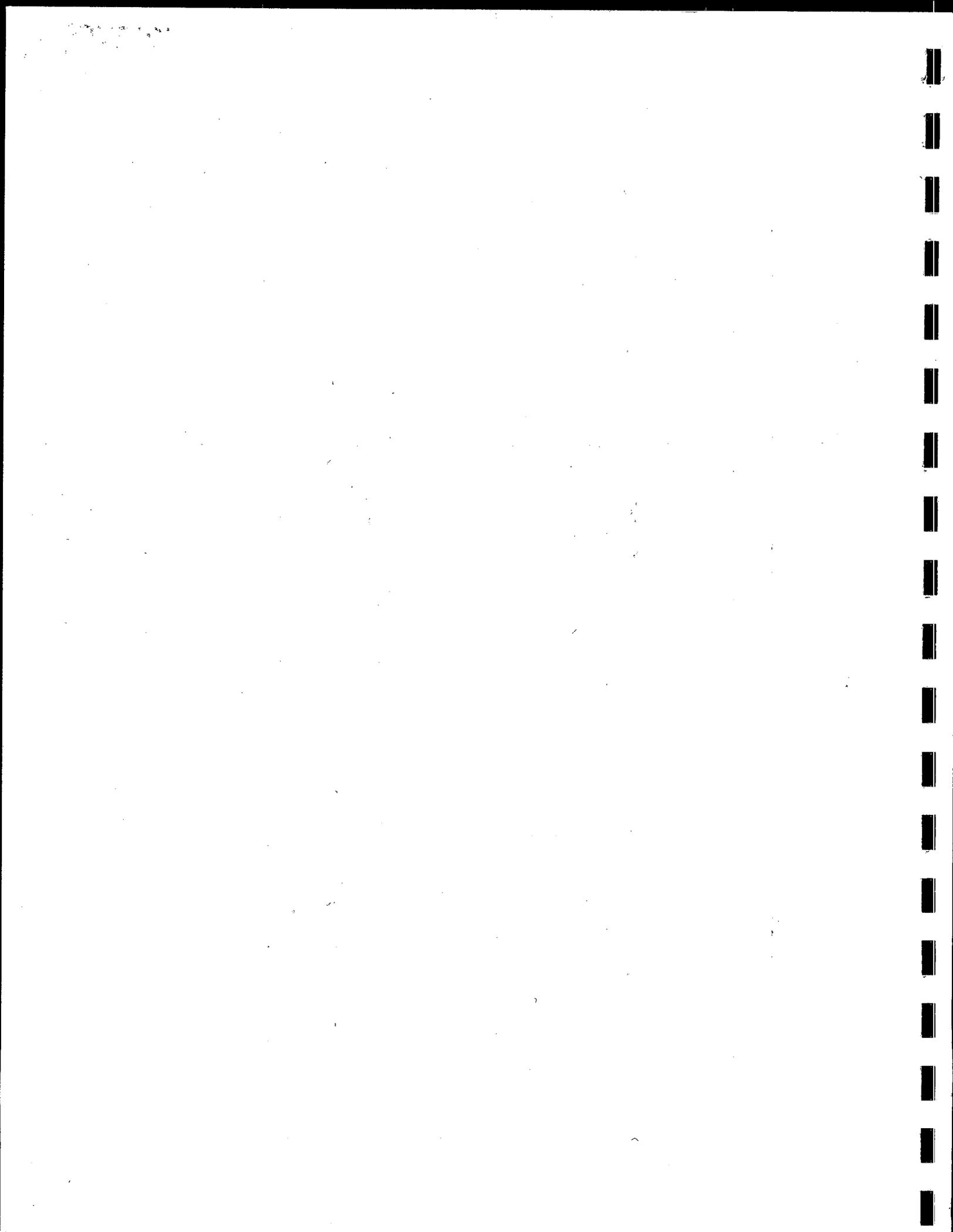


OCS Study
MMS 88-0061

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON

VOLUME 3 - APPENDICES

October 1988



REGISTERED

OCS Study
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COASTAL CIRCULATION ALONG WASHINGTON AND OREGON

VOLUME 3 - APPENDICES

October 1988

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Contract No. 14-12-0001-30389

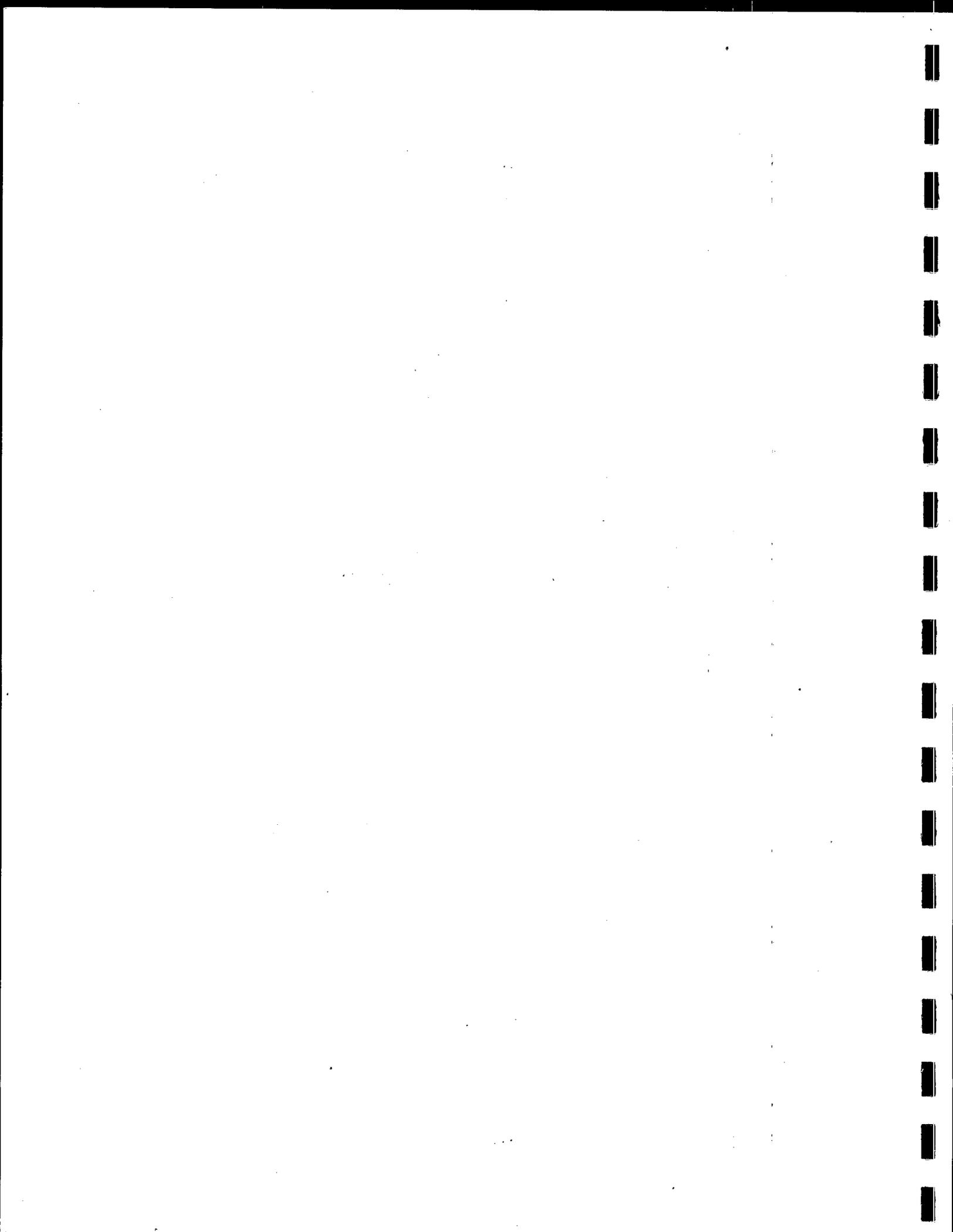
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FINAL REPORT
COASTAL CIRCULATION ALONG WASHINGTON AND OREGON

Volume III

Appendices

TABLE OF CONTENTS

Appendix A - Summary Report, Workshop on Coastal Circulation Along
Washington and Oregon

Appendix B - User's Guide, Data Base Management System

Appendix C - Bibliography

C.1 - Journal Articles and Technical Reports

C.2 - Data Reports

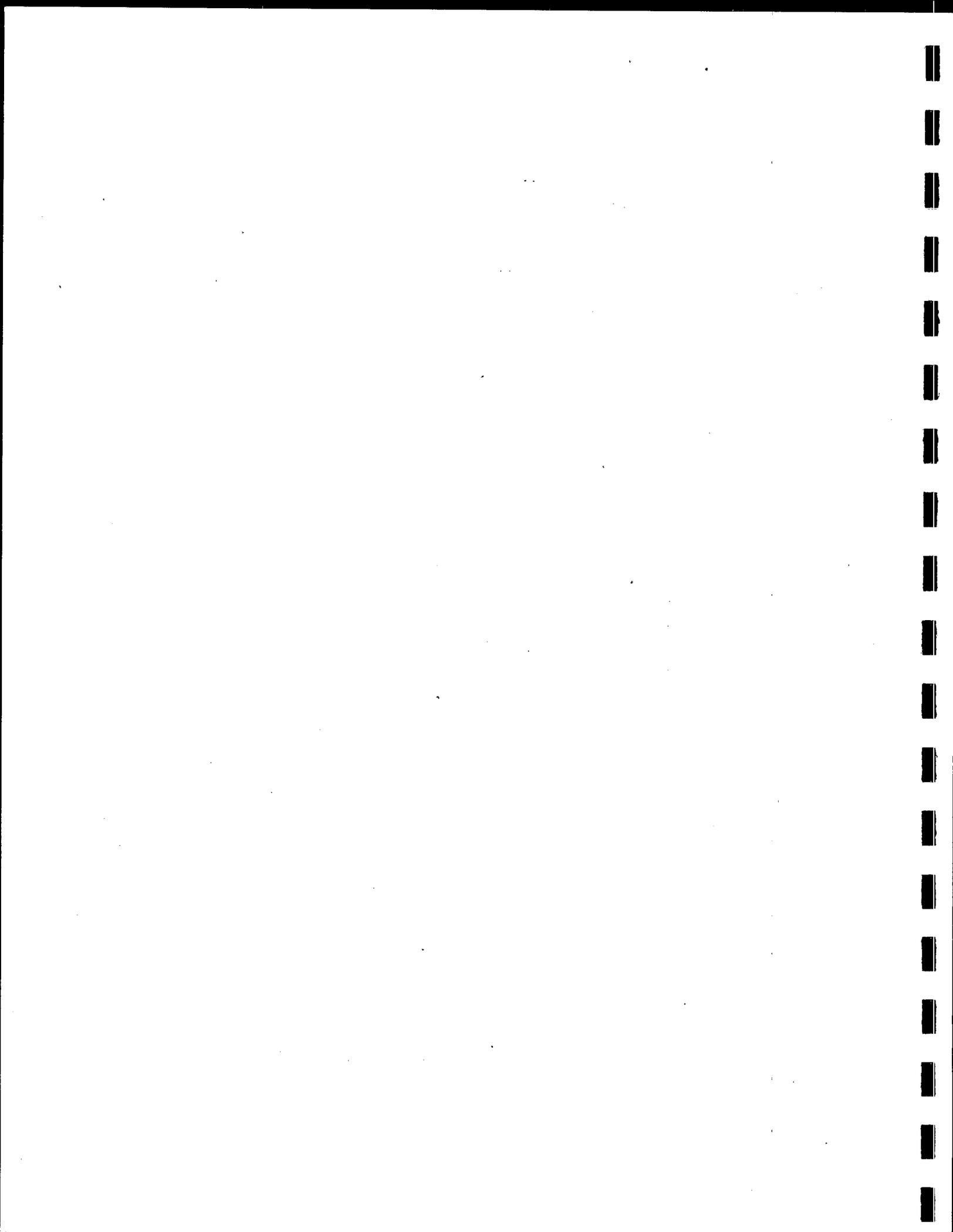
Appendix D - Alphabetical Listing (by Project Name) of Data Set Summaries

Appendix E - Data Plots

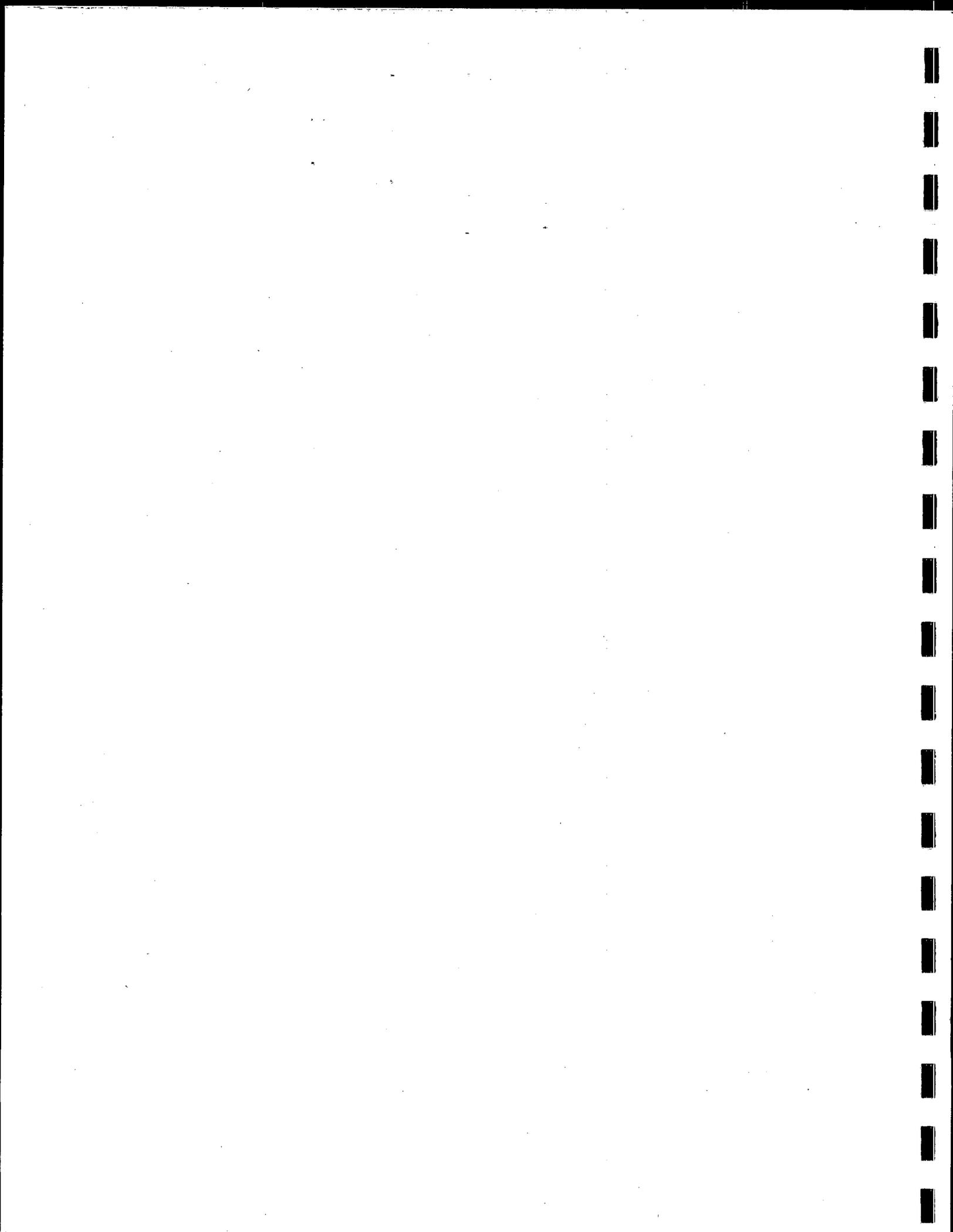
E.1 - Plots of All Data Types by Individual Year

E.2 - Plots of all Data Types Binned by Season

(Page numbering is separate for each Appendix.)



**Appendix A - Summary Report, Workshop
on Coastal Circulation Along
Washington and Oregon**



SUMMARY REPORT
WORKSHOP ON COASTAL CIRCULATION
ALONG WASHINGTON AND OREGON
FEBRUARY 8-9, 1988
SEATTLE, WASHINGTON

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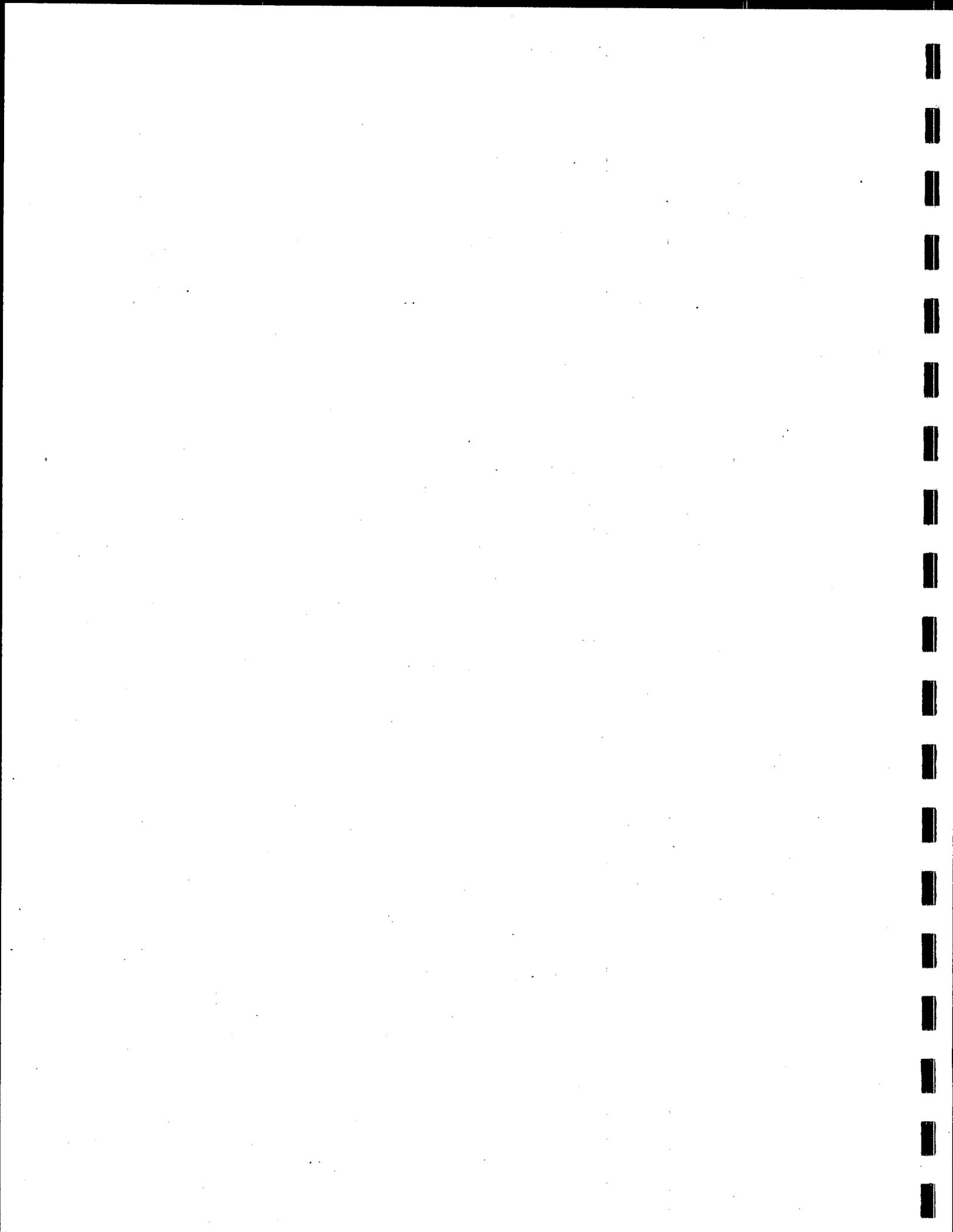
TABLE OF CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS	iv
I. INTRODUCTION AND BACKGROUND	1
II. GENERAL SENSE OF THE WORKSHOP AND RECOMMENDATIONS	4
Summary.....	4
Specific Recommendations	6
III. NARRATIVE SYNOPSIS	8
Welcome and Introduction	8
MMS Presentations	8
Discussion of Major Experiments	15
Discussion of Ancillary Data Sets	19
Discussion of Major Physical Processes	23
Adequacy of Data for MMS Needs.....	26
Applicability to Numerical Modeling.....	29
APPENDIX A. Discussion Paper for the Workshop on Coastal Circulation Along Washington and Oregon	
APPENDIX B. List of Participants	
APPENDIX C. Proceedings from the Physical Oceanography Sessions at the Conference/Workshop on Recommendations for Baseline Research in Washington and Oregon Relative to Offshore Resource Development, December 15-17, 1976	

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

<u>AEC</u> -	Atomic Energy Commission
<u>AVHRR</u> -	Advanced Very High Resolution Radiometer
<u>CalCOFI</u> -	California Cooperative Oceanic Fisheries Investigations
<u>COADS</u> -	Comprehensive Ocean-Atmosphere Data Set
<u>CODE</u> -	Coastal Ocean Dynamics Experiment
<u>CTD</u> -	Conductivity/Temperature/Depth Instrument
<u>CTM</u> -	Characteristic Tracing Model
<u>CUE</u> -	Coastal Upwelling Experiment
<u>CUEA</u> -	Coastal Upwelling Ecosystems Analysis
<u>CZCS</u> -	Coastal Zone Color Scanner
<u>DOI</u> -	Department of Interior
<u>EIS</u> -	Environmental Impact Statement
<u>FNOC</u> -	Fleet Numerical Oceanography Center
<u>GCM</u> -	General Circulation Model
<u>GOES</u> -	Geostationary Operational Environmental Satellite
<u>IDOE</u> -	International Decade of Ocean Exploration
<u>IOS</u> -	Institute of Ocean Sciences
<u>IPL</u> -	Jet Propulsion Laboratory
<u>LFM</u> -	Limited-area Fine Mesh atmospheric circulation model
<u>LORAN</u> -	Coastal radio navigation system
<u>MMS</u> -	Minerals Management Service
<u>MOODS</u> -	Master Oceanographic Observation Data Set

NASA - National Aeronautics and Space Administration
NCAR - National Center for Atmospheric Research
NDBC - National Data Buoy Center
NESDIS - National Environmental Satellite, Data, and Information Service
NMFS - National Marine Fisheries Service
NOAA - National Oceanic and Atmospheric Administration
NODC - National Oceanographic Data Center
NODS - NASA Ocean Data System
NSF - National Science Foundation
NWS - National Weather Service
OCS - Outer Continental Shelf
OSRAM - Oil Spill Risk Analysis Model
OSU - Oregon State University
PAPA - Designation for Ocean Station P (50°N, 145°W)
PMEL - Pacific Marine Environmental Laboratory
ROSCOP - Report of Observations/Samples Collected by Oceanographic Programs
SAR - Synthetic Aperture Radar
Sea-WIFS - Sea Wide Field Sensor
SMMR - Scanning Multi-channel Microwave Radiometer
UW - University of Washington
XBT - Expendable Bathythermograph



I. INTRODUCTION AND BACKGROUND

The Pacific Outer Continental Shelf (OCS) Regional Office of the Minerals Management Service (MMS) is sponsoring a year-long project entitled "Coastal Circulation Along Washington and Oregon" as part of the MMS Environmental Studies Program. The overall purpose of this project is to provide an assessment of the extent of the existing state of knowledge concerning the physical oceanographic environment, especially with regard to continental shelf/slope circulation in Washington/Oregon coastal waters, and to determine where this knowledge base resides. EnviroSphere Company, under contract to MMS, is conducting this study.

As an important step in this project, the Workshop on Coastal Circulation Along Washington and Oregon was held on February 8-9, 1988, in Seattle, Washington, in order to draw upon the expertise of investigators who have performed physical oceanographic research in this region, or are otherwise familiar with the existing data sets. Prior to the workshop, a Discussion Paper (included as Appendix A of this report) was prepared by EnviroSphere and distributed to the invited participants, with the intent being to help focus the major issues to be discussed at the workshop. The Discussion Paper provides background information on the MMS Environmental Studies Program and the oceanographic setting of the region. It also raises four issues for discussion, which are considered to be central to the MMS program in the Washington/Oregon Planning Area. These are:

- 1) The state of knowledge of oceanic circulation off Washington and Oregon;
- 2) The adequacy of the existing knowledge base in meeting MMS requirements;
- 3) Identification of significant information gaps; and
- 4) Integration with other environmental disciplines.

The results from this workshop will form a basis from which EnviroSphere will proceed in describing the existing state of knowledge with regard to oceanic circulation along Washington and Oregon. Also of importance, however, will be the presentation of these workshop results and recommendations at the Conference/Workshop on Recommendations for Studies in Washington and Oregon Relative to Offshore Oil and Gas Development, an MMS-sponsored public meeting to be held on May 23-25, 1988, in Portland, Oregon. Physical oceanography will be one of several environmental disciplines in which discussions will be held concerning the present state of knowledge and the identification of information gaps relevant to potential environmental impacts of oil and gas development in the Washington/Oregon Planning Area.

The list of participants at the workshop is given in Appendix B. This group provided a cross-section of present and past investigators from several universities, government agencies, and private consulting firms. Moreover, representatives were present from the pertinent oceanographic specialization areas and related disciplines (e.g., coastal dynamics, descriptive oceanography, data management, numerical modeling, satellite oceanography, coastal meteorology).

The workshop agenda is shown in Figure 1. The workshop was organized primarily to foster group discussion and participation. With the exception of presentations by the MMS representatives concerning MMS objectives, plans, and oil spill risk analysis modeling efforts during the morning of the first day, no formal presentations were made. The afternoon of the first day was structured as a discussion of the extent and variety of existing data sets collected in past experiments and an assessment of the state of knowledge of major physical processes in the region. Building upon the information exchange of the first day, the discussions on the second day provided the participants with the opportunity to subjectively address the adequacy of the existing knowledge base with respect to MMS environmental impact assessment needs, with special emphasis on the area of numerical modeling. Finally, the participants were invited to make recommendations and raise additional questions that they felt to be important regarding present and future OCS environmental studies.

AGENDA

Workshop on Coastal Circulation Along Oregon and Washington February 8-9, 1988

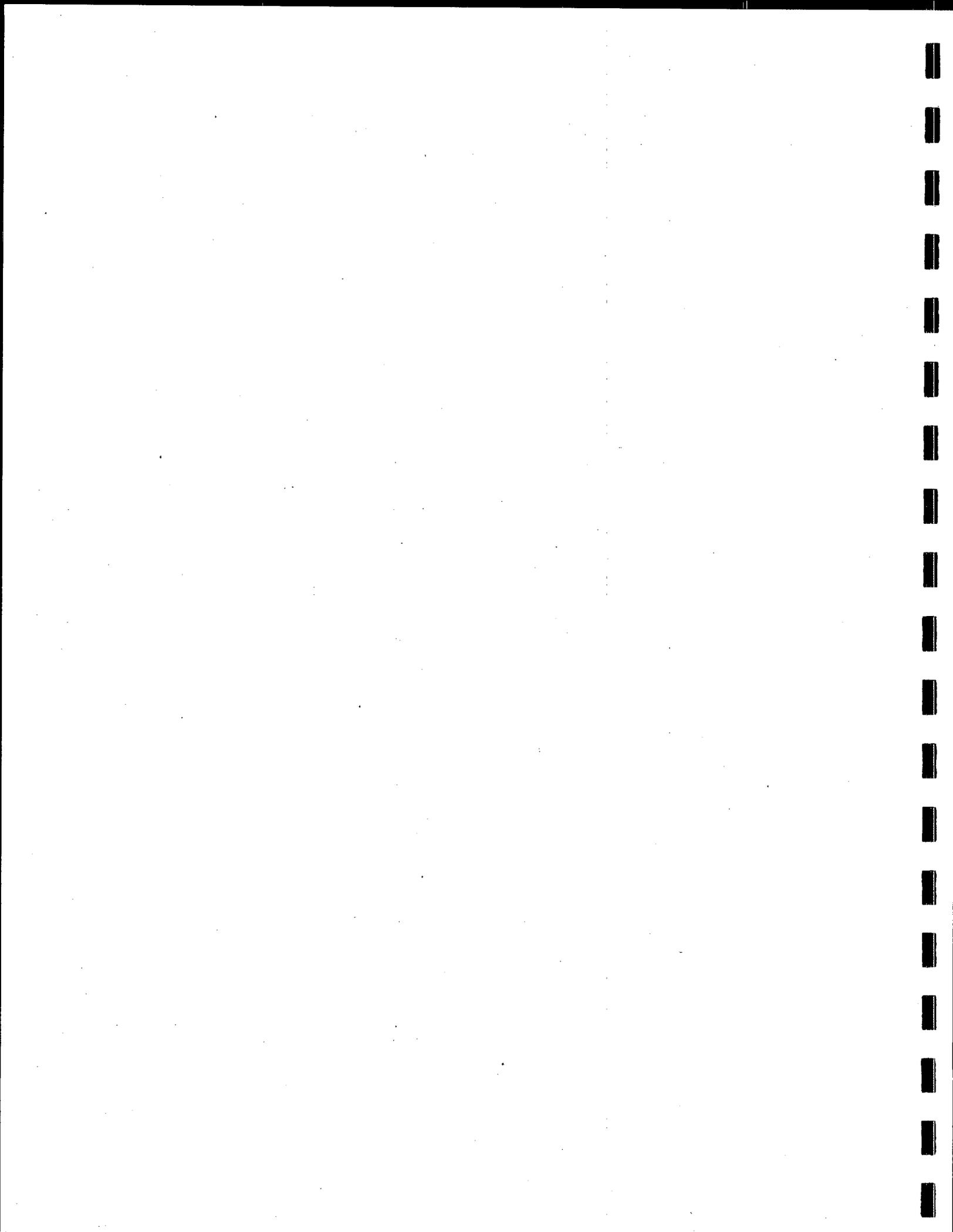
February 8: Program Summaries (Moderator - K. Short)

Morning:	Welcome and Introduction (L. Hachmeister)	8:30 - 8:45
	MMS Presentations	8:45 - 10:30
	Coffee Break	10:30 - 10:45
	MMS Presentations	10:45 - 12:00
	Lunch	12:00 - 1:00
Afternoon:	Discussion of Major Experiments (e.g., CUE-I, CUE-II, WISP, UP-75, Fall Transition Experiment, Super CODE)	1:00 - 1:45
	Discussion of Ancillary Data Sets	1:45 - 2:30
	• Coastal Meteorology	
	• Sea Level	
	• Satellite Imagery	
	Coffee Break	2:30 - 3:00
	Discussion of Major Physical Processes	3:00 - 5:00
	• Coastal Upwelling	
	• Alongshore and Cross-Shelf Transport	
	• Interannual Variability	
	Adjourn	5:00
	Social Hour	5:00 -

February 9: Evaluations and Recommendations (Moderator - L. Hachmeister)

Morning:	Adequacy of Data for MMS Needs	8:30 - 10:40
	• Criteria for Adequacy	
	• Quality and Reliability	
	• Space-Time Coverage	
	Coffee Break	10:40 - 11:00
	Applicability to Numerical Modeling (Discussion to be led by H.J. Herring.)	11:00 - 12:00
	Lunch (catered)	12:00 - 1:00
Afternoon:	Recommendations	1:00 - 3:00
	(Discussion to be led by J. Kelley.)	
	Coffee Break	3:00 - 3:15
	Summary and General Sense of Meeting	3:15 - 4:00
	Adjourn	4:00

FIGURE 1



II. GENERAL SENSE OF THE WORKSHOP AND RECOMMENDATIONS

Summary

The objective of the workshop was to gather information and expert opinions from oceanographers familiar with Pacific Northwest coastal oceanography and use that information to guide and focus future efforts. It was not the intent of this workshop to reach final conclusions regarding the issues listed in Section I of this report. The workshop provided the opportunity for the participants to raise important questions and to formulate preliminary evaluations of data adequacy with respect to MMS environmental assessment needs, and to suggest means of rectifying deficiencies in the knowledge base. This summary should be viewed in that context.

A number of major past oceanographic experiments were discussed. Several others were identified as potential sources of useful information for EnviroSphere to follow up on. It was acknowledged that a substantial volume of high quality oceanographic data has been collected in this region over the past 25 or so years. There was general agreement, however, that such factors as the lack of regionally synoptic data, limited surface and bottom boundary layer observations, and data archival problems may constitute limitations on the utility of the existing data base for the purposes of ocean circulation and oil spill trajectory modeling. There was doubt among many of the participants that the existing data base could be used to establish interannual oceanographic variability in the region. It was felt that mean seasonal climatological descriptions are probably the maximum realizable objectives.

The group in attendance did feel, however, that despite the possible difficulties, it would be a valuable task for some organization to search out and compile all available oceanographic data for the Pacific Northwest coast, and place it a convenient format on some easily transportable medium (such as a single compact disk) for use by the oceanographic community at large. This was seen as being a logical extension of the present effort being carried out by EnviroSphere for MMS.

There was general agreement that the existing network of meteorological observing stations in the region is inadequate for resolving many of the mesoscale (spatial scales on the order of tens of kilometers) features in the alongshore wind field. It was also agreed that the cross shelf structure of the wind field is poorly known and documented. Both alongshore and cross shelf structure in the wind field force important mesoscale and large scale oceanographic processes.

The point was raised several times that a different approach to coastal oceanographic studies, that being a combination of a detailed observational study of the wind field and a high resolution three dimensional numerical ocean circulation model, may be a productive means for investigating dynamical processes in this region. Such an approach is novel, and the Santa Barbara

Channel Circulation Model and Field Study is the only such MMS-funded study to date. In such a study, supporting oceanographic observations serve the purposes of model boundary condition specification and model verification.

There was also general belief among the participants that remotely sensed data, due to its synoptic regional nature, routine availability, and high spatial resolution, is particularly suited for use in conjunction with numerical models, both as model input and verification.

Regarding the present state of knowledge of key oceanographic processes, there was an overall sense that basic large-scale seasonal transport balances and dominant scales of motion are generally well known. However, there was some disagreement among the participants on the accuracy of the existing understanding. Some felt that the spatial and temporal variability discovered between regions on the Oregon shelf may suggest inadequacies in the existing characterizations of large-scale circulation. There was general agreement that cross-shelf transport processes are not as well understood as the alongshore transport. Topographic effects, which are often associated with cross-shelf transport processes, were likewise pointed out as being not adequately understood. Although there was not a lot of discussion on the topics of the nearshore (depths less than 50 m) and bottom boundary layer dynamics, it was generally agreed that these processes are poorly understood and documented.

There was a general consensus that interannual oceanographic variability in this region is important, and as such should be incorporated into any numerical modeling effort designed to assess potential environmental impacts. However, as previously mentioned, there was considerable doubt expressed that the existing data base is sufficient to accurately characterize the interannual variability.

The evaluations and recommendations elicited from the participants at the end of the workshop clearly reflected the major issues and concerns outlined above. A number of the points concerning deficiencies in the existing knowledge base raised in this workshop closely paralleled those raised in the physical oceanography sessions at the Conference/Workshop on Recommendations for Baseline Research in Washington and Oregon Relative to Offshore Resource Development held in December, 1976 (see Appendix C). This may be interpreted as a somewhat pessimistic assessment of the progress on these topics over the past 11 years. For example, circulation in the surface layer and in the nearshore zone were identified in both workshops as topics requiring further study. Also, the earlier workshop identified the southern Oregon coast as being a region where additional studies were required, and highlighted the Heceta Bank region between Newport and Coos Bay as one of the key regions of interest. Recommendations from the present workshop echoed this evaluation. There appears to be growing evidence that this part of the Oregon coast may be an important transition zone between different types of flow regimes.

Specific Recommendations

Specific recommendations arising from the workshop fell into four general areas: important phenomena or issues that need further study; further analysis and compositing of existing data; identification of significant data gaps; and recommendations for specific types of studies.

Important Phenomena or Issues that Need Further Study

- Mesoscale (scales on the order of tens of kilometers) structure and variability of the surface wind field.
- Interannual variability and its treatment in numerical modeling.
- The Fall Transition.
- The relationship between fall/winter flow and the poleward undercurrent.
- Determination of the importance of residual tidal motion and tidal rectification on the shelf circulation.
- The spatial scales and temporal variability of energetic cross-shelf transport features: squirts and jets.
- Vertical mixing and internal structure within surface and bottom boundary layers.
- Flow in the vicinity of submarine canyons.
- Columbia River plume dynamics and interaction with larger scale circulation.
- Strait of Juan de Fuca exchange processes with Puget Sound and the Pacific Ocean.
- Exchange processes between the coastal ocean and bays and estuaries.

Further Analysis and Compositing of Existing Analysis

- Compile a complete bibliography of reference material derived from Washington/Oregon coastal studies to date.
- Produce descriptions of regional data distribution and timelines for existing data sets.

- Accumulate all available relevant data and make available on a convenient medium (e.g., compact disk) to the oceanographic community.
- Analyze the existing data base to determine interannual variability, or assess the feasibility of such an analysis.

Identification of Significant Data Gaps

- Sparse meteorological data - particularly wind measurements across the shelf (for wind stress curl determinations) and temperature and humidity (for heat flux computations).
- Limited synoptic paired temperature and salinity observations in much of the region.
- Limited detailed hydrographic data near the mouth of the Columbia River for characterization of ocean-estuary exchange processes.
- Virtually no observational data for the region off southern Oregon between Coos Bay and Newport.
- Very limited near-surface (0-20 m) circulation measurements.
- Very limited nearshore (inshore of 50 m isobath) circulation measurements.
- Very limited bottom boundary layer observations.

Recommendations for Specific Types of Studies

- Meteorological measurements with improved spatial resolution, particularly in conjunction with numerical models.
- Further development and expanded use of remote sensing tools, particularly in conjunction with numerical models.
- Southern Oregon current meter deployments to describe apparent transition zone between Coos Bay and Newport.
- More modern drifter tracking studies as a means of studying surface circulation, especially in conjunction with remote sensing.

III. NARRATIVE SYNOPSIS

This section provides a condensed account (not a verbatim transcript) of the workshop discussions in chronological order. Great care has been taken (including the use of tape recordings of the workshop) to accurately attribute specific comments to individual participants where appropriate. However, the workshop participants have not had the opportunity to review this synopsis. The authors bear full responsibility for the interpretation of the viewpoints expressed.

Welcome and Introductions

The meeting was called to order by Lon Hachmeister of EnviroSphere Company, Program Manager for the Coastal Circulation Along Washington and Oregon project. He welcomed the participants and introduced the EnviroSphere staff members present and the representatives from MMS. He also briefly outlined the purpose of the workshop, stressing that the primary objective was to gather information from the assembled experts, and that the participants should consider the meeting "their workshop".

Mr. Hachmeister introduced Kent Short of EnviroSphere, Technical Director of the project, who moderated the sessions on the first day. Mr. Short briefly outlined the workshop agenda, again stressing that it was not EnviroSphere's intent in this workshop to lecture or present results, but rather to facilitate discussion among the group in order to glean information and expert opinions from the group. He then introduced Sig Larson of the MMS Pacific OCS Region, Environmental Studies Section, who presented a description of MMS activities.

MMS Presentations

The MMS Environmental Studies Program - Sig Larson

Mr. Larson, who is the MMS Contracting Officer's Technical Representative (COTR) for the Coastal Circulation Along Washington and Oregon project, gave a brief overview of the organization of MMS, the activities of the Office of Leasing and Environment, and the Environmental Studies Program. It is the Environmental Studies Program which designs and oversees studies required to meet the information requirements of MMS for environmental assessment.

Mr. Larson next described the steps in the OCS leasing process. This process may sometimes span several years, during which various government agencies and the public have several opportunities for review and comment. In the case of the Washington-Oregon Planning Area (Figure 2), present schedules call for the completion of the draft and final Environmental Impact Statements (EIS) during 1991, followed by Lease Sale 132 in April, 1992.

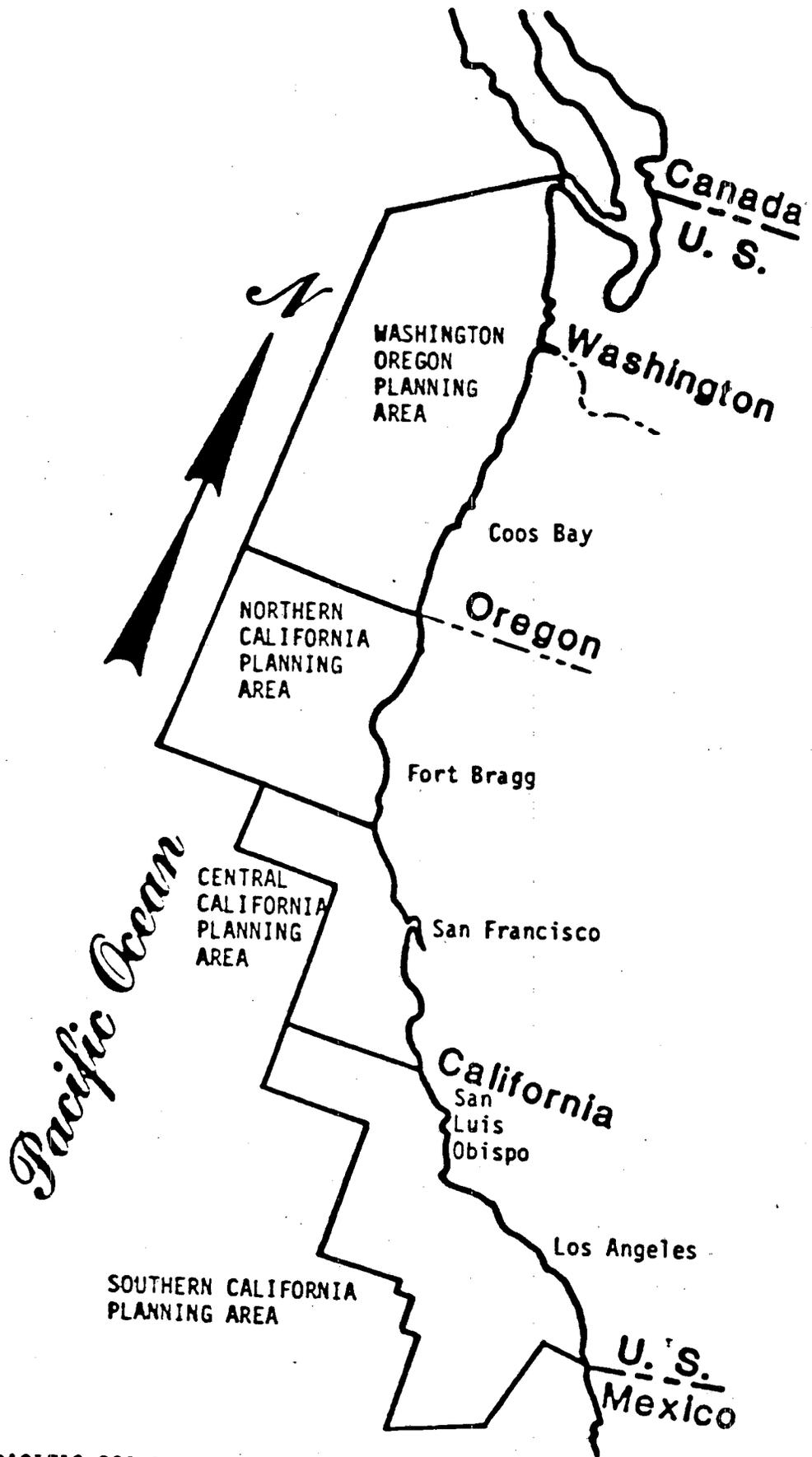


FIGURE 2. PACIFIC OCS REGION PLANNING AREAS

Mr. Larson suggested that the first step in this process for the Washington-Oregon region could be considered the Conference/Workshop on Recommendations for Baseline Research in Washington and Oregon Relative to Offshore Resource Development, which was held in Portland, Oregon, on December 15-17, 1976. This previous workshop was sponsored by the Bureau of Land Management (BLM), the agency which had the responsibility for overseeing the development of offshore oil and gas resources before it was turned over to MMS. The 1976 meeting was a multidisciplinary meeting addressing a number of environmental topics, including physical oceanography. [The proceedings of the physical oceanography sessions from that conference are included as Appendix C to this document.] Mr. Larson pointed out that an analogue to the 1976 meeting will be the upcoming multidisciplinary public conference/workshop to be held May 23-25, 1988, again in Portland, Oregon.

The rationale and guidelines employed by the Environmental Studies Program in designing and prioritizing the various types of environmental studies for each OCS Region were next described. The three major operant guidelines outlined by Mr. Larson are that studies: 1) should be designed to serve decisions; 2) should be developed by those who are familiar with the region to be studied; and 3) should increase understanding of processes occurring in the environment. Other considerations are that such studies also provide a basis for future monitoring of OCS oil and gas operations and provide information on possible means of mitigating any impacts. He stressed the importance of the MMS in-house and external review process, both in the study design/competitive proposal stage, and during the conduct of the study. He then briefly summarized the funding levels and constraints under which the Environmental Studies Program operates.

The Pacific OCS Region Physical Oceanography Program was the final topic covered by Mr. Larson. The objectives of this program are summarized in Figure 3. He then went into some detail on the past and present Pacific OCS physical oceanography programs, both observational and modeling, along the California coast. These studies are listed in the Workshop Discussion Paper (Appendix A).

The MMS Oil Spill Risk Analysis Model (OSRAM) - Robert Labelle

Mr. LaBelle described the modeling mission of MMS in the area of oil spill risk assessment. He emphasized that MMS has no role in the operational real-time forecasting of actual oil spill trajectories (which is the responsibility of the U.S. Coast Guard, supported by NOAA). Rather, the risk assessment model attempts to answer the following three questions:

- 1) What is the chance of a spill occurring at a given location?
- 2) Where will spilled oil go, if released at a given location at a given time of year?

PACIFIC OCS REGION PHYSICAL OCEANOGRAPHY PROGRAM

OBJECTIVES:

- * THROUGH NUMERICAL SIMULATION AND AT-SEA OBSERVATION DEVELOP SUFFICIENT UNDERSTANDING OF THE PHYSICAL ENVIRONMENT AND ITS VARIATION WITHIN CALIFORNIA COASTAL WATER TO:
- * PREDICT MOVEMENT AND DISTRIBUTION OF HYDROCARBONS AND OTHER POLLUTANTS, AND
- * FACILITATE UNDERSTANDING AND INTERPRETATION OF THE RESULTS OF CHEMICAL, GEOLOGICAL, AND BIOLOGICAL STUDIES IN THESE WATERS, AND THEREBY
- * PROVIDE ACCURATE AND TIMELY INPUT INTO MMS AND DOI DECISIONS REGARDING OFFSHORE OIL AND GAS DEVELOPMENT ACTIVITY.

FIGURE 3.

3) What resources would be contacted by the spilled oil?

The model simulates numerous oil spills, with release points distributed according to the anticipated development sites and transportation routes. Input to the model includes ocean circulation modeling results, climatological wind data, historical oil spill rates, and information on the location of biological and other "resources" supplied by biological analysts.

Oceanographic Input to the OSRAM - Terri Paluszkiwicz

Ms. Paluszkiwicz described the types of oceanographic input required to run the OSRAM. A required input would be seasonal mean surface current velocities on a 0.5° latitude by 0.5° longitude grid (Figure 4). At the present time, seasonal information for the West Coast is provided by the Characteristic Tracing Model (CTM) developed for MMS by Dynalysis of Princeton. Wind data for the OSRAM are derived from a statistical model applied to historical data from discrete stations (not gridded fields) such as meteorological buoys. The wind field over the model domain is subdivided into zones of influence defined for individual wind stations. A mismatch in characteristic time scales for model input arises in this technique, since the CTM current fields are mean seasonal depictions, while the wind input is based on 3-hourly records. This is recognized as a limitation, but is necessitated at present by the nature of the data base.

Five hundred trajectory simulations are run for each of the four seasons, with randomly selected start times. Trajectories are computed by simply adding the CTM-derived current vector to the computed wind drift vector. The wind drift vector is computed according to a widely accepted semi-empirical formula (basically 3.5 percent of the wind speed).

Ms. Paluszkiwicz next provided a brief overview of the Dynalysis CTM. Of greatest relevance to this workshop are the data requirements for the CTM, which include: a seasonal hydrographic climatology; a seasonal wind stress field; bottom topography; and current meter or hydrographic data to specify boundary conditions for velocity. Figure 5 shows a representation of the number of surface hydrographic measurements that were input to the CTM. The higher number of temperature measurements than salinity measurements is notable.

Describing a "straw man" run of the OSRAM for the Washington-Oregon region, Ms. Paluszkiwicz indicated that the wind field could be defined by three National Data Buoy Center (NDBC) offshore meteorological buoys, from which at least 9 years of historical data are available, plus coastal station observations, where data quality permits. She then described the first order Markov statistical model which is applied to the historical 3-hourly data to construct seasonal probability matrices for wind events that may be used in model runs.

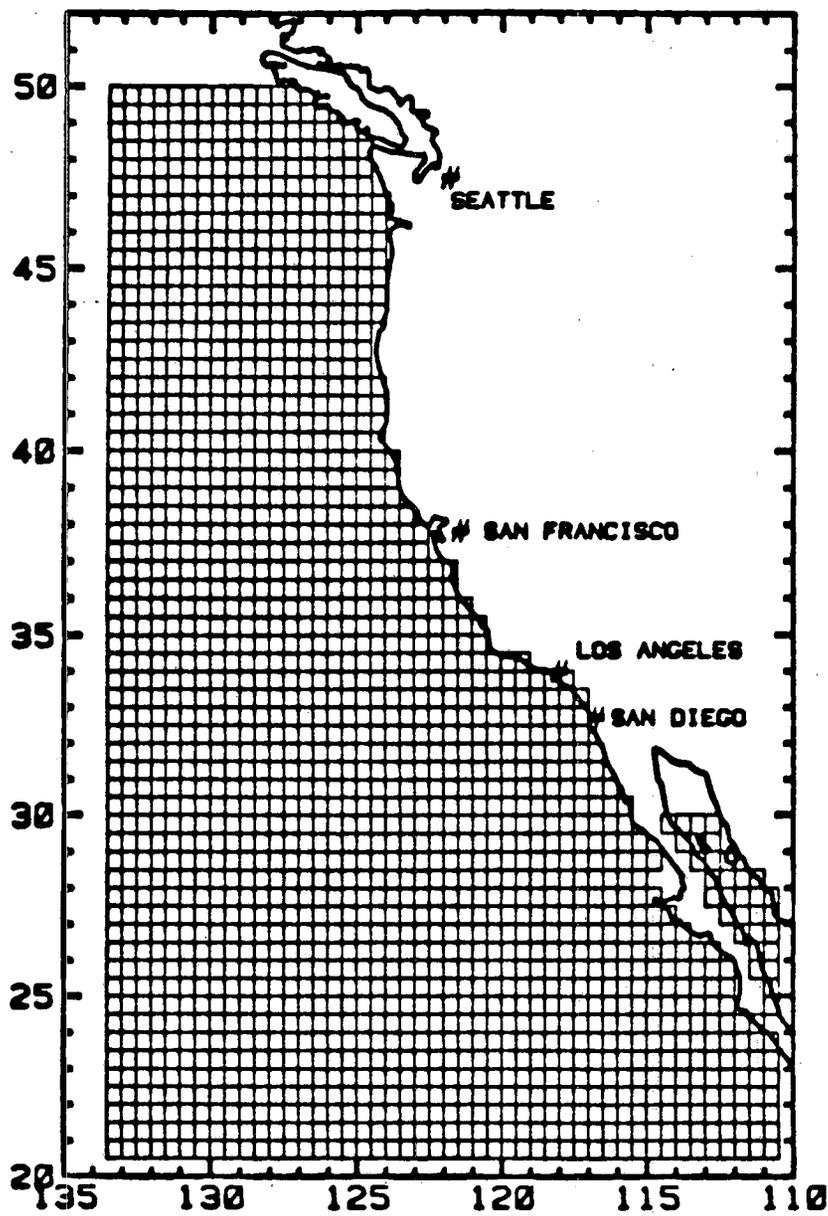


FIGURE 4. Grid for the West Coast Characteristic Tracing Model (CTM)

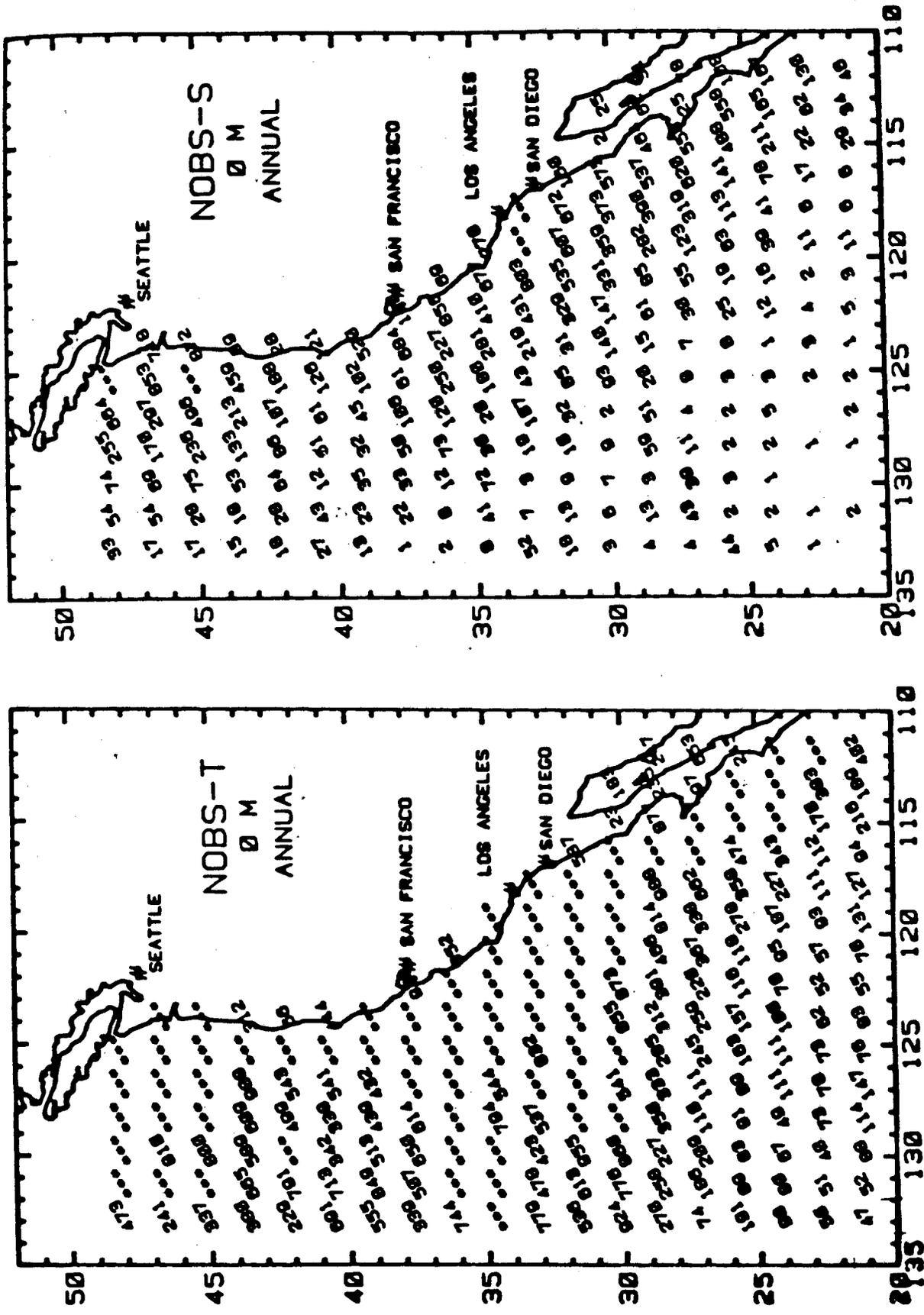


FIGURE 5. Total number of observations of temperature and salinity, available in the combined data base, at the surface (asterisks denote 1000 or more).

Finally, Ms. Paluszkiwicz and Mr. LaBelle commented on the modeling efforts for the California coast, in which a full three dimensional primitive equation general circulation model (GCM) has been developed by Dynalysis for MMS. The GCM, which uses the large scale West Coast CTM output for boundary conditions, is computed on a variable dimension curvilinear grid (Figure 6), and provides a much more detailed current field for input to the OSRAM in that region. Since such a GCM has not yet been applied to the Washington-Oregon coast, the "straw man" scenario presented in this workshop relied only on CTM output. The application of the GCM to domains other than the California coast is a straightforward process and presents no special problems for the Washington-Oregon domain.

Discussion of Major Experiments

Mr. Short began by presenting a list of a number of major past Pacific Northwest oceanographic experiments (Figure 7). This list is incomplete at this point, and corrections or additions are expected. It was noted that several of the experiments listed were conducted by investigators who were unable to attend the workshop (e.g., Barbara Hickey, Robert Smith, and Adriana Huyer). Envirosphere will be contacting these individuals and others following the workshop to request their input.

It was pointed out that one significant omission on Figure 7 was a series of studies in and around the Columbia River plume in the 1960s, funded by the Atomic Energy Commission, which was interested in the fate of radioactive isotopes originating at Hanford. These studies included hydrographic and current meter measurements, and a variety of surface and bottom drifter experiments. Much of the data from these studies are at the National Oceanographic Data Center (NODC), but a large volume of data reports and punched computer cards exists locally at the University of Washington, and may be in jeopardy of destruction within a few years. Oregon State University was also involved in these studies, and may be an additional source of archived data. Investigators named included Alyn Duxbury, Grant Gross, Betty Ann Morse, Cliff Barnes, Noel McGary, George Anderson, Jim Postell, Jack Beck, C.L. Osterberg, and T.J. Conomos.

The discussion next turned to the Coastal Upwelling Ecosystems Analysis (CUEA) program of the early 1970s. Dave Halpern described the rationale and objectives of the program and the planning process leading to the CUE-I and CUE-II experiments in 1972 and 1973, respectively. The experimental design of these programs relied heavily on early numerical modeling studies of upwelling-related processes by James O'Brien at Florida State University. The Oregon coast was chosen as a convenient location to develop and test oceanographic techniques that could be applied in other upwelling regions of the world. Types of measurements performed in the CUE-I and CUE-II experiments (as well as some follow-on studies such as WISP and UP-75) included moored current meter measurements, drogue studies, aircraft remote sensing, and hydrographic casts. A large number of CUEA

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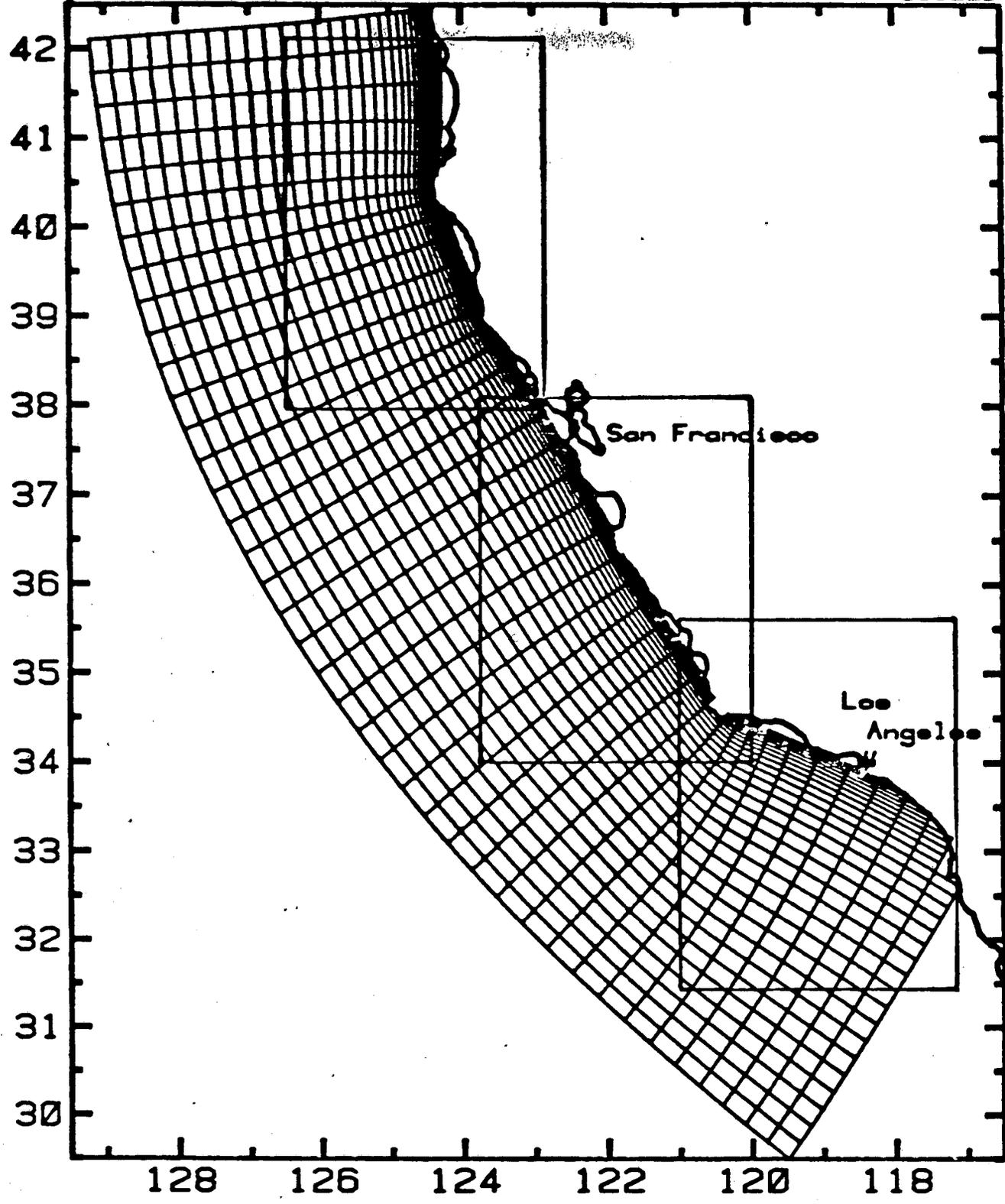


FIGURE 6. Grid for the California General Circulation Model (GCM)

**MAJOR PAST OCEANOGRAPHIC EXPERIMENTS
ON THE PACIFIC NORTHWEST OCS**

<u>EXPERIMENT</u>	<u>DATE(S)</u>	<u>LOCATION(S)</u>
CUE-1	1972	Central Oregon
CUE-II	1973	Central Oregon
WISP	1975	Oregon-Washington
UP-75	1975	Central Oregon
CROSS-SHELF	1977	Washington
POLEWARD UNDERCURRENT	1977-1978	Washington
ASTORIA CANYON	1977-1978, 1983	N. Oregon-S. Washington
QUINALT CANYON	1979-1982	Central Washington
CODE (Canadian)	1979-1980	Vancouver Island
FALL TRANSITION	1980	Central Oregon
UP-1	1981	Washington
UP-2	1982	Washington-Oregon
SUPERCODE	1981-1984	S. Oregon (California)
COASTAL CURRENT	1984	Vancouver Island

FIGURE 7.

data reports and publications were produced at Oregon State University (OSU) and the University of Washington (UW), and a catalog of such works may exist at these institutions or at the National Science Foundation (NSF). Information on meteorological measurements made in conjunction with the coastal upwelling experiments might be sought from David Stewart at Florida State University, who has supervised a number of Master's Degree research projects in this area. National Weather Service weather charts were used heavily for weather support data in the CUE experiments.

In regard to the archiving of data from the CUE experiments, Dr. Halpern estimated that between 50 and 75 percent of the data collected now resides at NODC. This was confirmed by Sid Stillwaugh, the NODC Pacific Northwest Liaison Officer. Alyn Duxbury cautioned that the early 1970s marked the transition from hydrographic bottle casts to electronic conductivity-temperature-depth (CTD) instruments. Prior to that time, there was usually a paper trail from which to reconstruct the observational record. After that time, the automated processing carried out on some data sets was not always well documented. William Emery remarked that deterioration of magnetic tape media is becoming a problem, so that even if an inventory shows a particular dataset to be archived, it may in some instances be unreadable. Dr. Halpern suggested that in many cases the original investigators may have reexamined the data in light of subsequent experiments, so that the version they maintain may be more reliable. Contacts and publications mentioned by various participants as being important include: Doug Hamilton at NODC regarding the reliability of archives; Dean Holt as NSF; Curt Collins (formerly of NSF, now with the Naval Postgraduate School); the International Decade of Ocean Exploration (IDOE) data catalogs; Oceanographic Commission of Washington publication inventories; and the collection of Report of Observations/Samples Collected by Oceanographic Programs (ROSCOP) forms on file at NODC. Dr. Emery noted that in post-IDOE years (after 1980), there has been little effort expended on the part of funding agencies to track data acquisitions or encourage data submittals to NODC.

Stan Huggett of the Institute of Ocean Sciences (IOS) outlined the Canadian CODE experiment in 1979-1980, which was an analogue of the California coastal experiment of the same name, and the ongoing Vancouver Island Coastal Current Experiment, which has been using moored current meters, LORAN-tracked drifters, and satellite imagery to study the coastal current regime since 1984. Dr. Huggett also stated that all current meter data collected in these programs is archived at IOS and available on request. CTD data is archived nationally in Ottawa, not at IOS.

Other measurement programs mentioned by the workshop participants include: the TOTEM spar buoy experiment (suggested contact - Steve Neshyba at OSU); various mixed layer experiments near Ocean Station PAPA (50°N, 145°W), which may have relevance for western boundary conditions in models of the coastal region; Cobb Seamount studies in the early 1950s and early 1970s; the Newport

hydrographic line, which has been occupied semi-routinely from the 1960s to the present; the "P line" hydrographic section between Vancouver Island and Ocean Station PAPA, occupied by the Canadians 4 to 5 times per year; ship of opportunity expendable bathythermograph (XBT) data on the Seattle to Hawaii route (in the Navy's MOODS database); and a year-long current meter mooring maintained at 45°N, 130°W by the NOAA Pacific Marine Environmental Laboratory (PMEL). Mr. Larson noted that under MMS contract, a compilation of wave data from West Coast NOAA Data Buoy Center (NDBC) buoys and the Corps of Engineers/State of California wave measurement sites has recently been completed by MEC Systems, Inc., in the form of an interactive, searchable data base and statistical summary system.

Several of the participants voiced their view that MMS (or some other agency) should consider an extension of the efforts of the Coastal Circulation Along Washington and Oregon into the actual collection and compilation of all available data into a format available to the oceanographic community at large.

Discussion of Ancillary Data Sets

It was pointed out at the beginning of this session that, depending on one's professional point of view, and the scope of certain projects, the data sets discussed in the following section might sometimes be considered primary, with the more traditional oceanographic data relegated to "ancillary" status.

Coastal Meteorology

Mr. Short began this discussion by presenting a depiction of the location of all coastal and offshore stations from which routine weather observations are presently available along Washington, Oregon, and Vancouver Island (Figure 8). This includes both manned and automated stations, including the NDBC buoys. Mark Albright suggested that a major gap in knowledge concerning the coastal meteorology of this region concerns summertime coastally-trapped meteorological disturbances which propagate northward from California. He indicated that the alongshore data coverage is sufficient to resolve the phase speed of these disturbances, but that little is known about their onshore-offshore structure due to the lack of high spatial resolution offshore meteorological data. These disturbances appear to have characteristic scales in the offshore direction of 100 - 200 km, and are most energetic at about the latitude of the Washington-Oregon border. Dr. Albright proposed that a line of weather buoys extending offshore from the Columbia River to NDBC buoy 46005 (46°N, 131°W) at a spacing of about 30 km would greatly assist in the resolution of these trapped wave features. It was mentioned that wind data from such a line of buoys (or more than one such line) would be necessary for improved depiction of wind stress curl. This parameter is seen as critical to accurate modeling of coastal ocean circulation. Ted Strub inquired as to whether gridded operational products from Fleet Numerical

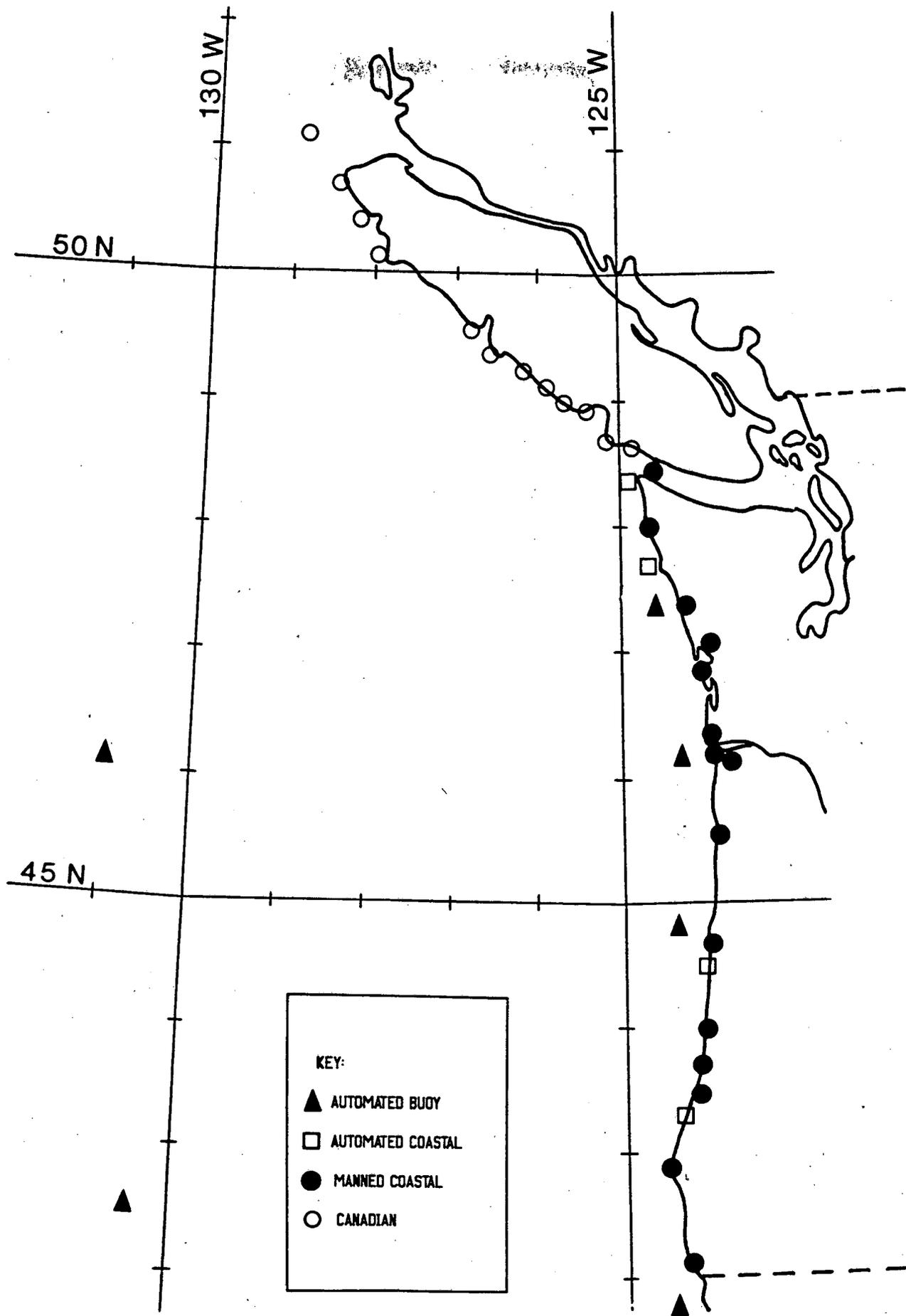


FIGURE 8. Meteorological stations.

Oceanography Center (FNOC) or the Limited-area Fine Mesh (LFM) output from the National Weather Service could resolve the mesoscale wind features. Dr. Albright responded that the grid scales are too coarse and coastal topography is not handled well enough in such models to be of significant use. Dr. Strub remarked that in fact, climatological averages derived from LFM wind fields off Oregon and Washington give the wrong sign for the wind stress curl.

The question of ocean numerical model sensitivity to wind was raised. Bruce Magnell pointed out that California studies have shown that variations exist in the wind field with scales comparable to the shelf width. Such differences in the wind measured north and south of Cape Mendocino correlate well with current convergences and divergences observed there, and are likely related to offshore jet formation. Jim Herring described how incorporating several closely spaced wind stations in the Santa Barbara Channel study clearly improved model predictions. In the absence of such a network of stations, only one LFM grid point would have been available in the Santa Barbara Channel.

Sea Level

Mick Spillane stated that although long records of sea level data exist for several points along the coast, their main utility at shorter time scales appears to be as a control on alongshore transport and in model validation. This data type is of little use in the study of cross-shelf transport phenomena.

Dr. Duxbury noted that tide gauges located within bays or estuaries can be subject to data contamination due to local tidal modification. Dr. Spillane noted that U.S. tide records often require more processing to remove erroneous data than do Canadian records. Dr. Strub mentioned that considerable effort goes into sea level quality control at OSU. Dr. Huggett added that Canadian west coast tide gauge data are archived at IOS, and are processed and available one month after collection.

Dr. Herring noted that the use of actual tidal data at the boundaries of the domain to force the Santa Barbara Channel circulation model led to unrealistic mass transport results if even the smallest error in tidal input was present. This extreme sensitivity necessitated an approach that allowed sea level in the model to find its own equilibrium.

Satellite Imagery

Robert Bernstein led off this discussion by saying that satellite data have proved to be a valuable contribution to past California coastal oceanographic studies, including those sponsored by MMS. He cautioned that farther north, persistent cloud cover becomes a problem, and may introduce a seasonal bias into the data set. Dr. Emery responded that if one is prepared to accept partial coverage, there is much useful information to be obtained despite the cloud cover problems.

The discussion next turned to satellite data archives. Seaspace, Inc. (Dr. Bernstein) routinely receives recorded raw satellite data from the NOAA Satellite Field Station in Redwood City, California, and has archived four or five AVHRR passes per day from the NOAA Polar Orbiting Satellite series since 1984. A long term contract with NOAA is in place to continue this archive. Ernest Dagher noted that a hard copy image archive of all AVHRR data acquired at the Redwood City station since 1972 exists at that station, but that prior to the arrangement with Seaspace, no digital data archives were maintained. Requests for digital data archived by Seaspace under NOAA contract should be addressed to the NOAA/NESDIS Satellite Data Services Division in Washington, D.C. Dr. Bernstein also mentioned that the satellite facility at the Scripps Institution of Oceanography has approximately 8 years of AVHRR passes (one per day) in their archives, although the extent of West Coast coverage on these archived images is variable. Dr. Emery reported that the University of British Columbia Satellite Oceanography Laboratory has archived selected (based upon cloud cover) West Coast imagery, covering portions of the coast as far south as the Oregon-California border since 1983. A beneficial feature of this archive is the availability of videotaped imagery for preview and selection.

Coastal Zone Color Scanner (CZCS) data from the Nimbus-7 satellite for the years 1979 through 1986 are archived at the Jet Propulsion Laboratory (JPL) as part of the NASA Ocean Data System (NODS) West Coast Time Series. NODS is an interactive system available to outside users. It also contains Seasat microwave altimeter and scatterometer data, and Scanning Multichannel Microwave Radiometer (SMMR) data from Seasat and Nimbus-7. The utility of these microwave instruments for coastal studies is limited, as data within 50 km of the coast are unusable. Synthetic Aperture Radar (SAR) data from Seasat are also available at JPL, although not on NODS due to the high data volume. The Canada Centre for Remote Sensing maintains a coastal SAR data archive. GEOSAT altimeter data are archived at NODC. [A more detailed description of the U.S. satellite imagery archives is contained in the Final Report of the MMS-sponsored "California Seabird Ecology Study", MMS-87-0056.]

In response to a question from Mr. Larson, there was a brief discussion, primarily involving Drs. Emery and Bernstein, outlining plans for the launch of new ocean remote sensors over the next few years. The acquisition of ocean color imagery, which ceased in 1986 with the demise of the CZCS sensor on Nimbus-7, will not resume before 1991 at the earliest. The proposed sensor, known as SeaWiFS (Sea Wide Field Sensor), is scheduled for launch on Landsat-6, operated by EOSAT Company. Scatterometer and SAR instruments are scheduled for inclusion on the ERS-1 satellite to be launched in 1990 by the European Space Agency. The NASA TOPEX mission, with a probable 1992 launch date, will measure ocean surface topography using a microwave altimeter. The next series of geostationary weather satellites to be launched by NOAA (starting in 1990), known as GOES-Next, will contain an AVHRR sensor, which will provide continuous high resolution (2-4 km) imagery of the type only presently available on polar orbiting satellites.

This should allow much greater exploitation of temporary cloud breaks in measuring surface temperatures. With regard to the NOAA polar orbiting series, the next planned launch is now scheduled for April 1988.

As a final point regarding remote sensing, Dr. Duxbury mentioned that weekly airborne infrared radiometer flights to measure sea-surface temperature for the fishing industry were conducted by the Coast Guard along Washington and Oregon for several years, but were terminated at least 10 years ago.

Discussion of Major Physical Processes

Following on the preceding discussions of various existing data sets and types of data, this session turned to the assessment of the level of present knowledge of dynamical processes necessary to an understanding of the oceanography of the Pacific Northwest coastal region. The discussion generally followed the topics suggested in Figure 9.

Dr. Halpern suggested that over the past 15 years, sufficient research has been conducted along the Oregon and Washington coasts to permit an adequate description of the first order physics of the coastal circulation in this region. Pressed to define what he meant by "first order", Dr. Halpern indicated that he would include basic mass transport balances and dominant spatial and temporal scales of motion. He feels that with adequate wind input, a three-dimensional numerical model incorporating the known physics could yield useful prognostic circulation patterns. He stated that the knowledge base is probably weakest in the area of topographic effects and Columbia River plume interaction effects. Dr. Strub commented that the analysis of CUE data performed by Harry Bryden indicates that the upper 20 m of the water column is of major importance in the transport balance, and that CODE results suggest that this upper layer is not well understood, particularly with respect to cross-shelf transport. Dr. Halpern countered that models, rather than additional observations, could be used to understand the physics of the upper layer. While agreeing that the overall oceanographic characterization of the region derived from the intensive studies of the 1970s has stood up fairly well, Dr. Strub emphasized, based upon his own work, that spatial variability along the coast may be of greater magnitude and importance than previous studies have indicated.

Regarding cross-shelf transport phenomena, Dr. Emery stated that some of his own work, plus that of Rick Thomson at IOS, has demonstrated that cross-shelf "squirts and jets" resulting from baroclinic instability can be triggered by small-scale wind field perturbations, and may occur at any place along the coast. These baroclinic instability features may sometimes interact with topographically-forced cross-shelf jets, such as observed near Cape Blanco and Cape Mendocino. Dr. Bernstein agreed, suggesting that a better knowledge of the wind field, combined with numerical modeling studies, may in fact yield a better understanding of cross-shelf transport than would additional intensive current meter measurements.

MAJOR PHYSICAL PROCESSES

- Alongshore and Cross-shelf Transport
- Coastal Upwelling
- Shelf Waves
- Seasonal Transitions

POSSIBLE DISCUSSION QUESTIONS FOR EACH PROCESS

- How well understood is this process overall?
- What is known about spatial (latitudinal, onshore-offshore) variability in this process?
- What is known about temporal variability (short-term, seasonal, interannual time scales)?
- What role do topographic effects (headlands, submarine canyons) play in modifying this process?
- To what extent do the Columbia River plume and flow out the Strait of Juan de Fuca affect this process?

The discussion next turned to the subject of interannual variability. Several participants agreed that any interannual variability is superimposed on a very pronounced seasonal cycle along the Pacific Northwest coast. Dr. Ebbesmeyer noted that a 10 year cycle in snowpack, sea level, and other parameters has been observed. Dr. Spillane added that sea level fluctuations associated with El Nino events have been observed at West Coast tide stations. Ms. Paluszkiewicz asked if interannual variability was an important enough consideration to warrant inclusion in a risk assessment model, and if so, how should one go about doing so. She reiterated that the MMS modeling role is aimed at most probable, not worst case scenarios. Regarding that point, Jim Kelley remarked that from the point of view of the public, some thought ought to be given to means of predicting worst cases. Some form of error bounds on model predictions, based upon known variability in the physical system, was suggested as a possibility. Dr. Bernstein referred to some recent research at Florida State University (James O'Brien's group) that deals with oceanographic modeling along the West Coast using real winds and tropical influences to derive seasonal and interannual variability over long periods of time. Dr. Bernstein feels that this work shows great promise in the ability to characterize long-term interannual variability in circulation models. He further suggested that such a model might be used via some nesting hierarchy as a replacement for simple climatology in setting initial conditions for shorter time scale trajectory models. The group's consensus was that interannual variability should indeed be factored in some manner into a risk assessment model for this region.

Finally, on the subject of topographic effects, Glenn Cannon indicated that there are effects associated with the Juan de Fuca submarine canyon that are different from those of other canyons, such as the Quinalt and Astoria canyons studied by Barbara Hickey. Regarding headland effects, Dr. Strub and Dr. Emery reemphasized the existence of semi-permanent cross-shelf jets and eddies in the vicinity of Cape Blanco, Heceta Bank, and Cape Mendocino. According to Dr. Emery, some existing models handle such features well, but the level of understanding of the pertinent processes is debatable. Dr. Ebbesmeyer suggested that more attention should be paid to the bottom boundary layer, since heavy oils or tar balls might act like bottom drifters and find their way northward into the Strait of Juan de Fuca and Puget Sound. This would also be relevant to the fate of drilling muds and cuttings. Mr. Larson responded that MMS is not just interested in the surface currents, and that the general circulation models (GCM) under development have the capacity to provide excellent vertical resolution throughout the water column. Dr. Strub offered a final comment that the physics of the bottom boundary layer is probably considerably less understood than that in the upper water column.

Adequacy of Data for MMS Needs

The February 9 morning session, moderated by Mr. Hachmeister, began with a discussion of the adequacy of the existing data base for addressing MMS needs. Several suggested topics of discussion on this issue were presented (Figure 10).

Dr. Duxbury started off the discussion with his assessment that the existing data sets are sufficient to compile a climatic mean picture of the oceanography of the region for each of the four seasons, but that use of historical data to study individual processes is a totally different matter, and probably not feasible. Ms. Paluszkiwicz echoed this viewpoint, stating that it would be a very rare case where reanalysis of historical data sets could be used as a tool to study specific processes that are not well understood. In her opinion, the primary uses of historical data should be for developing climatology and for verifying numerical models, and that the adequacy of the existing data should be evaluated with those purposes in mind.

Dr. Emery suggested that perhaps the views expressed on the previous day regarding the state of knowledge of basic processes in the region were somewhat overly optimistic. He added that there may well be trends and cycles evident in the physics of the region that have not even been detected in the historical data base.

Mr. Larson asked if there was any hope that the existing data base off the Pacific Northwest could yield information on interannual variability in a manner similar to what Dudley Chelton has done with the California Cooperative Fisheries Investigation (CalCOFI) data base off California. Dr. Herring stated that while Dynalysis has compiled a comprehensive climatology for their West Coast model, they have not tried to resolve any interannual variability. Dr. Emery felt that even with the CalCOFI data, it is really only possible to discern ranges of variability, and not characterize interannual variability in a deterministic sense. Ms. Paluszkiwicz was in agreement, stating that data of different types, from different seasons, depths, locations, etc., when lumped together are appropriate for constructing a climatology, but not for any statistically defensible description of interannual variability.

Dr. Magnell commented that it is difficult to address the adequacy of data without relating it to some specific process which you need to understand. He suggested the group address the adequacy of the present data sets and numerical models for detecting and describing cross-shelf squirts and jets. In response, Dr. Strub said that these features are seen, for example, in the CODE satellite data set off California, and that such features are also seen off Washington and Oregon, although less frequently and later in the year. Dr. Magnell recommended that such cross-shelf transport processes should be included, at least in a stochastic sense, in the MMS modeling effort. Dr. Emery agreed, stating that not including these processes would be ignoring some of the most important transport processes of the region.

ADEQUACY OF DATA FOR MMS NEEDS

Facilitator Mr. L. Hachmeister

Numerical Simulations

(Covered more in next discussion section)
Has own special set of problems.

Process-Oriented Descriptions

CRITERIA FOR ADEQUACY

- set bounds for adequacy w/rft coverage, resolution
- discuss need for overlapping on concurrent data sets
- measured resolution (ppt. °C, cm/s, etc.)

DATA QUALITY AND RELIABILITY

- calibration assurances
- pre-processing algorithms
- filtering
- subsampling

SPACE-TIME COVERAGE

- data gaps
- sampling intervals
- crossshelf vs. longshore resolution
- vertical sampling
- seasonal descriptions
- interannual variability

CRITERIA FOR ADEQUACY - SUMMARIZE

- meteorology
- circulation
- hydrology

NEED FOR ADDITIONAL DATA

FIGURE 10.

Dr. Duxbury suggested that one weakness in the existing data sets is the paucity of observations in the nearshore zone (shoreward of the 20 m isobath). There was general agreement on this point. There was also agreement that the Columbia River plume is a key feature in the region, and is probably responsible for some of the unexplained spatial and temporal variability observed.

Dr. Bernstein commented that the discussion of data adequacy versus needs was circular by nature, and that the debate could go on indefinitely. He argued that a more constructive approach would be to have some organization compile all available oceanographic data for the region onto one central, easily transportable medium for general distribution to the oceanographic community. Data adequacy would then be determined by use of the data base, rather than by speculation. He suggested that the appropriate transportable medium might be the compact disk, which has recently been used as a mass storage and access device for long-term meteorological data in a demonstration project conducted by the UW Atmospheric Science Department. Mr. Larson responded that to act as an archiving agency would not be within the mission of MMS, although MMS needs would likely be served by the results of such a project. Dr. Herring noted that much of the hydrographic data compilation has already been done by Dynalysis, though there may exist a considerable amount of CTD data that is still in originator's format and as such has not yet been retrieved from the NODC archives.

The discussion moved on to the adequacy of the meteorological data base. Dr. Albright noted that detailed wind observations are required, as only minor variations in surface pressure patterns (as drawn on weather maps) may result in significant differences in the coastal wind field. When questioned about the feasibility of deriving pressure and wind fields through the use of a suitable objective mesoscale atmospheric model coupled with existing observations, Dr. Albright responded that such studies are projected, but that the existing synoptic data network (even including ship of opportunity observations) might not be of sufficient density to provide the necessary input for such a model.

The best way to sample the coastal wind field, especially with respect to onshore/offshore resolution, was then discussed. Dr. Albright felt that one cross-shelf transect of weather buoys, spaced closely together (30 km), would be more valuable than multiple lines of loosely spaced buoys. Dr. Strub countered that if one wants to resolve the curl of the wind stress equally well in two dimensions, more than one cross-shelf line would be required.

Mr. Hachmeister returned to the question of remote sensing data as a possible tool for describing the physics of the upper water column and nearshore domains, where existing data are insufficient. Dr. Emery and Dr. Strub were in agreement that while remote sensing techniques are exciting and promising, the techniques are still relatively immature, and the error bounds are not well known. They indicated that in a couple of years, the techniques and associated errors should be much better known. Dr. Duxbury added that precipitation events as well as river

runoff may produce a thin lens of fresh water overlying saline coastal or upwelled water, which might confound the results.

Applicability to Numerical Modeling

The data requirements for numerical modeling, and the applicability of the existing data base for this purpose, were addressed in this session, moderated by Dr. Herring. He led off the modeling discussion by voicing his viewpoint that there must be a balance between the modeling and observational efforts. He cautioned against unrealistic expectations that models can provide useful predictions in the absence of detailed observations. At the present time, he feels that West Coast circulation models developed by Dynalysis (and others) can replicate each of the major physical processes to some degree. Alongshore transport can be modeled with some success, while cross-shelf transport is poorly represented. Coastal upwelling and shelf waves have been reproduced successfully.

