

①

5WW/TN-83/001



5TH WEATHER WING

TECHNICAL NOTE

83-001

ADA 131892

WORLD-WIDE

SEA-SURFACE TEMPERATURES

APRIL 1983

This document contains
blank pages that were
not filmed.

DTIC
ELECTE
AUG 16 1983

S
B

DTIC FILE COPY

REPRODUCED FROM
BEST AVAILABLE COPY

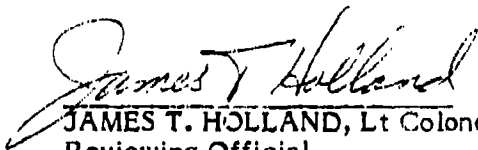
AEROSPACE SCIENCES DIVISION

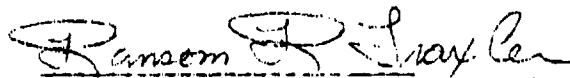
FIFTH WEATHER WING

LANGLEY AIR FORCE BASE, VIRGINIA 23665

This publication approved for public release. There is no objection to unlimited distribution of this document to the public at large, or by the Defense Technical Information Center (DTIC) to the National Technical Information Service (NTIS).

This technical publication has been reviewed and is approved for publication.


JAMES T. HOLLAND, Lt Colonel, USAF
Reviewing Official


RANSOM R. TRAXLER, 1st Lt, USAF
Author

FOR THE COMMANDER


JOSEPH A. ZAK, Lt Colonel, USAF
Chief, Aerospace Sciences Division

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM	
1. REPORT NUMBER 5WW/TN-83/001	2. GOVT ACCESSION NO. ADA131 892	3. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle) WORLD-WIDE SEA-SURFACE TEMPERATURES		5. TYPE OF REPORT & PERIOD COVERED Technical Note (Final)	
		6. PERFORMING ORG. REPORT NUMBER	
7. AUTHOR(s) 1Lt Ransom R. Traxler TSgt Gerald L. Wheeler		8. CONTRACT OR GRANT NUMBER(s)	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Climatology Branch (5WW/DNC) 5th Weather Wing Aerospace Sciences Division Langley AFB VA 23665		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS N/A	
11. CONTROLLING OFFICE NAME AND ADDRESS Same as 9		12. REPORT DATE April 1983	
		13. NUMBER OF PAGES 254	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED	
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.			
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) N/A			
18. SUPPLEMENTARY NOTES Supersedes 5WW TN 79-001, Minimum Sea Surface Temperatures and Associated Survival Times.			
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)			
Mediterranean Sea	Aegean Sea	Ligurian Sea	Celtic Sea
Red Sea	Adriatic Sea	Barents Sea	Irish Sea
Black Sea	Ionian Sea	Norwegian Sea	North China Sea
Yellow Sea	Sea of Crete	Balearic Sea	South China Sea
White Sea	Tyrrhenian Sea	Alboran Sea	Philippine Sea
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)			
This technical note contains sea-surface isotherm charts divided into geographical sections for the Atlantic, Pacific, and Indian Oceans as well as North American lakes and Hudson Bay. Each section is further divided into 12 monthly sets of charts, each set containing a maximum, mean, and minimum temperature chart (except for the Canadian lakes and Hudson Bay section, which only has a mean value). Also included is a table on approximate survival times of humans immersed in the sea with ordinary clothing.			

BLOCK 19

Sibuyan Sea
 Arabian Sea✓
 Coral Sea
 Bering Sea
 Solomon Sea
 Bismarck Sea
 Arafura Sea
 Tasman Sea✓
 Sea of Japan *- Japan Sea*
 North Sea✓
 Baltic Sea✓
 Persian Gulf
 Gulf of Oman
 Gulf of Aden *Aden Gulf*
 Carribbean Sea
 Gulf of Mexico *mexico Gulf*
 Hudson Bay✓
 James Bay
 Bay of Biscay
 Gulf of Bothnia
 Gulf of Sidra
 Gulf of Tonkin *Tonkin Gulf*
 Gulf of Alaska *ALASKA GULF*
 Gulf of Bengal *BENGAL Bay*
 Gulf of Guinea
 Lake Michigan
 Lake Superior✓
 Lake Huron
 Lake Erie✓
 Lake Ontario
 Great Salt Lake
 Great Slave Lake
 Great Bear Lake
 Lake Winnipeg
 Sea Surface Temperature
 Water Survival
 Atlantic Ocean
 Pacific Ocean
 Indian Ocean

UNCLASSIFIED

5TH WEATHER WING
TECHNICAL NOTE 83-001

WORLD-WIDE SEA-SURFACE
TEMPERATURES

APRIL 1983

AEROSPACE SCIENCES DIVISION
5TH WEATHER WING
LANGLEY AIR FORCE BASE, VIRGINIA

World-Wide Sea-Surface Temperatures

FORWARD

The sea-surface isotherm charts in this publication came from the following sources:

- I. U.S. Navy Marine Climatic Atlas of the World
 - a. Vol I: North Atlantic Ocean (NAVAIR 50-1C-528) (Revised 1974)
 - b. Vol II: North Pacific Ocean (NAVAIR 50-1C-529) (Revised 1977)
 - c. Vol III: Indian Ocean (NAVAIR 50-1C-530) (Revised 1976)
 - d. Vol IV: South Atlantic Ocean (NAVAIR 50-1C-531) (Revised 1978)
 - e. Vol V: South Pacific Ocean (NAVAIR 50-1C-532) (Revised 1979)
- II. Summary of Synoptic Meteorological Observations for Great Lakes Area (National Climatic Center), January 1975
- III. Utah State University Climatology Department
- IV. United States Air Force Environmental Technical Applications Center (MAC)

These charts are grouped into the following geographical sections:

- I. North Atlantic Ocean
- II. North Pacific Ocean
- III. Indian Ocean
- IV. South Atlantic Ocean
- V. South Pacific Ocean
- VI. Great Lakes and Great Salt Lake
- VII. Canadian Lakes and Bays

Each geographical section consists of 12 monthly sets of temperature charts. Each monthly set contains 3 charts, except for the Canadian Lakes and Bays section. The first chart of each month is the maximum temperature chart. The maximum temperature is that value in which 1 percent of the temperatures recorded for that location were greater than the given value. The second chart is the mean temperature chart. The last chart is the minimum temperature chart. Its value is that value in which 1 percent of the temperatures recorded for that location were less than the given value. For the Canadian Lakes and Bays section, only mean temperature charts are provided.

INTRODUCTION

This technical note was prepared with all the data currently available to AWS. The majority of the data (that for the oceans) came from the five Navy publications listed in the forward. The USAF Environmental Technical Applications Center, through various sources, obtained the rest of the data in this publication. We were unable to obtain data on non-North American lakes, such as the Caspian Sea and the Aral Sea, USSR. Data on Lake Victoria, Africa, was available, but the temperature of the lake will always be high enough not to present any hazard due to its equatorial location.

OCEANIC CHARTS

Sea-surface temperature is recorded with a fairly high frequency in marine observations. The various methods of recording (bucket versus intake, etc.) have been combined for these charts. In data sparse regions, satellite data were used for guidance. In addition, all data associated with oceanographic hydrocast and bathythermograph samples (expendable and otherwise) were included. The various methods of recording, however, tend to decrease the reliability of the individual values. Gradients and relative values are considered to be reliable.

The 1% and 99% isopleths give estimates of the extremes that may be encountered at any location. Use the extreme values, especially the minimum values, in all your sea-surface temperature determinations - the actual temperature can be anywhere between the extremes. In rare occasions, the actual values could exceed the extremes. These isopleth analyses of the sea-surface temperatures are based on all available data subjectively adjusted where bias was evident.

LAKES AND HUDSON BAY CHARTS

Some of the lakes are small enough to have only one temperature for the entire lake (that is, no isopleths). The Great Lakes and Hudson Bay, however, are large enough to contain isopleths, even though the gradients could be small. The isopleths for these bodies of water were subjectively determined and interpolated from various data sources.

An important fact to remember about water temperatures (and lake temperatures in particular) is that land heats and cools faster than water. This effect can be seen in the Great Lakes. During the summer, the land heats faster than the water, causing water temperature gradients to increase toward land (i.e., the coolest part of a lake in summer is that part farthest from the surrounding land). During the winter, the reverse is true - temperature gradients decrease towards land and the warmest part of the lake is that part farthest from the shore.

Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
Distribution	
Availability Codes	
Dist	Avail and/or Special
A	

CONTENTS

Forward	ii
Introduction	iii
I. Approximate Survival Times and Temperature Conversions	1
II. North Atlantic Temperature Charts	3
III. North Pacific Temperature Charts	41
IV. Indian Ocean Temperature Charts	79
V. South Atlantic Temperature Charts	117
VI. South Pacific Temperature Charts	155
VII. Great Lakes and Great Salt Lake Temperature Charts	193
VIII. Canadian Lakes and Bays Temperature Charts	231

APPROXIMATE SURVIVAL TIMES AND TEMPERATURE CONVERSIONS

Approximate Survival Times

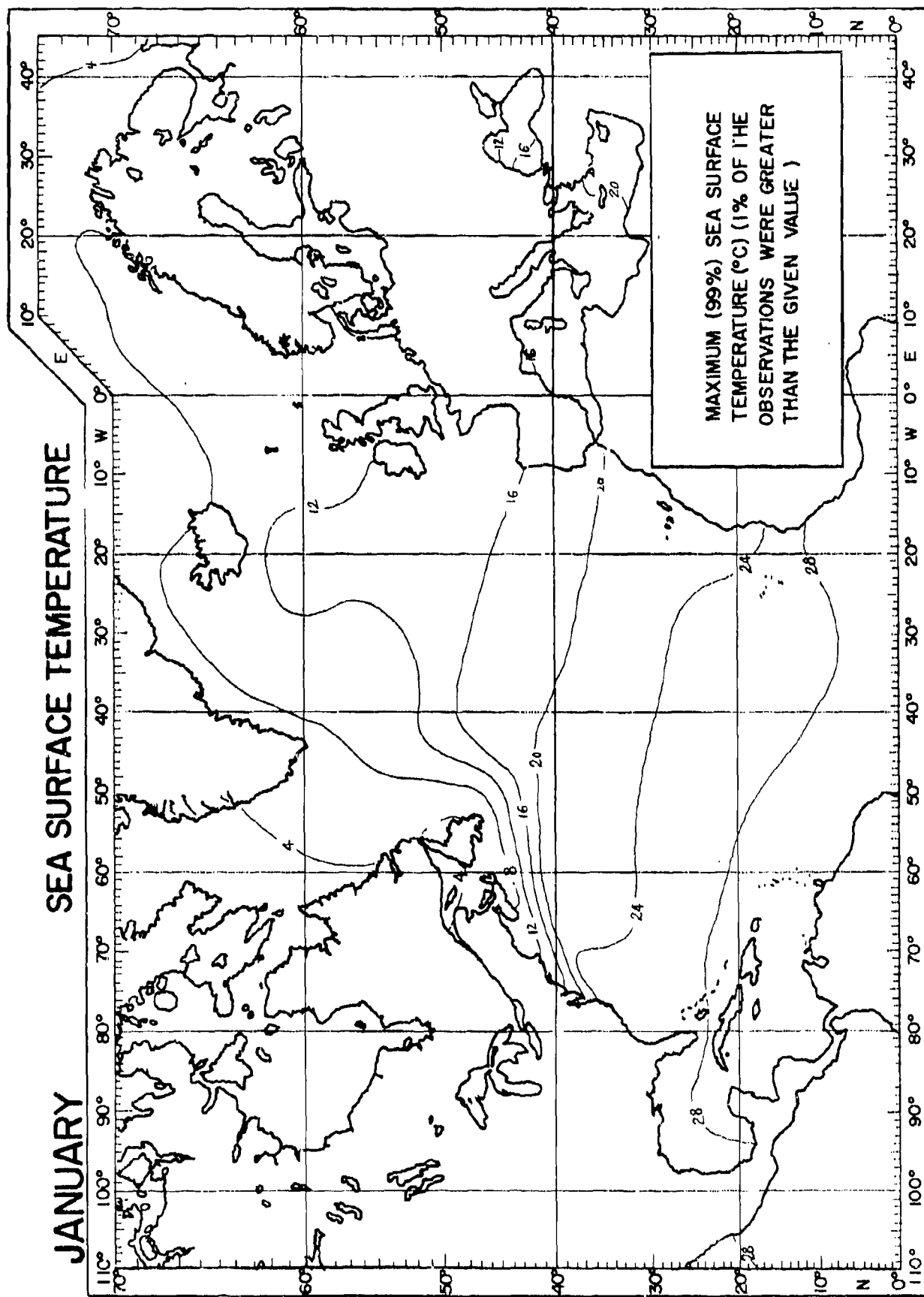
Water Temperature (°C)	Exhaustion or Unconsciousness	Expected Survival Time
< 0	< 15 min	< 15 - 45 min
0 - 5	15 - 30 min	30 - 90 min
5 - 10	30 - 60 min	1 - 3 hrs
10 - 15	1 - 2 hrs	1 - 6 hrs
15 - 20	2 - 7 hrs	2 - 40 hrs
20 - 25	3 - 12 hrs	3 - Indef hrs
> 25	Indef	Indef

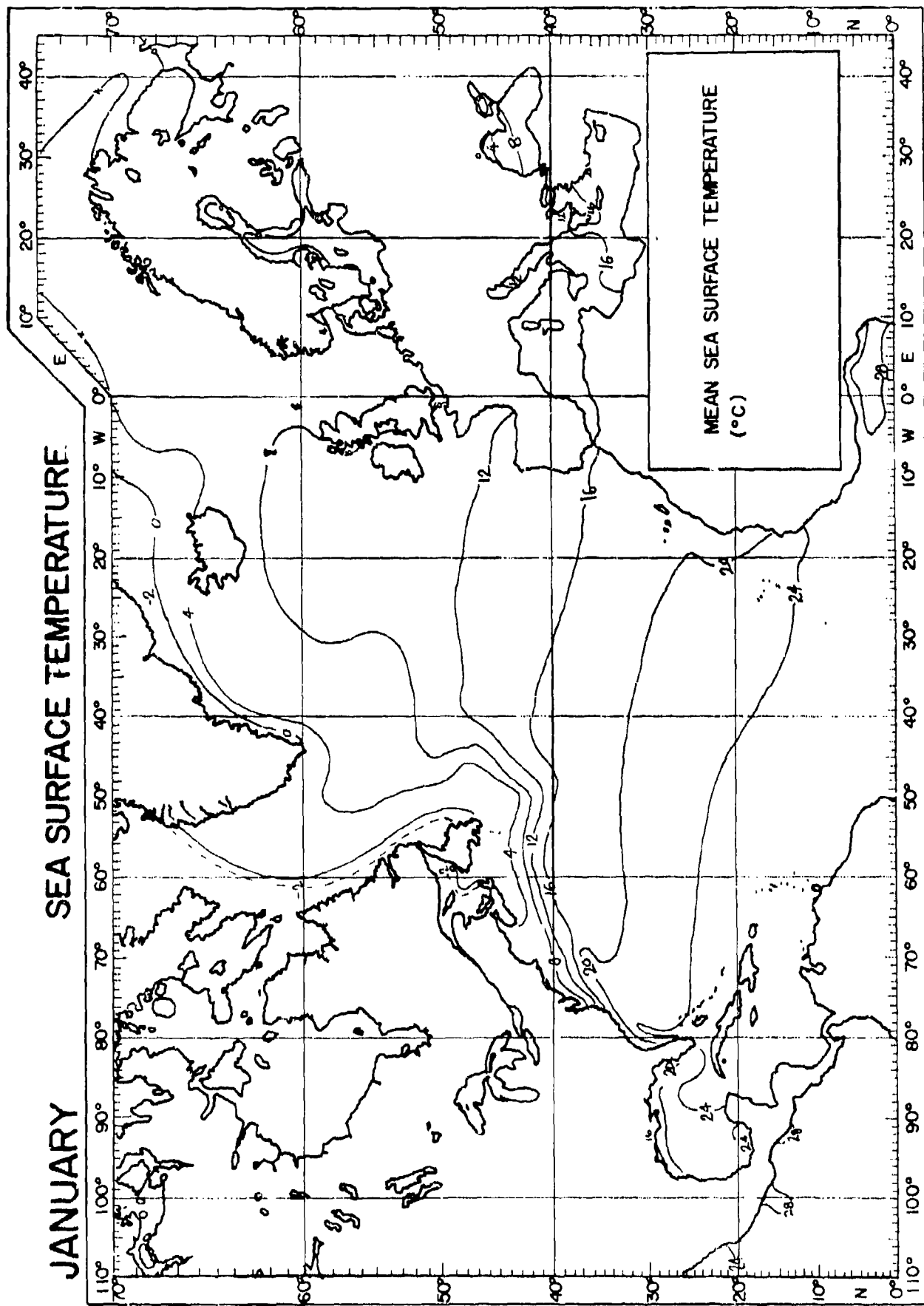
Water temperature can be used to estimate the approximate time a person in ordinary clothes and life preserver may be expected to survive in the water. (Source: US Navy Marine Climatic Atlas of the World : Vol. III, Indian Ocean)

Temperature Conversions (°C to °F)

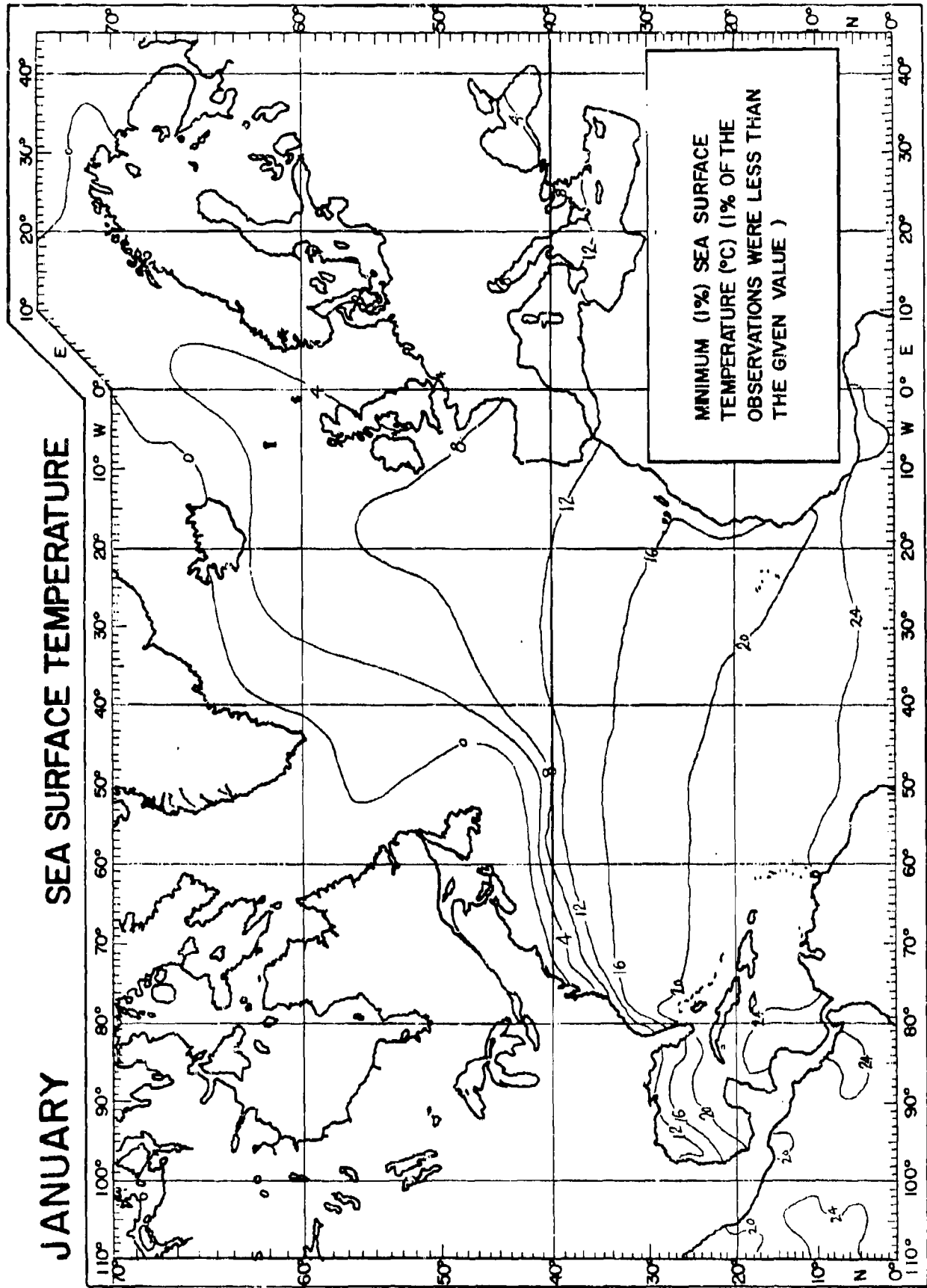
°C	°F	°C	°F	°C	°F	°C	°F
- 12	10.4	- 1	30.2	10	50.0	21	69.8
- 11	12.2	0	32.0	11	51.8	22	71.6
- 10	14.0	1	33.8	12	53.6	23	73.4
- 9	15.8	2	35.6	13	55.4	24	75.2
- 8	17.6	3	37.4	14	57.2	25	77.0
- 7	19.4	4	39.2	15	59.0	26	78.8
- 6	21.2	5	41.0	16	60.8	27	80.6
- 5	23.0	6	42.8	17	62.6	28	82.4
- 4	24.8	7	44.6	18	64.4	29	84.2
- 3	26.6	8	46.4	19	66.2	30	86.0
- 2	28.4	9	48.2	20	68.0	31	87.8

