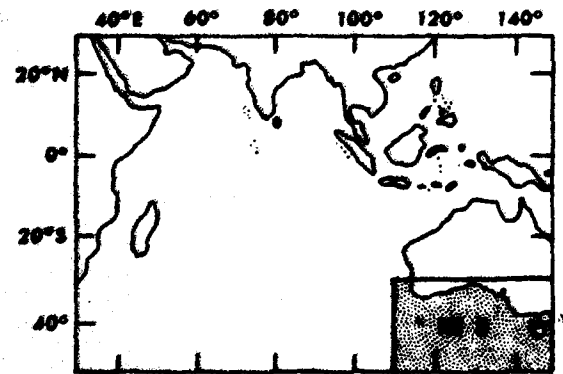


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NAVAL OCEANOGRAPHIC OFFICE

SURFACE CURRENTS

SOUTHEAST INDIAN OCEAN IN THE GREAT AUSTRALIAN BAY



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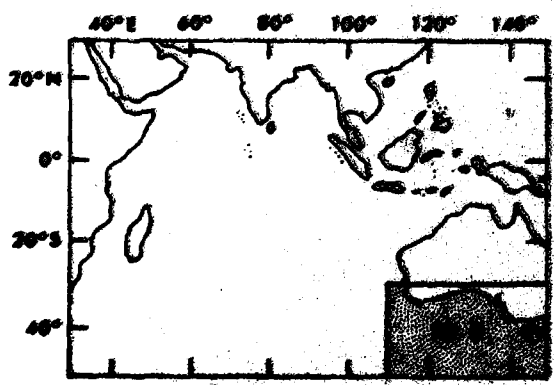
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SURFACE CURRENTS

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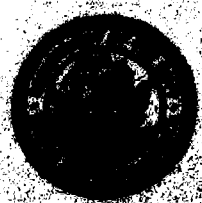
EAST INDIAN OCEAN INCLUDING THE GREAT AUSTRALIAN BIGHT

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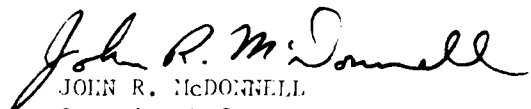
Messrs. Raymond J. Beauchesne* and William E. Boisvert made major contributions to this atlas.

Mr. Beauchesne presently is employed by the Bureau of Naval Personnel.

FOREWORD

THIS ATLAS, ONE IN A SERIES OF 43 REGIONAL SURFACE CURRENT ATLASES, IS PRODUCED TO FULFILL A NEED OF NAVY PLANNING STAFFS AND THE SCIENTIFIC AND INDUSTRIAL COMMUNITIES FOR THE LATEST AVAILABLE OCEAN SURFACE CURRENT DATA. THESE ATLASES ADD TO THE WEALTH OF NAUTICAL INFORMATION UPON WHICH OPERATIONAL PLANNING, NAVIGATIONAL SAFETY, AND SHIPPING ECONOMY DEPEND. RAPID PRODUCTION AND WIDE DISSEMINATION OF THIS ATLAS ARE MADE POSSIBLE BY THE LATEST COMPUTER TECHNIQUES.

THE CONSTANT IMPROVEMENT IN THE QUALITY OF SURFACE CURRENT DATA RECEIVED OVER THE YEARS IS MADE POSSIBLE LARGELY BY THE MORE THOROUGH REPORTS OF VOLUNTARY OBSERVERS IN RECENT YEARS. THE DEFENSE MAPPING AGENCY, THE OCEANOGRAPHIC OFFICE, AND THE USER OF THE ATLASES RELY ON THE PERSONAL OBSERVATIONS OF THE MAN WHO HAS "BEEN THERE." MARINERS, IN REPORTING THEIR OBSERVATIONS, RENDER A SERVICE NOT ONLY TO THEMSELVES BUT ALSO TO ALL "WHO GO DOWN TO THE SEA IN SHIPS." WITH THE ADVENT OF NUCLEAR POWER, ELECTRONIC NAVIGATION AIDS, AND 300,000-TON SHIPS, UP-TO-DATE, RAPIDLY DISSEMINATED ENVIRONMENTAL AND NAVIGATIONAL INFORMATION HAS BECOME INCREASINGLY IMPORTANT.


JOHN R. McDONNELL
Captain, U.S. Navy
Commander

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FOREWORD

IN A SERIES OF 43 REGIONAL SURFACE CURRENT ATLASES,
EDITED BY THE STAFFS OF THE NAVY PLANNING STAFFS AND THE SCIENTIFIC AND
OPERATIONAL STAFFS OF THE LATEST AVAILABLE OCEAN SURFACE CURRENT DATA.
ALTHOUGH THE ATLASES RELY UPON NAUTICAL INFORMATION UPON WHICH OPERA-
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John R. McDonnell
JOHN R. McDONNELL
Captain, U.S. Navy
Commander