Resolution in time is generally not a limiting factor in model performance, as model time steps are small. Spatial resolution (as represented in model gridpoint or element spacing) is usually the source of problems, particularly for small scale topographically-forced features. Dr. Herring pointed out that model skill in reproducing dynamical processes usually drops off rapidly with diminishing characteristic scales of the processes.

Regarding the suitability of existing data for use in running a circulation model off Washington and Oregon, Dr. Herring stated that despite the apparent abundance of hydrographic data off of Washington and Oregon, much of it is unsuitable for initializing or verifying a model density field, because temperature and salinity are often not available as a pair (XBTs for example), and sets of synoptic observations over the region are rare. Consequently, the existing hydrographic data are useful primarily for developing regional seasonal climatologies.

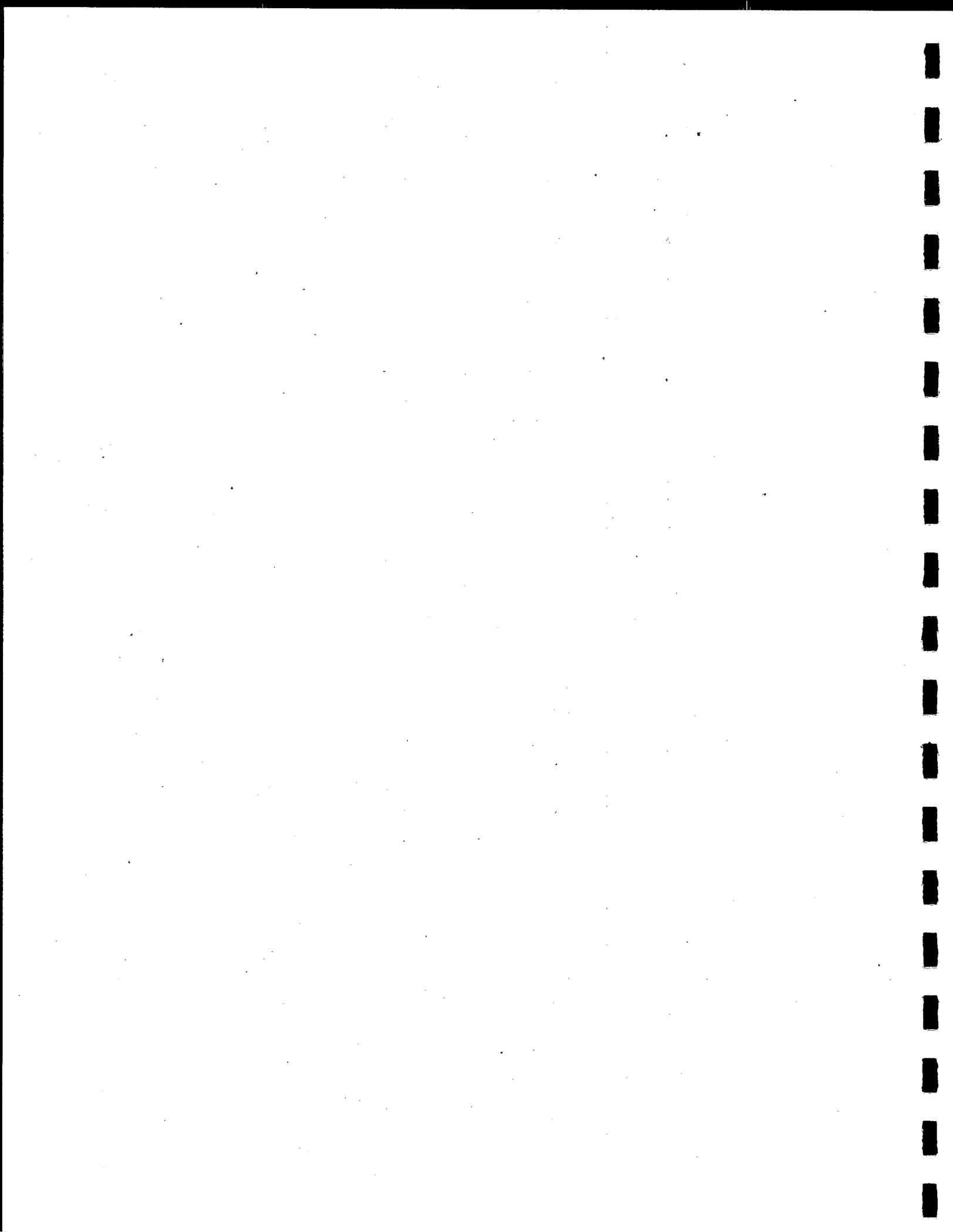
Dr. Herring noted that another data requirement of these models is the need for either surface elevation or transports at the model boundaries. Dr. Magnell voiced concern that applying a seasonal mean boundary condition at the outer boundaries of a model for this region would almost be the equivalent of treating the boundary as a wall, in light of the significant shorter time scale variability that has actually been observed. Dr. Herring indicated that given seasonal mean boundary conditions, a model will not be able to represent time-varying influences advected into the domain from outside the boundaries. It will, however, be able to represent processes or instabilities generated within the domain at locations sufficiently distant from time-invariant boundaries. Dr. Herring again stressed the concurrency criterion in assessing data utility, in this case with respect to the use of current meter data in deriving transport boundary conditions. Current meter studies have tended to be somewhat isolated in space and time, which does not lend itself well to the determination of transport boundary conditions with much

temporal resolution. Dr. Herring remarked that on the East Coast, it has been common to find multiple concurrent oceanographic experiments. This has not been the case on the West Coast. Dr. Strub asked whether satellite altimeter data could be used to provide estimates of transport that could be used for boundary conditions. Dr. Emery reported that numerous projects addressing the problem of extrapolating such surface information over the entire water column are underway.

On the subject of wind input requirements for models, Dr. Herring pointed out that only a few grid points of the LFM atmospheric model fall within the Pacific Northwest portion of the West Coast CTM model domain. Without a finer scale wind grid, small-scale circulation features cannot be represented by the model. Dr. Strub noted that a new operational atmospheric model (Nested Grid Model) produces finer scale gridpoint output, but he was unsure if it was archived and available as is the LFM. From a climatological viewpoint, the COADS set of marine observations maintained by the NCAR was mentioned as a potentially useful product for both wind and surface heat flux, which is also required by the model.

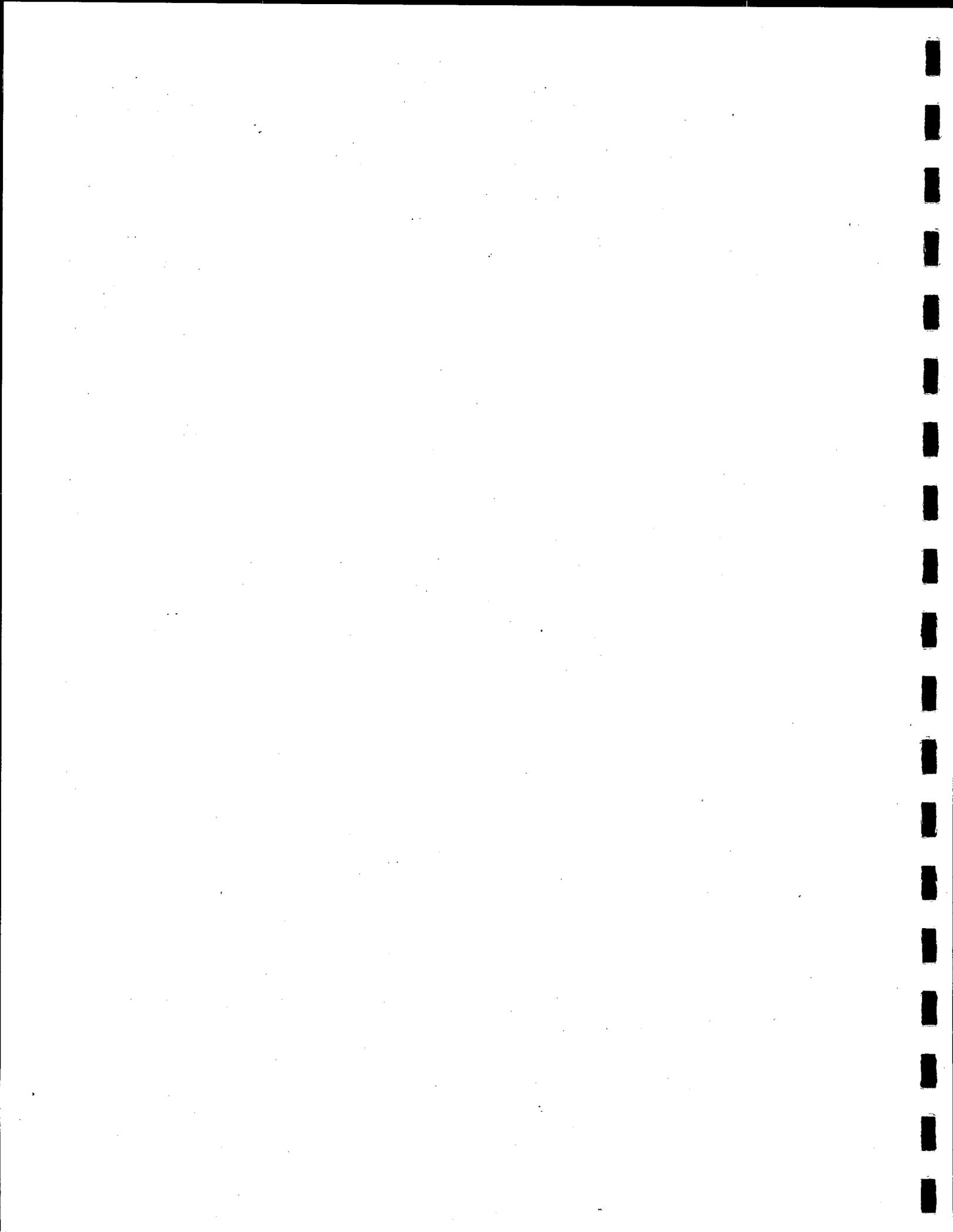
Other sources of possible *in-situ* oceanographic input data for models suggested by the group included expendable CTDs and acoustic doppler current profilers mounted on ships of opportunity. Dr. Bernstein suggested a scenario which included long term current meter line arrays at each end of the model domain, with a few moorings scattered between. Dr. Strub remarked that a good verification of model performance could be obtained from a small but heavily instrumented region within the model domain, in which momentum and heat flux budgets could be calculated to see if the model achieves a balance of terms.

The discussion of modeling requirements concluded after a brief presentation by Dr. Duxbury on a modeling effort he carried out in the early 1970s for the Washington-Oregon coastal region. Some aspects of the behavior of the Columbia River plume appeared to be well represented in this early model.



APPENDIX A

**Discussion Paper
for the Workshop on Coastal Circulation
Along Washington and Oregon**



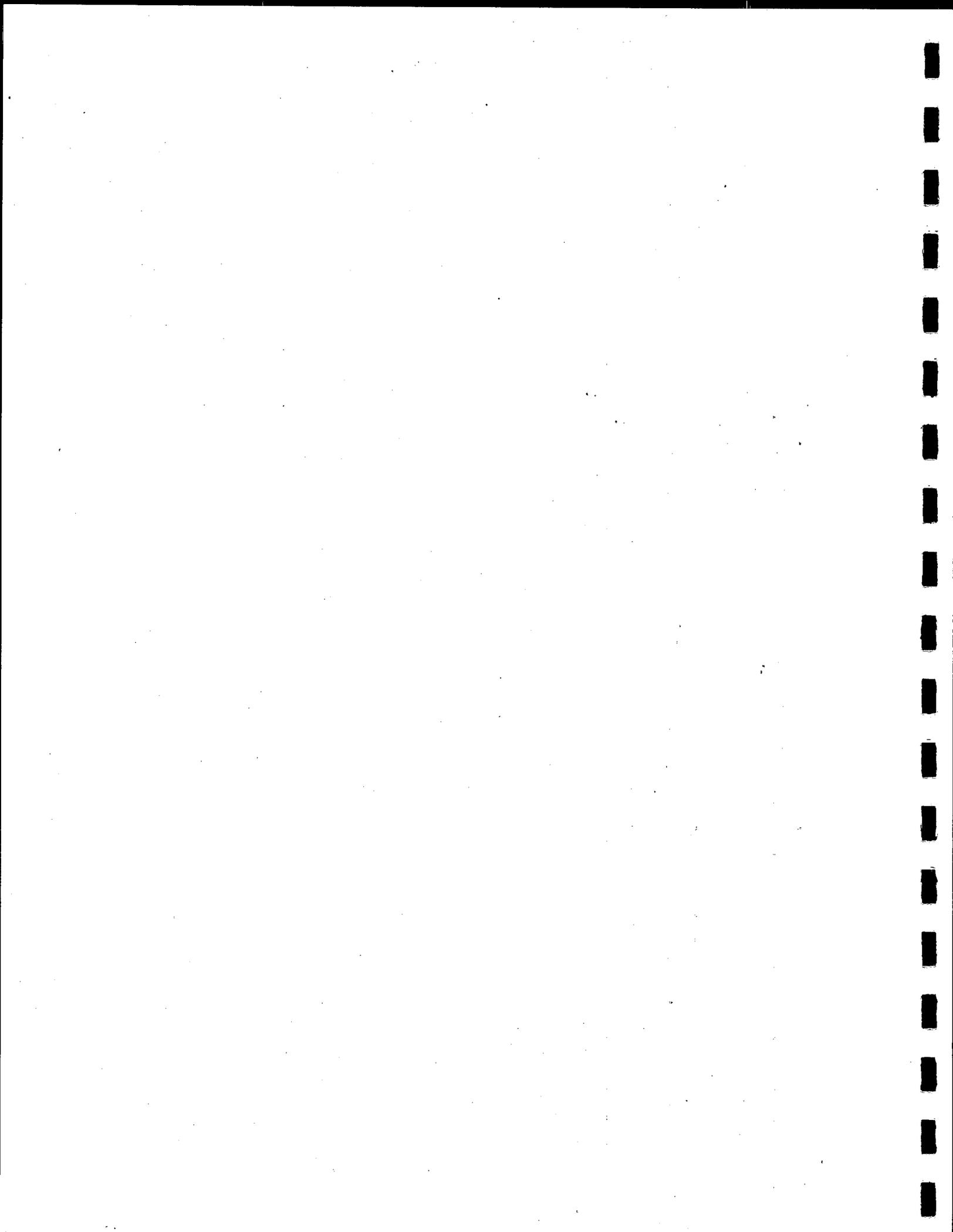
DISCUSSION PAPER for the

WORKSHOP
ON COASTAL CIRCULATION
ALONG WASHINGTON AND OREGON

FEBRUARY 8-9, 1988
SEATTLE, WASHINGTON

envirosphere company
A Division of EBASCO SERVICES INCORPORATED
Bellevue, WA

JANUARY 1988



INTRODUCTION

Oil and gas exploration on the Outer Continental Shelf (OCS) off the Oregon and Washington coasts may become a reality during the next decade. If sufficient resources are discovered, the Outer Continental Shelf Lands Act Amendments of 1978 (OCSLAA, Public Law 95372) require that exploration and development be conducted with due consideration for the protection of the human and marine environment. The U.S. Department of Interior, acting through the Minerals Management Service (MMS), is the Federal Government agency assigned with balancing the development of OCS oil and gas resources to meet the energy needs of the nation with economic, environmental, and social concerns. MMS has established an Environmental Studies Program to:

- Enhance the leasing decision process by providing accurate environmental information upon which the prediction of potential impacts of OCS oil and gas development may be based
- Provide information on the ways and extent that potential impacts on the human, marine, biological, and coastal environments can be mitigated
- Ensure that information already available or being collected under the program is in a form that can be used in the decision-making process associated with a specific leasing action or with the longer term OCS minerals management responsibilities
- Provide a basis for future monitoring of OCS operations.

The Environmental Studies Program includes a physical oceanography element, owing to the fact that coastal ocean circulation patterns must be adequately known in order to determine the likely transport and fate of pollutants which may be introduced by OCS oil and gas exploration and production facilities.

The MMS Pacific OCS Regional Office is presently sponsoring a study entitled "Coastal Circulation Along Washington and Oregon" to answer three basic questions:

- 1) What is the extent of the present state of knowledge concerning the physical environment, especially shelf/slope circulation in this region, and where does this knowledge base reside?
- 2) Is the present state of knowledge sufficient to provide a sound basis (via realistic input to numerical models or other means) for accurate estimation of potential environmental impacts from oil and gas-related developments in the region?
- 3) If this state of knowledge is not sufficient to provide the required information, what additional studies need

to be conducted, in terms of either additional analysis of existing data or further field data collection programs, to bring the state of knowledge to a level that meets the needs of MMS?

To answer these questions, discussions with the oceanographic community of the Pacific Northwest is the obvious first step. One need not delve too deeply into the oceanographic literature before it becomes obvious that much of the "knowledge base" on this subject resides with a relatively small number of coastal oceanographers who have performed research off the Pacific Northwest coast over the past 30 years. For this reason, Envirosphere Company, on behalf of MMS, is conducting this "Workshop on Coastal Circulation Along Washington and Oregon." The purpose of this paper is to provide a focus for discussion at the workshop. The issues presented here are not intended to preclude other topics or issues that the workshop participants feel should be addressed. There will be sufficient opportunity at the workshop to raise and discuss any other issues regarding physical oceanographic research off Oregon and Washington that may be pertinent to past, present, and future programs. This workshop is not intended to foreclose any options which may be available to MMS in the design of future studies.

There will be a Public Conference/Workshop in Portland, Oregon, on May 23-25, 1988, during which all aspects of the Environmental Studies Program will be open for discussion. A physical oceanographic session will also be included in that conference.

BACKGROUND

MMS Perspective

The Pacific OCS Region, comprising the West Coast of the continental United States, has been divided into four Planning Areas. These include the Southern, Central, and Northern California Planning Areas, and the Washington-Oregon Planning Area. Although leasing and exploratory drilling have occurred in each Planning Area, only the Southern California region has experienced significant leasing, development, and production activity.

Between April 1965 and August 1967, 12 exploratory wells were drilled on Oregon and Washington OCS lease sites. Although hydrocarbons were encountered in some of the wells, none of the finds were considered at the time to be of commercial quality. All of these leases were relinquished prior to the end of 1969. The latest tentative OCS oil and gas leasing schedule proposed by the Department of Interior calls for lease sales to begin in the Washington-Oregon Planning Area in 1991. The Environmental Studies Program has therefore initiated the environmental assessment process that will strive to determine in advance the potential for impacts of oil and gas development off Washington and Oregon. The

Coastal Circulation Along Washington and Oregon Program will determine how much is known (or not known) about regional oceanographic processes and circulation patterns. This, along with planned biological/ecological baseline studies, is the first step in the assessment process.

With the only active exploration and development occurring in the California planning areas, the MMS Pacific OCS Region Environmental Studies Program has previously concentrated on environmental studies along the California coast. At this time, several MMS-sponsored physical oceanographic studies are ongoing or have been completed. These include:

- The Climatology and Oceanographic Analysis of the California Pacific Outer Continental Shelf Region (completed)
- The Central California Nearshore Current Study (completed)
- An Evaluation of Effluent Dispersion and Fate Models for OCS Platforms (completed)
- The California Shelf Circulation Model (completed)
- The Santa Barbara Channel Circulation Model and Field Study (completed)
- The Central California Coastal Circulation Study (ongoing)
- The Northern California Coastal Circulation Study (ongoing)
- The Coastal Wave Statistical Data Base (ongoing)
- The Southern California Bight Circulation Model (recently begun)
- The Initial Statistical Characterization of the Variability of Coastal Winds and Currents (expected to begin in early 1988).

In addition, for several years MMS has funded a number of environmental buoys which are located along the California coast and operated by NOAA's National Data Buoy Center (NDBC). To ensure that sufficient weather and wave data are available to support the other environmental studies, two NDBC buoys funded by MMS have recently been deployed off Oregon and Washington.

As may be inferred from the subject matter of the studies listed above, the primary goal of the physical oceanography component of the MMS Environmental Studies Program is to characterize the oceanographic processes affecting circulation in the OCS regions. Such characterizations are critical to the prediction of the fate of

discharged drilling muds and cuttings as well as the transport of possible spills of oil or other hazardous substances. Such studies also provide background data on expected environmental conditions that may be of use in other related applications such as the design engineering criteria for platform construction and installation.

Oceanographic Setting

Although ship drift measurements, tide gauge records, and coastal survey data have been available along the Pacific Northwest coast since the late 1800s, it has only been during the last 30 years that concerted oceanographic investigations have been conducted in this region. Early hydrographic, drift bottle, and drogue tracking studies during the 1950s and 1960s gave way to intensive process-oriented studies during the 1970s and early 1980s (e.g., CUE-I, CUE-II, WISP, UP-75, Fall Transition Experiment, and SuperCODE). Advancements in technology during the past few years, such as ocean remote sensing, digital data loggers, real-time telemetry, satellite tracking systems, and remotely operated subsurface vehicles have allowed oceanographers to combine a much greater range of data types into descriptions of oceanographic processes off the Pacific Northwest coast (e.g., Vancouver Island Coastal Current Experiment).

For the sake of a common starting point for discussions at the workshop, we will assume that the following brief oceanographic description of the Oregon-Washington continental shelf region is generally accepted by the oceanographic research community.

The Oregon-Washington coast runs nearly north-south, with a continental shelf that is wider and straighter than the Northern California shelf, and with relatively few bays and promontories. The width of the shelf tends to isolate the nearshore flow from the large-scale California Current system. There are fewer eddy-like features and cross shelf filaments or "squirts" in this region than are observed off California, and the seasonal upwelling signal and associated coastal currents are more clearly defined.

The currents off the Oregon-Washington coast have significant energy at many different time scales, including: tidal and inertial signals with periods of several hours to a day; locally and nonlocally wind-forced fluctuations with periods of several days to several weeks; and seasonal and interannual variations. The oceanographic regime along this coast is strongly influenced by the mesoscale wind field. The coastal upwelling season occurs during April through September, with a maximum intensity in July and August. Although alongshore currents appear to be predominantly locally wind driven, theoretical and experimental work has also revealed evidence of the existence of coastally trapped waves of nonlocal origin on this shelf/slope domain.

Average currents exhibit strong seasonal cycles, with mean northward flow at all depths in winter, mean southward flow at all depths in spring, and southward flow near the surface with northward flow at depth in summer. A rapid transition of the currents from northward flow to southward flow occurs in the spring, with a more gradual return to northward flow in the fall. These transitions, particularly the "spring transition," are most notably observed in the near surface currents and coastal sea level.

Another important feature of the region, which has a significant influence on the surface circulation and further differentiates this region from the California coast, is the presence of the Columbia River plume. The plume exhibits a complex horizontal frontal structure, which is detectable by gradients of surface temperature, salinity, and water color, and is often easily identified in satellite imagery. The movement of the plume is significantly influenced by the winds. During winter it extends north in a narrow band along the Washington coast, while during the summer it spreads offshore far out to sea and southward off the Oregon coast.

ISSUES FOR DISCUSSION

This section presents four issues which are felt to be central to the MMS program in the Washington-Oregon Planning Area. As indicated above, this will allow the workshop invitees sufficient time in advance of the workshop to reflect on past experiences, gather any pertinent information, and formulate recommendations. The first three issues raised here closely parallel the three questions raised earlier in the introduction. The fourth issue pertains to integration with other environmental disciplines.

Issue: The State of Knowledge of Oceanic Circulation Off Washington and Oregon

The objective in discussing this issue is not to attempt to formulate a detailed technical review or summary of the oceanic circulation processes in this region. Such reviews have been published at various times in the past, and are more suited for scientific journals or compendia. Rather, the intent of this project (and specifically the workshop) with respect to this issue will be to:

- Determine when, where, how, and by whom oceanographic measurements have been made along Oregon and Washington
- Determine the spatial and temporal coverage of data collected in this region
- Establish where and in what form (i.e., how accessible and available) the data collected in past experiments are archived

- Distinguish those processes/phenomena for which we have a relatively well developed conceptual picture (e.g., long term seasonal geostrophic flow) from those which are less well understood (e.g., the nature of interannual variability).

Envirosphere will be compiling for MMS a catalog of existing data sets, including as many answers to the above questions as possible for each case. It is not within the scope of this project, however, to actually acquire and analyze or synthesize the data sets identified.

Issue: The Adequacy of the Existing Knowledge Base in Meeting MMS Requirements

The environmental impact assessment objectives of MMS have been briefly discussed in preceding sections, and will be presented in greater detail at the workshop. One of the questions which must be answered early on is: What criteria should be used to evaluate "adequacy" in the context of MMS requirements? Our ability to define and characterize the naturally occurring spatial and temporal variability of the shelf/slope circulation and the ability to properly specify model initial and boundary conditions are both relevant to this issue.

While a considerable amount of useful data has been collected over the years, some may not have been fully analyzed and/or compiled with other similar data sets to form a clearer composite picture. By further analysis and synthesis of existing data sets, it may be possible to enhance the adequacy of the overall data base.

For this project, emphasis is placed on data bases consisting of current measurements (Eulerian and Lagrangian) and currents inferred from dynamic height computations. However, since diagnostic or prognostic ocean circulation models are considered by MMS as possible tools in evaluating potential impacts, one must also have an understanding of certain ancillary data sets which relate to model forcing and boundary conditions. Examples of such data include coastal meteorological observations, coastal sea level records, and satellite imagery. The adequacy of these types of data is also expected to be a topic of discussion.

Issue: Identification of Significant Information Gaps

Enough data may have been collected along the Washington-Oregon coast to fully characterize the oceanography of the region with respect to the requirements of MMS, or important gaps in data or understanding may exist. Building upon the discussions of the level of our understanding of the physical environment and the adequacy of the information base available to describe and model it, the workshop will provide the attendees an opportunity to identify and discuss information gaps which they feel are significant.

**Issue: Integration with Other
Environmental Disciplines**

The physical processes operating in the ocean off Washington and Oregon are unlikely to be greatly affected by the presence of oil and gas development. Potential environmental impacts, therefore, must be evaluated in light of the interaction between the physical environment, the biological environment, and the human socioeconomic environment. While the issue of integrating physical oceanographic information with data from other disciplines is less straightforward than the purely physical questions, it is nevertheless central to the overall objectives of the MMS Environmental Studies Program. Several workshop attendees have participated in such interdisciplinary studies in the past, and their recommendations will be welcome.

As mentioned in the introduction, an MMS-sponsored public workshop concerning a broad range of environmental issues related to OCS oil and gas development off the Washington-Oregon coast is scheduled for May 23-25, 1988, in Portland, Oregon. In this forum MMS is also encouraging the participation of the scientific community. A presentation on the results from the Workshop on Circulation Along Washington and Oregon is anticipated at the public workshop. The findings and recommendations on the status of physical oceanographic studies in the region will need to be presented within the overall framework of general environmental issues.

SUMMARY

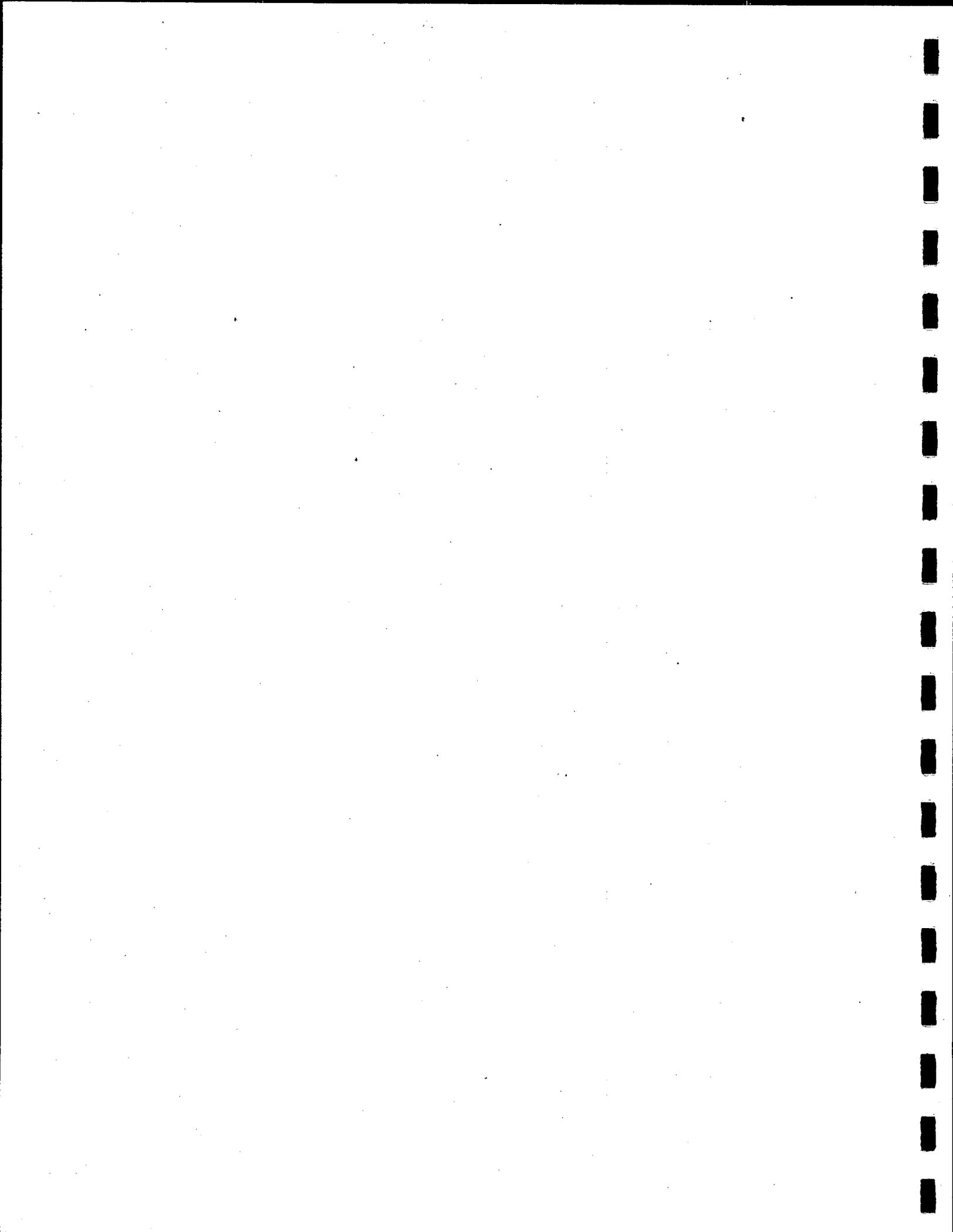
This brief discussion paper has attempted to serve two purposes. First it has provided some general background on the MMS Environmental Studies Program and its sponsorship of physical oceanographic studies. Secondly, it has proposed four primary issues for discussion at the Workshop on Circulation Along Washington and Oregon:

- The state of knowledge of oceanic circulation off Washington and Oregon
- The adequacy of the existing knowledge base in meeting MMS requirements
- Identification of significant information gaps
- Integration with other environmental disciplines.

Discussions at the workshop are expected to revolve around the above issues, but will not be restricted only to these issues. The workshop, above all, will be an opportunity for Pacific Northwest coastal oceanographers to provide input to the present and future MMS planning process involving critical environmental issues associated with any future oil and gas leasing and development activity along the Washington and Oregon coasts.

APPENDIX B

List of Participants



LIST OF PARTICIPANTS
 WORKSHOP ON COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
 FEBRUARY 8-9, 1988

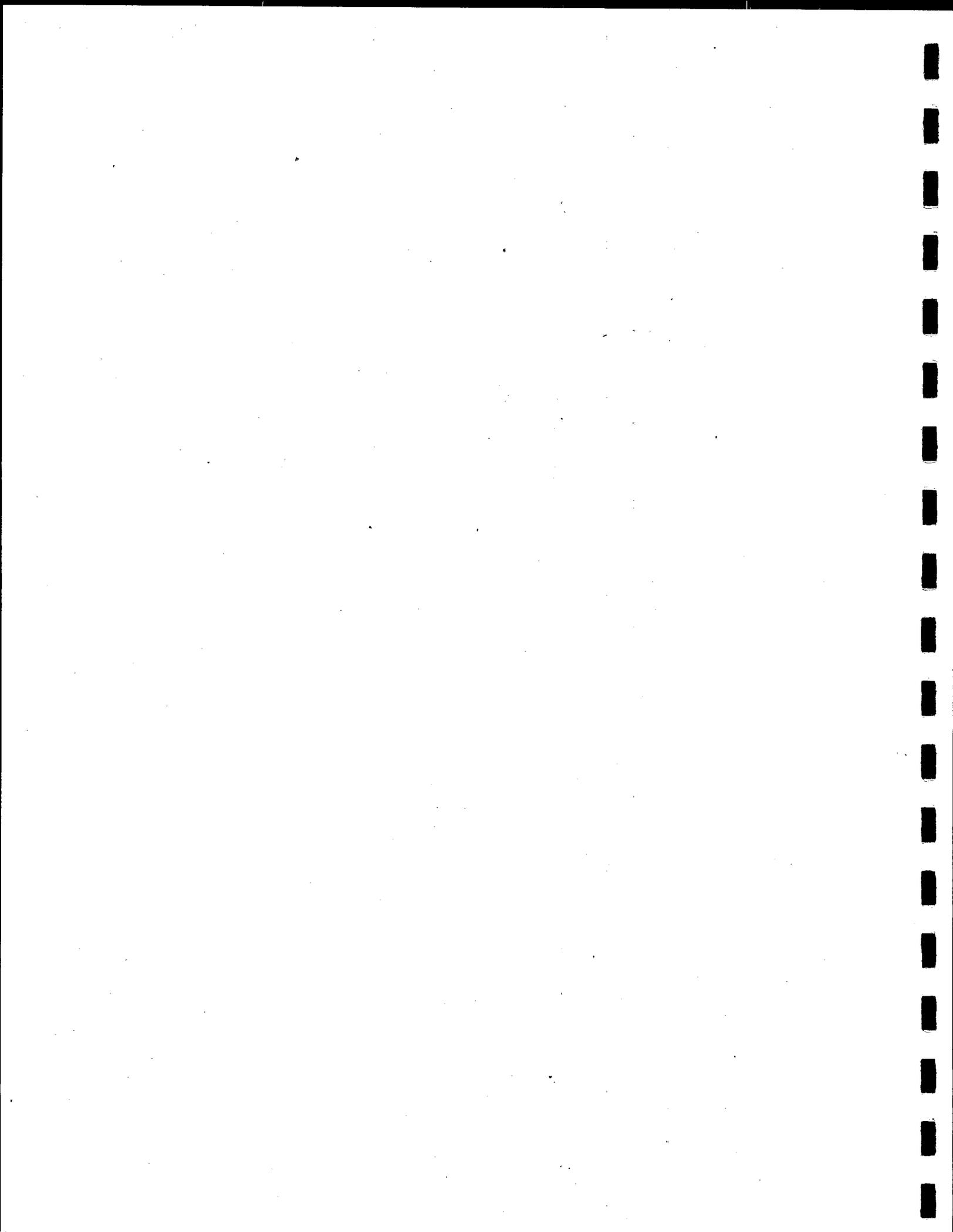
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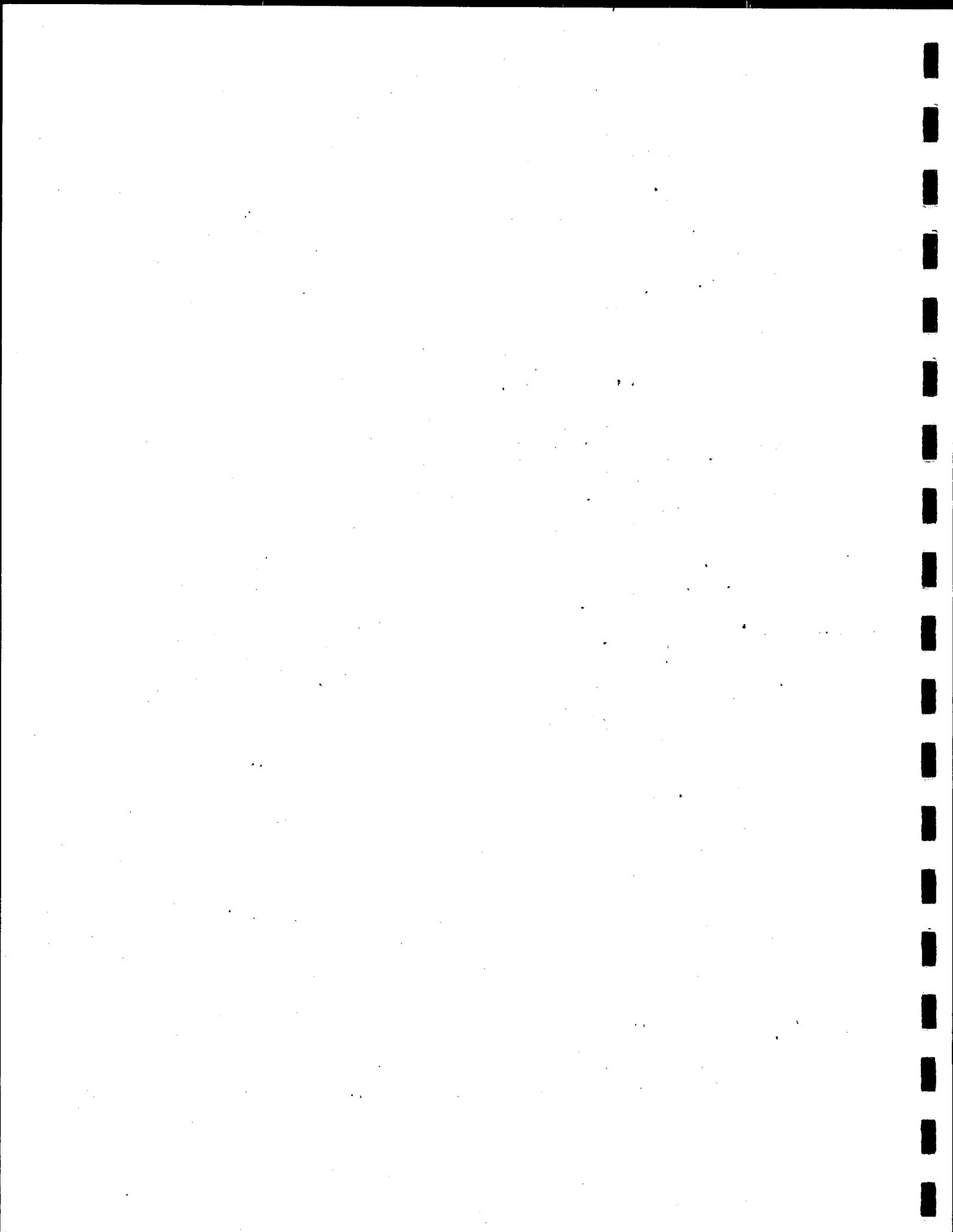
LIST OF PARTICIPANTS (Continued)
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 FEBRUARY 8-9, 1988

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APPENDIX C

Proceedings from the Physical Oceanography Sessions
at the Conference/Workshop on Recommendations
for Baseline Research in Washington and Oregon
Relative to Offshore Oil and Gas Development,
December 15-17, 1976
(Massoglia, 1977)



PHYSICAL OCEANOGRAPHY CONSIDERATIONS

Adriana Huyer, Ph.D.*

Introduction

One of the general questions about offshore resource development is what impact such development will have on the environment. There are only a few processes (e.g., heating, change of surface tension) by which development of offshore resources can affect the physical oceanography of the region. The importance of physical oceanography in considering offshore resource development lies not so much in that the physical oceanography will change, but rather in that the physical oceanography is what determines the transport of pollutants or other materials away from their source to regions where they may be damaging to the environment. Such transport occurs through lateral and vertical advection, and also through turbulent diffusion and convective mixing. The diffusion and mixing processes are by far more difficult to understand, but not nearly enough is known even about the currents which carry material by simple advection.

Water motions that transport materials occur on a great variety of time scales: wind waves and swell (with periods of seconds); internal waves (periods of minutes to hours); inertial and tidal oscillations (periods of 12 to 25 hours); wind-generated "events" (with periods of several days); seasonal changes (period of 1 year); and year to year variations. All of these time scales are important in understanding and predicting the currents and hence the transport of material in the event of leakage or spillage.

Important Unknowns

Before describing some of the things that are known, I would like to emphasize those areas about which we know very little.

1. Surface currents. The surface currents are important in determining the distribution of any oil that is spilled or leaked. So far, there have been very few direct measurements of near-surface currents (mainly by Dr. David Halpern of Pacific Marine Environmental Laboratory). Instrument development

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that has recently occurred will make it possible to measure surface currents on a larger scale within the next year or so.

2. Near-shore currents (between the surf zone and the 50-m isobath). Currents in this region are significant as they will determine whether or not pollutants originating offshore will reach the beach. Again, oceanographic technology has now reached the point that we can begin to make regular observations in this region.

3. The flow over the shelf south of 44°40' N (including not only southern Oregon, but also northern California). This includes the fertile Heceta Bank region, and areas around Cape Blanco and Cape Mendocino where the upwelling process (which may cause high fertility) is probably very strong.

What Is Known

The subsurface circulation over the Shelf off Oregon and Washington (north of 44°40' N) is relatively well known. Figure 1 shows the location of current meter moorings during one experiment that was conducted jointly by IOS (Victoria), University of Washington, and Oregon State University in early 1975. Most other direct current measurements were made over the shelf between 44°40' and 47°00' N. At one location, a current meter mooring was maintained for a year near the 100-m isobath. These observations show that there is a significant seasonal variation in the alongshore flow (figure 2). Monthly mean currents at a 25-m depth at this location vary from 20 cm/sec⁻¹ northward to 35 cm/sec⁻¹ southward. These might indicate monthly displacements of 750 km northward in January, and 1,200 km southward in April.

Figure 3 shows that variability also occurs in periods of several days. These fluctuations (termed "events") have amplitudes of 20 to 30 cm/sec⁻¹. The fluctuations are coherent with wind and sea level variations, and coherent in the alongshore direction; the amplitude of the fluctuations decreases with distance from shore. It remains to be seen whether the event structure and behavior is similar in southern Oregon; there is some evidence that this description is not valid off central California.

Strong variability exists as well at tidal and inertial periods (12.5, 25, and 17 hours). Over the Shelf, the amplitudes are about 10 to 20 cm/sec⁻¹. They are particularly important in the Strait of Juan de Fuca and Puget Sound, where tidal currents can reach 4 knots.

- △ IOS (Canada) mooring
- ◡ UW mooring
- OSU mooring
- ▲ CHS tide gage
- NOAA tide gage
- OSU tide gage

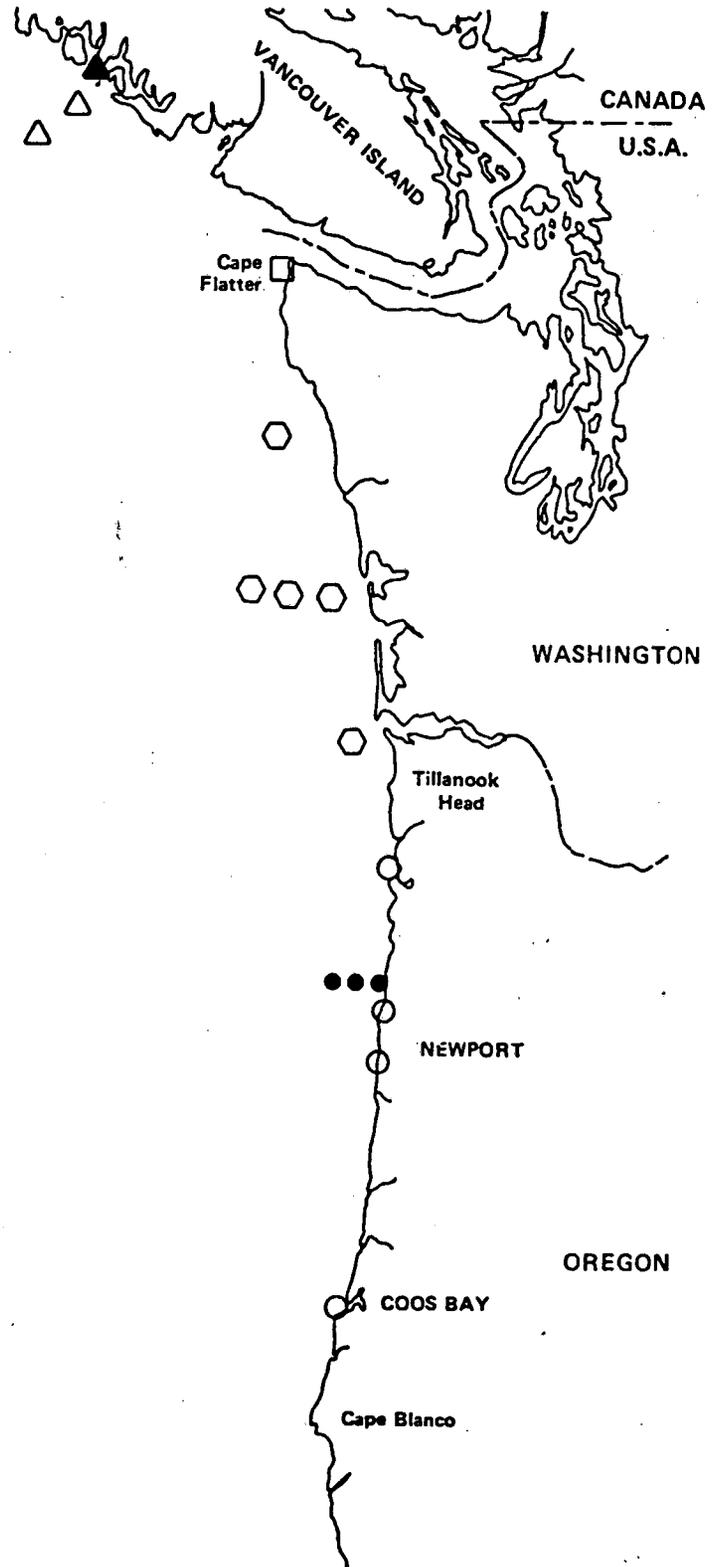


Figure 1.

MONTHLY MEAN CURRENTS
 POINSETTIA
 14 DEC 1972 - 17 DEC 1973

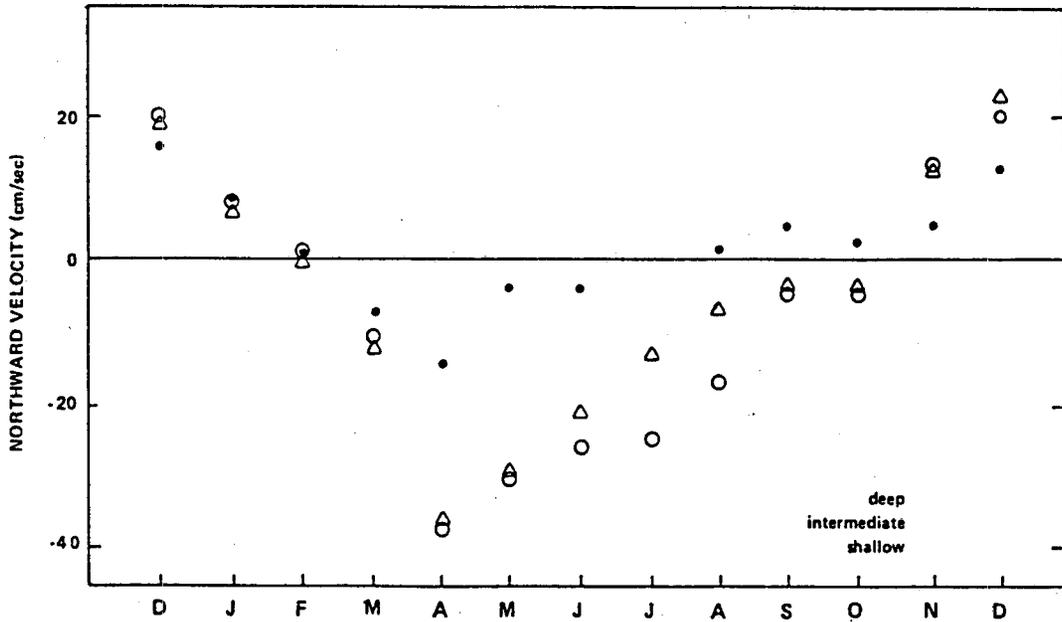


Figure 2.

NEWPORT WIND

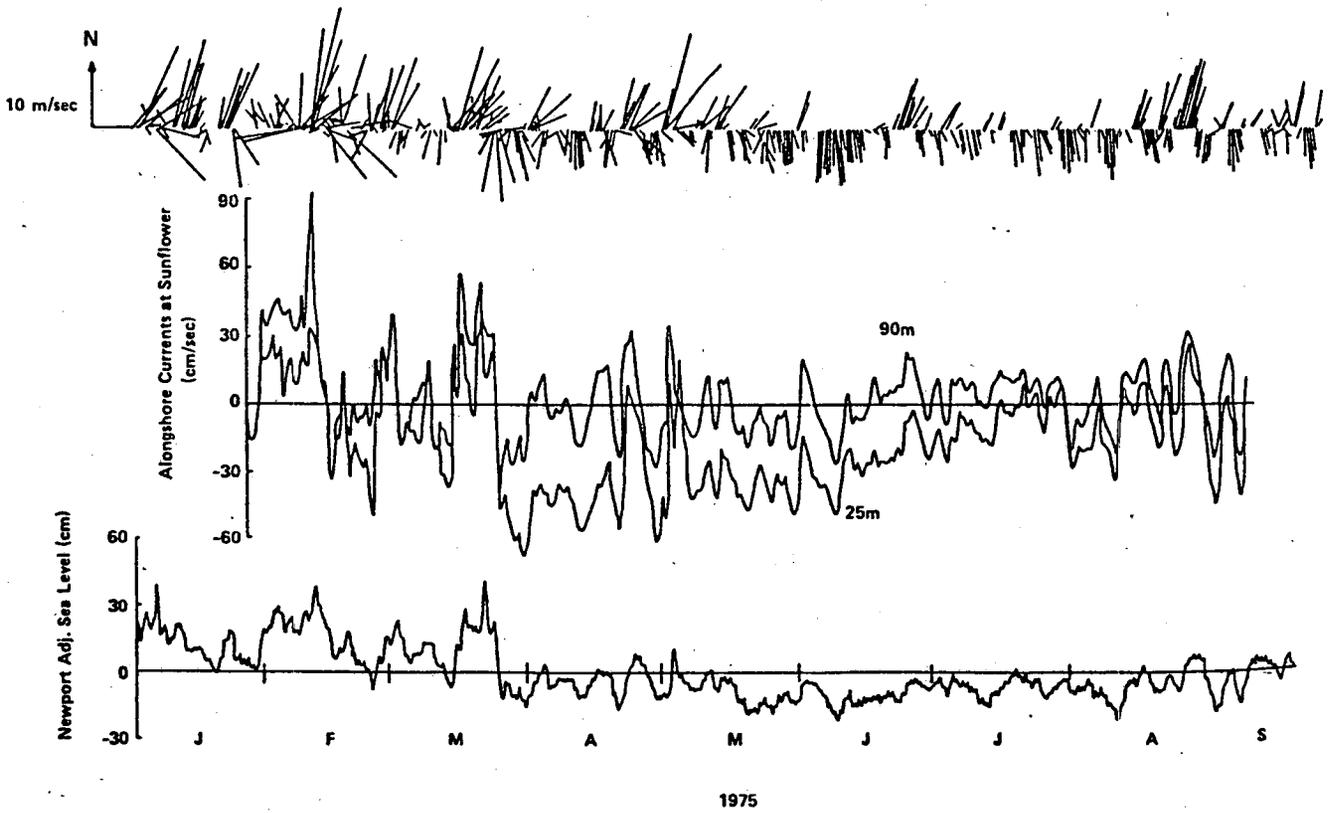


Figure 3.

PHYSICAL OCEANOGRAPHY WORKSHOP

Convenor: Dr. Adriana Huyer
Rapporteur: Dr. Barbara Hickey

The physical oceanography workshop was initially divided into four subgroups: Continental Shelf and Slope; estuaries; intertidal, open coast; and Puget Sound. The intertidal and Puget Sound subgroups met in joint sessions with counterpart biological oceanography subgroups. Summaries of the deliberations of these two subgroups are included in the biological oceanography subgroup reports.

RECOMMENDATIONS CONTINENTAL SHELF AND SLOPE WORKSHOP

Moderator: Dr. Adriana Huyer
Rapporteur: Dr. Barbara Hickey

The recommendations on the study of the physical oceanography of the Outer Continental Shelf and Slope region are based on the following philosophical considerations:

1. There is a need to know the surface flow (its mean, seasonal variability, response to wind variations, and its tidal and inertial oscillations) to be able to predict the transport of pollutants spilled or leaked on the surface. Technological problems and high costs have discouraged measurements of near-surface currents in the past. These difficulties have now decreased significantly.
2. Understanding the subsurface flow is necessary to predict the transport of water-soluble pollutants, suspensions, and bedloads. The subsurface currents over the shelf are relatively well known for the area north of 44°40' N. There are data and descriptions from which we can estimate the amplitude of the seasonal variations, the response to wind variations, and the tidal and inertial oscillations; relationships can also be established between the

alongshore component of the subsurface currents and sea-level variations in this area, both on the seasonal and several-day time scales. South of 44°40' N, the subsurface flow is not well known.

3. Currents in the nearshore zone, between the surf zone and the 50-m isobath, are not known well enough to predict when and where pollutants will reach the shore. Only now is it becoming technologically feasible to make measurements on a regular basis here.
4. Currents seaward of the Continental Shelf are not well known. At least in summer, surface waters originating on the shelf are transported at least 200 km offshore (e.g., Columbia River plume). These currents are important both in transporting pollutants offshore and nutrients and offshore species to the shelf region.
5. There are some areas which deserve intensive study--for example, Heceta Bank, which is particularly fertile, and the entrance to the Strait of Juan de Fuca, where little is known about the interaction between water and fauna from the Strait and those on the shelf.
6. There is an ongoing need to monitor winds and sea level along the coast. Both may be used to estimate the currents, and the wind is also needed as a direct input for spill trajectory models.
7. The shelf and slope circulation are unaffected by political boundaries, and studies should be coordinated as much as possible with those farther south--off northern California--and any that might be conducted farther north--off Vancouver Island.
8. Near-bottom currents at both high and low frequencies need to be measured to understand the sediment transport.

In the light of these considerations, we recommend the following studies in order of priority:

1. The shelf circulation of Southern Oregon: The study would consist of direct current measurements at several locations along the

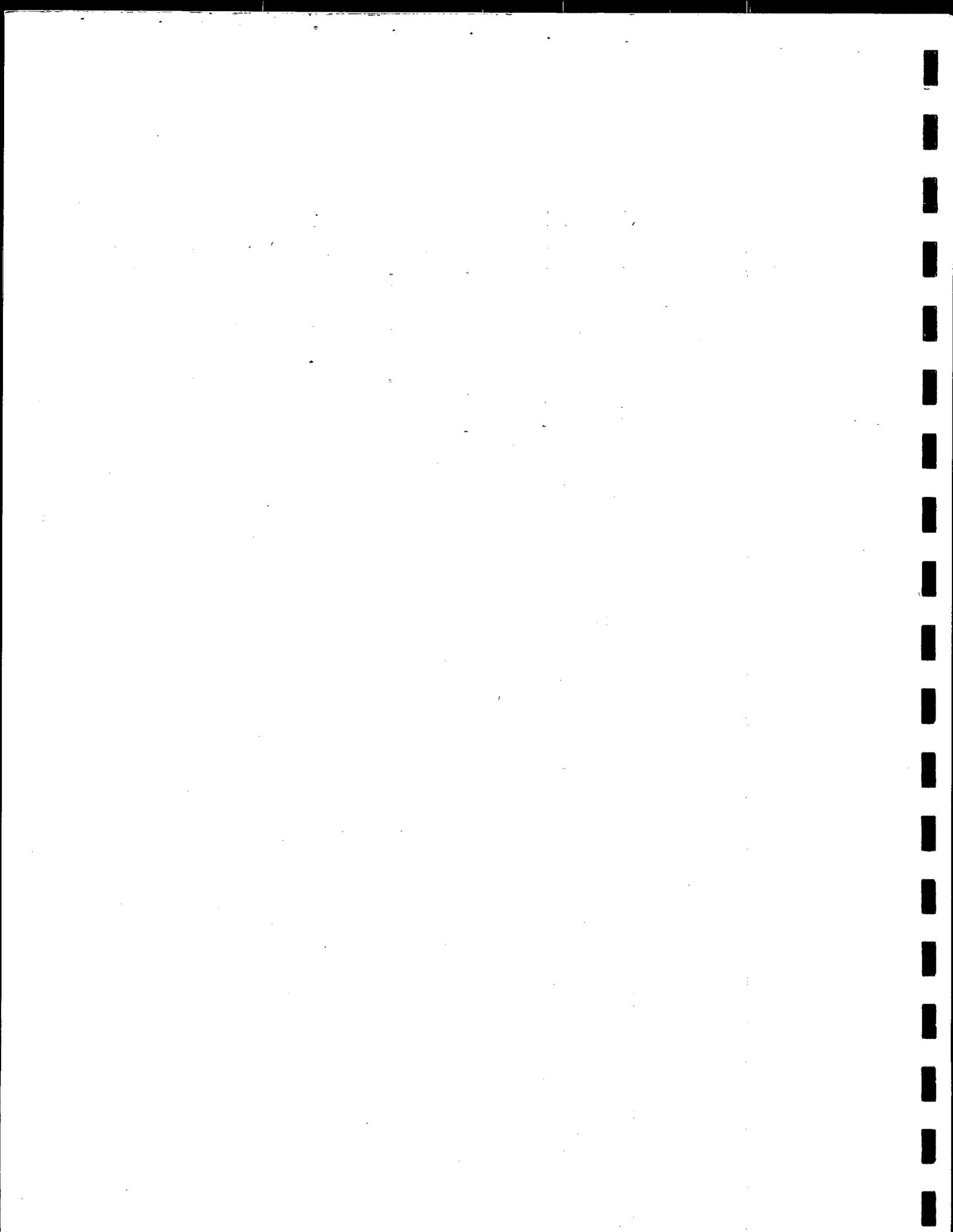
100-m isobath: for example, off Brookings, Cape Blanco, Reedsport, Florence, and Cascade Head. Wind and sea-level measurements should also be made at several exposed locations along the coast. The current meter moorings off Florence and Cape Blanco would be maintained for a full year; the others would be maintained at least 6 weeks in each of three seasons: winter, spring, and summer. Suitable arrays would consist of three or more Aanderaa current meters with the main subsurface flotation at about 20 m and additional current meters (designed to reduce contamination from surface waves) above 20 m to measure the near-surface flow. The near-surface flotation would be streamlined to reduce drag. Near-bottom currents should be measured to estimate sediment transports. This study will be of even greater value if it is coordinated with a similar study recommended for northern California by the workshop in San Francisco.

2. The circulation over Heceta Bank: This study would consist of direct current measurements over and near the bank. The strong coastal current observed farther north is certainly modified significantly in this region where the shelf width changes by a factor of 2 in 16 km. A suitable array might consist of six moorings: four in a line across the bank at about 44°05' N, between the shore and the 500-m isobath; and two on the northern flank of the bank. Drogue studies would provide additional information on recirculation in this region. Since the bank is very asymmetrical, it probably affects northward currents very differently from southward currents. Observations at least 6 weeks in duration should be made in each of three seasons--winter, spring, and summer--because the mean flow regions as well as the biological regions are different in each season. Sea level and wind should both be monitored during this period so that results can be generalized to be applicable to other years.
3. The circulation of the nearshore zone: By nearshore zone is meant the zone between the surf zone and the 50-m isobath. Alongshore

coherence lengths are probably not as great here as in the midshelf regime and are probably shorter along irregular coastlines than along regular coastlines. A suitable study would encompass both types of coastline. The smooth type of coastline could be studied in the region between Heceta Head and Cape Arago by moorings about 10 to 25 km apart which would be maintained in this area along the 20-m or 30-m isobath. The irregular type of coastline would be studied in the region between Cape Blanco and Cape Ferrello by maintaining an array along the 20-m or 30-m isobath. Arrays in the two regions would be maintained for about 2 months and simultaneously if possible. The current meters and the moorings must be designed to minimize contamination by high-frequency waves.

4. The circulation near the entrance of the Strait of Juan de Fuca: Exchange between the inland waters of Washington and the waters of the Continental Shelf region occurs at the entrance to the Strait of Juan de Fuca. It is in this region that pollutants or fauna in the inland waters could be released to the shelf and open ocean; conversely, pollutants or fauna from the shelf could enter the inland waters via bottom currents in the Strait. A suitable study would consist of three moorings across the entrance to the Strait, and two moorings about midshelf just north and south of the entrance. The moorings would be designed to minimize mooring motion due to the very strong tidal currents in this region. The direct current measurements would be supplemented by hydrographic observations.
5. The circulation beyond the shelf: This study would consist of a few current meter moorings over the Continental Slope and a few beyond the foot of the slope. A suitable study would have moorings at about 48° N, 45° N and 42° N, which would be maintained for about 2 years.

**Appendix B - User's Guide, Data Base
Management System**



COASTAL CIRCULATION
ALONG WASHINGTON AND OREGON

DATA MANAGEMENT SYSTEM
USER'S MANUAL

Prepared by:

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Under Contract No. 14-12-0001-30389

August 1988

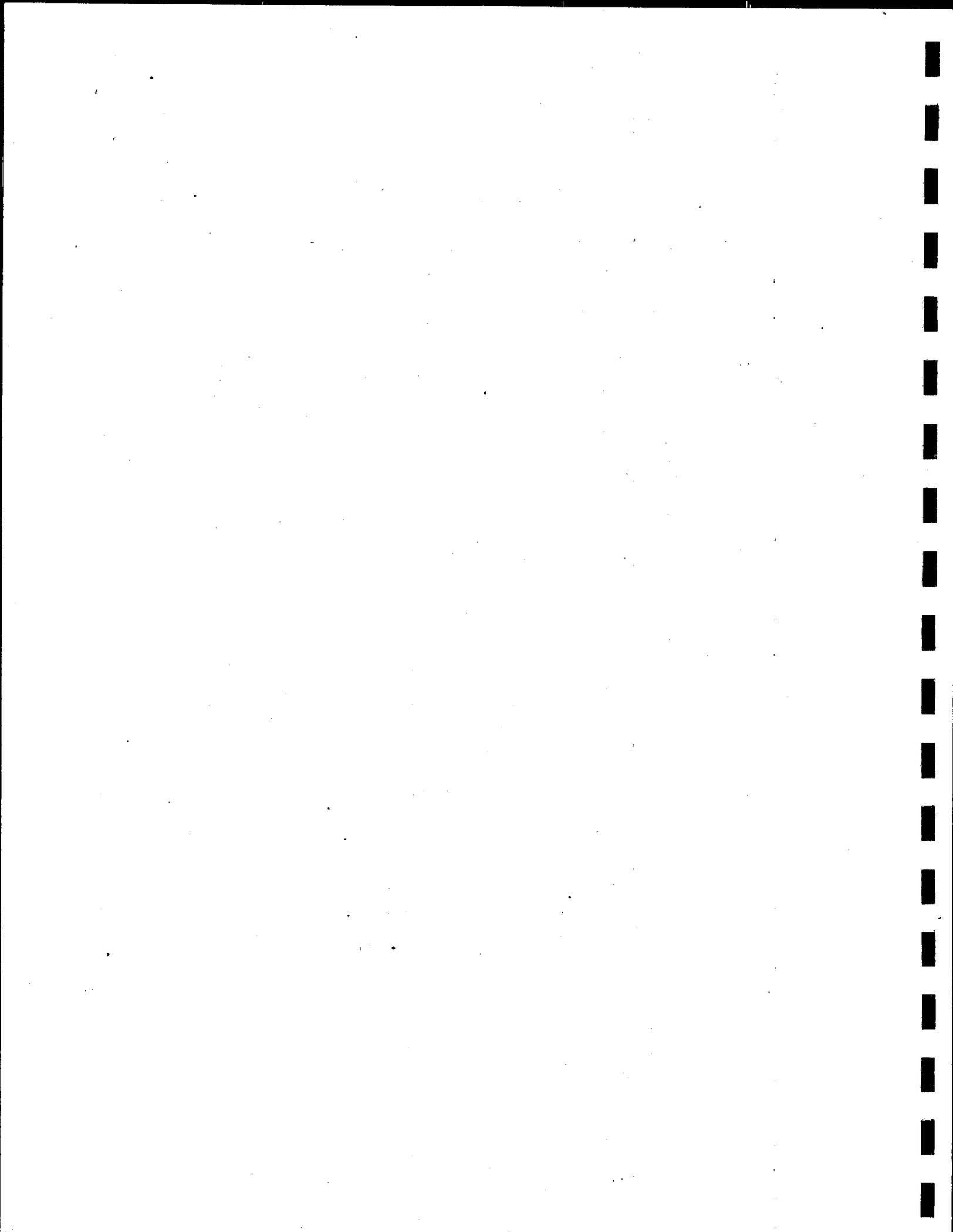


TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 DATA BASE DESIGN - STRUCTURE, REQUIRED HARDWARE AND SOFTWARE	2
3.0 USER'S INSTRUCTIONS	5

LIST OF FIGURES

<u>Figure No.</u>		<u>Page</u>
1	Example of Master Data Set Form.	3
2	Example of Data Record Form.	4
3	Example of CCWO data structure.	2
4	Flow chart for MMS CCWO data base.	6
5	The Main Menu.	5
6	The Search and Plot Menu.	7
7	Example of a plot.	12

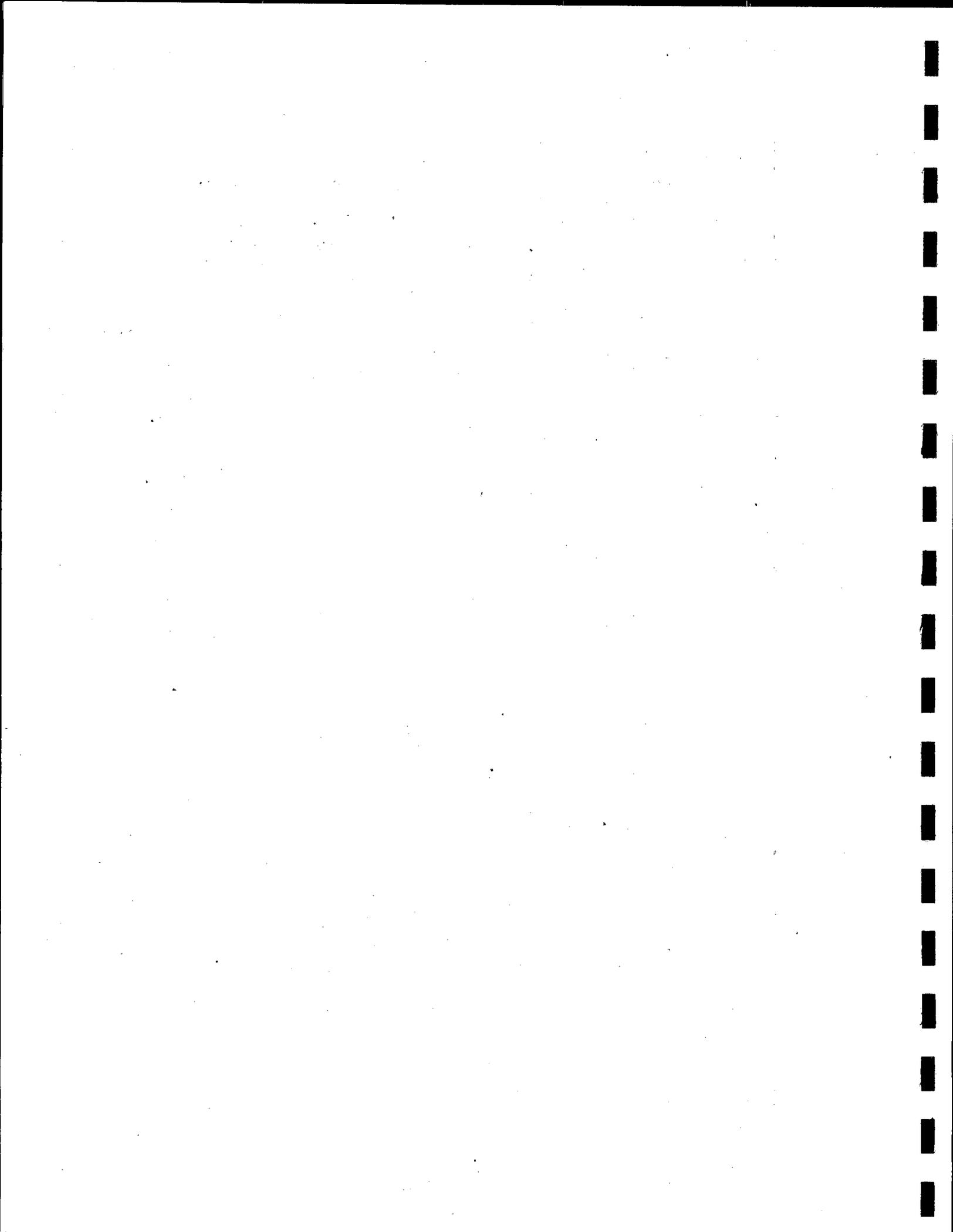
LIST OF TABLES

<u>Table No.</u>		<u>Page</u>
1	Listing of abbreviations.	8
2	Listing of project names.	13

1.0 INTRODUCTION

The Minerals Management Service (MMS) Environmental Studies Program has initiated the environmental assessment process to determine the potential effects of future oil and gas exploration along the coasts of Washington and Oregon. A part of this assessment is the Coastal Circulation Along Washington and Oregon (CCWO) project, which was a year-long study designed to evaluate the existing state of knowledge with respect to oceanic circulation off the Pacific Northwest. The MMS CCWO Data Management System is a computerized representation of the data collected for this study. This manual is a guide to operating the system. Examples of the kind of output available are included.

This data base management system was developed under contract to MMS. The software developed specifically for the system is the property of MMS, and any request for copies of the programs or the data base itself should be forwarded to the MMS Pacific OCS Regional Office.



2.0 DATA BASE DESIGN - STRUCTURE, REQUIRED HARDWARE AND SOFTWARE

The CCWO data base was developed around Ashton-Tate's dBase III +®, commercially available software. It was developed and intended to be run on a 100% IBM compatible computer which uses Microsoft's Disk Operating System (version 3.0 or higher). Other hardware requirements include a 10 megabyte or greater hard disk, a CGA compatible monitor, and a dot matrix printer capable of emulating an Epson or IBM graphics printer.

The data base itself consists of a collection of information on oceanographic projects completed off Washington and Oregon. Each project is represented by two record types. The first, the Master Data Set Form, consists of such information fields as the name of the institution, the principal investigator, etc. (Figure 1) This form also indicates which data were collected. To indicate the presence of data, a 'T' or 'F' follows each variable, meaning yes or no, respectively. Each data type is represented by a corresponding Data Record form. (Figure 2). An individual project may include a Data Record form for any of the following data types: Hydrography (HY), Moored Current Meters (CM), Profiling Current Meters (PM), Sea Level Sensors (SL), Drifters (DR), Meteorological Stations (ME). Figure 3 is an example of the CCWO data structure.

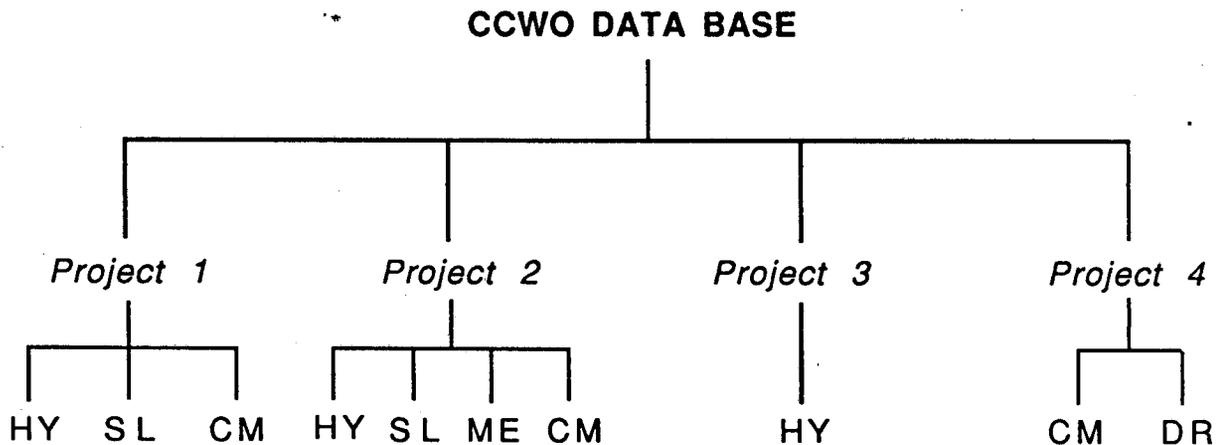


Figure 3. Example of MMS CCWO data structure.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: UP-75

SHIP NAME: R/V CAYUSE, R/V YAQUINA
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: R. SMITH
OTHER INVESTIGATORS:
A. HUYER

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS::

REFERENCES:

GILBERT, W., A. HUYER, E. BARTON, R. SMITH. 1976.
PHYSICAL OCEANOGRAPHIC OBSERVATIONS OFF THE
OREGON COAST, 1975 WISP AND UP-75. OSU DEPT. OF
OCEAN. DATA REP. NO. 75. REF. NO. 76-4. 189 PP.

START DATE: 4/75

END DATE : 9/75

GENERAL AREA: NORTHERN OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

TO DETERMINE WHETHER THERE IS A POLEWARD
UNDERCURRENT ALONG THE CONTINENTAL SHELF DURING
THE UPWELLING SEASON.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO MONTHS

CURRENT METER: T

SEA LEVEL SENSOR: T

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AT NODC; ALSO ON MAGNETIC TAPE AT OSU.

AVAILABLE AT NODC?: Y

COMMENTS:

WIND AND SEA LEVEL DATA OBTAINED FROM NEWPORT
STATION.

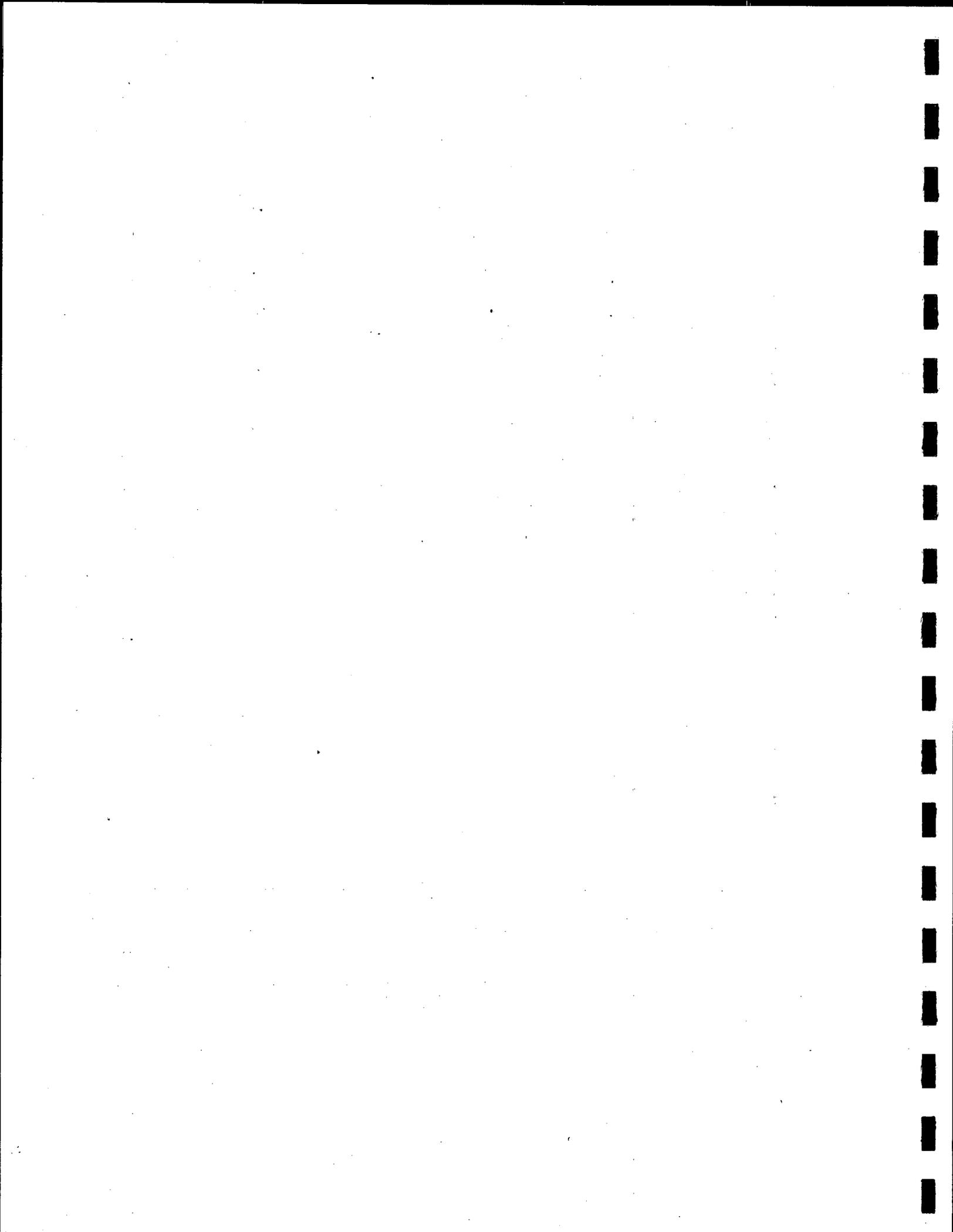
Figure 1. Example of Master Data Set Form.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: UP-75

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
AANDERAA	46.2100	124.3400	60	1/78	4/78	F	F
BRAINCON	46.2100	124.3400	62	1/78	4/78	F	F
AANDERAA	46.1700	124.2000	60	1/78	4/78	F	F
BRAINCON	46.1700	124.2000	62	1/78	4/78	F	F
AANDERAA	46.1400	124.3400	60	2/78	4/78	F	F
AANDERAA	46.1400	124.3400	140	2/78	4/78	F	F
AANDERAA	46.1400	124.2300	60	2/78	4/78	F	F
BRAINCON	46.1400	124.2300	62	2/78	4/78	F	F
AANDERAA	46.1600	124.3200	60	2/78	4/78	F	F
BRAINCON	46.1600	124.3200	62	2/78	4/78	F	F
AANDERAA	46.1900	124.2800	60	2/78	6/78	F	F
AANDERAA	46.1300	124.2300	40	10/78	12/78	F	F
AANDERAA	46.1300	124.2300	100	10/78	12/78	F	F
AANDERAA	46.1300	124.2300	125	10/78	12/78	F	F
AANDERAA	46.1300	124.2300	135	10/78	12/78	F	F

Figure 2. Example of Data Record Form.



3.0 USER'S INSTRUCTIONS

Input can be entered in either lower or upper case letters. All printouts will be in upper case. Press return after entering information from the keyboard. See Figure 4 for program flow.

To access the CCWO data management system type CCWO and press the return key. The first screen to appear is the dBase introductory screen. Press the return key again and the CCWO welcome menu will appear. Press any key to exit this screen and access the Main Menu.

THE MAIN MENU

The Main Menu (Figure 5) offers 6 choices, described below.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON DATA MANAGEMENT SYSTEM

MAIN MENU

- 1 - SEARCH data by DATE
- 2 - SEARCH data by INVESTIGATOR
- 3 - SEARCH data by INSTITUTION
- 4 - SEARCH data by DATA TYPE
- 5 - PRINT all of SELECTED PROJECT
- 6 - Exit to SYSTEM

Enter Choice:

Figure 5. The Main Menu.

SELECTIONS 1 THROUGH 3

Choice number 1, **SEARCH data by DATE**, allows the user to obtain a printout of projects within a chosen time span, inclusive. The first question prompts the user to enter the starting date. This date should be entered in a year month (YYMM) format (i.e., 7701 for the year 1977, starting with January). The second question prompts the user to enter the ending date. This date should be entered in the same YYMM format. The program will include only those projects whose time spans equal or fall within the

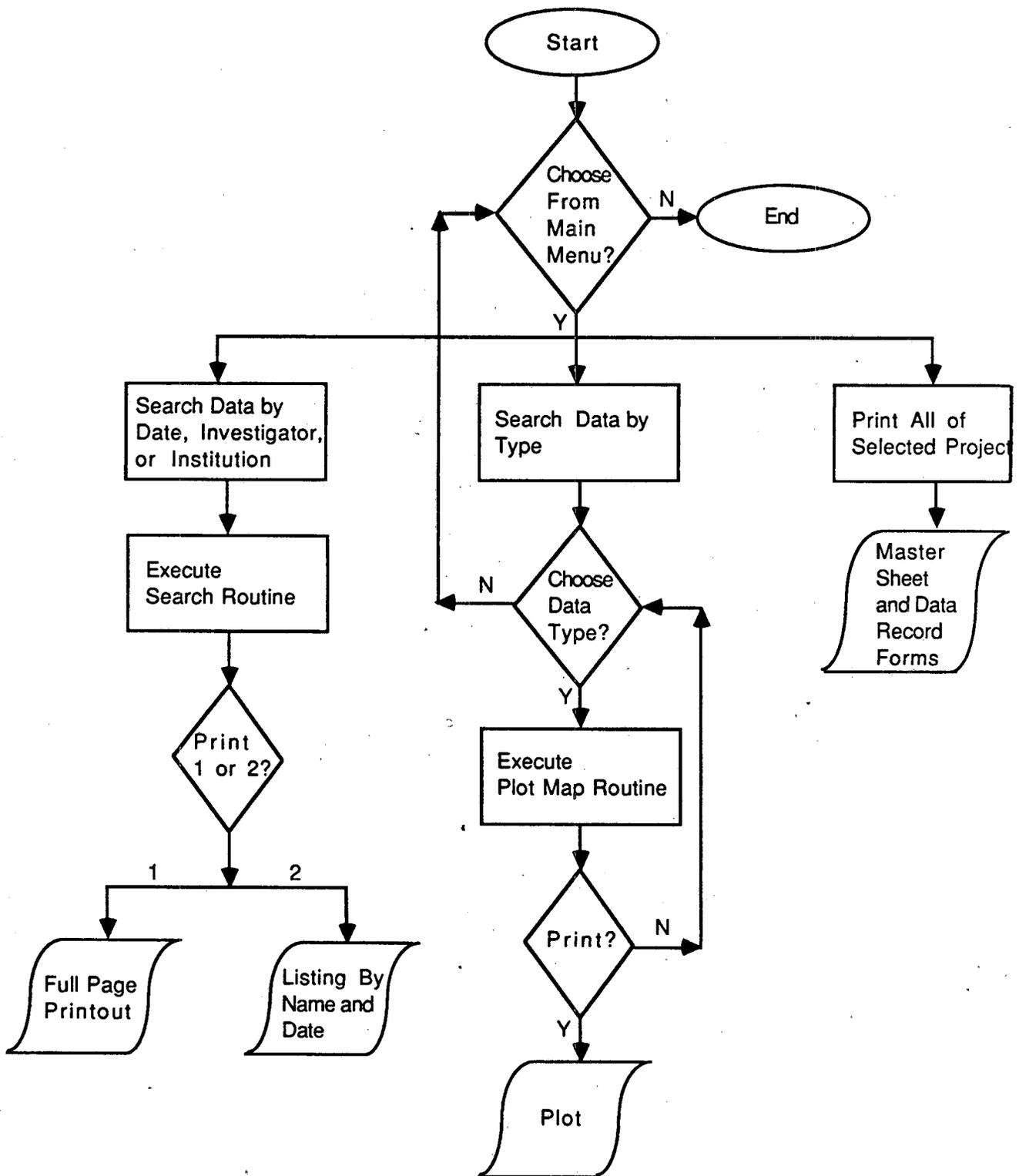


Figure 4. Flow chart for MMS CCWO data base.

starting and ending dates. The next prompt asks the user to choose from 2 printing options. Option 1, a full page printout, prints the master data sheet for each selected project. Figure 1 is an example of a full page printout. Option 2 prints a listing of each project by project name, starting date, and ending date.

Choice number 2, SEARCH data by INVESTIGATOR, allows the user to obtain a printout of projects for a specific principal investigator. The first question prompts the user to enter the name of the principal investigator. The name should be entered as a first initial, last name format (i.e., R. Rosario). The remaining questions are the same as Choice number 1, SEARCH data by DATE. Refer to that paragraph for instructions.

Choice number 3, SEARCH data by INSTITUTION, allows the user to obtain a printout of projects by institution. The first question prompts the user to enter the name of the institution. The name should be entered in abbreviated form (i.e., UW). Consult Table 1 for a listing of abbreviations: The remaining questions are the same as Choice number 1, SEARCH data by DATE. Refer to that paragraph for instructions.

SELECTION NUMBER 4

Choice number 4, SEARCH data by DATA TYPE, accesses the Search and Plot Menu (Figure 6). This menu offers 7 choices in order to plot the 6 data types available. Choices 1 through 7 allow the user to plot the data by the selected data type within a chosen time span. The 6 data types are listed below.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DATA MANAGEMENT SYSTEM
SEARCH AND PLOT MENU
BY DATA TYPE

- 1 - Hydrographic (HY) coverage by area
- 2 - Profiling Current Meter (PM) coverage by area
- 3 - Drifter (DR) coverage area
- 4 - Locations of Moored Current Meters (CM)
- 5 - Locations of Sea Level Sensors (SL)
- 6 - Locations of Meteorologic Stations (ME)
- 7 - 3 through 6 together (DR, CM, SL, & ME)
- 8 - Return to Main Menu

Enter Choice:

Figure 6. The Search and Plot Menu.

Table 1. List of abbreviations.

AD	Acoustic Doppler Profiler
ADMIN	Administration
AEC	Atomic Energy Commission
BOT	Bottle
BTM	Bottom
BPS	Bottom Pressure Sensor
BRD	Board
BUR/COMM FISH	Bureau of Commercial Fisheries
CM	Moored Current Meter
COUNC	Council
DEF	Defense
DEG	Degrees
DR	Drifter (Lagrangian)
DRB	Drifting buoy
HRS	Hours
HY(S)	Hydrography (salinity)
HY(T)	Hydrography (temperature)
IOS	Institute of Ocean Sciences
ME	Meteorology
MESO	Mesoscale - 20-200 km
MTHS	Months
NAT	National
NOAA	National Oceanic and Atmospheric Administration
NODC	National Oceanographic Data Center
NSF	National Science Foundation
OCEAN	Oceanographer
CNR	Office of Naval Research
OSU	Oregon State University
P	Atmospheric Pressure
PM	Profiling Current Meter
PMEL	Pacific Marine Environmental Laboratory
RES	Research
RGL	Regional - greater than 200 km
RS	Remote Sensing
R/V	Research vessel
SAL	Salinity
SAV	Savonius
SCRIPPS	SCRIPPS Institute of Oceanography
SL	Sea Level Sensor
SMALL	Less than 20 km
SUB	Subsurface
SUR	Surface
T	Air Temperature
TEMP	Temperature
UBC	University of British Columbia
USCOE	U.S. Army Corps of Engineers
USDOE	U.S. Department of Energy
US F AND W SERV	U.S. Fish and Wildlife Service
UW	University of Washington

Table 1. (Cont.)

VACM	Vector Averaging Current Meter
VSLs	Vessels
W	Wind
WKS	Weeks
YRS	Interannual

1. HY Coverage Area: Plots the number of HY casts within each of the 10 subregions.
2. PM Coverage Area: Plots the number of PM casts within each of the 10 subregions.
3. DR Coverage Area: Plots the area an individual DR experiment covered within the entire study region during the study period.
4. Locations of CM: Plots the location of each CM mooring within the entire study region during the study period.
5. Locations of SL: Plots the location of each SL sensor within the entire study region during the study period.
6. Locations of ME: Plots the location of each ME sensor within the entire study region during the study period.

Choice number 7 allows the DR coverage areas and the locations of the CM, SL and ME to be plotted together.

