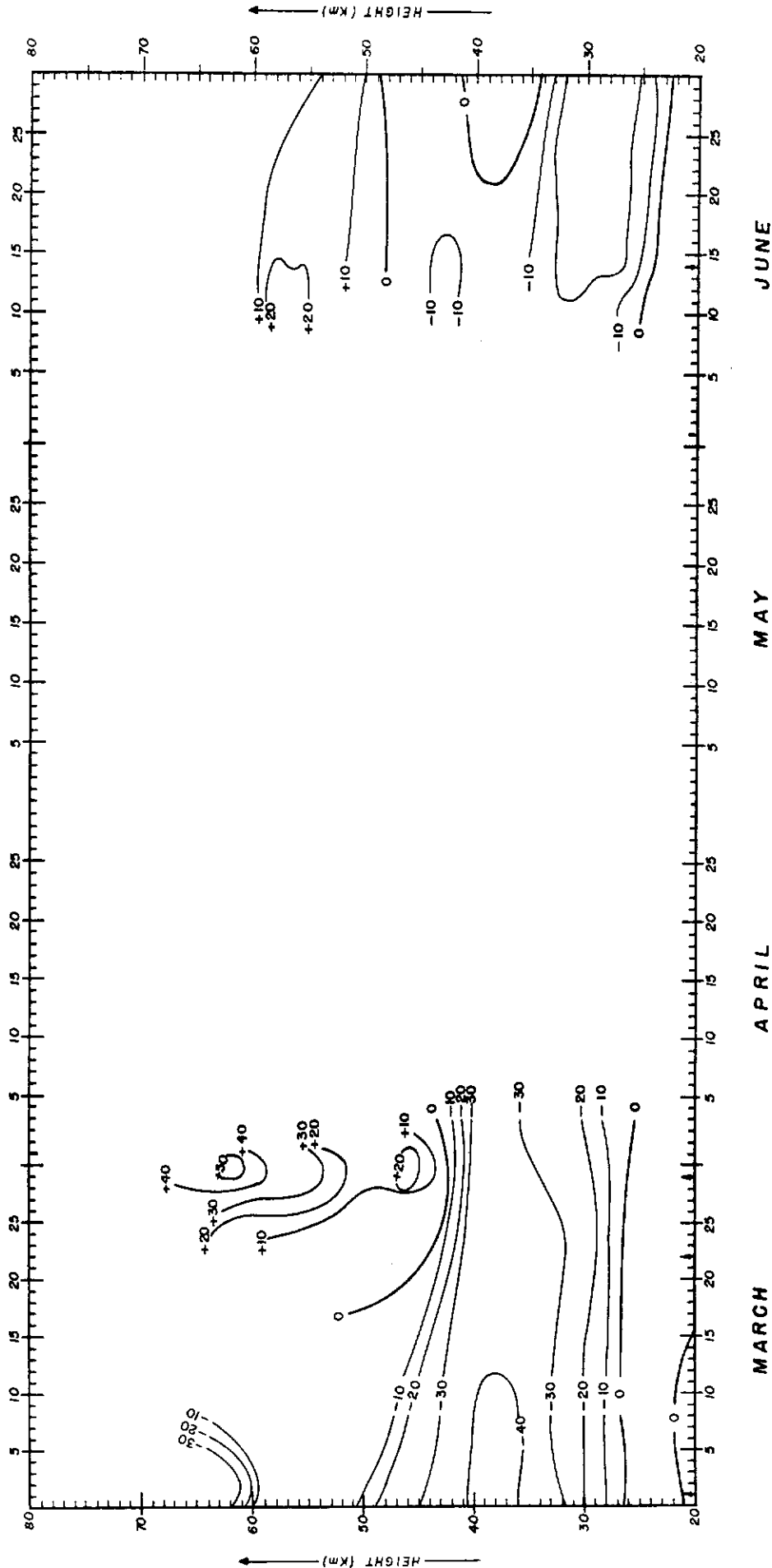
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

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TIME HEIGHT SECTION

ZONAL COMPONENT

-INPE-

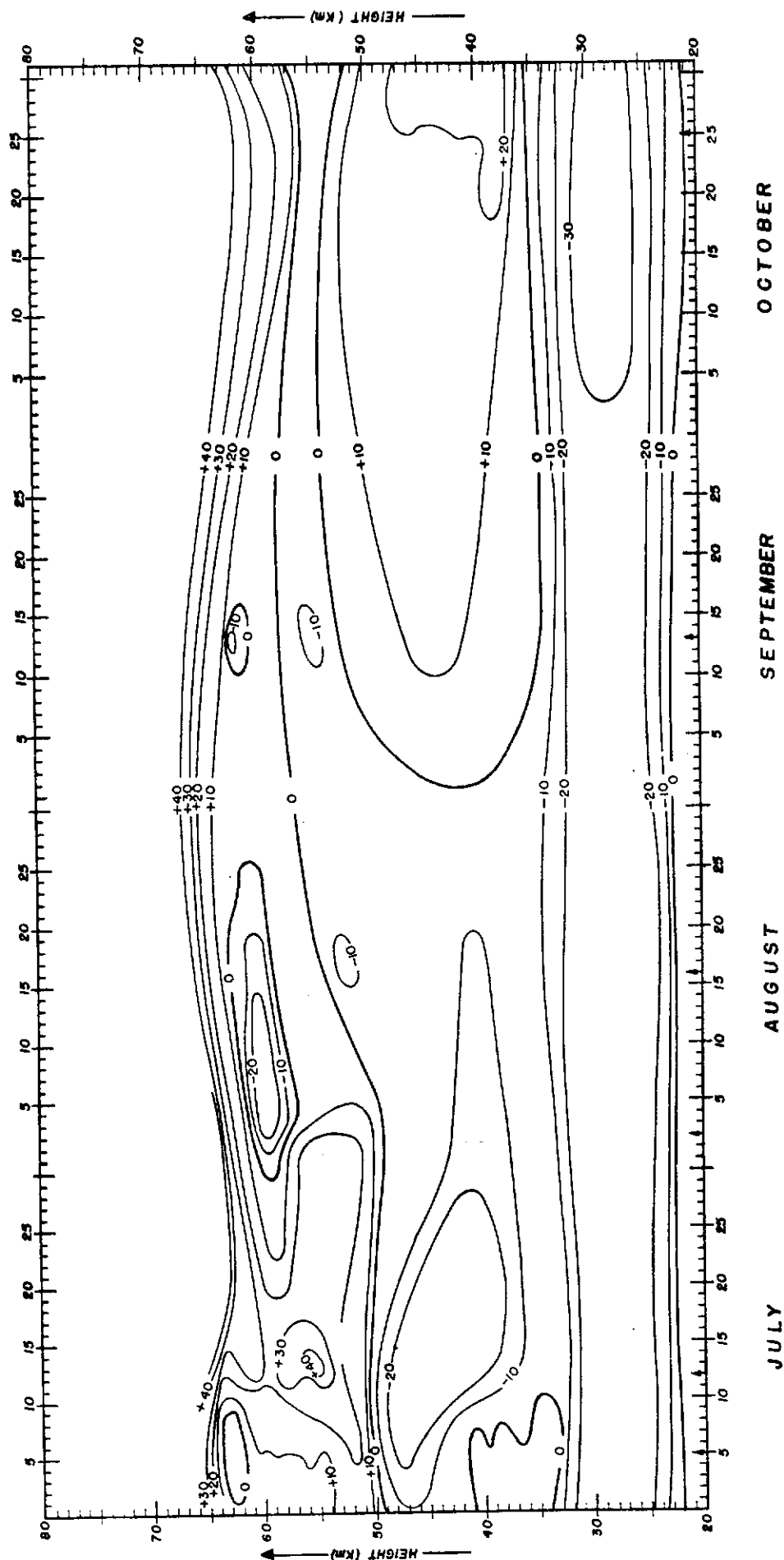
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

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1967



TIME HEIGHT SECTION

ZONAL COMPONENT

-INPE-

INSTITUTO DE PESQUISAS ESPACIAIS

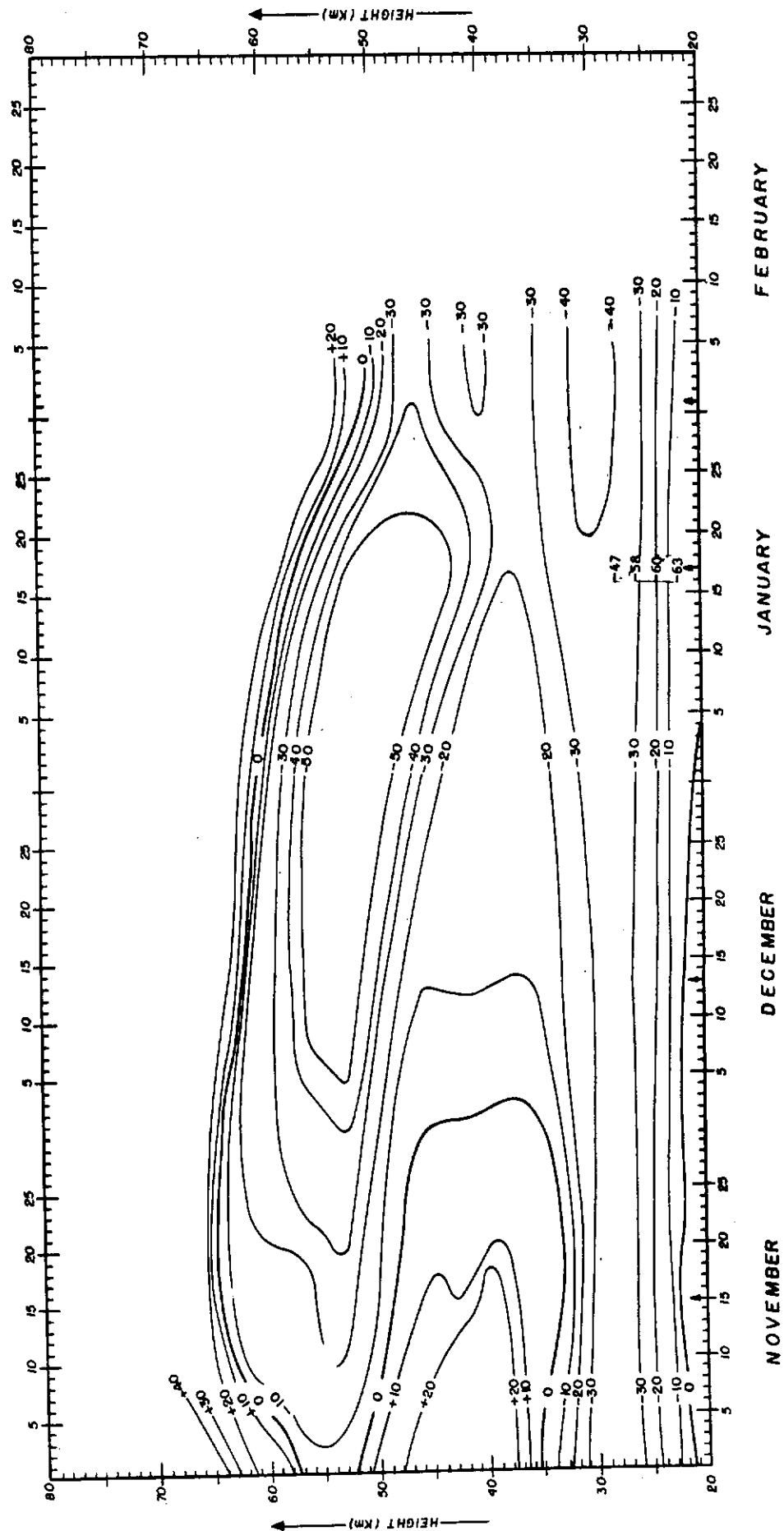
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NATAL, BRAZIL

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1968

1967



TIME HEIGHT SECTION

ZONAL COMPONENT

- I N P E -

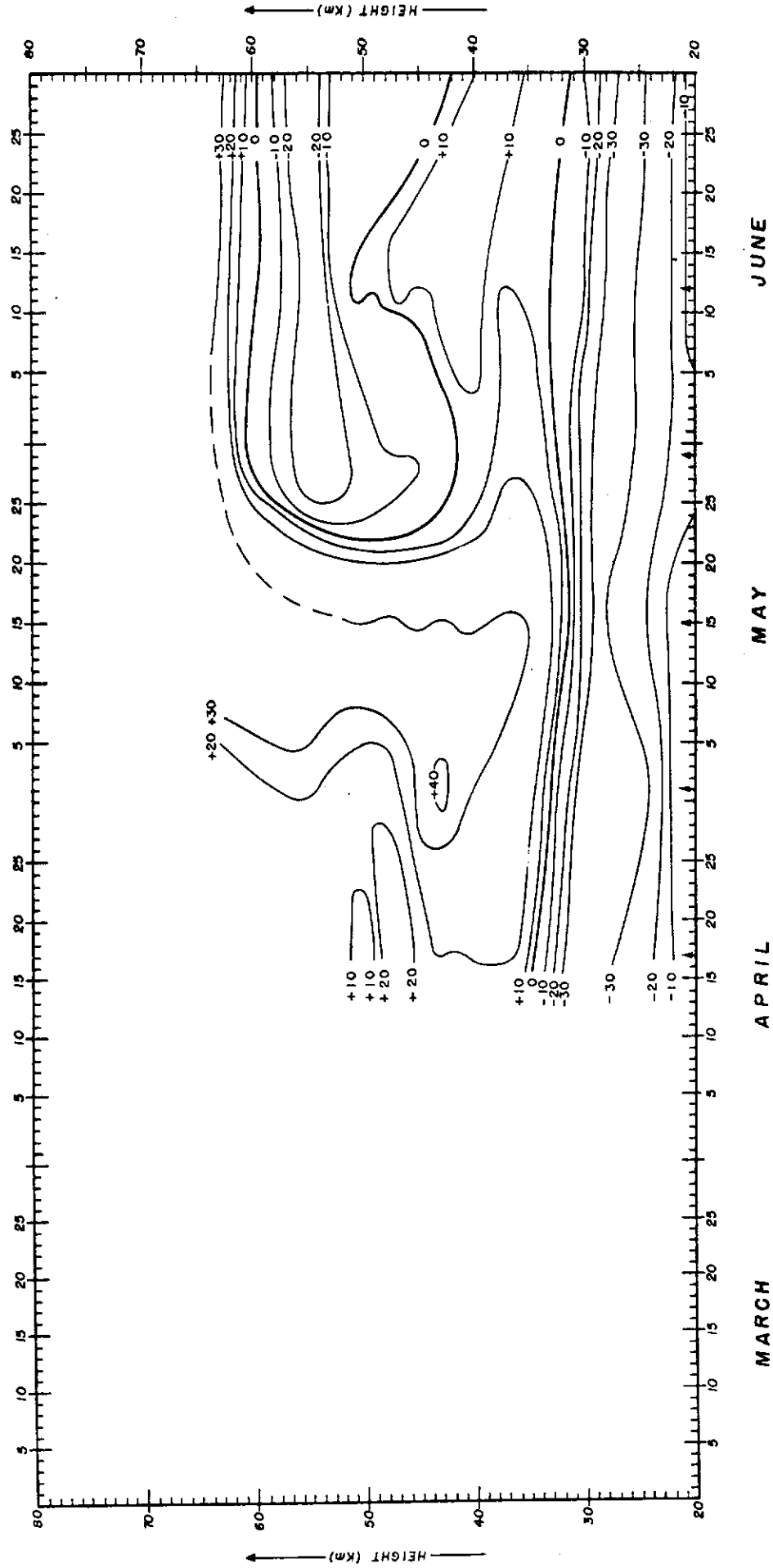
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S ; 35° 15' W

1968



TIME HEIGHT SECTION ZONAL COMPONENT

- IN PE -

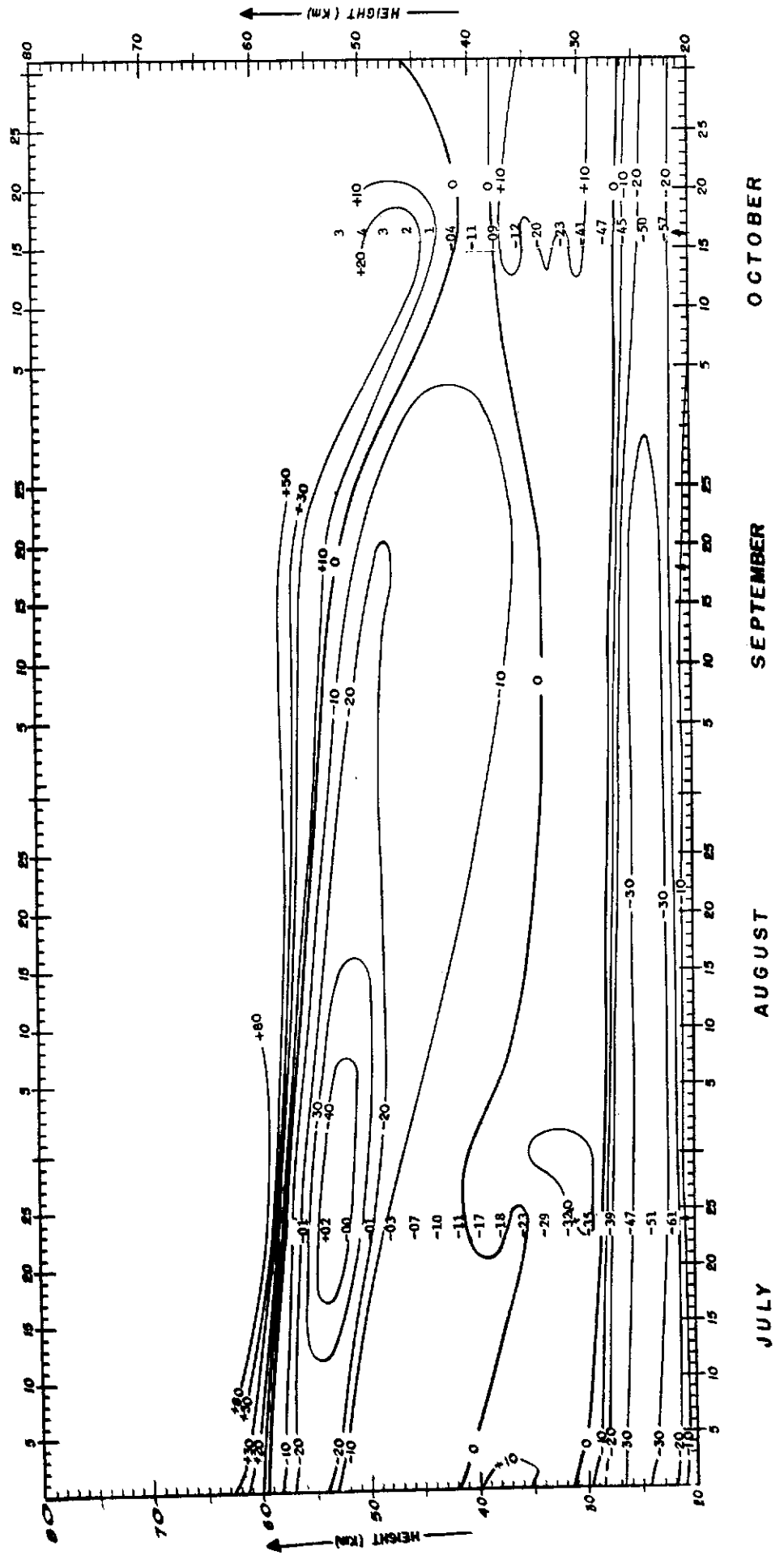
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TIME HEIGHT SECTION