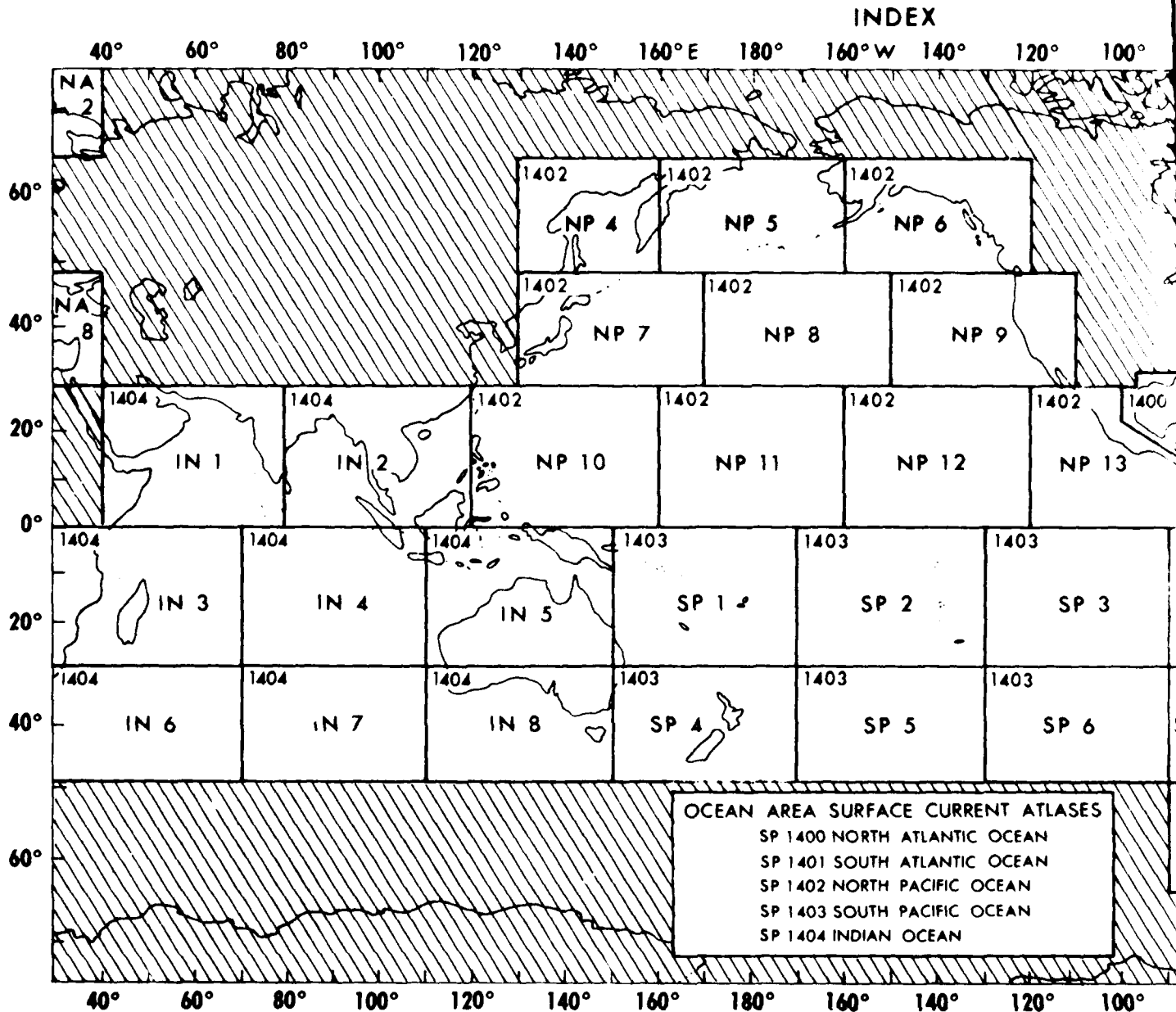
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SURFACE CURRENT ATLASES

THIS SERIES OF COMPACTIZED ATLASES REPLACES THE 11 VOLUME ROYAL NAVY PUBLISHED ATLASES OF SURFACE CURRENTS (NO. 566, 569, 569, 570) WHICH WERE MANUALLY COMPILLED FROM DATA OBTAINED DURING THE PERIOD 1903 - 1934. THESE NEW ATLASES CONFORM TO THE STANDARD NAVY OCEAN AREA AND REGION INDEX LIMITS SHOWN BELOW AND COVER THE 1400-NP 1404 AREA (NORTH PACIFIC REGION) EAST OF THE PHILIPPINES.

NO. 566
NO. 569
NO. 569
NO. 570

RECENT IMPROVEMENTS IN THE DATA FILE ASSURE THE INCLUSION OF THE LATEST, HIGHER QUALITY SURFACE CURRENT DATA AVAILABLE. THE FILE NOW CONTAINS MORE THAN 41,000 OBSERVATIONS AND A GENERAL MAP OF THE FILE WILL BE MADE.



SURFACE CURRENT ATLASES

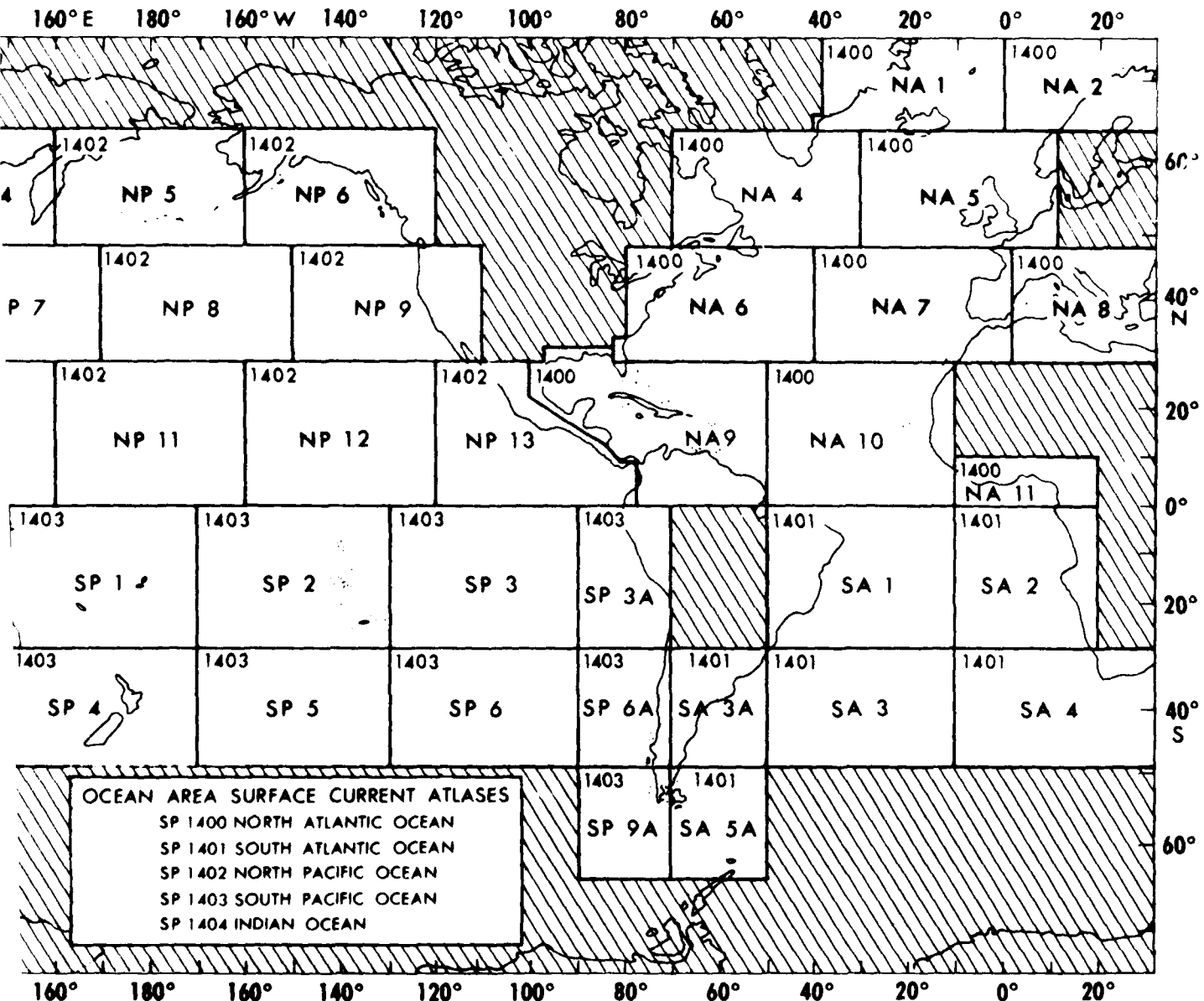
HYDROGRAPHIC DATA
WERE MANUALLY
CHECKED. THESE NEW ATLASES
CONTAIN SHOWN BELOW
THE PHILIPPINES.