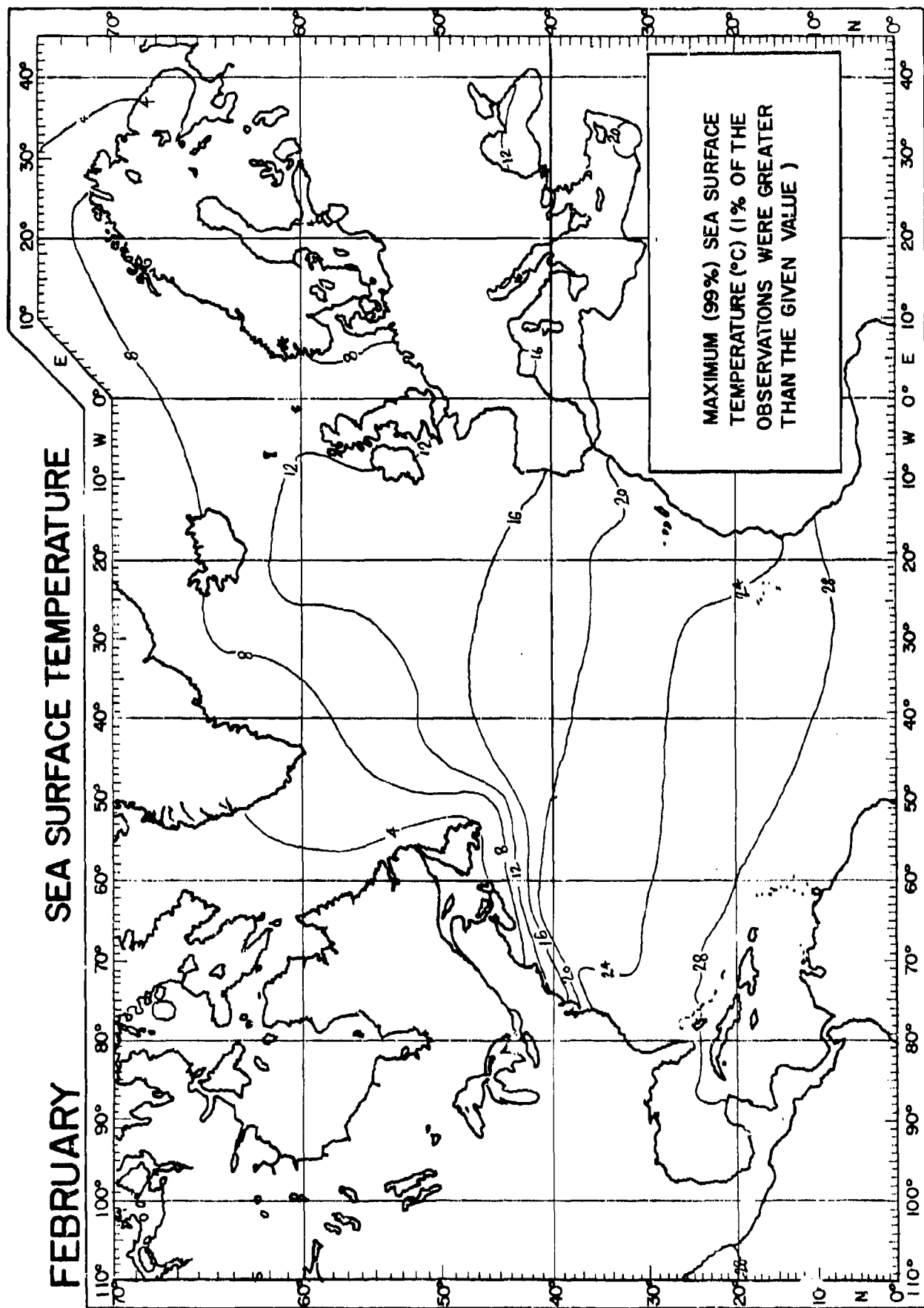
NORTH ATLANTIC
TEMPERATURE CHARTS

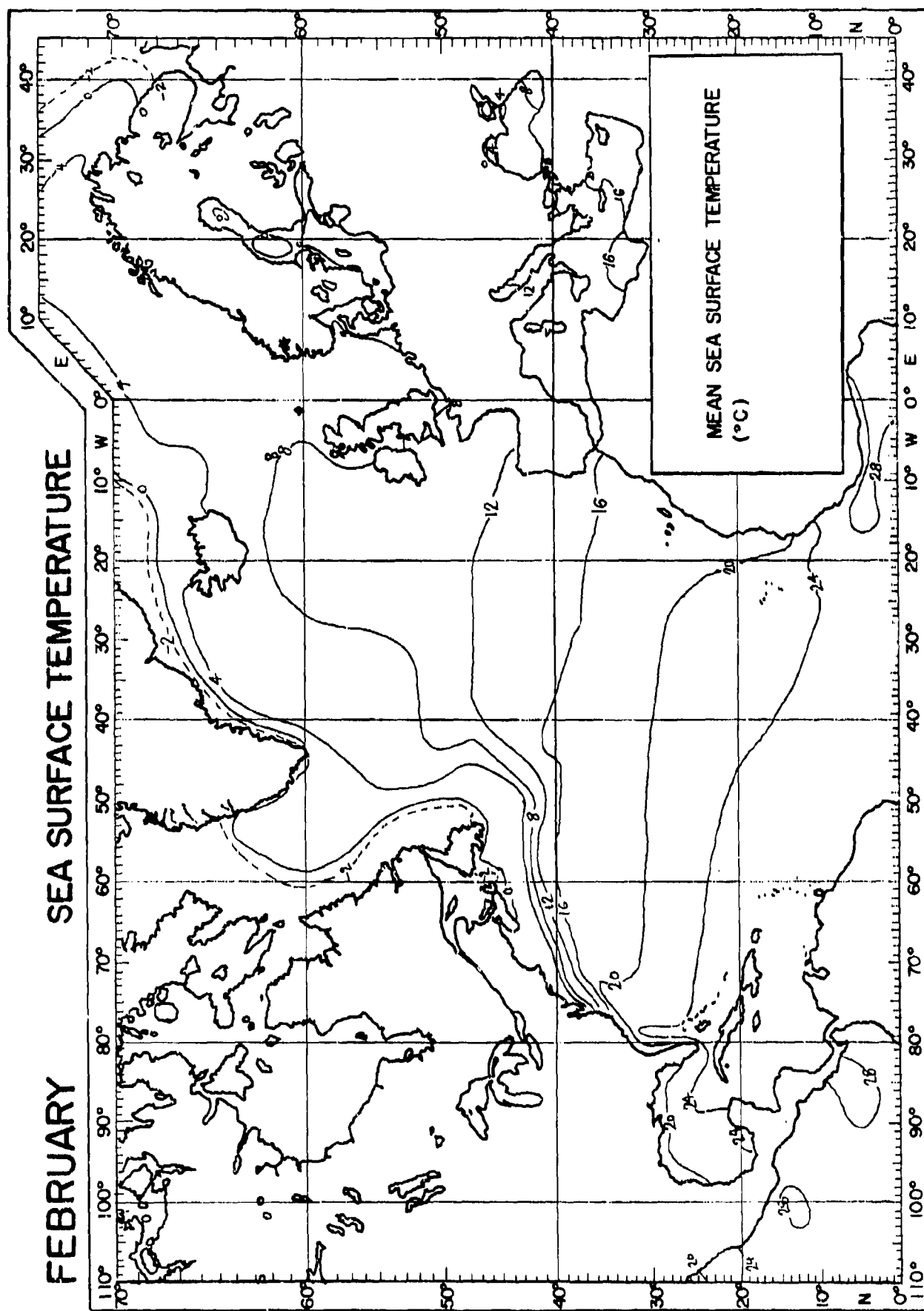




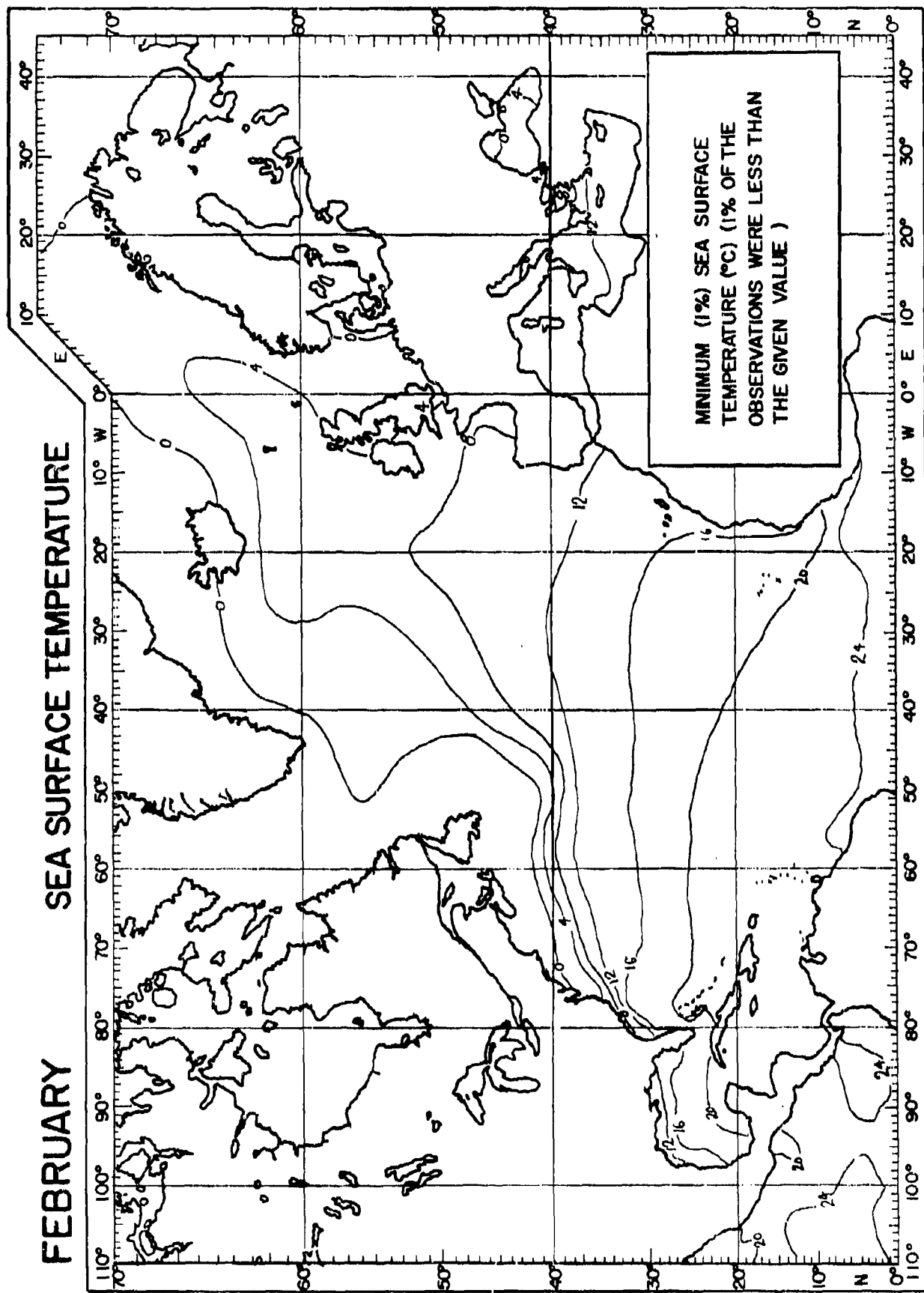
JANUARY SEA SURFACE TEMPERATURE

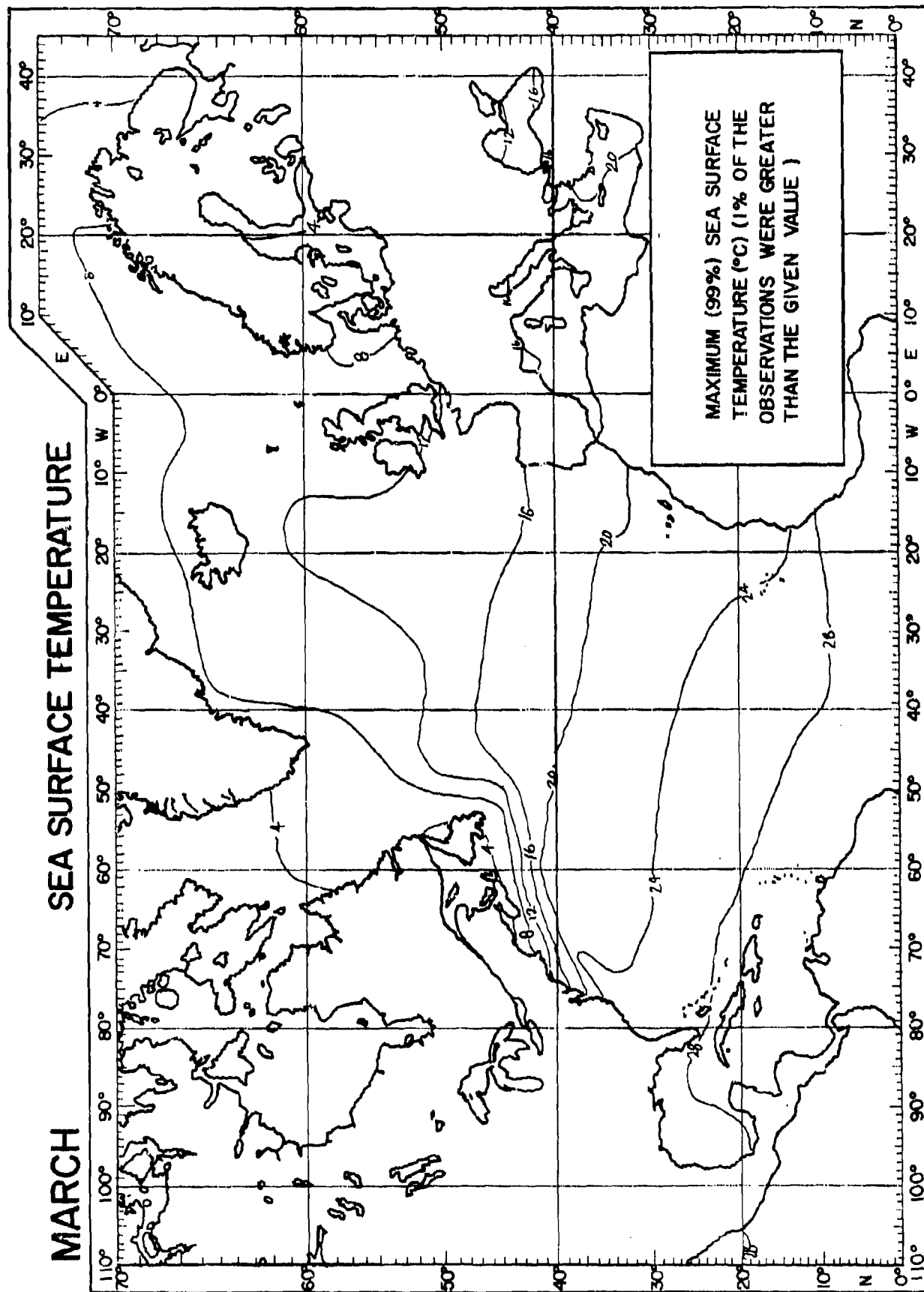


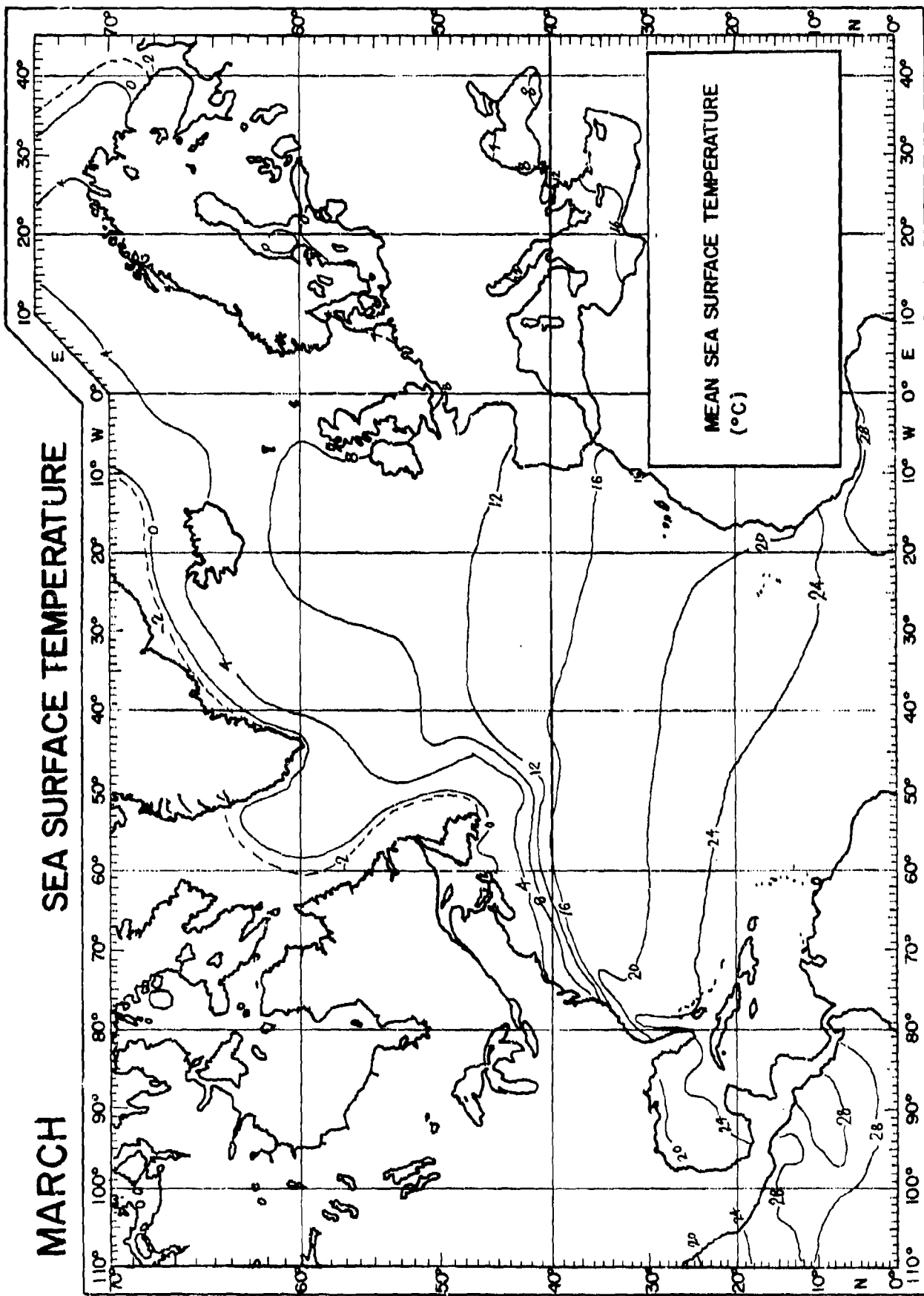


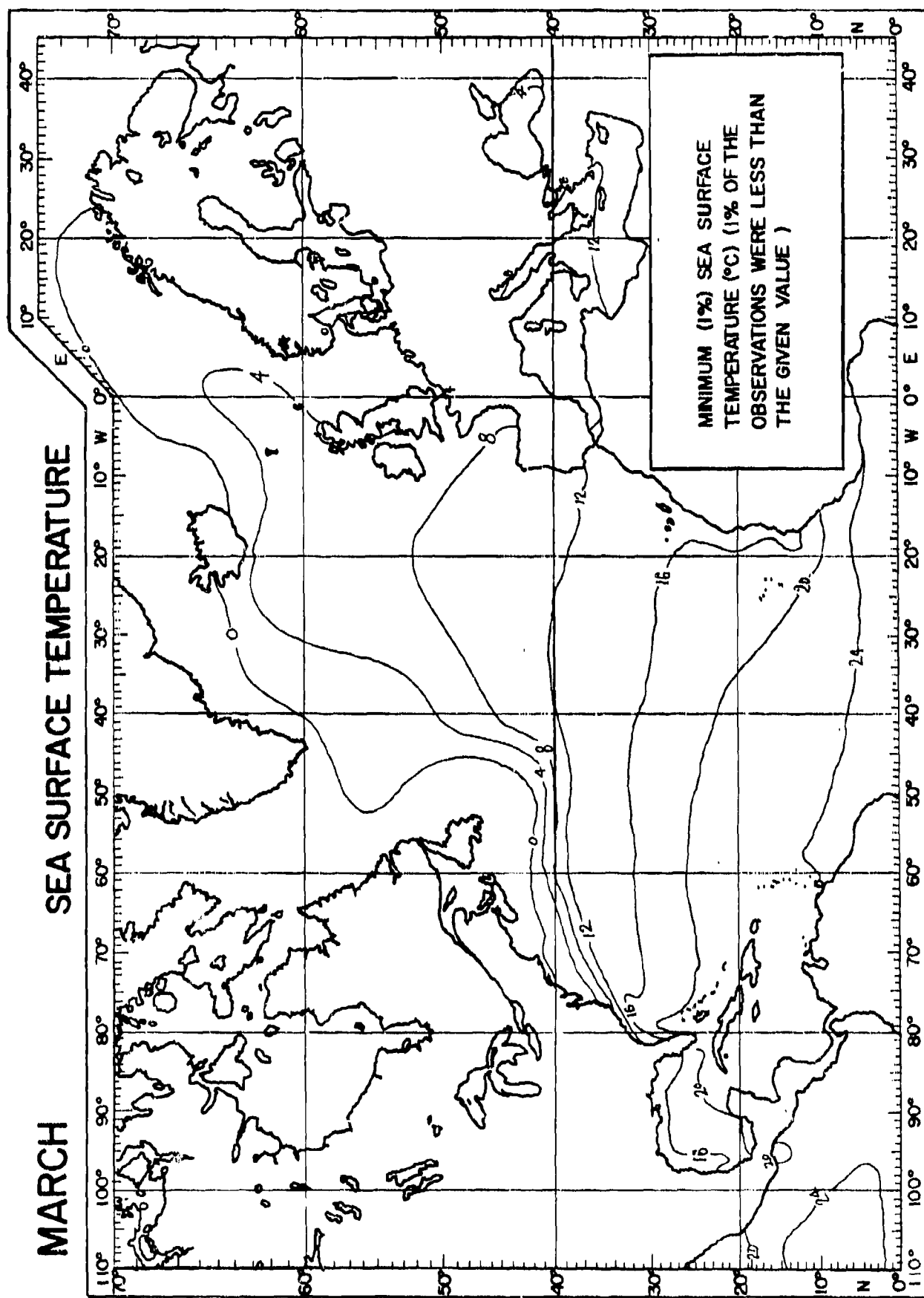


FEBRUARY SEA SURFACE TEMPERATURE



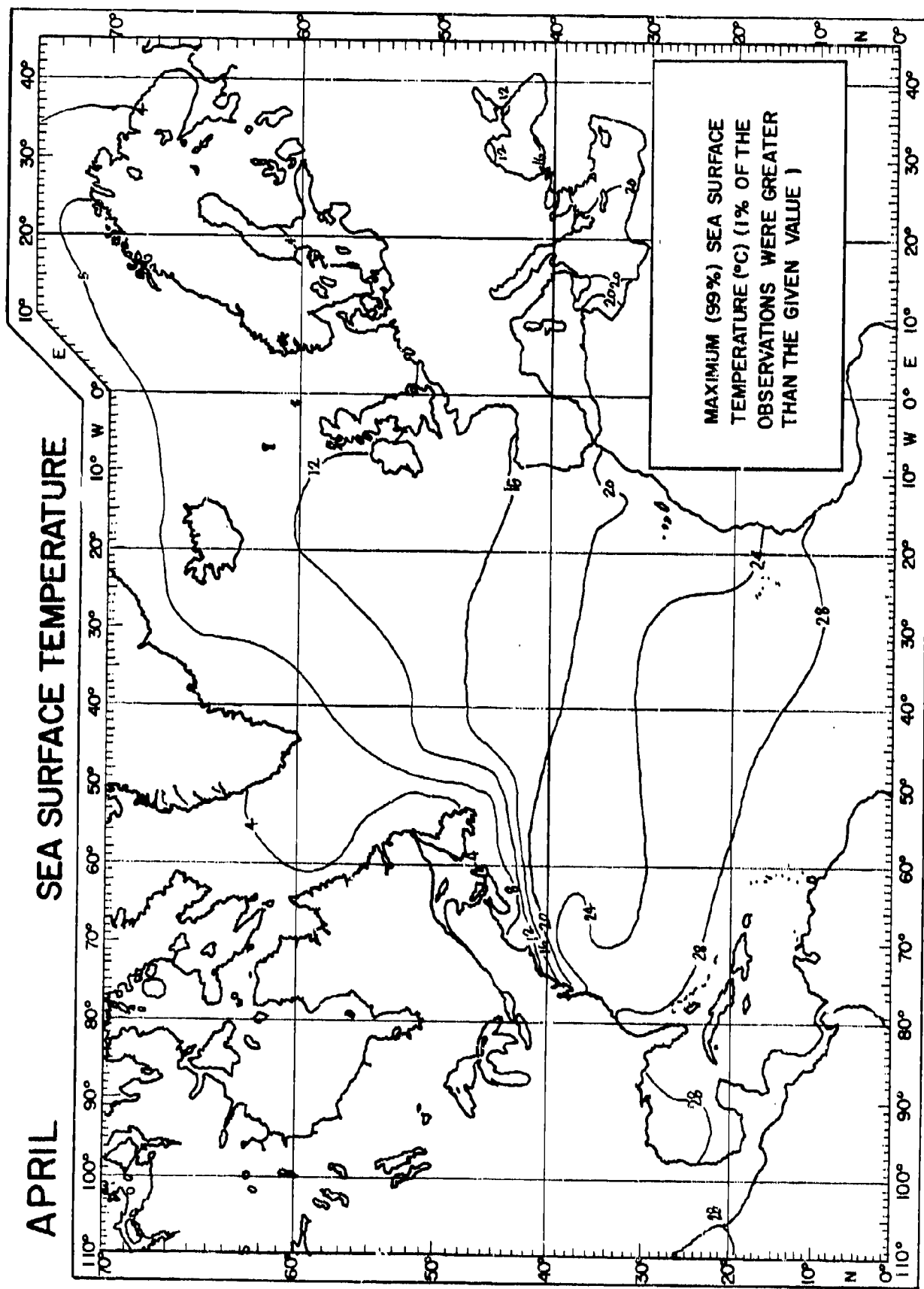


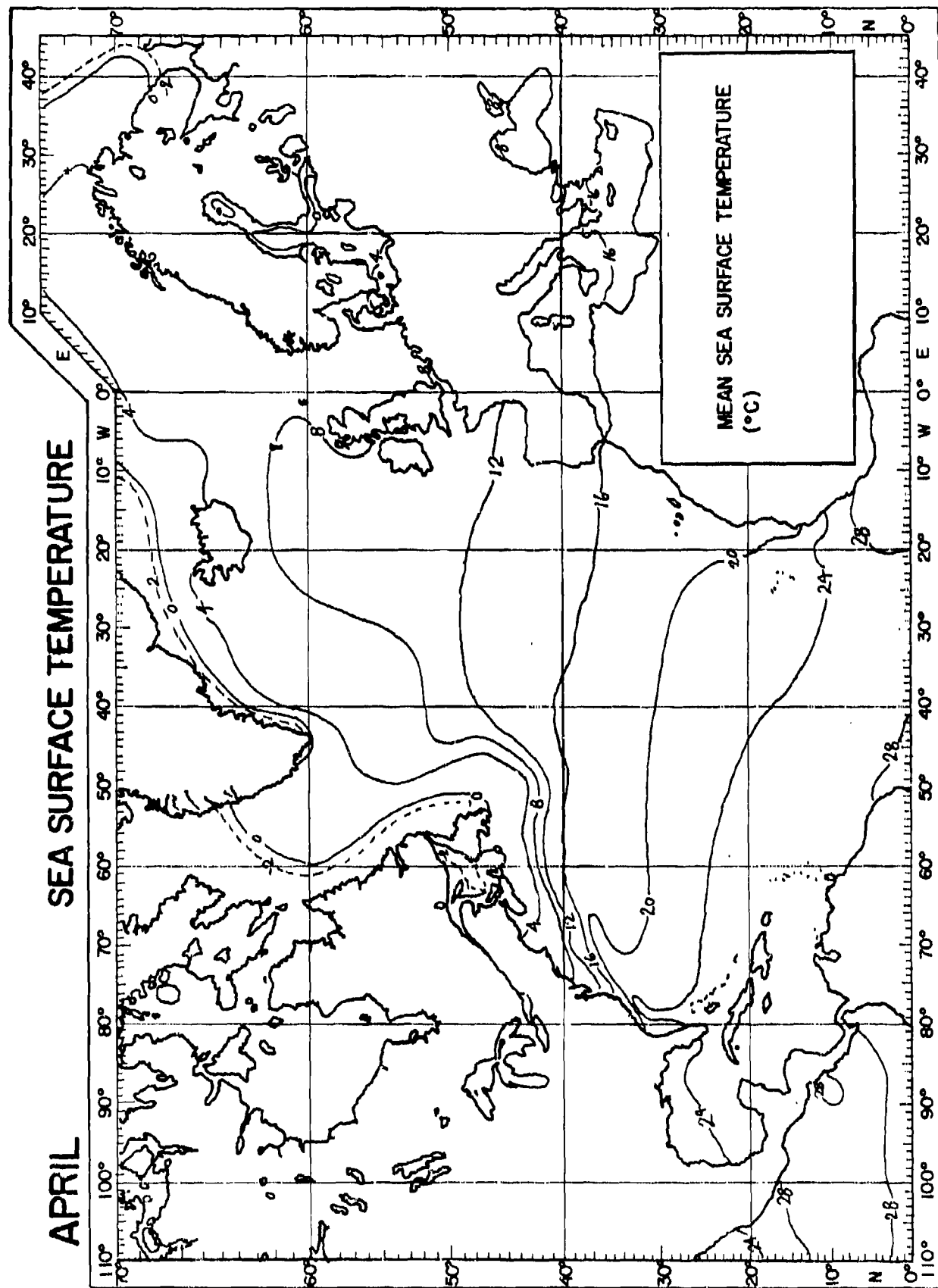




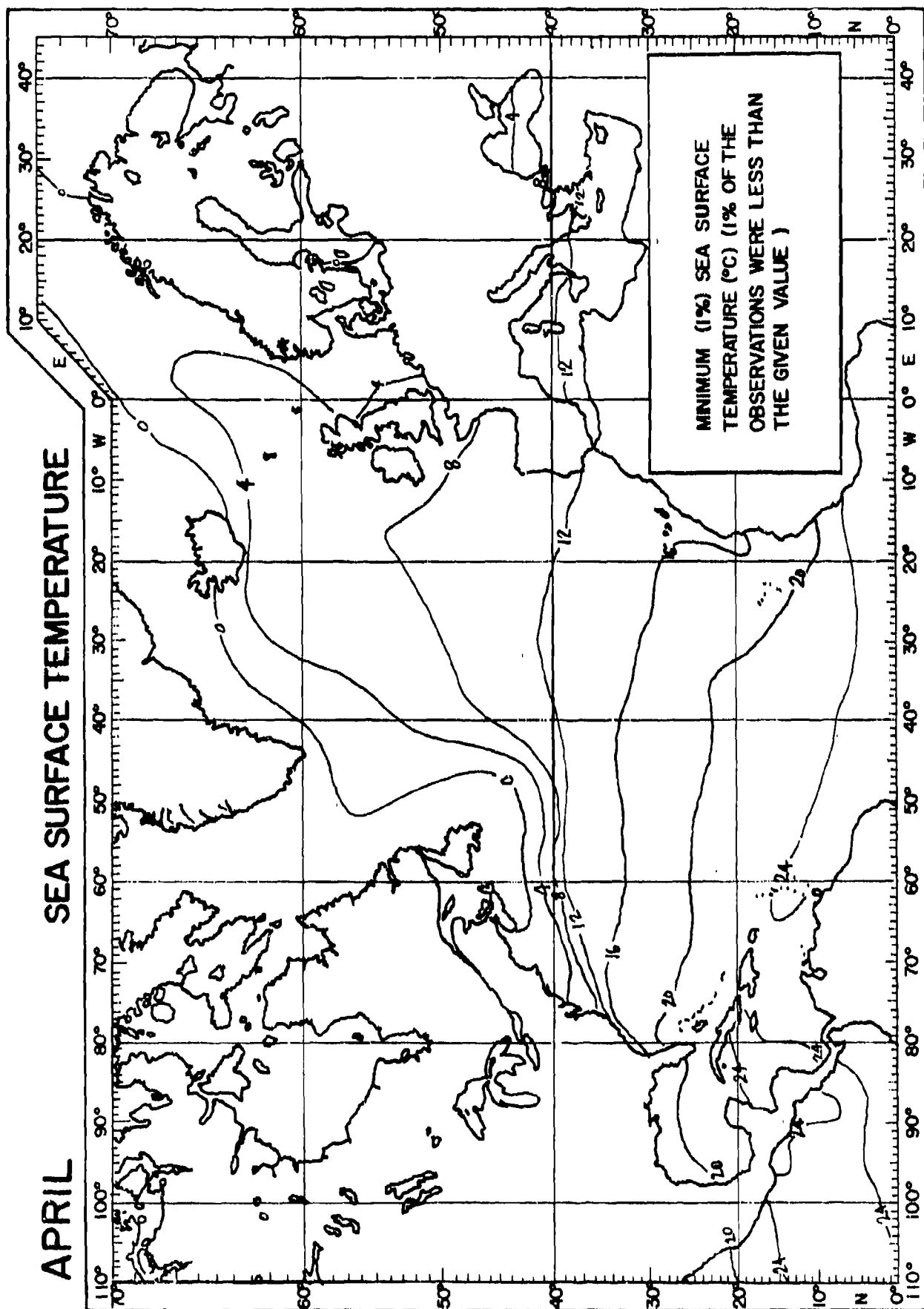
APRIL

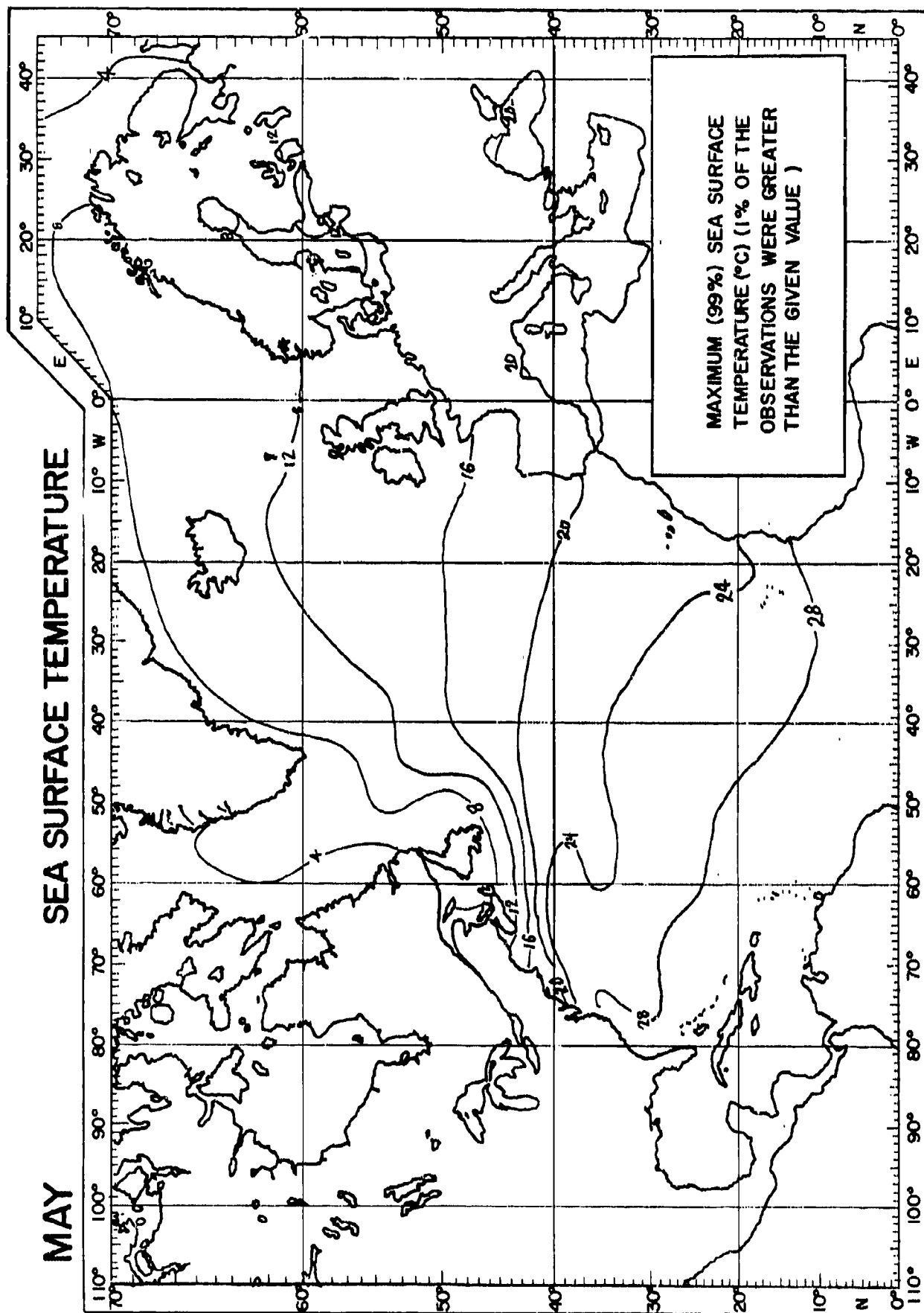
SEA SURFACE TEMPERATURE

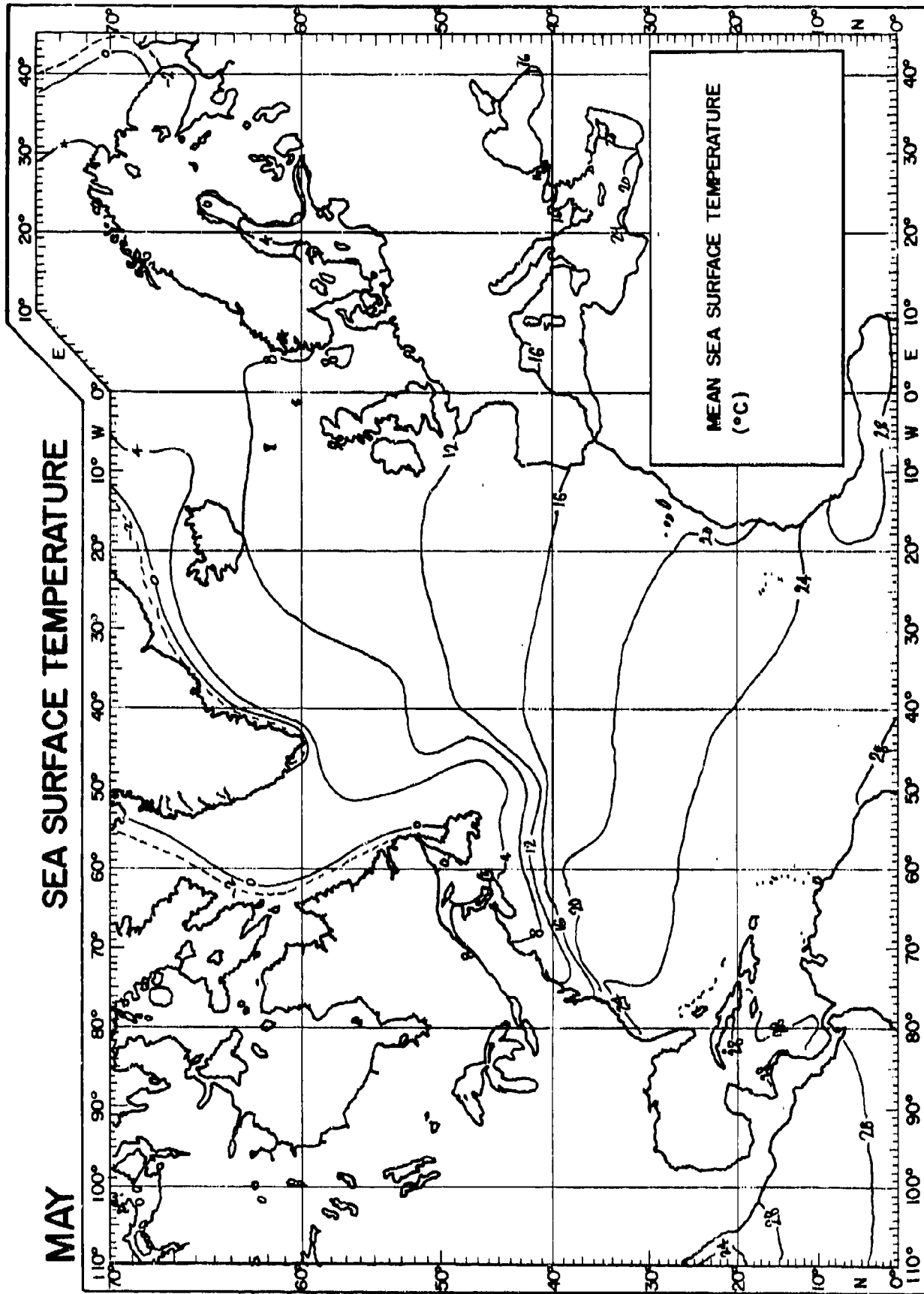


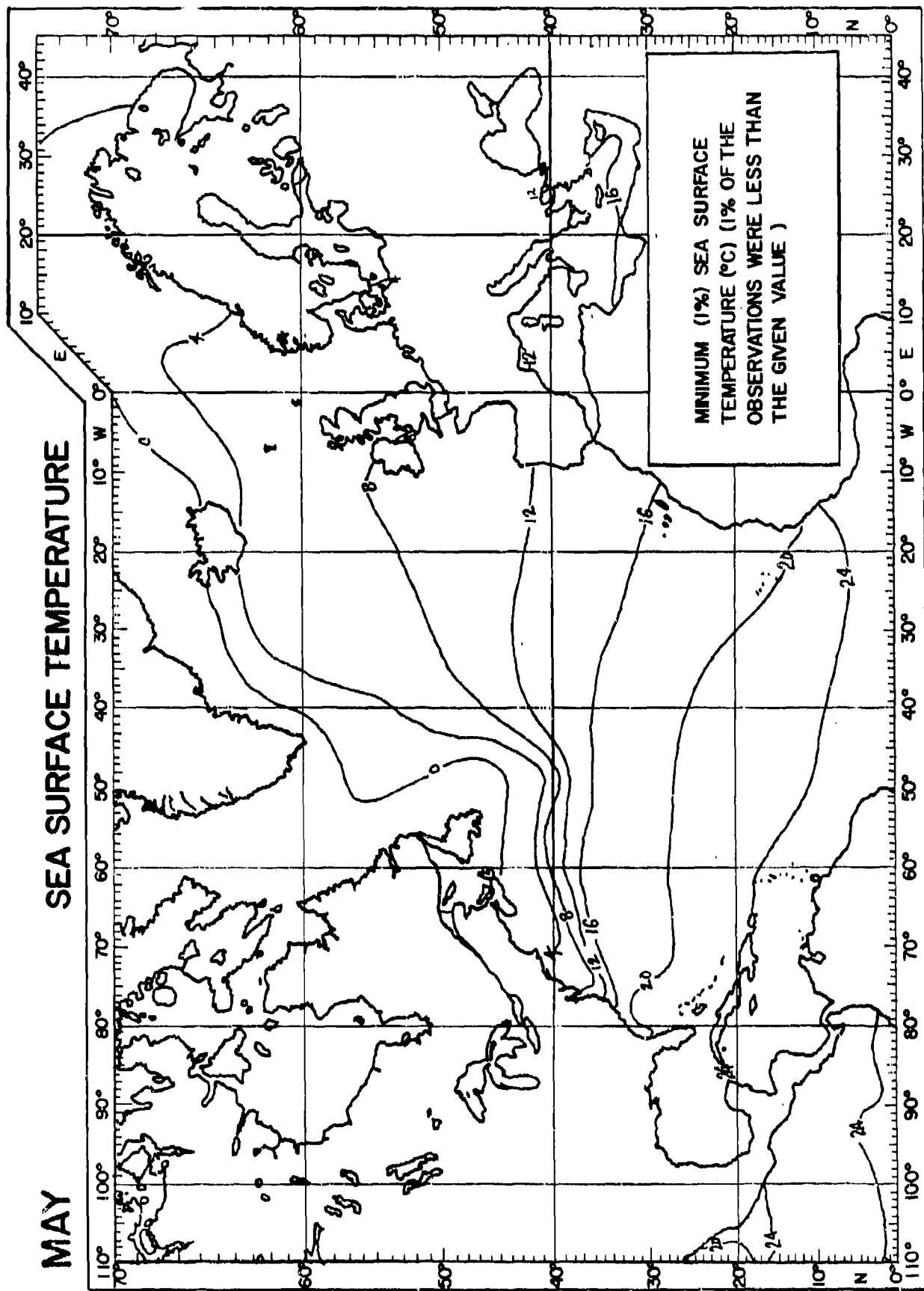


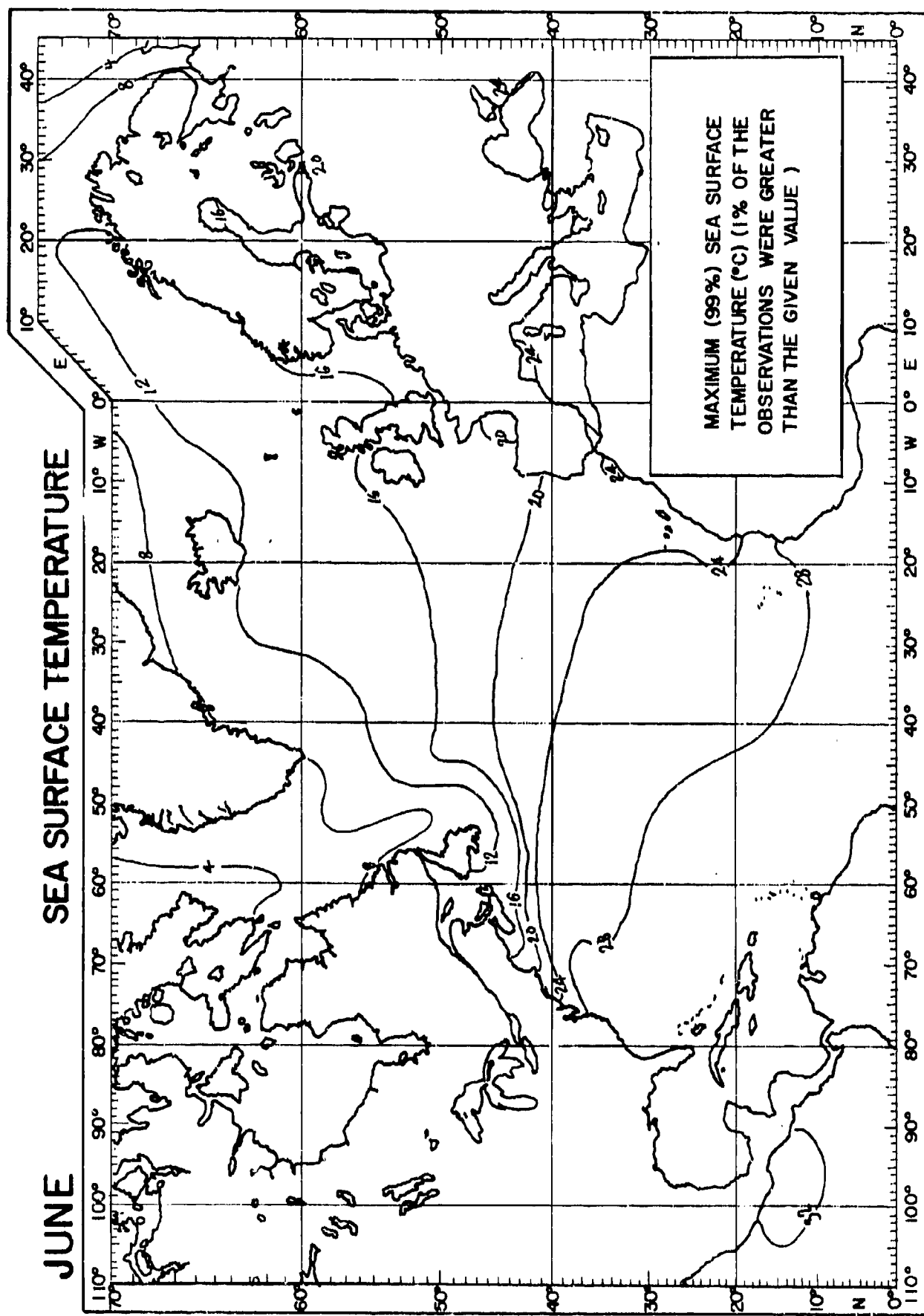
APRIL SEA SURFACE TEMPERATURE

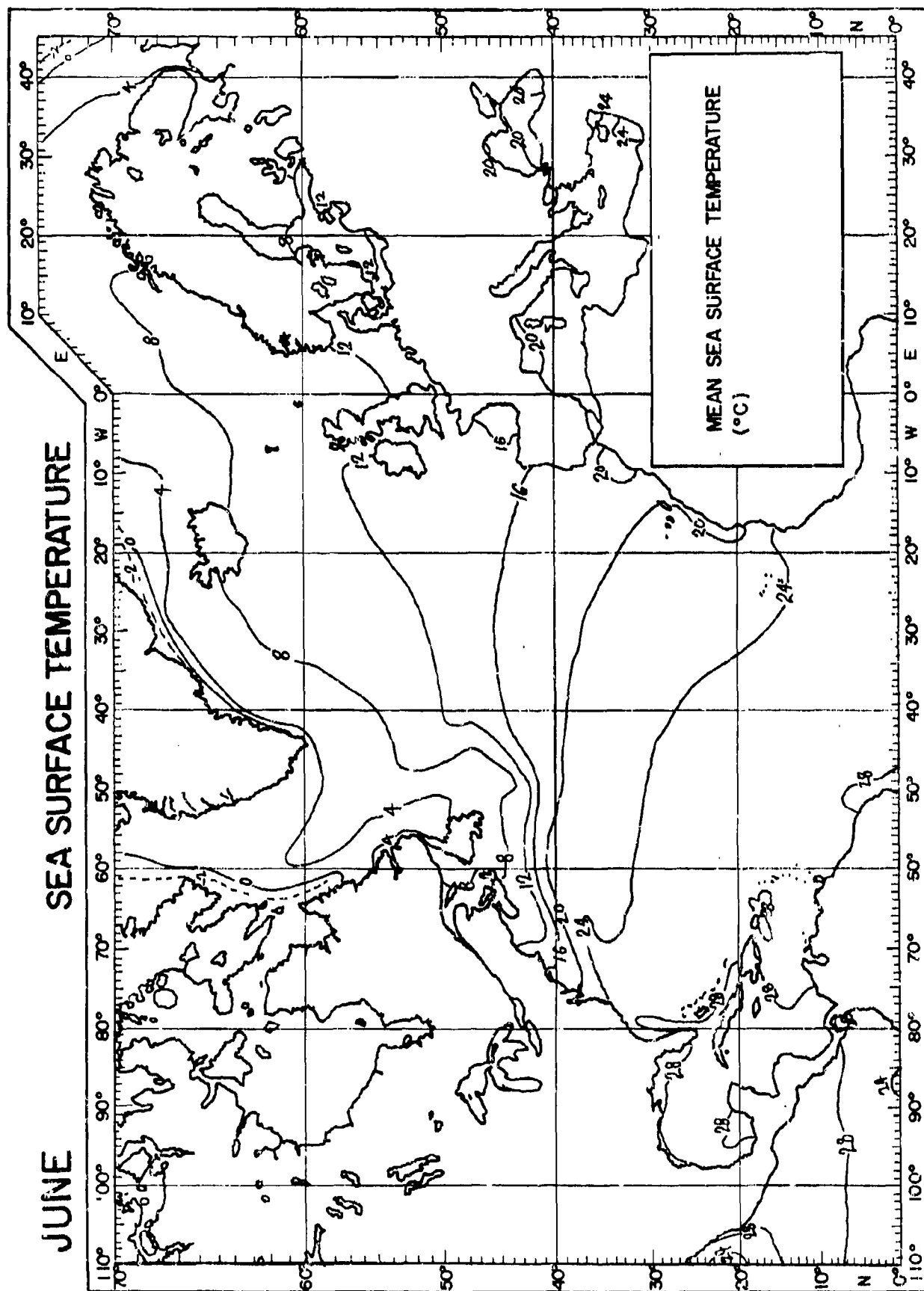


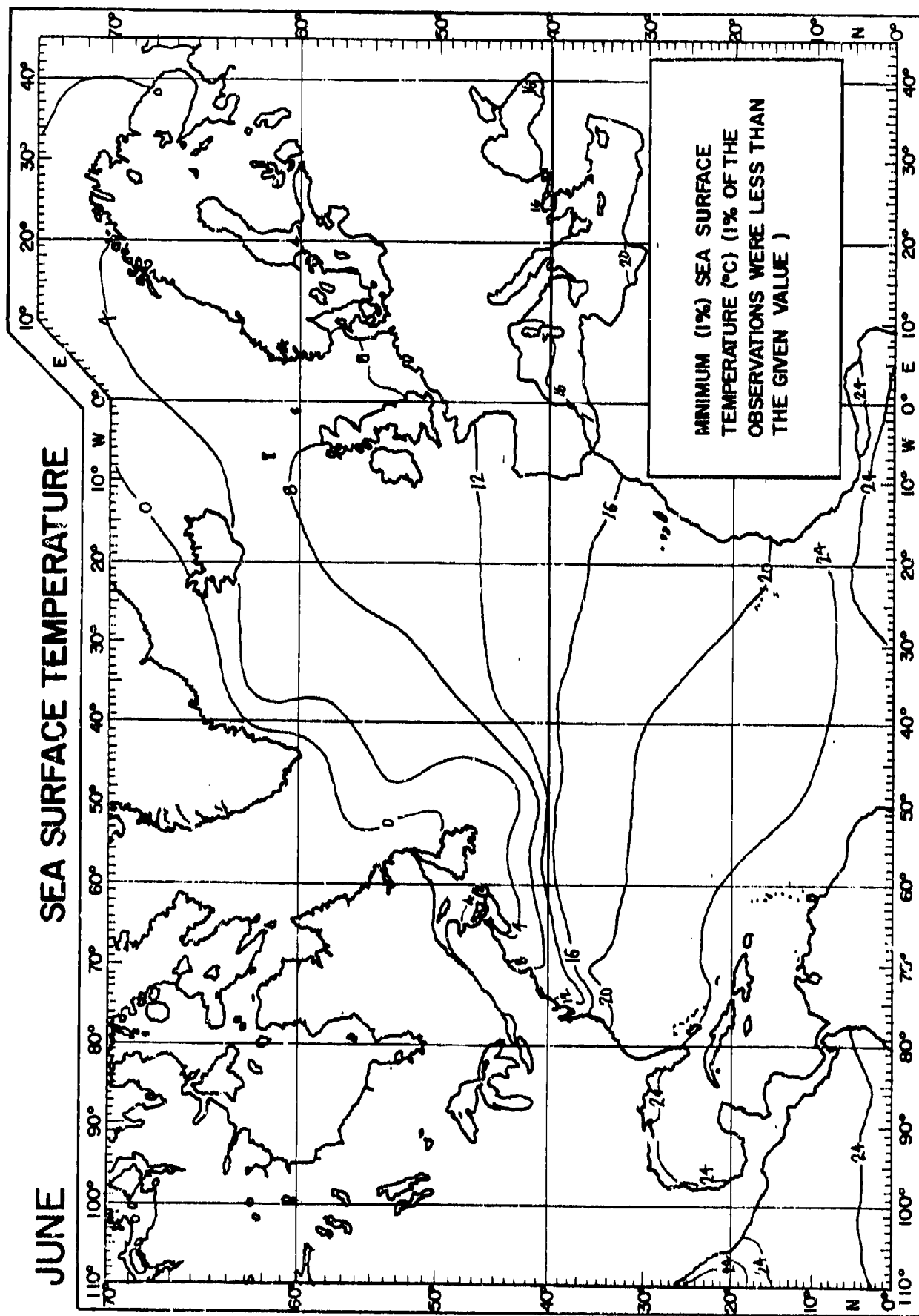


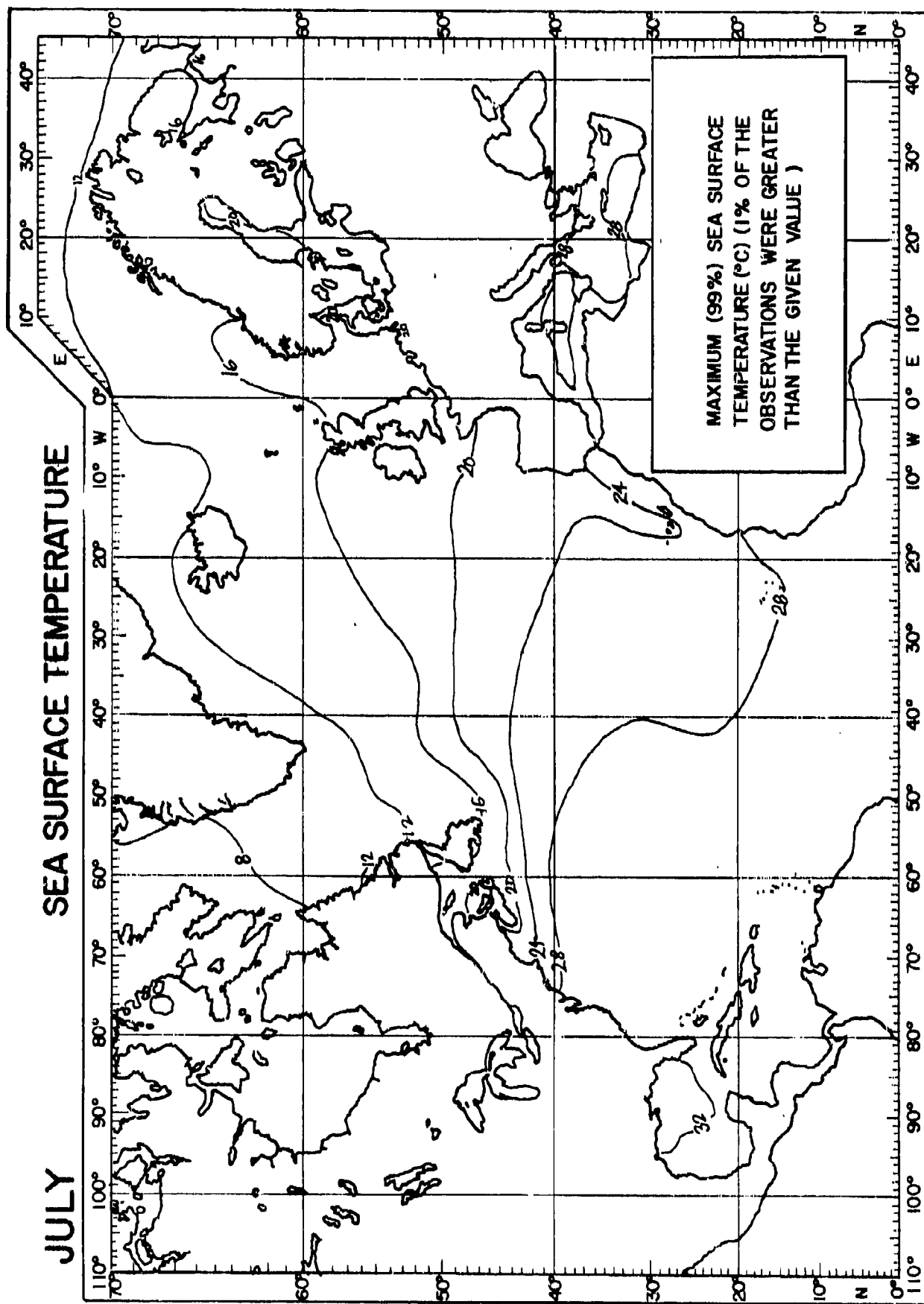






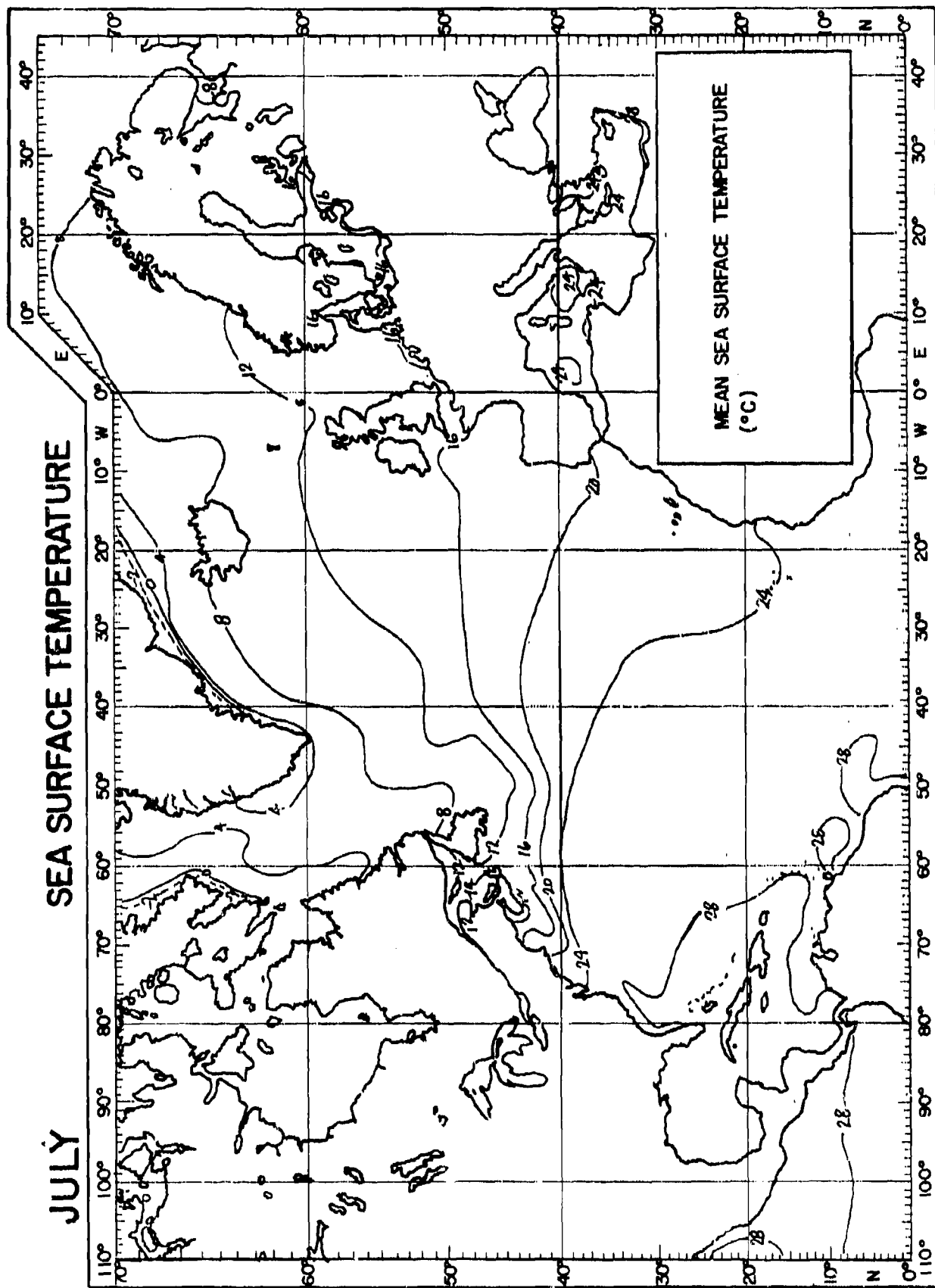


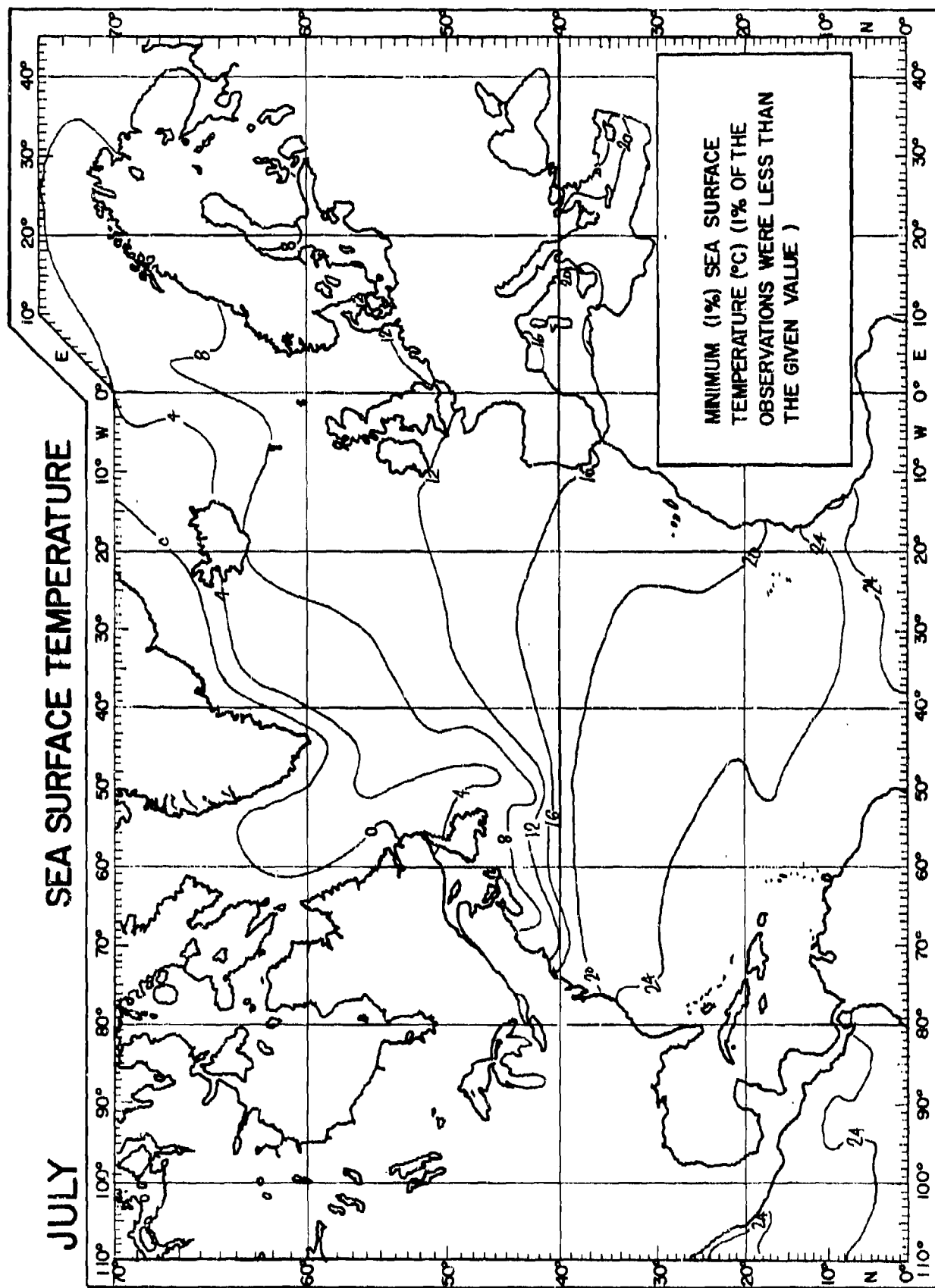


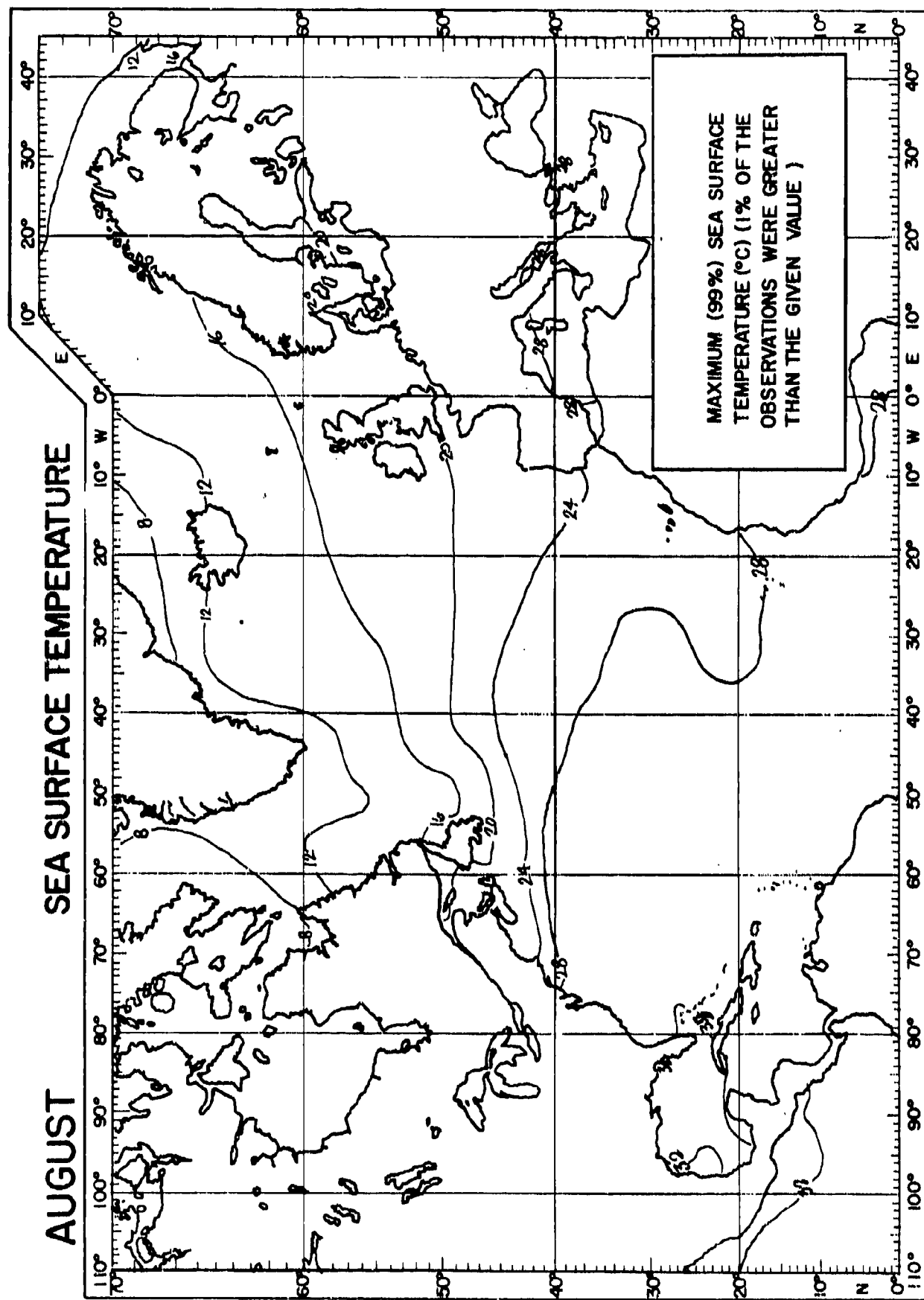


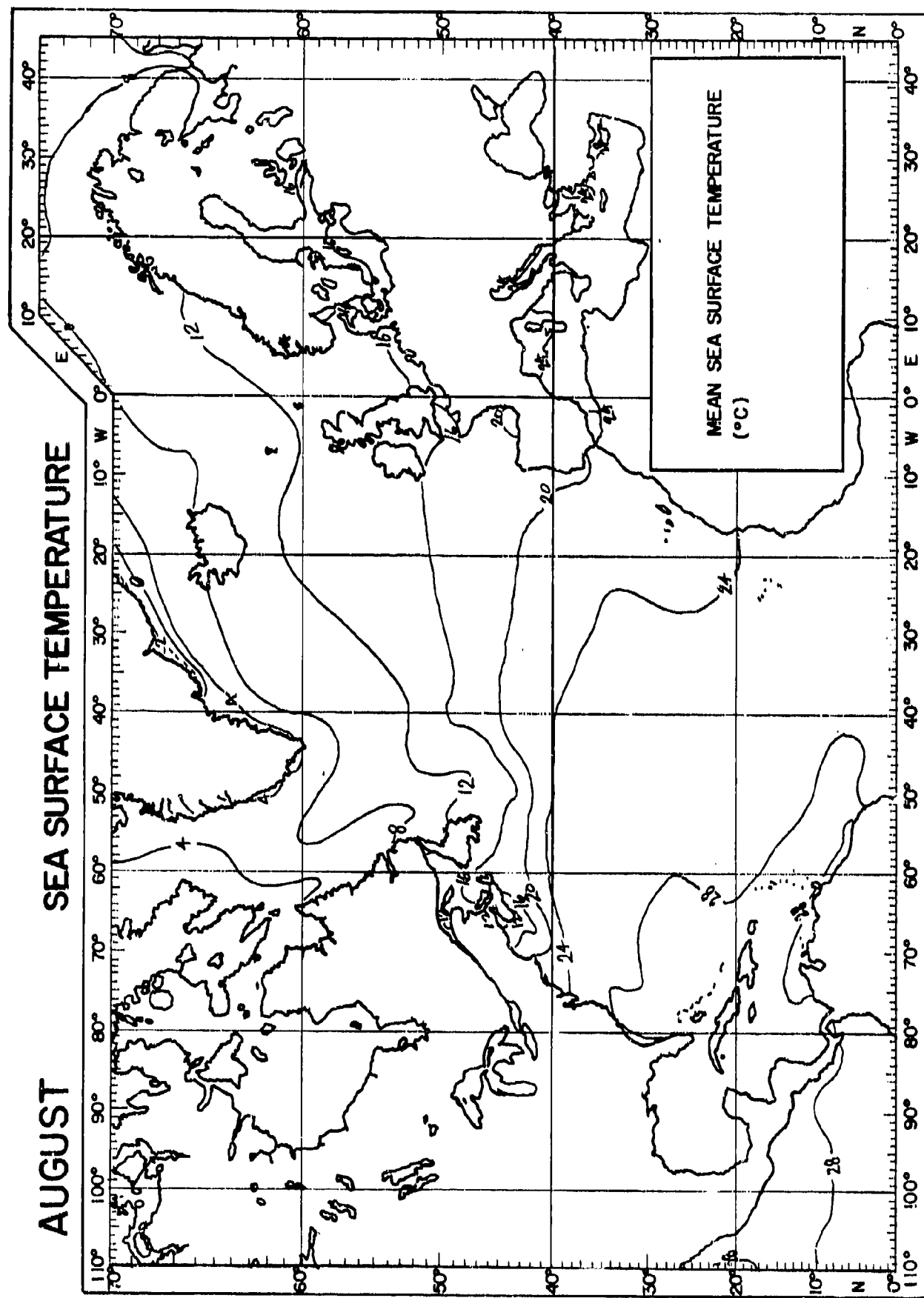
SEA SURFACE TEMPERATURE

JULY



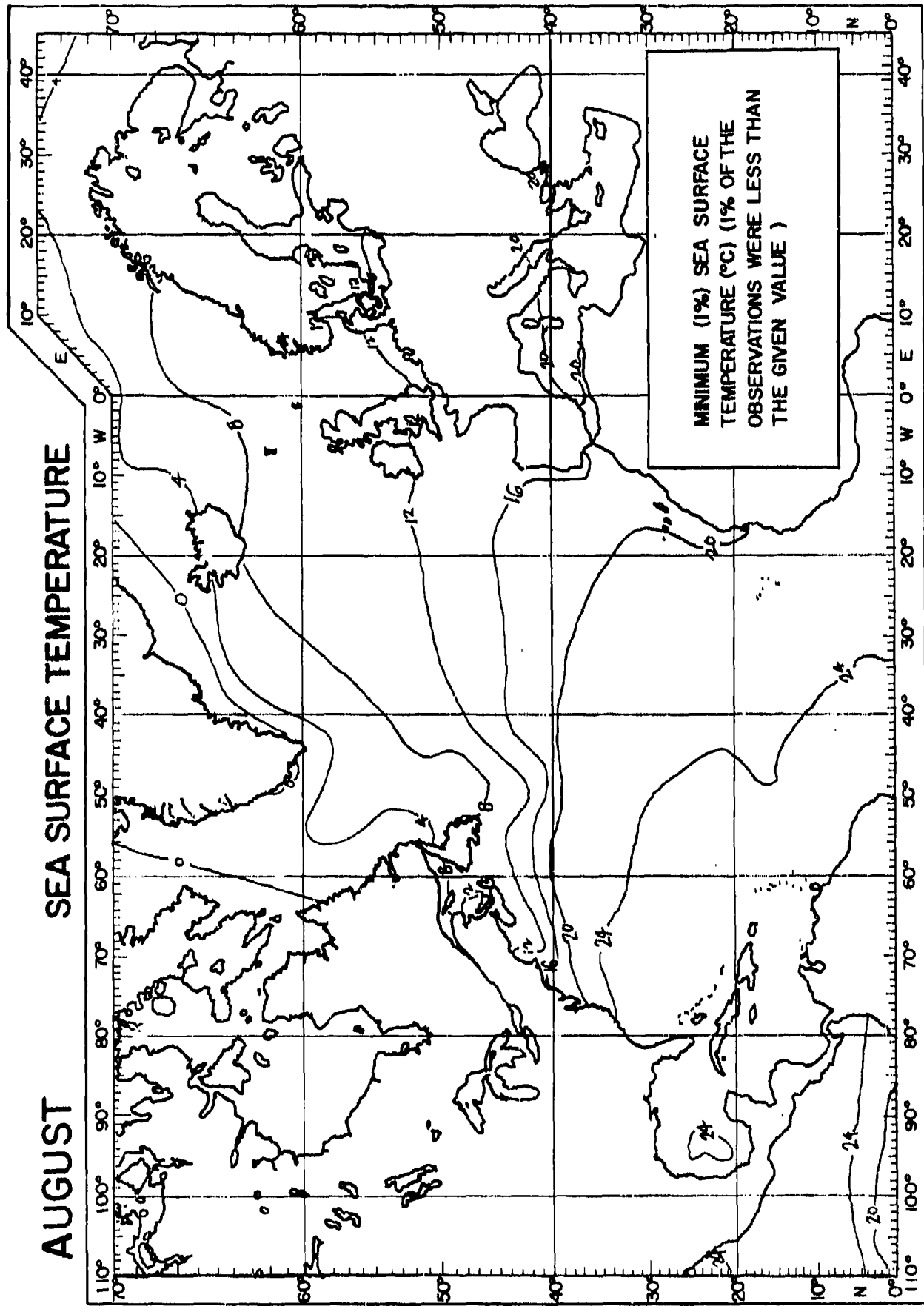


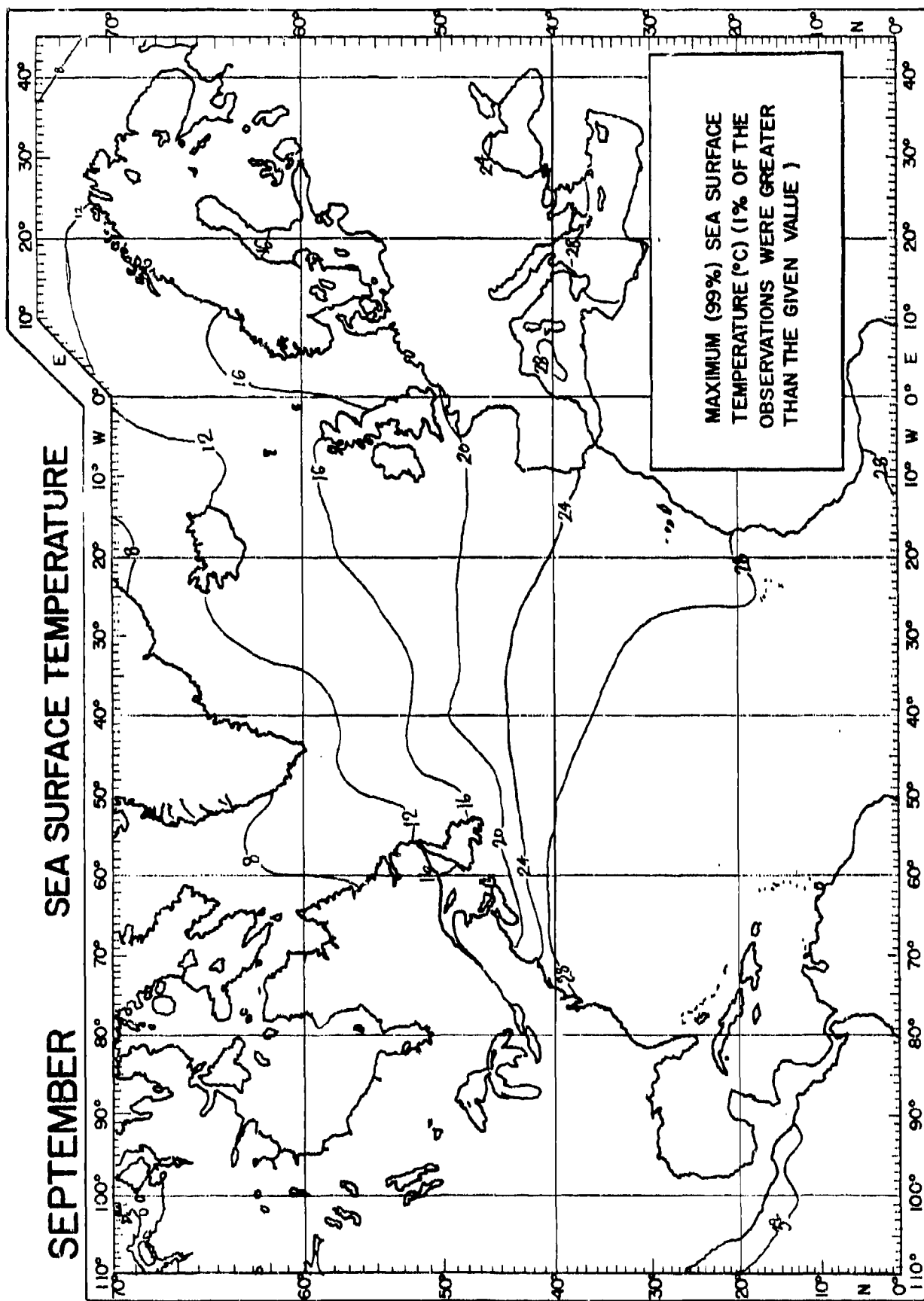




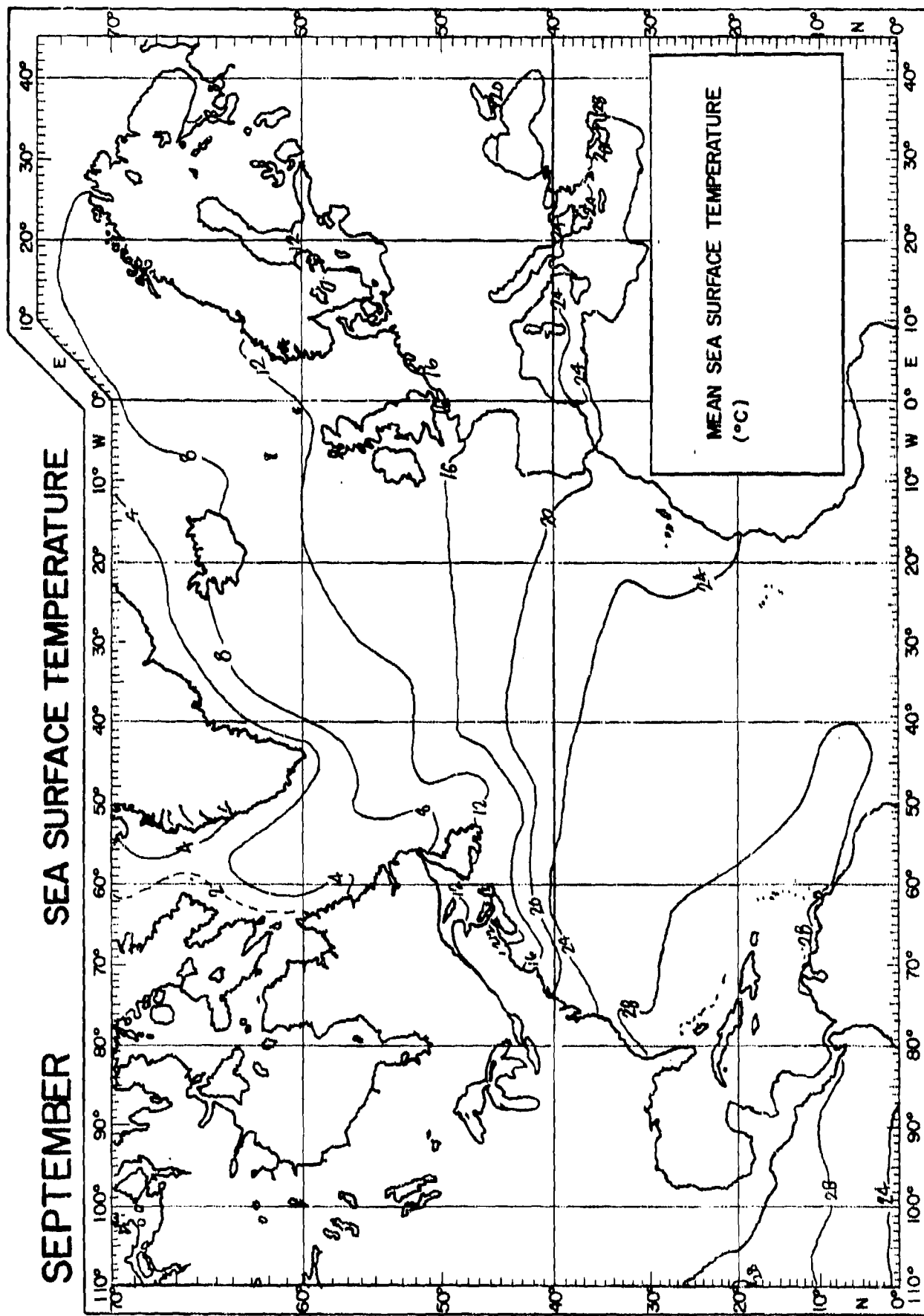
AUGUST

SEA SURFACE TEMPERATURE



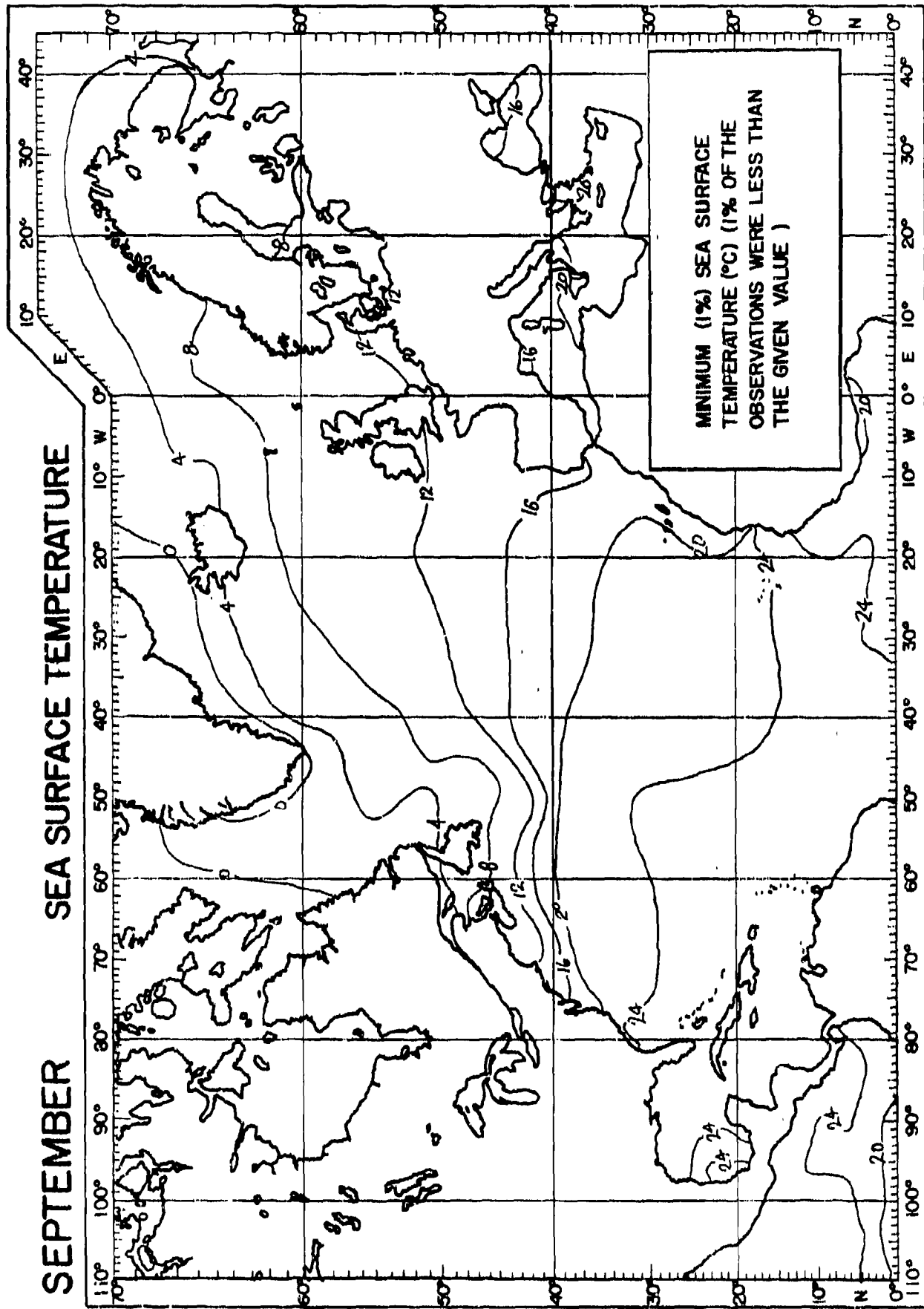


SEPTEMBER SEA SURFACE TEMPERATURE

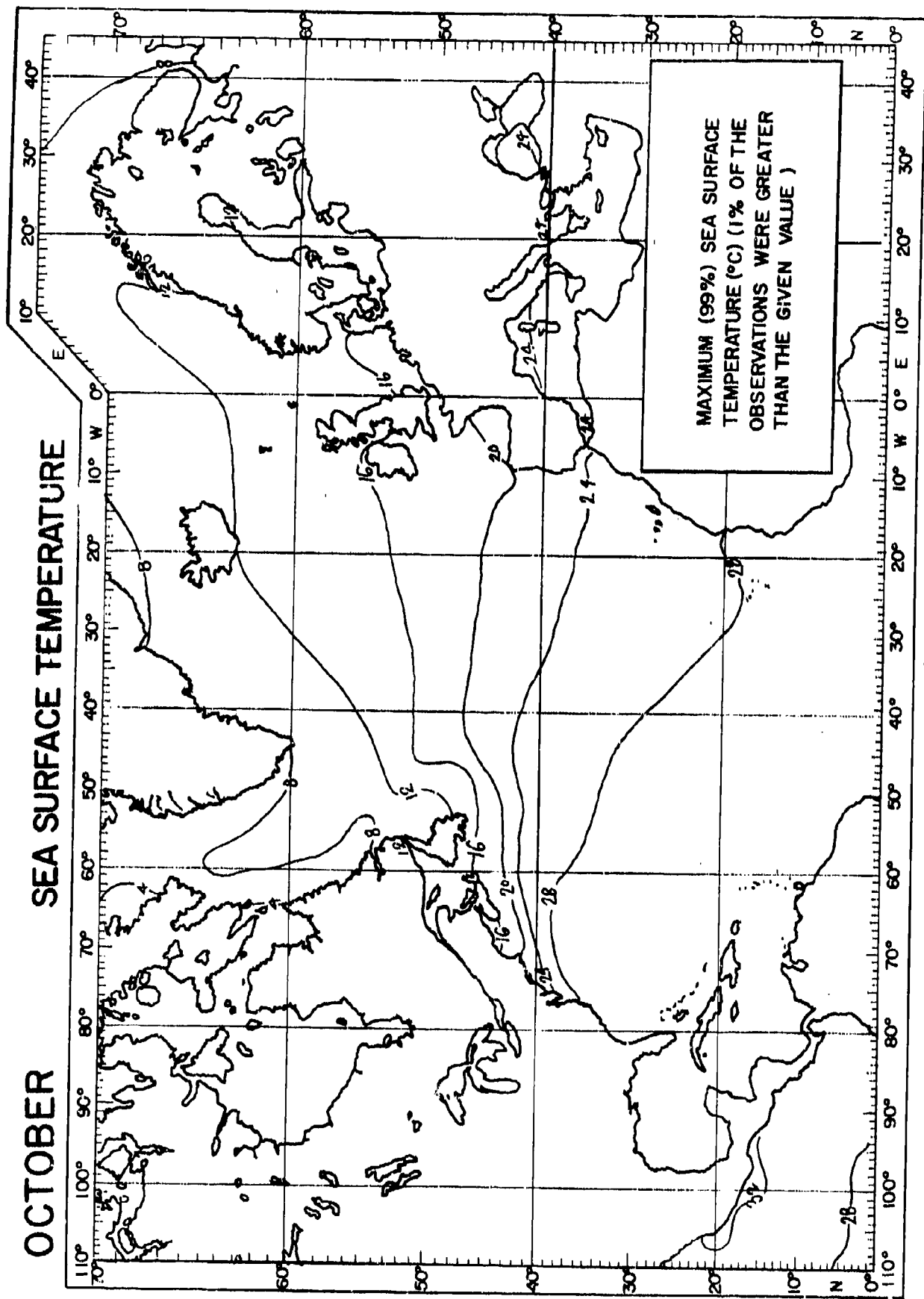


SEPTEMBER

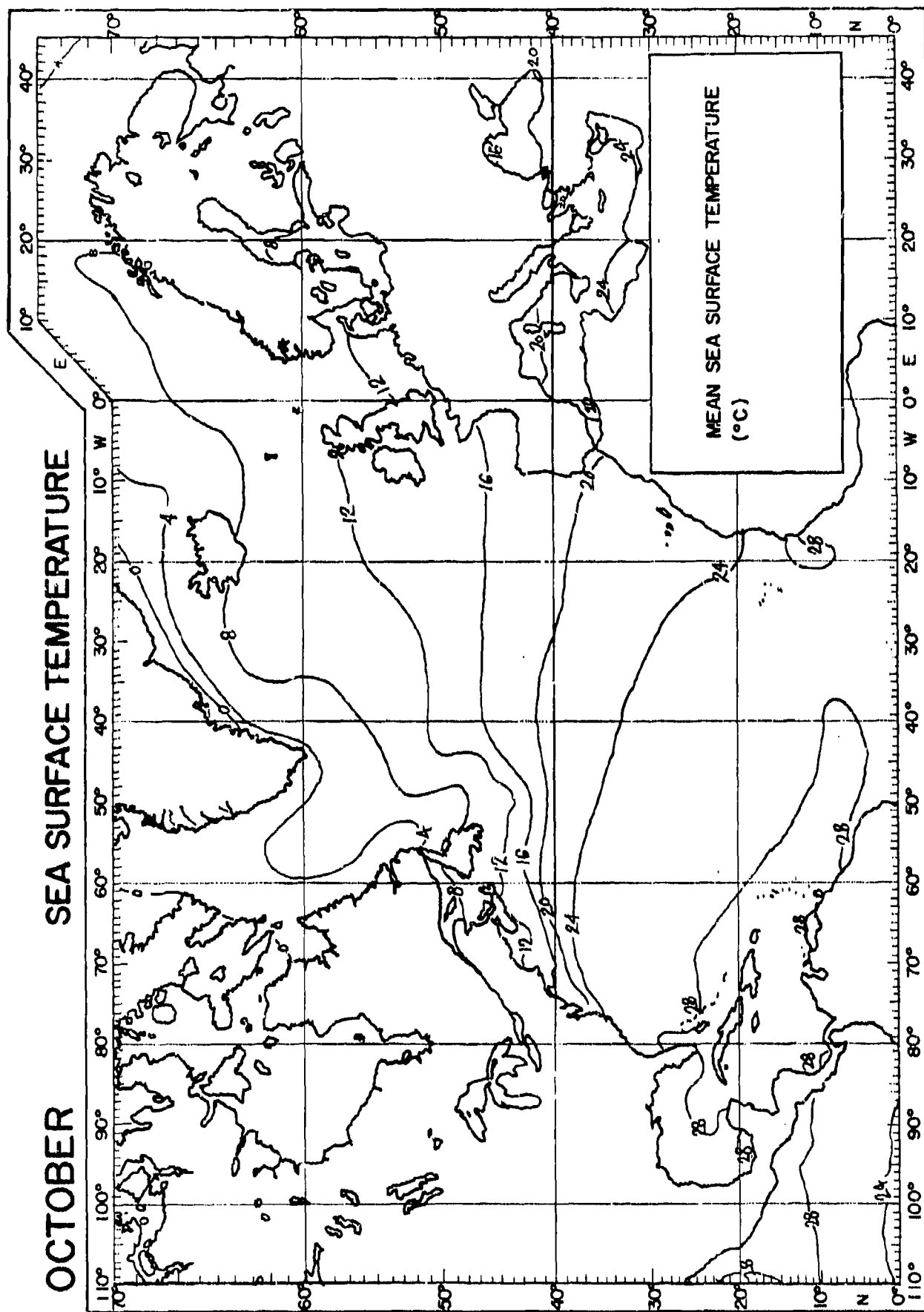
SEA SURFACE TEMPERATURE



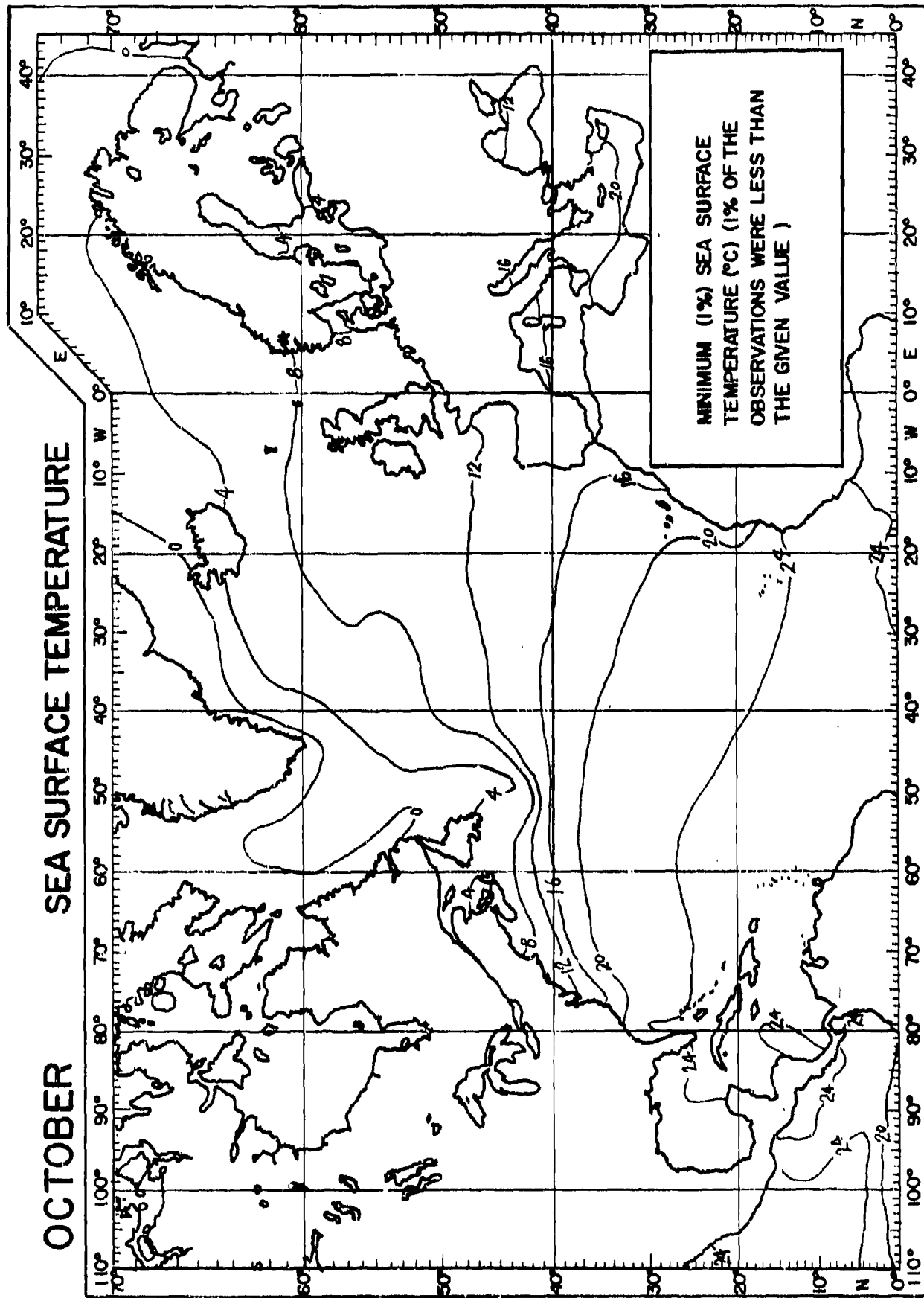
OCTOBER SEA SURFACE TEMPERATURE

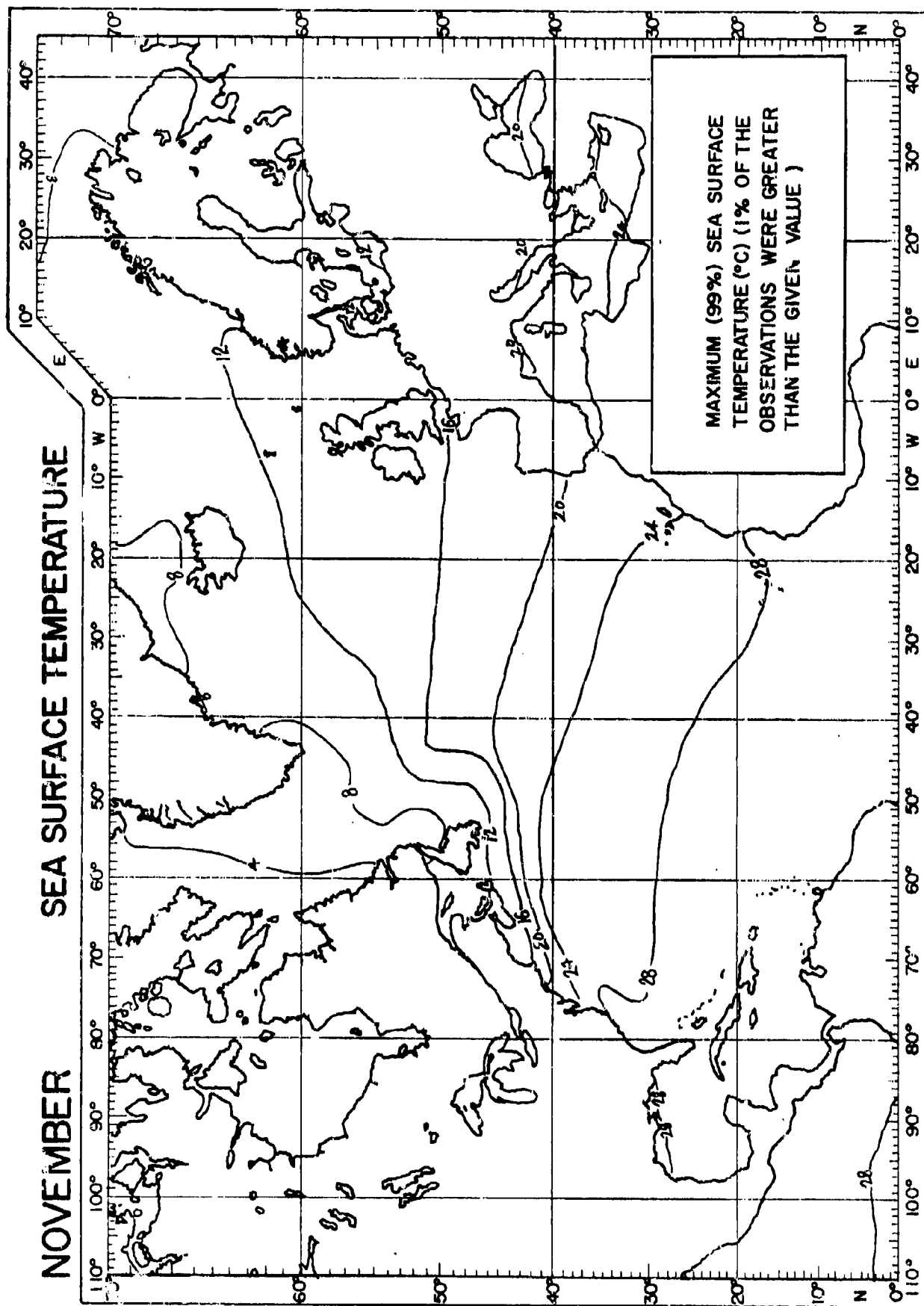


OCTOBER SEA SURFACE TEMPERATURE

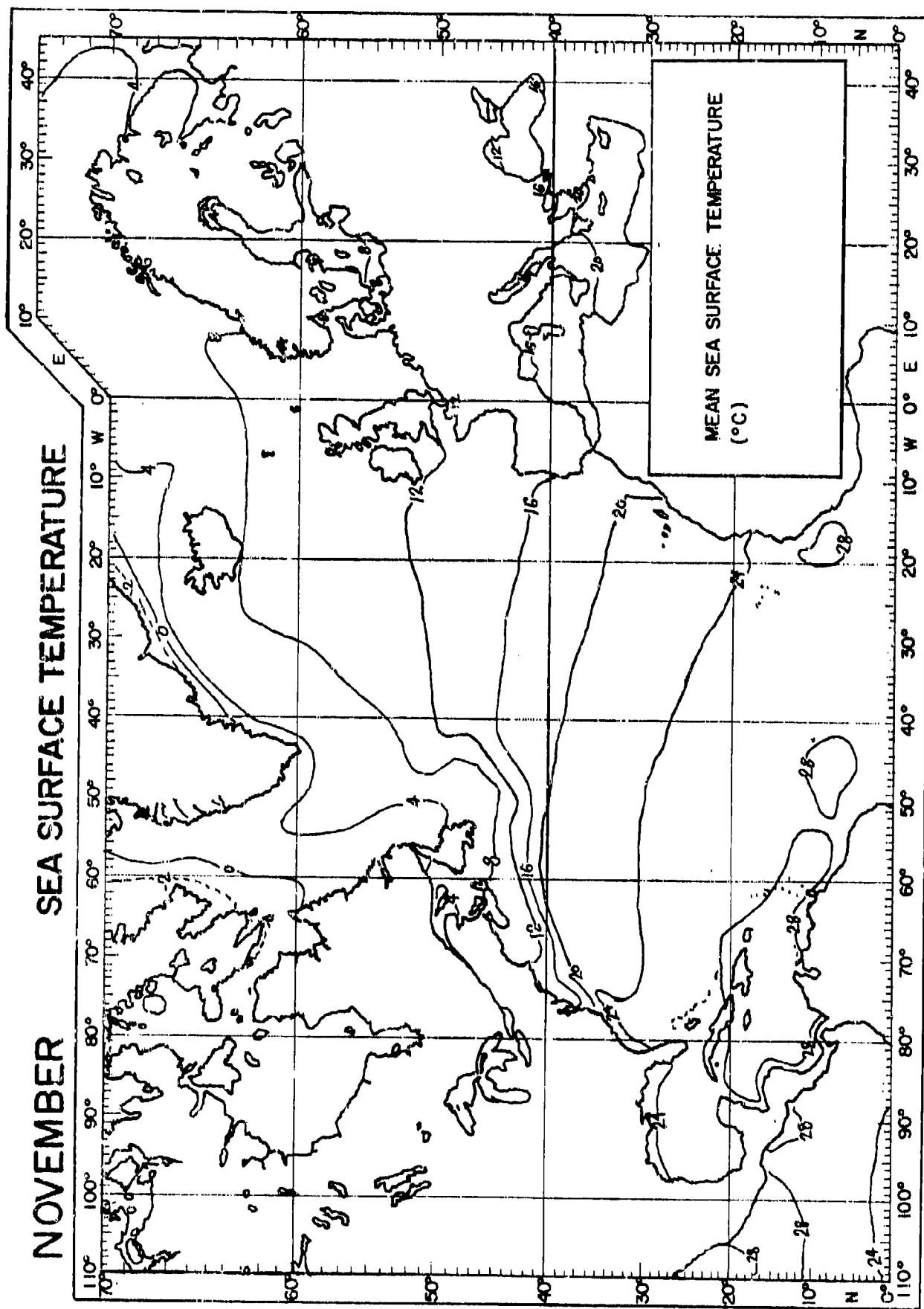


OCTOBER SEA SURFACE TEMPERATURE



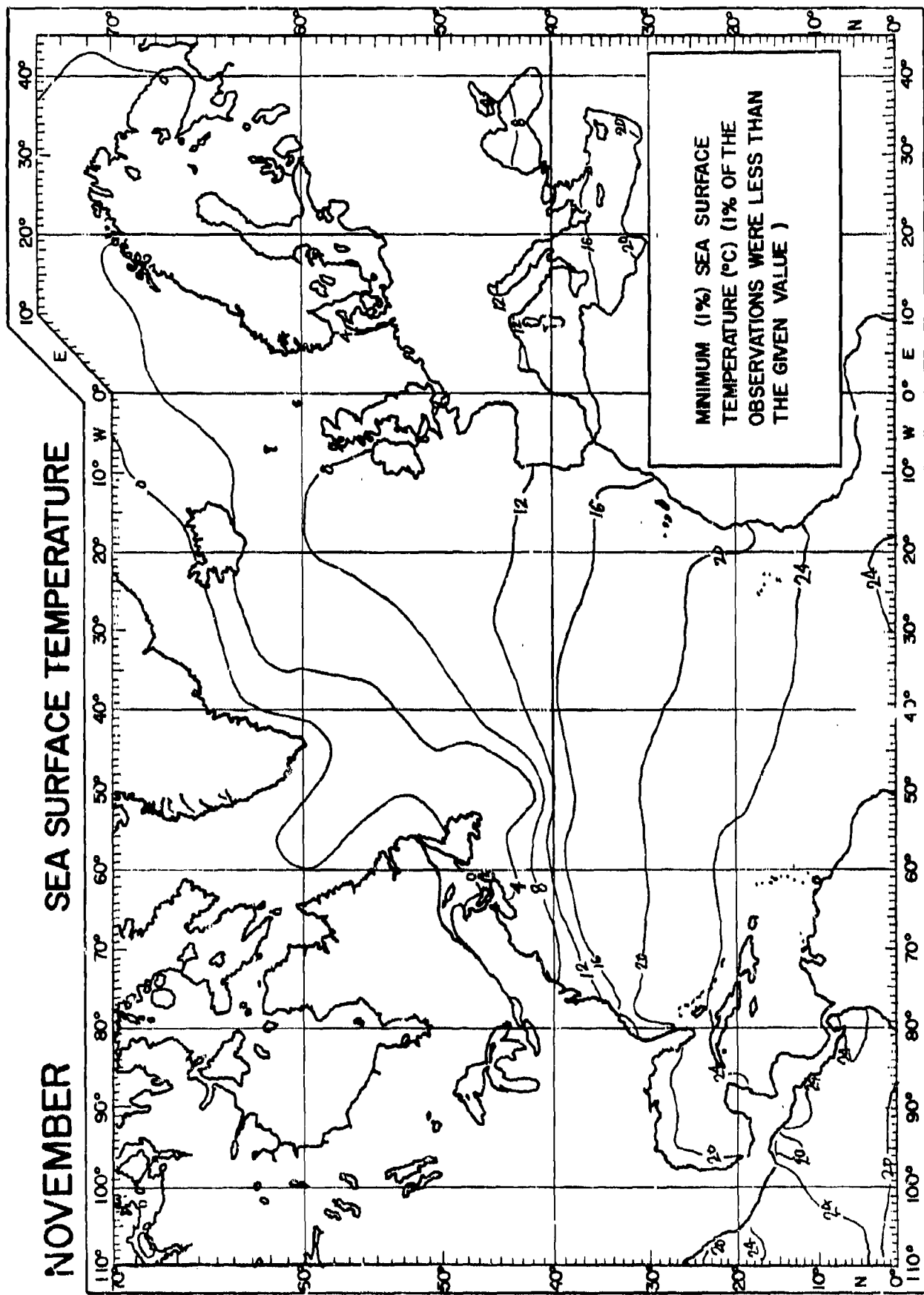


NOVEMBER SEA SURFACE TEMPERATURE

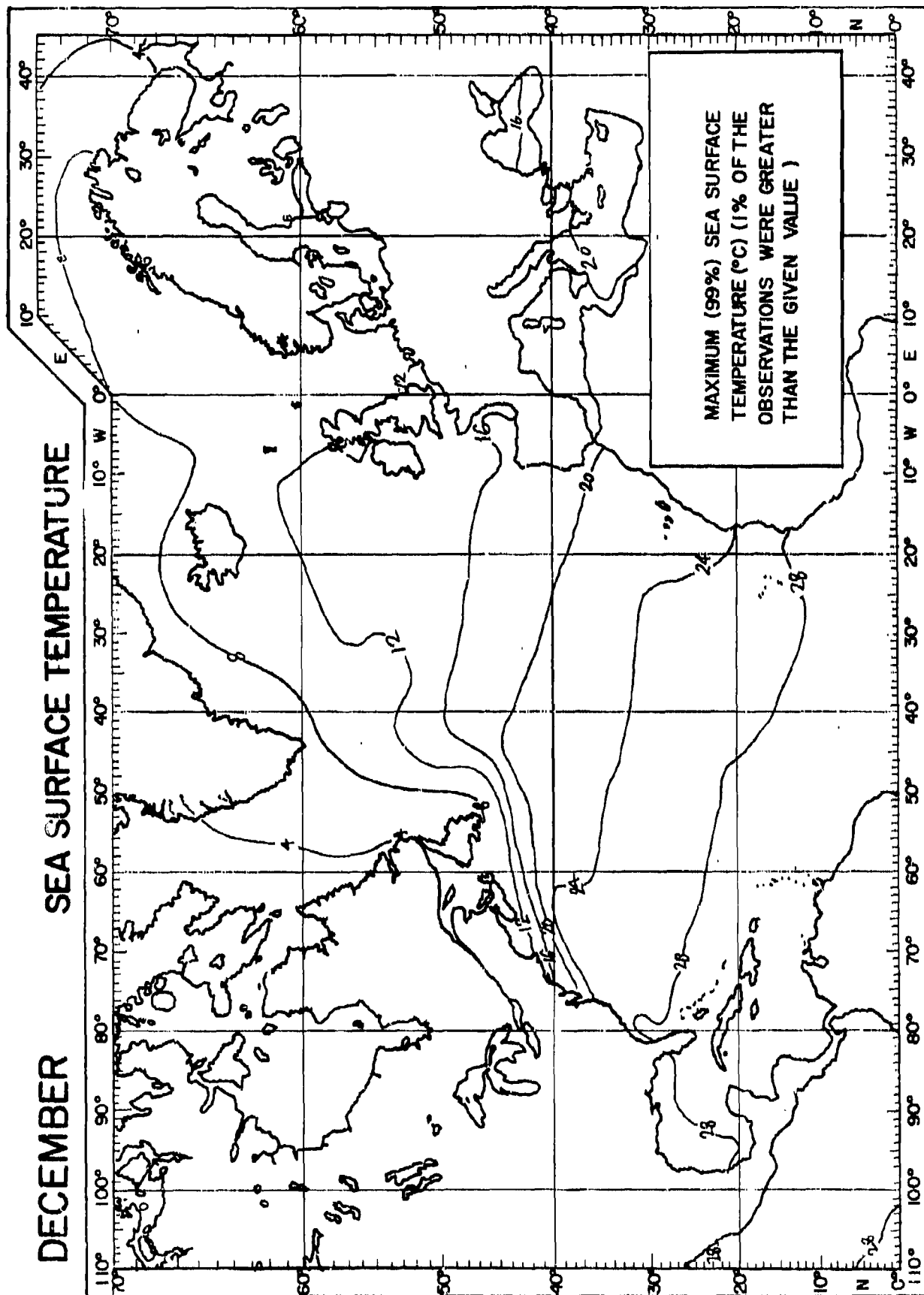


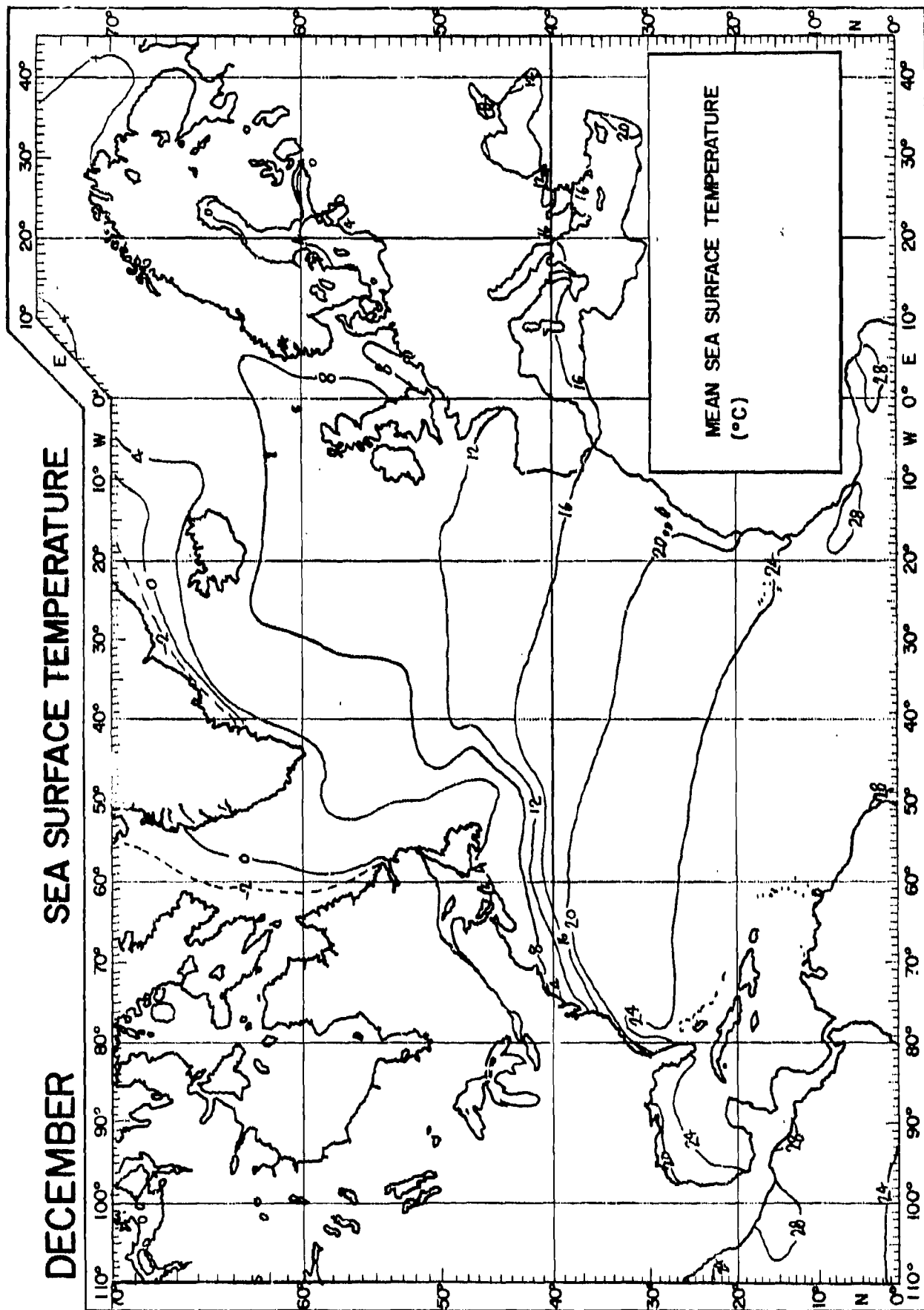
NOVEMBER

SEA SURFACE TEMPERATURE



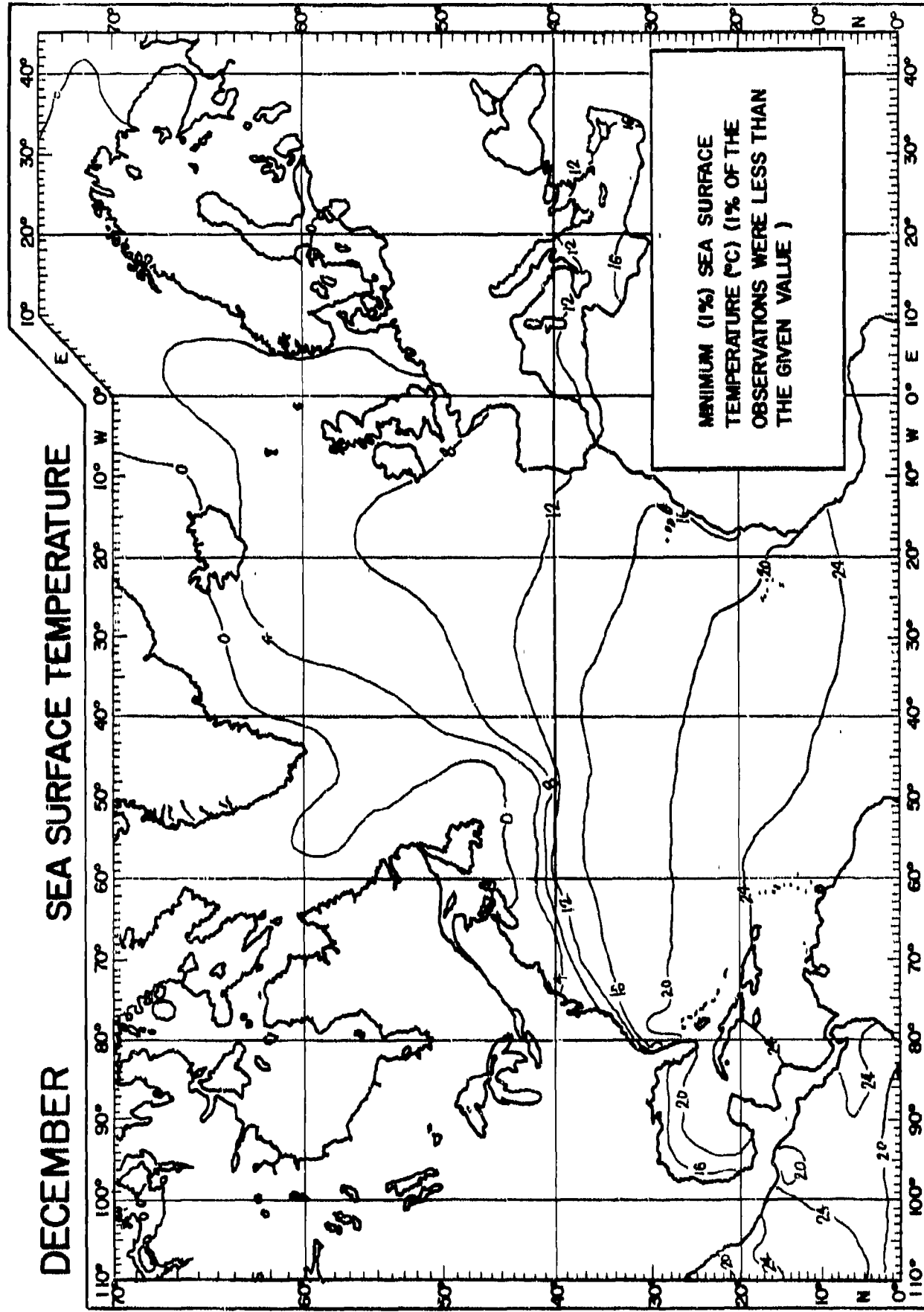
DECEMBER SEA SURFACE TEMPERATURE





DECEMBER

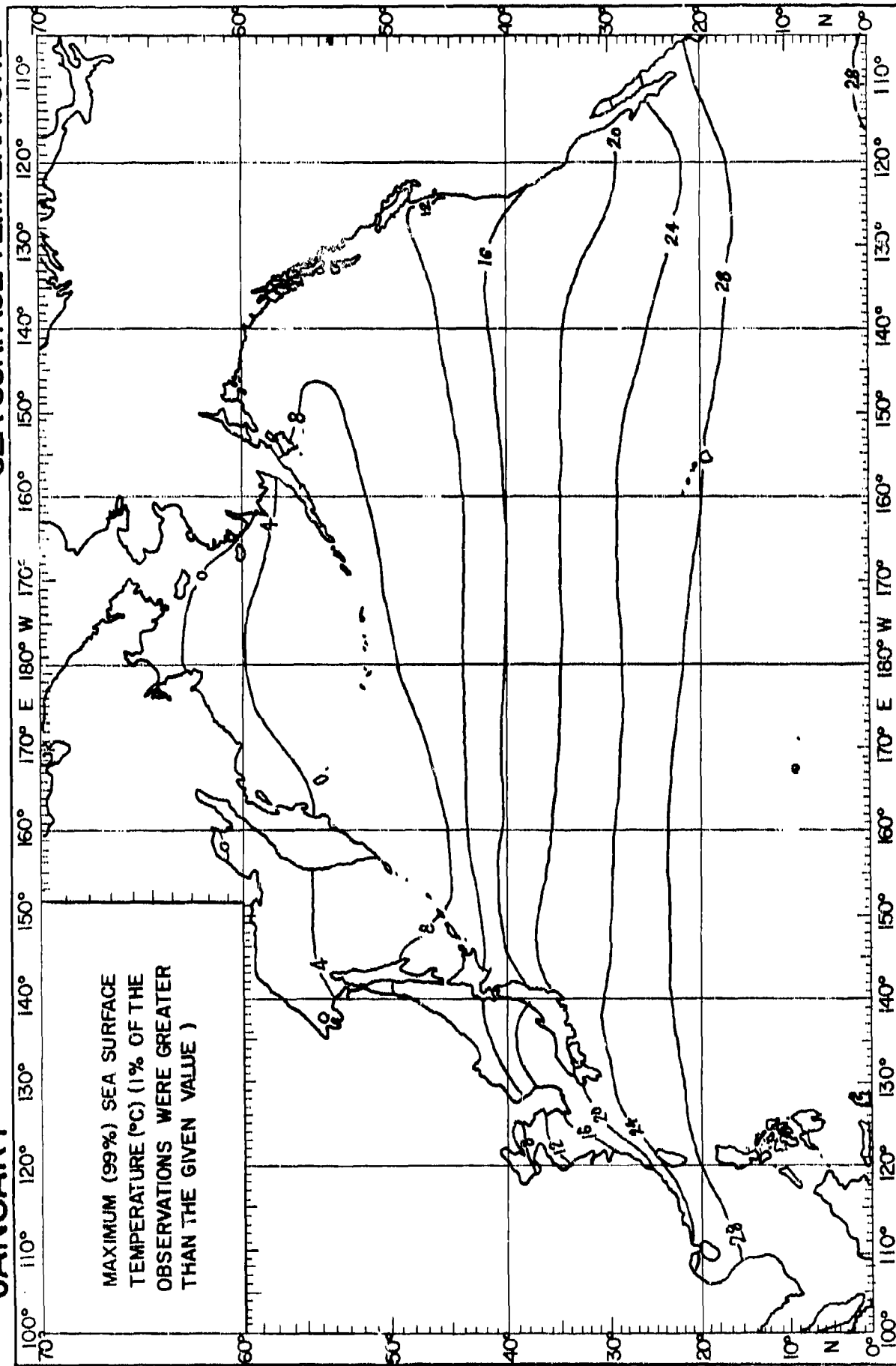
SEA SURFACE TEMPERATURE



**NORTH PACIFIC
TEMPERATURE CHARTS**

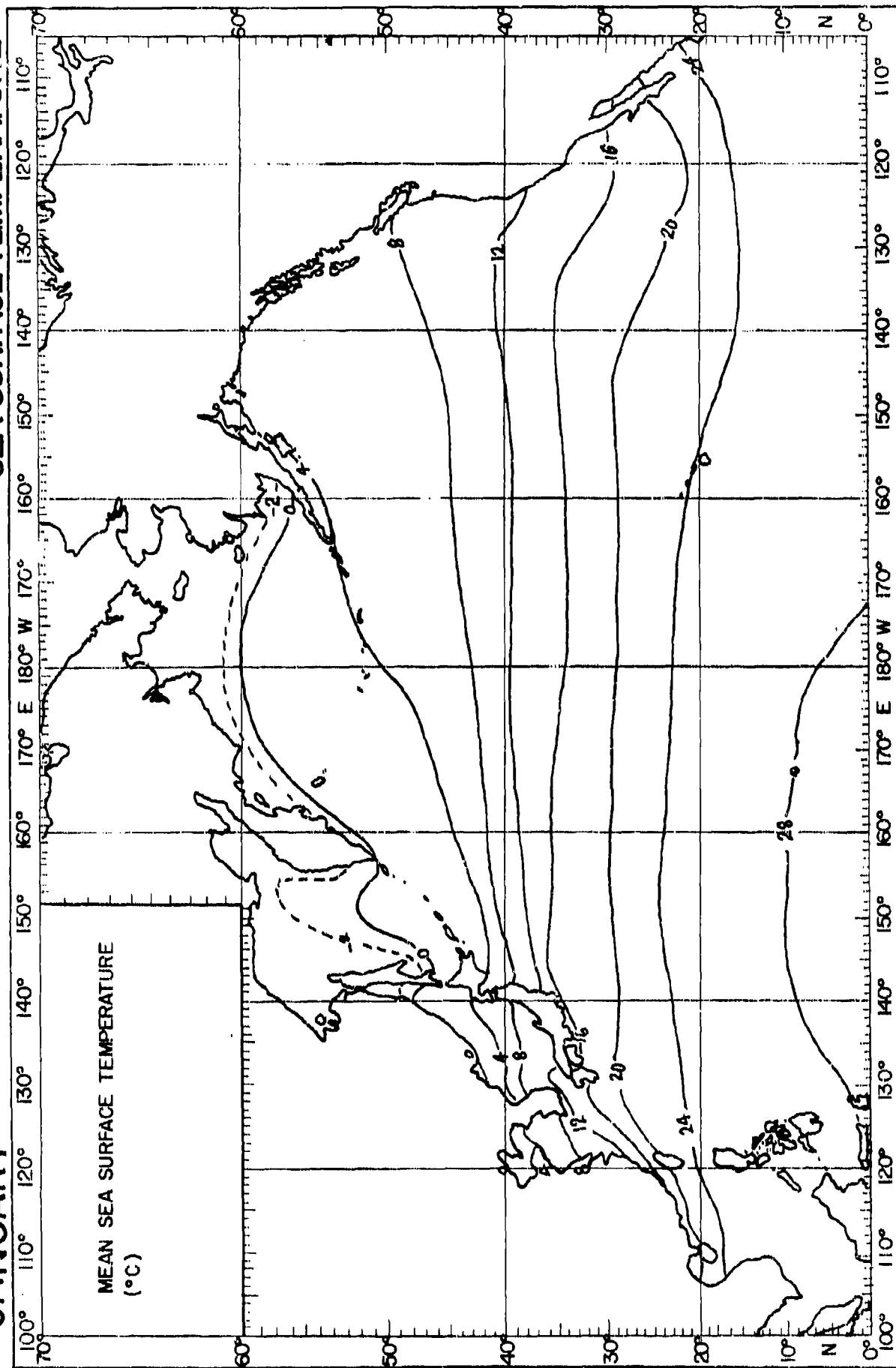
JANUARY

SEA SURFACE TEMPERATURE



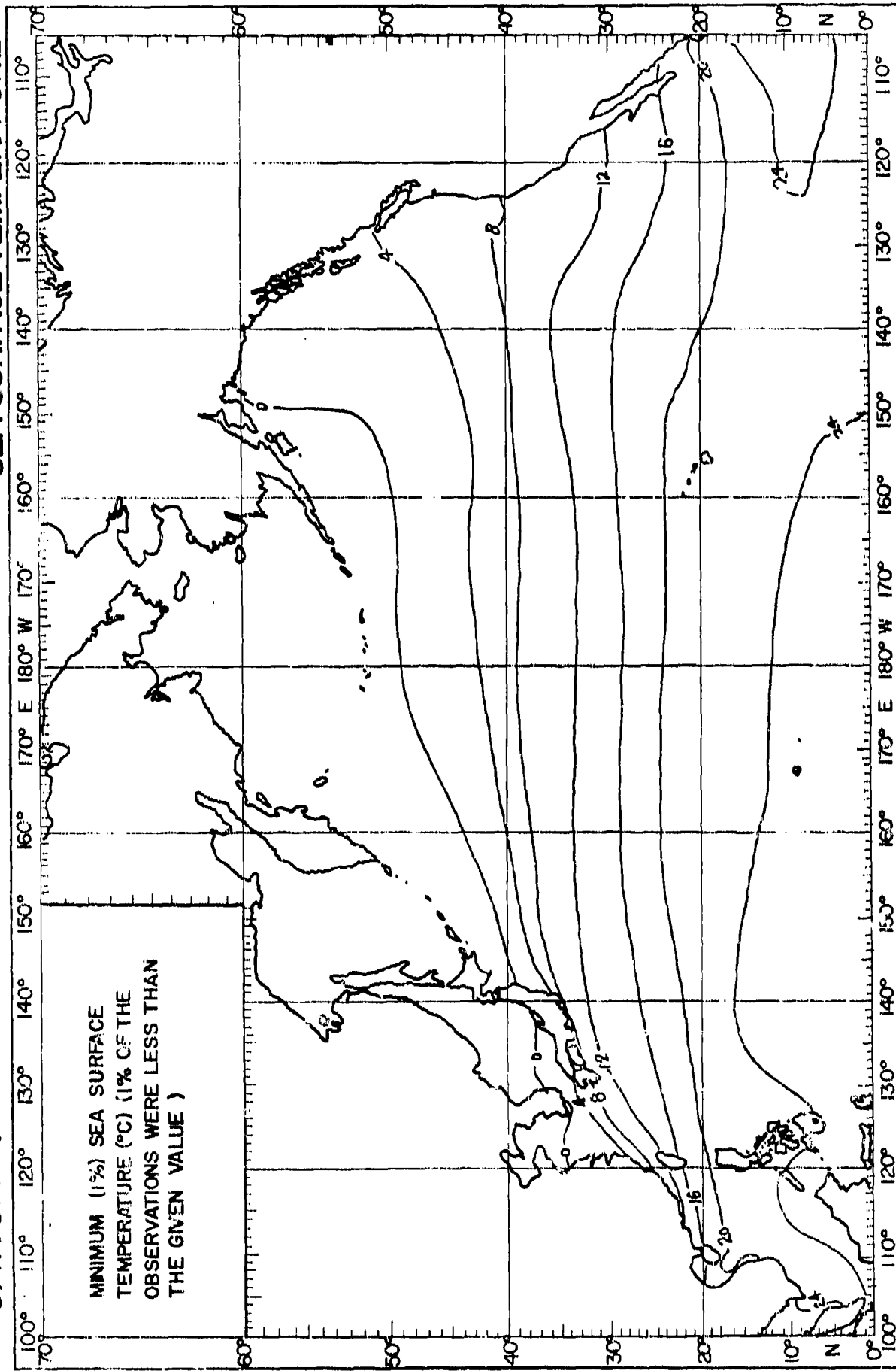
JANUARY

SEA SURFACE TEMPERATURE



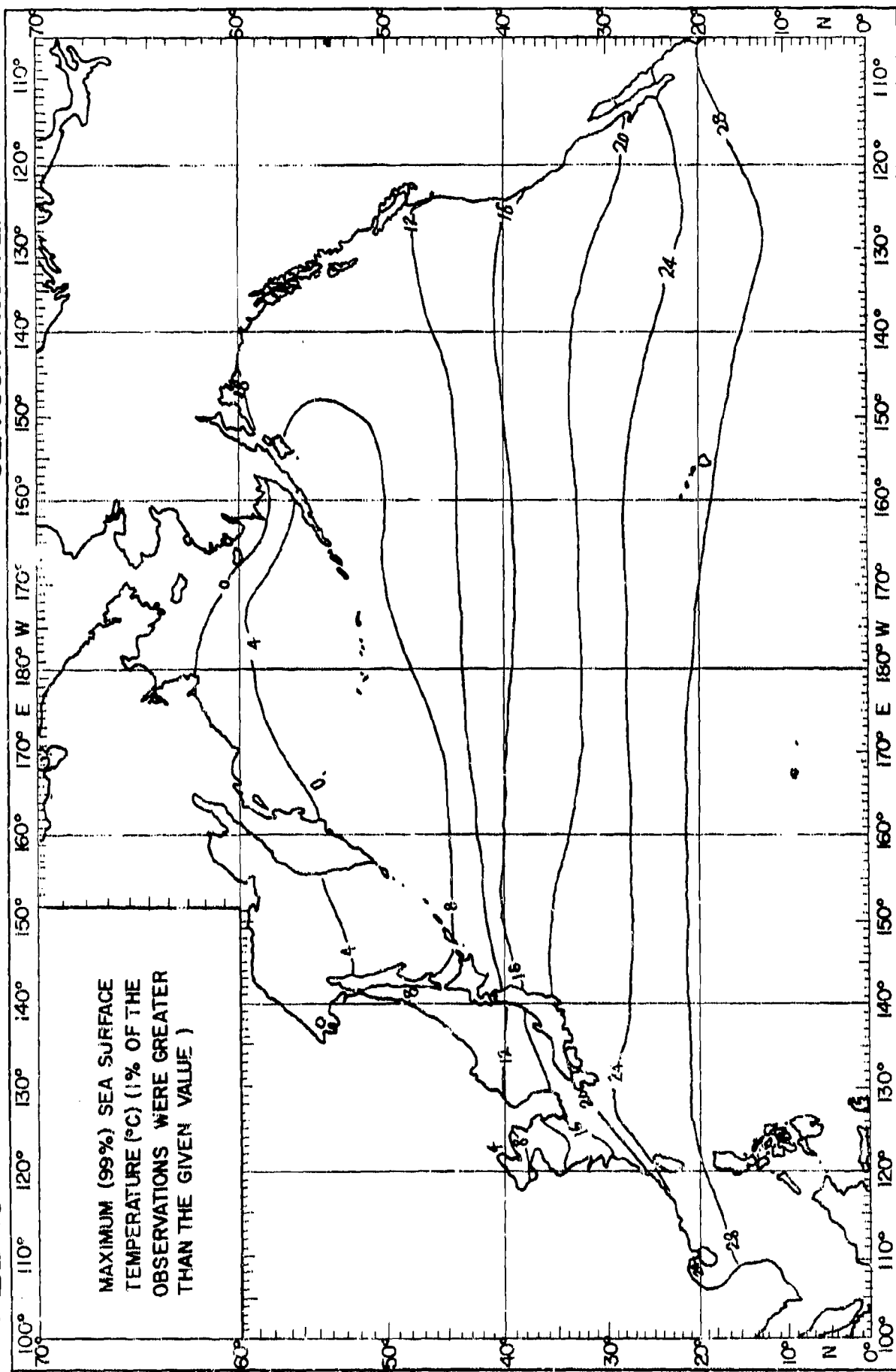
JANUARY