ZONAL COMPONENT

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INSTITUTO DE PESQUISAS ESPACIAIS

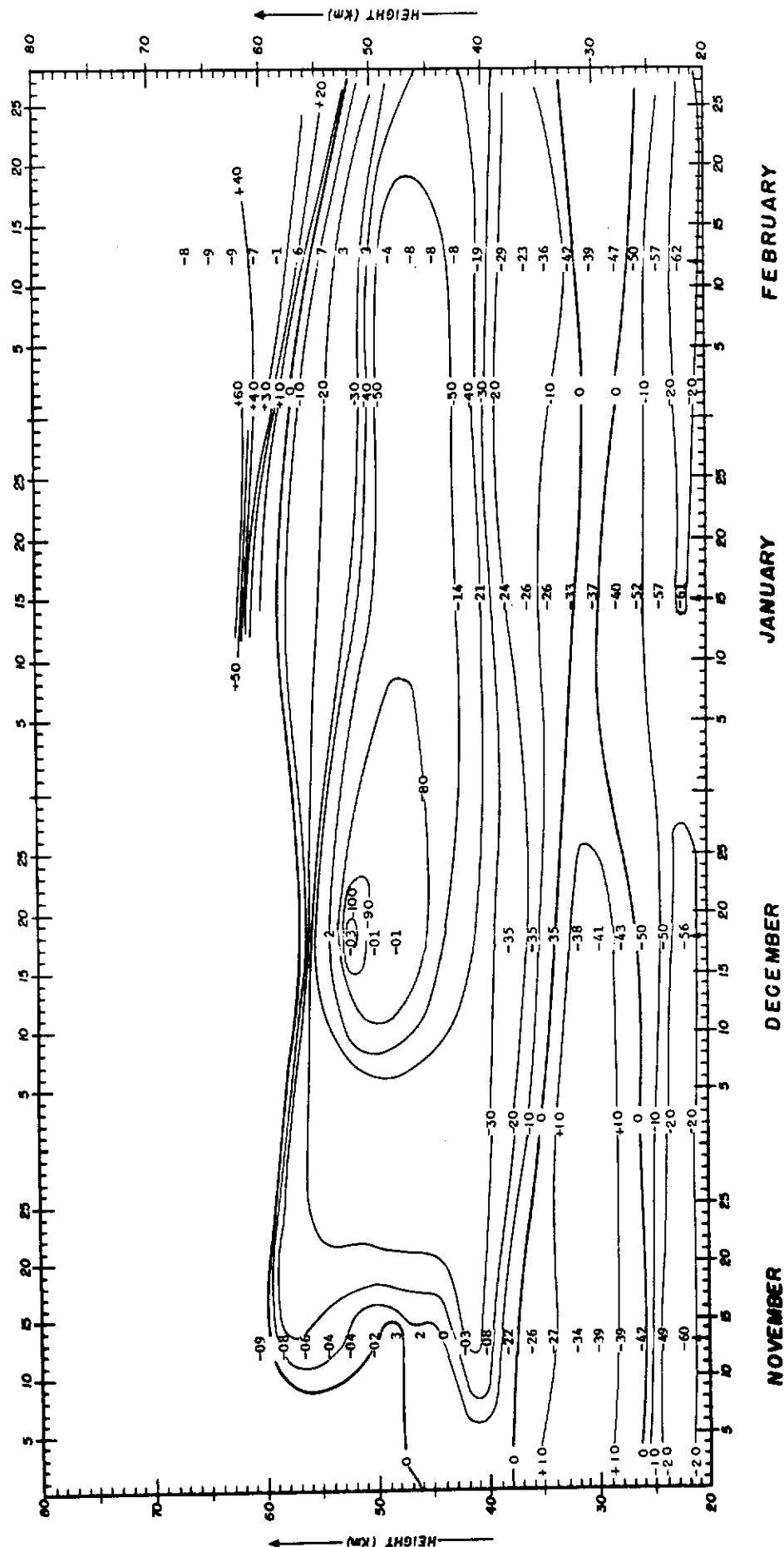
PROJECT MESA/EXAMETNET

NATAL, BRAZIL

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1968

1969



ZONAL COMPONENT

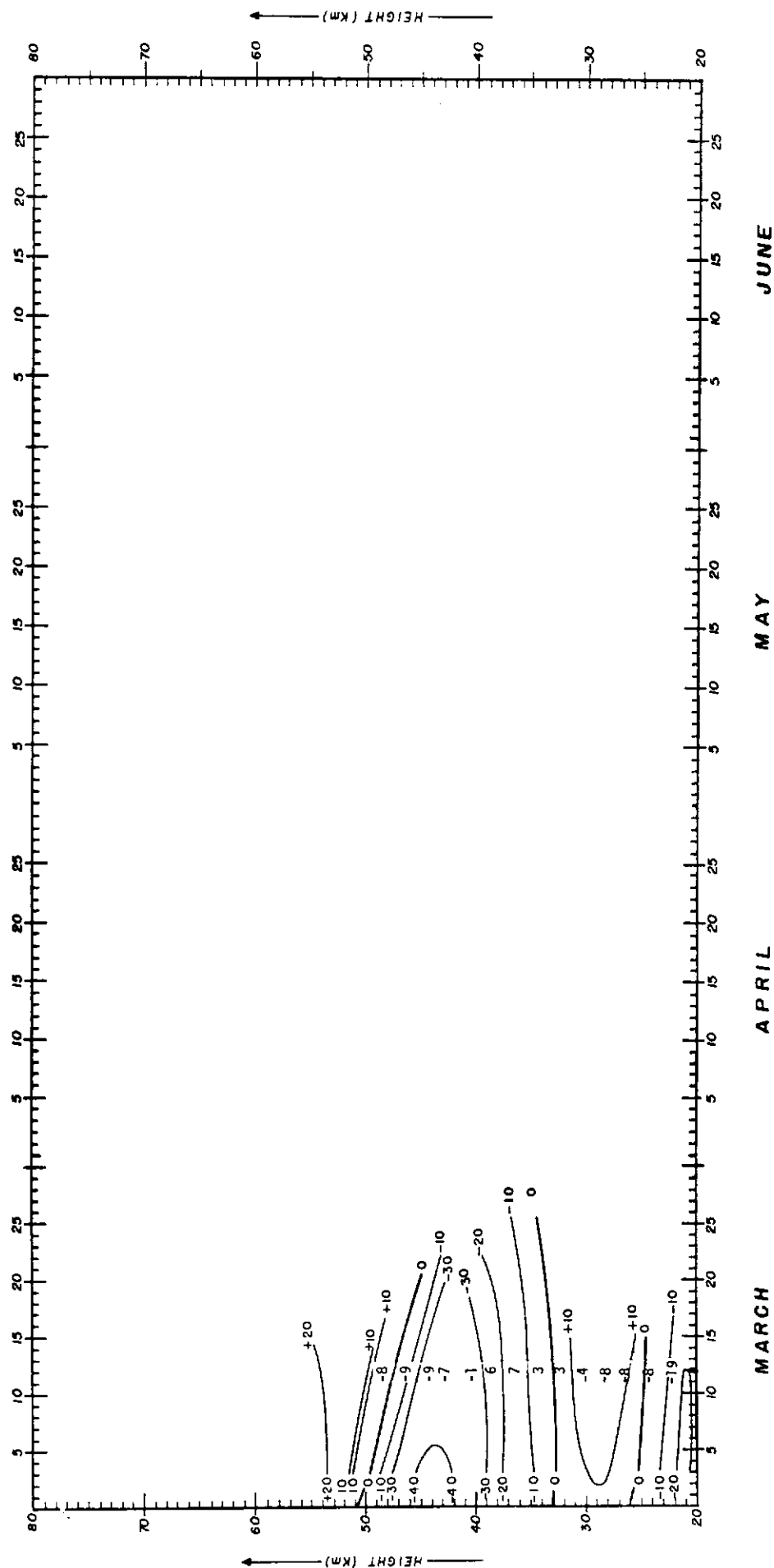
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PROJECT MESA / EXAMETNET

NATAL, BRAZIL

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TIME HEIGHT SECTION

ZONAL COMPONENT

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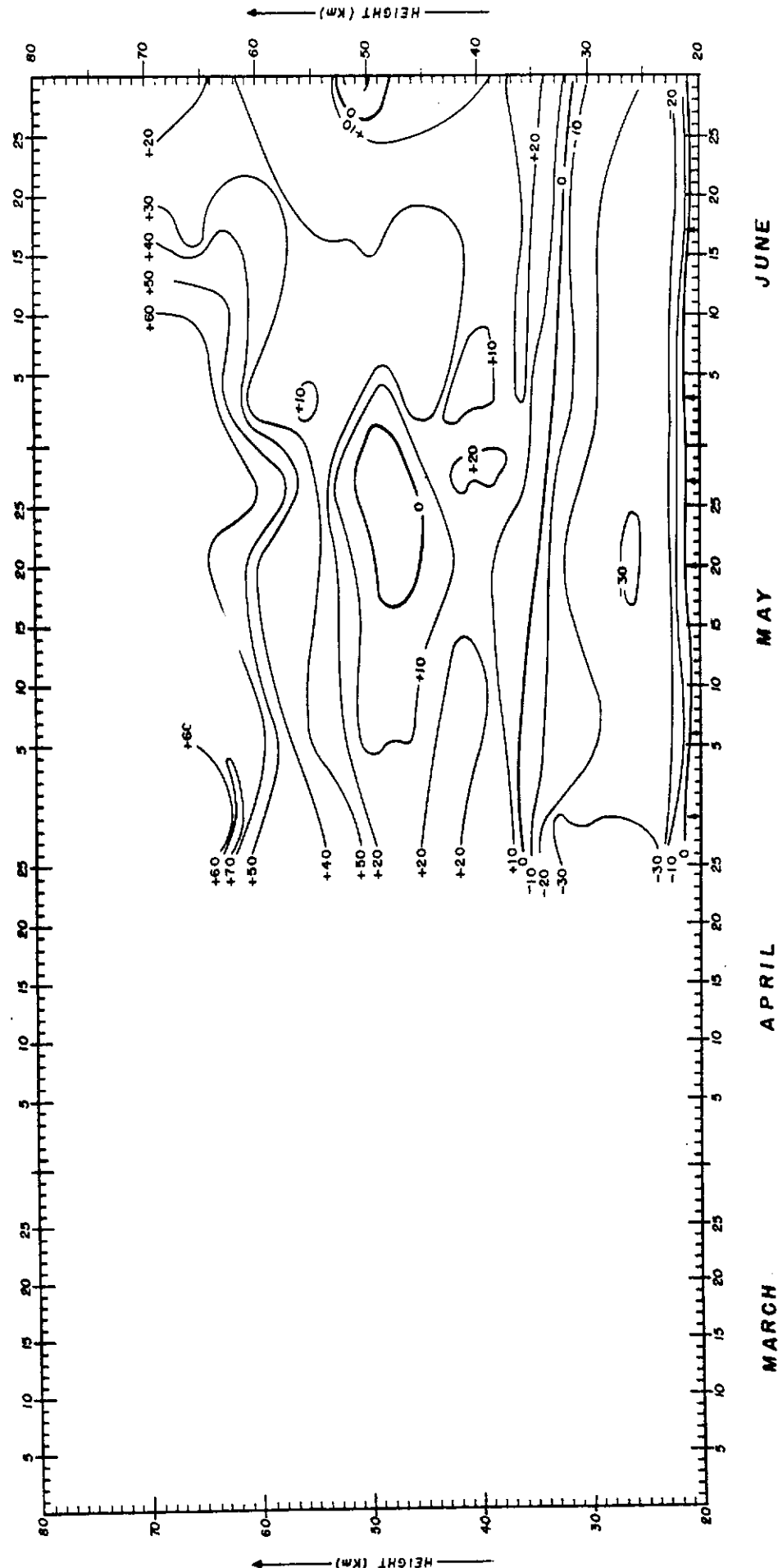
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1970



TIME HEIGHT SECTION

ZONAL COMPONENT

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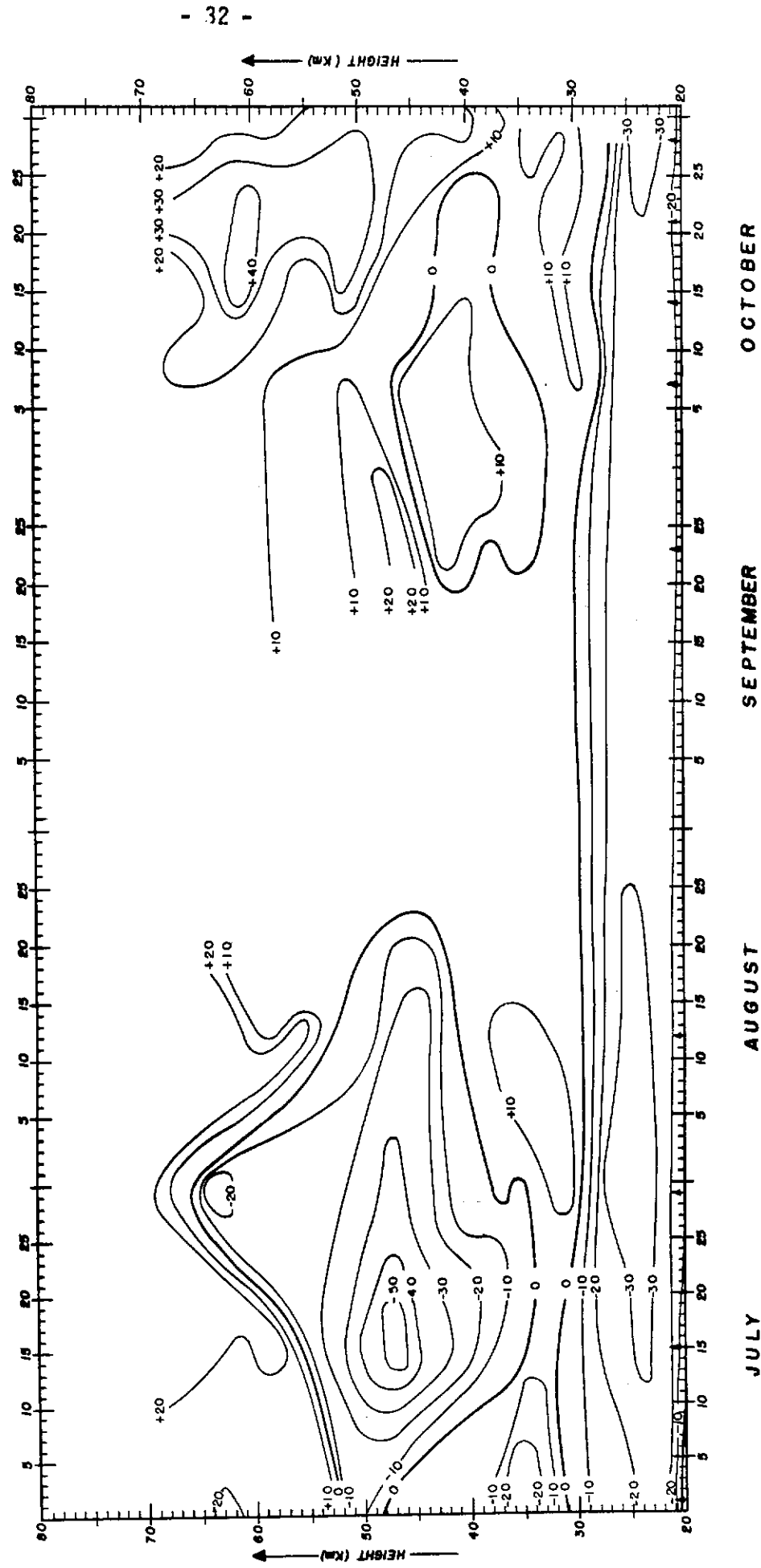
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NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S ; 35° 15' W