When the user chooses numbers 1 through 7, the first question will prompt for a starting date. The second question prompts for an ending date. In both cases, use the YYMM format. After pressing return, the program will load the geographic data. The next question asks for the title of the map to be entered. The user may enter any title desired. The program will then plot the geographic data and display it on the screen.

The plot will first appear with the entire study region in view. To get a close up of individual subregions for HY and PM, use the numeric keypad located on the right side of the keyboard. Make sure the **num-lock** key is on. The keypad is set up to resemble the overall study region. For example, when number 9 is pressed, the upper corner of the study region, the Washington coastline area, will be expanded to cover the entire viewing box. The name of the area currently being scanned will appear at the bottom of the viewing box. To return to the plot of the entire study area, press 0 on the numeric keypad.

For close ups of the remaining data types (DR, CM, SL, and ME) press **C** (upper or lower case) to turn the (C)ursor on. Initially located at the lower left portion of the screen, the cursor can be moved about using the numeric key pad. (i.e., 8 moves the cursor to the north, 1 to the southwest, etc.) Once the cursor reaches the desired location, pressing the "+" key will display a close up of the area centered on the cursor. Pressing the "-" will return the screen display to the original scale, allowing the user to continue moving the cursor about. Pressing **C** a second time turns the (C)ursor off.

To get a printout simply press the **prnt-scrn** button. Typing a **Q** returns the user to the Search and Plot Menu. Figure 7 is an example of a plot, showing the locations of current meter moorings for the year 1973.

Choice number 8 returns the user to the Main Menu.

SELECTION NUMBERS 5 AND 6

Choice number 5 will print all the data associated with the selected project. The prompt asks the user to input a project name. Consult Table 2 for a listing of project names. The corresponding printout will include the Master Data Set Form and a Data Record Form for each data type included in the project.

Choice number 6 exits the data management system and returns the user to the operating system.

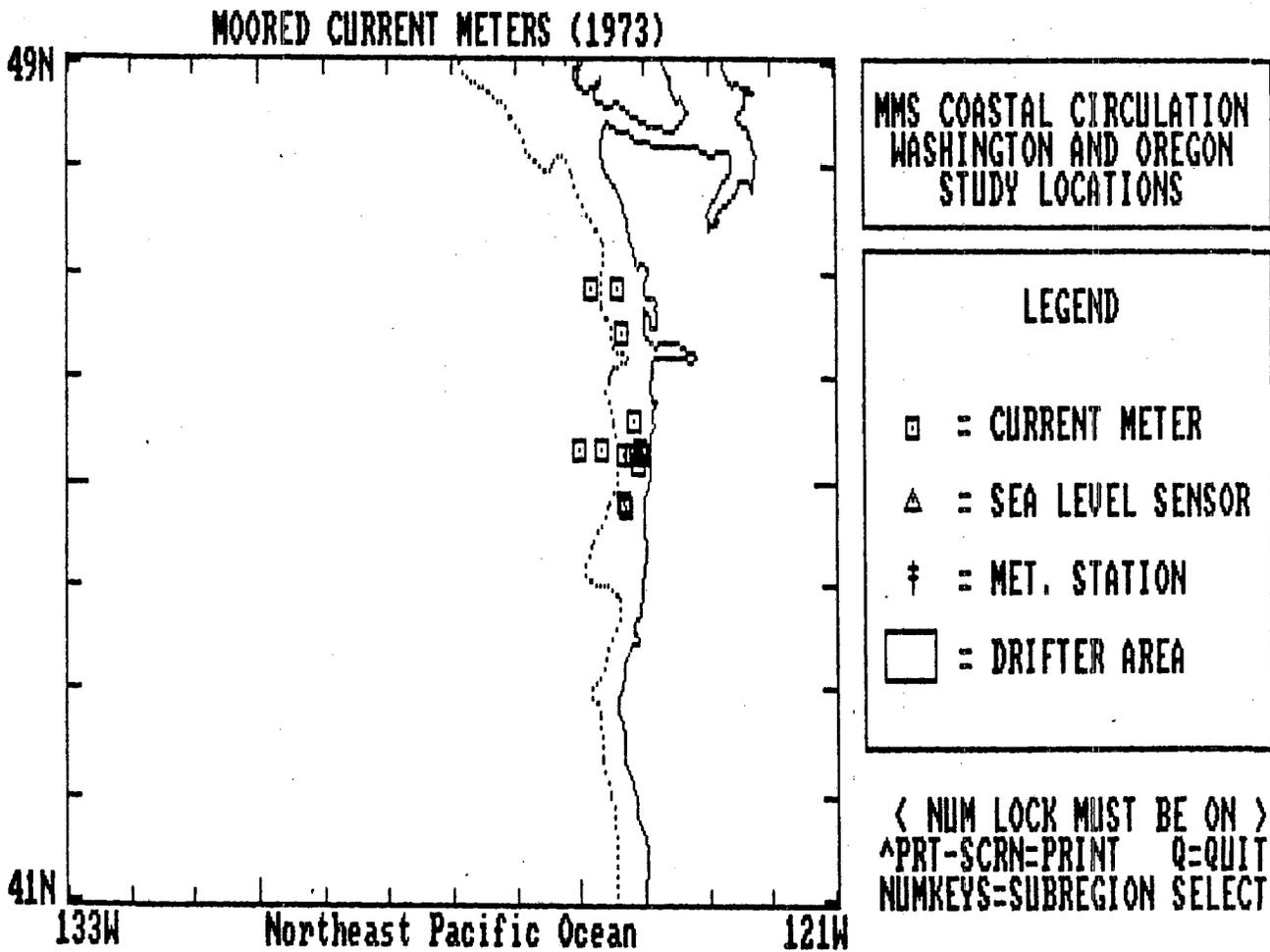


Figure 7. Example of a plot.

Table 2. Listing of project names.

ANDERSON 1978
ASTORIA CANYON 1978
ASTORIA CANYON 1983
CANNON 1970
COLLIAS 1954-55
COLUMBIA RIVER EFFLUENT 1961
COLUMBIA RIVER EFFLUENT 1962
COLUMBIA RIVER EFFLUENT 1963
COLUMBIA RIVER EFFLUENT 1964
COLUMBIA RIVER EFFLUENT 1965
COLUMBIA RIVER EFFLUENT 1966
CROSS-SHELF
CUE-I
CUE-II
CURTIN 1967
FALL TRANSITION
FREITAG 1977
GAST 1955
HALPERN 1971
HARLETT 1971
HOLBROOK 1973
HOPKINS 1967-69
INGRAHAM 1963
KORGEN 1968
LARSEN 1978-79
LOVE 1955-56
LOVE 1956-58
LOVE 1977
MARMER 1915-20
MURRAY 1977
OARS/CUE-3
PAK 1974-75
PAK 1977-78
PAQUETTE 1952
PAQUETTE 1953
PATTULLO 1965
PATTULLO 1966
PATTULLO 1969
PILLSBURY 1967-68
QUINALT CANYON I
QUINALT CANYON II
QUINALT CANYON III
REED 1972
REGIONAL CURRENT SYSTEM STUDIES (RCSS)
SLOPE UNDERCURRENT STUDY
SMITH (J.D.) 1971-74
SOLLITT 1985-86
STERNBERG 1975
SUPERCODE
THEMIS

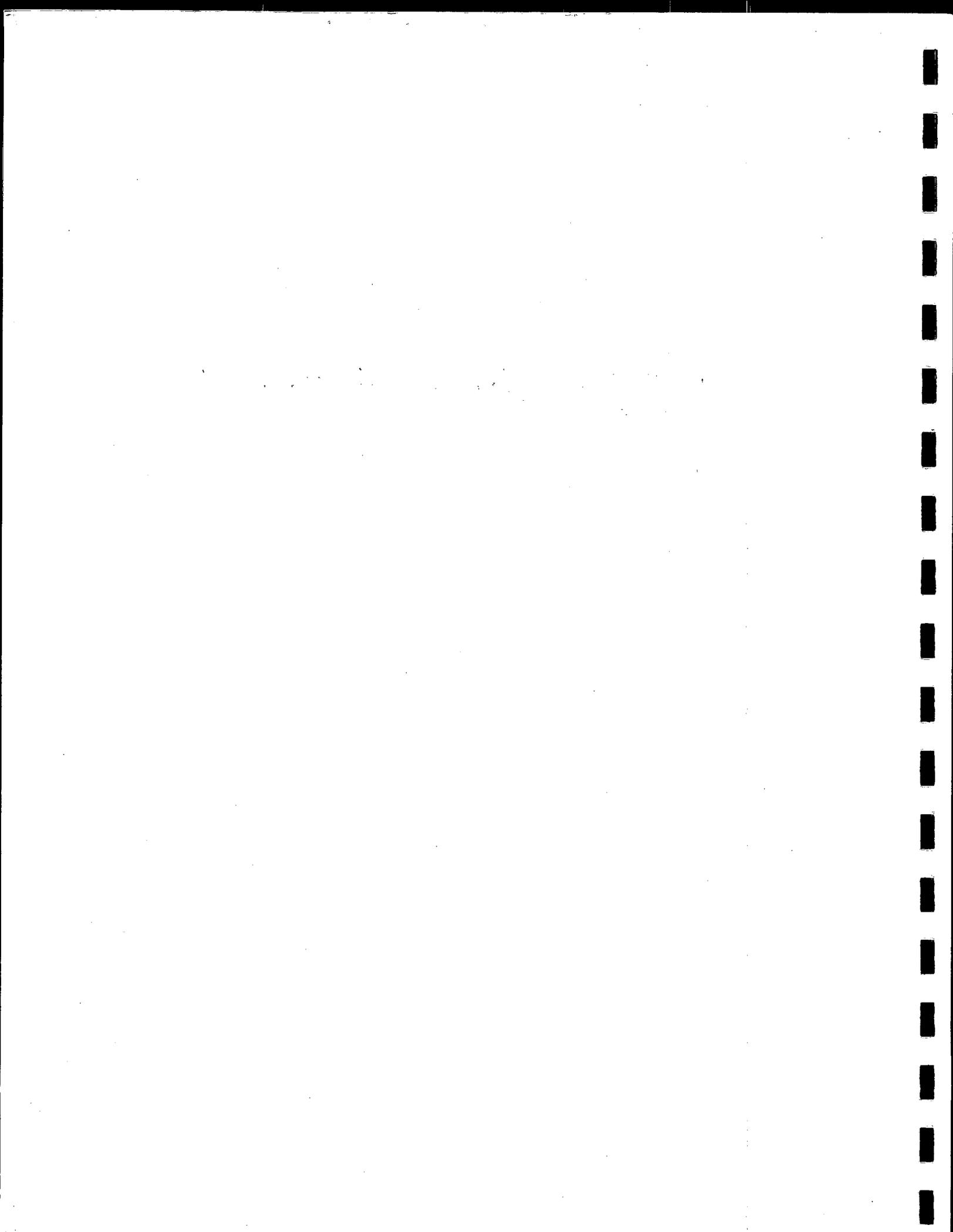
Table 2. (Cont.)

TIBBY 1939
TOTEM
UBC 1969
UP-75
UP-I
UP-II
USCOE 1974-81
USCOE 1984-85
VANCOUVER ISLAND COASTAL CURRENT
WISP
WYATT 1958-59
WYATT 1959-60
WYATT 1960-61
WYATT 1961
WYATT 1962-64
WYATT 1962-65
WYATT 1965
WYATT 1966
WYATT 1967
WYATT 1968
WYATT 1969
WYATT 1970
WYATT 1971

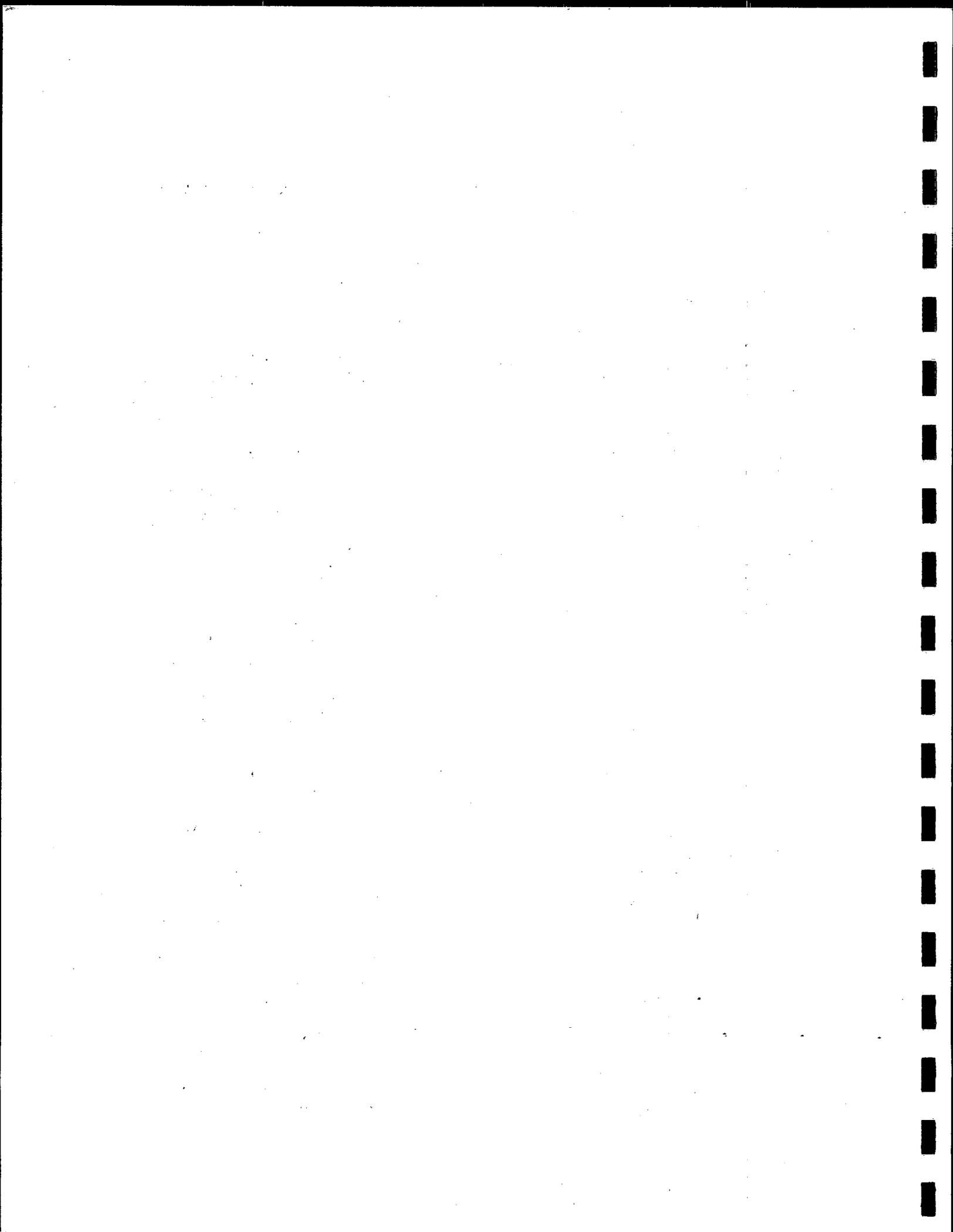
Appendix C - Bibliography

(C.1 - Journal Articles and Technical Reports)

(C.2 - Data Reports)



**C.1 - Journal Articles and Technical
Reports**



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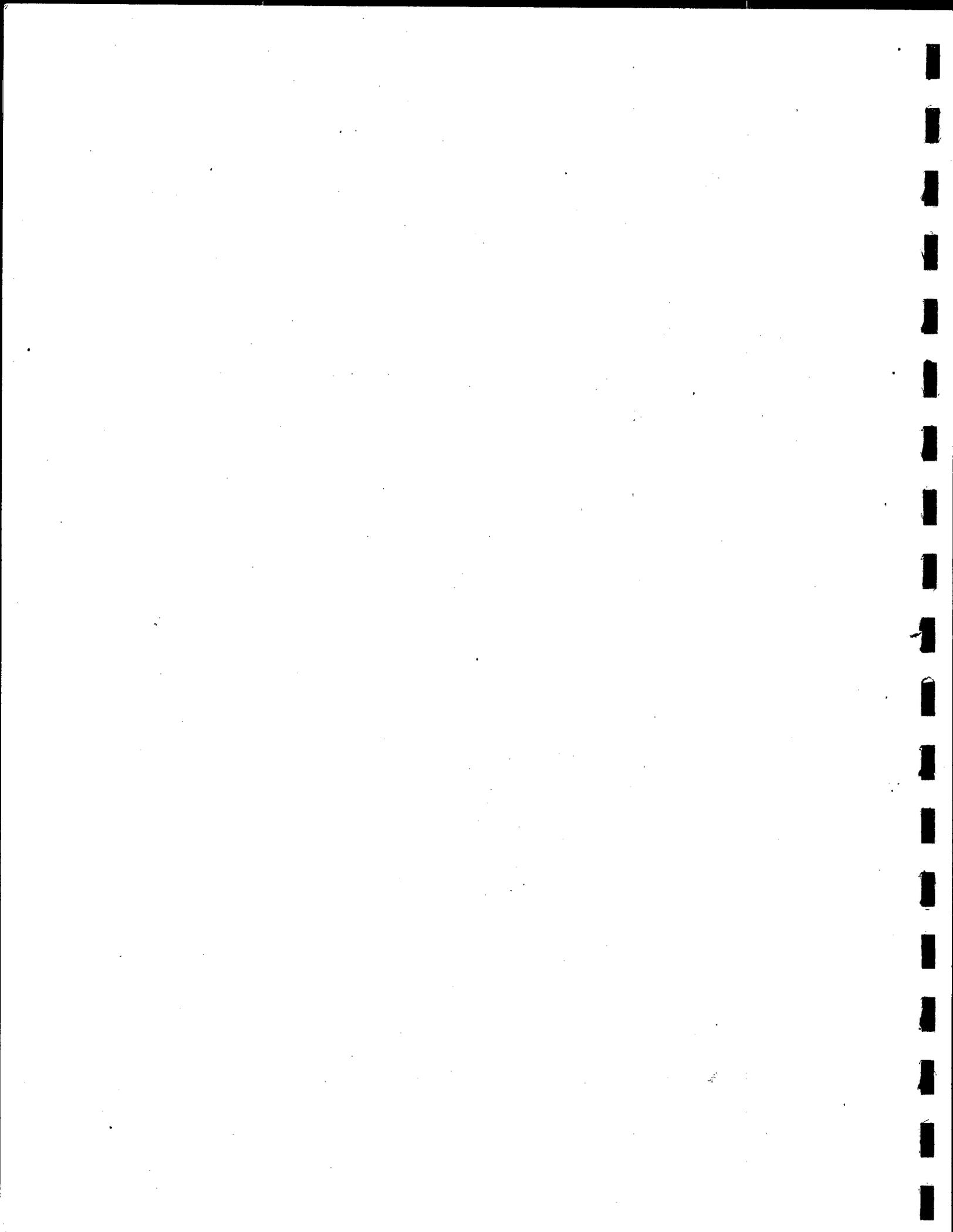
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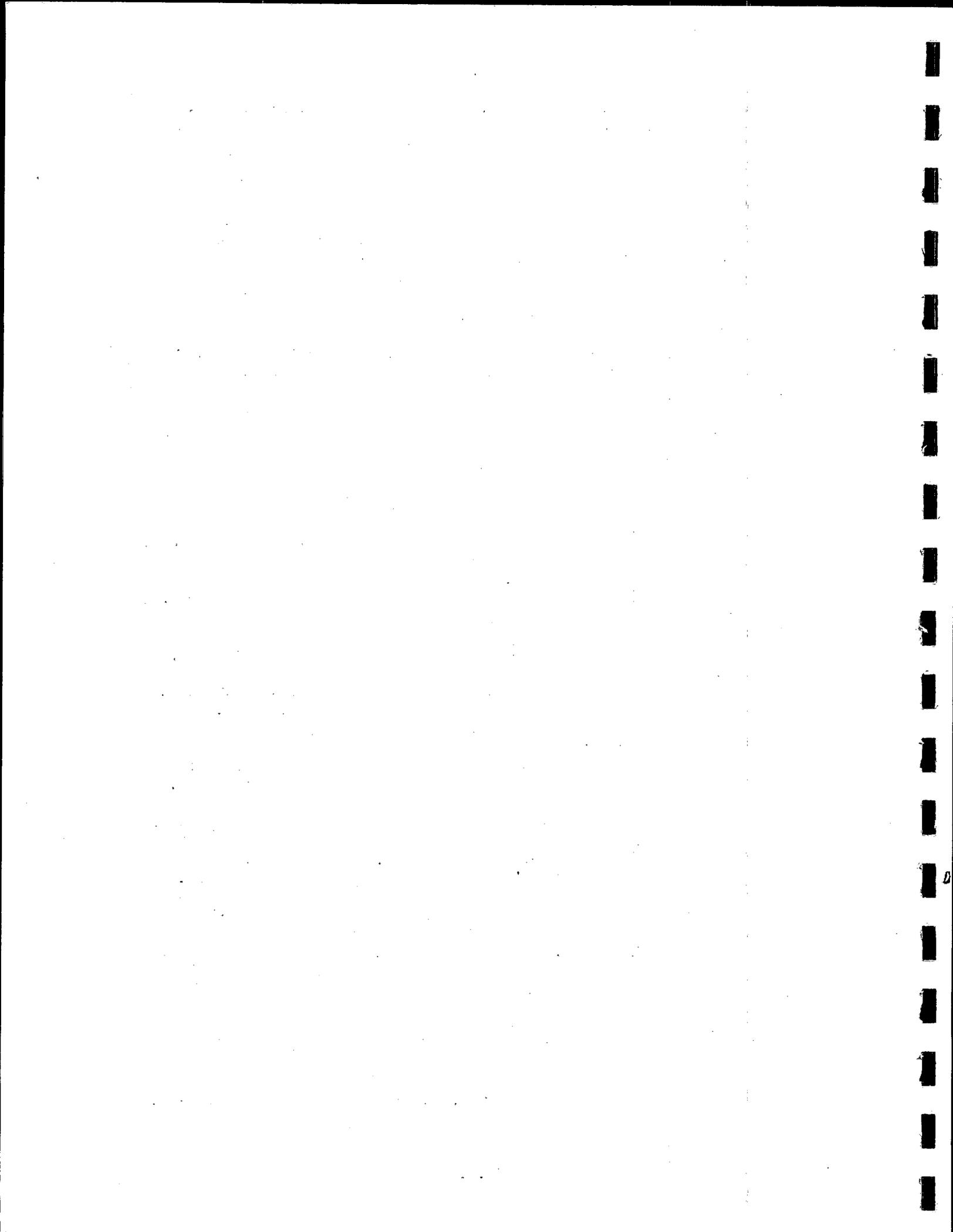
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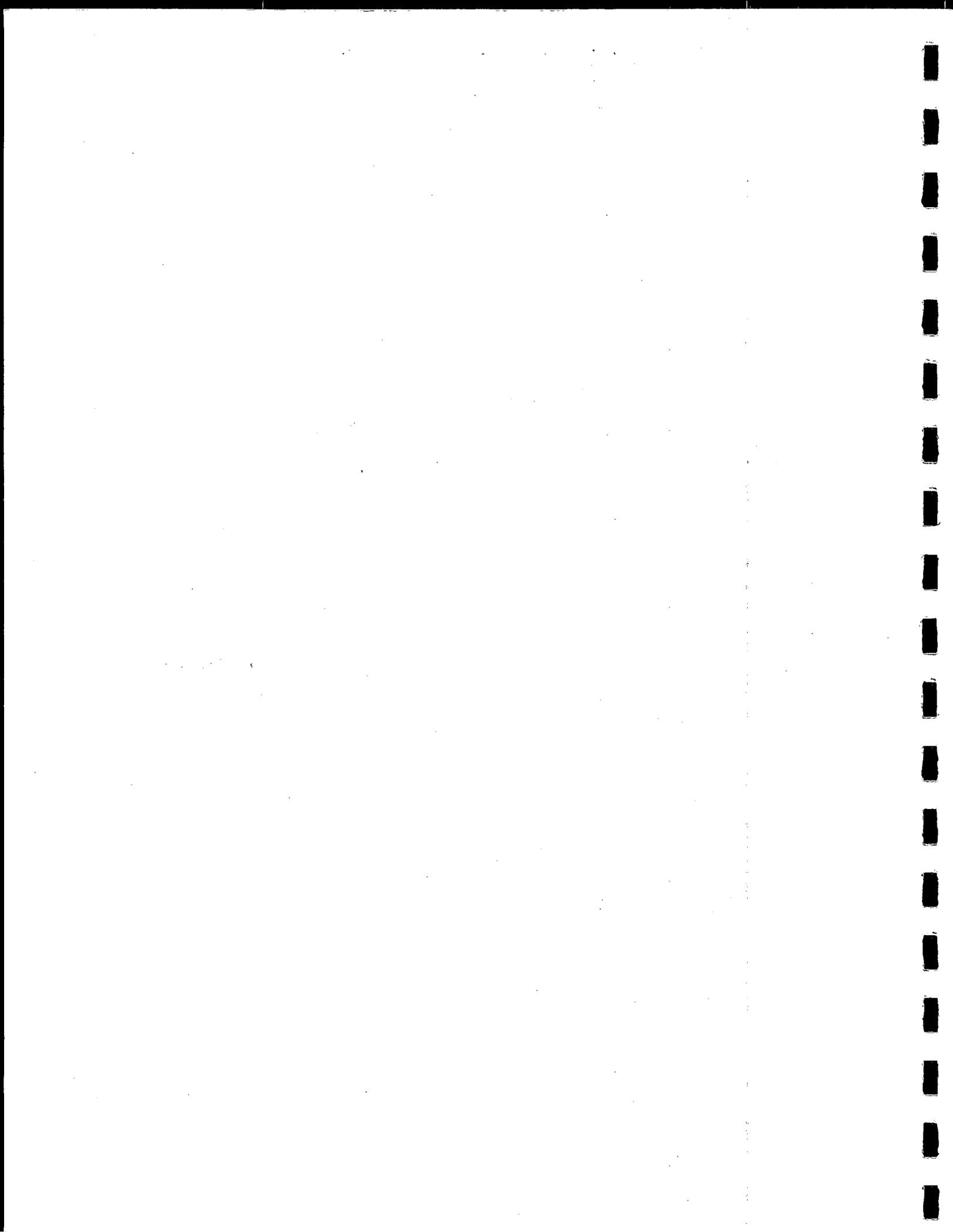
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**Appendix D - Alphabetical Listing (by
Project Name) of Data Set
Summaries**



COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: ANDERSON 1978

SHIP NAME: R/V CAYUSE, R/V THOMPSON
SPONSOR: USDOE
PRINCIPAL INVESTIGATOR: G. ANDERSON
OTHER INVESTIGATORS:
M.J. FERRY
M. LANDRY

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:
OSU

REFERENCES:

POSTEL, J.R., AND W.K. PETERSON. 1981.
HYDROGRAPHIC AND BIOLOGICAL OBSERVATIONS ON THE
WASHINGTON CONTINENTAL SHELF AND SLOPE DURING THE
PERIODS 30 MARCH - 5 APRIL, 8-15 JUNE, AND 6-11
SEPTEMBER 1978. PREP. U.S. DEPT. OF ENERGY,
DE/EV/75026-94.

POSTEL, J.R., W.K. PETERSON, AND J.C. KITCHEN.
1980. DATA REPORT OF THE DOE-SPONSORED NORTHWEST
MARINE SCIENCES GROUP OCTOBER 1978 CRUISE. PREP.
FOR U.S. DEPT. OF ENERGY, DE/EV/10047-1.

START DATE: 3/78
END DATE : 10/78
GENERAL AREA: CENTRAL WASHINGTON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:
COLLECT SEASONAL INFORMATION ON THE PROCESSES
AFFECTING PHYTOPLANKTON PRODUCTION AND
DISTRIBUTION.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: SEASONS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
ON MAGNETIC TAPE AT UW.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: ANDERSON 1978

AVAILABLE AT NODC? N

COMMENTS:

OTHER SAMPLING: TURBIDITY, SUBMARINE IRRADIANCE,
DISSOLVED OXYGEN, NUTRIENTS, BIOPIGMENTS,
PLANKTON.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: ANDERSON 1978

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	9	4/78
CTD	W3	5	4/78
CTD	W1	9	6/78
CTD	W3	7	6/78
CTD	W1	4	9/78
CTD	W3	5	9/78
CTD	W1	9	10/78
CTD	W3	7	10/78

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON'
MASTER DATA SET

PROJECT: ASTORIA CANYON 1978

SHIP NAME: R/V THOMPSON

SPONSOR:

PRINCIPAL INVESTIGATOR: B. HICKEY

OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: UW

OTHER INSTITUTIONS:

REFERENCES:

SUSAN GEIER, UNIVERSITY OF WASHINGTON - PERSONAL
COMMUNICATON

START DATE: 1/78

END DATE : 12/78

GENERAL AREA: SOUTHERN WASHINGTON CONTINENTAL SHELF

OBJECTIVES:

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO SEASONS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

STORED ON MAGNETIC TAPE AT UW.

AVAILABLE AT NODC? N

COMMENTS:

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON.
MOORED CURRENT METER (CM)

PROJECT: ASTORIA CANYON 1978

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP. (?)	SAL (?)
AANDERAA	46.0800	124.3200	60	1/78	4/78	F	F
BRAINCON	46.0800	124.3200	62	1/78	4/78	F	F
AANDERAA	46.2100	124.3400	60	1/78	4/78	F	F
BRAINCON	46.2100	124.3400	62	1/78	4/78	F	F
AANDERAA	46.1700	124.2000	60	1/78	4/78	F	F
BRAINCON	46.1700	124.2000	62	1/78	4/78	F	F
AANDERAA	46.1400	124.3400	60	2/78	4/78	F	F
AANDERAA	46.1400	124.3400	140	2/78	4/78	F	F
AANDERAA	46.1400	124.2300	60	2/78	4/78	F	F
BRAINCON	46.1400	124.2300	62	2/78	4/78	F	F
AANDERAA	46.1600	124.3200	60	2/78	4/78	F	F
BRAINCON	46.1600	124.3200	62	2/78	4/78	F	F
AANDERAA	46.1900	124.2800	60	2/78	6/78	F	F
AANDERAA	46.1300	124.2300	40	10/78	12/78	F	F
AANDERAA	46.1300	124.2300	100	10/78	12/78	F	F
AANDERAA	46.1300	124.2300	125	10/78	12/78	F	F
AANDERAA	46.1300	124.2300	135	10/78	12/78	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: ASTORIA CANYON 1978

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W2	38	1/78
CTD	W2	37	10/78

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: ASTORIA CANYON 1983

SHIP NAME: R/V WECOMA, R/V THOMPSON
SPONSOR:
PRINCIPAL INVESTIGATOR: B. HICKEY
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

SUSAN GEIER, UNIVERSITY OF WASHINGTON - PERSONAL
COMMUNICATION

START DATE: 5/83

END DATE : 8/83

GENERAL AREA: SOUTHERN WASHINGTON CONTINENTAL SHELF
OBJECTIVES:

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: HRS TO MONTHS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

STORED ON MAGNETIC AT UW.

AVAILABLE AT NODC? N

COMMENTS:

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: ASTORIA CANYON 1983

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
AANDERAA	46.1400	124.2900	60	5/83	6/83	F	F
AANDERAA	46.1400	124.2900	100	5/83	6/83	F	F
AANDERAA	46.1400	124.2900	140	5/83	6/83	F	F
AANDERAA	46.1400	124.2900	200	5/83	6/83	F	F
AANDERAA	46.1400	124.2900	360	5/83	6/83	F	F
AANDERAA	46.1500	124.3000	34	5/83	8/83	F	F
AANDERAA	46.1500	124.3000	139	5/83	8/83	F	F
AANDERAA	46.1500	124.3000	199	5/83	8/83	F	F
AANDERAA	46.1500	124.3000	359	5/83	8/83	F	F
AANDERAA	46.1500	124.3000	559	5/83	8/83	F	F
AANDERAA	46.1600	124.3000	52	5/83	8/83	F	F
AANDERAA	46.1600	124.3000	64	5/83	8/83	F	F
AANDERAA	46.1600	124.3000	92	5/83	8/83	F	F
AANDERAA	46.1600	124.3000	104	5/83	8/83	F	F
AANDERAA	46.1600	124.3000	132	5/83	8/83	F	F
AANDERAA	46.1600	124.3000	192	5/83	8/83	F	F
AANDERAA	46.1600	124.3000	352	5/83	8/83	F	F
AANDERAA	46.1600	124.2700	144	5/83	8/83	F	F
AANDERAA	46.1600	124.2700	204	5/83	8/83	F	F
AANDERAA	46.1600	124.2700	364	5/83	8/83	F	F
AANDERAA	46.1600	124.2500	89	5/83	8/83	F	F
AANDERAA	46.1600	124.2500	169	5/83	8/83	F	F
AANDERAA	46.1600	124.2500	229	5/83	8/83	F	F
AANDERAA	46.1600	124.2500	389	5/83	8/83	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: ASTORIA CANYON 1983

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W2	30	5/83
CTD	W2	30	8/83

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: CANNON 1970

SHIP NAME:

SPONSOR: AEC, NOAA/SEA GRANT

PRINCIPAL INVESTIGATOR: G. CANNON

OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: NOAA/PMEL

OTHER INSTITUTIONS:

REFERENCES:

CANNON, G.A. 1972. WIND EFFECTS ON CURRENTS
OBSERVED IN JUAN DE FUCA SUBMARINE CANYON. JOURN.
PHYS. OCEAN., 2, 281-285.

START DATE: 1/70

END DATE : 1/70

GENERAL AREA: NORTHERN WASHINGTON CONTINENTAL SHELF

OBJECTIVES:

DETERMINE CURRENTS IN JUAN DE FUCA CANYON UNDER
THE INFLUENCE OF WIND AND DENSITY-GRADIENT
FORCING.

SPATIAL SCALES: SMALL

TEMPORAL SCALES: HRS TO WKS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): F

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AVAILABLE IN R2D2 DATA BASE AT PMEL.

AVAILABLE AT NODC? N

COMMENTS:

WINDS OBTAINED FROM UMATILLA LIGHTSHIP.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: CANNON 1970

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
BRAINCON	48.0500	125.1600	175	1/70	2/70	F	F
BRAINCON	48.0500	125.1600	225	1/70	2/70	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: COLLIAS 1954-55

SHIP NAME: R/V BROWN BEAR
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: E. COLLIAS
OTHER INVESTIGATORS:
C.M. LOVE
R.G. PAQUETTE

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

COLLIAS, E.E, C.M. LOVE, AND R.G. PAQUETTE. 1956.
EASTERN NORTH PACIFIC AND GULF OF ALASKA OFFSHORE
PHYSICAL AND CHEMICAL DATA, APRIL 1954 - JANUARY
1955. UNIV. WASHINGTON DEPT. OCEAN. TECH. REP. NO.
49, 33 PP.

START DATE: 4/54

END DATE : 1/55

GENERAL AREA: WASHINGTON-NORTHERN OREGON CONTINENTAL SHELF AND OFFSHO

OBJECTIVES:

NOT GIVEN.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: MTHS TO SEASONS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AT NODC; AVAILABILITY OF ORIGINAL DATA AT UW

UNKNOWN.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. OTHER
SAMPLING: DISSOLVED OXYGEN, DISSOLVED INORGANIC
PHOSPHATE.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
 HYDROGRAPHIC DATA (HY)

PROJECT: COLLIAS 1954-55

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W1	4	4/54
BOT	W2	9	4/54
BOT	W3	9	4/54
BOT	O1	4	4/54
BOT	W1	1	10/54
BOT	W3	4	10/54
BOT	W3	3	1/55

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: COLUMBIA RIVER EFFLUENT 1961

SHIP NAME: R/V BROWN BEAR
SPONSOR: AEC, ONR
PRINCIPAL INVESTIGATOR: C. BARNES
OTHER INVESTIGATORS:
C.M. LOVE

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

BARNES, C.A. 1963. PHYSICAL, CHEMICAL, AND
BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN:
COLUMBIA RIVER EFFLUENT AREA, JANUARY-JUNE 1961.
UNIV. WASHINGTON DEPT. OCEAN. TECH. REP. NO. 86,
405 PP.

LOVE, C.M. 1964. PHYSICAL, CHEMICAL, AND
BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN:
COLUMBIA RIVER EFFLUENT AREA, JULY-AUGUST 1961.
UNIV. WASHINGTON DEPT. OCEAN. TECH. REP. NO. 112,
260 PP.

LOVE, C.M. 1964. PHYSICAL, CHEMICAL, AND
BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN:
COLUMBIA RIVER EFFLUENT AREA, SEPTEMBER-DECEMBER
1961. UNIV. WASHINGTON DEPT. OCEAN. TECH. REP.
NO. 115 (2 VOLS.).

START DATE: 1/61

END DATE : 12/61

GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

TO DETERMINE THE GROSS FEATURES OF THE MOVEMENT
AND DISPERSION OF THE COLUMBIA RIVER EFFLUENT
WATER IN THE OPEN SEA OFF THE MOUTH OF THE RIVER
AND ALONG THE ADJACENT COAST.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MONTHS TO YRS
CURRENT METER: F

SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): T
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T

DATA ACCESSIBILITY:

AT NODC; ALSO ON COMPUTER PUNCH CARDS AT UW.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: COLUMBIA RIVER EFFLUENT 1961

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT ALL STATIONS. OTHER SAMPLES
TAKEN: BTS, NUTRIENTS, PLANKTON TOWS,
PRODUCTIVITY AND CHLOROPHYLL, RADIATION COUNTS.
DROGUE STUDY NEAR COLUMBIA RIVER MOUTH ALSO
CONDUCTED, BUT NO DOCUMENTATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: COLUMBIA RIVER EFFLUENT 1961

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W1	7	1/61
BOT	W2	11	1/61
BOT	O1	9	1/61
BOT	O2	7	1/61
BOT	W3	14	1/61
BOT	O5	9	1/61
BOT	D1	1	1/61
BOT	W1	6	3/61
BOT	W2	15	3/61
BOT	O1	9	3/61
BOT	O2	3	3/61
BOT	W3	14	3/61
BOT	O5	8	3/61
BOT	W3	1	4/61
BOT	D1	3	4/61
BOT	W1	12	5/61
BOT	W2	19	5/61
BOT	O1	11	5/61
BOT	O2	10	5/61
BOT	W3	20	5/61
BOT	O5	11	5/61
BOT	W1	5	6/61
BOT	W2	3	6/61
BOT	O1	13	6/61
BOT	O2	3	6/61
BOT	W3	14	6/61
BOT	O5	6	6/61
BOT	W2	13	7/61
BOT	W3	15	7/61
BOT	O1	11	7/61
BOT	O2	6	7/61
BOT	O3	2	7/61
BOT	O5	20	7/61
BOT	O6	8	7/61
BOT	D1	8	7/61
BOT	W1	3	8/61
BOT	W2	4	8/61
BOT	W3	11	8/61
BOT	O1	6	8/61
BOT	O5	32	8/61
BOT	O6	1	8/61
BOT	W2	16	9/61
BOT	W3	17	9/61
BOT	O1	14	9/61
BOT	O2	8	9/61
BOT	O5	13	9/61
BOT	D1	9	9/61
BOT	O3	2	10/61
BOT	O6	15	10/61
BOT	D1	12	10/61
BOT	W3	3	11/61

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
 HYDROGRAPHIC DATA (HY) (CONT.)

PROJECT: COLUMBIA RIVER EFFLUENT 1961

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	D1	1	11/61
BOT	W1	3	12/61
BOT	W2	11	12/61
BOT	O1	6	12/61
BOT	O2	3	12/61
BOT	O3	5	12/61
BOT	O4	2	12/61
BOT	W3	12	12/61
BOT	O5	12	12/61
BOT	O6	11	12/61
BOT	D1	7	12/61

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: COLUMBIA RIVER EFFLUENT 1962

SHIP NAME: R/V BROWN BEAR
SPONSOR: AEC, ONR
PRINCIPAL INVESTIGATOR: C. BARNES
OTHER INVESTIGATORS:
C.M. LOVE

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

LOVE, C.M. 1965. PHYSICAL, CHEMICAL, AND
BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN:
COLUMBIA RIVER EFFLUENT AREA, JANUARY-OCTOBER
1962. UNIV. WASHINGTON DEPT. OCEAN. TECH. REP.
NO. 119, (5 VOLS.).

START DATE: 1/62

END DATE : 10/62

GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

TO DETERMINE THE GROSS FEATURES OF THE MOVEMENT
AND DISPERSION OF THE COLUMBIA RIVER EFFLUENT
WATER IN THE OPEN SEA OFF THE MOUTH OF THE RIVER
AND ALONG THE ADJACENT COAST.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: MONTHS TO YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AT NODC; ALSO ON COMPUTER PUNCH CARDS AT UW.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT ALL STATIONS. OTHER SAMPLES
TAKEN: BTS, NUTRIENTS, PLANKTON TOWS,
PRODUCTIVITY AND CHLOROPHYLL, RADIATION COUNTS,
WATER COLOR.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: COLUMBIA RIVER EFFLUENT 1962

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W1	9	1/62
BOT	W2	24	1/62
BOT	W3	23	1/62
BOT	O1	7	1/62
BOT	O2	6	1/62
BOT	O3	1	1/62
BOT	O5	11	1/62
BOT	W1	7	4/62
BOT	W2	14	4/62
BOT	W3	19	4/62
BOT	O1	12	4/62
BOT	O2	5	4/62
BOT	O5	13	4/62
BOT	O6	6	4/62
BOT	W2	22	6/62
BOT	O1	11	6/62
BOT	O2	29	6/62
BOT	W3	23	6/62
BOT	O5	51	6/62
BOT	O3	4	6/62
BOT	D1	21	6/62
BOT	W2	1	7/62
BOT	O1	3	7/62
BOT	O2	1	7/62
BOT	O3	1	7/62
BOT	O5	12	7/62
BOT	O6	11	7/62
BOT	D1	8	7/62
BOT	W2	3	8/62
BOT	W3	4	8/62
BOT	O5	7	8/62
BOT	O6	7	8/62
BOT	D1	32	8/62
BOT	W1	6	9/62
BOT	W2	23	9/62
BOT	W3	25	9/62
BOT	O1	11	9/62
BOT	O2	3	9/62
BOT	O3	4	9/62
BOT	O4	2	9/62
BOT	O5	22	9/62
BOT	O6	25	9/62
BOT	D1	33	9/62

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: COLUMBIA RIVER EFFLUENT 1963

SHIP NAME: R/V BROWN BEAR, CNAV OSHAWA, R/V HOH
SPONSOR: AEC, ONR
PRINCIPAL INVESTIGATOR: C. BARNES
OTHER INVESTIGATORS:
C.M. LOVE

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

LOVE, C.M. 1966. PHYSICAL, CHEMICAL, AND
BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN:
COLUMBIA RIVER EFFLUENT AREA, JANUARY-JUNE 1963.
UNIV. WASHINGTON DEPT. OCEAN. TECH. REP. NO. 134
(6 VOLS.).

LOVE, C.M. 1966. PHYSICAL, CHEMICAL, AND
BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN:
COLUMBIA RIVER EFFLUENT AREA, JULY-DECEMBER 1963.
UNIV. WASHINGTON DEPT. OCEAN. TECH. REP. NO. 159
(4 VOLS.).

START DATE: 1/63
END DATE : 12/63

GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

DETERMINE THE GROSS FEATURES OF THE MOVEMENT AND
DISPERSION OF THE COLUMBIA RIVER EFFLUENT WATER IN
THE OPEN SEA OFF THE MOUTH OF THE RIVER AND ALONG
THE ADJACENT COAST.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MONTHS TO YRS
CURRENT METER: F

SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T

DATA ACCESSIBILITY:
AT NODC; ALSO ON COMPUTER PUNCH CARDS AT UW.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT ALL STATIONS. OTHER SAMPLES
TAKEN: BTS, NUTRIENTS, PLANKTON TOWS,
PRODUCTIVITY, CHLOROPHYLL, RADIATION COUNTS, WATER
COLOR.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: COLUMBIA RIVER EFFLUENT 1963

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W1	10	3/63
BOT	W2	20	3/63
BOT	W3	45	3/63
BOT	O1	6	3/63
BOT	O2	8	3/63
BOT	O5	36	3/63
BOT	D1	21	3/63
BOT	W1	11	4/63
BOT	W2	19	4/63
BOT	W3	46	4/63
BOT	O1	7	4/63
BOT	O2	7	4/63
BOT	O5	38	4/63
BOT	D1	18	4/63
BOT	W3	39	5/63
BOT	W2	34	5/63
BOT	O1	34	5/63
BOT	O5	28	5/63
BOT	D1	10	5/63
BOT	W1	1	5/63
BOT	O3	11	5/63
BOT	W1	4	6/63
BOT	W2	40	6/63
BOT	W3	35	6/63
BOT	O1	12	6/63
BOT	O2	4	6/63
BOT	O3	5	6/63
BOT	O5	38	6/63
BOT	O6	24	6/63
BOT	D1	30	6/63
BOT	O4	2	6/63
BOT	O2	5	7/63
BOT	O5	29	7/63
BOT	D1	4	7/63
BOT	W2	48	8/63
BOT	W3	5	8/63
BOT	W1	3	8/63
BOT	O1	12	8/63
BOT	O2	2	8/63
BOT	O5	7	8/63
BOT	D1	5	8/63
BOT	W2	22	9/63
BOT	W3	16	9/63
BOT	O1	1	9/63
BOT	O5	2	9/63
BOT	W1	7	10/63
BOT	W2	31	10/63
BOT	W3	23	10/63
BOT	O1	48	10/63
BOT	O2	16	10/63
BOT	O3	7	10/63

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY) (CONT.)

PROJECT: COLUMBIA RIVER EFFLUENT 1963

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	O5	48	10/63
BOT	O6	8	10/63
BOT	D1	33	10/63
BOT	W1	6	12/63
BOT	W2	34	12/63
BOT	O1	14	12/63
BOT	W3	14	12/63
BOT	O5	7	12/63
BOT	D1	10	12/63

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON

MASTER DATA SET

PROJECT: COLUMBIA RIVER EFFLUENT 1964

SHIP NAME: R/V BROWN BEAR; CNAV OSHAWA
SPONSOR: AEC, ONR
PRINCIPAL INVESTIGATOR: C. BARNES

OTHER INVESTIGATORS:

C. M. LOVE
A. DUXBURY
PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

BECK, J.R. 1966. PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN, COLUMBIA RIVER EFFLUENT AREA, 1964. UNIV. WASHINGTON DEPT. OCEAN. TECH. REP. NO. 180 (THREE VOLUMES).

START DATE: 2/64
END DATE: 10/64
GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES: DETERMINE THE PROPERTIES, DISTRIBUTION, AND MOVEMENT OF THE COLUMBIA RIVER EFFLUENT IN THE NORTHEAST PACIFIC.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MONTHS TO YRS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: -T
DATA ACCESSIBILITY: AT NODC; ALSO ON COMPUTER PUNCH CARDS AT UW.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT ALL STATIONS. OTHER SAMPLES TAKEN: BTS, NUTRIENTS, PLANKTON TOWS, PRODUCTIVITY, CHLOROPHYLL, RADIATION COUNTS, WATER COLOR.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: COLUMBIA RIVER EFFLUENT 1965

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W2	3	1/65
BOT	W3	2	1/65
BOT	O1	2	1/65
BOT	O5	2	1/65
BOT	D1	7	1/65
BOT	W1	1	2/65
BOT	W3	1	2/65
BOT	W2	80	2/65
BOT	W2	48	3/65
BOT	W2	44	4/65
BOT	W3	32	4/65
BOT	W1	1	4/65
BOT	O1	5	4/65
BOT	O5	3	4/65
BOT	D1	9	4/65
BOT	W2	60	6/65
BOT	W1	6	7/65
BOT	W2	1	7/65
BOT	W3	5	7/65
BOT	W2	1	8/65
BOT	O1	15	8/65
BOT	O5	3	8/65
BOT	D1	9	8/65
BOT	W2	66	9/65
BOT	O1	2	9/65
BOT	W3	3	11/65
BOT	D1	4	11/65

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: COLUMBIA RIVER EFFLUENT 1966

SHIP NAME: R/V THOMPSON, R/V OCEANEER
SPONSOR: AEC, ONR
PRINCIPAL INVESTIGATOR: C. BARNES
OTHER INVESTIGATORS:
A. DUXBURY
T.J. CONOMOS

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

BECK, J.R. 1967. PHYSICAL, CHEMICAL, AND
BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN:
COLUMBIA RIVER EFFLUENT AREA, 1966. UNIV.
WASHINGTON DEPT. OCEAN. TECH. REP. NO. 186, 225
PP.

START DATE: 6/66

END DATE : 11/66

GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

DETERMINE THE PROPERTIES, DISTRIBUTION, AND
MOVEMENT OF THE COLUMBIA RIVER EFFLUENT IN THE
NORTHEAST PACIFIC.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: MONTHS TO YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): T

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

MOST AT NODC; ALSO ON COMPUTER PUNCH CARDS AT UW.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT ALL STATIONS. OTHER SAMPLES
TAKEN: BTS, NUTRIENTS, PLANKTON TOWS,
PRODUCTIVITY, CHLOROPHYLL, RADIATION COUNTS, WATER
COLOR. PLASTIC SEABED DRIFTERS ALSO RELEASED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: COLUMBIA RIVER EFFLUENT 1966

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W2	29	6/66
BOT	O2	3	8/66
BOT	O5	10	8/66
BOT	D1	19	8/66
BOT	W2	22	8/66
BOT	W2	19	11/66
BOT	W3	2	11/66

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: CROSS-SHELF

SHIP NAME: R/V THOMPSON

SPONSOR:

PRINCIPAL INVESTIGATOR: B. HICKEY

OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: UW

OTHER INSTITUTIONS:

REFERENCES:

SUSAN GEIER, UNIVERSITY OF WASHINGTON - PERSONAL
COMMUNICATION.

START DATE: 1/77

END DATE : 4/77

GENERAL AREA: CENTRAL WASHINGTON CONTINENTAL SHELF

OBJECTIVES:

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO MONTHS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

STORED ON MAGNETIC TAPE AT UW.

AVAILABLE AT NODC? N

COMMENTS:

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: CROSS-SHELF

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	OF STUDY END	TEMP (?)	SAL (?)
AANDERAA	46.5200	124.2100	25	1/77	4/77	F	F
BRAINCON	46.5200	124.2100	26	1/77	4/77	F	F
BRAINCON	46.5200	124.2100	40	1/77	4/77	F	F
AANDERAA	46.5000	124.3300	25	1/77	4/77	F	F
BRAINCON	46.5000	124.3300	40	1/77	4/77	F	F
AANDERAA	46.5000	124.3300	80	1/77	4/77	F	F
AANDERAA	46.4700	124.4800	25	1/77	4/77	F	F
BRAINCON	46.4700	124.4800	40	1/77	4/77	F	F
AANDERAA	46.4700	124.4800	80	1/77	4/77	F	F
BRAINCON	46.4700	124.4800	140	1/77	4/77	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: CROSS-SHELF

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W2	13	1/77
CTD	W2	34	4/77

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: CUE-I

SHIP NAME: R/V YAQUINA, R/V CAYUSE, NOAA SHIP OCEAN
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: R. SMITH
OTHER INVESTIGATORS:
R.D. PILLSBURY
D. HALPERN
C.N.K. MOOERS
M. STEVENSON
A. HUYER

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:
UW
NOAA/PMEL
UNIV. OF MIAMI

REFERENCES:
CUEA DATA REPORTS NOS. 1-10, 23, 24
CUEA TECHNICAL REPORTS NOS. 5, 11

START DATE: 5/72
END DATE : 10/72
GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF
OBJECTIVES:
STUDY COASTAL UPWELLING PROCESSES.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: HRS TO MONTHS
CURRENT METER: T
SEA LEVEL SENSOR: T
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): T
PROFILING CURRENT METERS: T
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: T
OTHER: T
DATA ACCESSIBILITY:
MOST AT NODC; ALSO MOST ARCHIVED ON MAGNETIC TAPE
AT PARTICIPATING INSTITUTIONS.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION AND RECORDED AT
BUOYS (FORM ATTACHED). HYDROGRAPHIC MEASUREMENTS
PRIMARILY CTD, BUT ALSO BOTTLE CASTS, CHEMICAL
ANALYSIS AND CTD CALIBRATION. SEA LEVEL FROM
NEWPORT. CONTINUOUS SHIPBOARD SURFACE
THERMOSALINOGRAPH. SST ALSO MEASURED BY AIRBORNE
RADIOMETER. LIMITED SATELLITE DATA COLLECTED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: CUE-I

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	PERIOD OF END	TEMP (?)	SAL (?)
AANDERAA	44.4200	124.2100	20	4/72	5/72	T	F
AANDERAA	44.4200	124.2100	80	4/72	5/72	T	F
AANDERAA	44.4400	124.2000	20	5/72	5/72	T	F
AANDERAA	44.4400	124.2000	80	5/72	5/72	T	F
AANDERAA	44.4300	124.2300	20	5/72	6/72	T	F
AANDERAA	44.4300	124.2300	80	5/72	6/72	T	F
AANDERAA	44.4000	124.2500	0	6/72	7/72	T	F
AANDERAA	44.4000	124.2500	20	6/72	7/72	T	F
AANDERAA	44.4000	124.2500	40	6/72	7/72	T	F
AANDERAA	44.4000	124.2500	60	6/72	7/72	T	F
AANDERAA	44.4000	124.2500	80	6/72	7/72	T	F
AANDERAA	44.3900	124.0800	30	7/72	8/72	T	F
AANDERAA	44.3900	124.1700	0	7/72	8/72	T	F
AANDERAA	44.3900	124.1700	20	7/72	8/72	T	F
AANDERAA	44.3900	124.1700	40	7/72	8/72	T	F
AANDERAA	44.3900	124.1700	60	7/72	8/72	T	F
AANDERAA	44.4000	124.2500	20	7/72	8/72	T	F
AANDERAA	44.4000	124.2500	40	7/72	8/72	T	F
AANDERAA	44.4000	124.2500	60	7/72	8/72	T	F
AANDERAA	44.4000	124.2500	80	7/72	8/72	T	F
AANDERAA	44.3900	124.3200	0	7/72	8/72	T	F
AANDERAA	44.3900	124.3200	20	7/72	8/72	T	F
AANDERAA	44.3900	124.3200	40	7/72	8/72	T	F
AANDERAA	44.3900	124.3200	120	7/72	8/72	T	F
AANDERAA	44.5100	124.1200	20	7/72	8/72	T	F
AANDERAA	44.5100	124.1200	40	7/72	8/72	T	F
AANDERAA	44.5100	124.1200	60	7/72	8/72	T	F
AANDERAA	44.5100	124.1200	80	7/72	8/72	T	F
AANDERAA	44.5400	124.1900	20	7/72	7/72	T	F
AANDERAA	44.5400	124.1900	40	7/72	7/72	T	F
AANDERAA	44.5400	124.1900	70	7/72	7/72	T	F
AANDERAA	44.5400	124.1900	120	7/72	7/72	T	F
AANDERAA	44.4500	124.1700	20	7/72	8/72	T	F
AANDERAA	44.4500	124.1700	40	7/72	8/72	T	F
AANDERAA	44.4500	124.1700	60	7/72	8/72	T	F
AANDERAA	44.4500	124.1700	80	7/72	8/72	T	F
AANDERAA	44.3900	124.0700	20	8/72	8/72	T	F
AANDERAA	44.3900	124.1200	20	8/72	8/72	T	F
AANDERAA	44.3900	124.1200	40	8/72	8/72	T	F
AANDERAA	44.3900	124.1200	60	8/72	8/72	T	F
AANDERAA	44.3900	124.1700	0	8/72	8/72	T	F
AANDERAA	44.3900	124.1700	20	8/72	8/72	T	F
AANDERAA	44.3900	124.1700	60	8/72	8/72	T	F
AANDERAA	44.4000	124.2500	0	8/72	8/72	T	F
AANDERAA	44.4000	124.2500	20	8/72	8/72	T	F
AANDERAA	44.4000	124.2500	40	8/72	8/72	T	F
AANDERAA	44.4000	124.2500	60	8/72	8/72	T	F
AANDERAA	44.4000	124.2500	80	8/72	8/72	T	F
AANDERAA	44.3900	124.3900	0	8/72	8/72	T	F
AANDERAA	44.3900	124.3900	20	8/72	8/72	T	F
AANDERAA	44.3900	124.3900	40	8/72	8/72	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM) (CONT.)

PROJECT: CUE-I

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
AANDERAA	44.3900	124.3900	70	8/72	8/72	T	F
AANDERAA	44.3900	124.3900	120	8/72	8/72	T	F
AANDERAA	44.5100	124.1200	20	8/72	8/72	T	F
AANDERAA	44.5100	124.1200	40	8/72	8/72	T	F
AANDERAA	44.5100	124.1200	60	8/72	8/72	T	F
AANDERAA	44.5100	124.1200	80	8/72	8/72	T	F
AANDERAA	44.5400	124.1900	0	8/72	8/72	T	F
AANDERAA	44.5400	124.1900	20	8/72	8/72	T	F
AANDERAA	44.5400	124.1900	40	8/72	8/72	T	F
AANDERAA	44.5400	124.1900	70	8/72	8/72	T	F
AANDERAA	44.5400	124.1900	120	8/72	8/72	T	F
AANDERAA	44.4500	124.1700	40	8/72	8/72	T	F
AANDERAA	44.4500	124.1700	60	8/72	8/72	T	F
AANDERAA	44.4500	124.1700	80	8/72	8/72	T	F
AANDERAA	44.3900	124.0700	25	8/72	9/72	T	F
AANDERAA	44.3900	124.0700	35	8/72	9/72	T	F
AANDERAA	44.3900	124.1200	25	8/72	10/72	T	F
AANDERAA	44.3900	124.1200	40	8/72	10/72	T	F
AANDERAA	44.3900	124.1200	60	8/72	10/72	T	F
AANDERAA	44.3900	124.1800	0	8/72	9/72	T	F
AANDERAA	44.3900	124.1800	25	8/72	9/72	T	F
AANDERAA	44.3900	124.1800	60	8/72	9/72	T	F
AANDERAA	44.4000	124.2500	0	8/72	10/72	T	F
AANDERAA	44.4000	124.2500	25	8/72	10/72	T	F
AANDERAA	44.4000	124.2500	40	8/72	10/72	T	F
AANDERAA	44.4000	124.2500	60	8/72	10/72	T	F
AANDERAA	44.4000	124.2500	80	8/72	10/72	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
METEOROLOGIC (ME)

PROJECT: CUE-I

PARAMETERS MEASURED	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	PERIOD OF START	STUDY END
SPEED, DIR, TEMP	44.4000	124.2500	6/72	7/72
TEMP	44.3900	124.1700	7/72	8/72
SPEED, DIR	44.3900	124.3200	7/72	8/72
TEMP, SPEED, DIR	44.3900	124.1700	8/72	8/72
TEMP, SPEED, DIR	44.4000	124.2500	8/72	8/72
TEMP, SPEED, DIR	44.3900	124.3200	8/72	8/72
TEMP, SPEED, DIR	44.5400	124.1900	8/72	8/72
TEMP, SPEED, DIR	44.3900	124.1800	8/72	9/72
TEMP, SPEED, DIR	44.4000	124.2500	8/72	10/72

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DRIFTER DATA (DR)

PROJECT: CUE-I

GEOGRAPHIC BOUNDS

TYPE OF INSTRUMENT	LAT 1 DEG.MINS	LAT 2 DEG.MINS	LONG 1 DEG.MINS	LONG 2 DEG.MINS	DEPTH (M)	PERIOD OF START
DRB	44.5900	44.4000	124.0400	124.2200	0	8/72
SUB	44.5900	44.4000	124.0400	124.2200	10	8/72
SUB	44.5900	44.4000	124.0400	124.2200	50	8/72

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: CUE-I

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	02	57	5/72
CTD	01	6	5/72
CTD	02	63	6/72
CTD	01	6	6/72
CTD	02	338	7/72
CTD	01	23	7/72
CTD	02	999	8/72
CTD	02	66	8/72
CTD	01	40	8/72
CTD	05	3	7/72
CTD	02	32	9/72
CTD	02	22	10/72

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
PROFILING CURRENT METER (PM)

PROJECT: CUE-I

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
AANDERAA	02	5	8/72

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: CUE-II

SHIP NAME: R/V YAQUINA, R/V CAYUSE, NOAA SHIP OCEAN
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: R. SMITH
OTHER INVESTIGATORS:
R.D. PILLSBURY
D. HALPERN
C.N.K. MOEDERS
M. STEVENSON
A. HUYER

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:
NOAA/PMEL
UW
UNIV. OF MIAMI

REFERENCES:
CUEA DATA REPORTS NOS. 12, 17, 21, 22, 26, 28, 29
CUEA TECHNICAL REPORTS NOS. 6, 23, 27, 34

START DATE: 7/73
END DATE : 8/73
GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF
OBJECTIVES:
STUDY COASTAL UPWELLING PROCESSES.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: HRS TO MONTHS
CURRENT METER: T
SEA LEVEL SENSOR: T
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): T
PROFILING CURRENT METERS: T
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: T
OTHER: T
DATA ACCESSIBILITY:
SOME AT NODC; MOST ARCHIVED ON MAGNETIC TAPE AT
PARTICIPATING INSTITUTIONS.

AVAILABLE AT NODC? CTD-Y CM-N

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. OTHER
METEOROLOGICAL MEASUREMENTS AT MOORED BUOYS, SHORE
STATIONS AND AIRCRAFT FLIGHTS. LIMITED SATELLITE
DATA COLLECTED, SST MEASURED BY AIRBORNE
RADIOMETER. SEA LEVEL FROM NEWPORT.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: CUE-II

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
AANDERAA	45.1600	124.0200	0	7/73	8/73	T	F
AANDERAA	45.1600	124.0200	20	7/73	8/73	T	F
AANDERAA	45.1600	124.0200	40	7/73	8/73	T	F
AANDERAA	45.1600	124.0100	10	7/73	8/73	T	F
AANDERAA	45.1600	124.0100	40	7/73	8/73	T	F
AANDERAA	45.1600	124.0700	0	6/73	8/73	T	F
AANDERAA	45.1600	124.0700	20	6/73	8/73	T	F
AANDERAA	45.1600	124.0700	40	6/73	8/73	T	F
AANDERAA	45.1600	124.0700	60	6/73	8/73	T	F
AANDERAA	45.1600	124.0700	80	6/73	8/73	T	F
AANDERAA	45.1600	124.0700	95	6/73	8/73	T	F
AANDERAA	45.1600	124.1200	0	7/73	8/73	T	F
AANDERAA	45.1600	124.1900	0	7/73	8/73	T	F
AANDERAA	45.1600	124.1900	20	7/73	8/73	T	F
AANDERAA	45.1600	124.1900	40	7/73	8/73	T	F
AANDERAA	45.1600	124.1900	80	7/73	8/73	T	F
AANDERAA	45.1600	124.1900	120	7/73	8/73	T	F
AANDERAA	45.1600	124.1900	180	7/73	8/73	T	F
AANDERAA	45.1600	124.1900	195	7/73	8/73	T	F
AANDERAA	45.1700	124.4000	0	6/73	8/73	T	F
AANDERAA	45.1700	124.4000	40	6/73	8/73	T	F
AANDERAA	45.1700	124.4000	80	6/73	8/73	T	F
AANDERAA	45.1700	124.4000	120	6/73	8/73	T	F
AANDERAA	45.1700	124.4000	180	6/73	8/73	T	F
AANDERAA	45.3500	124.0900	20	7/73	8/73	T	F
AANDERAA	45.3500	124.0900	40	7/73	8/73	T	F
AANDERAA	45.3500	124.0900	60	7/73	8/73	T	F
AANDERAA	45.3500	124.0900	80	7/73	8/73	T	F
AANDERAA	45.1700	125.0000	0	7/73	8/73	T	F
AANDERAA	45.1100	124.0500	20	7/73	8/73	T	F
AANDERAA	45.1100	124.0500	40	7/73	8/73	T	F
AANDERAA	45.1100	124.0500	60	7/73	8/73	T	F
AANDERAA	45.1700	124.0400	0	7/73	8/73	T	F
AANDERAA	44.4500	124.1700	20	7/73	8/73	T	F
AANDERAA	44.4500	124.1700	40	7/73	8/73	T	F
AANDERAA	44.4500	124.1700	60	7/73	8/73	T	F
AANDERAA	44.4600	124.1800	20	8/73	9/73	T	F
AANDERAA	44.4600	124.1800	40	8/73	9/73	T	F
AANDERAA	44.4600	124.1800	60	8/73	9/73	T	F
AANDERAA	44.4600	124.1800	80	8/73	9/73	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
METEOROLOGIC (ME)

PROJECT: CUE-II

PARAMETERS MEASURED	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	PERIOD OF STUDY	
			START	END
TEMP, SPEED, DIR	45.1600	124.0200	7/73	8/73
TEMP	45.1600	124.0700	6/73	8/73
TEMP, SPEED, DIR	45.1600	124.1200	7/73	8/73
TEMP, SPEED, DIR	45.1600	124.1900	7/73	8/73
TEMP, SPEED, DIR	45.1700	124.4000	7/73	8/73
TEMP, SPEED, DIR	45.1700	125.0000	7/73	8/73
TEMP, SPEED	45.1700	124.0400	7/73	8/73

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DRIFTER DATA (DR)

PROJECT: CUE-II

GEOGRAPHIC BOUNDS

TYPE OF INSTRUMENT	LAT 1 DEG.MINS	LAT 2 DEG.MINS	LONG 1 DEG.MINS	LONG 2 DEG.MINS	DEPTH (M)	PERIOD OF START
SUB	45.1500	44.4000	124.0000	124.1500	4	7/73
SUB	45.1500	44.4000	124.0000	124.1500	10	7/73
SUB	45.1200	44.5000	124.0000	124.0500	10	8/73

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: CUE-II

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	01	25	6/73
CTD	05	1	6/73
CTD	01	330	7/73
CTD	02	37	7/73
CTD	01	709	8/73
CTD	02	42	8/73
CTD	05	7	8/73

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
PROFILING CURRENT METER (PM)

PROJECT: CUE-II

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
AANDERAA	01	76	7/73
AANDERAA	02	15	7/73
AANDERAA	01	101	8/73
AANDERAA	02	17	8/73
CYCLESONDE	01	716	8/73

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: CURTIN 1967

SHIP NAME: R/V YAQUINA
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: T. CURTIN
OTHER INVESTIGATORS:
R.E. STILL
S. NESHYBA

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

CURTIN, T.B., R.E. STILL, AND S. NESHYBA. 1968. A
REPORT ON GEOMAGNETIC ELECTROKINETOGRAPH
OBSERVATIONS OFF THE OREGON COAST. OSU DEPT.
OCEAN. DATA REPORT NO. 32, REF. 68-21, 78 PP.

START DATE: 6/67
END DATE : 11/67
GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF
OBJECTIVES:
DEVELOP AND TEST GEK CURRENT MEASUREMENT
TECHNIQUES.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: HRS TO SEASONS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): F
HYDROGRAPHIC (TEMPERATURE): F
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
UNKNOWN.

AVAILABLE AT NODC? N

COMMENTS:

SURFACE CURRENTS FROM TOWED ELECTRODES. SURFACE
TEMPERATURE ALSO MEASURED. (NO DATA SHEET WITH
THIS FORM.)

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: FALL TRANSITION

SHIP NAME: R/V WECOMA
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: B. REID
OTHER INVESTIGATORS:
A. HUYER

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

REID, B., R.E. SCHRAMM, A. HUYER, R.L. SMITH.
1985. CURRENT AND CTD OBSERVATIONS OFF OREGON,
AUGUST TO DECEMBER, 1980. OSU DEPT. OCEAN. DATA
REP. NO 116, REF. 85-7, 103 PP.

START DATE: 8/80
END DATE : 12/80

GENERAL AREA: NORTHERN AND CENTRAL OR CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

STUDY THE AUTUMN TRANSITION FROM SUMMER TO WINTER
CURRENT AND HYDROGRAPHIC REGIMES.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: HRS TO SEASONS
CURRENT METER: T

SEA LEVEL SENSOR: T
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T
REMOTE SENSING: F
OTHER: F

DATA ACCESSIBILITY:
PART AT NODC; ALSO ON MAGNETIC TAPE AT OSU.

AVAILABLE AT NODC? CTD-Y CM-N

COMMENTS:

ATMOSPHERIC PRESSURE, WIND SPEED AND DIRECTION,
AND SEA LEVEL FROM NEWPORT USED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: FALL TRANSITION

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
AANDERAA	45.0000	124.1000	25	8/80	12/80	T	F
AANDERAA	45.0000	124.1000	50	8/80	12/80	T	F
AANDERAA	45.0000	124.1000	75	8/80	12/80	T	F
AANDERAA	45.0000	124.1000	90	8/80	12/80	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: FALL TRANSITION

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	05	4	7/80
CTD	01	8	8/80
CTD	05	2	8/80
CTD	01	8	9/80
CTD	05	4	9/80
CTD	01	9	10/80
CTD	05	3	10/80
CTD	01	15	11/80
CTD	05	8	11/80
CTD	01	10	12/80
CTD	05	3	12/80

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: FREITAG 1977

SHIP NAME: NOAA SHIP OCEANOGRAPHER
SPONSOR: NOAA/ERL
PRINCIPAL INVESTIGATOR: H. FREITAG
OTHER INVESTIGATORS:
D. HALPERN

PRINCIPAL INSTITUTIONS: NOAA/PMEL
OTHER INSTITUTIONS:

REFERENCES:

FREITAG, H.P., AND D. HALPERN. 1981.
HYDROGRAPHIC OBSERVATIONS OFF NORTHERN CALIFORNIA
DURING MAY 1977. JOURN. GEOPHYS. RES., 86(C5),
4248-4252.

START DATE: 5/77

END DATE : 5/77

GENERAL AREA: SOUTHERN OR CONTINENTAL SHELF AND OFFSHORE (AND SOUTHWA
OBJECTIVES:

DESCRIBE THE STRUCTURE OF THE GEOSTROPHIC FLOW IN
THE LIGHTLY STUDIED REGION BETWEEN 37°N AND 43°N.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: N/A

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AVAILABLE IN R2D2 DATA BASE AT PMEL.

AVAILABLE AT NODC? N

COMMENTS:

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: FREITAG 1977

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	04	22	5/77
CTD	06	17	5/77

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: GAST 1955

SHIP NAME: FISH AND WILDLIFE SERVICE VESSELS
SPONSOR: U.S. FISH AND WILDLIFE SERVICE, ONR
PRINCIPAL INVESTIGATOR: J. GAST
OTHER INVESTIGATORS:
J.L. AMIDON
J.F. HEBARD
P.E. SEELINGER

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

GAST, J.A., J.L. AMIDON, J.F. HEBARD, AND P.E.
SEELINGER. 1956. OCEANOGRAPHIC OBSERVATIONS IN
THE NORTH PACIFIC ABOARD VESSELS OF THE UNITED
STATES FISH AND WILDLIFE SERVICE, SUMMER AND FALL,
1955. UNIV. WASHINGTON DEPT. OCEAN. SPECIAL REP.
NO. 20.

START DATE: 10/55

END DATE : 10/55

GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF (AND NORTHWESTWARD)

OBJECTIVES:

CONDUCT OCEANOGRAPHIC RESEARCH IN CONJUNCTION WITH
EXPLORATORY SALMON FISHING.

SPATIAL SCALES: MESO TO RGL

TEMPORAL SCALES: N/A

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

UNKNOWN.

AVAILABLE AT NODC? UNKNOWN

COMMENTS:

OTHER SAMPLING: BTS, PLANKTON TOWS. HYDRO CASTS
TO 1000 M.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: GAST 1955

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W3	1	10/55
BOT	W2	1	10/55
BOT	01	1	10/55
BOT	03	2	10/55
BOT	04	1	10/55

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: HALPERN 1971

SHIP NAME: NOAA SHIP OCEANOGRAPHER
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: D. HALPERN
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: NOAA/PMEL
OTHER INSTITUTIONS:

REFERENCES:

HALPERN, D. 1972. STD OBSERVATIONS IN THE
NORTHEAST PACIFIC NEAR 47°N, 128°W
(AUGUST/SEPTEMBER 1971). NOAA TECH. MEMO. ERL
POL-2, 26 PP.

HALPERN, D. 1972. WIND RECORDER, CURRENT METER,
AND THERMISTOR CHAIN MEASUREMENTS IN THE NORTHEAST
PACIFIC, AUGUST/SEPTEMBER 1971. NOAA TECH. REP.
ERL 240-POL 12, 37 PP.

HALPERN, D. 1972. DESCRIPTION OF AN EXPERIMENTAL
INVESTIGATION OF THE RESPONSE OF THE UPPER OCEAN
TO VARIABLE WINDS. NOAA TECH. REP. ERL 231-POL 9,
51 PP.

START DATE: 8/71

END DATE : 9/71

GENERAL AREA: APPROXIMATELY 300 KM OFF WASHINGTON COAST

OBJECTIVES:

INVESTIGATE THE RESPONSE OF THE UPPER OCEAN TO
VARIABLE WIND STRESS.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO WKS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AVAILABLE IN R2D2 DATA BASE AT FMEL.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: HALPERN 1971

AVAILABLE AT NODC? N

COMMENTS:

THERMISTOR CHAIN ON MOORING TO DEPTH OF 54 M.
WIND RECORDER MOUNTED ON BUOY AT 2 M HEIGHT.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: HALPERN 1971

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
GEDDYNE	47.0400	128.1700	8	8/71	9/71	F	F
GEDDYNE	47.0400	128.1700	16	8/71	9/71	F	F
GEDDYNE	47.0400	128.1700	26	8/71	9/71	F	F
GEDDYNE	47.0400	128.1700	46	8/71	9/71	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
METEOROLOGIC (ME)

PROJECT: HALPERN 1971

PARAMETERS MEASURED	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	PERIOD OF START	STUDY END
W SPEED, DIR, P, T	47.0400	128.1700	8/71	9/71

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: HALPERN 1971

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	D1	13	8/71
CTD	D1	16	9/71

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: HARLETT 1971

SHIP NAME: R/V YAQUINA, R/V CAYUSE
SPONSOR: USGS, NOAA/SEA GRANT
PRINCIPAL INVESTIGATOR: J. HARLETT
OTHER INVESTIGATORS:
L.D. KULM

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

HARLETT, J.C., AND L.D. KULM. 1973. SUSPENDED
SEDIMENT TRANSPORT ON THE NORTHERN OREGON
CONTINENTAL SHELF. GEOL. SOC. AMER. BULL., 84,
3815-3826.

START DATE: 2/71

END DATE : 5/71

GENERAL AREA: NORTH AND CENTRAL OREGON CONTINENTAL SHELF

OBJECTIVES:

DETERMINE THE CHARACTER OF BOTTOM CURRENTS AND
THEIR ROLE IN SEDIMENT TRANSPORT.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO MONTHS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

NOT AVAILABLE EXCEPT IN REPORT.

AVAILABLE AT NODC? N

COMMENTS:

OTHER SAMPLING: TURBIDITY, XBTS. CURRENT METER
MOORINGS WERE SHORT DURATION (HOURS-DAYS ONLY).
CURRENTS MEASURED 1,3 M ABOVE BOTTOM.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: HARLETT 1971

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
SAV ROTOR	45.1100	123.5900	40	2/71	2/71	F	F
SAV ROTOR	45.1100	124.0300	50	2/71	2/71	F	F
SAV ROTOR	45.1100	124.0500	80	2/71	2/71	F	F
SAV ROTOR	45.1100	124.0700	90	2/71	2/71	F	F
SAV ROTOR	45.1100	124.0900	110	2/71	2/71	F	F
SAV ROTOR	45.1100	124.1000	130	2/71	2/71	F	F
SAV ROTOR	45.1100	124.1200	150	2/71	2/71	F	F
SAV ROTOR	45.1100	124.1400	170	2/71	2/71	F	F
SAV ROTOR	45.1100	124.1700	190	2/71	2/71	F	F
SAV ROTOR	45.1000	124.1900	260	2/71	2/71	F	F
SAV ROTOR	44.4700	124.0500	40	4/71	4/71	F	F
SAV ROTOR	44.4700	124.1400	95	4/71	4/71	F	F
SAV ROTOR	44.4000	124.1400	75	4/71	4/71	F	F
SAV ROTOR	44.4600	124.3000	190	4/71	4/71	F	F
SAV ROTOR	44.4000	124.2400	100	4/71	4/71	F	F
SAV ROTOR	44.3900	124.2700	100	4/71	4/71	F	F
SAV ROTOR	44.3900	124.3200	150	4/71	4/71	F	F
SAV ROTOR	46.0000	124.3800	175	5/71	5/71	F	F
SAV ROTOR	45.5900	124.1200	100	5/71	5/71	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: HOLBROOK 1973

SHIP NAME: NOAA SHIP OCEANOGRAPHER
SPONSOR:
PRINCIPAL INVESTIGATOR: J. HOLBROOK
OTHER INVESTIGATORS:
R. REED

PRINCIPAL INSTITUTIONS: NOAA/PMEL
OTHER INSTITUTIONS:

REFERENCES:

HOLBROOK, J. 1975. STD MEASUREMENTS OFF
WASHINGTON AND VANCOUVER ISLAND COASTS, SEPTEMBER
1973. NOAA TECH. MEMO. ERL PMEL-5, 88 PP.

START DATE: 9/73

END DATE : 9/73

GENERAL AREA: WA-SOUTHERN VANCOUVER ISLAND CONTINENTAL SHELF AND OFFS

OBJECTIVES:

TO CONTINUE THE STUDY OF HYDRODYNAMIC AND FLOW
PROPERTIES AND THEIR AREAL AND TEMPORAL VARIATION
IN THE NORTHEAST PACIFIC.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: DAYS TO YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AT NODC; ALSO IN R2D2 DATA BASE AT PMEL.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. BOTTLE CASTS
MADE FOR CTD CALIBRATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: HOLBROOK 1973

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	5	9/73
CTD	W2	7	9/73
CTD	W3	57	9/73
CTD	D1	12	9/73

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: HOPKINS 1967-69

SHIP NAME:
SPONSOR: AEC
PRINCIPAL INVESTIGATOR: T. HOPKINS
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:
HOPKINS, T.S. 1971. ON THE CIRCULATION OVER THE
CONTINENTAL SHELF OFF WASHINGTON. PH.D. THESIS,
UNIVERSITY OF WASHINGTON, 204 PP.

START DATE: 7/67
END DATE : 10/69
GENERAL AREA: SOUTHERN WASHINGTON CONTINENTAL SHELF
OBJECTIVES:
STUDY WATER MOVEMENT AND TEMPERATURE ON THE
WASHINGTON CONTINENTAL SHELF.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: HRS TO YRS
CURRENT METER: T
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): F
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
AT NODC; ALSO ON MAGNETIC TAPE AT UW.

AVAILABLE AT NODC? Y

COMMENTS:
PRESSURE-TEMPERATURE RECORDERS DEPLOYED NEAR
SURFACE OR NEAR BOTTOM, BUT NOT AT CURRENT METER
DEPTHS. WIND DATA FROM COLUMBIA RIVER LIGHTSHIP.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: HOPKINS 1967-69

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
BRAINCON	46.2400	124.2000	77	7/67	10/67	F	F
BRAINCON	46.2400	124.1400	47	11/67	1/68	F	F
BRAINCON	46.1100	124.1100	40	4/68	5/68	F	F
BRAINCON	46.1100	124.1100	60	4/68	5/68	F	F
BRAINCON	46.1100	124.1100	40	7/68	7/68	F	F
BRAINCON	46.1100	124.1100	60	7/68	7/68	F	F
BRAINCON	46.2500	124.2000	60	9/68	11/68	F	F
BRAINCON	46.2500	124.2000	77	9/68	8/69	F	F
BRAINCON	46.2500	124.2000	60	3/69	10/69	F	F
BRAINCON	46.2500	124.2000	39	3/69	5/69	F	F
BRAINCON	46.2500	124.2000	70	5/69	7/69	F	F
BRAINCON	46.2500	124.2000	50	5/69	10/69	F	F
BRAINCON	46.2500	124.2000	19	5/69	10/69	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: INGRAHAM 1963

SHIP NAME: R/V GEORGE B. KELEZ

SPONSOR:

PRINCIPAL INVESTIGATOR: W. INGRAHAM

OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: BUR/COMM FISH

OTHER INSTITUTIONS:

REFERENCES:

INGRAHAM, W.J. 1967. THE GEOSTROPHIC CIRCULATION
AND DISTRIBUTION OF WATER PROPERTIES OFF THE
COASTS OF VANCOUVER ISLAND AND WASHINGTON, SPRING
AND FALL 1963. FISH. BULL., 66(2), 223-250.

START DATE: 4/63

END DATE : 11/63

GENERAL AREA: NORTH WASHINGTON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

DETERMINE OCEANOGRAPHIC CONDITIONS IN THE COASTAL
ENVIRONMENT.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: SEASONS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AT NODC; AVAILABILITY OF ORIGINAL DATA UNKNOWN.

AVAILABLE AT NODC? Y

COMMENTS:

OTHER MEASUREMENTS: DISSOLVED OXYGEN, BTS,
SURFACE BUCKET SAMPLES

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: INGRAHAM 1963

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W1	4	5/63
BOT	W2	5	5/63
BOT	W3	12	5/63
BOT	W1	6	10/63
BOT	W2	7	10/63
BOT	W3	19	10/63
BOT	D1	4	10/63

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: KORGEN 1968

SHIP NAME:

SPONSOR:

PRINCIPAL INVESTIGATOR: B. KORGEN

OTHER INVESTIGATORS:

G. BODVARSSON

L.D. KULM

PRINCIPAL INSTITUTIONS: OSU

OTHER INSTITUTIONS:

REFERENCES:

KORGEN, B.J., G. BODVARSSON, L.D. KULM. 1970.
CURRENT SPEEDS NEAR THE OCEAN FLOOR WEST OF
OREGON. DEEP-SEA RES., 17, 353-357.

START DATE: 8/68

END DATE : 8/68

GENERAL AREA: NORTH AND CENTRAL OREGON COAST

OBJECTIVES:

MEASURE VERTICAL CURRENT SHEAR IN THE NEAR BOTTOM
LAYER TO DETERMINE CORRECTIONS FOR VERTICAL
TEMPERATURE GRADIENT MEASUREMENTS.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: MINUTES TO DAYS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: T

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

UNKNOWN.

AVAILABLE AT NODC? N

COMMENTS:

MEASURED VERTICAL CURRENT AND TEMPERATURE SHEAR.
SCALAR SPEED ONLY MEASURED. NUMBER OF STATIONS
AND TIMES/DATES NOT GIVEN. NO DATA SHEETS
ACCOMPANY THIS FORM.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: LARSEN 1978-79

SHIP NAME:
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: L. LARSEN
OTHER INVESTIGATORS:
R.W. STERNBERG
N.C. SHI

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

LARSEN, L.H., R.W. STERNBERG, N.C. SHI, M.A.H.
MARSDEN, AND L. THOMAS. 1981. FIELD
INVESTIGATIONS OF THE THRESHOLD OF GRAIN MOTION BY
OCEAN WAVES AND CURRENTS. MAR. GEOL., 42,
105-132.

START DATE: 12/78

END DATE : 3/79

GENERAL AREA: CENTRAL WASHINGTON CONTINENTAL SHELF

OBJECTIVES:

DETERMINE BOTTOM CURRENTS TO HELP EVALUATE VARIOUS
HYPOTHESES ON THE THRESHOLD OF SEDIMENT GRAIN
MOTION UNDER OSCILLATORY FLOW CONDITIONS.

SPATIAL SCALES: SMALL

TEMPORAL SCALES: HRS TO MONTHS

CURRENT METER: T

SEA LEVEL SENSOR: T

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AVAILABLE IN HARD COPY LISTINGS FROM R.W.
STERNBERG.

AVAILABLE AT NODC? N

COMMENTS:

CURRENTS AND PRESSURE MEASURED 1 M ABOVE BOTTOM.
OTHER SAMPLING: TURBIDITY, REMOTE BOTTOM
PHOTOGRAPHY.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: LARSEN 1978-79

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD START	OF STUDY END	TEMP (?)	SAL (?)
SAV ROTOR	46.5400	124.3100	90	12/78	12/78	T	F
SAV ROTOR	46.5400	124.3100	90	2/79	3/79	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
TEMPORARY SEA LEVEL SENSOR (SL)

PROJECT: LARSEN 1978-79

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END
BPS	46.5400	124.3100	90	12/78	12/78
BPS	46.5400	124.3100	90	2/79	3/79

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: LOVE 1955-56

SHIP NAME: R/V BROWN BEAR, R/V JOHN N. COBB
SPONSOR: ONR, U.S. F AND W SERV., FISH COMM OF OR
PRINCIPAL INVESTIGATOR: C. LOVE
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

LOVE, C.M. 1957. NORTHEAST PACIFIC OCEAN
PHYSICAL AND CHEMICAL DATA, SUMMERS OF 1955 AND
1956; A PRELIMINARY TABULATION OF OCEANOGRAPHIC
DATA COLLECTED BY M/V BROWN BEAR AND M/V JOHN N.
COBB. UNIV. WASH. DEPT. OCEAN. TECH. REP. NO. 55,
104 PP.

START DATE: 6/55

END DATE : 8/56

GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

INVESTIGATION OF THE RELATIONSHIP BETWEEN WATER
PROPERTIES AND THE OCCURRENCE AND DISTRIBUTION OF
ALBACORE TUNA.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AT NODC; AVAILABILITY OF ORIGINAL DATA AT UW
UNKNOWN.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. OTHER SAMPLES
TAKEN: DISSOLVED OXYGEN, DISSOLVED INORGANIC
PHOSPHATE.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: LOVE 1955-56

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	D1	7	6/55
BOT	W1	3	6/55
BOT	W2	2	6/55
BOT	O1	2	6/55
BOT	O2	1	6/55
BOT	O3	2	6/55
BOT	O4	2	6/55
BOT	O6	3	6/55
BOT	W1	1	8/56
BOT	W2	1	8/56
BOT	O3	2	8/56
BOT	W3	3	8/56
BOT	O5	5	8/56
BOT	O6	2	8/56
BOT	D1	11	8/56

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: LOVE 1956-58

SHIP NAME: R/V BROWN BEAR
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: C. LOVE
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

LOVE, C.M. 1960. PHYSICAL AND CHEMICAL DATA FOR
A PORTION OF THE NORTHEAST PACIFIC OCEAN EXTENDING
FROM THE COASTS OF WASHINGTON AND BRITISH COLUMBIA
WESTWARD TO 131°W, APRIL 1956 - APRIL 1958. UNIV.
WASHINGTON DEPT. OCEAN. TECH. REP. NO. 66, 201 PP.

START DATE: 4/56

END DATE : 4/58

GENERAL AREA: WASHINGTON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

OBSERVE CONDITIONS OFF THE WASHINGTON COAST AT
VARIOUS TIMES OF YEAR; INVESTIGATE COBB SEAMOUNT
ENVIRONS.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: MONTHS TO YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AT NODC; AVAILABILITY OF ORIGINAL DATA AT UW
UNKNOWN.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. ALSO SAMPLED:
DISSOLVED OXYGEN, DISSOLVED INORGANIC PHOSPHATE,
DISSOLVED SILICATE (ONE CRUISE).

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: LOVE 1956-58

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	D1	10	4/56
BOT	W3	5	5/57
BOT	W1	2	7/57
BOT	W2	2	7/57
BOT	W3	9	7/57
BOT	W3	2	4/58

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: LOVE 1977

SHIP NAME: PROFESSOR SIEDLECKI (POLAND)
SPONSOR: NOAA/NMFS, POLISH SEA FISHERIES INST.
PRINCIPAL INVESTIGATOR: C. LOVE
OTHER INVESTIGATORS:
W.J. INGRAHAM, JR.

PRINCIPAL INSTITUTIONS: NOAA/NWAFIC
OTHER INSTITUTIONS:
POLISH SEA FISHERIES INSTITUTE

REFERENCES:

INGRAHAM, W.J., JR. AND C.M. LOVE. 1978.
OCEANOGRAPHIC CONDITIONS OFF CALIFORNIA TO
VANCOUVER ISLAND IN THE SUMMER OF 1977. MAR.
FISH. REV., 40(2), 24-28.