SEA SURFACE TEMPERATURE



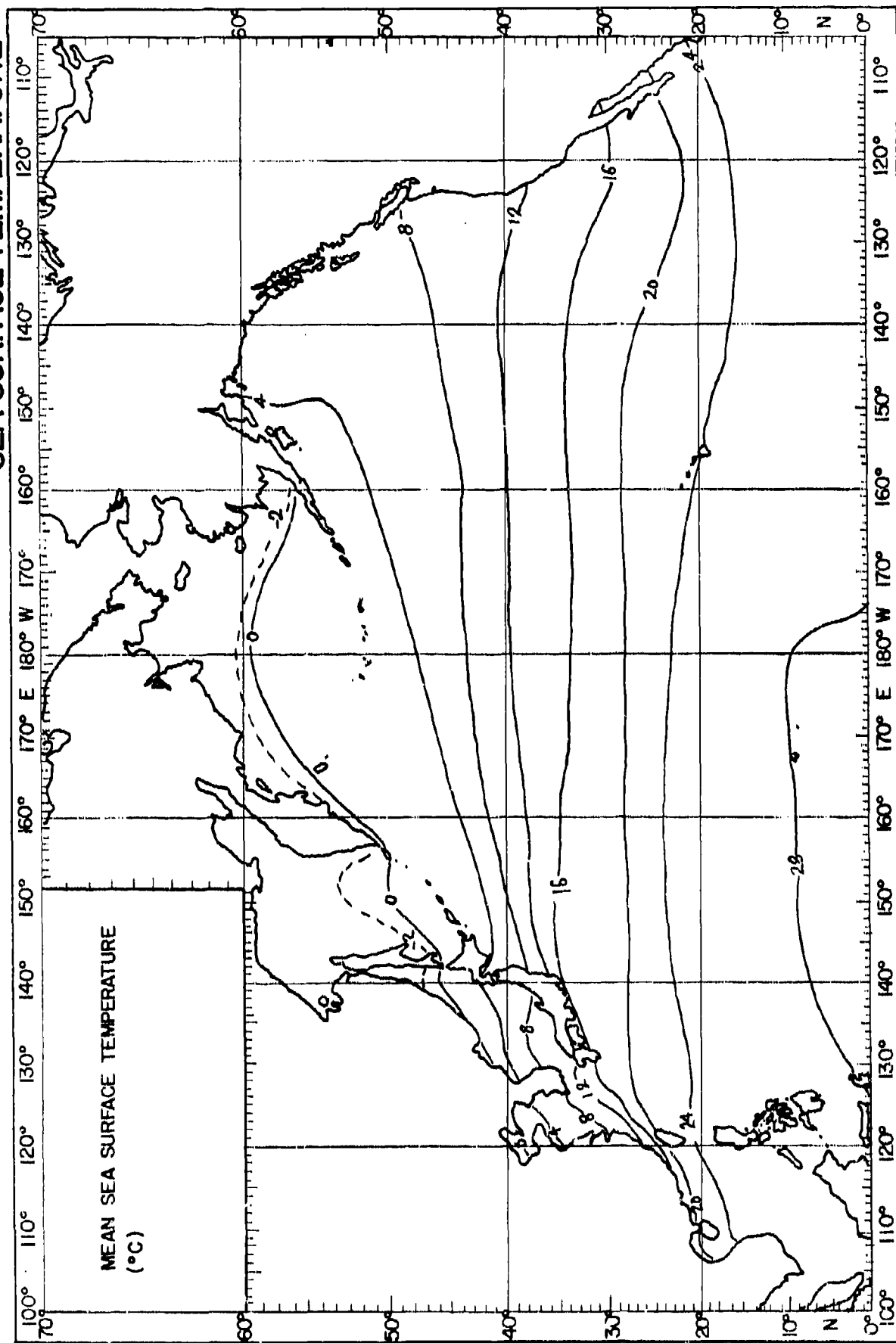
FEBRUARY

SEA SURFACE TEMPERATURE



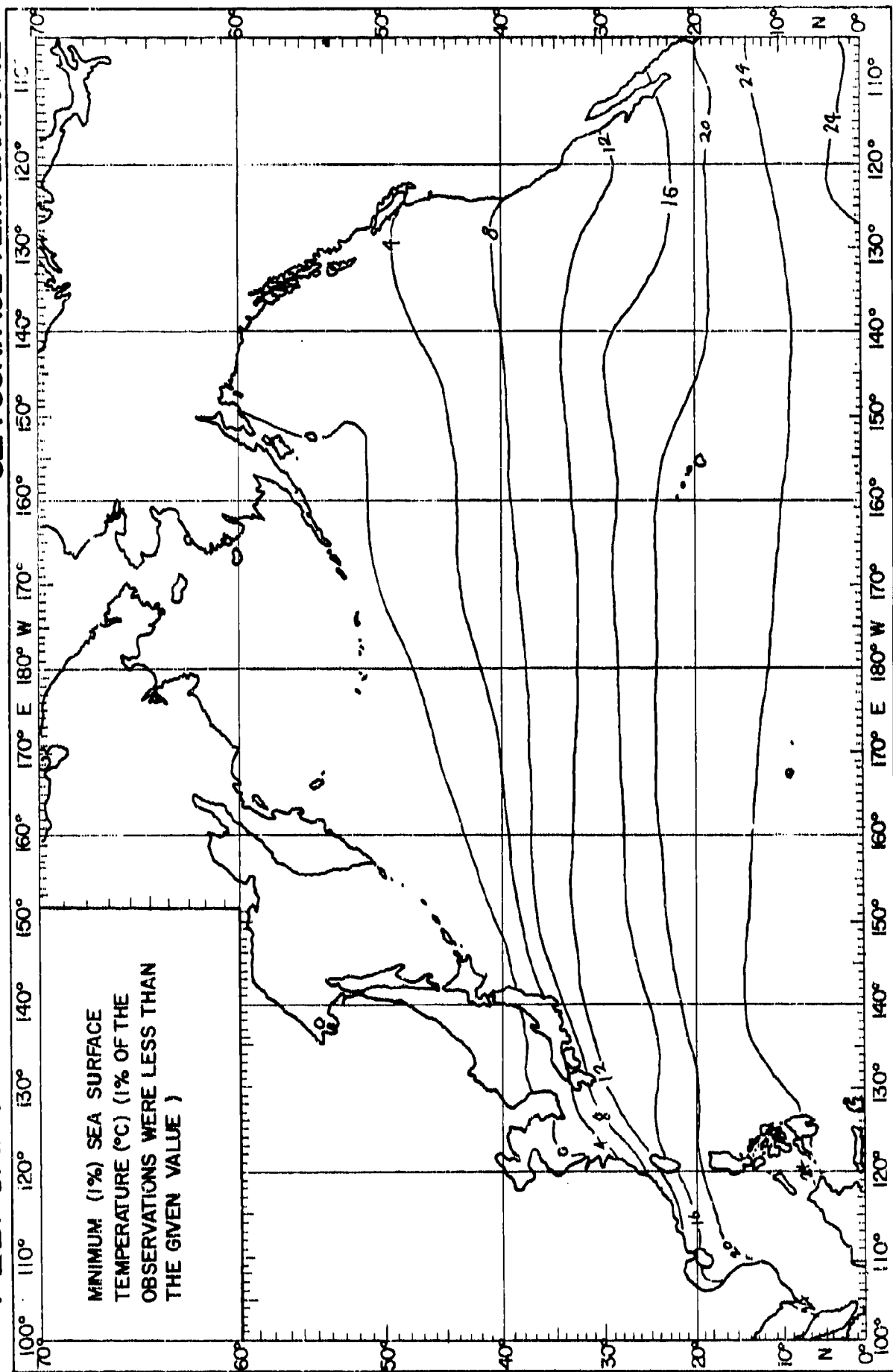
FEBRUARY

SEA SURFACE TEMPERATURE



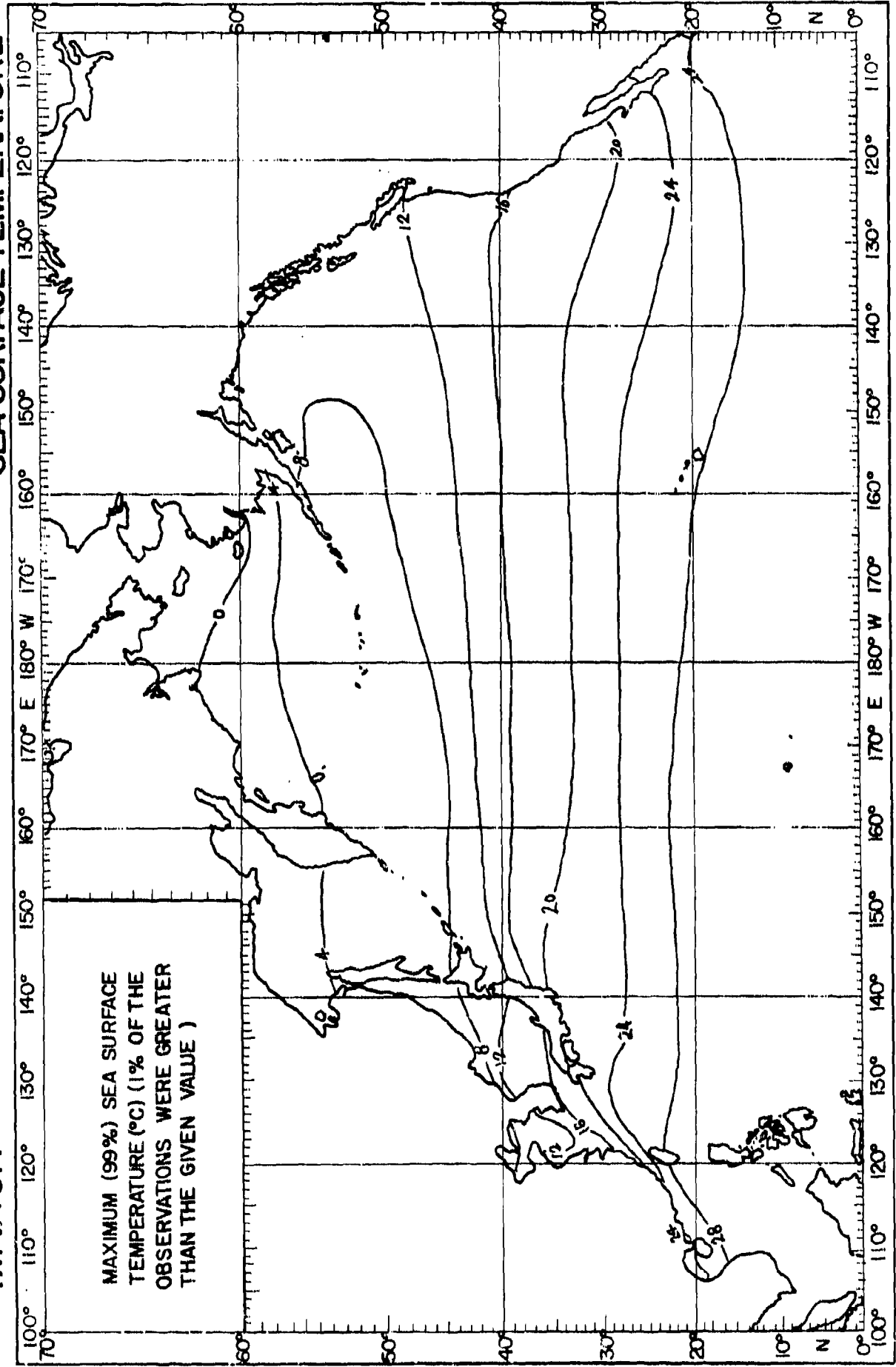
FEBRUARY

SEA SURFACE TEMPERATURE



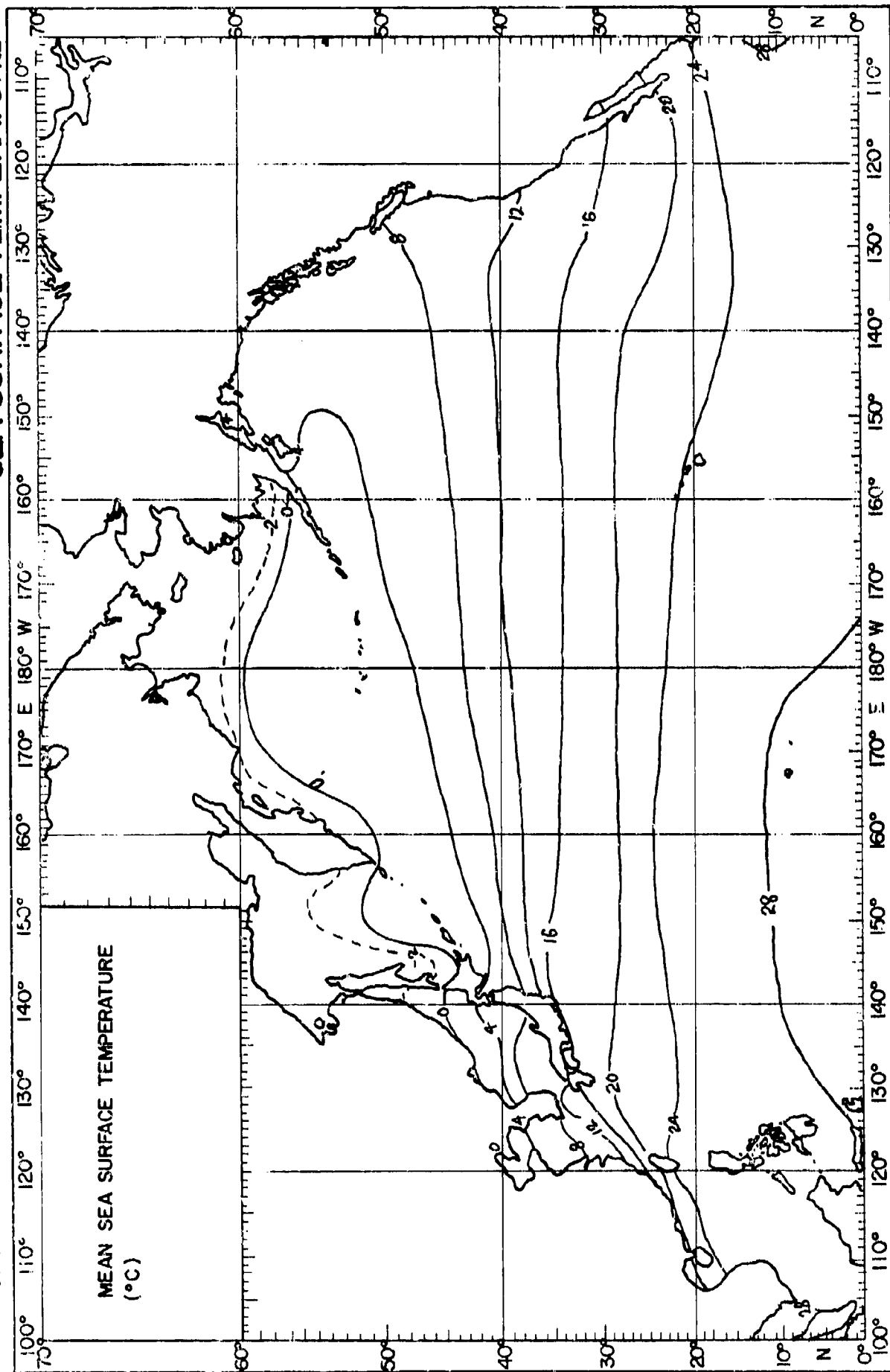
MARCH

SEA SURFACE TEMPERATURE



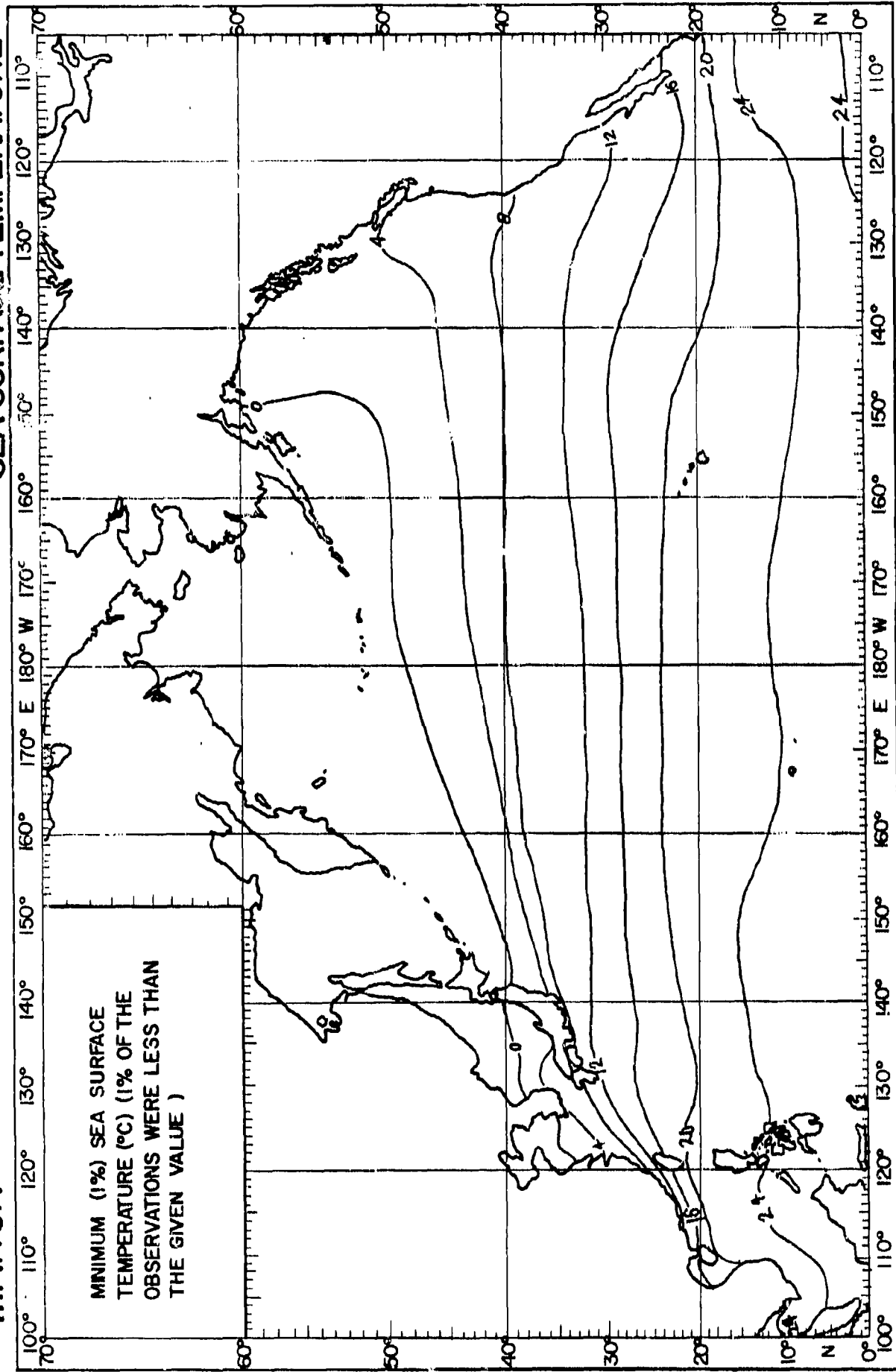
MARCH

SEA SURFACE TEMPERATURE



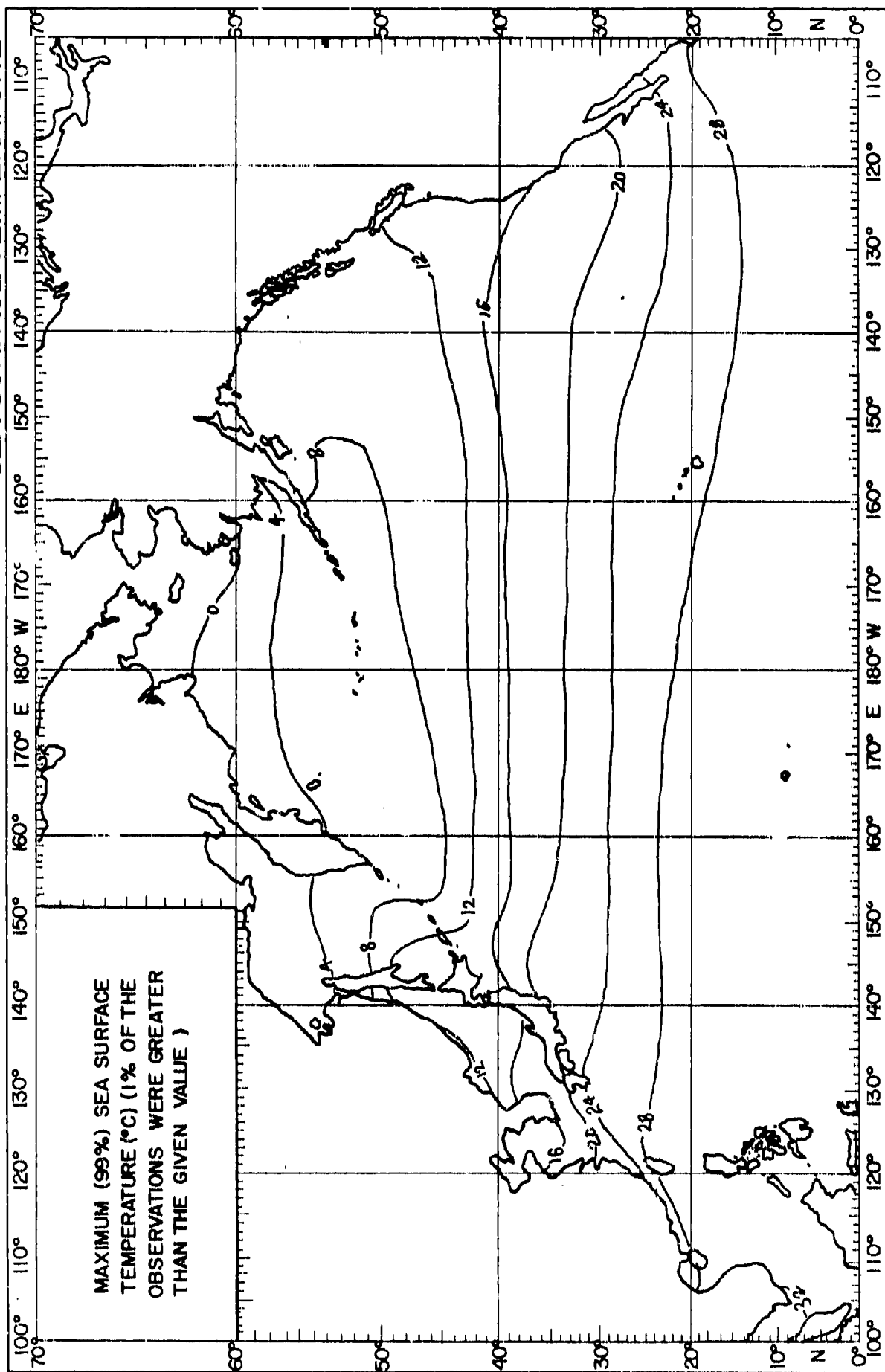
MARCH

SEA SURFACE TEMPERATURE



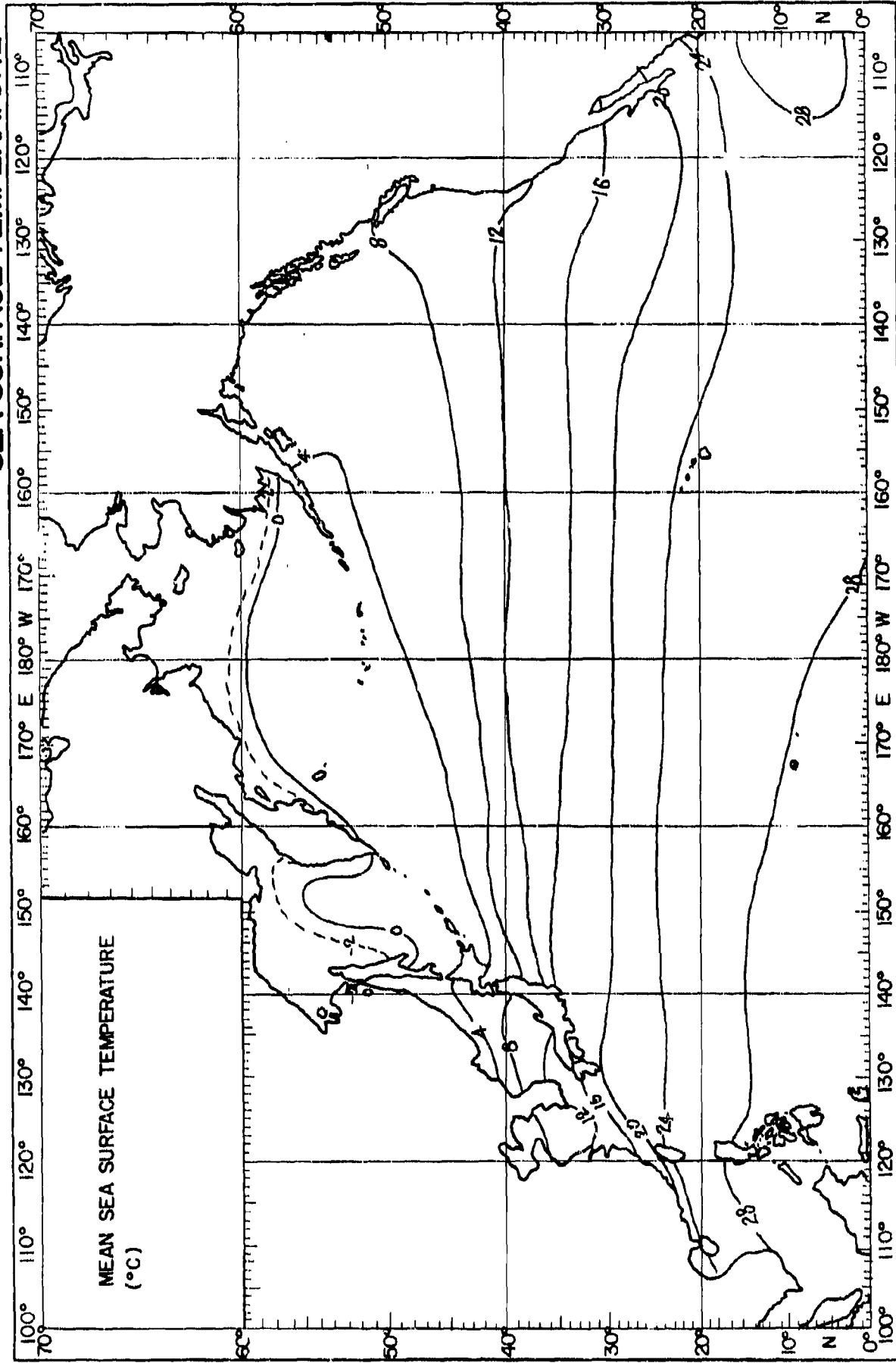
APRIL

SEA SURFACE TEMPERATURE



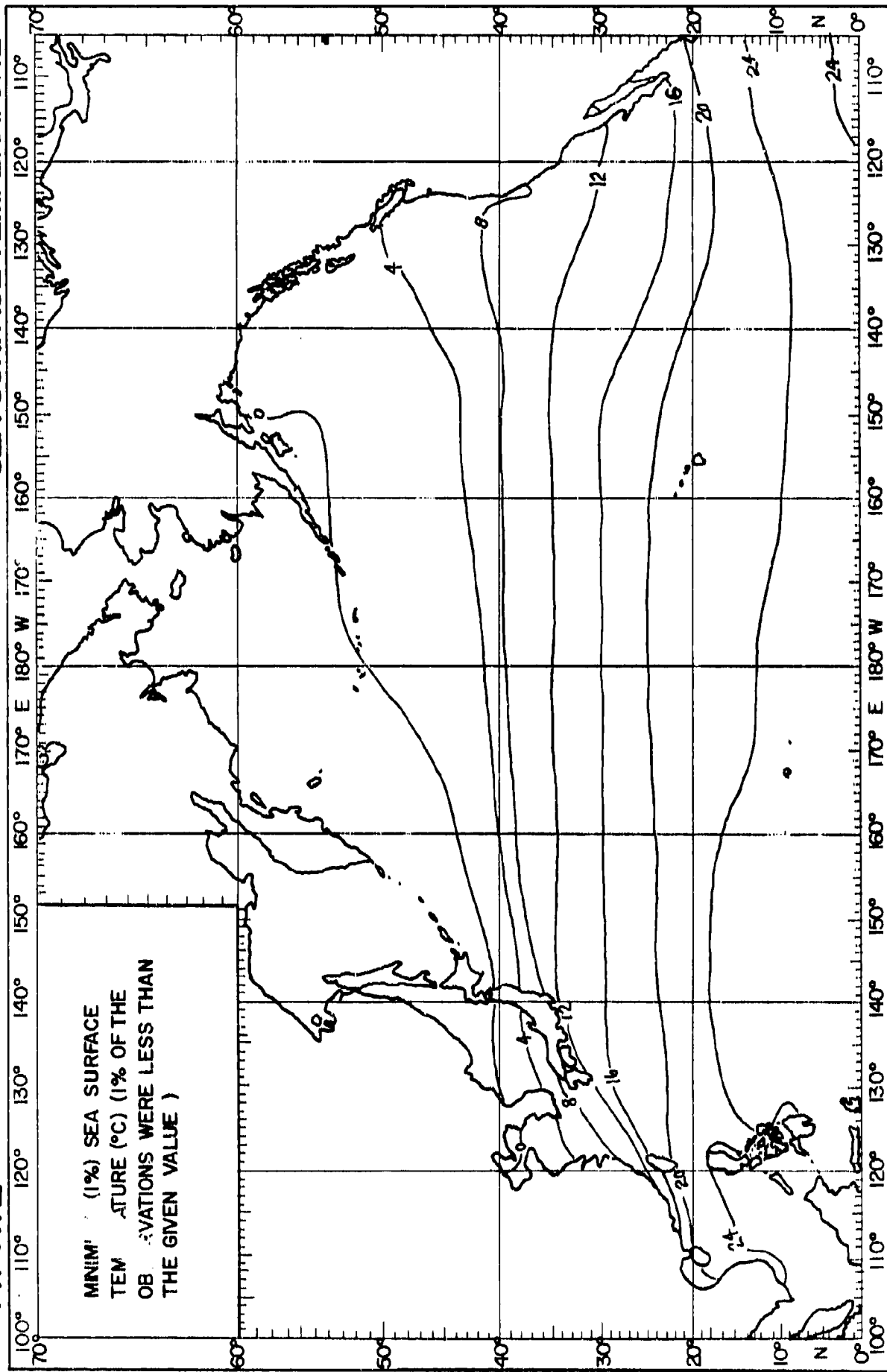
APRIL

SEA SURFACE TEMPERATURE



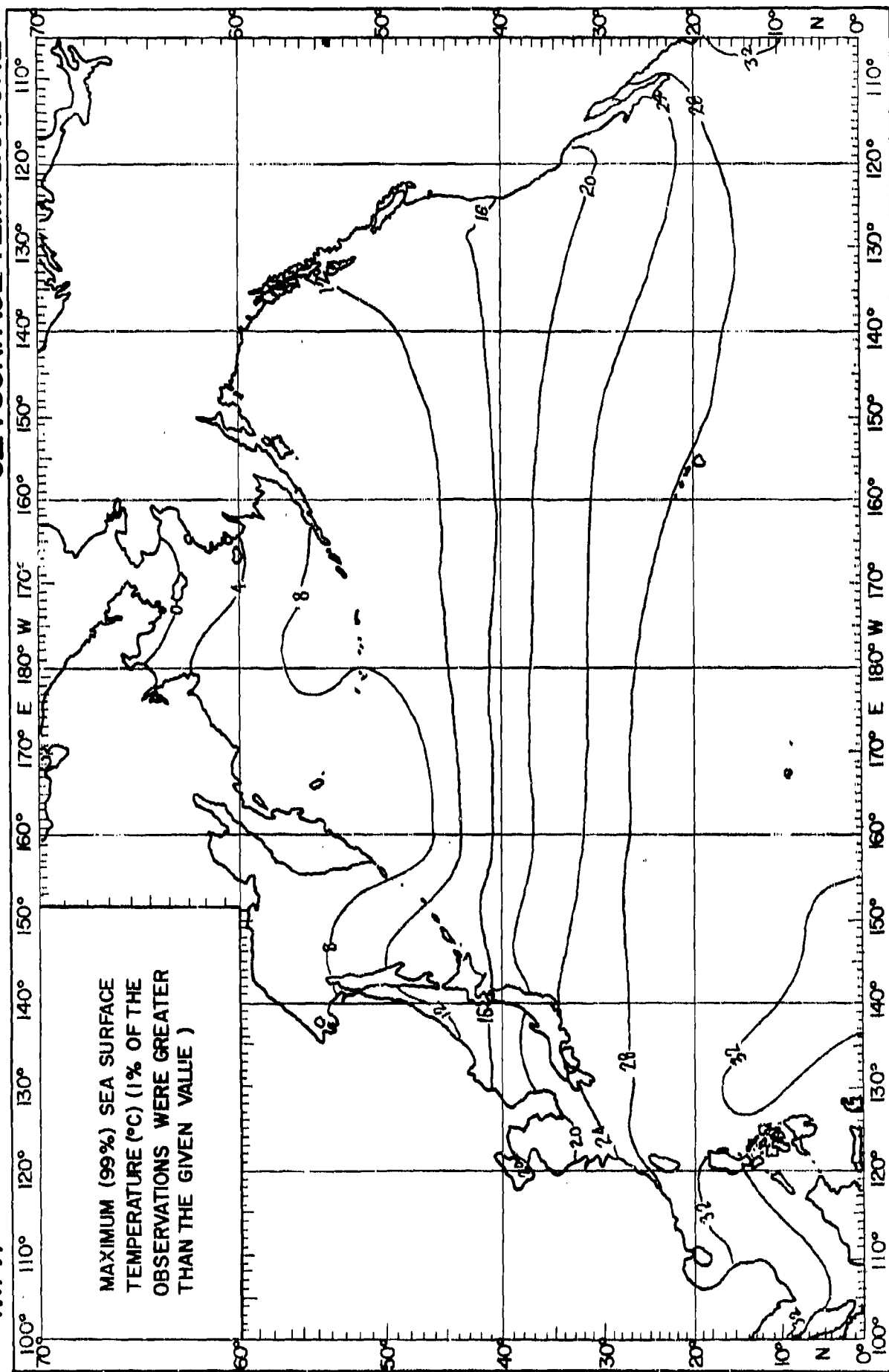
APRIL

SEA SURFACE TEMPERATURE



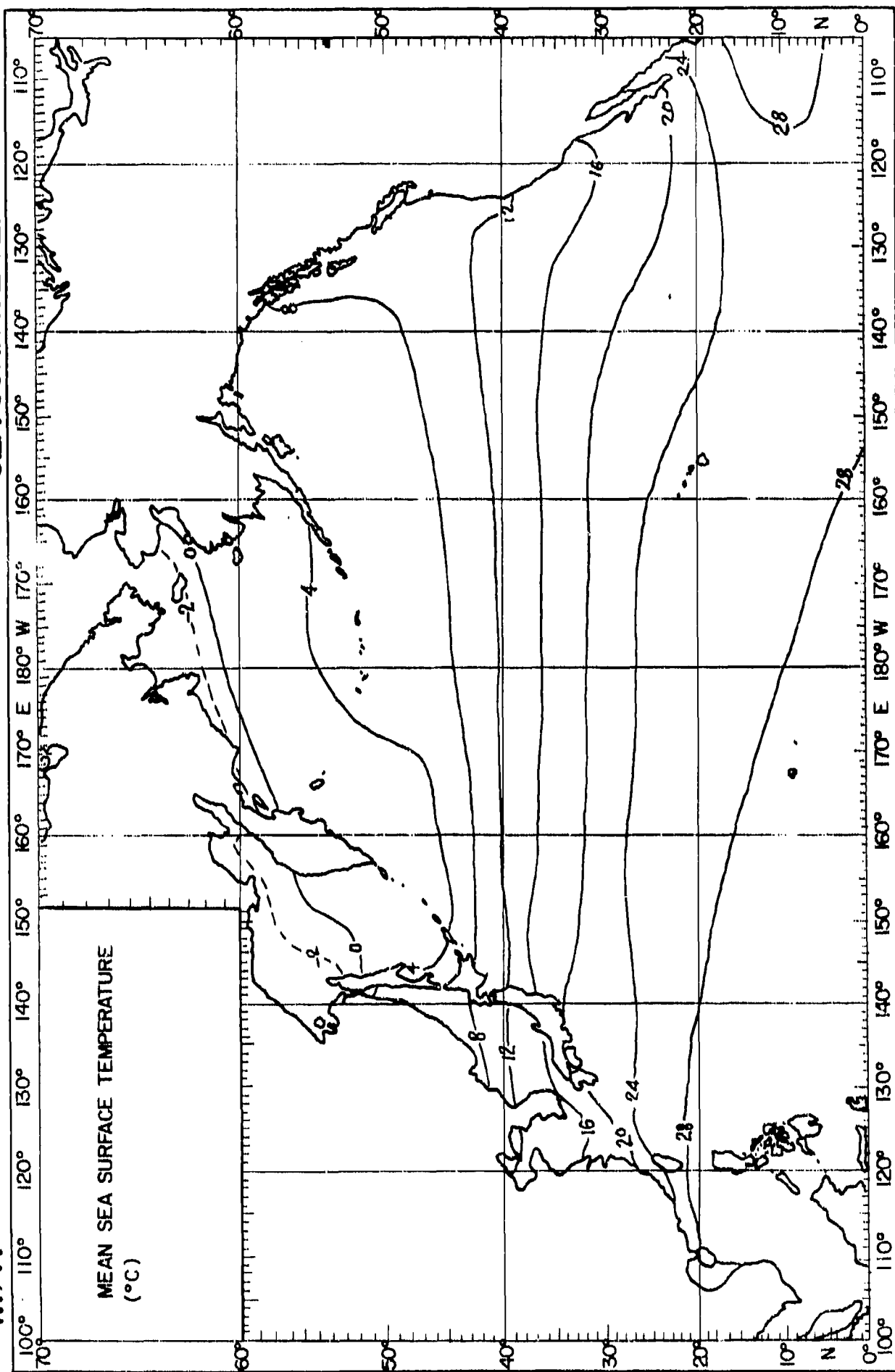
MAY

SEA SURFACE TEMPERATURE



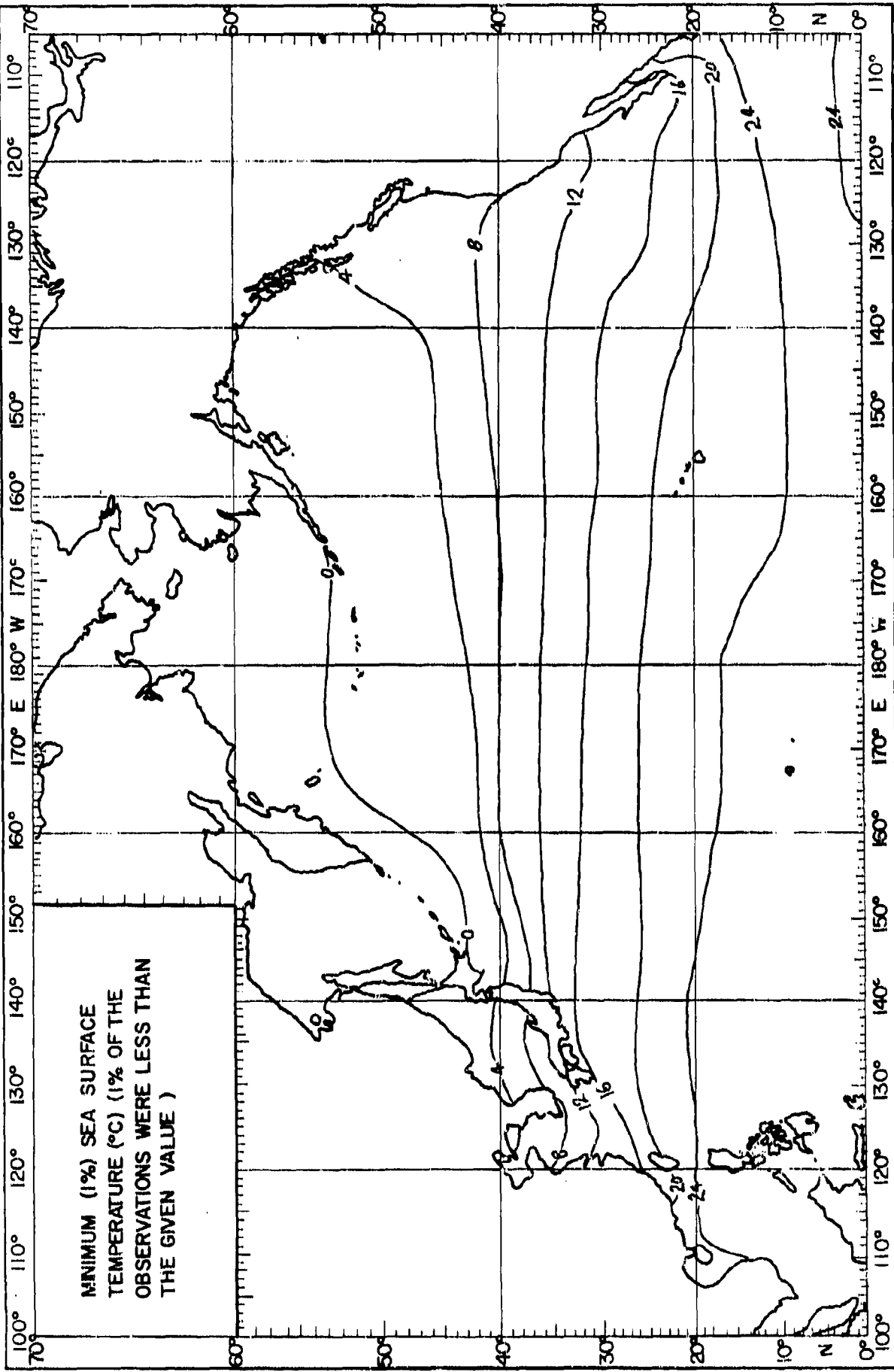
MAY

SEA SURFACE TEMPERATURE



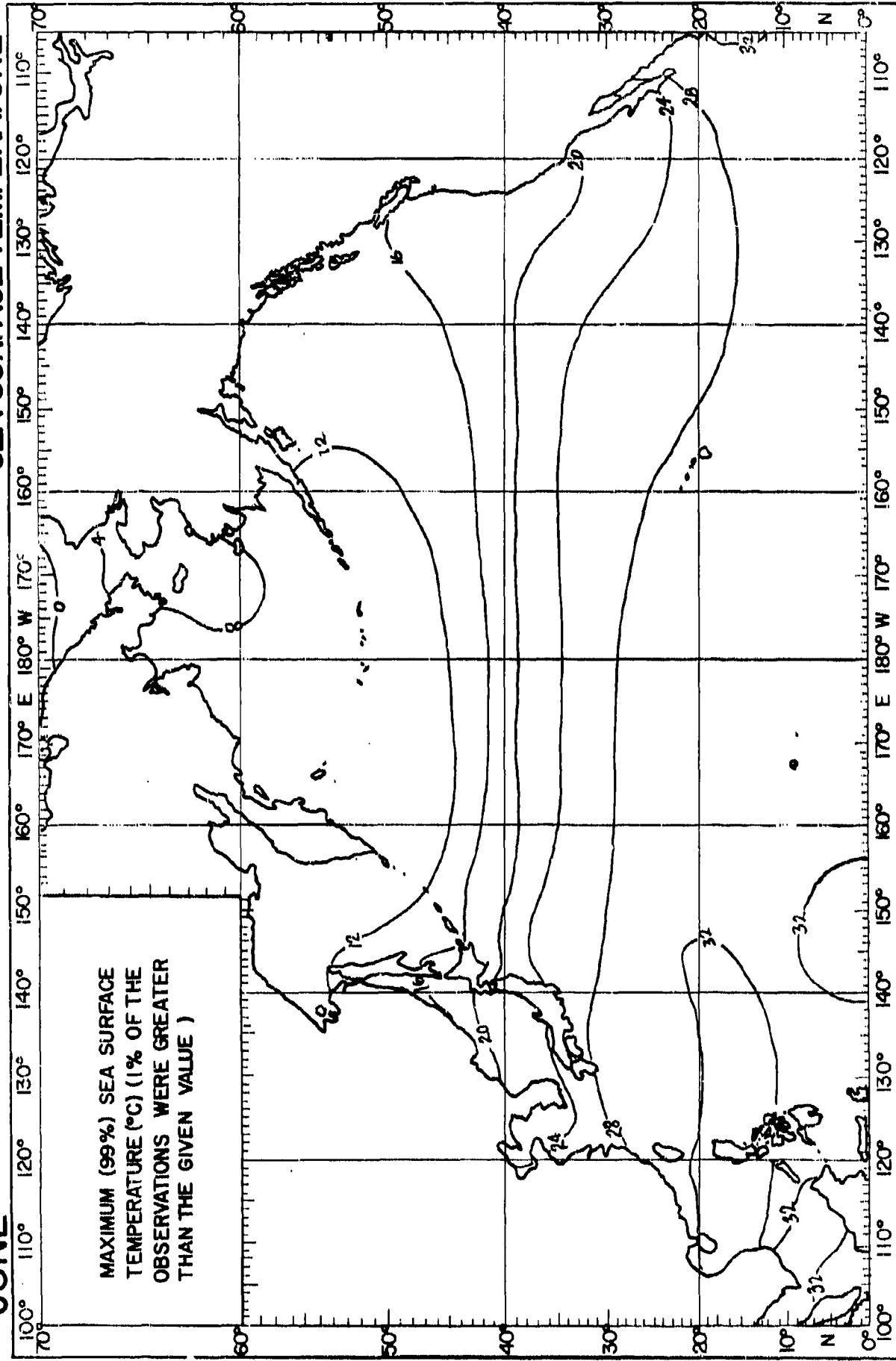
MAY

SEA SURFACE TEMPERATURE



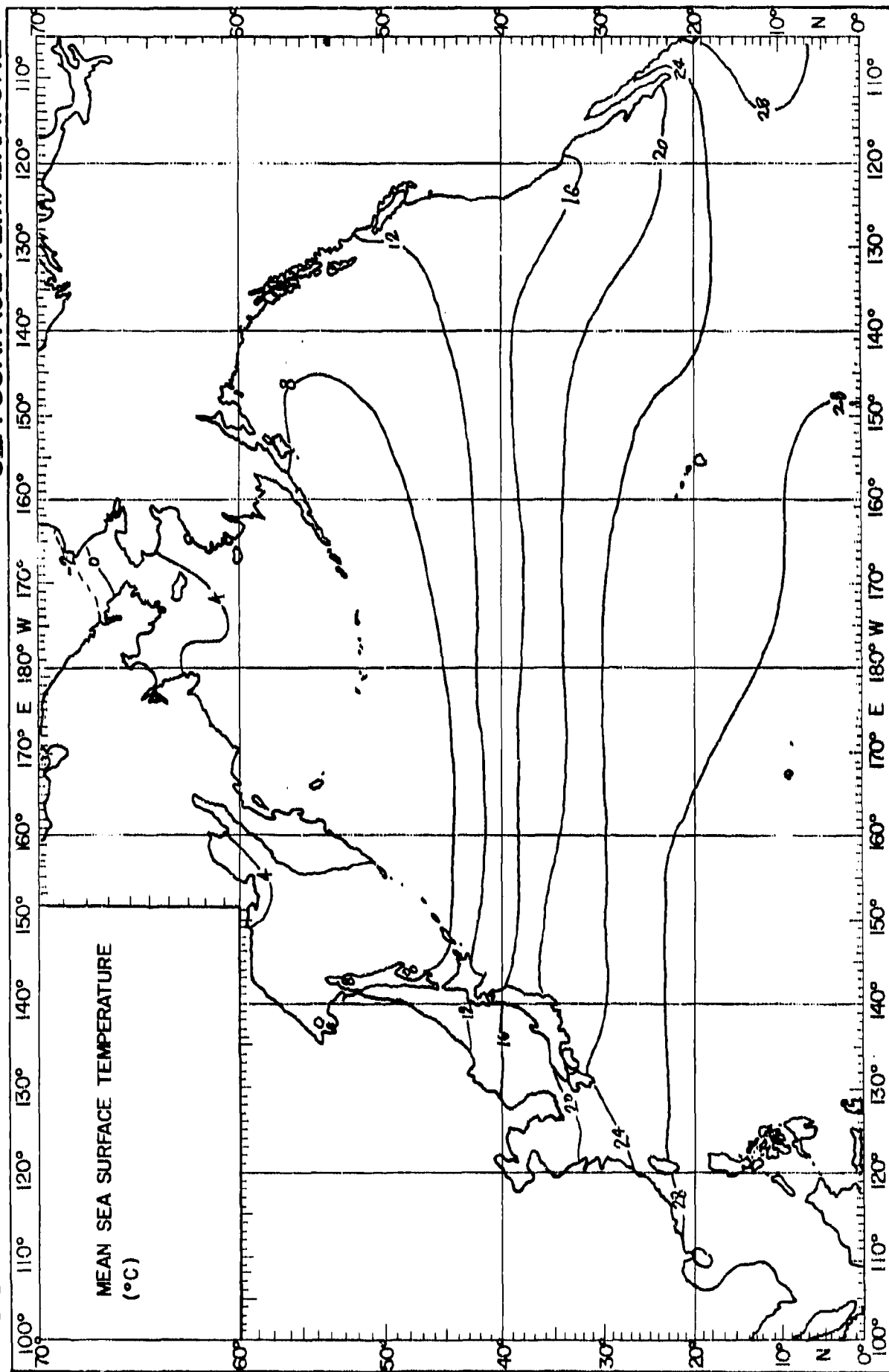
JUNE

SEA SURFACE TEMPERATURE



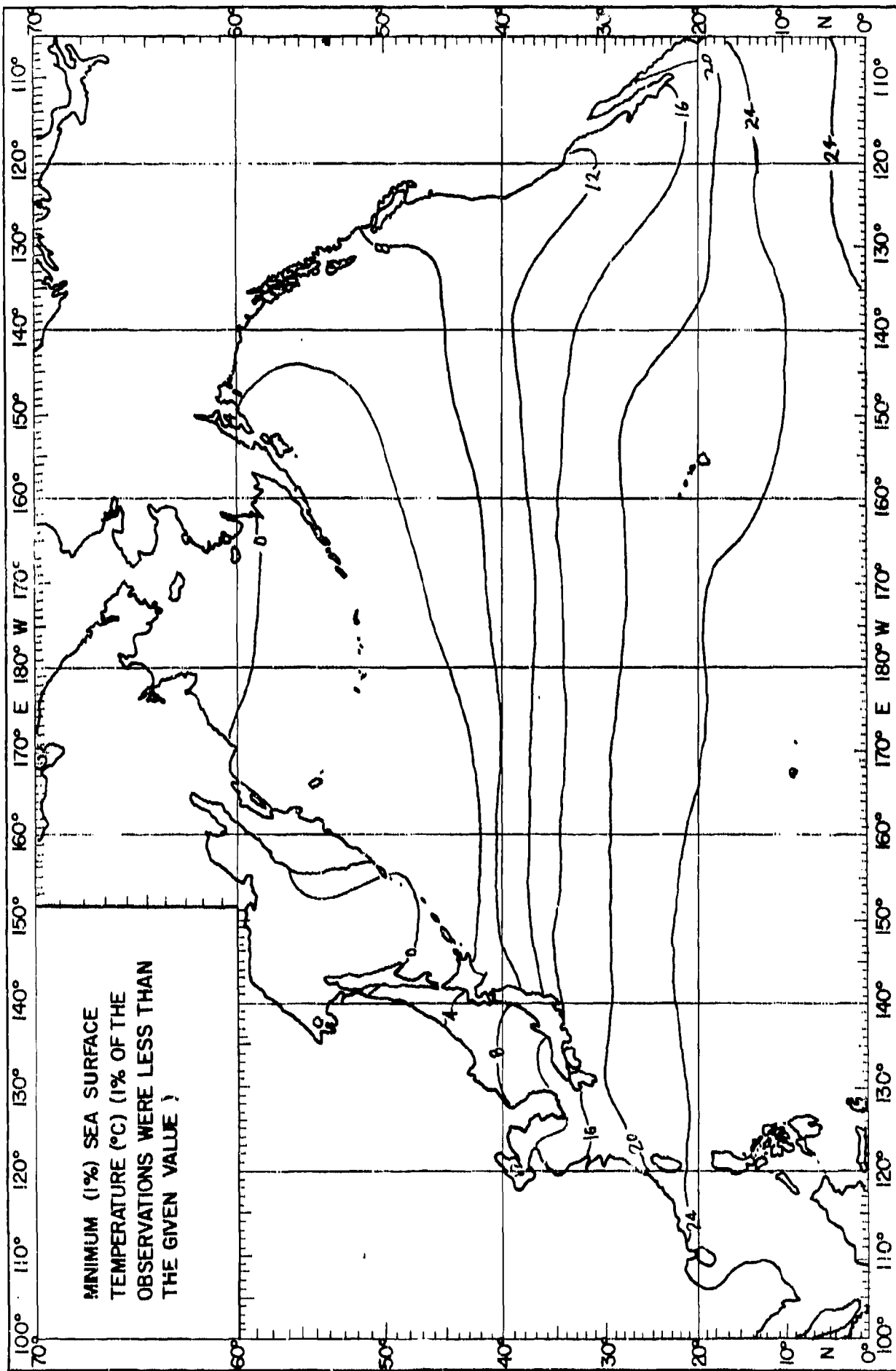
JUNE

SEA SURFACE TEMPERATURE



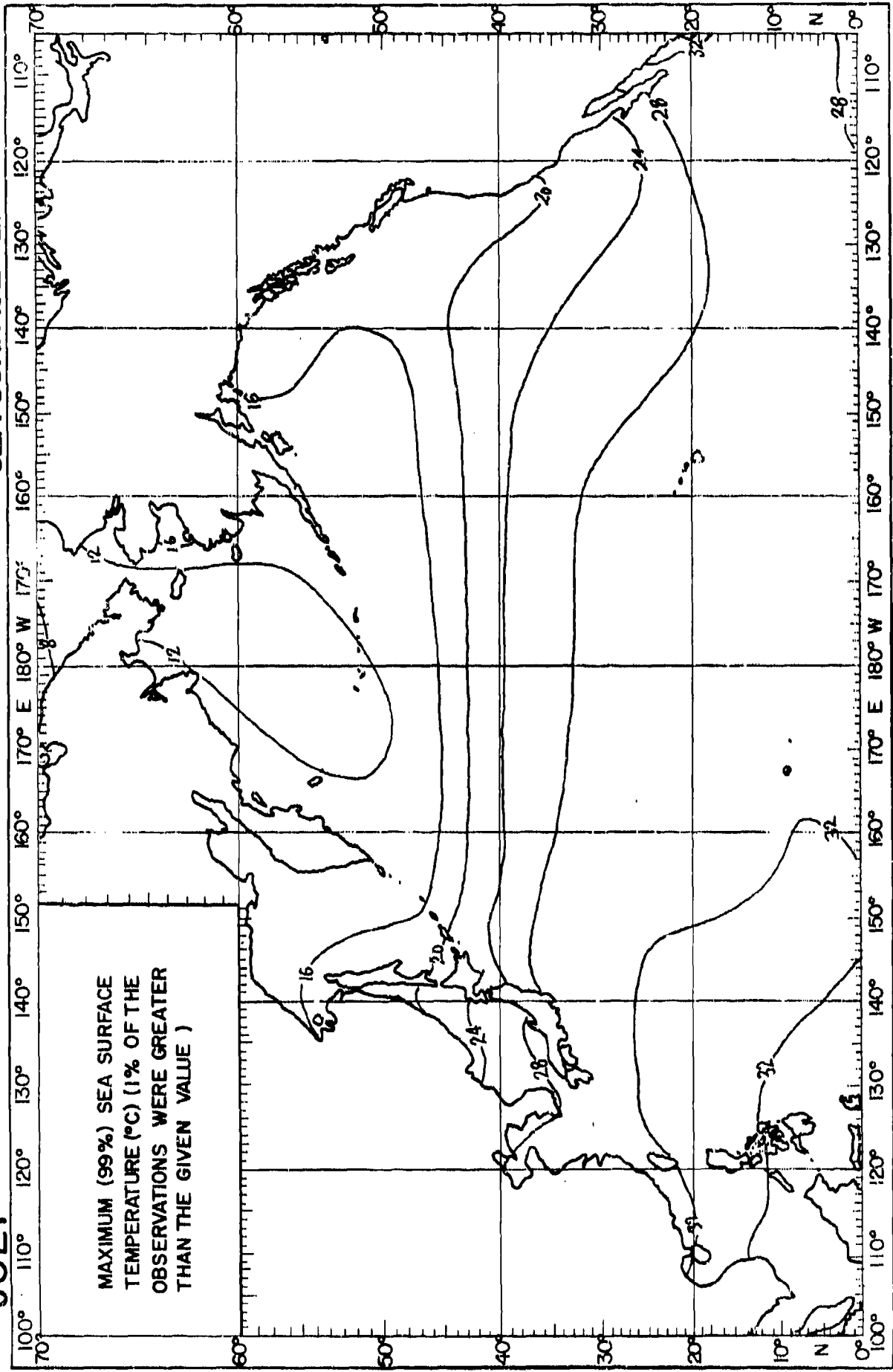
JUNE

SEA SURFACE TEMPERATURE



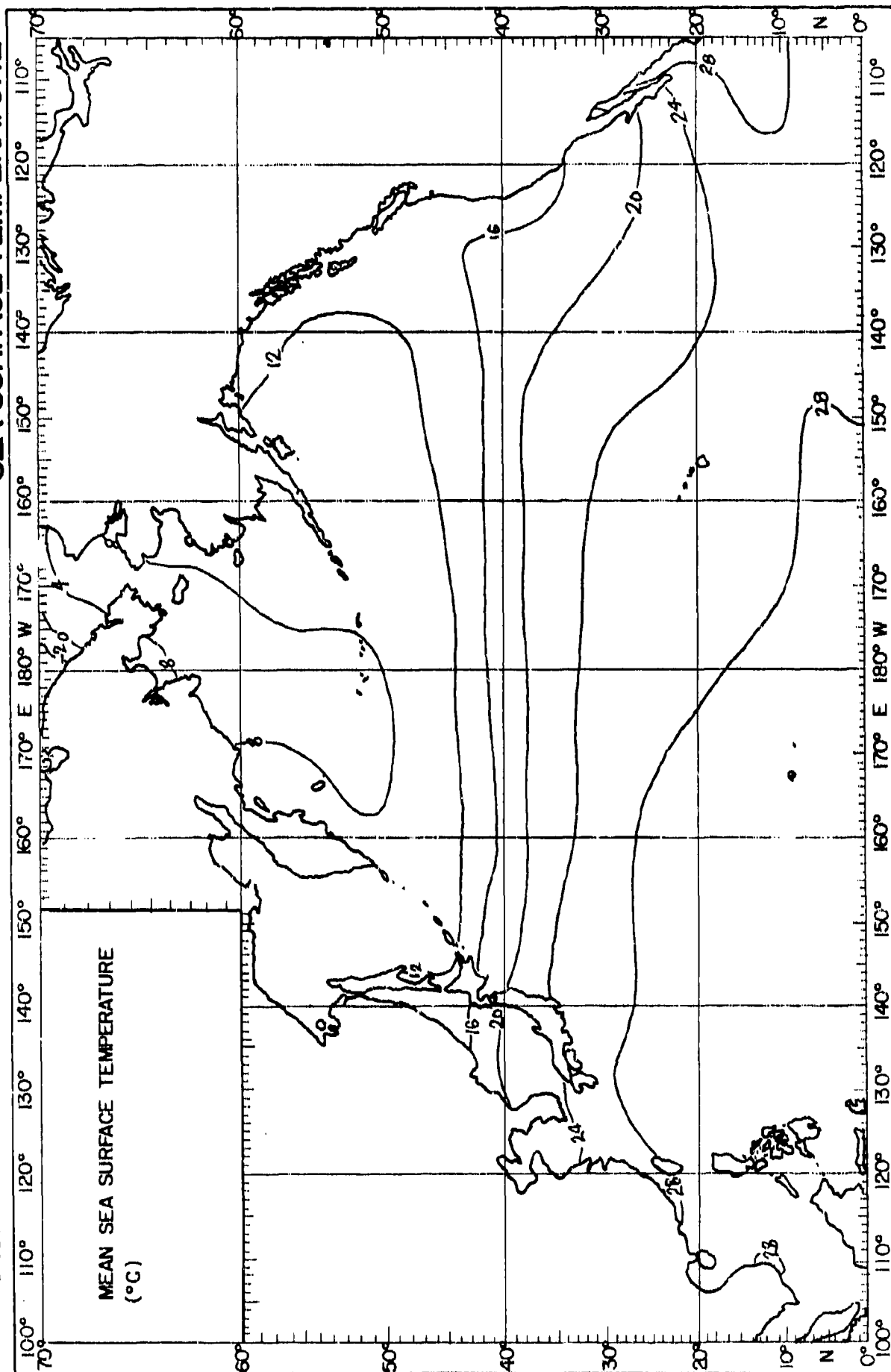
SEA SURFACE TEMPERATURE

JULY



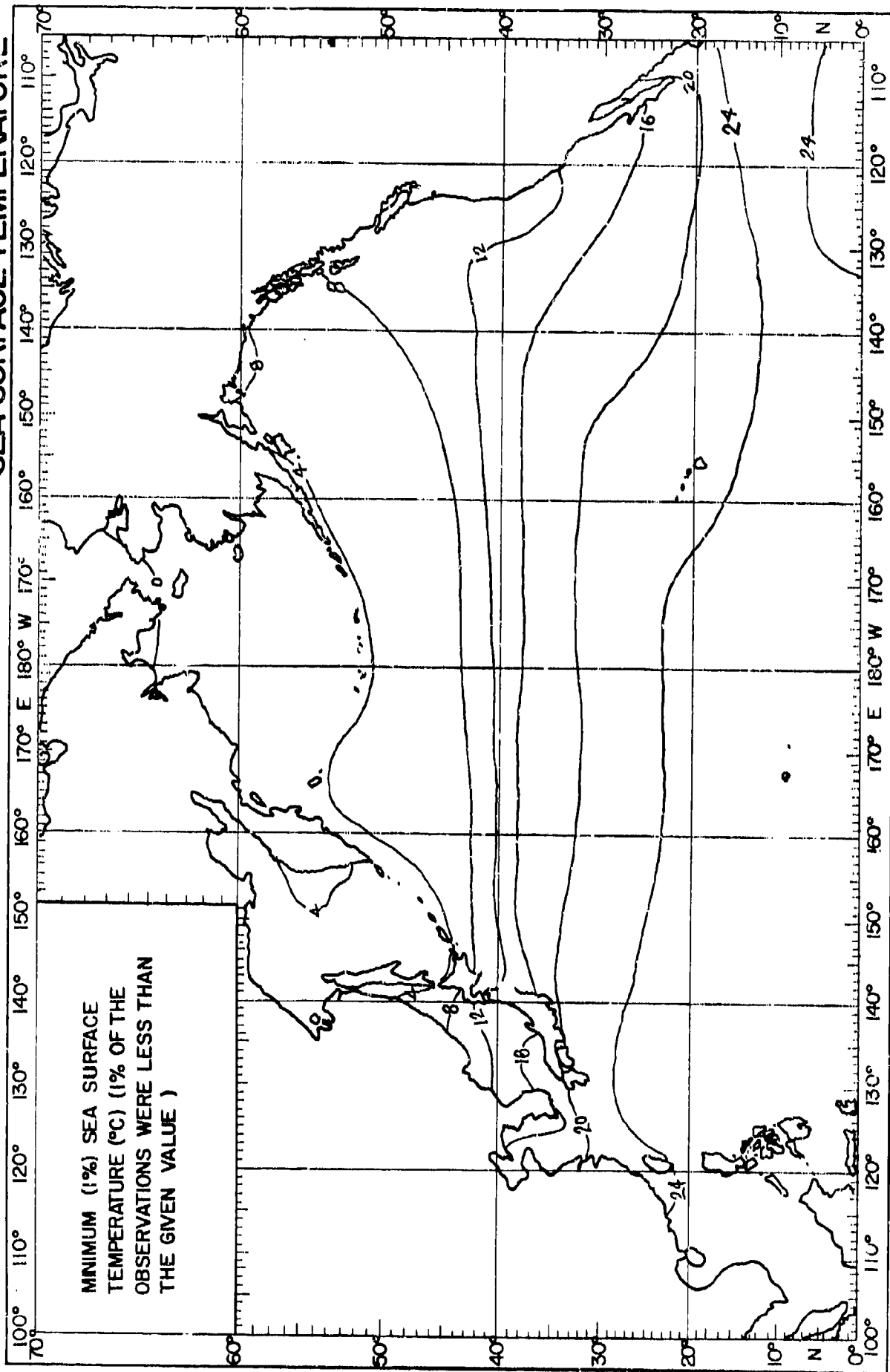
JULY

SEA SURFACE TEMPERATURE



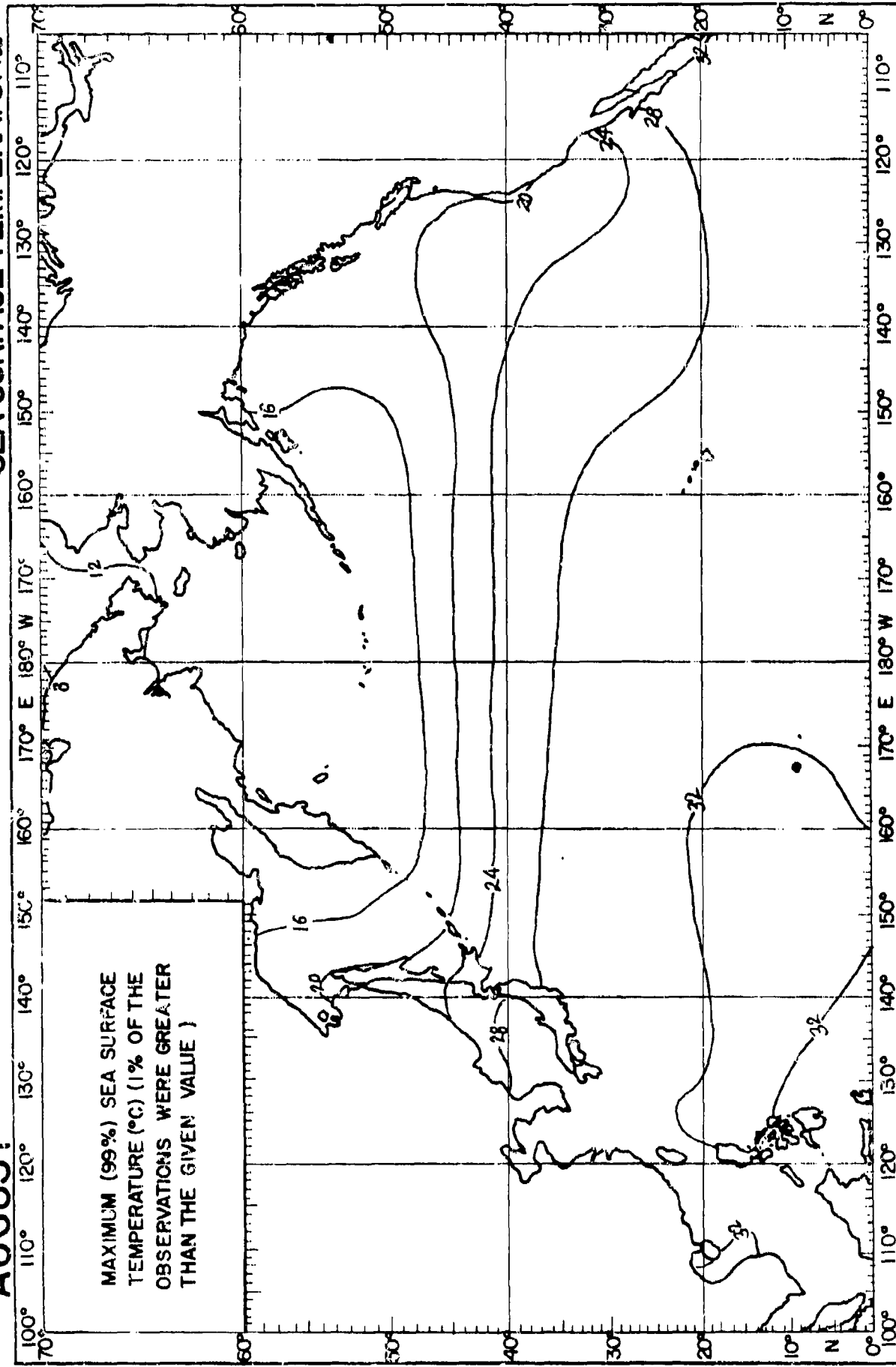
JULY

SEA SURFACE TEMPERATURE



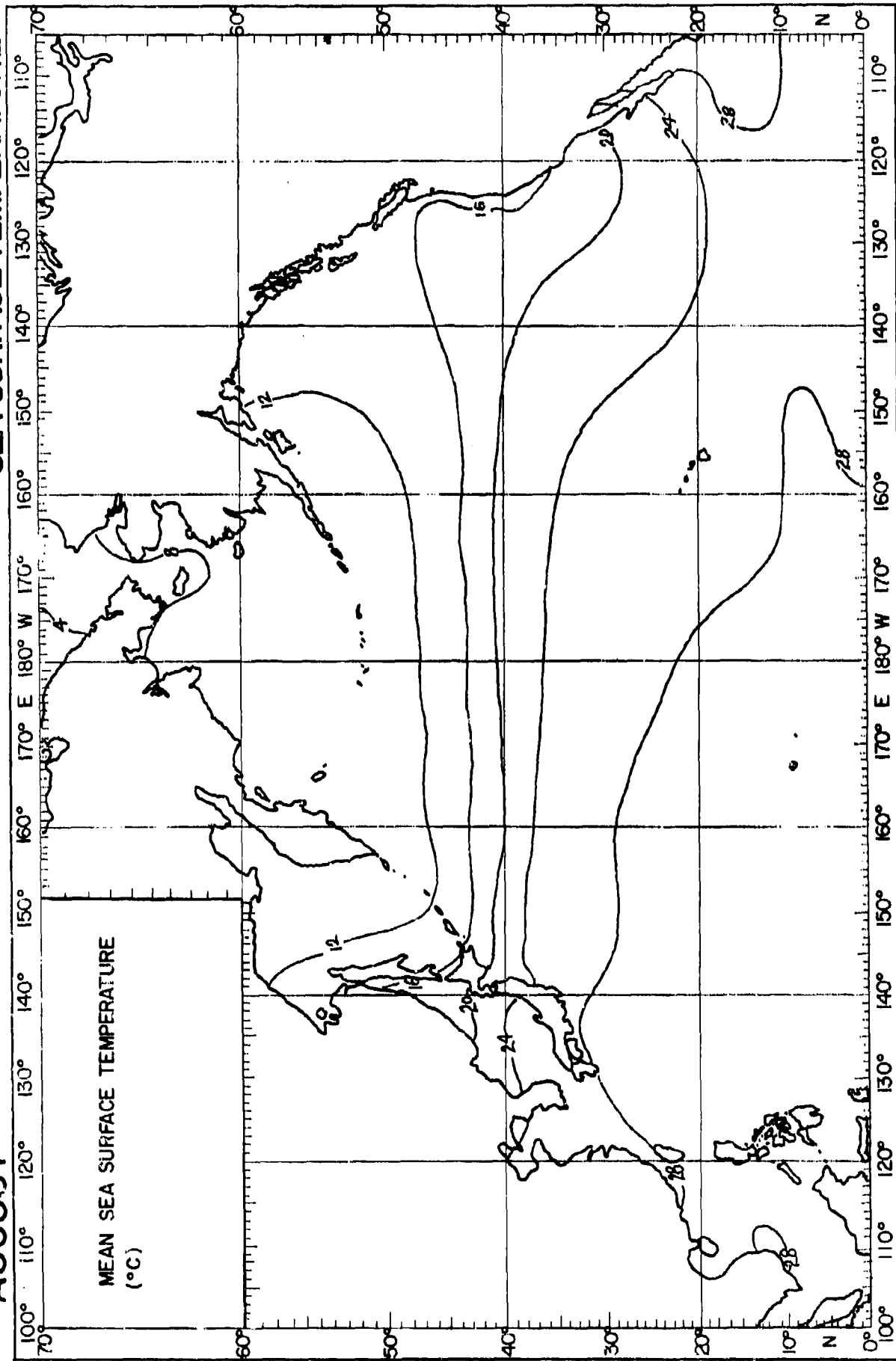
AUGUST

SEA SURFACE TEMPERATURE



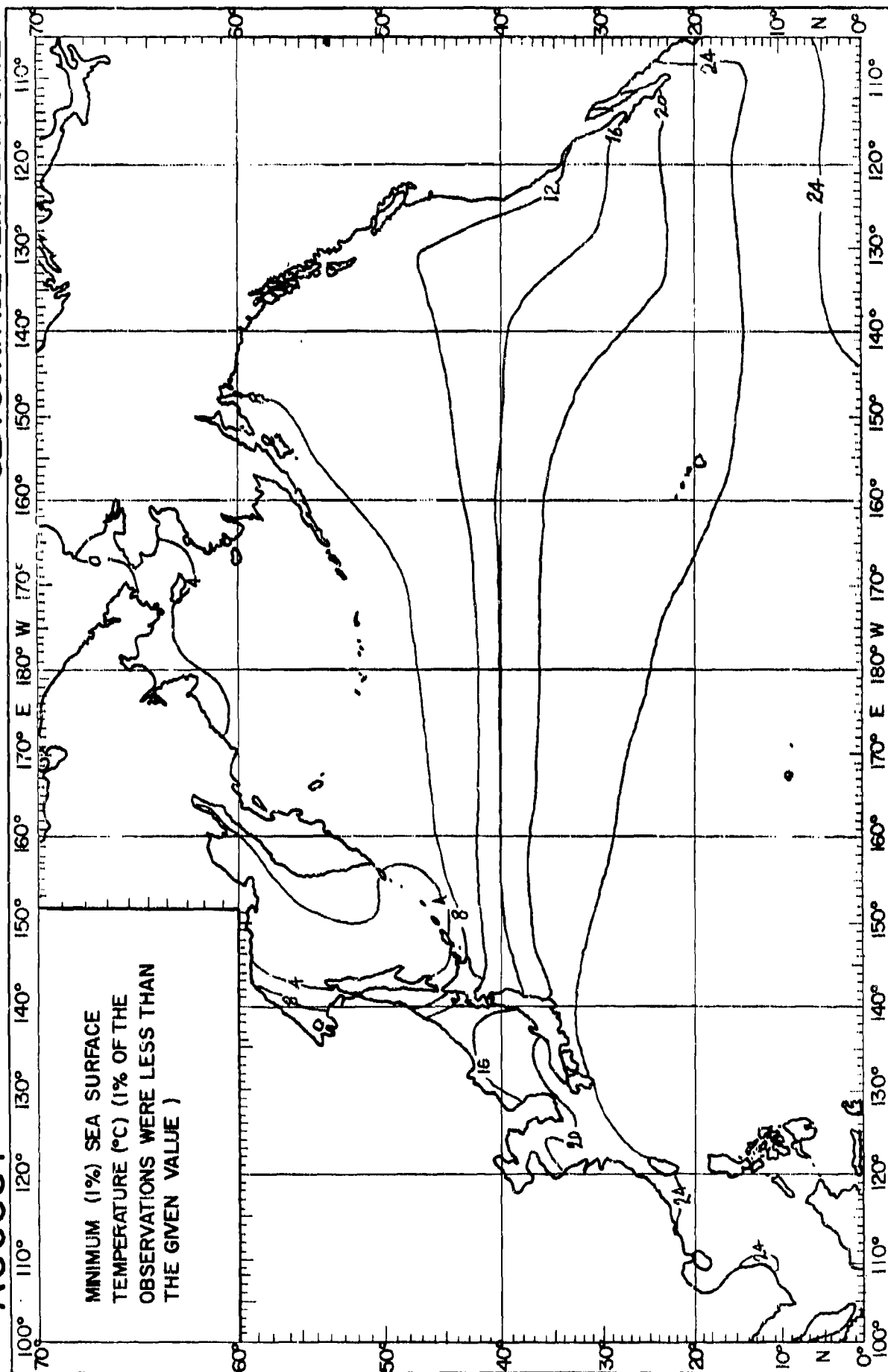
AUGUST

SEA SURFACE TEMPERATURE



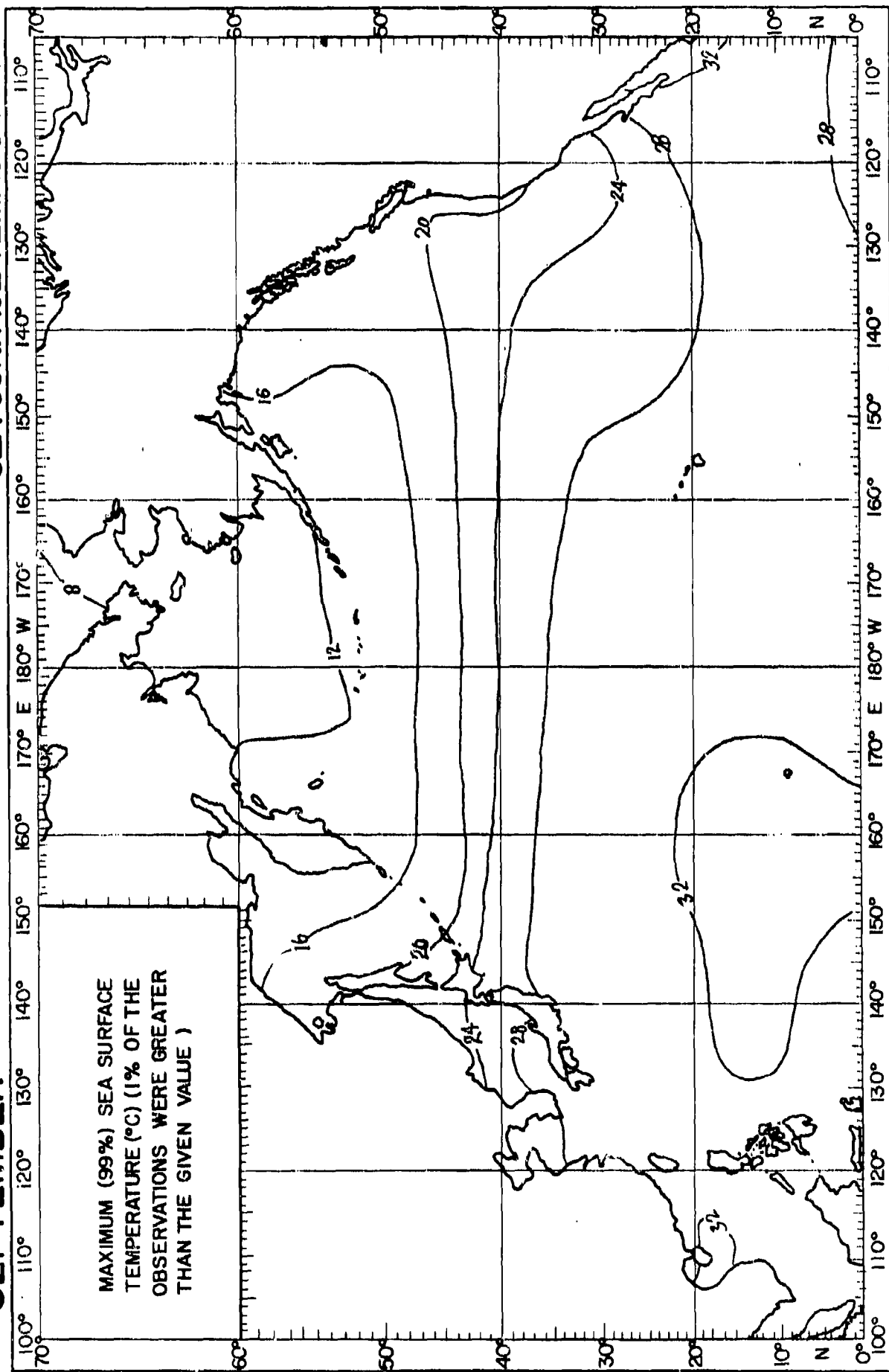
AUGUST

SEA SURFACE TEMPERATURE



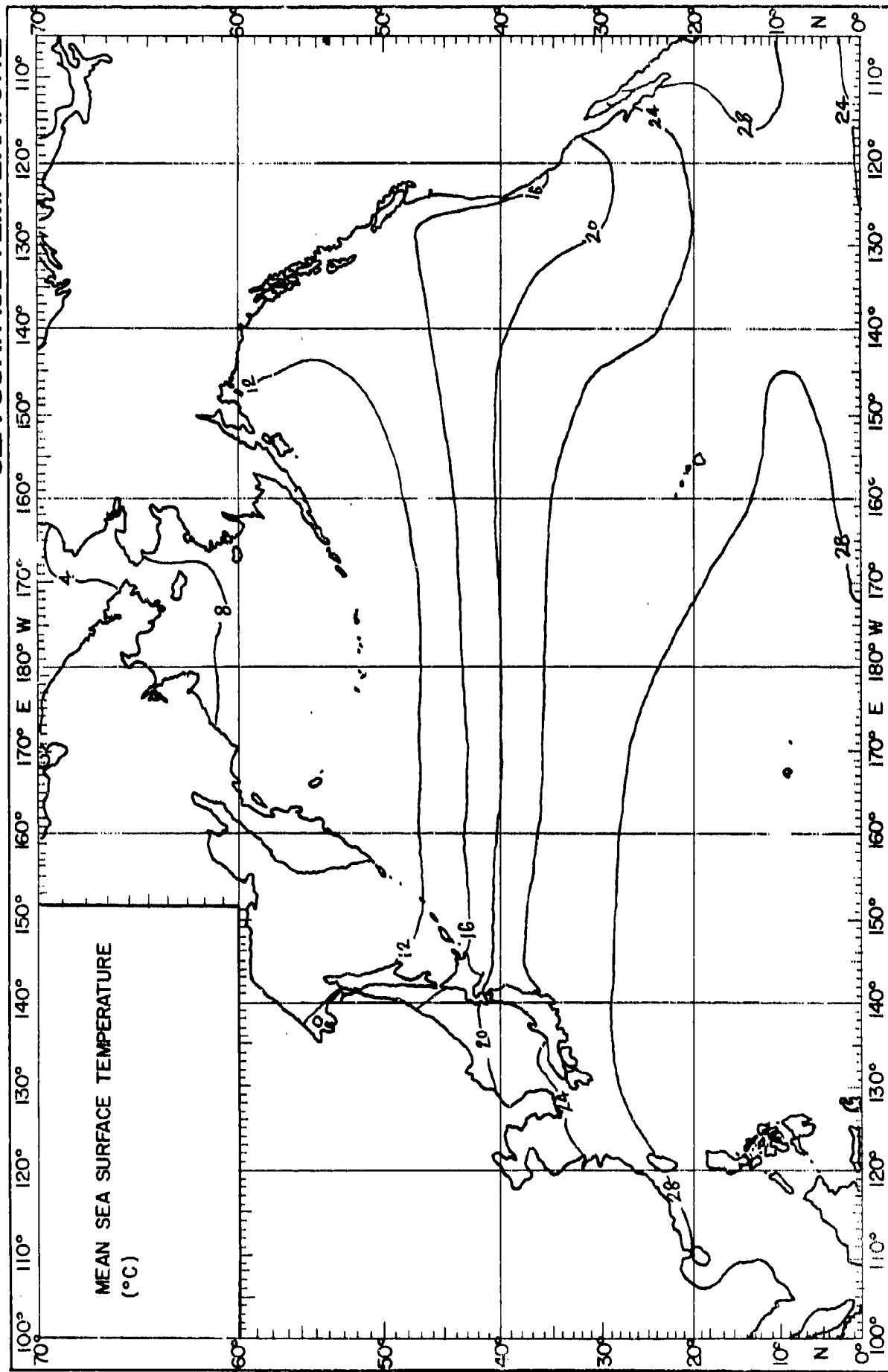
SEPTEMBER

SEA SURFACE TEMPERATURE



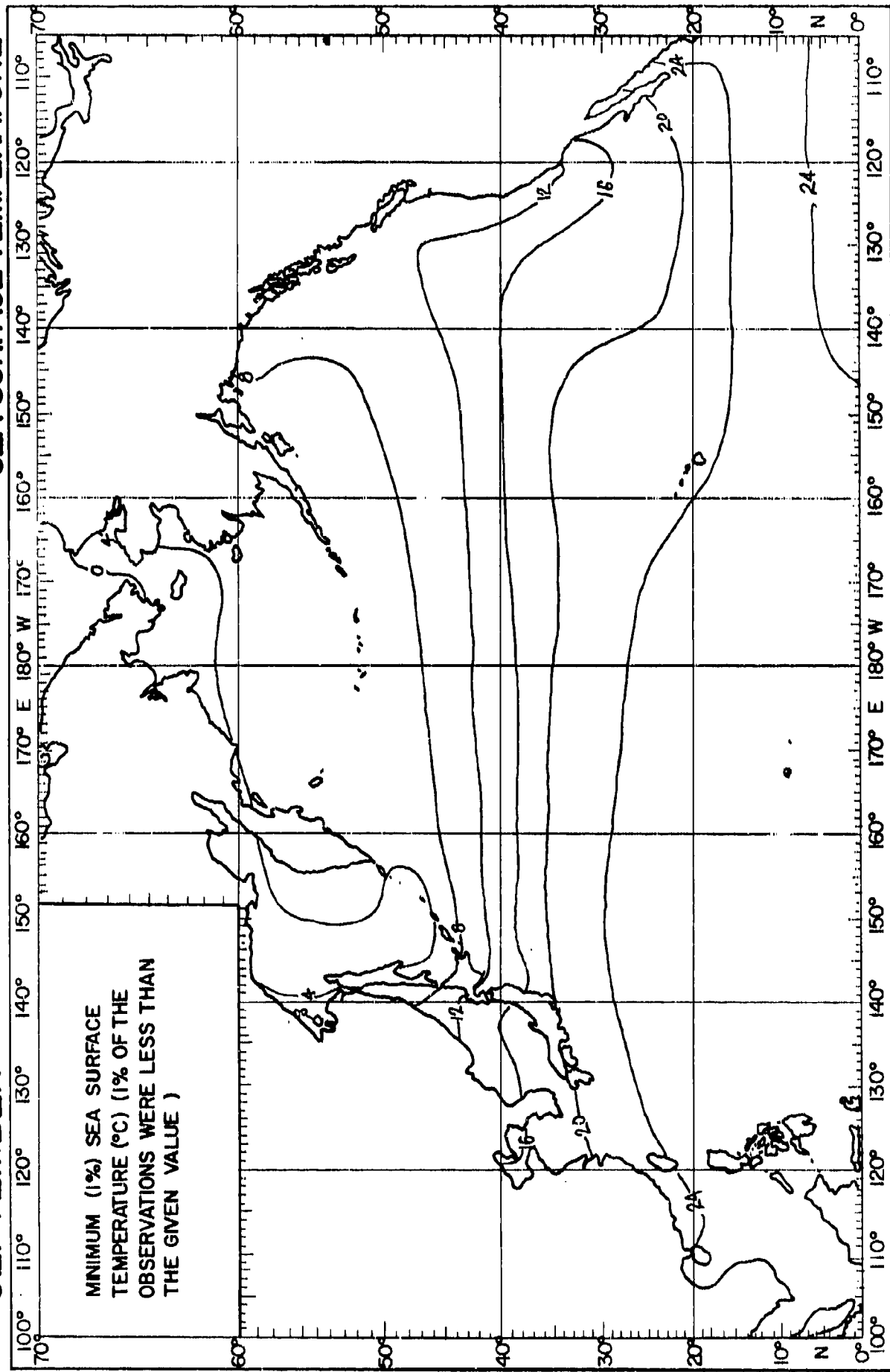
SEPTEMBER

SEA SURFACE TEMPERATURE



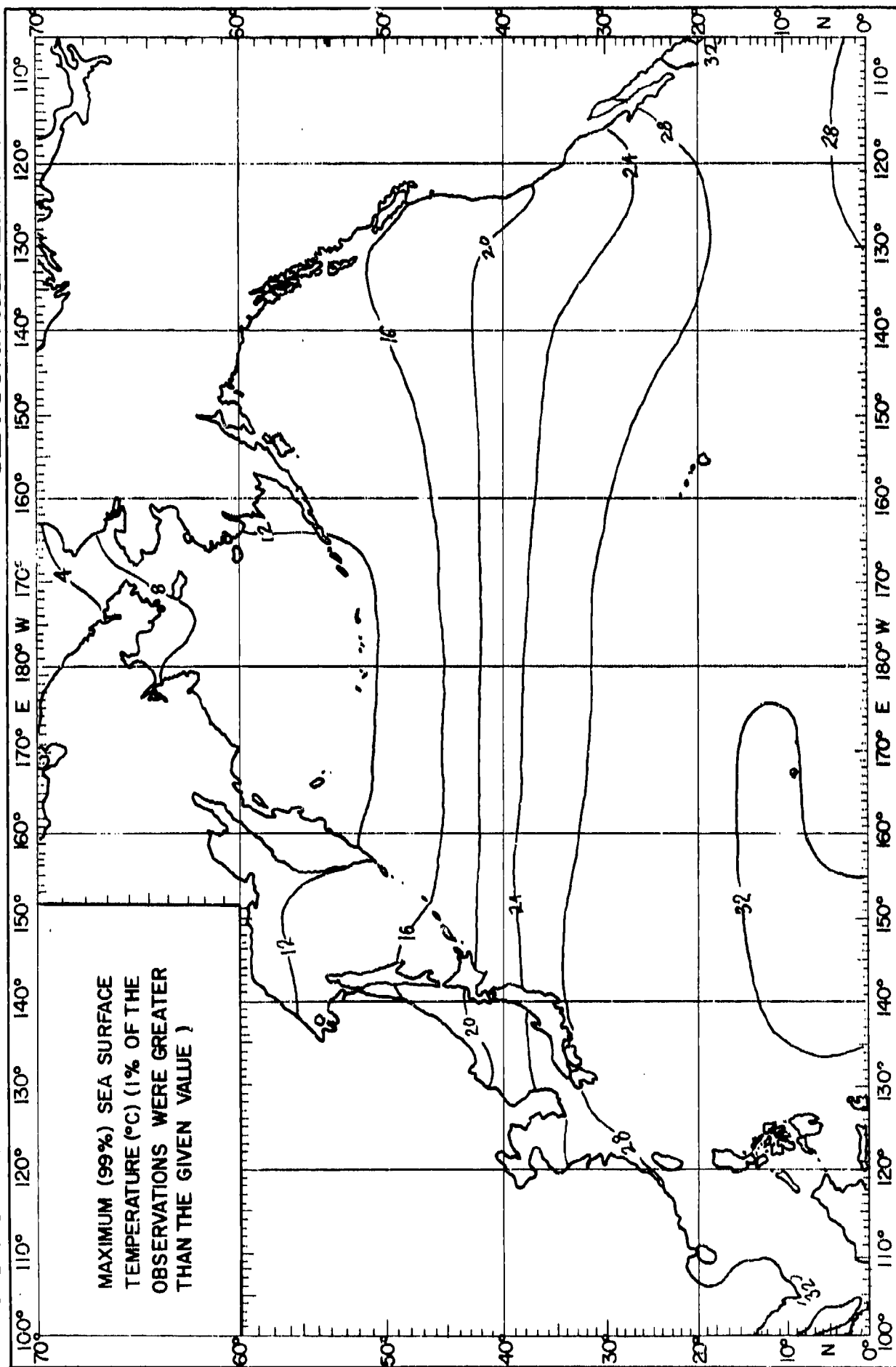
SEPTEMBER

SEA SURFACE TEMPERATURE



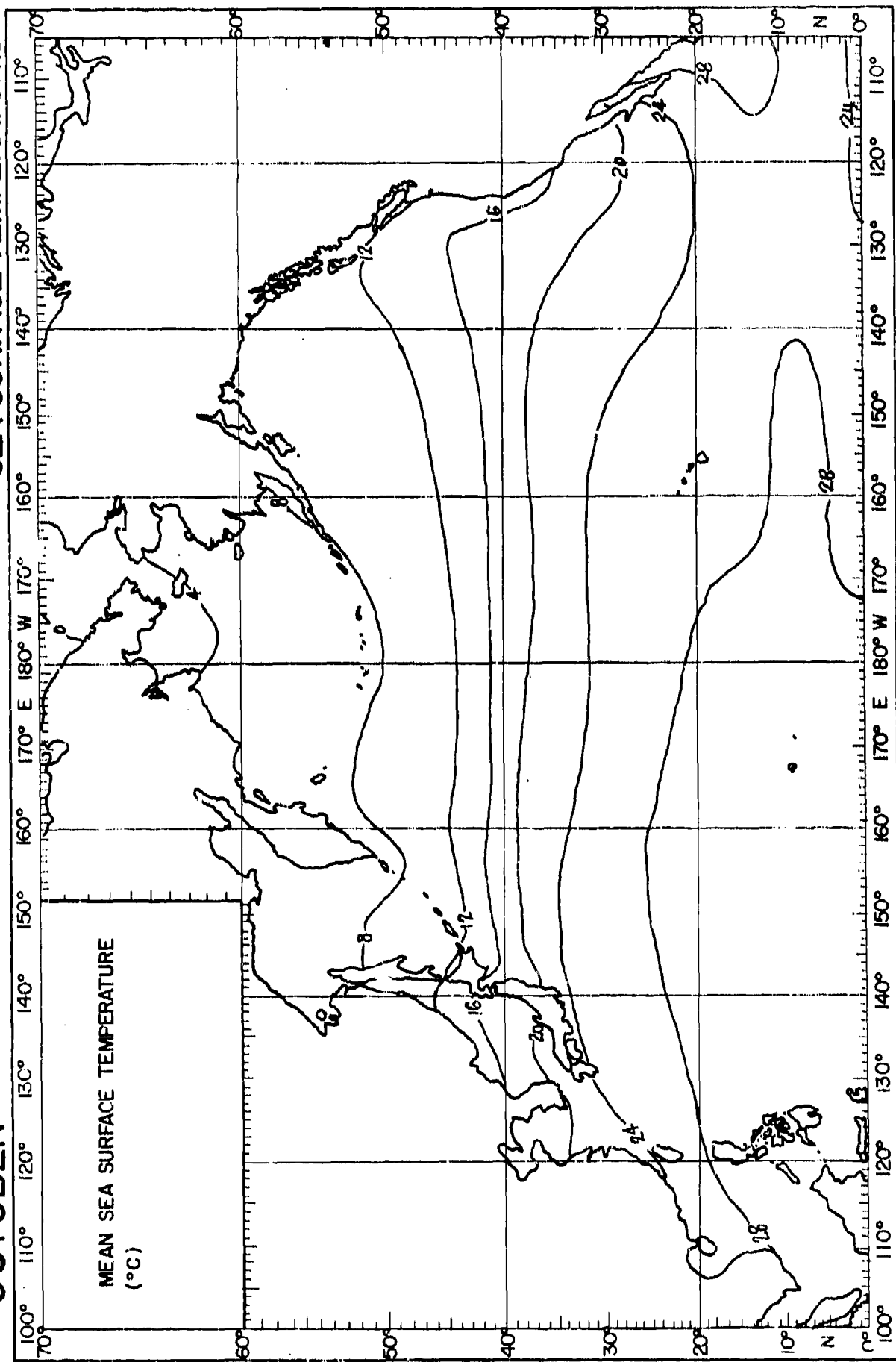
OCTOBER

SEA SURFACE TEMPERATURE



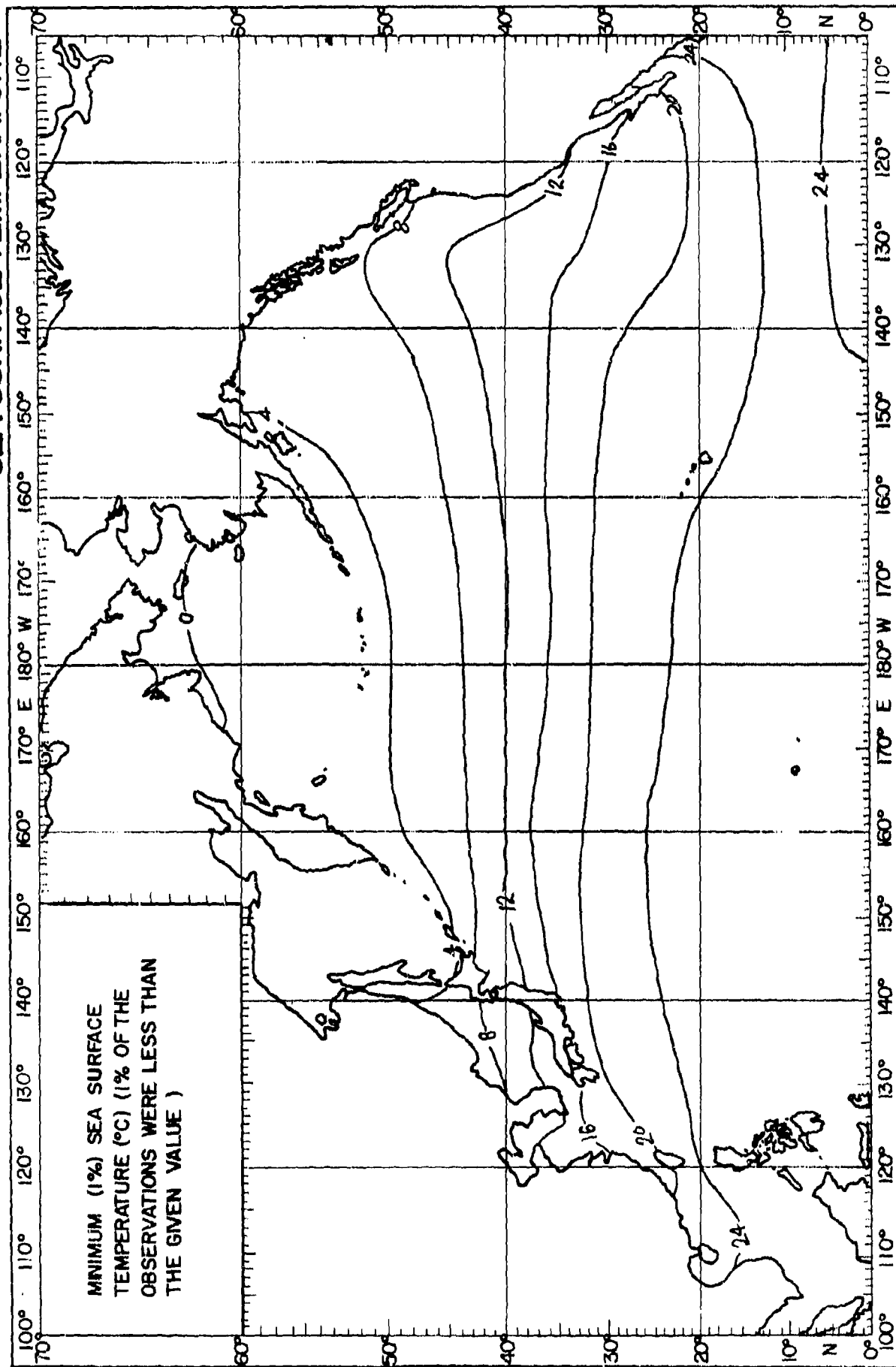
OCTOBER

SEA SURFACE TEMPERATURE



OCTOBER

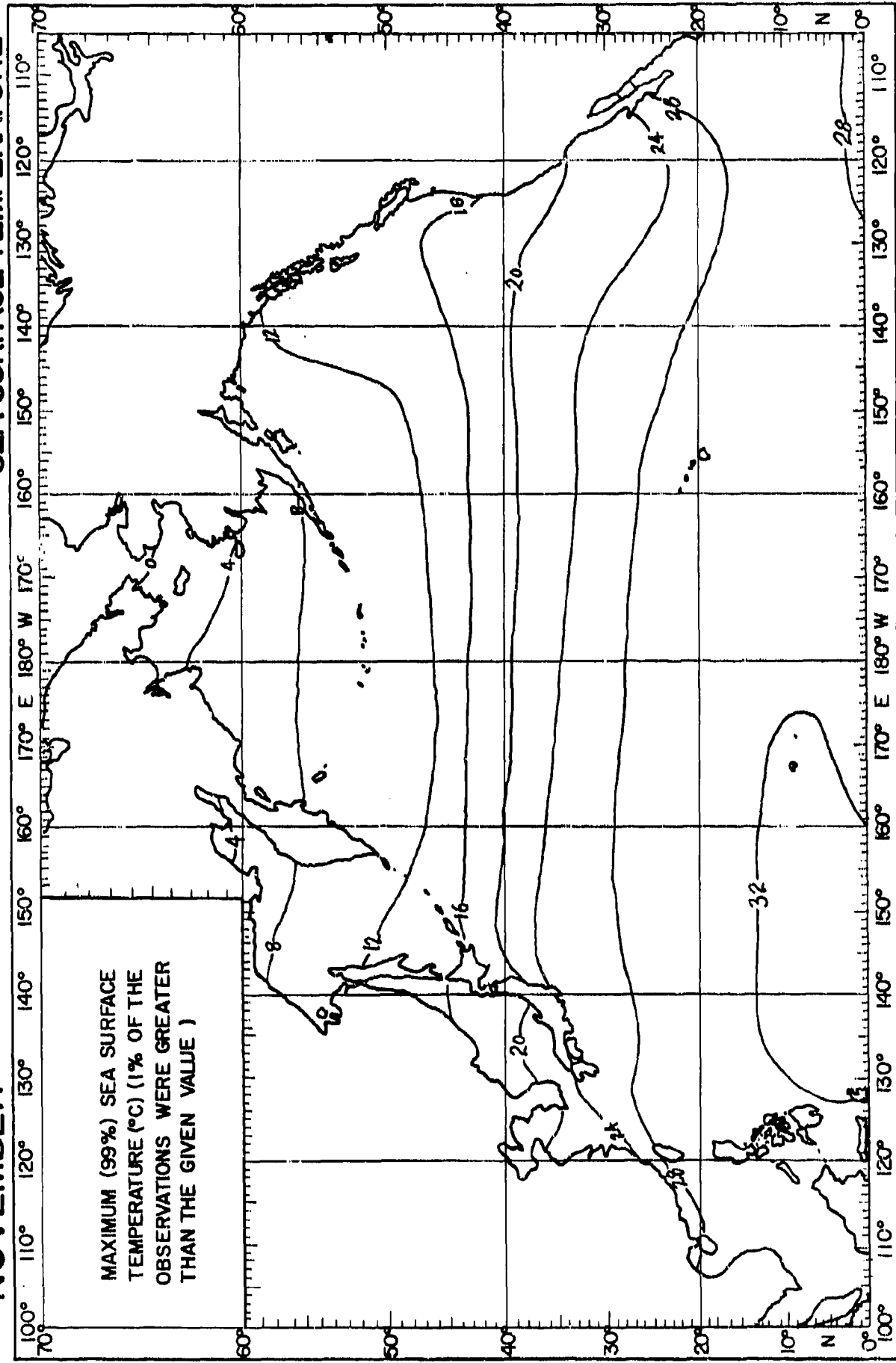
SEA SURFACE TEMPERATURE



NOVEMBER

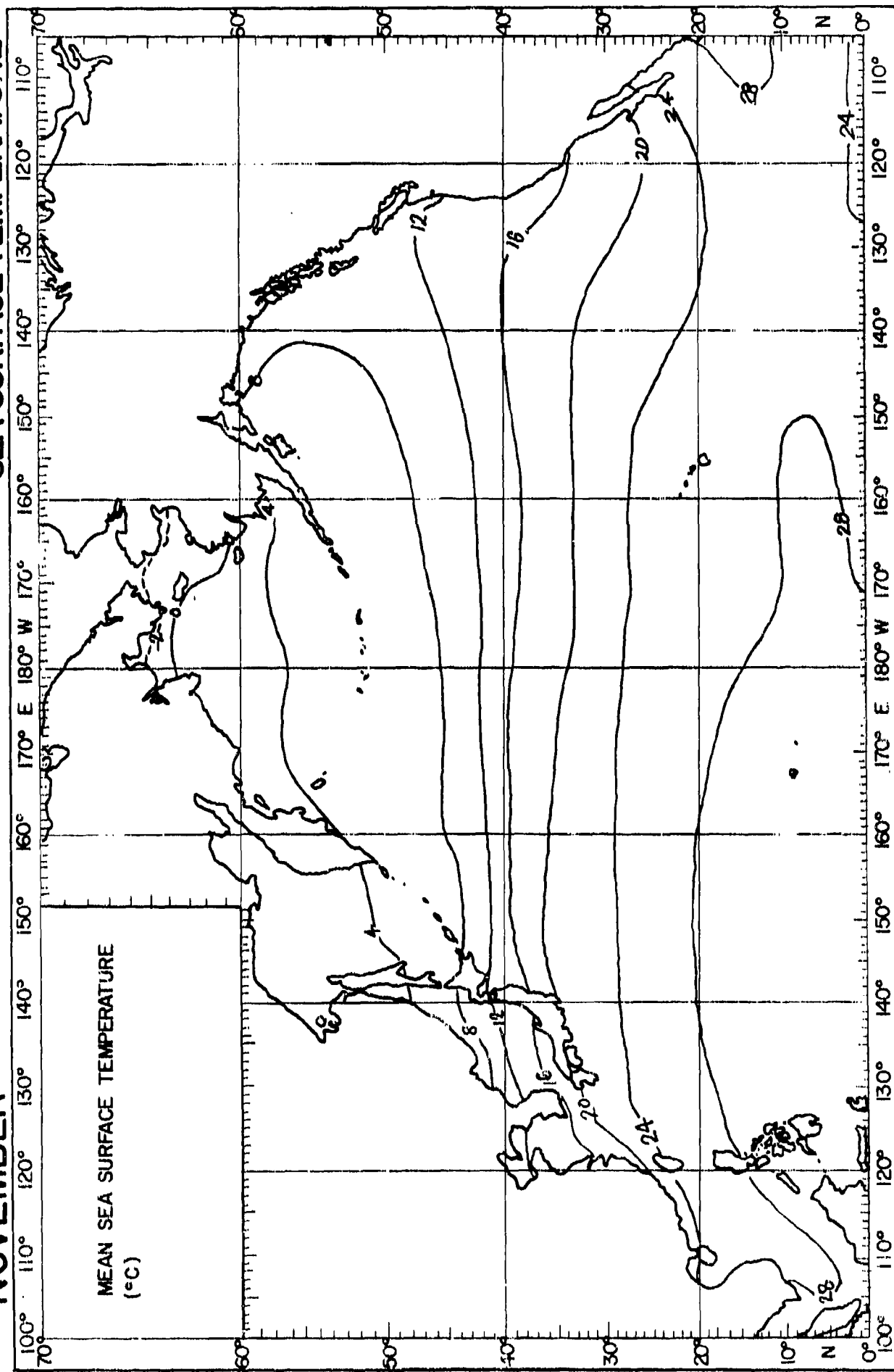
SEA SURFACE TEMPERATURE

MAXIMUM (99%) SEA SURFACE
TEMPERATURE (°C) (1% OF THE
OBSERVATIONS WERE GREATER
THAN THE GIVEN VALUE)