1970



TIME HEIGHT SECTION ZONAL COMPONENT

-INPE-

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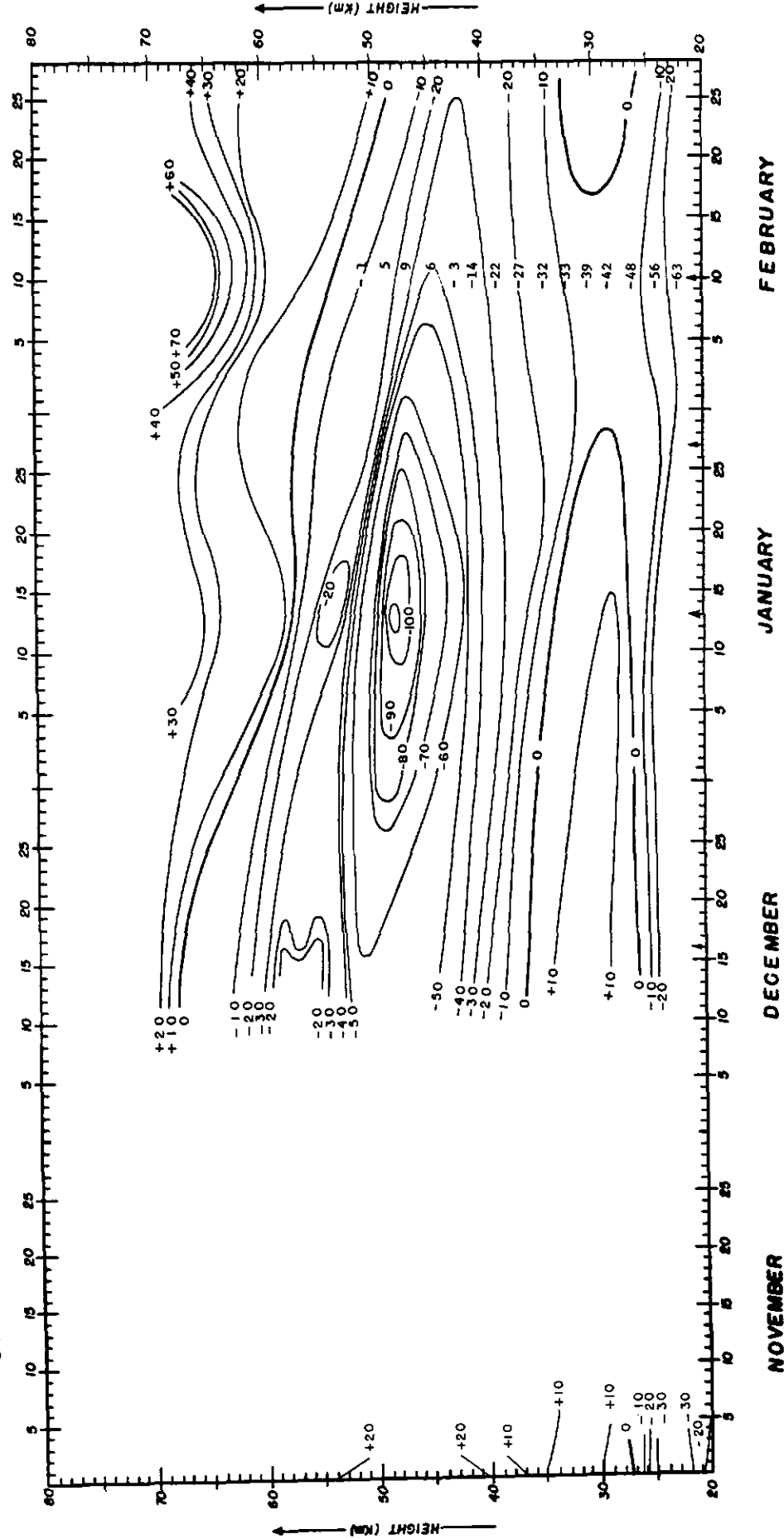
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NATAL, BRAZIL

5° 55' S : 35° 15' W

1970

1971



TIME HEIGHT SECTION ZONAL COMPONENT

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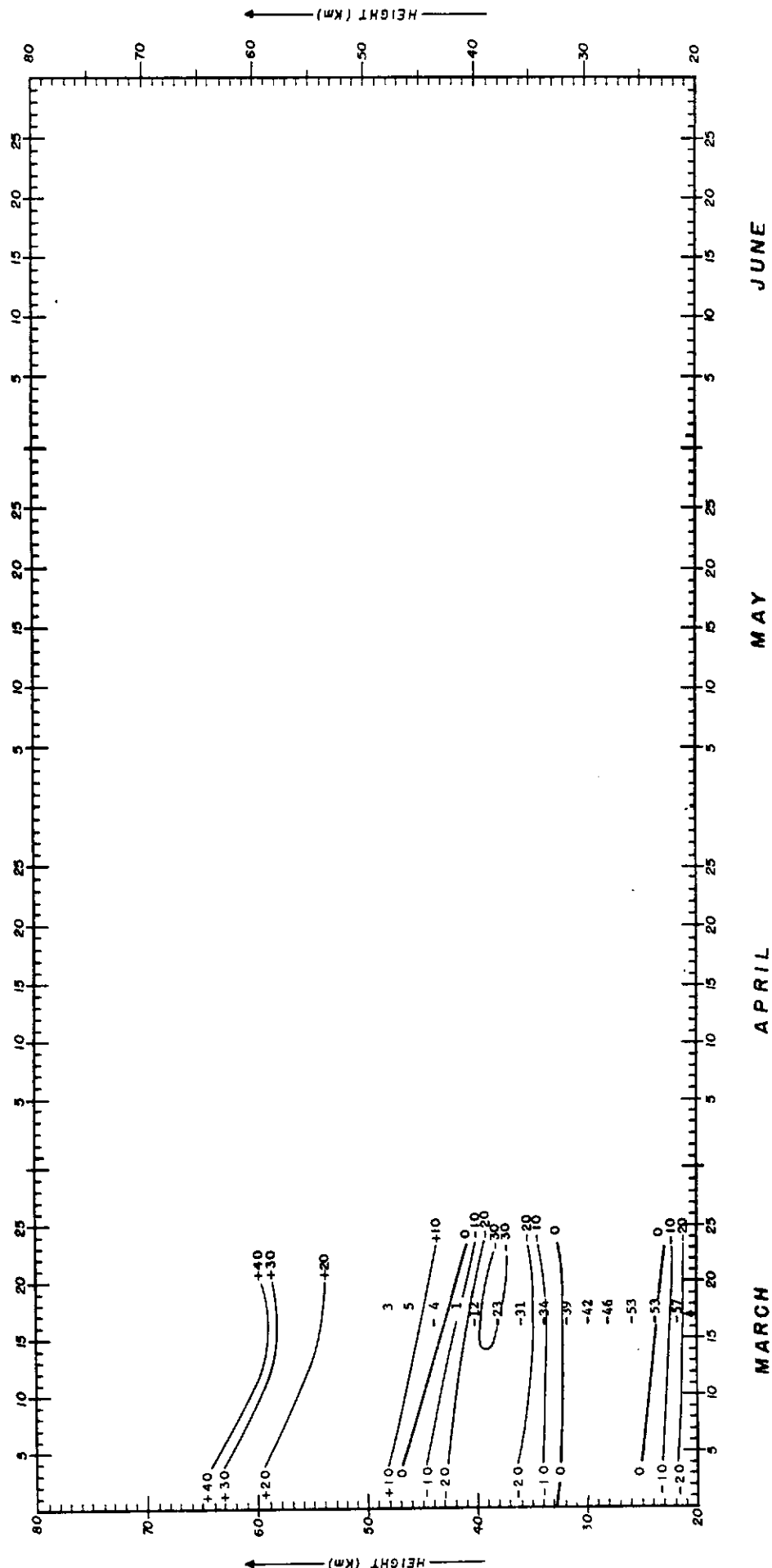
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NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S : 35° 15' W

1971



TIME HEIGHT SECTION

ZONAL COMPONENT

- I N P E -

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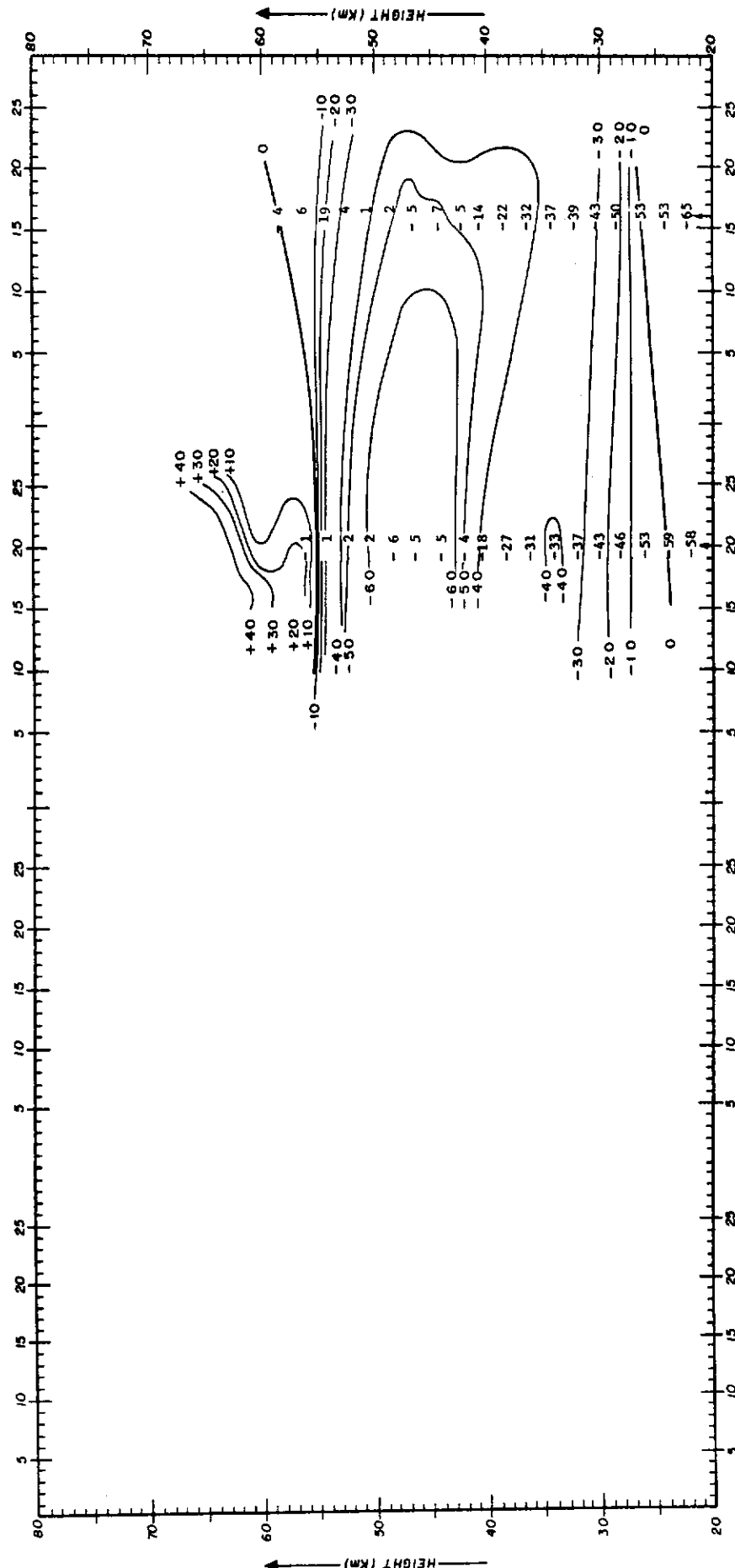
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NATAL, BRAZIL

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1972



TIME HEIGHT SECTION

ZONAL COMPONENT

-INPE-

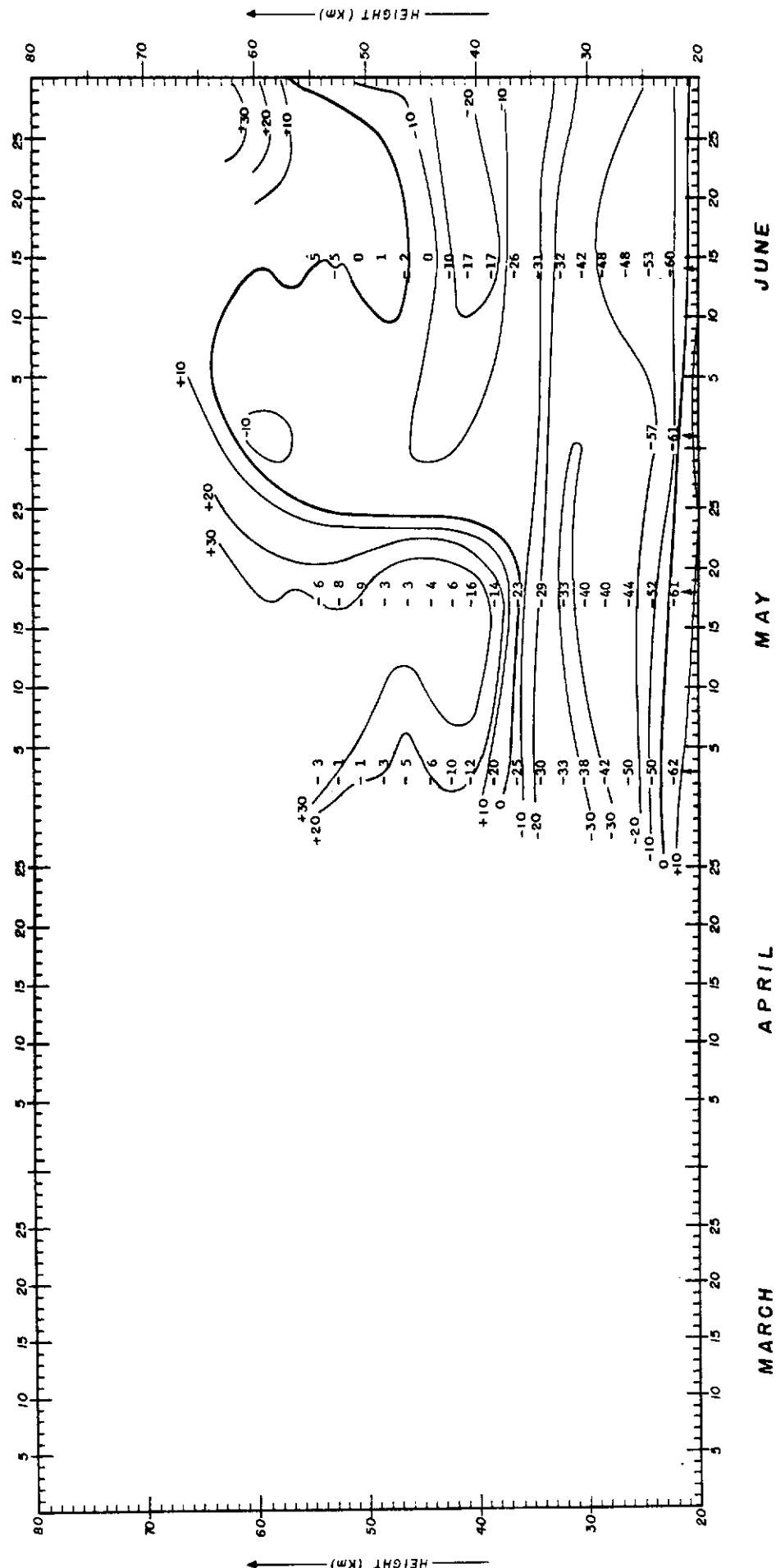
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1972