START DATE: 8/77
END DATE : 9/77

GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF (AND NORTH AND SOUT
OBJECTIVES:
DETERMINE GEOSTROPHIC CURRENTS AND
TEMPERATURE/SALINITY DISTRIBUTIONS TO ACCOMPANY
FISHERIES SURVEY DATA.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: N/A
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
RETAINED BY POLISH RESEARCHERS.

AVAILABLE AT NODC? N

COMMENTS:

OTHER SAMPLING: BOTTLE CASTS FOR CALIBRATION;
DISSOLVED OXYGEN; PLANKTON SAMPLES; XBTS; FISH
SURVEYS.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: LOVE 1977

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	17	9/77
CTD	W2	9	9/77
CTD	W3	13	9/77
CTD	O1	15	9/77
CTD	O2	14	9/77
CTD	O3	11	9/77
CTD	O4	12	9/77

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: MARMER 1915-20

SHIP NAME: COLUMBIA RIVER, UMATILLA REEF LIGHT VLSLS
SPONSOR: U.S. COAST AND GEODETIC SOCIETY
PRINCIPAL INVESTIGATOR: H. MARMER
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS:
OTHER INSTITUTIONS:

REFERENCES:

MARMER, H.A. 1926. COASTAL CURRENTS ALONG THE
PACIFIC COAST OF THE UNITED STATES. SPEC. PUB.
U.S. COAST AND GEODETIC SURVEY, 121, 91 PP.

START DATE: 1/15

END DATE : 12/20

GENERAL AREA: OREGON-WASHINGTON CONTINENTAL SHELF (AND SOUTHWARD)

OBJECTIVES:

TO DETERMINE VELOCITY OF SURFACE CURRENTS ALONG
THE U.S. WEST COAST.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: DAYS TO YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): F

DRIFTERS (LAGRANGIAN): T

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AVAILABLE AT NODC?

COMMENTS:

CURRENTS MEASURED BY "CHIP-LOG" TECHNIQUE.
METEOROLOGICAL CONDITIONS RECORDED CONCURRENTLY.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DRIFTER DATA (DR)

PROJECT: MARMER 1915-20

GEOGRAPHIC BOUNDS

TYPE OF INSTRUMENT	LAT 1 DEG.MINS	LAT 2 DEG.MINS	LONG 1 DEG.MINS	LONG 2 DEG.MINS	DEPTH (M)	PERIOD OF START
SUR	46.1100	46.1200	124.1100	124.1200	0	1/15
SUR	48.1000	48.1100	124.5000	124.5100	0	5/15
SUR	48.1000	48.1100	124.5000	124.5100	0	1/19

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: MURRAY 1977

SHIP NAME: R/V THOMPSON
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: J. MURRAY
OTHER INVESTIGATORS:
B. SPELL
G. FRIEDERICH

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:
OSU

REFERENCES:

MURRAY, J.W., B. SPELL, AND G. FRIEDERICH. 1977.
HYDROGRAPHIC AND NUTRIENT DATA FROM THE CASCADIA
BASIN (JULY 1977). UNIV. WASH. DEPT. OCEAN. SPEC.
REP. NO. 81.

START DATE: 7/77

END DATE : 7/77

GENERAL AREA: SOUTHERN WASHINGTON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

CONDUCT GEOCHEMICAL SURVEY OF THE WASHINGTON
SHELF, SLOPE, AND CASCADIA BASIN.

SPATIAL SCALES: MESO TO RGL

TEMPORAL SCALES: N/A

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

ORIGINAL DATA NOT AVAILABLE EXCEPT IN DATA REPORT.

AVAILABLE AT NODC? N

COMMENTS:

OTHER SAMPLING: DISSOLVED GASES (INCLUDING
OXYGEN); NUTRIENTS; BOX CORES; PORE WATER.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: MURRAY 1977

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W2	2	7/77
BOT	W3	6	7/77
BOT	D1	2	7/77

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: OARS/CUE-3

SHIP NAME: NOAA SHIP OCEANOGRAPHER
SPONSOR: NOAA, NSF
PRINCIPAL INVESTIGATOR: D. HALPERN
OTHER INVESTIGATORS:
R.L. SMITH
R.K. REED

PRINCIPAL INSTITUTIONS: NOAA/PMEL
OTHER INSTITUTIONS:
OSU

REFERENCES:

HALPERN, D., S. HAYES, R. REED, AND R. ZWILLING.
1978. PROGRESS REPORT OF THE OARS/CUE-3 PROJECT.
CUEA NEWSLETTER, 5(1), 20-24.

HALPERN, D., R.L. SMITH, AND R.K. REED. 1978. ON
THE CALIFORNIA UNDERCURRENT OVER THE CONTINENTAL
SLOPE OFF OREGON. JOURN. GEOPHYS. RES., 83(C3),
1366-1372.

START DATE: 6/75
END DATE : 7/75

GENERAL AREA: OREGON-WASHINGTON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

INVESTIGATE THE STRUCTURE OF THE BOTTOM BOUNDARY
LAYER; INVESTIGATE ZONAL PROFILE OF SEA SURFACE
HEIGHT; INVESTIGATE THE NORTHWARD-FLOWING
UNDERCURRENT ON THE CONTINENTAL SLOPE; STUDY HEAT
FLUX OVER THE COASTAL OCEAN.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: HRS TO MONTHS
CURRENT METER: T
SEA LEVEL SENSOR: T
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: F
DATA ACCESSIBILITY:
IN R2D2 DATA BASE AT PMEL.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: OARS/CUE-3

AVAILABLE AT NODC? N

COMMENTS:

CONCURRENT WITH OSU UP-75 PROJECT.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: OARS/CUE-3

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
GEODYNE	45.1600	124.0200	140	6/75	7/75	F	F
AMF VACM	45.1700	124.0800	85	6/75	7/75	F	F
AMF VACM	45.1700	124.0800	88	6/75	7/75	F	F
AMF VACM	45.1700	124.0800	91	6/75	7/75	F	F
AMF VACM	45.1700	124.0800	94	6/75	7/75	F	F
AMF VACM	45.1700	124.0800	97	6/75	7/75	F	F
GEODYNE	45.1600	124.1300	144	6/75	7/75	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
TEMPORARY SEA LEVEL SENSOR (SL)

PROJECT: OARS/CUE-3

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END
BPS	45.1600	124.0200	140	6/75	7/75
BPS	45.1600	124.1300	144	6/75	7/75

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
 HYDROGRAPHIC DATA (HY)

PROJECT: OARS/CUE-3

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	01	152	6/75
CTD	02	12	6/75
CTD	05	11	6/75
CTD	W1	2	7/75
CTD	W2	5	7/75
CTD	W3	38	7/75
CTD	01	107	7/75
CTD	02	14	7/75
CTD	03	7	7/75
CTD	04	2	7/75
CTD	05	30	7/75
CTD	06	17	7/75

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: PAK 1974-75

SHIP NAME: R/V YAQUINA
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: H. PAK
OTHER INVESTIGATORS:
J.R.V. ZANEVELD

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

PAK, H., AND J.R.V. ZANEVELD. 1977. BOTTOM
NEPHELOID LAYERS AND BOTTOM MIXED LAYERS OBSERVED
ON THE CONTINENTAL SHELF OFF OREGON. JOURN.
GEOPHYS. RES., 82(27), 3921-3931.

START DATE: 8/74
END DATE : 4/75
GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF
OBJECTIVES:
STUDY THE TEMPERATURE AND TURBIDITY STRUCTURE IN
THE BOTTOM BOUNDARY LAYER.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: SEASONS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
UNKNOWN.

AVAILABLE AT NODC? N

COMMENTS:

NEPHELOMETER MEASUREMENTS MADE CONCURRENTLY WITH
CTD. ALSO USED HYDROGRAPHIC AND CURRENT METER
DATA FROM CUE-I, CUE-II, AND WISP.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: FAK 1974-75

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	01	68	8/74
CTD	01	55	4/75

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: PAK 1977-78

SHIP NAME: R/V WECOMA, R/V THOMPSON
SPONSOR: USDOE, NSF
PRINCIPAL INVESTIGATOR: H. PAK
OTHER INVESTIGATORS:
J.R.V. ZANEVELD
J.C. KITCHEN

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

MENZIES, D.W., J.C. KITCHEN, S. MOORE, W.T.
PETERSON, J. AMBLER, H. PAK, J.R.V. ZANEVELD.
1980. HYDROGRAPHIC, OPTICAL, AND BIOLOGICAL
OBSERVATIONS ON THE CENTRAL OREGON SHELF DURING
6-13 NOVEMBER 1977. OSU DEPT. OCEAN. DATA REP.
NO. 81, REF. 80-5, 327 PP.

PAK, H., J.R.V. ZANEVELD, AND J. KITCHEN. 1980.
INTERMEDIATE NEPHELOID LAYERS OBSERVED OFF OREGON
AND WASHINGTON. JOURN. GEOPHYS. RES., 85(C11),
6697-6708.

START DATE: 11/77
END DATE : 10/78

GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF
OBJECTIVES:

TO GAIN CONCURRENT WINTERTIME INFORMATION ON
HYDROGRAPHY, SUSPENDED PARTICULATES, NUTRIENTS,
BIOMASS, PRIMARY PRODUCTIVITY, AND ZOOPLANKTON.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: YRS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
UNKNOWN.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: PAK 1977-78

AVAILABLE AT NODC? N

COMMENTS:

OTHER MEASUREMENTS: PARTICULATES; NUTRIENTS;
CHLOROPHYLL; CARBON AND NITROGEN; ZOOPLANKTON.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: PAK 1977-78

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	O1	48	11/77
CTD	W1	6	10/78
CTD	W3	6	10/78

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: PAQUETTE 1952

SHIP NAME: R/V BROWN BEAR
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: R. PAQUETTE
OTHER INVESTIGATORS:
E.E. COLLIAS
C.M. LOVE

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

PAQUETTE, R.G., E.E. COLLIAS, AND C.M. LOVE.
1954. EASTERN NORTH PACIFIC OFFSHORE PHYSICAL AND
CHEMICAL DATA OBSERVED DURING 1952. UNIV.
WASHINGTON DEPT. OCEAN. TECH. REP. NO. 22, 26 PP.

START DATE: 3/52
END DATE : 8/52
GENERAL AREA: WASHINGTON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:
NOT GIVEN.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MTHS TO SEASONS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: F
DATA ACCESSIBILITY:
AT NODC; AVAILABILITY OF ORIGINAL DATA AT UW
UNKNOWN.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. CASTS TO 2000
M WHERE POSSIBLE. DISSOLVED OXYGEN ALSO MEASURED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: PAQUETTE 1952

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W1	1	3/52
BOT	W3	2	3/52
BOT	W1	1	5/52
BOT	W3	3	5/52
BOT	W2	2	8/52
BOT	W3	3	8/52
BOT	O1	3	8/52
BOT	O5	2	8/52
BOT	D1	12	8/52

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: PAQUETTE 1953

SHIP NAME: R/V BROWN BEAR
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: R. PAQUETTE
OTHER INVESTIGATORS:
E.E. COLLIAS
C.M. LOVE

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

PAQUETTE, R.G., E.E. COLLIAS, AND C.M. LOVE.
1954. EASTERN NORTH PACIFIC OFFSHORE PHYSICAL AND
CHEMICAL DATA, JULY-SEPTEMBER 1953. UNIV. WASH.
DEPT. OCEAN. TECH. REP. NO. 34, 23 PP.

PAQUETTE, R.G., E.E. COLLIAS, C.M. LOVE. 1954.
EASTERN NORTH PACIFIC OFFSHORE PHYSICAL AND
CHEMICAL DATA, APRIL-JUNE 1953. UNIV. WASHINGTON
DEPT. OCEAN. TECH. REP. NO. 23, 17 PP.

START DATE: 4/53
END DATE : 9/53
GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:
NOT GIVEN.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MTHS TO SEASONS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: F
DATA ACCESSIBILITY:
AT NODC; AVAILABILITY OF ORIGINAL DATA AT UW
UNKNOWN.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. CASTS TO 2000
M WHERE POSSIBLE. DISSOLVED OXYGEN ALSO MEASURED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: PAQUETTE 1953

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W1	1	8/53
BOT	W3	5	8/53
BOT	D1	5	8/53
BOT	W1	9	9/53
BOT	W2	13	9/53
BOT	W3	11	9/53
BOT	O1	4	9/53
BOT	O2	2	9/53
BOT	O3	1	9/53
BOT	O5	14	9/53
BOT	O6	3	9/53
BOT	D1	3	9/53
BOT	W1	1	4/53
BOT	W3	3	4/53
BOT	W3	2	5/53
BOT	W1	1	6/53
BOT	W3	5	6/53
BOT	D1	9	6/53

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: PATTULLO 1965

SHIP NAME: R/V YAQUINA
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: J. PATTULLO
OTHER INVESTIGATORS:
C.A. COLLINS
C.N.K. MOOERS
D. PILLSBURY

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

COLLINS, C.A, H.C. CREECH, AND J.G. PATTULLO.
1966. A COMPILATION OF OBSERVATIONS FROM MOORED
CURRENT METERS AND THERMOGRAPHS, VOL. I: OREGON
CONTINENTAL SHELF, JULY 1965 - FEBRUARY 1966.
OREGON STATE UNIV. DEPT. OCEAN. DATA REP. NO. 23,
REF. 66-11, 39 PP.

START DATE: 7/65

END DATE : 2/66

GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF

OBJECTIVES:

STUDY PHYSICAL PROCESSES IN OREGON SHELF WATERS BY
MEANS OF MOORED INSTRUMENT ARRAYS.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO SEASONS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

ON MAGNETIC TAPE AVAILABLE AT OSU.

AVAILABLE AT NODC? N

COMMENTS:

MOORED THERMISTOR MEASUREMENTS. CONSIDERABLE
INSTRUMENT FAILURE.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
 MOORED CURRENT METER (CM)

PROJECT: PATTULLO 1965

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
BRAINCON	44.5100	124.1500	20	7/65	8/65	T	F
BRAINCON	44.5100	124.1500	40	7/65	8/65	T	F
BRAINCON	44.5100	124.1500	60	7/65	8/65	T	F
BRAINCON	44.2900	124.2700	20	8/65	9/65	T	F
BRAINCON	44.2900	124.2700	40	8/65	9/65	T	F
BRAINCON	44.2900	124.2700	60	8/65	9/65	T	F
BRAINCON	44.5100	124.1500	20	9/65	10/65	T	F
BRAINCON	44.5100	124.1500	40	9/65	10/65	T	F
BRAINCON	44.5100	124.1400	25	1/66	2/66	T	F
BRAINCON	44.5100	124.1400	50	1/66	2/66	T	F
BRAINCON	44.5100	124.1400	75	1/66	2/66	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: PATTULLO 1966

SHIP NAME: R/V YAQUINA

SPONSOR: NSF

PRINCIPAL INVESTIGATOR: J. PATTULLO

OTHER INVESTIGATORS:

R. SMITH

C. MOOERS

PRINCIPAL INSTITUTIONS: OSU

OTHER INSTITUTIONS:

REFERENCES:

MOOERS, C.N.K., L. BOGERT, R.L. SMITH, J.
PATTULLO. 1968. A COMPILATION OF OBSERVATIONS
FROM MOORED CURRENT METERS AND THERMOGRAPHS (AND
COMPLEMENTARY OCEANOGRAPHIC AND ATMOSPHERIC DATA),
VOL. II: OREGON CONTINENTAL SHELF
AUGUST-SEPTEMBER 1966. OSU DEPT. OCEAN. DATA REP.
NO. 30, REF. NO. 68-5, 98 PP.

START DATE: 8/66

END DATE : 9/66

GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF

OBJECTIVES:

STUDY PHYSICAL PROCESSES IN THE OREGON COASTAL
REGIME BY MEANS OF MOORED ARRAYS OF CURRENT METERS
AND BY USE OF COMPLEMENTARY HYDROGRAPHIC AND
ATMOSPHERIC DATA.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO WKS

CURRENT METER: T

SEA LEVEL SENSOR: T

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: T

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

ON 9-TRACK MAGNETIC TAPE AVAILABLE AT OSU

AVAILABLE AT NODC?

COMMENTS:

HOURLY WIND MEASUREMENTS FROM OFFSHORE OIL
PLATFORM. CM DATA RECOVERY = 51%. BTS ALSO
TAKEN. SEA LEVEL OBSERVATION SITE NOT IDENTIFIED.
METEOROLOGY LOGGED AT EACH CTD STATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
 MOORED CURRENT METER (CM)

PROJECT: PATTULLO 1966

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
BRAINCON	44.5000	124.1000	20	8/66	9/66	T	F
BRAINCON	44.5000	124.1000	60	8/66	9/66	T	F
BRAINCON	44.5200	124.1700	20	8/66	9/66	T	F
BRAINCON	44.5200	124.1700	60	8/66	9/66	T	F
BRAINCON	44.5500	124.2500	20	8/66	9/66	T	F
BRAINCON	44.5500	124.2500	60	8/66	9/66	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
PROFILING CURRENT METER (PM)

PROJECT: PATTULLO 1966

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
SAV ROTOR	01	2	9/66
SAV ROTOR	02	4	9/66

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: PATTULLO 1966

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	02	4	8/66
BOT	01	4	8/66
BOT	05	1	8/66
BOT	02	4	9/66
BOT	01	2	9/66

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: PATTULLO 1969

SHIP NAME: R/V YAQUINA

SPONSOR: NSF

PRINCIPAL INVESTIGATOR: J. PATTULLO

OTHER INVESTIGATORS:

R.L. SMITH

R.D. PILLSBURY

PRINCIPAL INSTITUTIONS: OSU

OTHER INSTITUTIONS:

REFERENCES:

HUYER, A., J. BOTTERO, J.G. PATTULLO, R.L. SMITH.
1971. A COMPILATION OF OBSERVATIONS FROM MOORED
CURRENT METERS AND THERMOGRAPHS, VOL. V: OREGON
CONTINENTAL SHELF, 31 JULY - 21 SEPT. 1969. OSU
DEPT. OCEAN., DATA REP. NO. 46, REF. 71-1, 39 PP.

START DATE: 7/69

END DATE : 9/69

GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF

OBJECTIVES:

MEASURE COASTAL CURRENTS, TEMPERATURE, AND WIND
OFF OREGON DURING THE UPWELLING SEASON.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO MONTHS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

ON MAGNETIC TAPE AVAILABLE AT OSU.

AVAILABLE AT NODC? N

COMMENTS:

ANEMOMETER ON ONE MOORING (DATA SHEET ATTACHED).
NEWPORT WINDS ALSO USED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: PATTULLO 1969

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
BRAINCON	44.3900	124.0800	20	7/69	8/69	T	F
BRAINCON	44.3900	124.2500	20	7/69	9/69	T	F
BRAINCON	44.3900	124.2500	40	7/69	9/69	T	F
BRAINCON	44.5100	124.1300	40	7/69	9/69	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
METEOROLOGIC (ME)

PROJECT: PATTULLO 1969

PARAMETERS MEASURED	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	PERIOD OF START	STUDY END
WIND SPEED, DIR	44.3900	124.2500	7/69	9/69

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: PILLSBURY 1967-68

SHIP NAME: R/V YAQUINA
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: R. PILLSBURY
OTHER INVESTIGATORS:
R. SMITH
J. PATTULLO

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

PILLSBURY, R.D., R.L. SMITH, J.G. PATTULLO.
1967-68. A COMPILATION OF OBSERVATIONS FROM
MOORED CURRENT METERS AND THERMOGRAPHS, 67-68.
OSU DEPT. OF OCEAN. DATA REP. 40. REF. NO. 70-3,
102 PP.

START DATE: 5/67
END DATE : 9/68
GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF
OBJECTIVES:
TO STUDY PHYSICAL PROCESSES IN THE OREGON COASTAL
REGIME.

SPATIAL SCALES: SMALL
TEMPORAL SCALES: HRS TO YRS
CURRENT METER: T
SEA LEVEL SENSOR: T
HYDROGRAPHIC (SALINITY): F
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: F
DATA ACCESSIBILITY:
ON MAGNETIC TAPE AVAILABLE AT OSU.

AVAILABLE AT NODC? N
COMMENTS:

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: PILLSBURY 1967-68

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
BRAINCON	44.5000	124.1100	20	5/67	6/67	T	F
BRAINCON	44.5000	124.1100	60	5/67	6/67	T	F
BRAINCON	44.5100	124.1200	20	5/67	6/67	T	F
BRAINCON	44.5100	124.1200	40	5/67	6/67	T	F
BRAINCON	44.5100	124.1700	20	5/67	6/67	T	F
BRAINCON	44.5100	124.1700	60	5/67	6/67	T	F
BRAINCON	44.5100	124.1700	20	6/67	6/67	T	F
BRAINCON	44.5100	124.1700	40	6/67	6/67	T	F
BRAINCON	44.5100	124.1700	60	6/67	6/67	T	F
BRAINCON	44.5100	124.1400	25	4/68	5/68	T	F
BRAINCON	44.5100	124.1400	50	4/68	5/68	T	F
BRAINCON	44.5200	124.1300	25	5/68	6/68	T	F
BRAINCON	44.5200	124.1300	50	5/68	6/68	T	F
BRAINCON	44.5200	124.1300	75	5/68	6/68	T	F
BRAINCON	44.5000	124.1300	25	6/68	8/68	T	F
BRAINCON	44.5000	124.1300	50	6/68	8/68	T	F
BRAINCON	44.5000	124.1300	75	6/68	8/68	T	F
BRAINCON	44.5100	124.1300	25	8/68	9/68	T	F
BRAINCON	44.5100	124.1300	50	8/68	9/68	T	F
BRAINCON	44.5100	124.1300	75	8/68	9/68	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: QUINALT CANYON I

SHIP NAME: R/V THOMPSON
SPONSOR: USDOE
PRINCIPAL INVESTIGATOR: G. ANDERSON
OTHER INVESTIGATORS:
B. HICKEY
M.J. PERRY
W. PETERSON
M. LANDRY

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:
OSU

REFERENCES:

POSTEL, J.R., W.K. PETERSON, J.C. KITCHEN, AND
D.W. MENZIES. 1980. DATA REPORT OF THE
DOE-SPONSORED NORTHWEST MARINE SCIENCES GROUP
JULY-AUGUST 1979 CRUISE. PREP. FOR U.S. DEPT. OF
ENERGY, DE/EV/10047-2.

SUSAN GEIER, UNIVERSITY OF WASHINGTON - PERSONAL
COMMUNICATION.

START DATE: 7/79
END DATE : 8/79
GENERAL AREA: CENTRAL WASHINGTON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

TO DETERMINE THE EFFECT OF THE QUINALT CANYON ON
THE BIOLOGY, CHEMISTRY, HYDROGRAPHY, AND FLUX OF
PARTICULATE MATERIAL IN WASHINGTON COASTAL WATERS.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: HRS TO WKS
CURRENT METER: T
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
STORED ON MAGNETIC TAPE AT UW.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: QUINALT CANYON I

AVAILABLE AT NODC? N

COMMENTS:

OTHER SAMPLING: DISSOLVED OXYGEN, NUTRIENTS
PRODUCTIVITY, PIGMENTS, PLANKTON, TURBIDITY,
SUBMARINE IRRADIANCE. METEOROLOGY LOGGED AT EACH
CTD STATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: QUINALT CANYON I

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
AANDERAA	47.0700	125.0100	64	7/79	8/79	F	F
AANDERAA	47.0700	125.0100	114	7/79	8/79	F	F
AANDERAA	47.0700	125.0100	214	7/79	8/79	F	F
AANDERAA	47.0700	125.0100	414	7/79	8/79	F	F
AANDERAA	47.0800	124.5500	48	7/79	8/79	F	F
AANDERAA	47.0800	124.5500	152	7/79	8/79	F	F
AANDERAA	47.2300	124.4900	53	7/79	8/79	F	F
AANDERAA	47.2300	124.4900	103	7/79	8/79	F	F
AANDERAA	47.2300	124.4900	203	7/79	8/79	F	F
AANDERAA	47.2300	124.4900	403	7/79	8/79	F	F
AANDERAA	47.2300	124.4900	597	7/79	8/79	F	F
AANDERAA	47.2600	124.3900	50	7/79	8/79	F	F
AANDERAA	47.2600	124.3900	74	7/79	8/79	F	F
AANDERAA	47.2700	124.3300	20	7/79	8/79	F	F
AANDERAA	47.2700	124.3300	34	7/79	8/79	F	F
AANDERAA	47.2900	124.2600	15	7/79	8/79	F	F
AANDERAA	47.2900	124.2600	132	7/79	8/79	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: QUINALT CANYON I

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	61	7/79
CTD	W3	35	7/79

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: QUINALT CANYON II

SHIP NAME: R/V WECOMA
SPONSOR: USDOE
PRINCIPAL INVESTIGATOR: G. ANDERSON
OTHER INVESTIGATORS:
B. HICKEY
C. LORENZEN
M. LANDRY

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:
OSU

REFERENCES:
POSTEL, J.R., W.K. PETERSON, J.C. KITCHEN, AND
D.W. MENZIES. 1982. DATA REPORT OF THE
DOE-SPONSORED NORTHWEST MARINE SCIENCES GROUP
SEPTEMBER-OCTOBER 1980 CRUISE. PREP. FOR U.S.
DEPT. OF ENERGY, DE/EV/10047-5.

HICKEY, B., E. BAKER, AND N. KACHEL. 1986.
SUSPENDED PARTICLE MOVEMENT IN AND AROUND QUINALT
SUBMARINE CANYON. MAR. GEOL., 71, 35-83.

START DATE: 9/80
END DATE : 1/81
GENERAL AREA: CENTRAL AND SOUTHERN WA CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:
DETERMINE THE EFFECT OF THE QUINALT CANYON ON THE
BIOLOGY, CHEMISTRY, HYDROGRAPHY, AND FLUX OF
PARTICULATE MATERIAL IN WASHINGTON COASTAL WATERS.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: HRS TO WKS
CURRENT METER: T
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
STORED ON MAGNETIC TAPE AT UW.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: QUINALT CANYON II

AVAILABLE AT NODC? N

COMMENTS:

OTHER SAMPLING: DISSOLVED OXYGEN, NUTRIENTS,
PRODUCTIVITY, PIGMENTS, PLANKTON, TURBIDITY,
SUBMARINE IRRADIANCE. METEOROLOGY LOGGED AT EACH
CTD STATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: QUINALT CANYON II

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	OF STUDY END	TEMP (?)	SAL (?)
AANDERAA	47.1600	124.4600	147	10/80	1/81	T	T
AANDERAA	47.1800	124.4600	150	10/80	1/81	T	T
AANDERAA	47.1800	124.4600	386	10/80	1/81	T	T
AANDERAA	47.2100	124.5200	142	10/80	1/81	T	T
AANDERAA	47.2100	124.5200	392	10/80	1/81	T	T
AANDERAA	47.2100	124.5200	900	10/80	1/81	T	T
AANDERAA	47.2100	124.5200	1200	10/80	1/81	T	T
AANDERAA	47.2100	125.0900	384	10/80	1/81	T	T
AANDERAA	47.2100	125.0900	689	10/80	1/81	T	T
AANDERAA	47.2100	125.0900	1300	10/80	1/81	T	T
AANDERAA	47.2100	125.0900	1600	10/80	1/81	T	T
AANDERAA	47.2000	125.1100	1450	10/80	1/81	T	T
AANDERAA	47.0800	124.5900	138	10/80	1/81	T	T
AANDERAA	47.0800	124.5900	288	10/80	1/81	T	T
AANDERAA	47.0700	124.4800	146	10/80	1/81	T	T

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
 HYDROGRAPHIC DATA (HY)

PROJECT: QUINALT CANYON II

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	66	9/80
CTD	W3	26	9/80
CTD	W1	52	10/80
CTD	W3	12	10/80
CTD	W1	16	1/81
CTD	W3	7	1/81

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: QUINALT CANYON III

SHIP NAME: R/V THOMPSON, R/V WECOMA

SPONSOR:

PRINCIPAL INVESTIGATOR: B. HICKEY

OTHER INVESTIGATORS:

E. BAKER

N. KACHEL

PRINCIPAL INSTITUTIONS: UW

OTHER INSTITUTIONS:

NOAA/PMEL

REFERENCES:

HICKEY, B., E. BAKER, AND N. KACHEL. 1986.

SUSPENDED PARTICLE MOVEMENT IN AN AROUND QUINALT
SUBMARINE CANYON. MAR. GEOL., 71, 35-83.

START DATE: 10/81

END DATE : 1/82

GENERAL AREA: CENTRAL WASHINGTON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

DETERMINE THE MECHANISMS OF SEDIMENT DISPERSAL IN
A SUBMARINE CANYON.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO SEASONS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

STORED ON MAGNETIC TAPE AT UW.

AVAILABLE AT NODC? N

COMMENTS:

OTHER SAMPLING: TRANSMISSIVITY, SEDIMENT TRAPS,
SEDIMENT CORES.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: QUINALT CANYON III

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD START	OF STUDY END	TEMP (?)	SAL (?)
AANDERAA	47.1500	124.4600	150	10/81	1/82	T	T
AANDERAA	47.1500	124.4600	170	10/81	1/82	T	T
AANDERAA	47.1800	124.4700	275	10/81	1/82	T	T
AANDERAA	47.1800	124.4700	450	10/81	1/82	T	T
AANDERAA	47.2200	124.5400	1050	10/81	1/82	T	T
AANDERAA	47.2200	124.5400	1200	10/81	1/82	T	T
AANDERAA	47.2100	125.0900	1350	10/81	1/82	T	T
AANDERAA	47.2100	125.0900	1550	10/81	1/82	T	T
AANDERAA	47.0700	124.5900	200	10/81	1/82	T	T

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: QUINALT CANYON III

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	32	10/81
CTD	W3	15	10/81
CTD	W1	26	1/82
CTD	W3	7	1/82

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: REED 1972

SHIP NAME: NOAA SHIP OCEANOGRAPHER
SPONSOR: NOAA
PRINCIPAL INVESTIGATOR: R. REED
OTHER INVESTIGATORS:
D. HALPERN

PRINCIPAL INSTITUTIONS: NOAA/PMEL
OTHER INSTITUTIONS:

REFERENCES:

REED, R.K., AND D. HALPERN. 1973. STD
OBSERVATIONS IN THE NORTHEAST PACIFIC, SEPTEMBER -
OCTOBER 1972. NOAA TECH. REP. ERL 271 - POL 19,
58 PP.

START DATE: 9/72

END DATE : 10/72

GENERAL AREA: WASHINGTON COAST OFFSHORE

OBJECTIVES:

TO EXAMINE HYDROGRAPHIC AND FLOW PROPERTIES AND
THEIR AREAL AND TEMPORAL VARIATIONS.

SPATIAL SCALES: MESO TO RGL

TEMPORAL SCALES: WKS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AT NODC; ALSO IN R2D2 DATA BASE AT PMEL.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: REED 1972

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W3	5	9/72
CTD	D1	22	9/72
CTD	W3	5	10/72
CTD	D1	9	10/72

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: REGIONAL CURRENT SYSTEM STUDIES (RCSS)

SHIP NAME: NOAA SHIP OCEANOGRAPHER
SPONSOR: NOAA
PRINCIPAL INVESTIGATOR: T. RYAN
OTHER INVESTIGATORS:
N.P. LAIRD
G.A. CANNON

PRINCIPAL INSTITUTIONS: NOAA/PMEL
OTHER INSTITUTIONS:

REFERENCES:

RYAN, T.V., N.P. LAIRD, AND G.A. CANNON. 1973.
RP-6-OC-71 DAA REPORT: OCEANOGRAPHIC CONDITIONS
OFF THE WASHINGTON COAST OCTOBER-NOVEMBER 1971.
NOAA TECH. REP. ERL 259-POL16, 43 PP.

CANNON, G.A., N.P. LAIRD, AND T.V. RYAN. 1972.
CURRENTS OBSERVED IN JUAN DE FUCA SUBMARINE CANYON
AND VICINITY, 1971. NOAA TECH. REP. ERL 252-POL
14, 57 PP.

START DATE: 10/71

END DATE : 11/71

GENERAL AREA: WASHINGTON, NORTHERN OREGON CONTINENTAL SHELF AND OFFSH

OBJECTIVES:

STUDY THE COASTAL CURRENT REGIME THROUGH PHYSICAL
PROPERTIES OF THE WATER, DIRECT CURRENT
MEASUREMENTS BY CURRENT METERS, AND PARACHUTE
DROGUES. ALSO STUDY CURRENT SYSTEMS IN JUAN DE
FUCA SUBMARINE CANYON.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: HRS TO WKS

CURRENT METER: T

SEA LEVEL SENSOR: T

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): T

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AVAILABLE IN R2D2 DATA BASE AT PMEL.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: REGIONAL CURRENT SYSTEM STUDIES (RCSS)

AVAILABLE AT NODC? N.

COMMENTS:

WINDS MEASURED ONBOARD SHIP AND ACQUIRED FROM
UMATILLA LIGHTSHIP. TIDAL DATA FROM NEAH BAY.
PACKETS OF PLASTIC BOTTOM DRIFTERS ALSO RELEASED.
NANSEN CASTS FOR CALIBRATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: REGIONAL CURRENT SYSTEM STUDIES (RCSS)

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
GEDDYNE	48.2700	124.3800	37	10/71	11/71	F	F
BRAINCON	48.2700	124.3800	142	10/71	11/71	F	F
BRAINCON	48.2700	124.3800	245	10/71	11/71	F	F
GEDDYNE	48.0400	125.1800	19	10/71	11/71	F	F
AANDERAA	48.0400	125.1800	60	10/71	11/71	T	F
BRAINCON	48.0400	125.1800	125	10/71	11/71	F	F
AANDERAA	48.0400	125.1800	175	10/71	11/71	T	F
AANDERAA	48.0400	125.1800	226	10/71	11/71	T	F
BRAINCON	48.0100	125.1300	20	10/71	11/71	F	F
AANDERAA	48.0100	125.1300	148	10/71	11/71	T	F
BRAINCON	48.0800	125.2200	22	10/71	11/71	F	F
AANDERAA	48.0800	125.2200	108	10/71	11/71	T	F
BRAINCON	46.2600	124.2000	15	10/71	11/71	F	F
BRAINCON	46.2600	124.2000	20	10/71	11/71	F	F
BRAINCON	45.5000	124.5000	16	10/71	11/71	F	F
BRAINCON	45.5000	124.5000	21	10/71	11/71	F	F
BRAINCON	45.5000	124.5000	53	10/71	11/71	F	F
AANDERAA	45.5000	124.5000	112	10/71	11/71	F	F
AANDERAA	45.5000	124.5000	157	10/71	11/71	F	F
AANDERAA	45.5000	124.5000	163	10/71	11/71	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DRIFTER DATA (DR)

PROJECT: REGIONAL CURRENT SYSTEM STUDIES (RCSS)

GEOGRAPHIC BOUNDS

TYPE OF INSTRUMENT	LAT 1 DEG.MINS	LAT 2 DEG.MINS	LONG 1 DEG.MINS	LONG 2 DEG.MINS	DEPTH (M)	PERIOD OF START
SUB	48.2200	48.1300	126.1000	125.5500	250	11/71
SUB	48.2500	48.1000	125.0500	124.5000	90	11/71
SUB	48.2500	48.1000	125.0500	124.5000	230	11/71
SUB	48.2500	48.1000	125.0500	124.5000	255	11/71

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: REGIONAL CURRENT SYSTEM STUDIES (RCSS)

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	14	10/71
CTD	W2	8	10/71
CTD	W3	34	10/71
CTD	O1	7	10/71
CTD	O5	4	10/71
CTD	W1	6	11/71
CTD	W2	5	11/71
CTD	W3	31	11/71
CTD	O1	5	11/71
CTD	O5	4	11/71

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: SLOPE UNDERCURRENT STUDY

SHIP NAME: R/V WECOMA, R/V CAYUSE, R/V THOMPSON
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: A. HUYER
OTHER INVESTIGATORS:
R. SMITH
B. HICKEY

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:
UW

REFERENCES:

SCHRAMM, R.E., D.A. BARSTOW, W.E. GILBERT, A.
HUYER. 1980. CTD OBSERVATIONS FROM THE SLOPE
UNDERCURRENT STUDY OFF OREGON, JULY 1977 - OCTOBER
1978. OSU DEPT. OCEAN. PRELIMINARY DATA REPORT,
287 PP.

BARSTOW, D., W.E. GILBERT, R.E. SCHRAMM, B.M.
HICKEY, A. HUYER, R.L. SMITH. 1980. MOORED
CURRENT METER OBSERVATIONS FROM THE SLOPE
UNDERCURRENT STUDY OFF OREGON, JULY 1977 - OCTOBER
1978. OSU DEPT. OCEAN. PRELIM. DATA REP., 166 PP.

START DATE: 7/77
END DATE : 10/78
GENERAL AREA: OREGON-WASHINGTON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:
STUDY THE POLEWARD UNDERCURRENT ALONG THE
CONTINENTAL SLOPE OFF OREGON.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: HRS TO YRS
CURRENT METER: T
SEA LEVEL SENSOR: T
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
PART AT NODC; ALSO ON MAGNETIC TAPE AT OSU AND UW.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: SLOPE UNDERCURRENT STUDY

AVAILABLE AT NODC? CTD-Y CM-N

COMMENTS:

WIND, ATMOSPHERIC PRESSURE AND SEA LEVEL
OBSERVATIONS MADE AT NEWPORT. OTHER MEASUREMENTS:
DISSOLVED OXYGEN, NUTRIENTS. BOTTLE CASTS FOR
CTD CALIBRATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: SLOPE UNDERCURRENT STUDY

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
AANDERAA	45.0000	124.4400	92	9/77	10/77	T	T
AANDERAA	45.0000	124.4400	224	9/77	10/77	T	T
AANDERAA	45.0000	124.4400	364	9/77	10/77	T	T
AANDERAA	45.0000	124.4400	504	9/77	10/77	T	T
AANDERAA	45.2000	125.3800	100	10/77	1/78	T	T
AANDERAA	45.2000	125.3800	357	10/77	1/78	T	T
AANDERAA	45.2000	125.3800	600	10/77	1/78	T	T
AANDERAA	45.2000	125.3800	1850	10/77	1/78	T	T
AANDERAA	45.2000	125.3800	161	1/78	3/78	T	T
AANDERAA	45.2000	125.3800	472	1/78	3/78	T	T
AANDERAA	45.2000	125.3800	722	1/78	3/78	T	T
AANDERAA	45.2000	125.3800	972	1/78	3/78	T	T
AANDERAA	45.2000	125.3800	1972	1/78	3/78	T	T
AANDERAA	45.2000	125.3800	213	3/78	5/78	T	T
AANDERAA	45.2000	125.3800	462	3/78	5/78	T	T
AANDERAA	45.2000	125.3800	723	3/78	5/78	T	T
AANDERAA	45.2000	125.3800	983	3/78	5/78	T	T
AANDERAA	45.2000	125.3800	2025	3/78	5/78	T	T
AANDERAA	45.2000	125.3800	456	5/78	9/79	T	T
AANDERAA	45.2000	125.3800	706	5/78	9/79	T	T
AANDERAA	45.2000	125.3800	956	5/78	9/79	T	T
AANDERAA	45.2000	125.3800	1956	5/78	9/79	T	T
AANDERAA	45.1700	124.5700	70	10/77	1/78	T	T
AANDERAA	45.1700	124.5700	820	10/77	1/78	T	T
AANDERAA	45.1700	124.5700	131	1/78	5/78	T	T
AANDERAA	45.1700	124.5700	256	1/78	5/78	T	T
AANDERAA	45.1700	124.5700	381	1/78	5/78	T	T
AANDERAA	45.1700	124.5700	631	1/78	5/78	T	T
AANDERAA	45.1700	124.5700	881	1/78	5/78	T	T
AANDERAA	45.1700	124.5700	263	5/78	9/78	T	T
AANDERAA	45.1700	124.5700	388	5/78	9/78	T	T
AANDERAA	45.1700	124.5700	513	5/78	9/78	T	T
AANDERAA	45.1700	124.5700	763	5/78	9/78	T	T
AANDERAA	45.1700	124.5700	1013	5/78	9/78	T	T
AANDERAA	45.2000	124.4600	41	10/77	12/77	T	T
AANDERAA	45.2000	124.4600	141	10/77	12/77	T	T
AANDERAA	45.2000	124.4600	243	10/77	12/77	T	T
AANDERAA	45.2000	124.4600	371	10/77	12/77	T	T
AANDERAA	45.2000	124.4600	50	1/78	5/78	T	T
AANDERAA	45.2000	124.4600	90	1/78	5/78	T	T
AANDERAA	45.2000	124.4600	150	1/78	5/78	T	T
AANDERAA	45.2000	124.4600	250	1/78	5/78	T	T
AANDERAA	45.2000	124.4600	375	1/78	5/78	T	T
AANDERAA	45.2000	124.4600	500	1/78	5/78	T	T
AANDERAA	45.2000	124.4600	58	5/78	8/78	T	T
AANDERAA	45.2000	124.4600	98	5/78	8/78	T	T
AANDERAA	45.2000	124.4600	158	5/78	8/78	T	T
AANDERAA	45.2000	124.4600	258	5/78	8/78	T	T
AANDERAA	45.2000	124.4600	383	5/78	8/78	T	T
AANDERAA	45.2000	124.4600	88	8/78	10/78	T	T
AANDERAA	45.2000	124.4600	128	8/78	10/78	T	T

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM) (CONT.)

PROJECT: SLOPE UNDERCURRENT STUDY

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
AANDERAA	45.2000	124.4600	188	8/78	10/78	T	T
AANDERAA	45.2000	124.4600	288	8/78	10/78	T	T
AANDERAA	45.2000	124.4600	413	8/78	10/78	T	T
AANDERAA	45.2000	124.4600	538	8/78	10/78	T	T
AANDERAA	45.2000	124.2300	64	11/77	1/78	T	T
AANDERAA	45.2000	124.2300	164	11/77	1/78	T	T
AANDERAA	45.2000	124.2300	261	11/77	1/78	T	T
AANDERAA	45.2000	124.2300	59	1/78	5/78	T	T
AANDERAA	45.2000	124.2300	98	1/78	5/78	T	T
AANDERAA	45.2000	124.2300	157	1/78	5/78	T	T
AANDERAA	45.2000	124.2300	256	1/78	5/78	T	T
AANDERAA	45.2000	124.2300	264	5/78	7/78	T	T
AANDERAA	45.2000	124.0800	23	10/77	1/78	T	T
AANDERAA	45.2000	124.0800	49	10/77	1/78	T	T
AANDERAA	45.2000	124.0800	90	10/77	10/78	T	T
AANDERAA	45.2000	124.0800	52	3/78	8/78	T	T
AANDERAA	45.2200	125.3300	935	5/78	7/78	T	T
AANDERAA	45.2200	125.3300	971	5/78	7/78	T	T
AANDERAA	45.2200	125.3300	1917	5/78	7/78	T	T
AANDERAA	45.2200	125.3300	1953	5/78	7/78	T	T
AANDERAA	45.2200	125.3300	1971	5/78	7/78	T	T

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: SLOPE UNDERCURRENT STUDY

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	01	15	7/77
CTD	05	7	7/77
CTD	01	11	10/77
CTD	05	7	10/77
CTD	01	3	11/77
CTD	05	7	11/77
CTD	01	5	12/77
CTD	05	1	12/77
CTD	05	1	1/78
CTD	01	6	2/78
CTD	05	7	2/78
CTD	03	3	5/78
CTD	06	7	5/78
CTD	02	10	5/78
CTD	05	33	5/78
CTD	01	12	5/78
CTD	W2	6	5/78
CTD	W3	13	5/78
CTD	W1	4	5/78
CTD	01	10	7/78
CTD	05	8	7/78
CTD	03	3	9/78
CTD	06	6	9/78
CTD	02	4	9/78
CTD	05	20	9/78
CTD	02	5	9/78
CTD	01	6	9/78
CTD	W2	6	9/78
CTD	W3	15	9/78
CTD	W1	2	9/78

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: SMITH (J.D.) 1971-74

SHIP NAME: FISHING VESSELS, NOAA SHIP OCEANOGRAPHER
SPONSOR: ENERGY RESEARCH AND DEVELOPMENT ADMIN
PRINCIPAL INVESTIGATOR: J. SMITH
OTHER INVESTIGATORS:
B. HICKEY
J. BECK

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

SMITH, J.D., B. HICKEY, J. BECK. 1976.
OBSERVATIONS FROM MOORED CURRENT METERS ON THE
WASHINGTON CONTINENTAL SHELF FROM FEBRUARY 1971 TO
FEBRUARY 1974. UNIV. OF WASHINGTON DEPT. OCEAN.
SPECIAL REP. NO. 65.

START DATE: 2/71
END DATE : 2/74

GENERAL AREA: SOUTHERN WASHINGTON CONTINENTAL SHELF

OBJECTIVES:

TO SUPPLEMENT INFORMATION ON CONTINENTAL SHELF
CIRCULATION BEING GAINED BY HYDROGRAPHIC AND
SEABED DRIFTER METHODS AND TO PROVIDE THE BASIC
DATA NECESSARY FOR CALCULATIONS OF THE TRANSPORT
OF DISSOLVED MATERIAL AND SUSPENDED SEDIMENT.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO YRS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AT NODC; ALSO ON MAGNETIC TAPE AT UW.

AVAILABLE AT NODC? Y

COMMENTS:

WIND OBSERVATIONS ROUTINELY ACQUIRED FROM
WESTPORT, OR, AND THE COLUMBIA RIVER LIGHTSHIP.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: SMITH (J.D.) 1971-74

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
BRAINCON	46.2500	124.2000	15	2/71	2/71	F	F
BRAINCON	46.2500	124.2000	20	2/71	2/71	F	F
BRAINCON	46.2500	124.2000	30	2/71	2/71	F	F
BRAINCON	46.2500	124.2000	49	2/71	2/71	F	F
BRAINCON	46.2500	124.2000	72	2/71	2/71	F	F
BRAINCON	46.2500	124.2000	20	7/71	8/71	F	F
BRAINCON	46.2500	124.2000	30	7/71	8/71	F	F
BRAINCON	46.2500	124.2000	49	7/71	8/71	F	F
BRAINCON	46.2500	124.2000	67	7/71	8/71	F	F
BRAINCON	46.2500	124.2000	72	7/71	8/71	F	F
BRAINCON	46.2500	124.2000	15	10/71	11/71	F	F
BRAINCON	46.2500	124.2000	20	10/71	11/71	F	F
BRAINCON	46.2500	124.2000	30	10/71	11/71	F	F
AANDERAA	46.2500	124.2000	49	10/71	11/71	T	F
AANDERAA	46.2500	124.2000	66	10/71	11/71	T	F
BRAINCON	46.2500	124.2000	15	1/72	1/72	F	F
AANDERAA	46.2500	124.2000	16	1/72	1/72	T	F
BRAINCON	46.2500	124.2000	20	1/72	1/72	F	F
BRAINCON	46.2500	124.2000	30	1/72	1/72	F	F
AANDERAA	46.2500	124.2000	49	1/72	1/72	T	F
AANDERAA	46.2500	124.2000	66	1/72	1/72	T	F
AANDERAA	46.2500	124.2000	71	1/72	1/72	T	F
AANDERAA	46.2500	124.2000	21	7/72	8/72	T	F
AANDERAA	46.2500	124.2000	31	7/72	8/72	T	F
AANDERAA	46.2500	124.2000	51	7/72	8/72	T	F
AANDERAA	46.2500	124.2000	67	7/72	8/72	T	F
AANDERAA	46.2500	124.2000	72	7/72	8/72	T	F
AANDERAA	46.2500	124.2000	14	8/72	9/72	T	F
AANDERAA	46.2500	124.2000	19	8/72	9/72	T	F
AANDERAA	46.2500	124.2000	49	8/72	9/72	T	F
AANDERAA	46.2500	124.2000	65	8/72	9/72	T	F
AANDERAA	46.2500	124.2000	70	8/72	9/72	T	F
AANDERAA	46.2500	124.2000	20	2/73	6/73	T	F
AANDERAA	46.2500	124.2000	15	1/73	6/73	T	F
AANDERAA	46.2500	124.2000	30	1/73	6/73	T	F
AANDERAA	46.2500	124.2000	50	1/73	6/73	T	F
AANDERAA	46.2500	124.2000	66	1/73	6/73	T	F
AANDERAA	46.2500	124.2000	71	1/73	6/73	T	F
AANDERAA	46.2500	124.2000	57	11/73	1/74	T	F
AANDERAA	46.2500	124.2000	73	11/73	1/74	T	F
AANDERAA	46.2500	124.2000	78	11/73	1/74	T	F
AANDERAA	46.2500	124.2000	16	12/73	1/74	T	F
AANDERAA	46.2500	124.2000	27	12/73	1/74	T	F
AANDERAA	46.2500	124.2000	37	12/73	1/74	T	F
BRAINCON	46.5000	124.5000	18	10/71	11/71	F	F
BRAINCON	46.5000	124.5000	23	10/71	11/71	F	F
AANDERAA	46.5000	124.5000	111	10/71	11/71	T	F
AANDERAA	46.5000	124.5000	156	10/71	11/71	T	F
AANDERAA	46.5000	124.5000	161	10/71	11/71	T	F
BRAINCON	46.5000	124.5000	13	1/72	1/72	F	F
BRAINCON	46.5000	124.5000	18	1/72	1/72	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM) (CONT.)

PROJECT: SMITH (J.D.) 1971-74

TYPE OF INSTRUMENT	LATITUDE DEG. MINS	LONGITUDE DEG. MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
BRAINCON	46.5000	124.5000	47	1/72	1/72	F	F
AANDERAA	46.5000	124.5000	76	1/72	1/72	T	F
AANDERAA	46.5000	124.5000	121	1/72	1/72	T	F
AANDERAA	46.5000	124.5000	126	1/72	1/72	T	F
AANDERAA	46.5000	124.5000	21	7/72	8/72	T	F
AANDERAA	46.5000	124.5000	32	7/72	8/72	T	F
AANDERAA	46.5000	124.5000	57	7/72	8/72	T	F
AANDERAA	46.5000	124.5000	112	7/72	8/72	T	F
AANDERAA	46.5000	124.5000	157	7/72	8/72	T	F
AANDERAA	46.5000	124.5000	162	7/72	8/72	T	F
AANDERAA	46.5000	124.5000	18	8/72	9/72	T	F
AANDERAA	46.5000	124.5000	29	8/72	9/72	T	F
AANDERAA	46.5000	124.5000	54	8/72	9/72	T	F
AANDERAA	46.5000	124.5000	109	8/72	9/72	T	F
AANDERAA	46.5000	124.5000	159	8/72	9/72	T	F
AANDERAA	46.5000	124.5000	9	1/73	2/73	T	F
AANDERAA	46.5000	124.5000	20	1/73	2/73	T	F
AANDERAA	46.5000	124.5000	45	1/73	2/73	T	F
AANDERAA	46.5000	124.5000	100	1/73	2/73	T	F
AANDERAA	46.5000	124.5000	147	1/73	2/73	T	F
AANDERAA	46.5000	124.5000	152	1/73	2/73	T	F
AANDERAA	46.5000	124.5000	15	2/73	3/73	T	F
AANDERAA	46.5000	124.5000	26	2/73	3/73	T	F
AANDERAA	46.5000	124.5000	51	2/73	3/73	T	F
AANDERAA	46.5000	124.5000	106	2/73	3/73	T	F
AANDERAA	46.5000	124.5000	153	2/73	3/73	T	F
AANDERAA	46.5000	124.5000	158	2/73	3/73	T	F
BRAINCON	46.5000	124.2500	63	2/73	3/73	F	F
BRAINCON	46.5000	124.2500	68	2/73	3/73	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET.

PROJECT: SOLLITT 1985-86

SHIP NAME: F/V MAR RAE
SPONSOR: USCOE
PRINCIPAL INVESTIGATOR: C. SOLLITT
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

SOLLITT, C.K., D.R. STANDLEY, S.B. LEE, J.L.
WASHBURN. 1986. CURRENTS, WAVES AND SEDIMENT
TRANSPORT RATES AT SIX OREGON OFFSHORE DISPOSAL
SITES, WINTER AND SUMMER 1985, WINTER 1986. PREP.
BY CIVIL ENGR. DEPT., OREGON STATE UNIV. FOR U.S.
ARMY CORPS OF ENGINEERS, PORTLAND DISTRICT.

START DATE: 3/85
END DATE : 4/86
GENERAL AREA: VICINITY OF SEVERAL OREGON ESTUARY MOUTHS
OBJECTIVES:
DETERMINE WAVE AND CURRENT CHARACTERISTICS AT
OFFSHORE DISPOSAL SITES.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: HRS TO YRS
CURRENT METER: T
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): F
HYDROGRAPHIC (TEMPERATURE): F
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: F
DATA ACCESSIBILITY:
AVAILABLE FROM U.S. ARMY CORPS OF ENGINEERS,
PORTLAND DISTRICT.

AVAILABLE AT NODC? N

COMMENTS:

TWO NEIL BROWN ACOUSTIC CURRENT METERS EACH
DEPLOYMENT - ONE VECTOR AVERAGING, ONE BURST
SAMPLING. ALL MOORINGS WITHIN 1-2 M OF BOTTOM IN
SHALLOW NEARSHORE ZONE.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: SOLLITT 1985-86

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
NEIL BROWN	45.3400	123.5700	27.0	3/85	4/85	F	F
NEIL BROWN	44.0100	124.0900	24.0	3/85	4/85	F	F
NEIL BROWN	43.4000	124.1400	23.0	3/85	5/85	F	F
NEIL BROWN	43.0800	124.2700	23.0	3/85	5/85	F	F
NEIL BROWN	42.2400	124.2700	20.0	4/85	5/85	F	F
NEIL BROWN	42.0200	124.1600	23.0	4/85	5/85	F	F
NEIL BROWN	45.3400	123.5800	29.0	8/85	9/85	F	F
NEIL BROWN	44.0100	124.0900	26.0	7/85	8/85	F	F
NEIL BROWN	43.3900	124.1400	27.0	7/85	8/85	F	F
NEIL BROWN	43.0800	124.2700	26.0	7/85	8/85	F	F
NEIL BROWN	42.2400	124.2700	22.0	7/85	7/85	F	F
NEIL BROWN	42.0200	124.1700	24.0	7/85	7/85	F	F
NEIL BROWN	45.3400	123.5900	37.0	3/86	4/86	F	F
NEIL BROWN	45.3400	123.5900	27.0	3/86	4/86	F	F
NEIL BROWN	43.4000	124.1400	32.0	3/86	4/86	F	F
NEIL BROWN	43.4000	124.1400	24.0	3/86	4/86	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: STERNBERG 1975

SHIP NAME:
SPONSOR: USCOE
PRINCIPAL INVESTIGATOR: R. STERNBERG
OTHER INVESTIGATORS:
J.S. CREAGER

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:

REFERENCES:

STERNBERG, R.W., J.S. CREAGER, J. JOHNSON, W. GLASSLEY. 1979. STABILITY OF DREDGED MATERIAL DEPOSITED SEAWARD OF THE COLUMBIA RIVER MOUTH. IN: OCEAN DUMPING AND MARINE POLLUTION: GEOLOGICAL ASPECTS OF WASTE DISPOSAL, H.D. PALMER AND M.G. GROSS, EDS.

START DATE: 4/75
END DATE : 1/76
GENERAL AREA: VICINITY OF COLUMBIA RIVER MOUTH
OBJECTIVES:
DOCUMENT NEAR-BOTTOM CONDITIONS AND THEIR EFFECT ON DREDGE DISPOSAL DEPOSITS.

SPATIAL SCALES: SMALL
TEMPORAL SCALES: HRS TO SEASONS
CURRENT METER: T
SEA LEVEL SENSOR: T
HYDROGRAPHIC (SALINITY): F
HYDROGRAPHIC (TEMPERATURE): F
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
AVAILABLE IN HARD COPY LISTINGS FROM R.W. STERNBERG.

AVAILABLE AT NODC? N

COMMENTS:

CURRENTS AND PRESSURE MEASURED 1 M ABOVE BOTTOM.
OTHER SAMPLING: TURBIDITY, REMOTE BOTTOM PHOTOGRAPHY.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
 MOORED CURRENT METER (CM)

PROJECT: STERNBERG 1975

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF STUDY START	PERIOD OF STUDY END	TEMP (?)	SAL (?)
SAV ROTOR	46.1200	124.1000	30	4/75	5/75	F	F
SAV ROTOR	46.1500	124.1100	31	4/75	5/75	F	F
SAV ROTOR	46.1300	124.0700	24	6/75	7/75	F	F
SAV ROTOR	46.1100	124.0700	28	8/75	9/75	F	F
SAV ROTOR	46.1000	124.0500	31	8/75	9/75	F	F
SAV ROTOR	46.1400	124.1000	24	12/75	1/76	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
TEMPORARY SEA LEVEL SENSOR (SL)

PROJECT: STERNBERG 1975

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF STUDY START	STUDY END
BPS	46.1200	124.1000	30	4/75	5/75
BPS	46.1500	124.1100	31	4/75	5/75
BPS	46.1300	124.0700	24	6/75	7/75
BPS	46.1100	124.0700	28	8/75	9/75
BPS	46.1000	124.0500	31	8/75	9/75
BPS	46.1400	124.1000	24	12/75	1/76

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: SUPERCODE

SHIP NAME: R/V WECOMA
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: R. SMITH
OTHER INVESTIGATORS:
A. HUYER
J. ALLEN
D. DENBO

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

FLEISCHBEIN, J., W. GILBERT, R. SCHRAMM, A. HUYER.
1981. CTD OBSERVATIONS OFF OREGON AND CALIFORNIA,
5-17 FEBRUARY 1981. OSU DEPT. OCEAN. DATA REP.
NO. 90, REF. 81-16, 122 PP.

FLEISCHBEIN, J., W. GILBERT, A. HUYER, R. SMITH.
1982. CTD OBSERVATIONS OFF OREGON AND CALIFORNIA:
R/V WECOMA, WB201B, 28 JANUARY TO 6 FEBRUARY
1982. OSU DEPT. OCEAN. DATA REP. 100, REF. 82-18,
56 PP.

FLEISCHBEIN, J., W. GILBERT, A. HUYER. 1983. CTD
OBSERVATIONS OFF OREGON AND CALIFORNIA: R/V
WECOMA, WB205A, AND CODE 2 LEG 8, 18 MAY - 4 JUNE
1982. OSU DEPT. OCEAN., DATA REP. NO 104, REF.
83-10, 149 PP.

FLEISCHBEIN, J., R. SCHRAMM, A. HUYER, R. SMITH.
1983. CTD OBSERVATIONS OFF OREGON AND CALIFORNIA:
R/V WECOMA, WB209A, 7-24 SEPTEMBER 1982. OSU
DEPT. OCEAN. DATA REP. NO 106, REF. 83-13, 107 PP.

FLEISCHBEIN, J., R. SCHRAMM, D. ROOT, A. HUYER, R.
SMITH. 1985. CTD OBSERVATIONS OFF OREGON AND
CALIFORNIA, R/V WECOMA, WELOC 83 LEGS 1, 4, 5, 6,
11-16 JANUARY AND 6-18 APRIL 1983. OSU DEPT.
OCEAN. DATA REP. NO. 117, REF. 85-11, 156 PP.

DENBO, D., K. POLZIN, J. ALLEN, A. HUYER, R.
SMITH. 1984. CURRENT METER OBSERVATIONS OVER THE
CONTINENTAL SHELF OFF OREGON AND CALIFORNIA,
FEBRUARY 1981 - JANUARY 1984. OSU DEPT. OCEAN,
DATA REP. NO. 112, REF. 84-12, 372 PP.

HUYER, A. AND R.L. SMITH. 1985. THE SIGNATURE OF
EL NINO OFF OREGON, 1982-1983. JOURN. GEOPHYS.
RES., 90(C4), 7133-7142.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: SUPERCODE

START DATE: 2/81

END DATE : 1/84

GENERAL AREA: S. OREGON CONTINENTAL SHELF

OBJECTIVES:

TO DESCRIBE THE LARGER SCALE ALONGSHORE STRUCTURE
OF THE CURRENTS OVER THE CONTINENTAL SHELF AND THE
RESPONSE OF SHELF WATERS TO A TIME-VARYING WIND
STRESS.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: HRS TO YRS

CURRENT METER: T

SEA LEVEL SENSOR: T

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: T

OTHER: T

DATA ACCESSIBILITY:

AT NODC; ALSO ON MAGNETIC TAPE AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

SEA LEVEL FROM NEWPORT; DAILY SST MEASURED AT
CHARLESTON; WIND STRESS CALCULATED FROM BAKUN
UPWELLING INDEX. SATELLITE IMAGERY AVAILABLE.
ONE CURRENT METER MOORING REESTABLISHED IN 1986
(NOT ACTUALLY PART OF SUPERCODE).

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
 MOORED CURRENT METER (CM)

PROJECT: SUPERCODE

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
AANDERAA	43.0900	124.3400	40	4/81	1/84	T	T
AANDERAA	43.0900	124.3400	70	4/81	1/84	T	T
AANDERAA	43.0800	124.3800	40	4/81	9/82	T	T
AANDERAA	43.0800	124.3800	70	4/81	9/82	T	T
AANDERAA	43.0800	124.3800	110	4/81	9/82	T	F
AANDERAA	43.0900	124.3400	40	9/86	7/88	T	T
AANDERAA	43.0900	124.3400	70	9/86	7/88	T	T

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: SUPERCODE

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	03	7	2/81
CTD	06	3	2/81
CTD	03	6	5/81
CTD	06	2	5/81
CTD	03	6	8/81
CTD	06	2	8/81
CTD	03	8	12/81
CTD	06	2	12/81
CTD	03	1	1/82
CTD	03	6	2/82
CTD	06	2	2/82
CTD	03	7	5/82
CTD	06	2	5/82
CTD	03	6	9/82
CTD	06	2	9/82
CTD	03	6	1/83
CTD	06	2	1/83
CTD	03	6	4/83
CTD	06	3	4/83
CTD	02	4	4/83
CTD	05	7	4/83
CTD	03	6	7/83
CTD	06	2	7/83
CTD	02	4	7/83
CTD	05	7	7/83
CTD	03	6	1/84
CTD	06	2	1/84
CTD	02	4	4/84
CTD	05	7	4/84

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: THEMIS

SHIP NAME:

SPONSOR: ONR

PRINCIPAL INVESTIGATOR: K. GILBERT

OTHER INVESTIGATORS:

A. ROBINSON

R. STILL

T. SAKOU

PRINCIPAL INSTITUTIONS: OSU

OTHER INSTITUTIONS:

REFERENCES:

GILBERT, K., A. ROBINSON, R. STILL, T. SAKOU.
1970. DATA FROM THEMIS MOORED INSTRUMENTED OCEAN
ARRAY. DATA REP. NO. 43. REF. NO. 70-25, 32 PP.

START DATE: 11/68

END DATE : 11/69

GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF

OBJECTIVES:

PART OF THEMIS - LARGE SCALE EFFORT TO OBTAIN
CONTINUOUS CURRENT AND TEMPERATURE MEASUREMENTS
OFF OREGON COAST.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO SEASONS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

UNKNOWN.

AVAILABLE AT NODC? N

COMMENTS:

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: THEMIS

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
BRAINCON	45.0000	124.3900	320	11/68	12/68	T	F
BRAINCON	45.0000	124.3900	80	3/69	6/69	T	F
BRAINCON	45.0000	124.4600	80	4/69	5/69	T	F
BRAINCON	45.0000	124.4600	40	6/69	11/69	T	F
BRAINCON	45.0000	124.4600	120	9/69	11/69	T	F
BRAINCON	45.0000	125.0100	40	5/69	6/69	T	F
BRAINCON	45.0000	125.0100	80	7/69	8/69	T	F
BRAINCON	45.0000	125.0100	120	7/69	8/69	T	F
BRAINCON	45.0000	125.0100	40	9/69	10/69	T	F
BRAINCON	45.0000	125.0100	80	9/69	10/69	T	F
BRAINCON	45.0000	125.0100	120	9/69	10/69	T	F
BRAINCON	44.3300	124.5800	40	9/69	10/69	T	F
GEO DYNE	45.0000	124.3900	25	11/68	12/68	T	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: TIBBY 1939

SHIP NAME: E.W. SCRIPPS

SPONSOR:

PRINCIPAL INVESTIGATOR: R. TIBBY

OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: SCRIPPS

OTHER INSTITUTIONS:

REFERENCES:

TIBBY, R.B. 1941. THE WATER MASSES OFF THE WEST
COAST OF NORTH AMERICA. JOURN. MAR. RES., 4(2),
113-121.

START DATE: 5/39

END DATE : 7/39

GENERAL AREA: OREGON CONTINENTAL SHELF AND OFFSHORE (AND SOUTHWARD)

OBJECTIVES:

TO STUDY THE MIXING BETWEEN SUBARCTIC AND
EQUATORIAL WATER MASSES.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: N/A

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

UNKNOWN.

AVAILABLE AT NODC? N

COMMENTS:

CASTS TO OVER 1000 M.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: TIBBY 1939

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	02	2	5/39
BOT	03	1	5/39
BOT	04	2	5/39
BOT	05	4	5/39
BOT	06	5	5/39
BOT	D1	3	5/39

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: TOTEM

SHIP NAME:

SPONSOR: ONR

PRINCIPAL INVESTIGATOR: THEMIS GROUP

OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: OSU

OTHER INSTITUTIONS:

REFERENCES:

PLUTCHAK, N.B. 1970. TOTEM WIND AND CURRENT
DATA. OSU DEPT. OCEAN., DATA REP. 52, REF. 72-13,
63 PP.

START DATE: 5/70

END DATE : 9/70

GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF

OBJECTIVES:

COLLECT WIND AND CURRENT DATA TO TEST
INSTRUMENTATION ON A BUOY ULTIMATELY DESIGNED FOR
REAL-TIME DATA ACQUISITION.

SPATIAL SCALES: SMALL

TEMPORAL SCALES: HRS TO WKS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): F

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

UNKNOWN.

AVAILABLE AT NODC? N

COMMENTS:

NEWPORT WINDS USED FOR COMPARISON.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: TOTEM

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
BENDIX	45.0000	124.4500	7	8/70	8/70	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
METEOROLOGIC (ME)

PROJECT: TOTEM

PARAMETERS MEASURED	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	PERIOD OF STUDY START	END
WIND SPEED, DIR	45.0000	124.4500	5/70	9/70

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: UBC 1969

SHIP NAME: LAYMORE

SPONSOR: NAT RES COUNC; DEF RES BRD-BOTH CANADA

PRINCIPAL INVESTIGATOR:

OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: UBC

OTHER INSTITUTIONS:

REFERENCES:

INSTITUTE OF OCEANOGRAPHY (UBC). 1970. BRITISH
COLUMBIA INLETS AND PACIFIC CRUISES, 1969. DATA
REP. 30, 65 PP.

START DATE: 3/69

END DATE : 3/69

GENERAL AREA: WASHINGTON-OREGON OFFSHORE

OBJECTIVES:

NOT STATED.

SPATIAL SCALES: MESO TO RGL

TEMPORAL SCALES: N/A

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

UNKNOWN.

AVAILABLE AT NODC? UNKNOWN

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. DISSOLVED
OXYGEN ALSO MEASURED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: UBC 1969

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W3	3	3/69
BOT	05	2	3/69
BOT	06	2	3/69

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: UP-75

SHIP NAME: R/V CAYUSE, R/V YAQUINA
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: R. SMITH
OTHER INVESTIGATORS:
A. HUYER

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

GILBERT, W., A. HUYER, E. BARTON, R. SMITH. 1976.
PHYSICAL OCEANOGRAPHIC OBSERVATIONS OFF THE
OREGON COAST, 1975 WISP AND UP-75. OSU DEPT. OF
OCEAN. DATA REP. NO. 75. REF. NO. 76-4. 189 PP.

START DATE: 4/75

END DATE : 9/75

GENERAL AREA: NORTHERN OREGON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

TO DETERMINE WHETHER THERE IS A POLEWARD
UNDERCURRENT ALONG THE CONTINENTAL SHELF DURING
THE UPWELLING SEASON.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO MONTHS

CURRENT METER: T

SEA LEVEL SENSOR: T

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

AT NODC; ALSO ON MAGNETIC TAPE AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

WIND AND SEA LEVEL DATA OBTAINED FROM NEWPORT
STATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: UP-75

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
AANDERAA	44.5900	124.4400	25	4/75	7/75	T	T
AANDERAA	44.5900	124.4400	100	4/75	7/75	T	T
AANDERAA	44.5900	124.4400	200	4/75	7/75	T	T
AANDERAA	44.5900	124.4400	300	4/75	7/75	T	T
AANDERAA	44.5900	124.4400	400	4/75	7/75	T	T
AANDERAA	44.5900	124.4400	500	4/75	7/75	T	T
AANDERAA	45.0000	124.1000	25	4/75	7/75	T	T
AANDERAA	45.0000	124.1000	50	4/75	7/75	T	T
AANDERAA	45.0000	124.1000	75	4/75	7/75	T	T
AANDERAA	45.0000	124.1000	90	4/75	7/75	T	T
AANDERAA	45.0000	124.0900	25	7/75	9/75	T	T
AANDERAA	45.0000	124.0900	75	7/75	9/75	T	T
AANDERAA	45.0000	124.0900	90	7/75	9/75	T	T

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: UP-75

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	01	10	5/75
CTD	05	2	5/75
CTD	01	8	7/75
CTD	05	1	7/75

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: UP-I

SHIP NAME: R/V THOMPSON
SPONSOR: USDOE
PRINCIPAL INVESTIGATOR: G. ANDERSON
OTHER INVESTIGATORS:
B. HICKEY

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:
OSU

REFERENCES:

POSTEL, J.R., W.K. PETERSON, M.C. TALBOT, J.C.
NEWMAN, J.C. KITCHEN, D.W. MENZIES. 1983. DATA
REPORT OF THE DOE-SPONSORED NORTHWEST MARINE
SCIENCES GROUP AUGUST-SEPTEMBER 1981 CRUISE.
PREP. FOR U.S. DEPT. OF ENERGY, DE/EV/10047-6.

SUSAN GEIER, UNIVERSITY OF WASHINGTON - PERSONAL
COMMUNICATION.

START DATE: 8/81

END DATE : 9/81

GENERAL AREA: CENTRAL-SOUTHERN WASHINGTON CONTINENTAL SHELF AND OFFSH

OBJECTIVES:

TO STUDY THE MECHANISMS OF TRANSFER OF ENERGY AND
BIOMASS IN COASTAL MARINE ECOSYSTEMS OVER THE
CONTINENTAL SHELF AND SLOPE, WITH EMPHASIS ON
UPWELLING.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO WKS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

STORED ON MAGNETIC TAPE AT UW.

AVAILABLE AT NODC? N

COMMENTS:

WIND MEASURED AT TWO MOORINGS USING A VECTOR
MEASURING CURRENT METER (VMCM) ON A 5 M MAST ABOVE
A BUOY. OTHER SAMPLING: PLANKTON, PIGMENTS,
BACTERIAL ACTIVITY, SEDIMENT TRAPS, NUTRIENTS,
CHLOROPHYLL, TRANSMISSIVITY.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: UP-I

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	OF STUDY END	TEMP (?)	SAL (?)
VACM	47.0800	124.3700	5	8/81	9/81	F	F
VACM	47.0800	124.3700	10	8/81	9/81	F	F
VACM	47.0800	124.3700	15	8/81	9/81	F	F
AANDERAA	47.0800	124.3700	25	8/81	9/81	T	T
AANDERAA	47.0800	124.3700	35	8/81	9/81	T	F
AANDERAA	47.0800	124.3700	45	8/81	9/81	T	F
AANDERAA	47.0800	124.3700	60	8/81	9/81	T	F
AANDERAA	47.0800	124.3700	75	8/81	9/81	T	T
VACM	47.1000	124.1600	5	8/81	9/81	F	F
VACM	47.1000	124.1600	10	8/81	9/81	F	F
AANDERAA	47.1000	124.1600	12	8/81	9/81	T	F
VACM	47.1000	124.1600	15	8/81	9/81	F	F
AANDERA	47.1100	124.1600	30	8/81	9/81	T	F
AANDERAA	47.1100	124.1600	45	8/81	9/81	T	T
AANDERAA	47.0500	124.4700	40	8/81	9/81	T	F
AANDERAA	47.0500	124.4700	75	8/81	9/81	T	F
AANDERAA	47.0500	124.4700	100	8/81	9/81	T	F
AANDERAA	47.0500	124.4700	125	8/81	9/81	T	T
AANDERAA	47.0500	124.5800	25	8/81	9/81	T	T
AANDERAA	47.0500	124.5800	40	8/81	9/81	T	F
AANDERAA	47.0500	124.5800	75	8/81	9/81	T	F
AANDERAA	47.0500	124.5800	120	8/81	9/81	T	F
AANDERAA	47.0500	124.5800	155	8/81	9/81	T	T
AANDERAA	47.0500	124.5800	180	8/81	9/81	T	T

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
METEOROLOGIC (ME)

PROJECT: UP-I

PARAMETERS MEASURED	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	PERIOD OF START	STUDY END
WIND SPEED, DIR	47.0800	124.3700	8/81	9/81
WIND SPEED, DIR	47.1000	124.1600	8/81	9/81

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: UP-I

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	101	8/81
CTD	W2	7	8/81
CTD	W3	20	8/81

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: UP-II

SHIP NAME: R/V WECOMA, R/V CAYUSE
SPONSOR: USDOE
PRINCIPAL INVESTIGATOR: M. LANDRY
OTHER INVESTIGATORS:
B. HICKEY

PRINCIPAL INSTITUTIONS: UW
OTHER INSTITUTIONS:
OSU

REFERENCES:

POSTEL, J.R., W.K. PETERSON, AND F.Q. DORTCH.
1984. DATA REPORT OF THE DOE-SPONSORED NORTHWEST
MARINE SCIENCES GROUP JUNE 1982 CRUISE. PREP. FOR
U.S. DEPT. OF ENERGY, DE/EV/10047-8.

SUSAN GEIER, UNIVERSITY OF WASHINGTON - PERSONAL
COMMUNICATION.

START DATE: 6/82

END DATE : 6/82

GENERAL AREA: WASHINGTON-OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

TO STUDY THE MECHANISMS OF TRANSFER OF ENERGY AND
BIOMASS IN COASTAL MARINE ECOSYSTEMS OVER THE
CONTINENTAL SHELF AND SLOPE, WITH EMPHASIS ON
UPWELLING.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: HRS TO WKS

CURRENT METER: T

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): T

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

STORED ON MAGNETIC TAPE AT UW.

AVAILABLE AT NODC? N

COMMENTS:

OTHER SAMPLING: PLANKTON, NUTRIENTS,
TRANSMISSIVITY, SEDIMENT TRAPS, BOX CORES. WIND
MEASURED AT ONE CURRENT METER MOORING USING A
VECTOR MEASURING CURRENT METER (VMCM) ON A 5 M
MAST ABOVE BUOY.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: UP-II

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	OF STUDY END	TEMP (?)	SAL (?)
VACM	47.0800	124.1600	5	6/82	6/82	F	F
AANDERAA	47.0800	124.1600	7	6/82	6/82	T	T
VACM	47.0800	124.1600	10	6/82	6/82	F	F
VACM	47.0800	124.1600	15	6/82	6/82	F	F
AANDERAA	47.0800	124.2600	30	6/82	6/82	T	F
AANDERAA	47.0800	124.2600	45	6/82	6/82	T	T
VACM	47.0600	124.3800	5	6/82	6/82	F	F
AANDERAA	47.0600	124.3800	10	6/82	6/82	T	T
VACM	47.0600	124.3800	15	6/82	6/82	F	F
AANDERAA	47.0600	124.3800	20	6/82	6/82	T	T
VACM	47.0600	124.3800	23	6/82	6/82	F	F
AANDERAA	47.0600	124.3800	25	6/82	6/82	T	T
AANDERAA	47.0600	124.3800	35	6/82	6/82	T	F
AANDERAA	47.0600	124.3800	45	6/82	6/82	T	F
AANDERAA	47.0600	124.3800	55	6/82	6/82	T	F
AANDERAA	47.0600	124.3800	65	6/82	6/82	T	F
AANDERAA	47.0600	124.3800	75	6/82	6/82	T	F
AANDERAA	47.0400	124.5600	25	6/82	6/82	T	T
AANDERAA	47.0400	124.5600	45	6/82	6/82	T	F
AANDERAA	47.0400	124.5600	70	6/82	6/82	T	F
AANDERAA	47.0400	124.5600	95	6/82	6/82	T	F
AANDERAA	47.0400	124.5600	125	6/82	6/82	T	F
AANDERAA	47.0400	124.5600	155	6/82	6/82	T	T
AANDERAA	47.0400	124.5600	180	6/82	6/82	T	T

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
METEOROLOGIC (ME)

PROJECT: UP-II

PARAMETERS MEASURED	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	PERIOD OF STUDY START	END
WIND SPEED, DIR	47.0600	124.3800	6/82	6/82

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DRIFTER DATA (DR)

PROJECT: UP-II

TYPE OF INSTRUMENT	GEOGRAPHIC BOUNDS				DEPTH (M)	PERIOD OF START
	LAT 1 DEG.MINS	LAT 2 DEG.MINS	LONG 1 DEG.MINS	LONG 2 DEG.MINS		
SUB	47.0700	46.5600	124.1200	124.2700	10	6/82

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: UP-II

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	32	6/82
CTD	W2	11	6/82
CTD	W3	15	6/82
CTD	O2	30	6/82
CTD	O5	11	6/82

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: USCOE 1974-81

SHIP NAME:
SPONSOR: USCOE
PRINCIPAL INVESTIGATOR:
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS:
OTHER INSTITUTIONS:

REFERENCES:

U.S. ARMY CORPS OF ENGINEERS, SEATTLE DISTRICT.
1988. GRAYS HARBOR, WASHINGTON NAVIGATION
IMPROVEMENT PROJECT, CHEHALIS AND HOQUIAM RIVERS.
GENERAL DESIGN MEMORANDUM, VOL. I.

START DATE: 1/74
END DATE : 1/81
GENERAL AREA: VICINITY OF GRAYS HARBOR ENTRANCE
OBJECTIVES:
DETERMINE CURRENT PATTERNS NEAR GRAYS HARBOR
ENTRANCE RELEVANT TO OUTER HARBOR AND OFFSHORE
SEDIMENTATION PROCESSES.

SPATIAL SCALES: SMALL
TEMPORAL SCALES: HRS TO YRS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): F
HYDROGRAPHIC (TEMPERATURE): F
DRIFTERS (LAGRANGIAN): T
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: F
DATA ACCESSIBILITY:
HARD COPY DATA AVAILABLE THROUGH U.S. ARMY CORPS
OF ENGINEERS, SEATTLE DISTRICT.

AVAILABLE AT NODC? N
COMMENTS:
POORLY DOCUMENTED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DRIFTER DATA (DR)

PROJECT: USCOE 1974-81

GEOGRAPHIC BOUNDS

TYPE OF INSTRUMENT	LAT 1 DEG.MINS	LAT 2 DEG.MINS	LONG 1 DEG.MINS	LONG 2 DEG.MINS	DEPTH (M)	PERIOD OF START
SUR	46.0000	46.5600	124.0800	124.1400	0	1/74
BTM	46.5400	46.5600	124.0800	124.1400	BTM	1/74

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: USCOE 1984-85

SHIP NAME:

SPONSOR: USCOE.

PRINCIPAL INVESTIGATOR:

OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS:

OTHER INSTITUTIONS:

REFERENCES:

U.S. ARMY CORPS OF ENGINEERS, SEATTLE DISTRICT.
1988. GRAYS HARBOR, WASHINGTON NAVIGATION
IMPROVEMENT PROJECT, CHEHALIS AND HOQUIAM RIVERS.
GENERAL DESIGN MEMORANDUM, VOL. I.

START DATE: 1/84

END DATE : 12/85

GENERAL AREA: VICINITY OF GRAYS HARBOR ENTRANCE

OBJECTIVES:

DETERMINE BOTTOM CURRENT PATTERNS AT RECOMMENDED
DISPOSAL SITES.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): F

DRIFTERS (LAGRANGIAN): T

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

HARD COPY OF DATA AVAILABLE THROUGH U.S. ARMY
CORPS OF ENGINEERS, SEATTLE DISTRICT.

AVAILABLE AT NODC? N

COMMENTS:

POORLY DOCUMENTED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DRIFTER DATA (DR)

PROJECT: USCOE 1984-85

GEOGRAPHIC BOUNDS

TYPE OF INSTRUMENT	LAT 1 DEG.MINS	LAT 2 DEG.MINS	LONG 1 DEG.MINS	LONG 2 DEG.MINS	DEPTH (M)	PERIOD OF START
BTM	46.5000	46.5800	124.1000	124.2500	BTM	1/84

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: VANCOUVER ISLAND COASTAL CURRENT

SHIP NAME: CSS PARIZEAU, PANDORA II
SPONSOR: CANADA FISHERIES AND OCEANS, ONR, NSERC
PRINCIPAL INVESTIGATOR: R. THOMSON
OTHER INVESTIGATORS:
B.M. HICKEY
P.H. LEBLOND

PRINCIPAL INSTITUTIONS: IOS CANADA
OTHER INSTITUTIONS:
UW
UBC

REFERENCES:

THOMSON, R.E., B.M. HICKEY, P.H. LEBLOND. 1986.
WATER PROPERTY OBSERVATIONS FROM THE VANCOUVER
ISLAND COASTAL CURRENT EXPERIMENT: JUNE, JULY,
AND OCTOBER, 1984. CANADIAN DATA REP. OF HYDROG.
AND OCEAN. SCI., NO. 46, 505 PP.

SUSAN GEIER, UNIVERSITY OF WASHINGTON - PERSONAL
COMMUNICATION

START DATE: 6/84

END DATE : 11/84

GENERAL AREA: N WA CONTINENTAL SHELF & OFFSHORE (& VANC ISLAND - NOT

OBJECTIVES:

INVESTIGATE THE CIRCULATION AND WATER PROPERTY
VARIABILITY OFF THE WEST COAST OF VANCOUVER ISLAND
AND NORTHWEST WASHINGTON.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: HRS TO SEASONS

CURRENT METER: T

SEA LEVEL SENSOR: T

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): T

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: T

OTHER: T

DATA ACCESSIBILITY:

ON 9-TRACK MAGNETIC TAPE AT IOS AND UW

AVAILABLE AT NODC? N

COMMENTS:

ALSO MEASURED: DISSOLVED OXYGEN. SEA LEVEL
OBSERVATIONS FROM NEAH BAY AND VANCOUVER ISLAND
STATIONS. WIND FROM VANCOUVER ISLAND STATIONS.
NOAA AVHRR SATELLITE IMAGERY ACQUIRED.
SATELLITE-TRACKED DRIFTERS IN VANCOUVER ISLAND
WATERS.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: VANCOUVER ISLAND COASTAL CURRENT

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	STUDY END	TEMP (?)	SAL (?)
AANDERAA	48.1900	124.5000	30	6/84	11/84	F	F
AANDERAA	48.1900	124.5000	45	6/84	11/84	F	F
AANDERAA	48.0300	124.5400	30	6/84	11/84	F	F
AANDERAA	48.0300	124.5400	50	6/84	11/84	F	F
AANDERAA	48.0300	124.5400	65	6/84	11/84	F	F

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: VANCOUVER ISLAND COASTAL CURRENT

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	W1	13	6/84
CTD	W3	8	6/84
CTD	W1	7	7/84
CTD	W3	7	7/84

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WISP

SHIP NAME: R/V CAYUSE, R/V YAQUINA, R/V THOMPSON
SPONSOR: NSF
PRINCIPAL INVESTIGATOR: R. SMITH
OTHER INVESTIGATORS:
A. HUYER
B. HICKEY

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:
UW

REFERENCES:

GILBERT, W., A. HUYER, E. BARTON, R. SMITH. 1976.
PHYSICAL OCEANOGRAPHIC OBSERVATIONS OFF THE
OREGON COAST, 1975. WISP AND UP-75. OSU DEPT. OF
OCEAN. DATA REP. NO. 75. REF. NO. 76-4.
189 PP.

HICKEY, B.M. 1983. HYDROGRAPHIC OBSERVATIONS
OVER THE WASHINGTON-OREGON CONTINENTAL SHELF AND
SLOPE DURING WISP (FEBRUARY-MARCH 1975). UNIV.
WASHINGTON DEPT. OCEAN. SPECIAL REP. NO. 86.

START DATE: 1/75
END DATE : 5/75
GENERAL AREA: WASHINGTON-NORTHERN OREGON CONTINENTAL SHELF AND OFFSHO
OBJECTIVES:
TO STUDY THE TRANSITION BETWEEN WINTER AND SPRING
OCEANOGRAPHIC CONDITIONS OVER THE
OREGON-WASHINGTON CONTINENTAL SHELF.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: HRS TO SEASONS
CURRENT METER: T
SEA LEVEL SENSOR: T
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: F
DATA ACCESSIBILITY:
AT NOCD; ALSO ON MAGNETIC TAPE AT OSU AND UW.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET (CONT.)

PROJECT: WISF

AVAILABLE AT NODC? Y

COMMENTS:

WIND FROM NEWPORT, WESTPORT, AND COLUMBIA
LIGHTSHIP. SEA LEVEL FROM NEWPORT, TOKE POINT.
GRIDDED 6-HOUR WINDS FROM BAKUN (NOAA/NMFS) ALSO
USED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MOORED CURRENT METER (CM)

PROJECT: WISP

TYPE OF INSTRUMENT	LATITUDE DEG.MINS	LONGITUDE DEG.MINS	DEPTH (M)	PERIOD OF START	PERIOD OF END	TEMP (?)	SAL (?)
AANDERAA	45.0000	124.0500	25	1/75	5/75	T	T
AANDERAA	45.0000	124.0500	50	1/75	5/75	T	T
AANDERAA	45.0000	124.0900	26	1/75	4/75	T	T
AANDERAA	45.0000	124.0900	52	1/75	4/75	T	T
AANDERAA	45.0000	124.0900	76	1/75	4/75	T	T
AANDERAA	45.0000	124.0900	92	1/75	4/75	T	T
AANDERAA	45.0000	124.2300	31	1/75	4/75	T	T
AANDERAA	45.0000	124.2300	55	1/75	4/75	T	T
AANDERAA	45.0000	124.2300	106	1/75	4/75	T	T
AANDERAA	45.0000	124.2300	156	1/75	4/75	T	T
AANDERAA	45.0000	124.2300	206	1/75	4/75	T	T
AANDERAA	46.4800	125.1200	65	2/75	3/75	T	T
AANDERAA	46.4800	125.1200	415	2/75	3/75	T	T
AANDERAA	46.4800	125.1200	815	2/75	3/75	T	T
AANDERAA	46.4900	124.5200	20	2/75	3/75	T	T
AANDERAA	46.4900	124.5200	50	2/75	3/75	T	T
AANDERAA	46.4900	124.2700	17	1/75	2/75	T	T
AANDERAA	46.4900	124.2700	47	1/75	2/75	T	T
AANDERAA	46.4900	124.2700	72	1/75	2/75	T	T
AANDERAA	46.4900	124.2700	82	1/75	2/75	T	T
AANDERAA	46.4800	124.3100	26	2/75	3/75	T	T
AANDERAA	46.4800	124.3100	46	2/75	3/75	T	T
AANDERAA	46.4800	124.3100	66	2/75	3/75	T	T
AANDERAA	46.4800	124.3100	91	2/75	3/75	T	T
BRAINCON	47.3500	124.4600	20	2/75	3/75	F	F
AANDERAA	46.0900	124.1500	20	3/75	5/75	T	T
AANDERAA	46.0900	124.1500	40	2/75	3/75	T	T
AANDERAA	46.0900	124.1500	60	2/75	5/75	T	T
AANDERAA	46.0900	124.1500	85	2/75	5/75	T	T

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WISP

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
CTD	01	11	1/75
CTD	05	5	1/75
CTD	01	26	2/75
CTD	05	8	2/75
CTD	01	150	3/75
CTD	05	31	3/75
CTD	01	16	4/75
CTD	05	5	4/75
CTD	W2	63	2/75
CTD	W3	27	2/75
CTD	W1	6	3/75
CTD	W2	121	3/75
CTD	W3	76	3/75

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1958-59

SHIP NAME: COAST GUARD BOATS
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:
R. CALLAWAY

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

WYATT, B. AND R. CALLAWAY. 1961. PHYSICAL
HYDROGRAPHIC DATA OFFSHORE FROM NEWPORT, OREGON,
FOR JULY 1958 TO JULY 1959. OREGON STATE UNIV.
DEPT. OCEAN. DATA REP. NO. 4, REF. NO. 61-1, 15
PP.