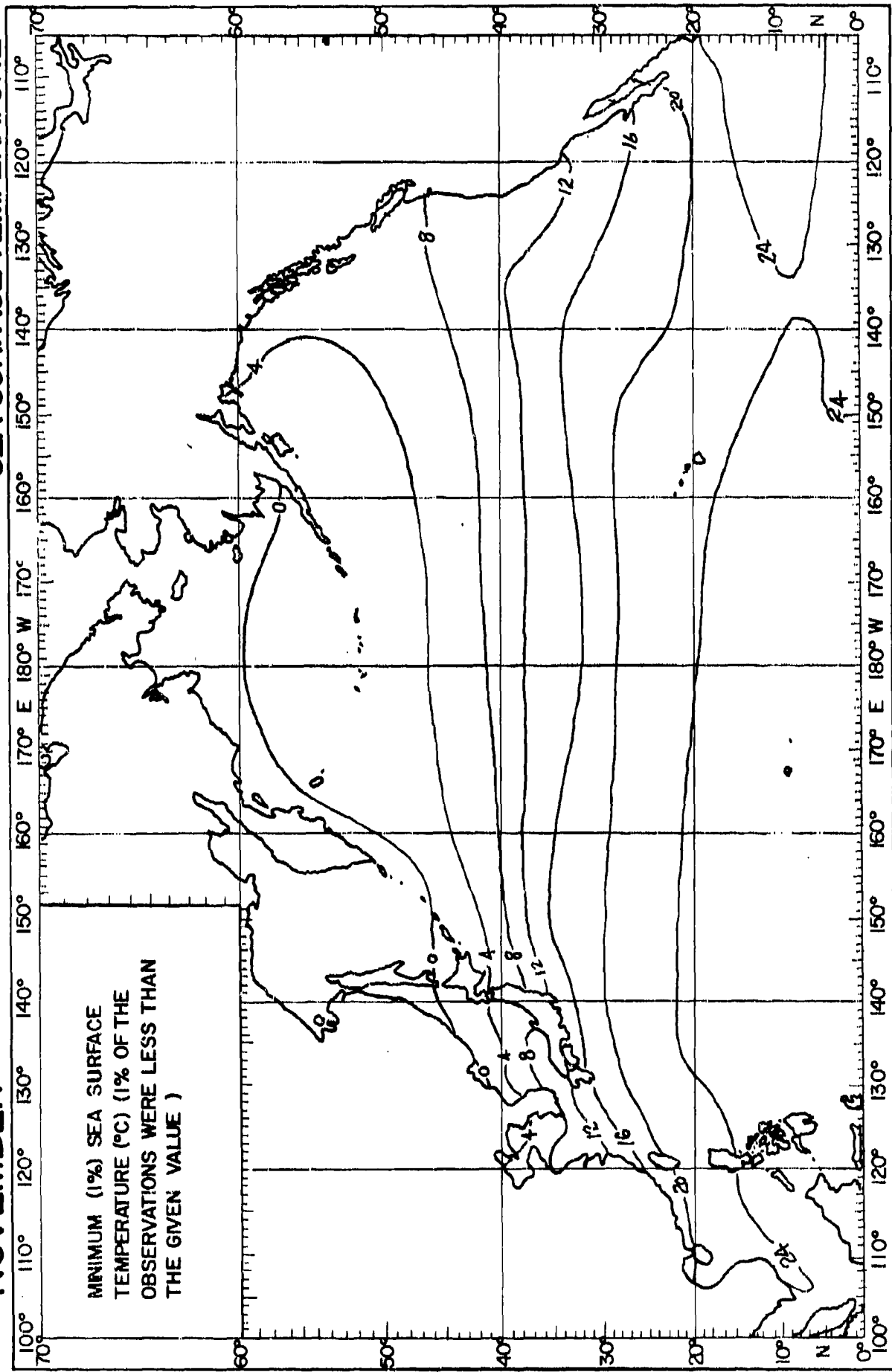
NOVEMBER

SEA SURFACE TEMPERATURE



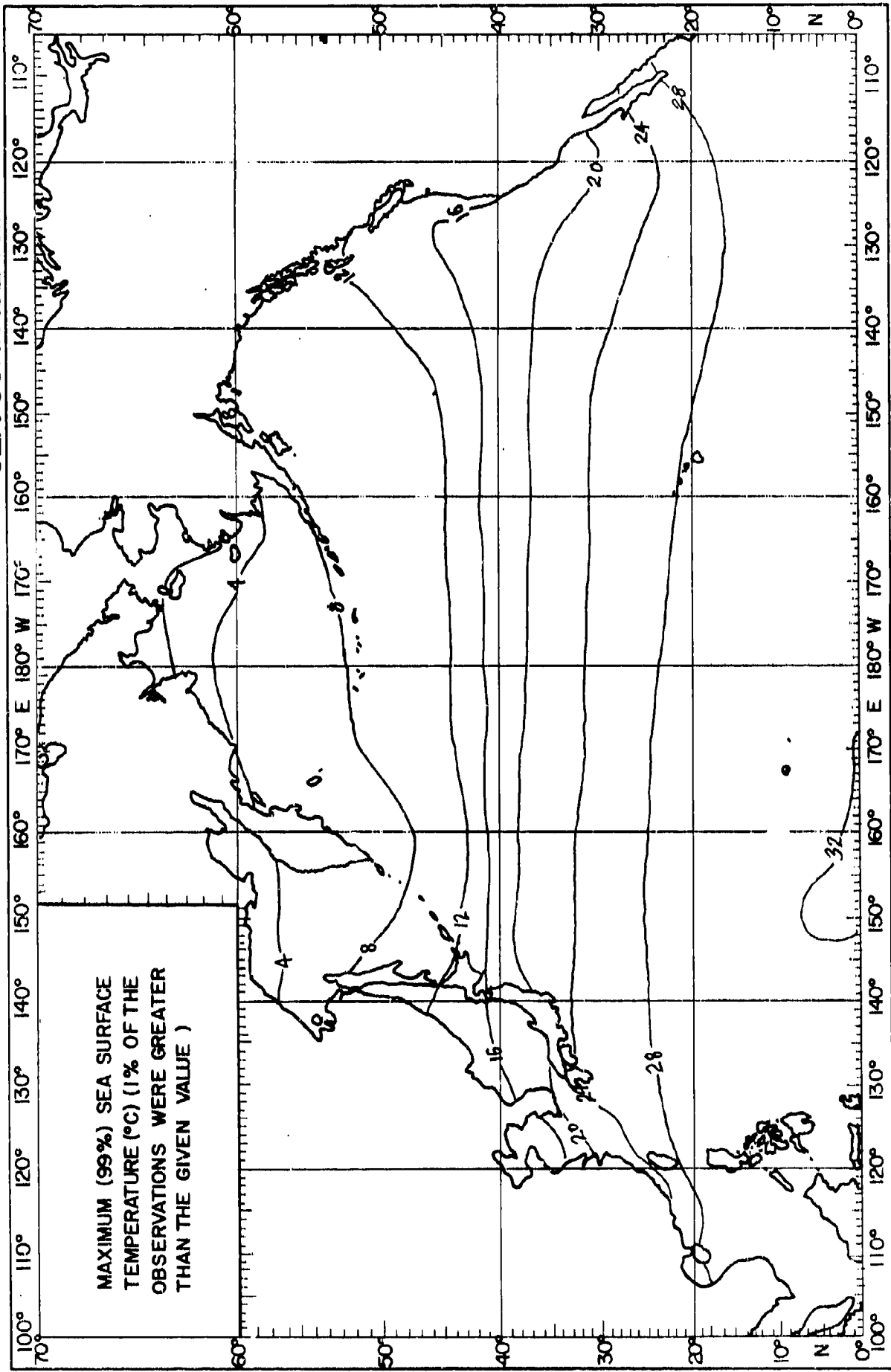
NOVEMBER

SEA SURFACE TEMPERATURE



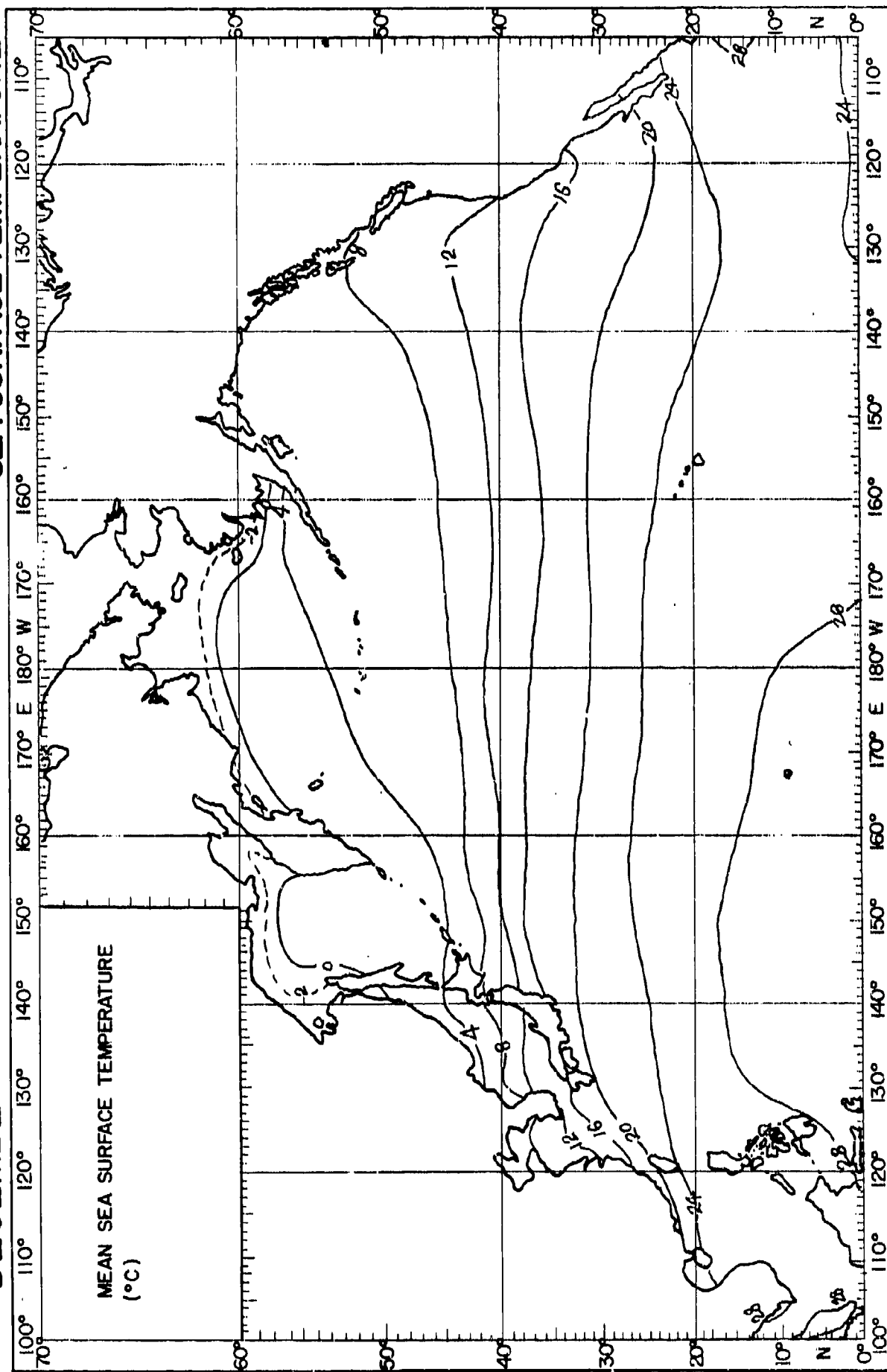
DECEMBER

SEA SURFACE TEMPERATURE



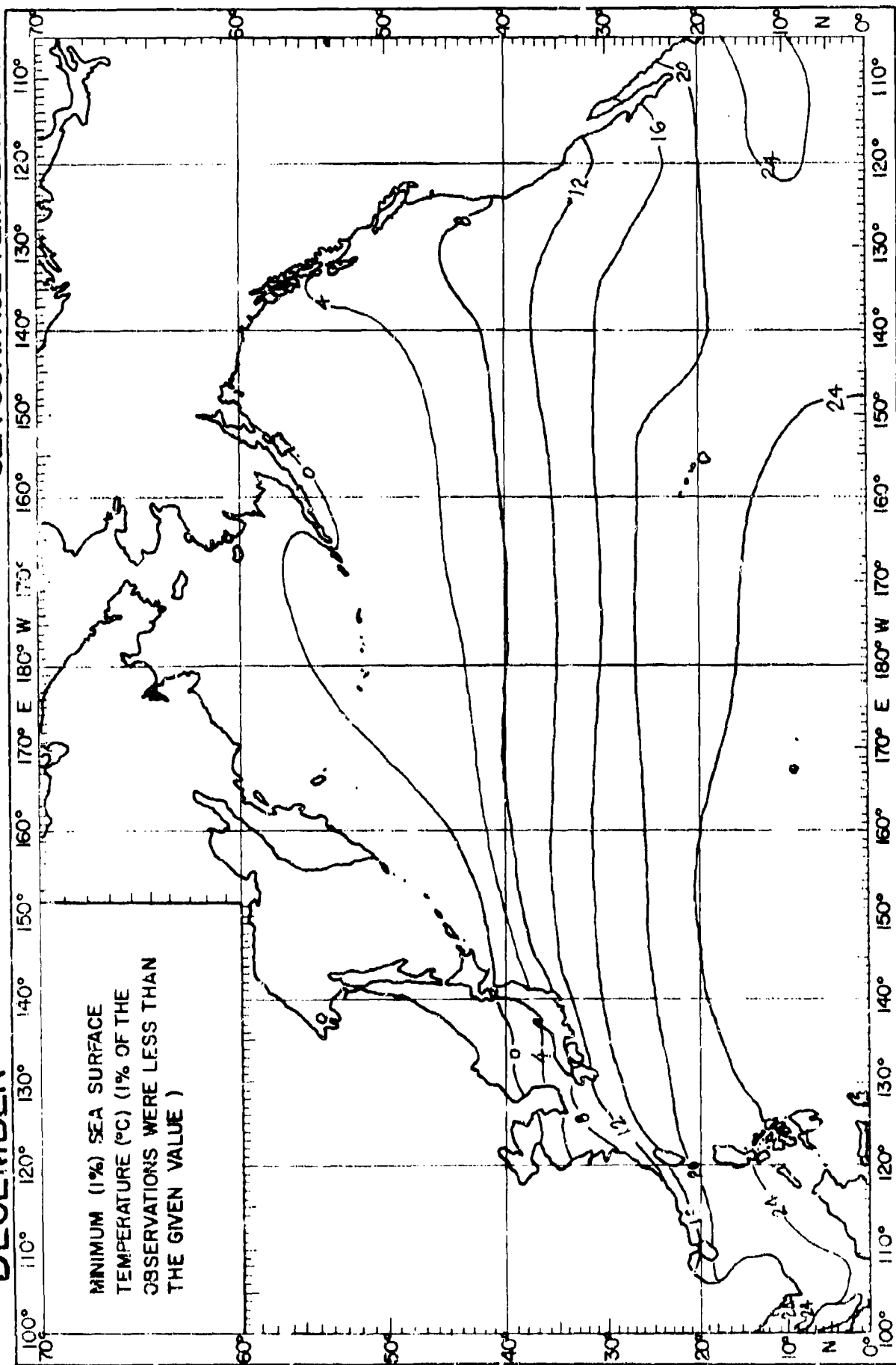
DECEMBER

SEA SURFACE TEMPERATURE



DECEMBER

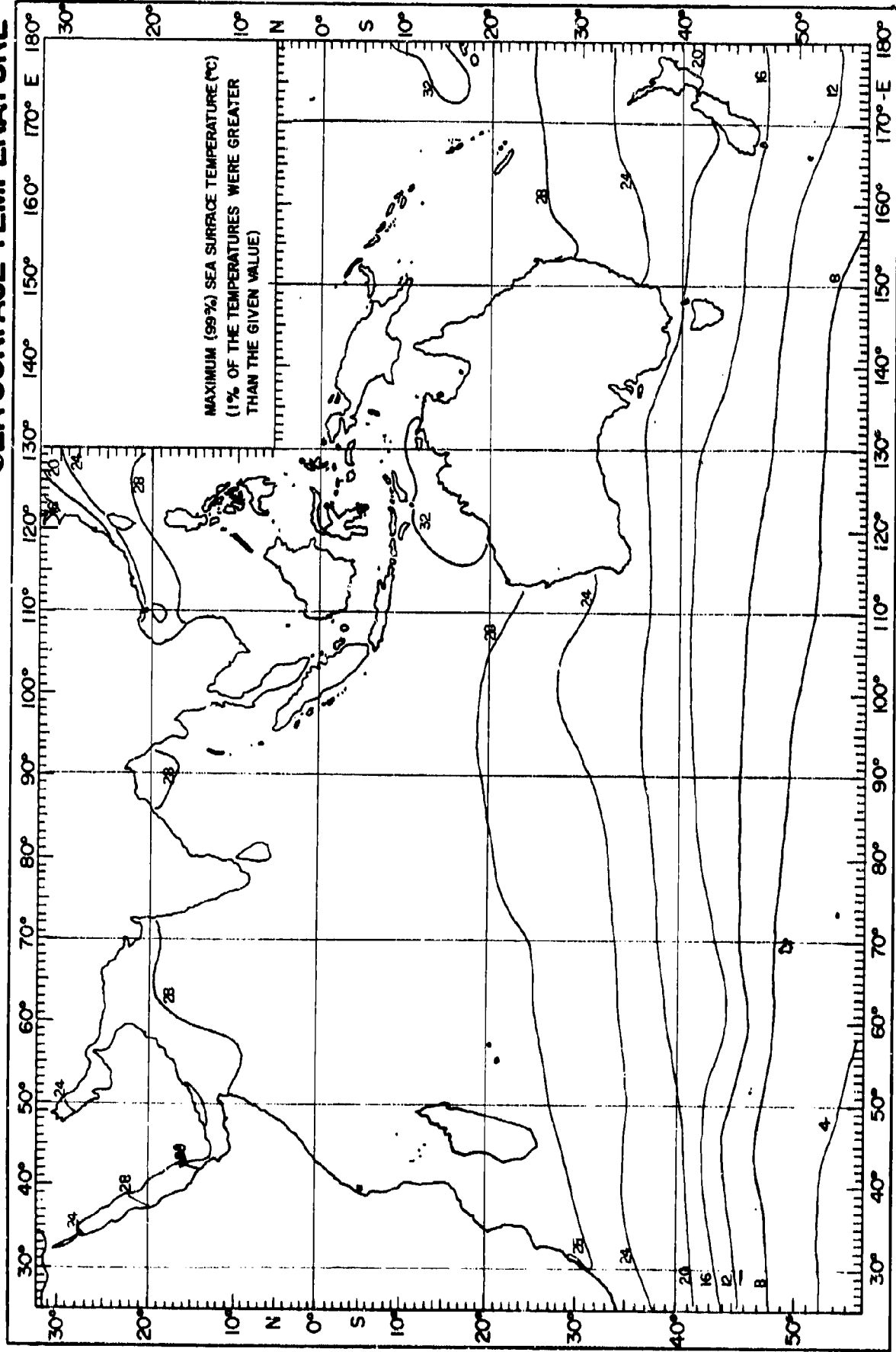
SEA SURFACE TEMPERATURE



INDIAN OCEAN
TEMPERATURE CHARTS

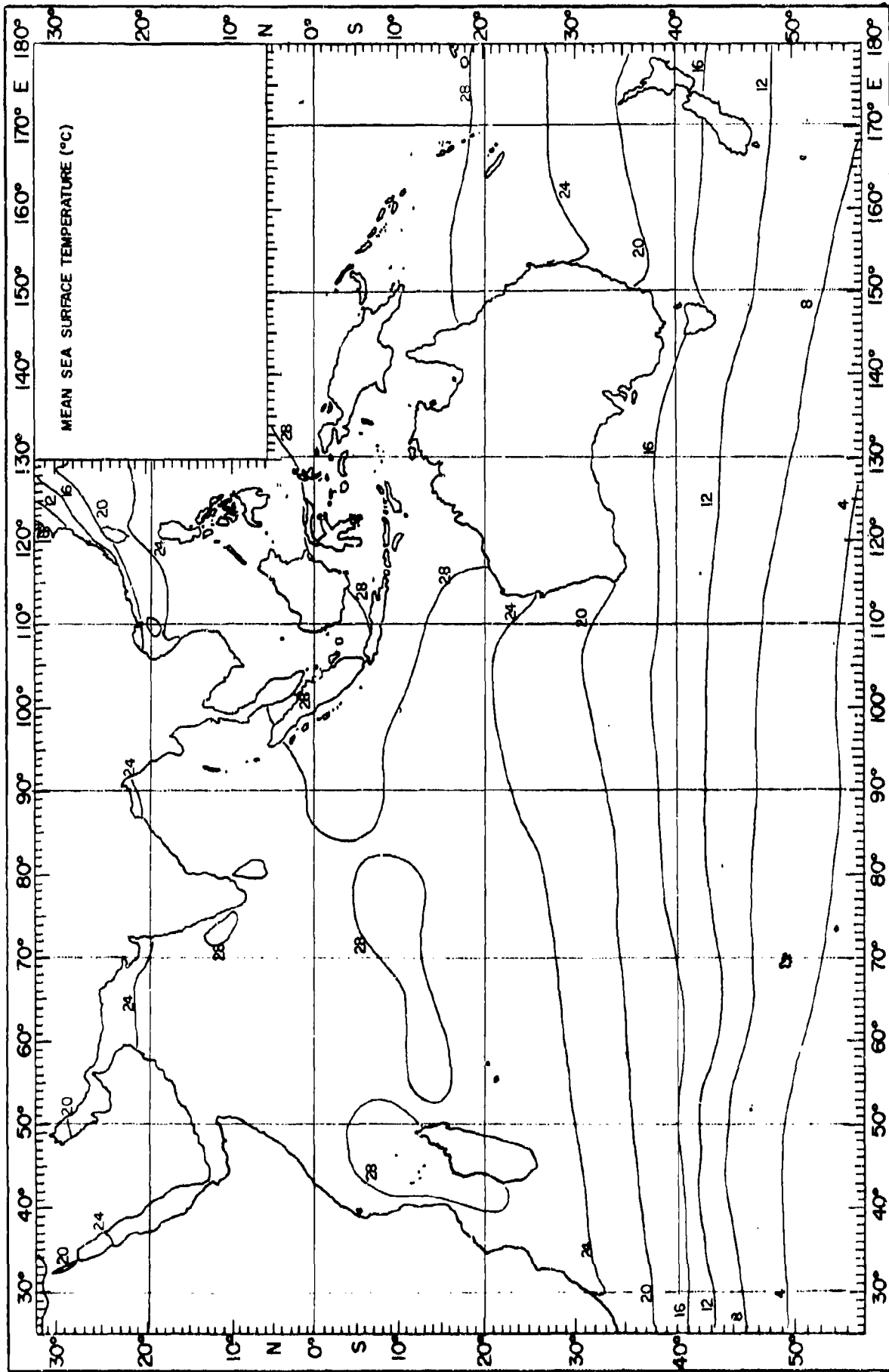
JANUARY

SEA SURFACE TEMPERATURE



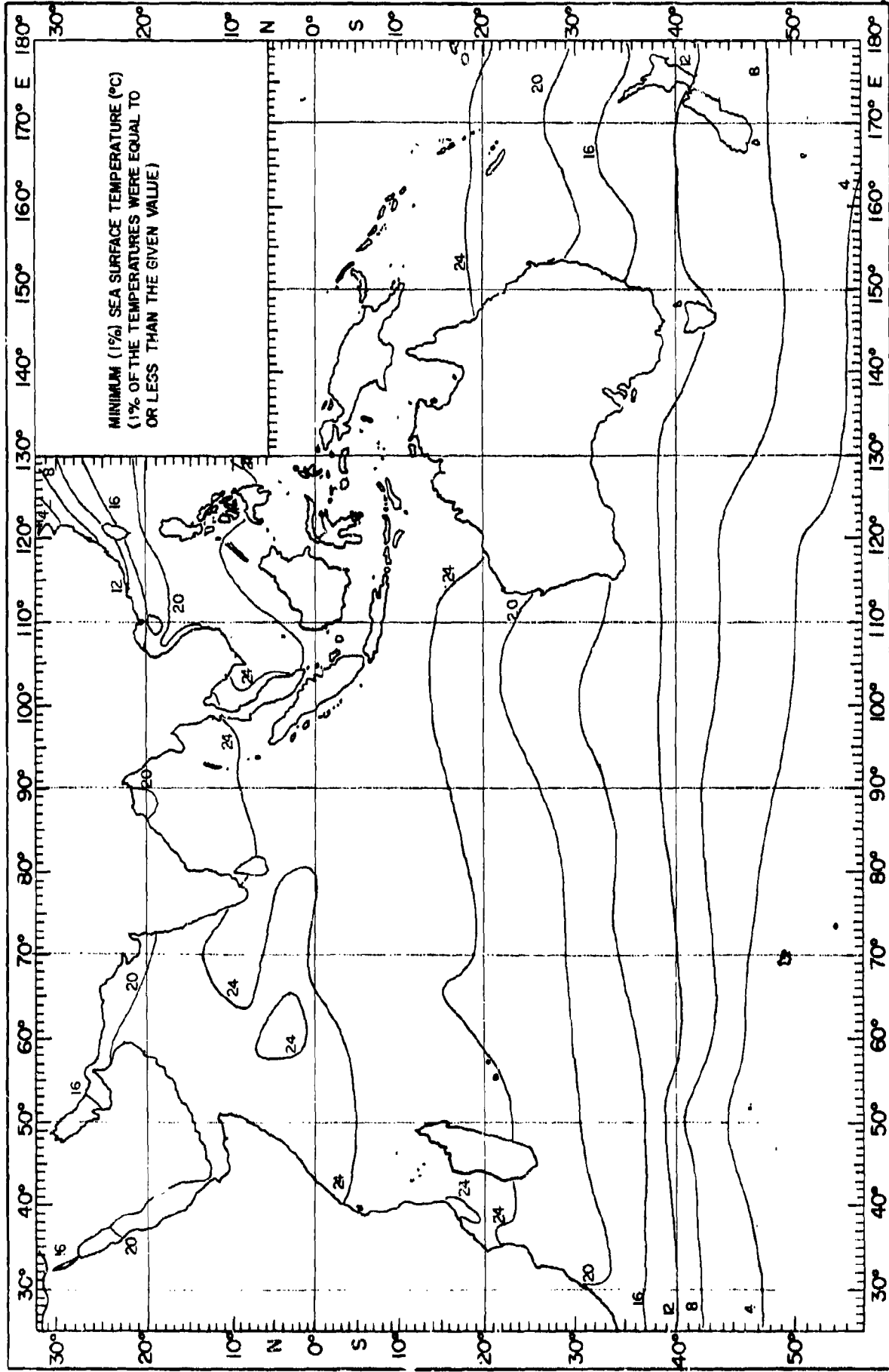
JANUARY

SEA SURFACE TEMPERATURE



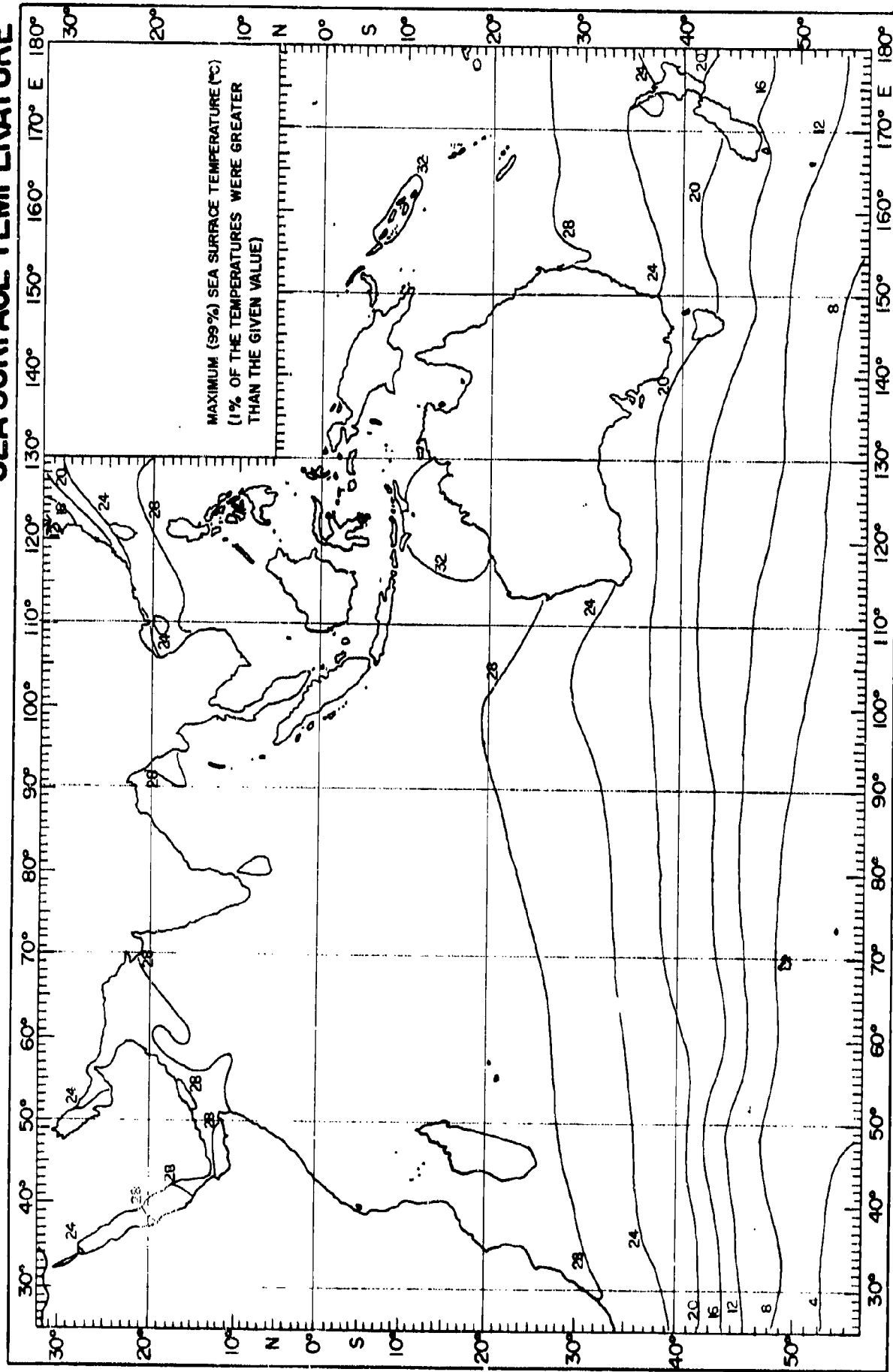
JANUARY

SEA SURFACE TEMPERATURE



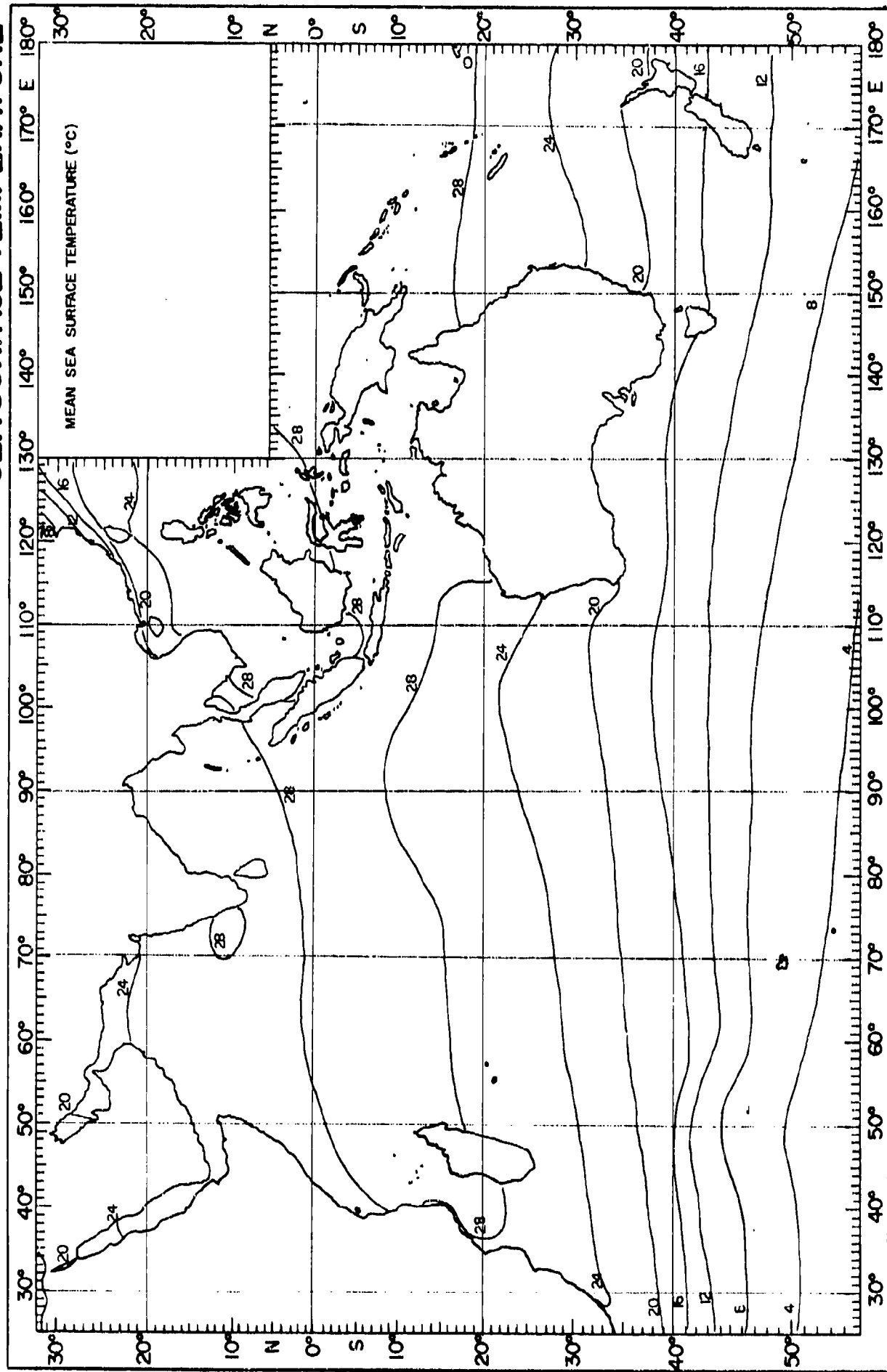
FEBRUARY

SEA SURFACE TEMPERATURE



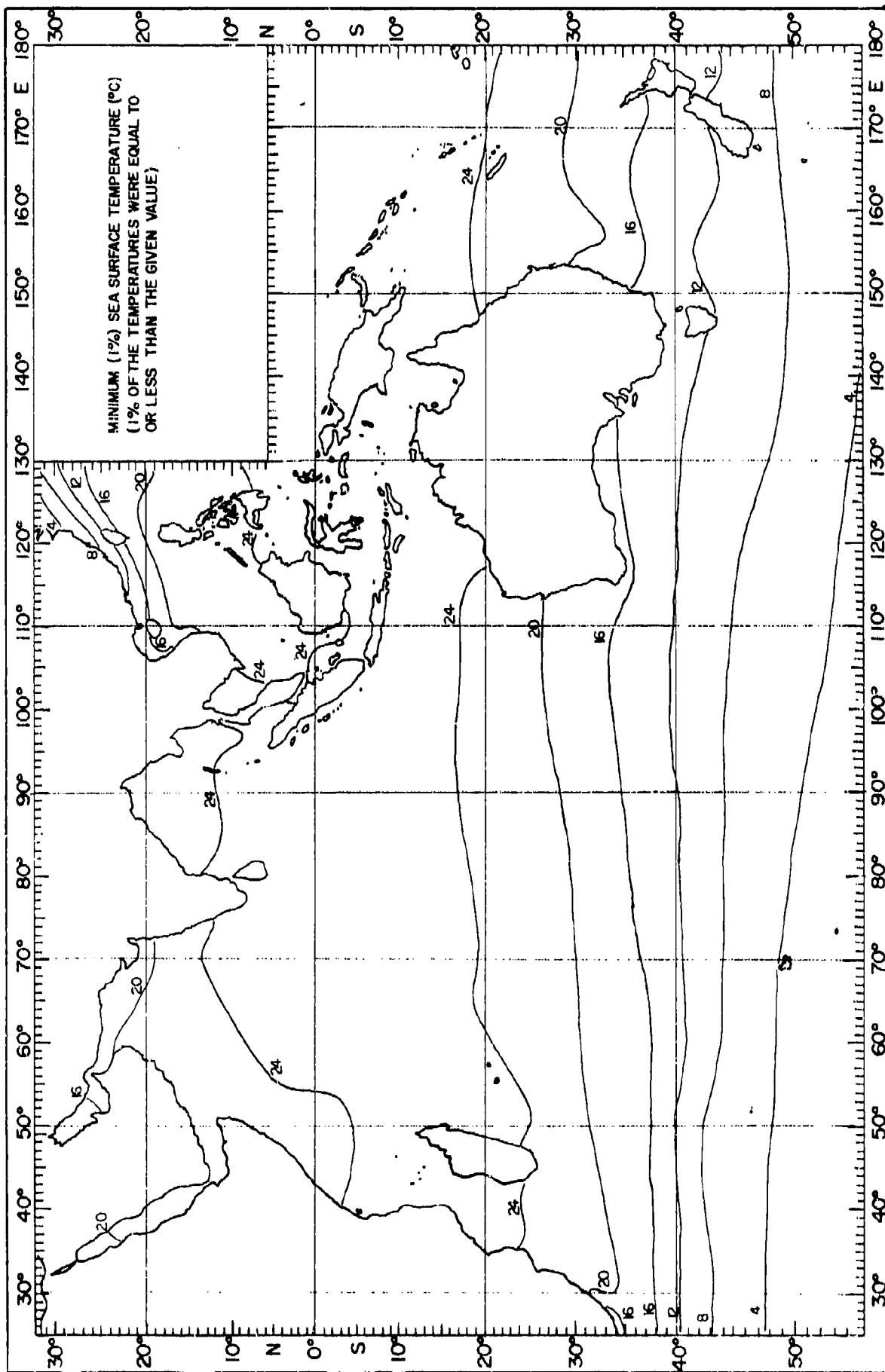
FEBRUARY

SEA SURFACE TEMPERATURE



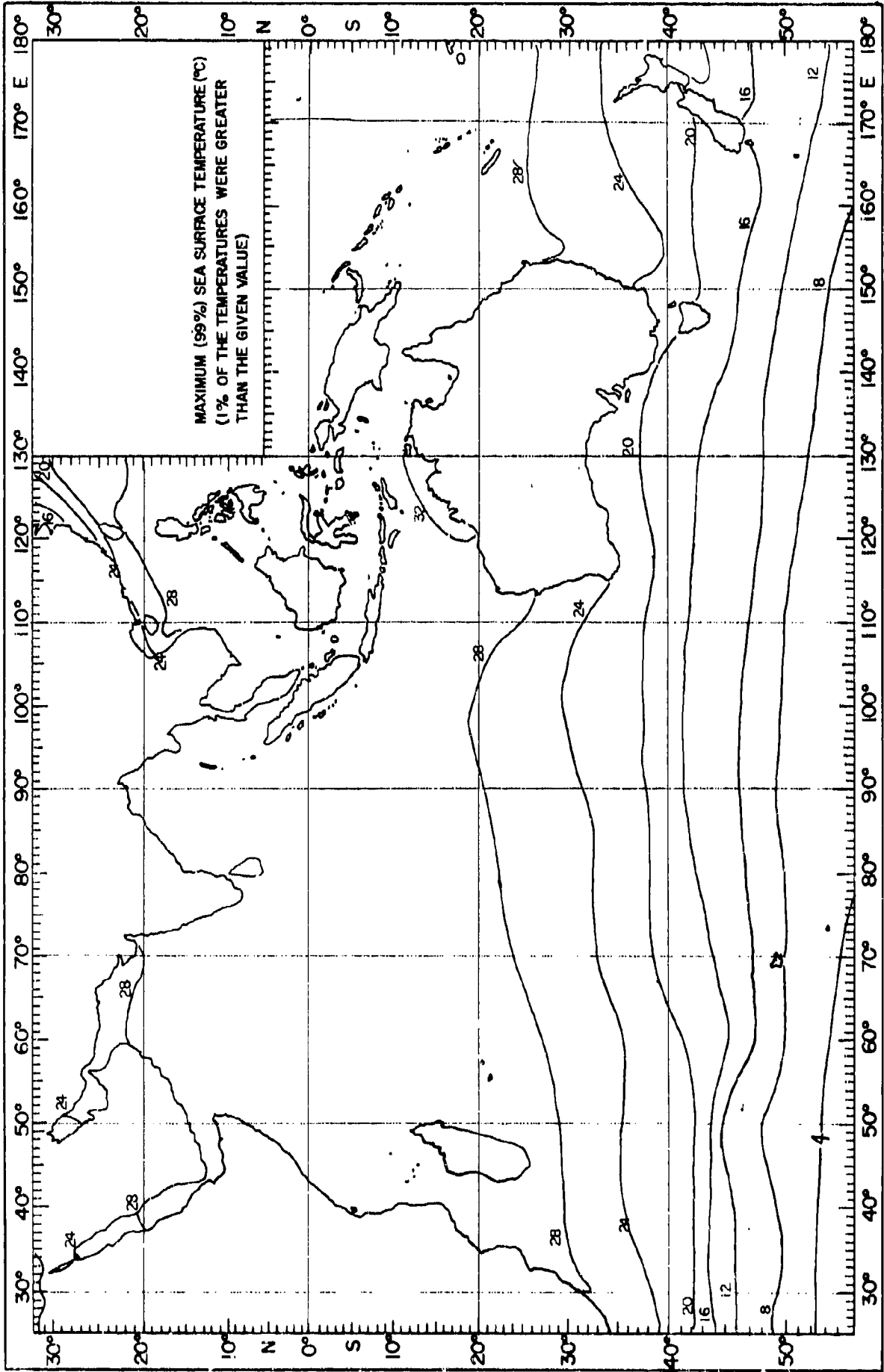
FEBRUARY

SEA SURFACE TEMPERATURE



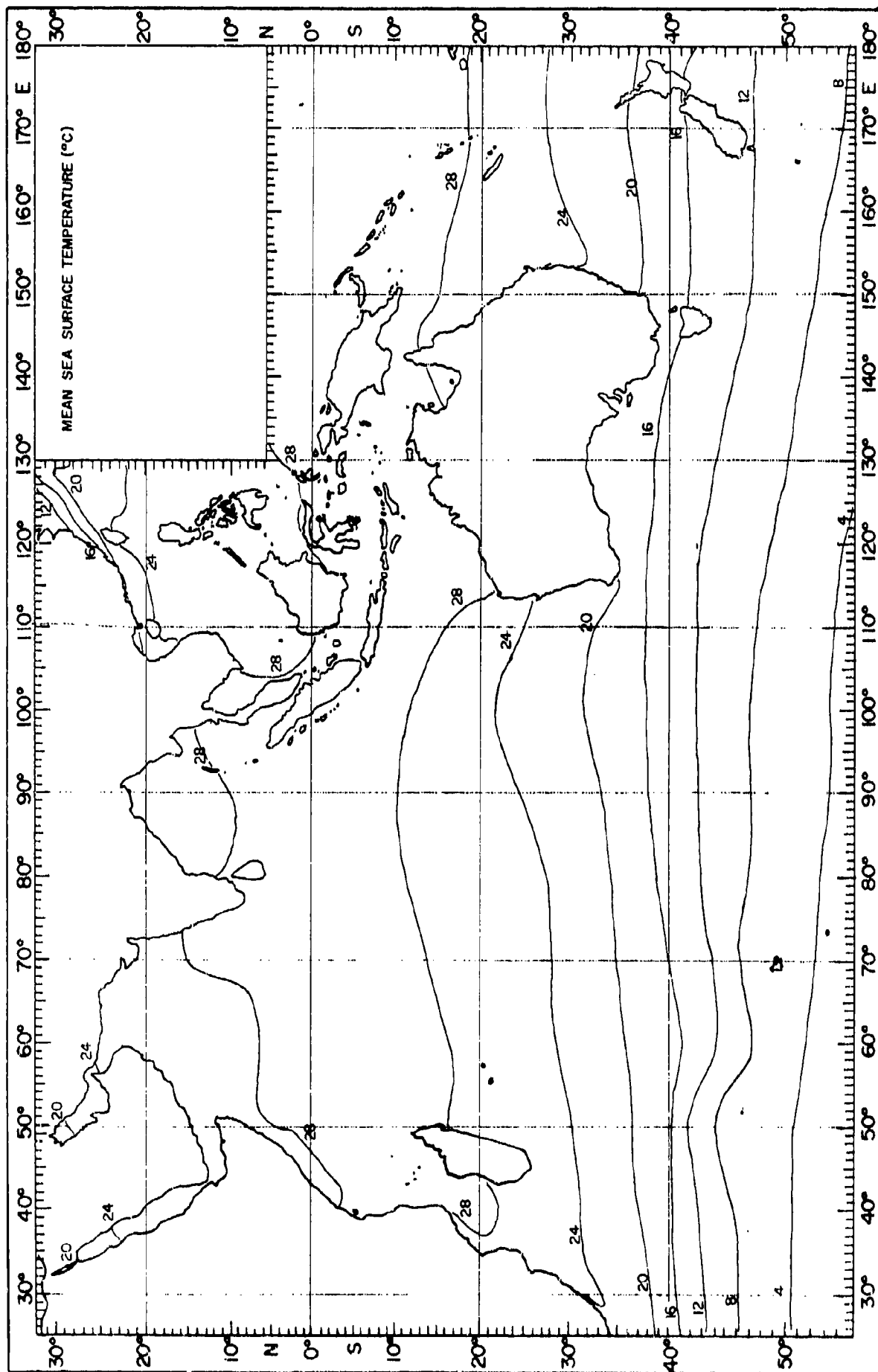
MARCH

SEA SURFACE TEMPERATURE



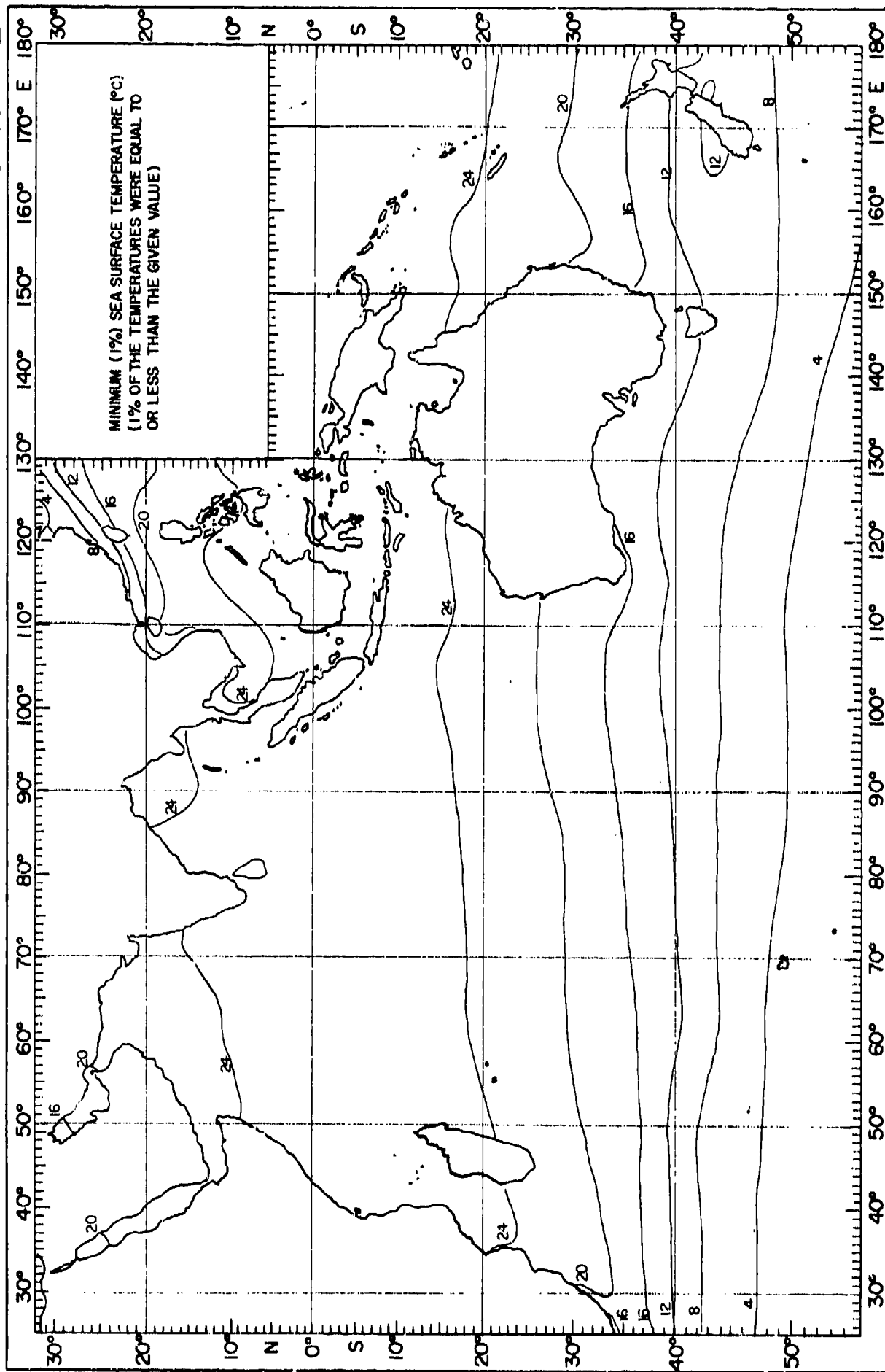
MARCH

SEA SURFACE TEMPERATURE



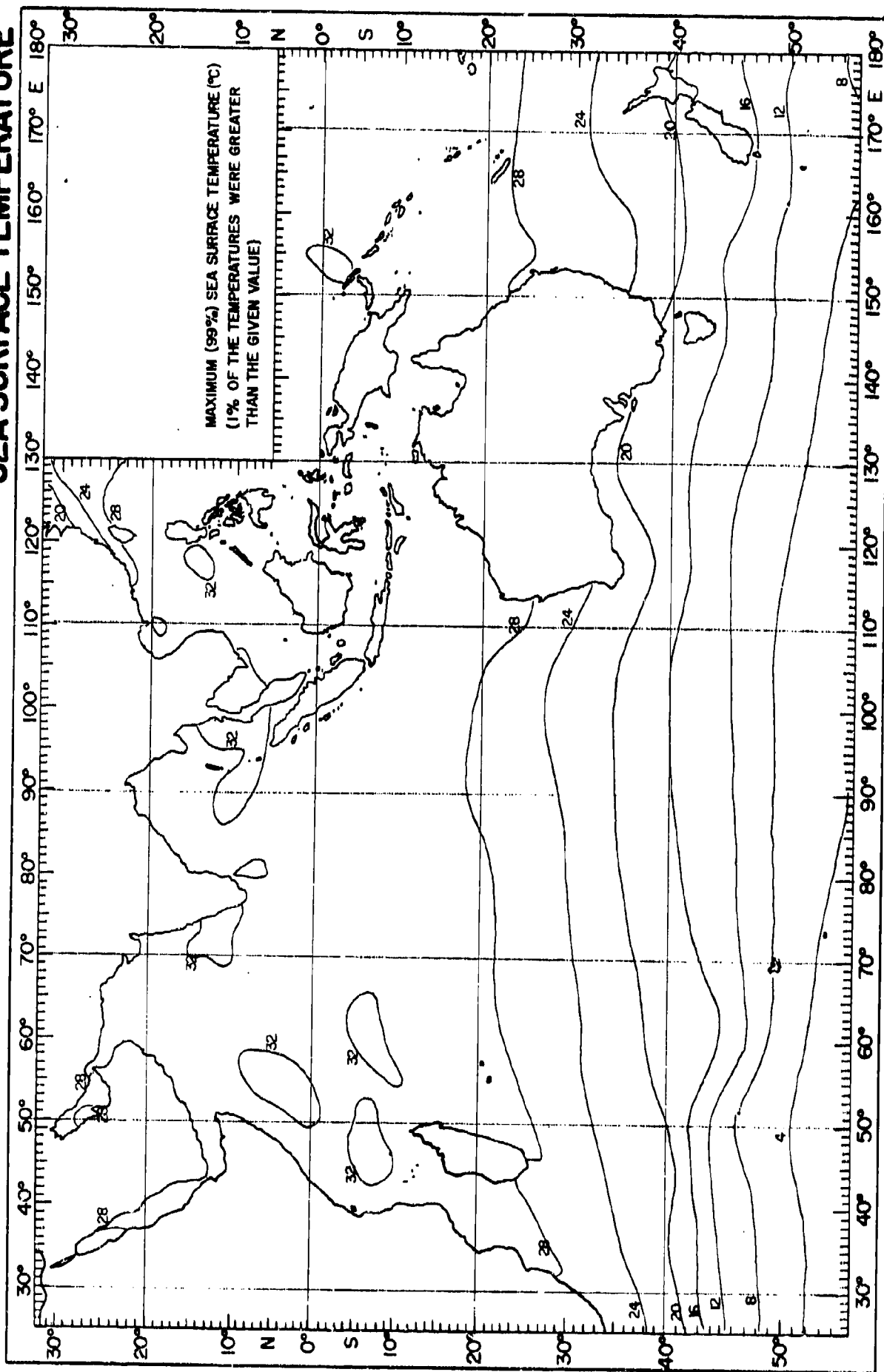
MARCH

SEA SURFACE TEMPERATURE



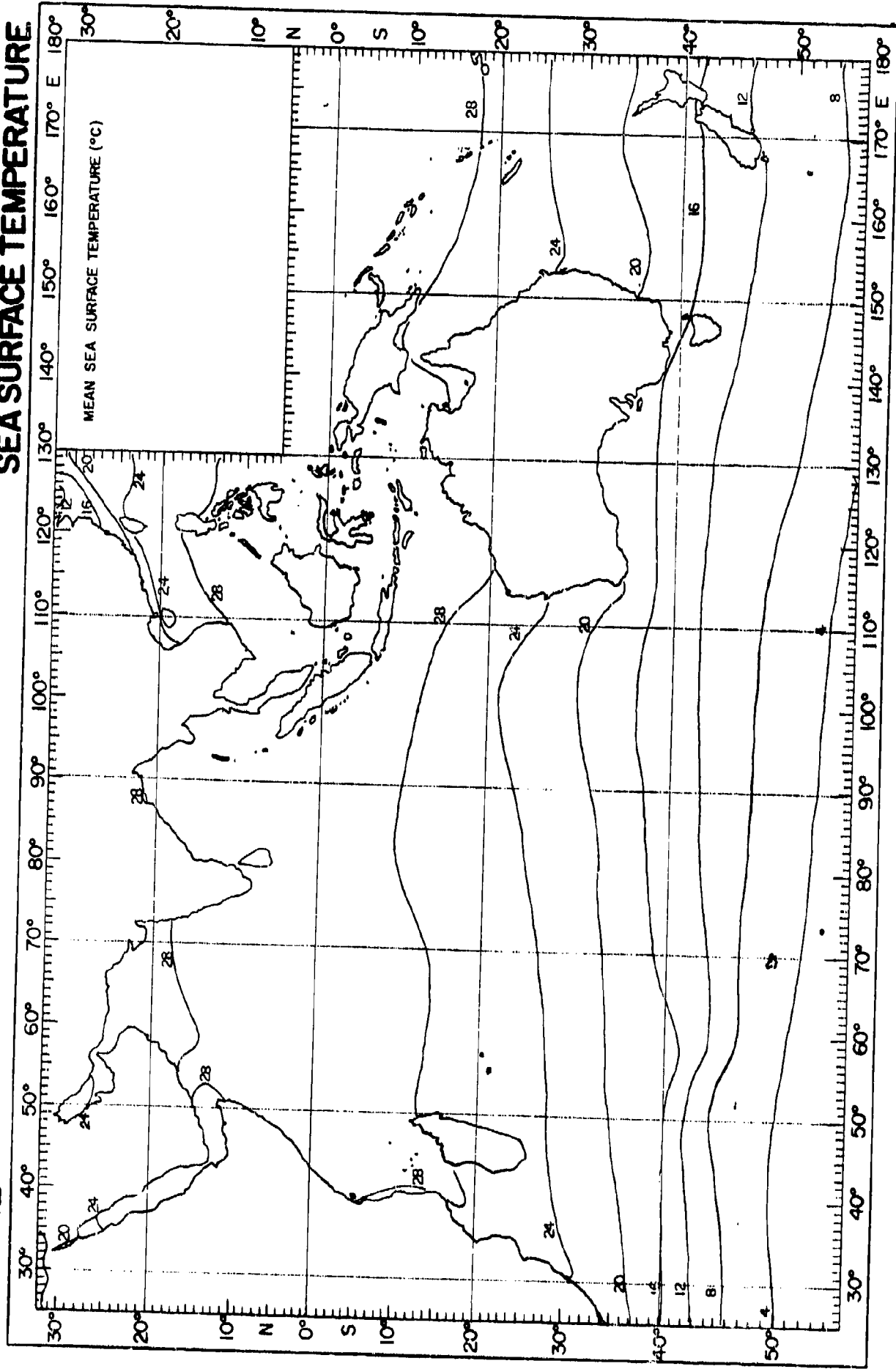
APRIL

SEA SURFACE TEMPERATURE



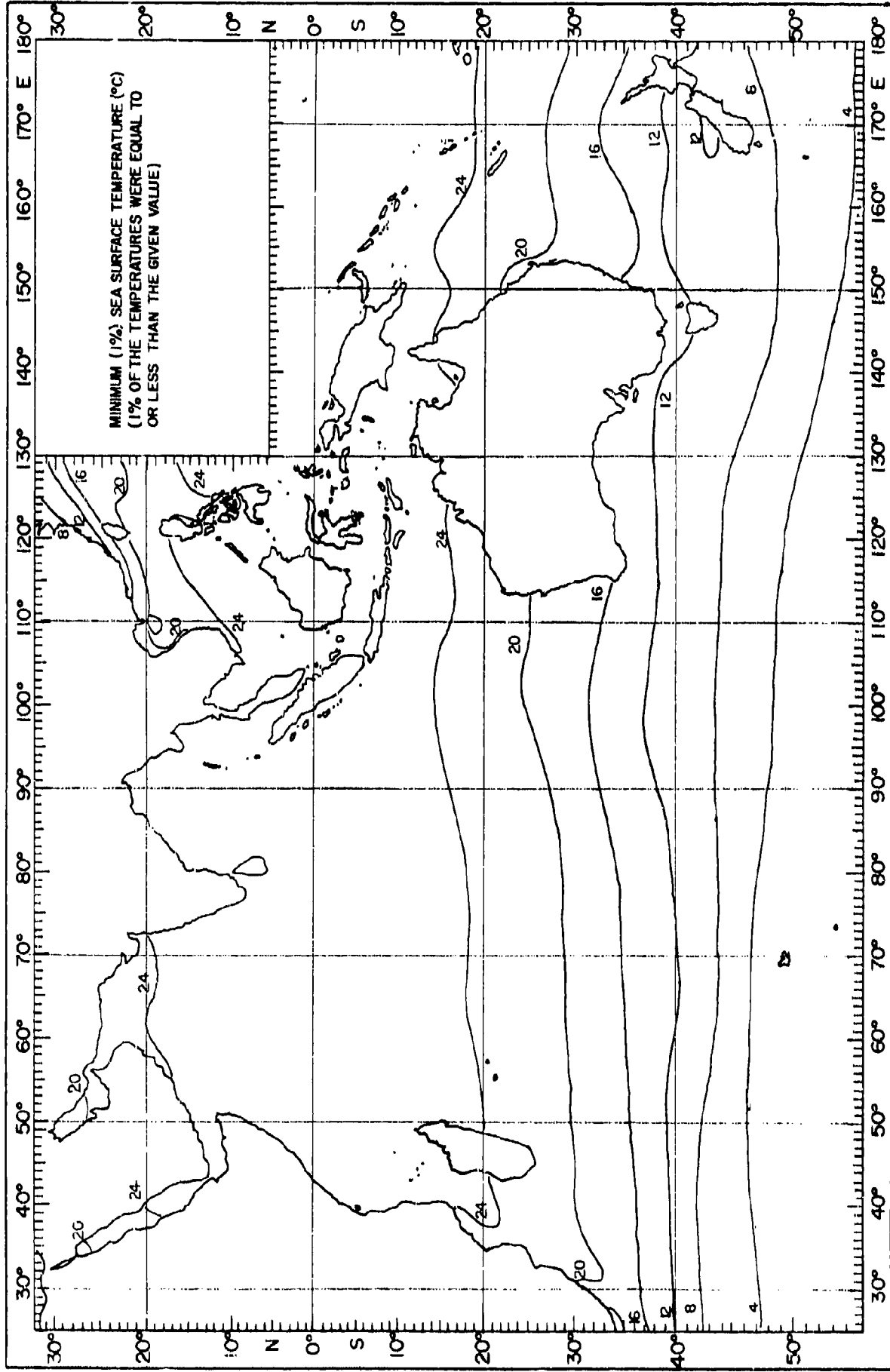
APRIL

SEA SURFACE TEMPERATURE



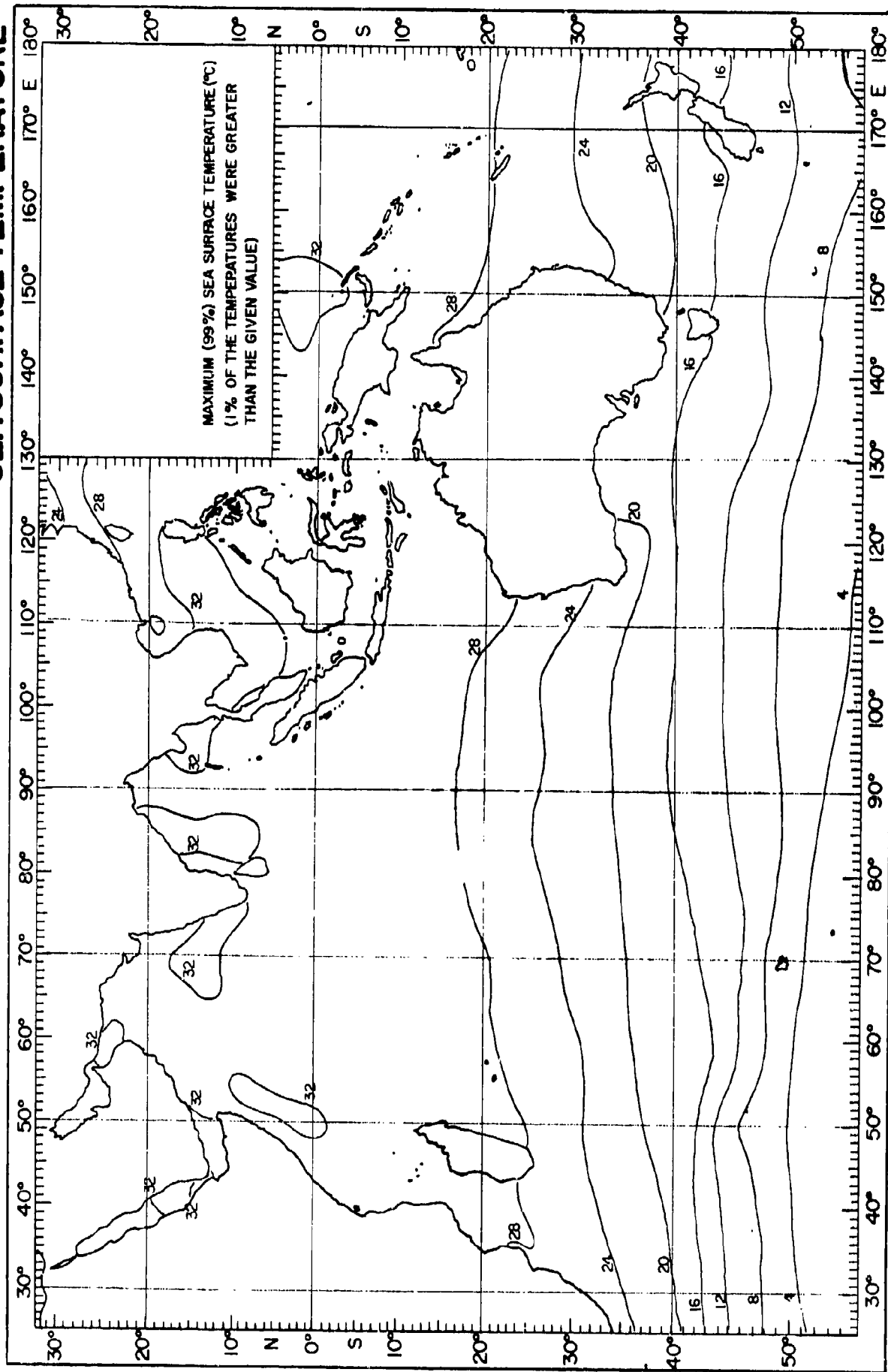
APRIL

SEA SURFACE TEMPERATURE



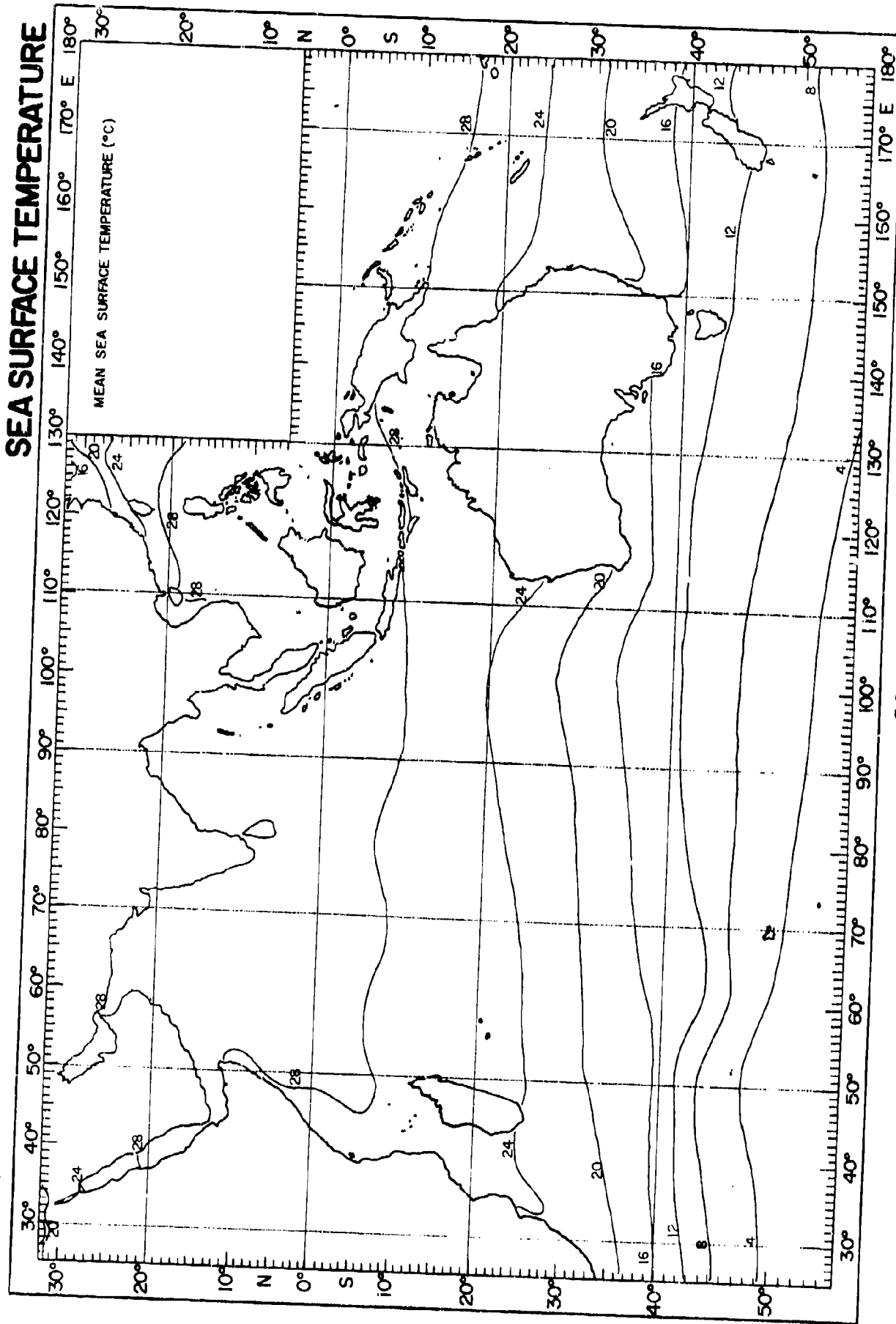
MAY

SEA SURFACE TEMPERATURE



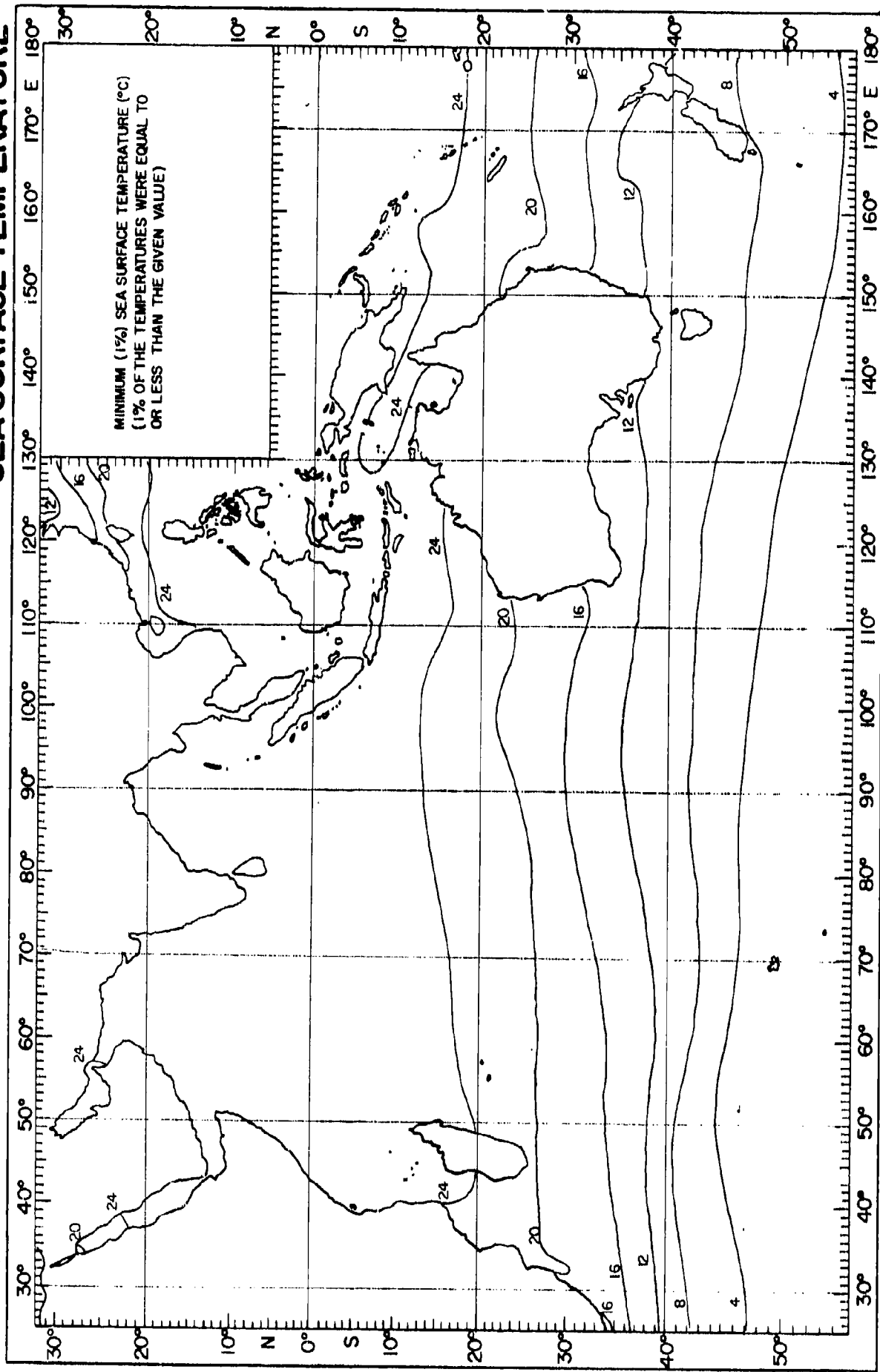
MAY

SEA SURFACE TEMPERATURE



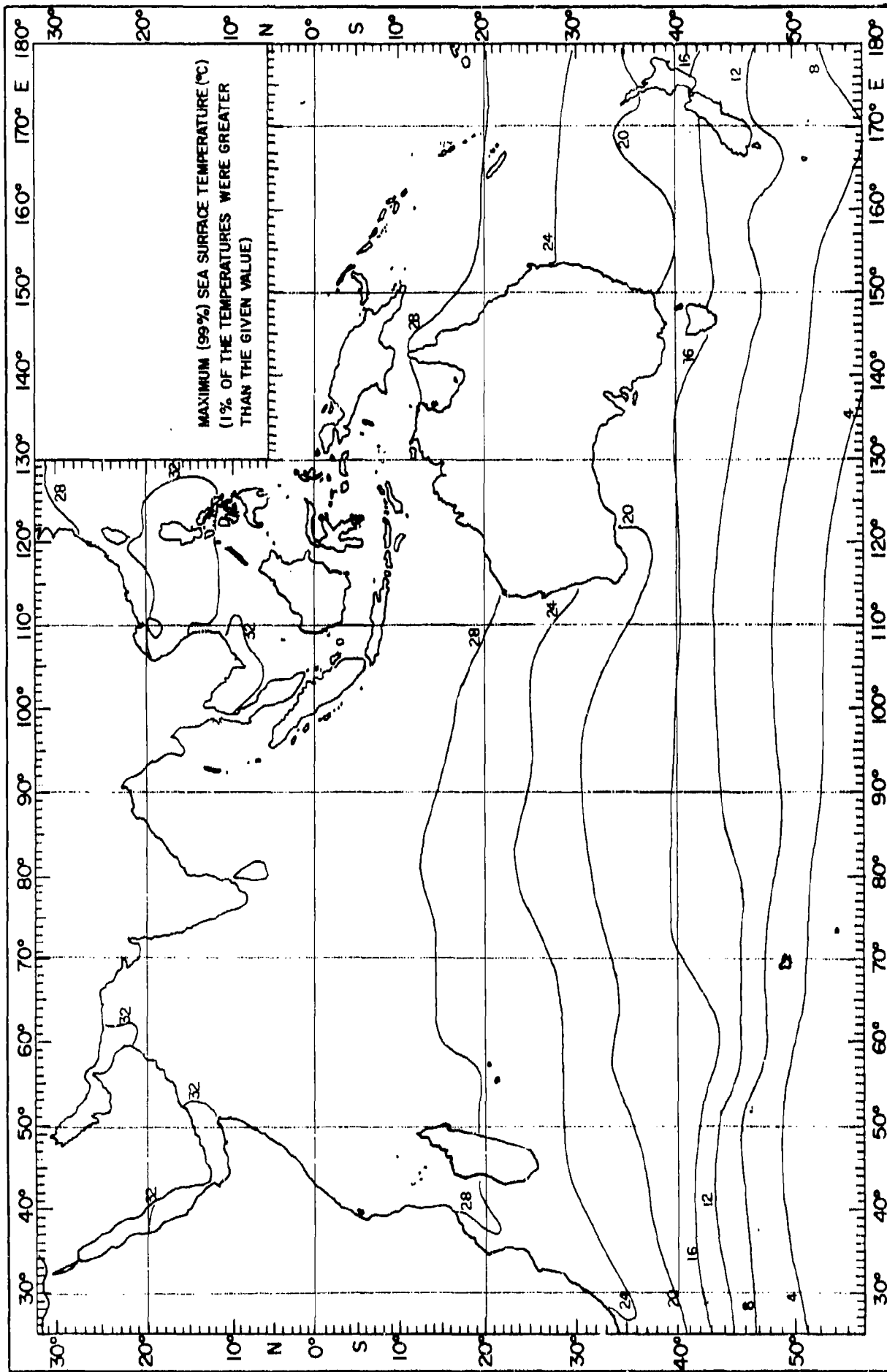
MAY

SEA SURFACE TEMPERATURE



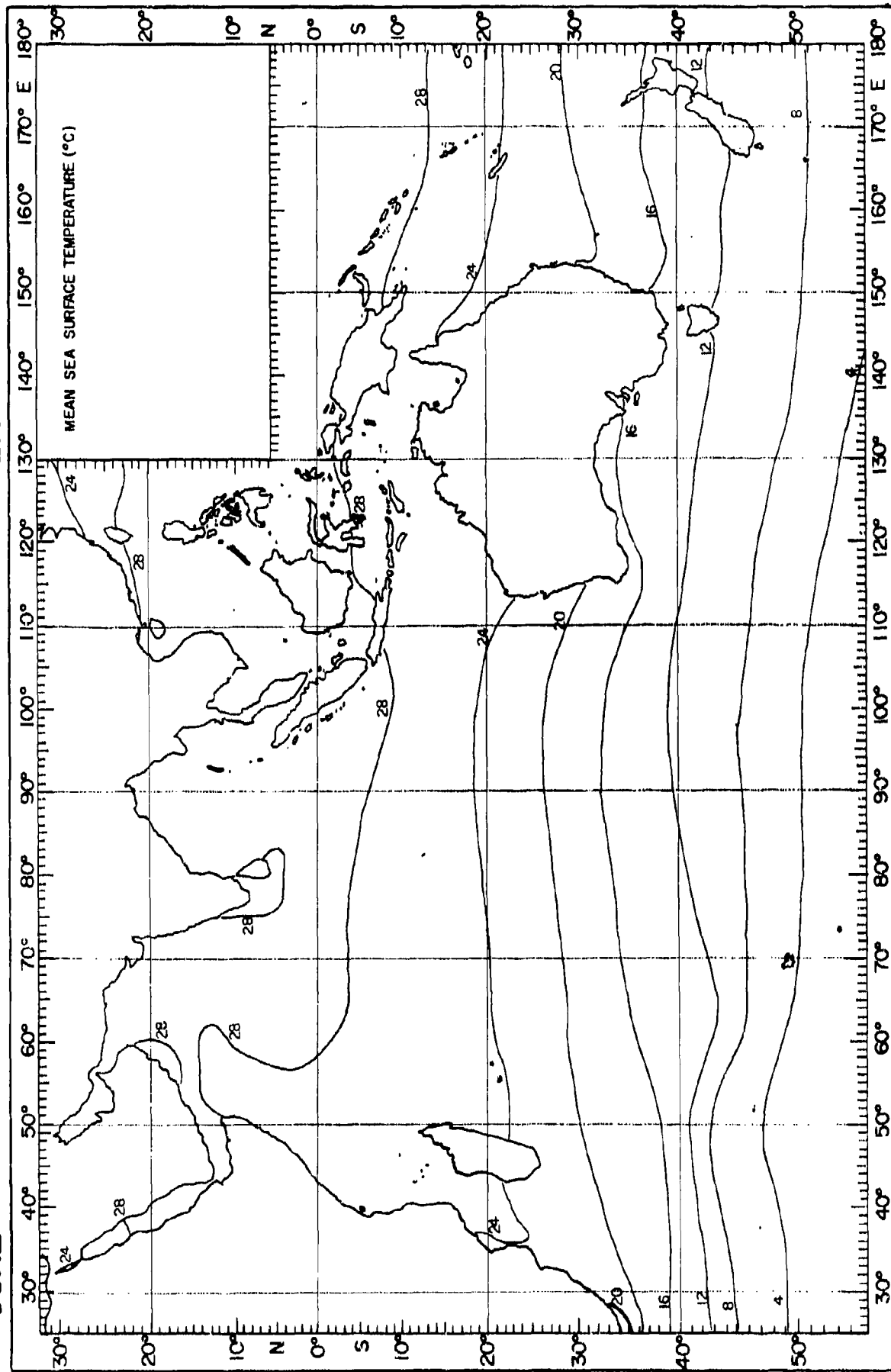
JUNE

SEA SURFACE TEMPERATURE



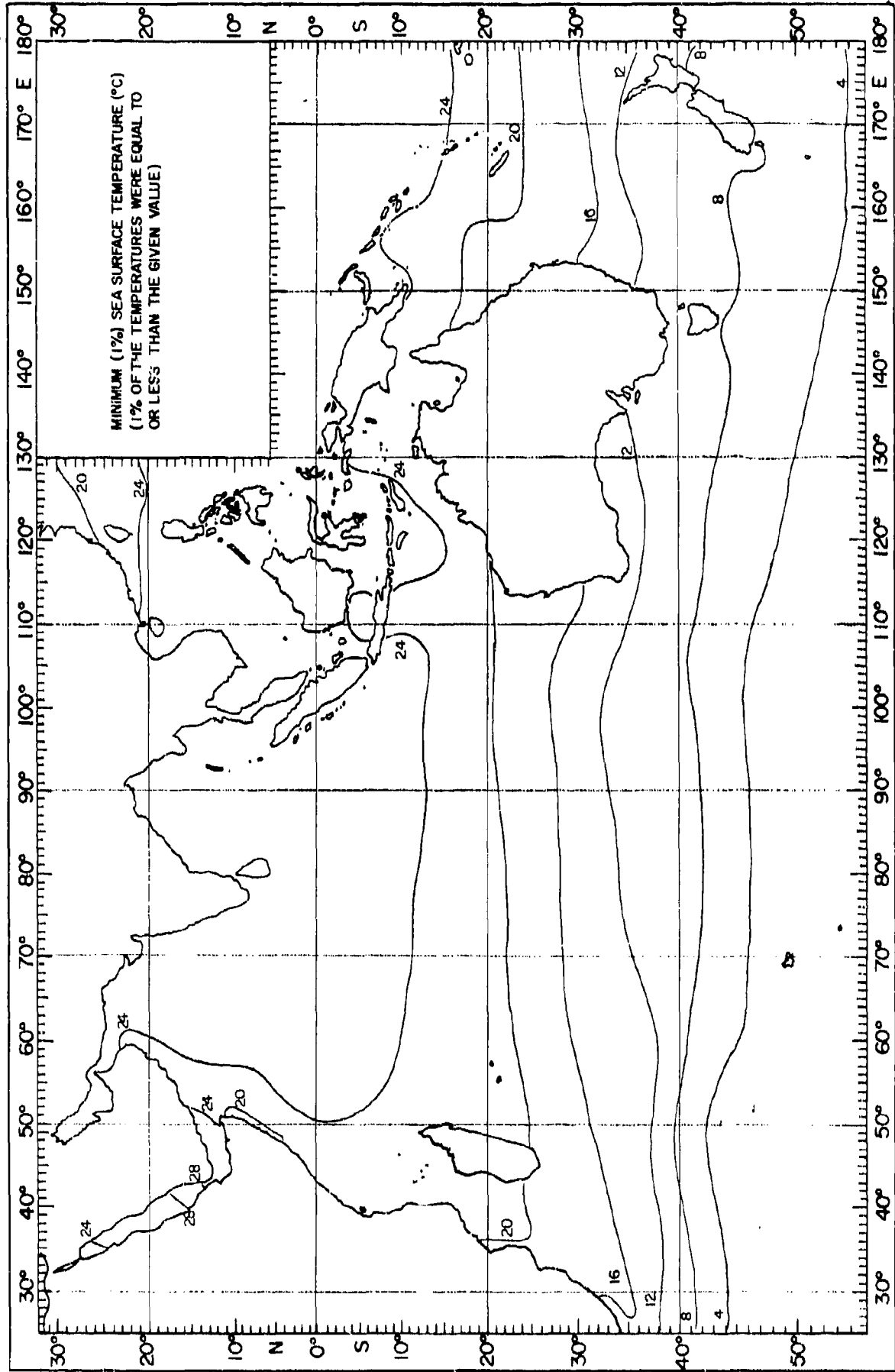
JUNE

SEA SURFACE TEMPERATURE



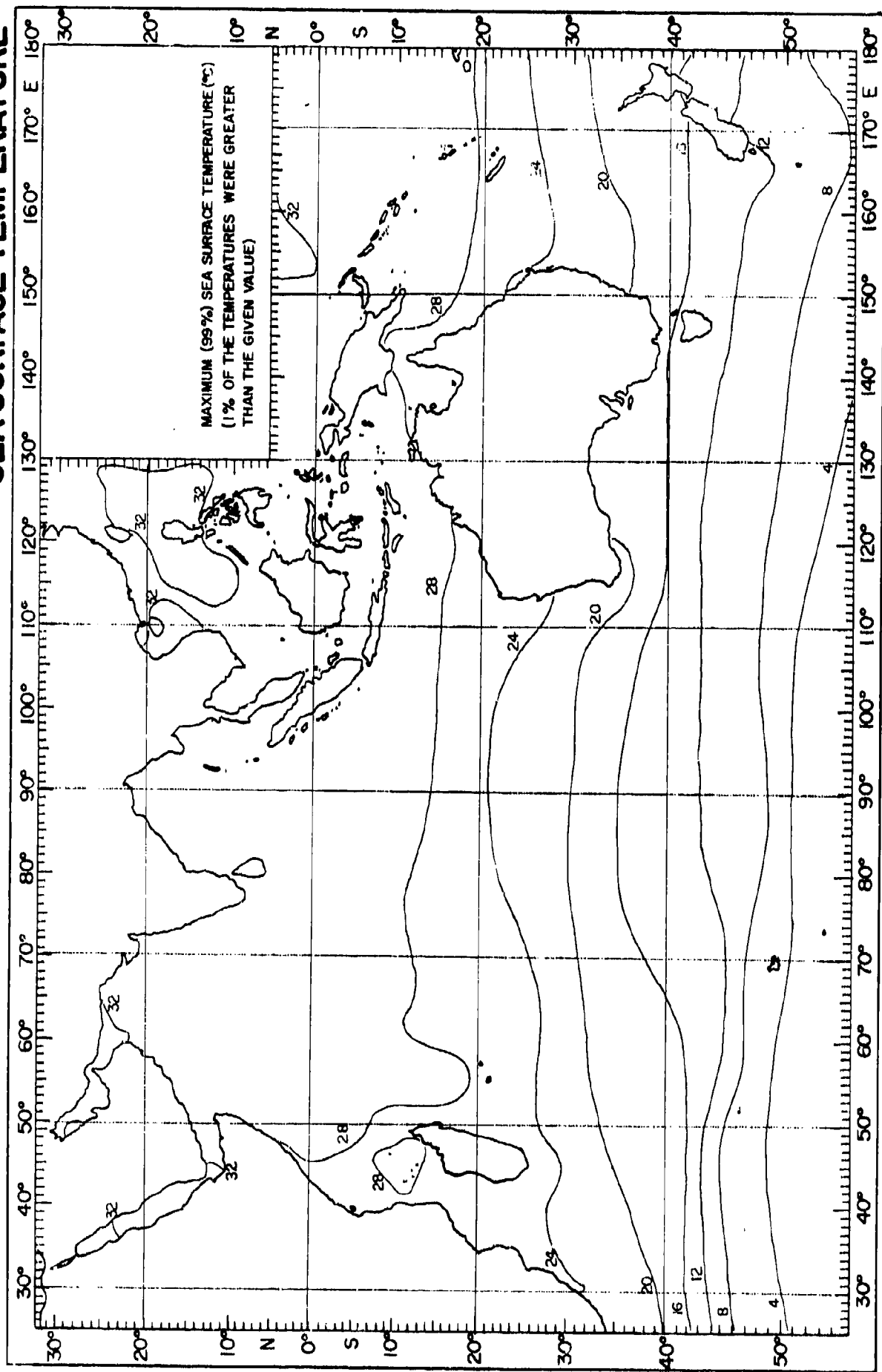
JUNE

SEA SURFACE TEMPERATURE



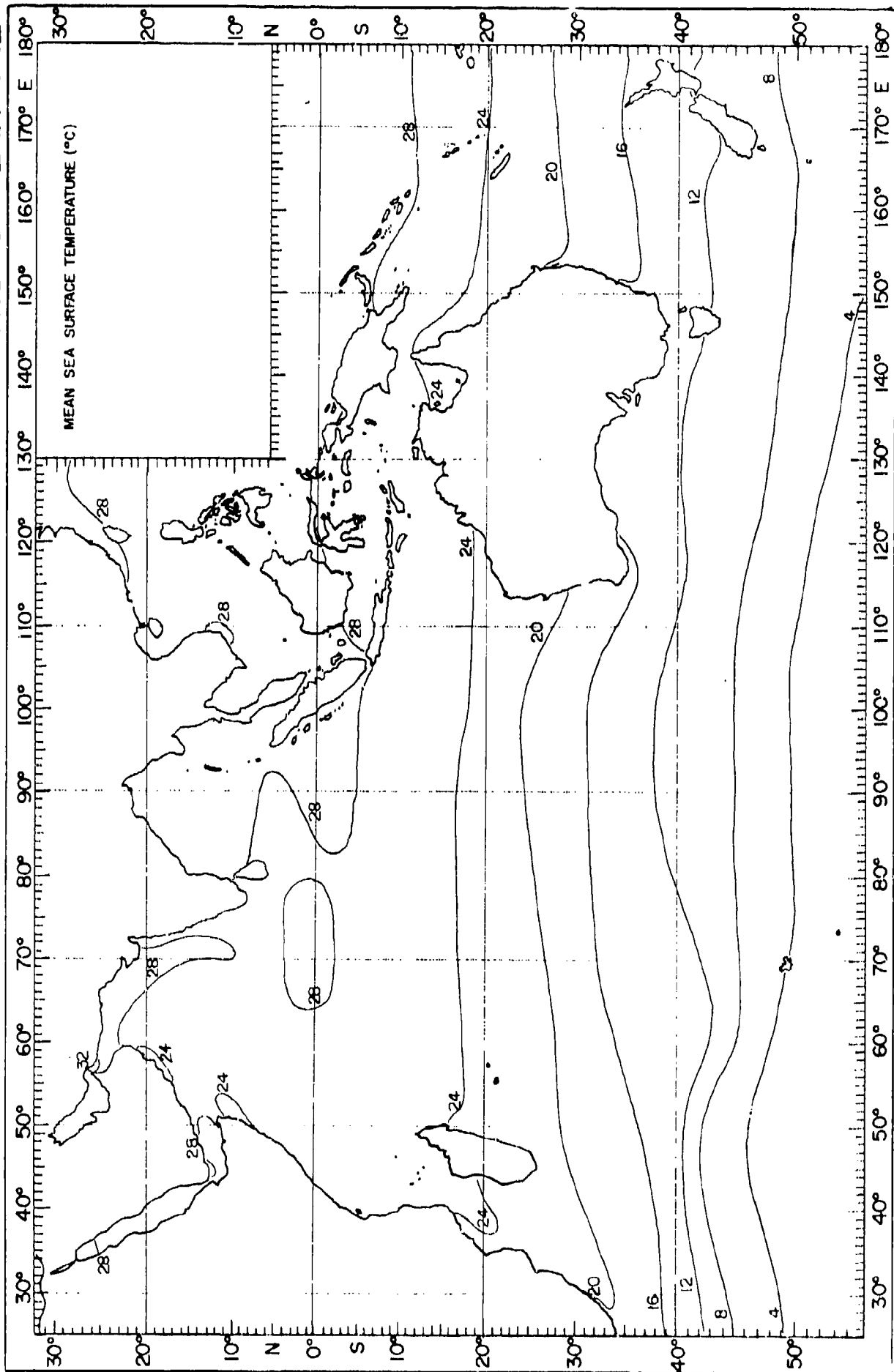
JULY

SEA SURFACE TEMPERATURE



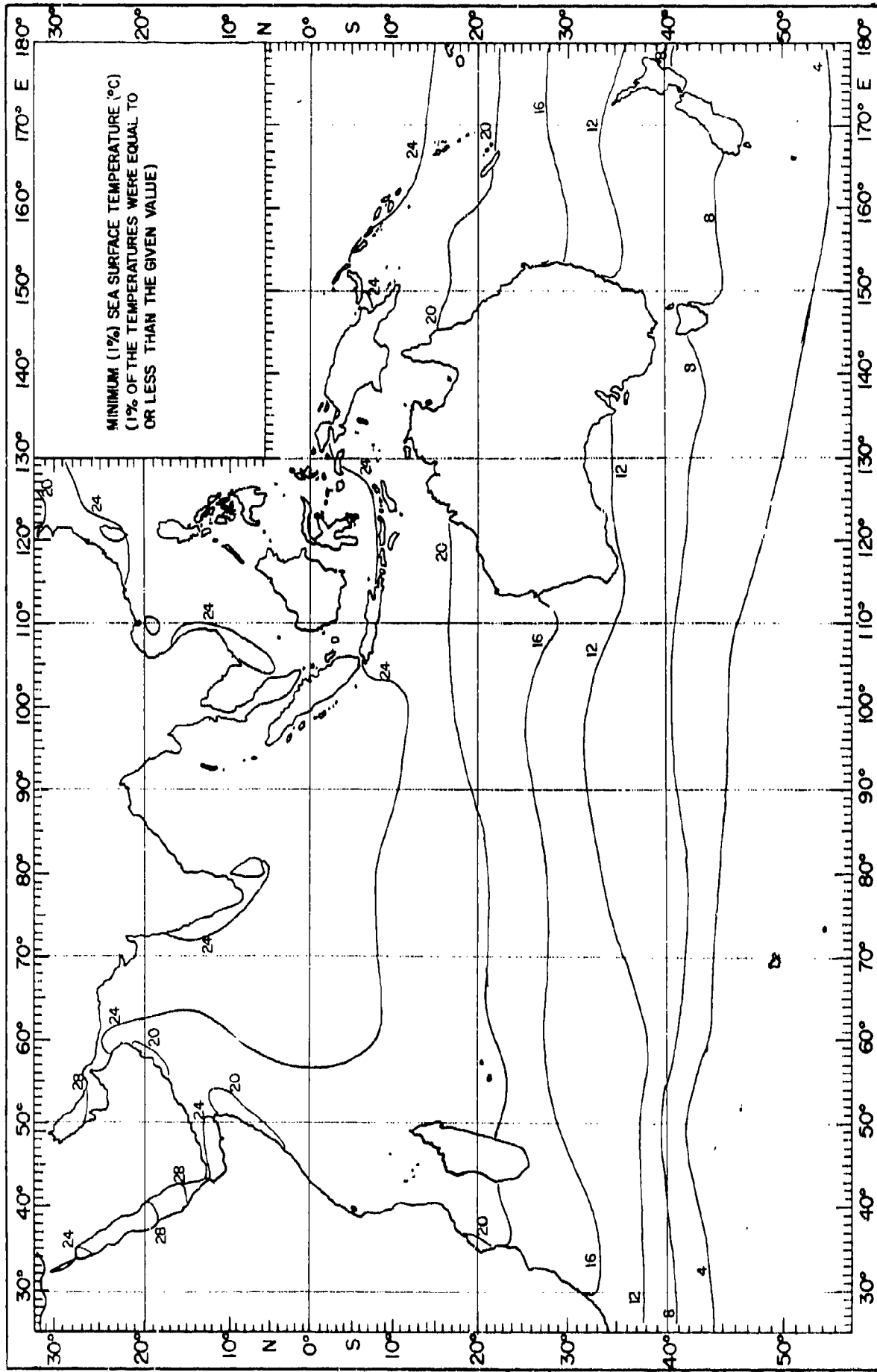
JULY

SEA SURFACE TEMPERATURE



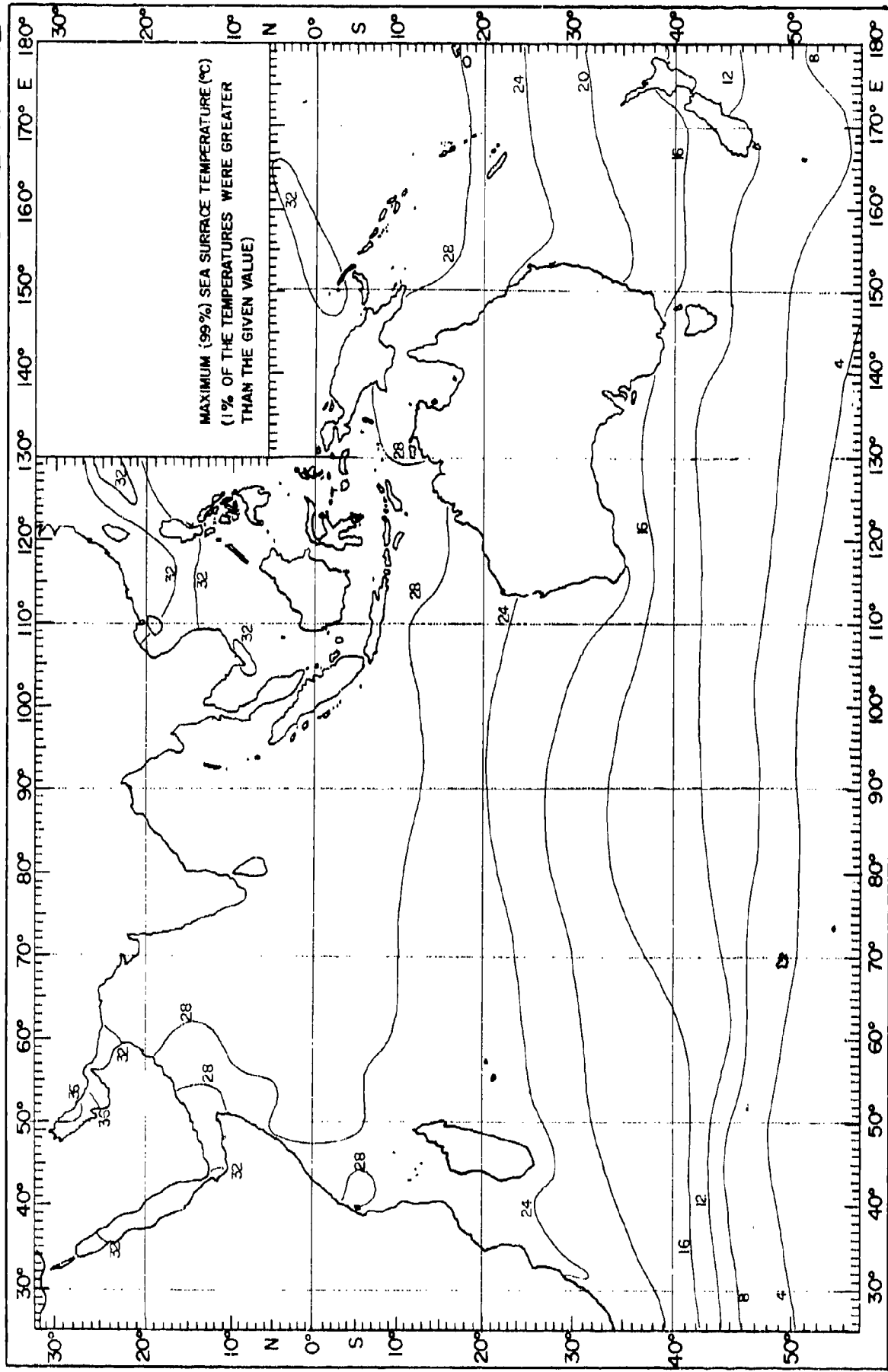
JULY

SEA SURFACE TEMPERATURE



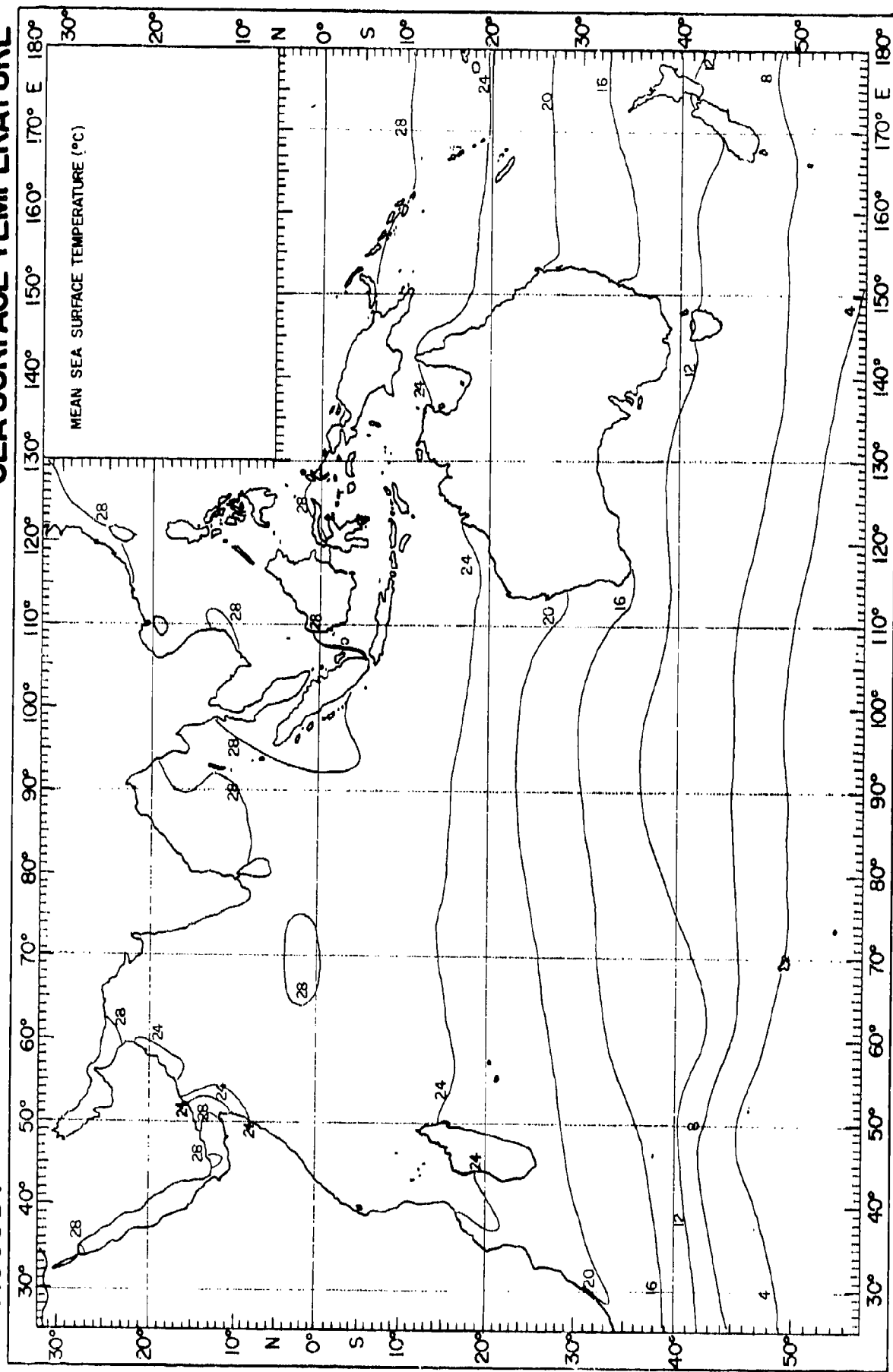
AUGUST

SEA SURFACE TEMPERATURE



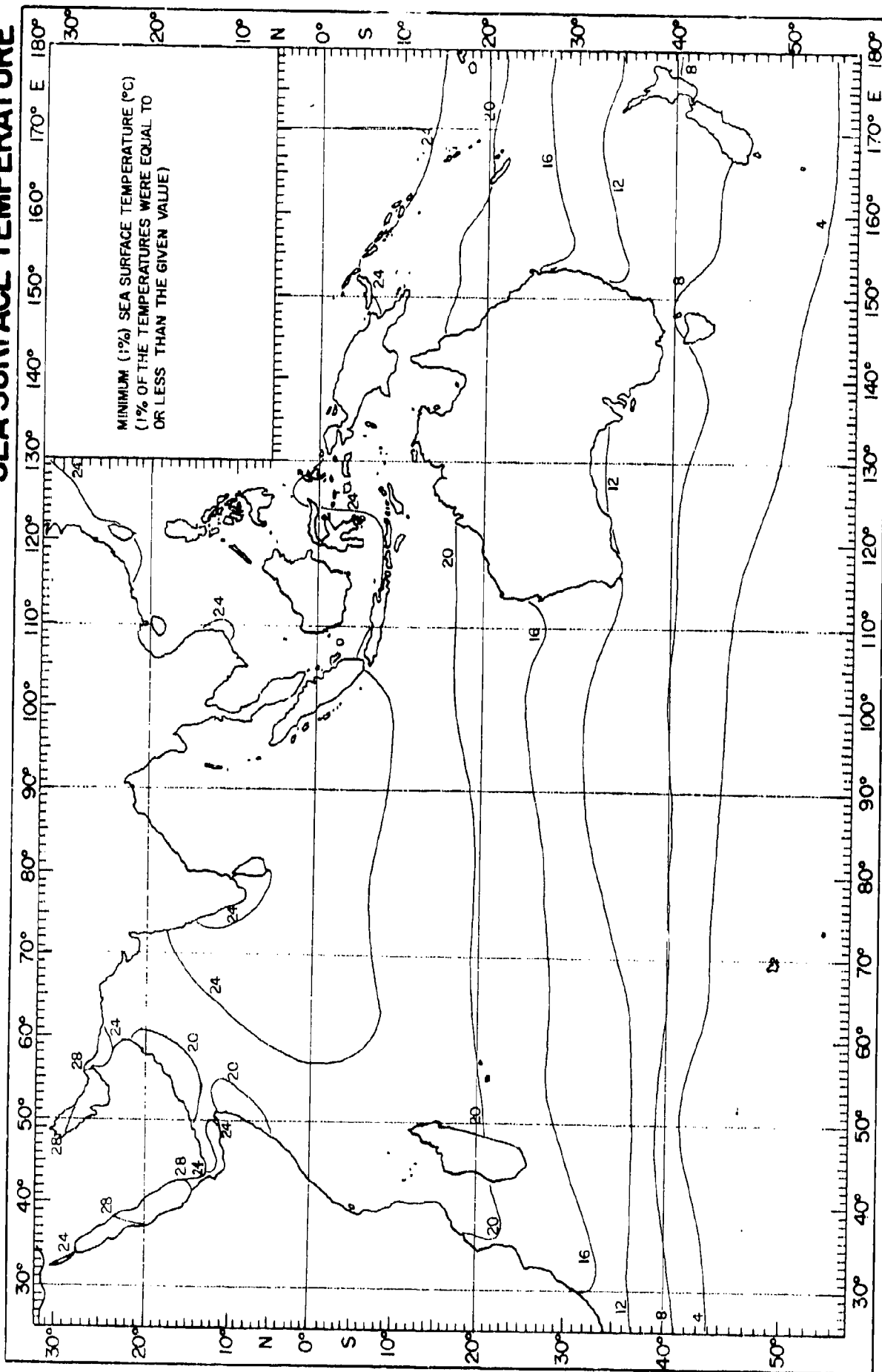
AUGUST

SEA SURFACE TEMPERATURE



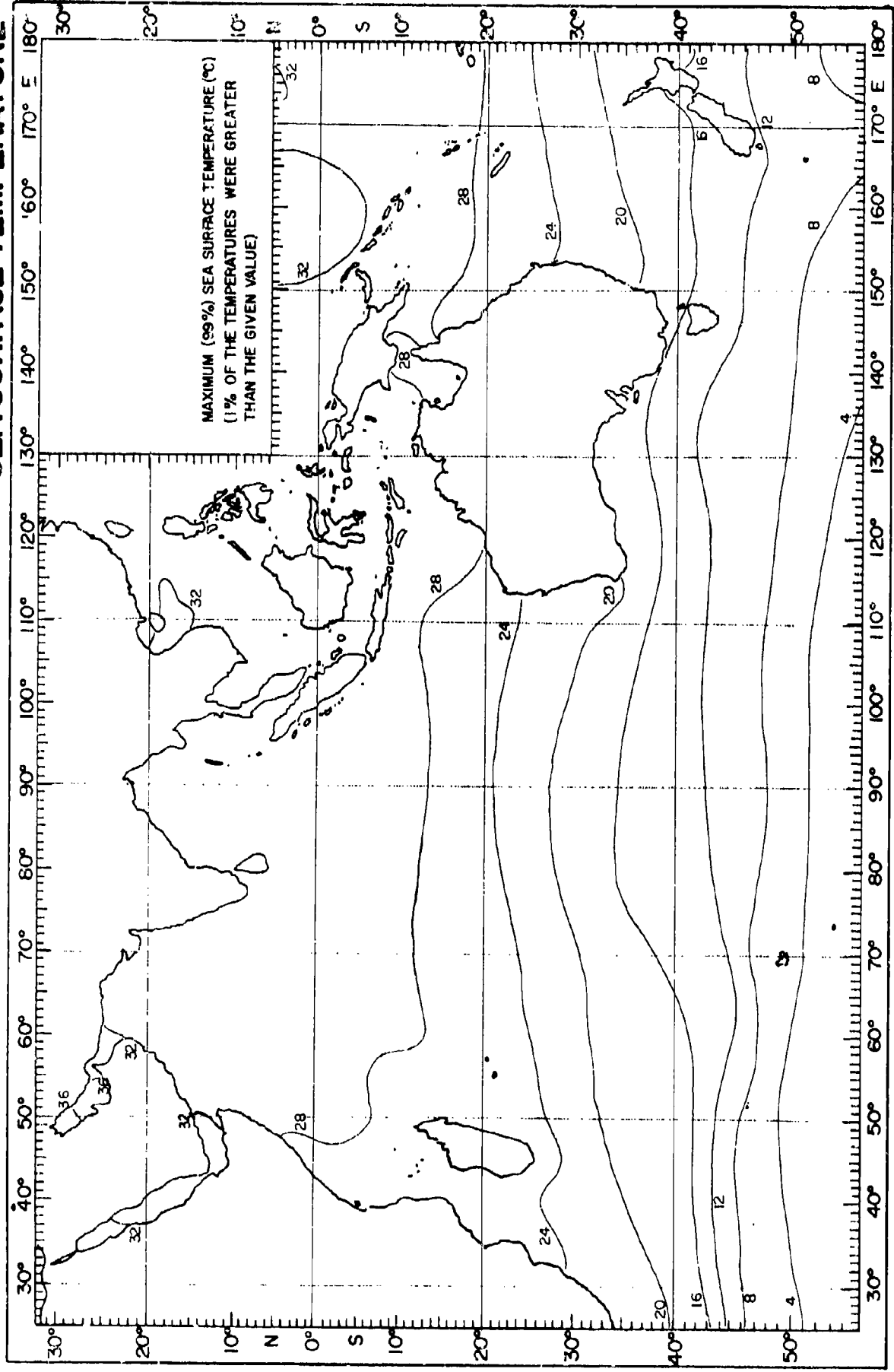
AUGUST

SEA SURFACE TEMPERATURE



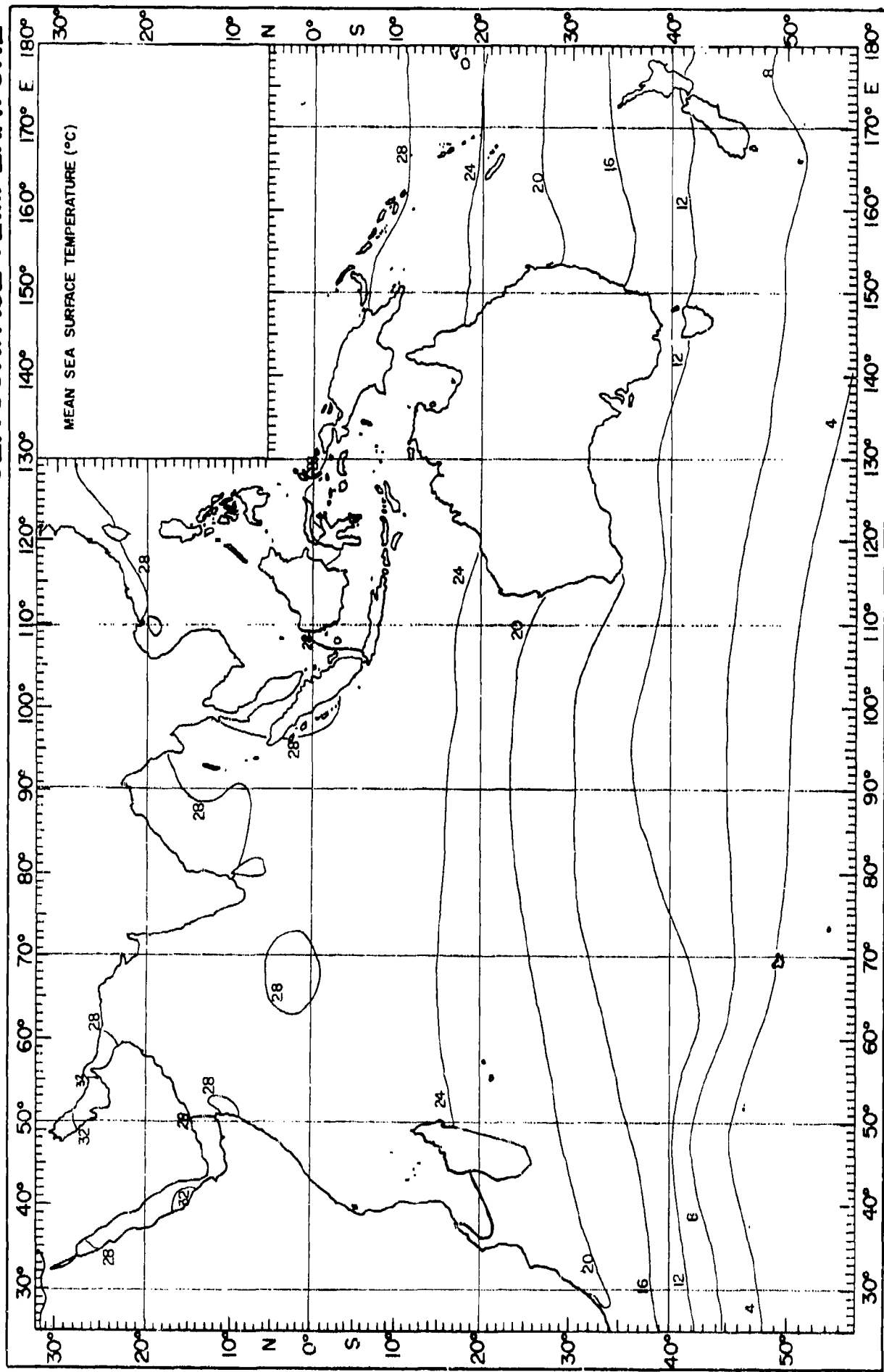
SEPTEMBER

SEA SURFACE TEMPERATURE



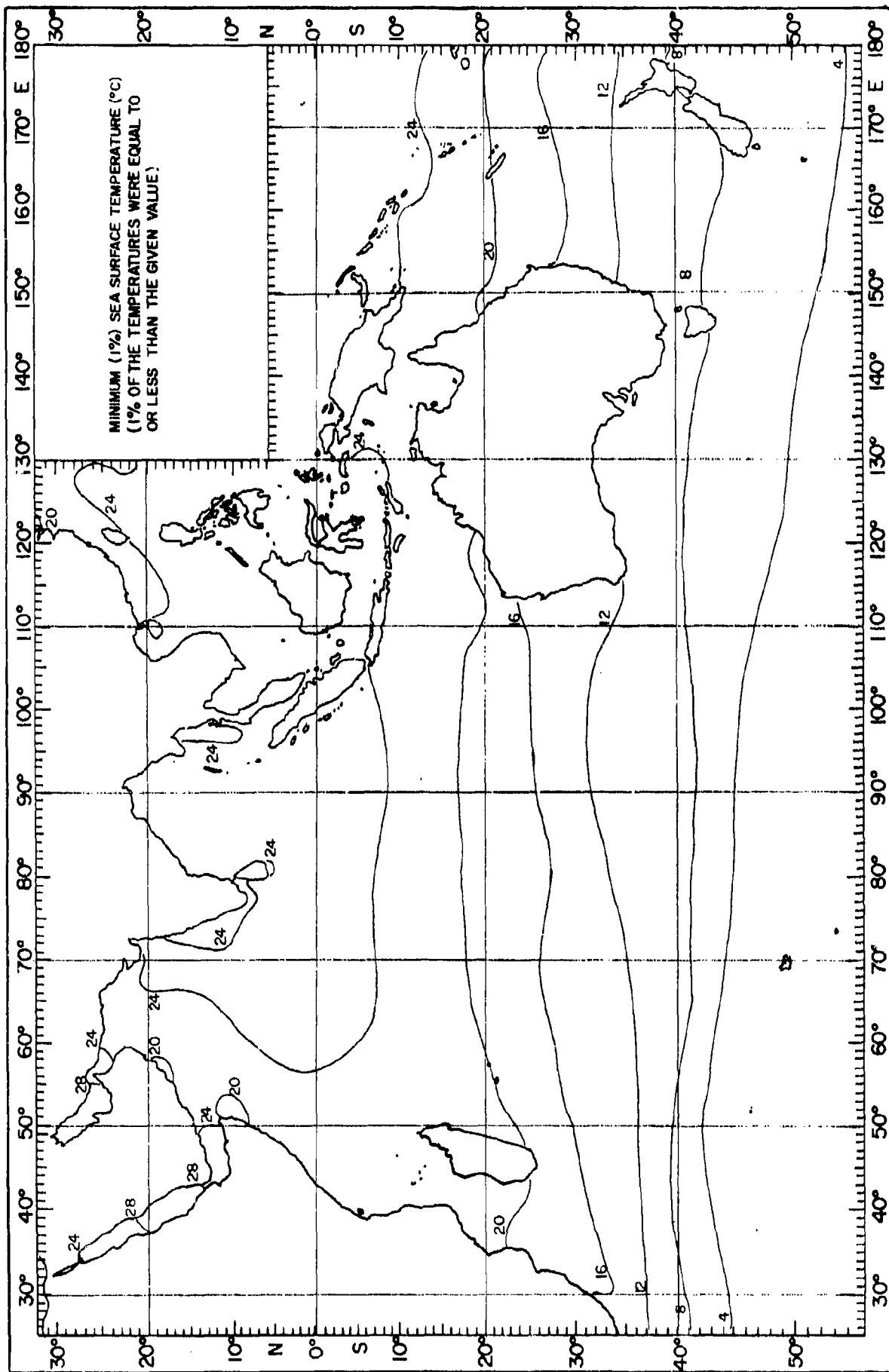
SEPTEMBER

SEA SURFACE TEMPERATURE



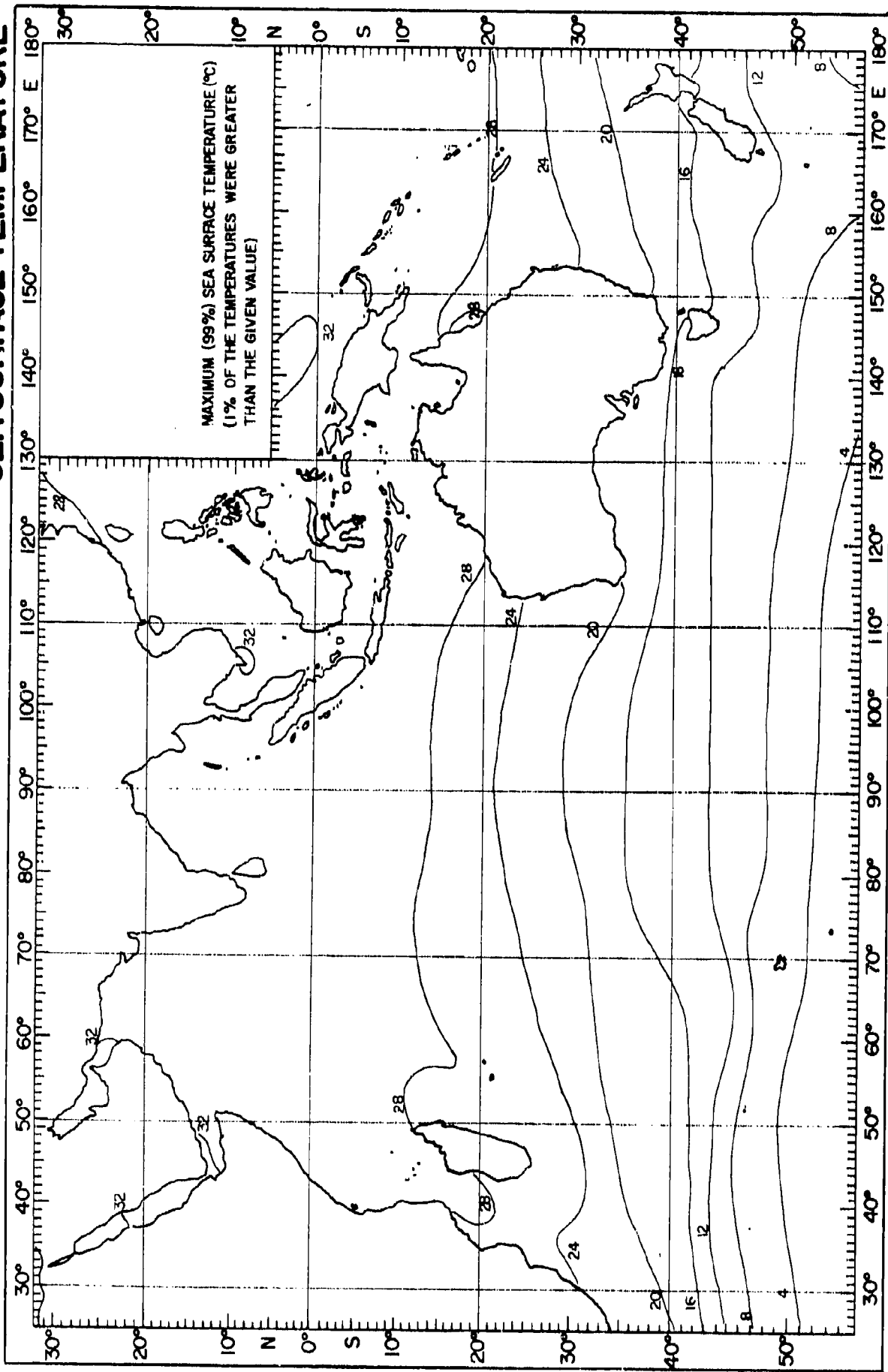
SEPTEMBER

SEA SURFACE TEMPERATURE



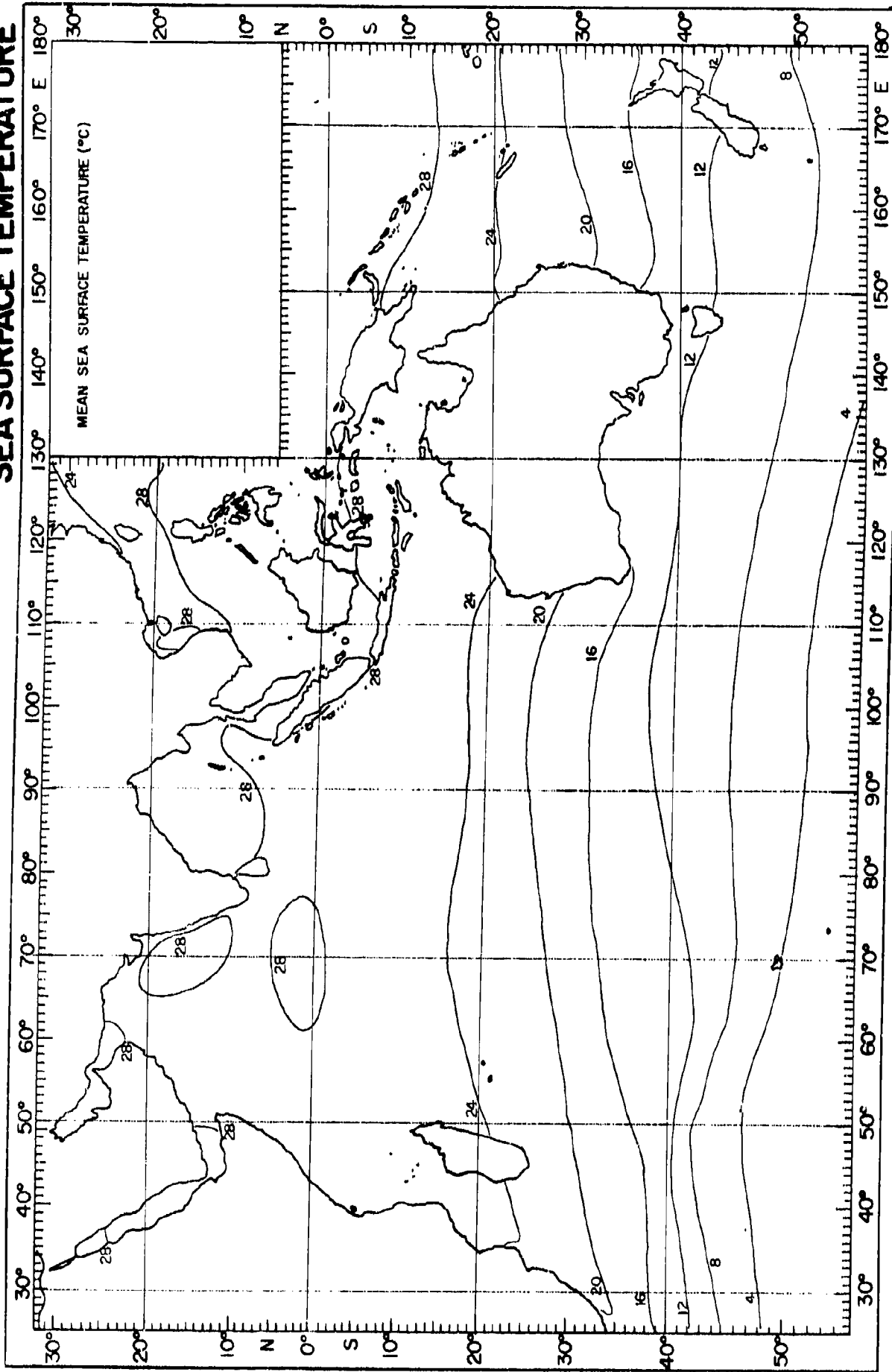