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PROJECT MESA/EXAMETNET

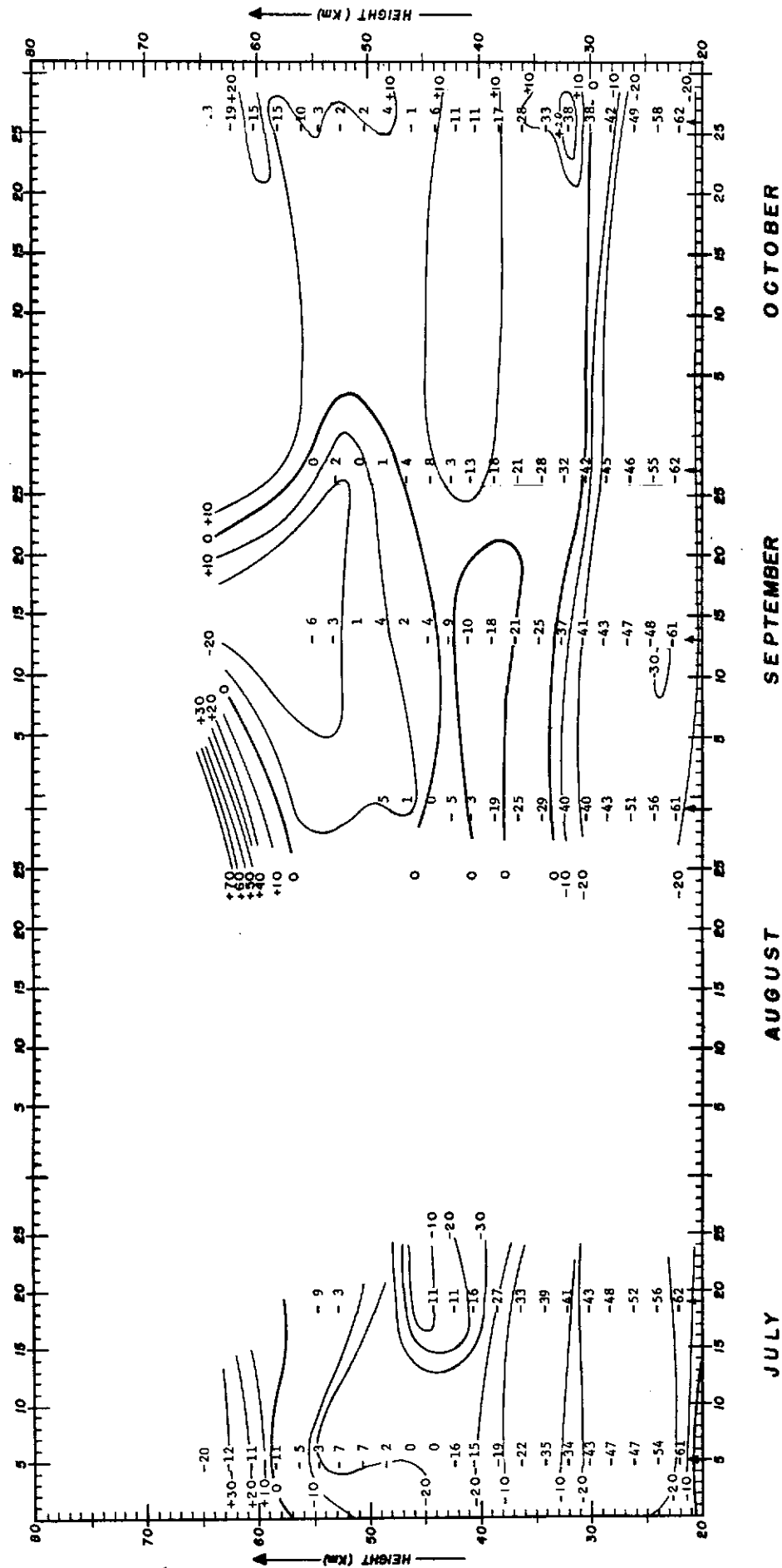
TIME HEIGHT SECTION

ZONAL COMPONENT

NATAL, BRAZIL

5° 55' S ; 35° 15' W

1972



TIME HEIGHT SECTION

ZONAL COMPONENT

— IN PE —

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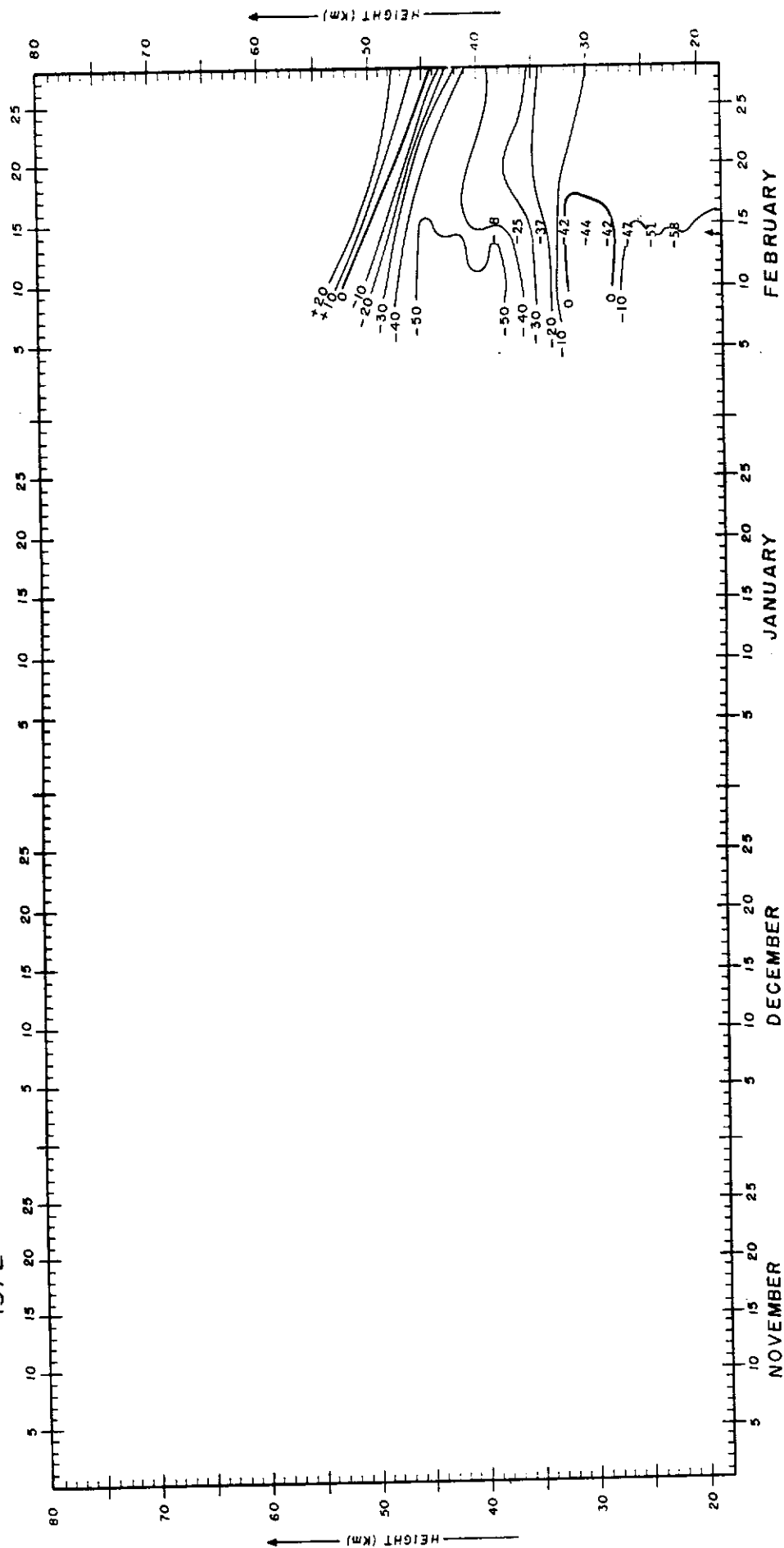
PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S ; 35° 15' W

1972

1973



TIME HEIGHT SECTION

ZONAL COMPONENT

-INPE-

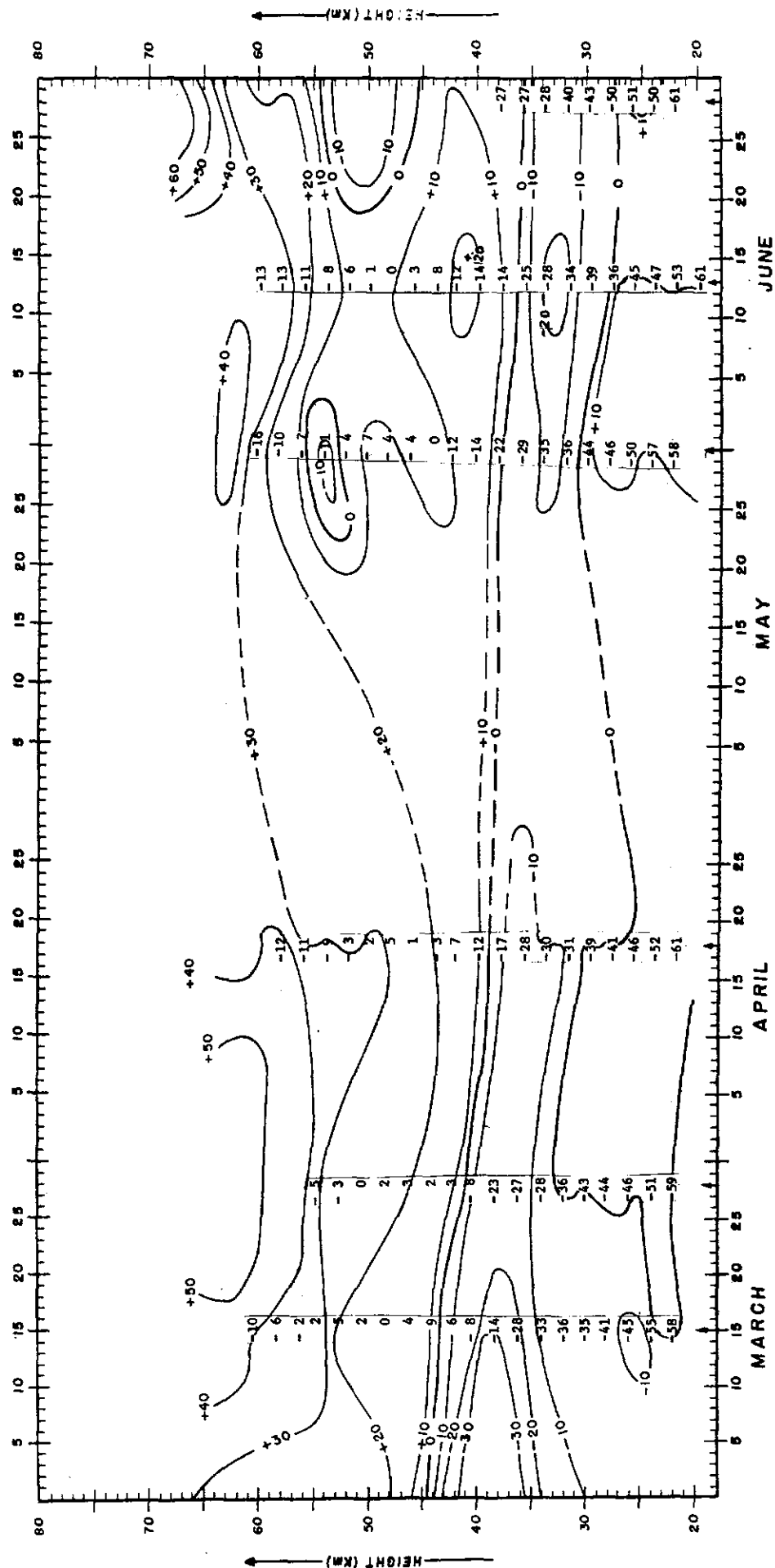
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S; 35° 15' W

1973



TIME HEIGHT SECTION ZONAL COMPONENT

-INPE-

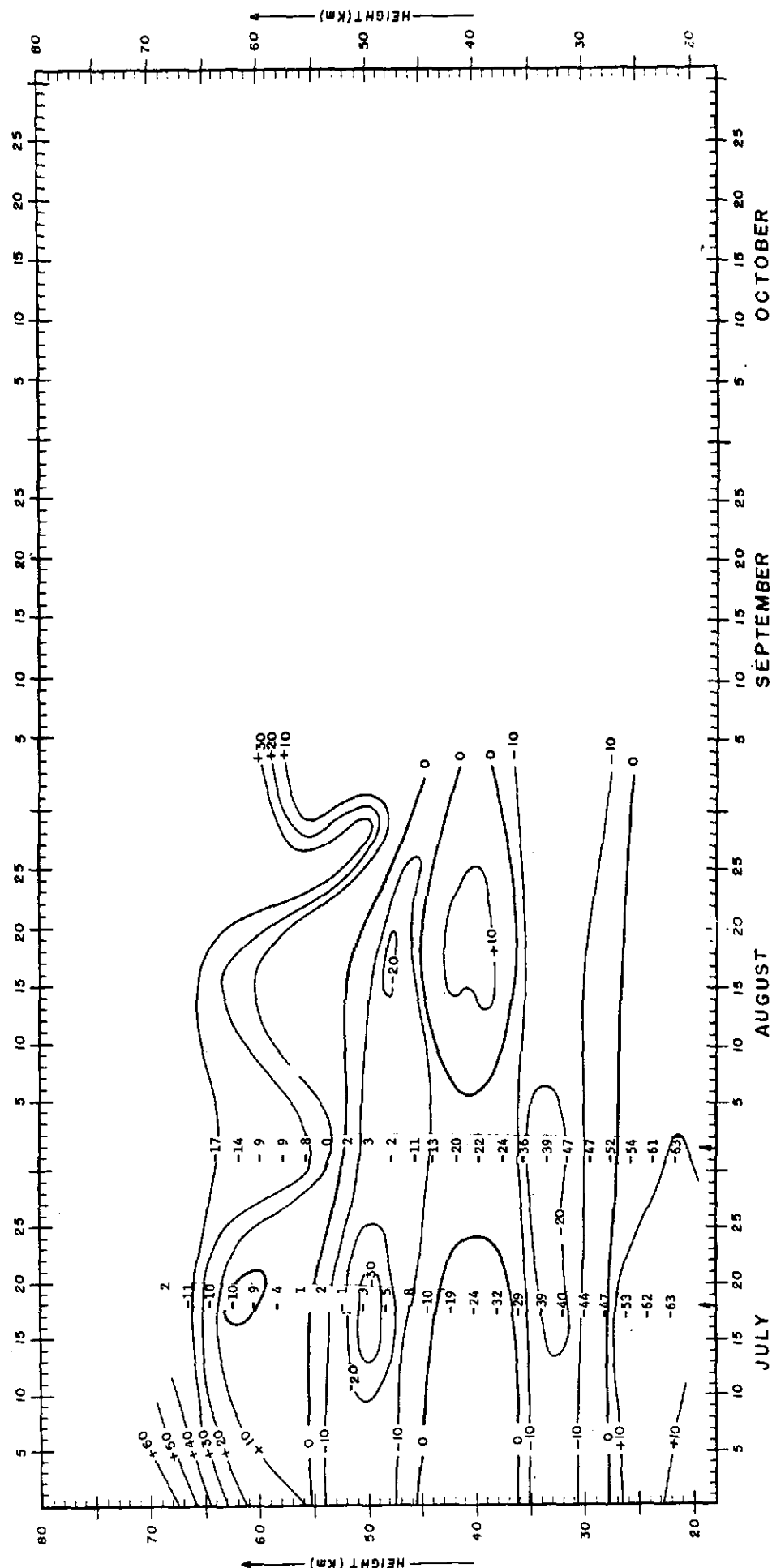
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NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S : 35° 15' W

1973



APPENDIX III

TIME HEIGHT SECTION

MERIDIONAL COMPONENT

-INPE-

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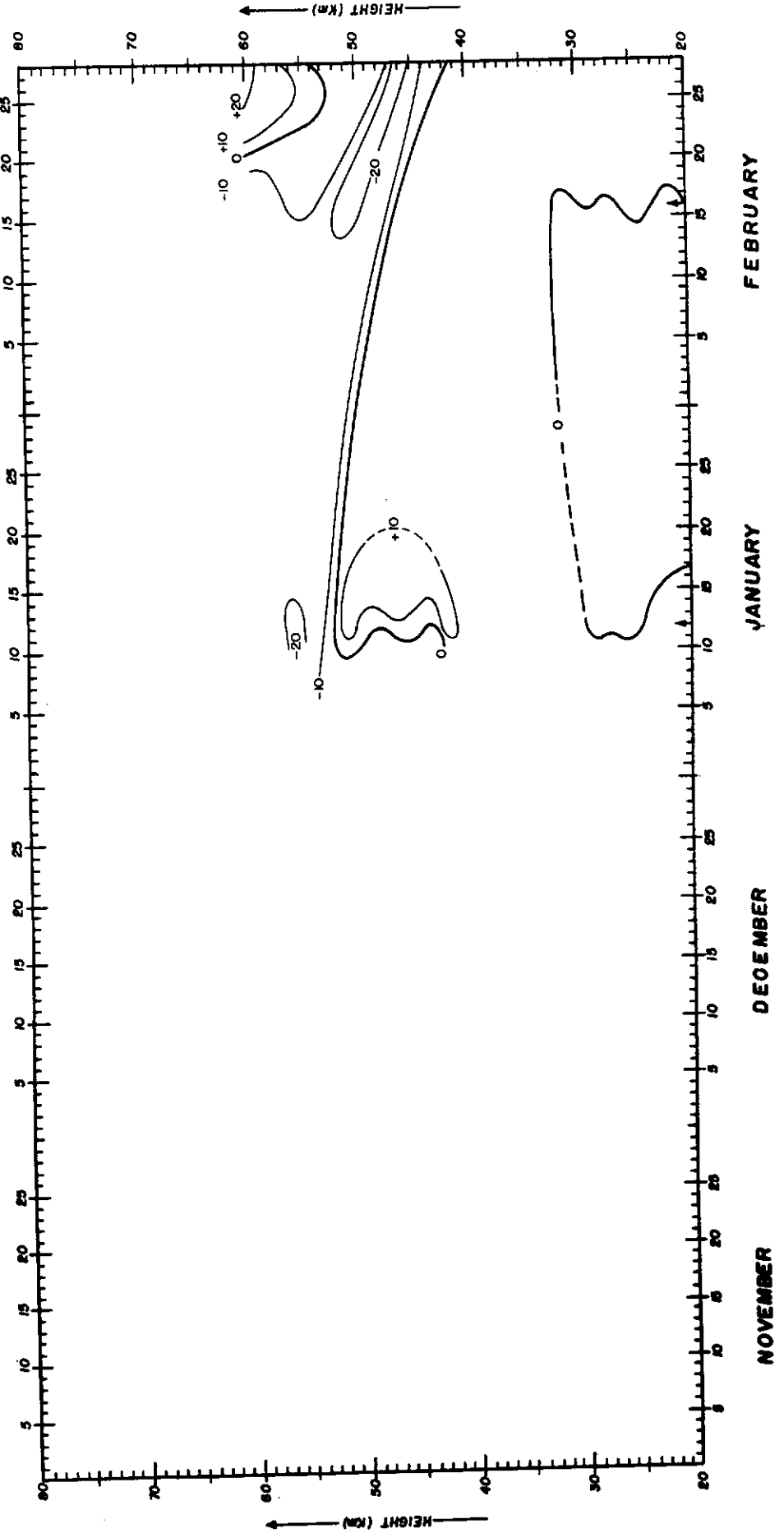
PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1966

1965



TIME HEIGHT SECTION

MERIDIONAL COMPONENT

-INPE-

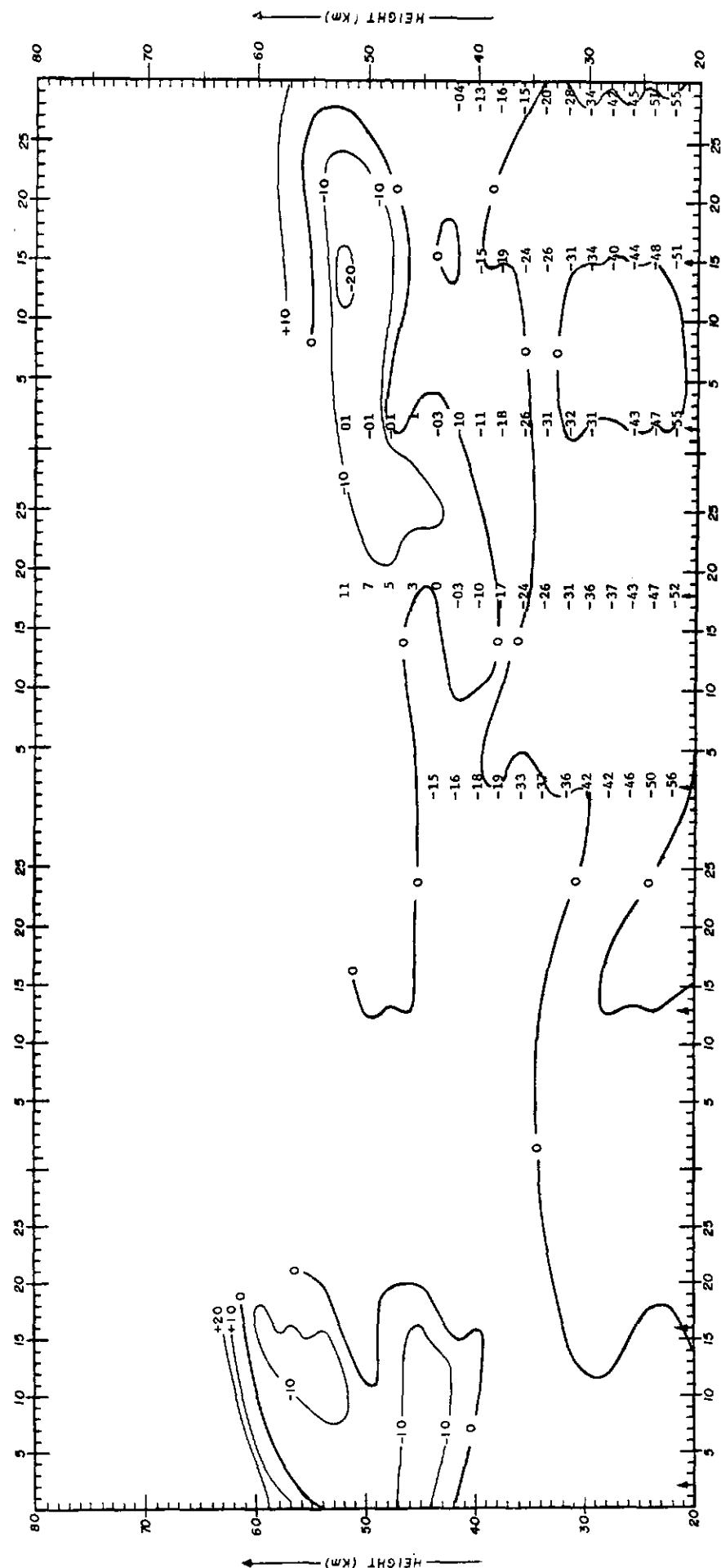
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S ; 35° 15' W