START DATE: 7/58
END DATE : 7/59
GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF
OBJECTIVES:
STUDY SALINITY, TEMPERATURE, AND OXYGEN BETWEEN
YAQUINA BAY AND 15 KM OFFSHORE.

SPATIAL SCALES: SMALL TO MESO
TEMPORAL SCALES: MONTHS TO YRS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: F
REMOTE SENSING: F
OTHER: F
DATA ACCESSIBILITY:
AT NODC; AVAILABILITY OF ORIGINAL DATA AT OSU
UNKNOWN.

AVAILABLE AT NODC? Y
COMMENTS:
CASTS TO 30 M ONLY.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1958-59

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	02	3	7/58
BOT	02	3	8/58
BOT	02	4	9/58
BOT	02	4	10/58
BOT	02	2	11/58
BOT	02	5	1/59
BOT	02	4	3/59
BOT	02	5	4/59
BOT	02	5	6/59

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1959-60

SHIP NAME: FISH BOATS
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:
N. KUJALA

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

WYATT, B., AND N. KUJALA. 1961. PHYSICAL
OCEANOGRAPHIC DATA OFFSHORE FROM NEWPORT AND
ASTORIA, OR FOR JUNE 1959 TO JUNE 1960. OSU DEPT.
OCEAN. DATA REP. NO. 5, REF. NO. 61-3, 17 PP.

START DATE: 6/59
END DATE : 6/60

GENERAL AREA: NORTH-CENTRAL OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

STUDY CURRENT PATTERNS AND WATER MASS
CHARACTERISTICS ALONG THE OREGON COAST.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MONTHS TO YRS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): T
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T

DATA ACCESSIBILITY:

AT NODC; AVAILABILITY OF ORIGINAL DATA AT OSU
UNKNOWN.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. OTHER
SAMPLING: PLANKTON TOW, BT, DISSOLVED O₂, DRIFT
BOTTLES CASTS TO 200 M.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1959-60

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	O2	4	6/59
BOT	O2	4	7/59
BOT	O5	1	7/59
BOT	O2	4	10/59
BOT	O5	1	10/59
BOT	W2	4	12/59
BOT	W3	1	12/59
BOT	O2	5	12/59
BOT	O1	1	12/59
BOT	O2	2	1/60
BOT	O5	1	1/60
BOT	O2	4	3/60
BOT	O5	1	3/60
BOT	W2	4	4/60
BOT	W3	1	4/60
BOT	O5	1	4/60
BOT	O5	1	4/60
BOT	O2	4	4/60
BOT	W2	4	5/60
BOT	O5	1	5/60
BOT	O5	1	5/60
BOT	O2	4	5/60

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1960-61

SHIP NAME: FISHBOATS, R/V ACONA
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:
N. KUJALA

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

WYATT, B. AND N. KUJALA. 1962. HYDROGRAPHIC DATA
FROM OREGON COASTAL WATERS, JUNE 1960 THROUGH MAY
1961. OREGON STATE UNIV. DEPT. OCEAN., DATA
REPORT NO. 7, REF. 62-6, 77 PP.

START DATE: 6/60

END DATE : 5/61

GENERAL AREA: OREGON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

STUDY CURRENT PATTERNS AND WATER MASS
CHARACTERISTICS ALONG THE OREGON COAST.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: MONTHS TO YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): T

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AT NODC; ALSO ON MAGNETIC TAPE (UNKNOWN QUALITY)
AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. HYDRO CASTS
TO 200 M. OTHER SAMPLING: BTS, SURFACE
TEMPERATURE AND SALINITY, DISSOLVED OXYGEN, DRIFT
BOTTLES, INCIDENT LIGHT INTENSITY, SECCHI DEPTH.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1960-61

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W2	8	6/60
BOT	W3	3	6/60
BOT	05	2	6/60
BOT	02	4	6/60
BOT	03	2	6/60
BOT	06	3	6/60
BOT	W3	2	7/60
BOT	05	8	7/60
BOT	06	8	7/60
BOT	04	3	7/60
BOT	03	4	7/60
BOT	02	5	7/60
BOT	01	2	7/60
BOT	W2	4	8/60
BOT	W3	1	8/60
BOT	05	2	8/60
BOT	06	3	8/60
BOT	02	4	8/60
BOT	03	3	8/60
BOT	W2	4	9/60
BOT	W3	1	9/60
BOT	05	2	9/60
BOT	06	3	9/60
BOT	02	4	9/60
BOT	03	3	9/60
BOT	W2	4	10/60
BOT	W3	1	10/60
BOT	05	2	10/60
BOT	06	3	10/60
BOT	02	4	10/60
BOT	03	3	10/60
BOT	W2	2	11/60
BOT	W2	2	12/60
BOT	W3	1	12/60
BOT	05	1	12/60
BOT	06	2	12/60
BOT	02	4	12/60
BOT	03	3	12/60
BOT	W2	4	1/61
BOT	W3	1	1/61
BOT	05	1	1/61
BOT	06	3	1/61
BOT	02	4	1/61
BOT	03	2	1/61
BOT	W2	4	3/61
BOT	W3	1	3/61
BOT	05	1	3/61
BOT	06	2	3/61
BOT	02	4	3/61
BOT	03	3	3/61
BOT	W2	4	4/61

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY) (CONT.)

PROJECT: WYATT 1960-61

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W3	1	4/61
BOT	05	1	4/61
BOT	06	3	4/61
BOT	02	5	4/61
BOT	03	2	4/61
BOT	05	1	5/61
BOT	W3	1	5/61
BOT	W2	4	5/61
BOT	02	4	5/61

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1961

SHIP NAME: R/V ACONA

SPONSOR: ONR

PRINCIPAL INVESTIGATOR: B. WYATT

OTHER INVESTIGATORS:

N. KUJALA

PRINCIPAL INSTITUTIONS: OSU

OTHER INSTITUTIONS:

REFERENCES:

WYATT, B. AND N. KUJALA. 1963. HYDROGRAPHIC DATA
FROM OREGON WATERS, JUNE THROUGH DECEMBER 1961.
OREGON STATE UNIV. DEPT. OCEAN. DATA REP. NO. 12,
REF. NO. 63-33, 36 PP.

START DATE: 6/61

END DATE : 12/61

GENERAL AREA: OREGON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

STUDY CURRENT PATTERNS AND WATER MASS
CHARACTERISTICS ALONG THE OREGON COAST.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: MTHS TO SEASONS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): T

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AT NODC; ALSO ON MAGNETIC TAPE (UNKNOWN QUALITY)
AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. OTHER
SAMPLING: BTS, PLANKTON TOW, DISSOLVED O2, DRIFT
BOTTLES. HYDRO CASTS TO 800-1000 M.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1961

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W2	8	6/61
BOT	W3	12	6/61
BOT	06	6	6/61
BOT	04	2	6/61
BOT	03	4	6/61
BOT	05	8	6/61
BOT	D1	2	6/61
BOT	02	4	7/61
BOT	05	1	7/61
BOT	02	4	8/61
BOT	05	8	8/61
BOT	01	3	8/61
BOT	W3	6	8/61
BOT	W2	4	8/61
BOT	03	3	8/61
BOT	06	4	8/61
BOT	04	1	8/61
BOT	04	2	9/61
BOT	02	4	10/61
BOT	05	5	10/61
BOT	W3	4	11/61
BOT	W2	4	11/61
BOT	06	7	11/61
BOT	03	3	11/61
BOT	02	4	12/61
BOT	05	7	12/61

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1962-64

SHIP NAME: R/V ACONA, R/V YAQUINA
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:
W. GILBERT

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

WYATT, B., GILBERT, W. 1967. HYDROGRAPHIC DATA
FROM OREGON WATERS, JANUARY 1962 - DECEMBER 1964.
OREGON STATE UNIV. DEPT. OCEAN. DATA REP. NO. 24,
REF. NO. 67-1, 178 PP.

START DATE: 1/62

END DATE : 12/64

GENERAL AREA: OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

SURVEY CONDITIONS OFF OREGON COAST PARTICULARLY TO
MONITOR TEMPERATURE AND SALINITY DISTRIBUTIONS.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: MONTHS TO YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AT NODC; ALSO ON MAGNETIC TAPE (UNKNOWN QUALITY)

AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. DISSOLVED O₂
AND PHOSPHATE MEASURED. PLANKTON TOWS, MIDWATER
TRAWL.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1962-64

TYPE OF INSTRUMENT SUBREGIONS OCCUPIED NO. OF STATIONS PER SUBREGION PERIOD

BOT	02	4	1/62
BOT	05	8	1/62
BOT	D1	2	1/62
BOT	W3	6	1/62
BOT	W2	4	1/62
BOT	03	3	1/62
BOT	06	6	1/62
BOT	02	4	2/62
BOT	05	6	2/62
BOT	03	9	3/62
BOT	06	6	3/62
BOT	02	5	4/62
BOT	05	8	4/62
BOT	D1	2	4/62
BOT	W3	6	4/62
BOT	W2	4	4/62
BOT	02	3	5/62
BOT	05	6	5/62
BOT	02	4	6/62
BOT	05	8	6/62
BOT	D1	4	6/62
BOT	W3	6	6/62
BOT	W2	4	6/62
BOT	03	4	6/62
BOT	06	13	6/62
BOT	04	4	6/62
BOT	W2	4	7/62
BOT	W3	6	7/62
BOT	D1	2	7/62
BOT	05	7	7/62
BOT	02	4	7/62
BOT	03	3	7/62
BOT	06	5	7/62
BOT	06	9	8/62
BOT	D1	2	8/62
BOT	04	4	8/62
BOT	02	4	9/62
BOT	05	7	9/62
BOT	02	4	10/62
BOT	05	4	10/62
BOT	W3	4	10/62
BOT	W2	4	10/62
BOT	04	4	10/62
BOT	06	8	10/62
BOT	02	4	12/62
BOT	05	8	12/62
BOT	D1	1	12/62
BOT	W3	6	12/62
BOT	W2	4	12/62
BOT	03	3	12/62
BOT	06	6	12/62

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY) (CONT.)

PROJECT: WYATT 1962-64

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	O2	3	1/63
BOT	O2	4	2/63
BOT	O5	4	2/63
BOT	D1	1	2/63
BOT	W3	6	2/63
BOT	W2	4	2/63
BOT	O4	4	3/63
BOT	O6	15	3/63
BOT	D1	1	3/63
BOT	O3	3	3/63
BOT	O4	4	5/63
BOT	O6	13	5/63
BOT	O3	3	5/63
BOT	O2	4	5/63
BOT	O5	7	5/63
BOT	O2	4	6/63
BOT	O2	5	7/63
BOT	O5	10	7/63
BOT	O3	5	7/63
BOT	O6	16	7/63
BOT	D1	1	7/63
BOT	O4	4	7/63
BOT	O3	3	9/63
BOT	O6	15	9/63
BOT	D1	3	9/63
BOT	O4	4	9/63
BOT	O2	4	9/63
BOT	O5	7	9/63
BOT	W3	6	9/63
BOT	W2	4	9/63
BOT	O2	3	11/63
BOT	O5	5	11/63
BOT	O5	7	12/63
BOT	O2	4	12/63
BOT	O2	3	2/64
BOT	O5	7	2/64
BOT	D1	1	2/64
BOT	O6	7	2/64
BOT	O3	3	2/64
BOT	O3	3	4/64
BOT	O6	15	4/64
BOT	D1	3	4/64
BOT	O4	4	4/64
BOT	O2	4	4/64
BOT	O5	8	4/64
BOT	W3	6	4/64
BOT	W2	1	4/64
BOT	O2	1	6/64
BOT	O5	3	6/64
BOT	W2	4	7/64
BOT	W3	6	7/64

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY) (CONT.)

PROJECT: WYATT 1962-64

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	D1	3	7/64
BOT	O5	13	7/64
BOT	O2	6	7/64
BOT	O3	3	7/64
BOT	O6	7	7/64
BOT	O2	9	11/64
BOT	O5	6	11/64
BOT	O6	7	11/64
BOT	O3	3	11/64
BOT	W2	2	11/64
BOT	W3	7	11/64
BOT	O2	2	12/64
BOT	O5	3	12/64

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1962-65

SHIP NAME: R/V ACONA, R/V YAQUINA
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:
M. STEVENSON
P. MAUGHN
J. PATTULLO

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

WYATT, B., M. STEVENSON, W. GILBERT, J. PATTULLO.
1967. MEASUREMENTS OF SUBSURFACE CURRENTS OFF THE
OREGON COAST MADE BY TRACKING OF PARACHUTE
DROGUES. OSU DEPT. OCEAN. DATA REP. NO. 26, REF.
NO. 67-20, 34 PP.

START DATE: 1/62

END DATE : 9/65

GENERAL AREA: CENTRAL OREGON CONTINENTAL SHELF

OBJECTIVES:

MEASURE CURRENTS BETWEEN THE SURFACE AND 1000 M
DEPTH OFF THE OREGON COAST BY TRACKING PARACHUTE
DROGUES.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: HRS TO YRS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): F

HYDROGRAPHIC (TEMPERATURE): F

DRIFTERS (LAGRANGIAN): T

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: F

REMOTE SENSING: F

OTHER: F

DATA ACCESSIBILITY:

UNKNOWN.

AVAILABLE AT NODC? N

COMMENTS:

SUBSURFACE DROGUES TRACKED BY RADAR (SURFACE
REFLECTORS).

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DRIFTER DATA (DR)

PROJECT: WYATT 1962-65

GEOGRAPHIC BOUNDS

TYPE OF INSTRUMENT	LAT 1 DEG.MINS	LAT 2 DEG.MINS	LONG 1 DEG.MINS	LONG 2 DEG.MINS	DEPTH (M)	PERIOD OF START
SUB	44.1500	44.4500	124.0000	124.1500	10	1/62
SUB	44.1500	44.4500	124.0000	124.1500	50	1/62
SUB	44.1500	44.4500	124.0000	124.1500	100	1/62
SUB	44.1500	44.4500	124.0000	124.1500	150	1/62
SUB	44.1500	44.4500	124.0000	124.1500	200	1/62
SUB	44.1500	44.4500	124.0000	124.1500	10	2/62
SUB	44.1500	44.4500	124.0000	124.1500	50	2/62
SUB	44.1500	44.4500	124.0000	124.1500	100	2/62
SUB	44.1500	44.4500	124.0000	124.1500	150	2/62
SUB	44.1500	44.4500	124.0000	124.1500	200	2/62
SUB	44.1500	44.4500	124.0000	124.1500	10	5/62
SUB	44.1500	44.4500	124.0000	124.1500	50	5/62
SUB	44.1500	44.4500	124.0000	124.1500	100	5/62
SUB	44.1500	44.4500	124.0000	124.1500	150	5/62
SUB	44.1500	44.4500	124.0000	124.1500	200	5/62
SUB	44.1500	44.4500	124.0000	124.1500	1000	5/62
SUB	44.1500	44.4500	124.0000	124.1500	10	7/62
SUB	44.1500	44.4500	124.0000	124.1500	100	7/62
SUB	44.1500	44.4500	124.0000	124.1500	150	7/62
SUB	44.1500	44.4500	124.0000	124.1500	250	7/62
SUB	44.1500	44.4500	124.0000	124.1500	550	7/62
SUB	44.1500	44.4500	124.0000	124.1500	10	9/62
SUB	44.1500	44.4500	124.0000	124.1500	50	9/62
SUB	44.1500	44.4500	124.0000	124.1500	100	9/62
SUB	44.1500	44.4500	124.0000	124.1500	150	9/62
SUB	44.1500	44.4500	124.0000	124.1500	200	9/62
SUB	44.1500	44.4500	124.0000	124.1500	250	9/62
SUB	44.1500	44.4500	124.0000	124.1500	1000	9/62
SUB	44.1500	44.4500	124.0000	124.1500	10	11/62
SUB	44.1500	44.4500	124.0000	124.1500	50	11/62
SUB	44.1500	44.4500	124.0000	124.1500	100	11/62
SUB	44.1500	44.4500	124.0000	124.1500	200	11/62
SUB	44.1500	44.4500	124.0000	124.1500	300	11/62
SUB	44.1500	44.4500	124.0000	124.1500	1000	11/62
SUB	44.1500	44.4500	124.0000	124.1500	10	1/63
SUB	44.1500	44.4500	124.0000	124.1500	50	1/63
SUB	44.1500	44.4500	124.0000	124.1500	100	1/63
SUB	44.1500	44.4500	124.0000	124.1500	200	1/63
SUB	44.1500	44.4500	124.0000	124.1500	10	6/63
SUB	44.1500	44.4500	124.0000	124.1500	30	6/63
SUB	44.1500	44.4500	124.0000	124.1500	60	6/63
SUB	44.1500	44.4500	124.0000	124.1500	90	6/63
SUB	44.1500	44.4500	124.0000	124.1500	120	6/63
SUB	44.1500	44.4500	124.0000	124.1500	240	6/63
SUB	44.1500	44.4500	124.0000	124.1500	10	8/63
SUB	44.1500	44.4500	124.0000	124.1500	30	8/63
SUB	44.1500	44.4500	124.0000	124.1500	60	8/63
SUB	44.1500	44.4500	124.0000	124.1500	120	8/63
SUB	44.1500	44.4500	124.0000	124.1500	200	8/63

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
DRIFTER DATA (DR) (CONT.)

PROJECT: WYATT 1962-65

GEOGRAPHIC BOUNDS

TYPE OF INSTRUMENT	LAT 1 DEG.MINS	LAT 2 DEG.MINS	LONG 1 DEG.MINS	LONG 2 DEG.MINS	DEPTH (M)	PERIOD OF START
SUB	44.3700	44.4300	124.0900	124.1500	10	5/64
SUB	44.3700	44.4300	124.0900	124.1500	40	5/64
SUB	44.3700	44.4300	124.0900	124.1500	200	5/64
SUB	44.3700	44.4300	124.0900	124.1500	10	10/64
SUB	44.3700	44.4300	124.0900	124.1500	75	10/64
SUB	44.3700	44.4300	124.0900	124.1500	500	10/64
SUB	44.3700	44.4300	124.0900	124.1500	10	12/64
SUB	44.3700	44.4300	124.0900	124.1500	100	12/64
SUB	44.3700	44.4300	124.0900	124.1500	10	3/65
SUB	44.3700	44.4300	124.0900	124.1500	100	3/65
SUB	44.3700	44.4300	124.0900	124.1500	200	3/65
SUB	44.3700	44.4300	124.0900	124.1500	500	3/65
SUR	44.3700	44.4300	124.0900	124.1500	0	7/65
SUB	44.3700	44.4300	124.0900	124.1500	10	7/65
SUB	44.3700	44.4300	124.0900	124.1500	20	7/65
SUB	44.3700	44.4300	124.0900	124.1500	100	7/65
SUB	44.3700	44.4300	124.0900	124.1500	200	7/65
SUB	44.3700	44.4300	124.0900	124.1500	500	7/65
SUB	44.3700	44.4300	124.0900	124.1500	10	9/65
SUB	44.3700	44.4300	124.0900	124.1500	50	9/65
SUB	44.3700	44.4300	124.0900	124.1500	90	9/65
SUB	44.3700	44.4300	124.0900	124.1500	200	9/65

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1965

SHIP NAME: R/V YAQUINA
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:
R. STILL
D. BARSTOW
W. GILBERT

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

WYATT, B., R. STILL, D. BARSTOW, W. GILBERT.
1965. HYDROGRAPHIC DATA FROM OREGON WATERS 1965.
OREGON STATE UNIVERSITY DEPT. OF OCEAN. DATA REP.
NO. 27, REF. NO. 67-28, 58 PP.

START DATE: 2/65
END DATE : 12/65

GENERAL AREA: NORTH AND CENTRAL OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:
TO DETERMINE CURRENTS AND WATER MASSES ALONG THE
OREGON COAST.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MTHS TO SEASONS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
ON MAGNETIC TAPE (UNKNOWN QUALITY) AT OSU.

AVAILABLE AT NODC? N

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. DISSOLVED O2
AND PHOSPHATE MEASURED.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1965

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	01	4	6/65
BOT	05	8	6/65
BOT	01	7	7/65
BOT	05	9	7/65
BOT	D1	11	7/65
BOT	01	5	11/65
BOT	05	7	11/65
BOT	01	4	12/65
BOT	05	14	12/65
BOT	D1	6	12/65
BOT	01	4	2/65
BOT	05	6	2/65
BOT	D1	5	2/65
BOT	D1	6	3/65
BOT	06	7	3/65
BOT	02	3	3/65
BOT	05	14	3/65
BOT	01	3	3/65
BOT	05	1	4/65
BOT	01	2	4/65
BOT	W3	7	6/65
BOT	W1	4	6/65
BOT	01	1	9/65
BOT	05	3	9/65
BOT	05	13	10/65

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1966

SHIP NAME: R/V YAQUINA, R/V ALONA
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:
R. STILL
K. PARK

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

BARSTOW, D., W. GILBERT, K. PARK, R. STILL, B.
WYATT. 1966. HYDROGRAPHIC DATA FROM OREGON
WATERS 1966. OREGON STATE UNIVERSITY DEPT. OF
OCEAN. DATA REP. NO. 33. REF. NO. 68-34, 109 PP.

START DATE: 1/66

END DATE : 11/66

GENERAL AREA: NORTH AND CENTRAL OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

TO DETERMINE WATER MASSES AND CURRENTS ALONG THE
COAST OF OREGON.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: MTHS TO SEASONS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AVAILABLE AT NODC?

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. OTHER
SAMPLING INCLUDED: BTS, DISSOLVED O₂, PHOSPHATES,
ALKALINITY, SILICATES, TOTAL CO₂.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1966

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	02	4	1/66
BOT	05	7	1/66
BOT	05	7	2/66
BOT	02	4	2/66
BOT	05	5	3/66
BOT	02	4	3/66
BOT	02	6	6/66
BOT	05	8	6/66
BOT	05	10	9/66
BOT	02	12	9/66
BOT	02	3	10/66
BOT	02	5	11/66
BOT	05	13	11/66
BOT	05	1	12/66
BOT	02	4	4/66
BOT	05	7	4/66
BOT	05	7	7/66
BOT	02	4	7/66
BOT	01	3	3/66
BOT	05	1	3/66
BOT	02	5	8/66
BOT	05	12	8/66
BOT	05	2	9/66
BOT	02	3	9/66
BOT	D1	2	10/66

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1967

SHIP NAME: R/V YAQUINA
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

BARSTOW, D., W. GILBERT, B. WYATT. 1967.
HYDROGRAPHIC DATA FROM OREGON WATERS 1967. OREGON
STATE UNIVERSITY DEPT. OF OCEAN. DATA REP. NO. 35.
REF. NO. 69-3. 77 PP.

START DATE: 1/67

END DATE : 11/67

GENERAL AREA: NORTH AND CENTRAL OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:

TO DETERMINE THE CURRENTS AND WATER MASSES ALONG
THE OREGON COAST.

SPATIAL SCALES: SMALL TO MESO

TEMPORAL SCALES: MTHS TO SEASONS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AT NODC; ALSO ON MAGNETIC TAPE (UNKNOWN QUALITY)
AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. OTHER
SAMPLING INCLUDED: DISSOLVED O2, PHOSPHATES,
ALKALINITY, SILICATES, TOTAL CO2, BTS, DROGUES.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1967

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	02	5	1/67
BOT	05	7	1/67
BOT	02	15	2/67
BOT	05	8	2/67
BOT	02	4	4/67
BOT	05	7	4/67
BOT	05	11	5/67
BOT	02	21	5/67
BOT	02	22	6/67
BOT	05	10	6/67
BOT	02	4	7/67
BOT	05	8	7/67
BOT	02	5	8/67
BOT	05	7	8/67
BOT	02	5	10/67
BOT	05	7	10/67
BOT	02	5	11/67
BOT	05	6	11/67
BOT	02	1	3/67
BOT	05	2	3/67
BOT	01	5	5/67
BOT	01	8	6/67
BOT	D1	1	7/67
BOT	05	8	7/67
BOT	W3	4	7/67

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1968

SHIP NAME: R/V YAQUINA, R/V CAYUSE
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

BARSTOW, D., W. GILBERT, AND B. WYATT. 1969.
HYDROGRAPHIC DATA FROM OREGON WATERS 1968. OSU
DEPT. OCEAN. DATA REP. NO. 36, REF. NO. 69-6, 84
PP.

START DATE: 1/68
END DATE : 12/68
GENERAL AREA: OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:
DETERMINE THE CURRENTS AND WATER MASSES ALONG THE
OREGON COAST.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MTHS TO SEASONS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): T
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
AT NODC; ALSO ON MAGNETIC TAPE (UNKNOWN QUALITY)
AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

METEOROLOGY LOGGED AT EACH STATION. OTHER
MEASUREMENTS: DISSOLVED OXYGEN; NUTRIENTS; DRIFT
BOTTLES; BT; OPTICS; SOME TOWED THERMISTORS.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1968

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	02	11	1/68
BOT	05	7	1/68
BOT	02	5	2/68
BOT	05	7	2/68
BOT	02	5	3/68
BOT	05	6	3/68
BOT	02	14	4/68
BOT	05	7	4/68
BOT	02	14	5/68
BOT	05	7	5/68
BOT	02	48	7/68
BOT	05	8	7/68
BOT	02	14	8/68
BOT	05	20	8/68
BOT	02	5	9/68
BOT	05	6	9/68
BOT	02	4	10/68
BOT	05	7	10/68
BOT	02	5	11/68
BOT	05	8	11/68
BOT	02	5	12/68
BOT	05	3	12/68
BOT	W2	15	1/68
BOT	W3	6	1/68
BOT	W1	7	1/68
BOT	01	2	4/68
BOT	01	2	5/68
BOT	02	8	6/68
BOT	01	29	6/68
BOT	05	12	6/68
BOT	06	3	6/68
BOT	03	8	7/68
BOT	01	2	7/68

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1969

SHIP NAME: R/V YAQUINA, R/V CAYUSE
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:
W. GILBERT
L. GORDON
D. BARSTOW

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

WYATT, B., W. GILBERT, L. GORDON, D. BARSTOW.
1970. HYDROGRAPHIC DATA FROM OREGON WATERS 1969.
OSU DEPT. OF OCEAN. DATA REP. NO. 42, REF. NO.
70-12, 155 PP.

START DATE: 1/69
END DATE : 10/69
GENERAL AREA: OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:
TO DETERMINE CURRENTS AND WATER MASSES ALONG THE
OREGON COAST.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MTHS TO SEASONS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
AT NODC; ALSO ON MAGNETIC TAPE (UNKNOWN QUALITY)
AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

OTHER MEASUREMENTS INCLUDED: DISSOLVED O2,
NUTRIENTS. METEOROLOGY LOGGED AT EACH STATION.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1969

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	01	5	1/69
BOT	05	7	1/69
BOT	01	5	2/69
BOT	05	7	2/69
BOT	01	5	3/69
BOT	05	3	3/69
BOT	01	5	4/69
BOT	05	7	4/69
BOT	01	5	5/69
BOT	05	11	5/69
BOT	W2	4	5/69
BOT	01	3	5/69
BOT	02	10	5/69
BOT	03	8	5/69
BOT	W3	1	5/69
BOT	W2	8	6/69
BOT	01	14	6/69
BOT	02	21	6/69
BOT	03	3	6/69
BOT	D1	9	6/69
BOT	05	22	6/69
BOT	06	14	6/69
BOT	W3	1	7/69
BOT	W2	8	7/69
BOT	01	16	7/69
BOT	02	15	7/69
BOT	05	23	7/69
BOT	D1	5	8/69
BOT	W3	4	8/69
BOT	W2	6	8/69
BOT	01	8	8/69
BOT	02	7	8/69
BOT	06	1	8/69
BOT	05	23	8/69
BOT	02	5	9/69
BOT	06	9	9/69
BOT	05	10	9/69
BOT	01	11	10/69
BOT	02	4	10/69
BOT	05	2	10/69
BOT	W2	27	11/69
BOT	01	7	11/69
BOT	02	4	11/69
BOT	05	7	11/69

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1970

SHIP NAME: R/V CAYUSE, R/V YAQUINA

SPONSOR: ONR

PRINCIPAL INVESTIGATOR: B. WYATT

OTHER INVESTIGATORS:

R. TOMLINSON

W. GILBERT

L. GORDON

D. BARSTOW

PRINCIPAL INSTITUTIONS: OSU

OTHER INSTITUTIONS:

REFERENCES:

WYATT, B., R. TOMLINSON, W. GILBERT, L. GORDON, D.
BARSTOW. 1971. HYDROGRAPHIC DATA FROM OREGON
WATERS 1970. DATA REP. NO. 49. REF. NO. 71-23,
134 PP.

START DATE: 1/70

END DATE : 12/70

GENERAL AREA: OREGON CONTINENTAL SHELF AND OFFSHORE

OBJECTIVES:

TO STUDY WATER MASSES ALONG THE OREGON COAST.

SPATIAL SCALES: SMALL TO RGL

TEMPORAL SCALES: MTHS TO SEASONS

CURRENT METER: F

SEA LEVEL SENSOR: F

HYDROGRAPHIC (SALINITY): T

HYDROGRAPHIC (TEMPERATURE): T

DRIFTERS (LAGRANGIAN): F

PROFILING CURRENT METERS: F

ACOUSTIC DOPPLER PROFILER: F

METEOROLOGY: T

REMOTE SENSING: F

OTHER: T

DATA ACCESSIBILITY:

AT NODC; ALSO ON MAGNETIC TAPE AVAILABLE AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

OTHER MEASUREMENTS INCLUDE: METEOROLOGY (AT EACH
STATION), DISSOLVED O₂, NUTRIENTS.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

PROJECT: WYATT 1970

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	W2	25	1/70
BOT	W3	2	1/70
BOT	02	6	1/70
BOT	03	3	1/70
BOT	05	2	1/70
BOT	02	7	2/70
BOT	05	5	2/70
BOT	D1	2	2/70
BOT	05	1	3/70
BOT	01	1	5/70
BOT	02	21	5/70
BOT	05	15	5/70
BOT	06	5	5/70
BOT	D1	2	5/70
BOT	01	9	6/70
BOT	02	72	6/70
BOT	W2	13	6/70
BOT	05	6	6/70
BOT	03	4	6/70
BOT	04	5	6/70
BOT	06	13	6/70
BOT	05	7	6/70
BOT	D1	1	6/70
BOT	W3	2	8/70
BOT	W2	2	8/70
BOT	03	1	9/70
BOT	03	6	10/70
BOT	06	4	10/70
BOT	02	10	11/70
BOT	05	17	11/70
BOT	D1	2	11/70
BOT	06	3	11/70

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
MASTER DATA SET

PROJECT: WYATT 1971

SHIP NAME: R/V YAQUINA, R/V CAYUSE
SPONSOR: ONR
PRINCIPAL INVESTIGATOR: B. WYATT
OTHER INVESTIGATORS:
R. TOMLINSON
W. GILBERT
L. GORDON
D. BARSTOW

PRINCIPAL INSTITUTIONS: OSU
OTHER INSTITUTIONS:

REFERENCES:

WYATT, R., R. TOMLINSON, W. GILBERT, L. GORDON, D.
BARSTOW. 1972. HYDROGRAPHIC DATA FROM OREGON
WATERS 1971. DATA REP. NO. 53. REF. NO. 72-14,
77 PP.

START DATE: 1/71
END DATE : 12/71
GENERAL AREA: OREGON CONTINENTAL SHELF AND OFFSHORE
OBJECTIVES:
TO STUDY WATER MASSES ALONG THE OREGON COAST.

SPATIAL SCALES: SMALL TO RGL
TEMPORAL SCALES: MTHS TO SEASONS
CURRENT METER: F
SEA LEVEL SENSOR: F
HYDROGRAPHIC (SALINITY): T
HYDROGRAPHIC (TEMPERATURE): T
DRIFTERS (LAGRANGIAN): F
PROFILING CURRENT METERS: F
ACOUSTIC DOPPLER PROFILER: F
METEOROLOGY: T
REMOTE SENSING: F
OTHER: T
DATA ACCESSIBILITY:
AT NODC; ALSO ON MAGNETIC TAPE AVAILABLE AT OSU.

AVAILABLE AT NODC? Y

COMMENTS:

OTHER MEASUREMENTS INCLUDE: METEOROLOGY AT EACH
STATION, NUTRIENTS, DISSOLVED O₂, ALKALINITY, PH
AND SILICATE.

COASTAL CIRCULATION ALONG WASHINGTON AND OREGON
HYDROGRAPHIC DATA (HY)

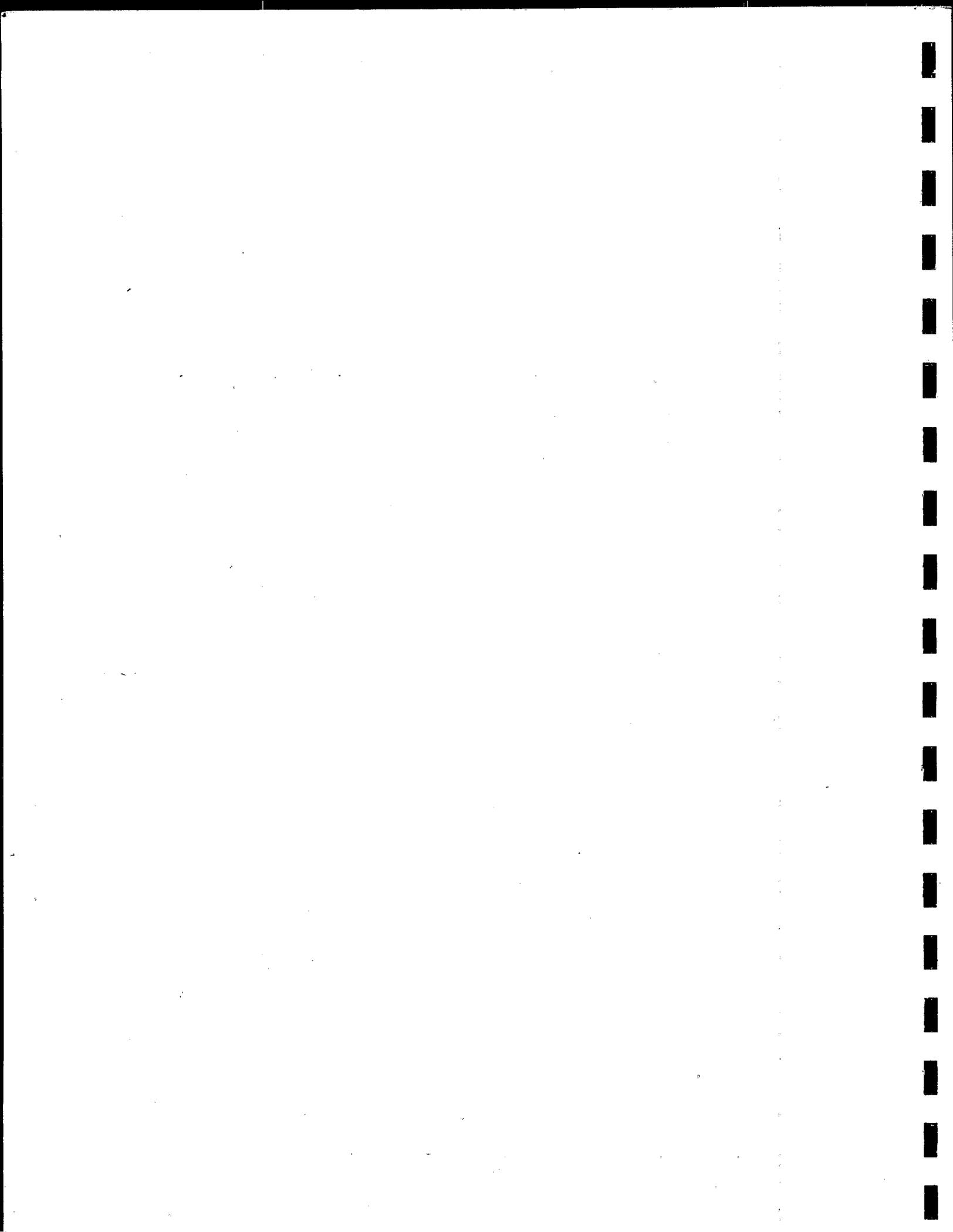
PROJECT: WYATT 1971

TYPE OF INSTRUMENT	SUBREGIONS OCCUPIED	NO. OF STATIONS PER SUBREGION	PERIOD
BOT	02	10	1/71
BOT	06	29	1/71
BOT	D1	2	1/71
BOT	05	15	1/71
BOT	03	1	1/71
BOT	02	1	2/71
BOT	05	4	2/71
BOT	02	21	3/71
BOT	05	12	3/71
BOT	06	5	3/71
BOT	02	8	4/71
BOT	03	2	4/71
BOT	06	9	4/71
BOT	05	17	4/71
BOT	02	15	6/71
BOT	05	4	6/71
BOT	W2	2	6/71
BOT	01	5	6/71
BOT	W2	4	8/71
BOT	W3	5	8/71
BOT	05	10	8/71
BOT	02	5	8/71
BOT	05	7	9/71
BOT	03	3	9/71
BOT	06	6	9/71
BOT	02	6	9/71
BOT	02	4	10/71
BOT	05	1	10/71

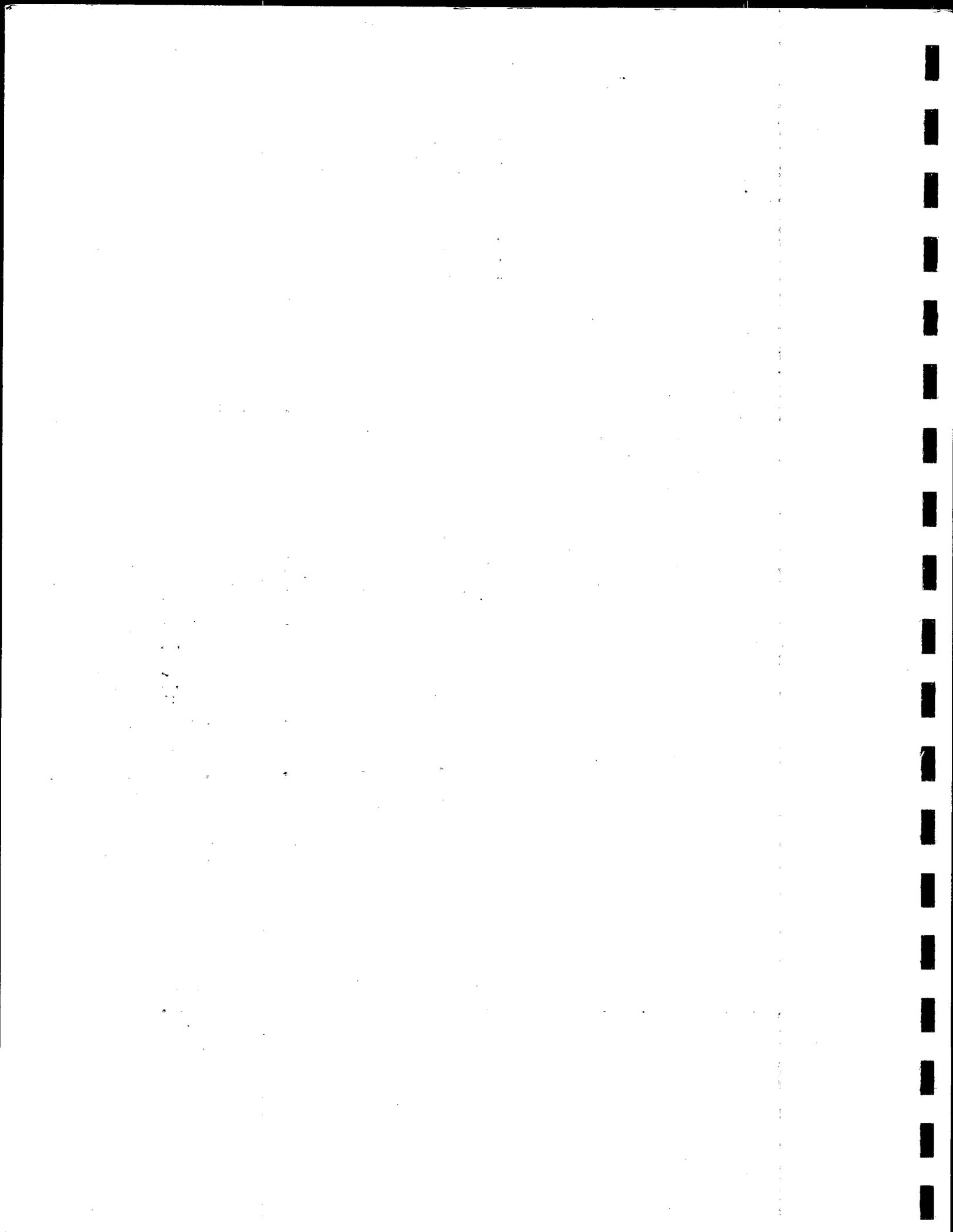
Appendix E - Data Plots

(E.1 - Plots of All Data Types by Individual Year)

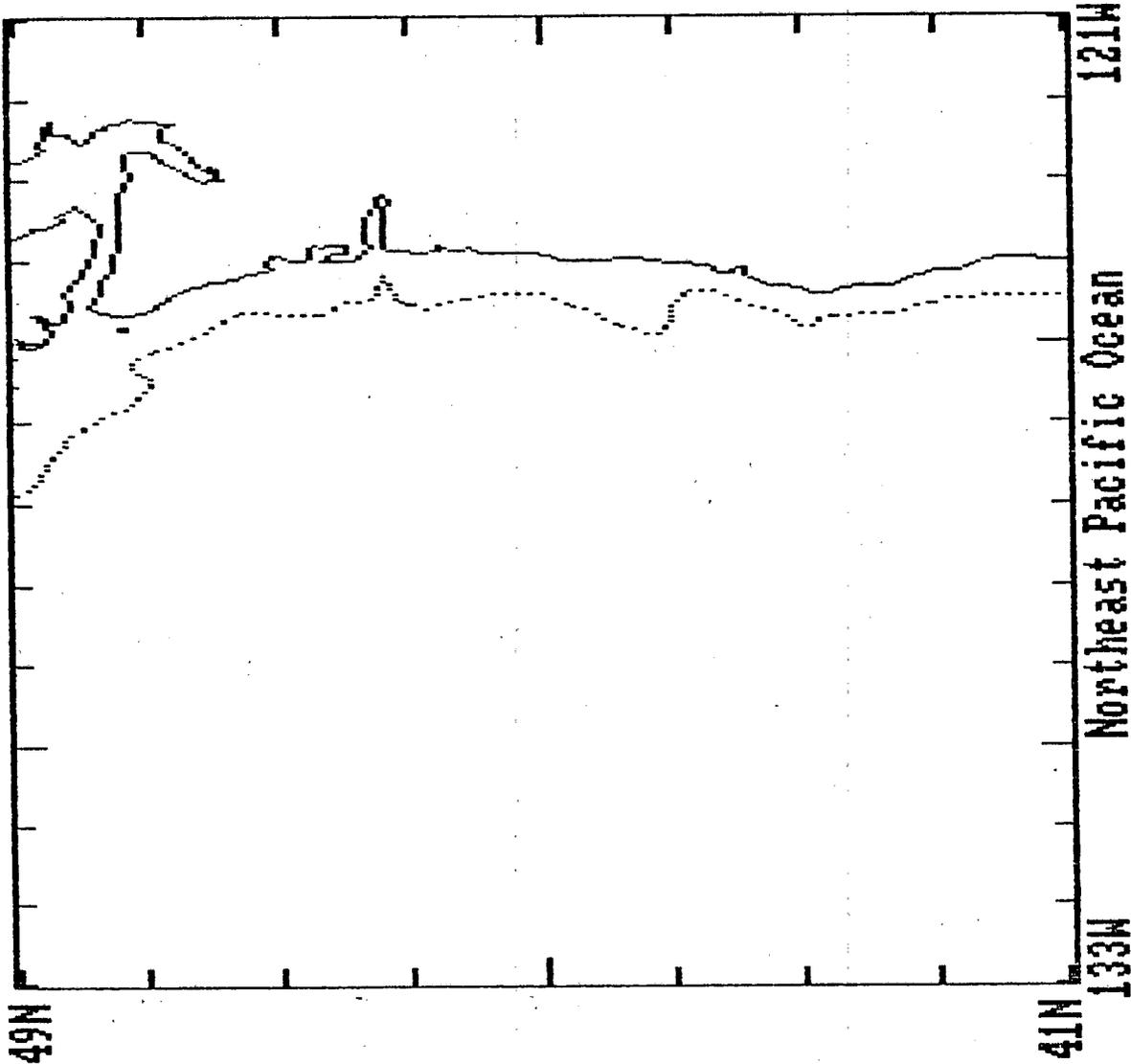
(E.2 - Plots of All Data Types Binned by Season)



**E.1 - Plots of All Data Types by
Individual Year**



DRIFTERS (1915)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

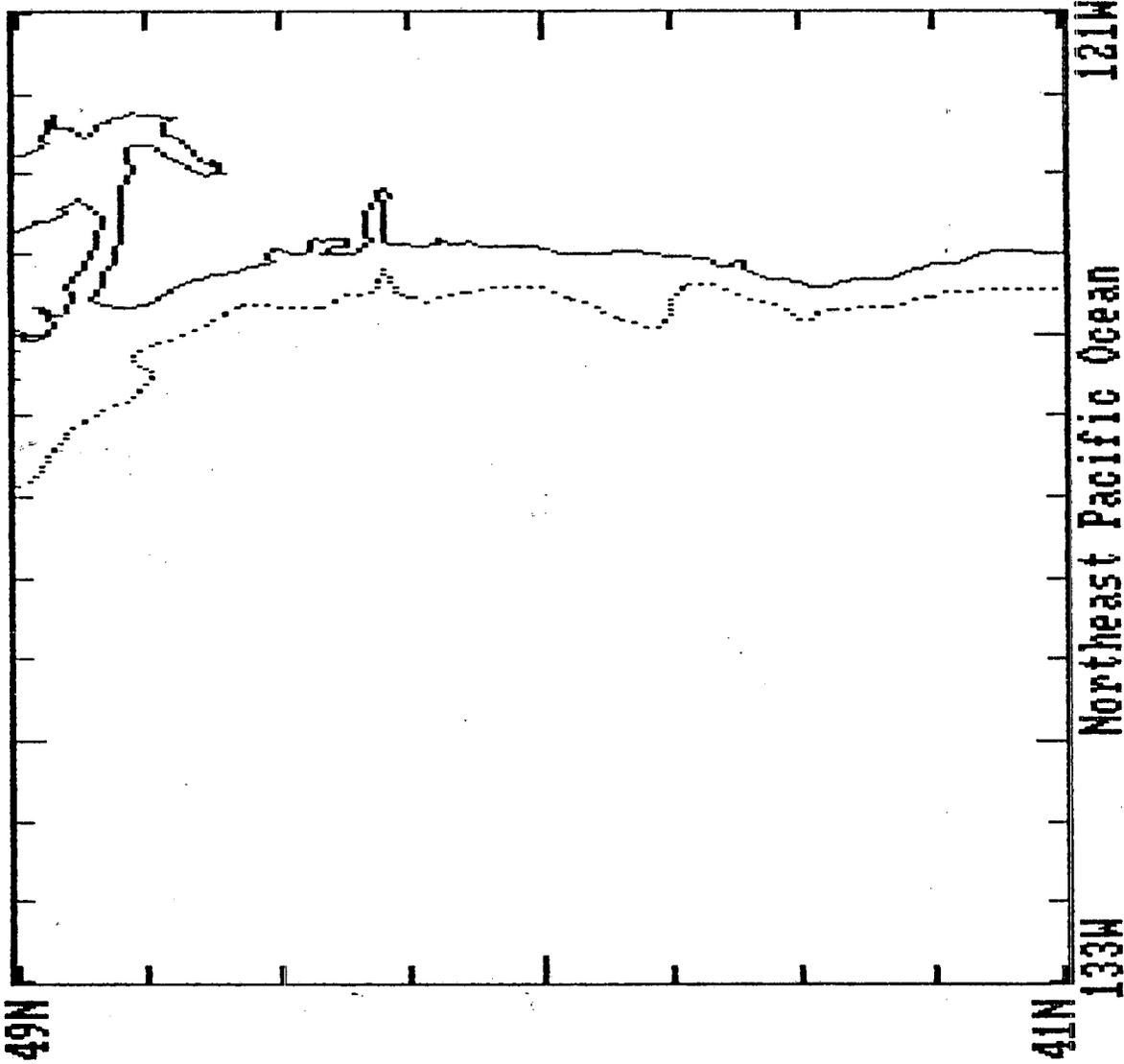
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

DRIFTERS (1916)

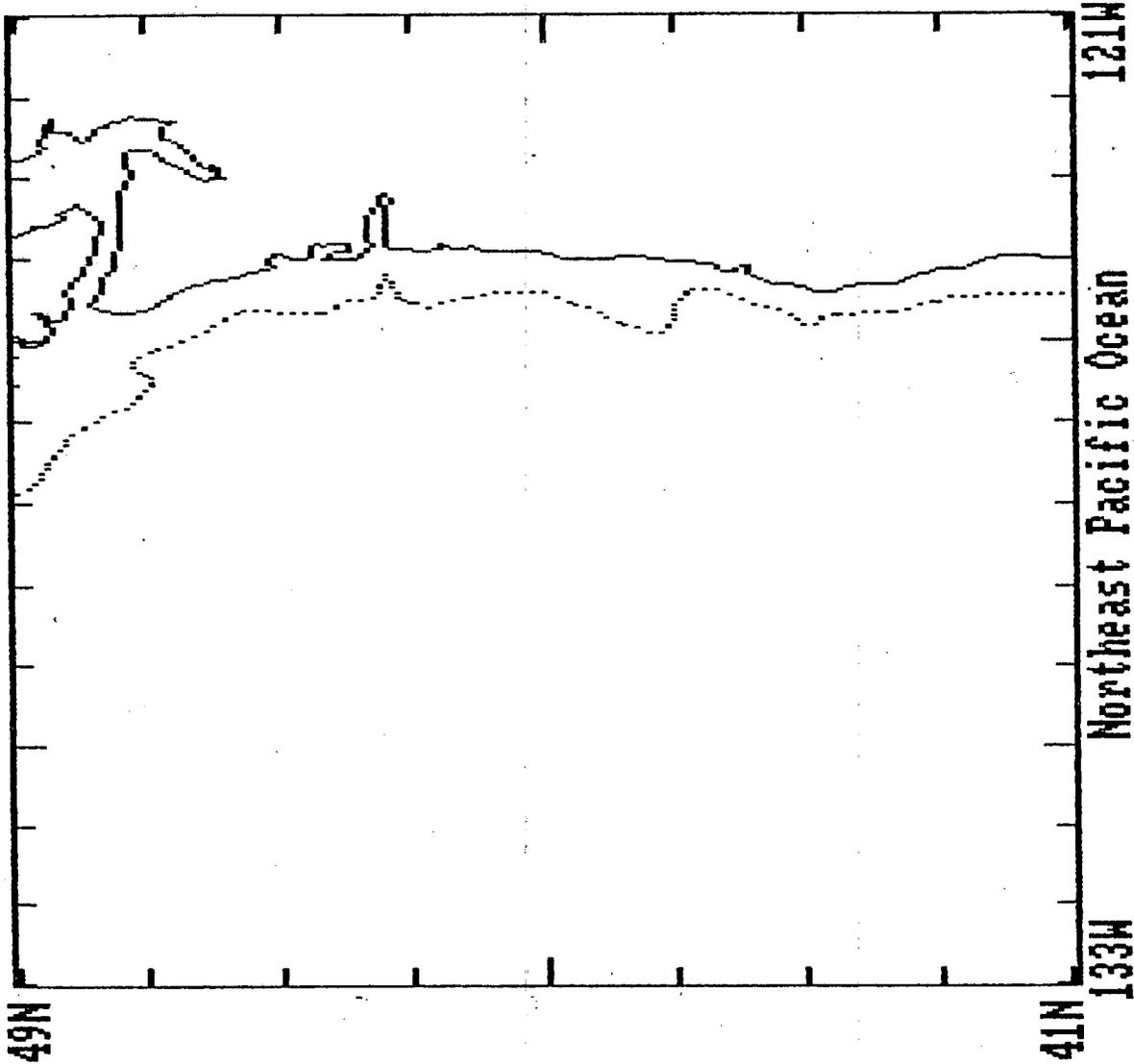


MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- † = MET. STATION
- = DRIFTER AREA

DRIFTERS (1917)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

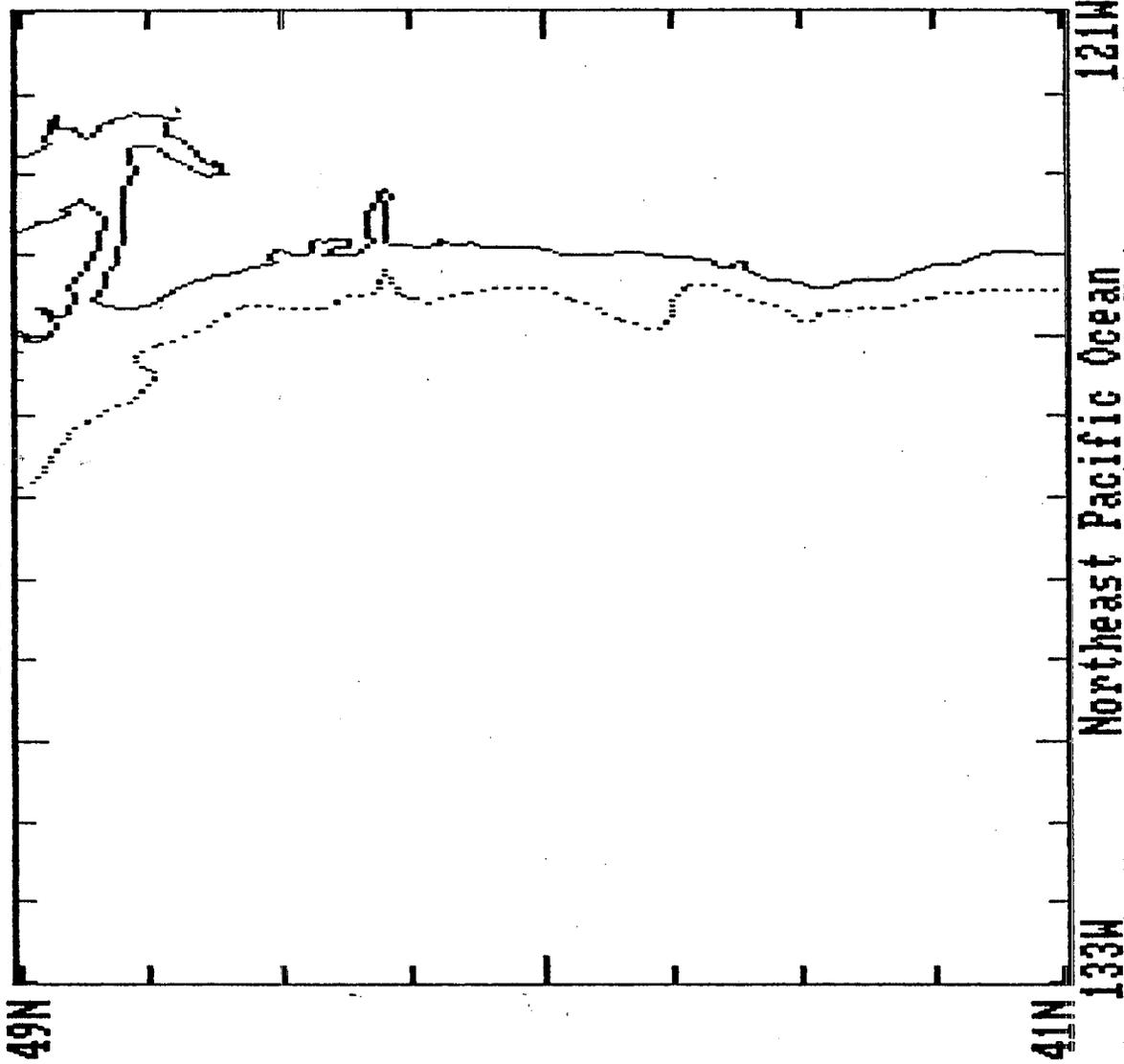
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

DRIFTERS (1918)



**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- ‡ = MET. STATION
- = DRIFTER AREA

MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

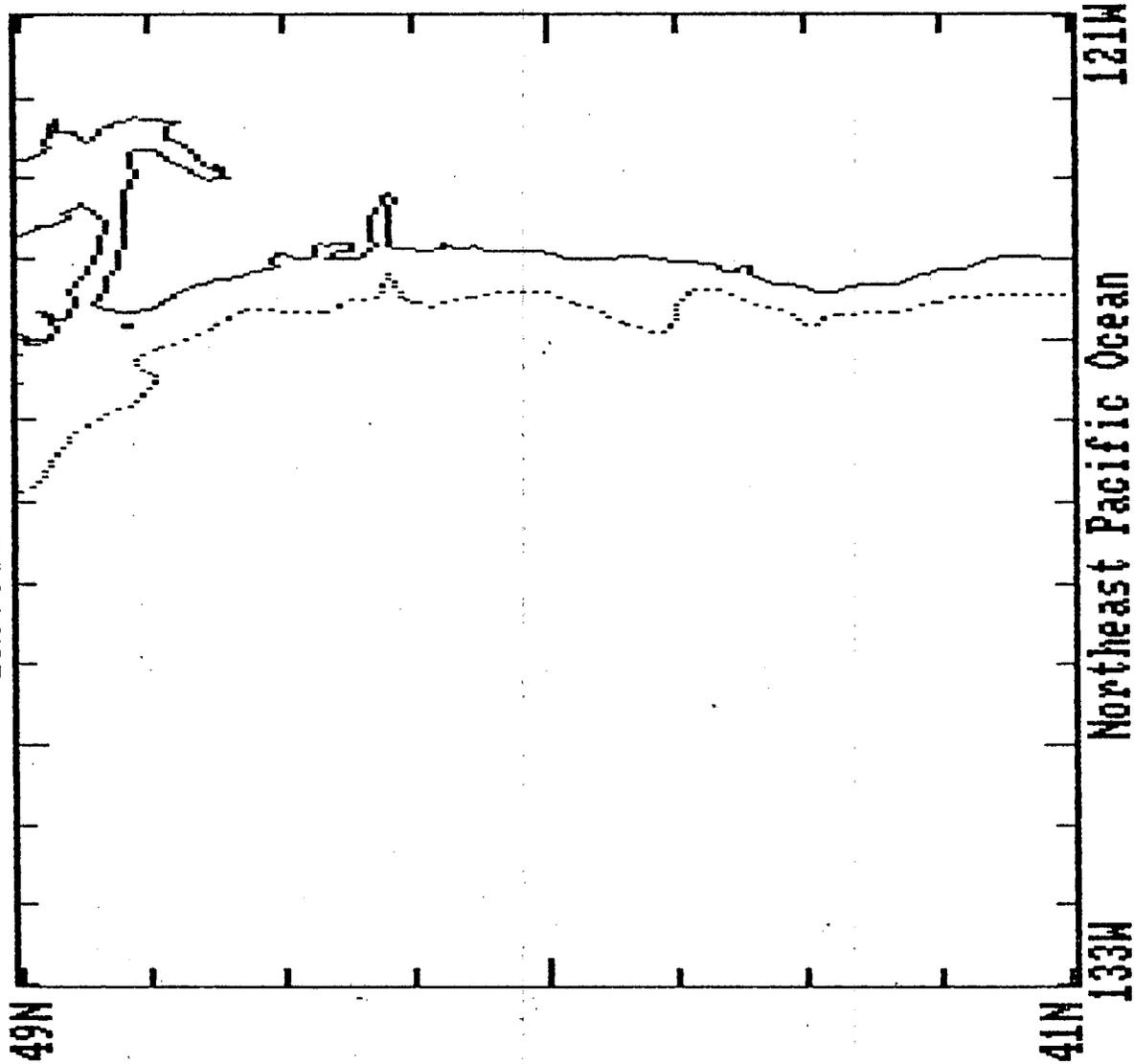
□ = CURRENT METER

△ = SEA LEVEL SENSOR

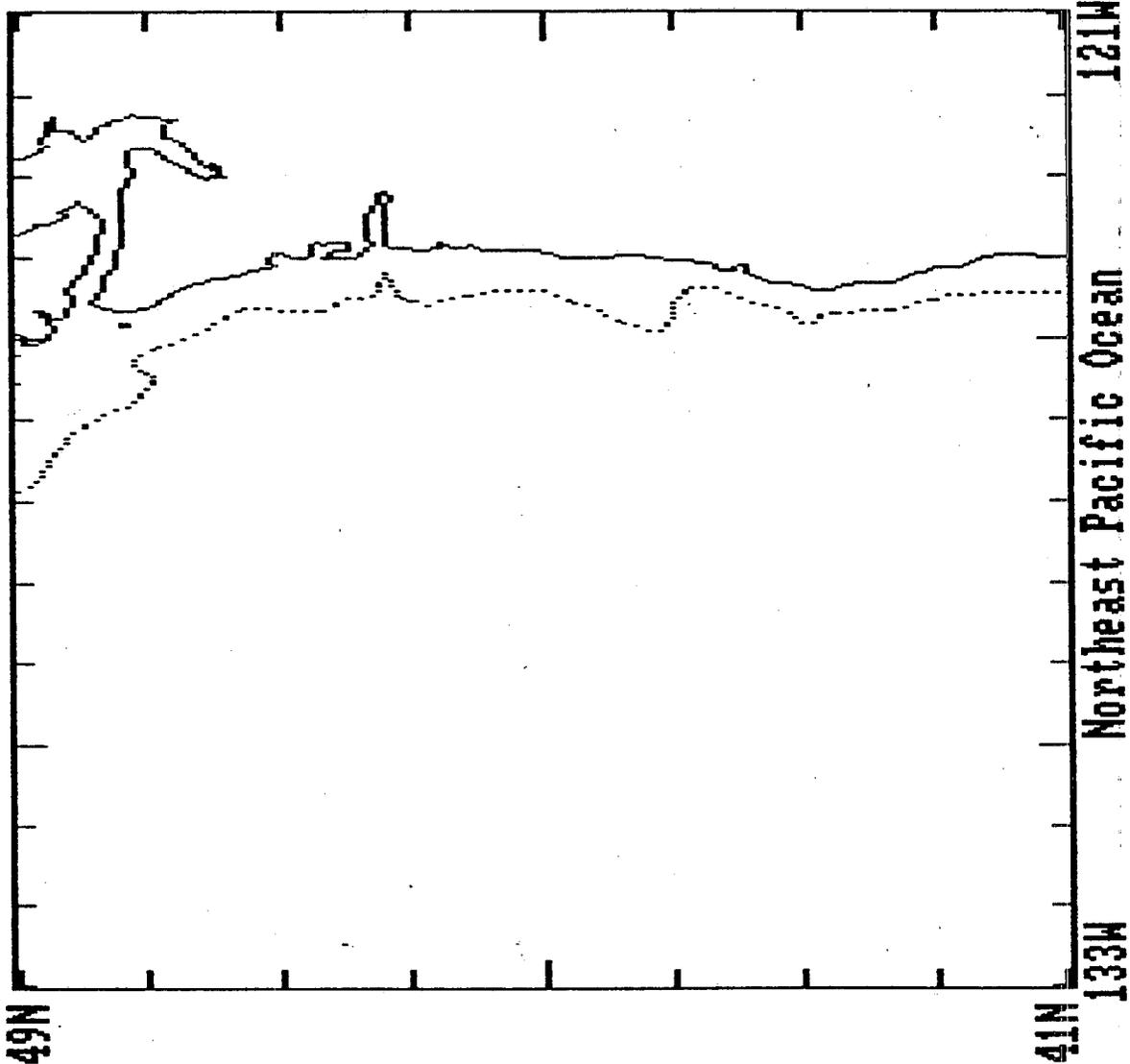
‡ = MET. STATION

□ = DRIFTER AREA

DRIFTERS (1919)



DRIFTERS (1920)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

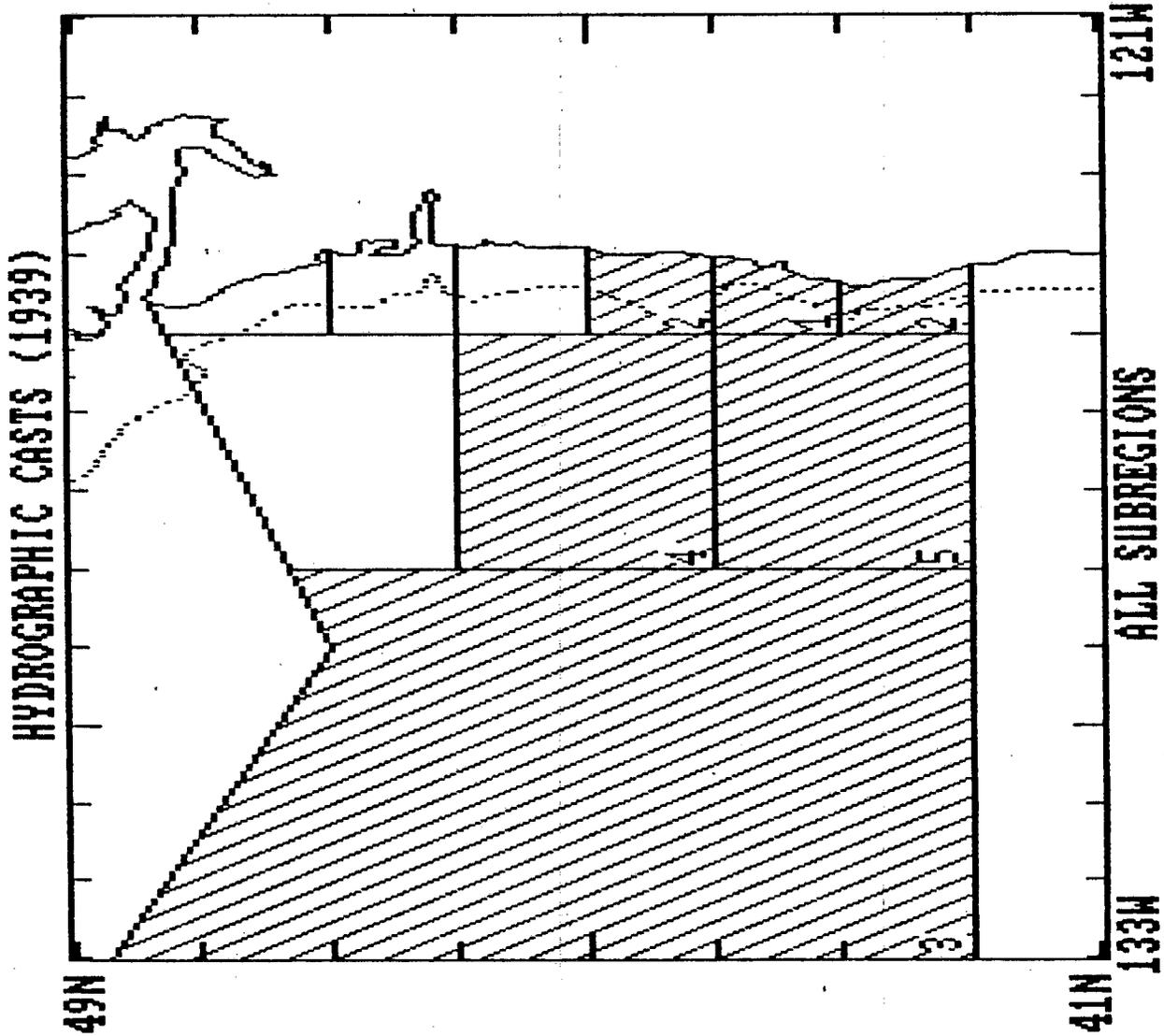
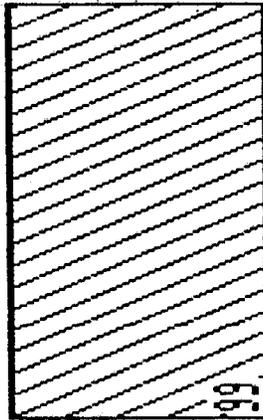
LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- ‡ = MET. STATION
- = DRIFTER AREA

**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

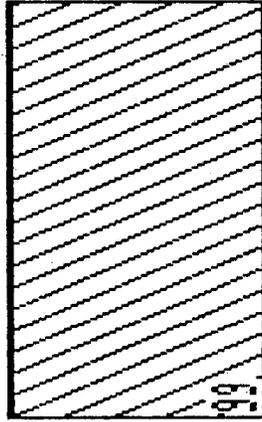
**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



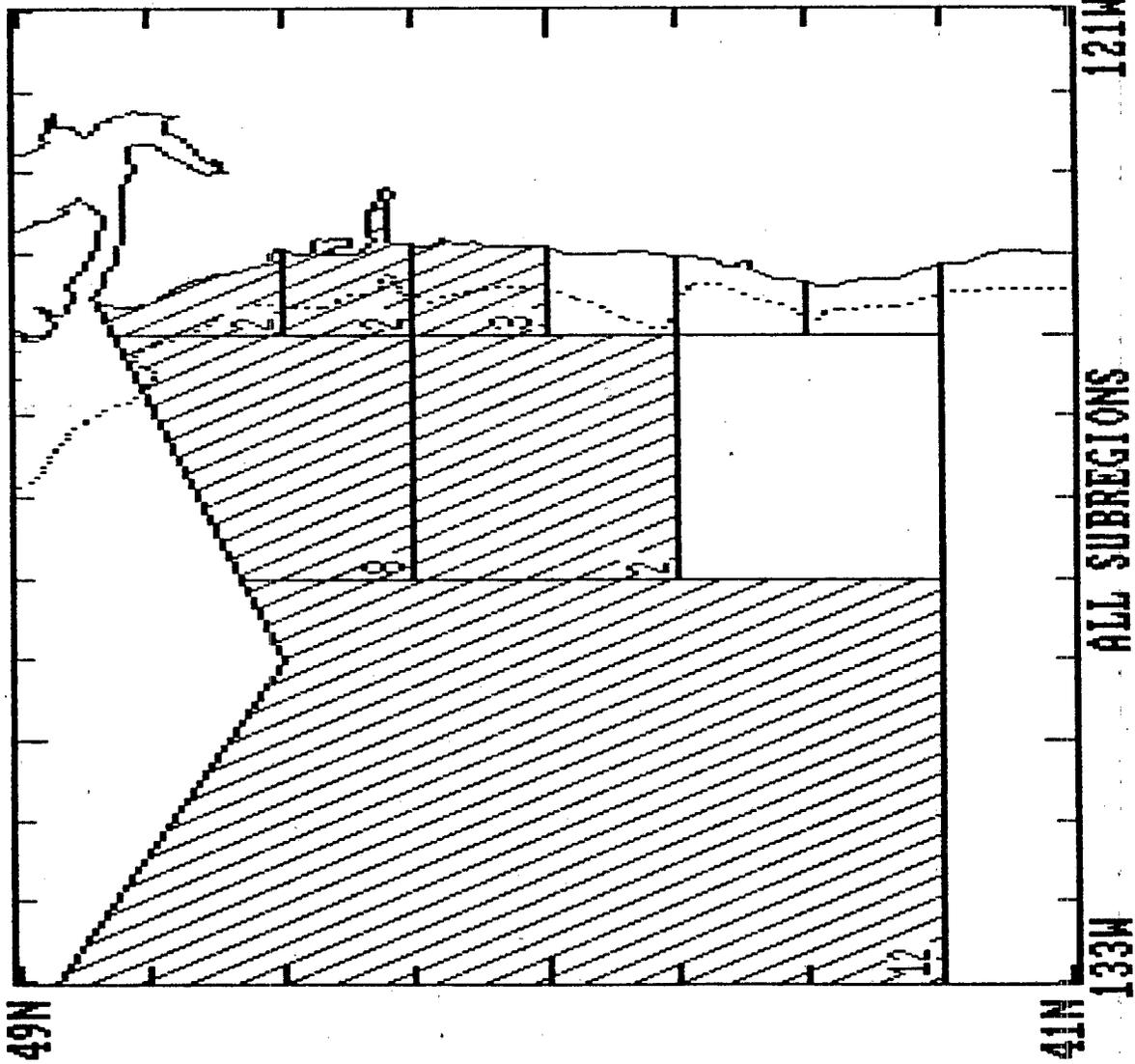
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



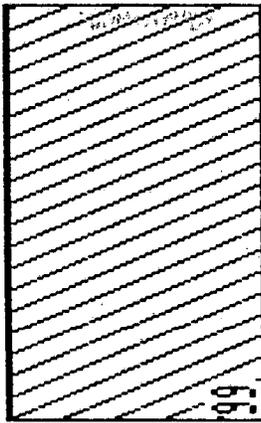
HYDROGRAPHIC CASTS (1952)



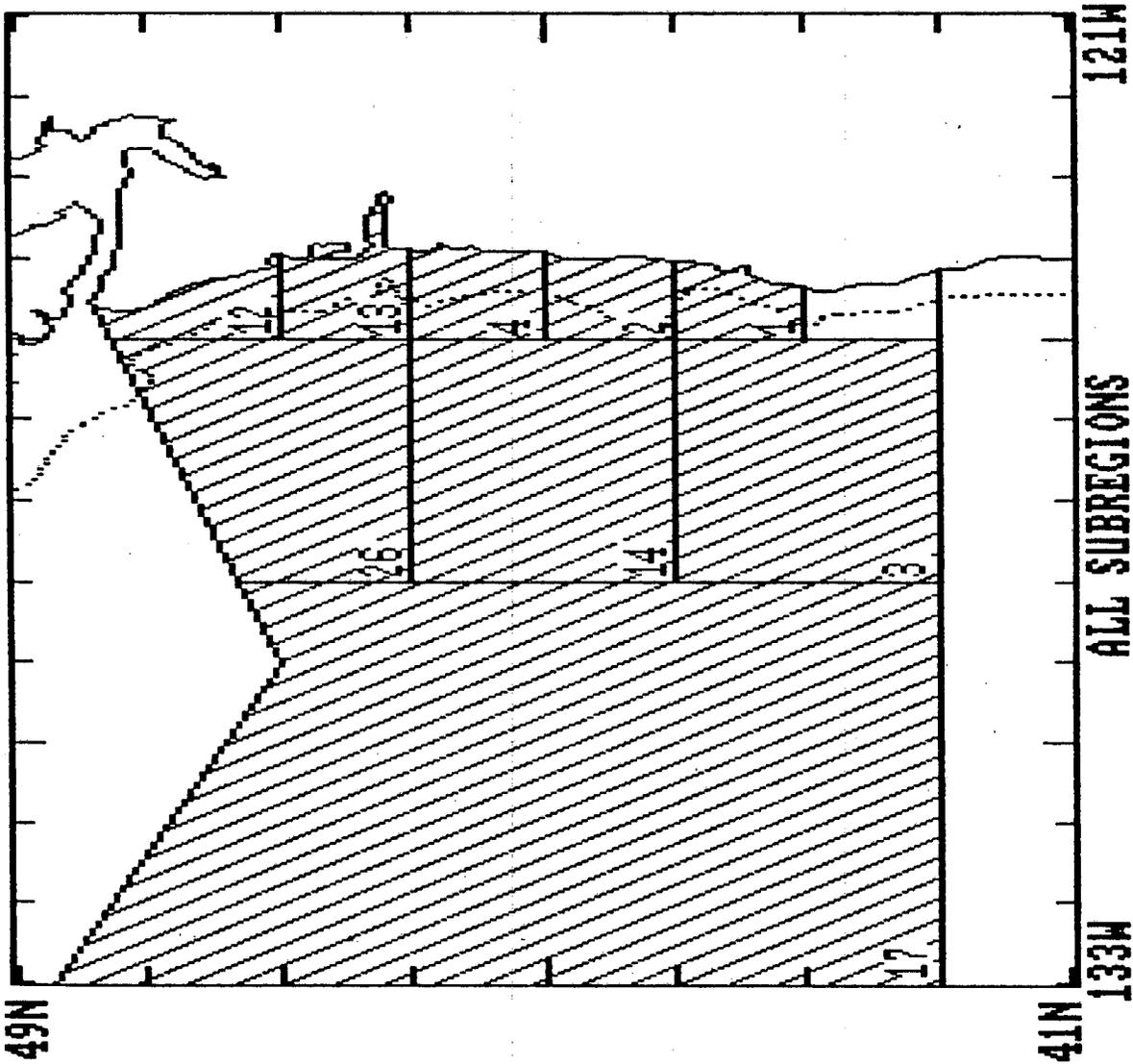
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

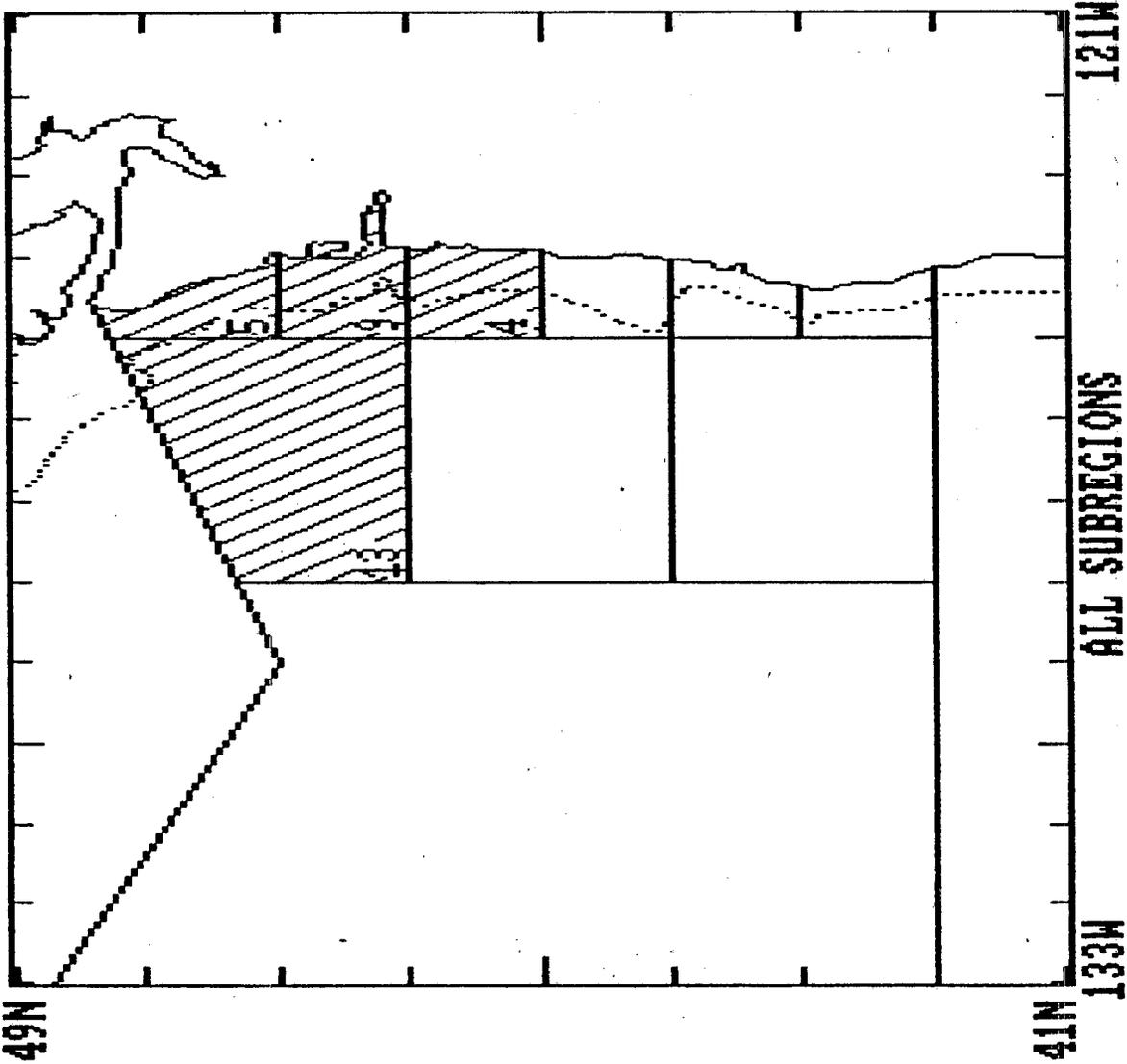
**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



HYDROGRAPHIC CASTS (1953)



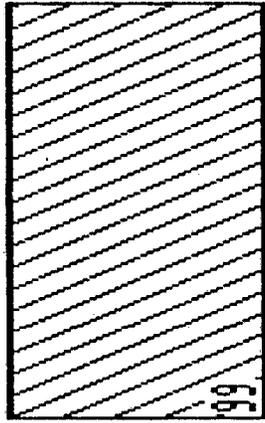
HYDROGRAPHIC CASTS (1954)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

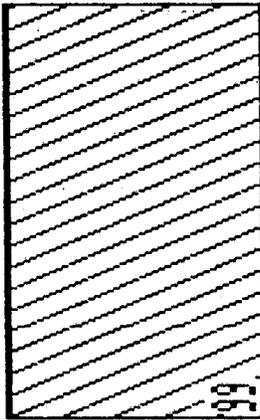
HYDROGRAPHIC SURVEY
COVERAGE BY AREA



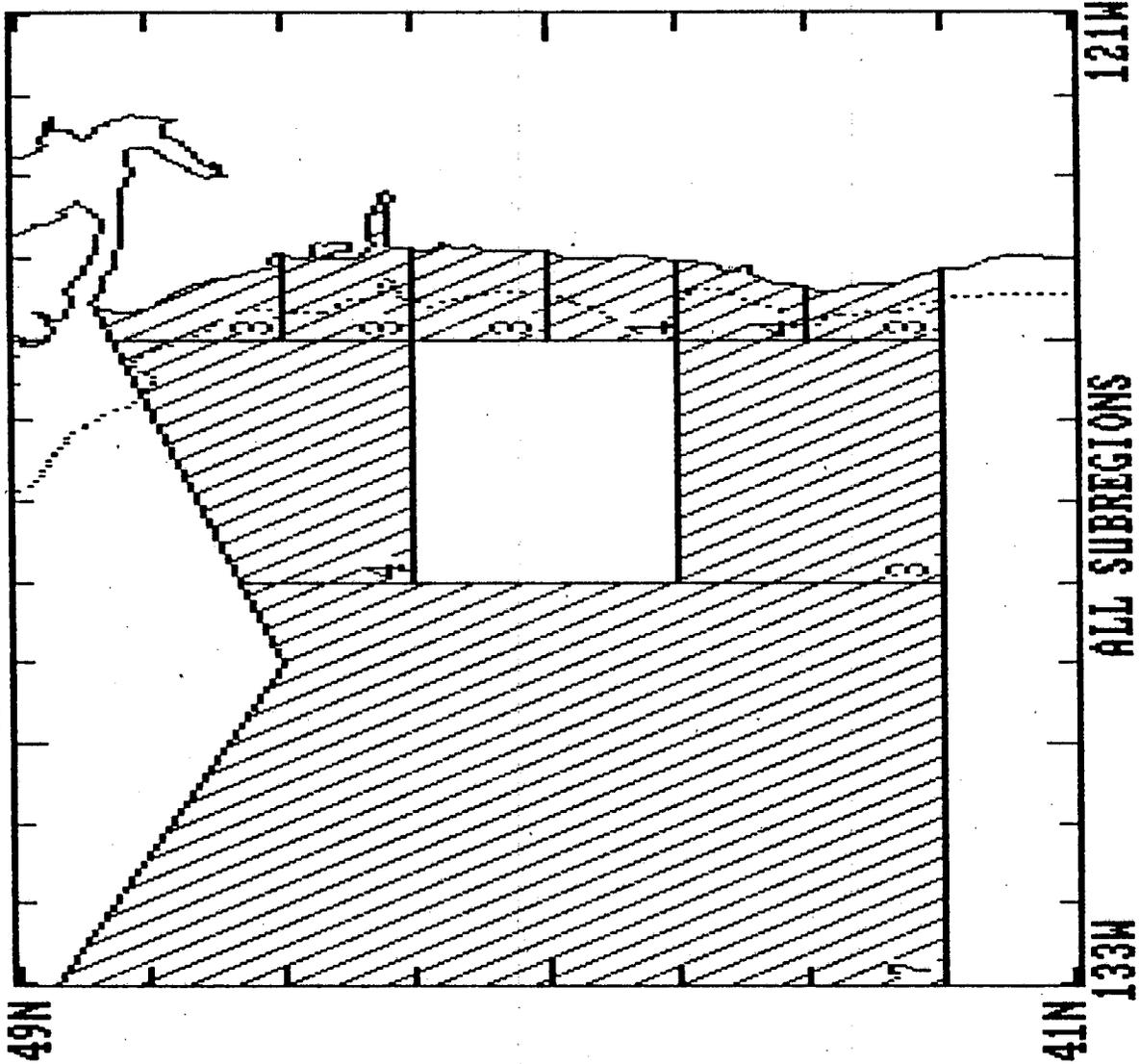
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

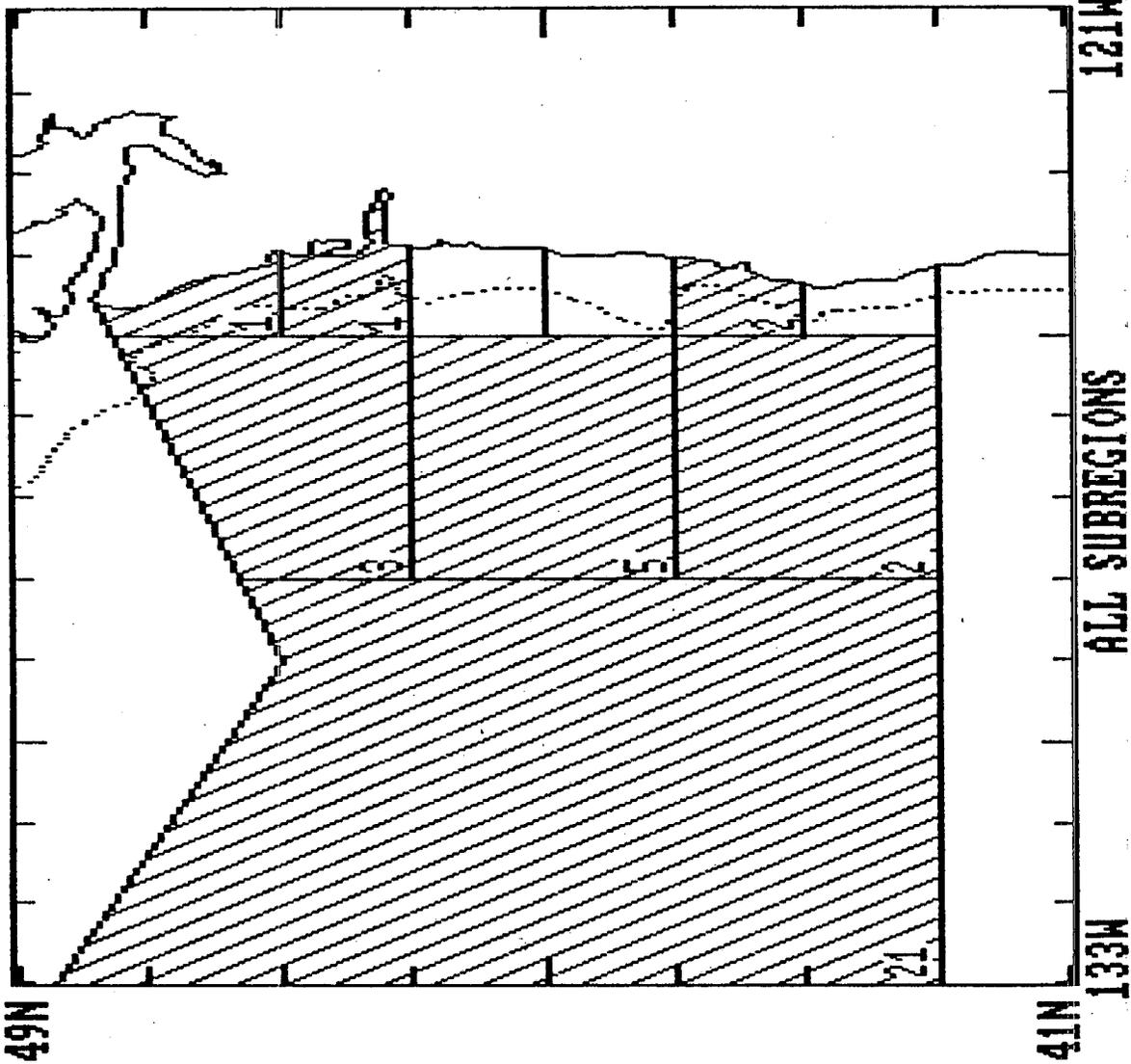
**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