OCTOBER

SEA SURFACE TEMPERATURE



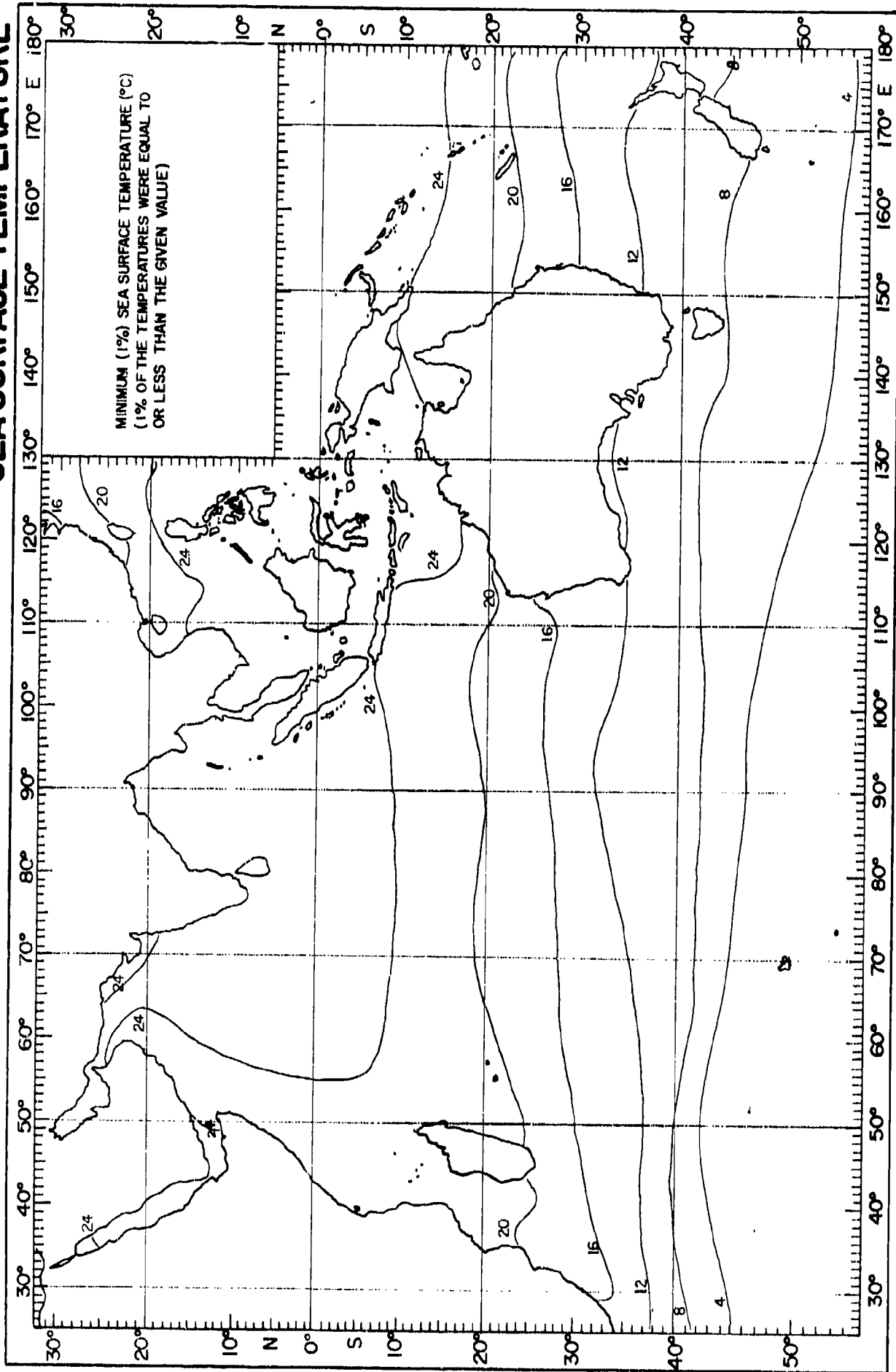
OCTOBER

SEA SURFACE TEMPERATURE



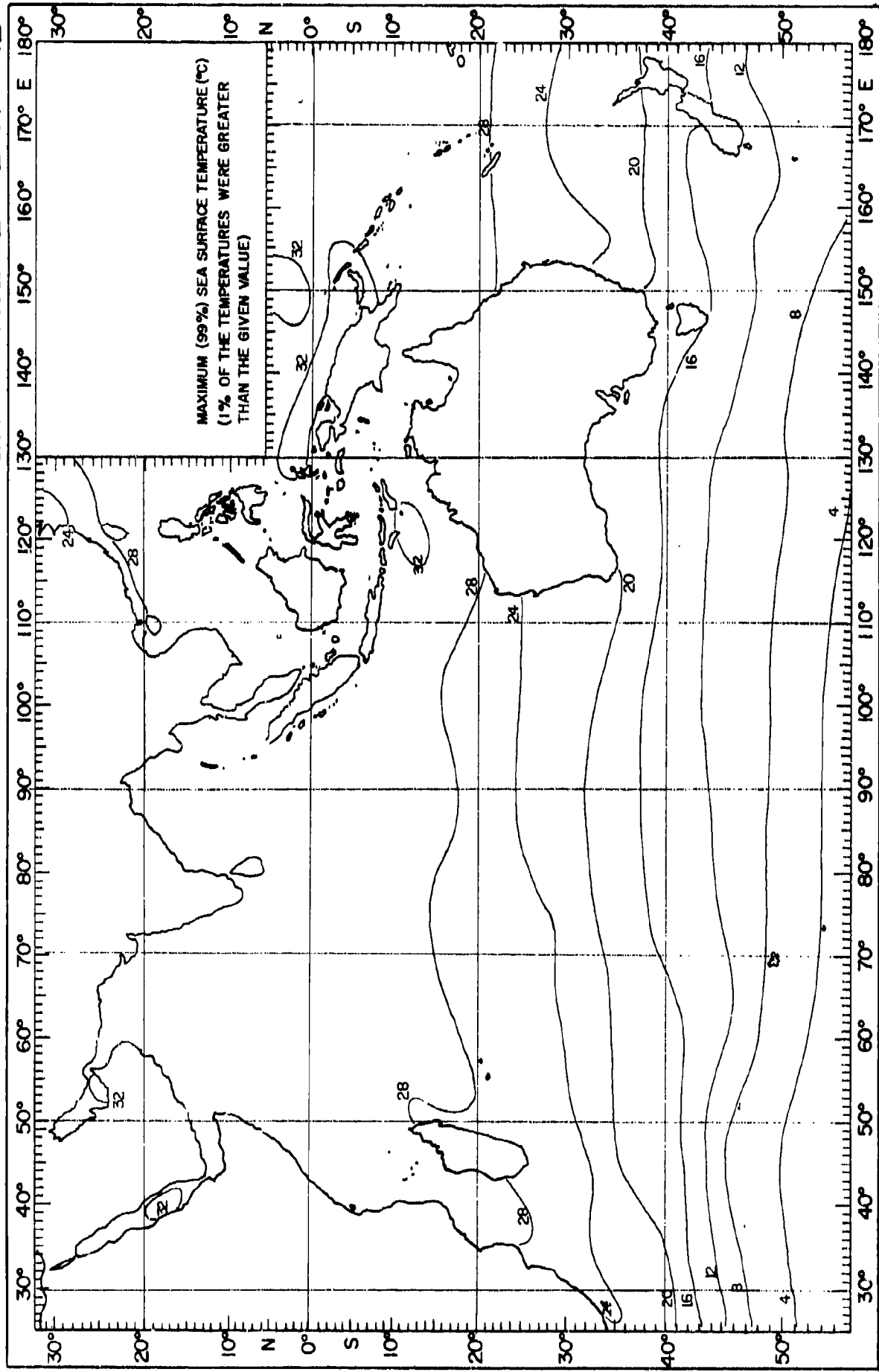
OCTOBER

SEA SURFACE TEMPERATURE



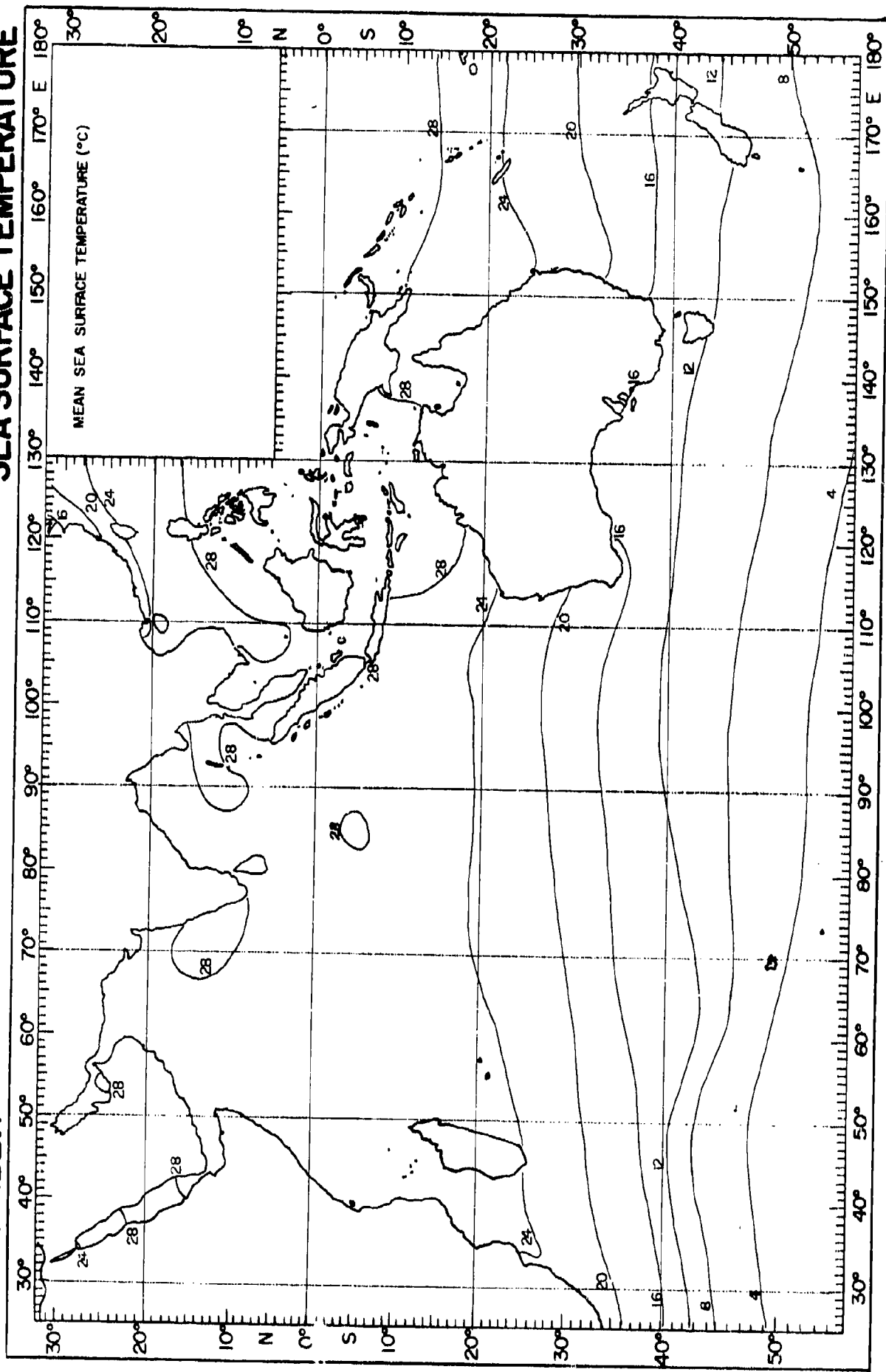
NOVEMBER

SEA SURFACE TEMPERATURE



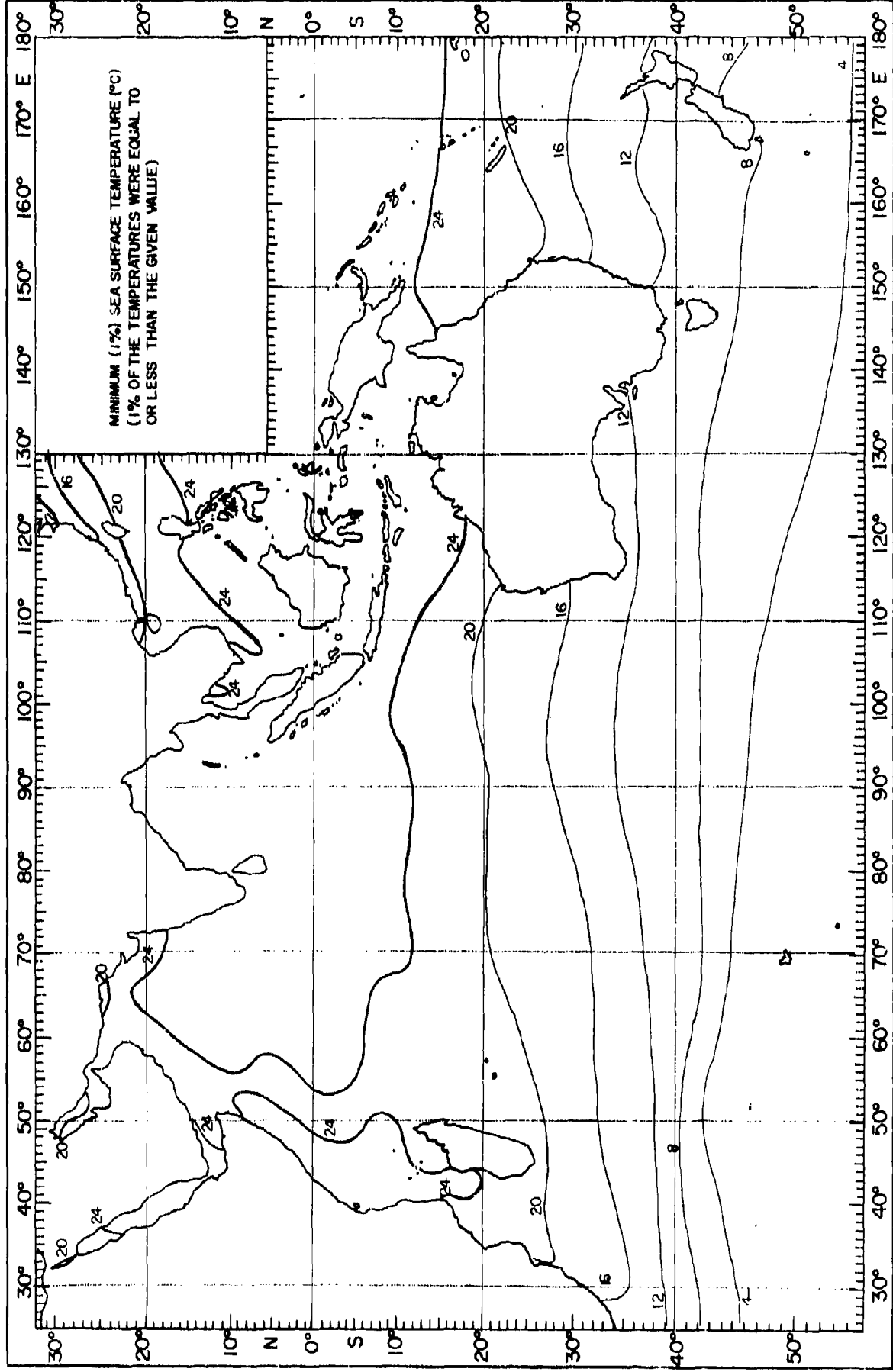
NOVEMBER

SEA SURFACE TEMPERATURE



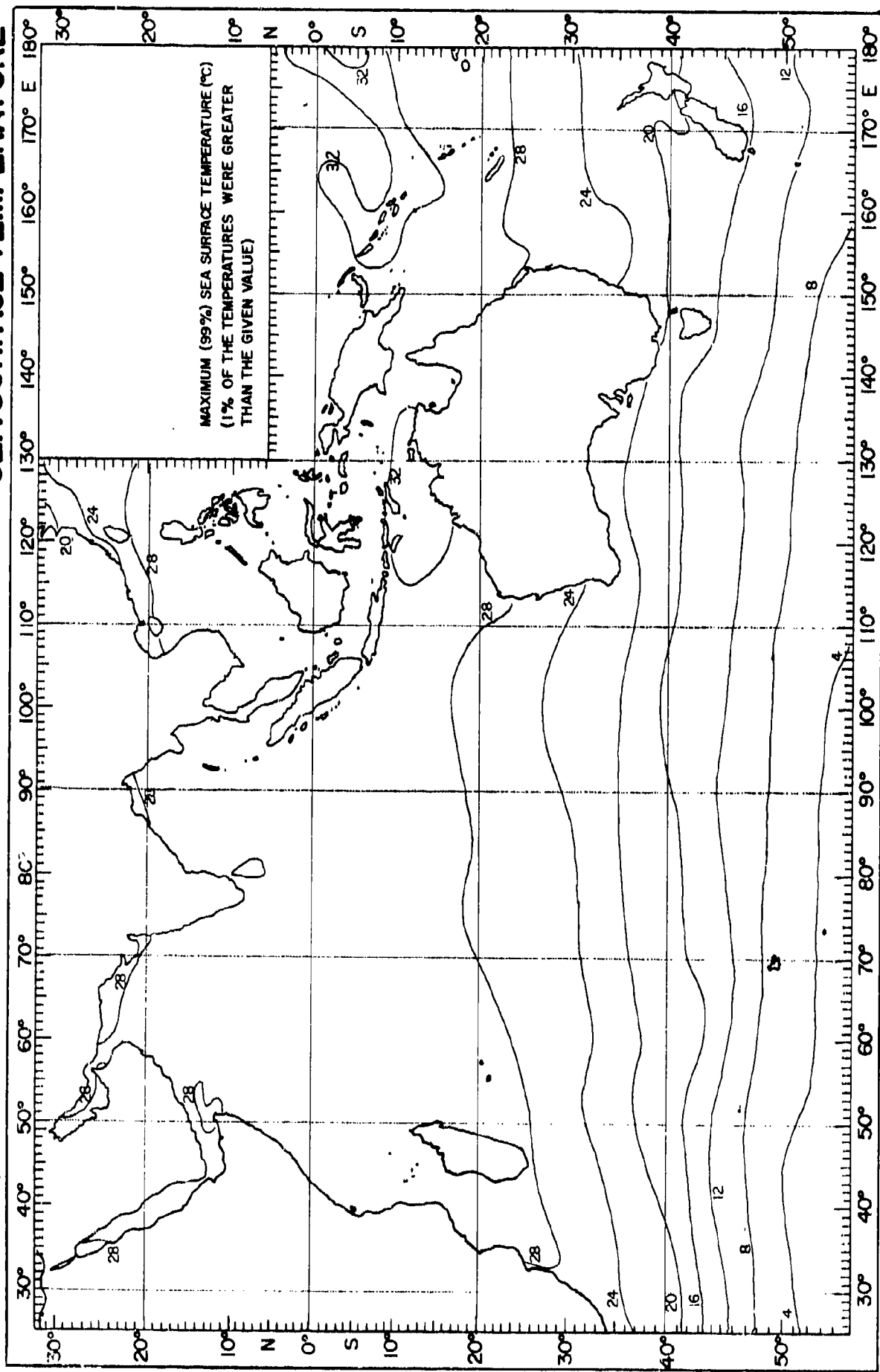
NOVEMBER

SEA SURFACE TEMPERATURE



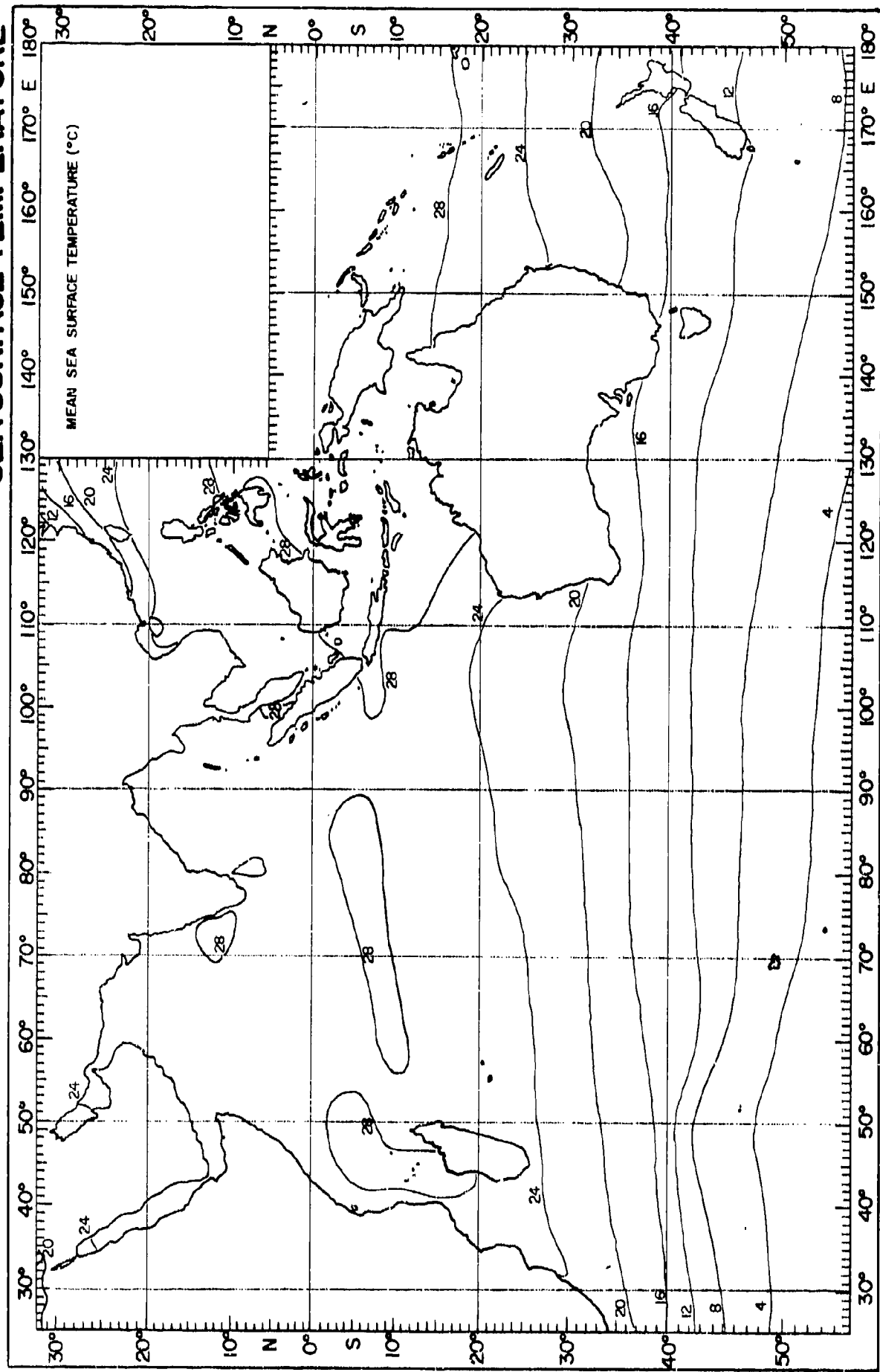
DECEMBER

SEA SURFACE TEMPERATURE



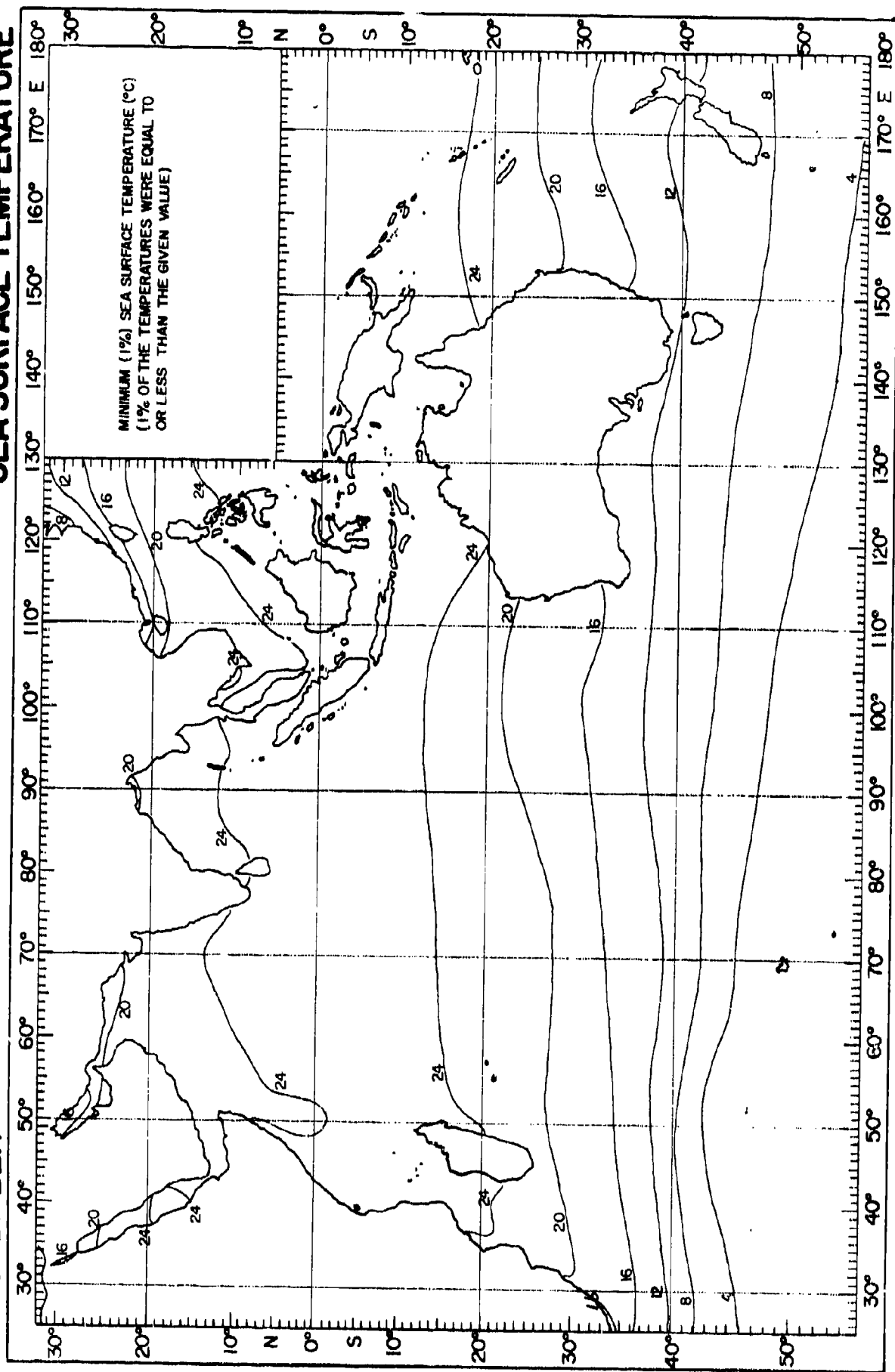
DECEMBER

SEA SURFACE TEMPERATURE



DECEMBER

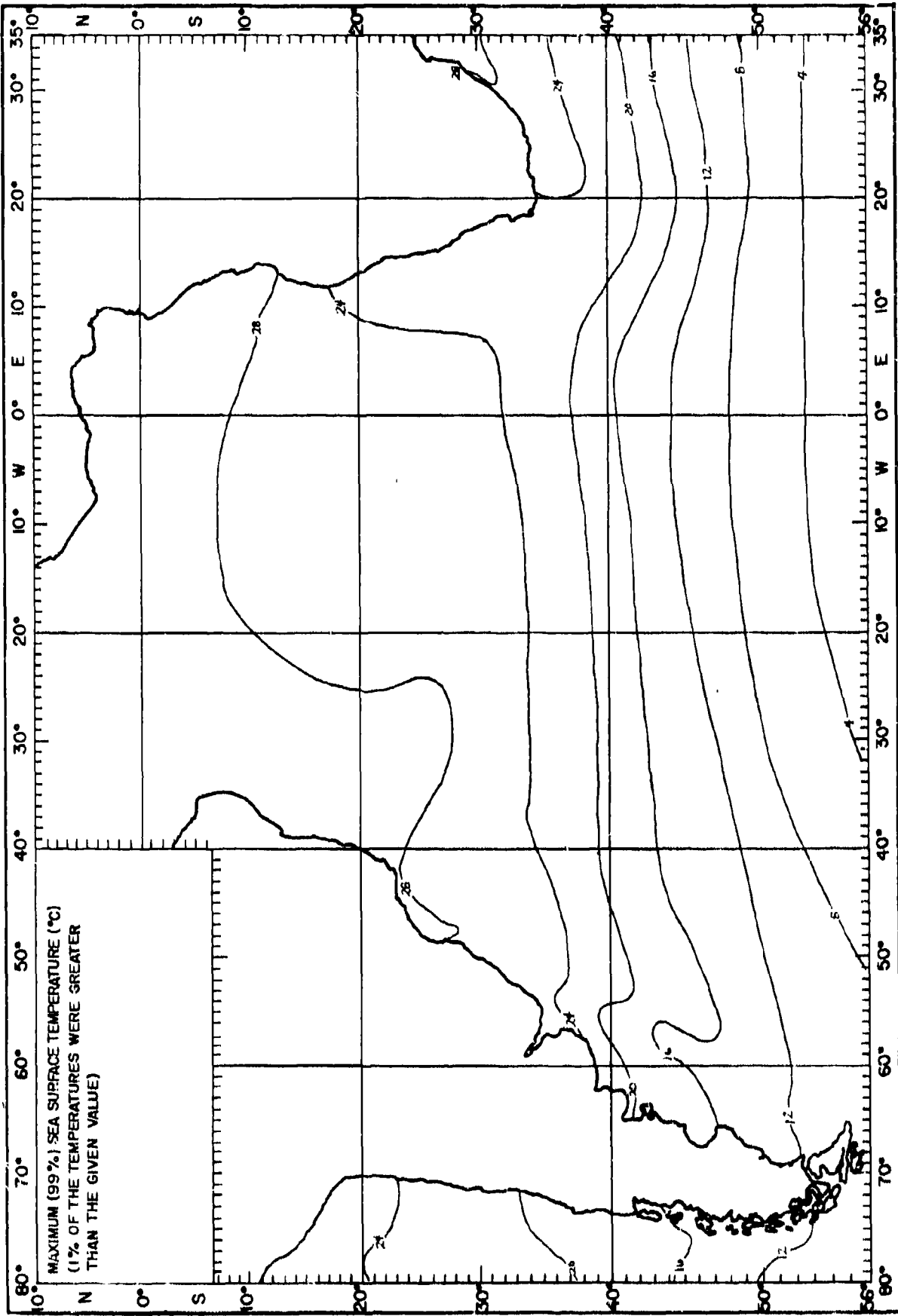
SEA SURFACE TEMPERATURE



SOUTH ATLANTIC
TEMPERATURE CHARTS

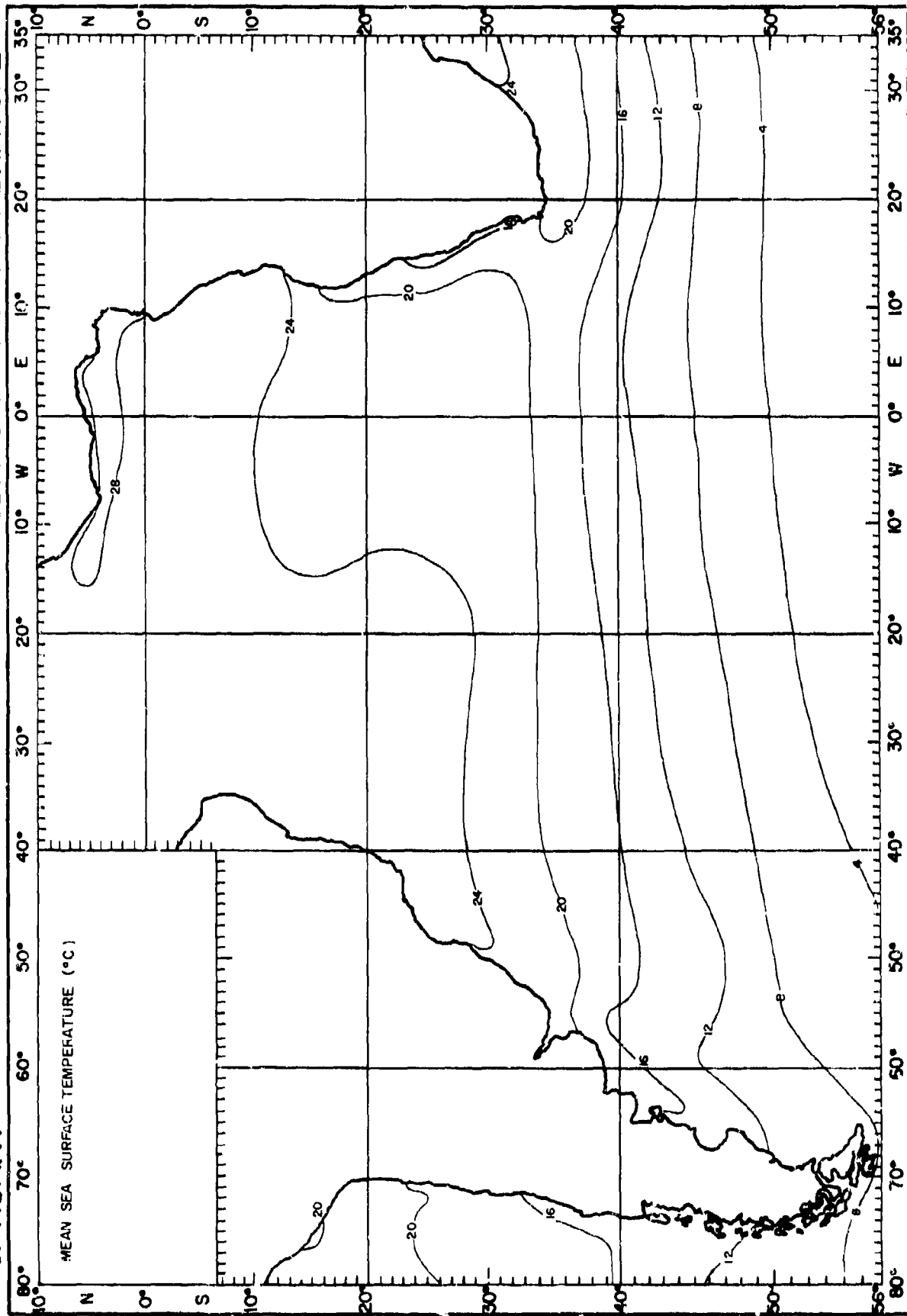
JANUARY

SEA SURFACE TEMPERATURE



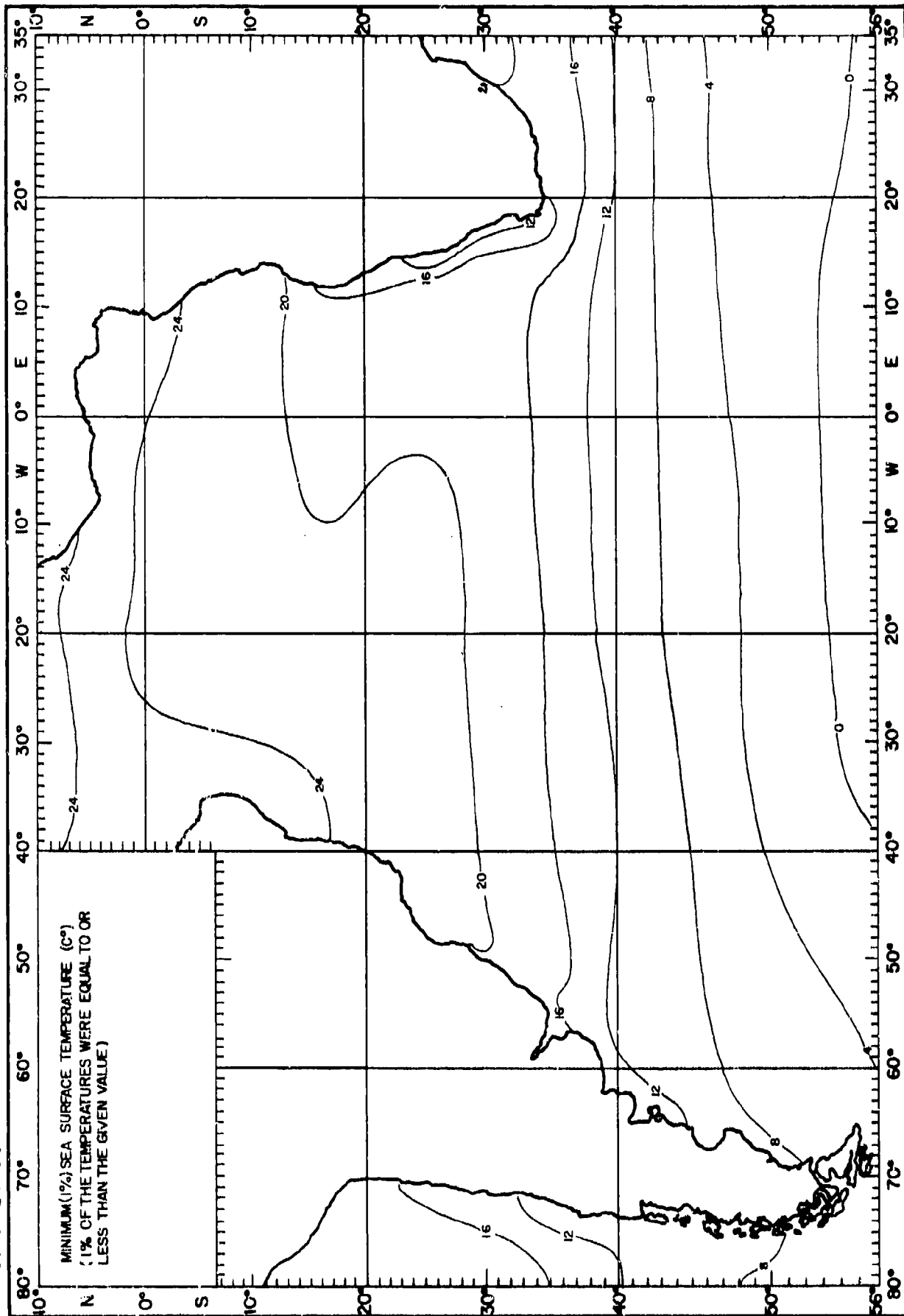
JANUARY

SEA SURFACE TEMPERATURE



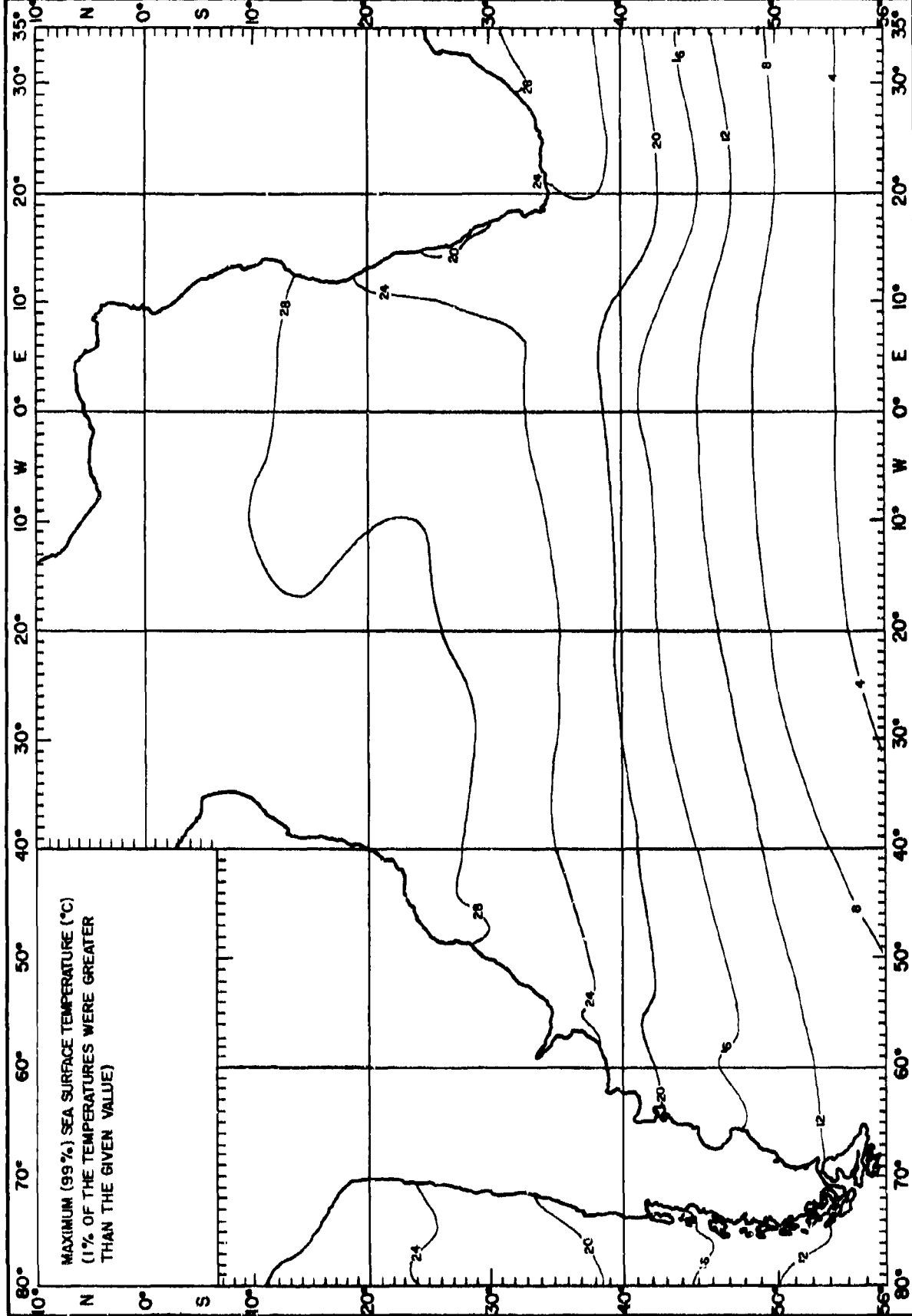
JANUARY

SEA SURFACE TEMPERATURE



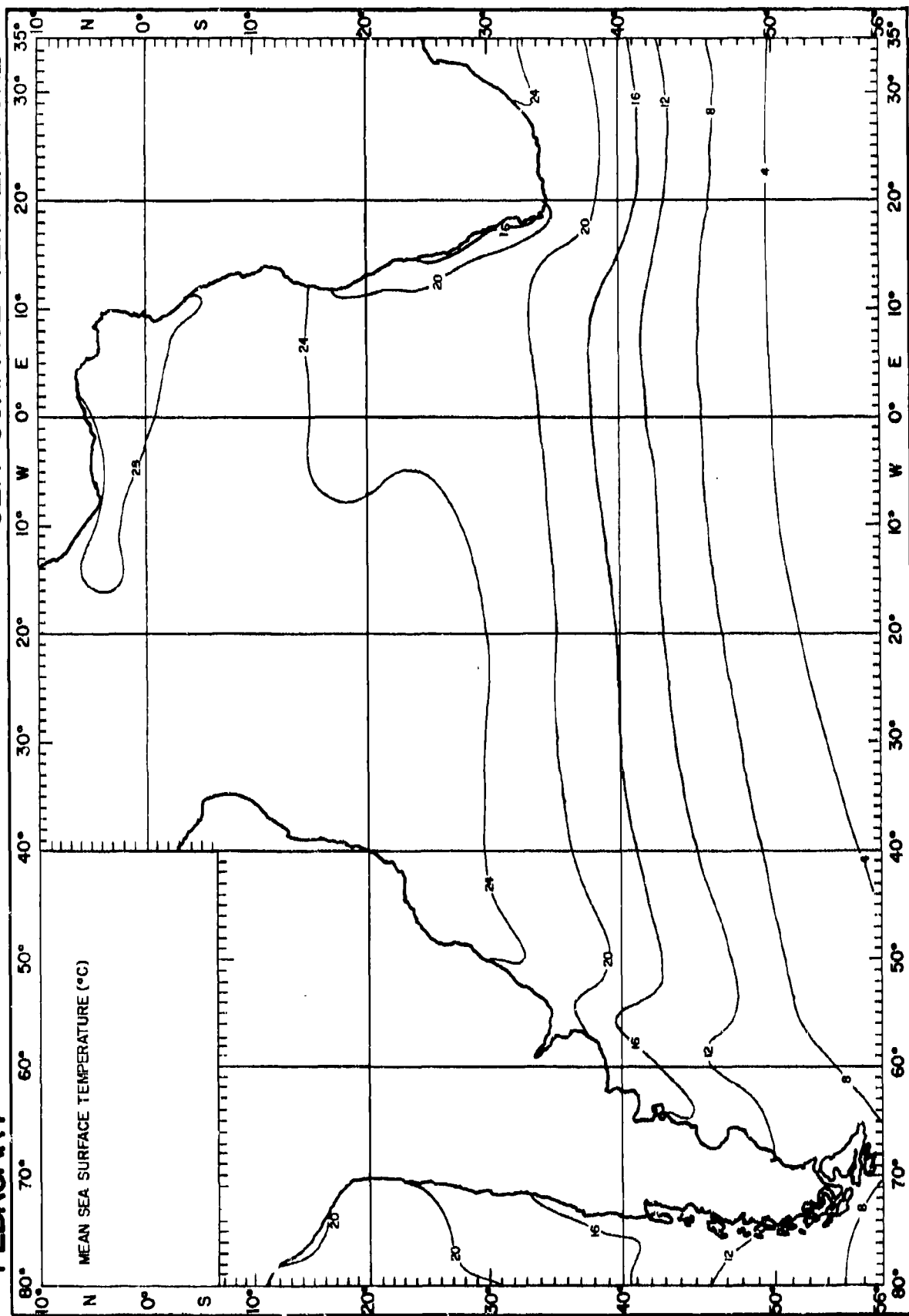
FEBRUARY

SEA SURFACE TEMPERATURE



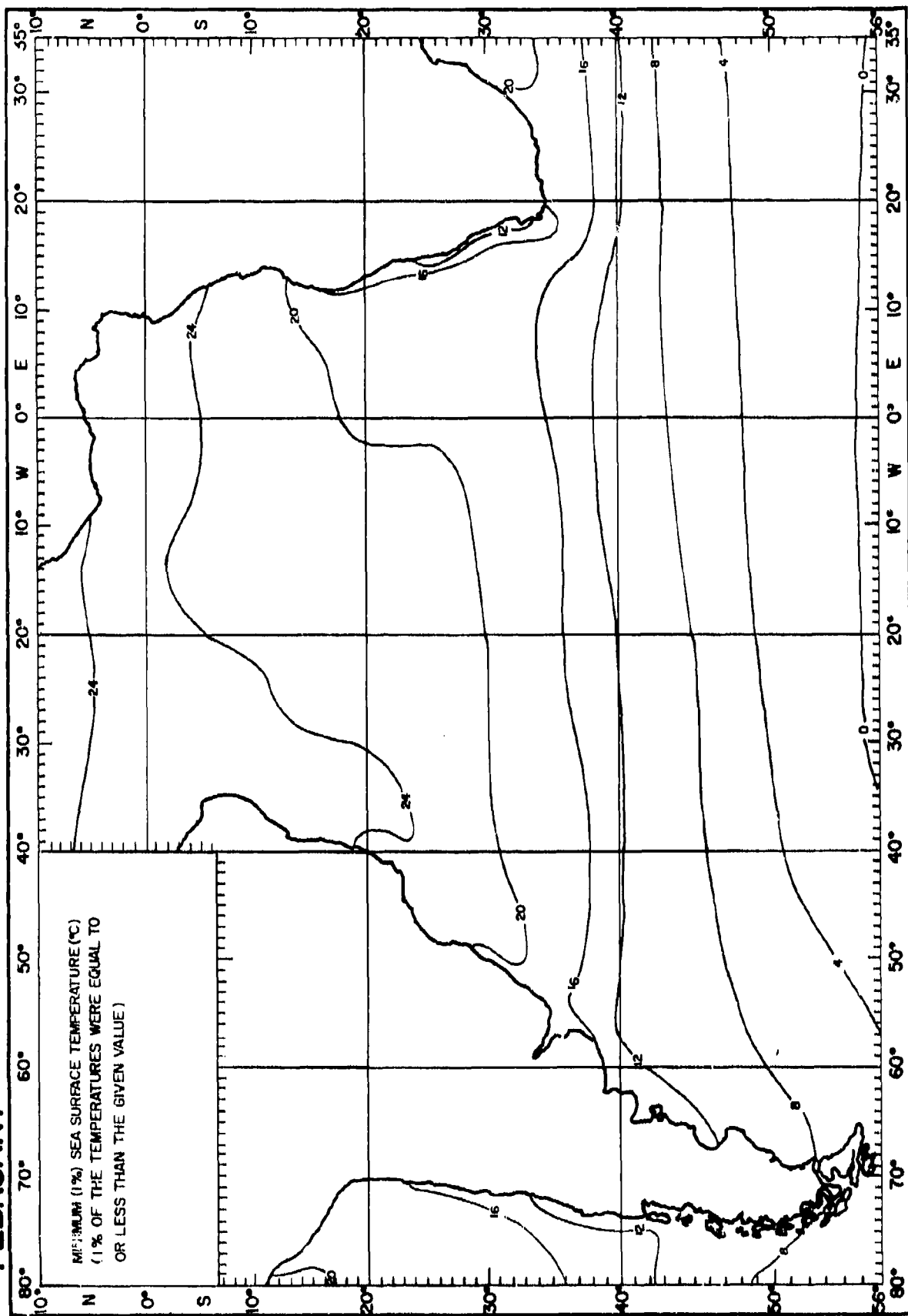
FEBRUARY

SEA SURFACE TEMPERATURE



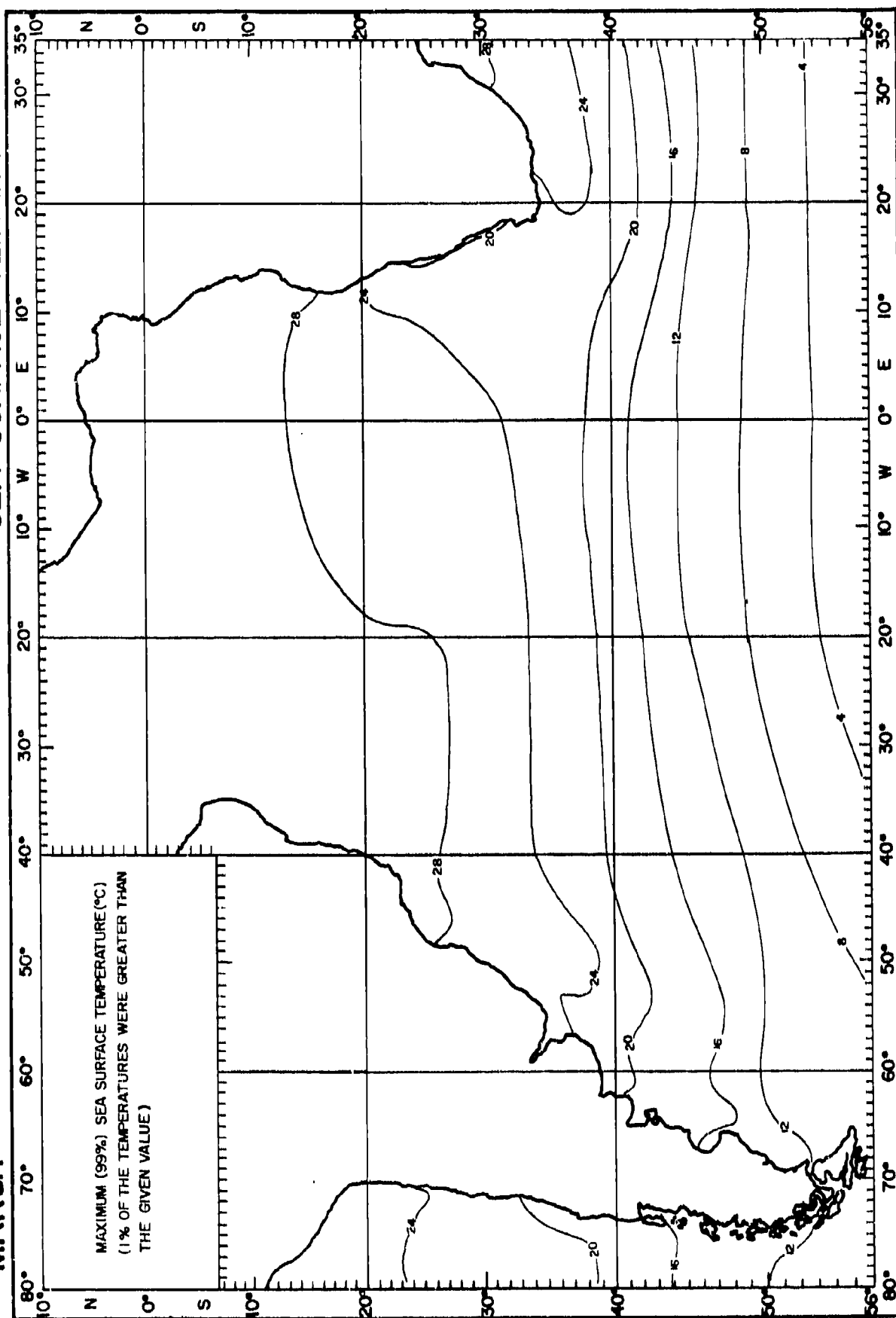
SEA SURFACE TEMPERATURE

FEBRUARY



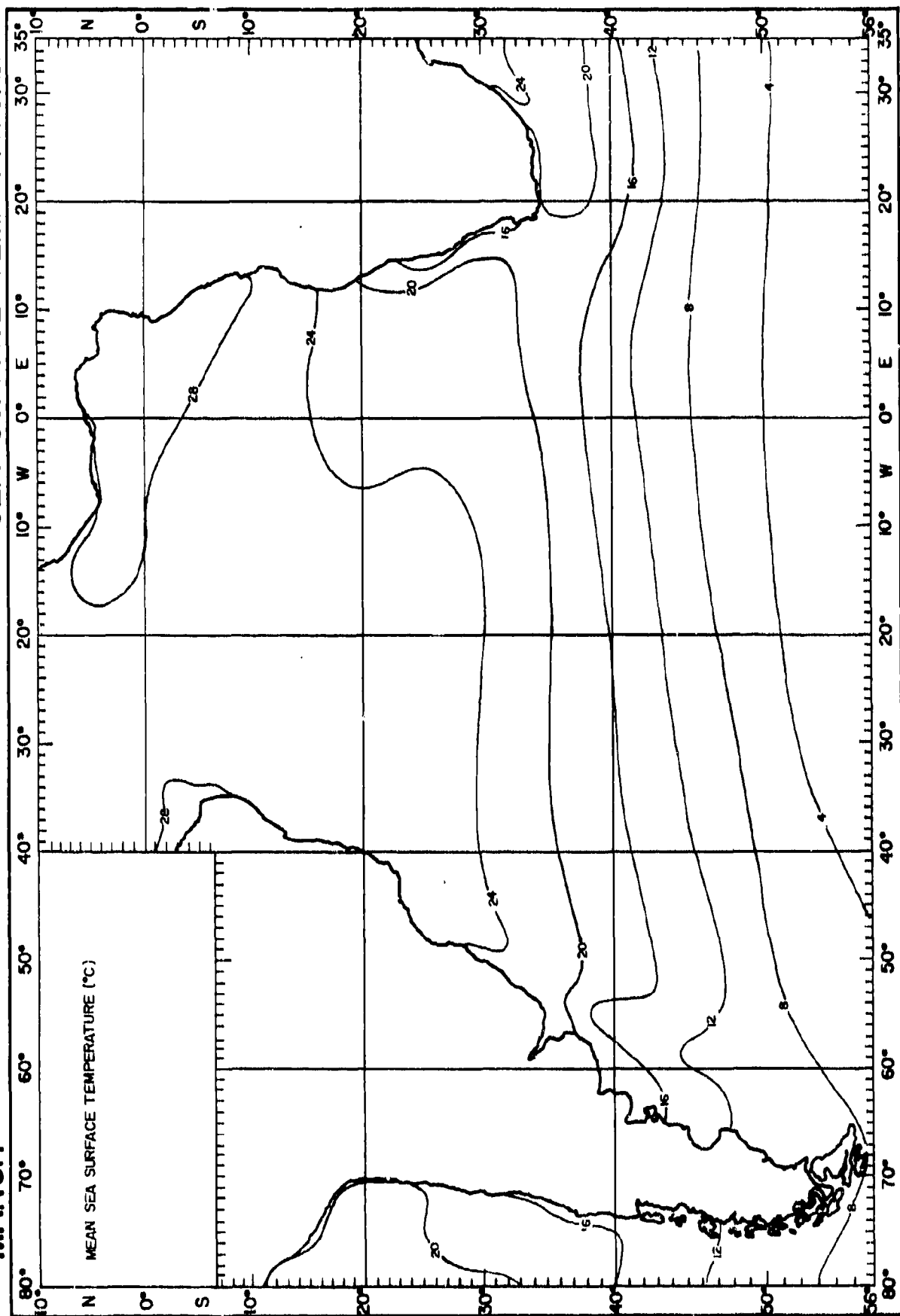
SEA SURFACE TEMPERATURE

MARCH



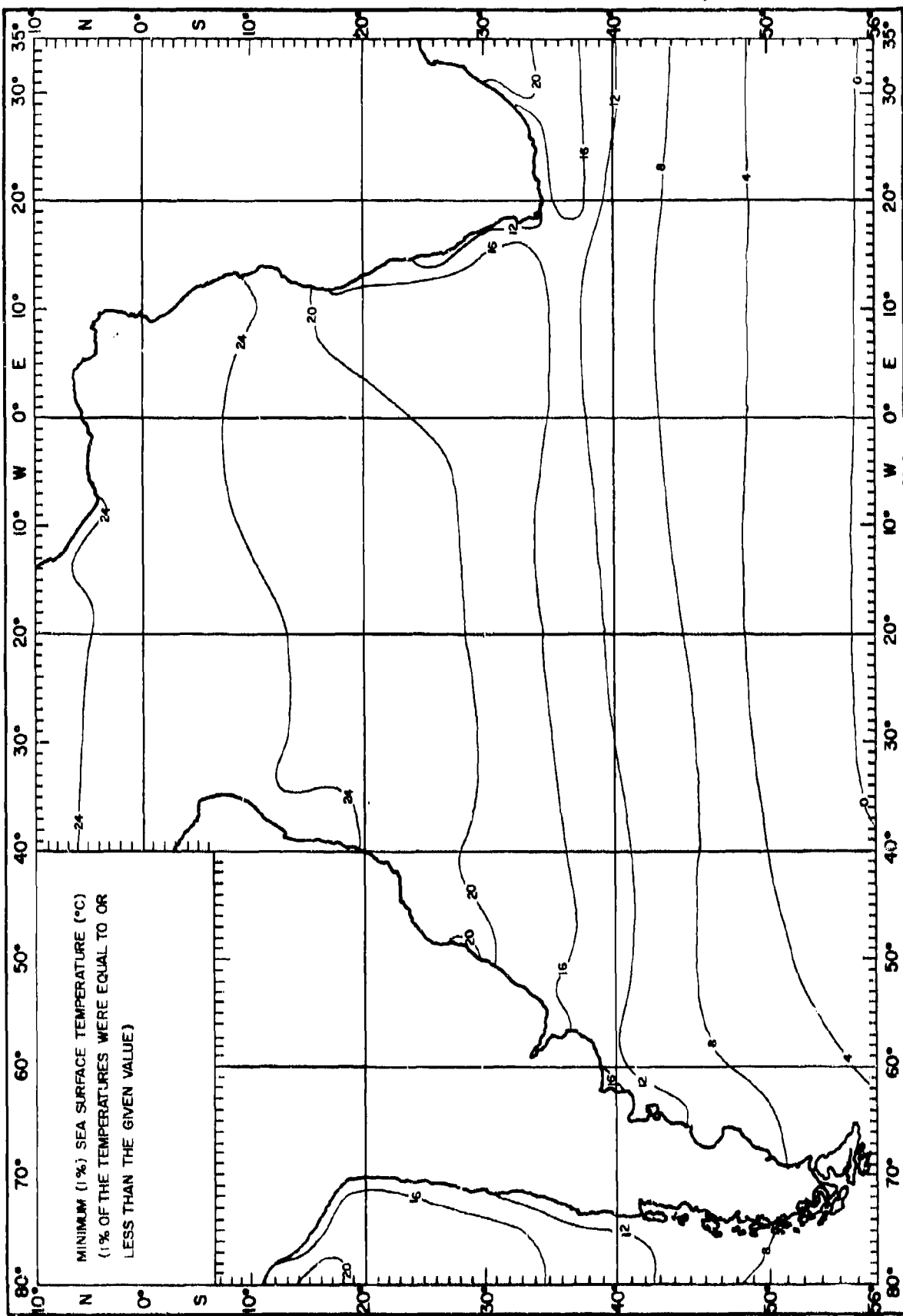
SEA SURFACE TEMPERATURE

MARCH



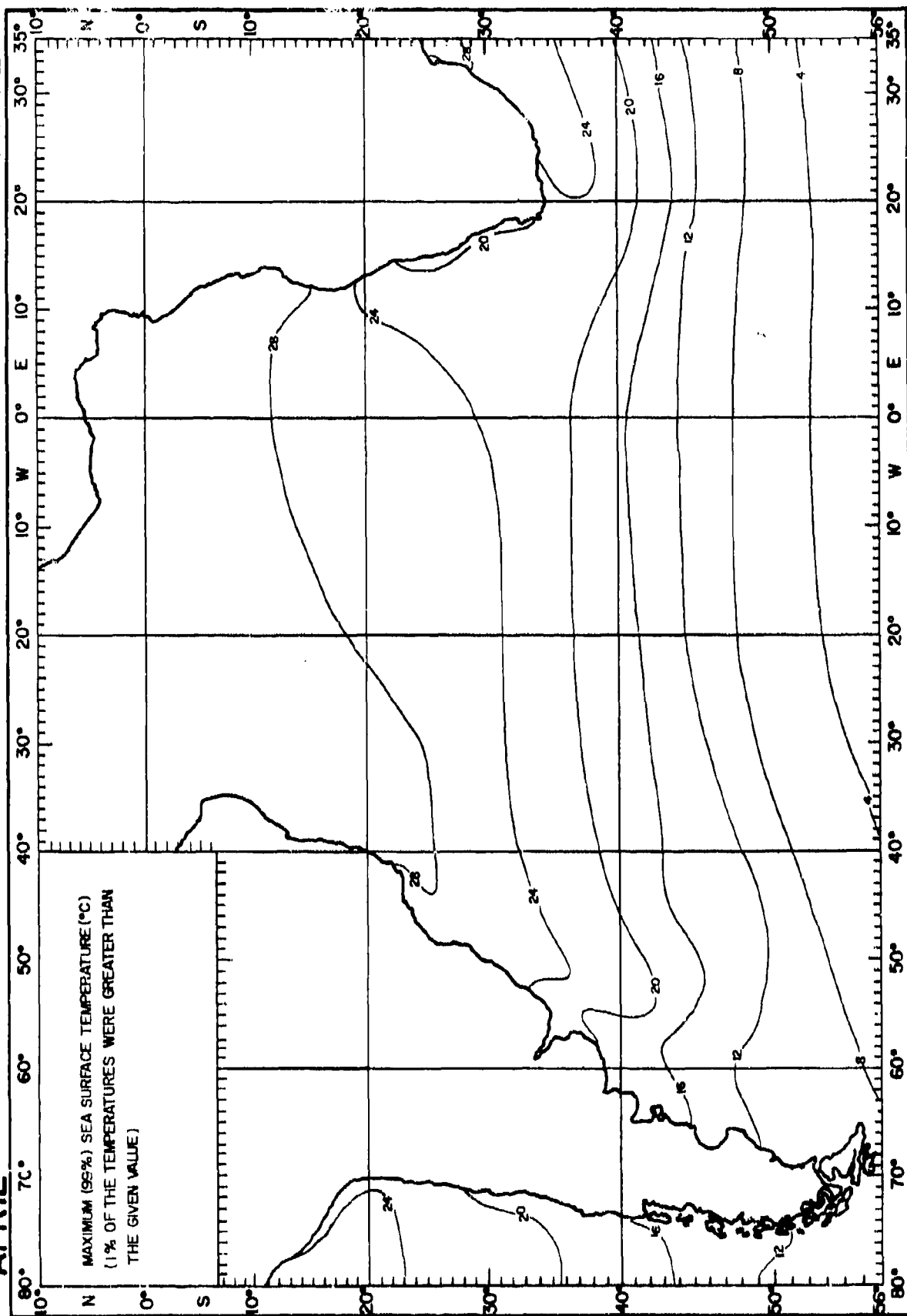
SEA SURFACE TEMPERATURE

MARCH



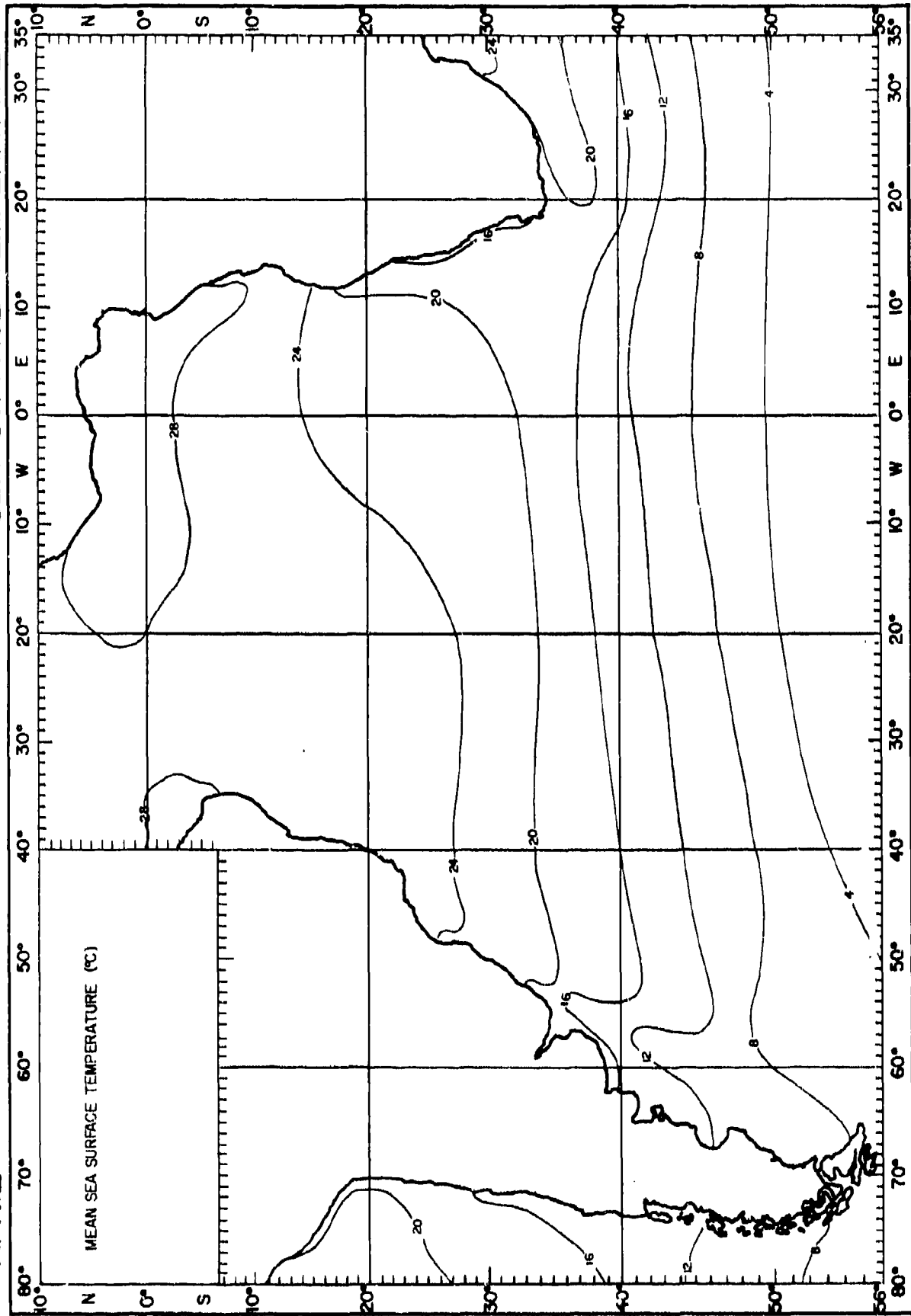
SEA SURFACE TEMPERATURE

APRIL



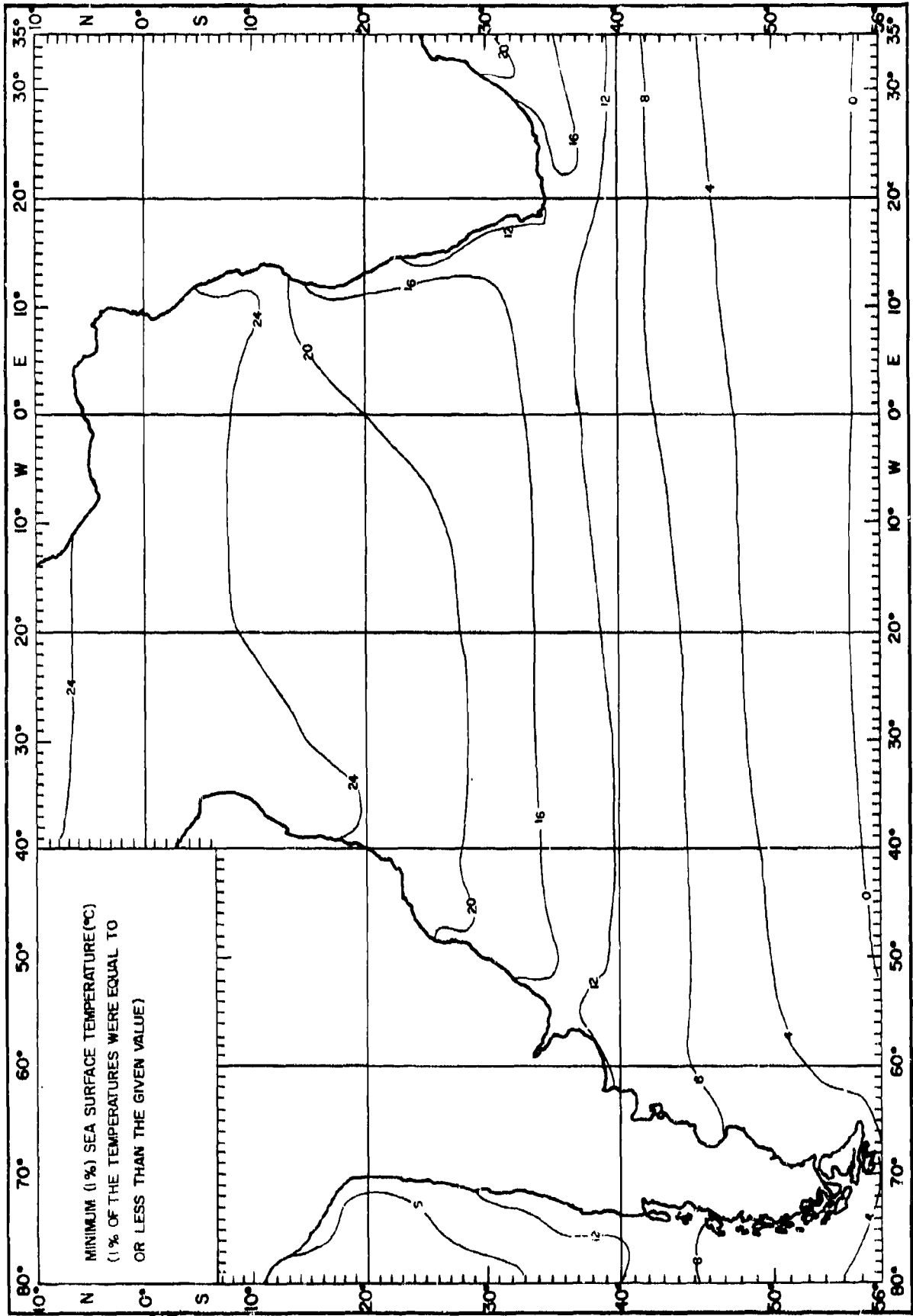
APRIL

SEA SURFACE TEMPERATURE



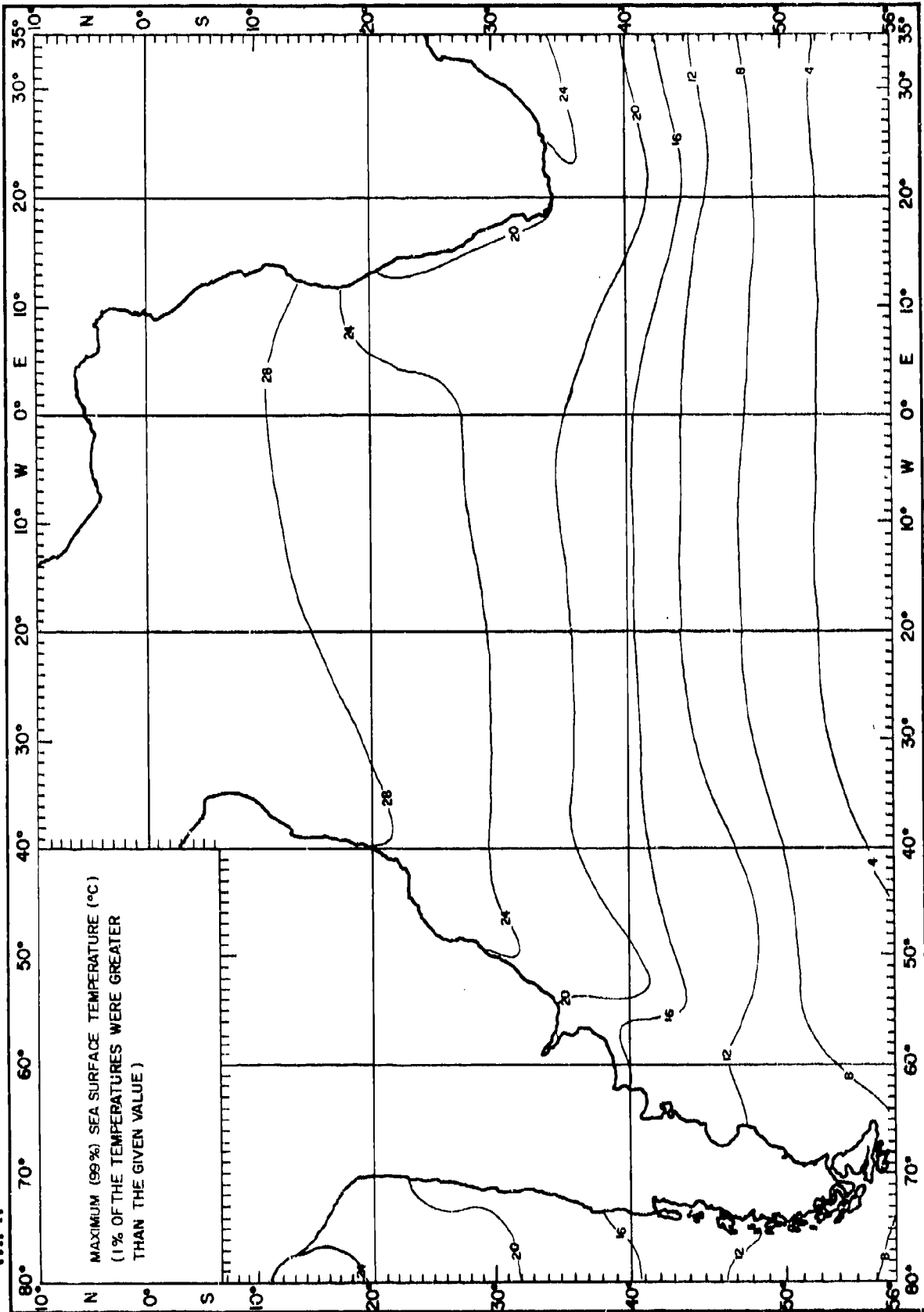
APRIL

SEA SURFACE TEMPERATURE



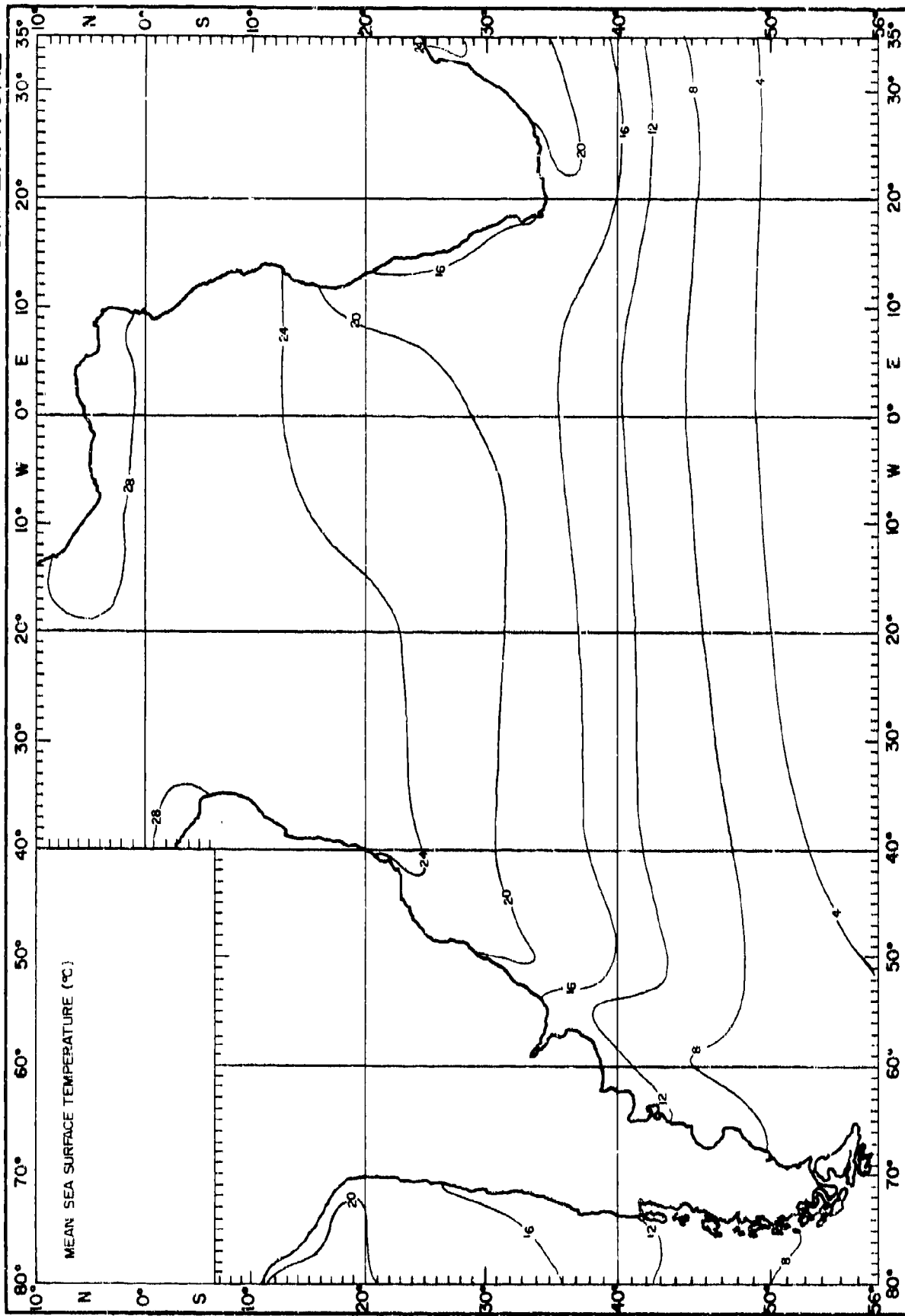
SEA SURFACE TEMPERATURE

MAY



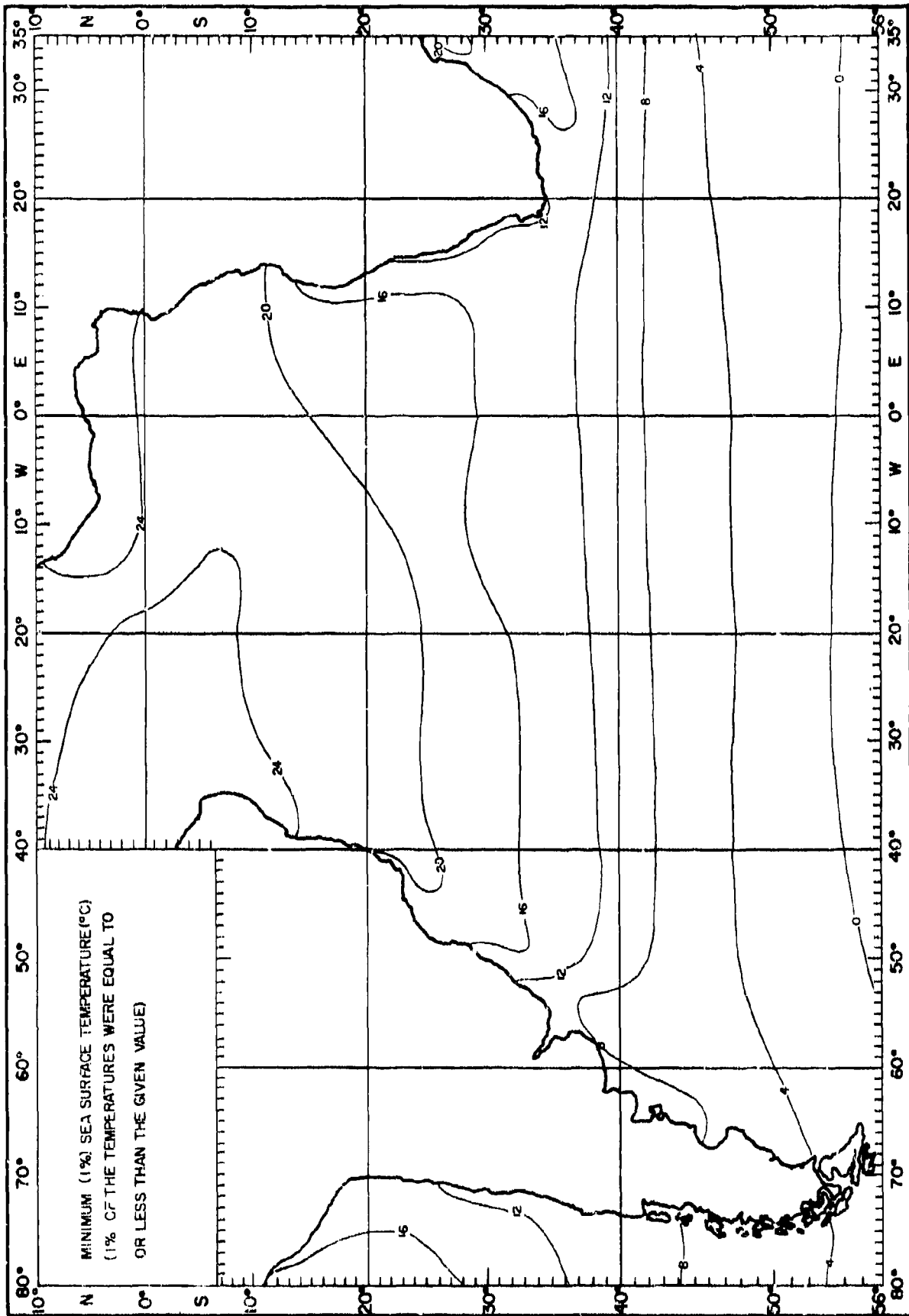
MAY

SEA SURFACE TEMPERATURE



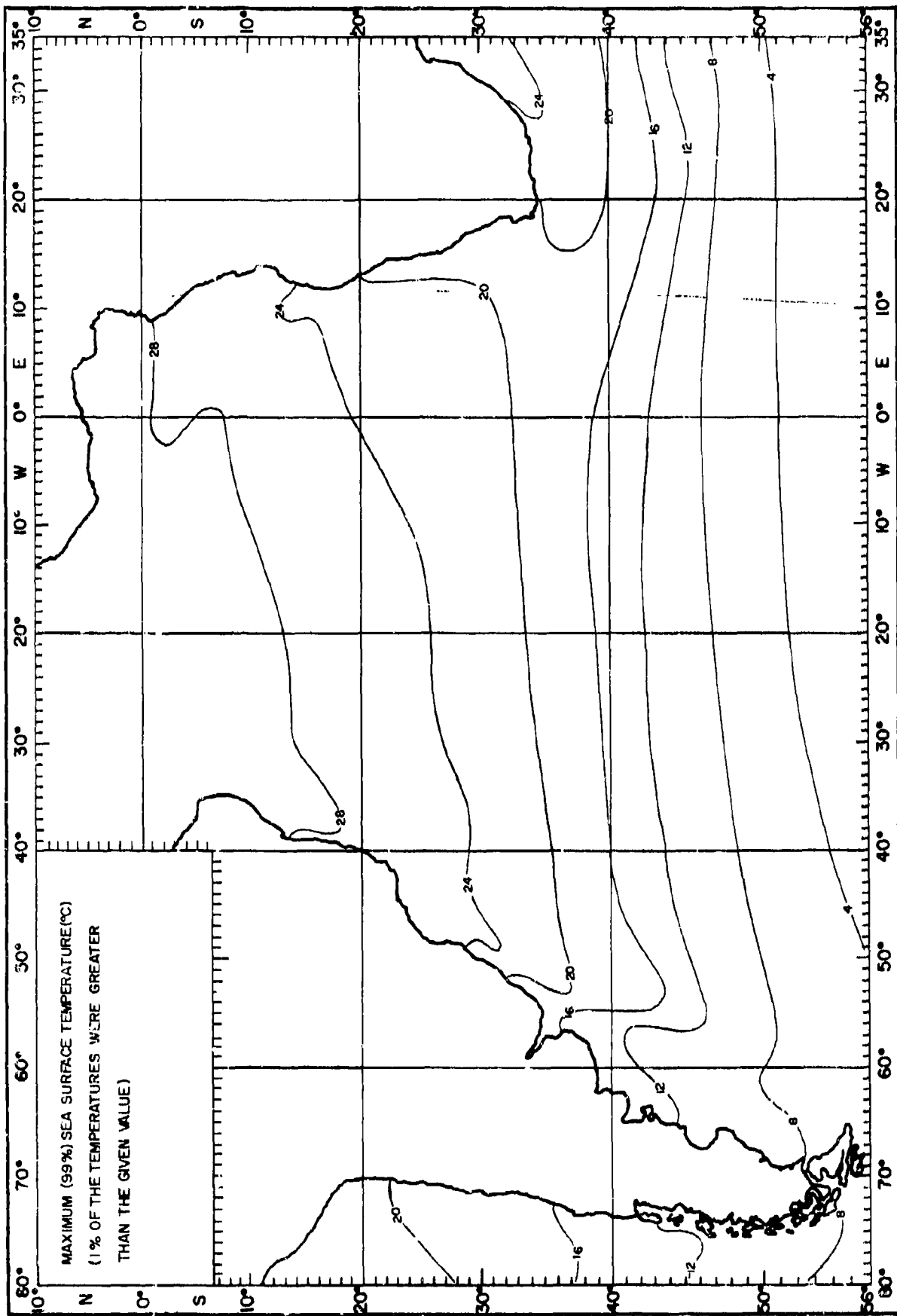
MAY

SEA SURFACE TEMPERATURE



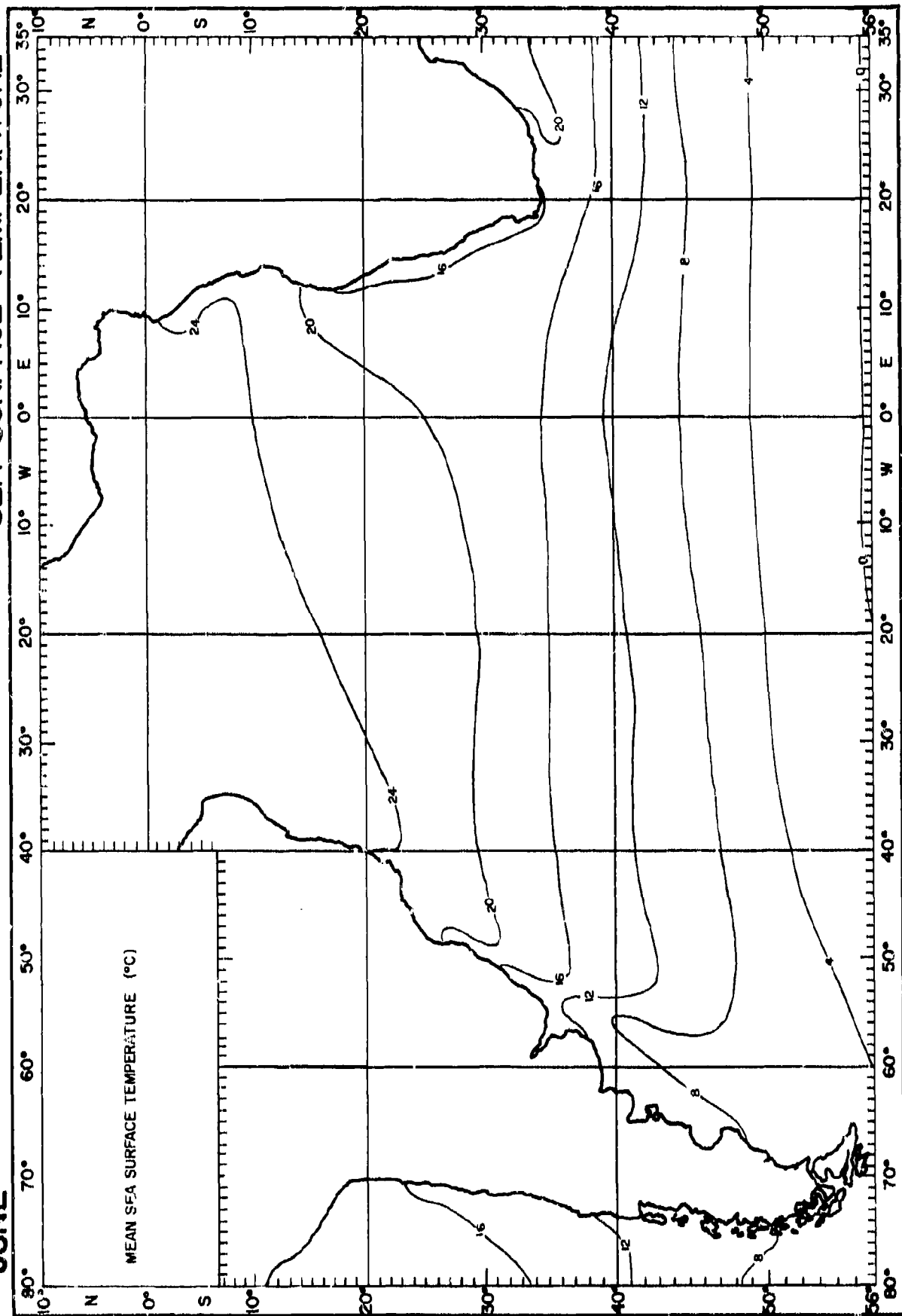
JUNE

SEA SURFACE TEMPERATURE



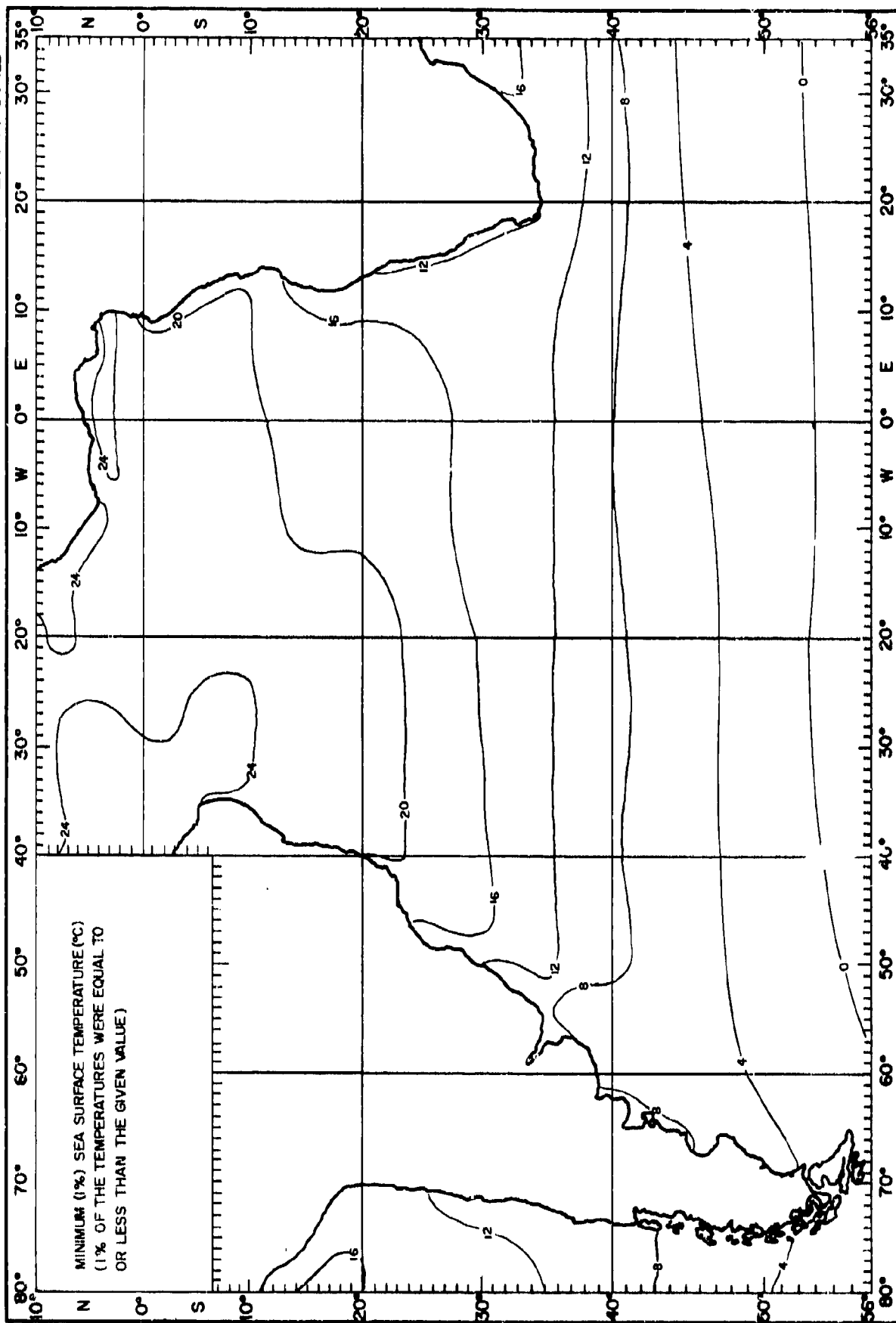
SEA SURFACE TEMPERATURE

JUNE



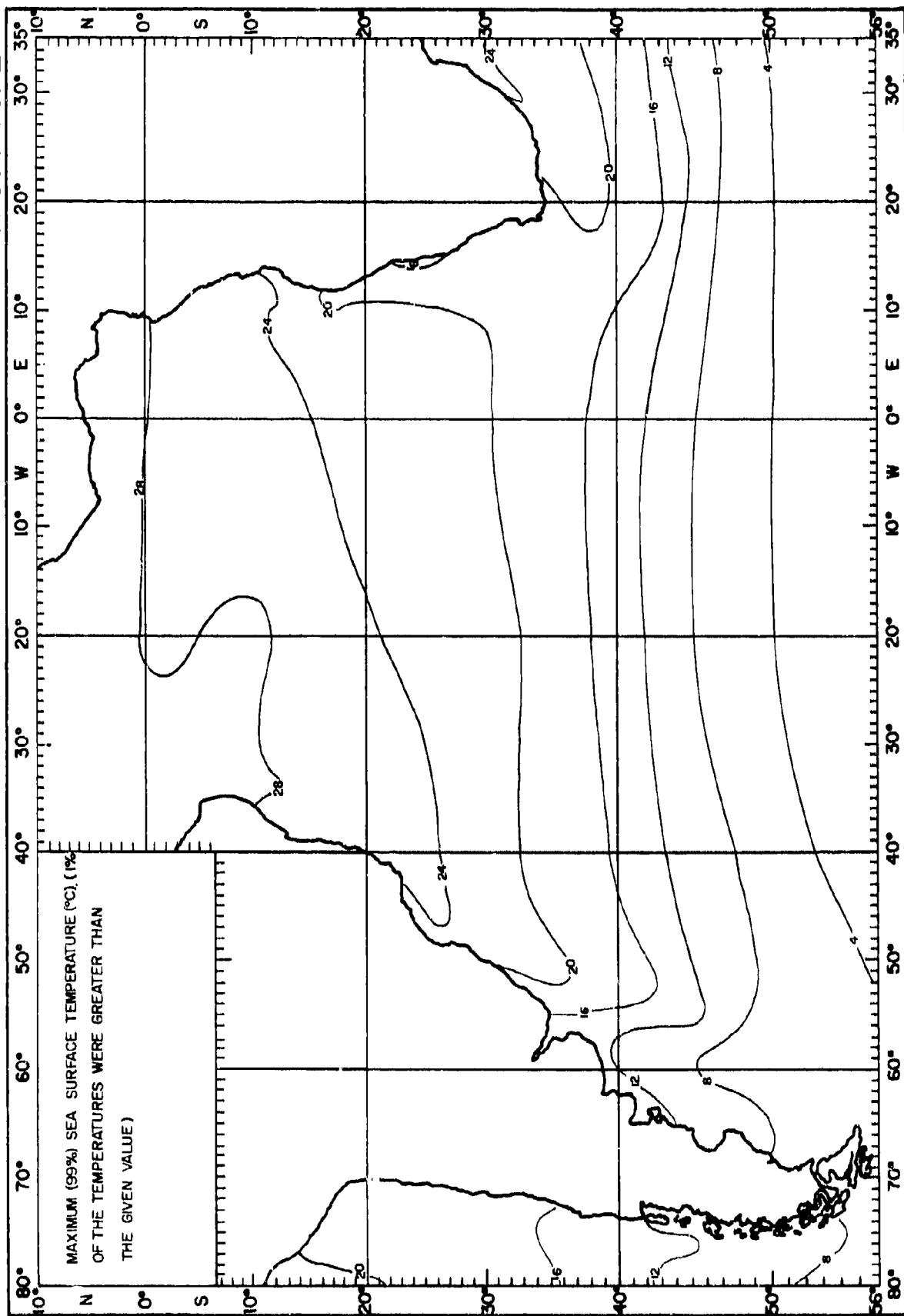
JUNE

SEA SURFACE TEMPERATURE



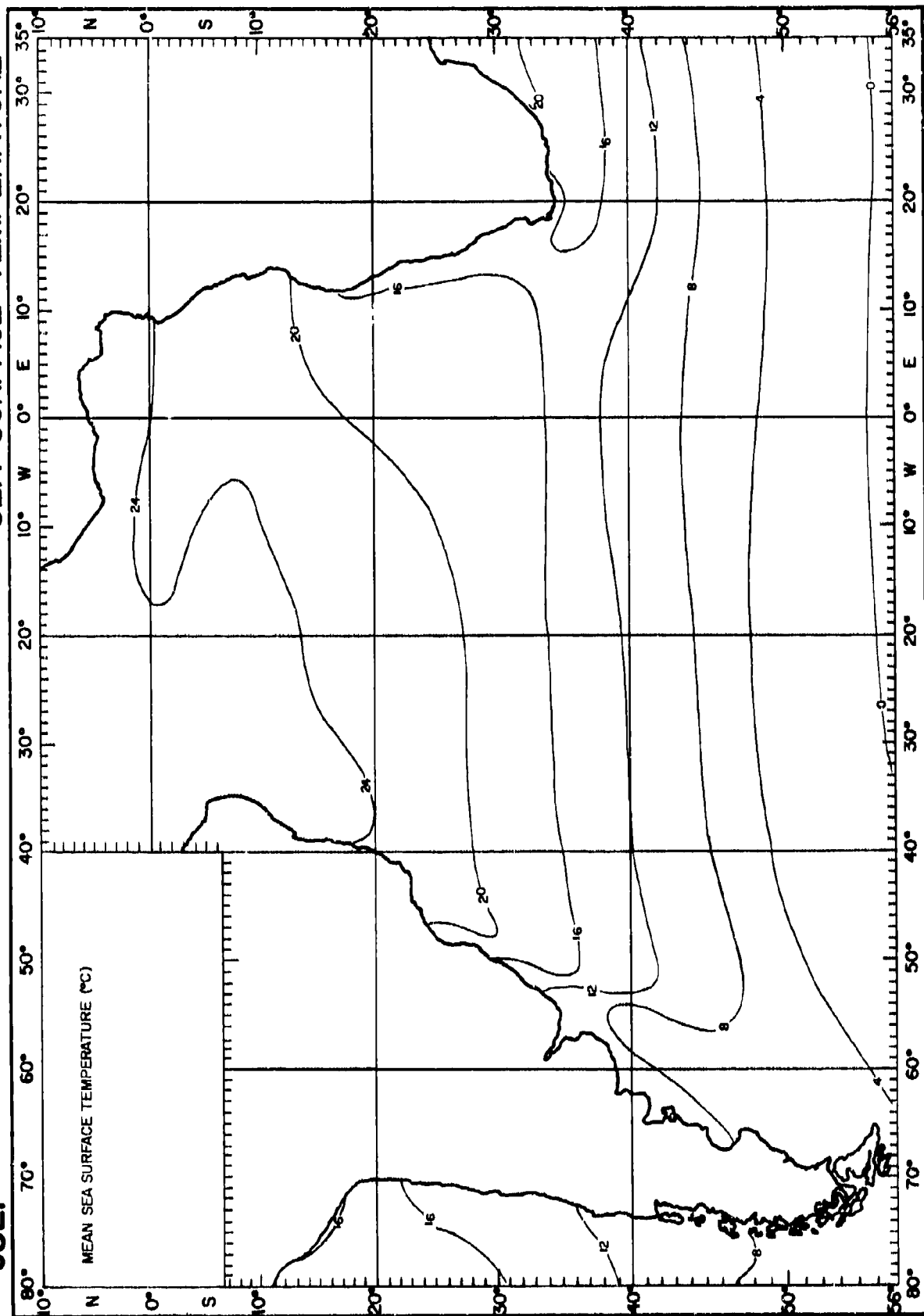
SEA SURFACE TEMPERATURE

JULY



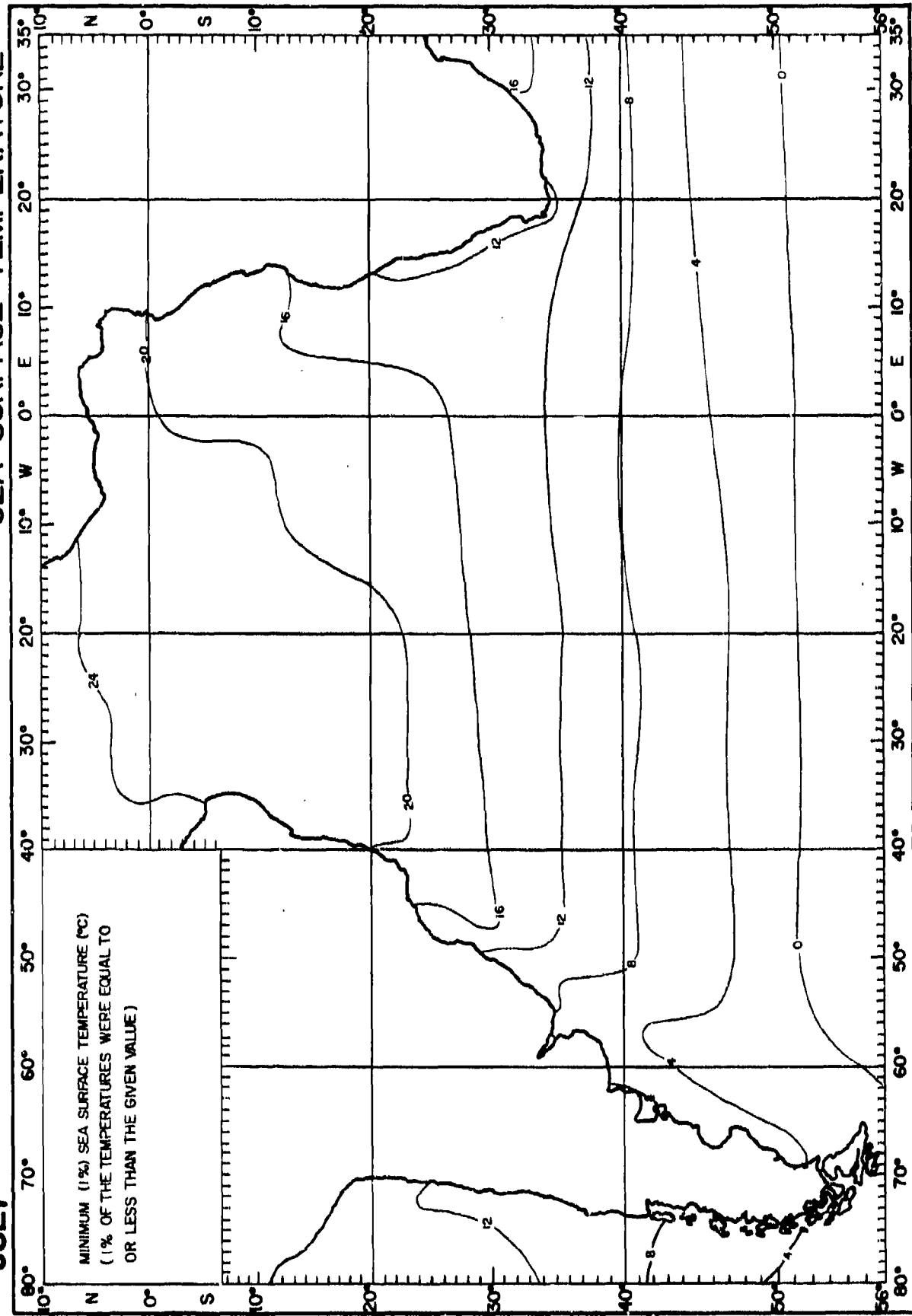
SEA SURFACE TEMPERATURE

JULY



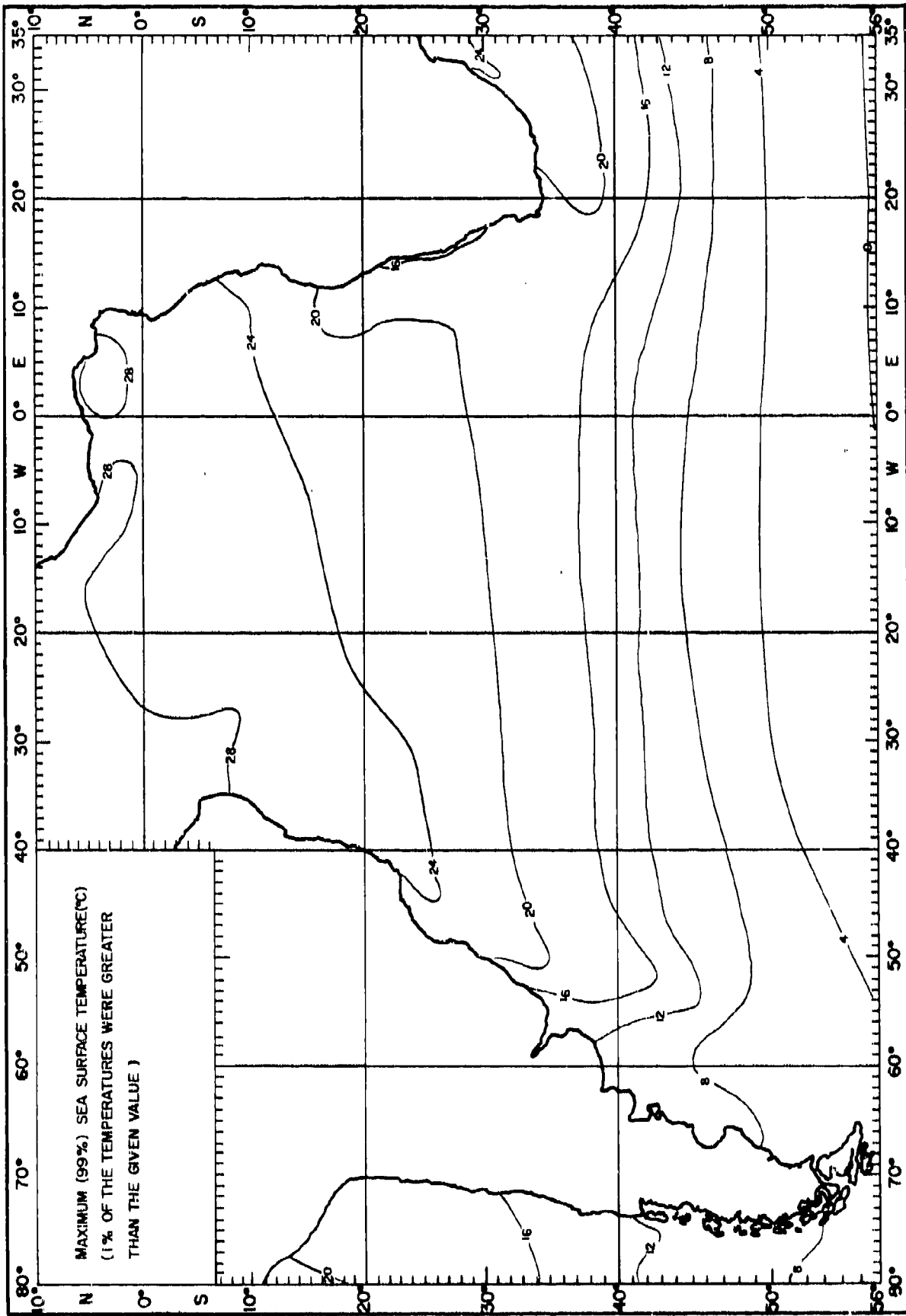
JULY

SEA SURFACE TEMPERATURE



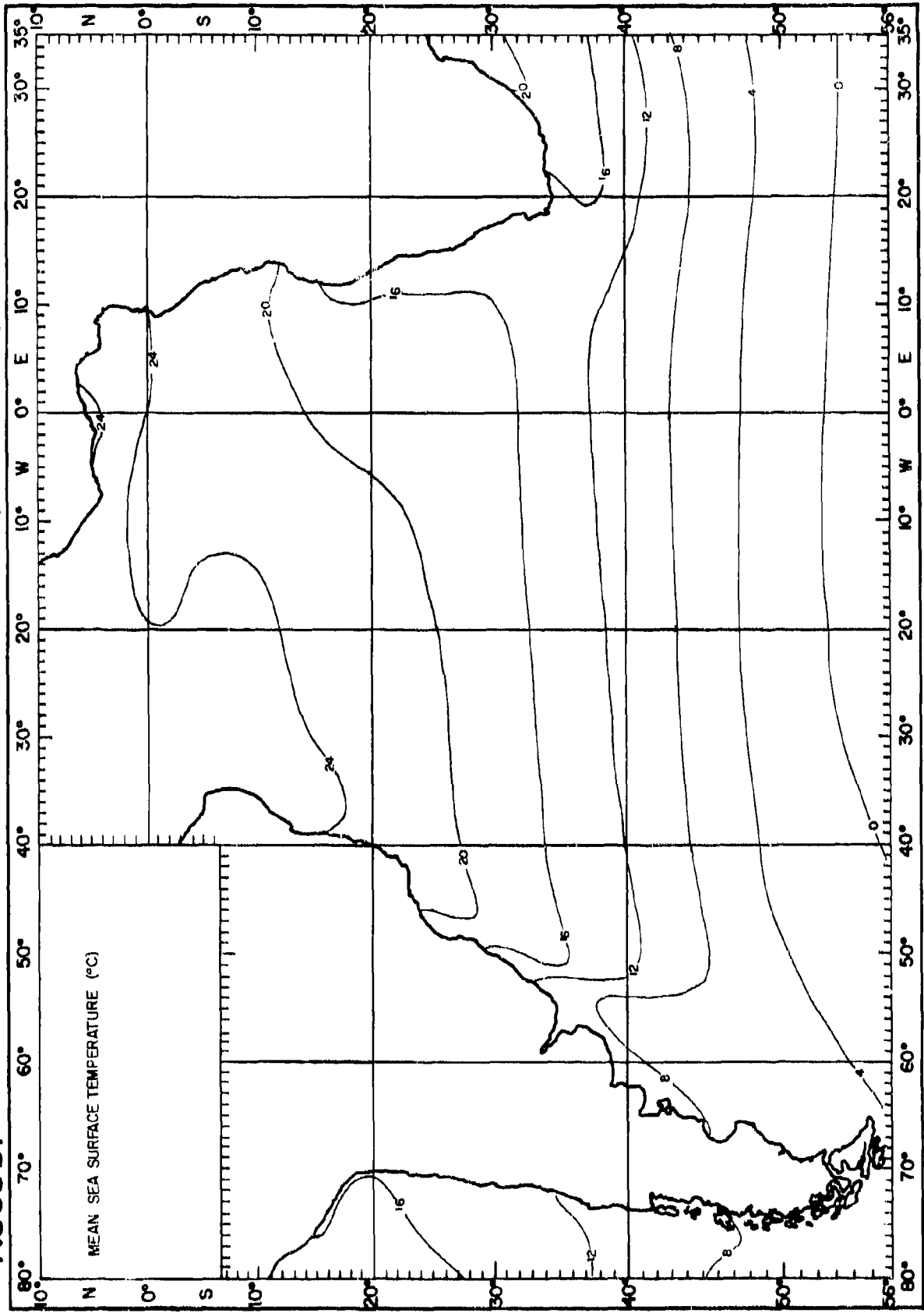
AUGUST

SEA SURFACE TEMPERATURE



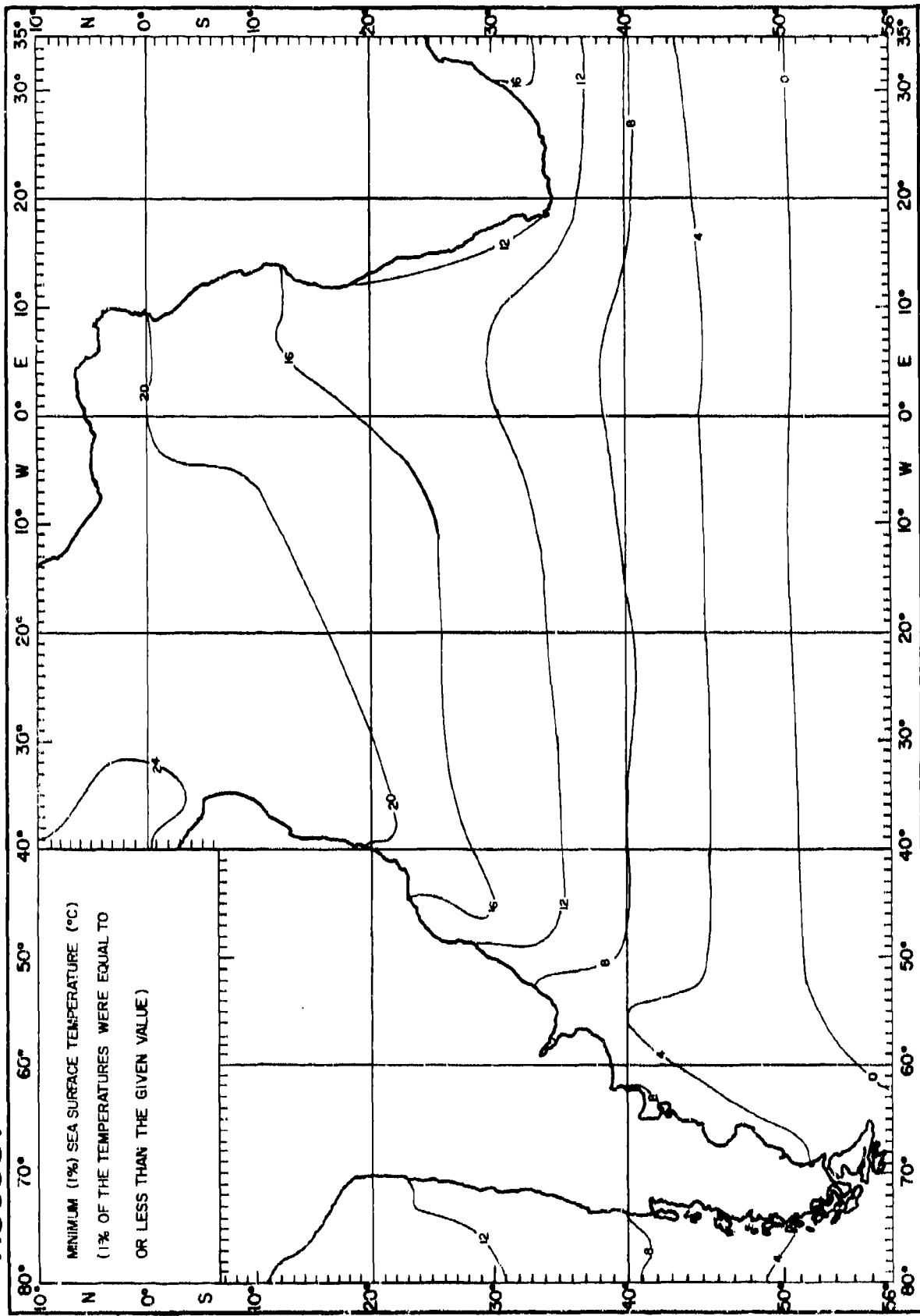
AUGUST

SEA SURFACE TEMPERATURE



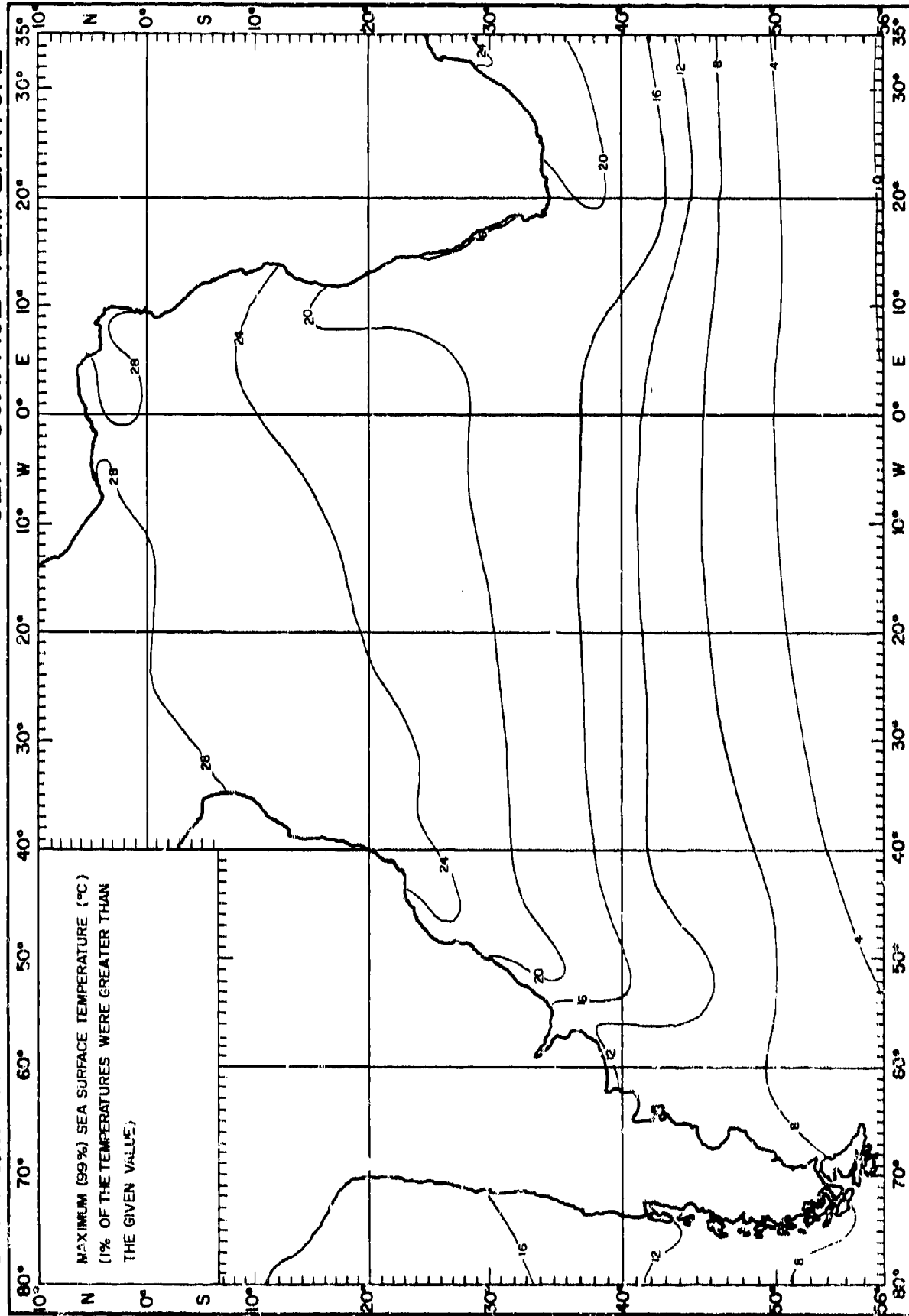
AUGUST