1966



MARCH

APRIL

MAY

JUNE

-INPE-

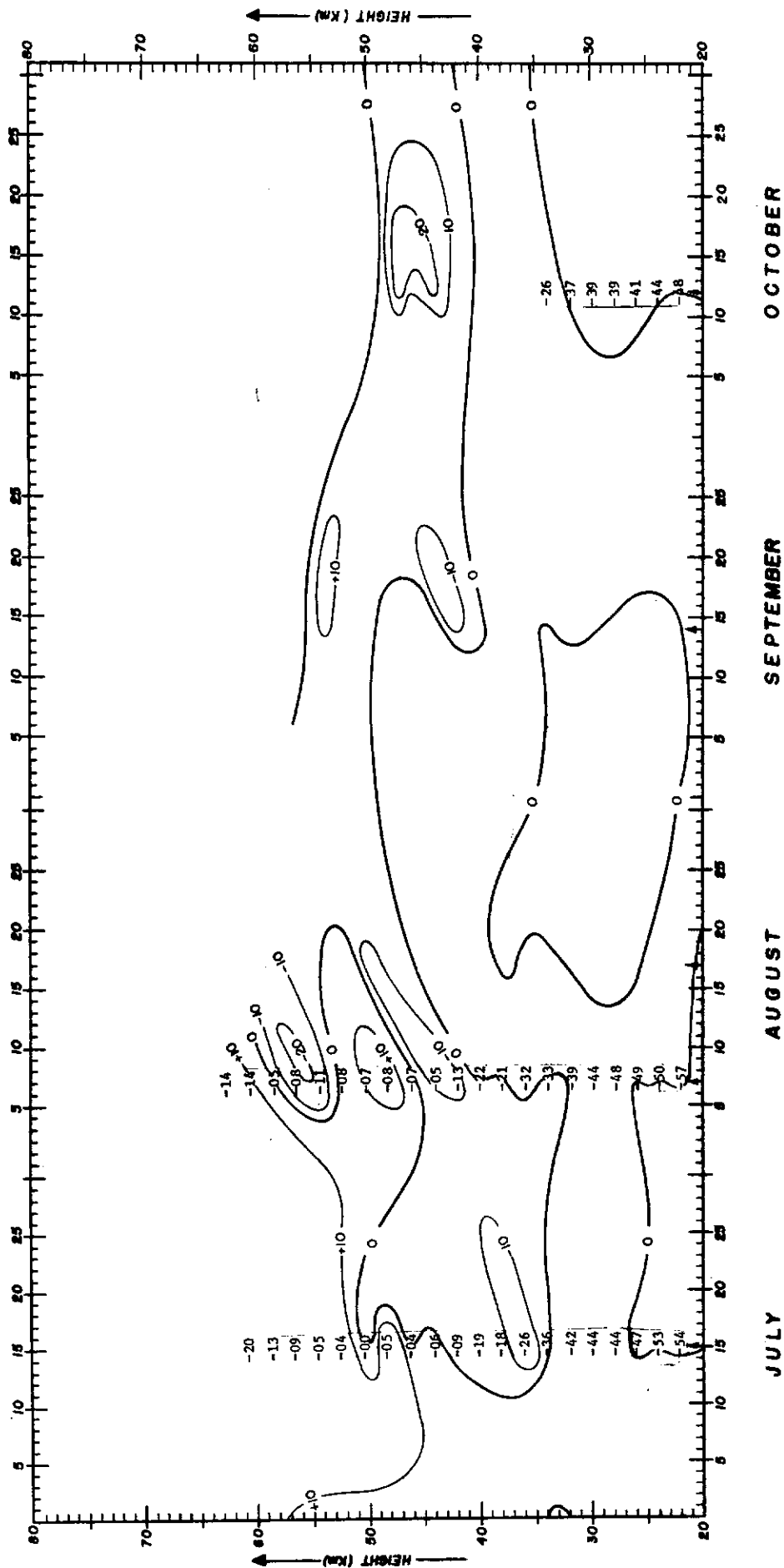
INSTITUTO DE PESQUISAS ESPACIAIS

NATAL, BRAZIL

PROJECT MESA / EXAMETNET

5° 55' S ; 35° 15' W

1966



TIME HEIGHT SECTION MERIDIONAL COMPONENT

- IN PE -

INSTITUTO DE PESQUISAS ESPACIAIS

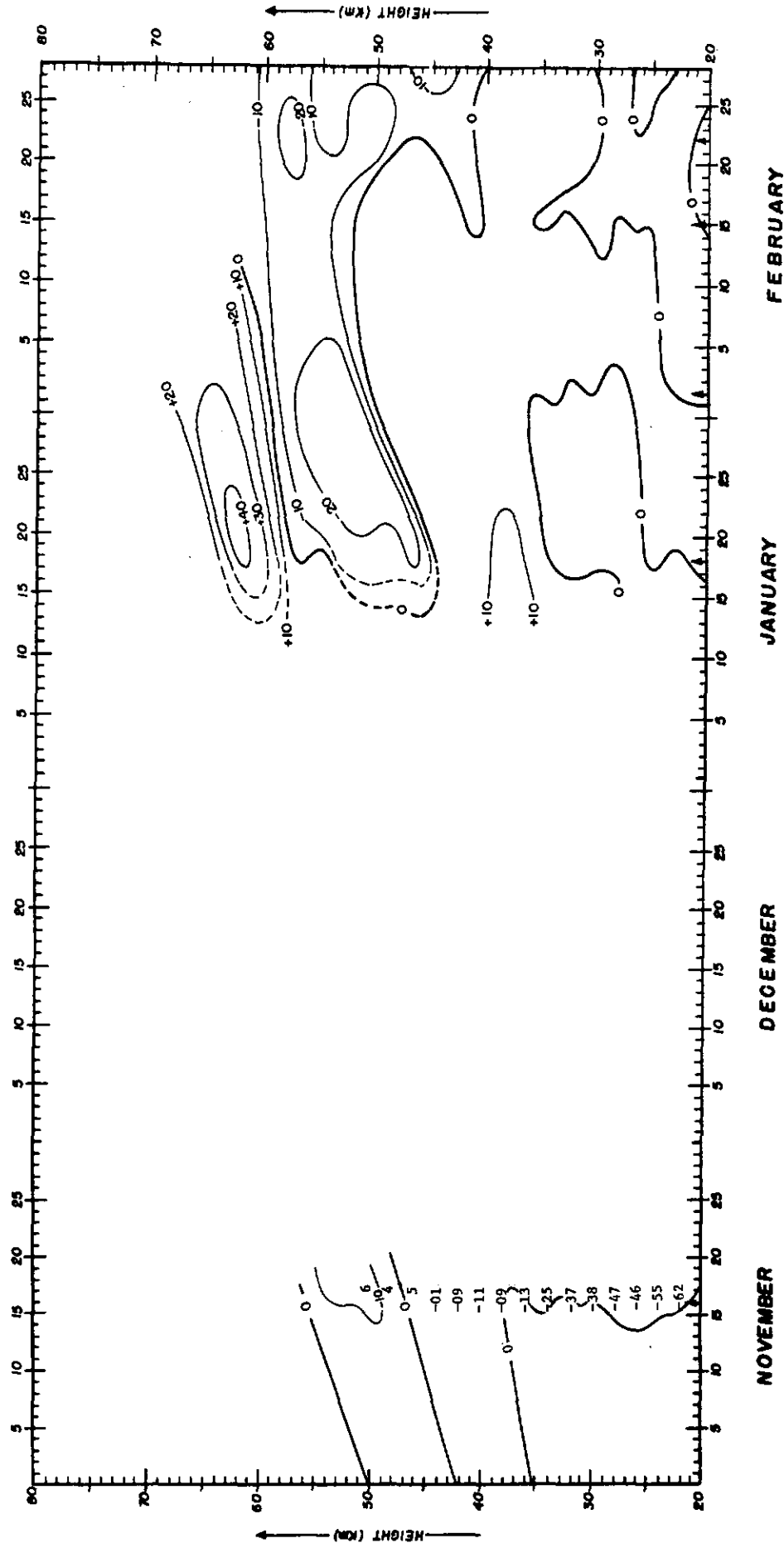
PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1966

1967



TIME HEIGHT SECTION MERIDIONAL COMPONENT

- I N P E -

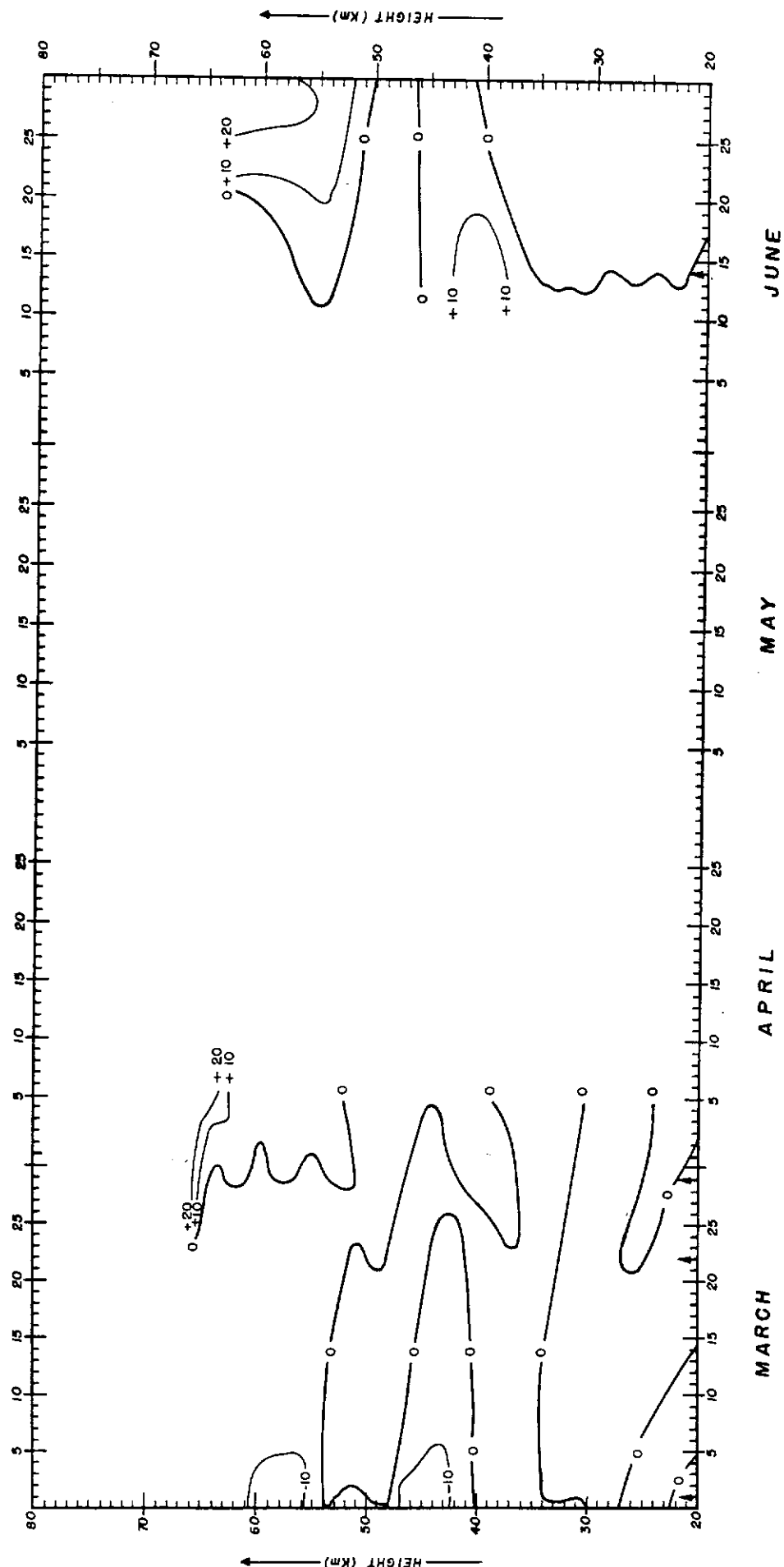
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PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S ; 35° 15' W

1967



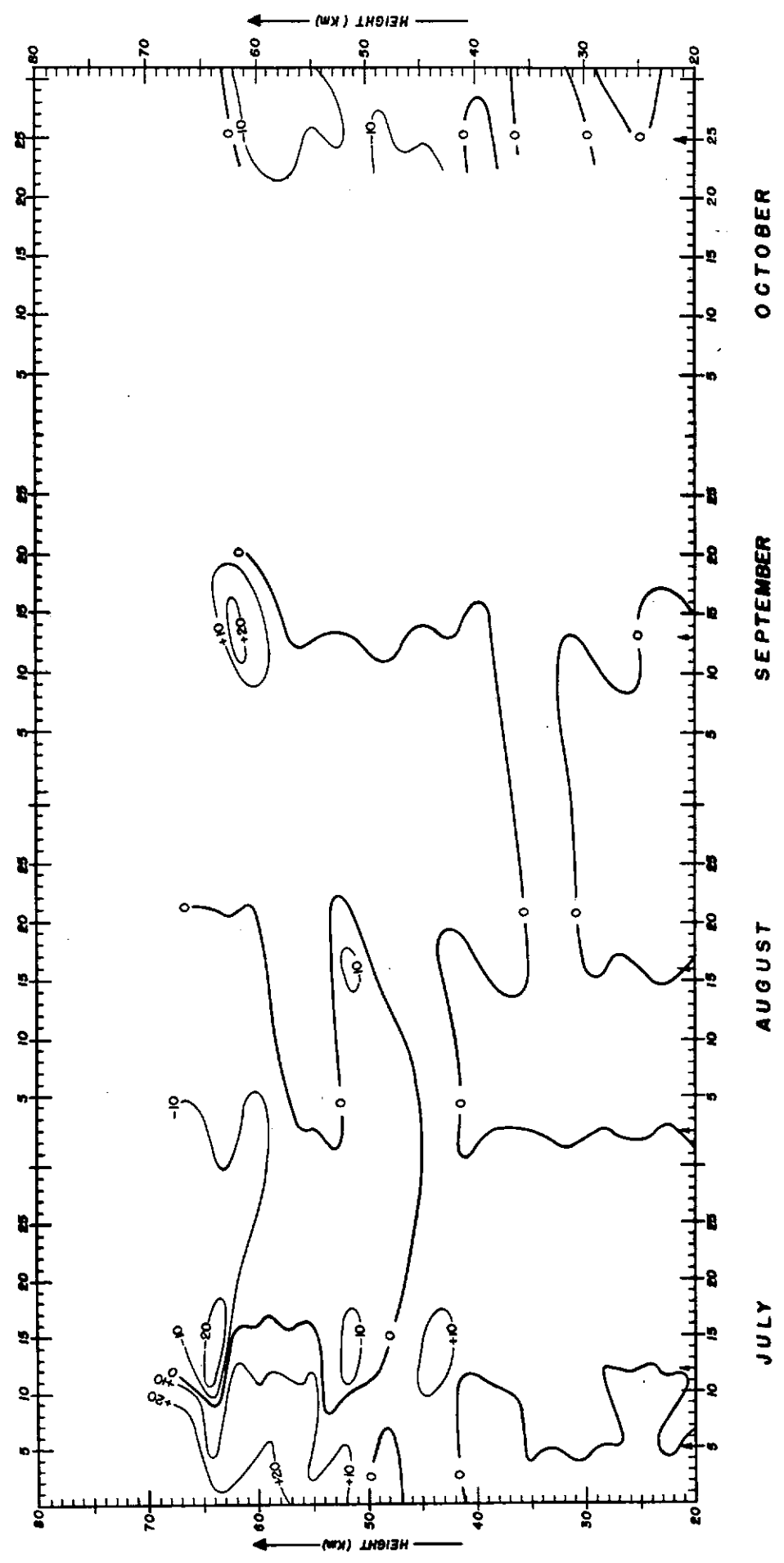
TIME HEIGHT SECTION
MERIDIONAL COMPONENT