HYDROGRAPHIC CASTS (1955)



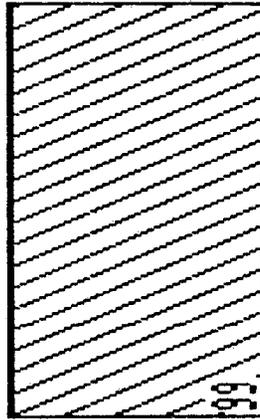
HYDROGRAPHIC CASTS (1956)



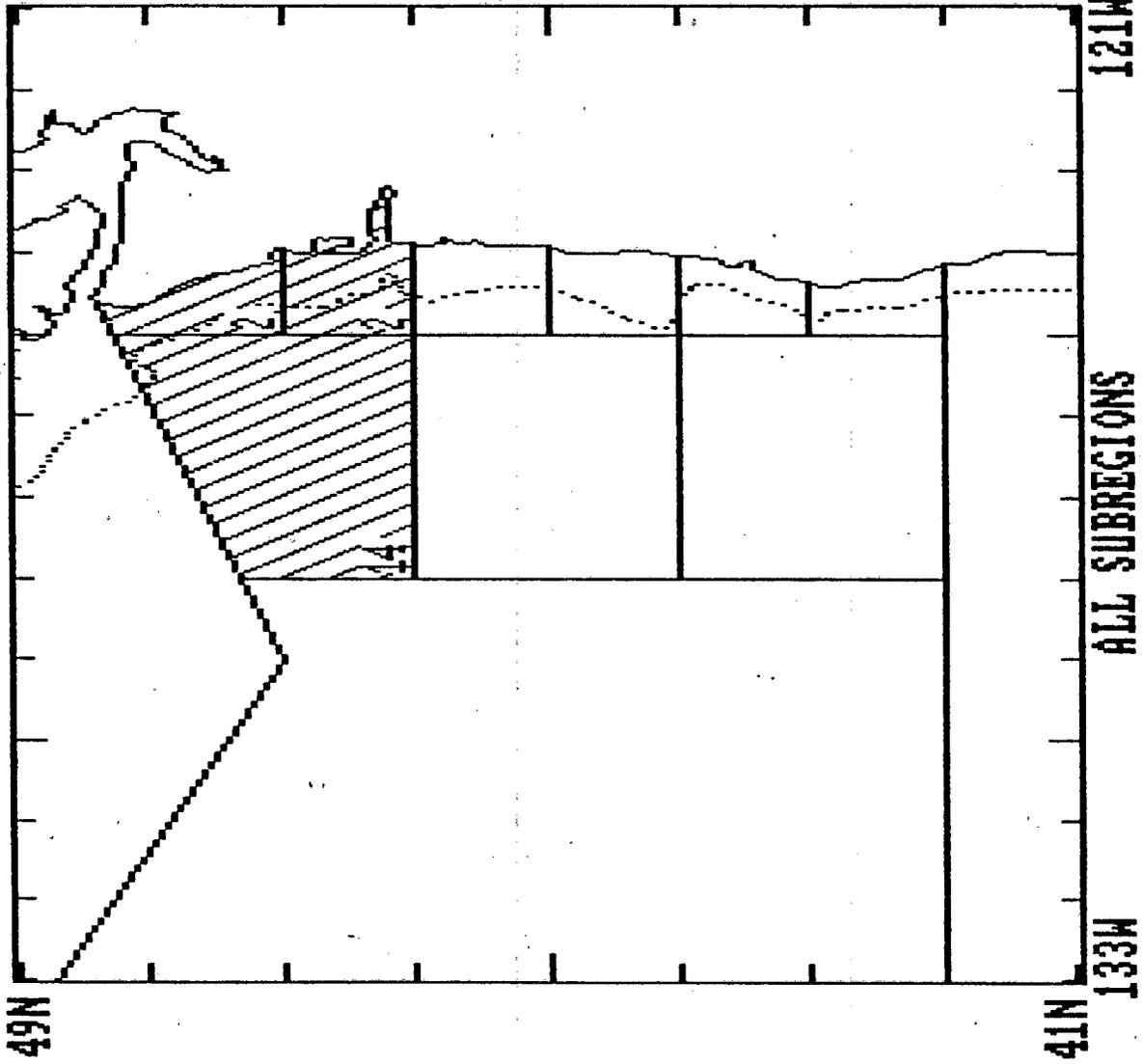
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



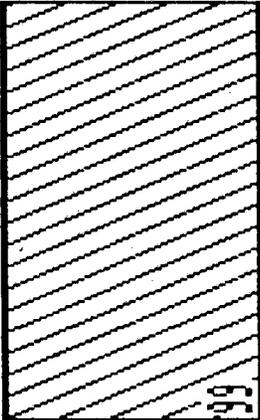
HYDROGRAPHIC CASTS (1957)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

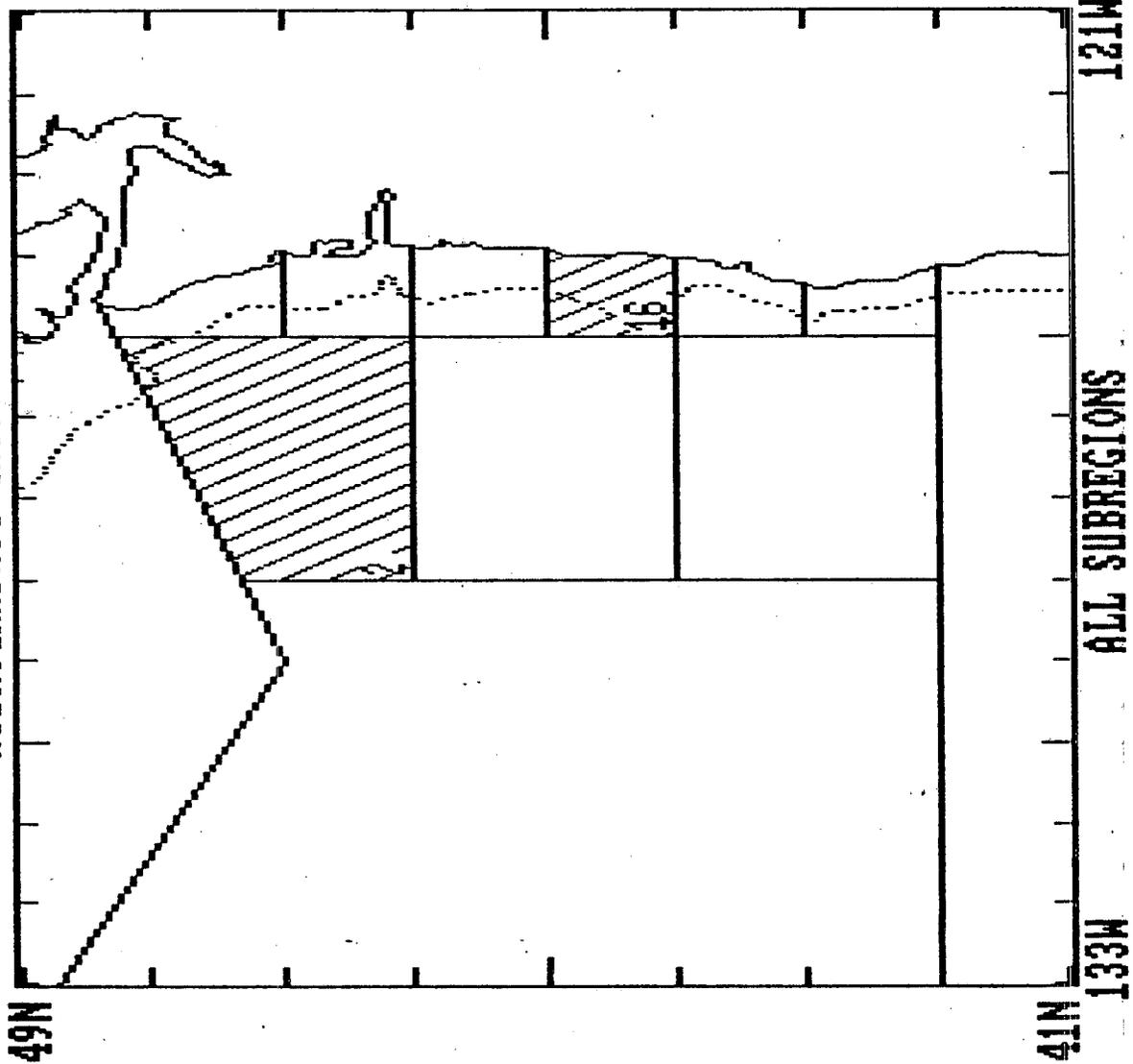
LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



99

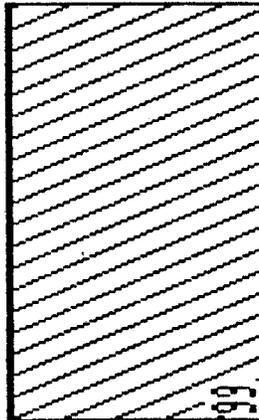
HYDROGRAPHIC CASTS (1958)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

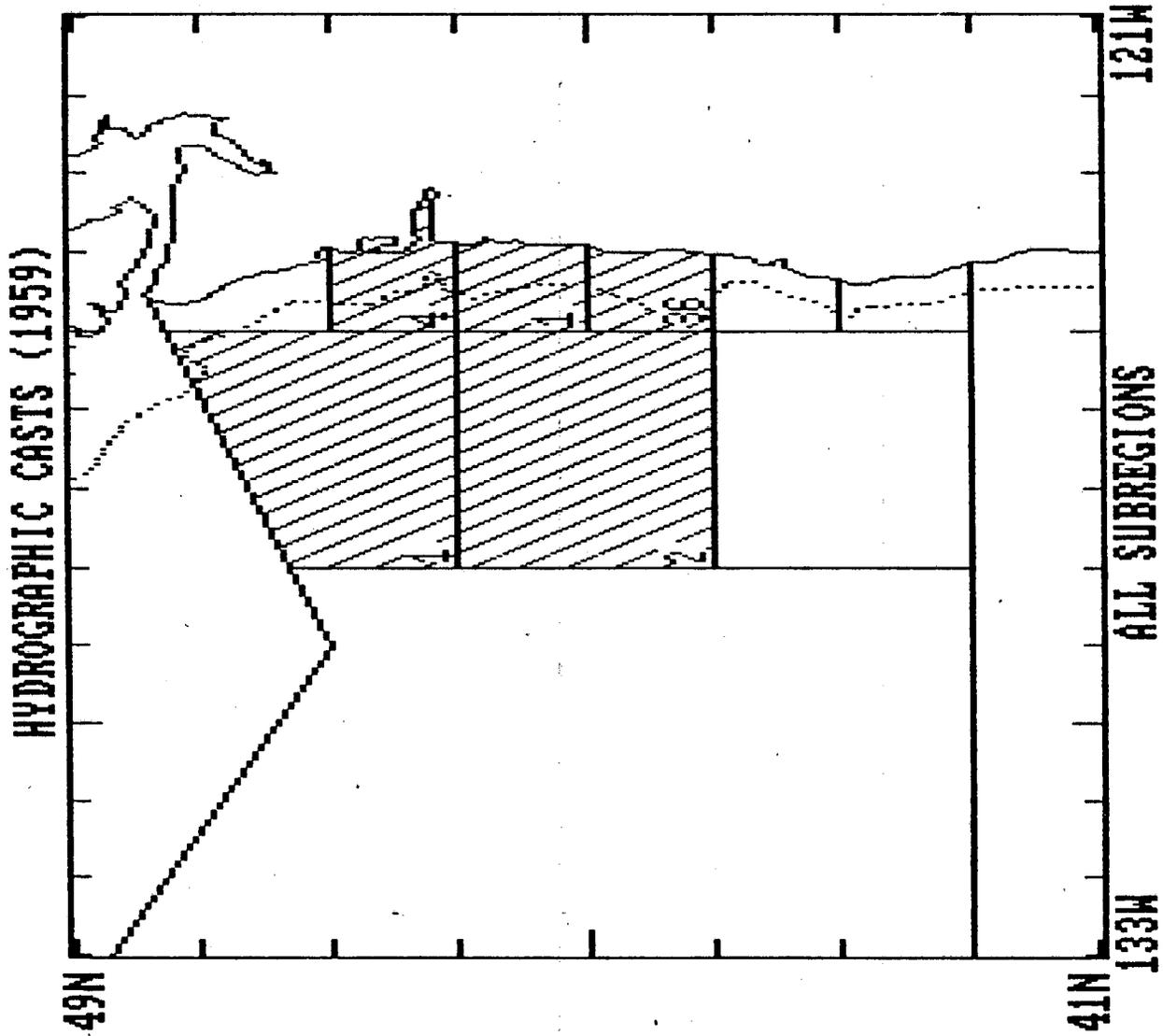
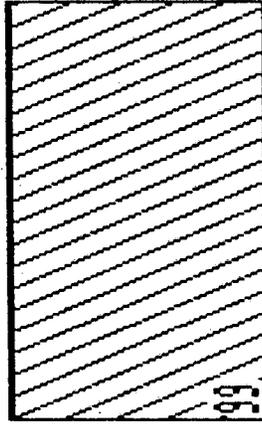
HYDROGRAPHIC SURVEY
COVERAGE BY AREA



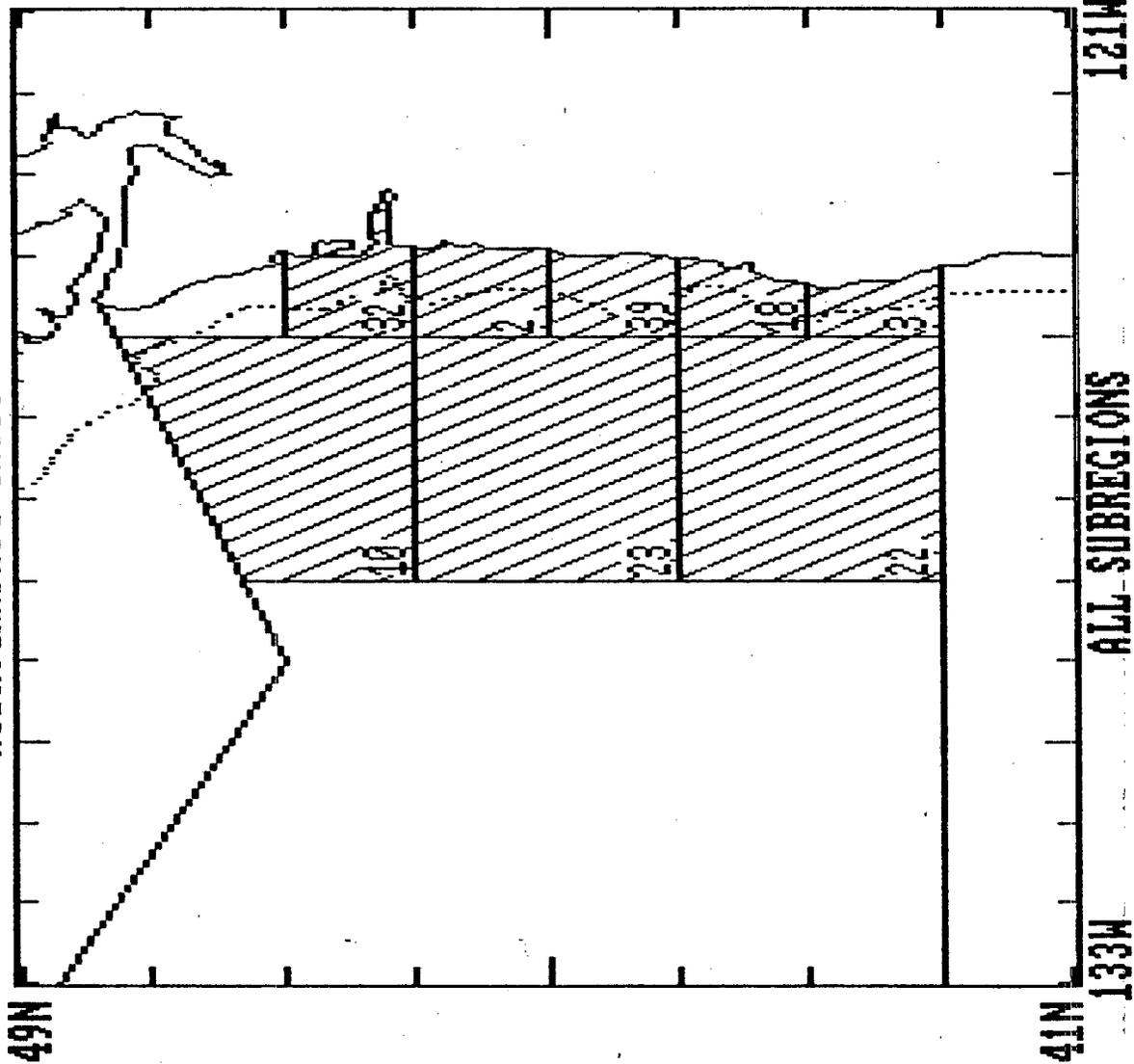
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



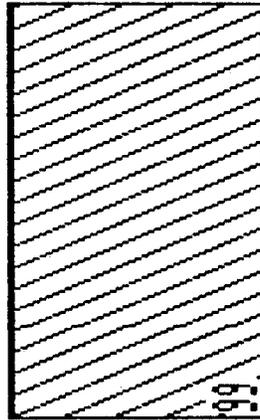
HYDROGRAPHIC CASTS (1960)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA

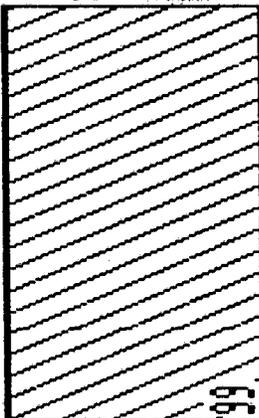


Hydrographic Survey

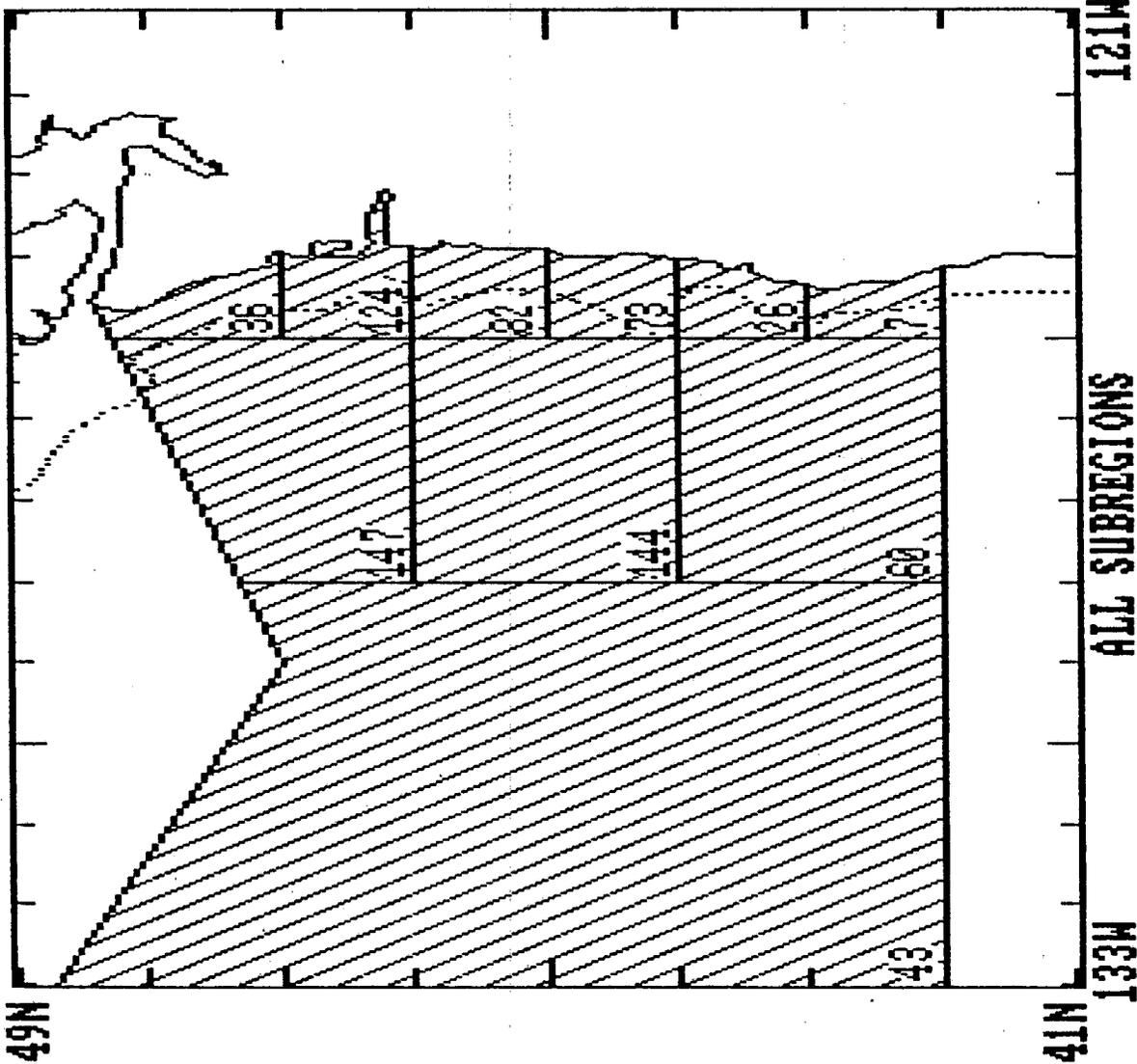
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

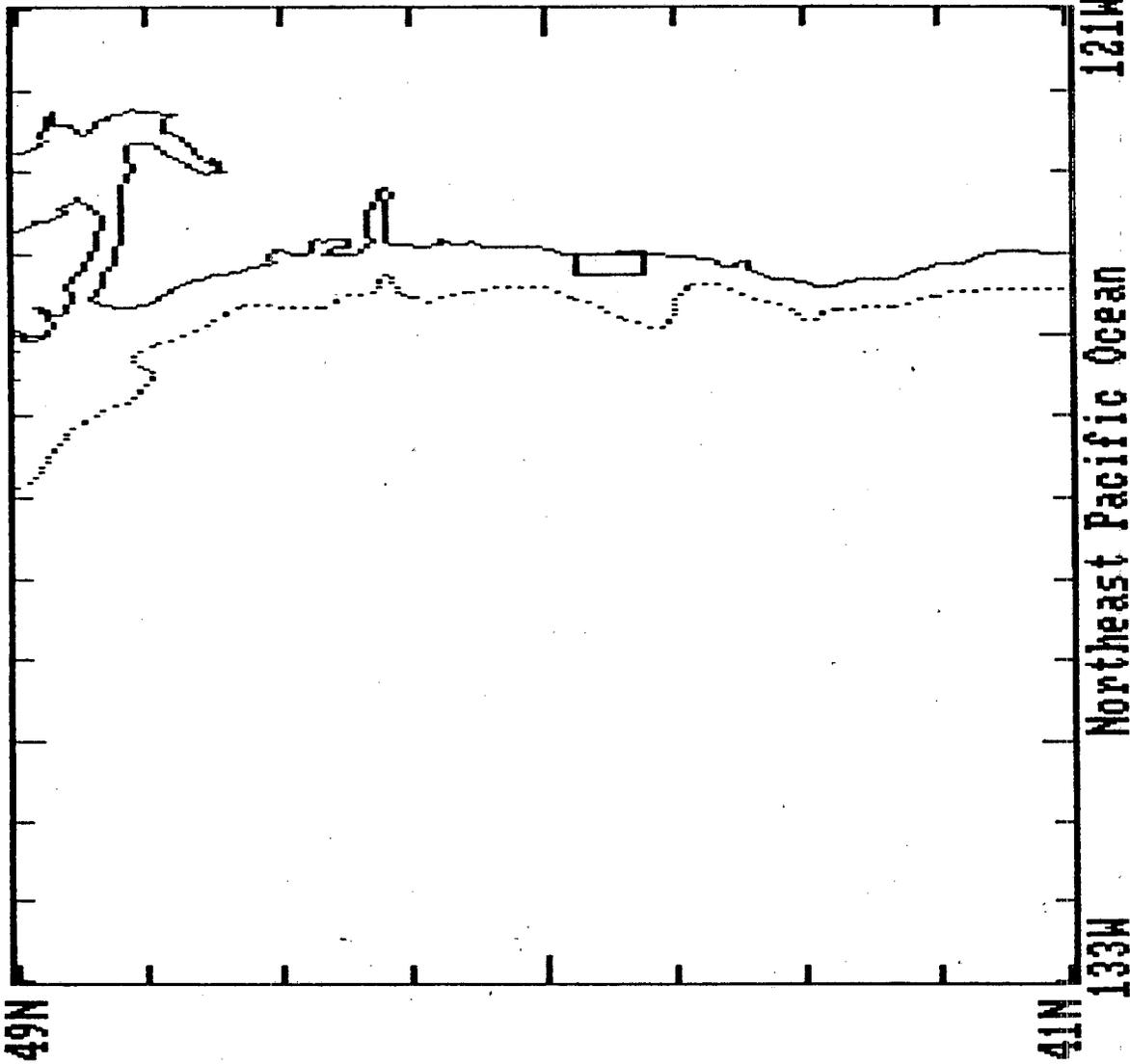
HYDROGRAPHIC SURVEY
COVERAGE BY AREA



HYDROGRAPHIC CASTS (1961)



DRIFTERS (1962)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

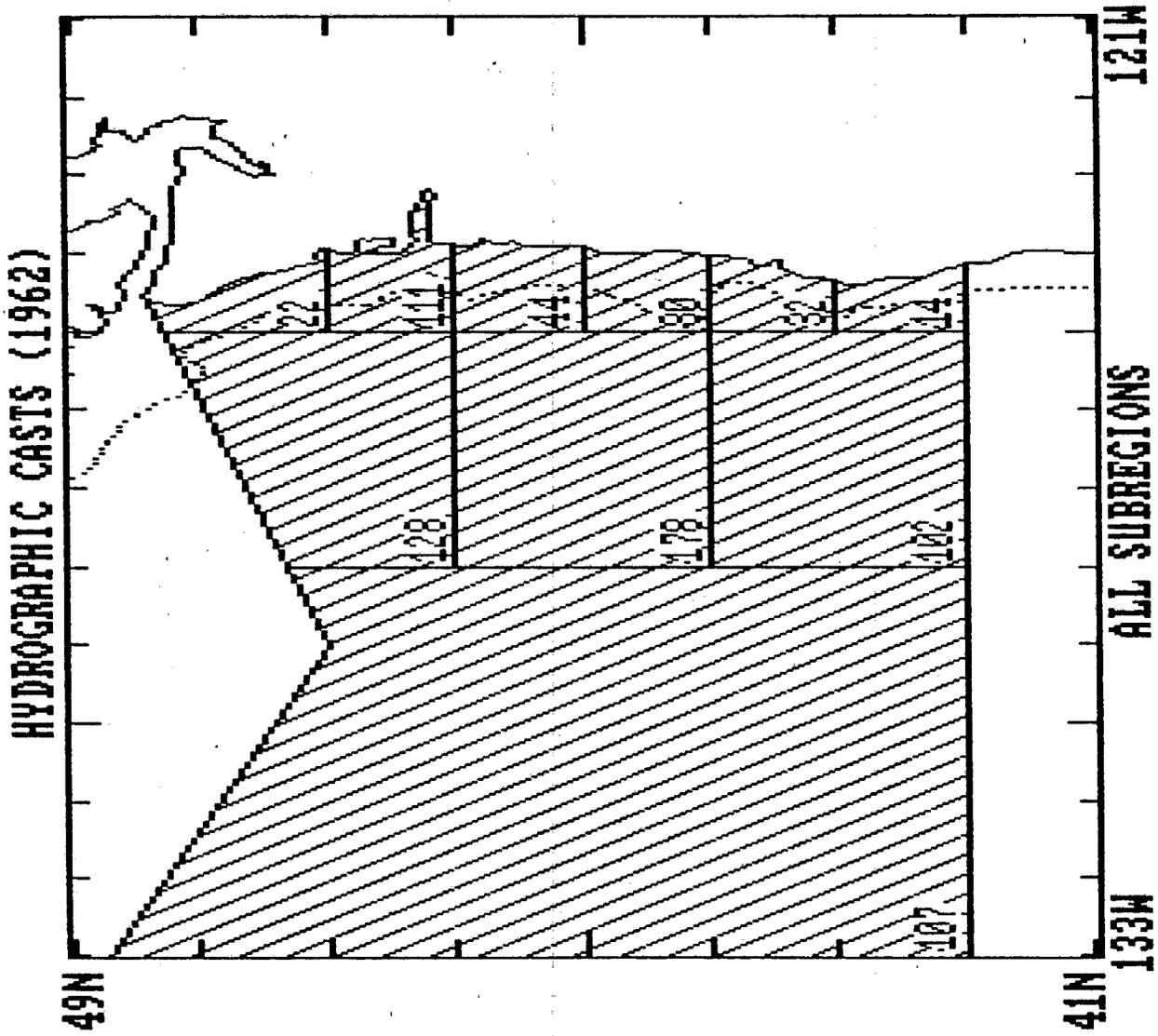
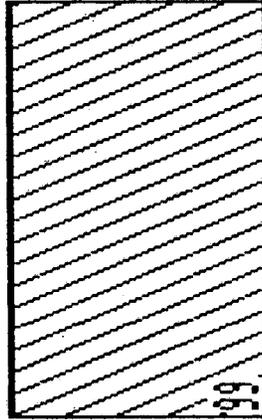
† = MET. STATION

□ = DRIFTER AREA

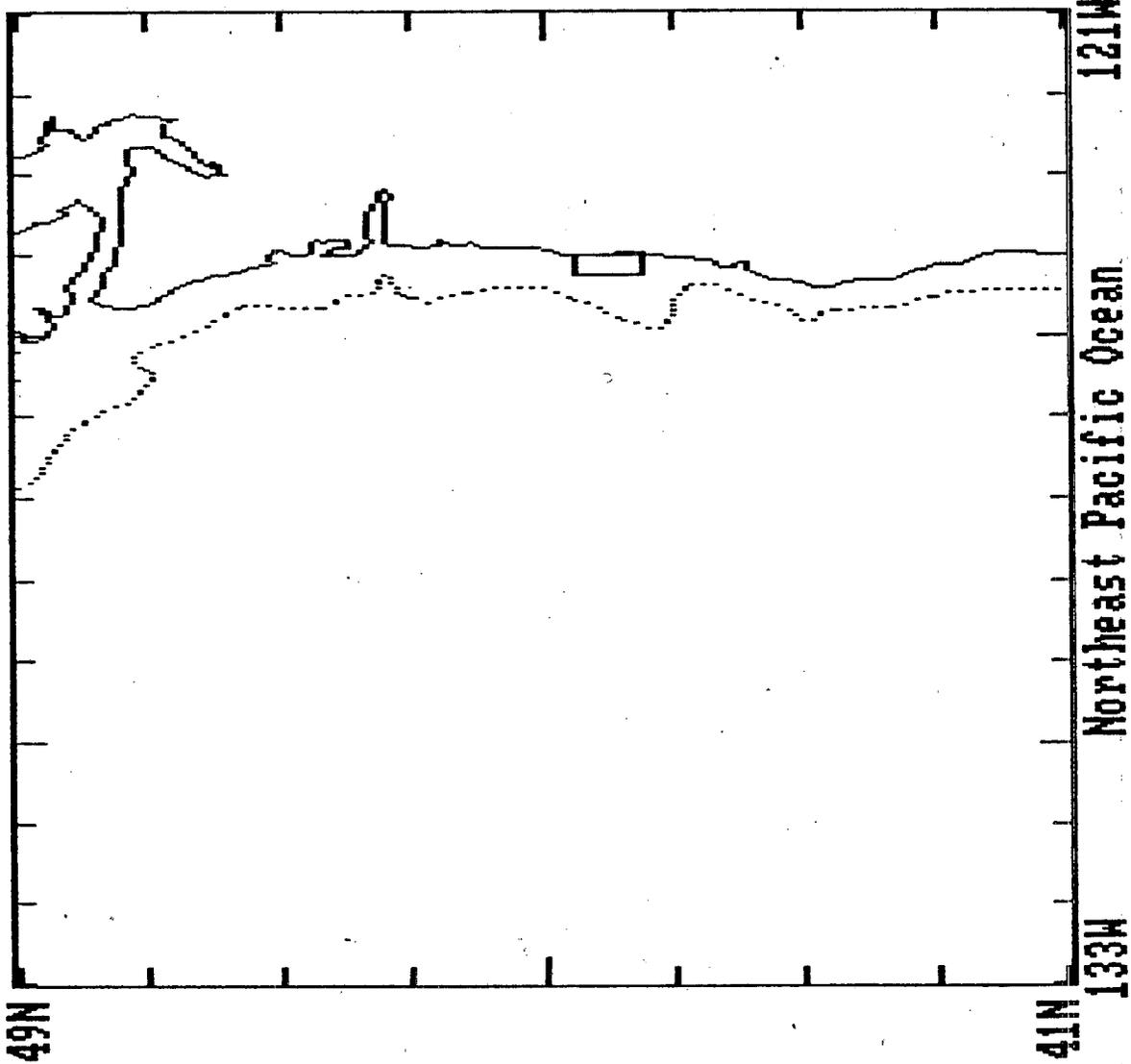
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



DRIFTERS (1963)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

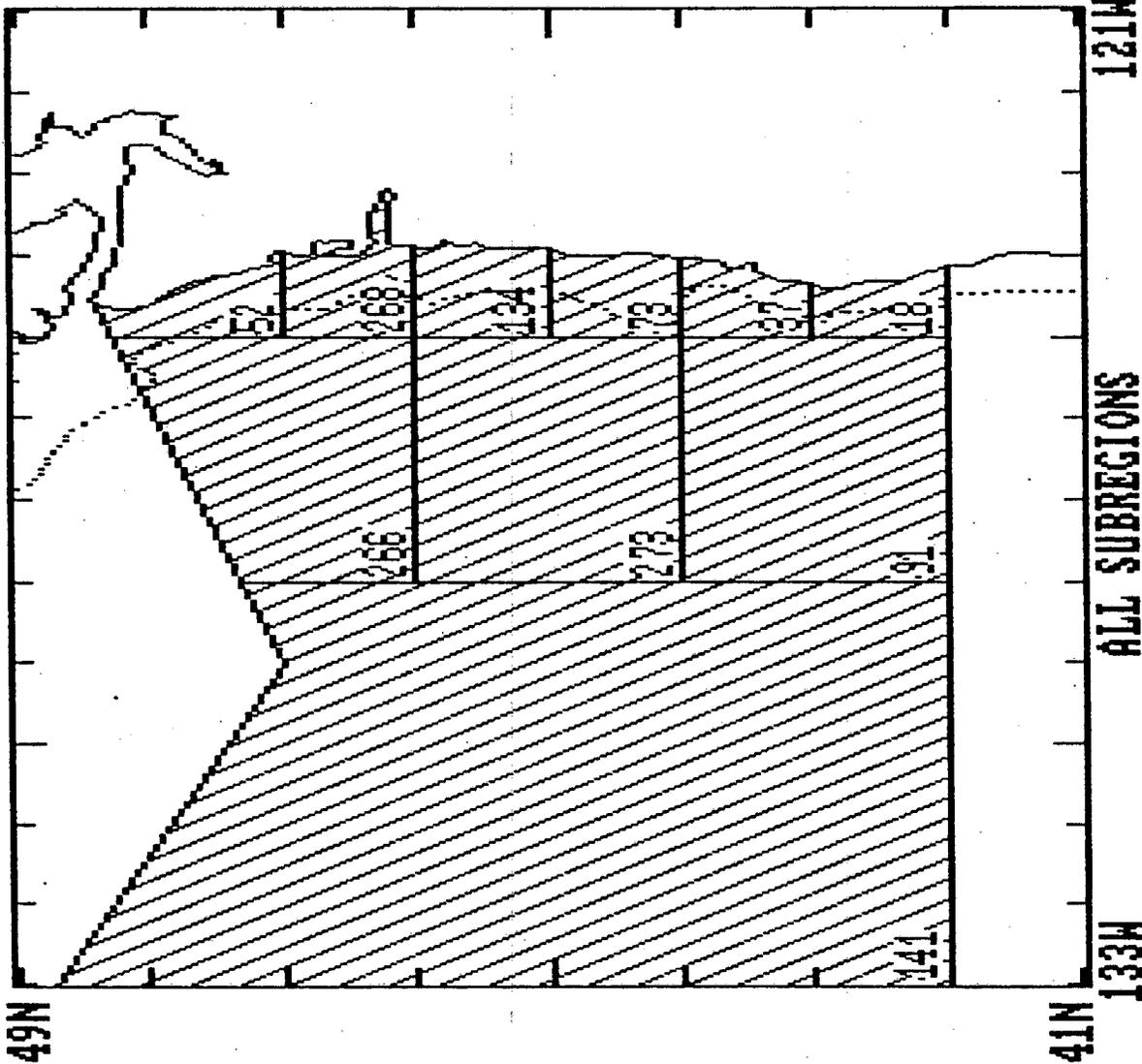
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‡ = MET. STATION

▭ = DRIFTER AREA

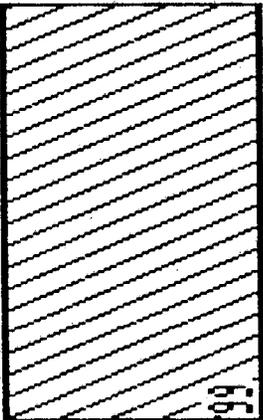
HYDROGRAPHIC CASTS (1963)



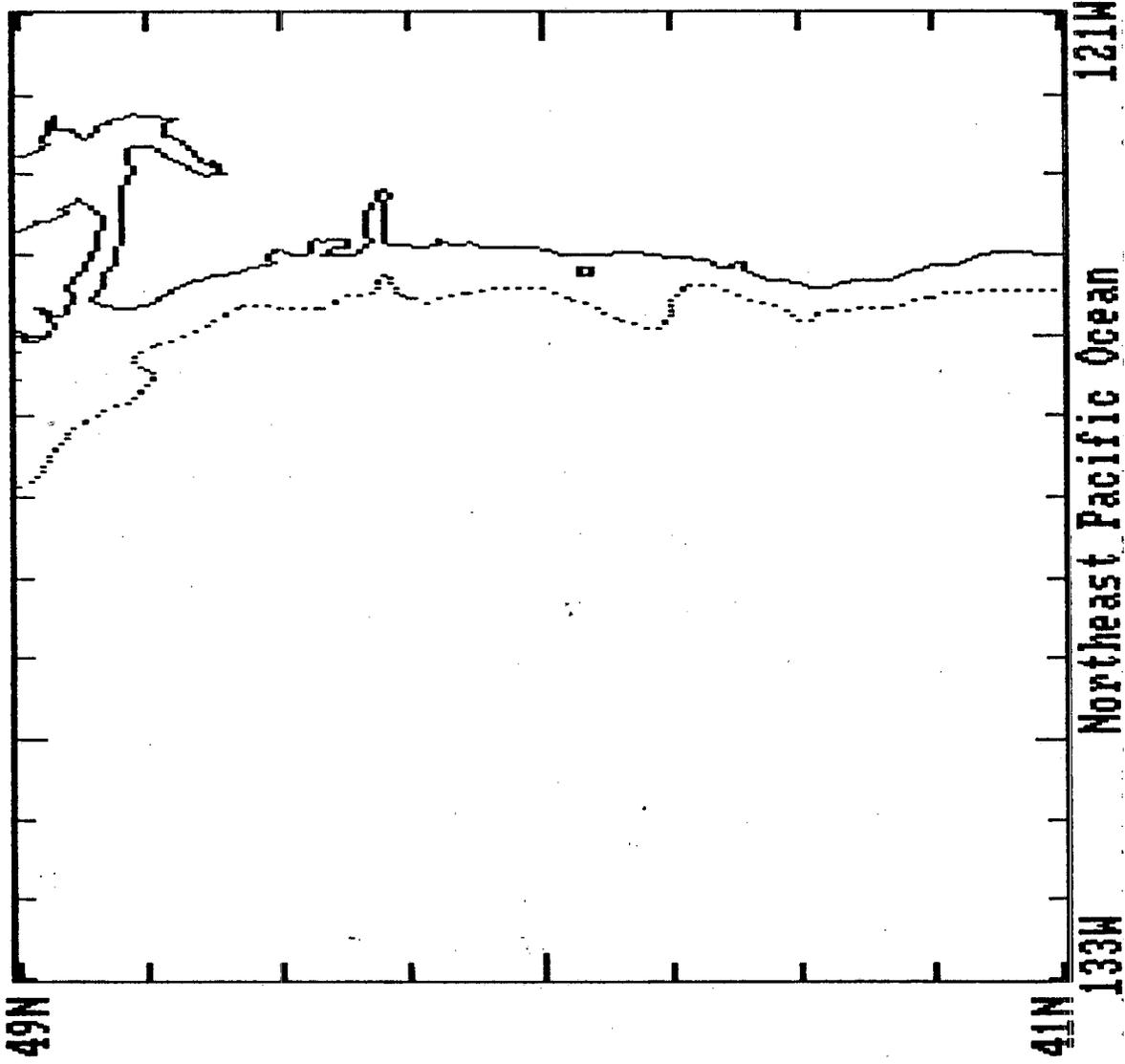
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



DRIFTERS (1964)



**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

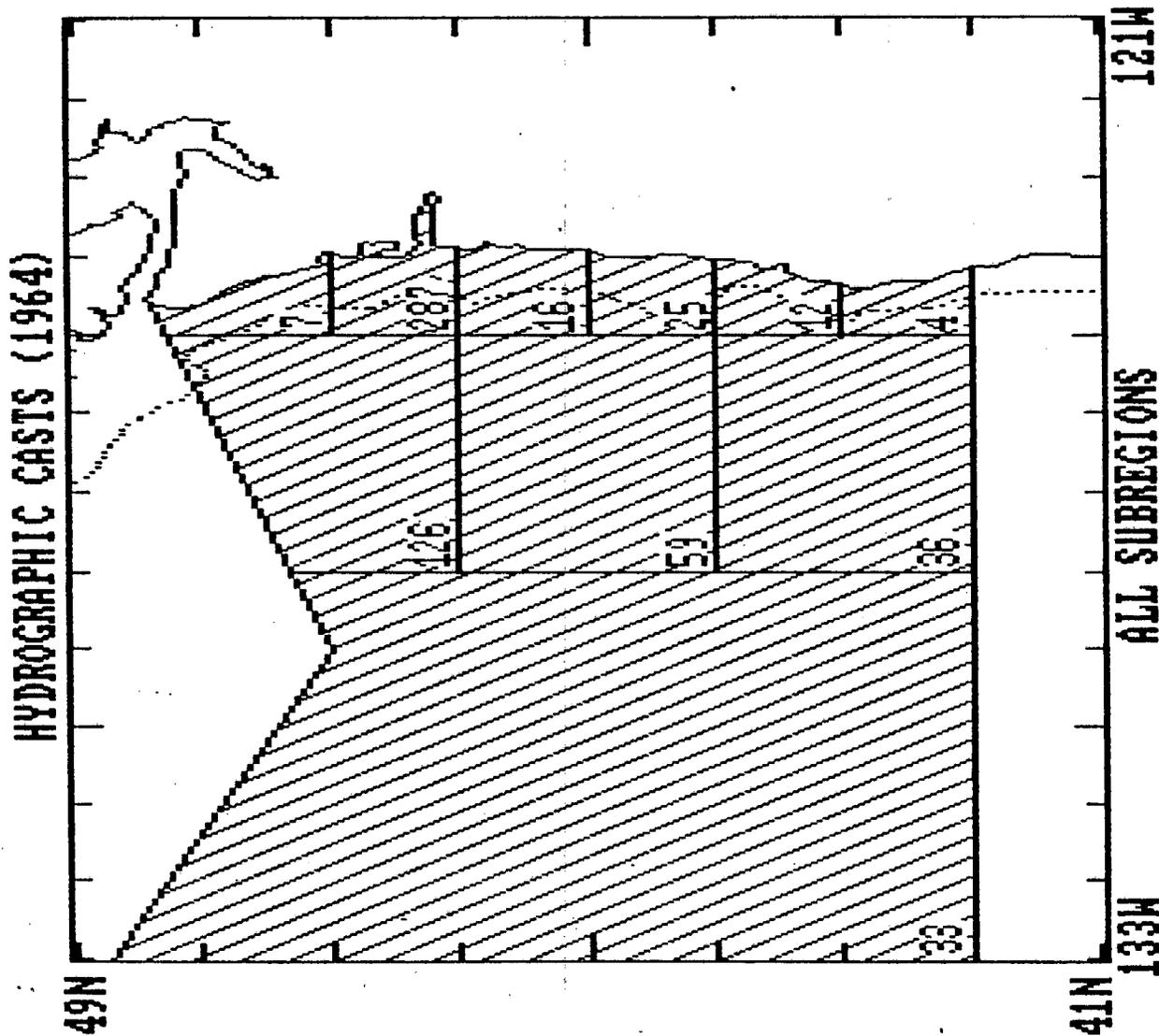
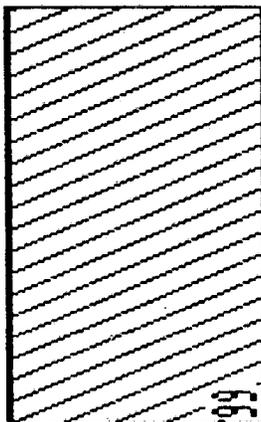
LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- † = MET. STATION
- = DRIFTER AREA

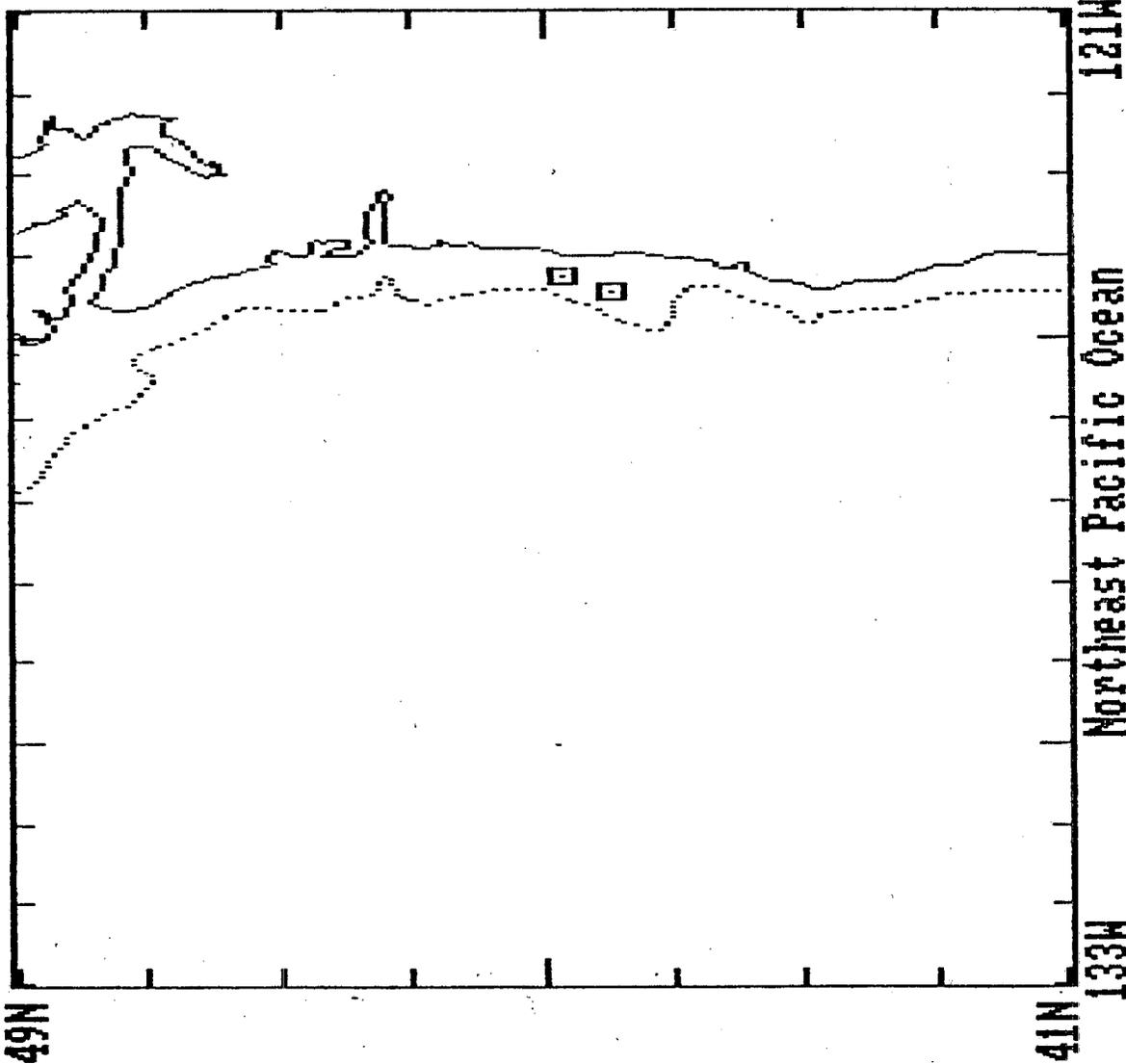
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



MOORED CURRENT METERS (1965)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

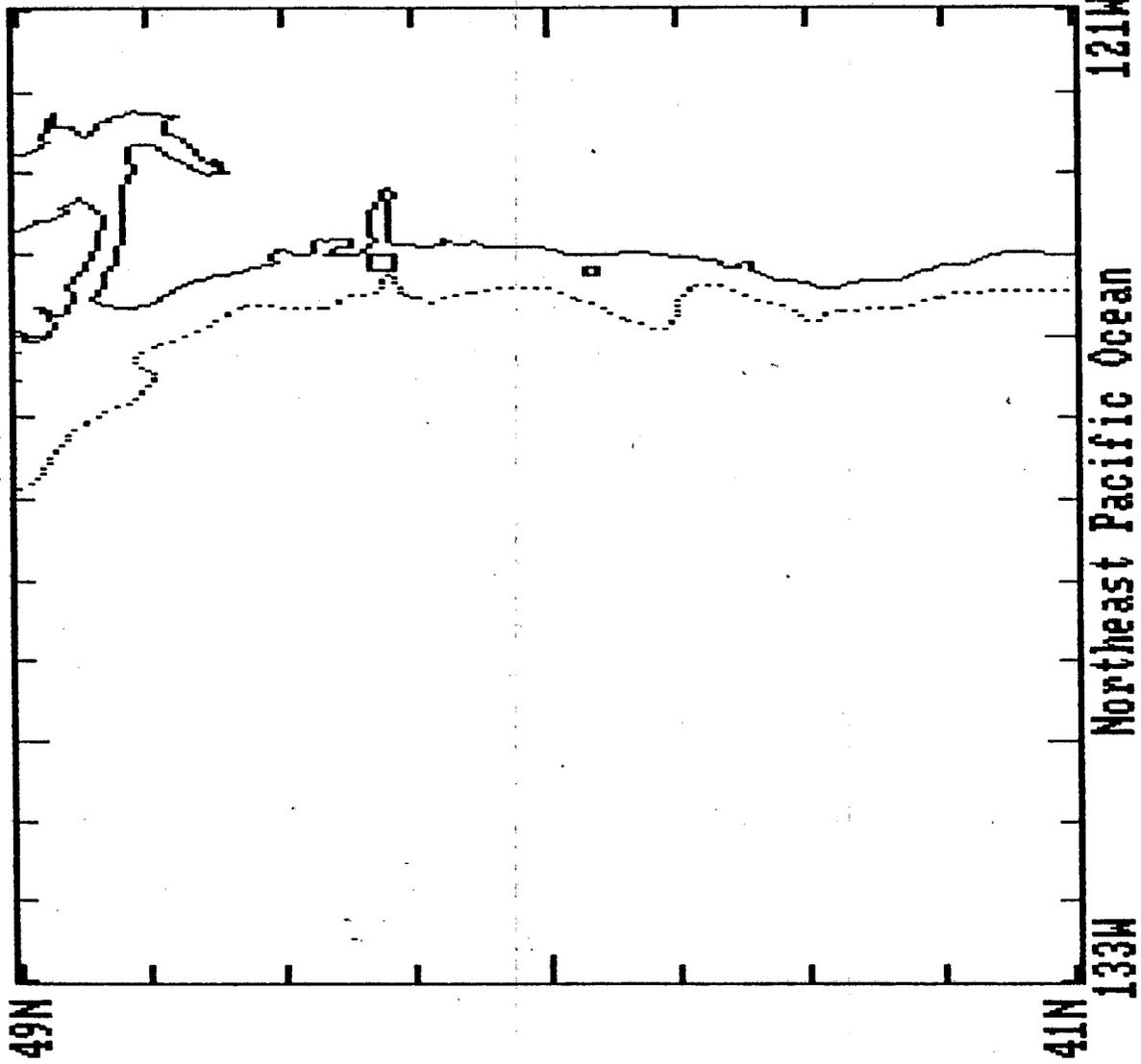
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△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA

DRIFTERS (1965)



**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

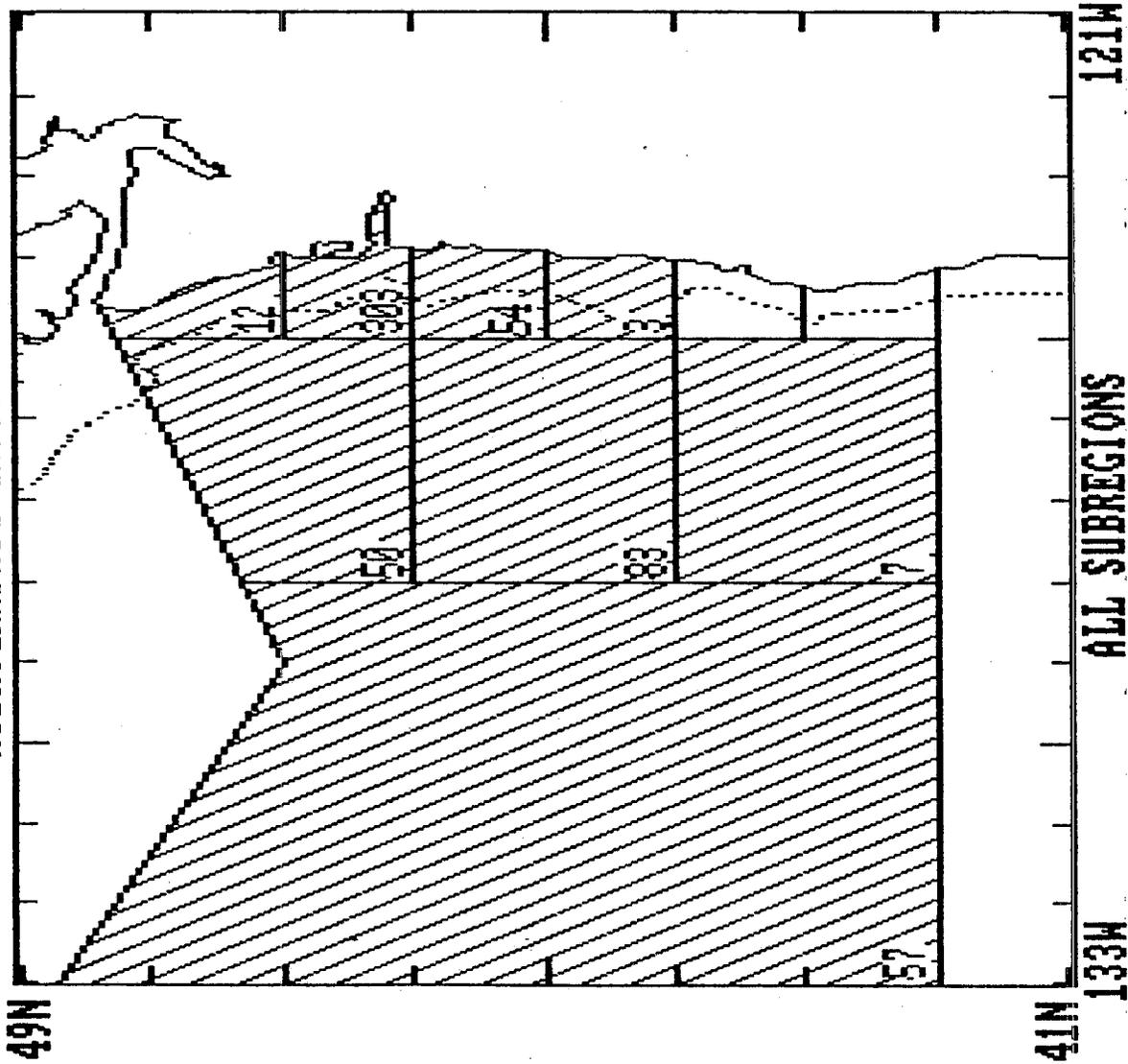
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△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

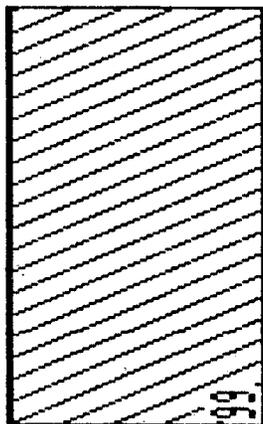
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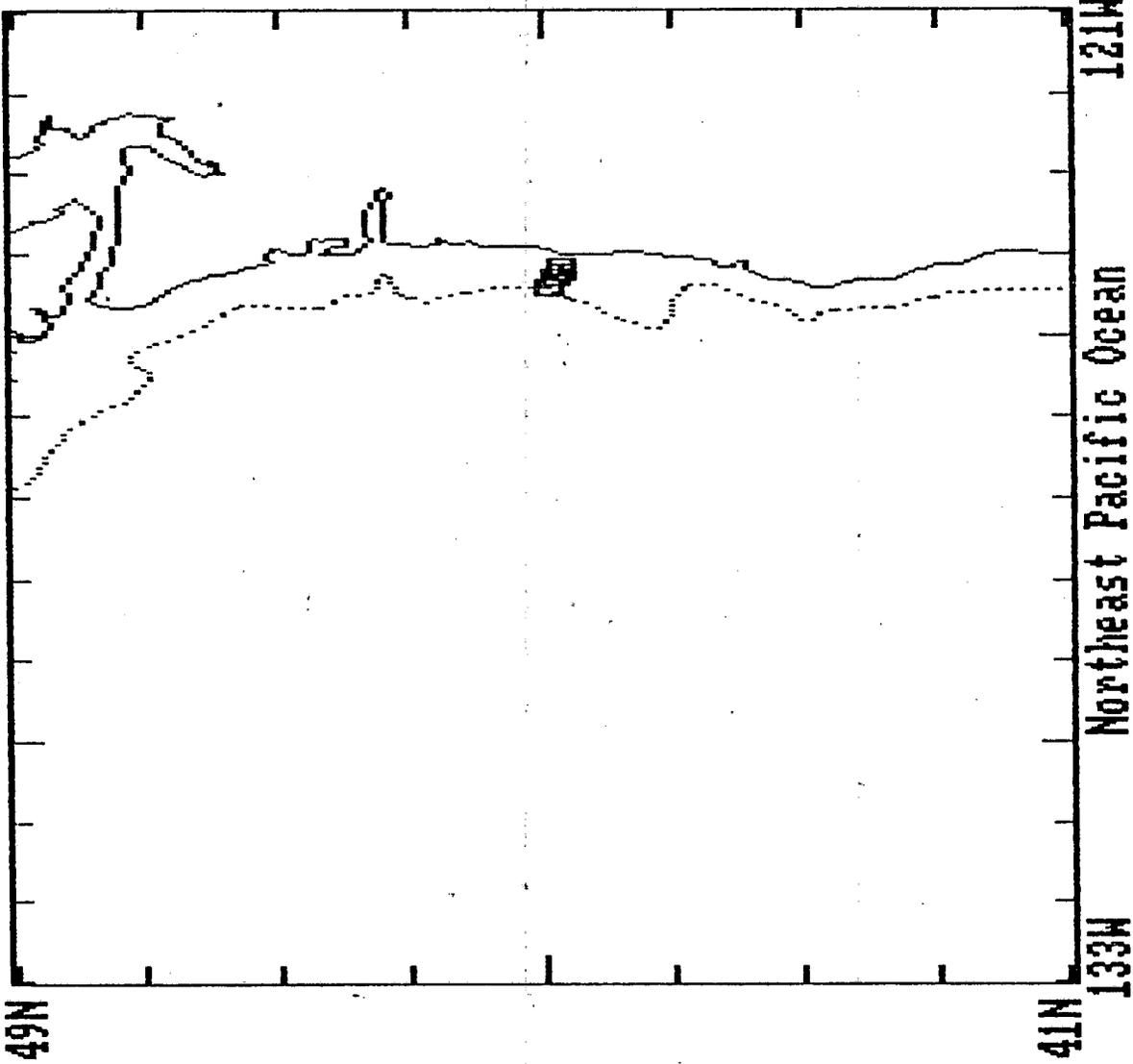
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



MOORED CURRENT METERS (1966)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

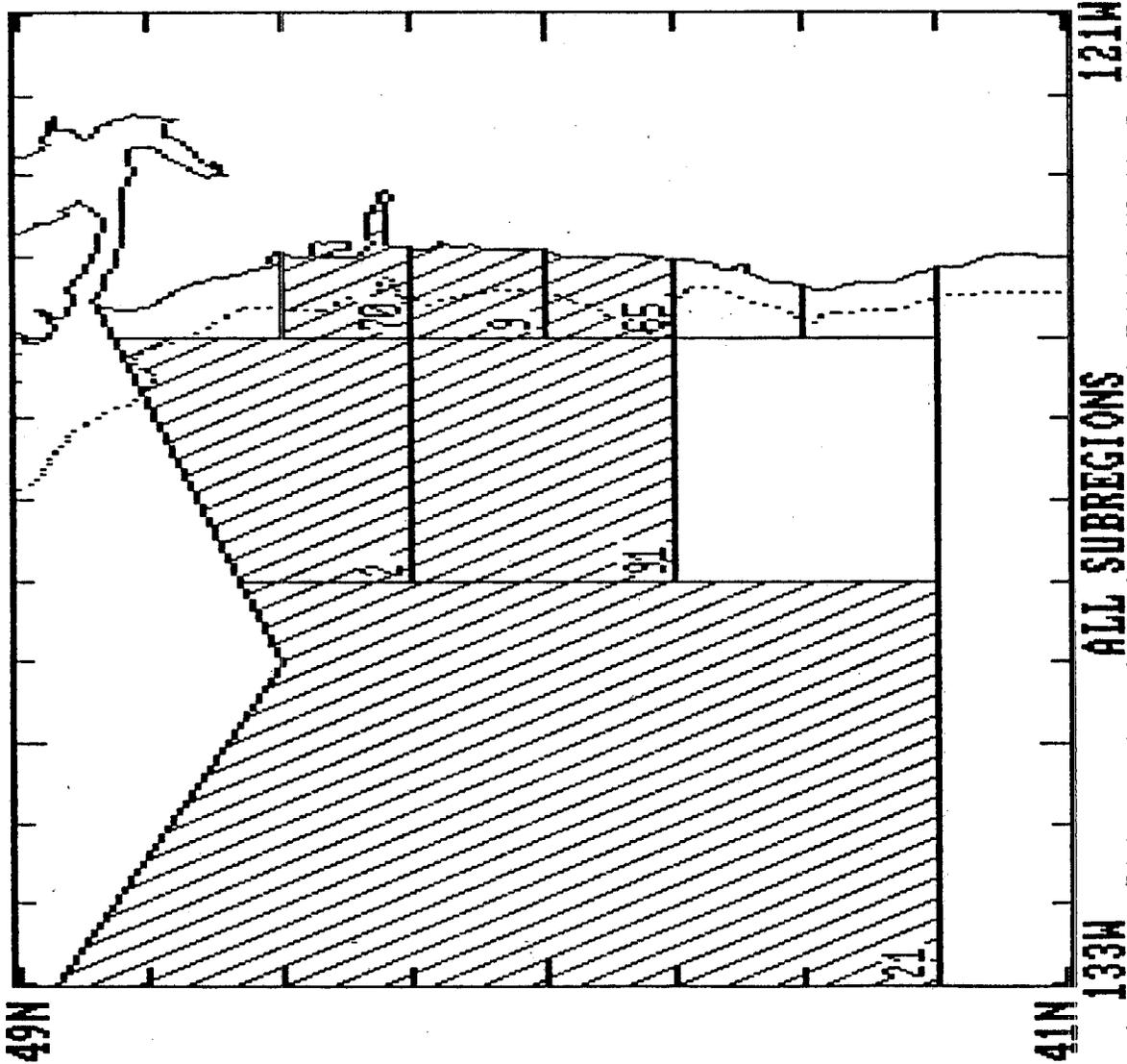
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△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

HYDROGRAPHIC CASTS (1966)



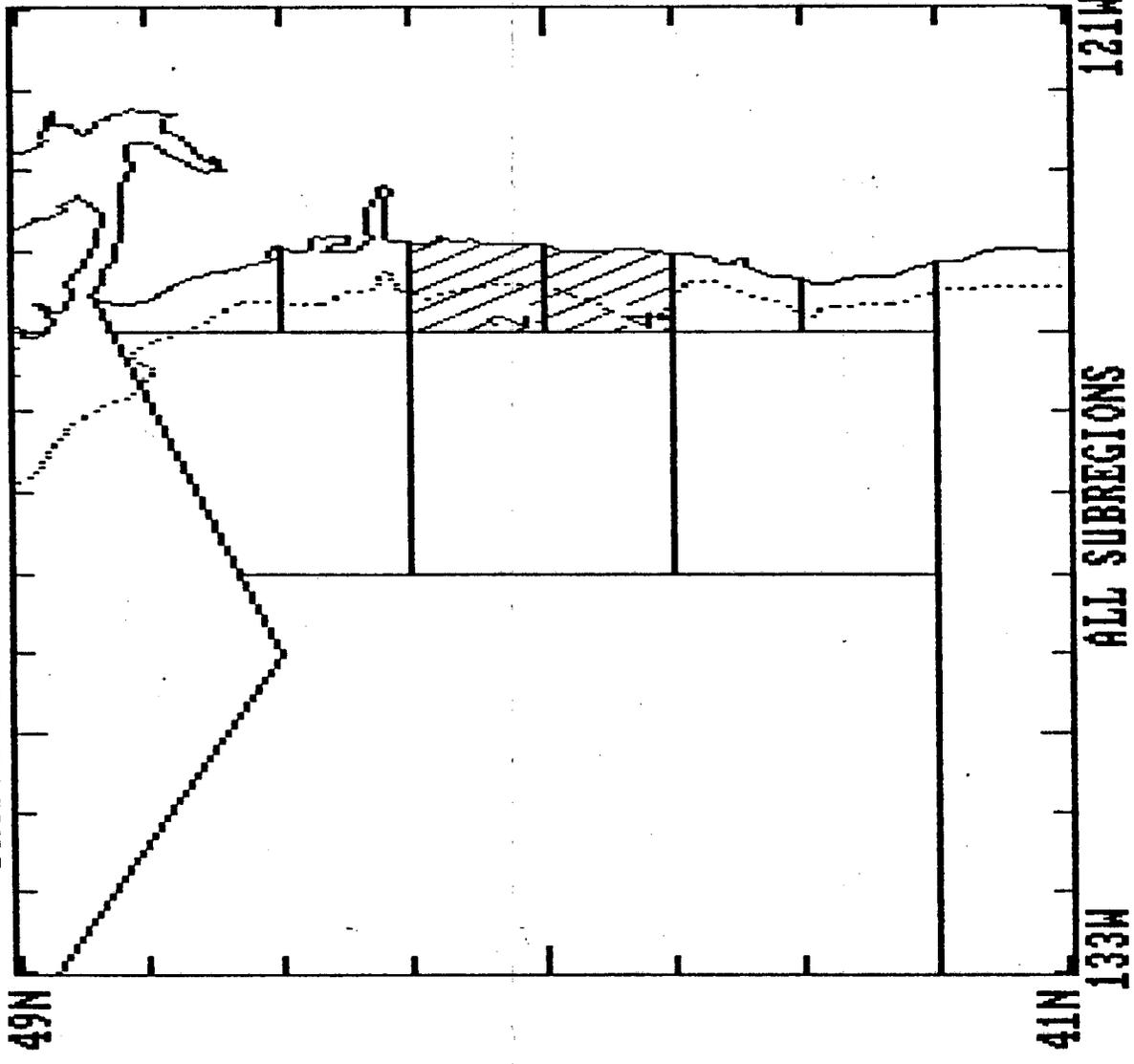
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA

66

PROFILING CURRENT METER CASTS (1966)



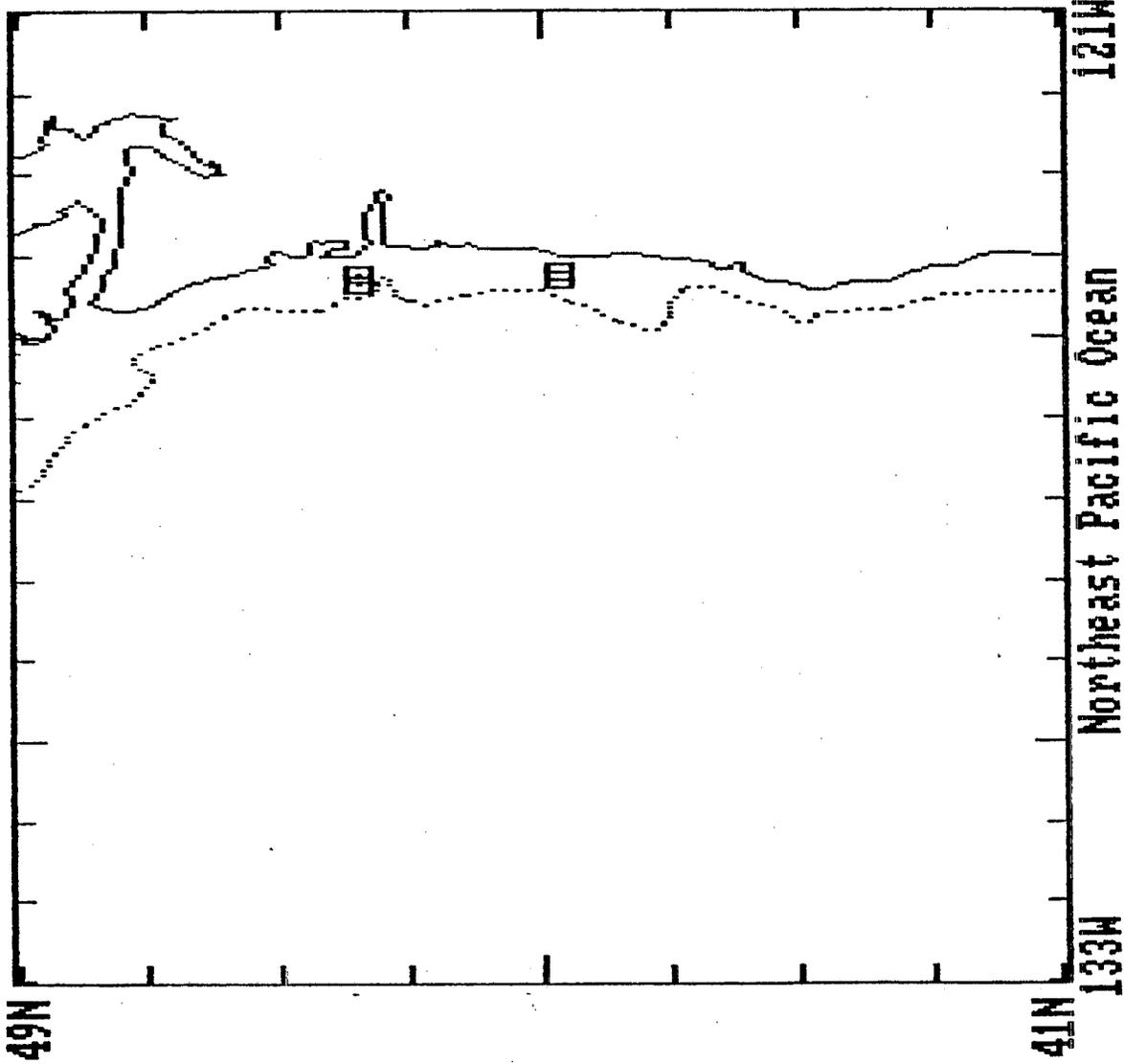
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

PROFILING CURRENT METER
COVERAGE BY AREA

A legend box containing the text 'LEGEND' and 'PROFILING CURRENT METER COVERAGE BY AREA'. To the right of the text is a rectangular box filled with diagonal hatching, with the number '99' written in the bottom right corner.

MOORED CURRENT METERS (1967)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

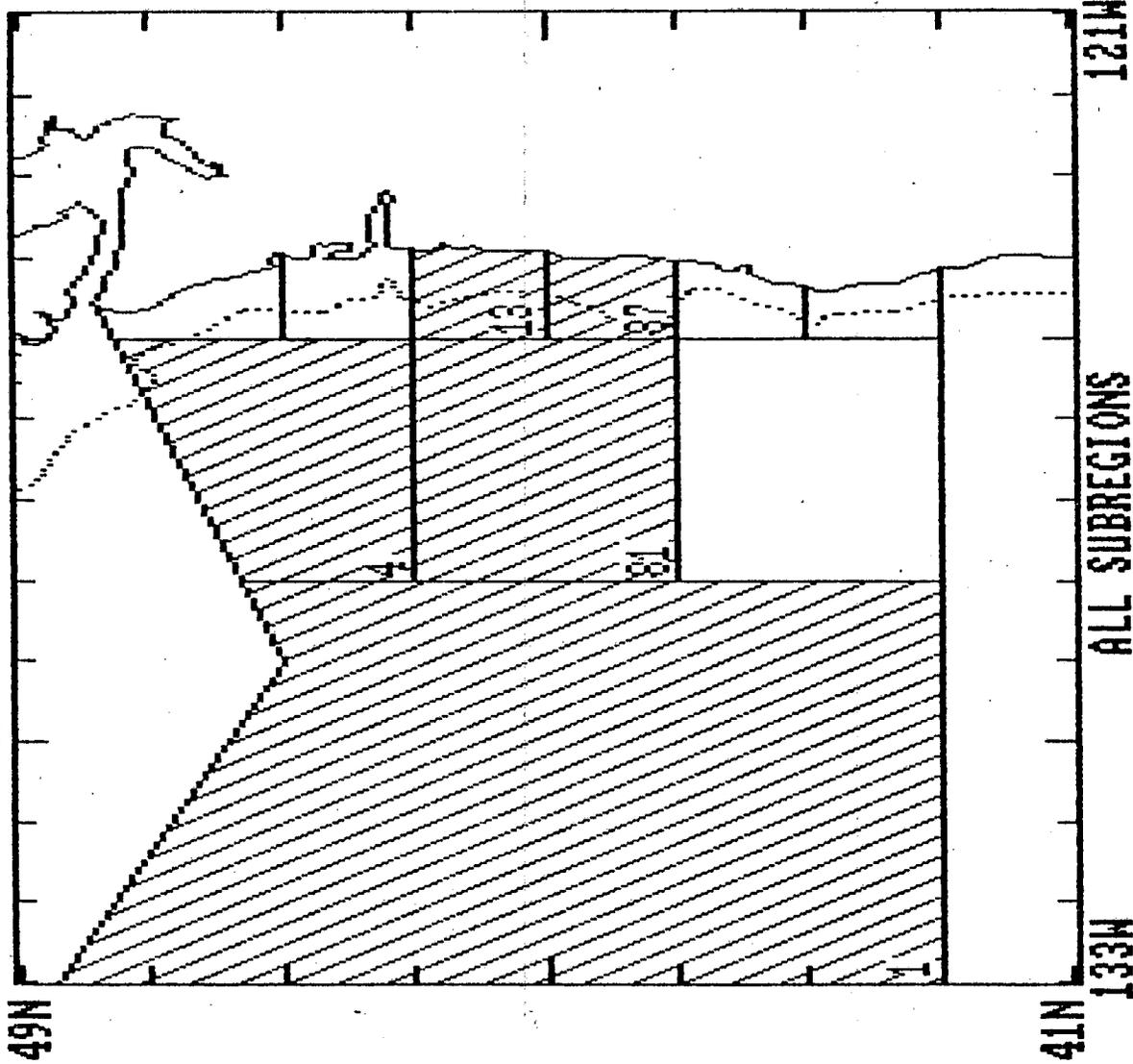
□ = CURRENT METER

△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA

HYDROGRAPHIC CASTS (1967)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

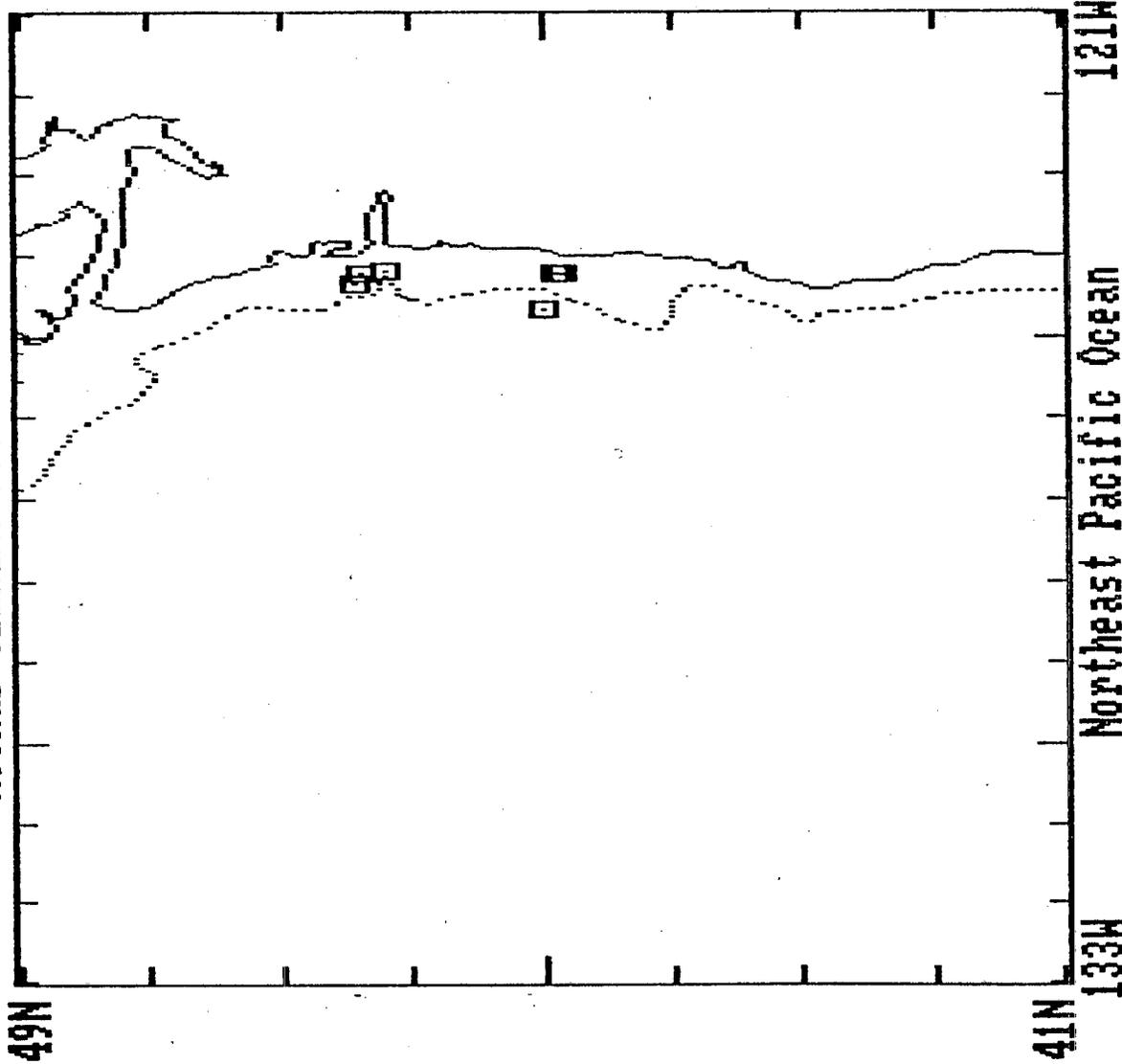
LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA

99

< NUM LOCK MUST BE ON >
^PRT-SCAN=PRINT Q=QUIT
NUMKEYS=SUBREGION SELECT

MOORED CURRENT METERS (1968)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

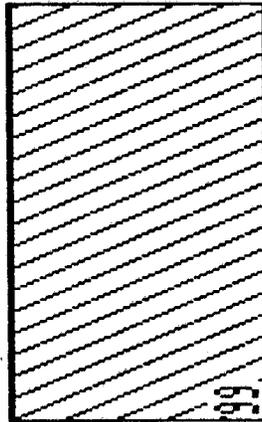
† = MET. STATION

□ = DRIFTER AREA

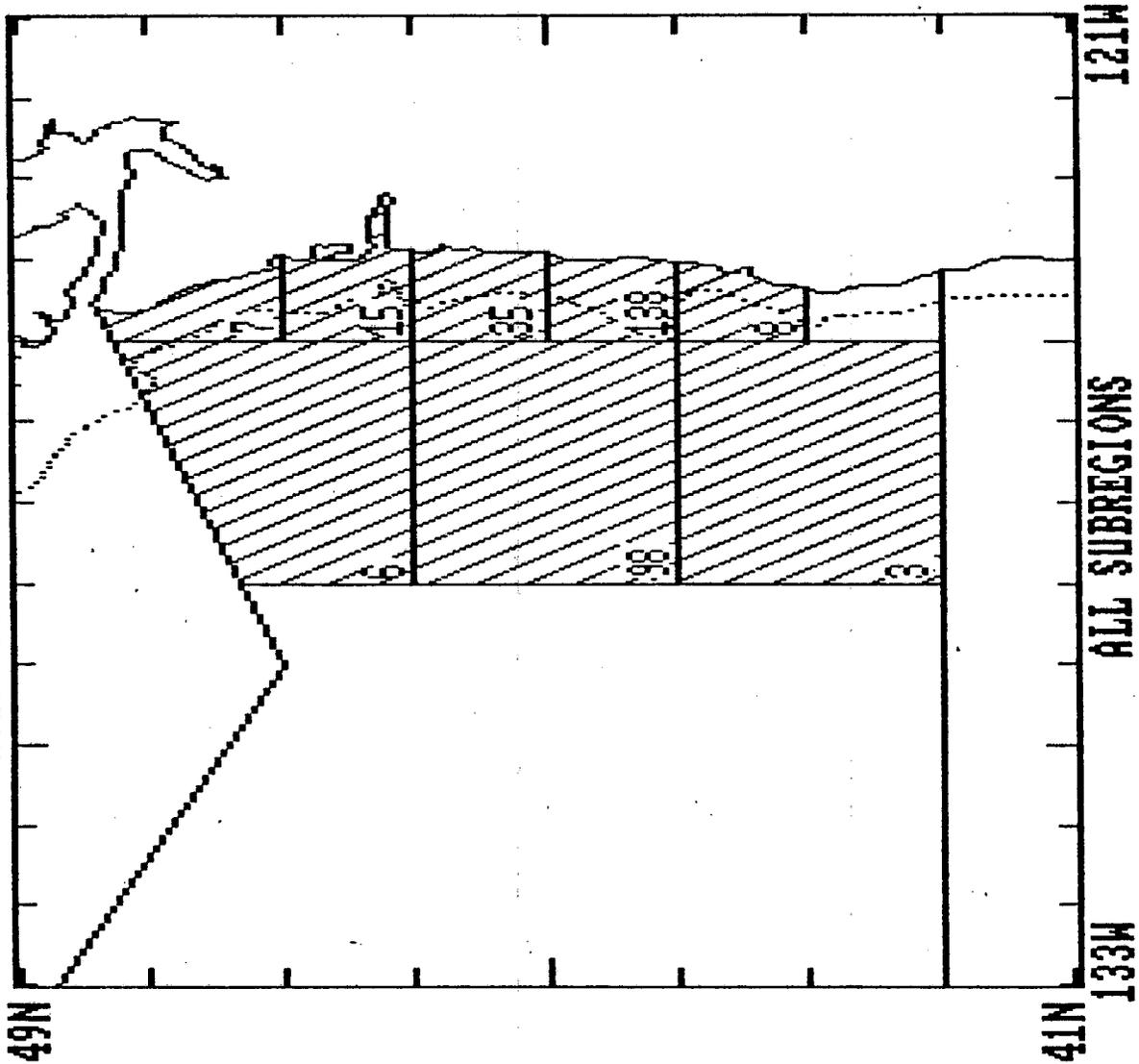
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

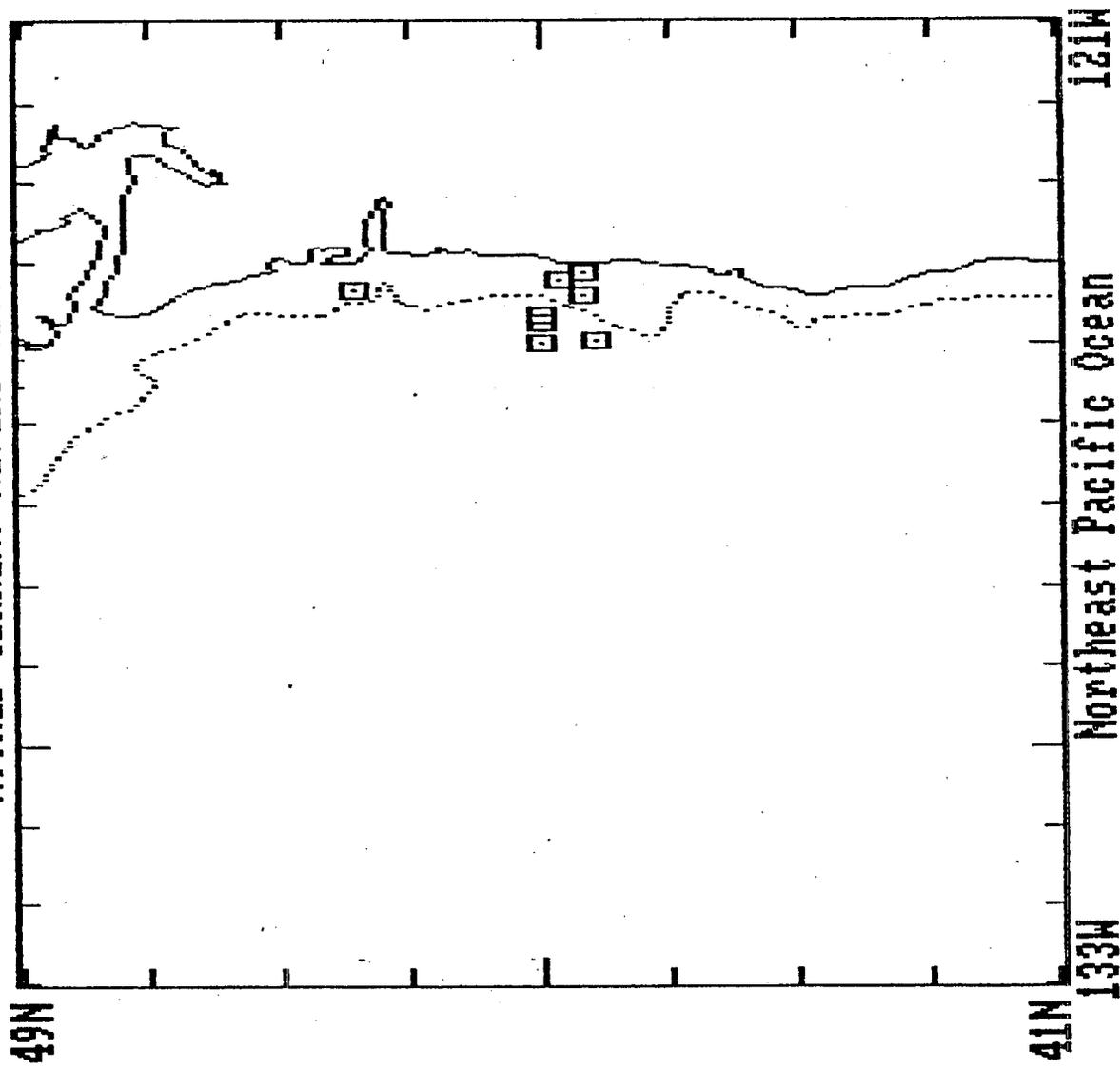
**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