SEA SURFACE TEMPERATURE



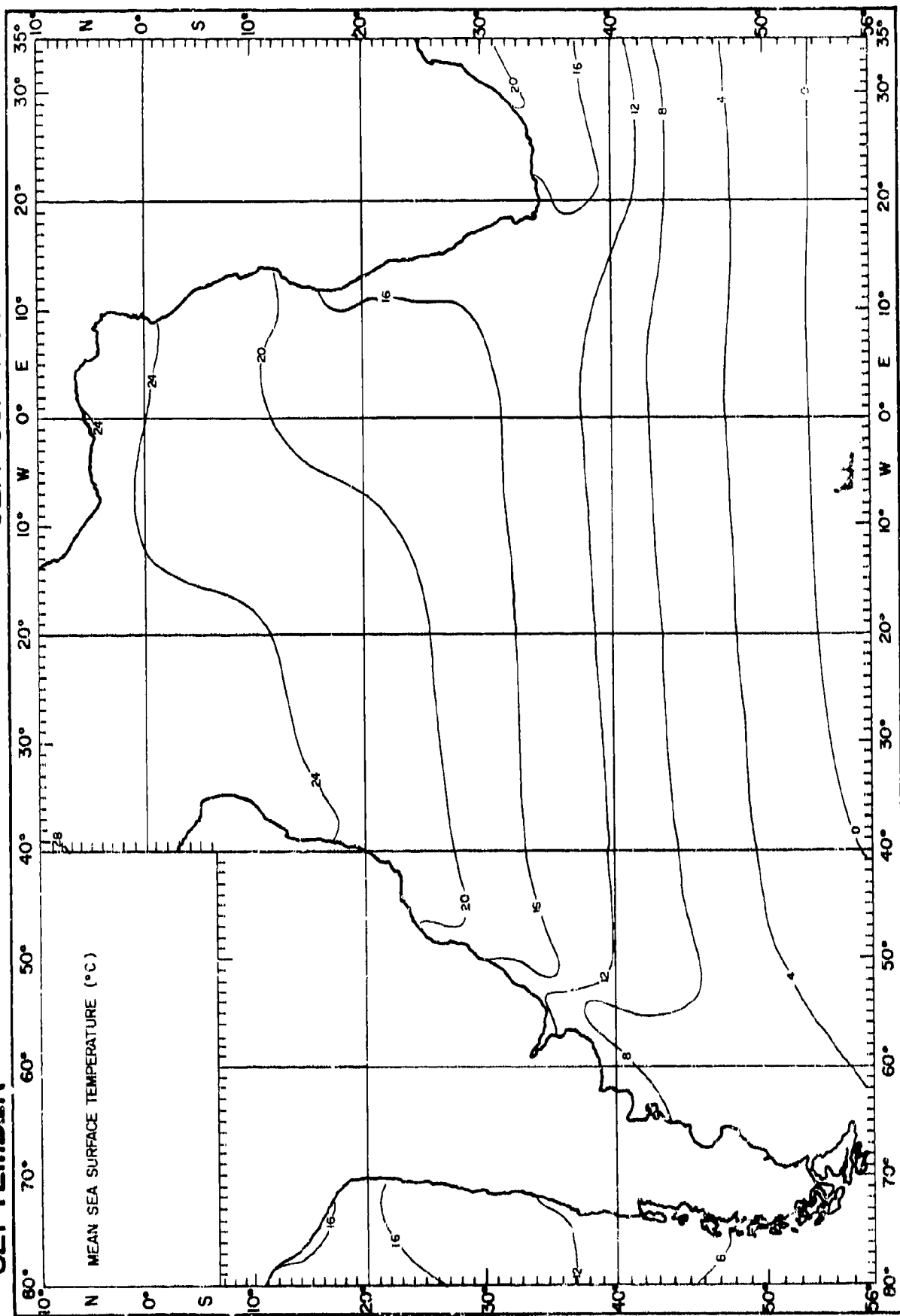
SEPTEMBER

SEA SURFACE TEMPERATURE



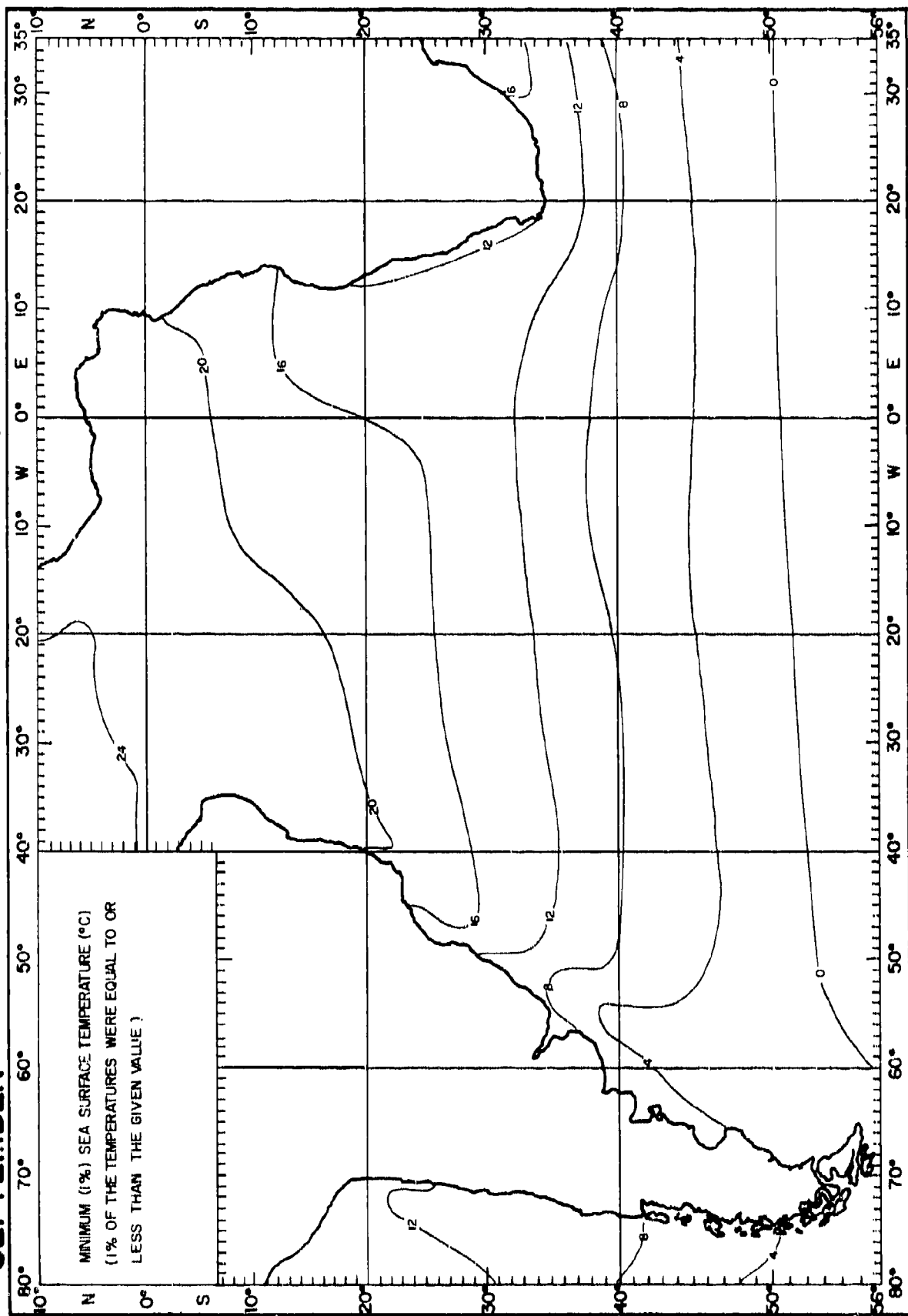
SEPTEMBER

SEA SURFACE TEMPERATURE



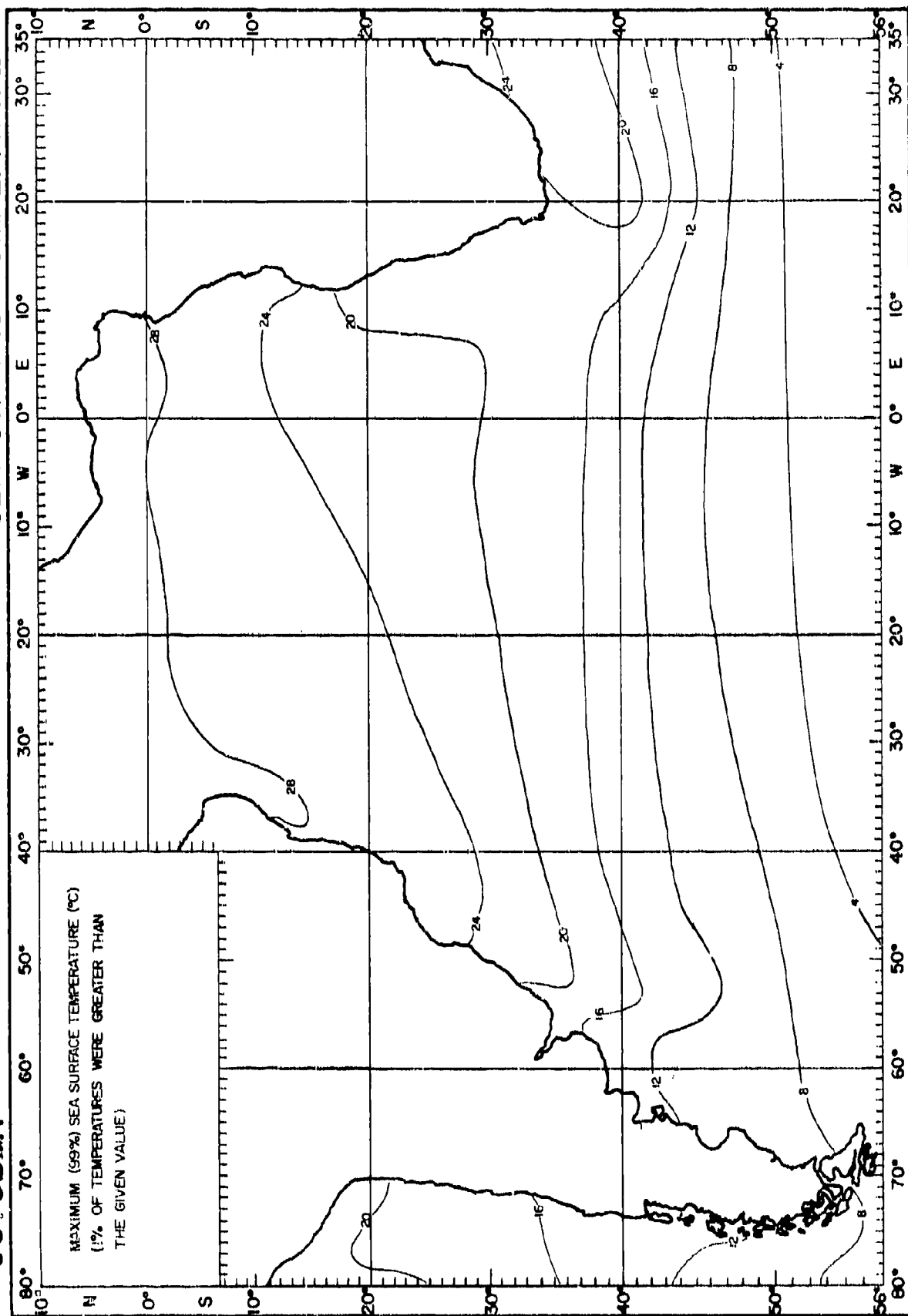
SEPTEMBER

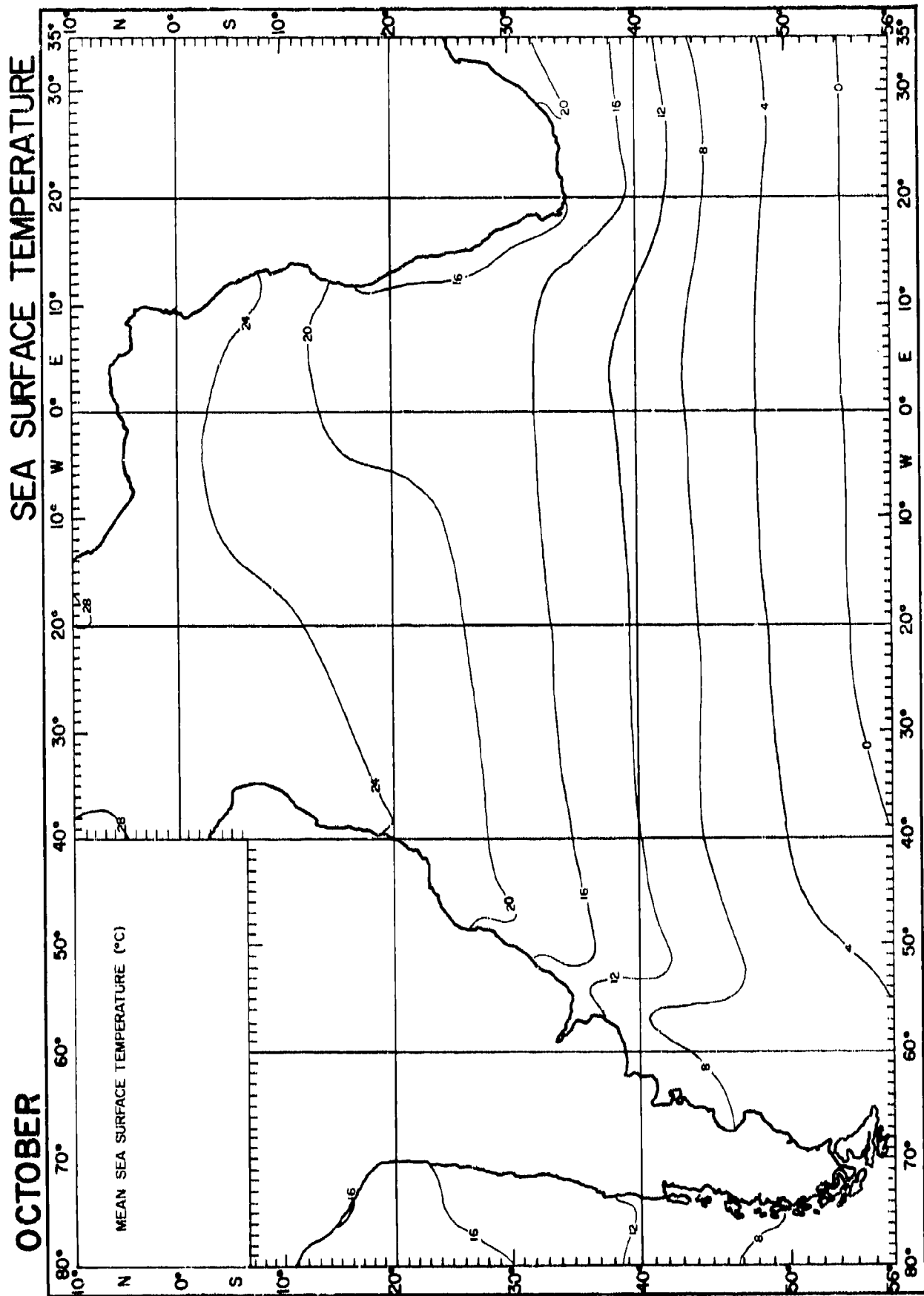
SEA SURFACE TEMPERATURE



SEA SURFACE TEMPERATURE

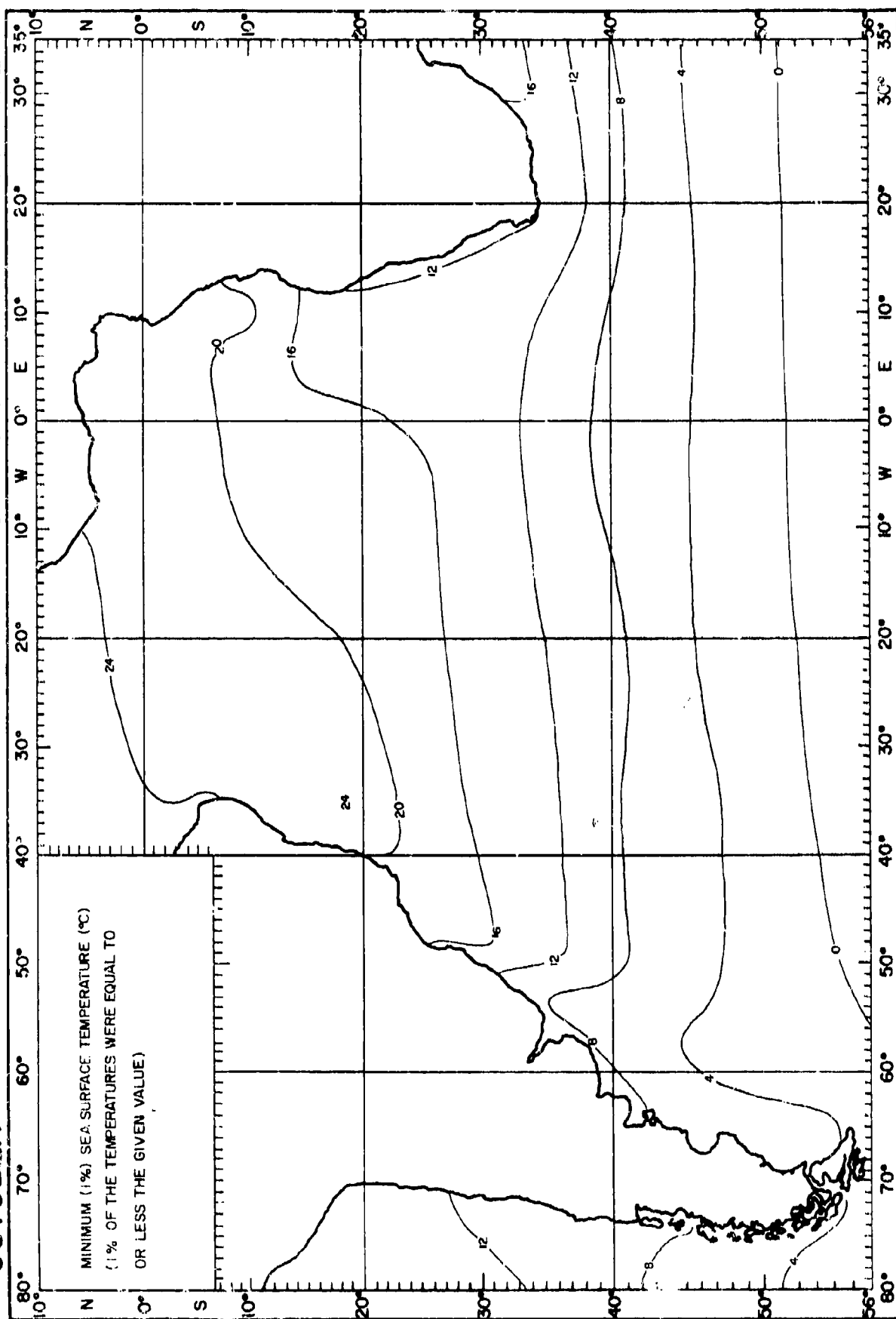
OCTOBER





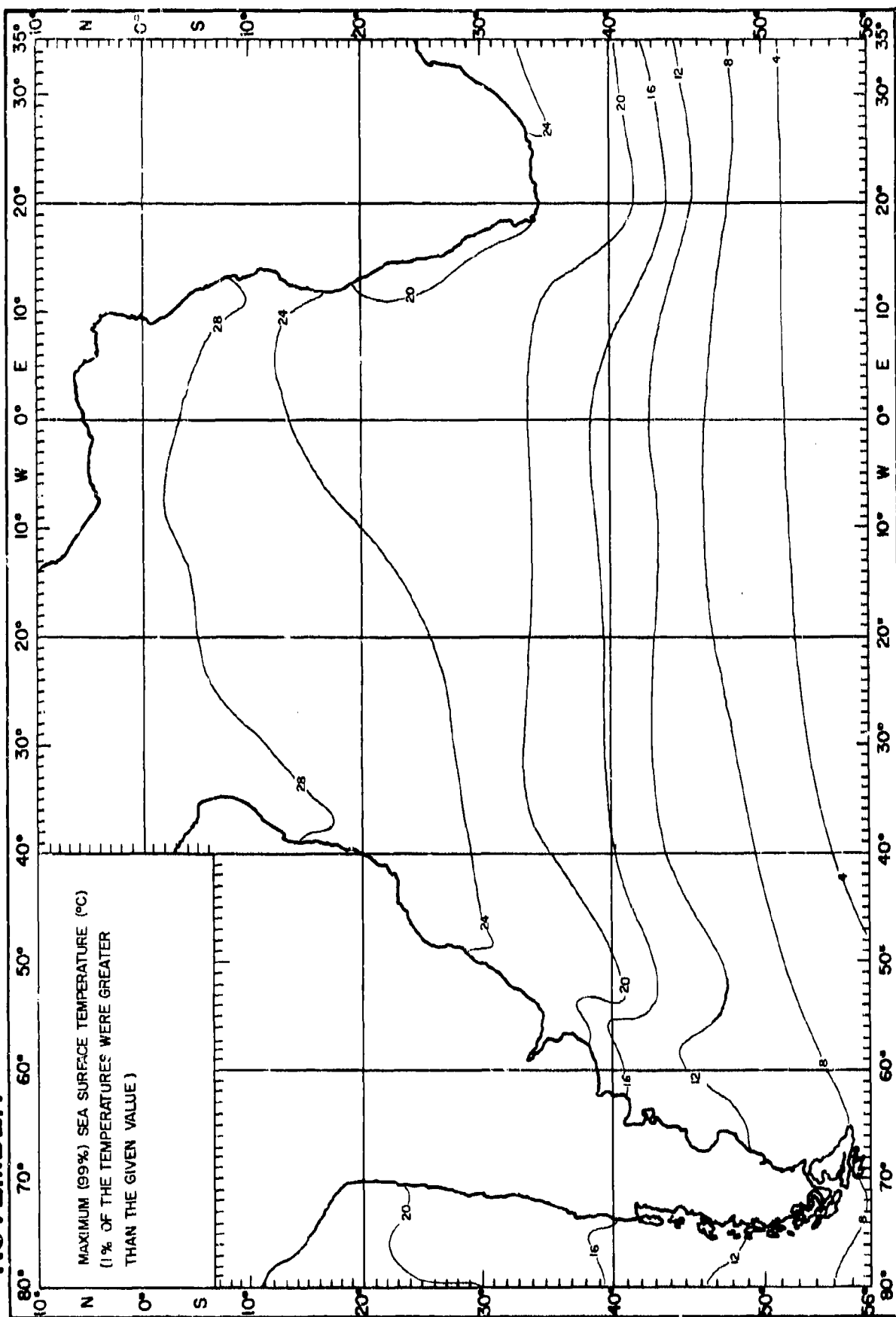
SEA SURFACE TEMPERATURE

OCTOBER



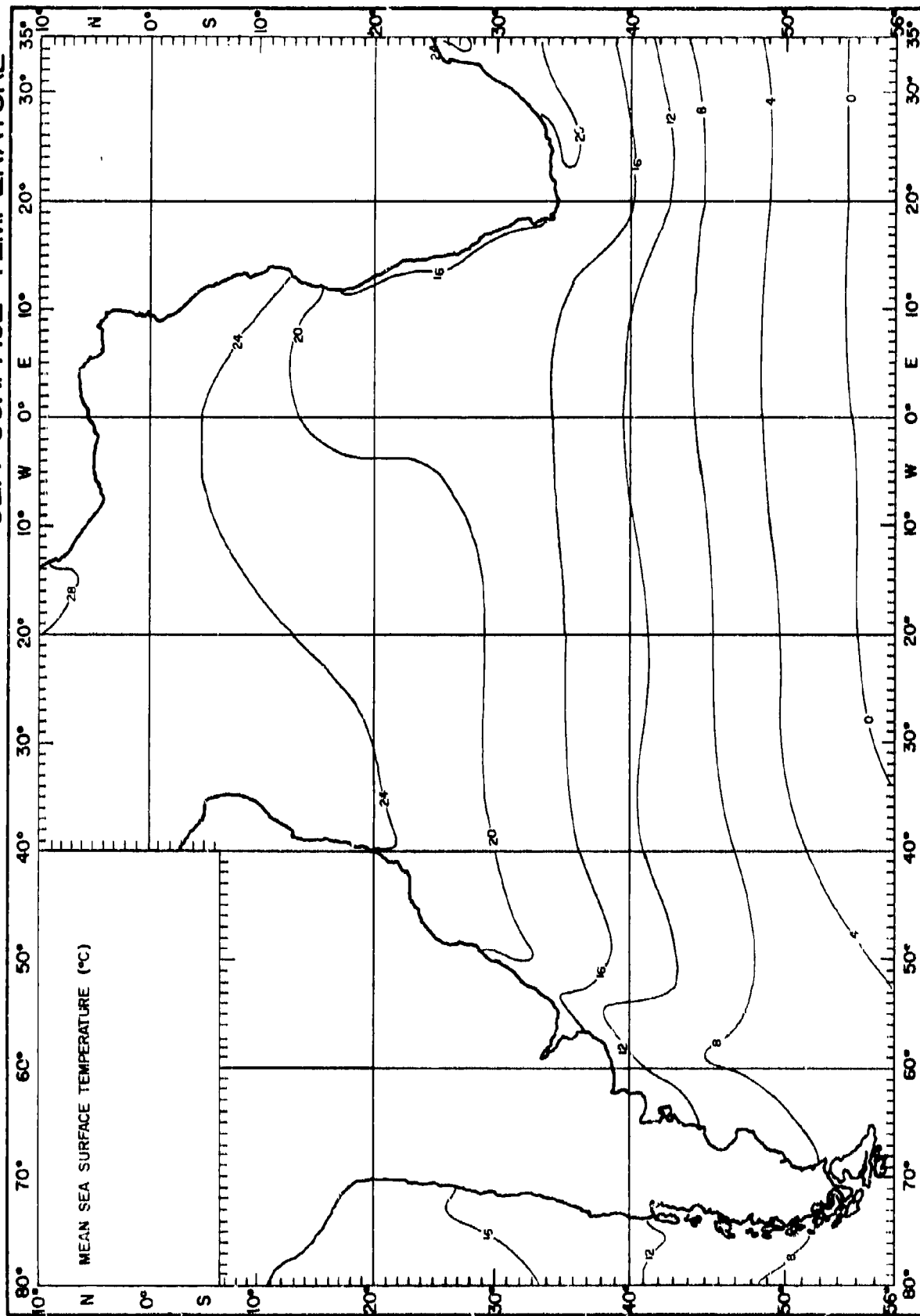
NOVEMBER

SEA SURFACE TEMPERATURE



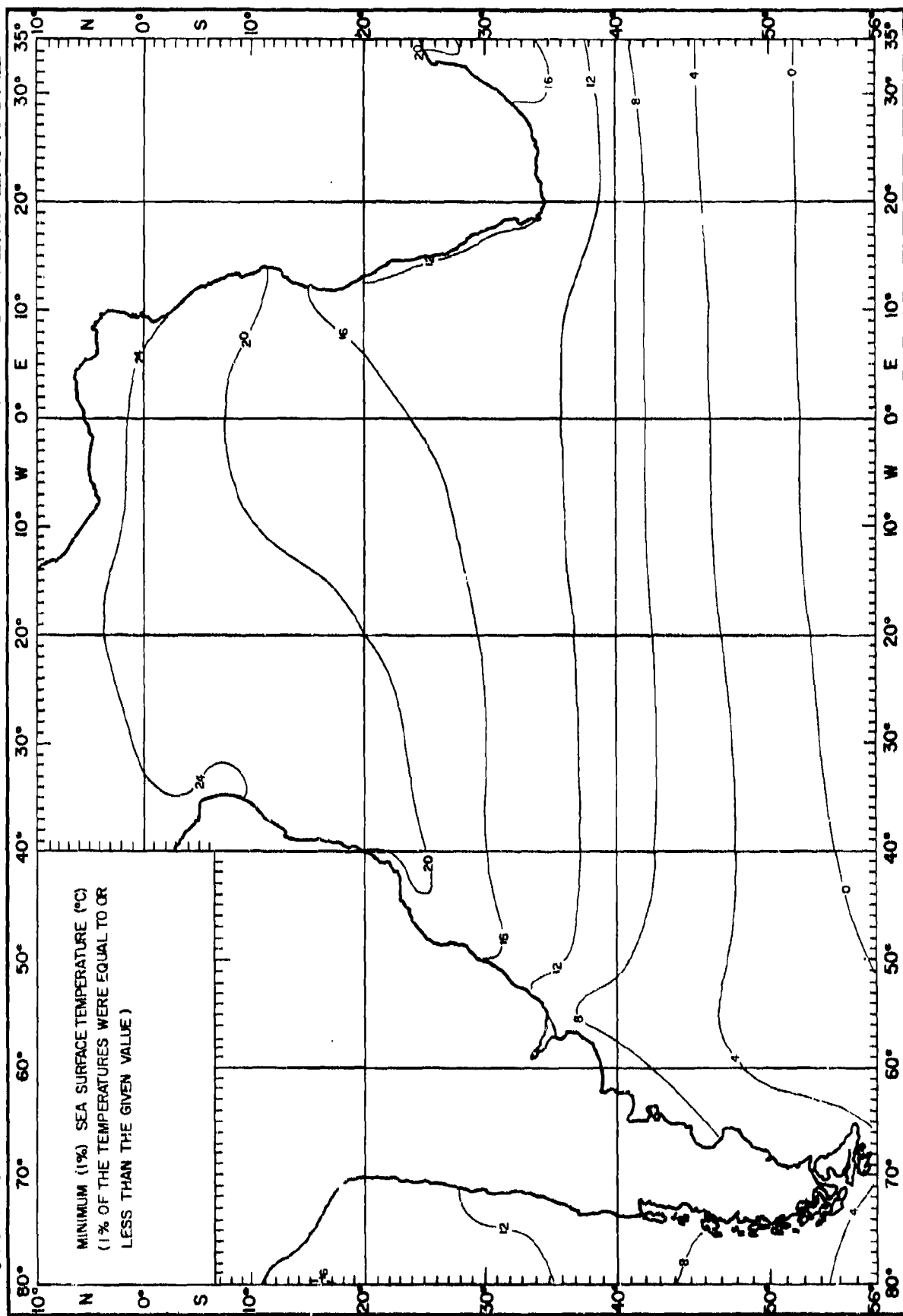
NOVEMBER

SEA SURFACE TEMPERATURE



NOVEMBER

SEA SURFACE TEMPERATURE

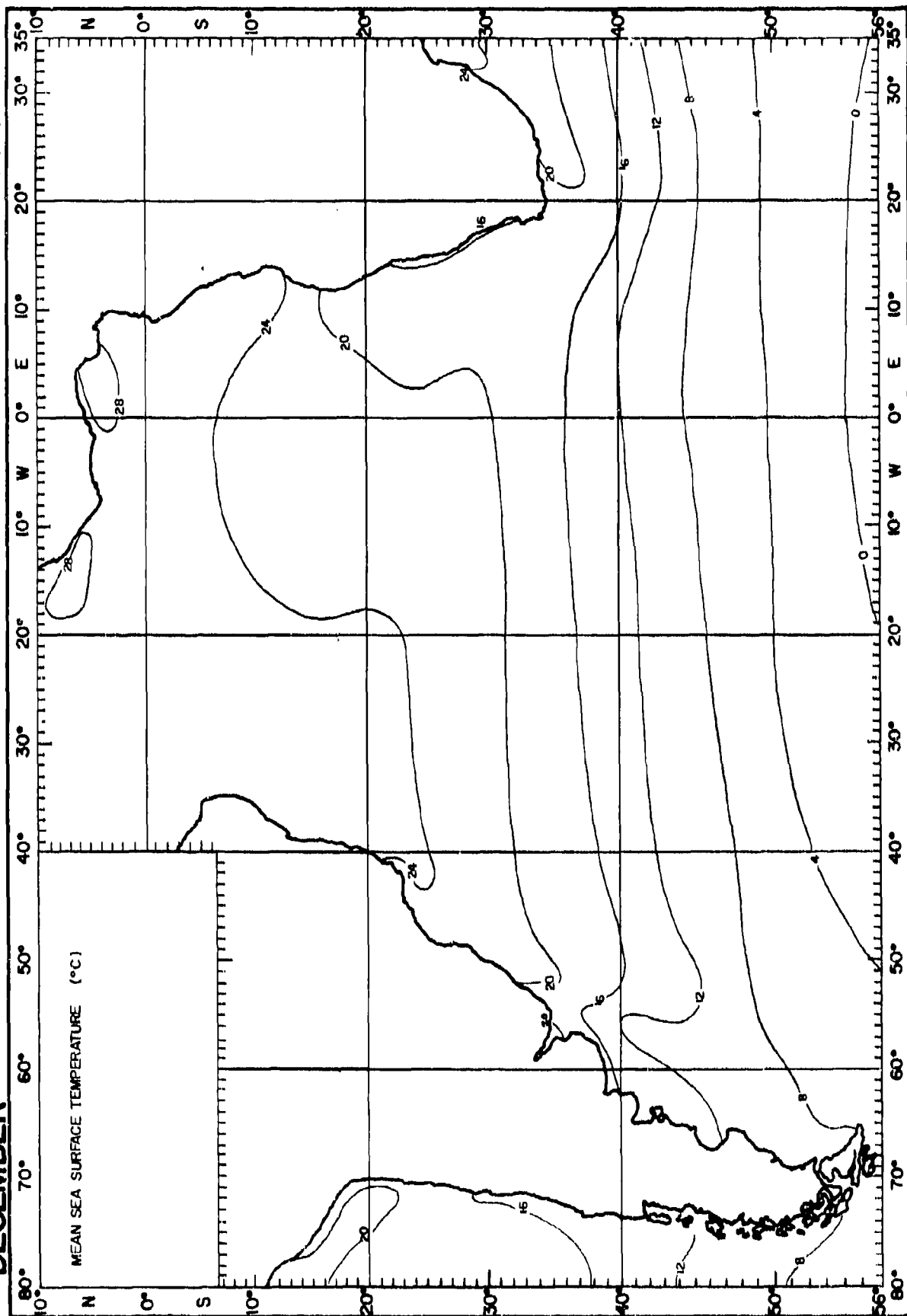


SEA SURFACE TEMPERATURE



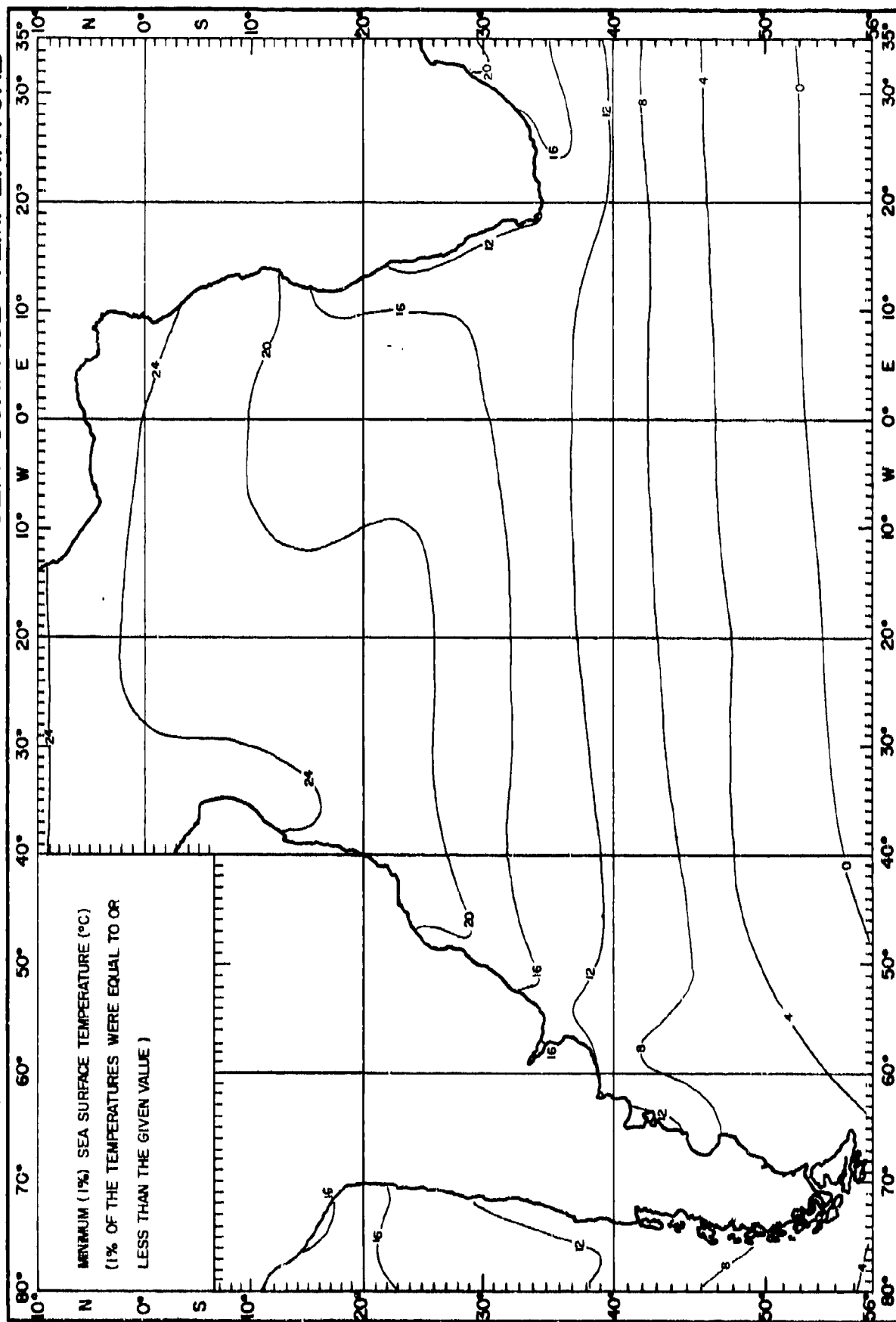
DECEMBER

SEA SURFACE TEMPERATURE



DECEMBER

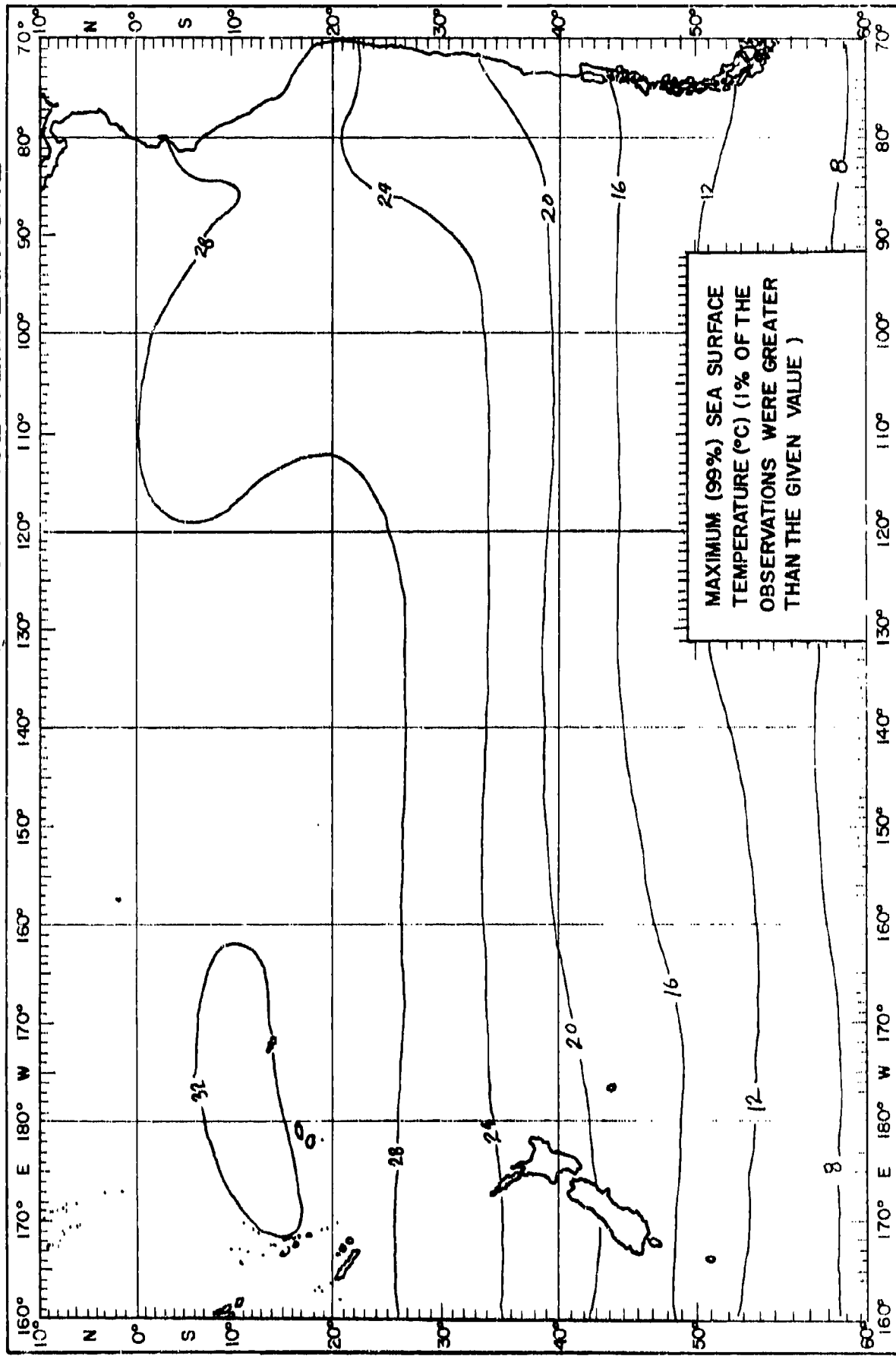
SEA SURFACE TEMPERATURE



SOUTH PACIFIC
TEMPERATURE CHARTS

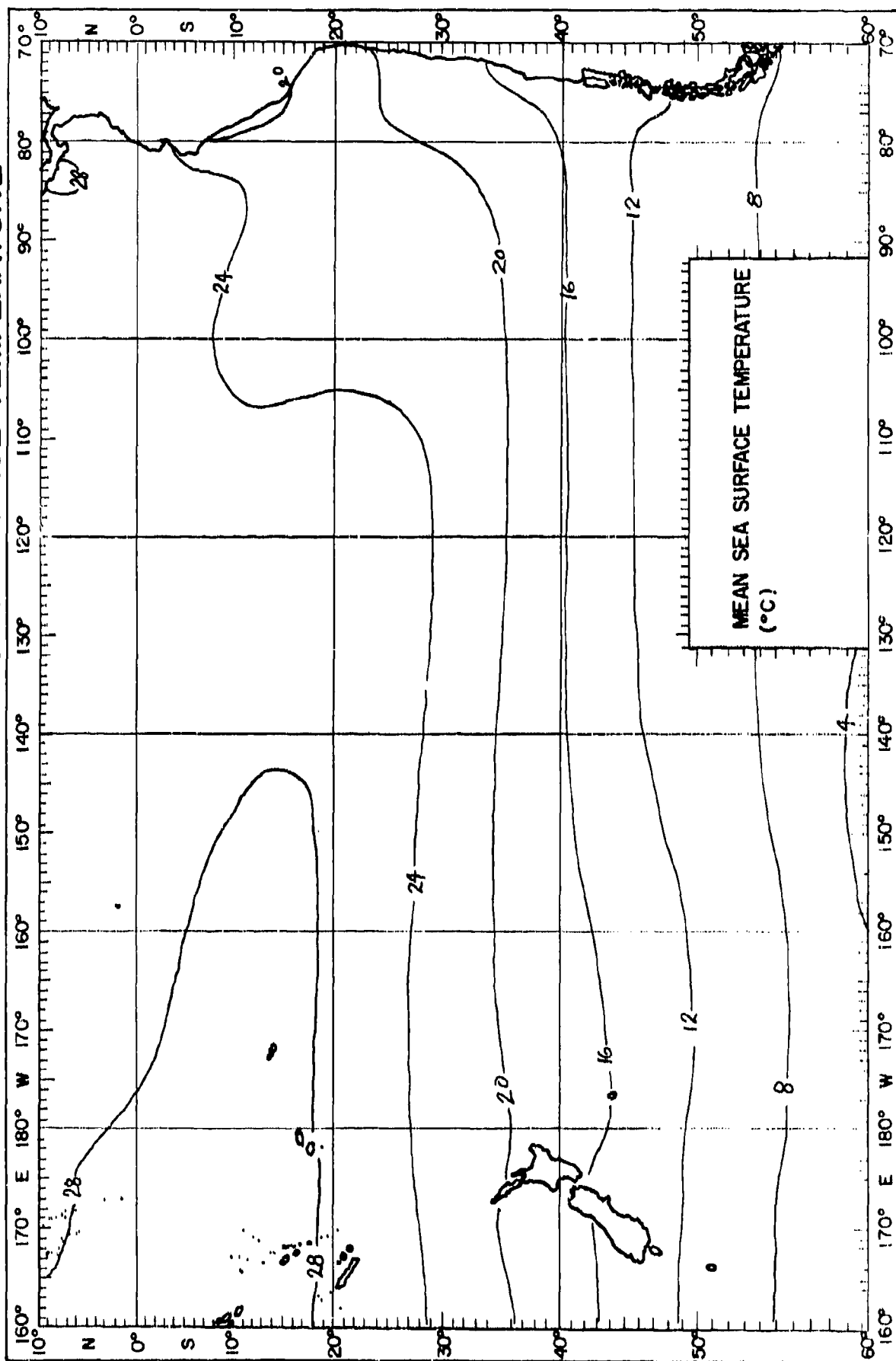
JANUARY

SEA SURFACE TEMPERATURE



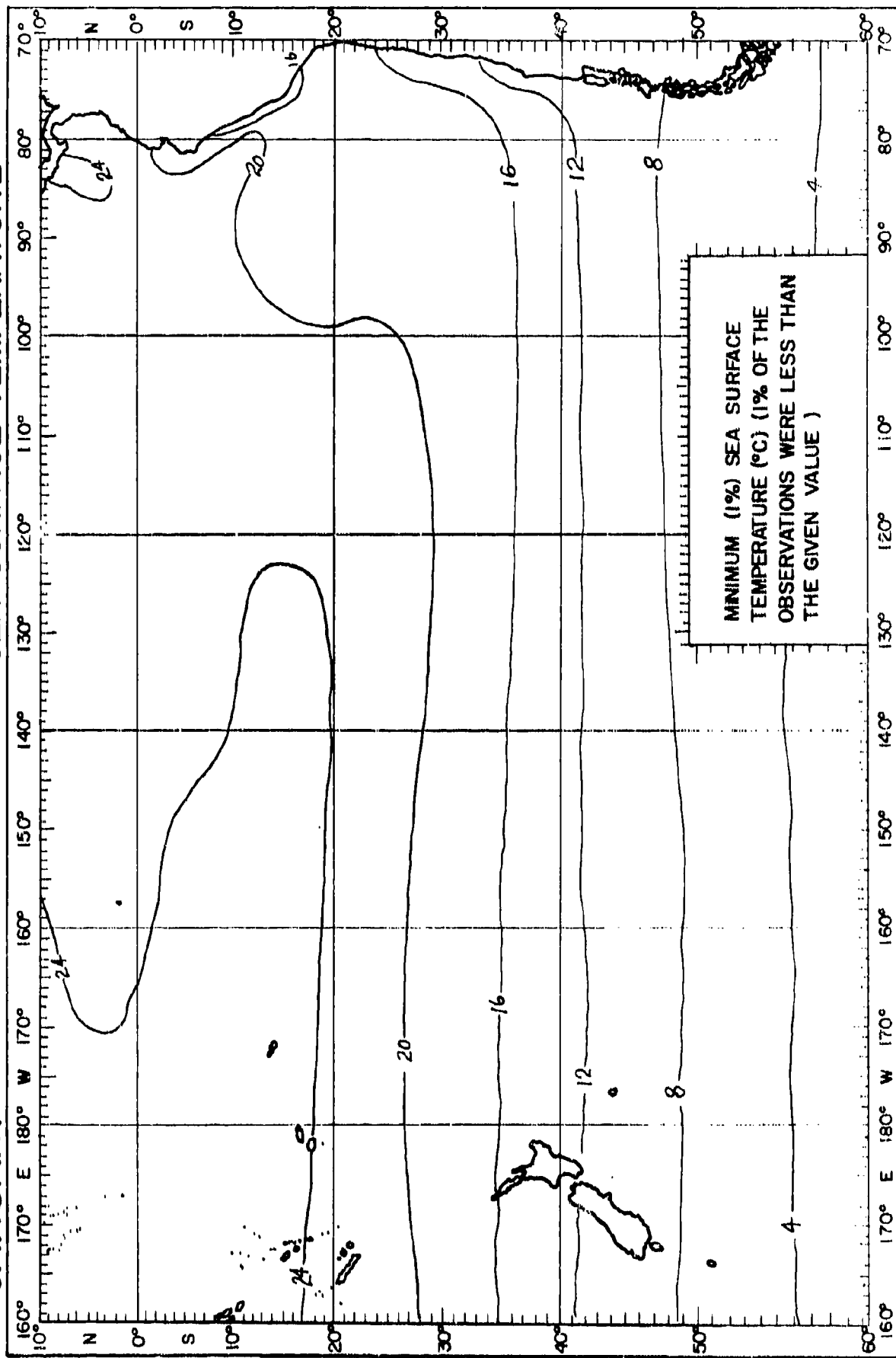
JANUARY

SEA SURFACE TEMPERATURE



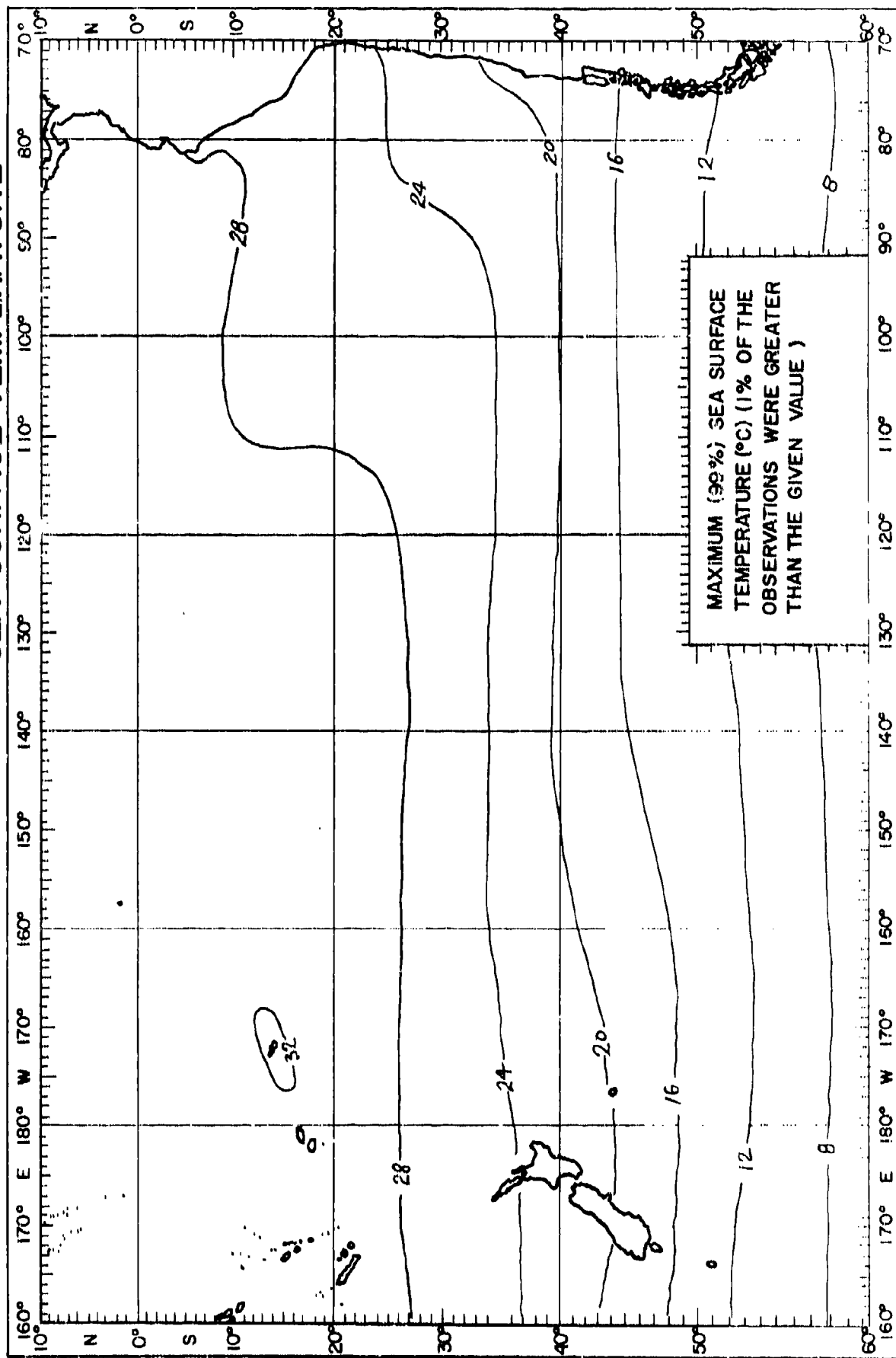
JANUARY

SEA SURFACE TEMPERATURE



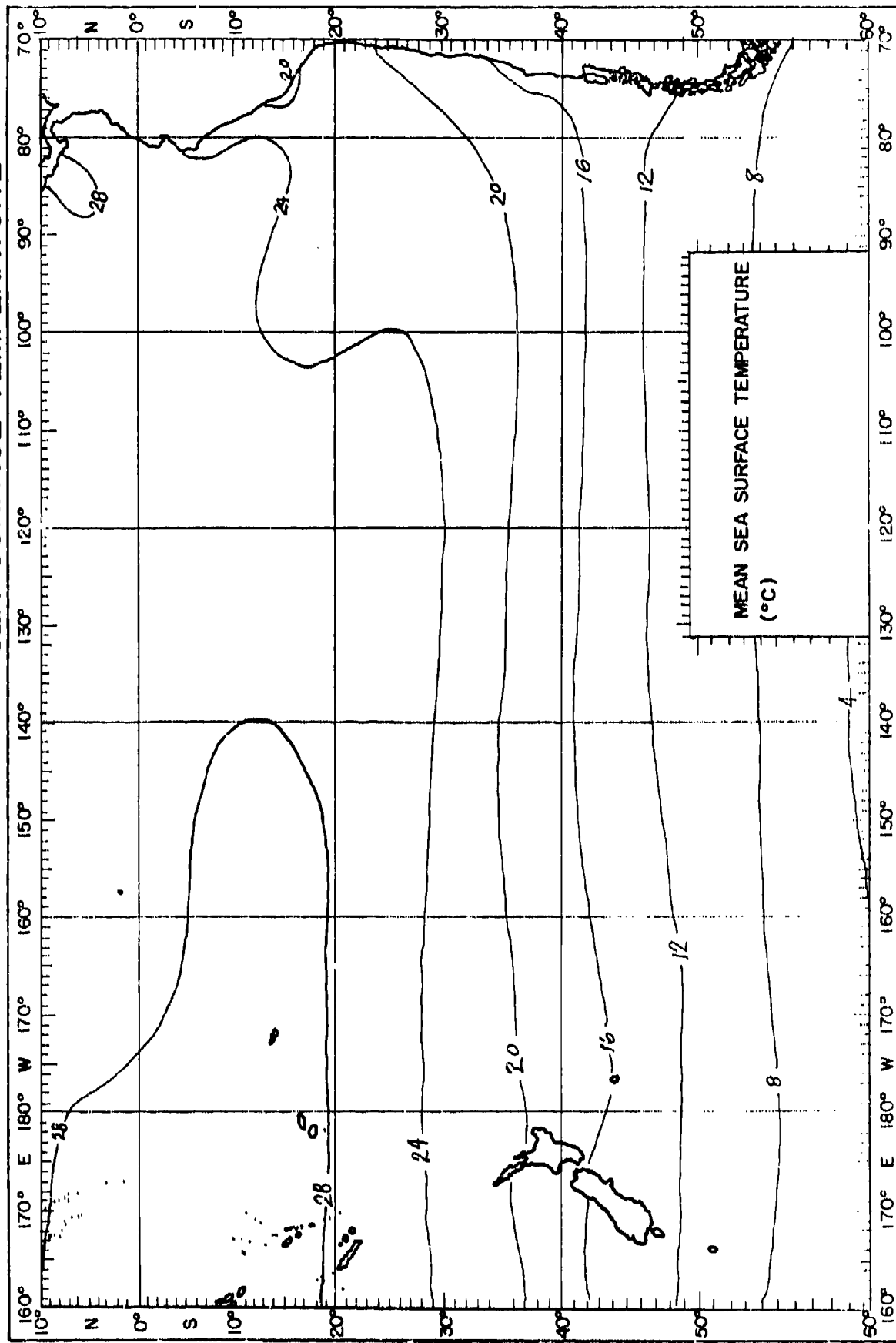
FEBRUARY

SEA SURFACE TEMPERATURE



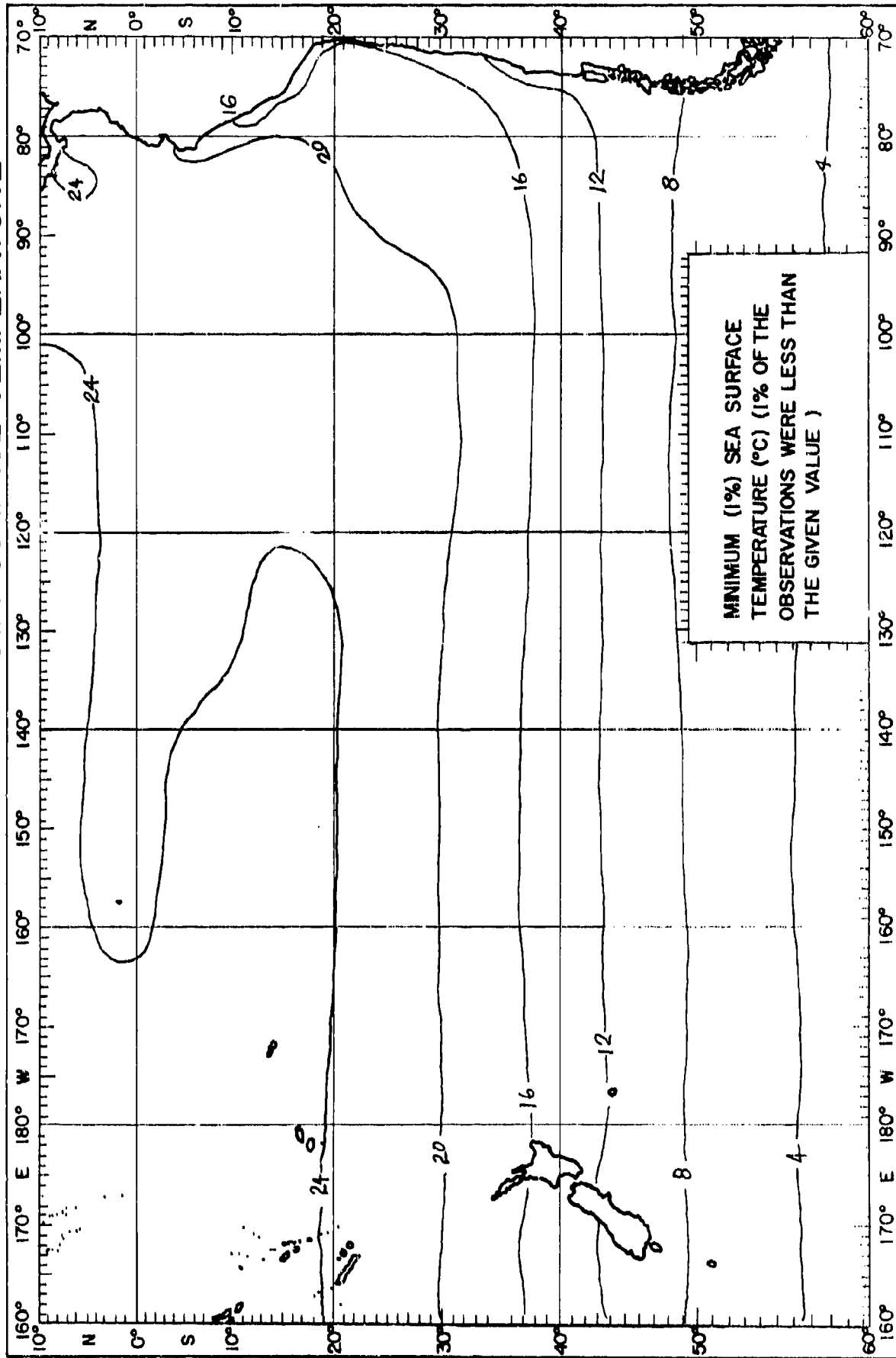
FEBRUARY

SEA SURFACE TEMPERATURE



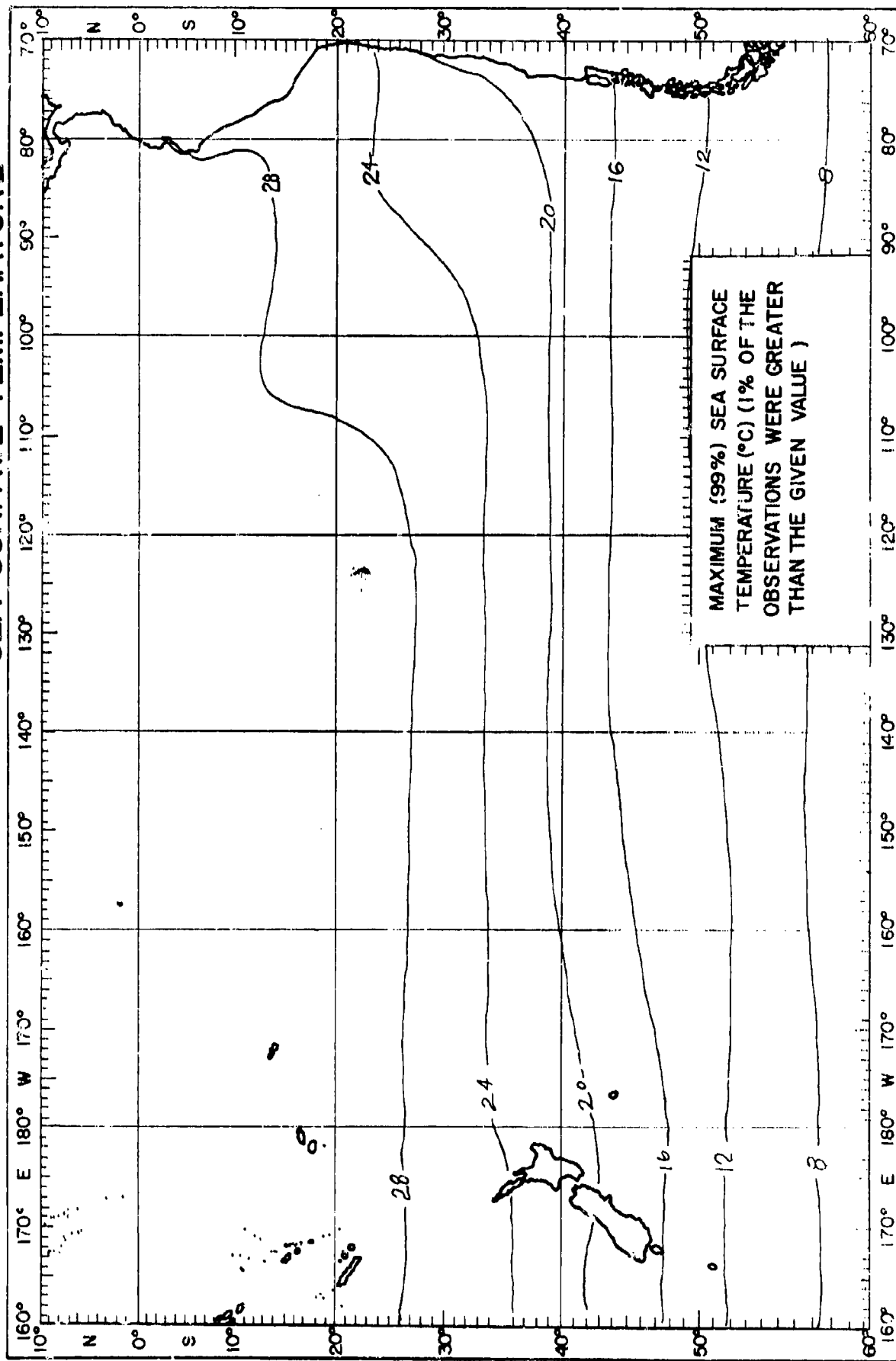
FEBRUARY

SEA SURFACE TEMPERATURE



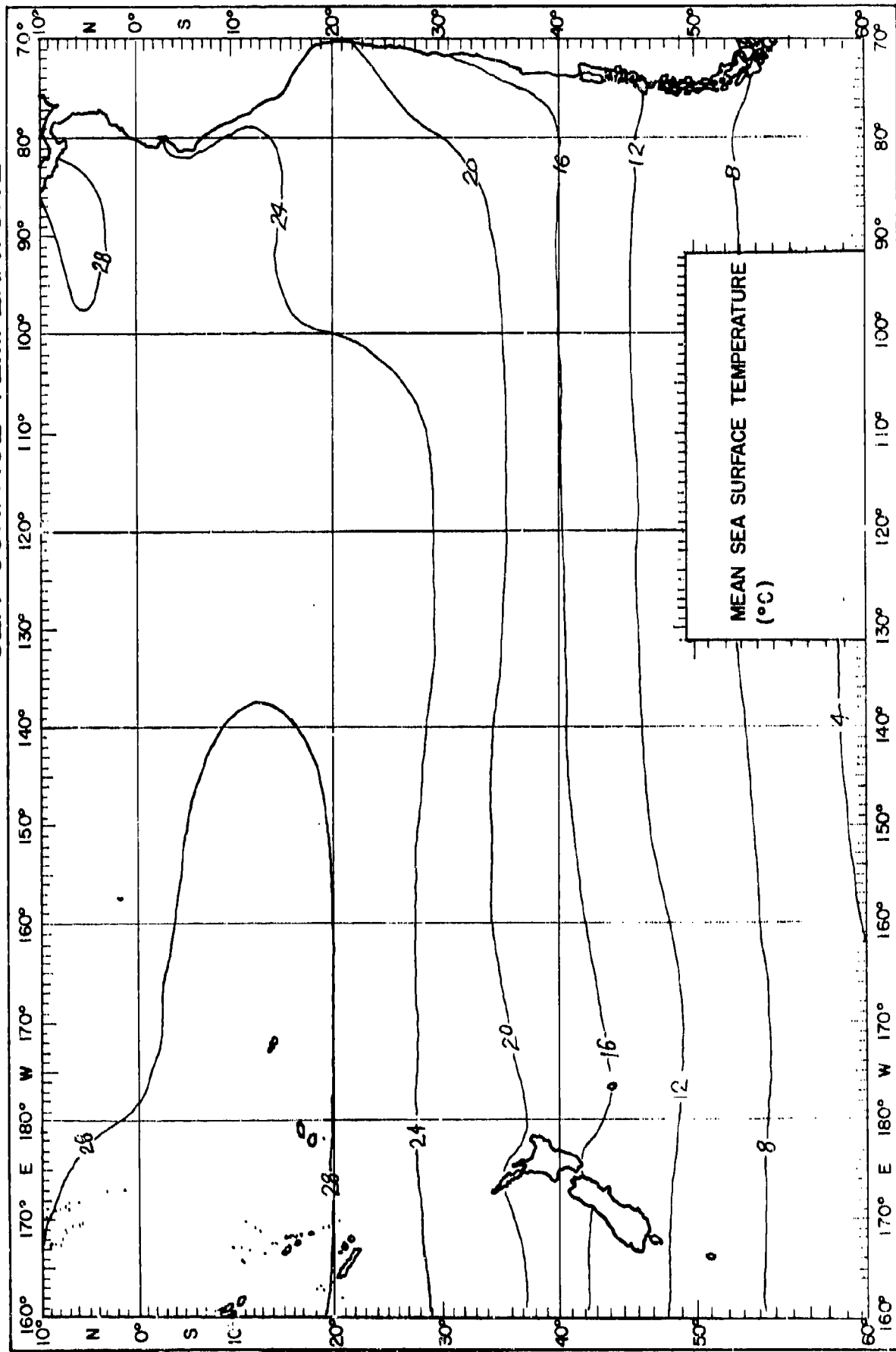
MARCH

SEA SURFACE TEMPERATURE



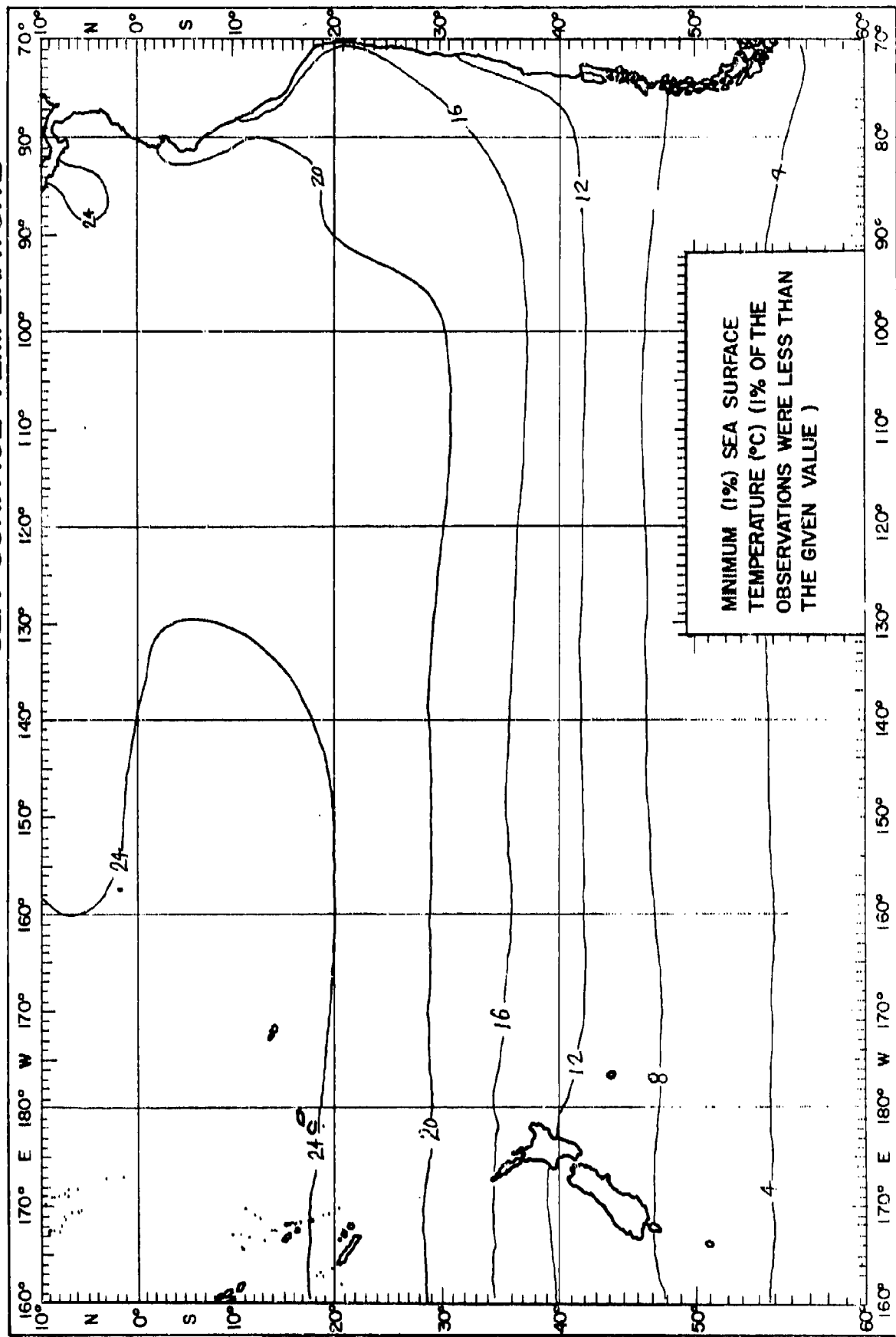
MARCH

SEA SURFACE TEMPERATURE



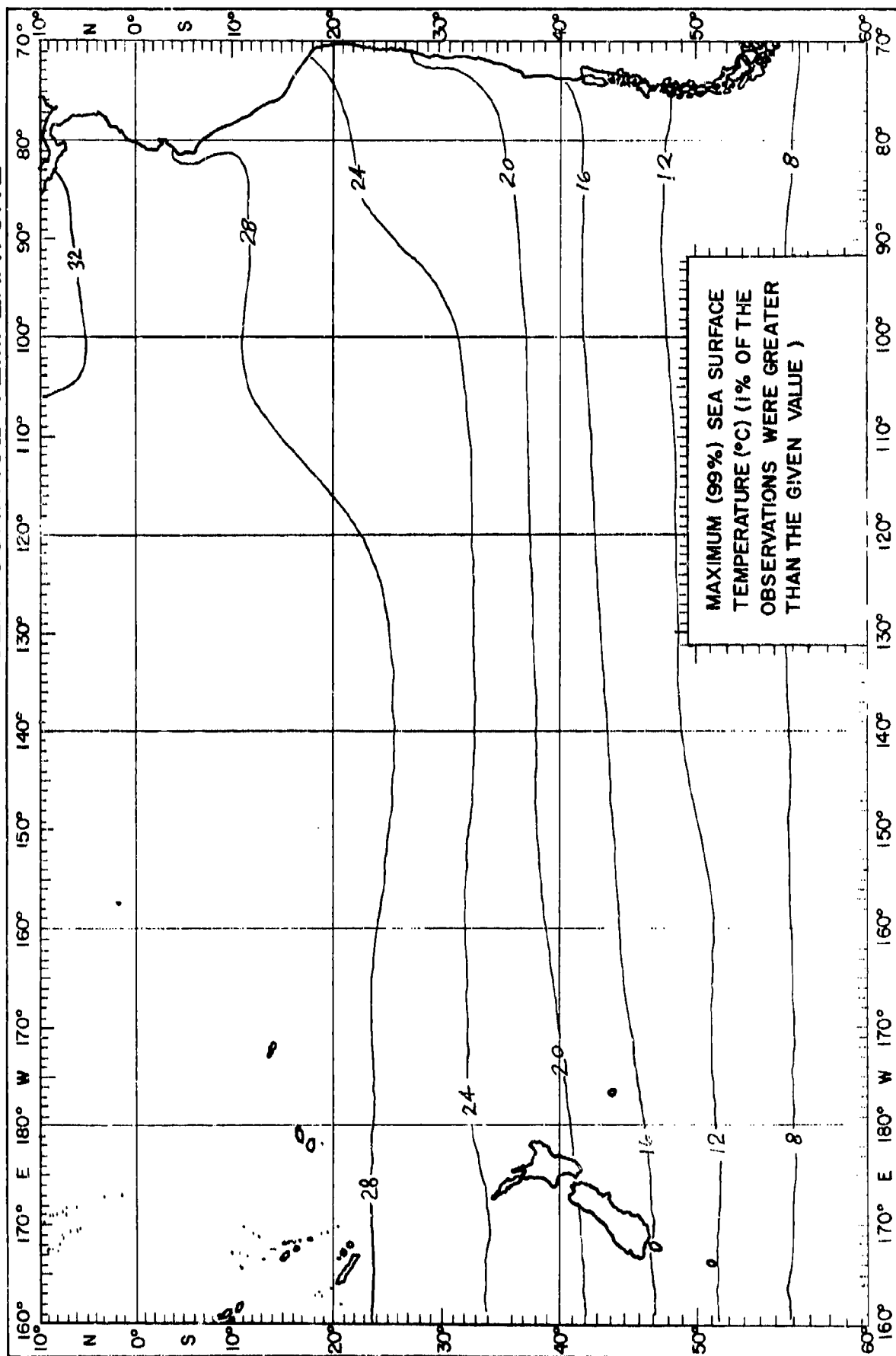
MARCH

SEA SURFACE TEMPERATURE



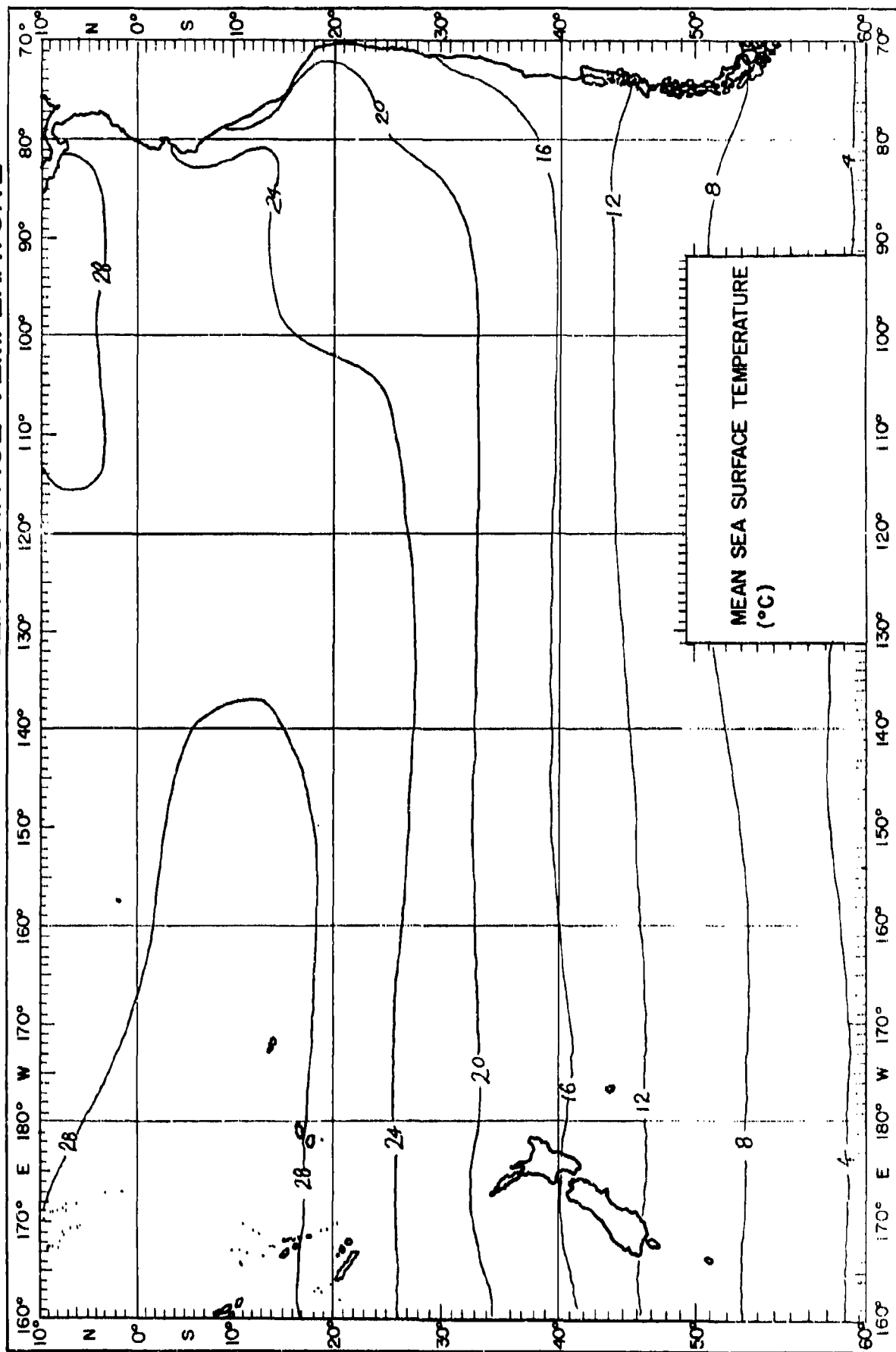
APRIL

SEA SURFACE TEMPERATURE



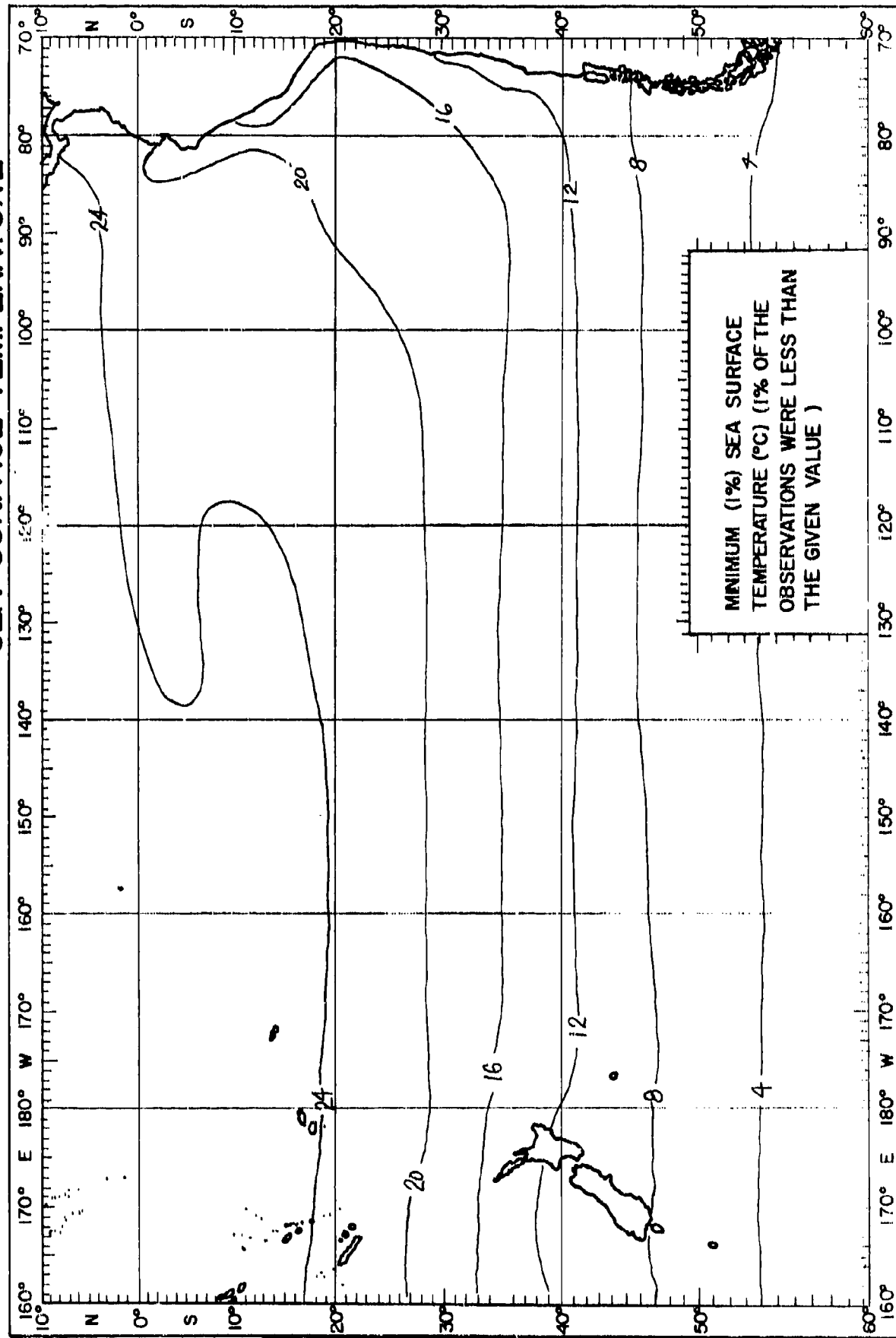
APRIL

SEA SURFACE TEMPERATURE



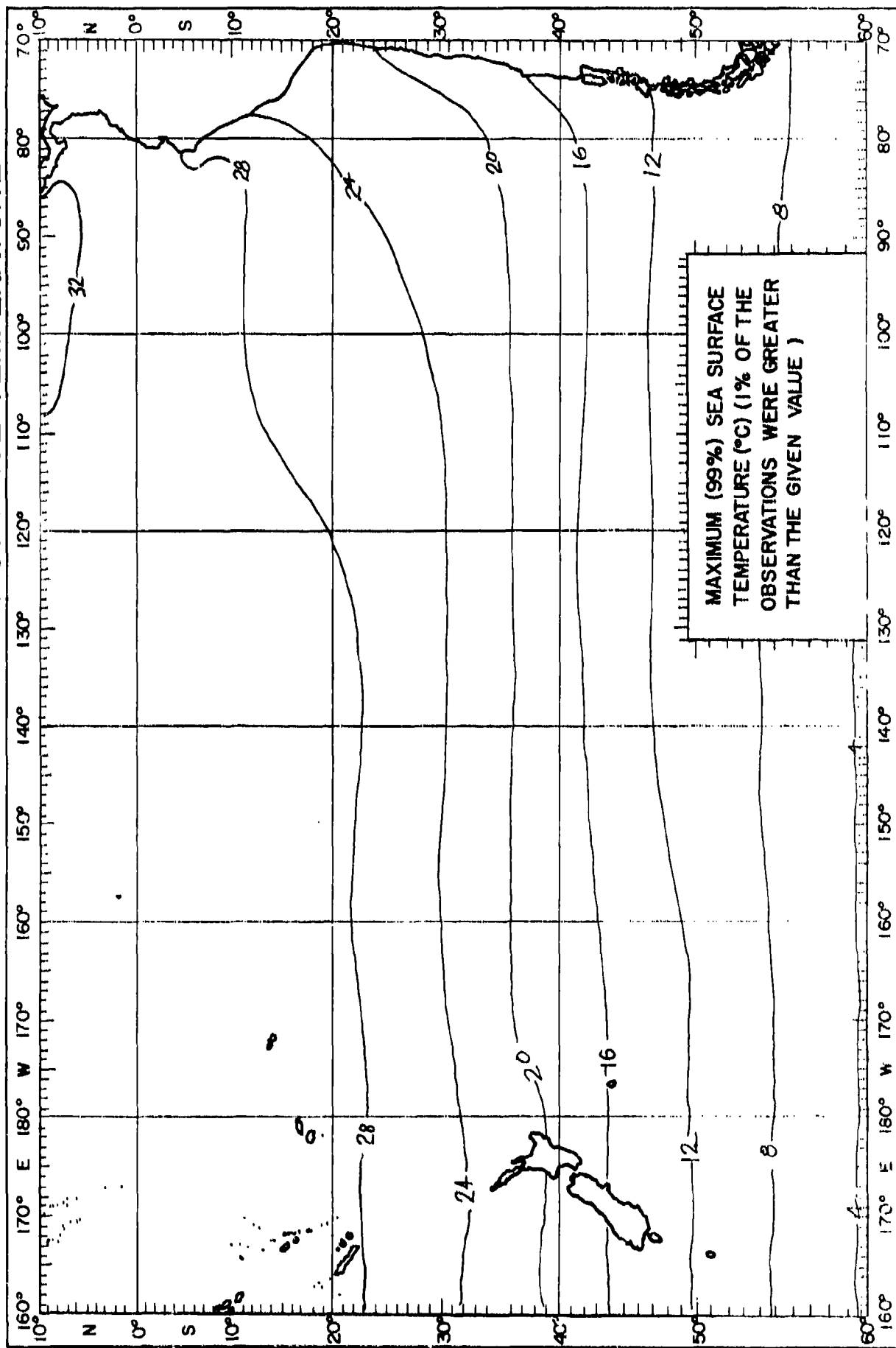
APRIL

SEA SURFACE TEMPERATURE



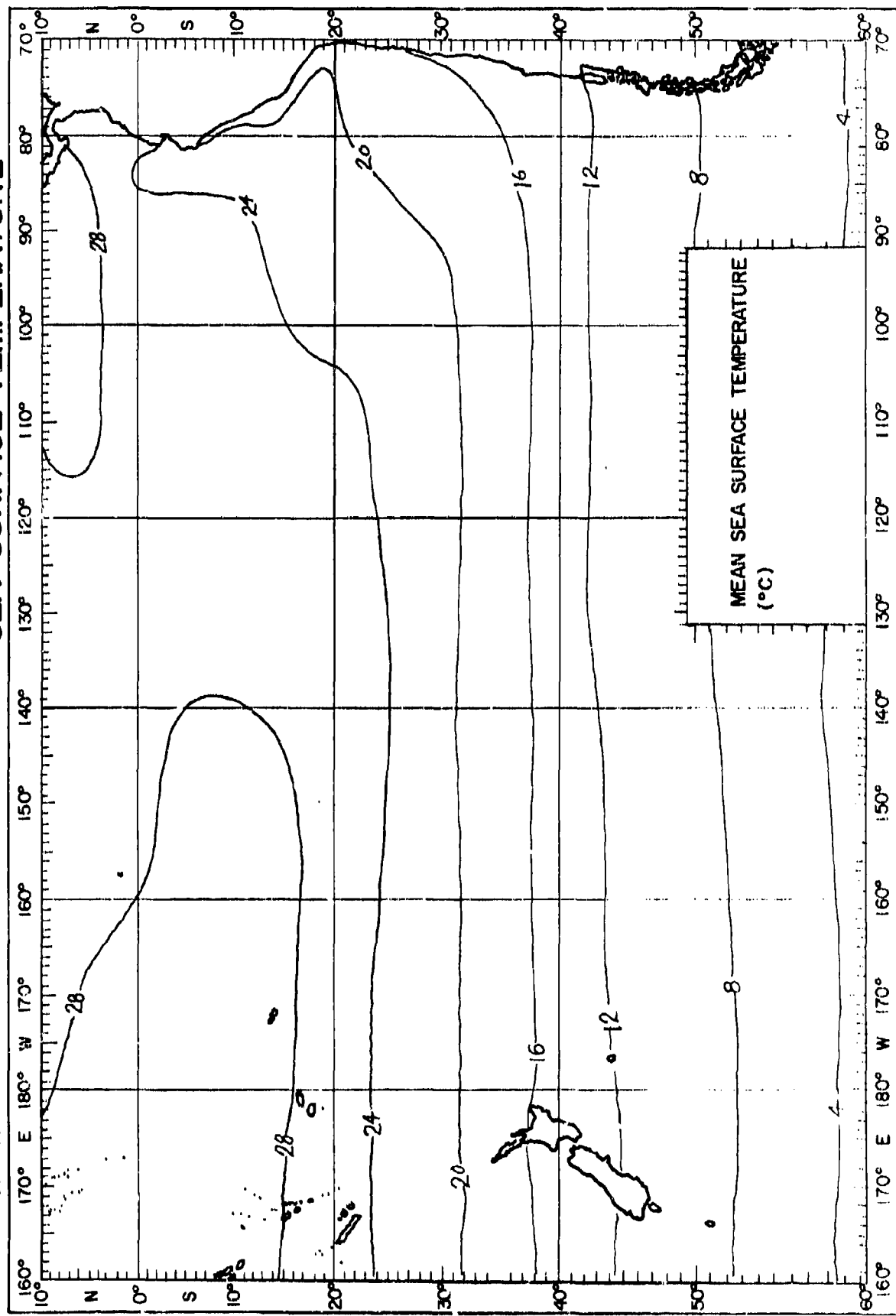
MAY

SEA SURFACE TEMPERATURE



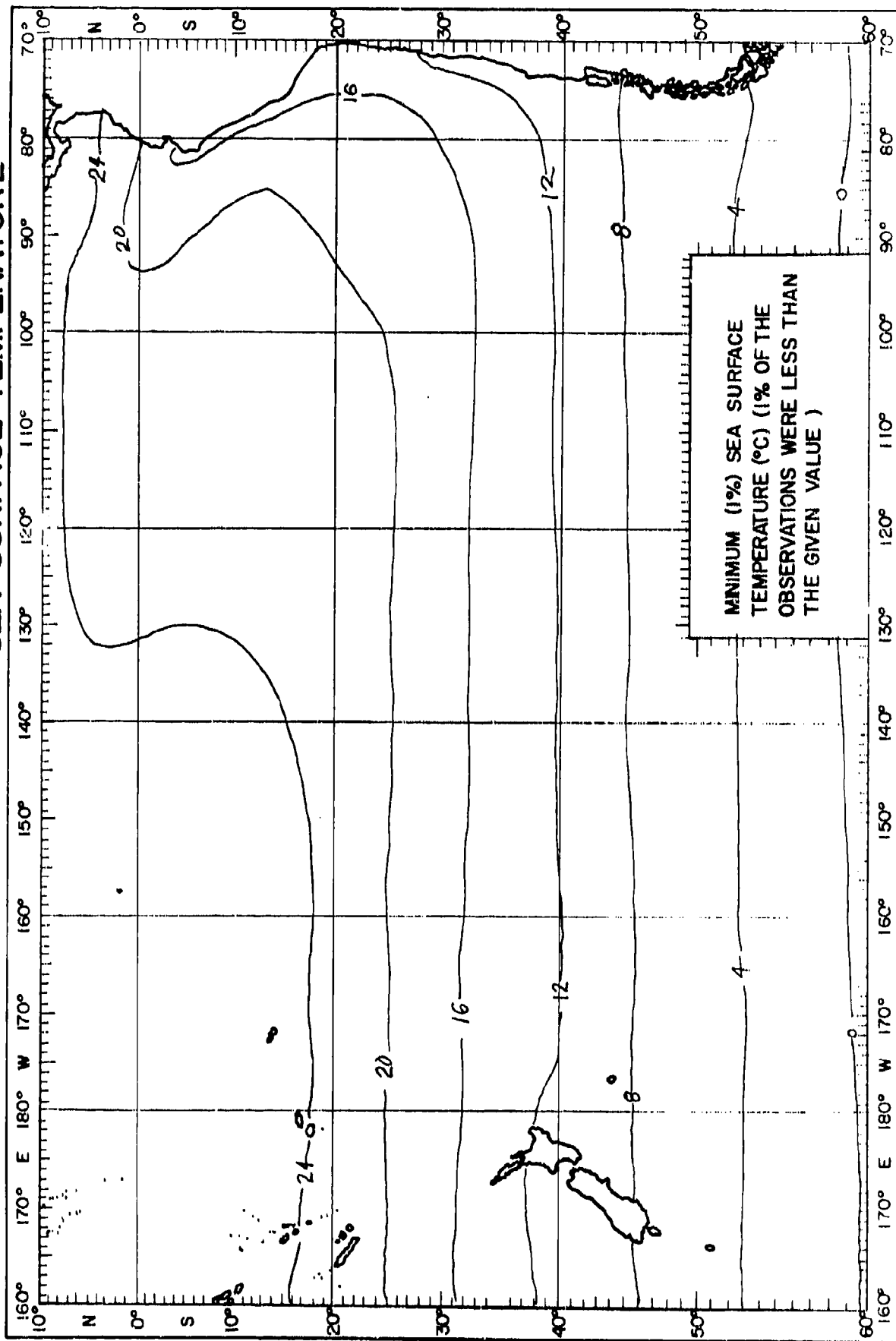
MAY

SEA SURFACE TEMPERATURE



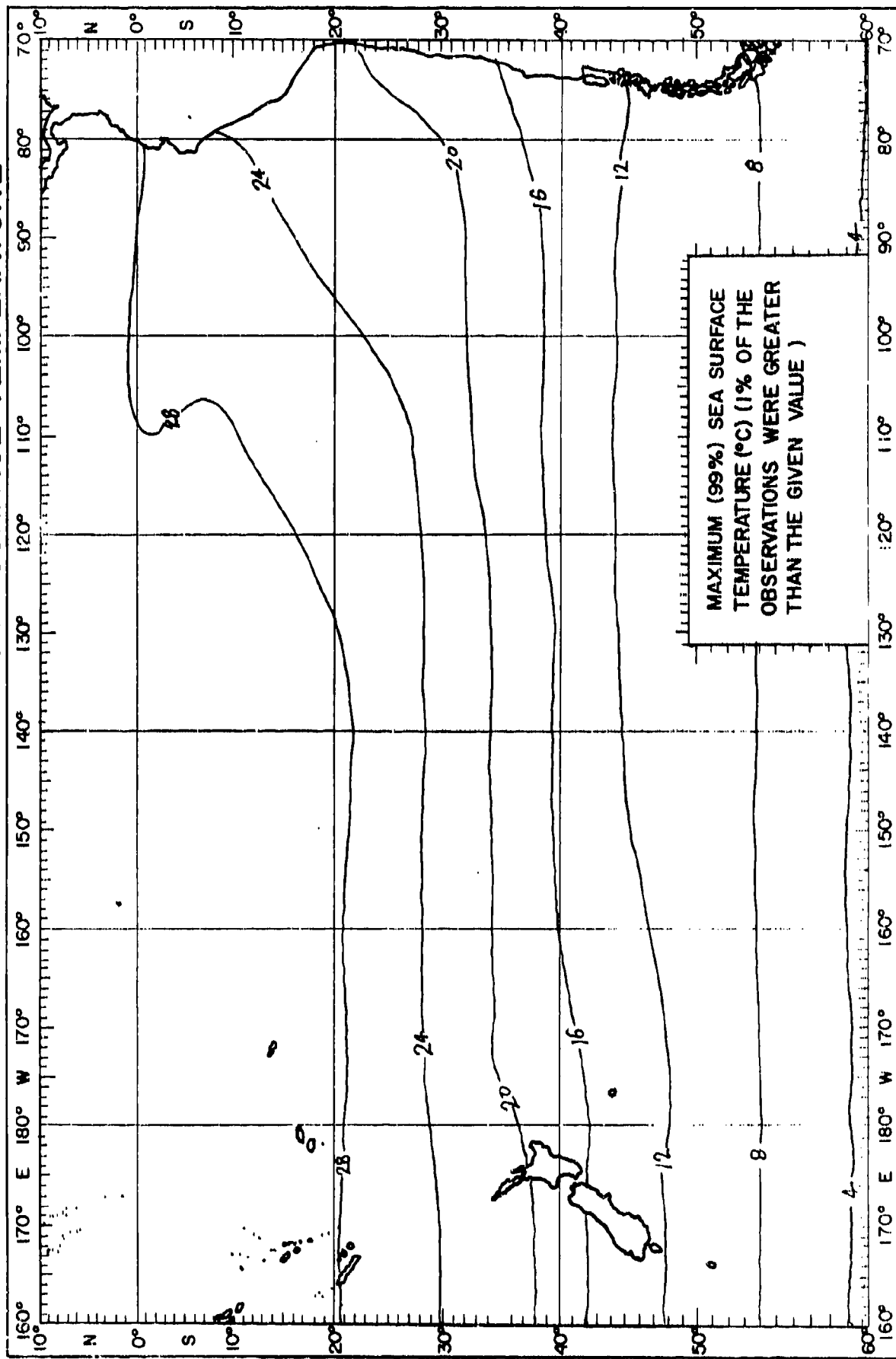
MAY

SEA SURFACE TEMPERATURE



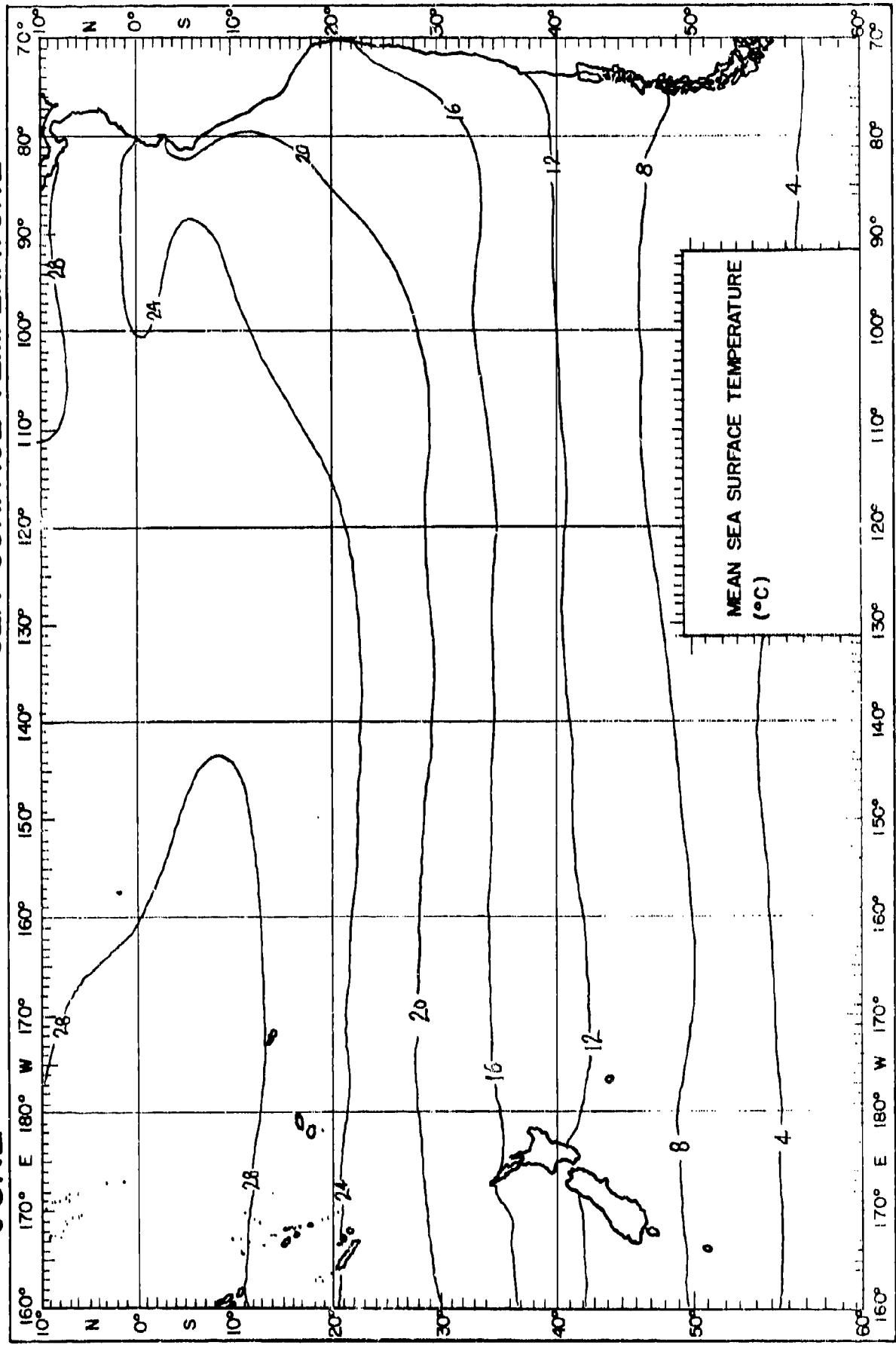
JUNE

SEA SURFACE TEMPERATURE



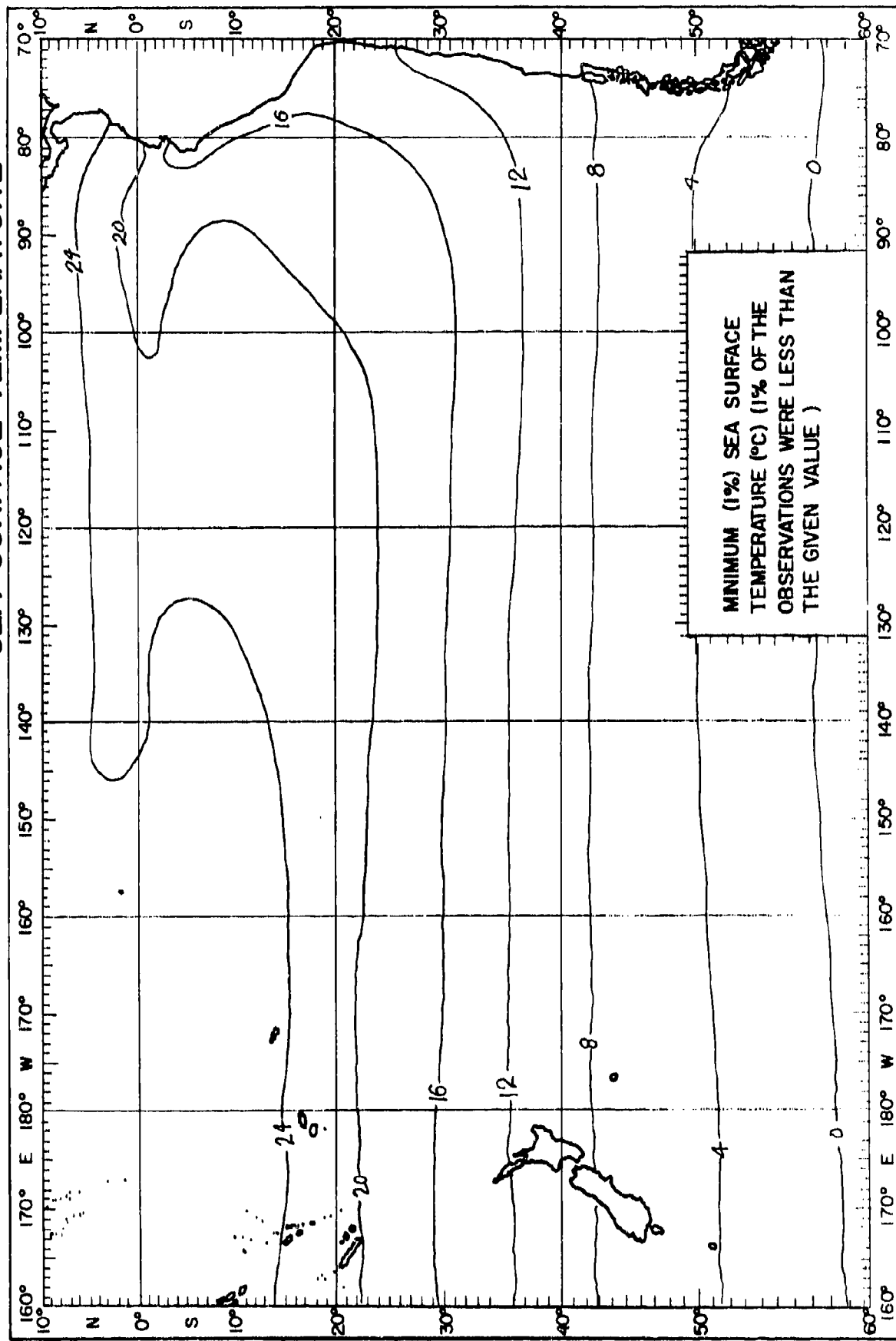
JUNE

SEA SURFACE TEMPERATURE



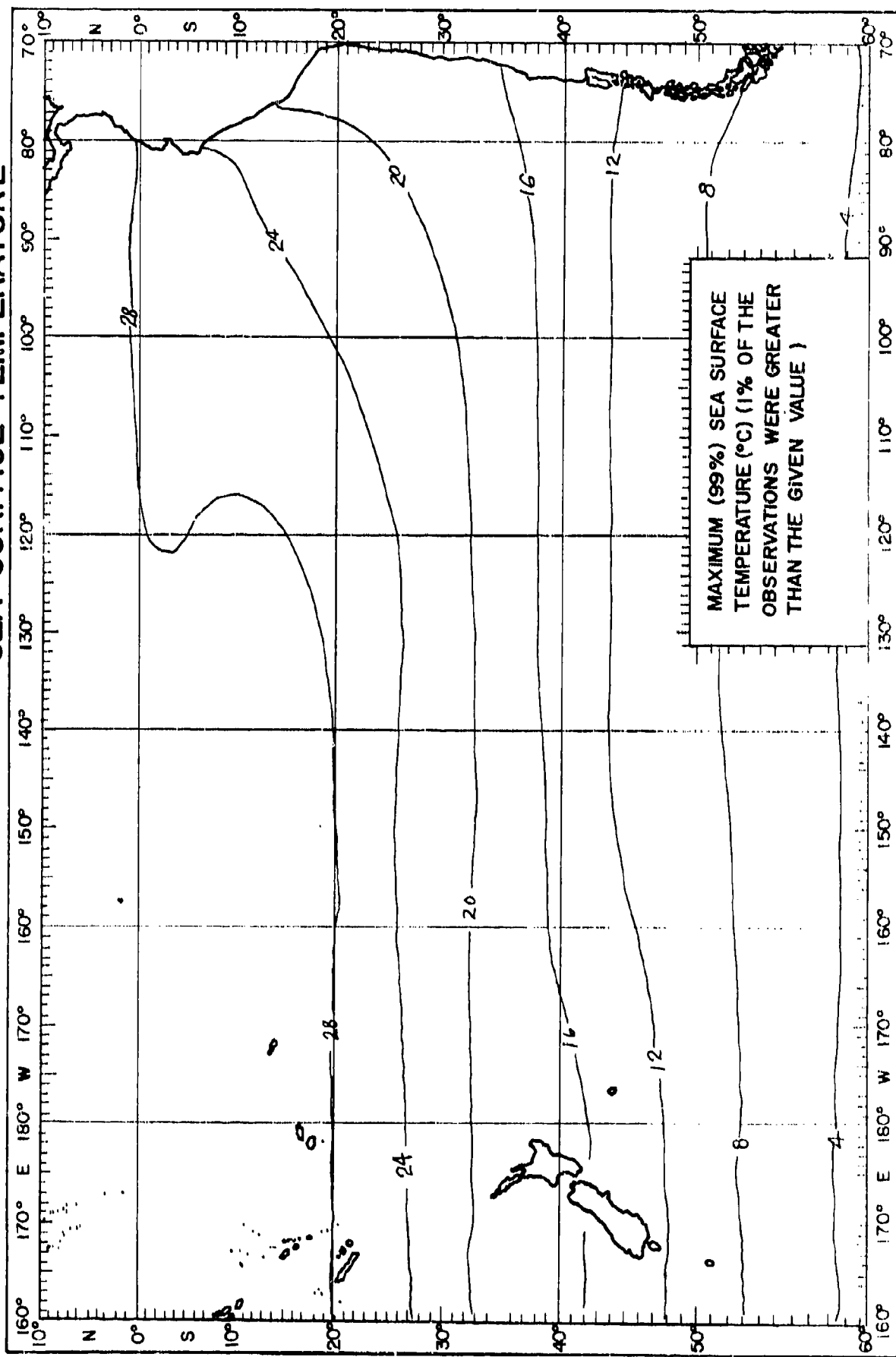
JUNE

SEA SURFACE TEMPERATURE



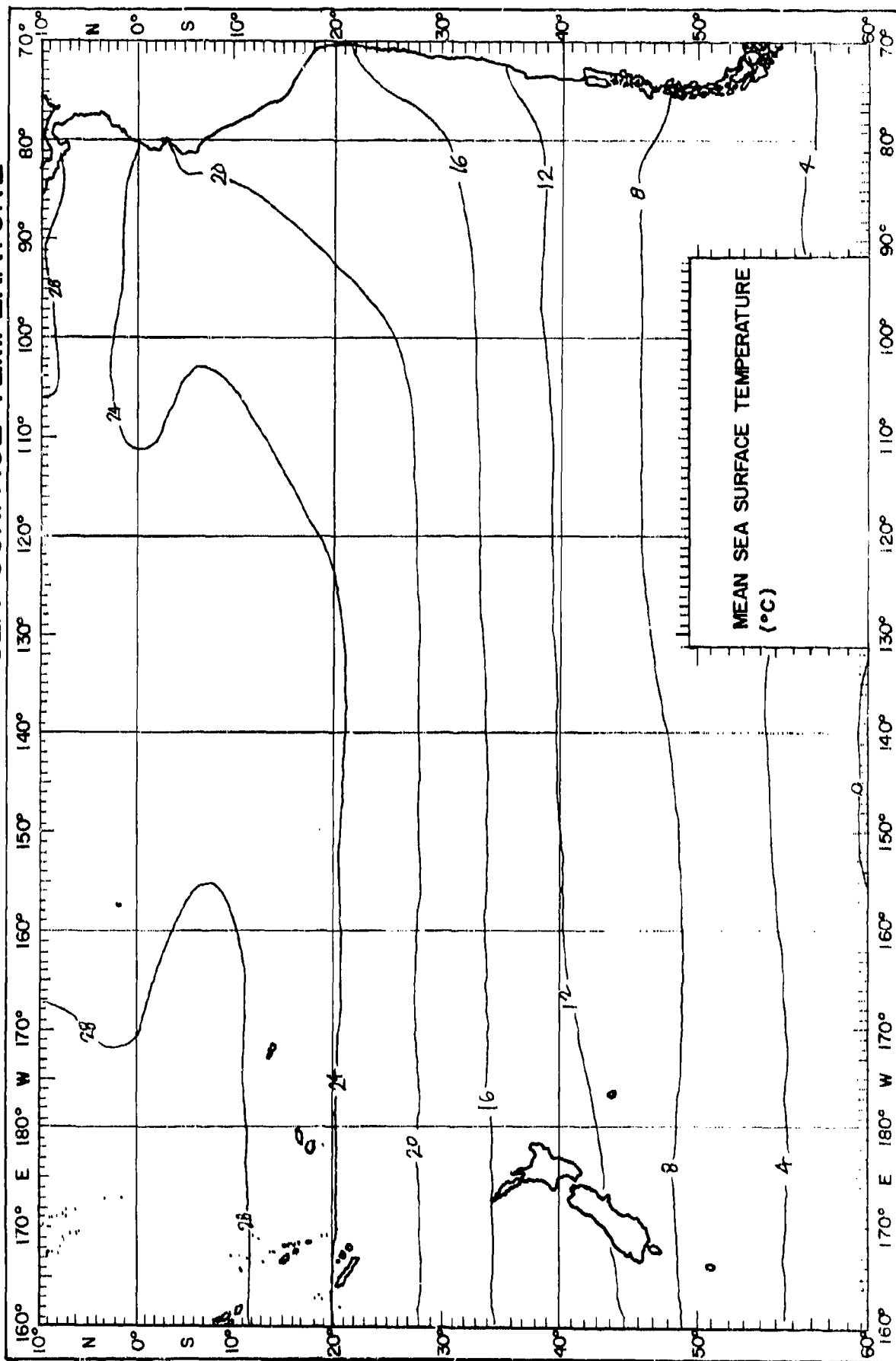
JULY

SEA SURFACE TEMPERATURE



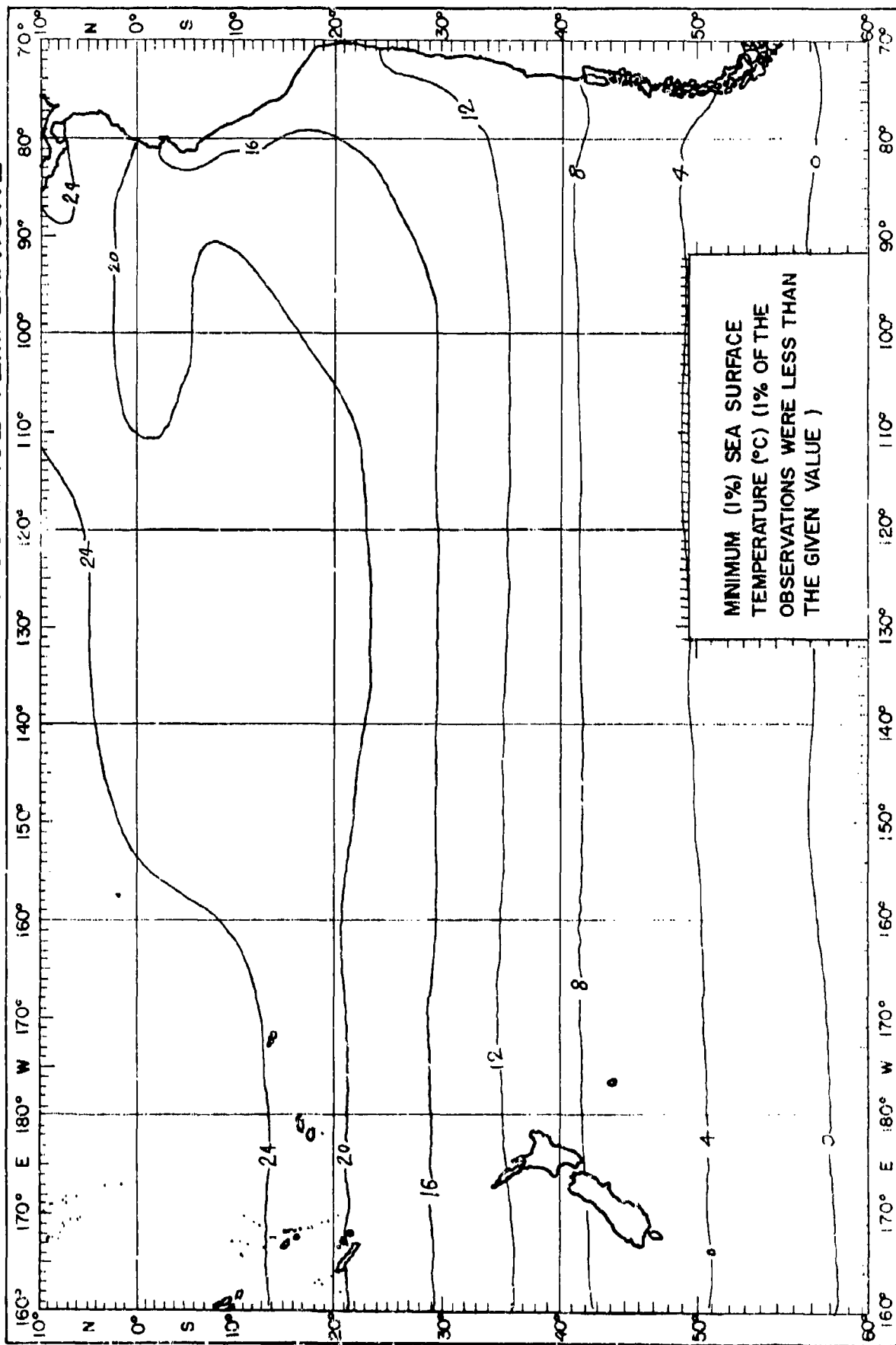
JULY

SEA SURFACE TEMPERATURE



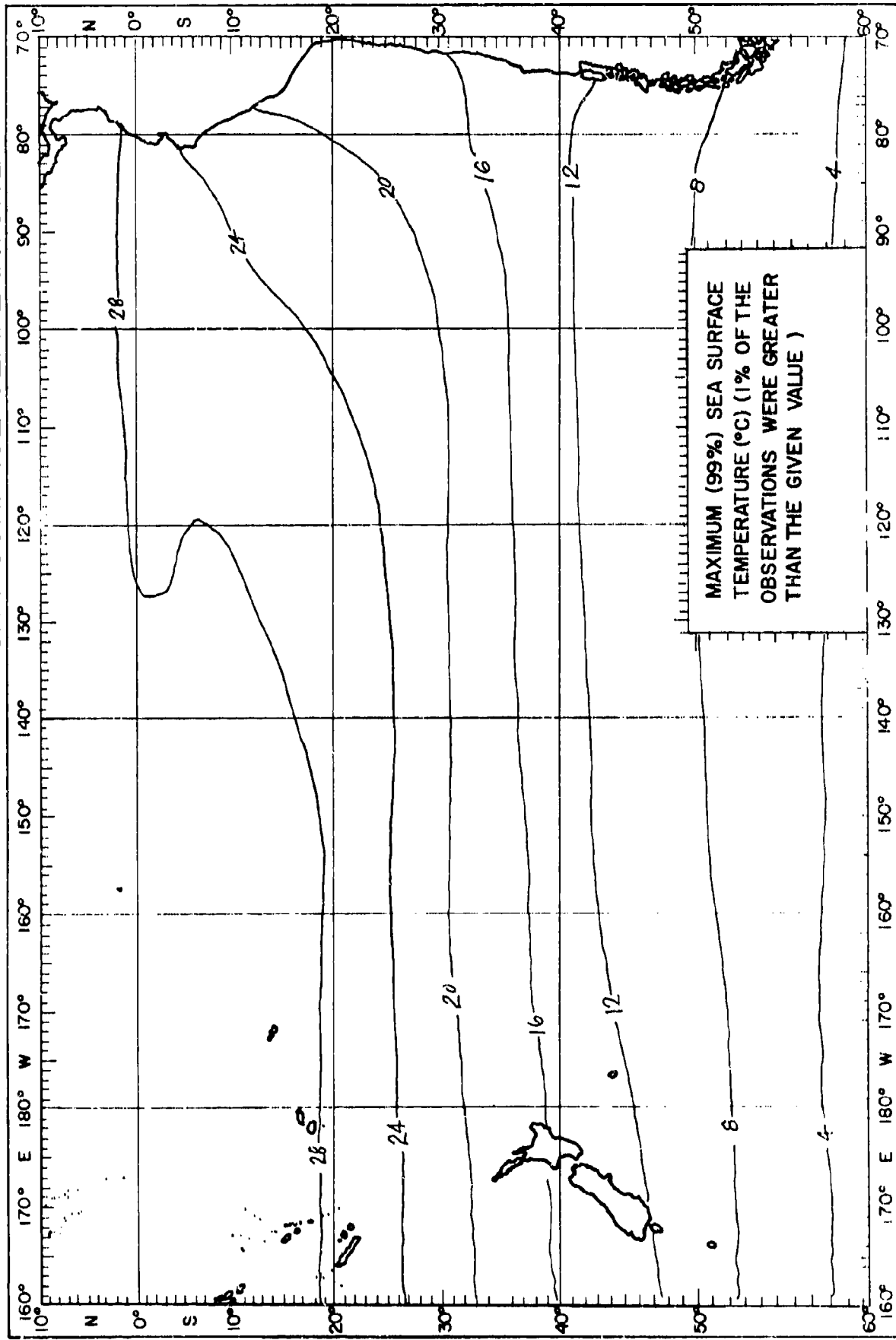
JULY

SEA SURFACE TEMPERATURE