- IN PE -

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PROJECT MESA/EXAMETNET

NATAL, BRAZIL
5° 55' S : 35° 15' W

1967



TIME HEIGHT SECTION MERIDIONAL COMPONENT

- IN PE -

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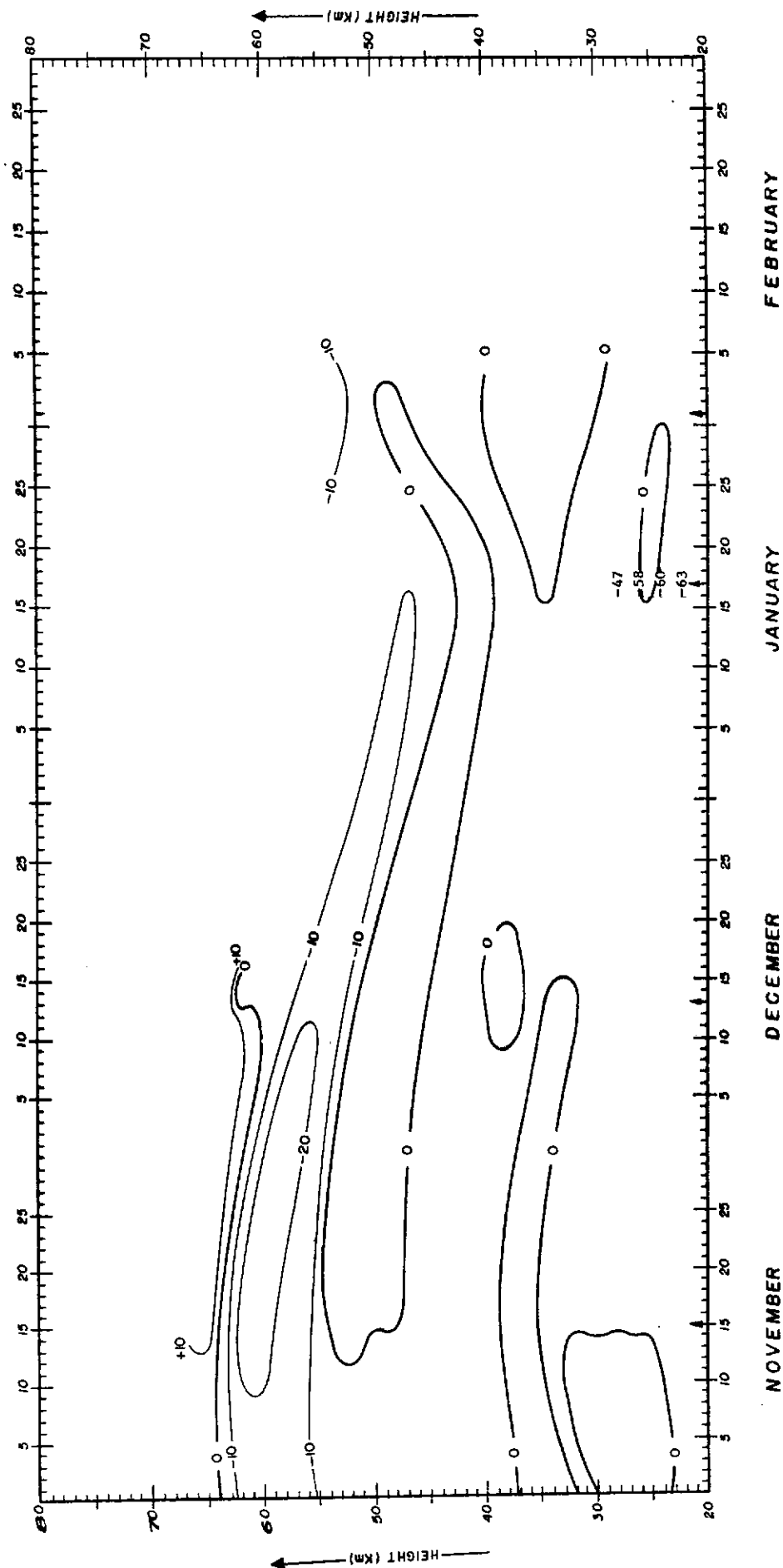
NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S : 35° 15' W

1967

1968



TIME HEIGHT SECTION
MERIDIONAL COMPONENT

- I N P E -

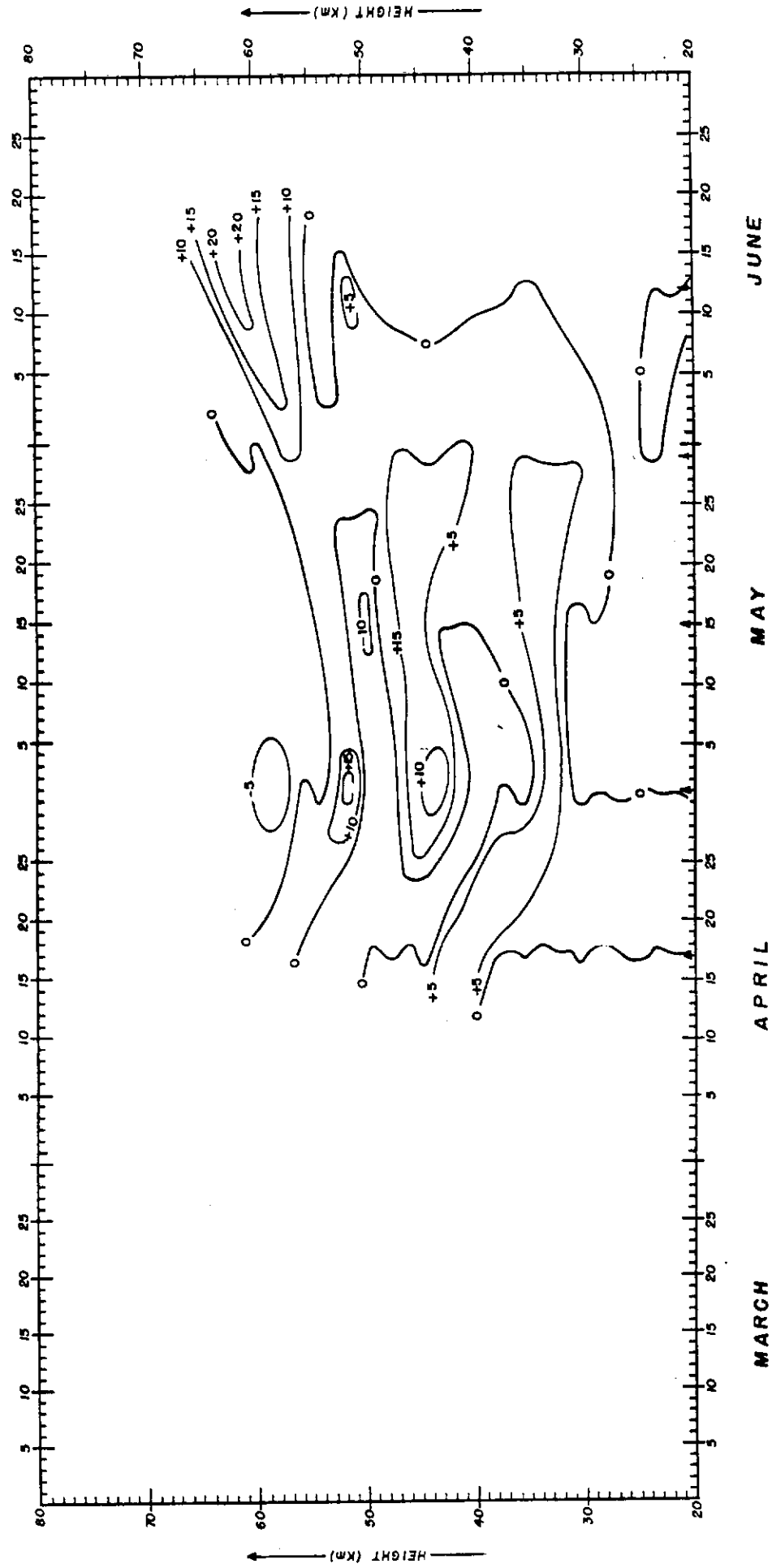
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NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S : 35° 15' W

1968



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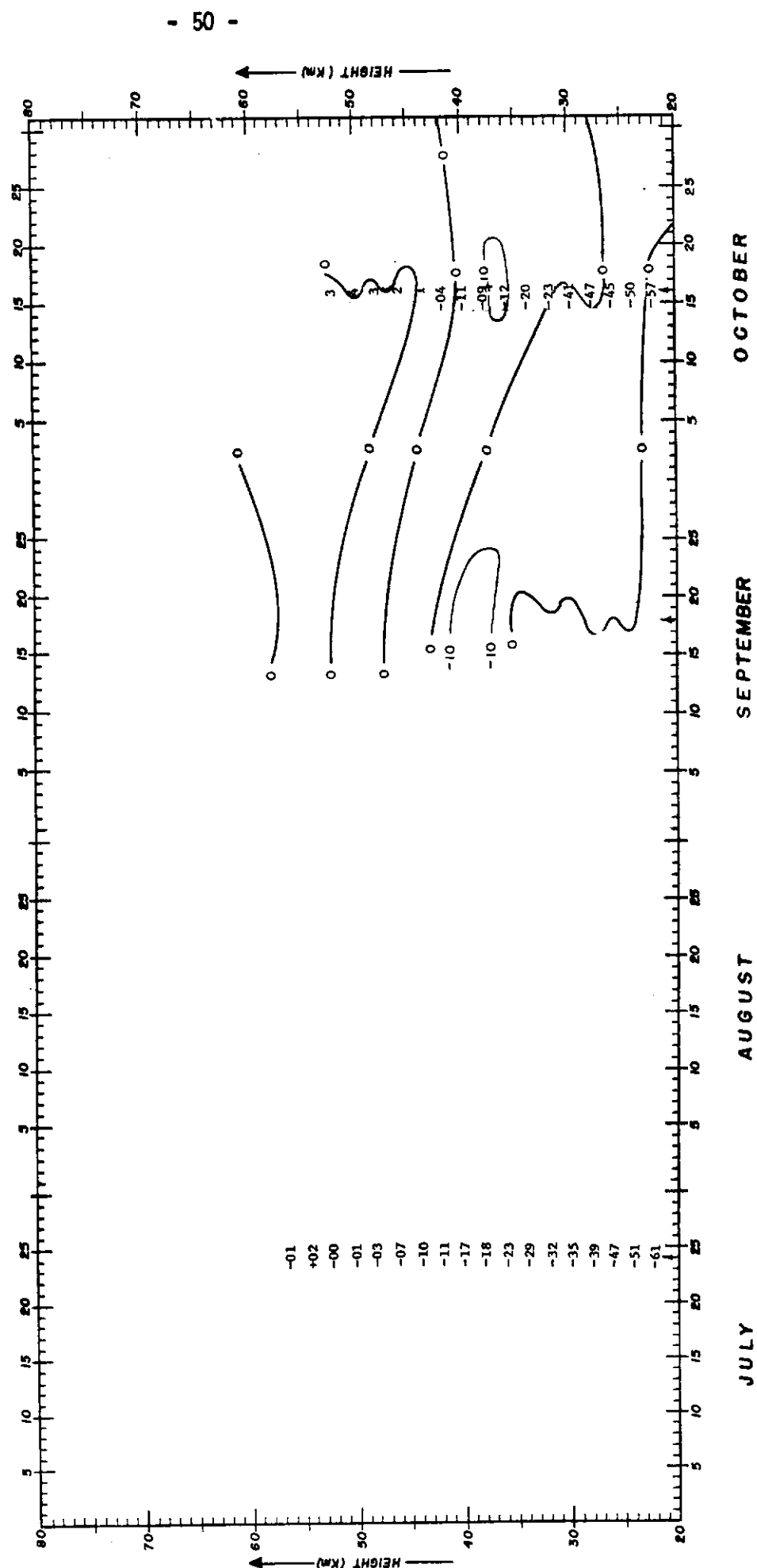
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NATAL, BRAZIL

5° 55' S : 35° 15' W

PROJECT MESA / EXAMETNET

1968



MERIDIONAL COMPONENT

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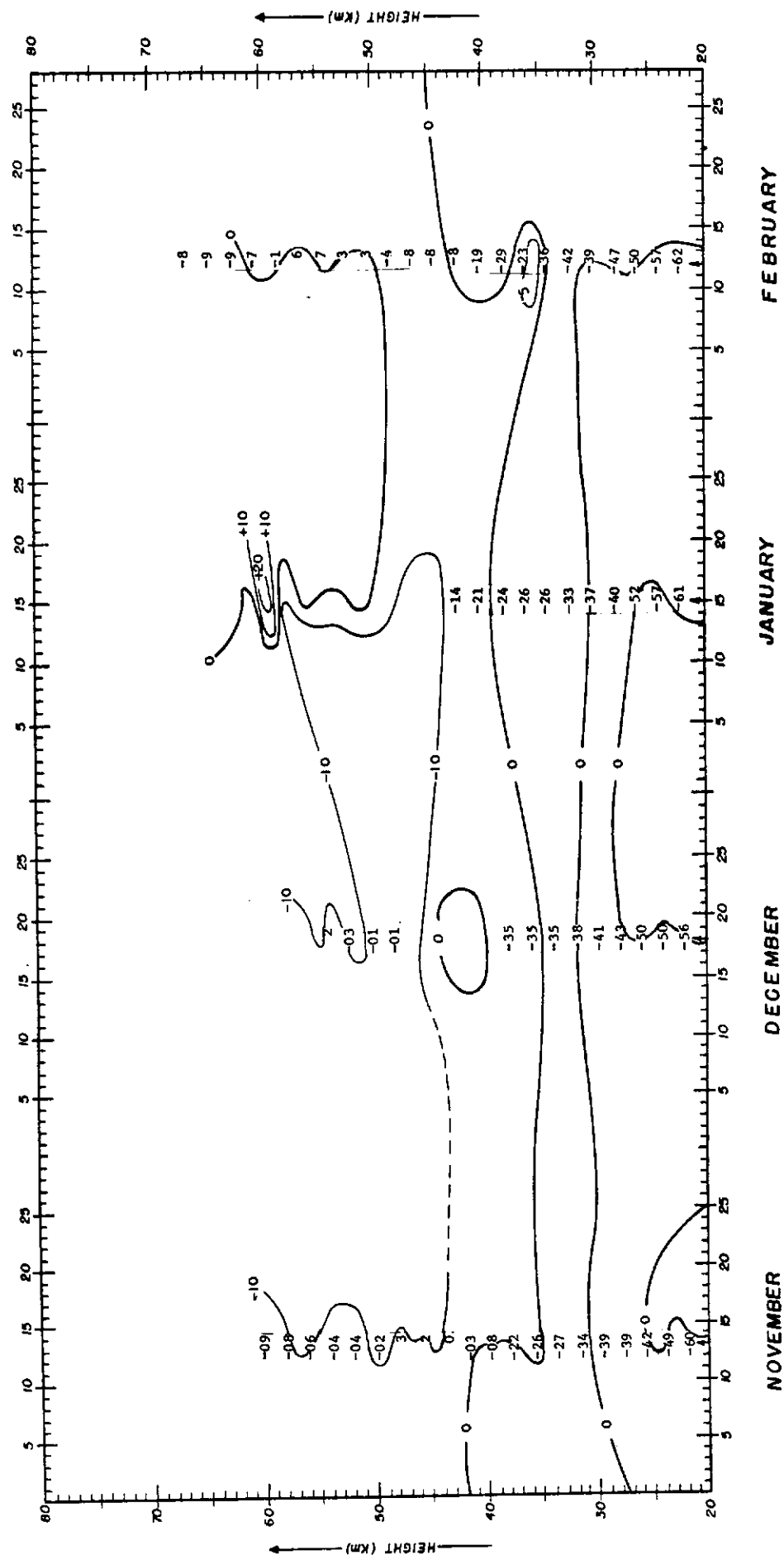
PROJECT MESA / EXAMETNET

NATAL, BRAZIL

5° 55' S ; 35° 15' W

1968

1969



TIME HEIGHT SECTION
MERIDIONAL COMPONENT

- I N P E -

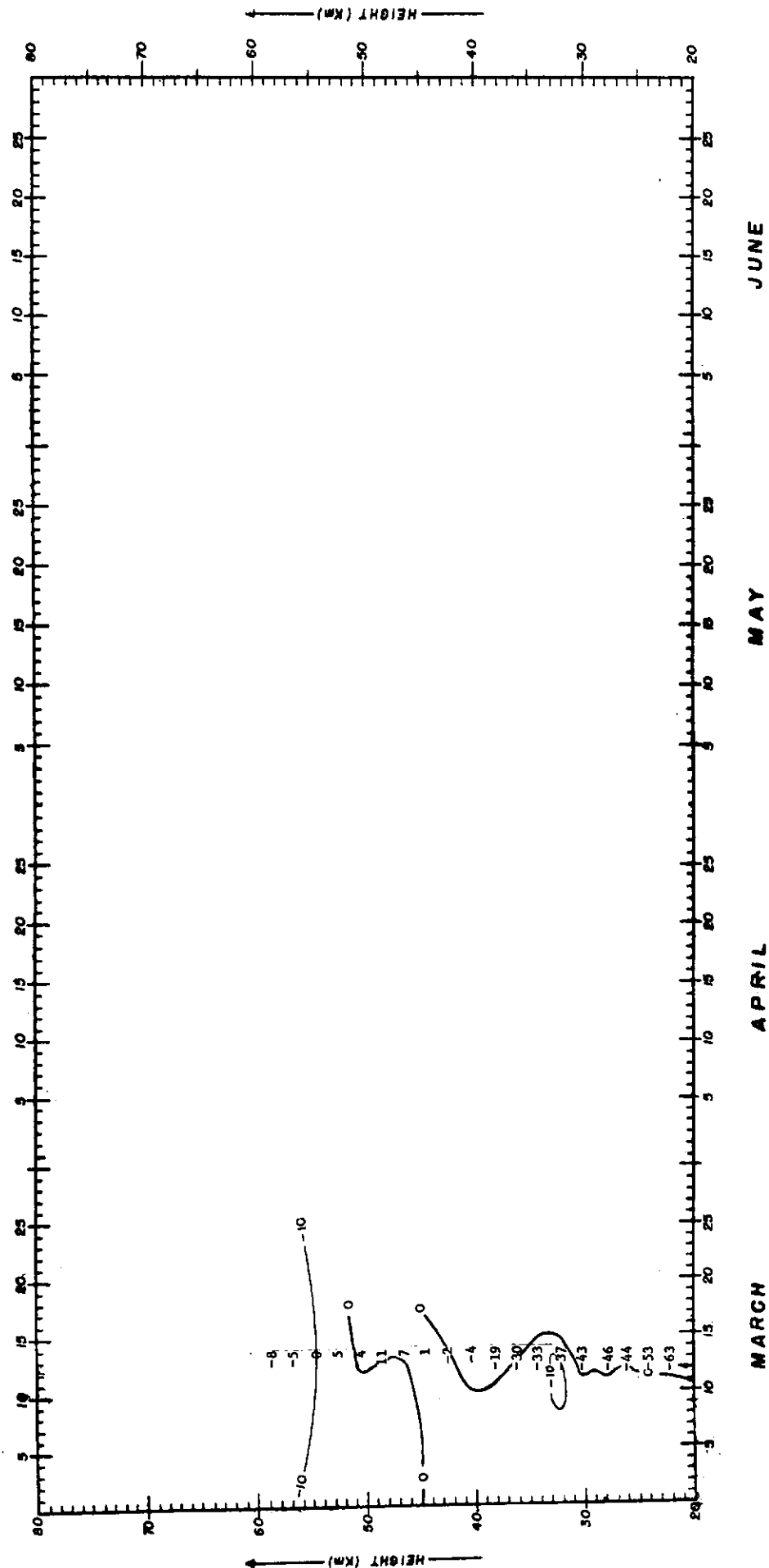
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NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S ; 35° 15' W