HYDROGRAPHIC CASTS (1968)



MOORED CURRENT METERS (1969)

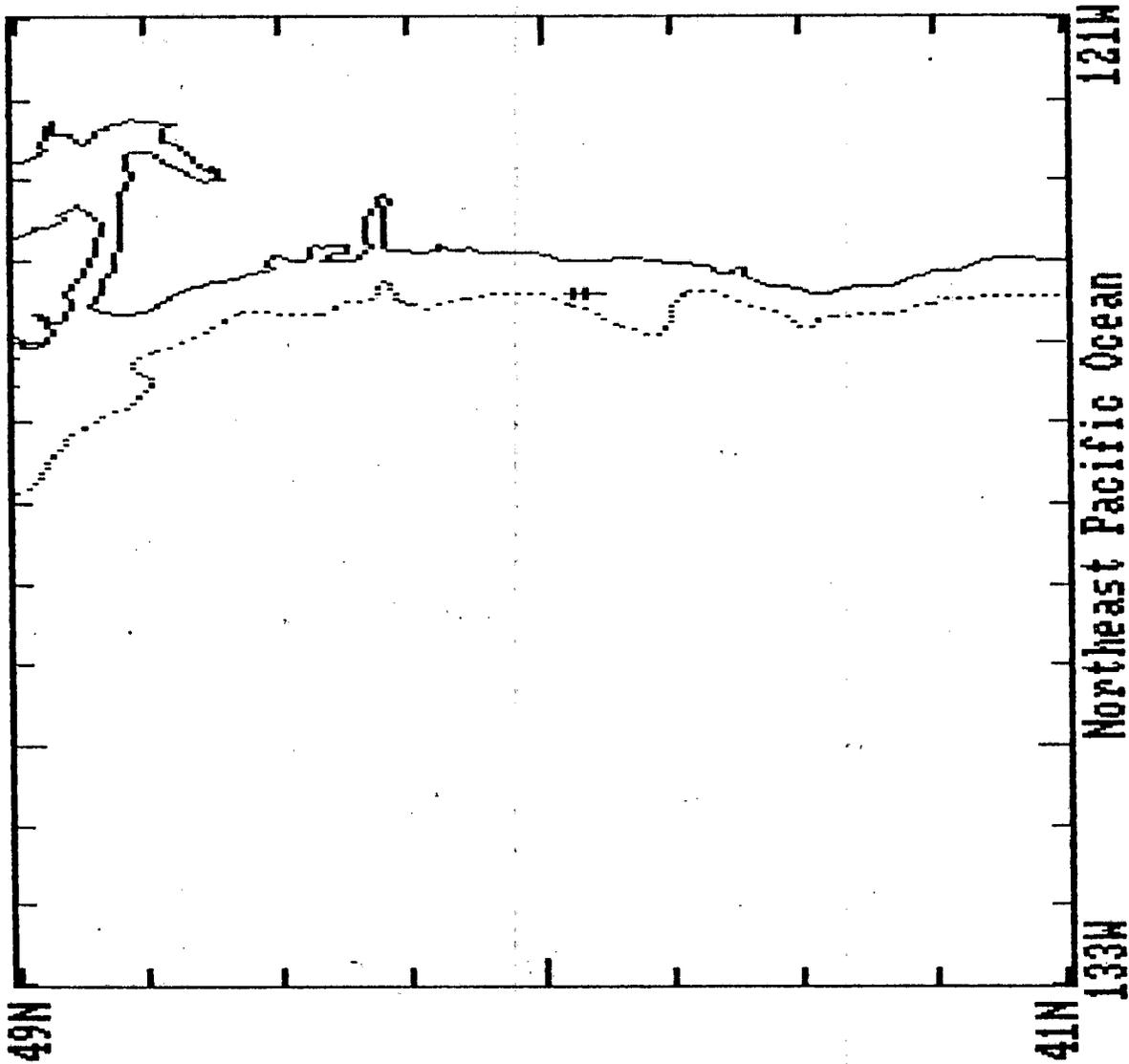


MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- † = MET. STATION
- = DRIFTER AREA

MET. STATIONS (1969)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

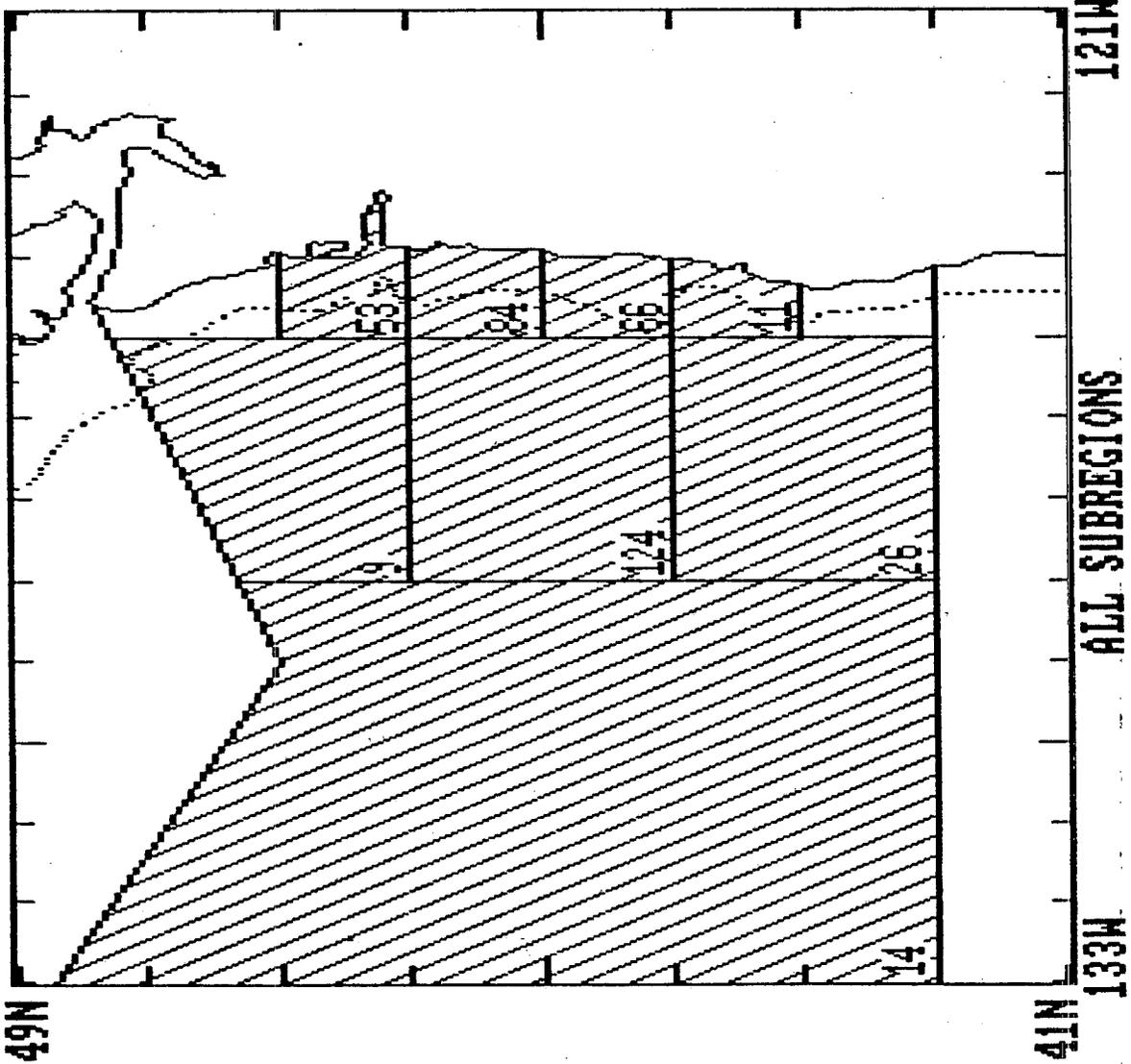
□ = CURRENT METER

△ = SEA LEVEL SENSOR

+ = MET. STATION

□ = DRIFTER AREA

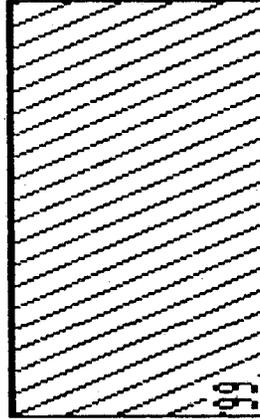
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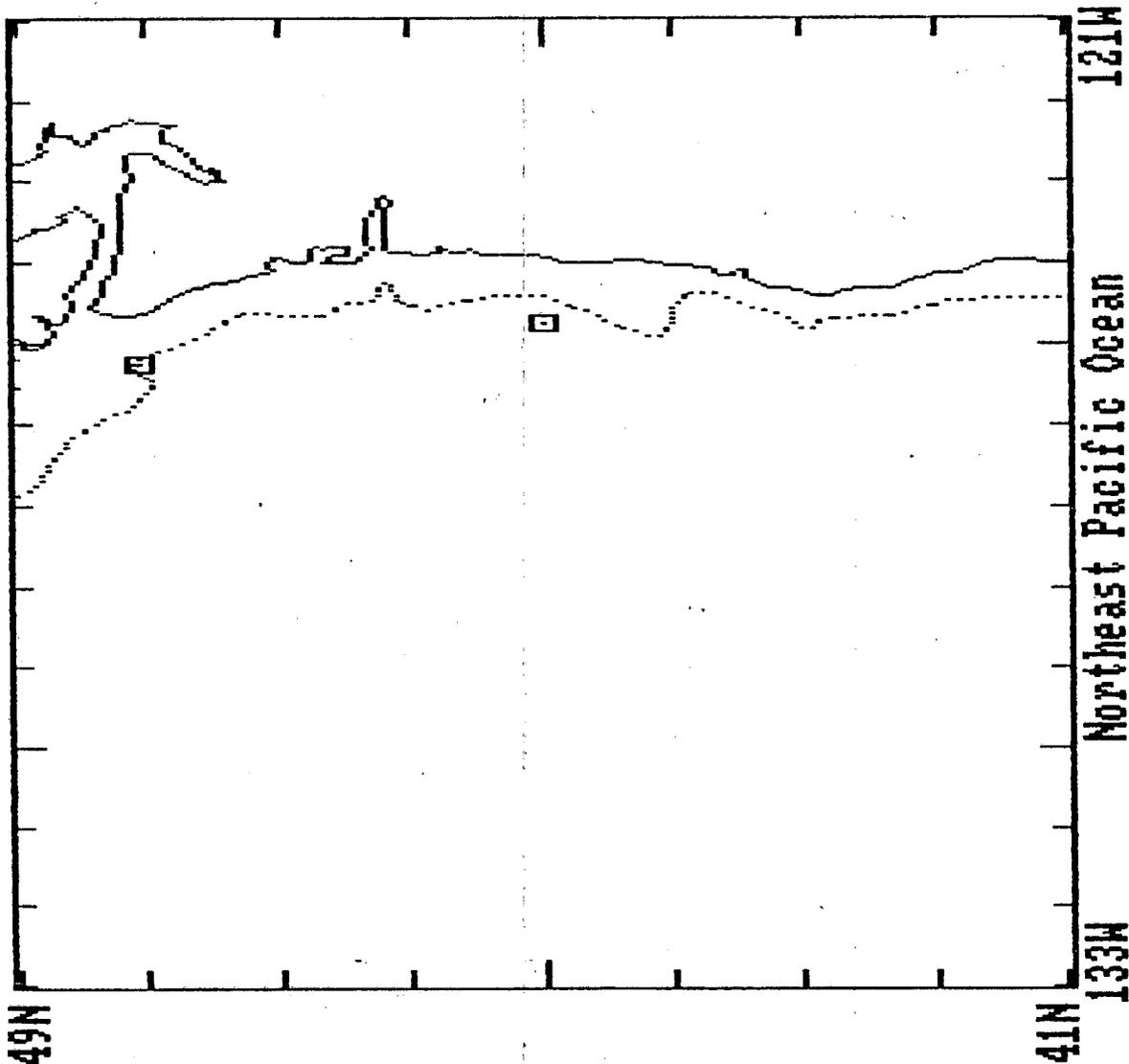
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



MOORED CURRENT METERS (1970)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

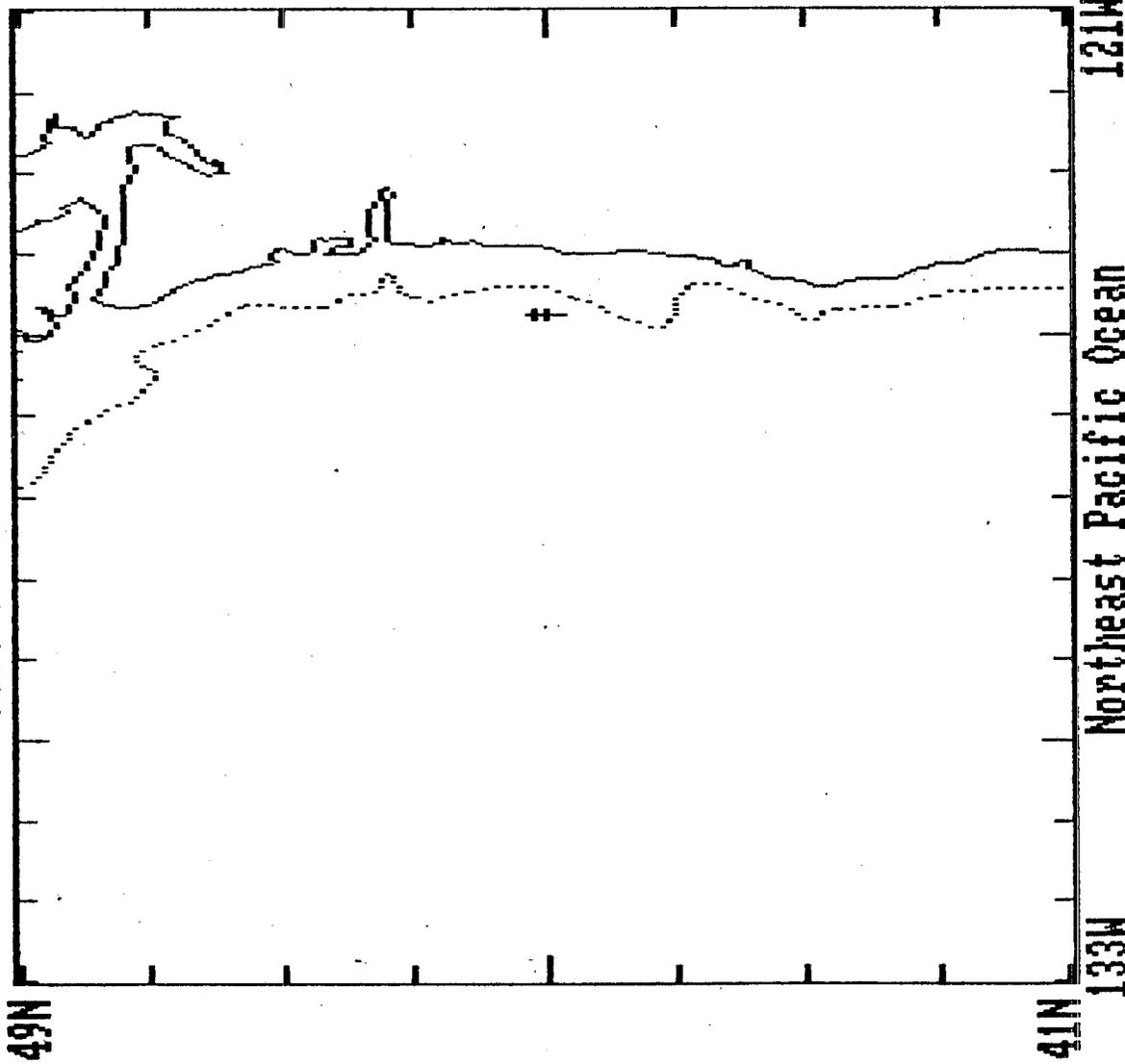
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

▭ = DRIFTER AREA

MET. STATIONS (1970)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

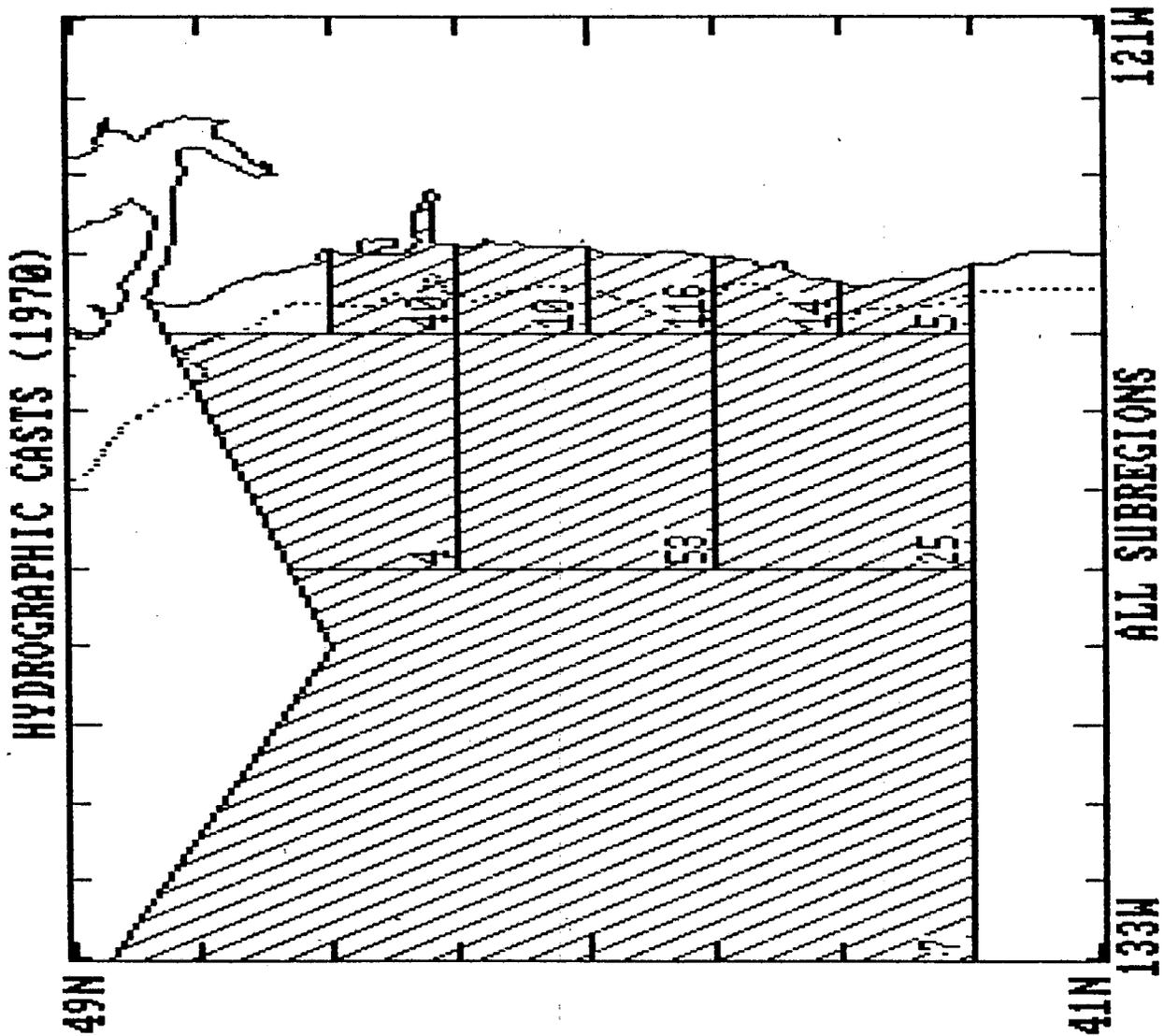
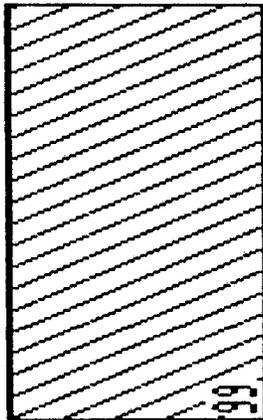
= MET. STATION

□ = DRIFTER AREA

**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

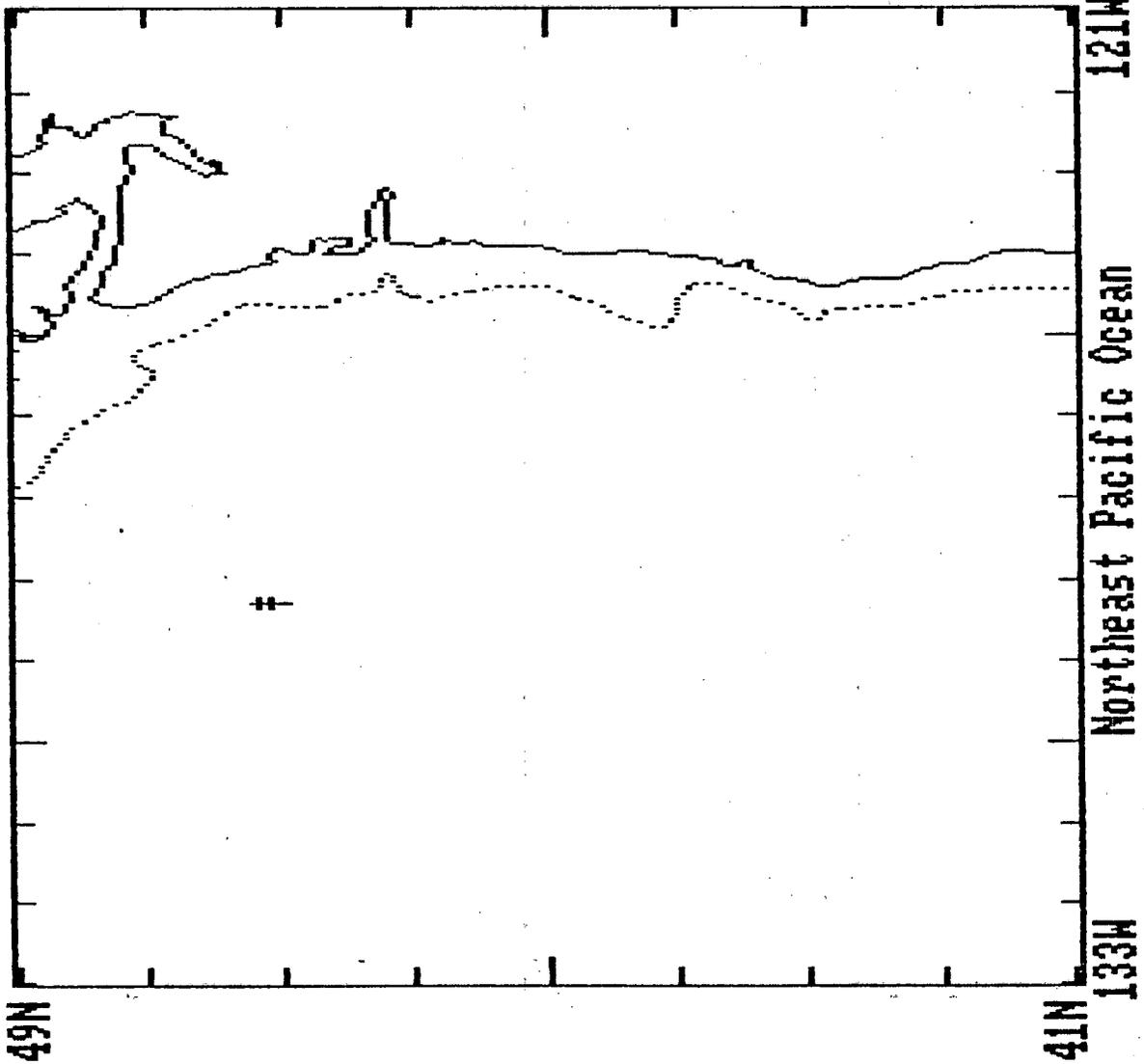
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△ = SEA LEVEL SENSOR

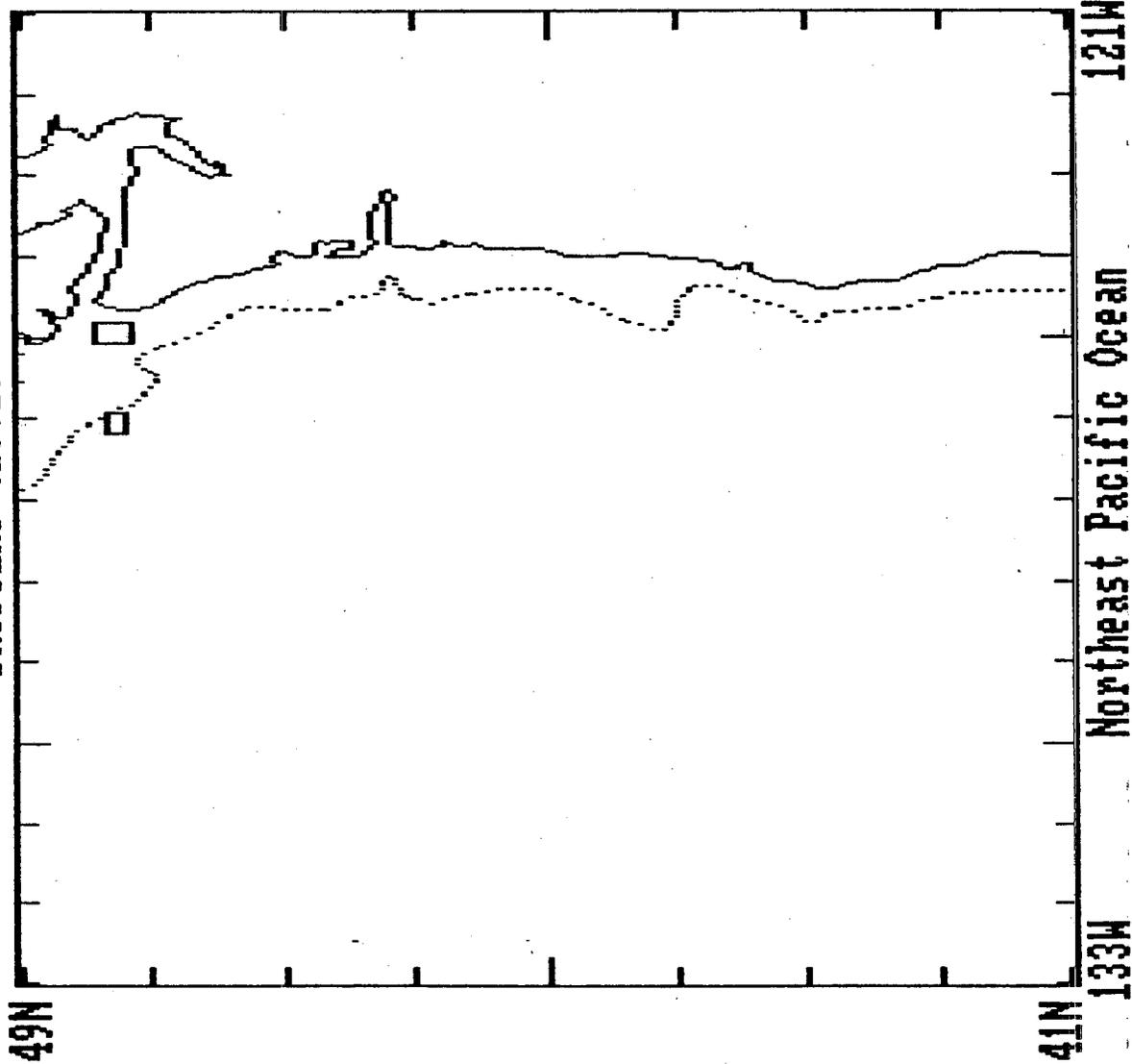
‡ = MET. STATION

□ = DRIFTER AREA

MET. STATIONS (1971)



DRIFTERS (1971)



**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

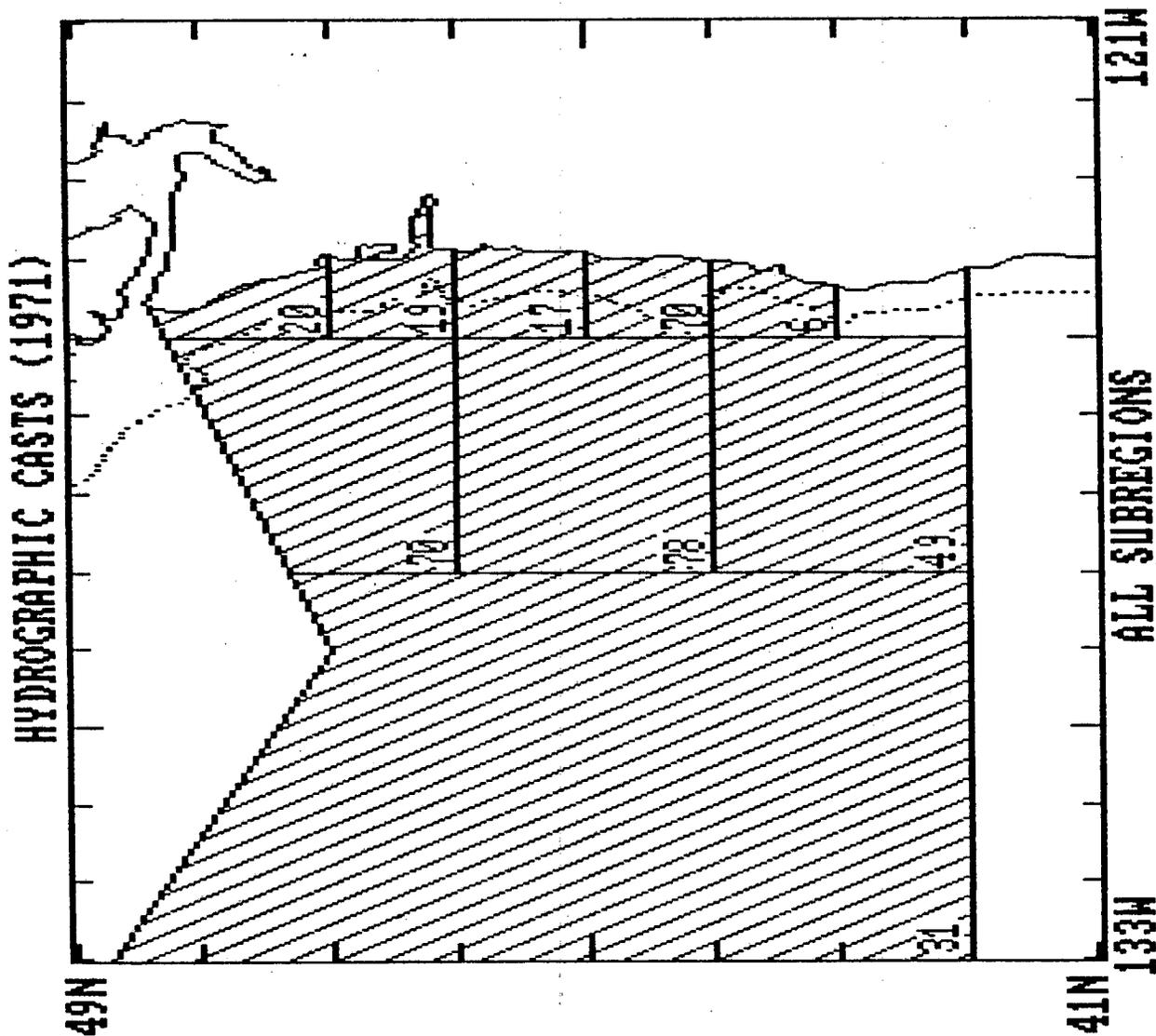
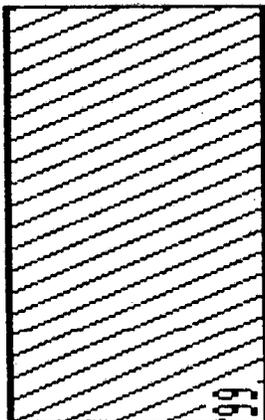
† = MET. STATION

□ = DRIFTER AREA

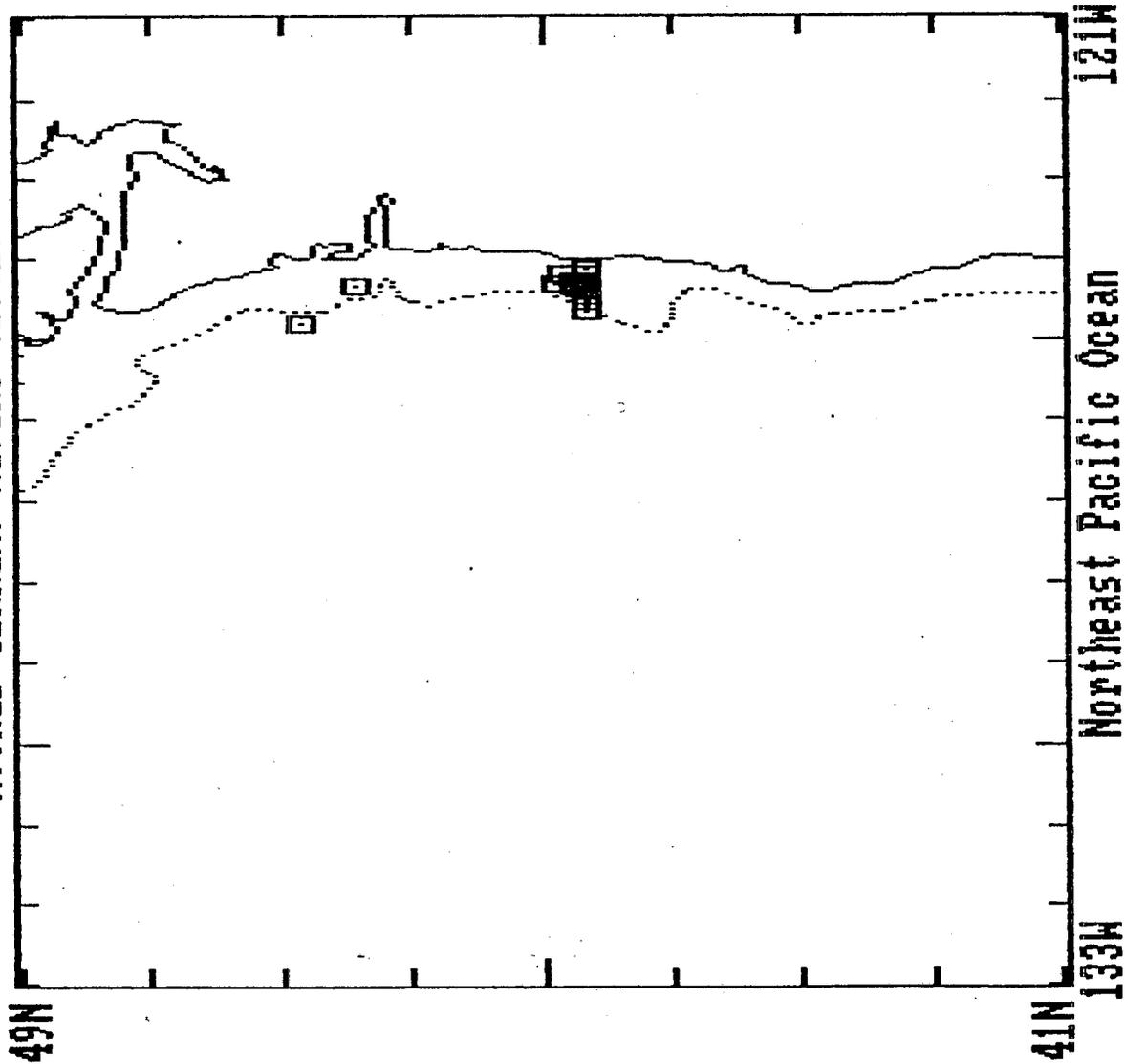
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



MOORED CURRENT METERS (1972)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- ‡ = MET. STATION
- = DRIFTER AREA

MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

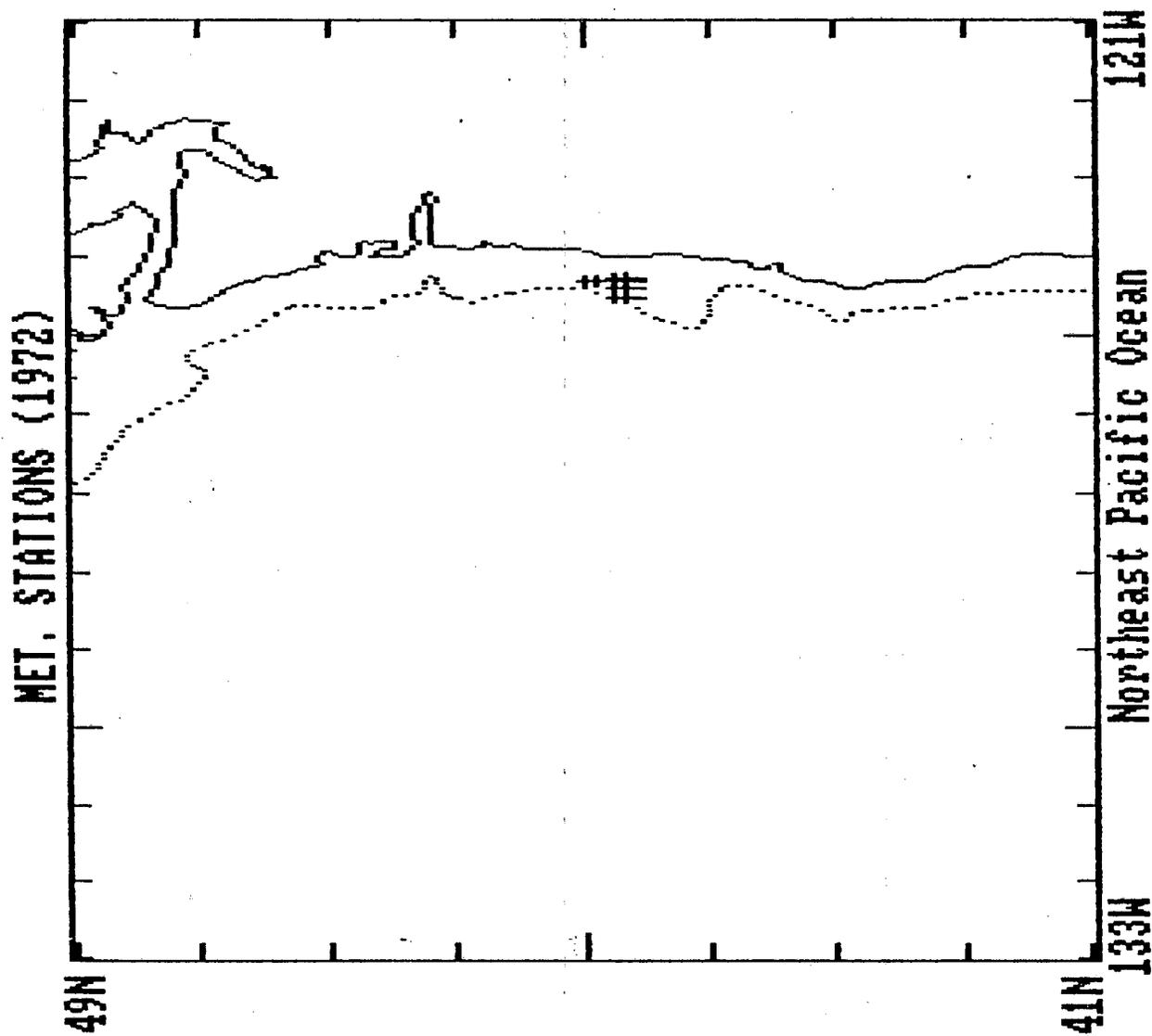
LEGEND

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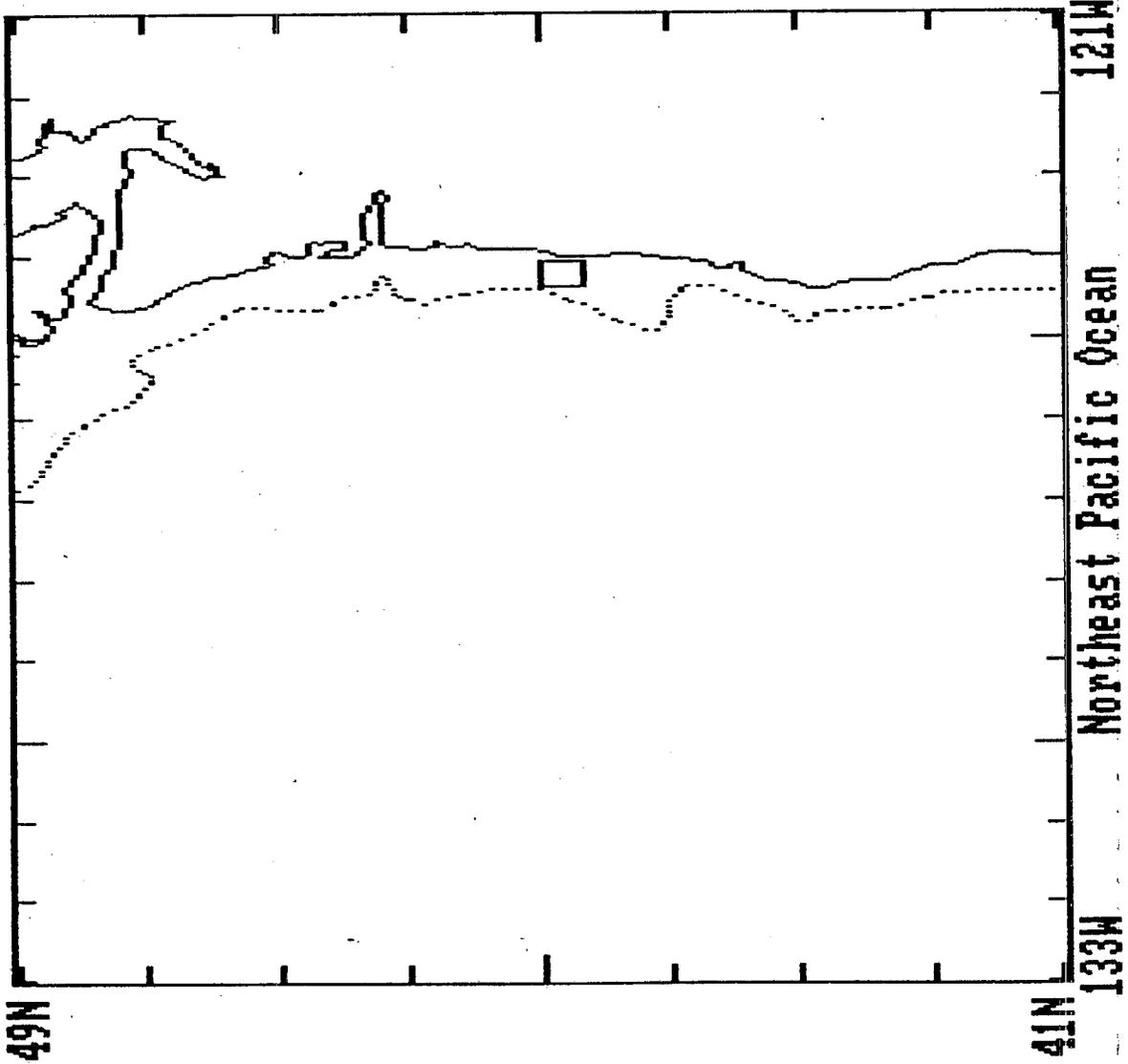
△ = SEA LEVEL SENSOR

= MET. STATION

□ = DRIFTER AREA



DRIFTERS (1972)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

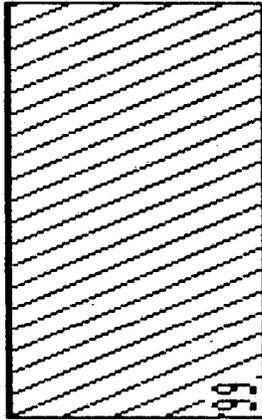
LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- ‡ = MET. STATION
- = DRIFTER AREA

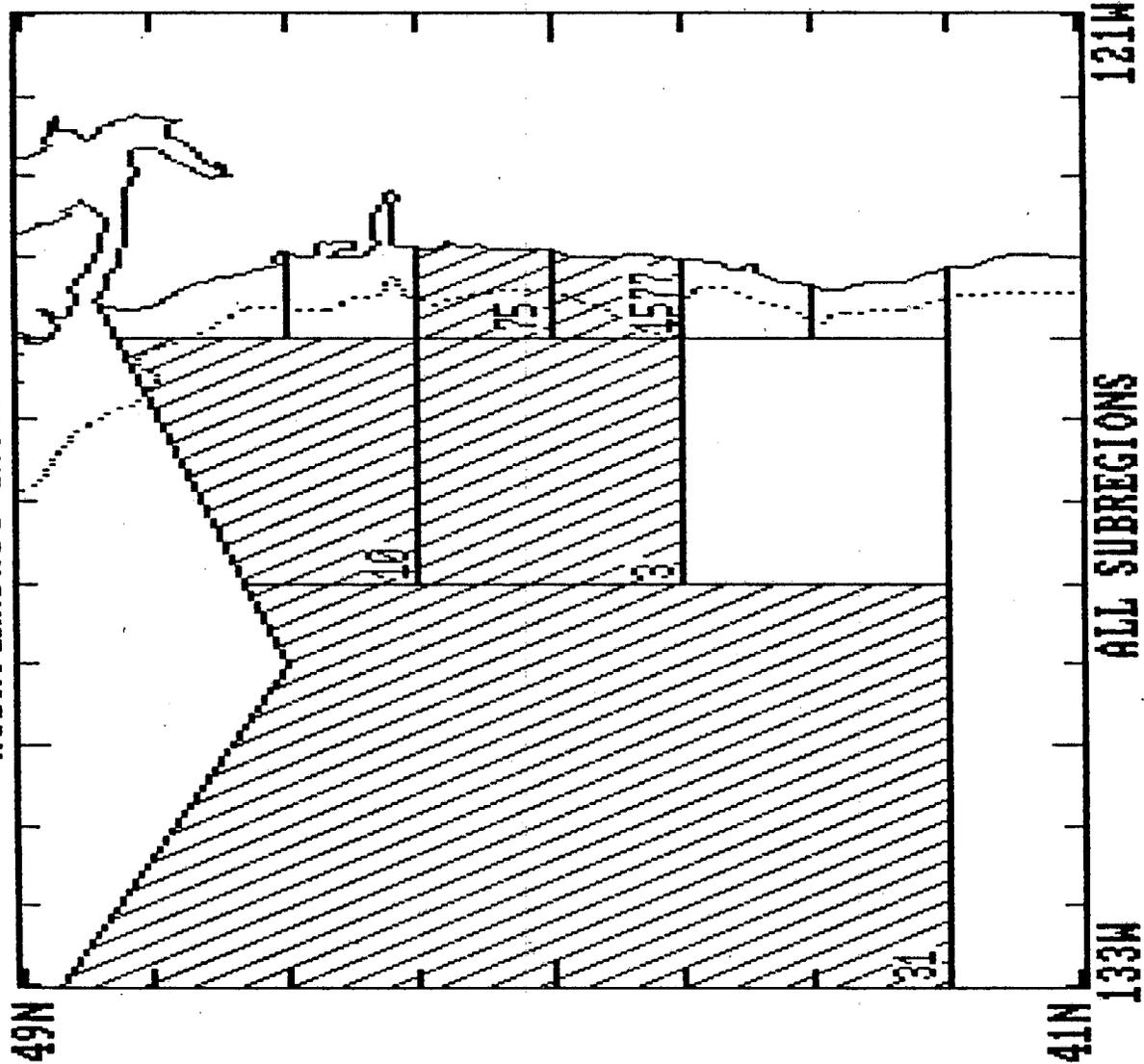
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

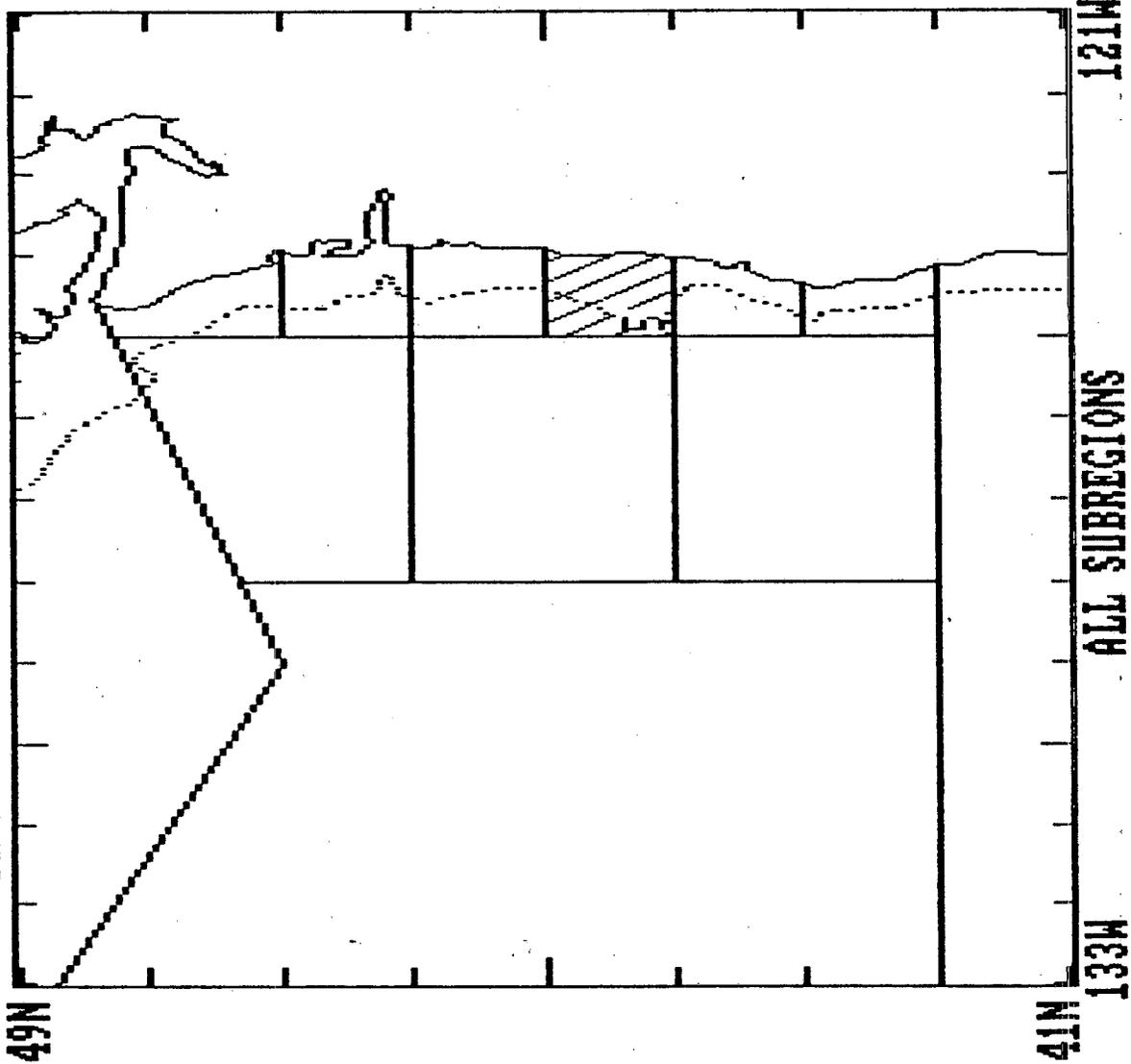
**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



HYDROGRAPHIC CASTS (1972)



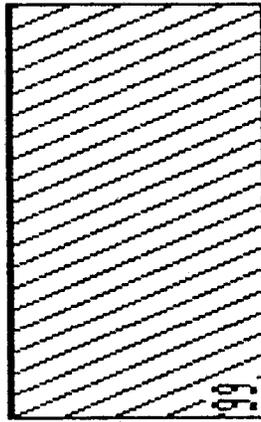
PROFILING CURRENT METER CASTS (1972)



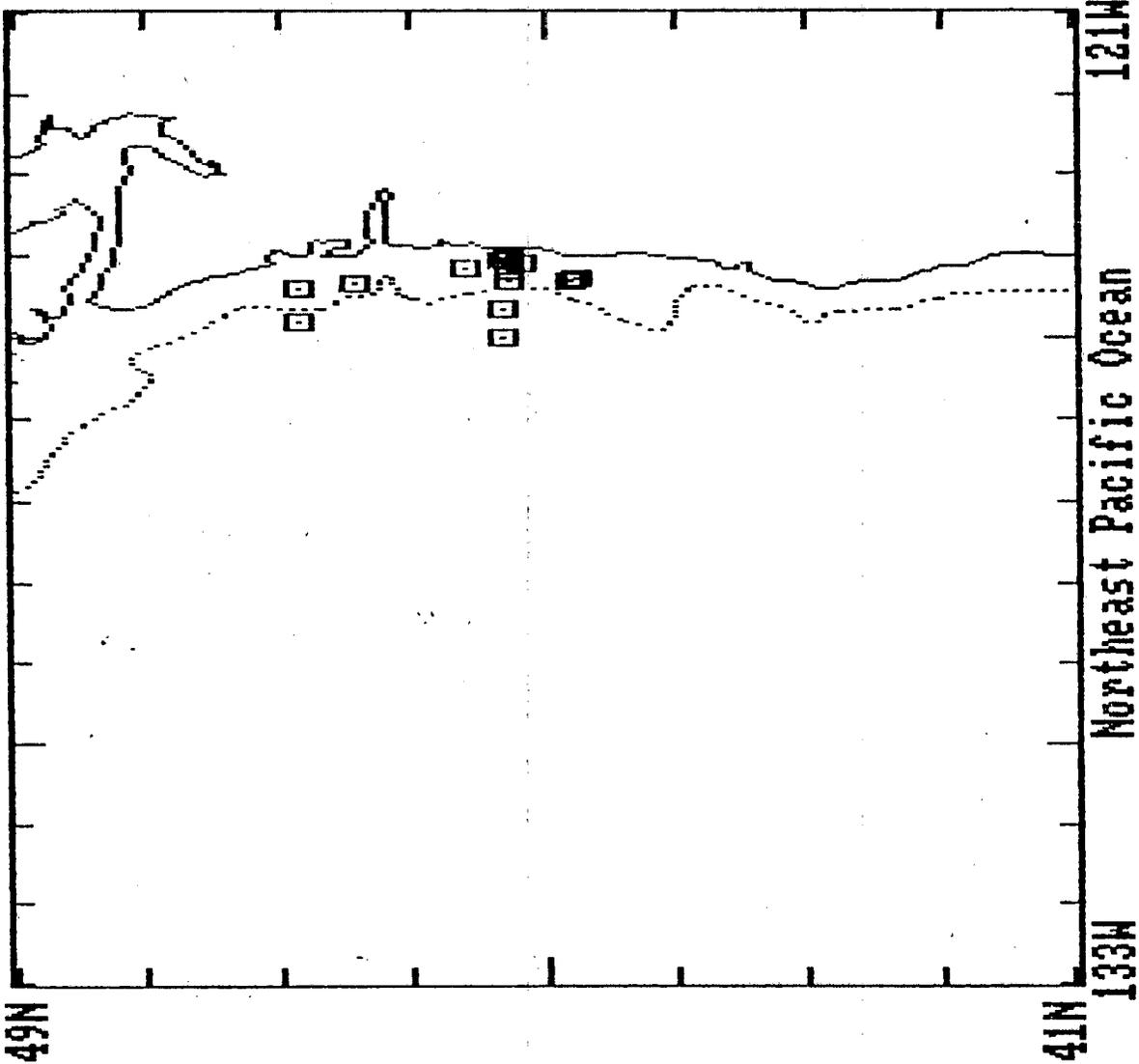
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

PROFILING CURRENT METER
COVERAGE BY AREA



MOORED CURRENT METERS (1973)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

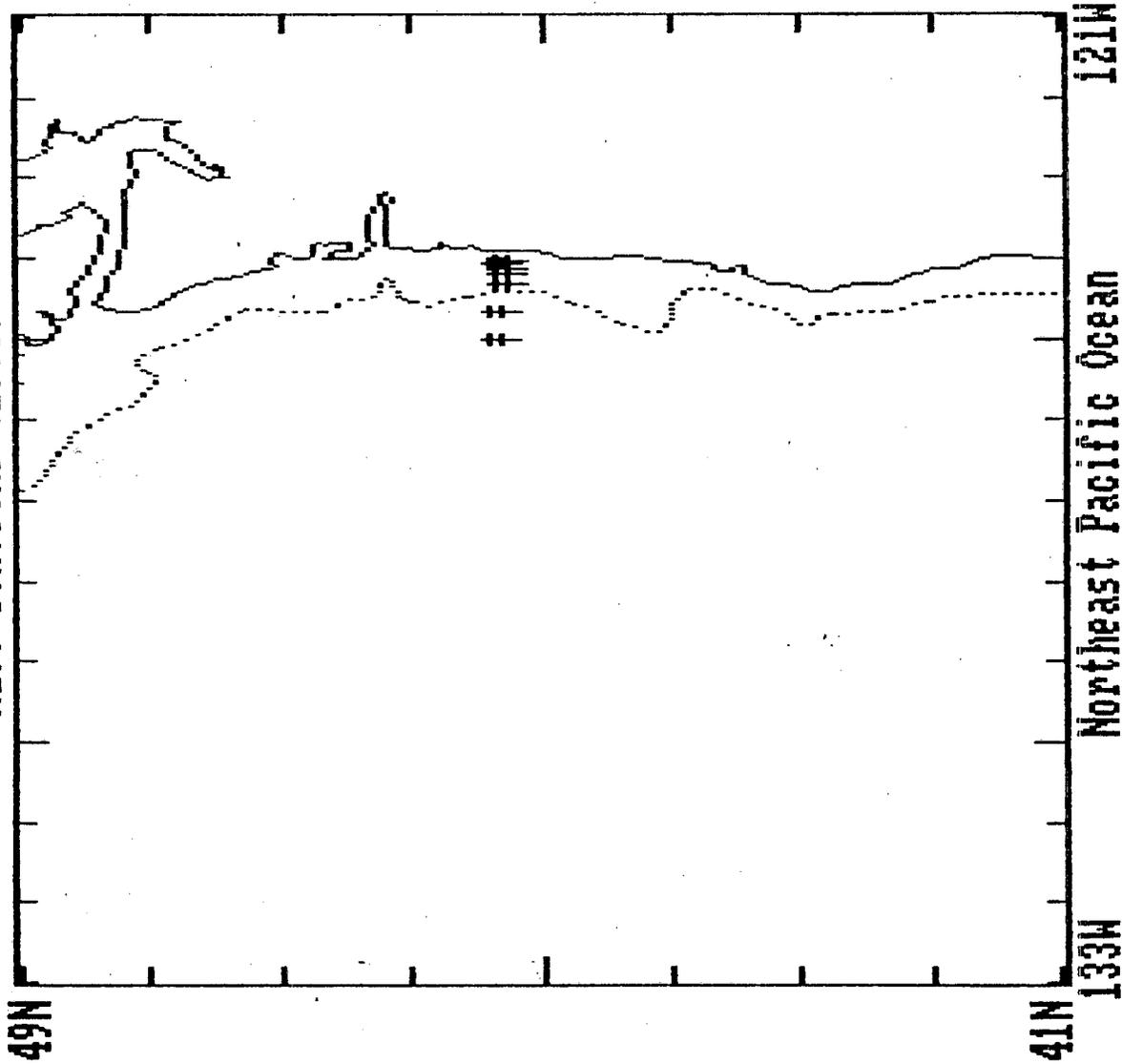
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△ = SEA LEVEL SENSOR

† = MET. STATION

▭ = DRIFTER AREA

MET. STATIONS (1973)

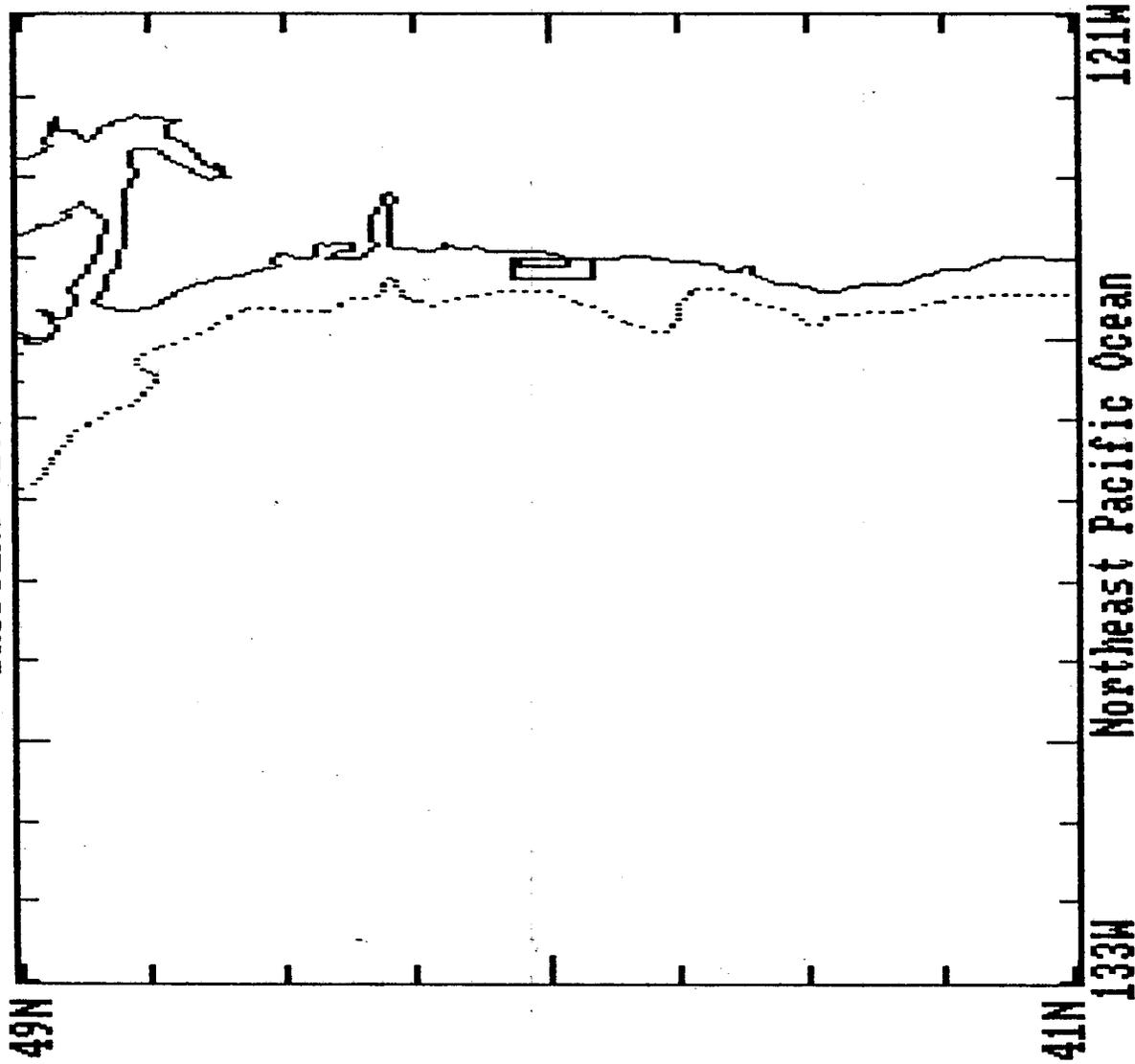


MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- ‡ = MET. STATION
- ▭ = DRIFTER AREA

DRIFTERS (1973)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

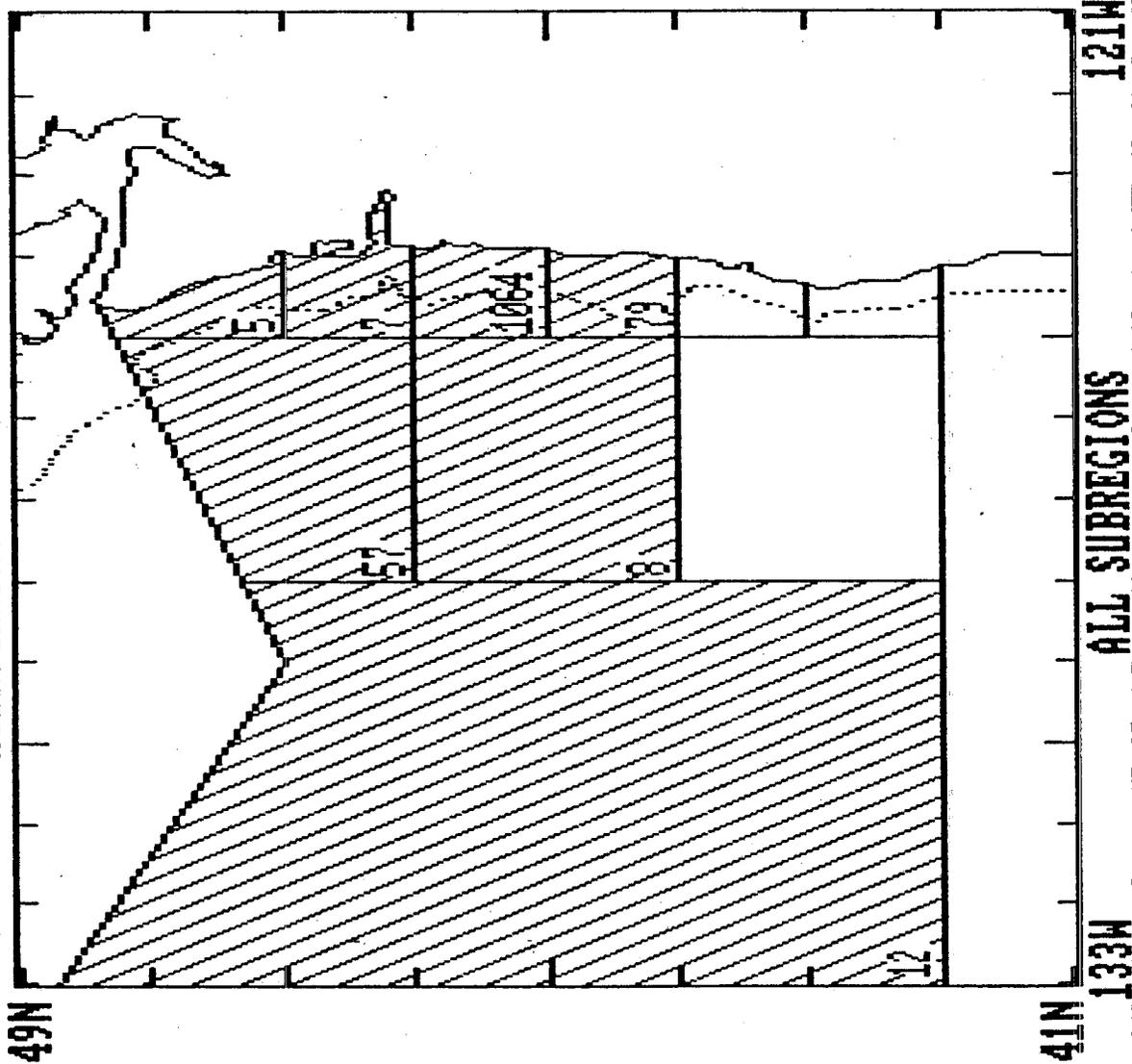
◻ = CURRENT METER

△ = SEA LEVEL SENSOR

‡ = MET. STATION

◻ = DRIFTER AREA

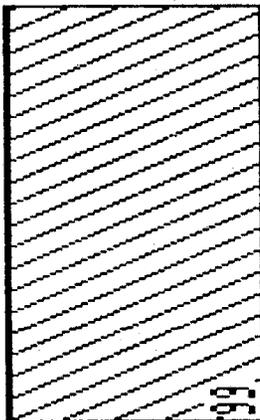
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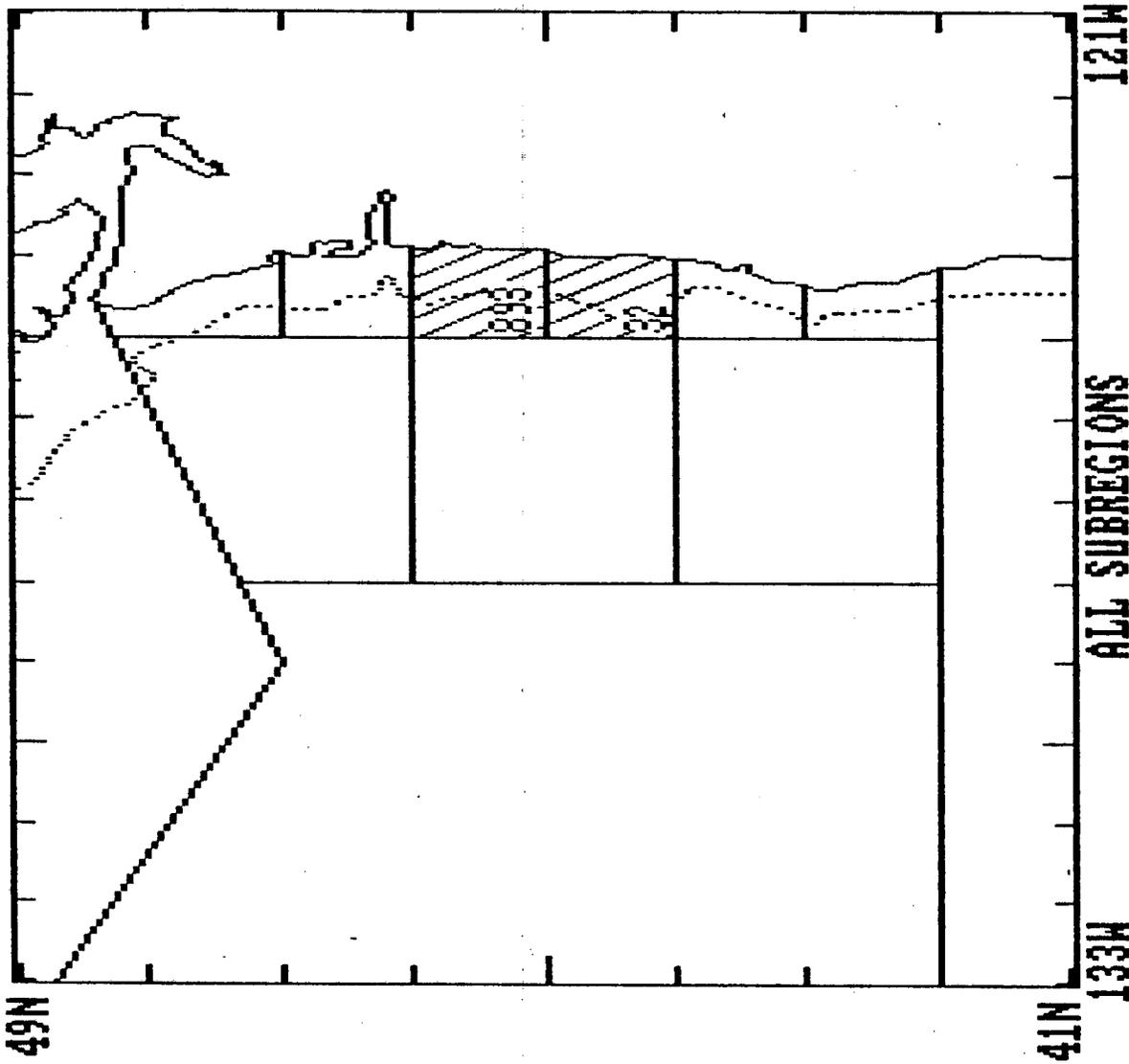
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



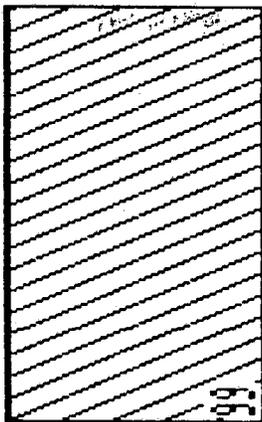
PROFILING CURRENT METER CASTS (1973)



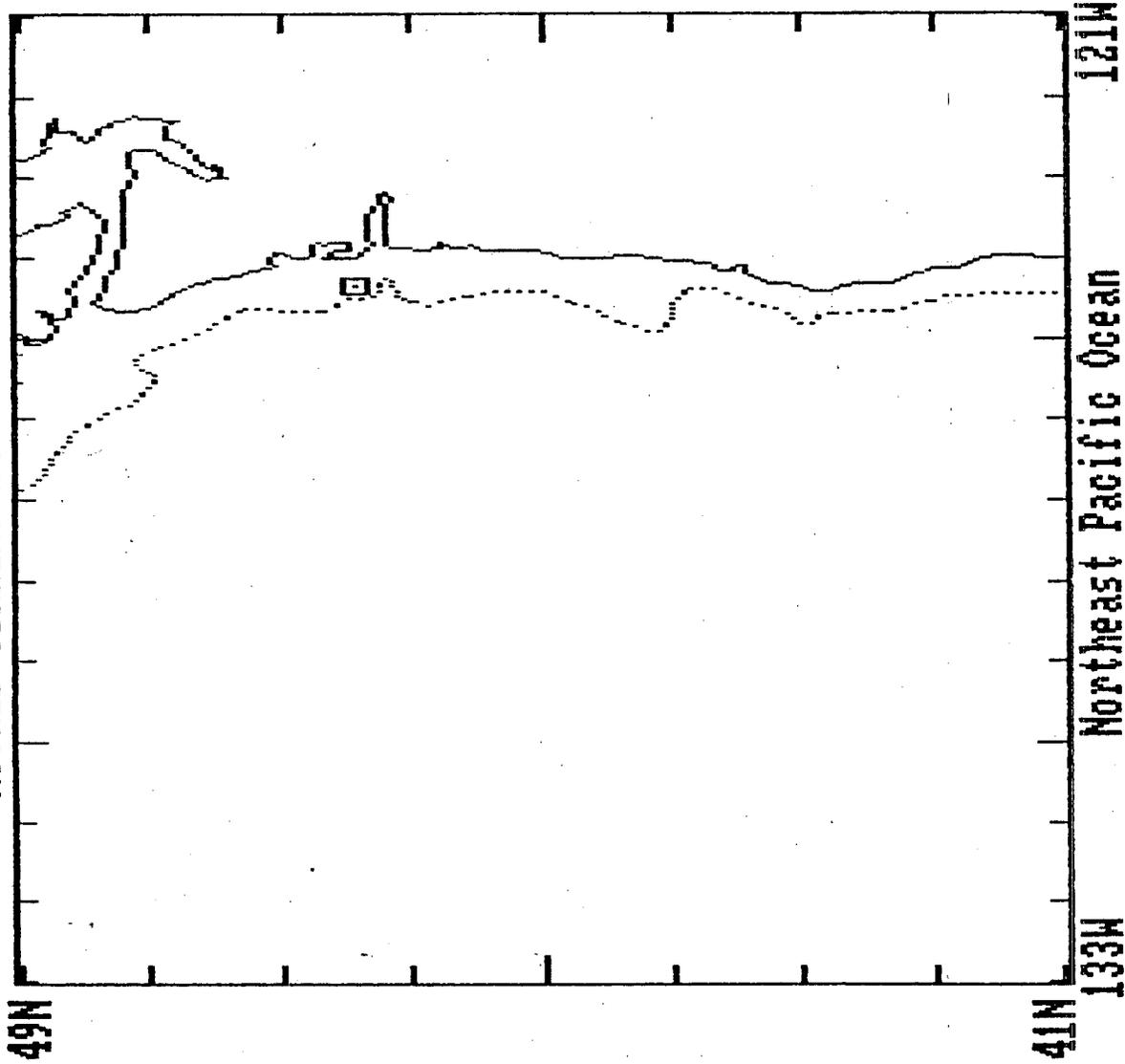
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

PROFILING CURRENT METER
COVERAGE BY AREA



MOORED CURRENT METERS (1974)

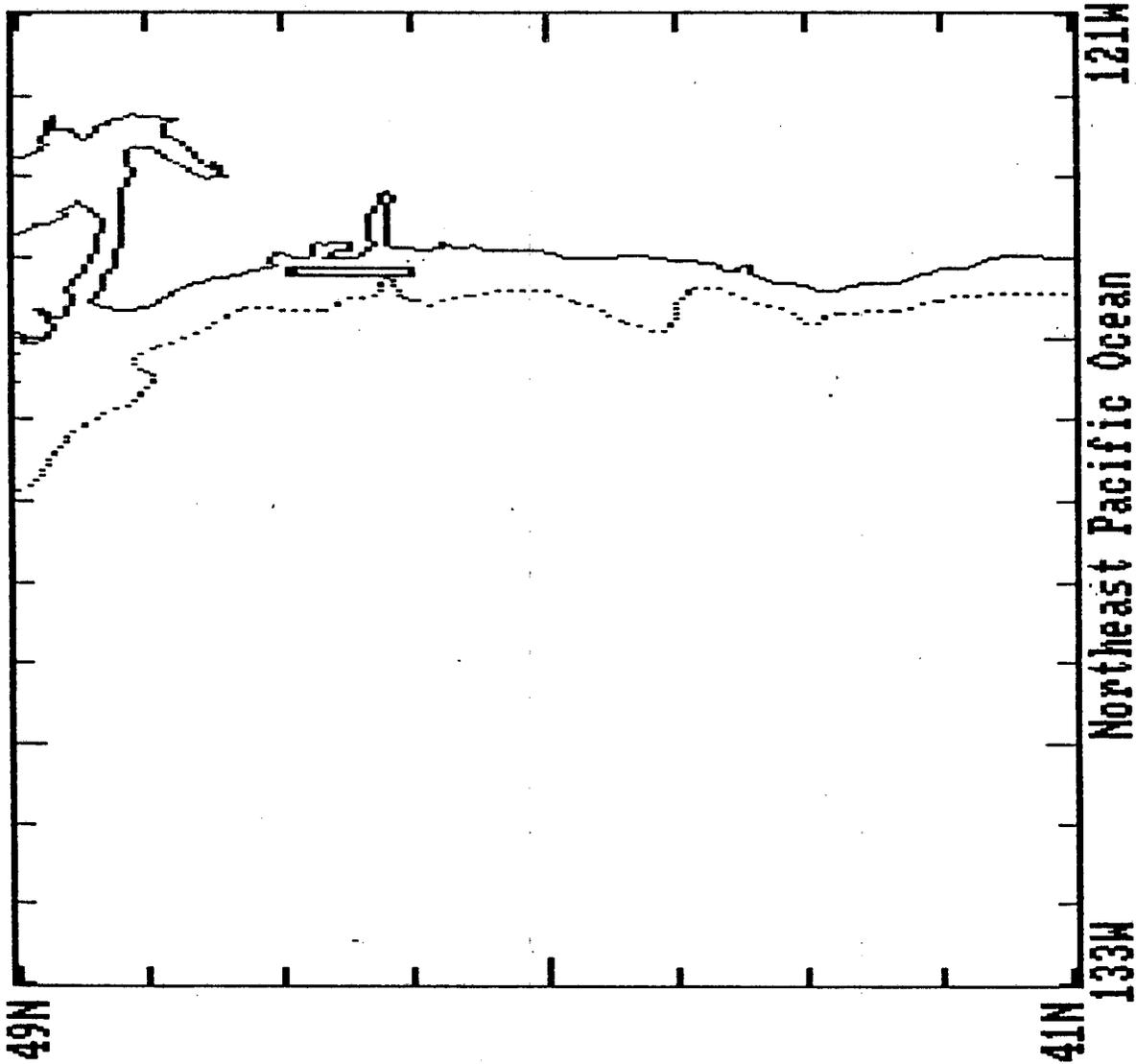


MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- † = MET. STATION
- = DRIFTER AREA

DRIFTERS (1974)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

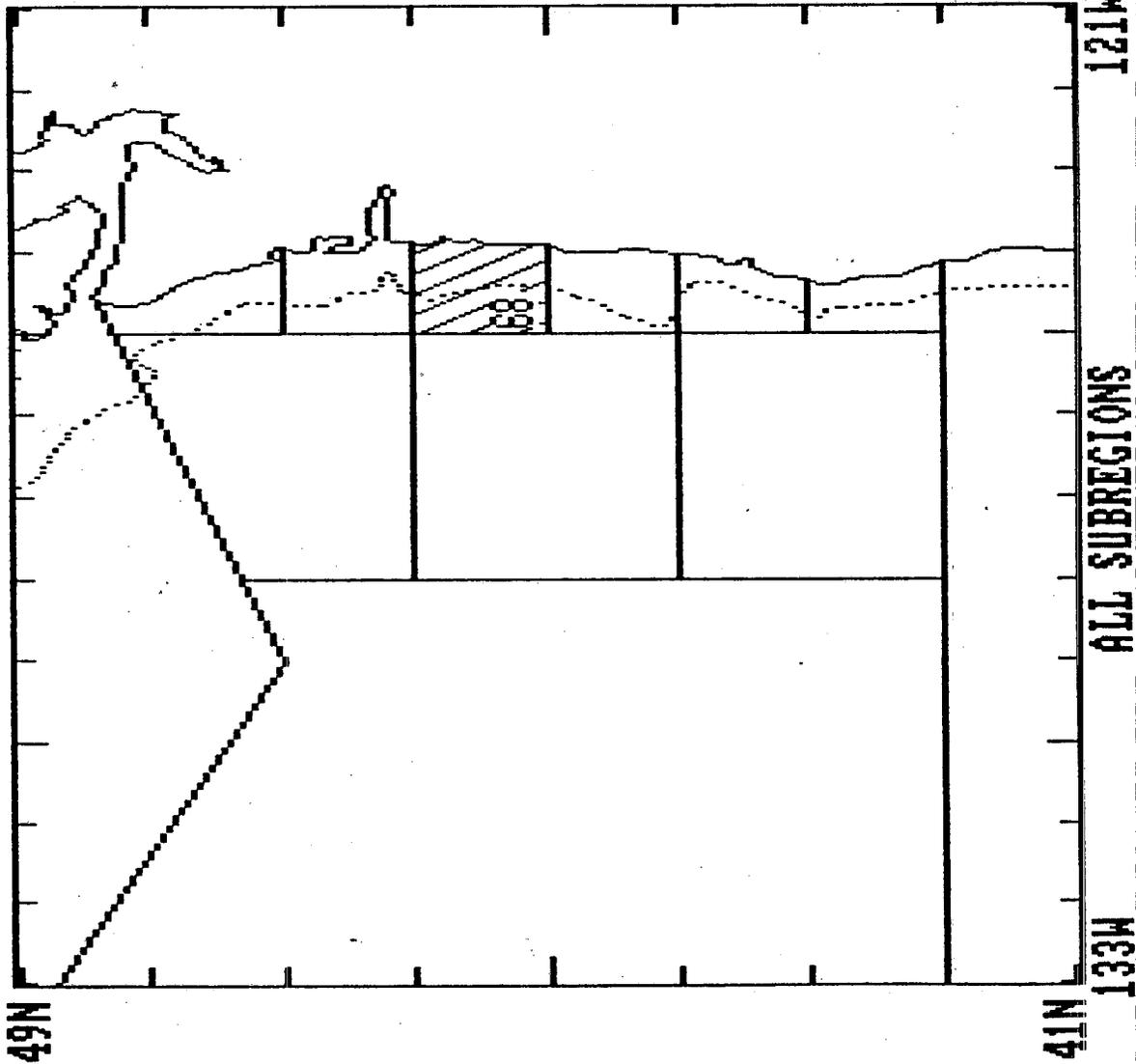
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△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

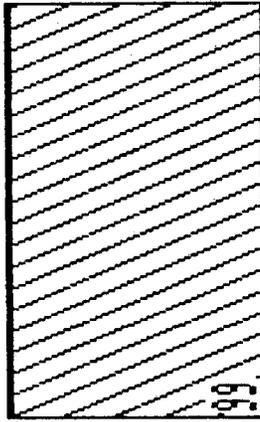
HYDROGRAPHIC CASTS (1974)



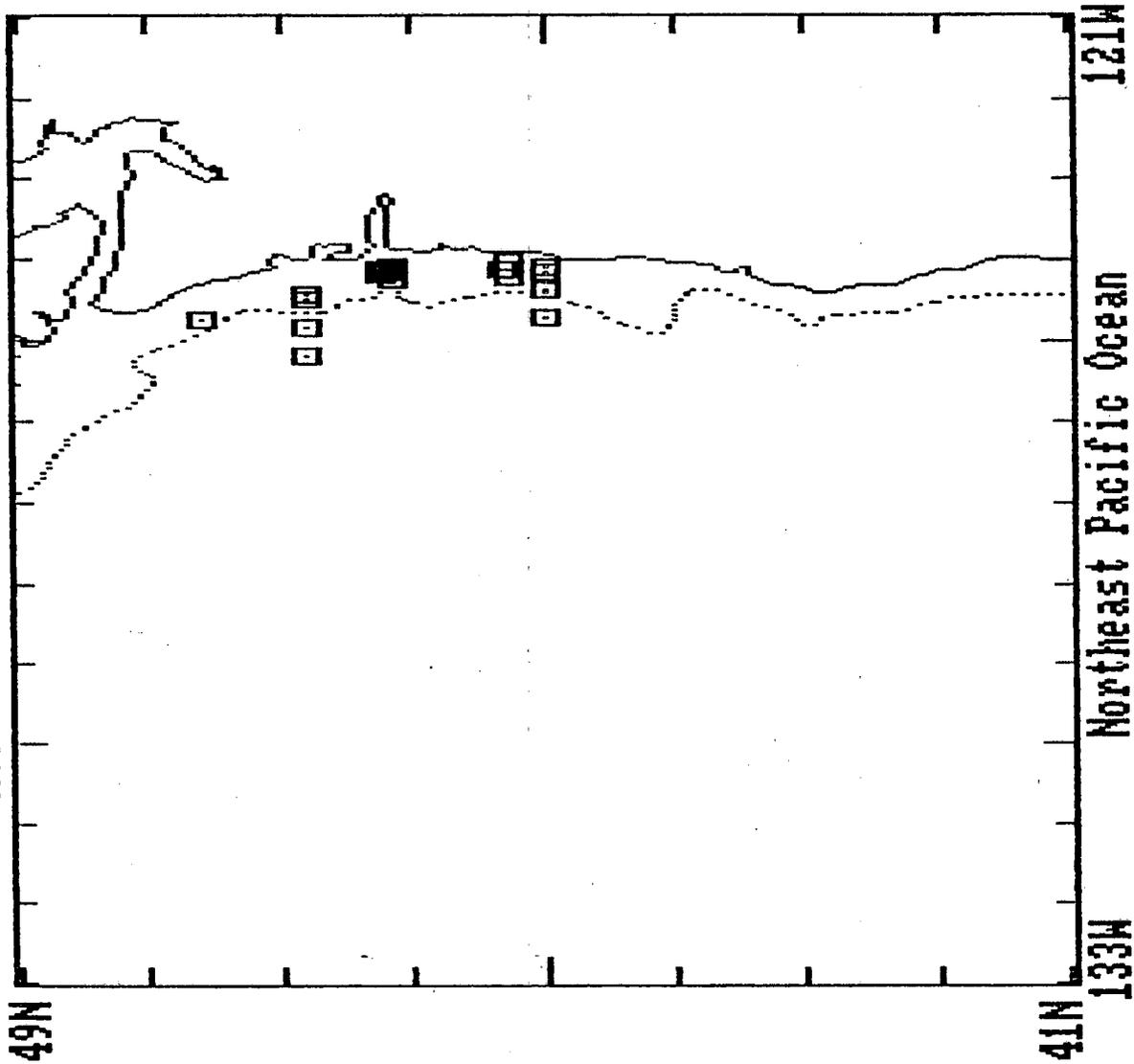
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