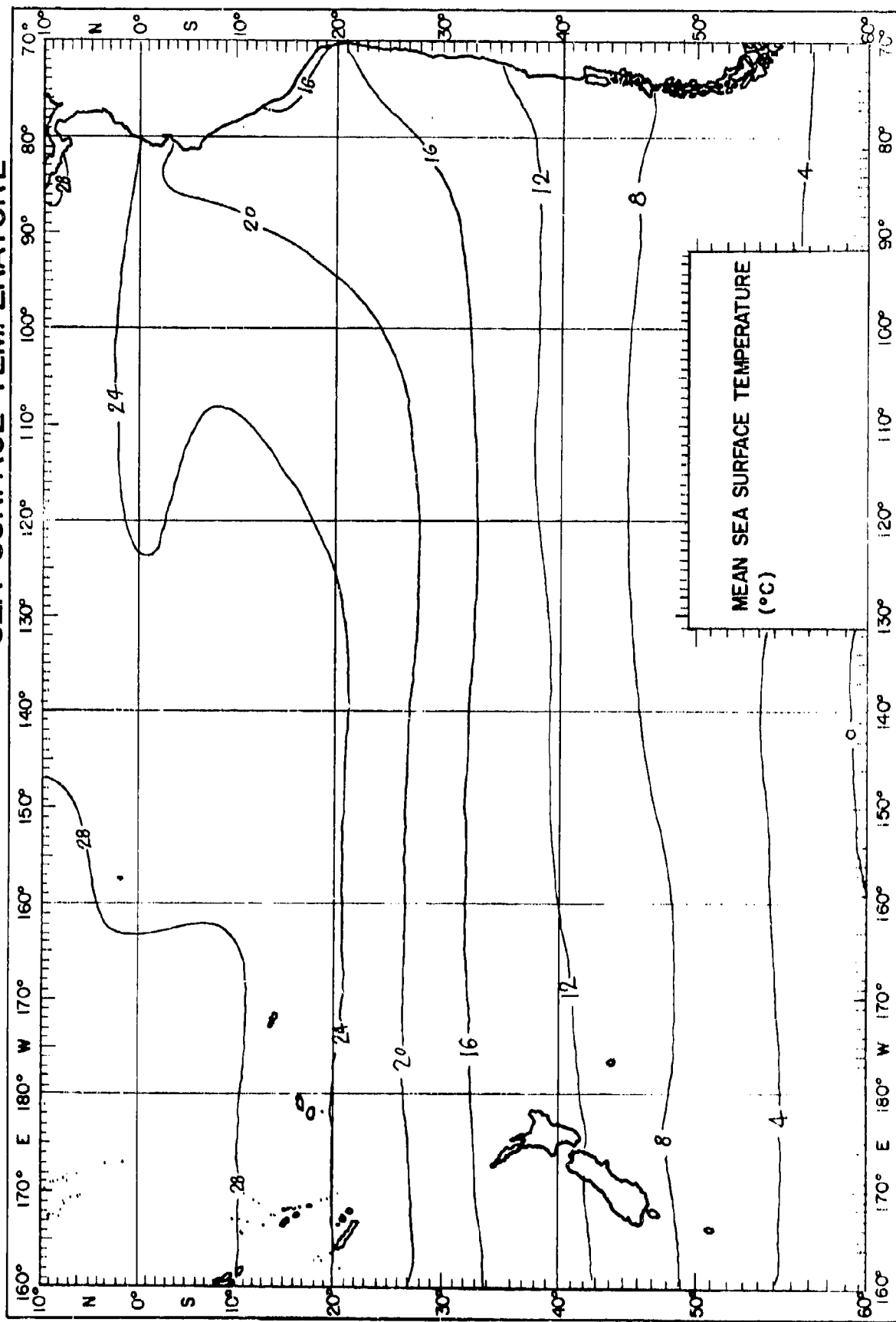
AUGUST

SEA SURFACE TEMPERATURE



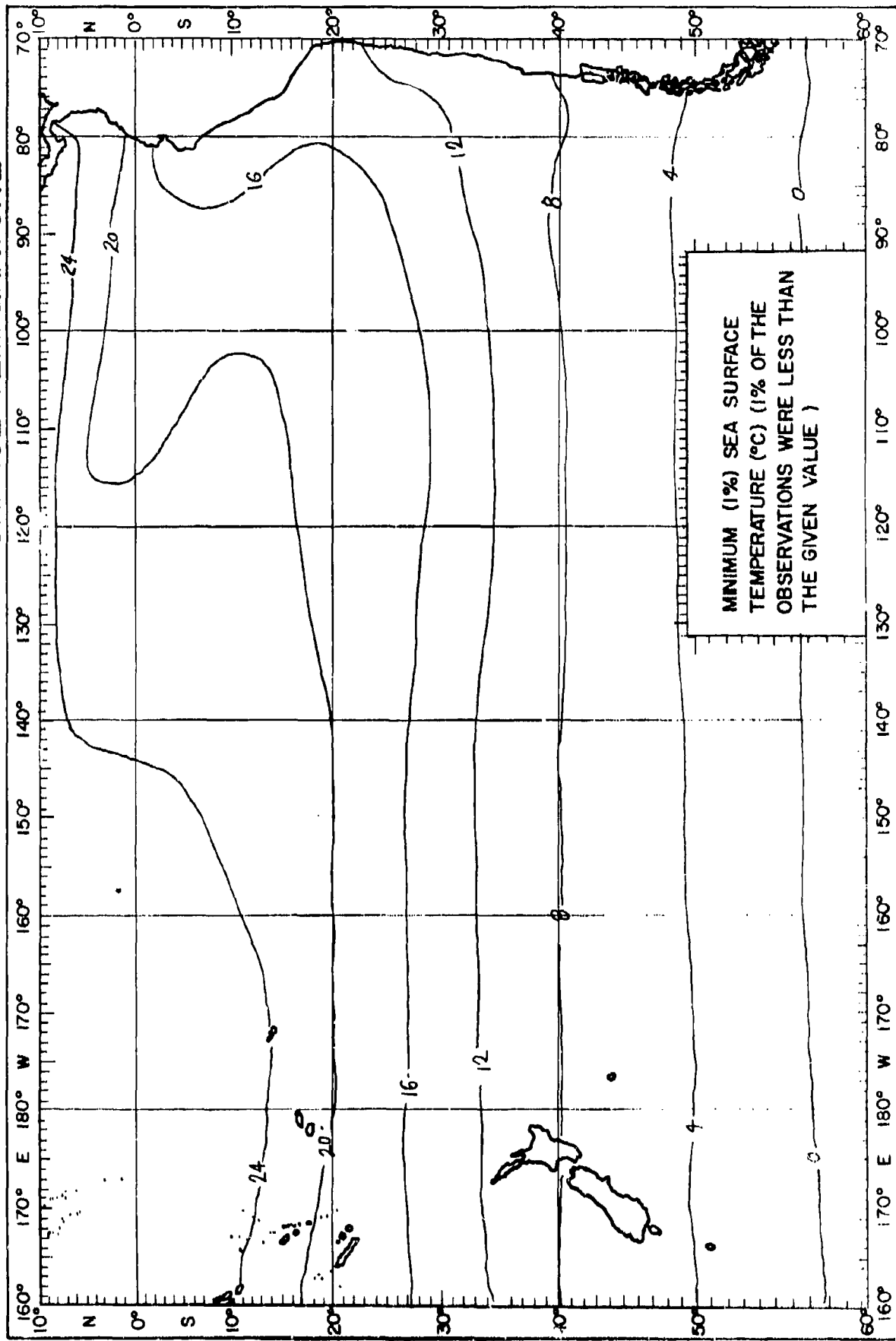
AUGUST

SEA SURFACE TEMPERATURE



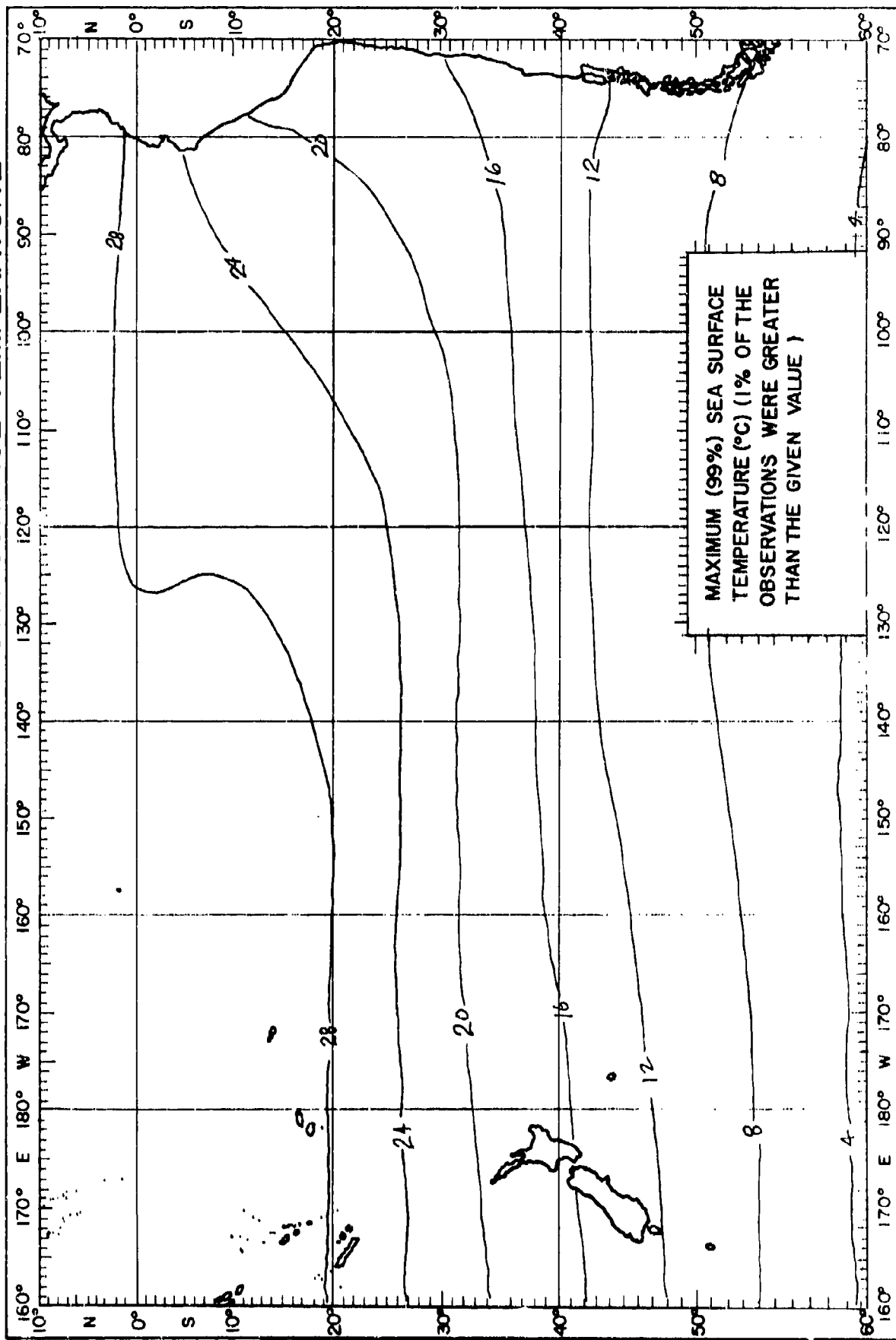
AUGUST

SEA SURFACE TEMPERATURE



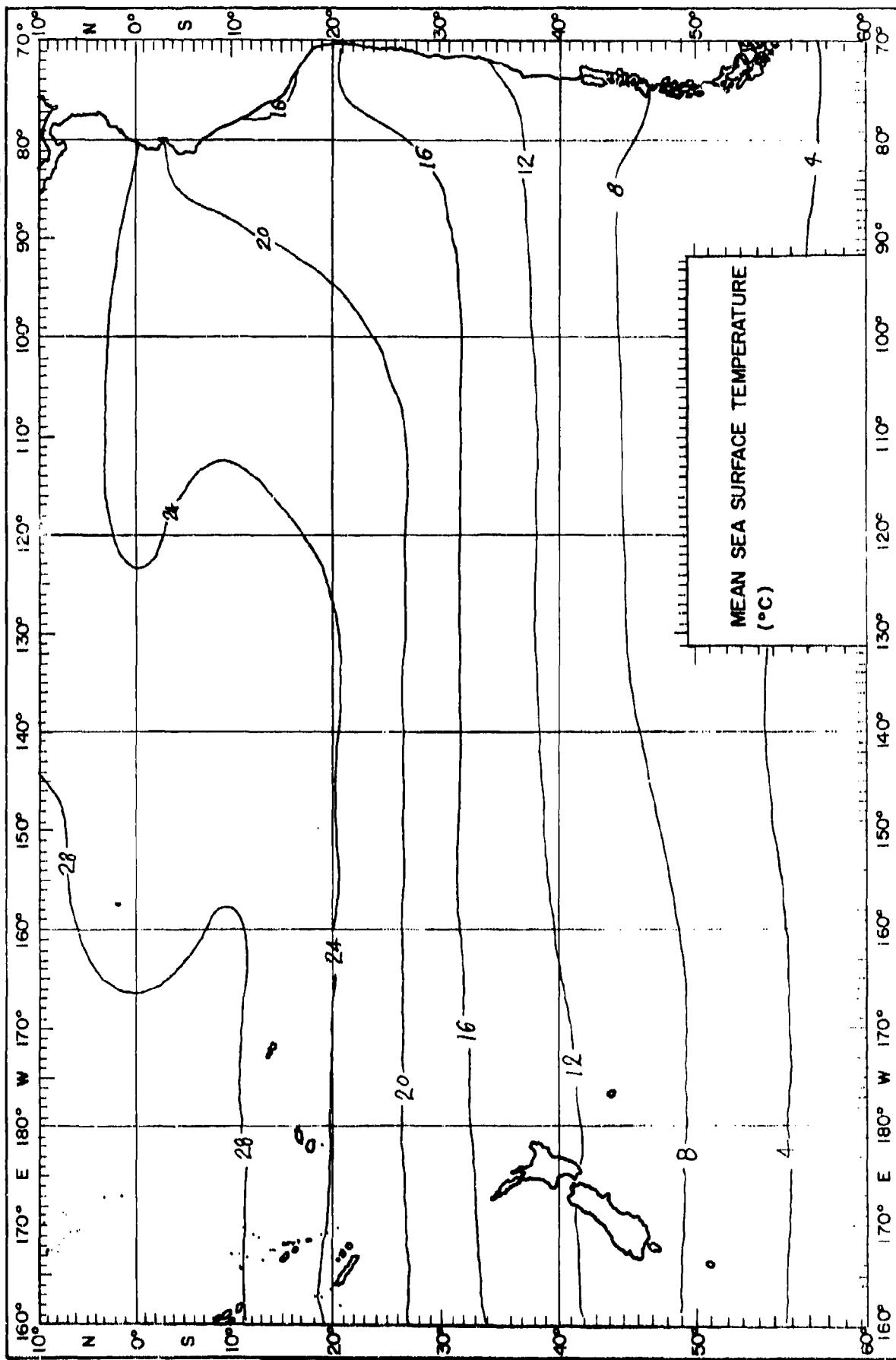
SEPTEMBER

SEA SURFACE TEMPERATURE



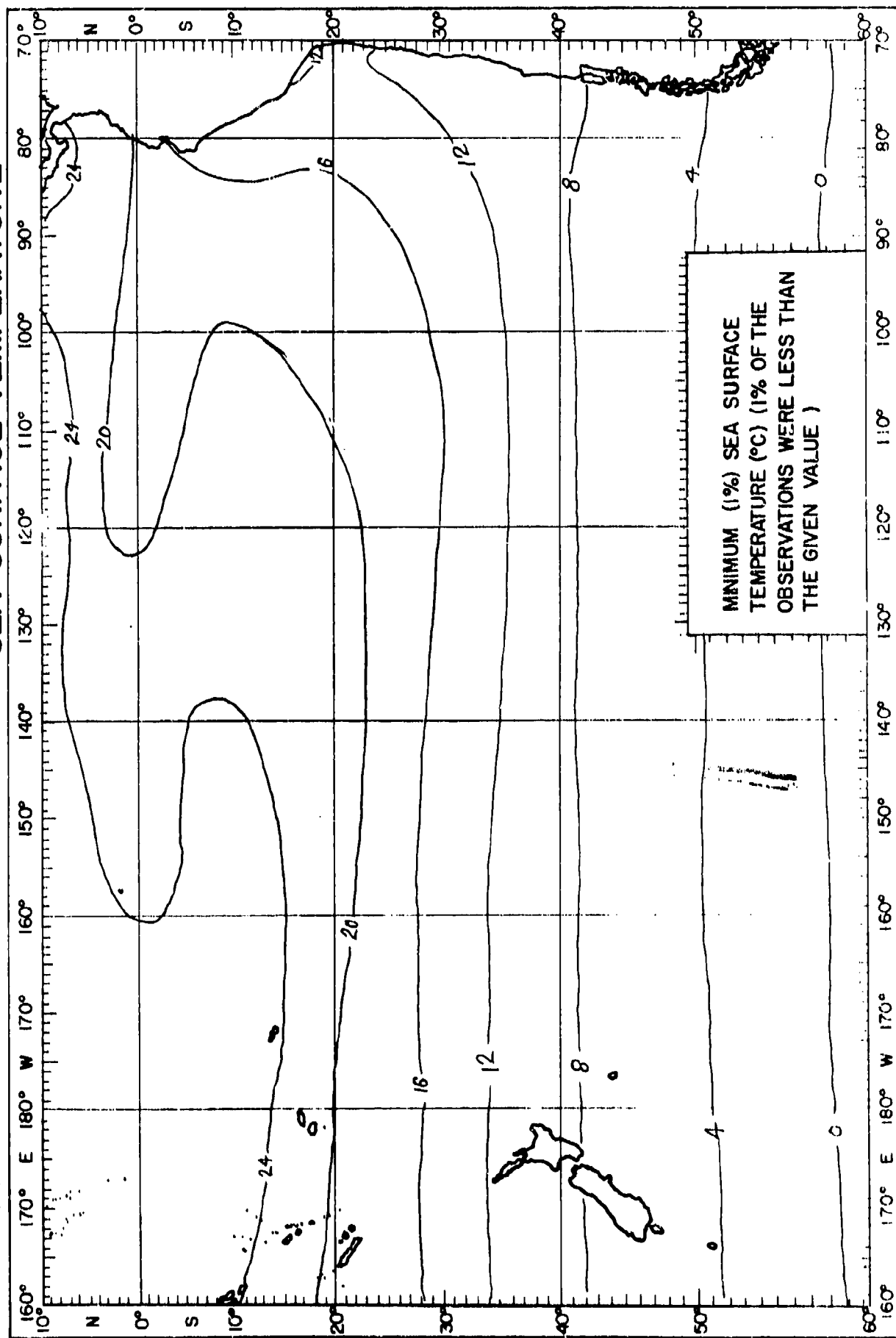
SEPTEMBER

SEA SURFACE TEMPERATURE



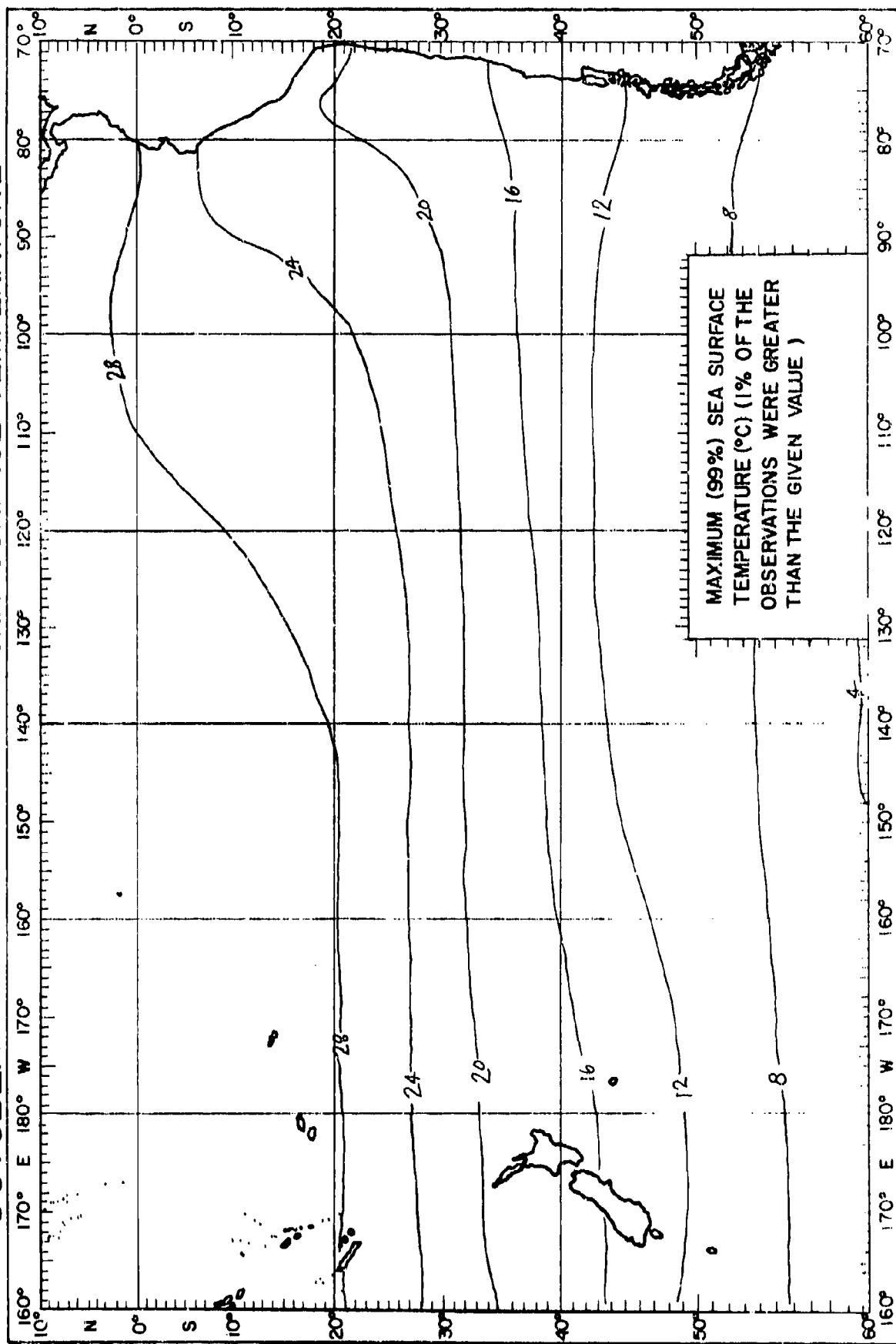
SEPTEMBER

SEA SURFACE TEMPERATURE



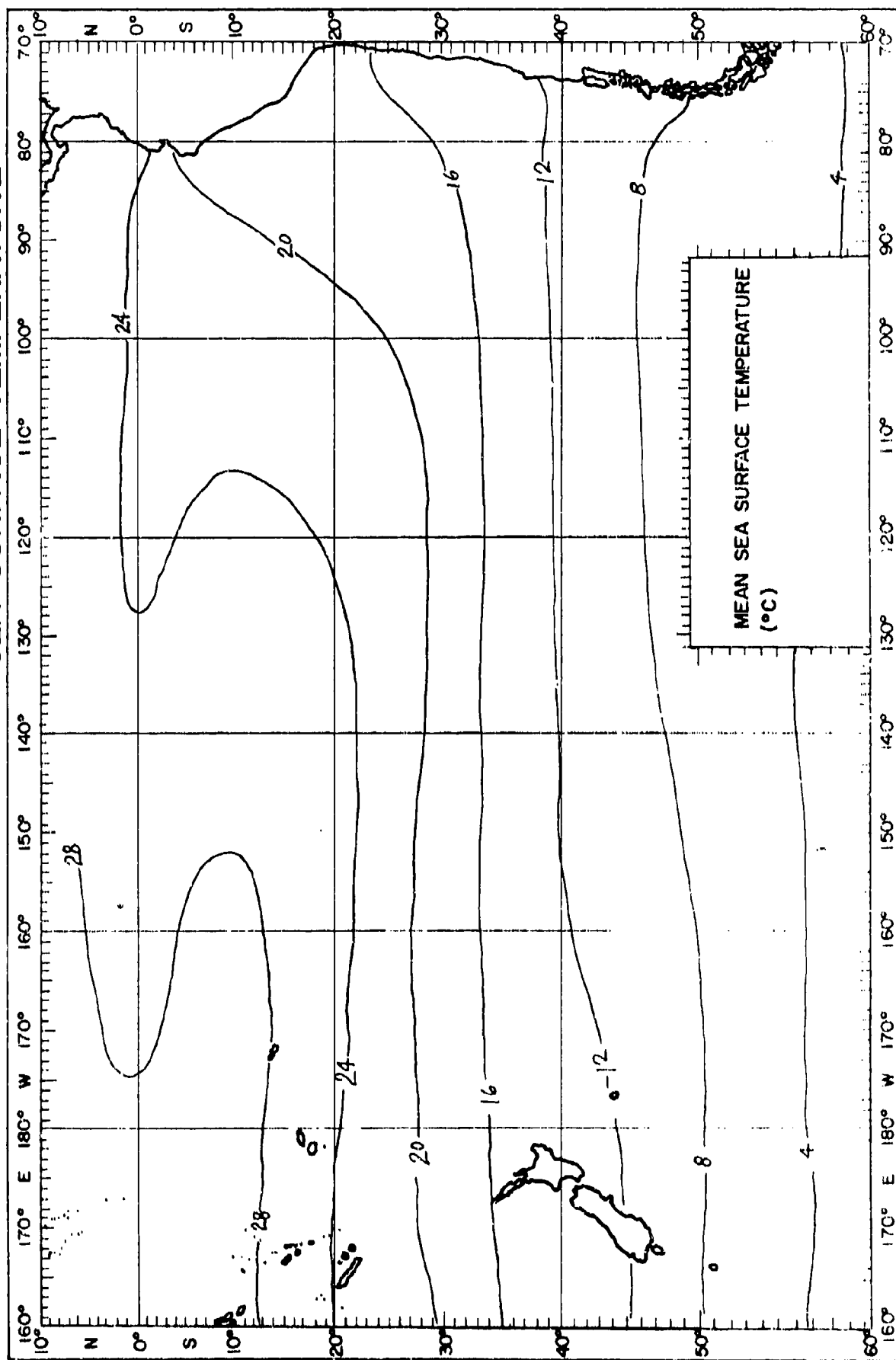
OCTOBER

SEA SURFACE TEMPERATURE



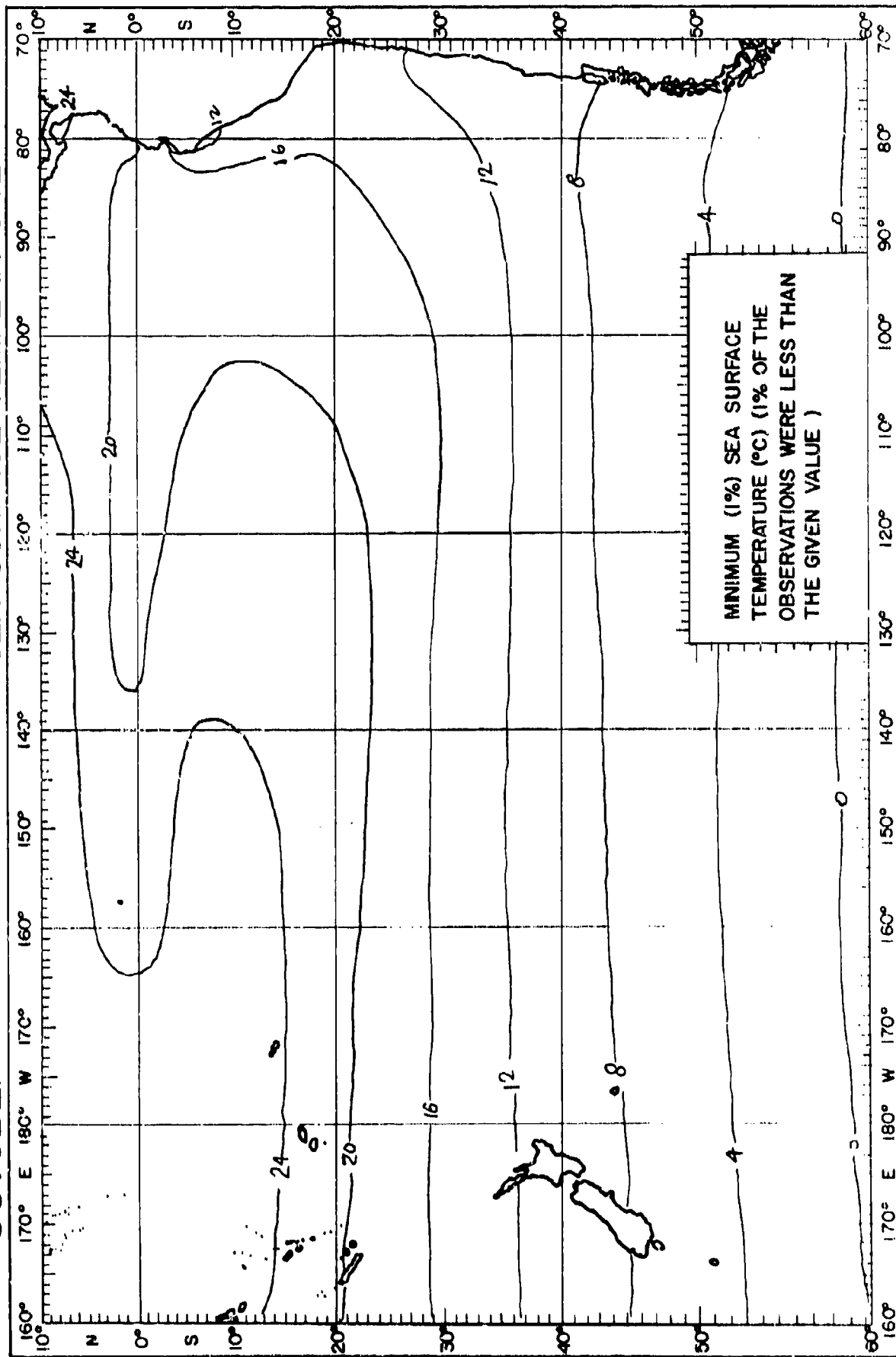
OCTOBER

SEA SURFACE TEMPERATURE



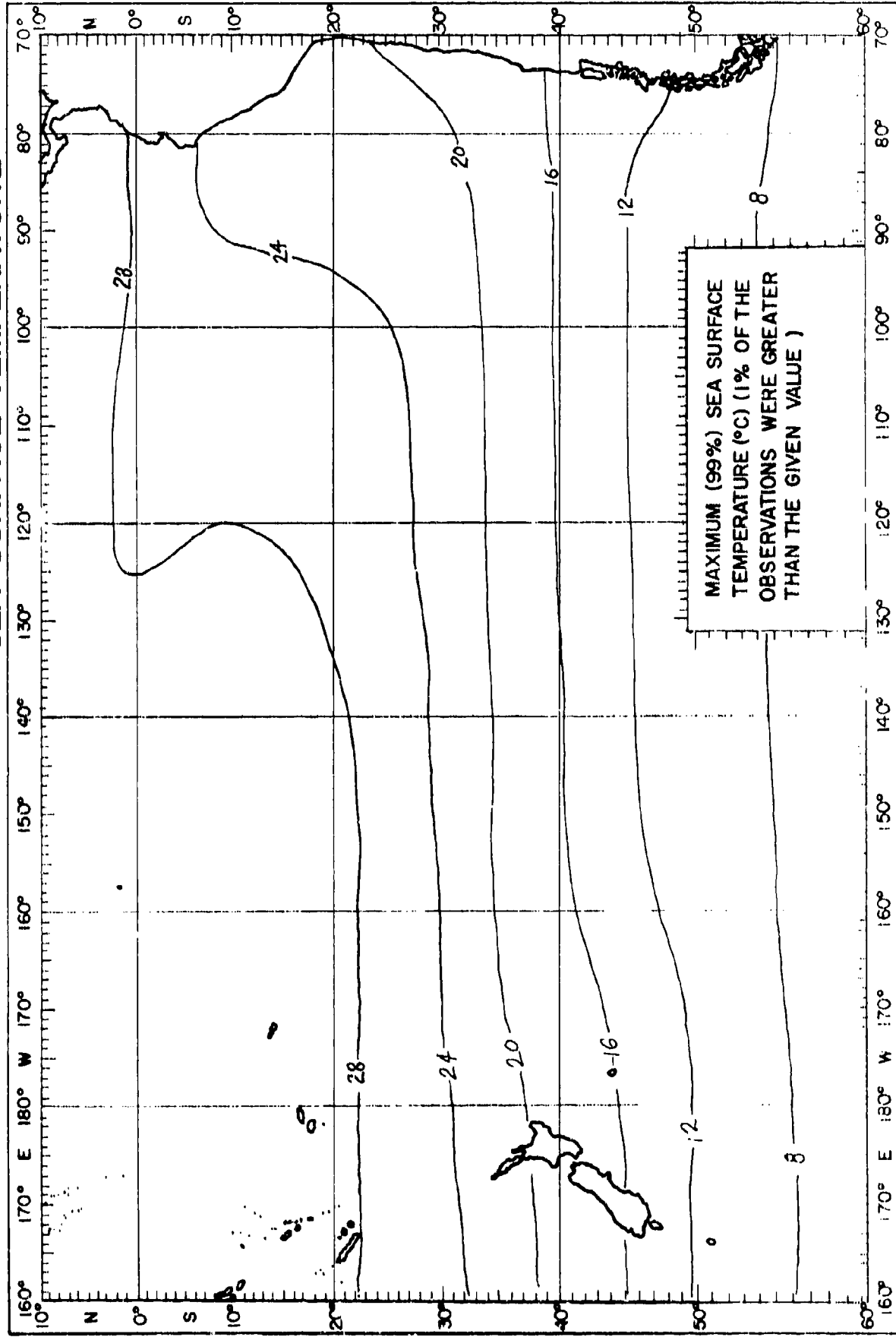
OCTOBER

SEA SURFACE TEMPERATURE



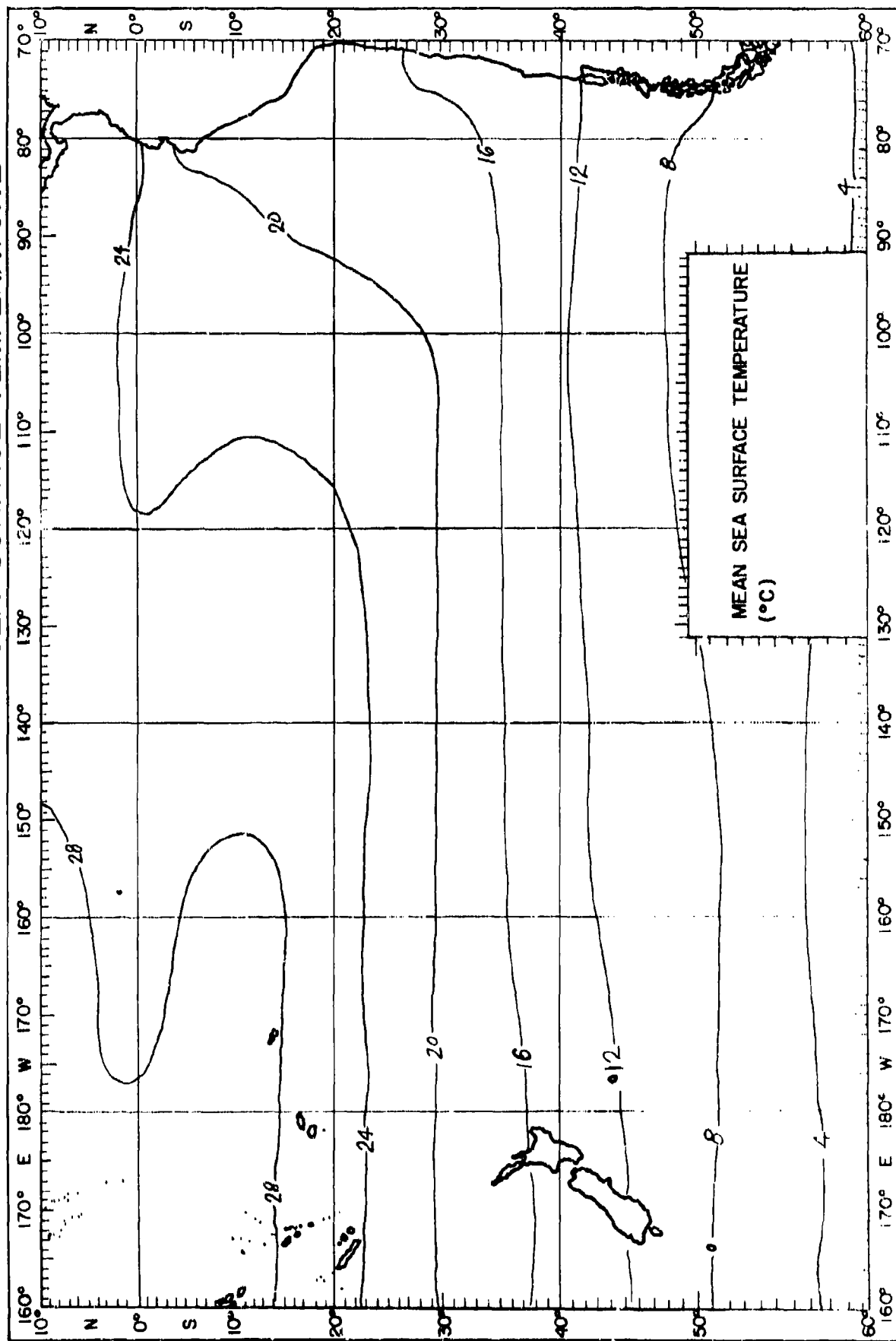
NOVEMBER

SEA SURFACE TEMPERATURE



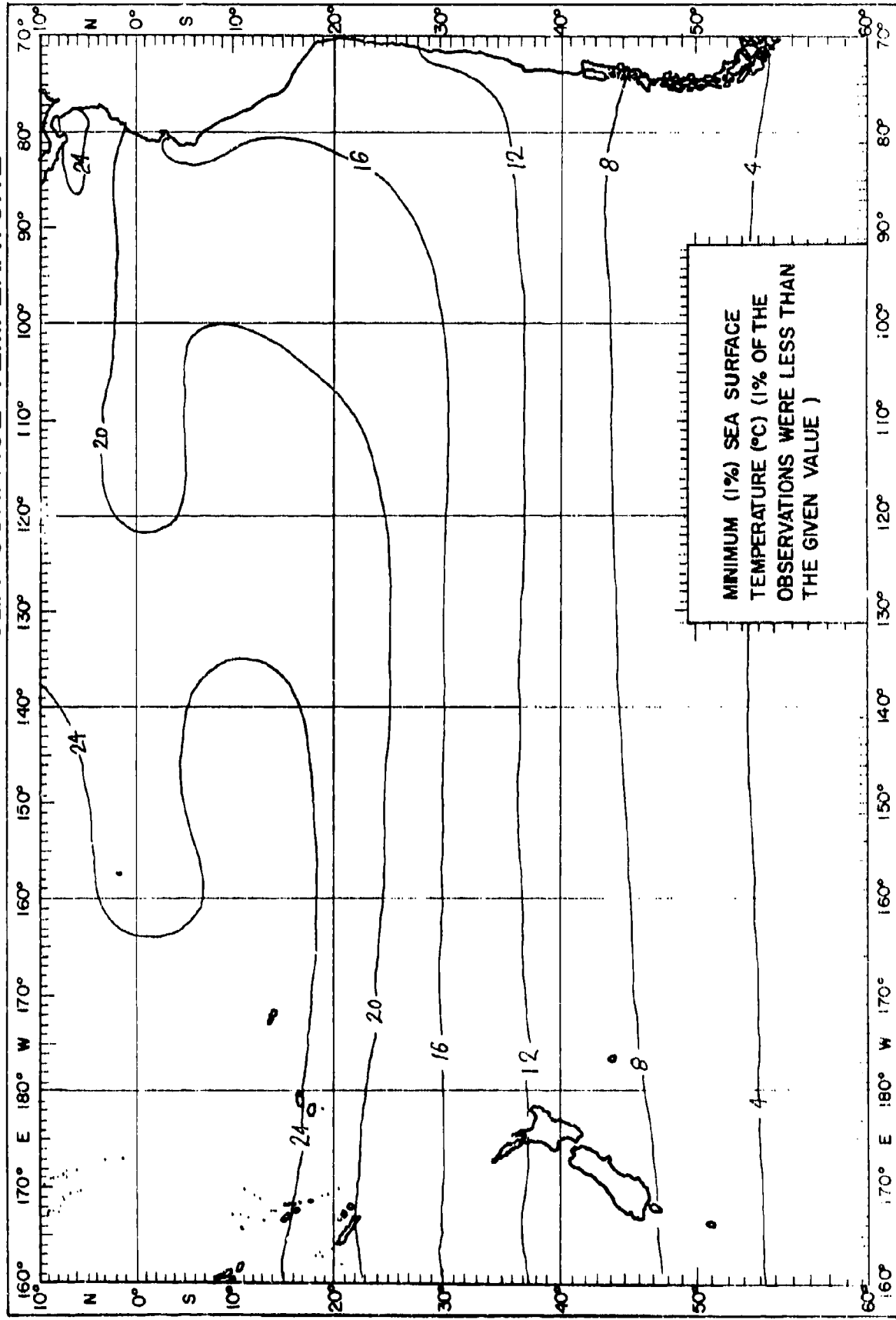
NOVEMBER

SEA SURFACE TEMPERATURE



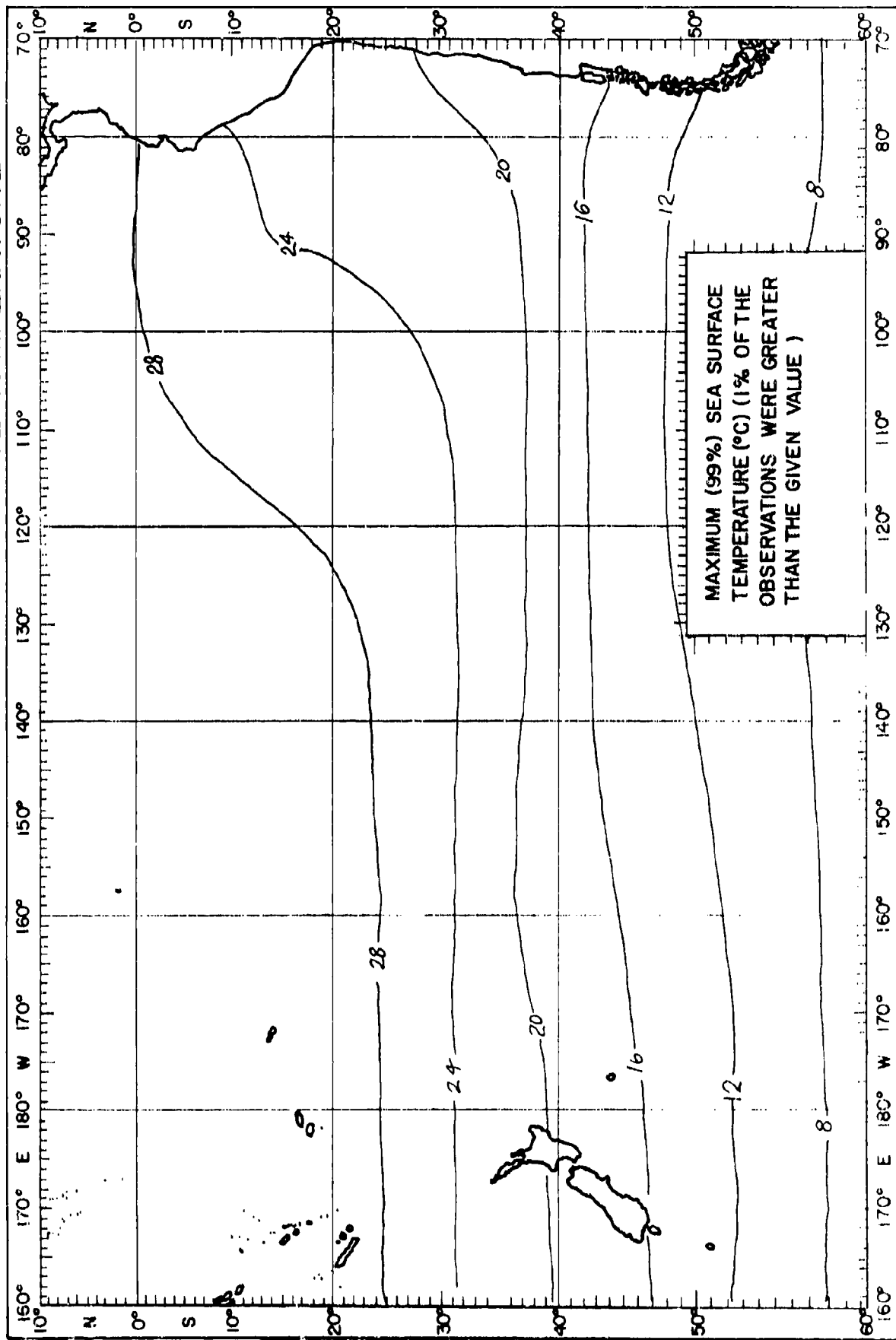
NOVEMBER

SEA SURFACE TEMPERATURE



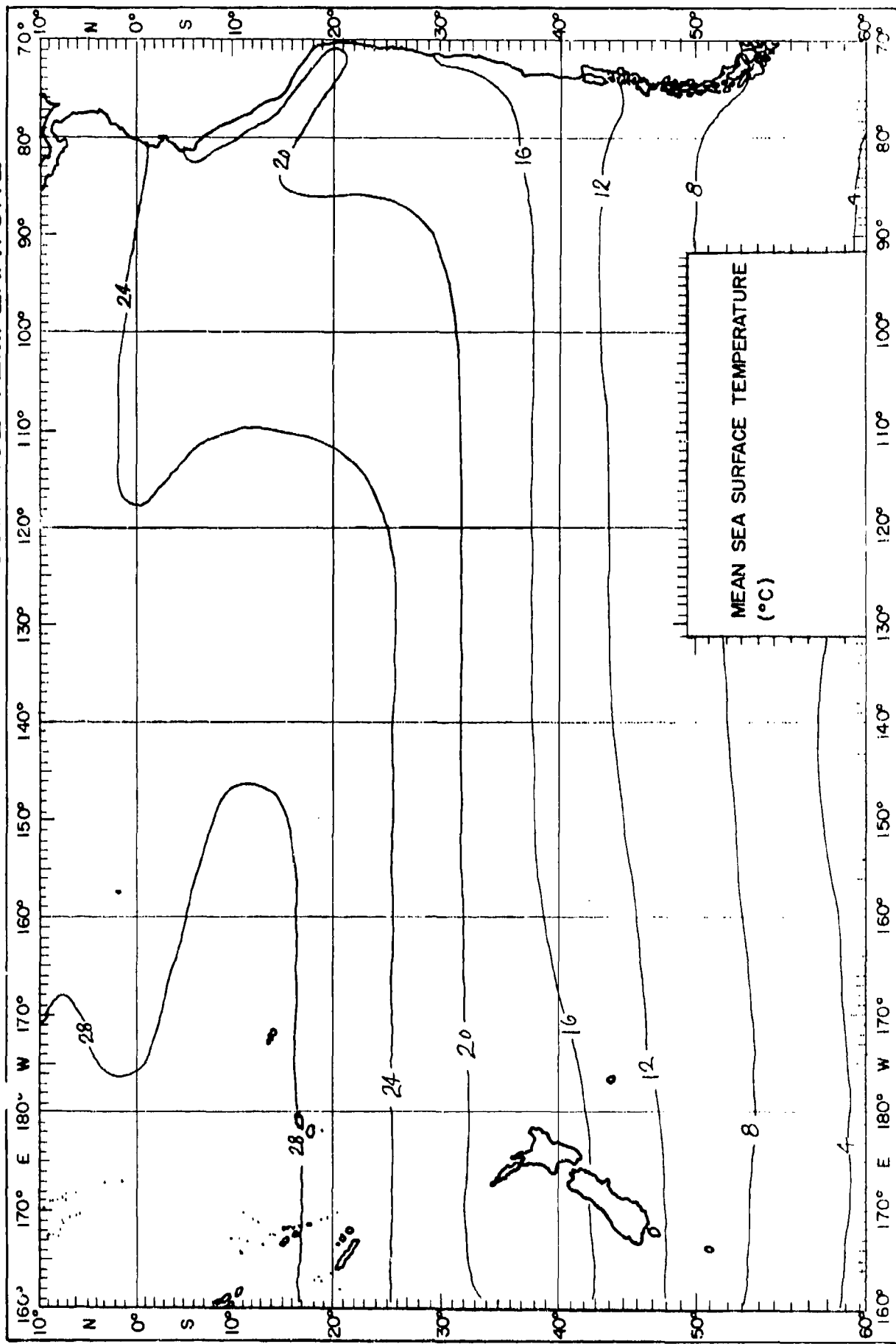
DECEMBER

SEA SURFACE TEMPERATURE



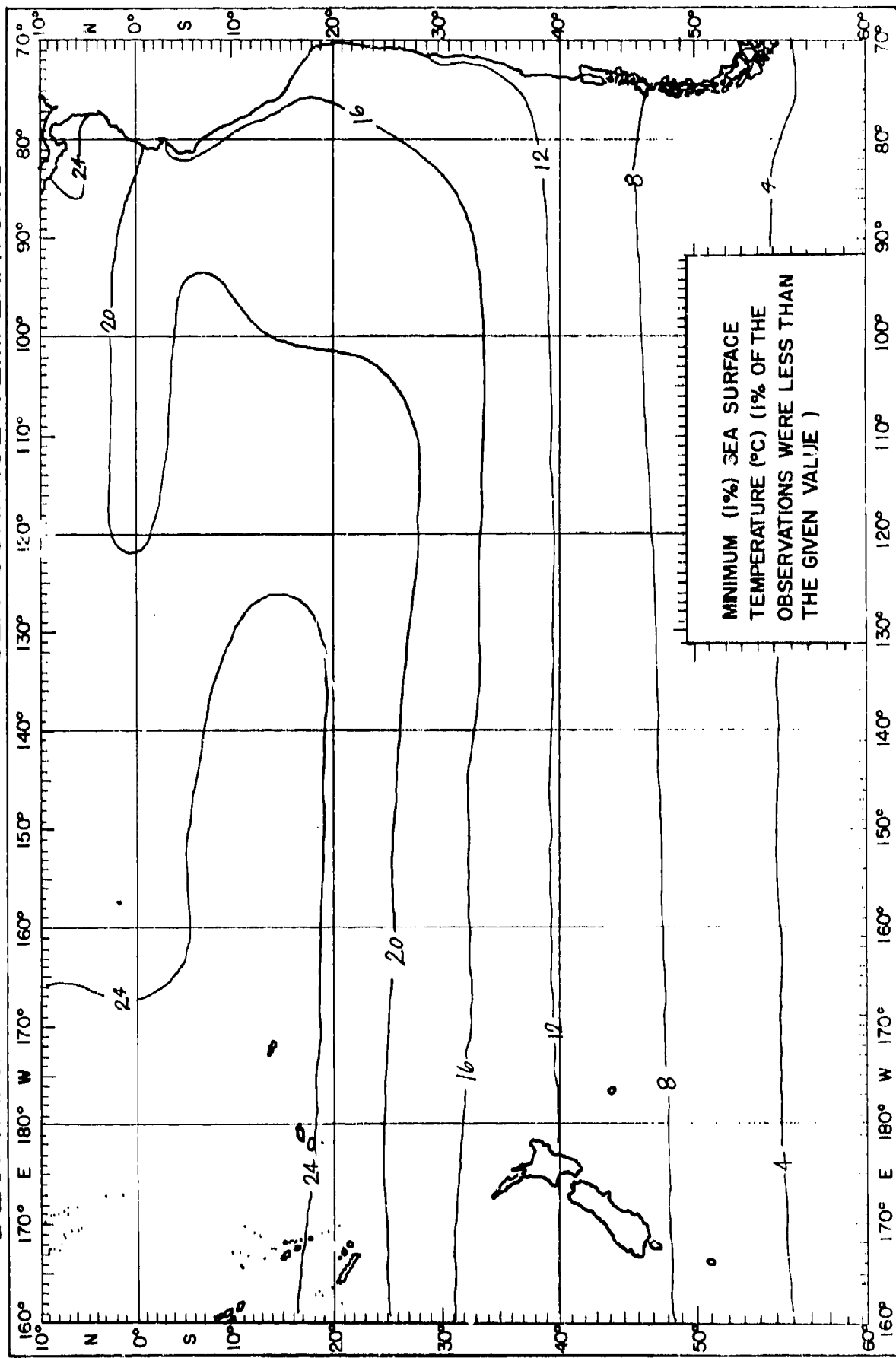
DECEMBER

SEA SURFACE TEMPERATURE



DECEMBER

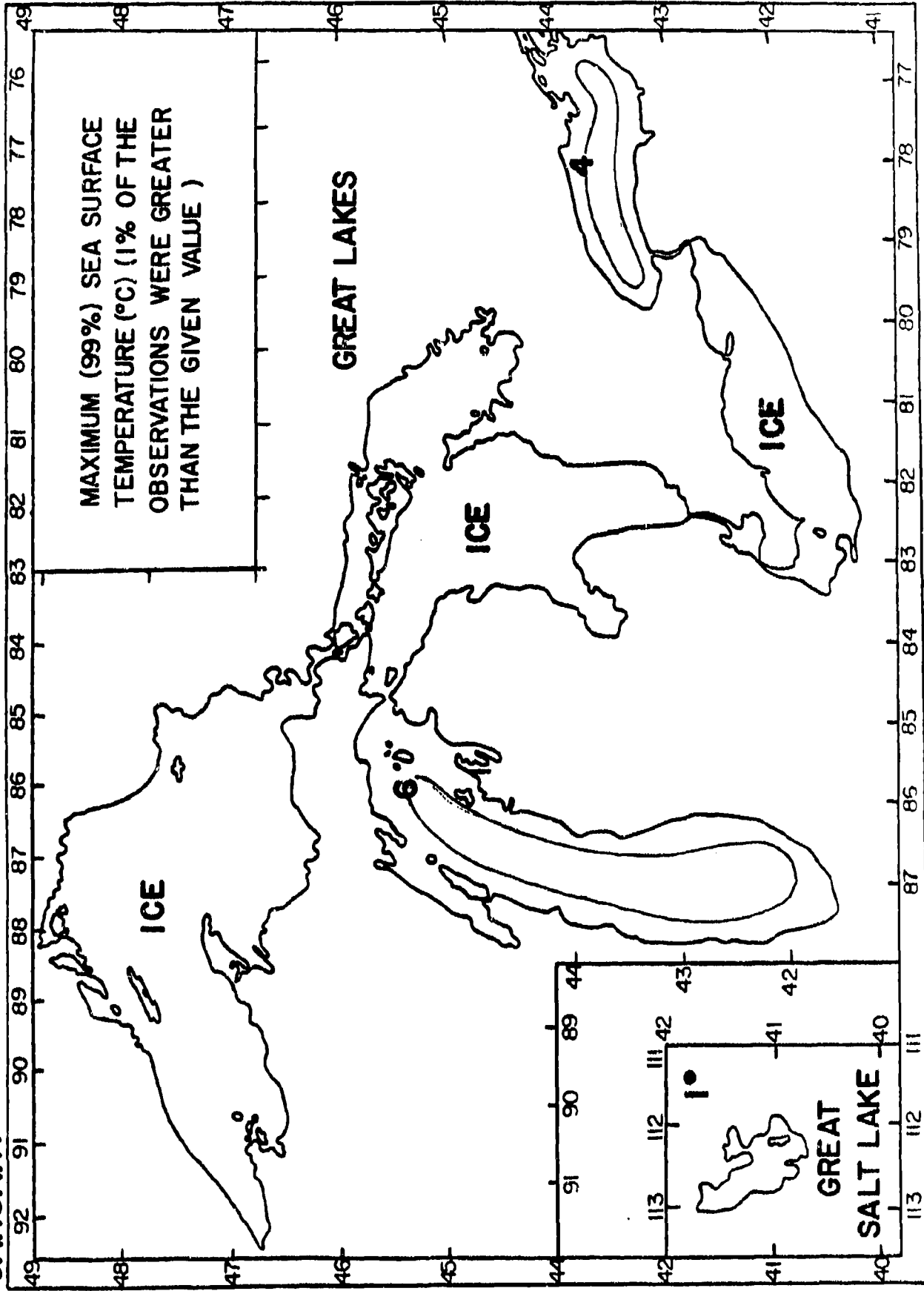
SEA SURFACE TEMPERATURE



GREAT LAKES
and
GREAT SALT LAKE
TEMPERATURE CHARTS

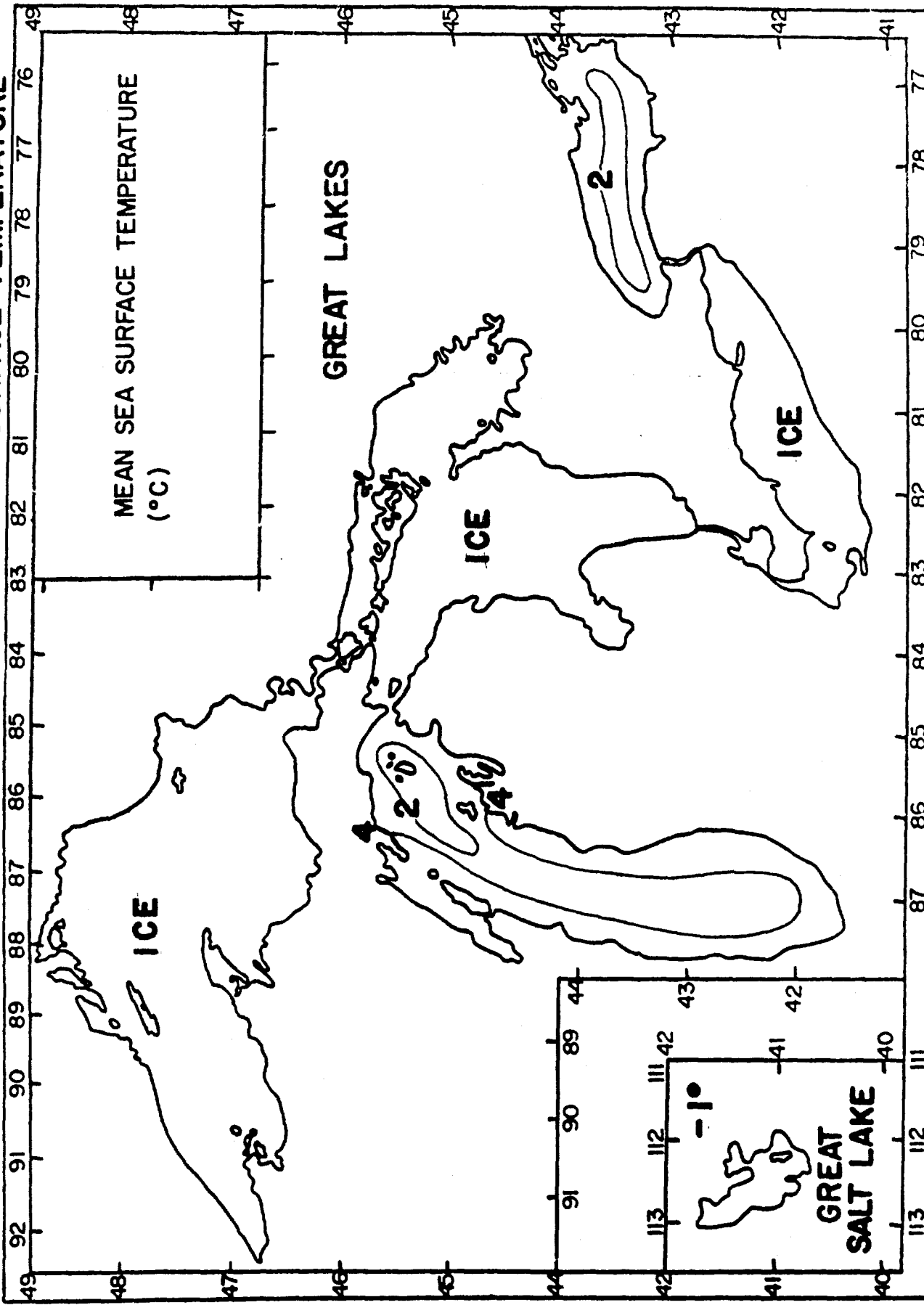
JANUARY

SEA SURFACE TEMPERATURE



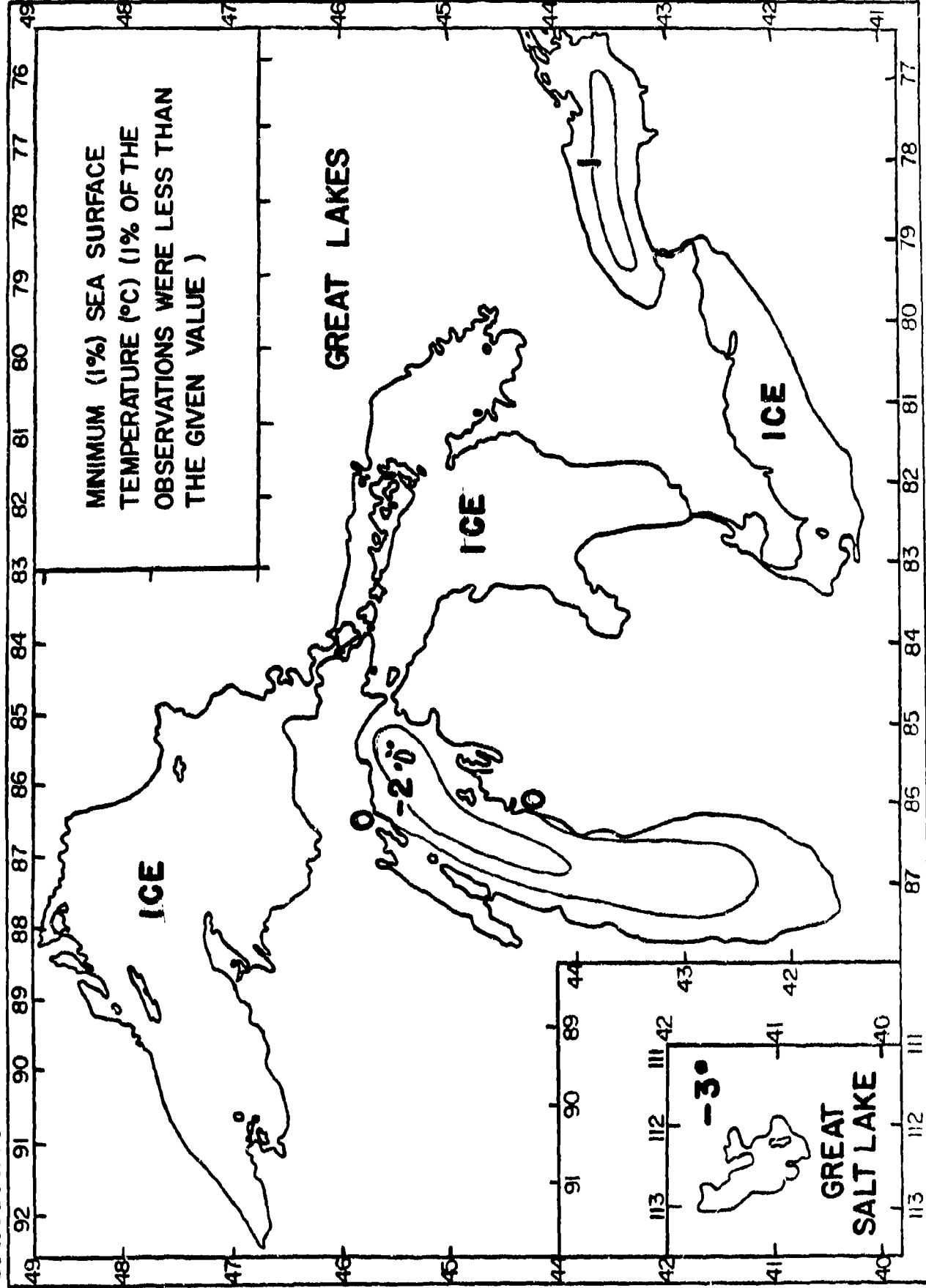
JANUARY

SEA SURFACE TEMPERATURE

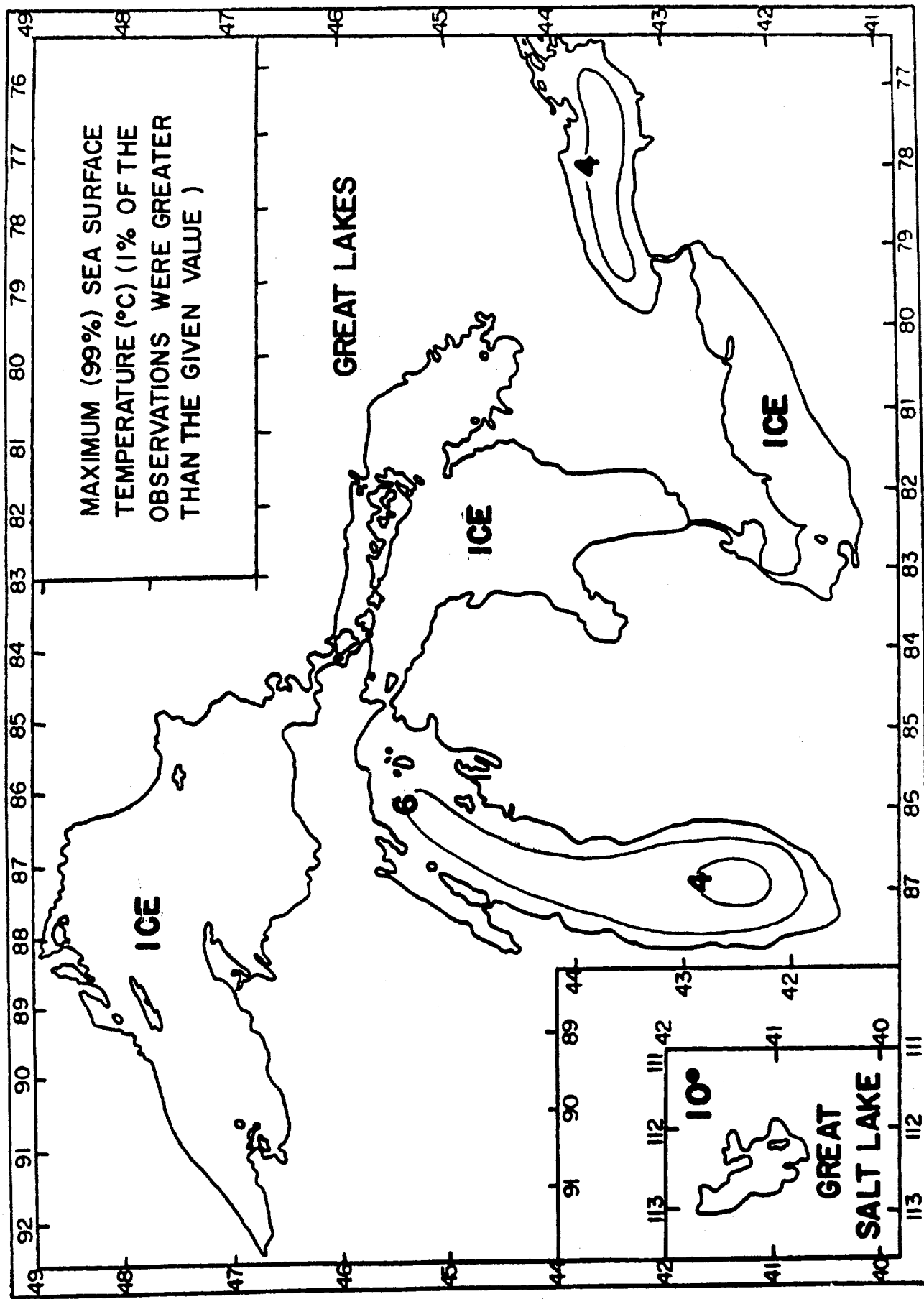


JANUARY

SEA SURFACE TEMPERATURE



SEA SURFACE TEMPERATURE



FEBRUARY

SEA SURFACE TEMPERATURE

**MEAN SEA SURFACE TEMPERATURE
(°C)**

GREAT LAKES

ICE

ICE

ICE

3.0

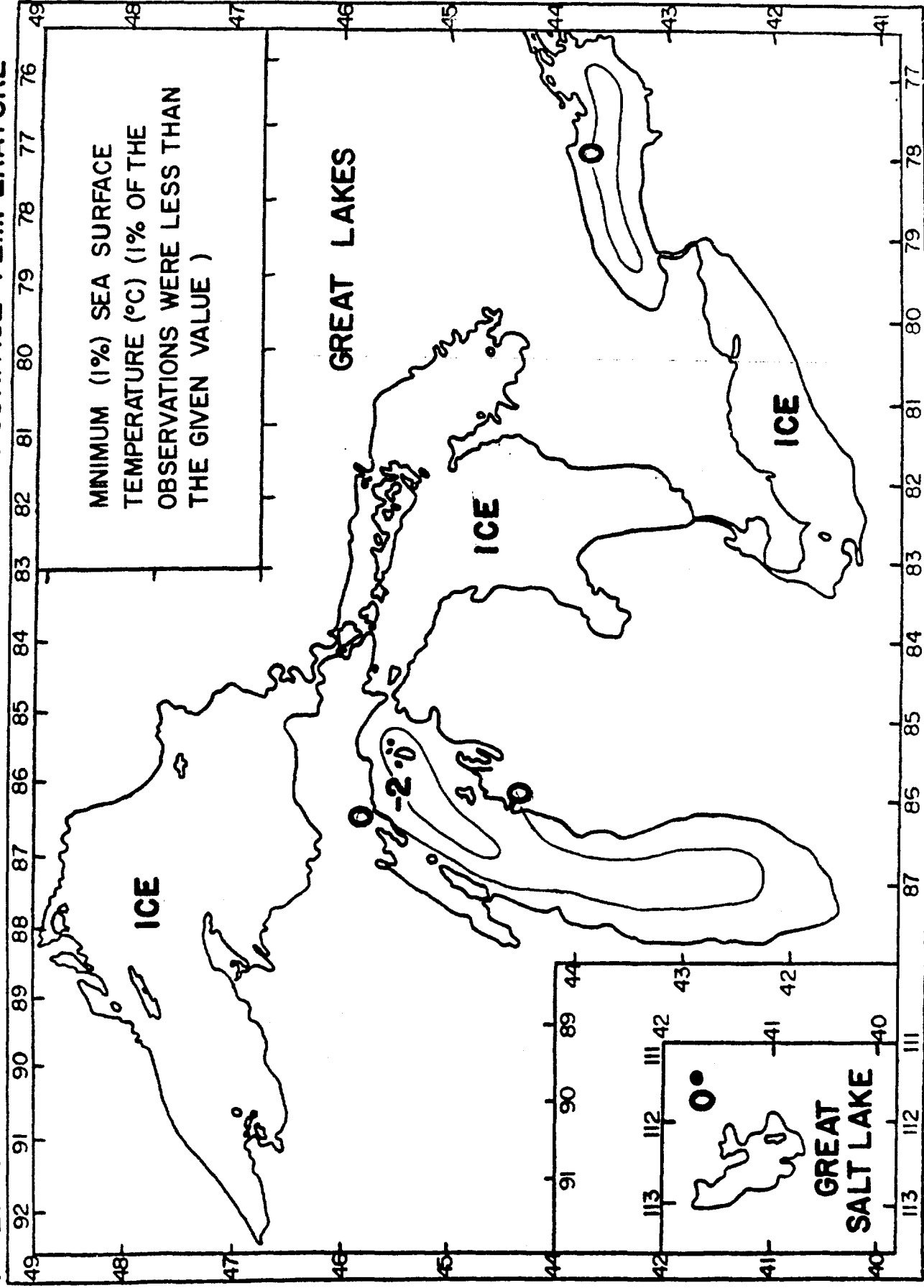
3.0

3°

**GREAT
SALT LAKE**

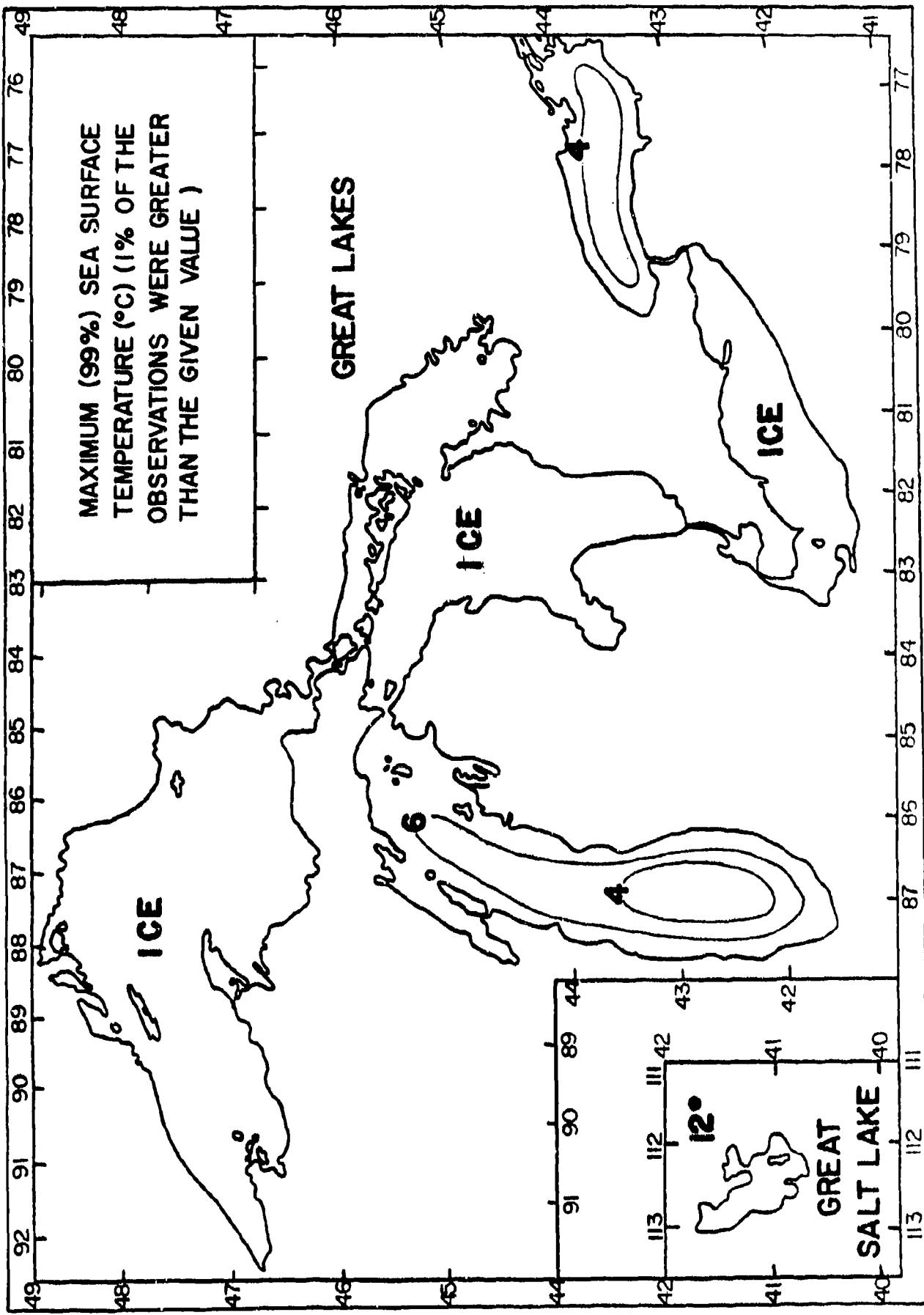
FEBRUARY

SEA SURFACE TEMPERATURE



MARCH

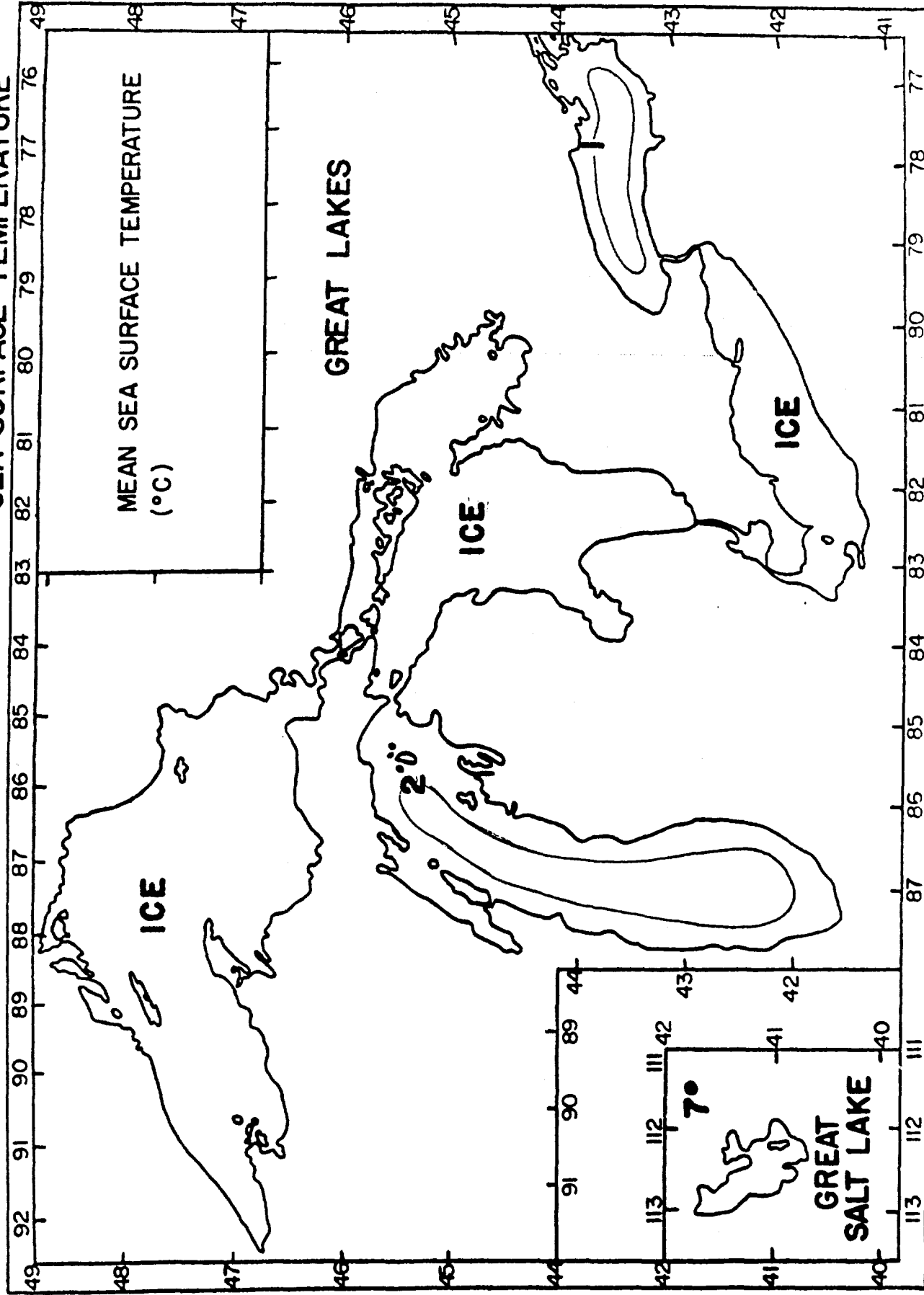
SEA SURFACE TEMPERATURE



MARCH

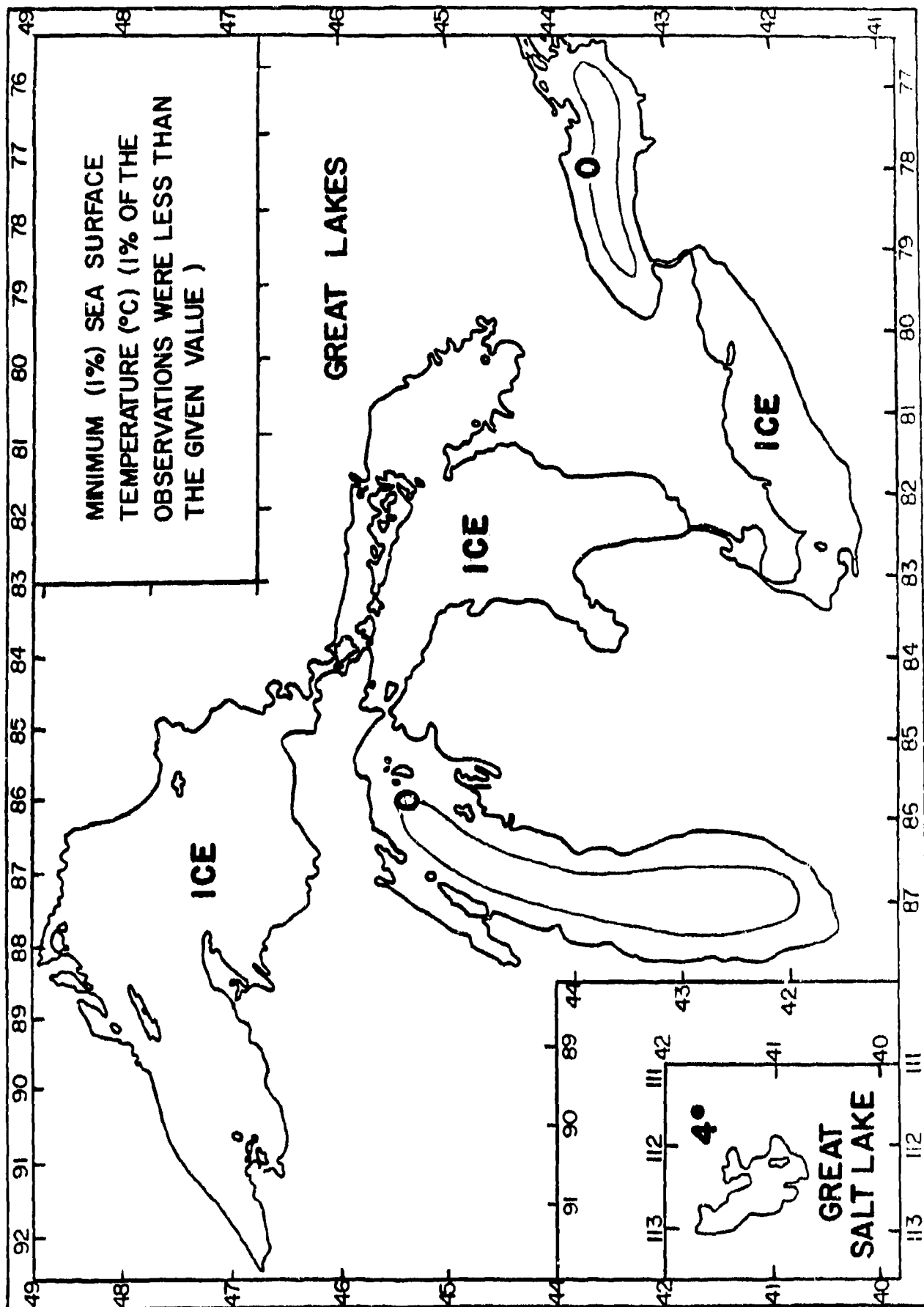
SEA SURFACE TEMPERATURE

**MEAN SEA SURFACE TEMPERATURE
(°C)**



MARCH

SEA SURFACE TEMPERATURE

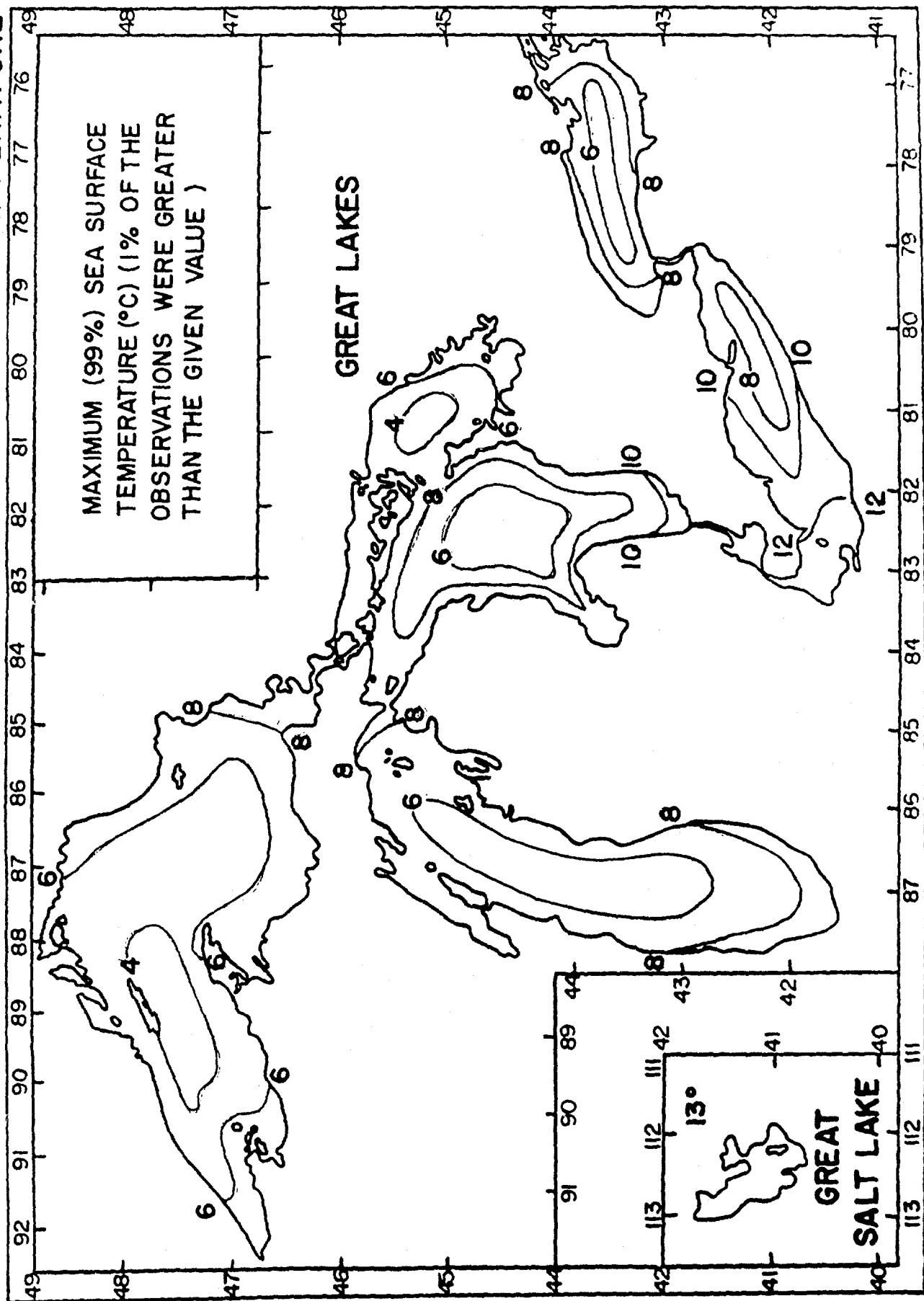


APRIL

SEA SURFACE TEMPERATURE

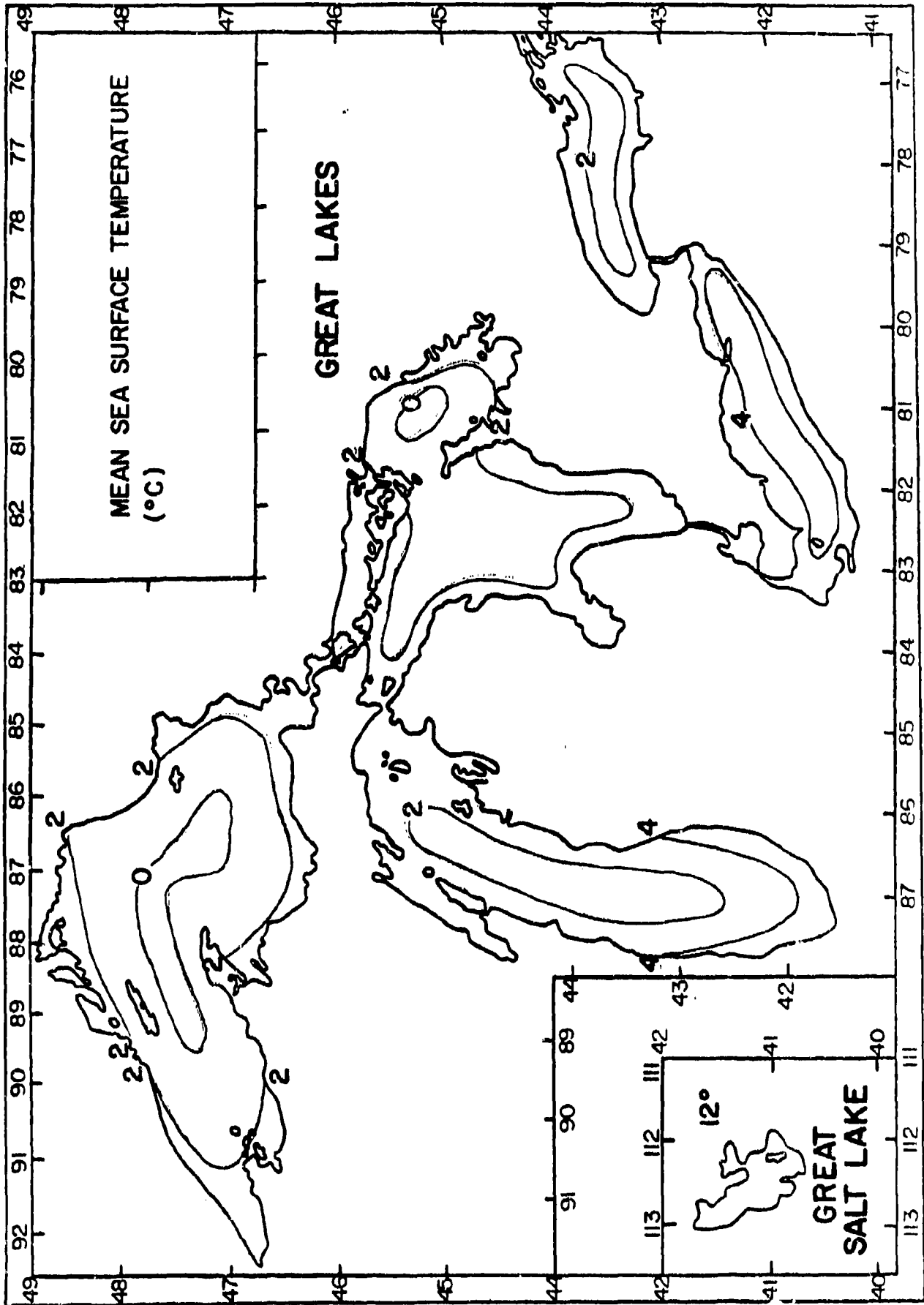
MAXIMUM (99%) SEA SURFACE
TEMPERATURE (°C) (1% OF THE
OBSERVATIONS WERE GREATER
THAN THE GIVEN VALUE)

GREAT LAKES



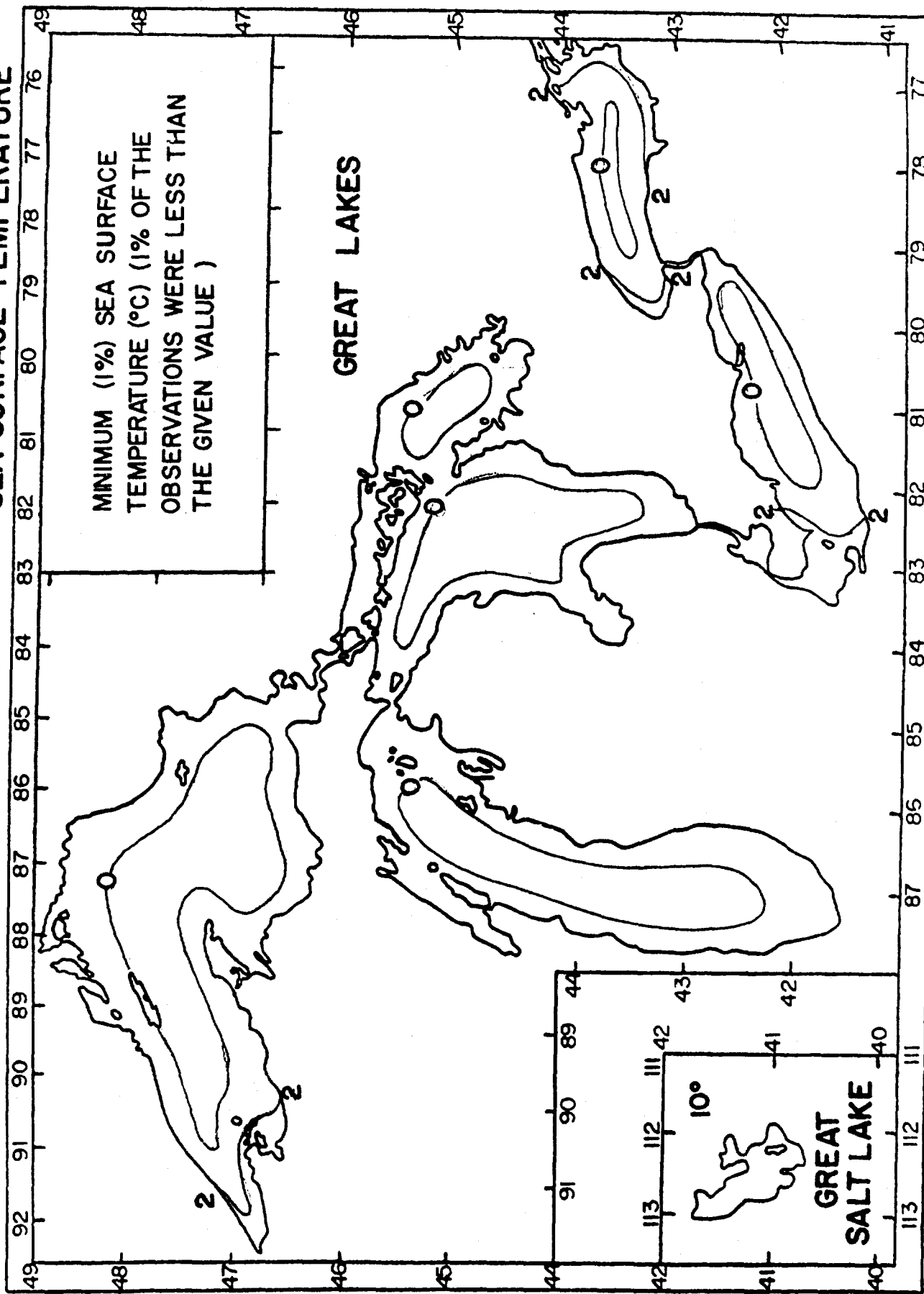
APRIL

SEA SURFACE TEMPERATURE



APRIL

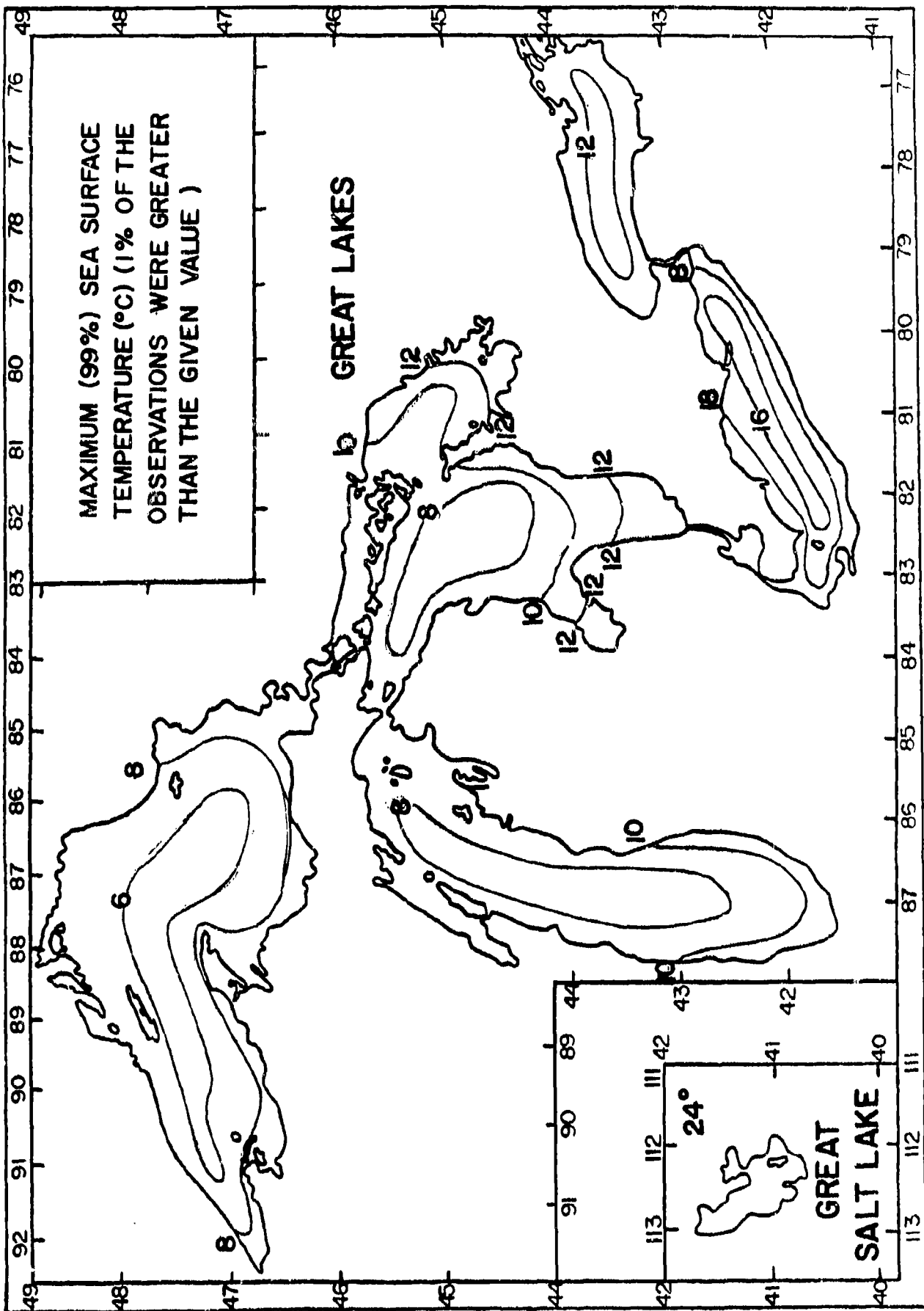
SEA SURFACE TEMPERATURE



MAY

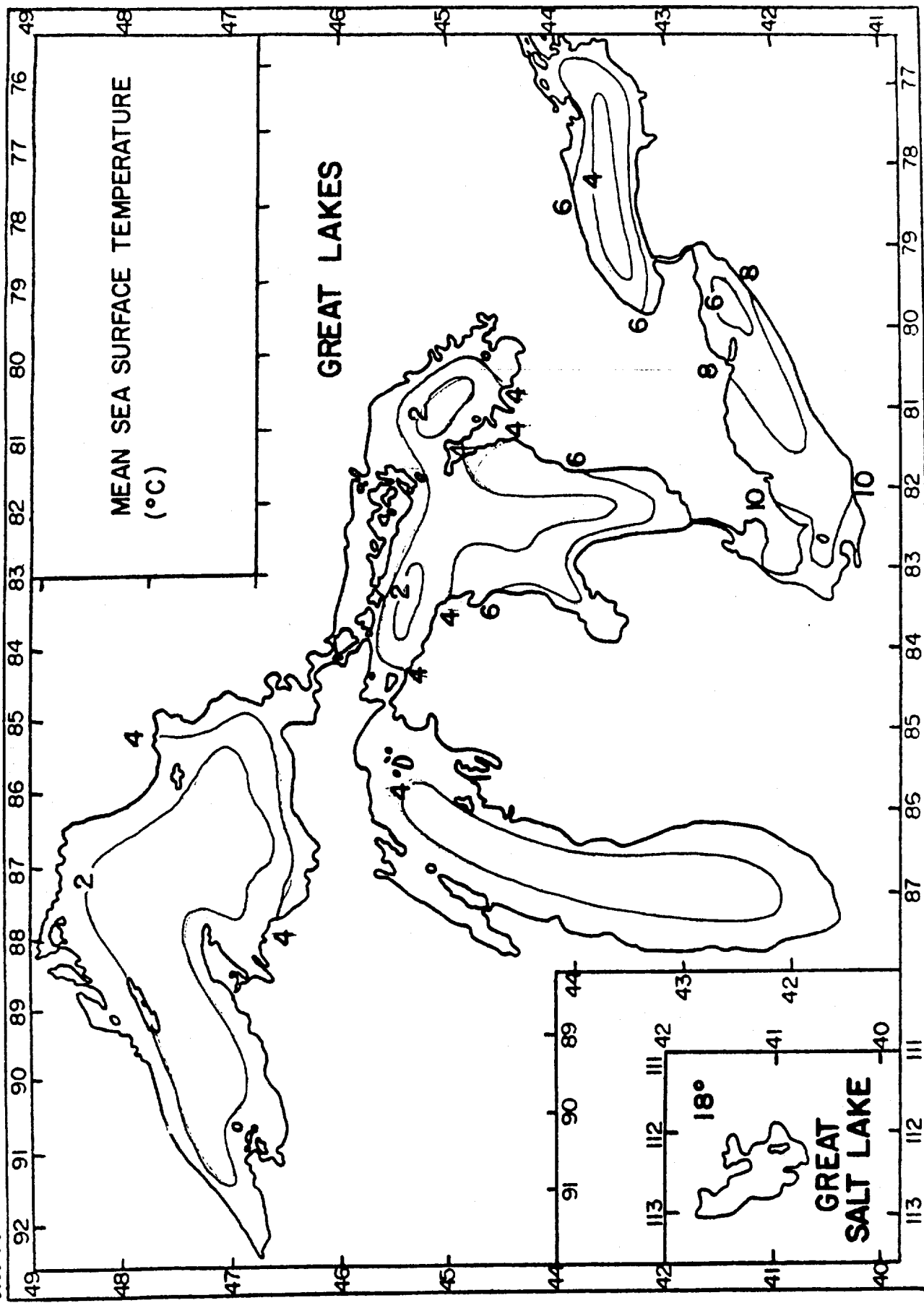
SEA SURFACE TEMPERATURE

MAXIMUM (99%) SEA SURFACE
TEMPERATURE (°C) (1% OF THE
OBSERVATIONS WERE GREATER
THAN THE GIVEN VALUE)