1969



JUNE

MAY

APRIL

MARCH

TIME HEIGHT SECTION
MERIDIONAL COMPONENT

-INPE-

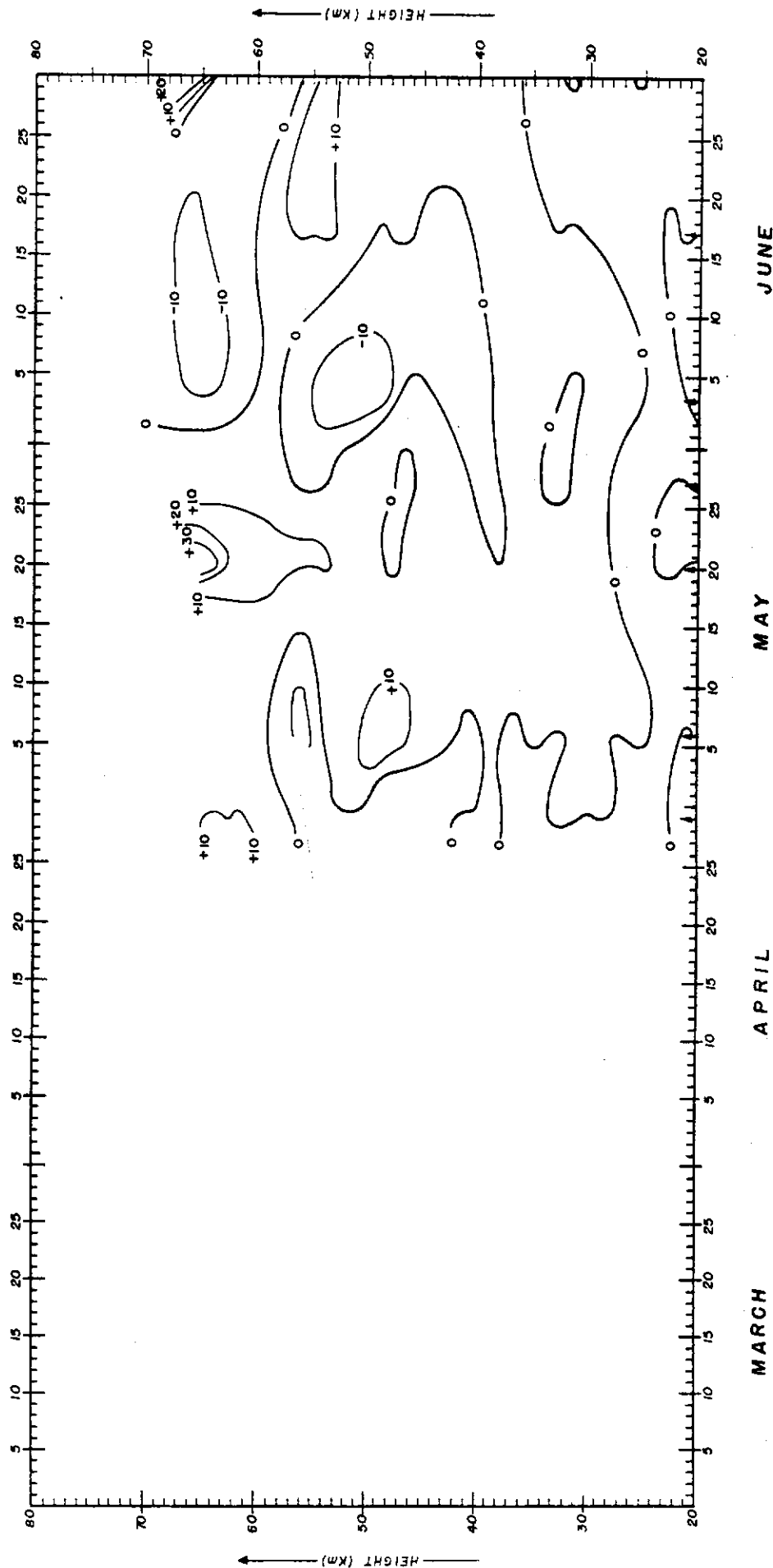
INSTITUTO DE PESQUISAS ESPACIAIS

PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1970



TIME HEIGHT SECTION

MERIDIONAL COMPONENT

-INPE-

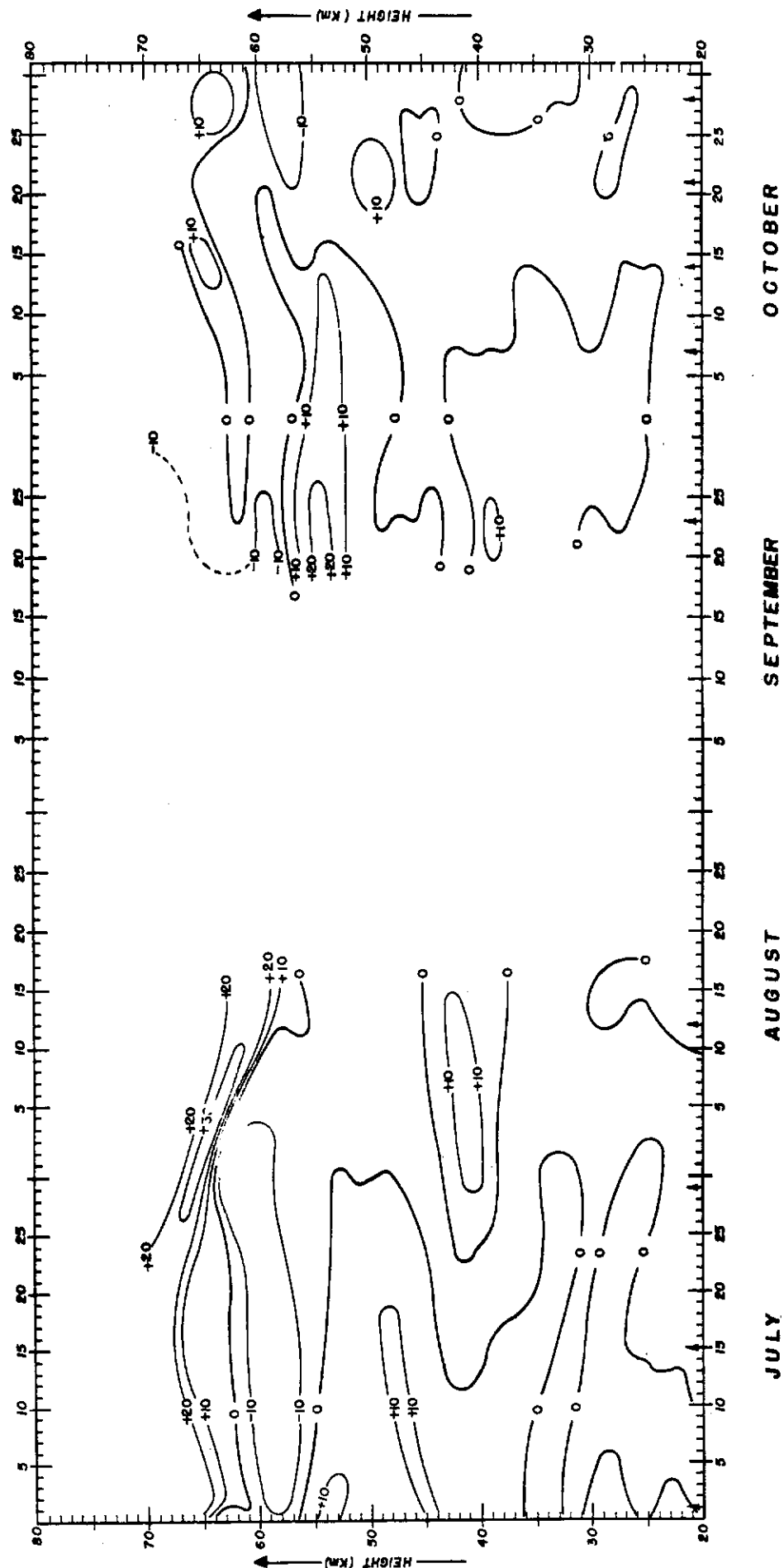
INSTITUTO DE PESQUISAS ESPACIAIS

NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S : 35° 15' W

1970



TIME HEIGHT SECTION

MERIDIONAL COMPONENT

- IN PE -

INSTITUTO DE PESQUISAS ESPACIAIS

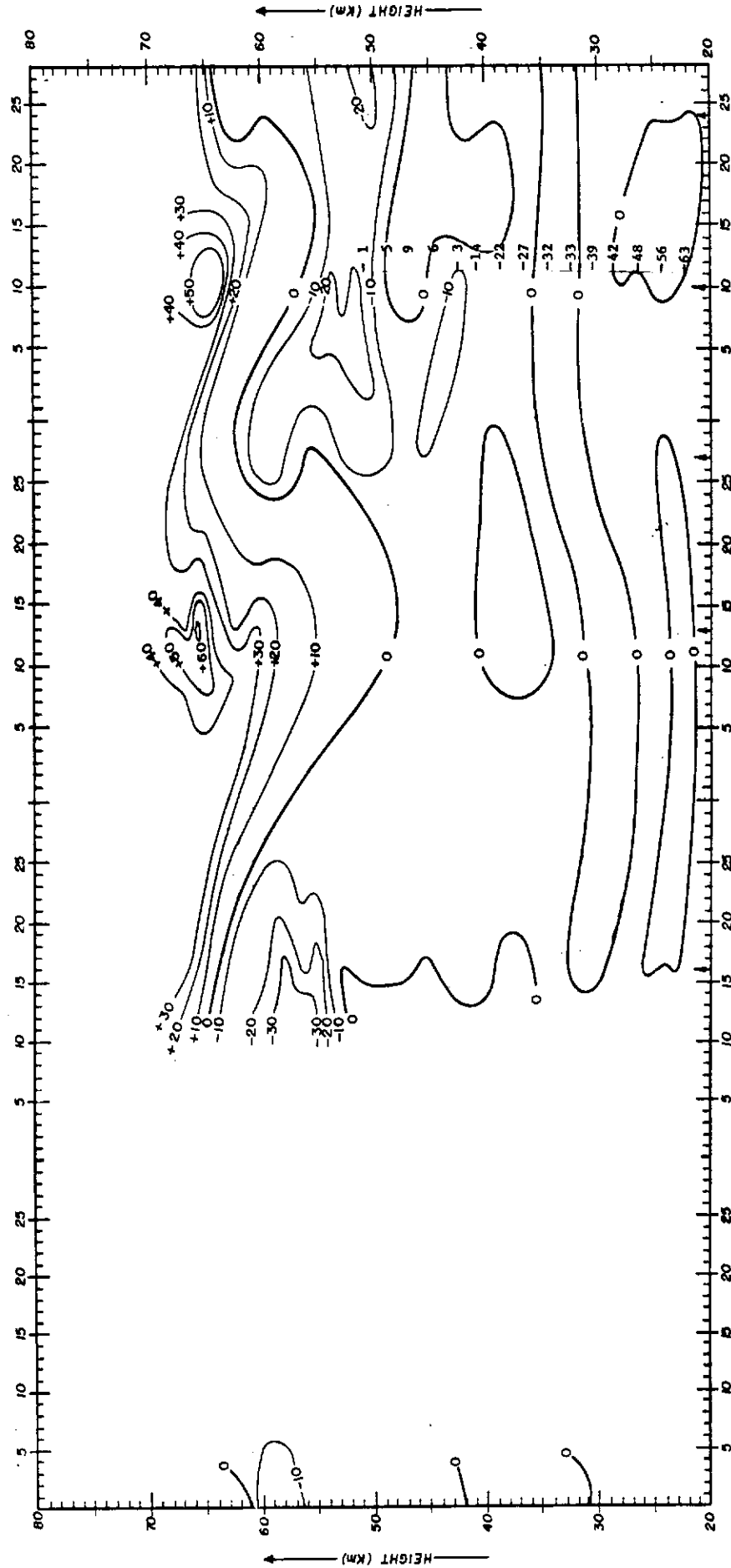
PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1970

1971



TIME HEIGHT SECTION

MERIDIONAL COMPONENT

-INPE-

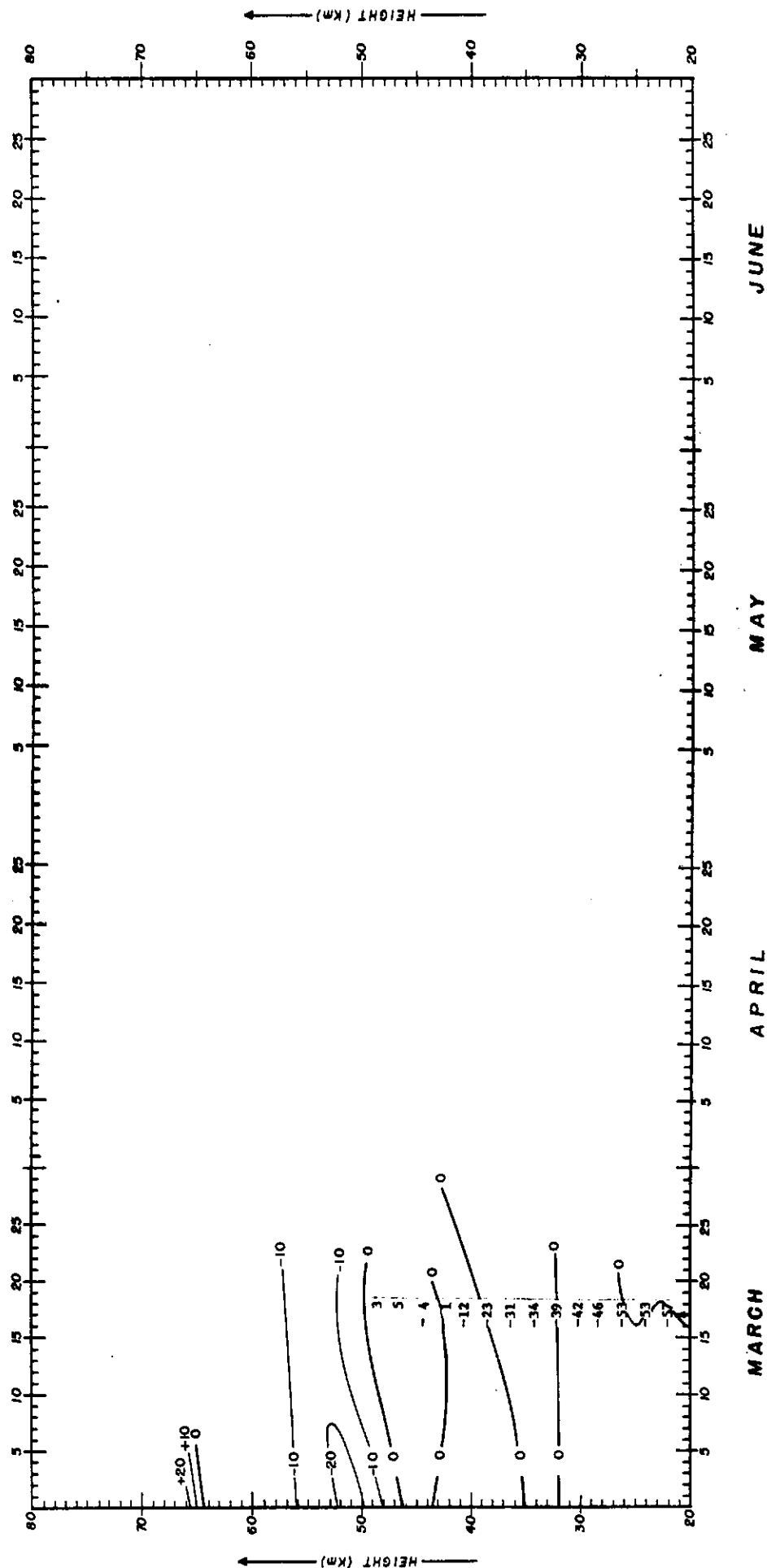
INSTITUTO DE PESQUISAS ESPACIAIS

NATAL, BRAZIL

PROJECT MESA/EXAMETNET

5° 55' S ; 35° 15' W

1971



TIME HEIGHT SECTION

MERIDIONAL COMPONENT

-INPE-

INSTITUTO DE PESQUISAS ESPACIAIS

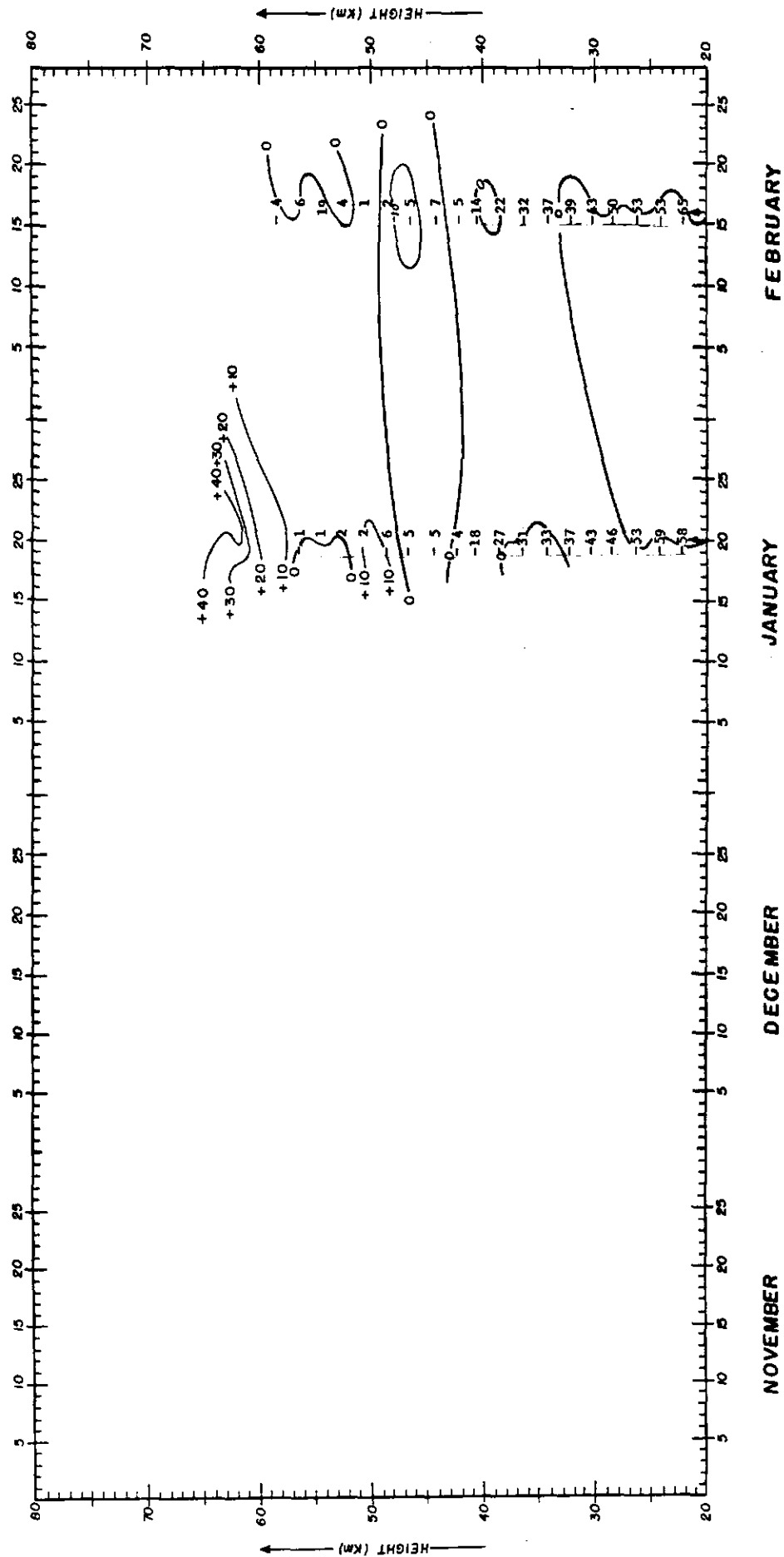
PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1971