ATTEMPTS TO NEW DATA WARRANTED TO BE CORRECT AND COMPLETE.

THESE CHARTS MAY NOT BE TRULY REPRESENTATIVE OF THE ACTUAL SITUATION IN
AREAS OF THE NORTH SEA, PERSIAN GULF, GULF OF OMAN, ARABIAN AND YELLOW SEA AREAS.
CURRENTS ARE STRONGLY TIDAL. BUT IN THESE AREAS, OTHER CURRENTS, INCLUDING
PREDICTABLE BURSTY CHANGES OF TIDAL CURRENTS, SHOULD BE TAKEN INTO

OF THE LATEST
CONTAINS MORE
WILL BE MADE

INDEX



Introduction

The Surface Current Data File, from which these atlases are derived, consists primarily of over four million ship set and drift observations. These data were collected by the Netherlands, Japan, Britain, France, and the United States. The file is supplemented by several thousand Geomagnetic Electrokinetograph (GEK) observations, mostly Japanese. The file spans the period from the early 1850's to the present. The earliest observations were collected by the Netherlands and Great Britain; those of the 1960's through the present are primarily United States data.

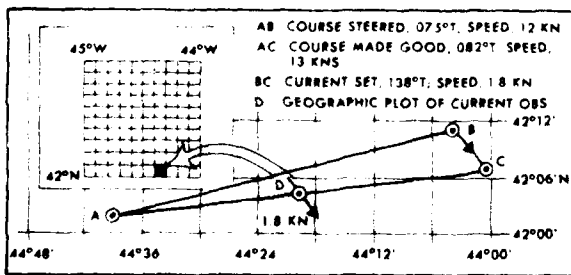
General Quality

The quality of this data file is considered high for this type of derived value. The data have been carefully screened for duplication; observations taken under adverse conditions (i.e. high winds and waves, time between observations greater than 12 hours) have been eliminated when warranted. Consideration was given to the reliability of the observer; doubtful shipboard computations of set and drift were edited; and observations with erroneous locations (mostly observations on land) have been eliminated. The accepted data are considered most useful when used collectively as in summaries where a number of observations show trends.

General Observation Technique

The set (direction) and drift (speed) are computed by the navigator from the difference between the dead reckoning (DR) position and the position determined by any type of navigational fix. The drift can be determined along any straight line track and includes all factors which cause changes in the DR position. When a fix is obtained, the current set (direction) is FROM the DR position TO the fix; the drift (speed) is equal to the distance in nautical miles between the DR and the fix, divided by the number of hours since the last fix. For successive observations, the TO POSITION of one observation becomes the FROM POSITION of the next observation.

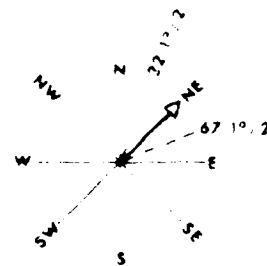
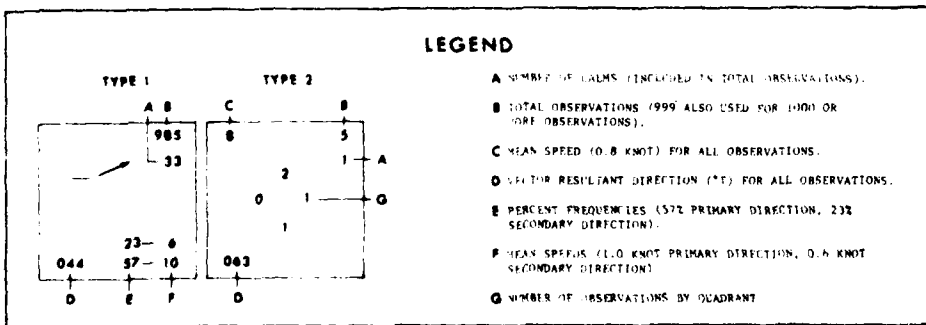
Because the influence of current may vary along a ship's track, the MEAN POSITION of the track is assigned as the geographic location of the current observation. An example of a current computation is shown in the figure below.



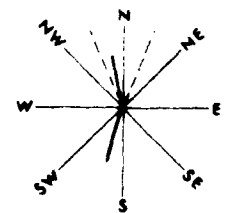
EXAMPLE OF A SURFACE CURRENT (SHIP'S DRIFT) OBSERVATION

Data Presentation

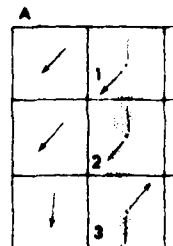
The following legend shows two types of surface current presentations by 1° quadrangle, type 1 with 12 or more observations and type 2 with fewer than 12 observations. Where there are 11 or fewer observations within a 1° quadrangle, the total number of observations is shown within the 90° quadrant containing the observations.