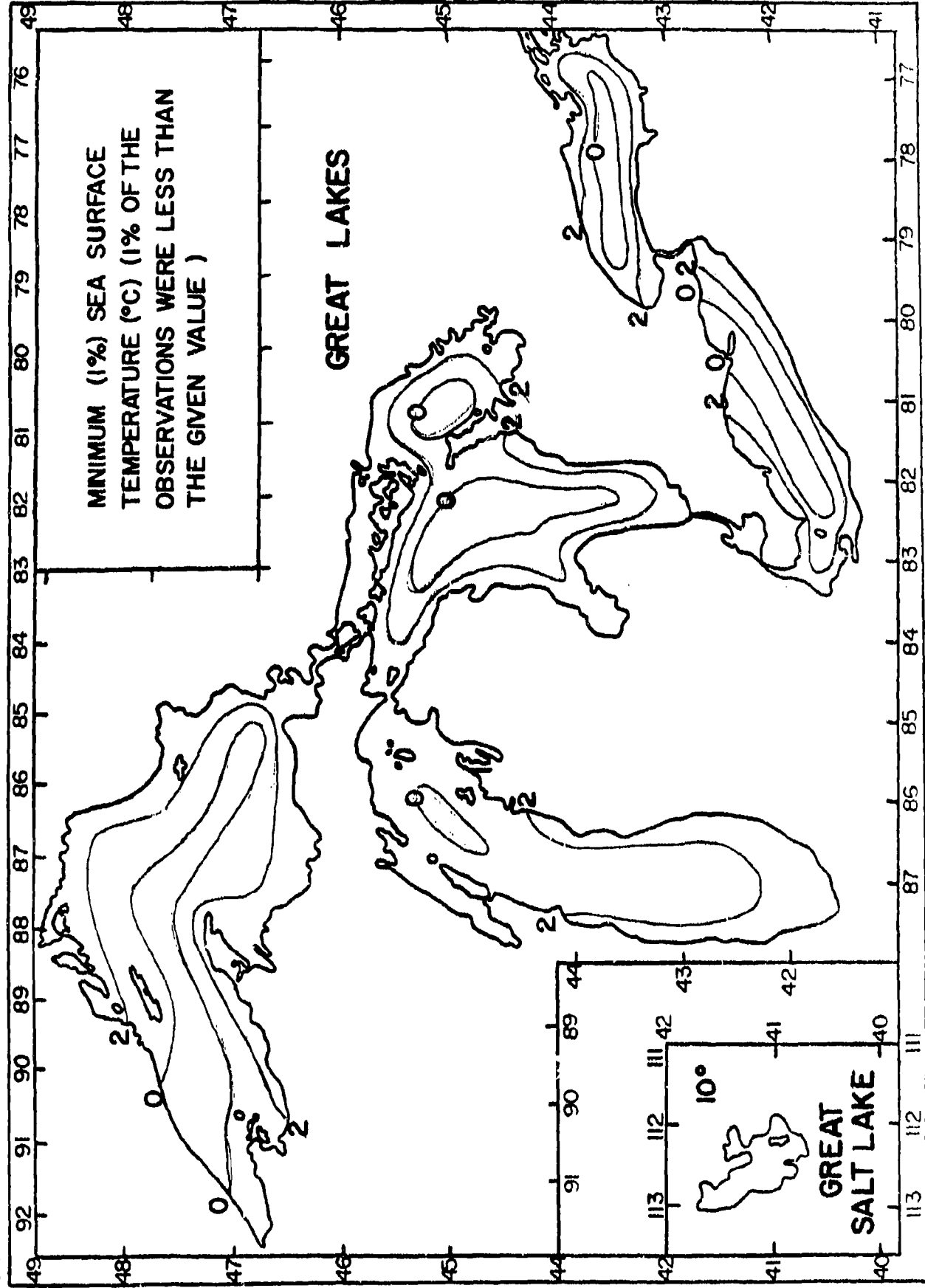
MAY

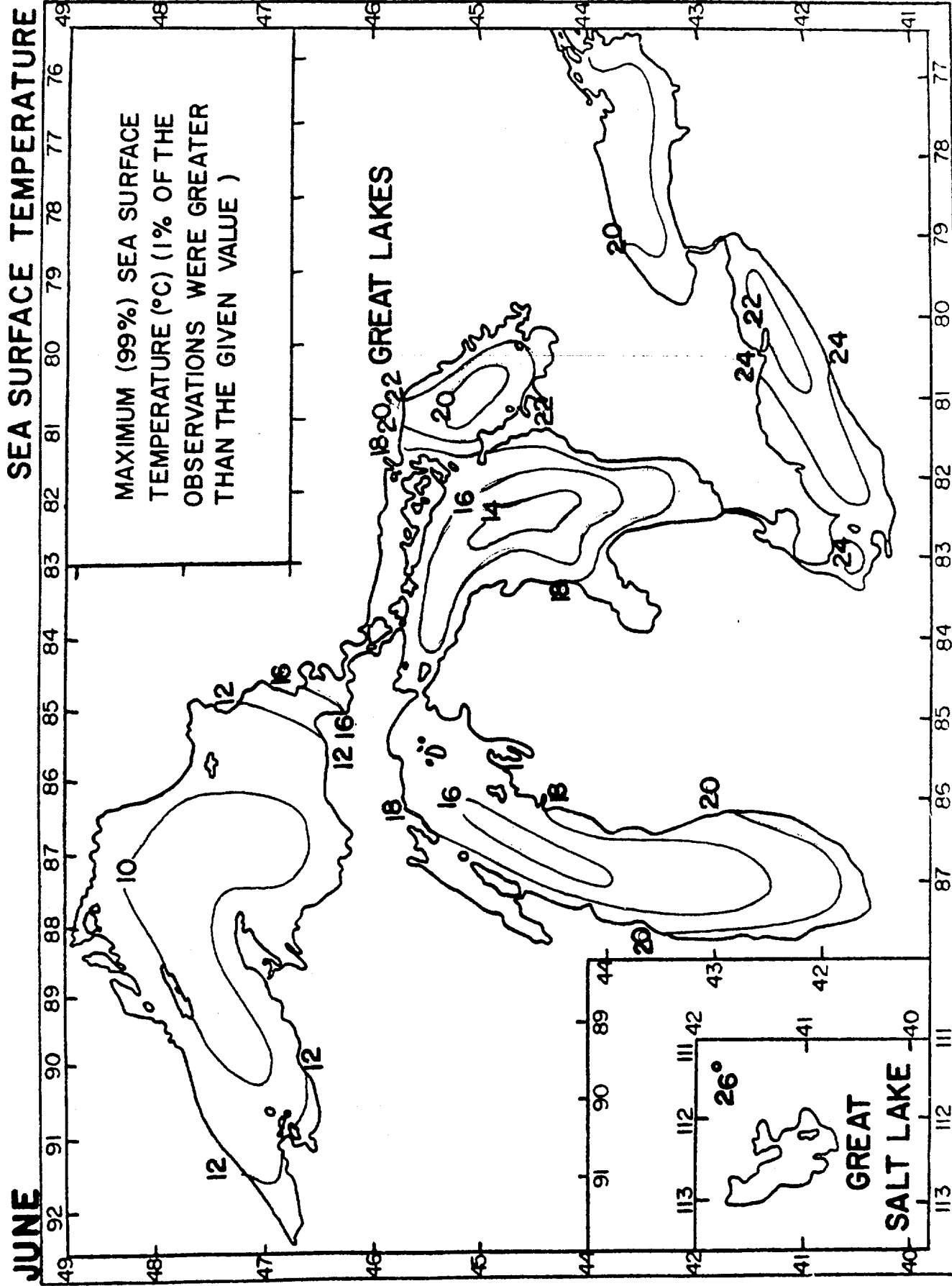
SEA SURFACE TEMPERATURE



MAY

SEA SURFACE TEMPERATURE





JUNE

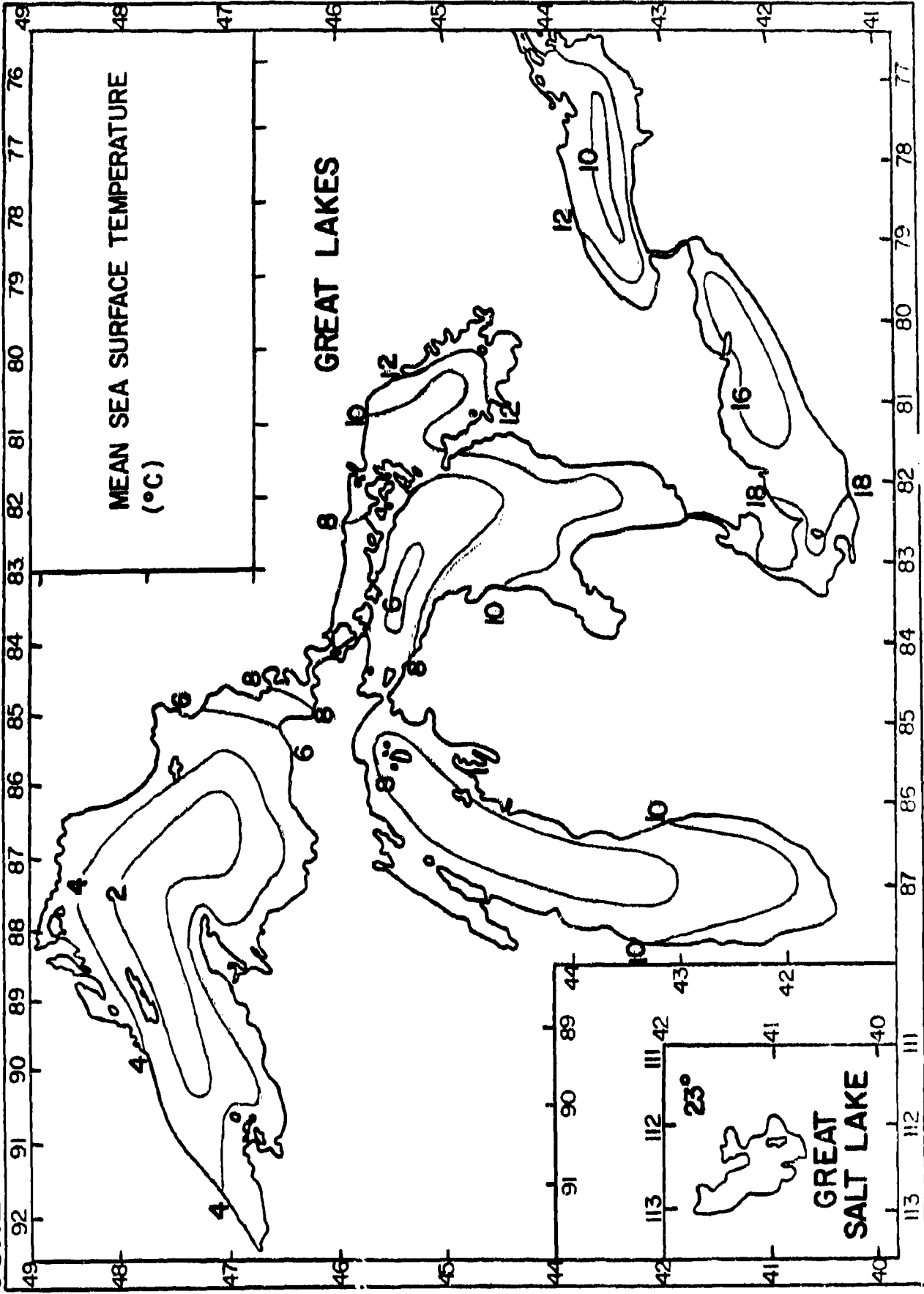
SEA SURFACE TEMPERATURE

**MEAN SEA SURFACE TEMPERATURE
(°C)**

GREAT LAKES

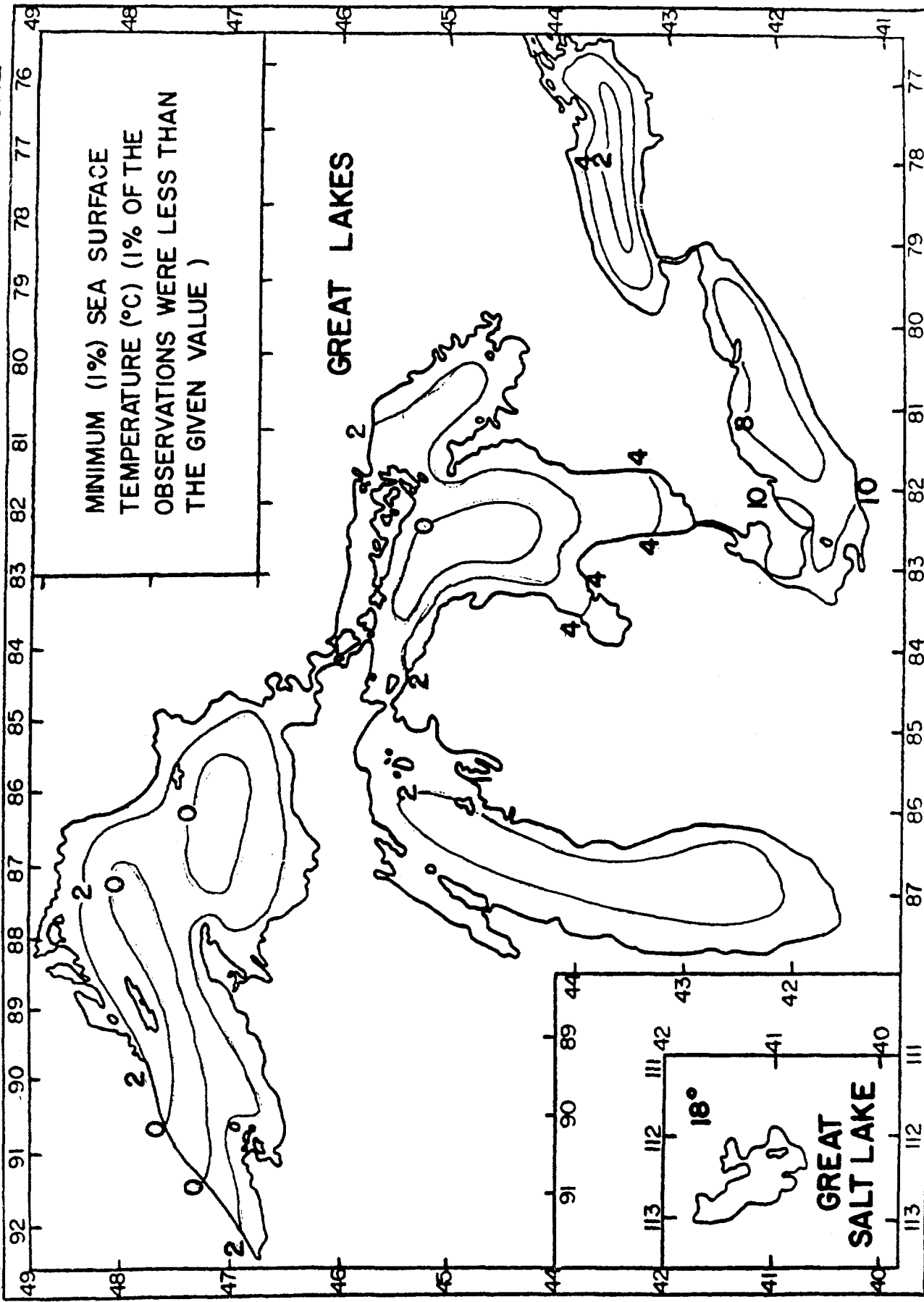
**GREAT
SALT LAKE**

23°



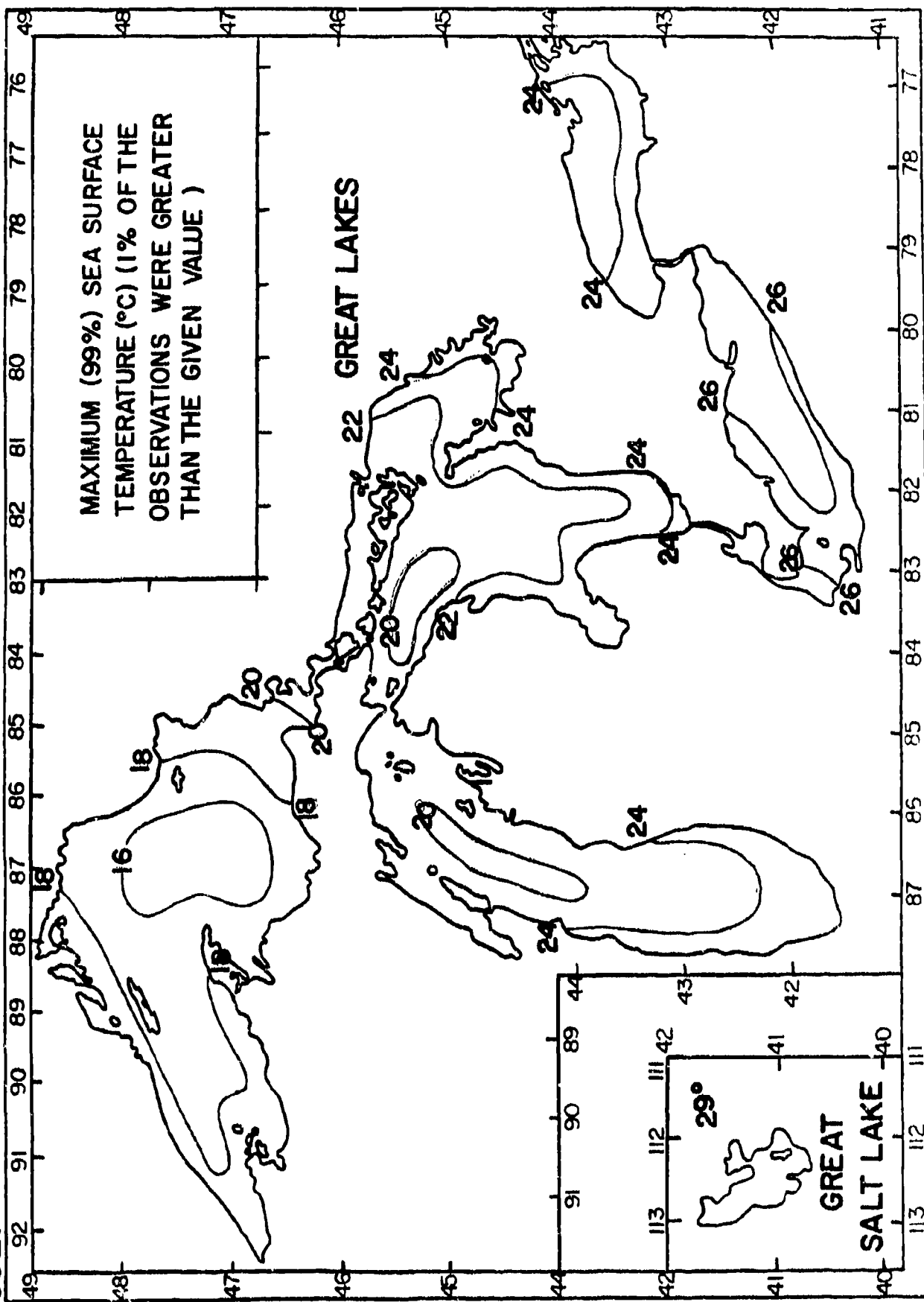
JUNE

SEA SURFACE TEMPERATURE



JULY

SEA SURFACE TEMPERATURE

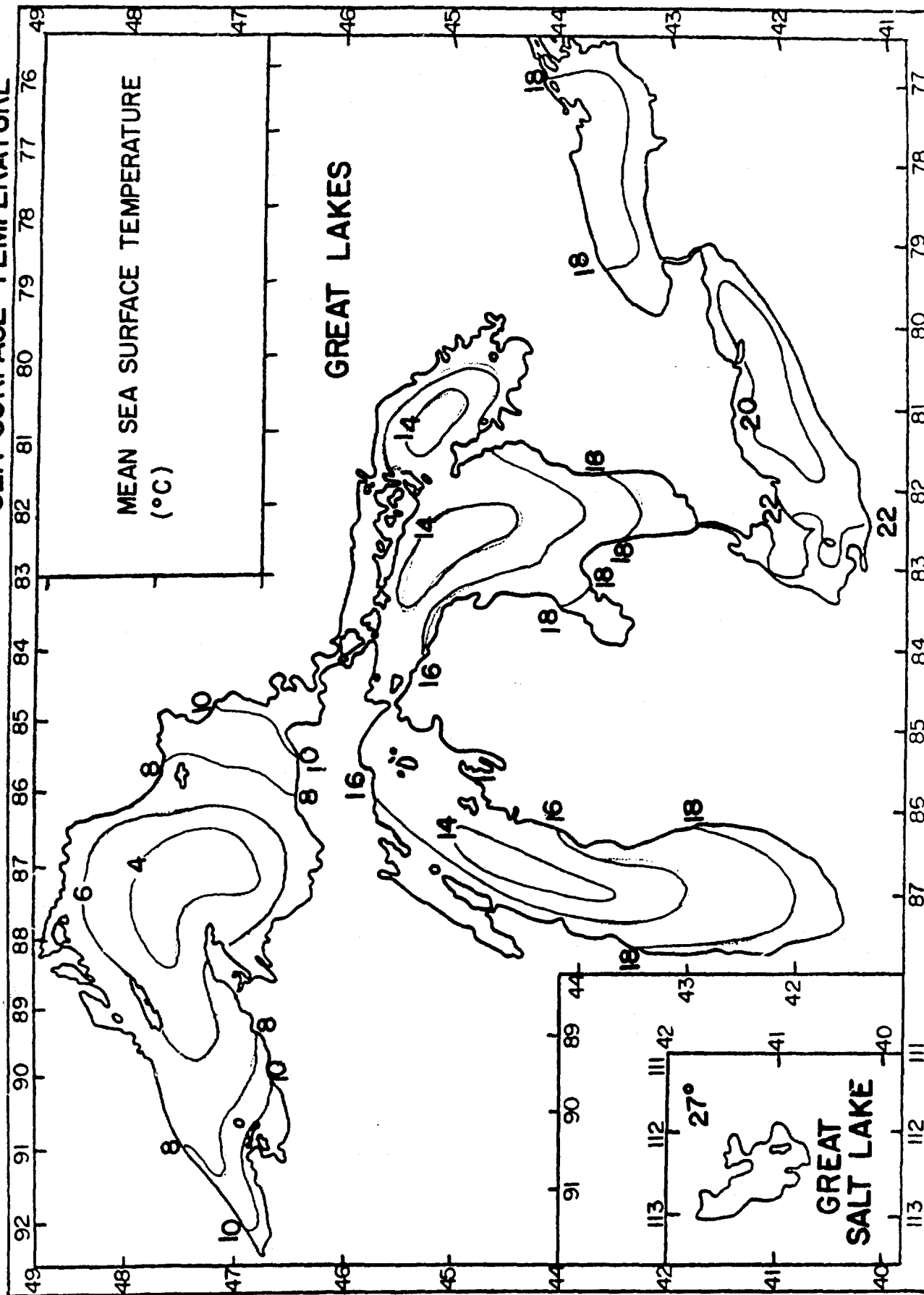


JULY

SEA SURFACE TEMPERATURE

**MEAN SEA SURFACE TEMPERATURE
(°C)**

GREAT LAKES

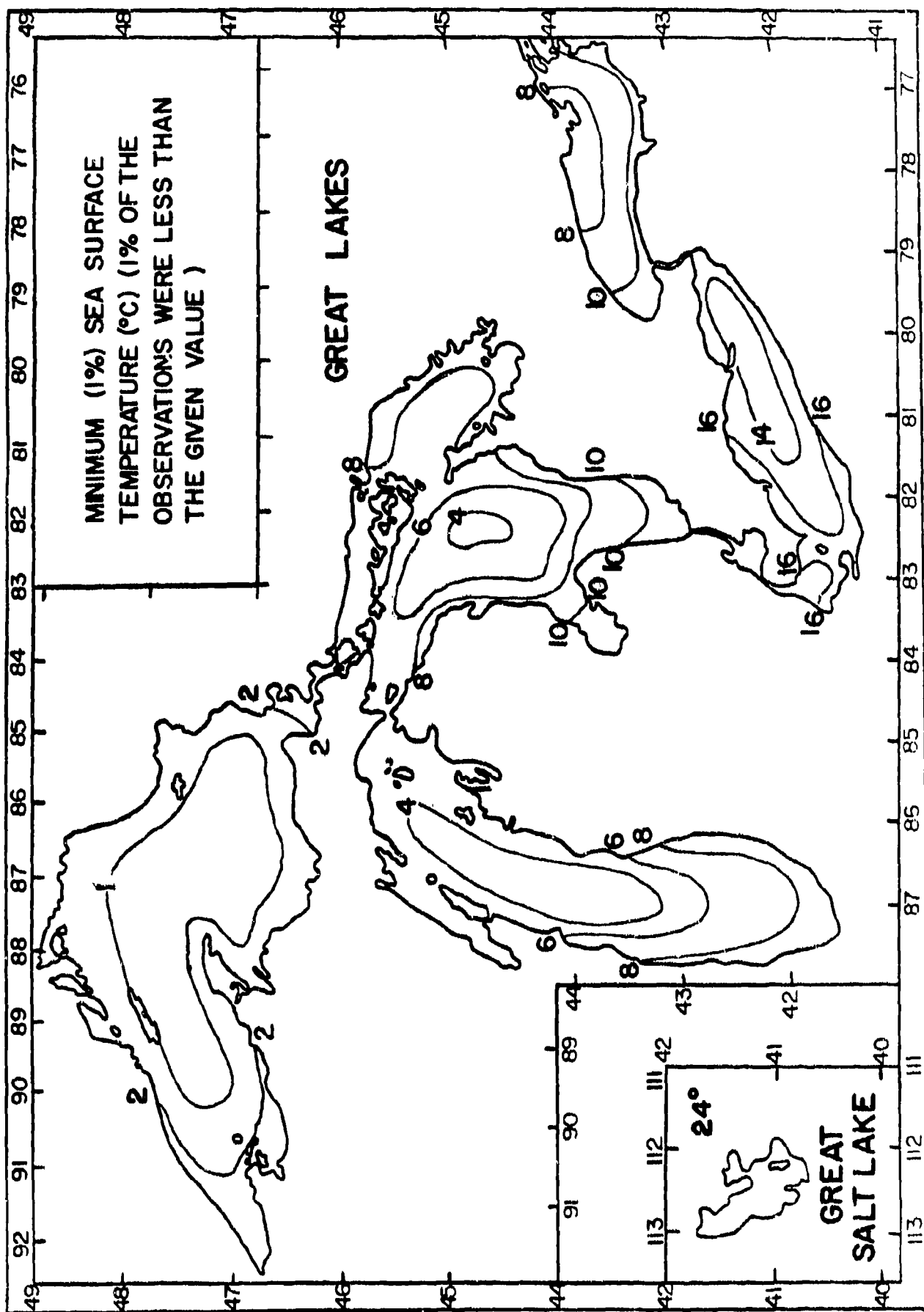


JULY

SEA SURFACE TEMPERATURE

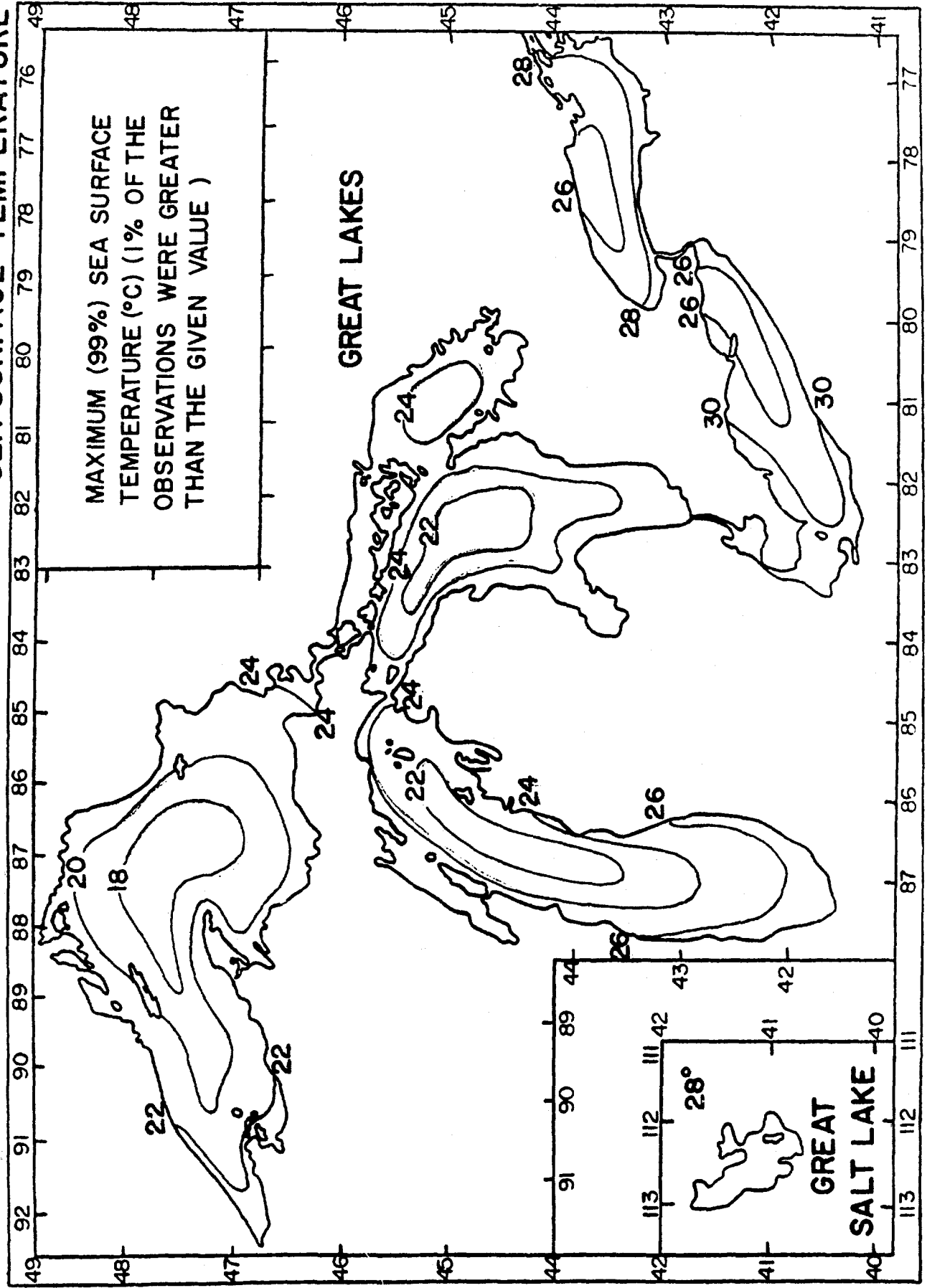
MINIMUM (1%) SEA SURFACE
TEMPERATURE (°C) (1% OF THE
OBSERVATIONS WERE LESS THAN
THE GIVEN VALUE)

GREAT LAKES



AUGUST

SEA SURFACE TEMPERATURE

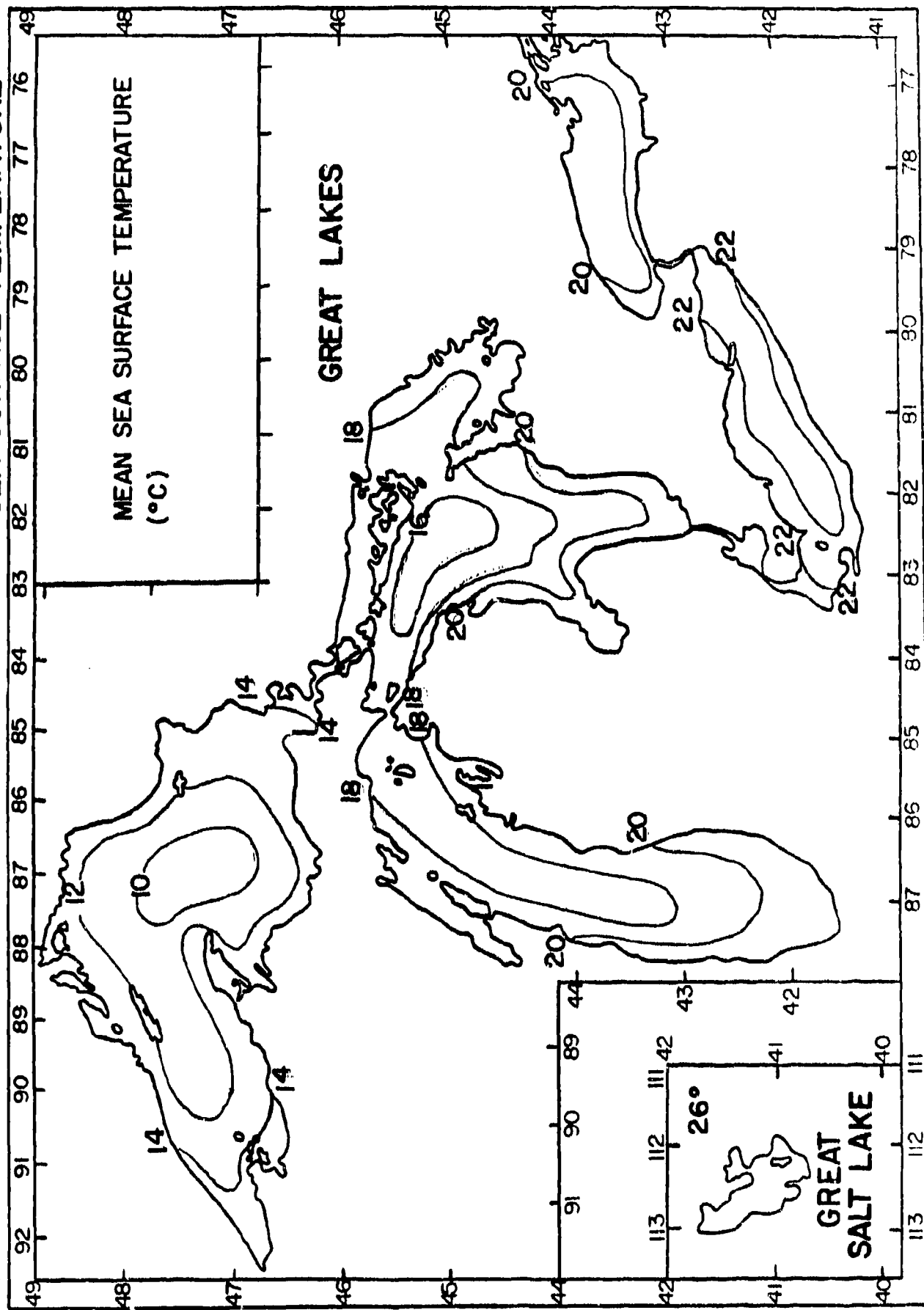


AUGUST

SEA SURFACE TEMPERATURE

**MEAN SEA SURFACE TEMPERATURE
(°C)**

GREAT LAKES

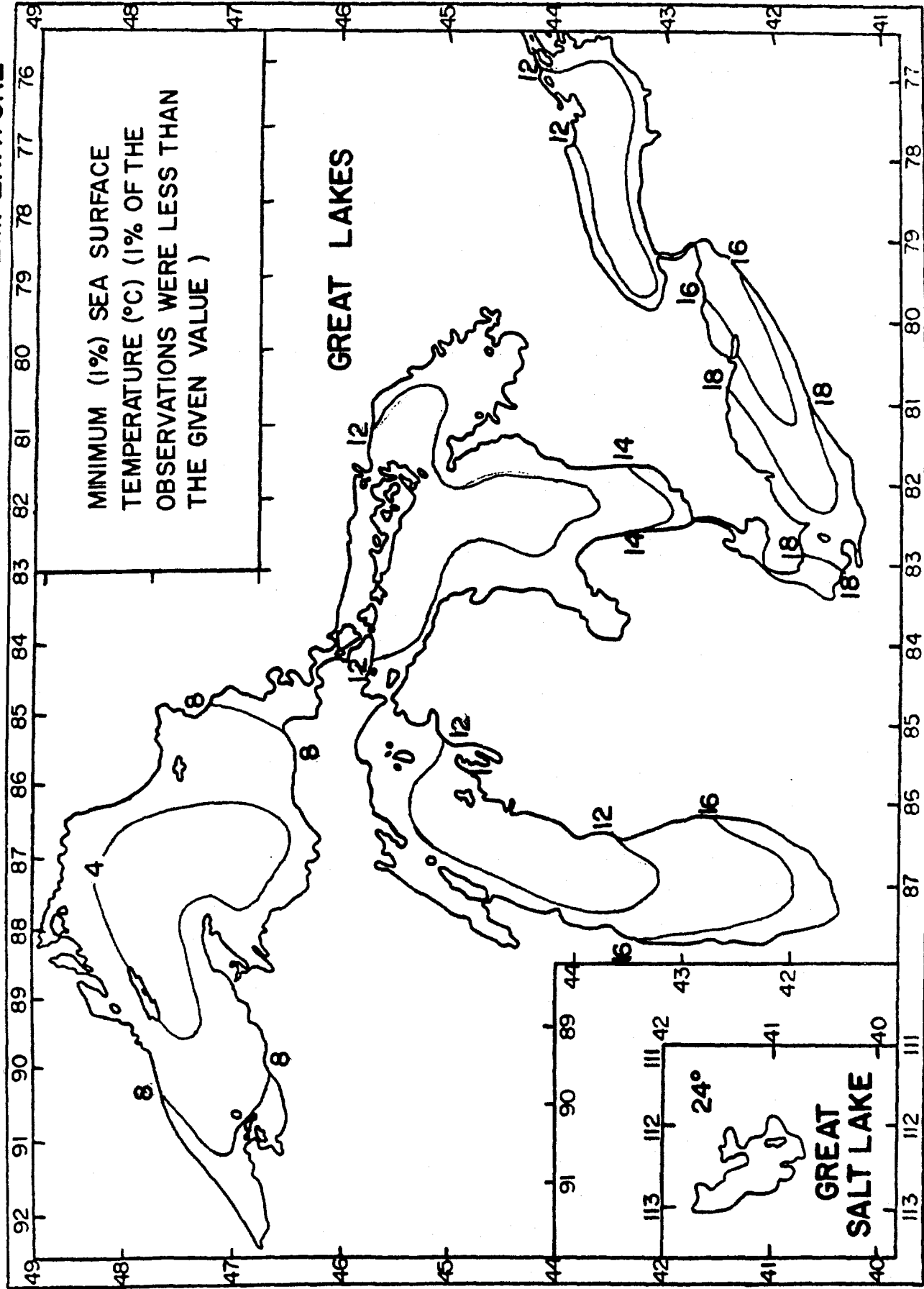


AUGUST

SEA SURFACE TEMPERATURE

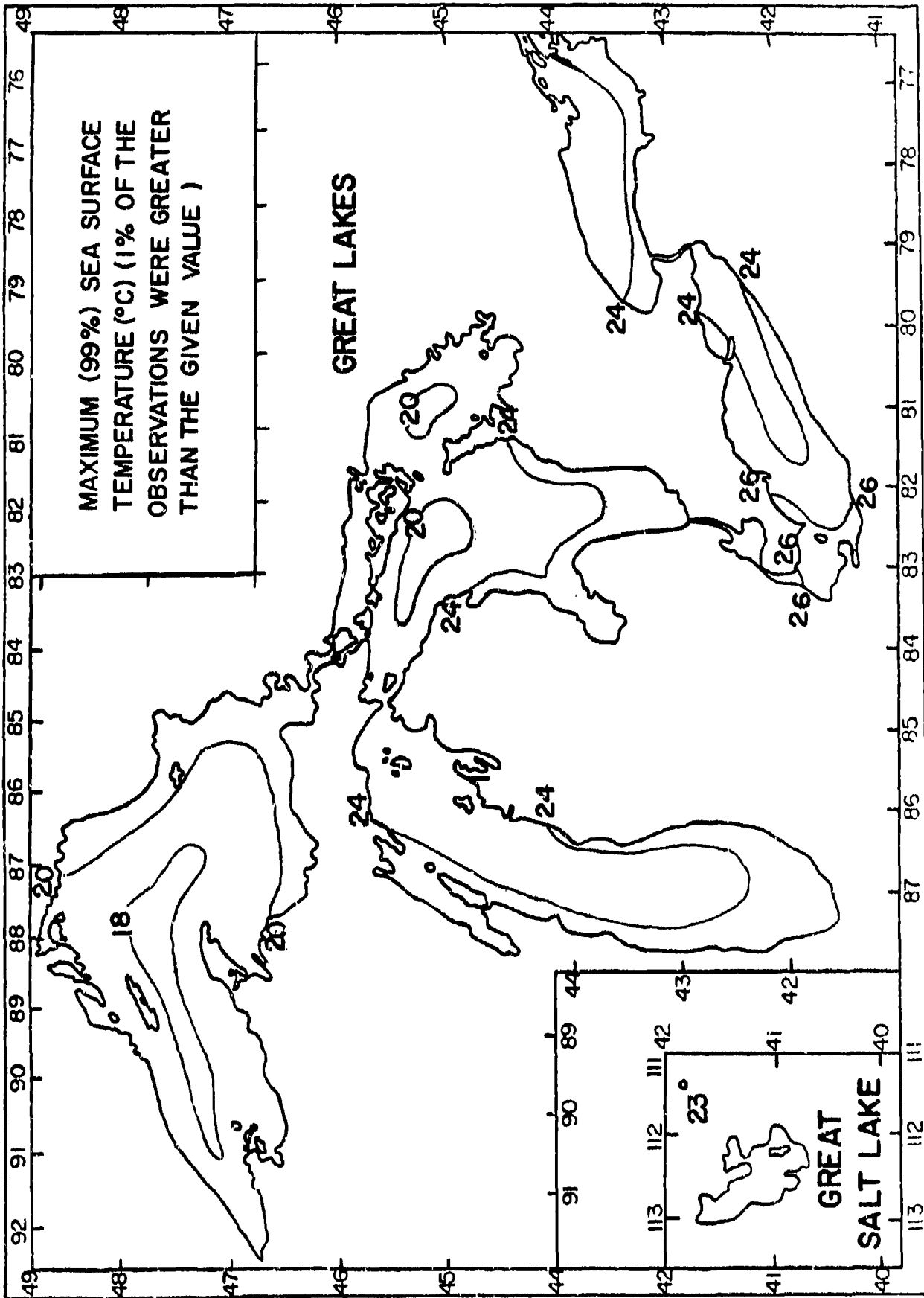
MINIMUM (1%) SEA SURFACE
TEMPERATURE (°C) (1% OF THE
OBSERVATIONS WERE LESS THAN
THE GIVEN VALUE)

GREAT LAKES



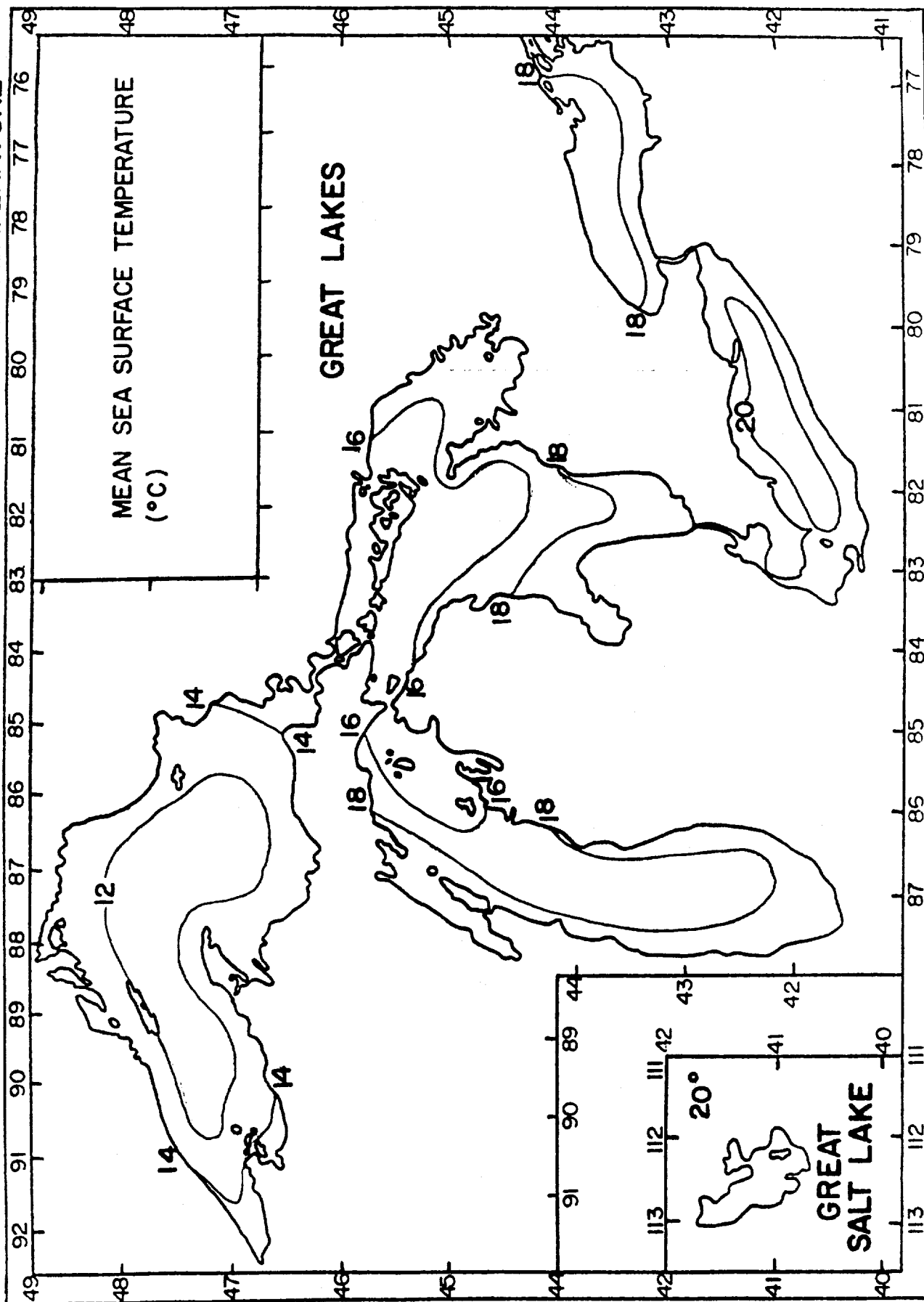
SEPTEMBER

SEA SURFACE TEMPERATURE



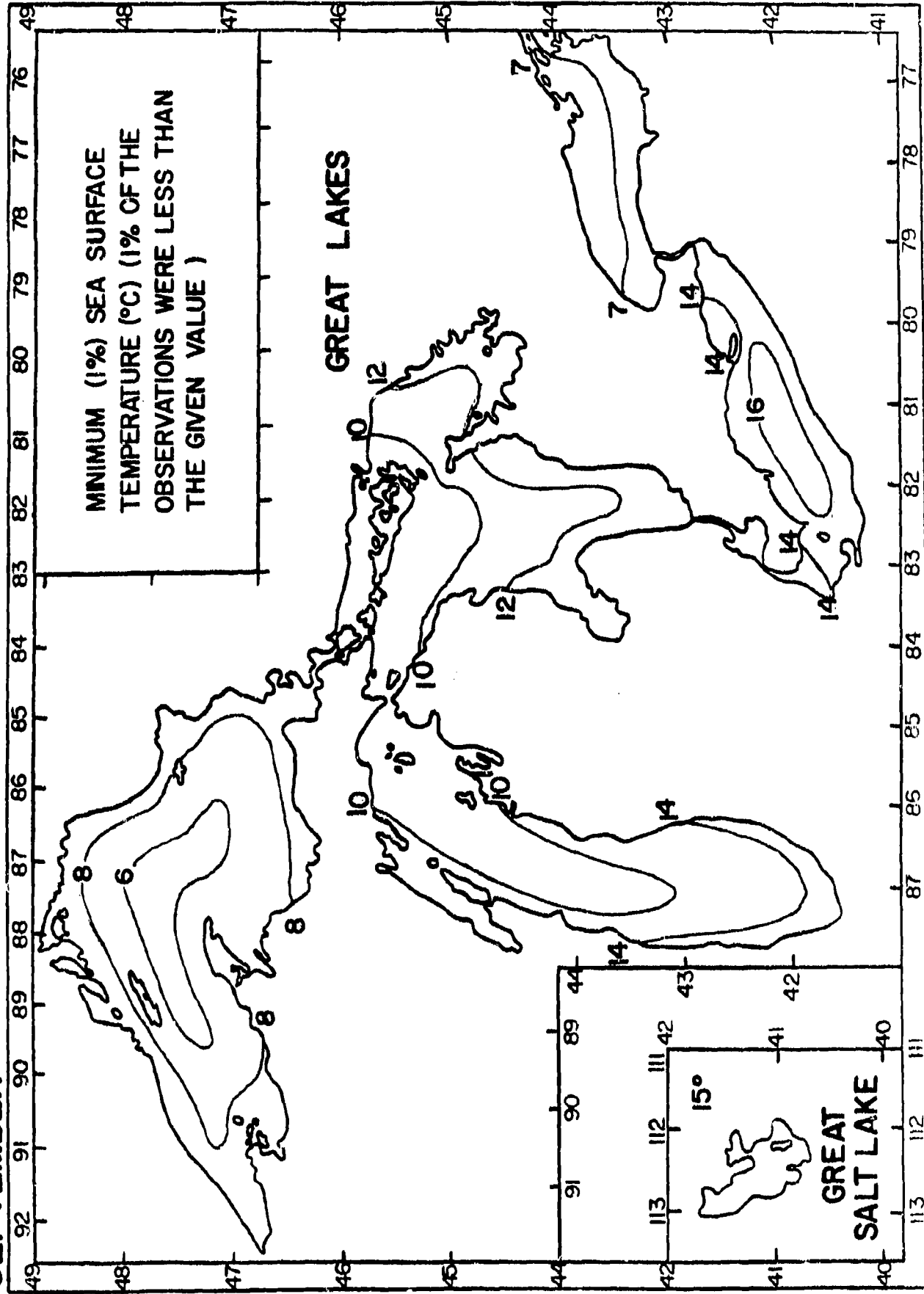
SEPTEMBER

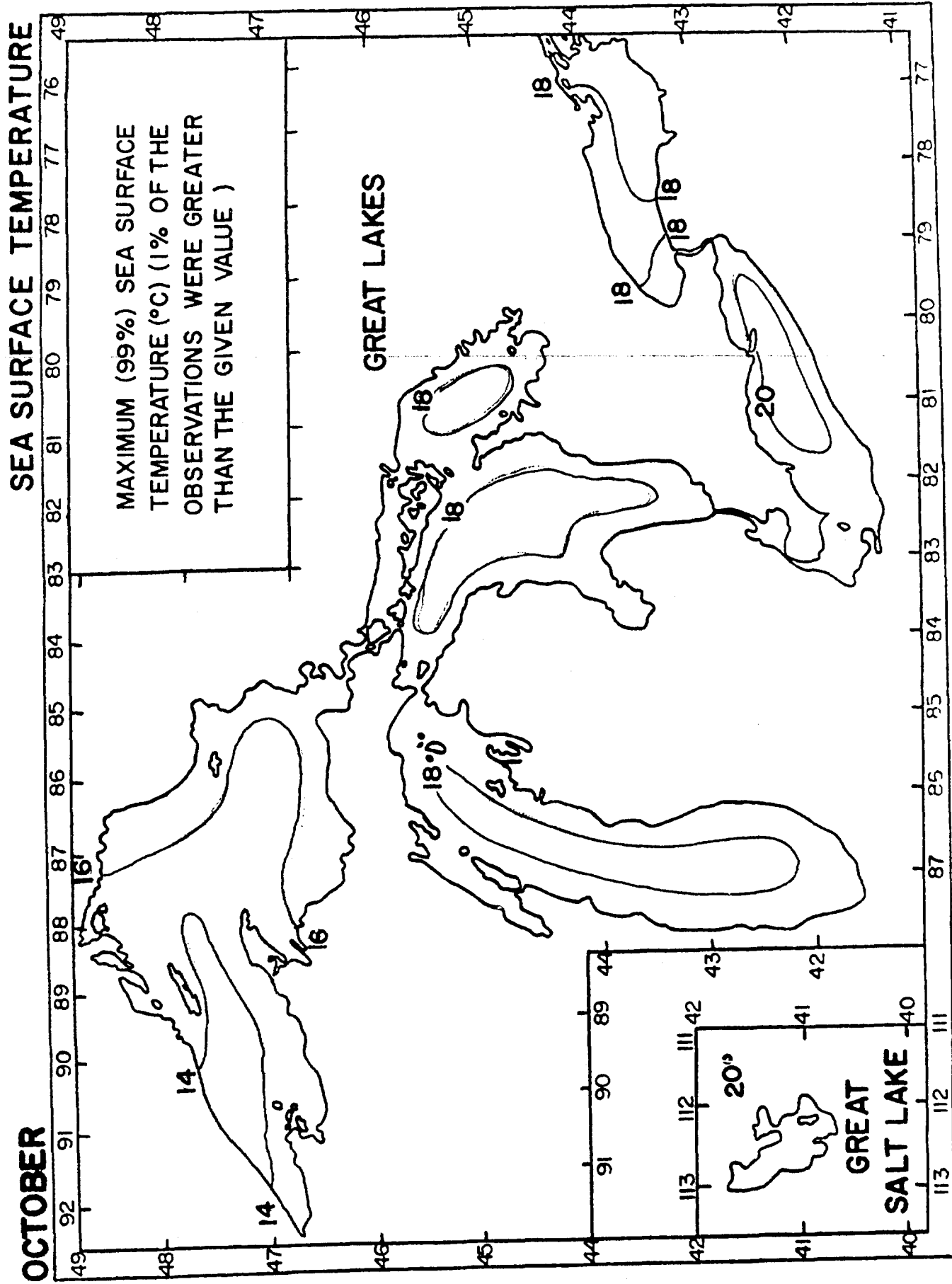
SEA SURFACE TEMPERATURE



SEPTEMBER

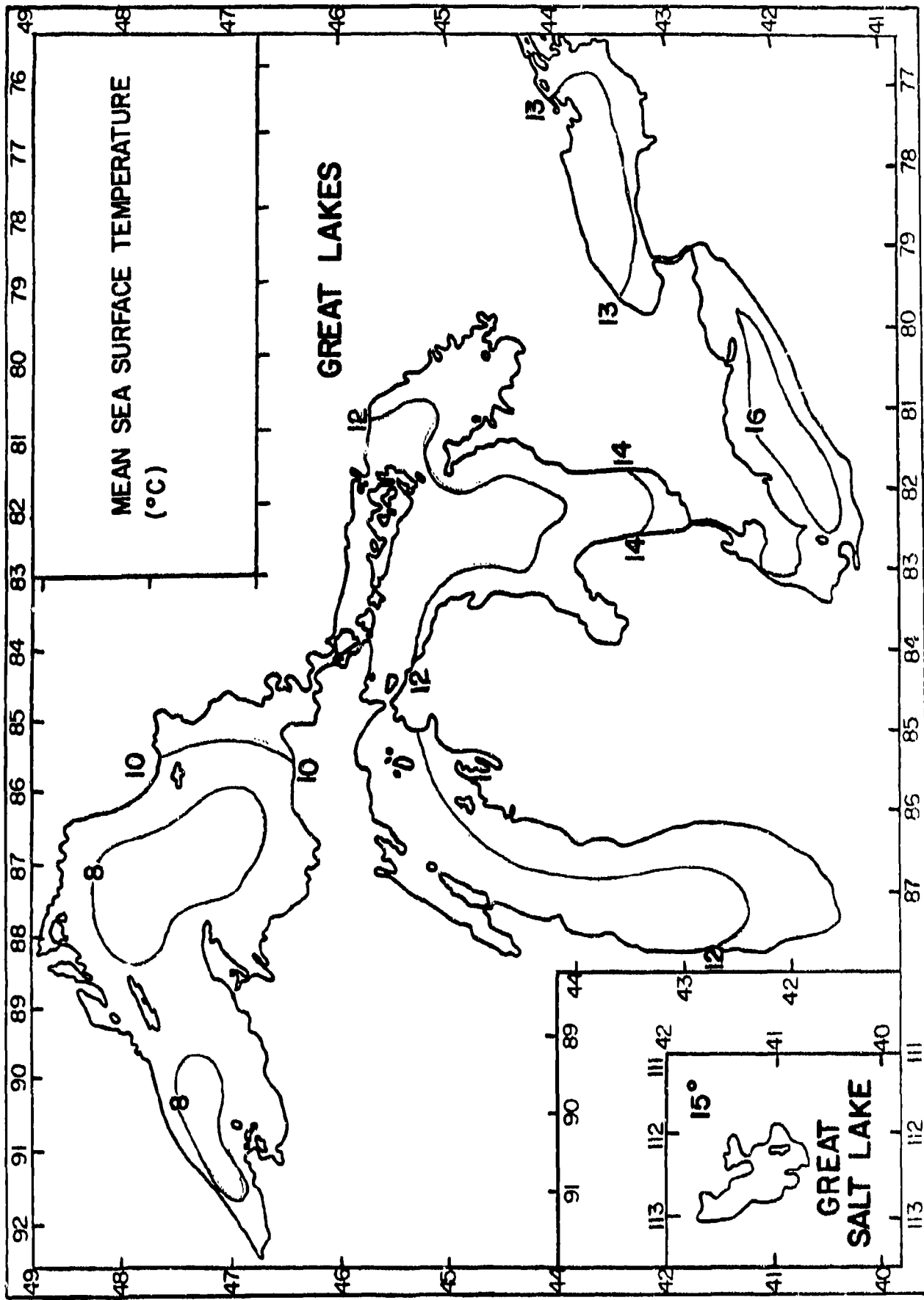
SEA SURFACE TEMPERATURE





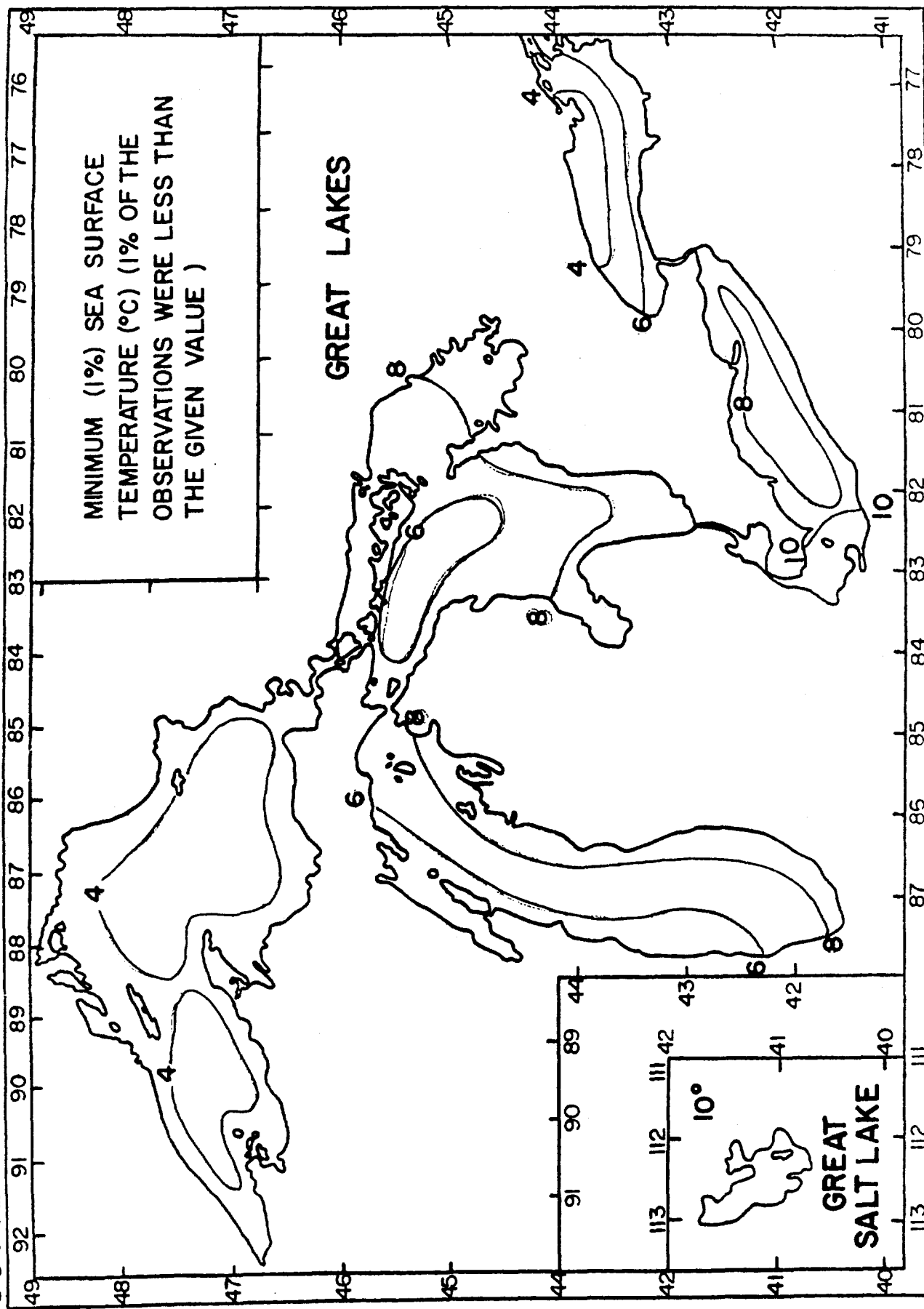
OCTOBER

SEA SURFACE TEMPERATURE



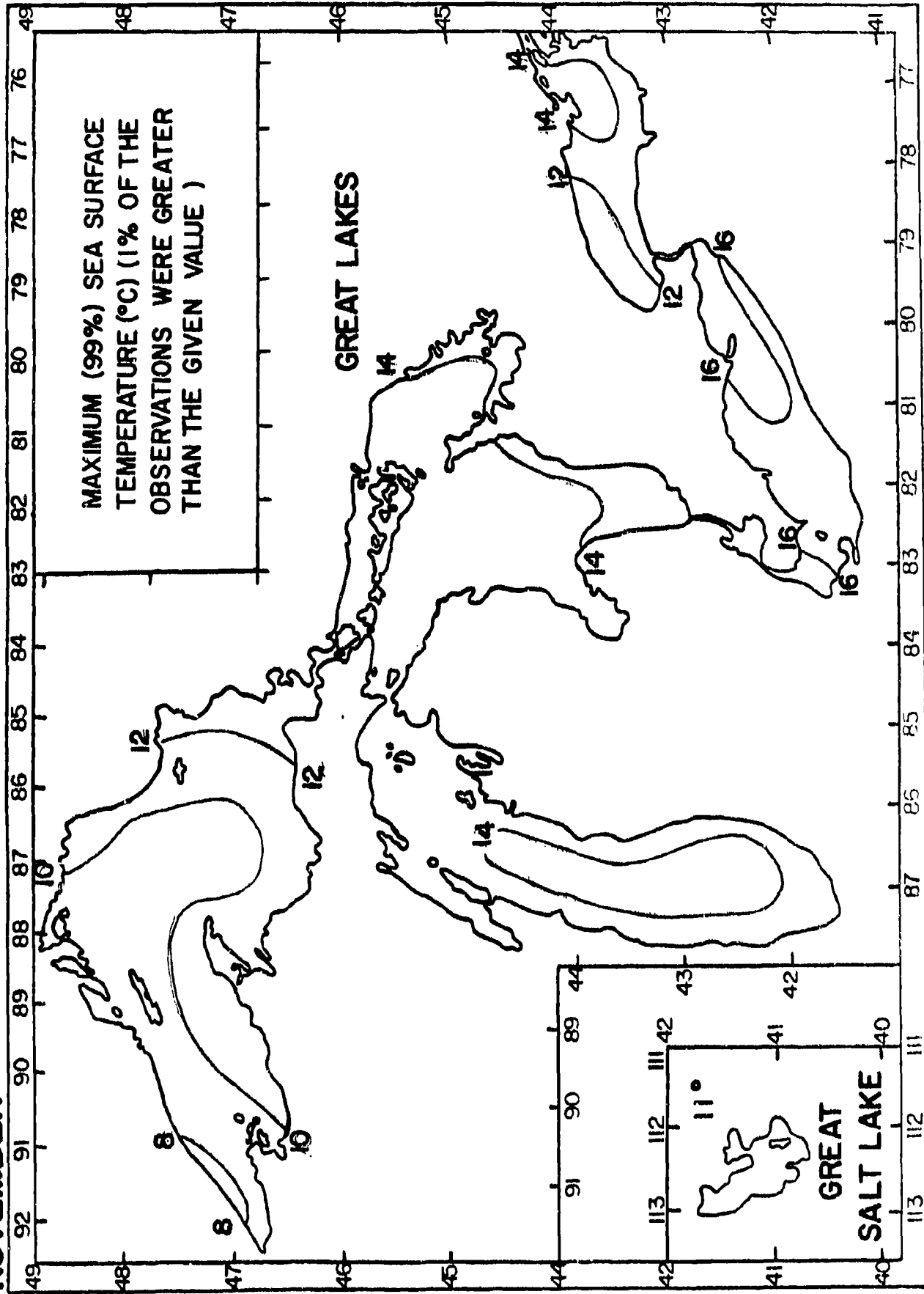
OCTOBER

SEA SURFACE TEMPERATURE



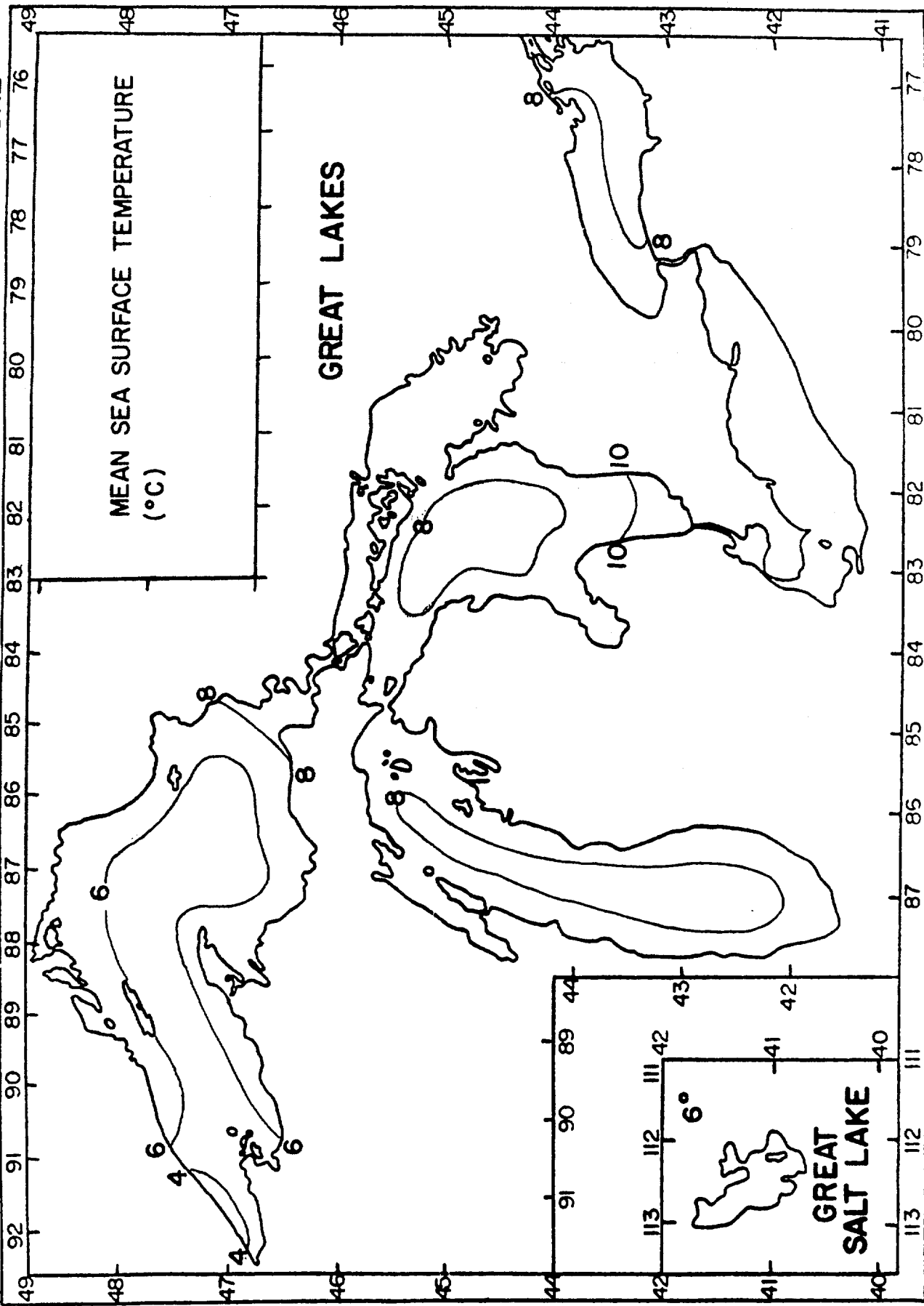
NOVEMBER

SEA SURFACE TEMPERATURE



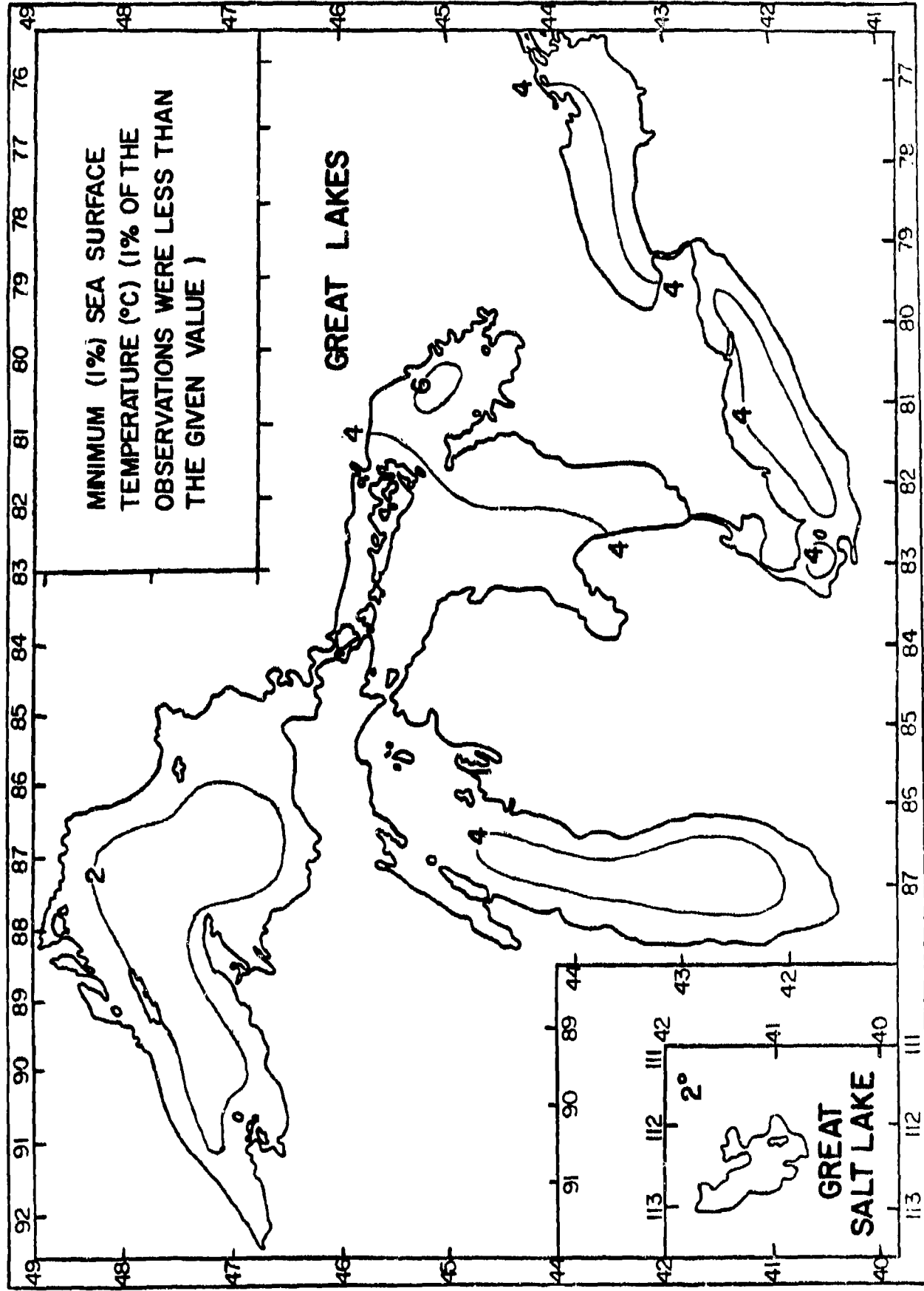
NOVEMBER

SEA SURFACE TEMPERATURE



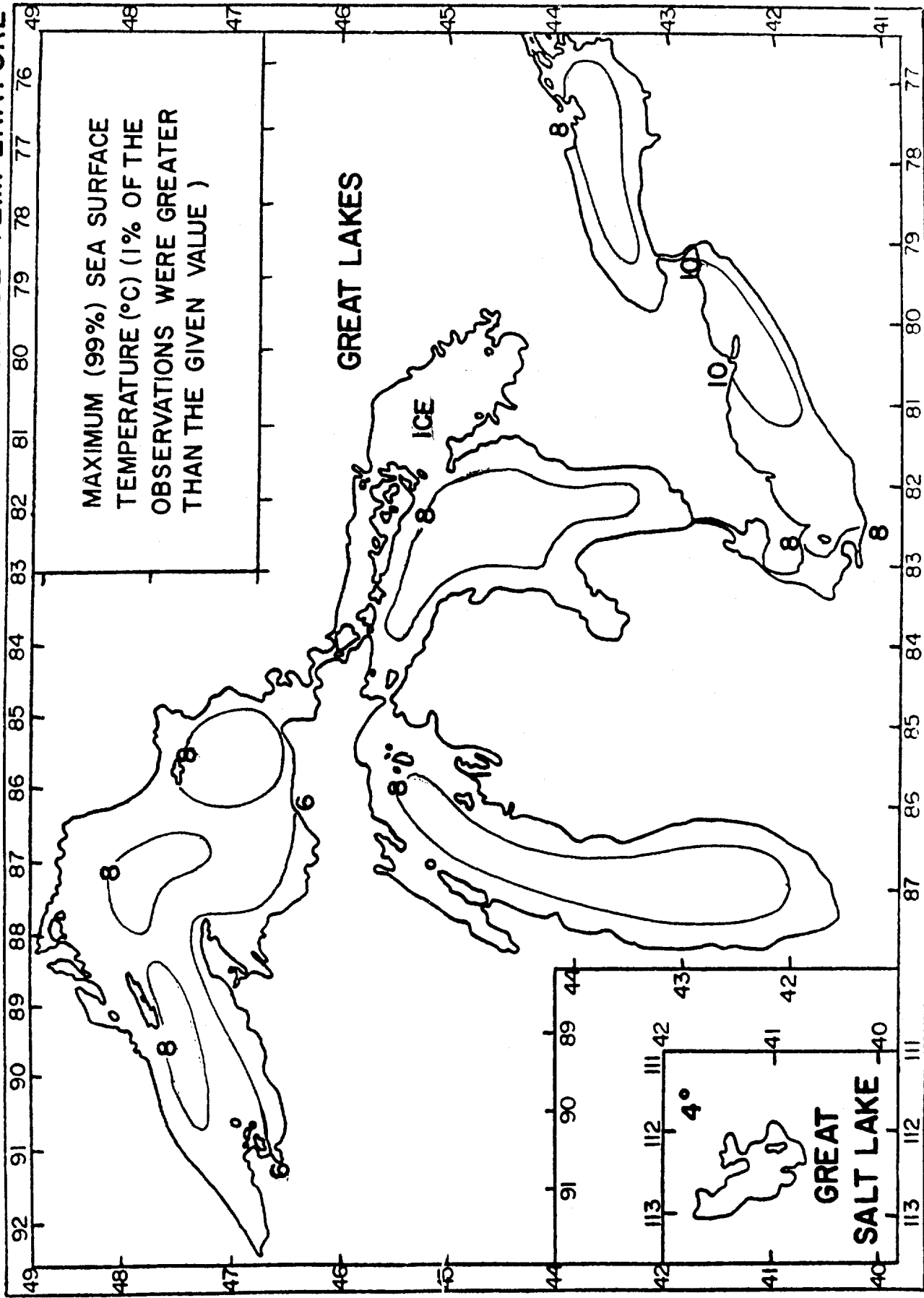
NOVEMBER

SEA SURFACE TEMPERATURE



DECEMBER

SEA SURFACE TEMPERATURE



DECEMBER

SEA SURFACE TEMPERATURE

MEAN SEA SURFACE TEMPERATURE
(°C)

GREAT LAKES

ICE

GREAT
SALT LAKE

2°

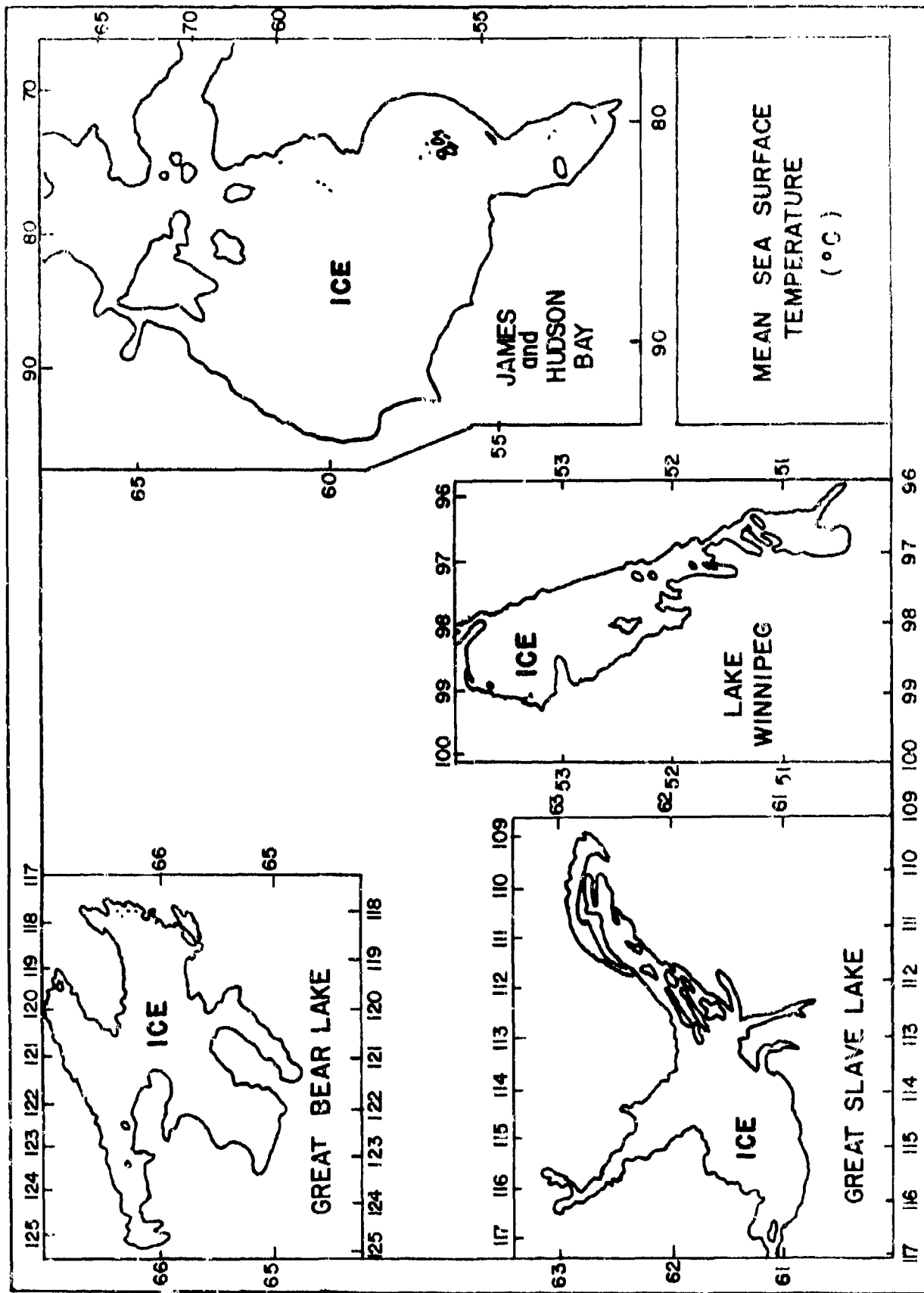
SEA SURFACE TEMPERATURE



CANADIAN
LAKES and BAYS
TEMPERATURE CHARTS

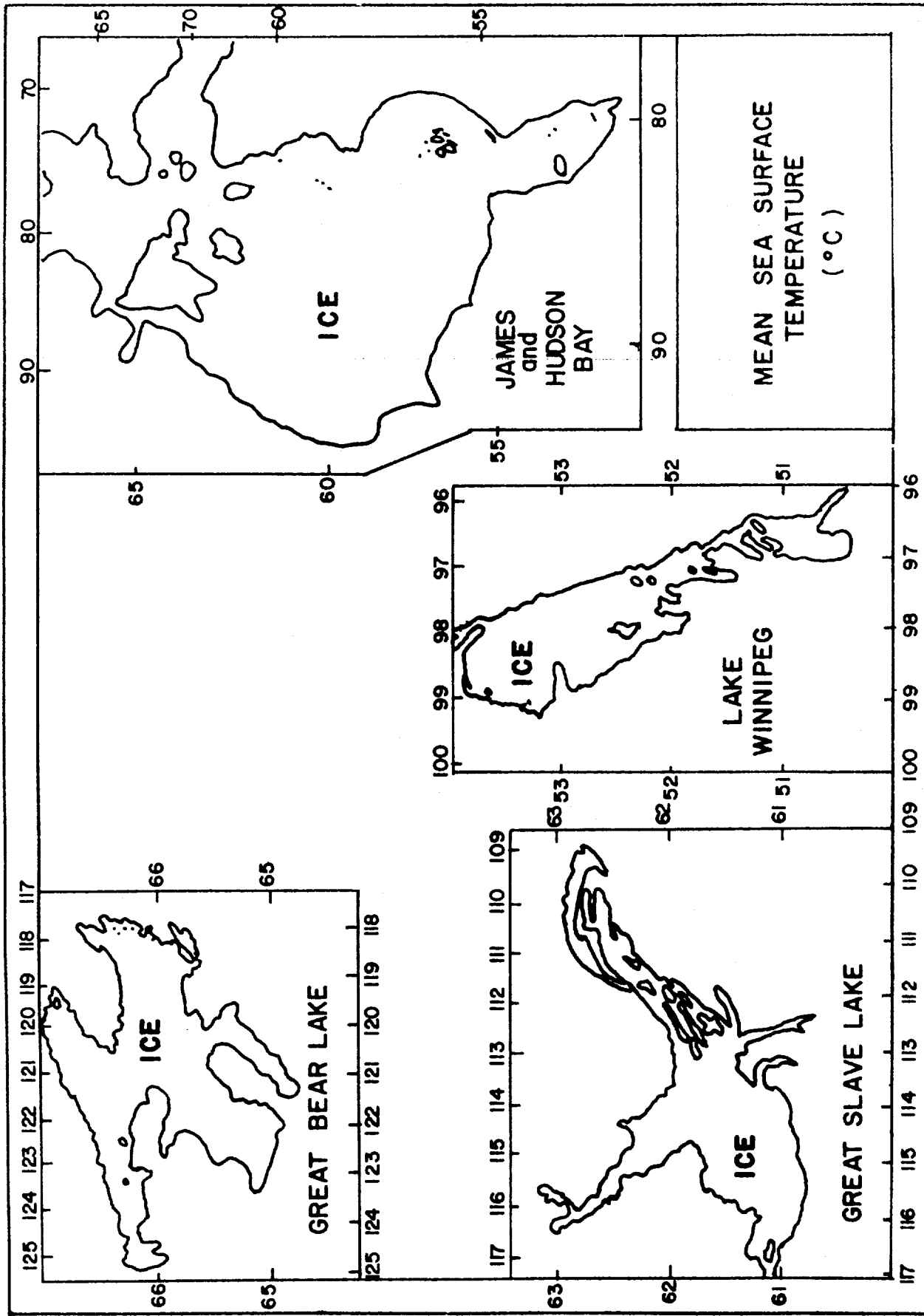
JANUARY

SEA SURFACE TEMPERATURE



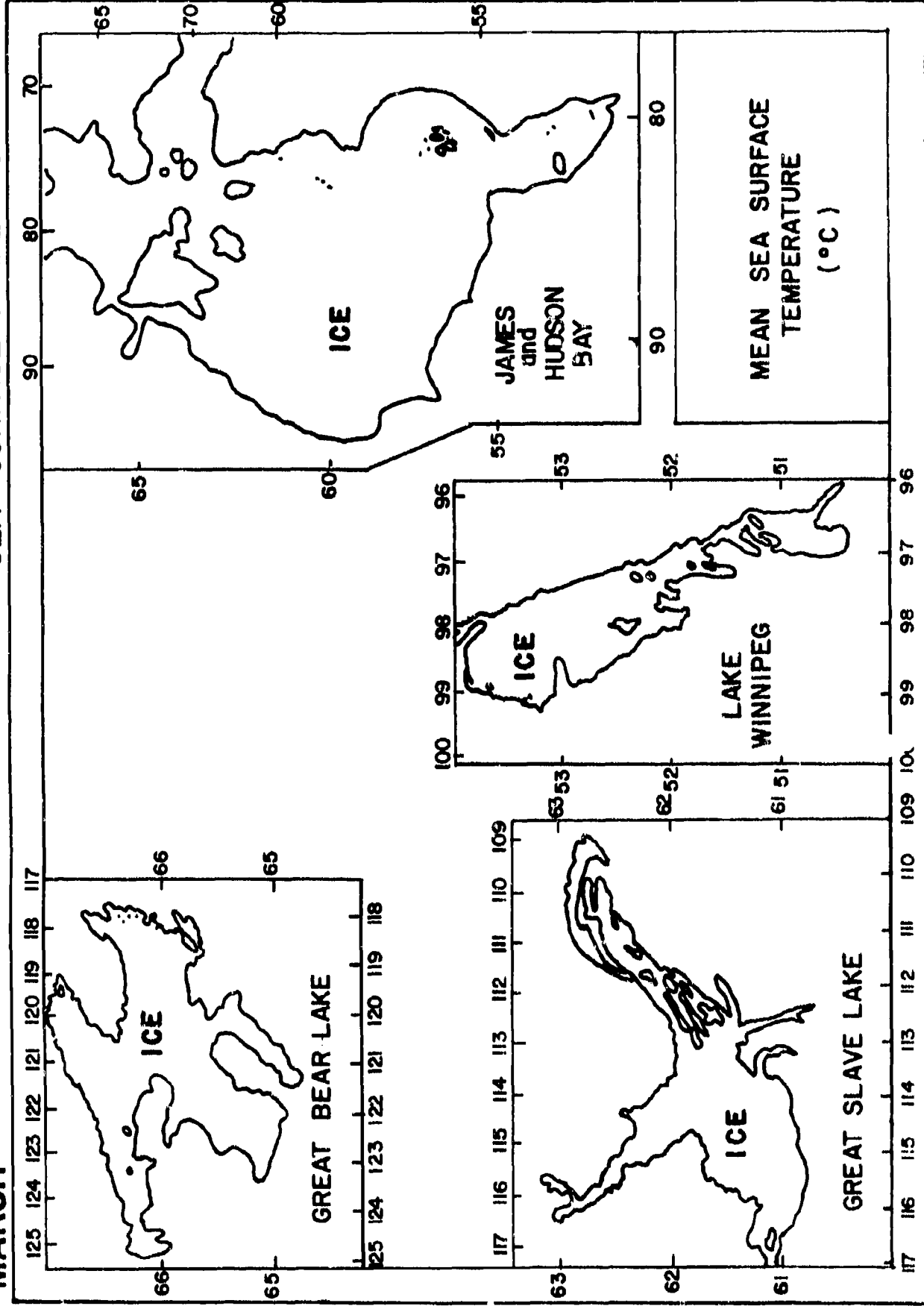
FEBRUARY

SEA SURFACE TEMPERATURE



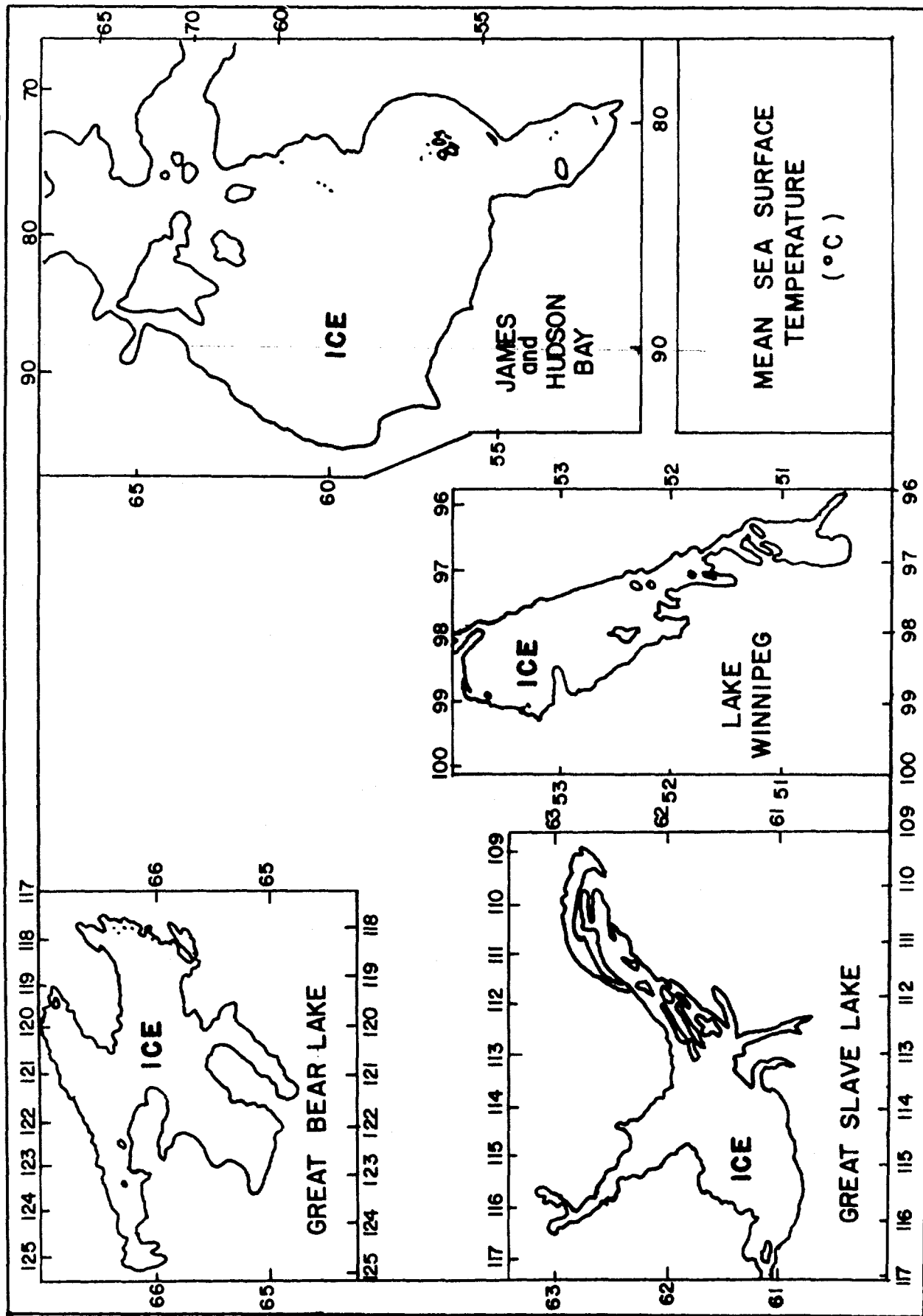
MARCH

SEA SURFACE TEMPERATURE



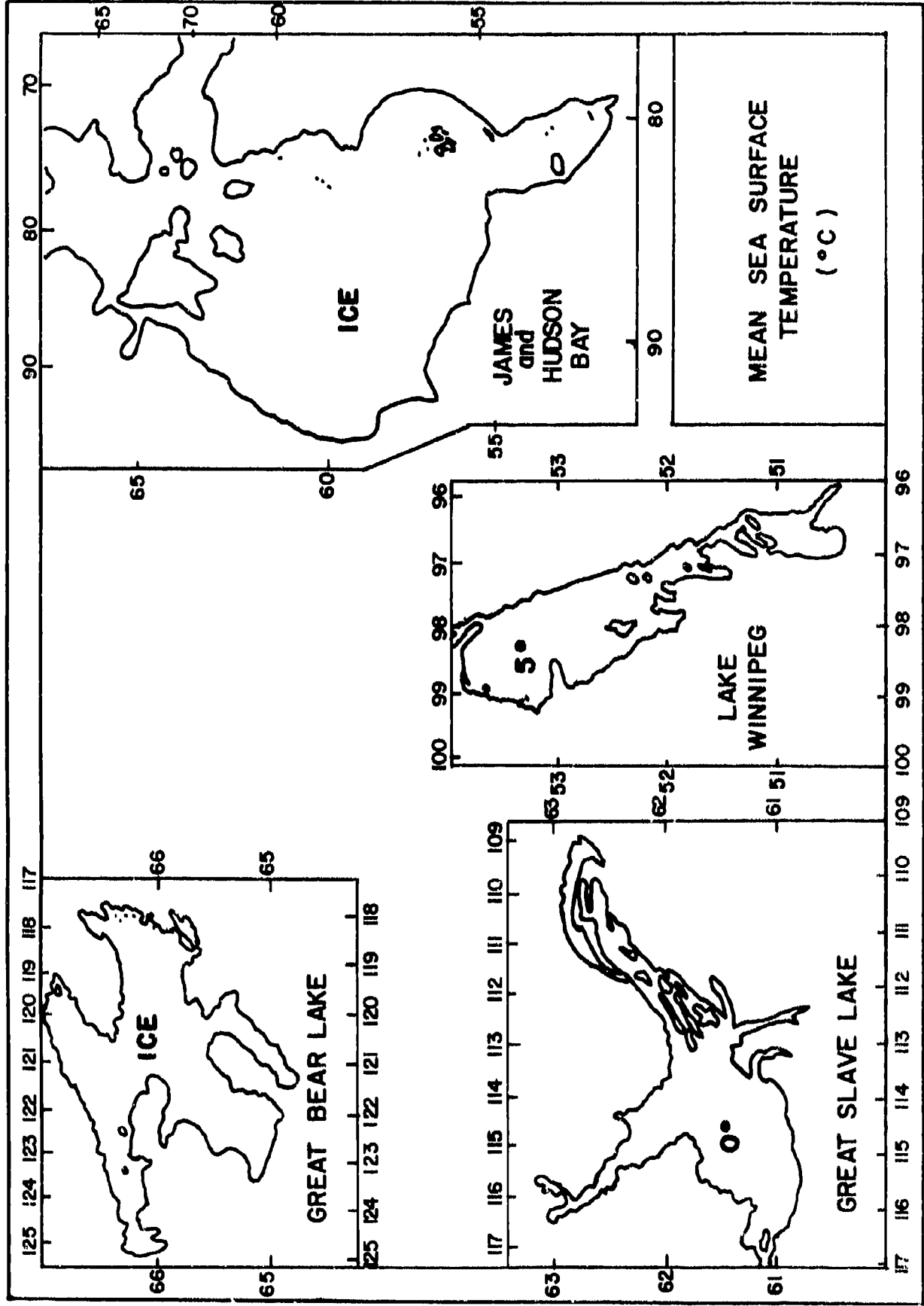
APRIL

SEA SURFACE TEMPERATURE



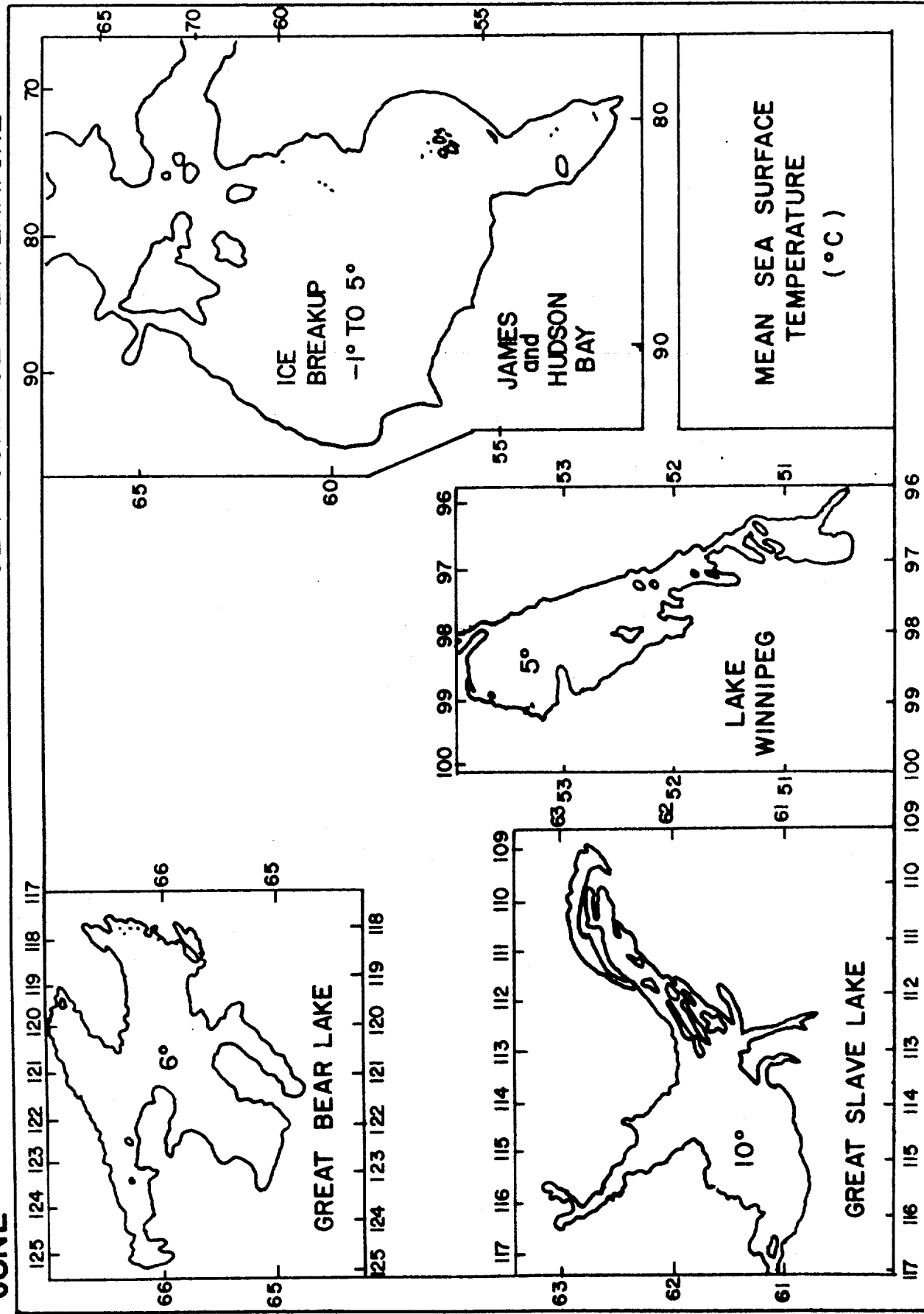
MAY

SEA SURFACE TEMPERATURE



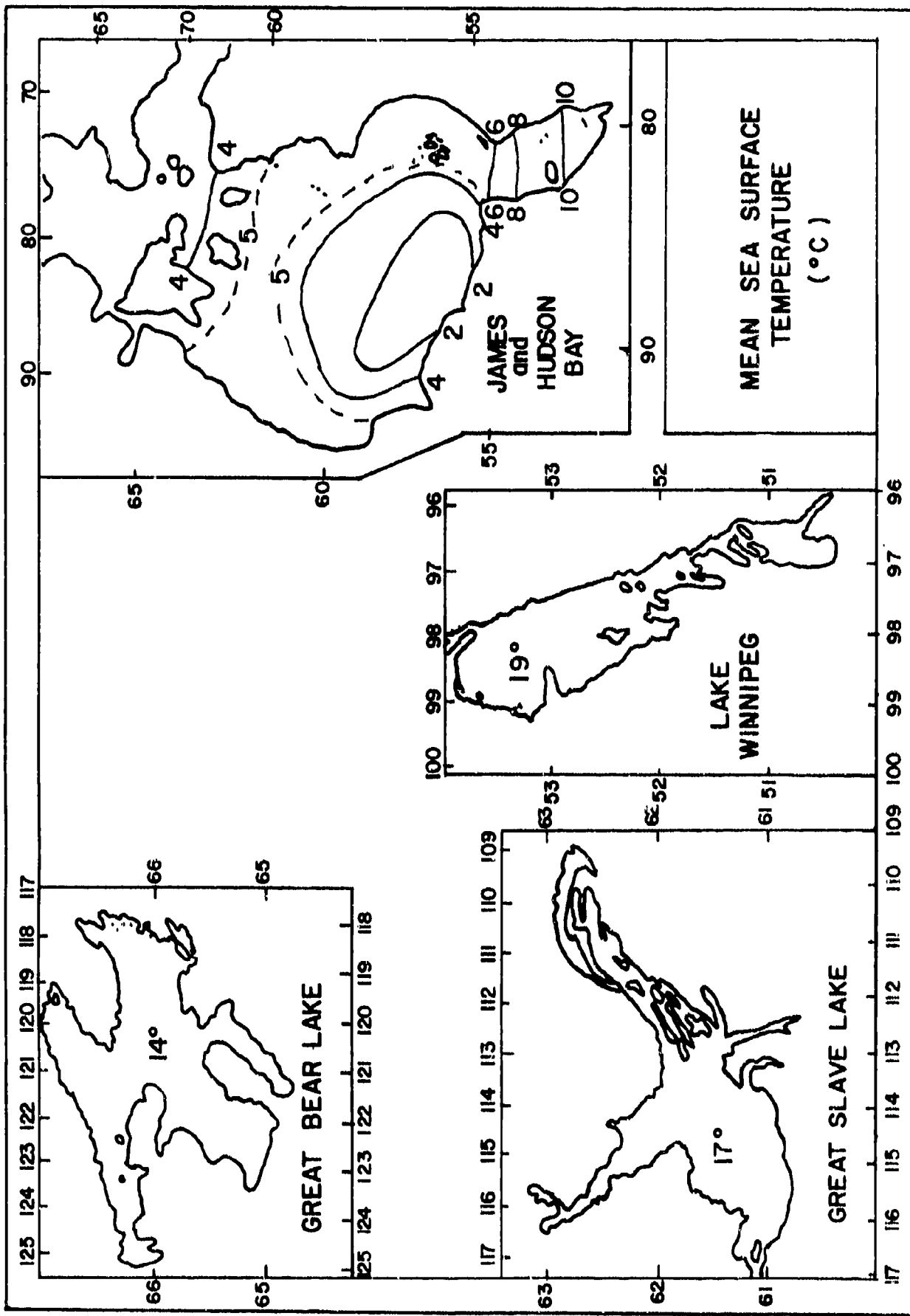
JUNE

SEA SURFACE TEMPERATURE



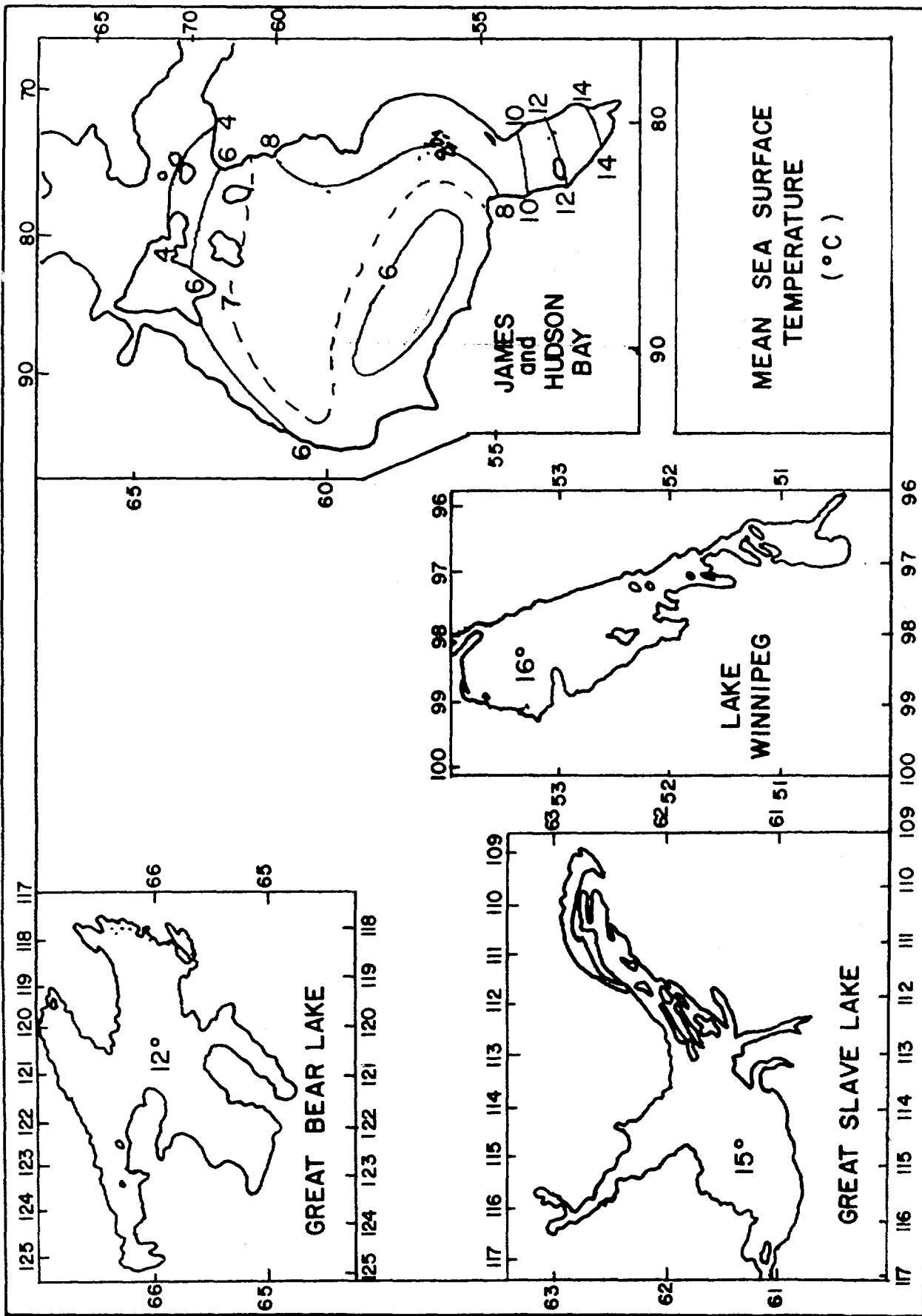
JULY

SEA SURFACE TEMPERATURE



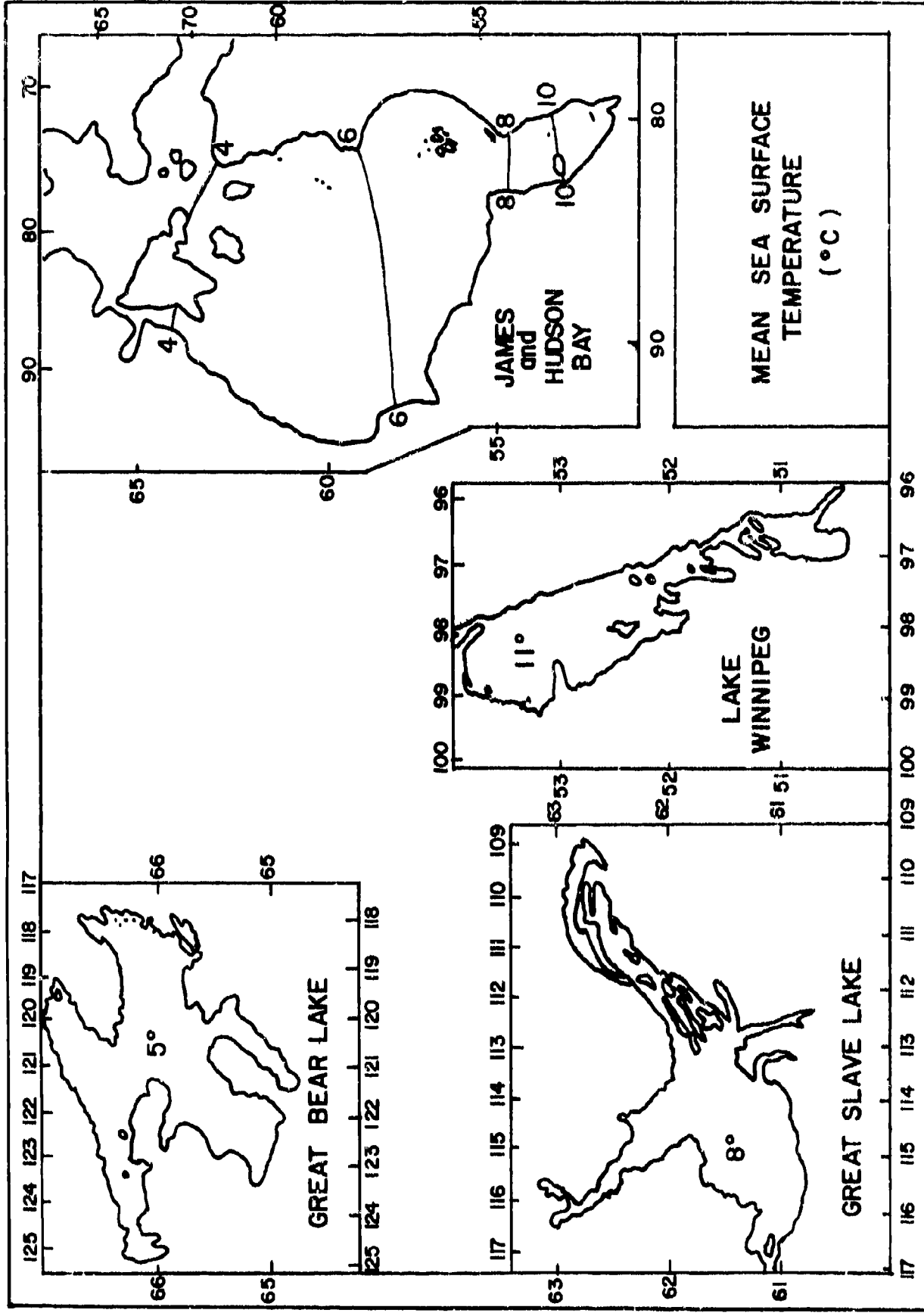
AUGUST

SEA SURFACE TEMPERATURE



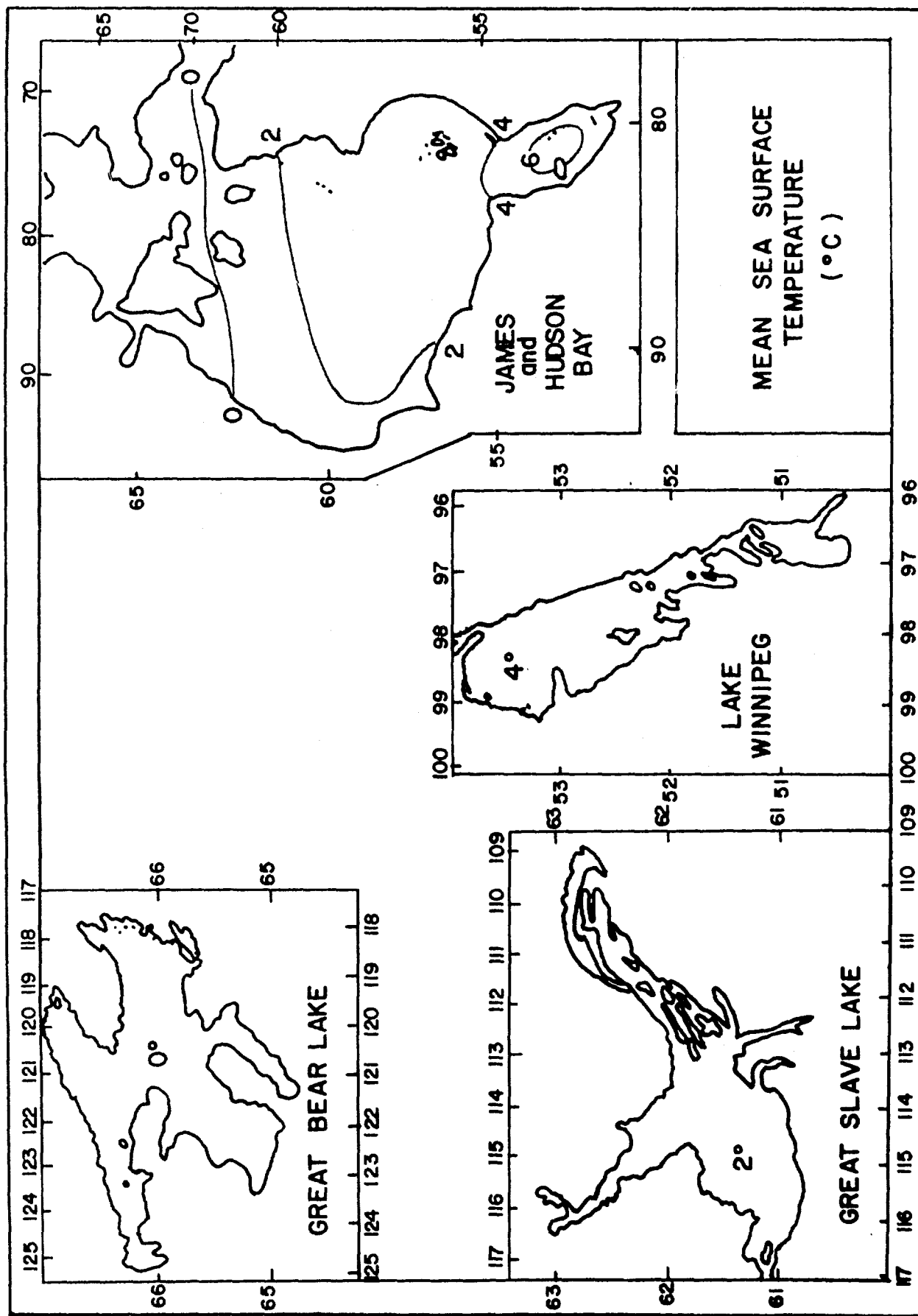
SEPTEMBER

SEA SURFACE TEMPERATURE



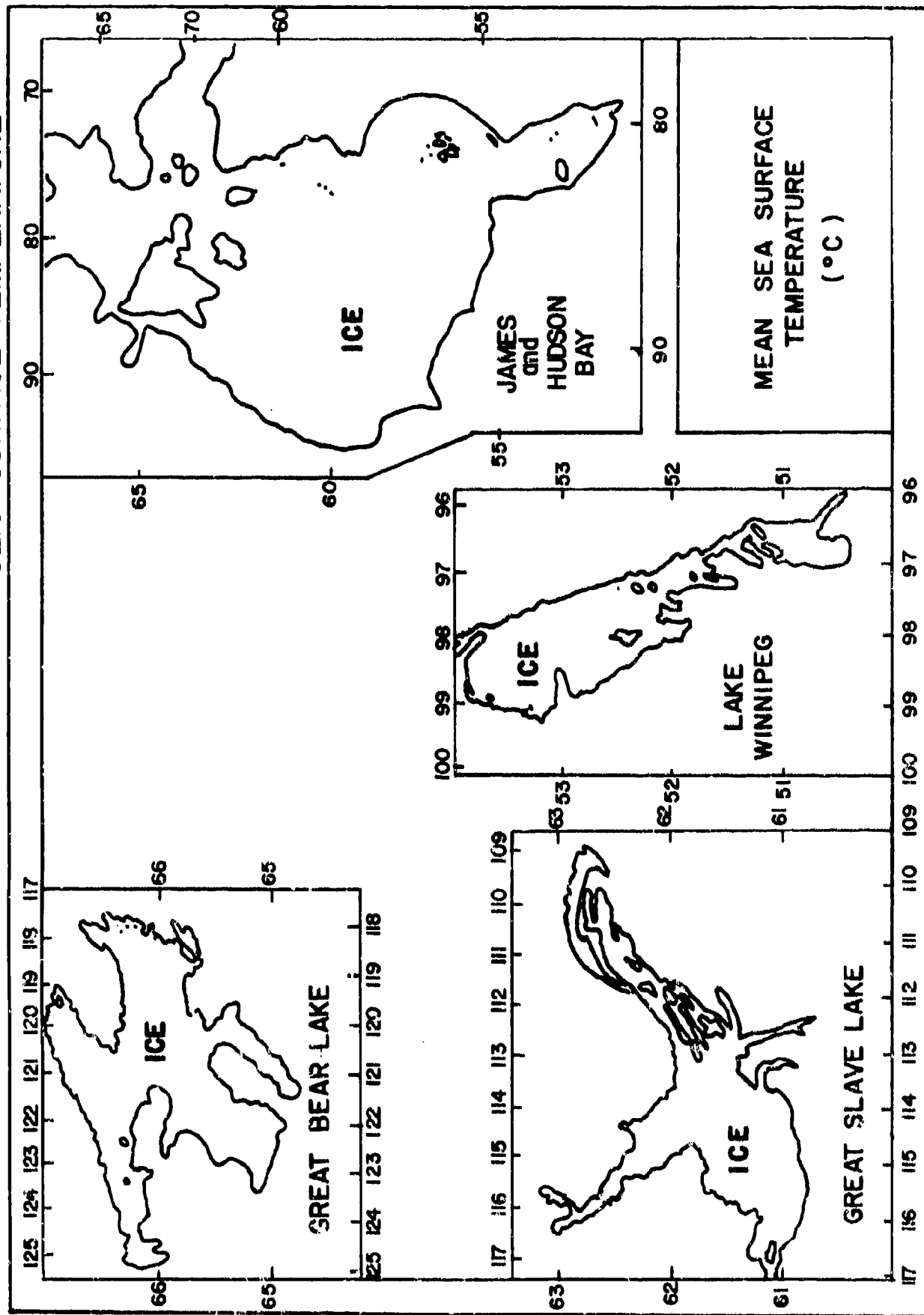
OCTOBER

SEA SURFACE TEMPERATURE



NOVEMBER

SEA SURFACE TEMPERATURE



DECEMBER

SEA SURFACE TEMPERATURE