1972



TIME HEIGHT SECTION MERIDIONAL COMPONENT

- I N P E -

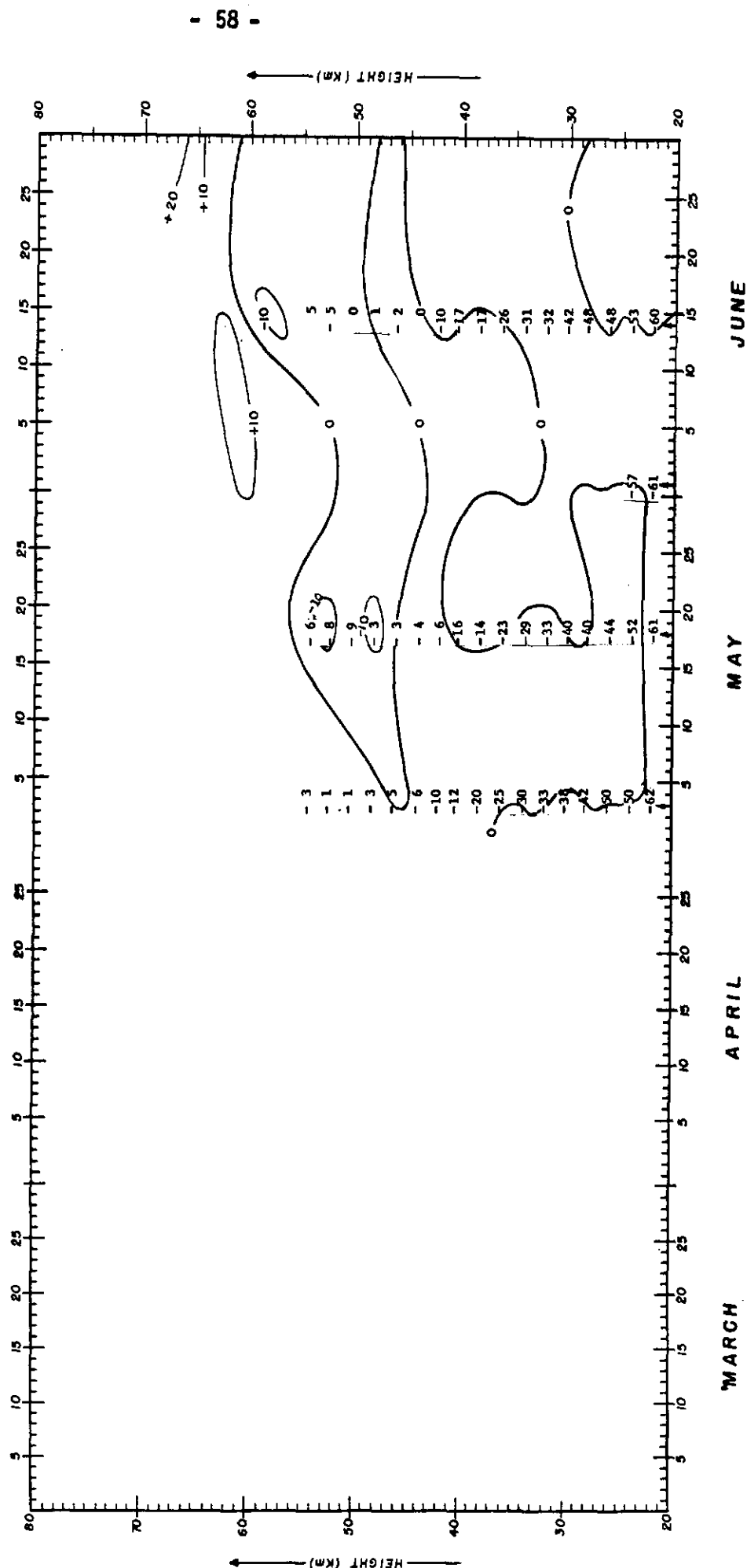
INSTITUTO DE PESQUISAS ESPACIAIS

PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1972



TIME HEIGHT SECTION

MERIDIONAL COMPONENT

-IN PE-

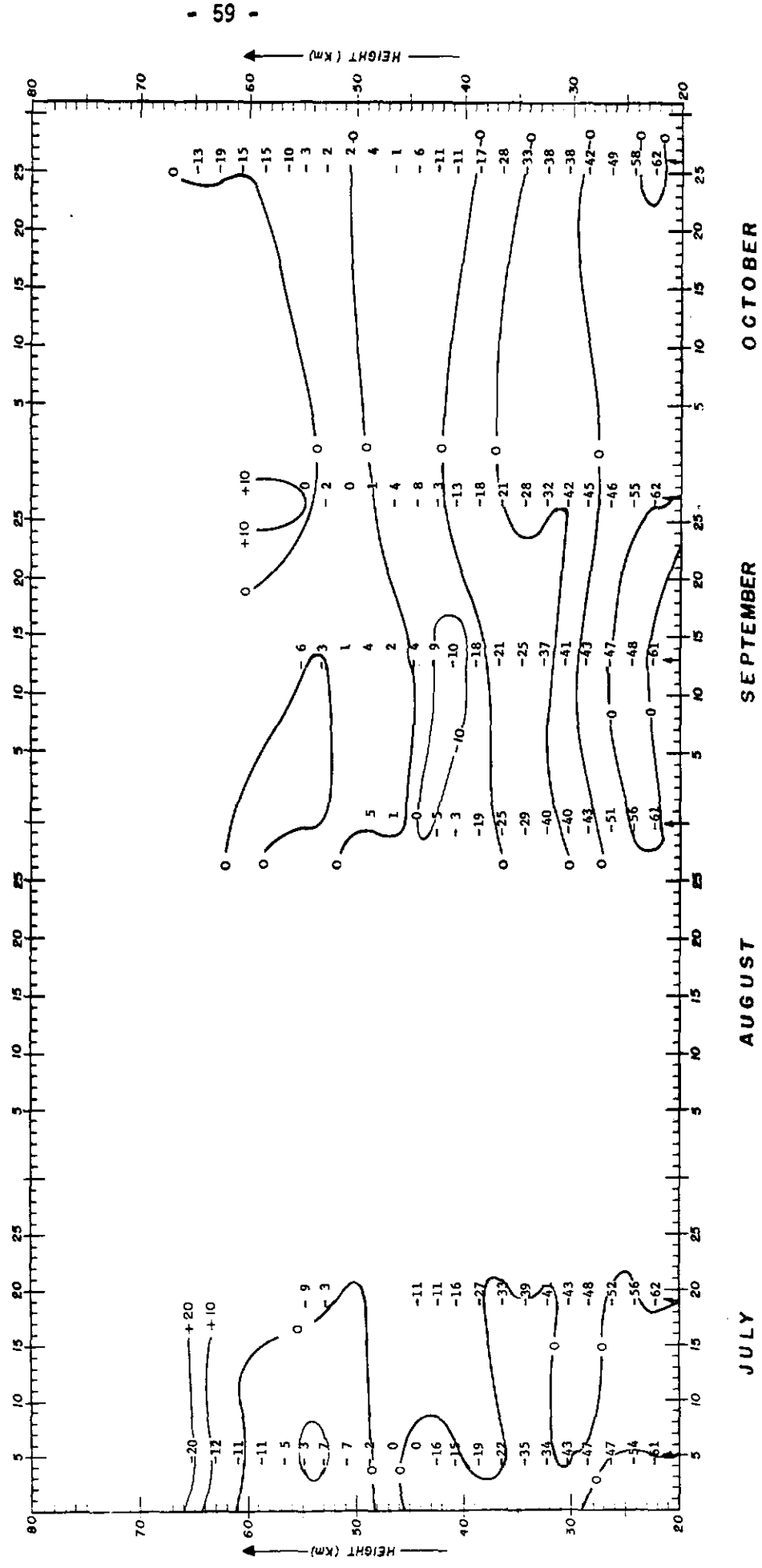
INSTITUTO DE PESQUISAS ESPACIAIS

PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1972



TIME HEIGHT SECTION
MERIDIONAL COMPONENT

—INPE—

INSTITUTO DE PESQUISAS ESPACIAIS

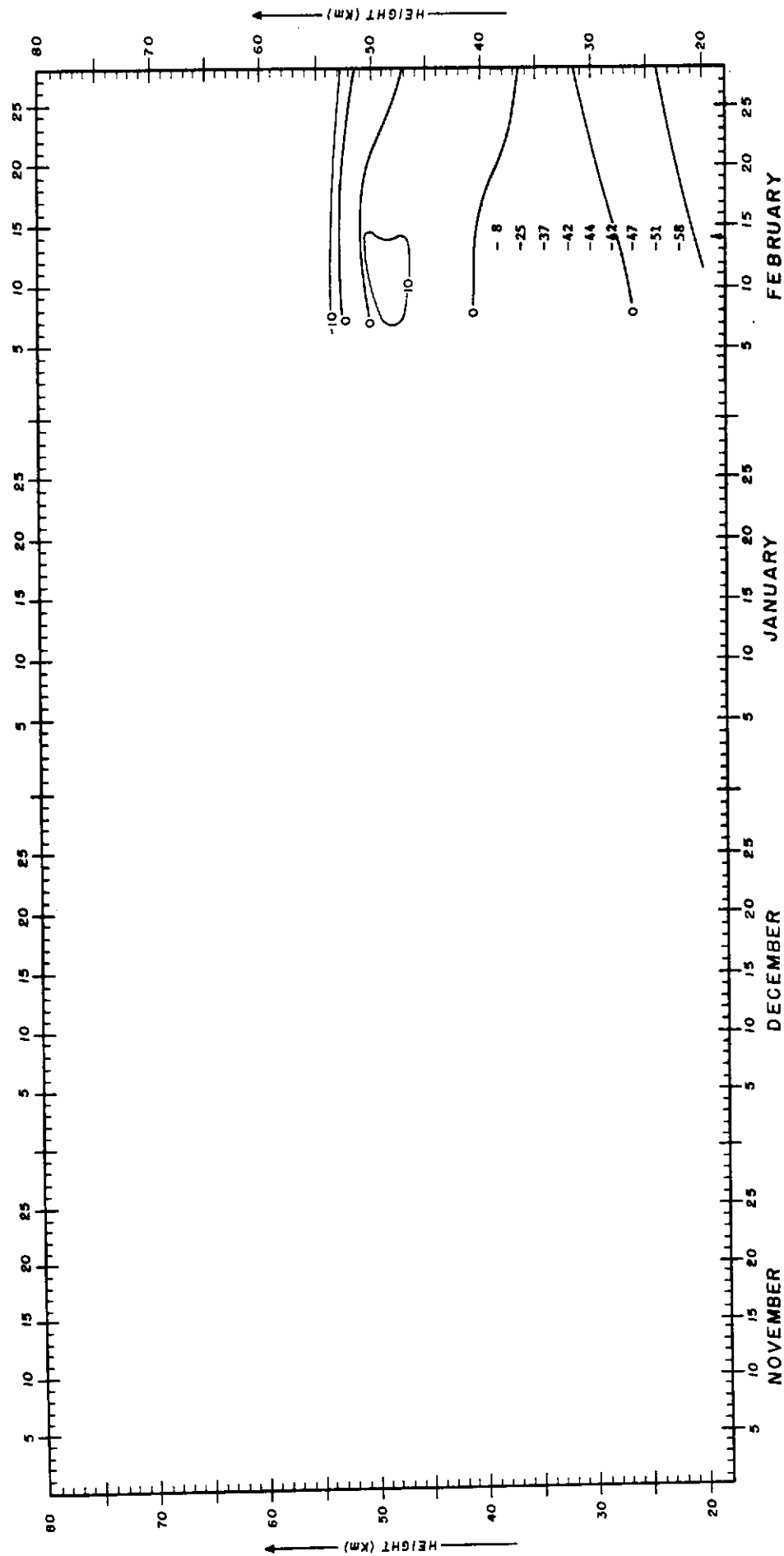
PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S : 35° 15' W

1972

1973



TIME HEIGHT SECTION

MERIDIONAL COMPONENT

-INPE-

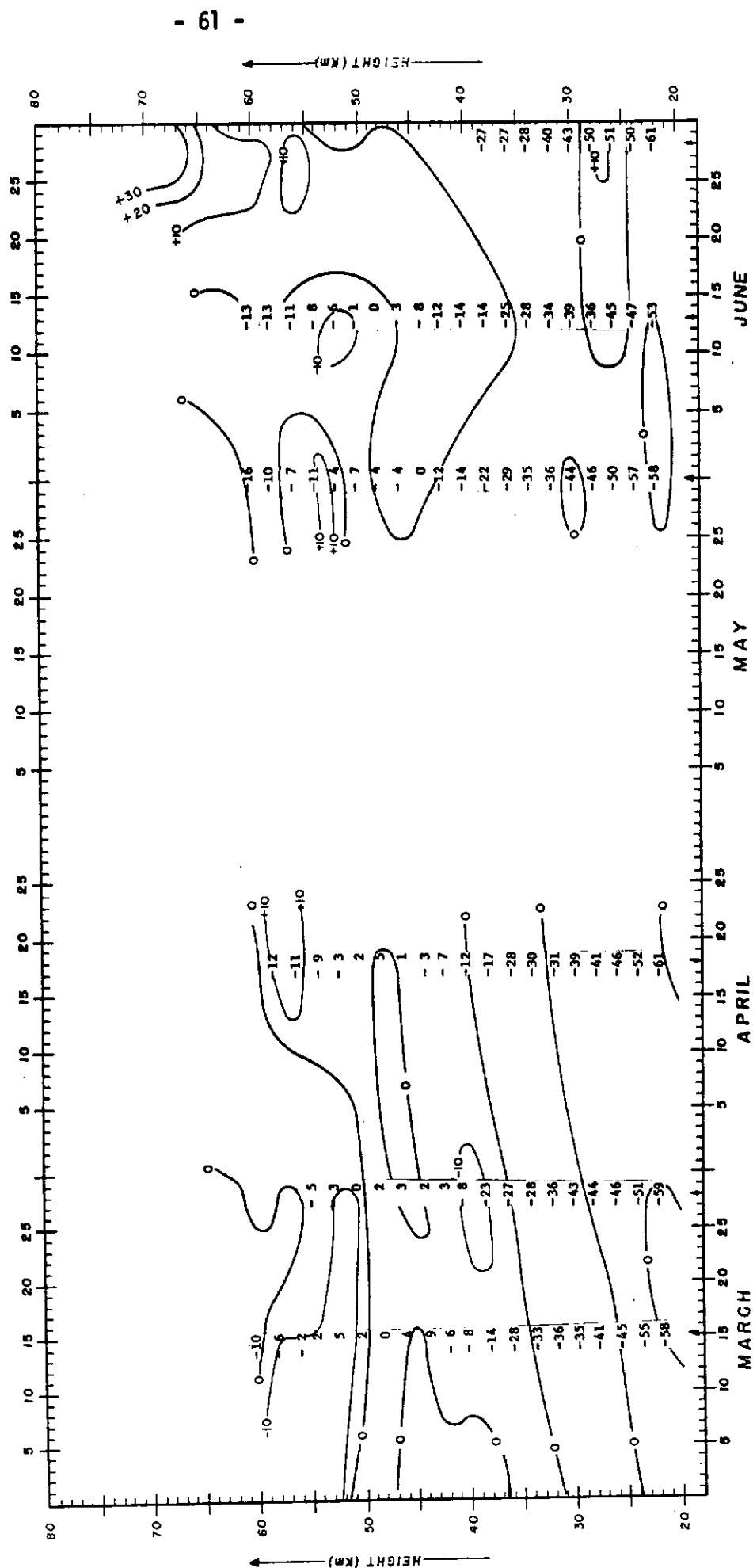
INSTITUTO DE PESQUISAS ESPACIAIS

PROJECT MESA/EXAMETNET

NATAL, BRAZIL

5° 55' S ; 35° 15' W

1973



TIME HEIGHT SECTION

MERIDIONAL COMPONENT

— IN P E —

INSTITUTO DE PESQUISAS ESPACIAIS
 NATAL, BRAZIL
 5° 55' S : 35° 15' W
 PROJECT MESA/EXAMETNET

1973