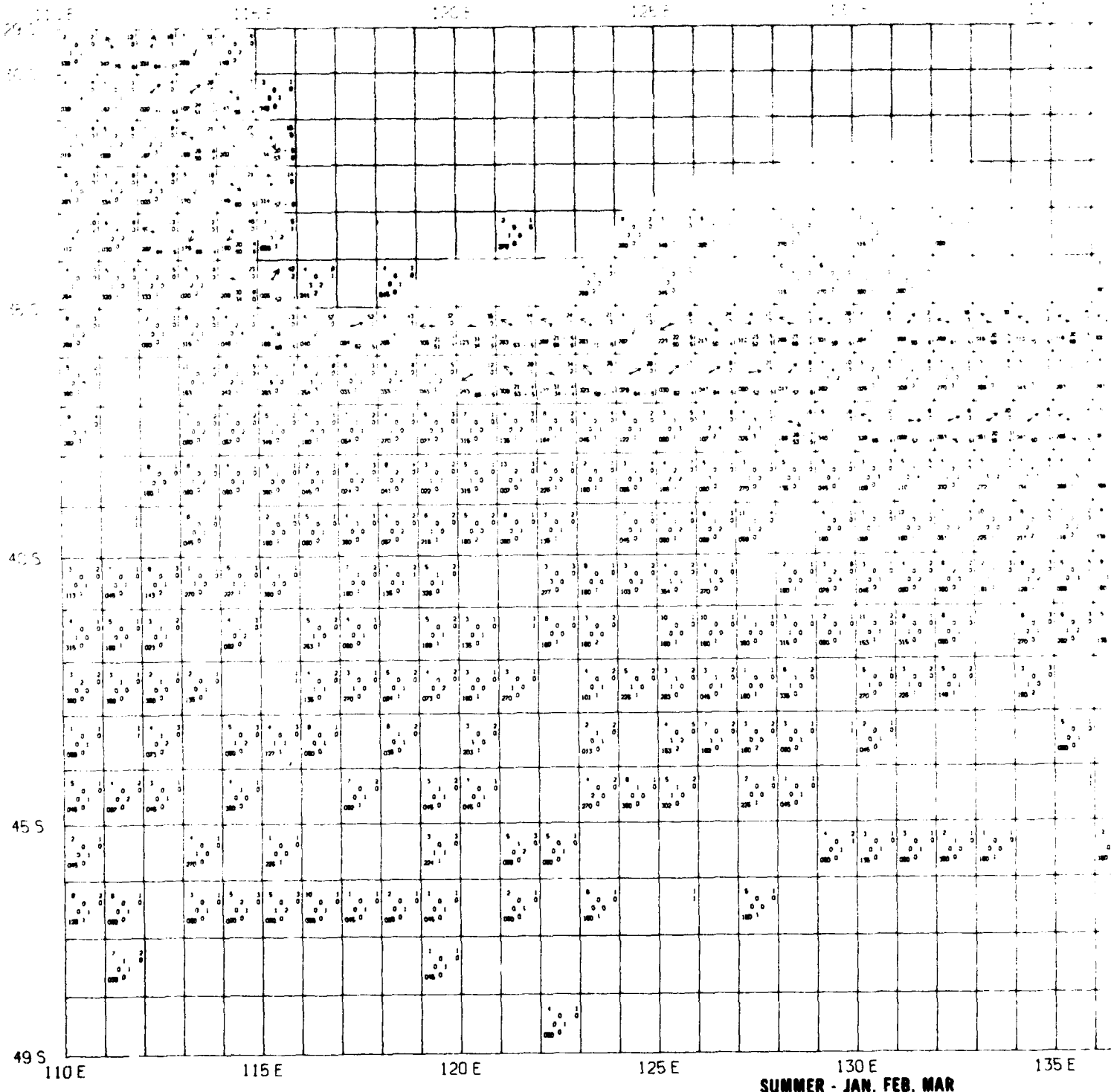


(3) Persistent Current - 80 percent or more of all observations fall within a 45° sector of the 8-point compass.



(4) Bizonal Flow - Practically all observations are concentrated in opposite pairs of 45° sectors, and one pair contains at least 80 percent as many observations as the opposite pair. This generally indicates variability that occurs in zones of entrainment between opposing currents (see examples A and B, quadrangles 1, 2, and 3).





SUMMER - JAN, FEB, MAR

1

125 E

130 E

135 E

140 E

145 E

150 E

38 S

39 S

40 S

45 S

49 S

125 E

130 E

135 E

140 E

145 E

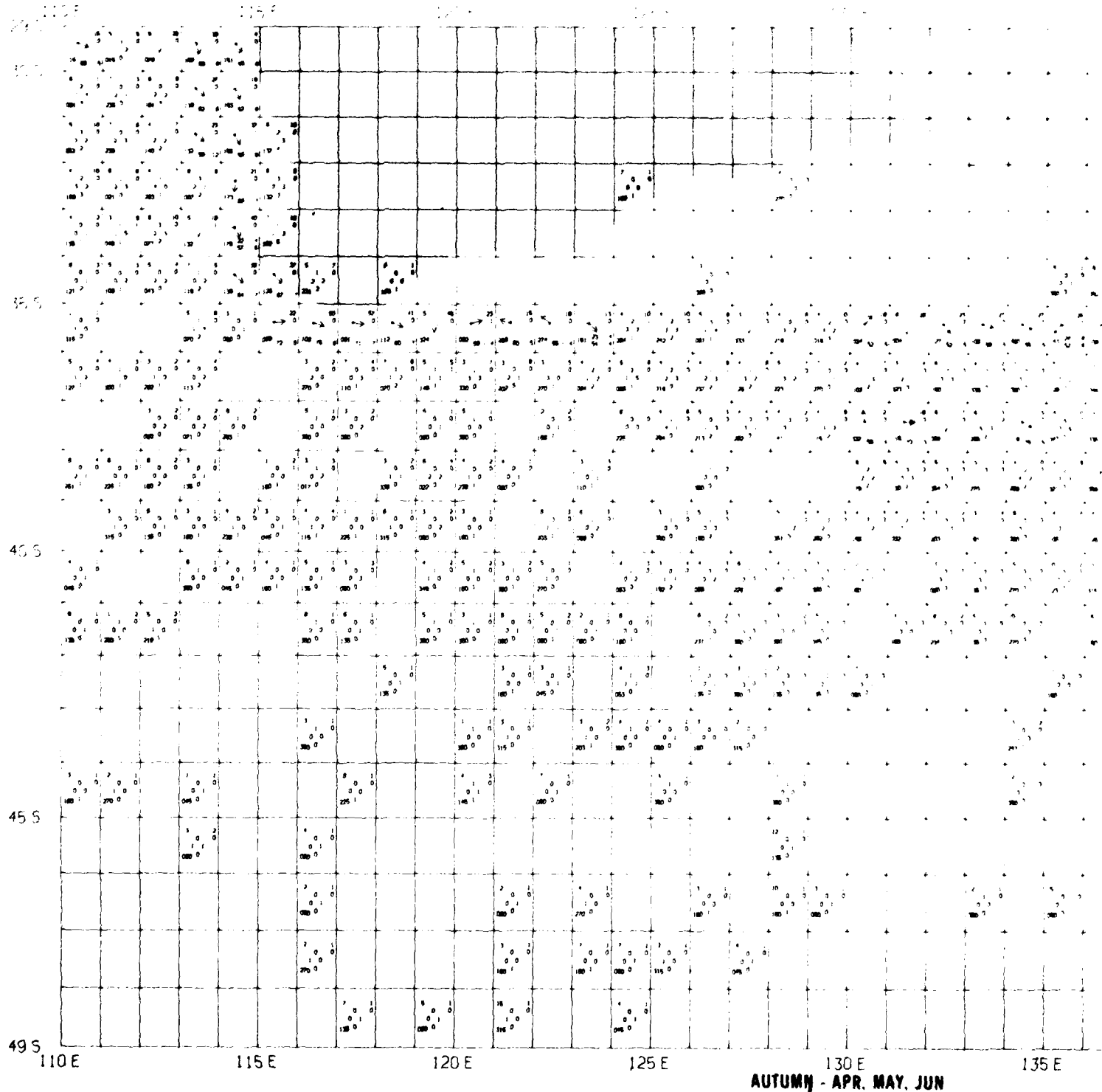
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SUMMER - JAN, FEB, MAR

↑

1

2

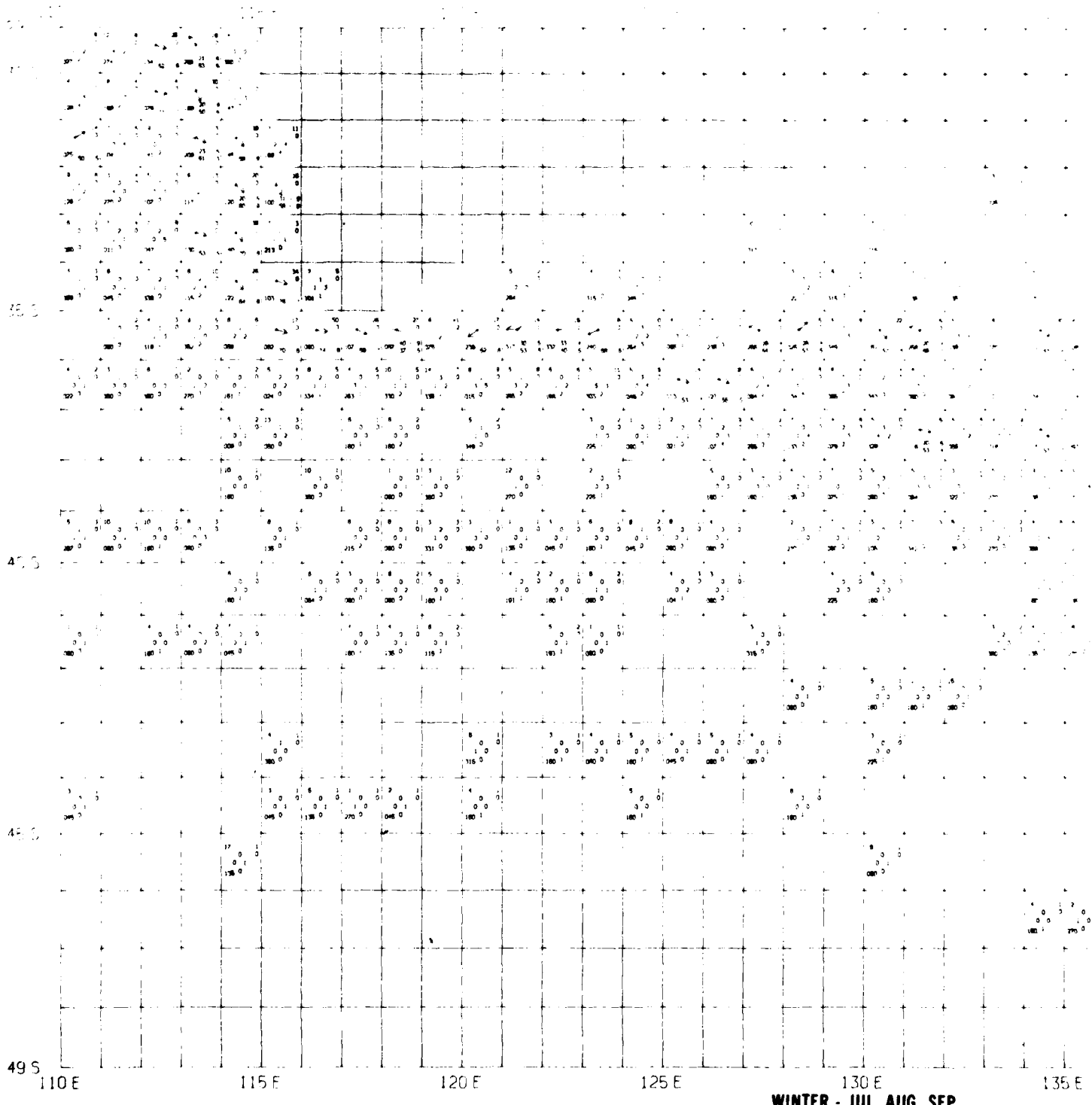


AUTUMN - APR. MAY, JUN



AUTUMN - APR. MAY, JUN

49 S



WINTER - JUL, AUG, SEP



125 E

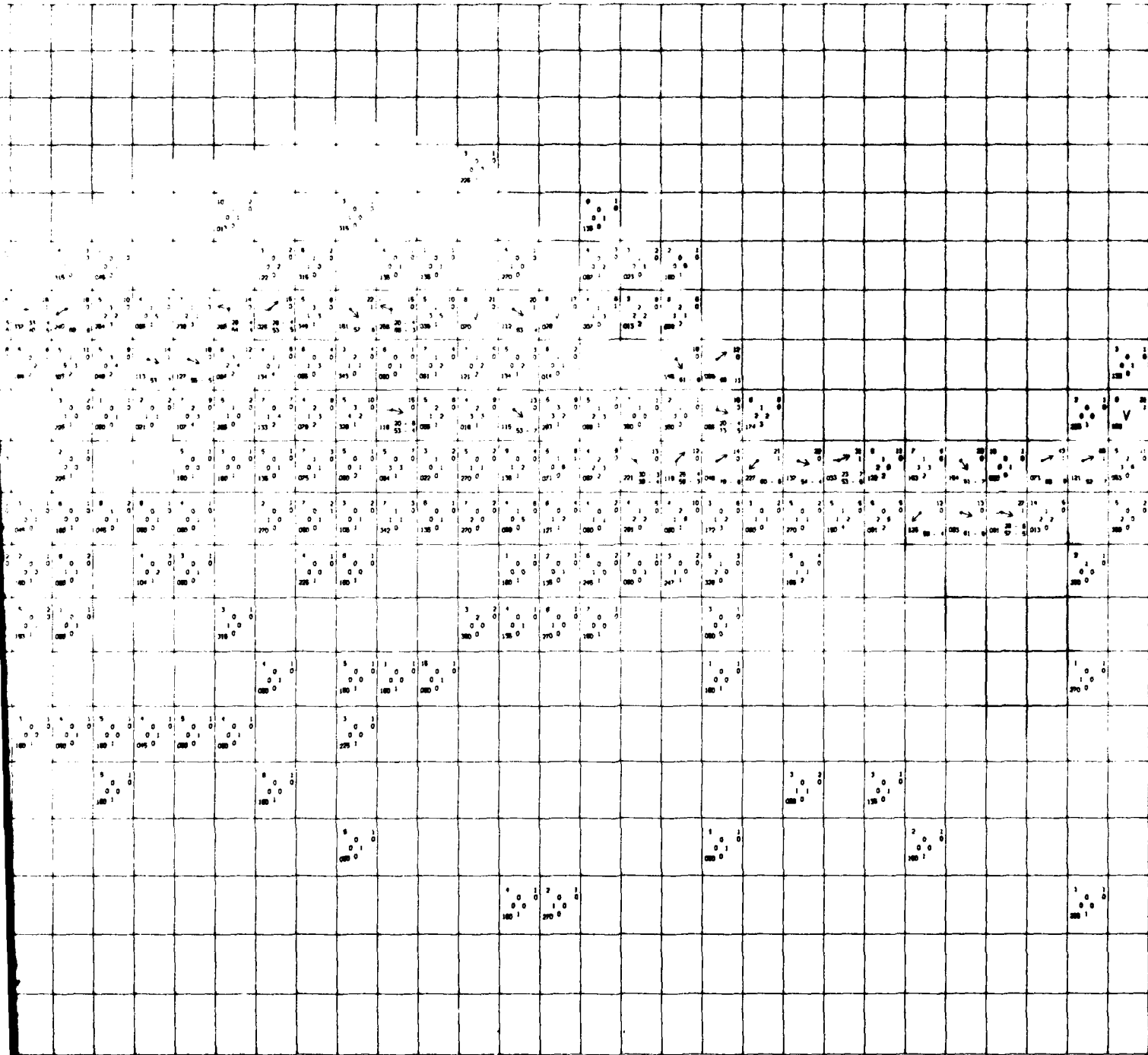
130 E

135 E

140 E

145 E

150 E



40 S

45 S

49 S

125 E

130 E

135 E

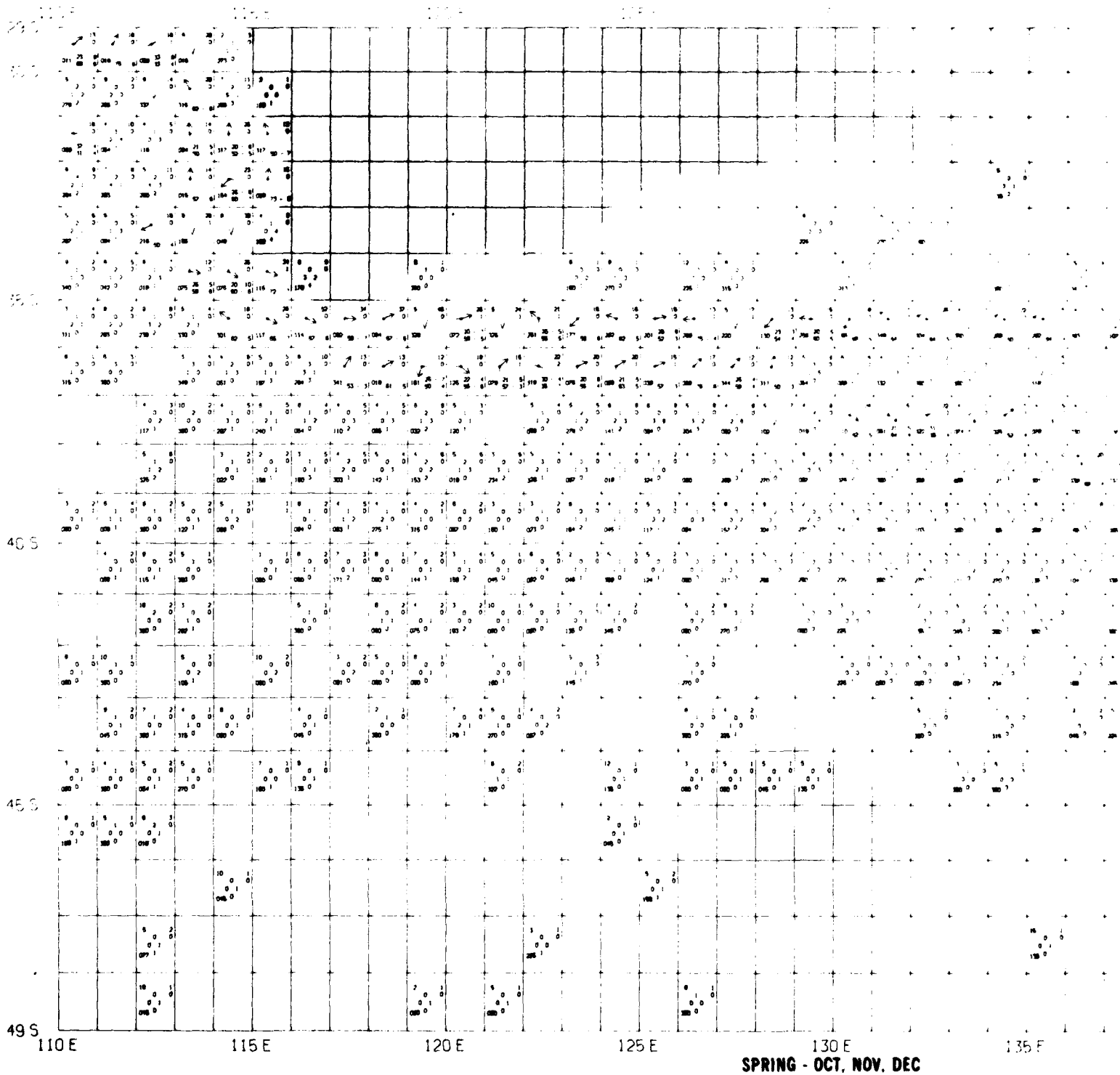
140 E

145 E

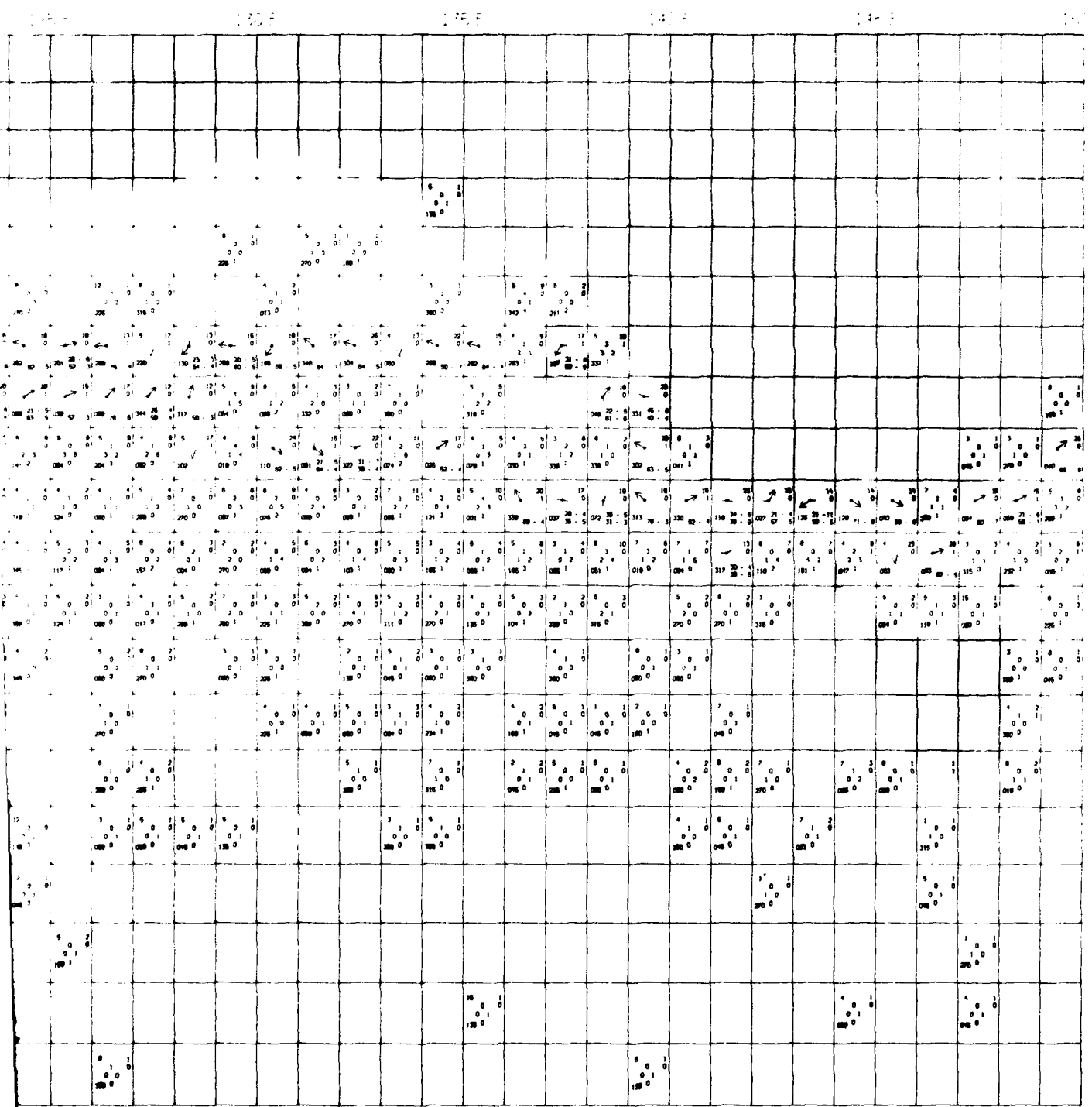
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WINTER - JUL, AUG, SEP





SPRING - OCT, NOV, DEC

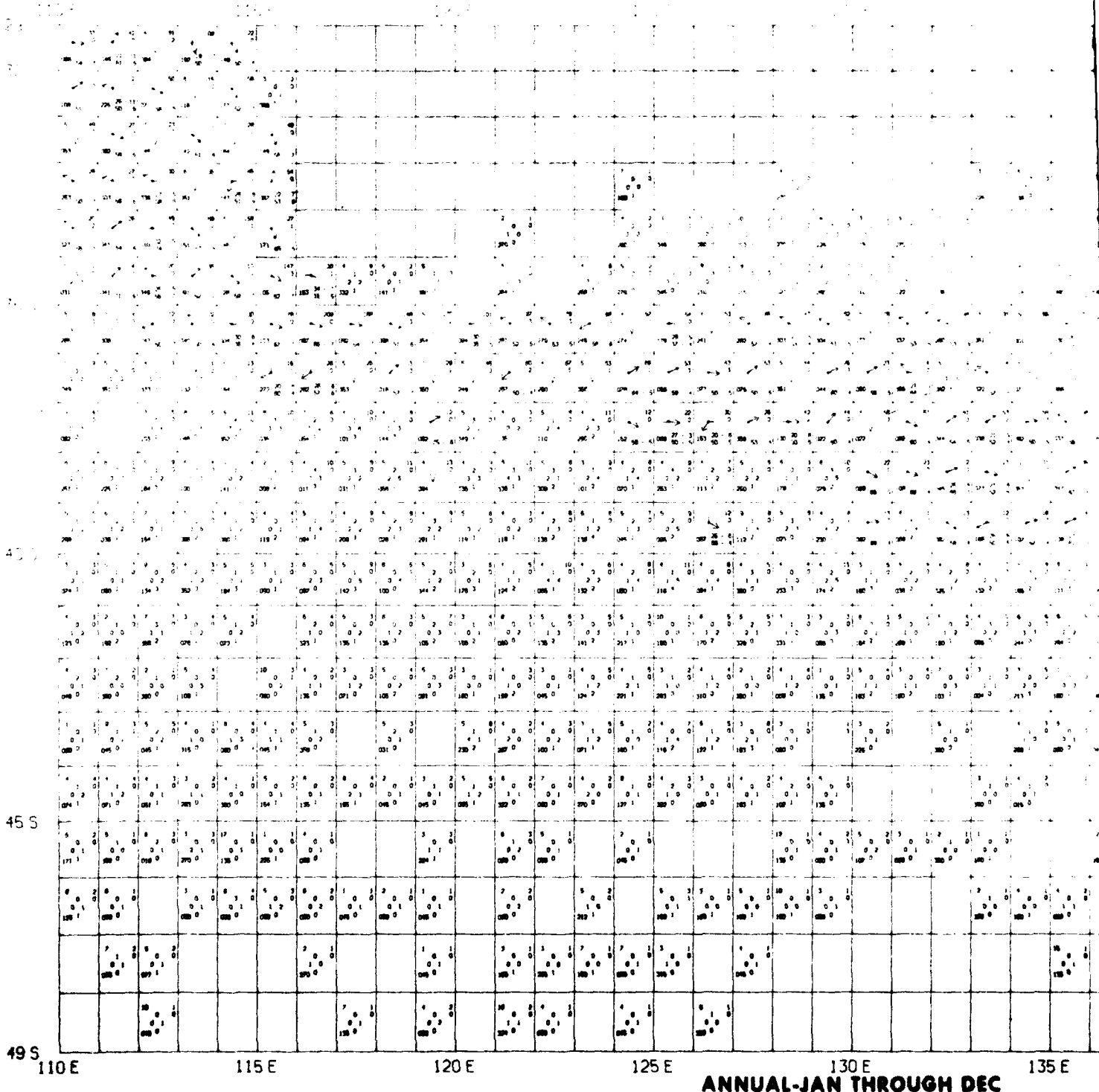


SPRING - OCT, NOV, DEC

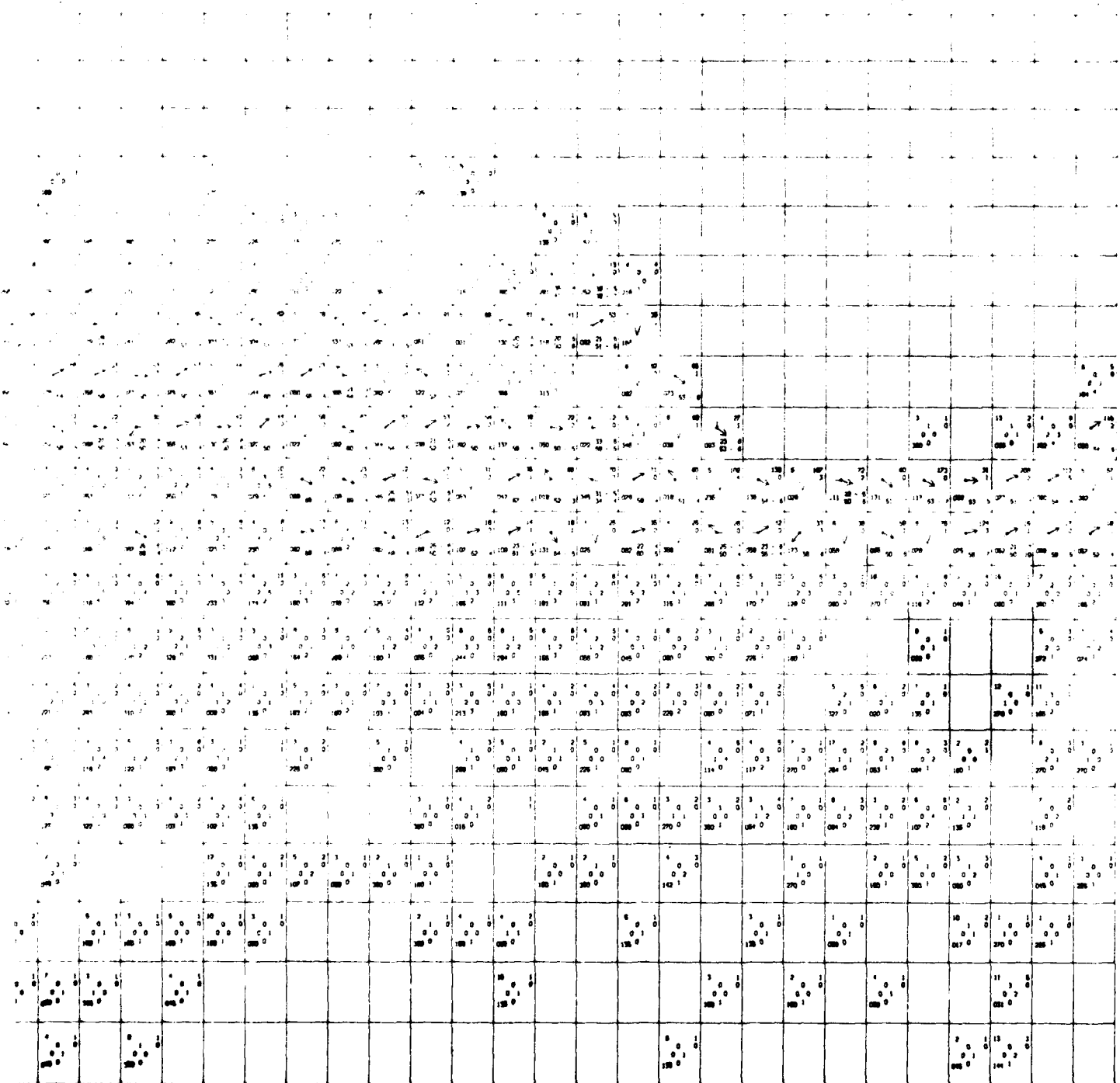
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ANNUAL-JAN THROUGH DEC



48

48.5

49 S

125 E 130 E 135 E 140 E 145 E 150 E

ANNUAL-JAN THROUGH DEC



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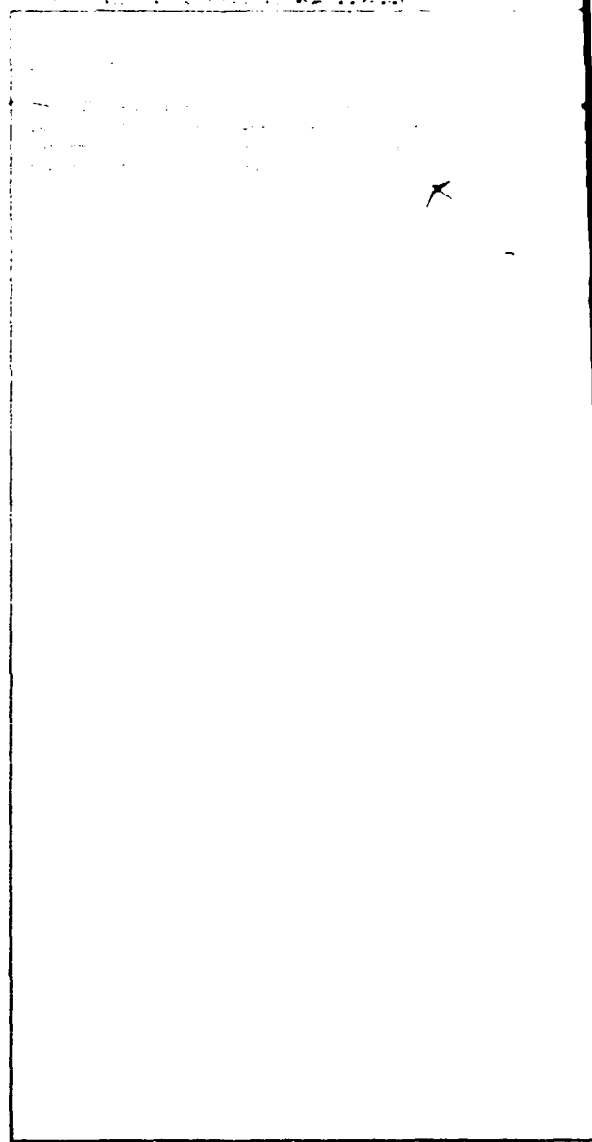
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Surface Currents Southeast Indian Ocean Great Australian Bight			
13. ABSTRACT (Continue on reverse side if necessary and identify by block number)			
This atlas, and the series of which it is a part, is computer generated and automatically plotted. It makes available to user the most recent surface current data collected and will be updated whenever sufficient amounts of data are added to the data file. This and the other atlases are based on a vast quantity of data as compared to the previous manually-compiled editions printed in the mid-thirties.			



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