MOORED CURRENT METERS (1975)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

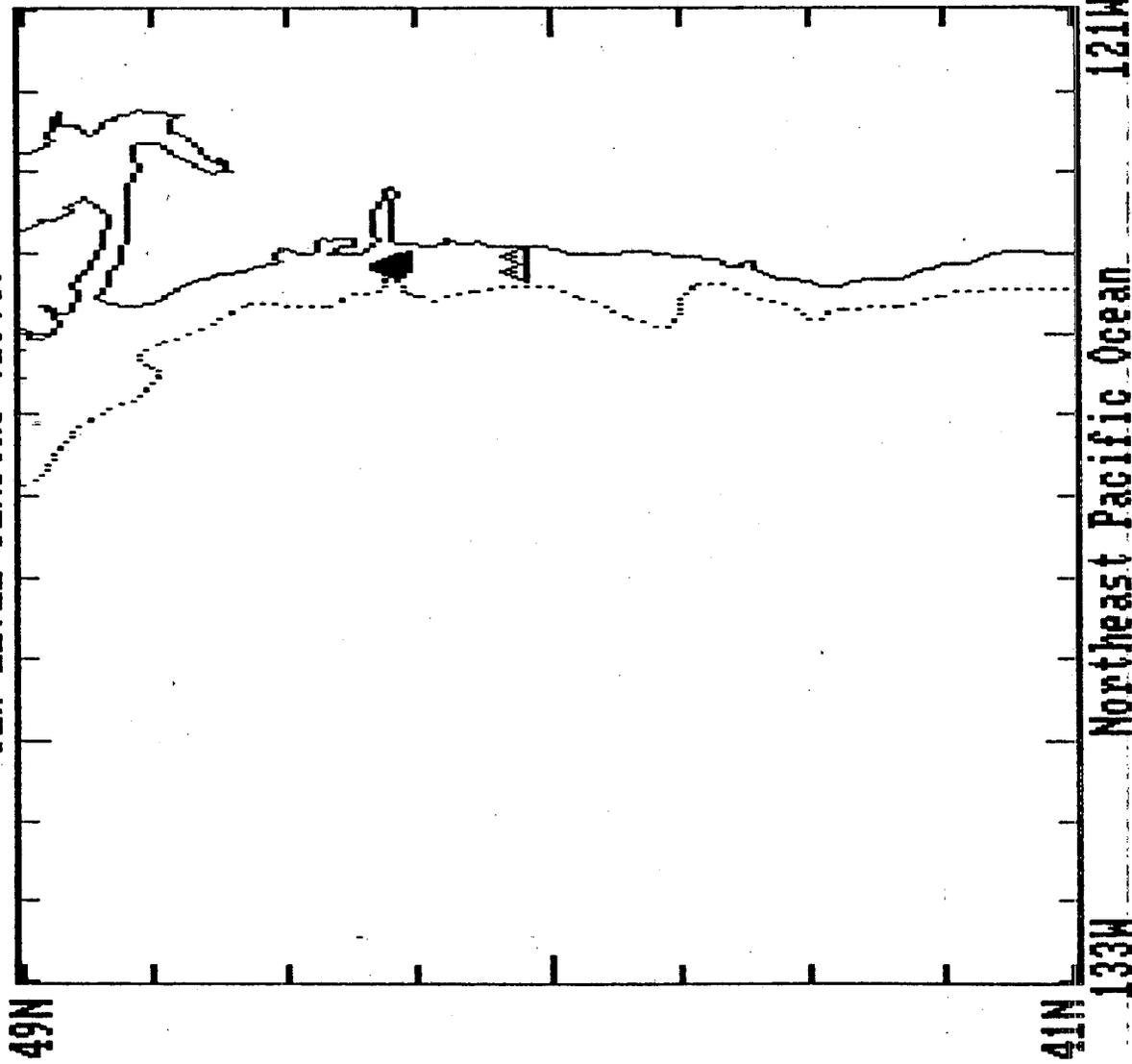
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

SEA LEVEL SENSORS (1975)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

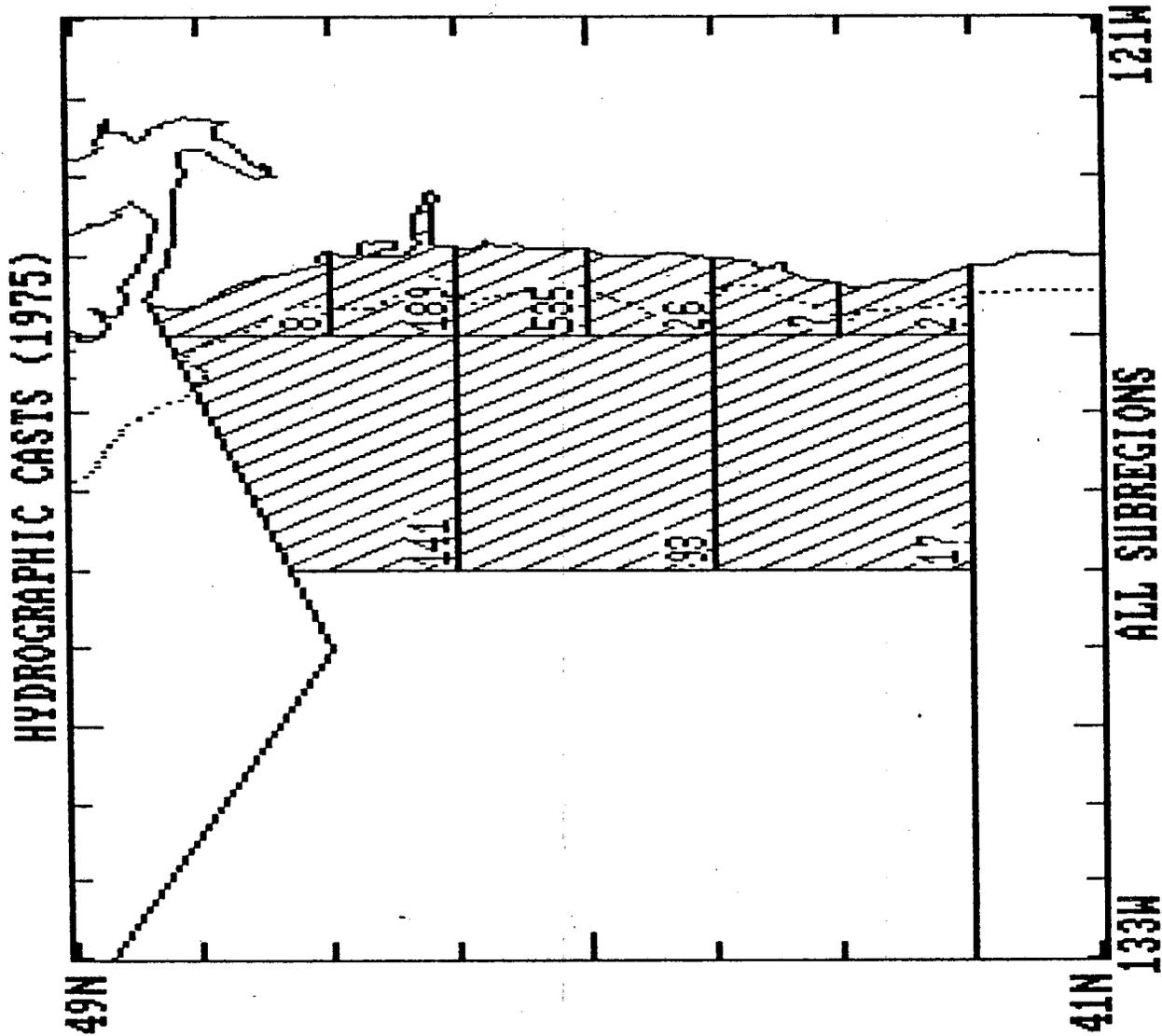
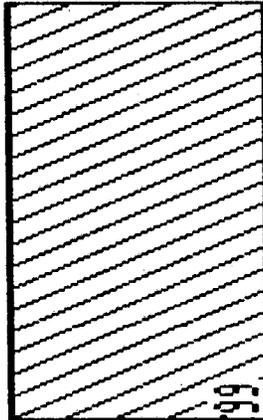
† = MET. STATION

□ = DRIFTER AREA

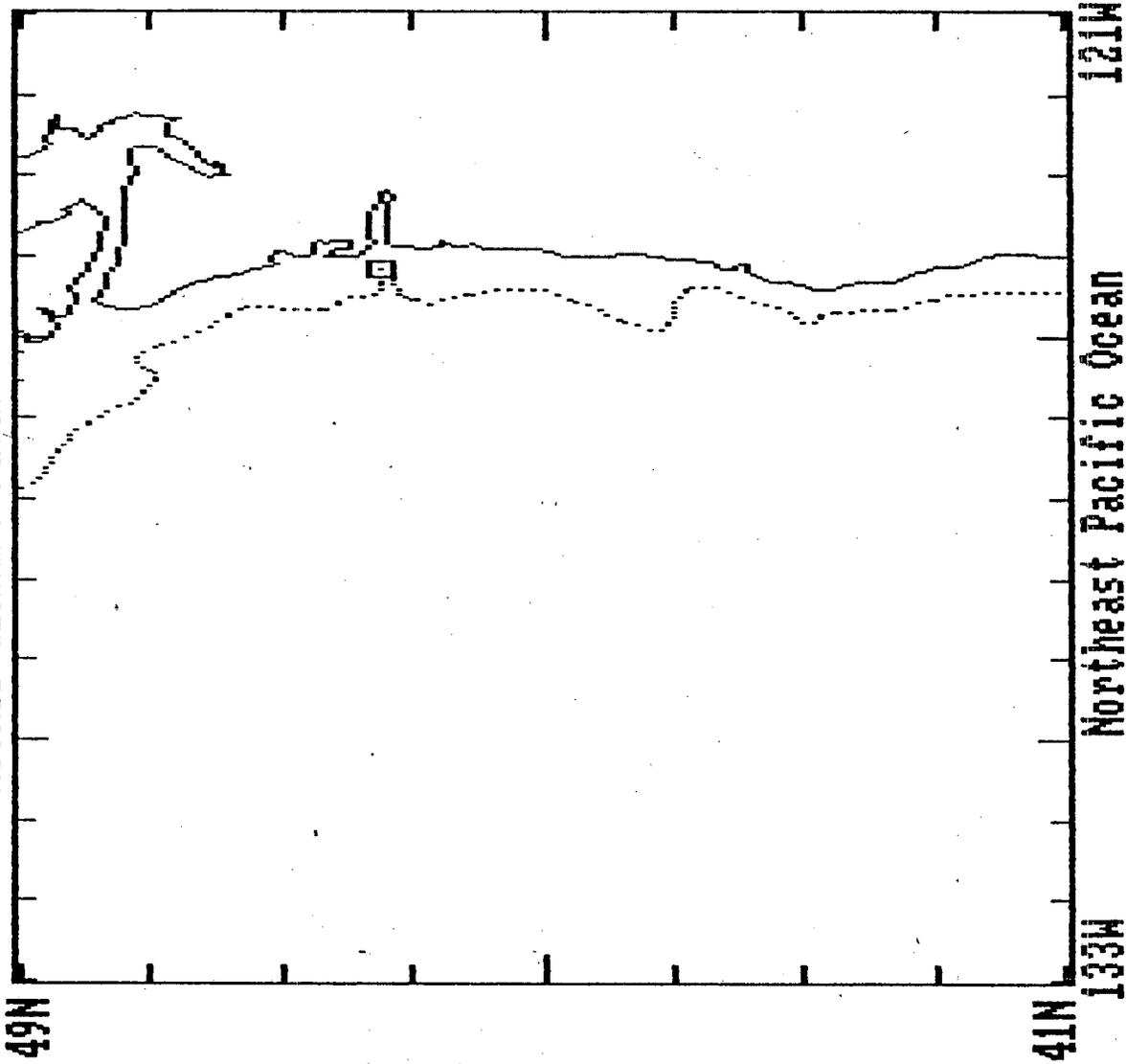
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



MOORED CURRENT METERS (1976)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

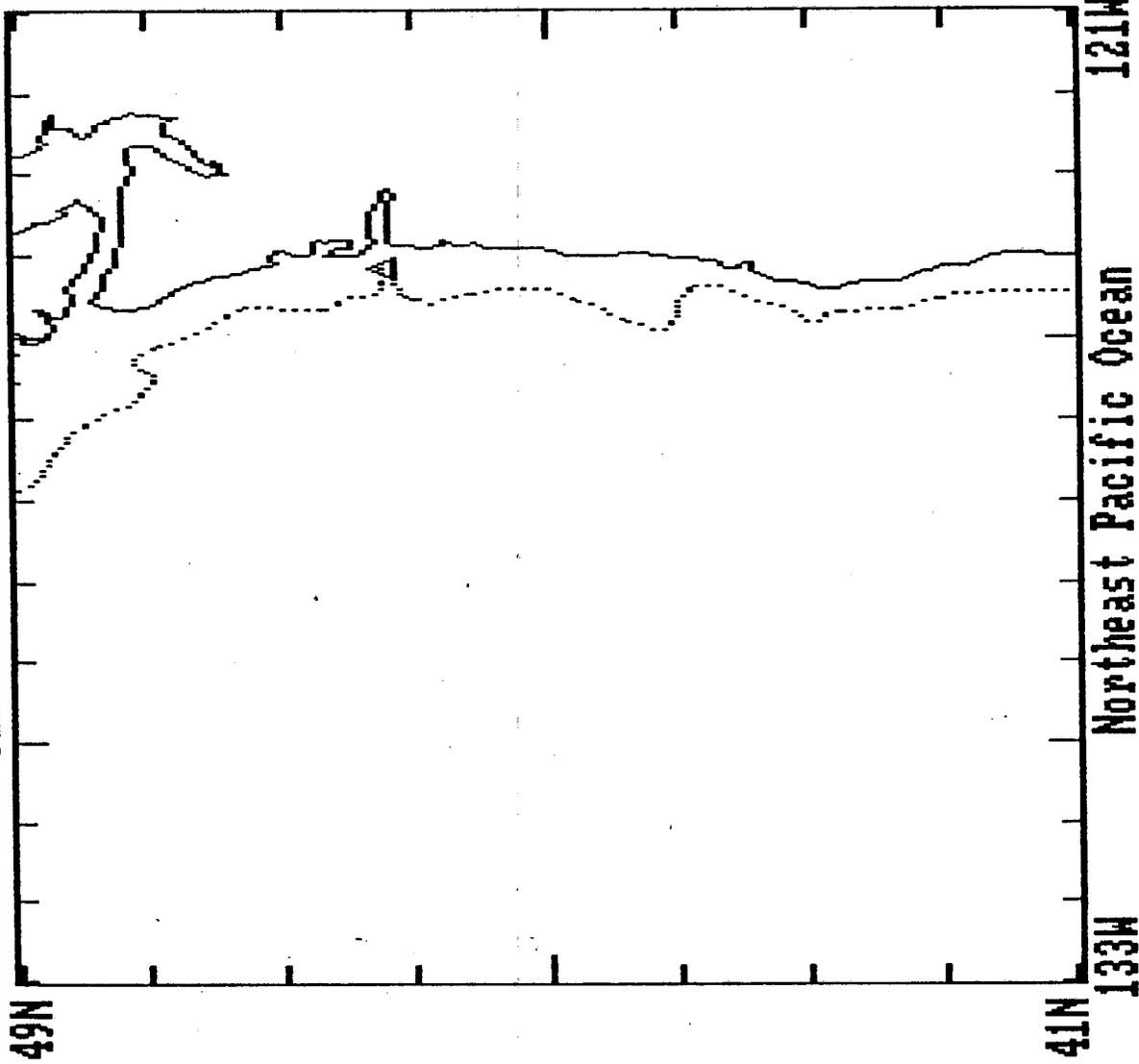
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

SEA LEVEL SENSORS (1976)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

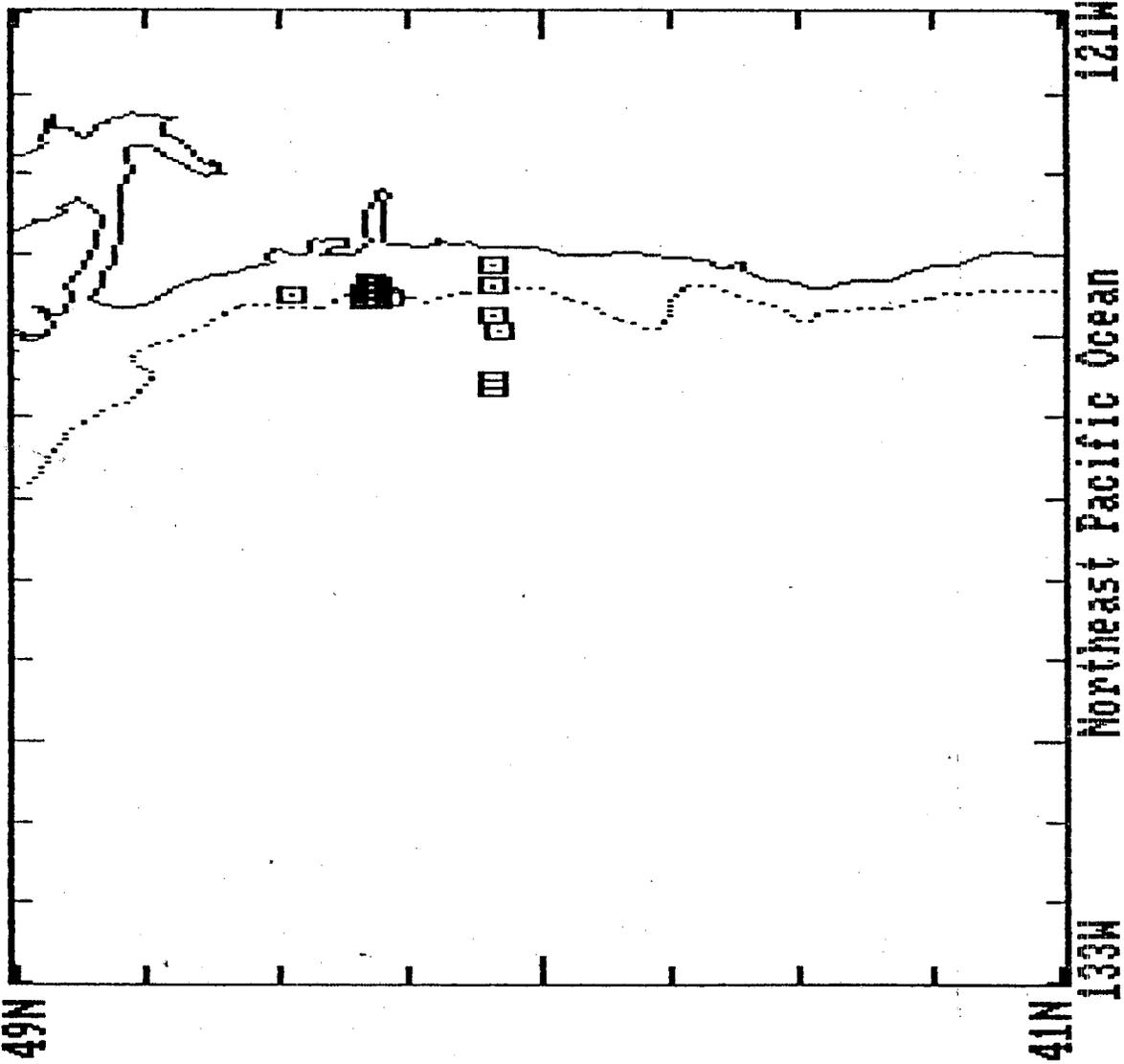
□ = CURRENT METER

△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA

MOORED CURRENT METERS (1978)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

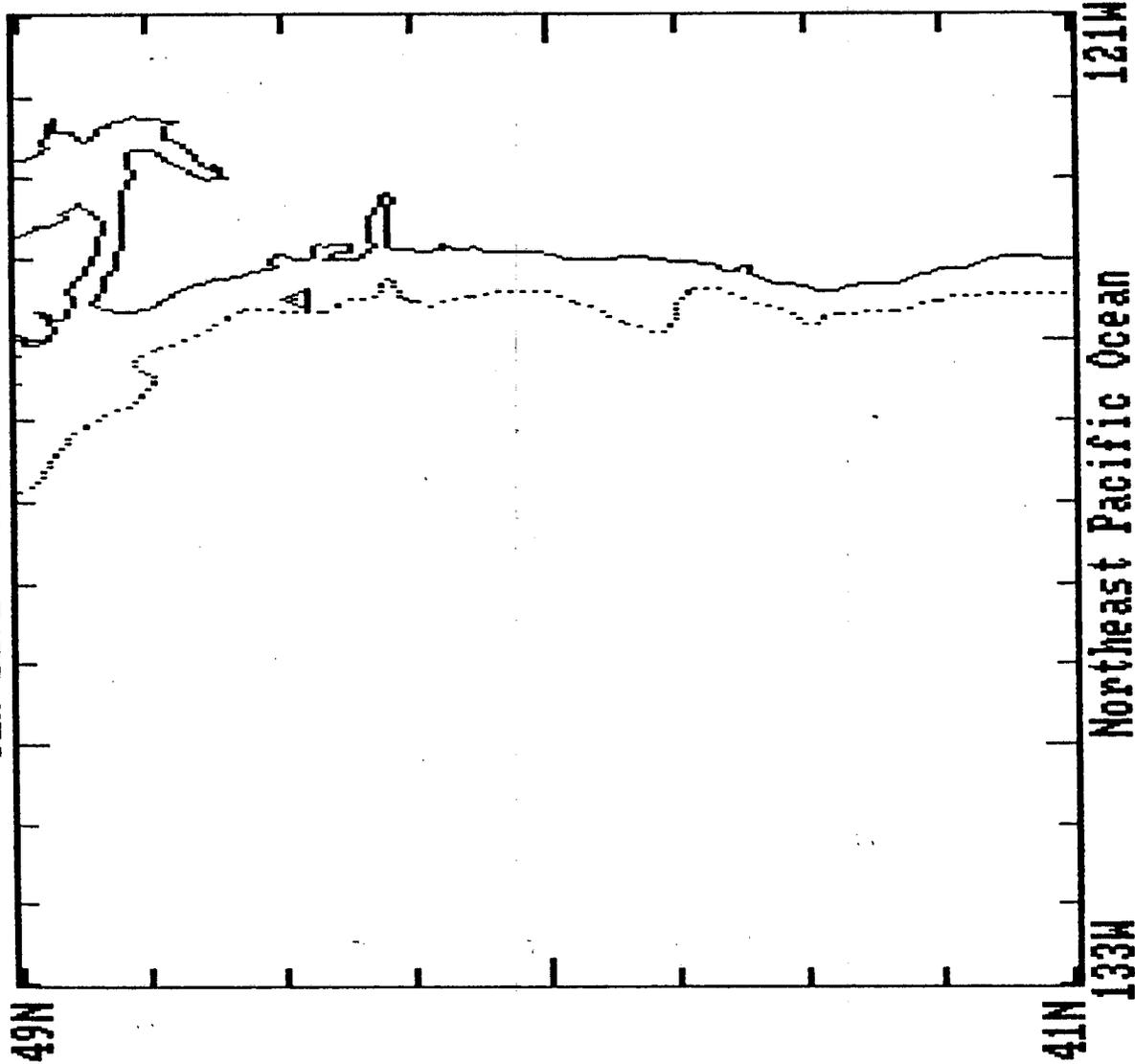
☐ = CURRENT METER

△ = SEA LEVEL SENSOR

⊠ = MET. STATION

□ = DRIFTER AREA

SEA LEVEL SENSORS (1978)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

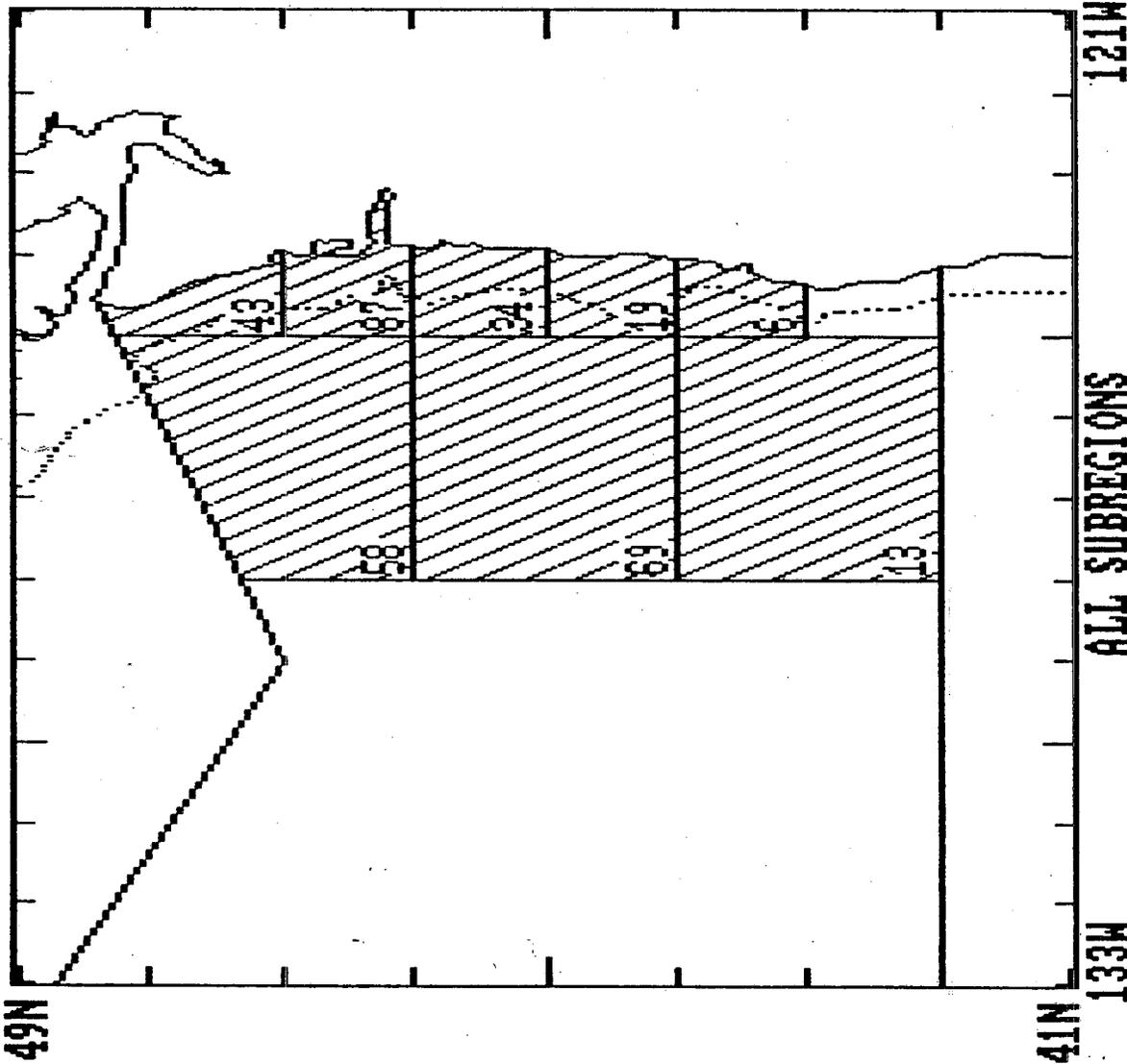
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

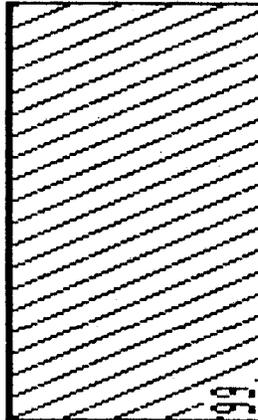
HYDROGRAPHIC CASTS (1978)



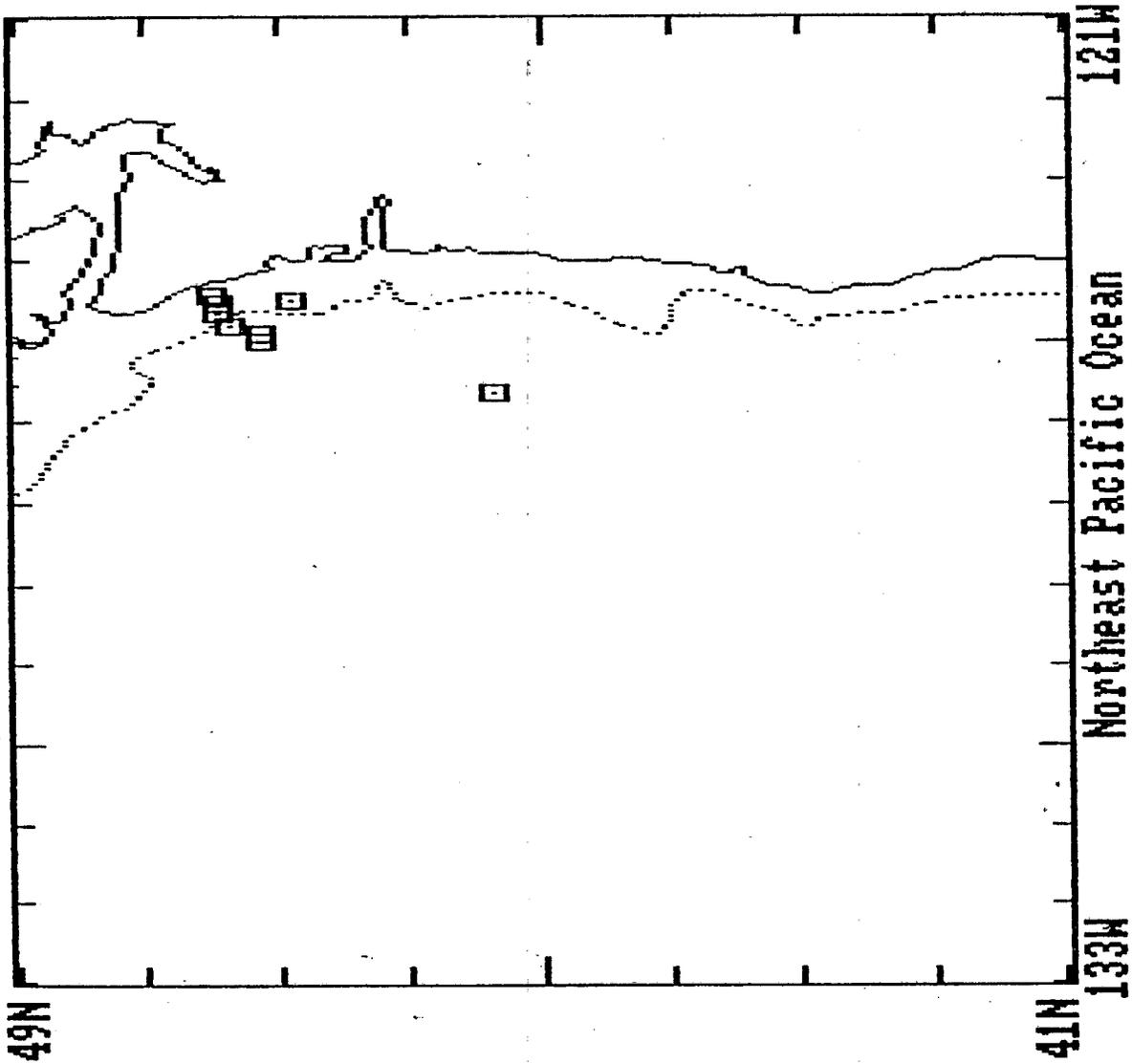
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



MOORED CURRENT METERS (1979)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

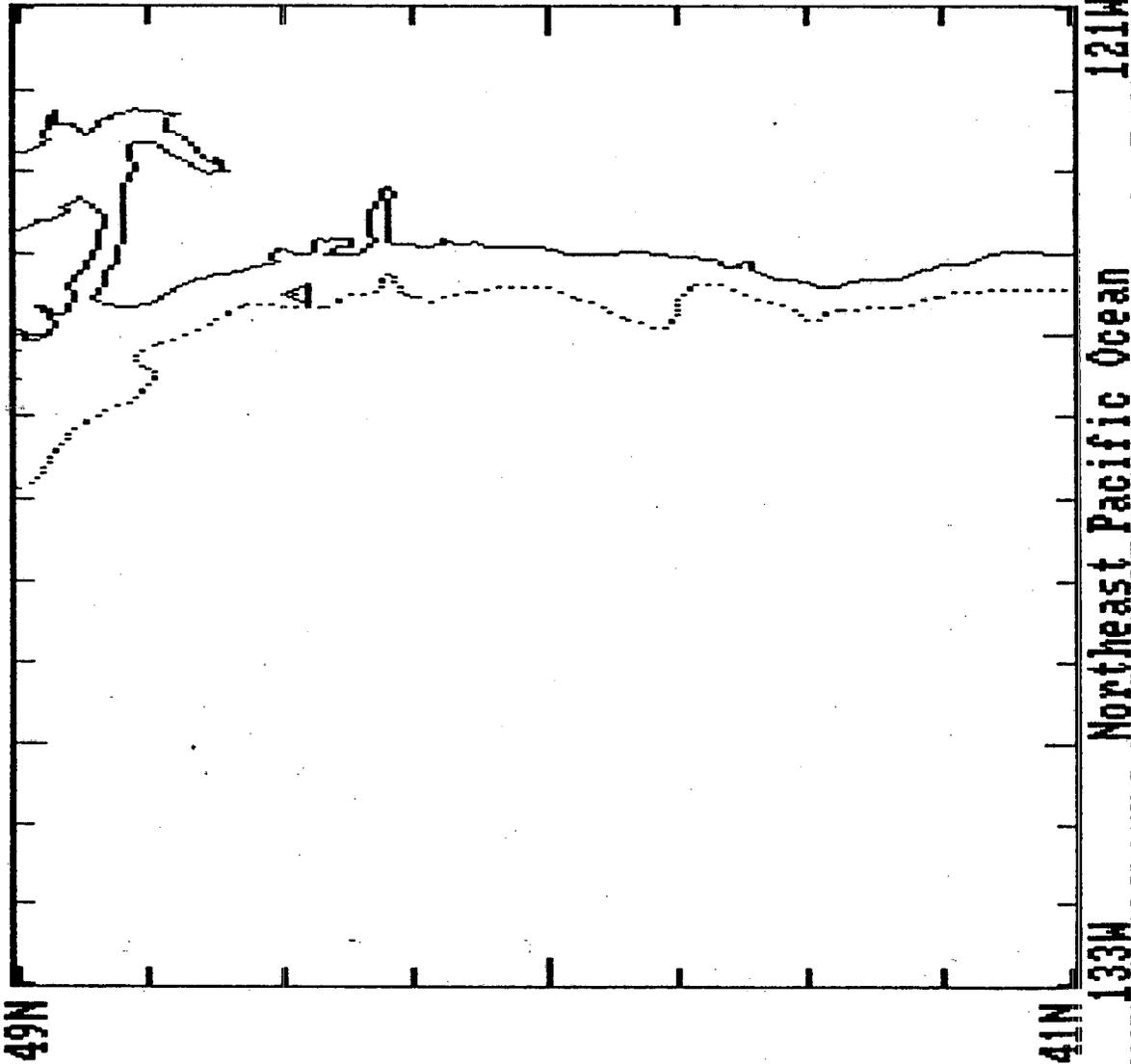
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

SEA LEVEL SENSORS (1979)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

◻ = CURRENT METER

▲ = SEA LEVEL SENSOR

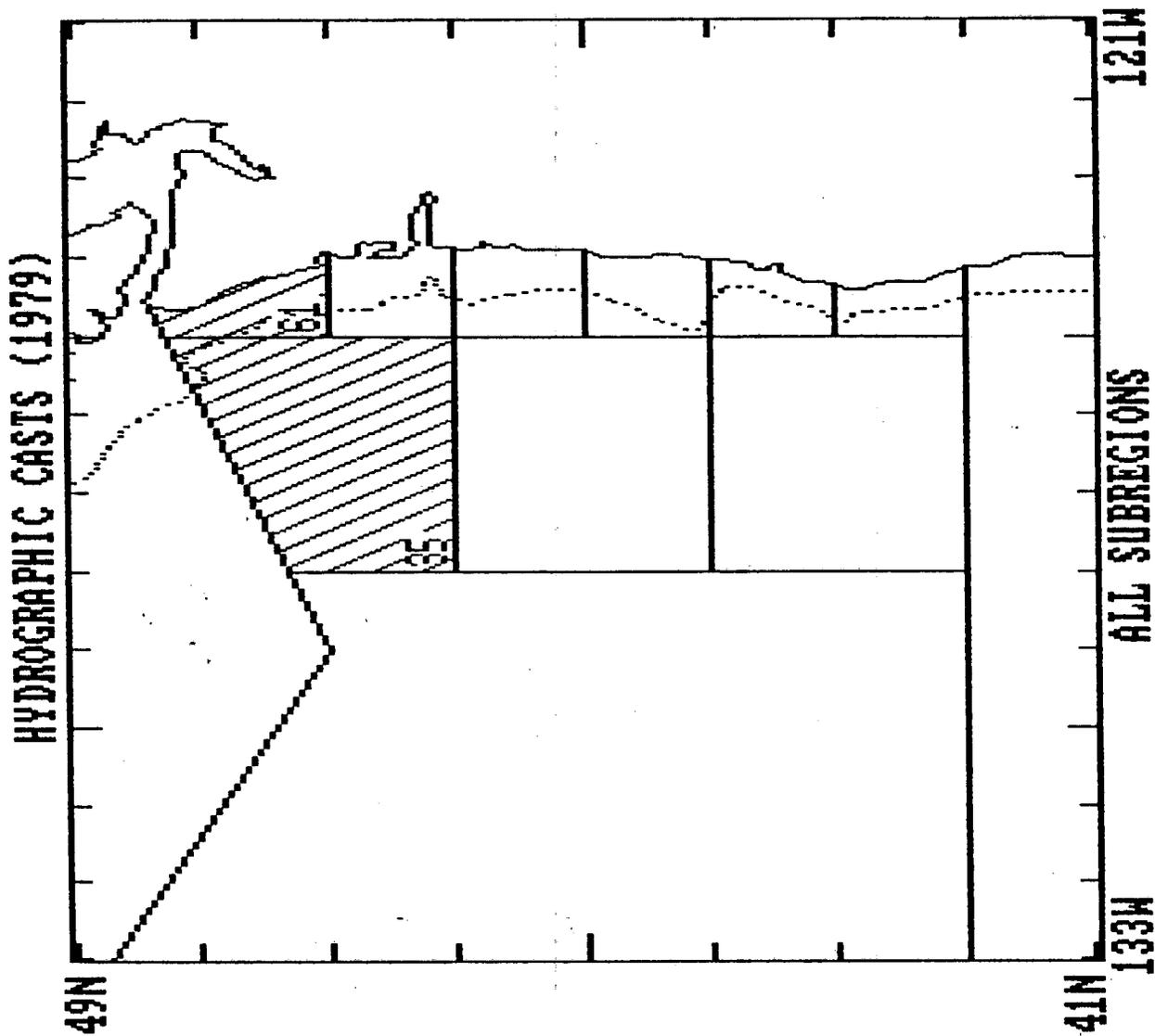
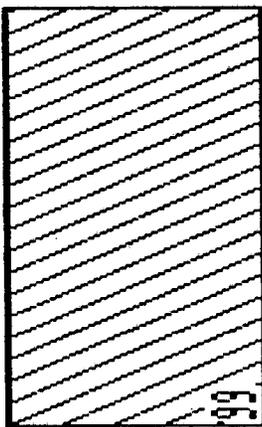
† = MET. STATION

◻ = DRIFTER AREA

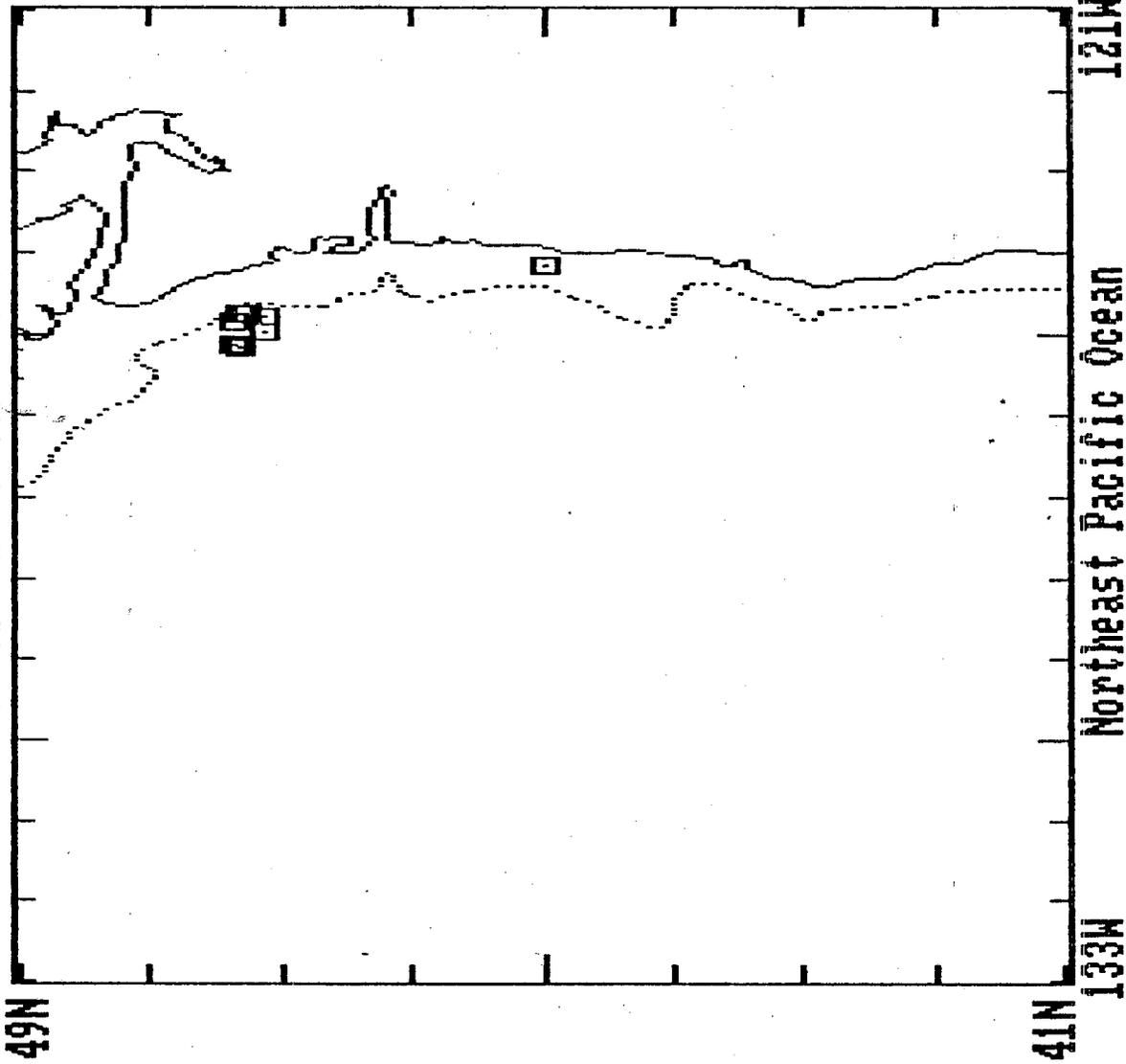
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



MOORED CURRENT METERS (1980)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

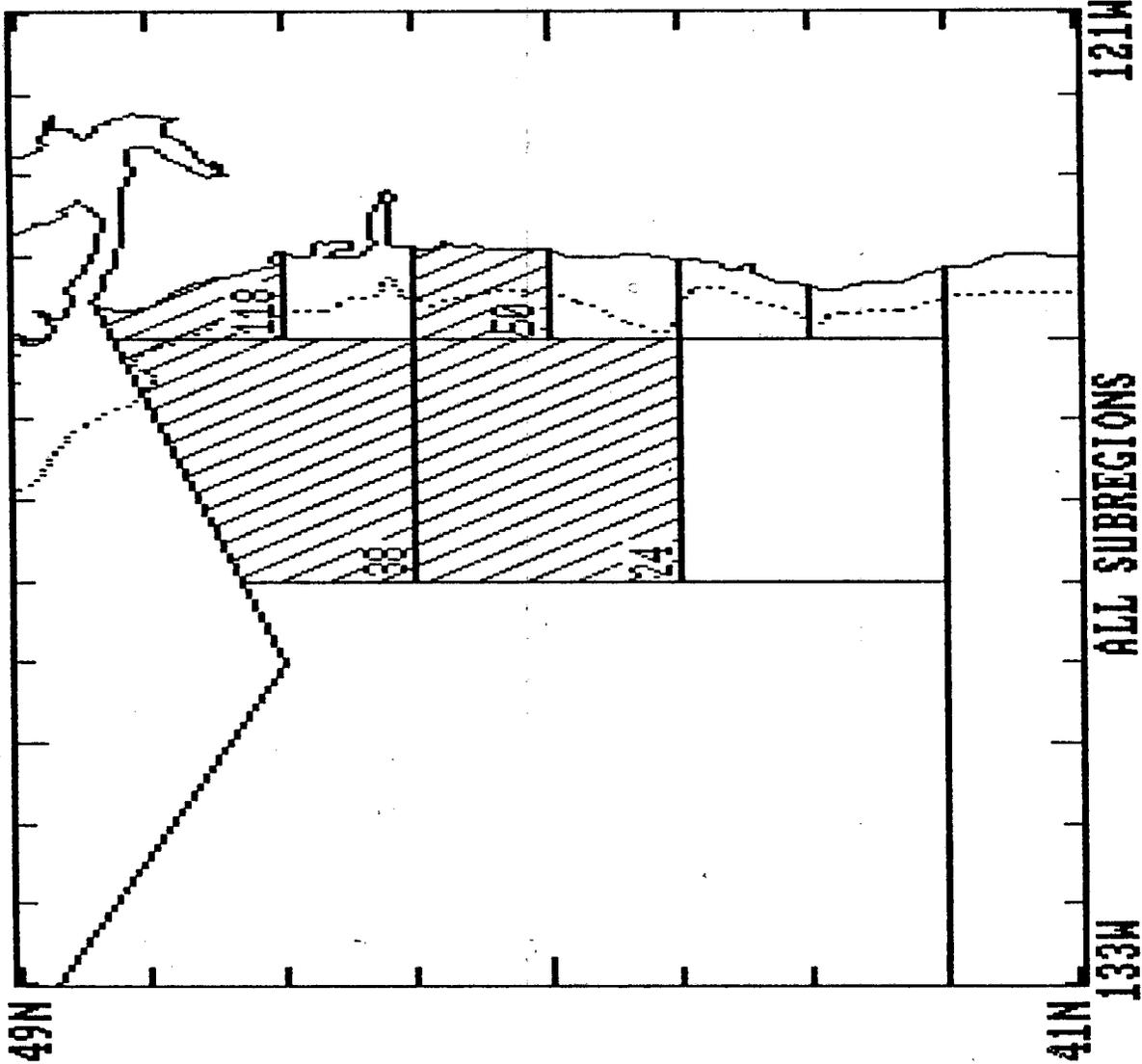
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△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

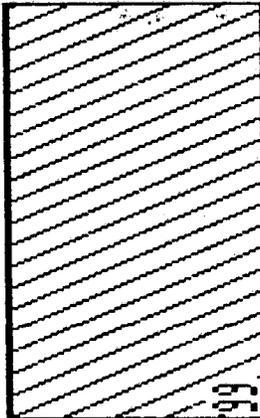
HYDROGRAPHIC CASTS (1980)



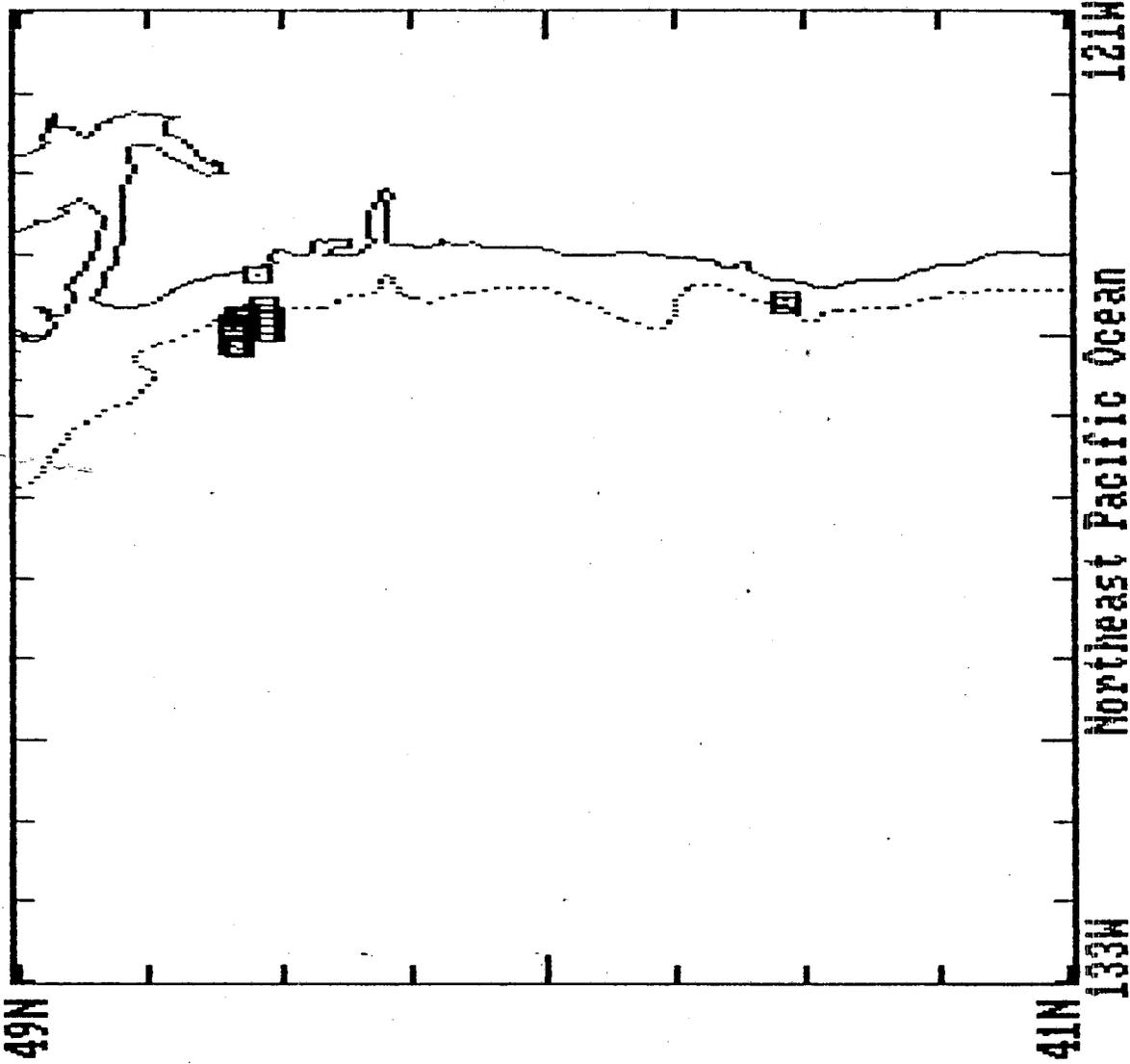
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



MOORED CURRENT METERS (1981)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA

MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

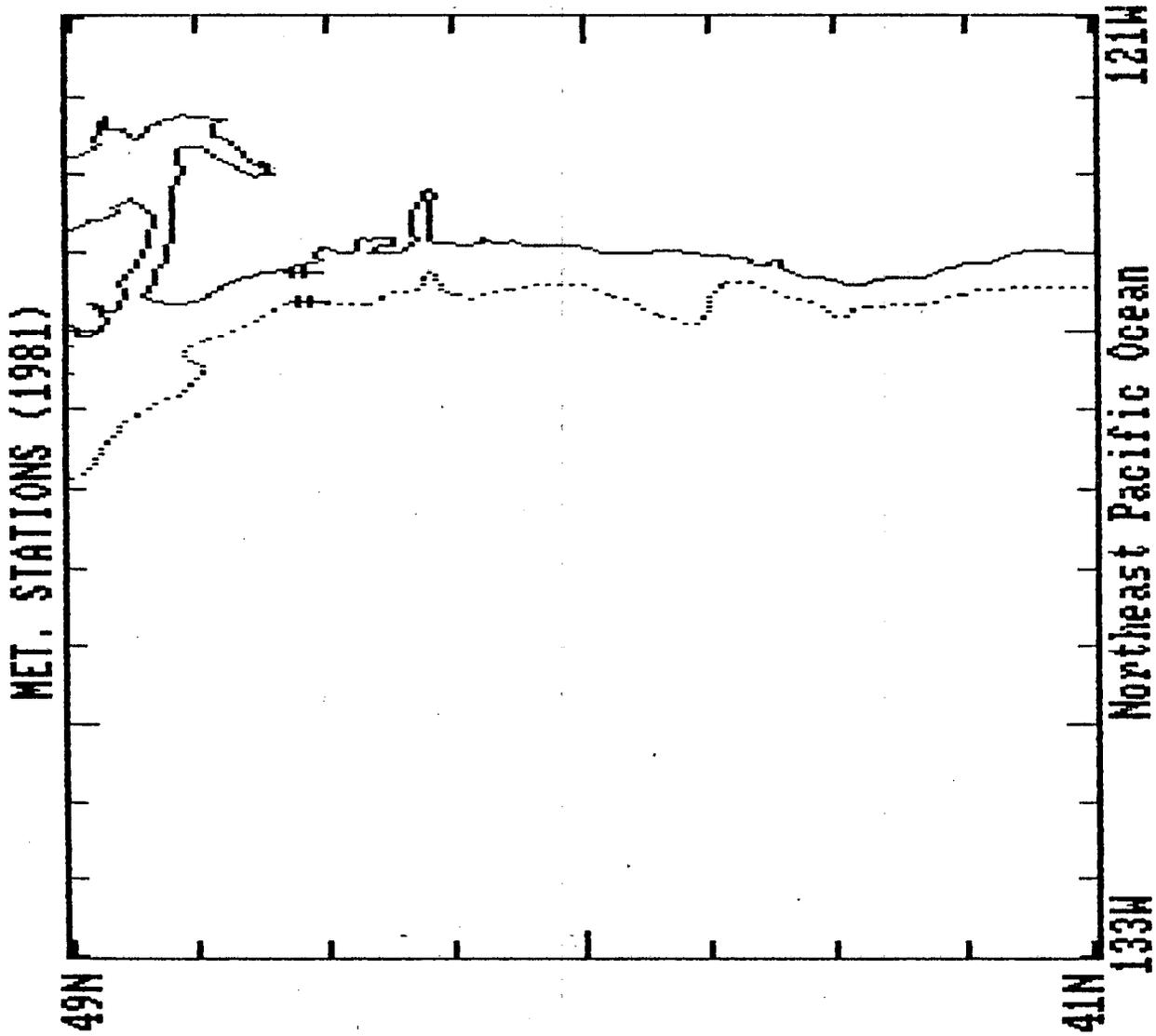
LEGEND

□ = CURRENT METER

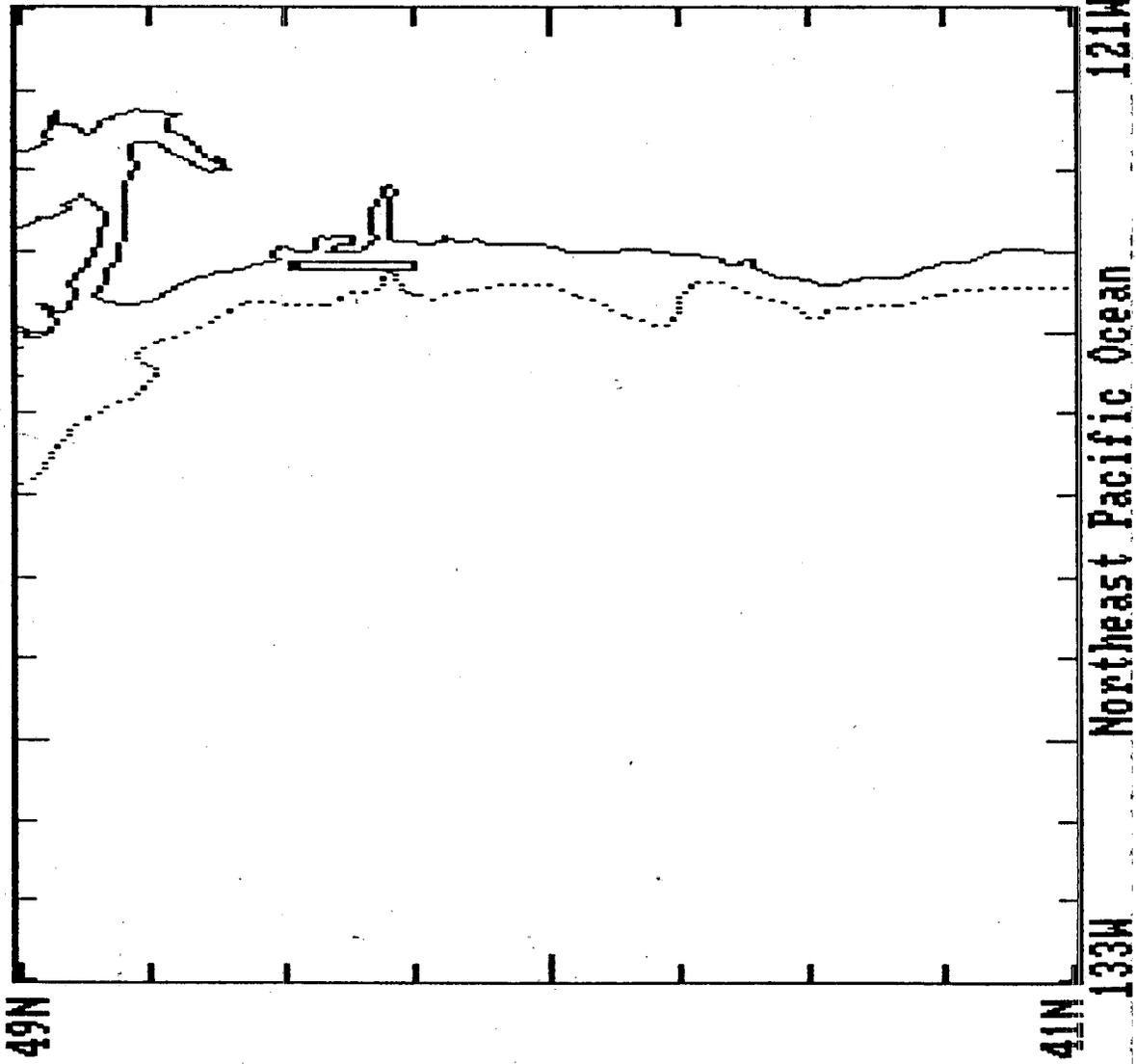
△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA



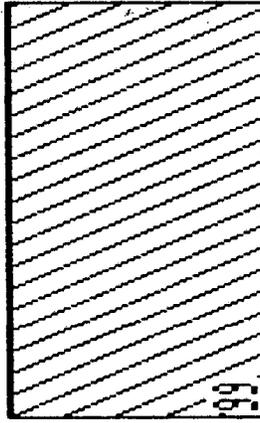
DRIFTERS (1981)



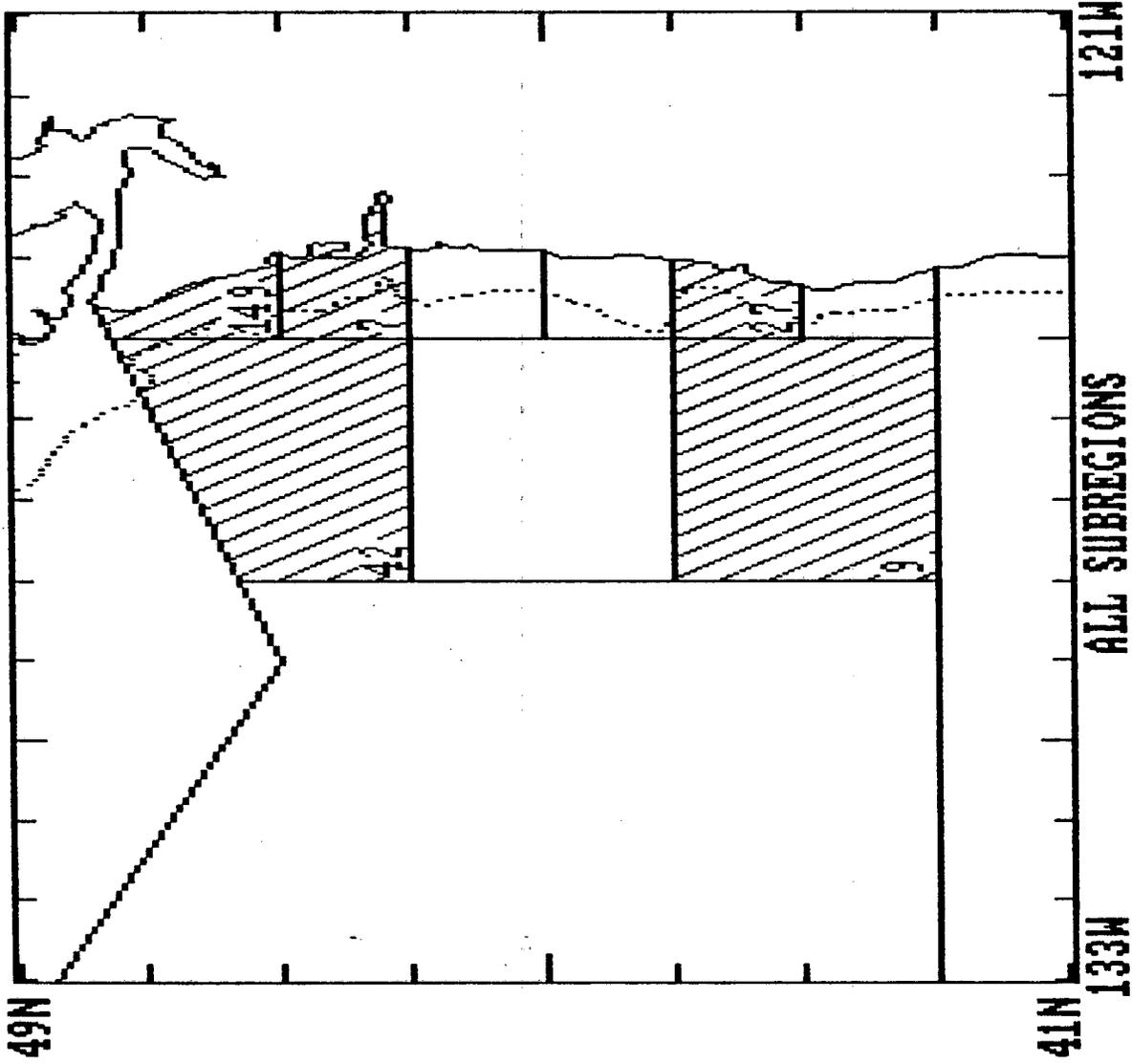
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

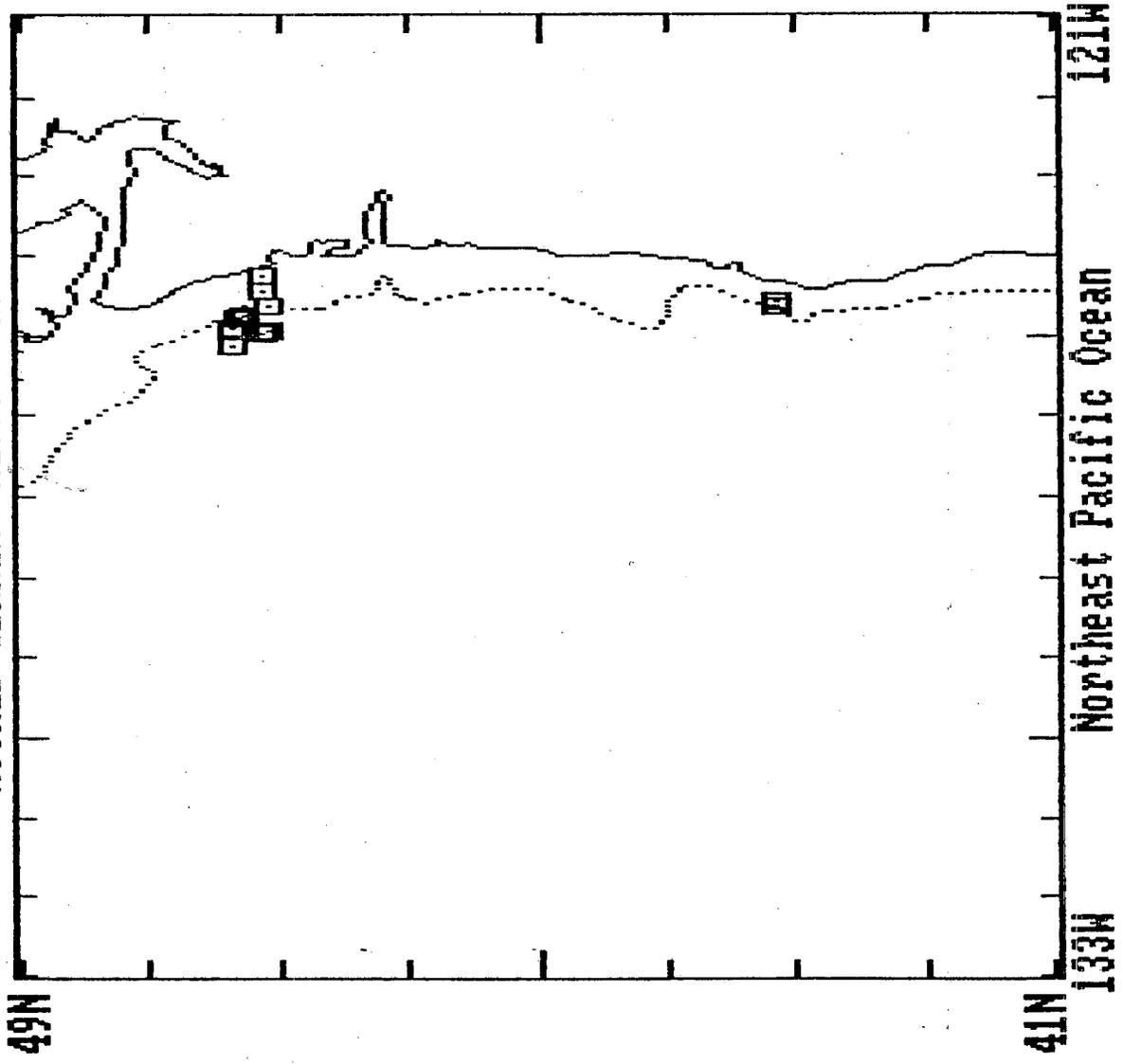
HYDROGRAPHIC SURVEY
COVERAGE BY AREA



HYDROGRAPHIC CASTS (1981)



MOORED CURRENT METERS (1982)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

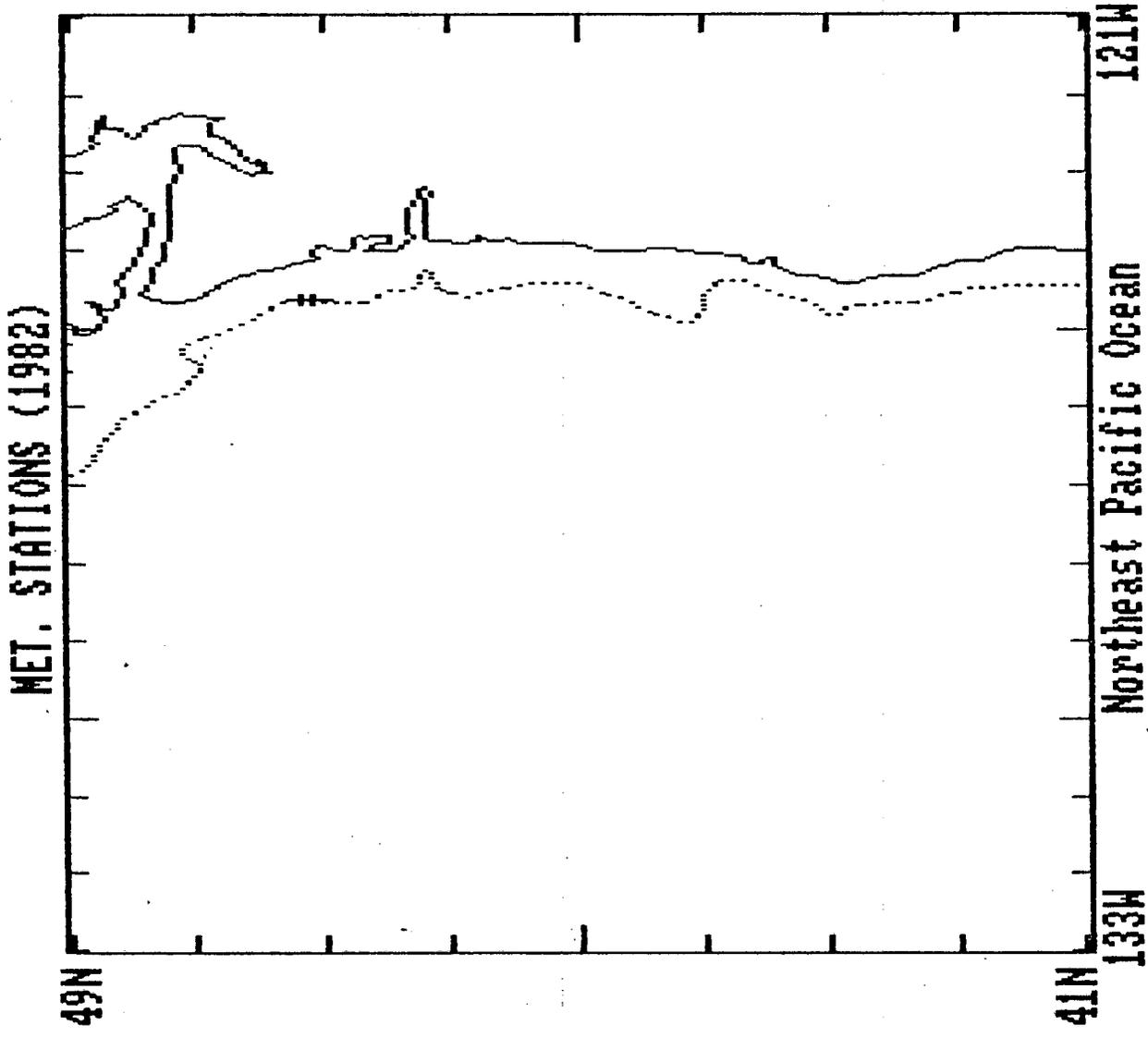
LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- ‡ = MET. STATION
- = DRIFTER AREA

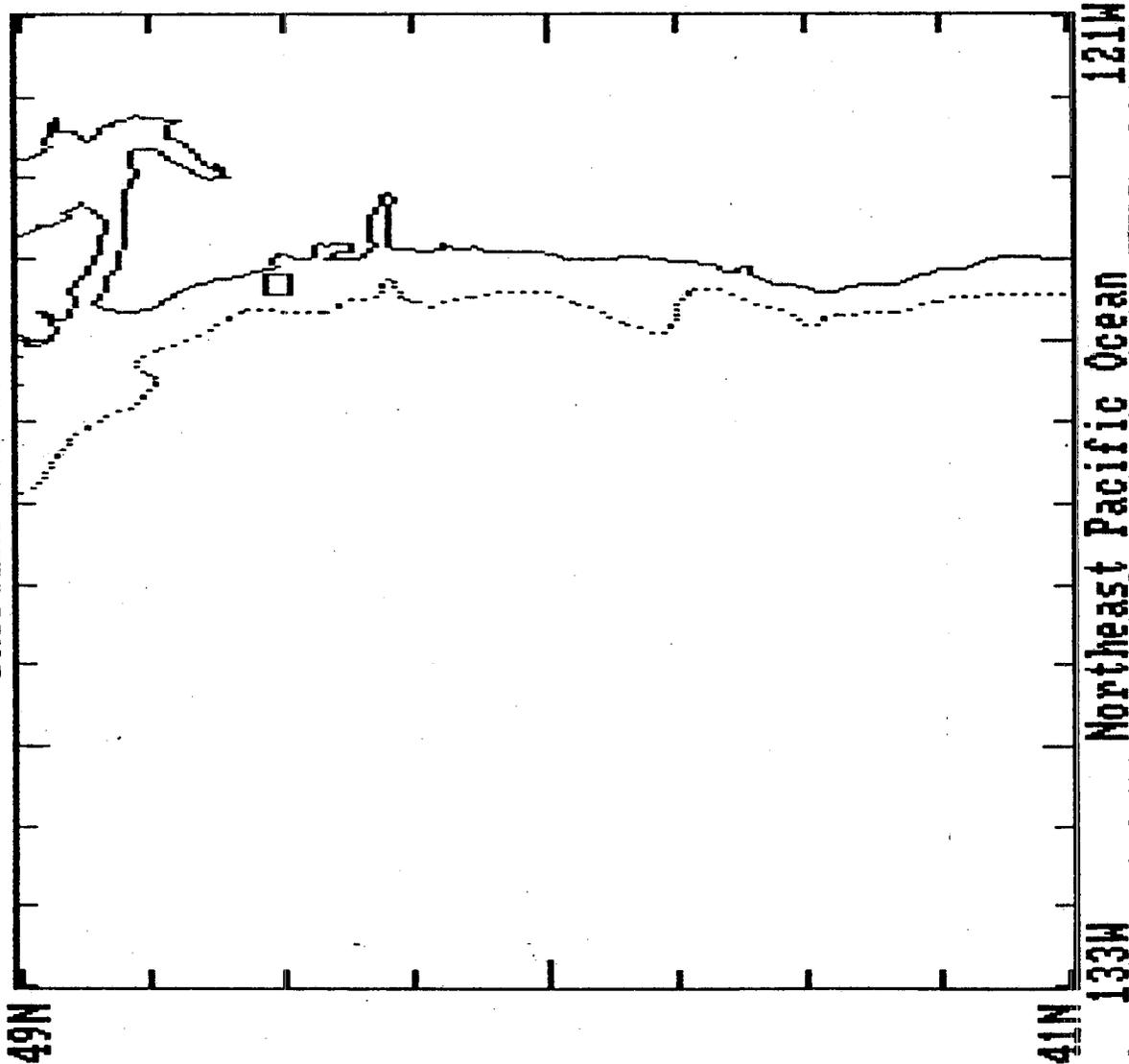
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

- = CURRENT METER
- △ = SEA LEVEL SENSOR
- † = MET. STATION
- = DRIFTER AREA



DRIFTERS (1982)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

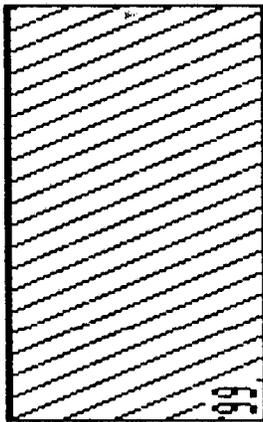
‡ = MET. STATION

□ = DRIFTER AREA

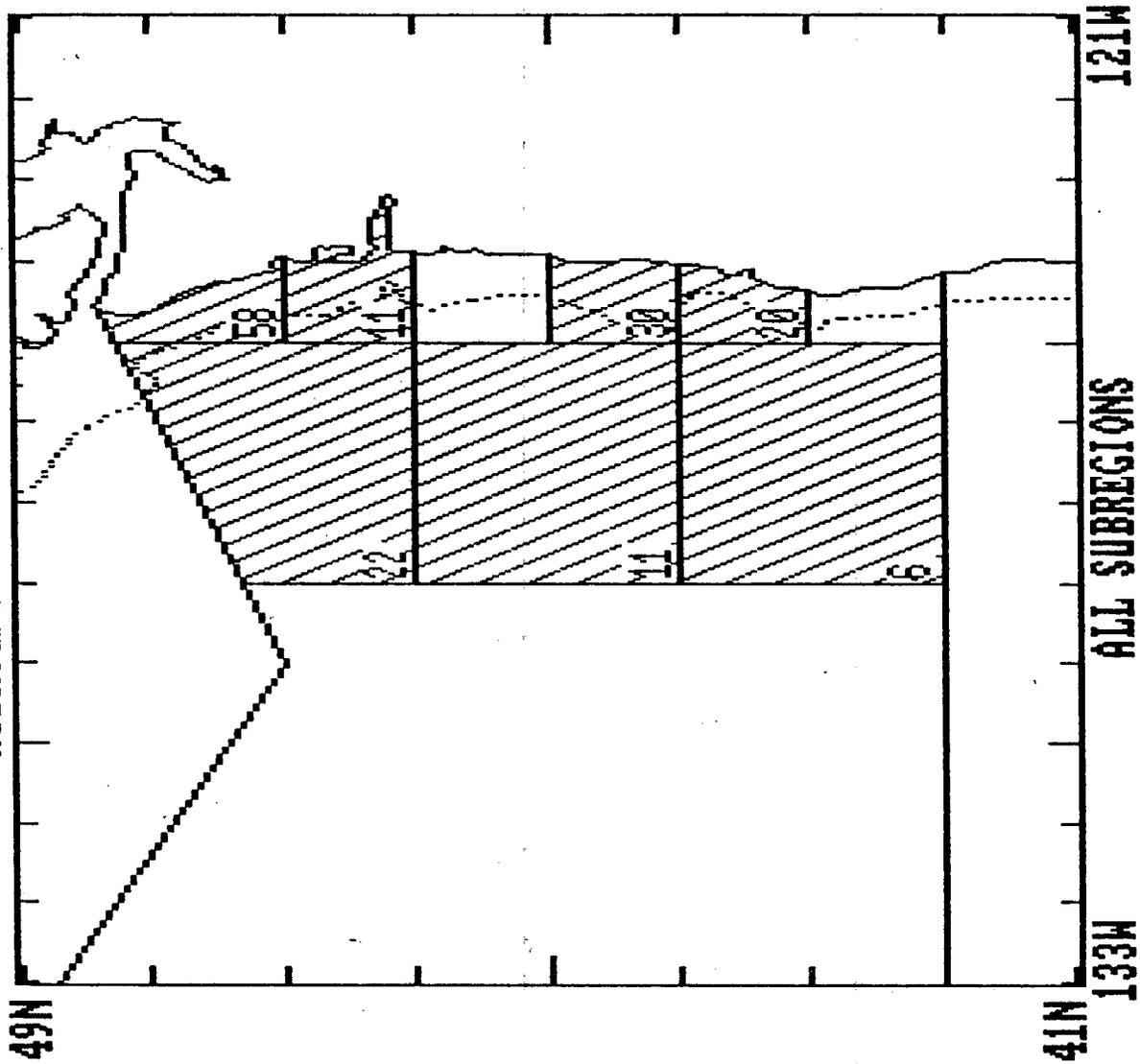
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

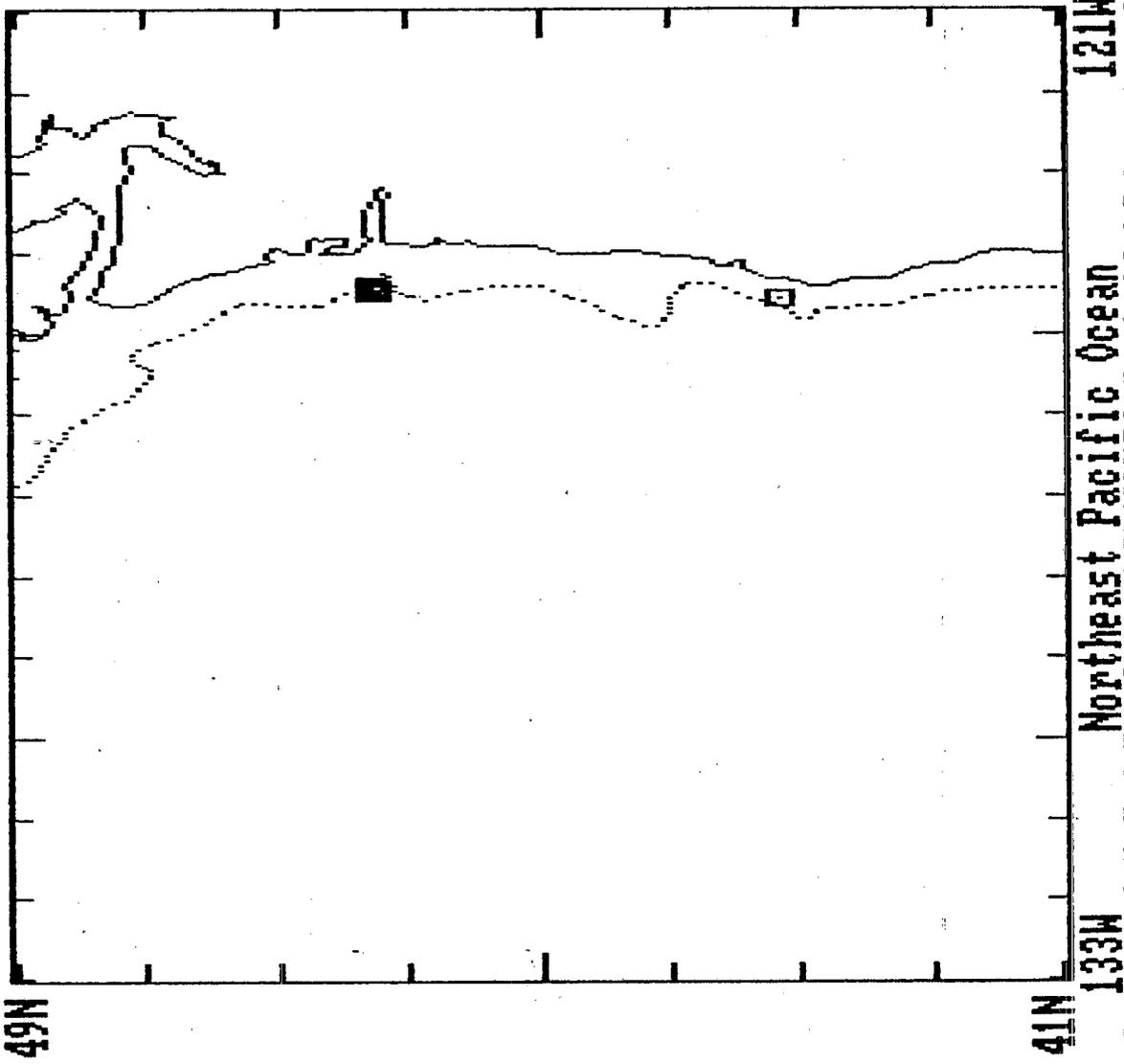
HYDROGRAPHIC SURVEY
COVERAGE BY AREA



HYDROGRAPHIC CASTS (1982)



MOORED CURRENT METERS (1983)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

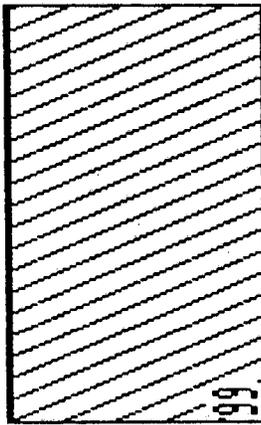
‡ = MET. STATION

▭ = DRIFTER AREA

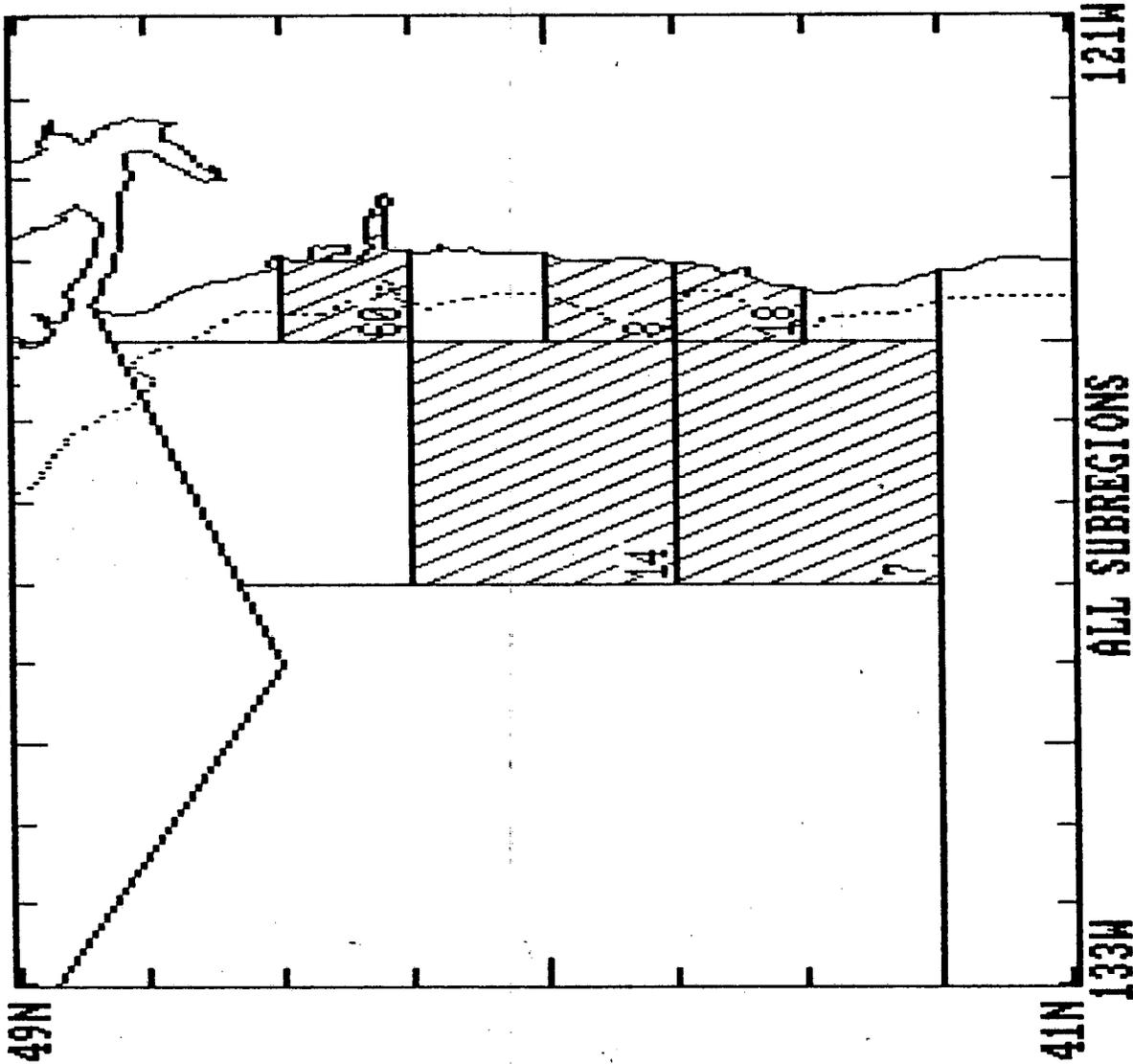
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

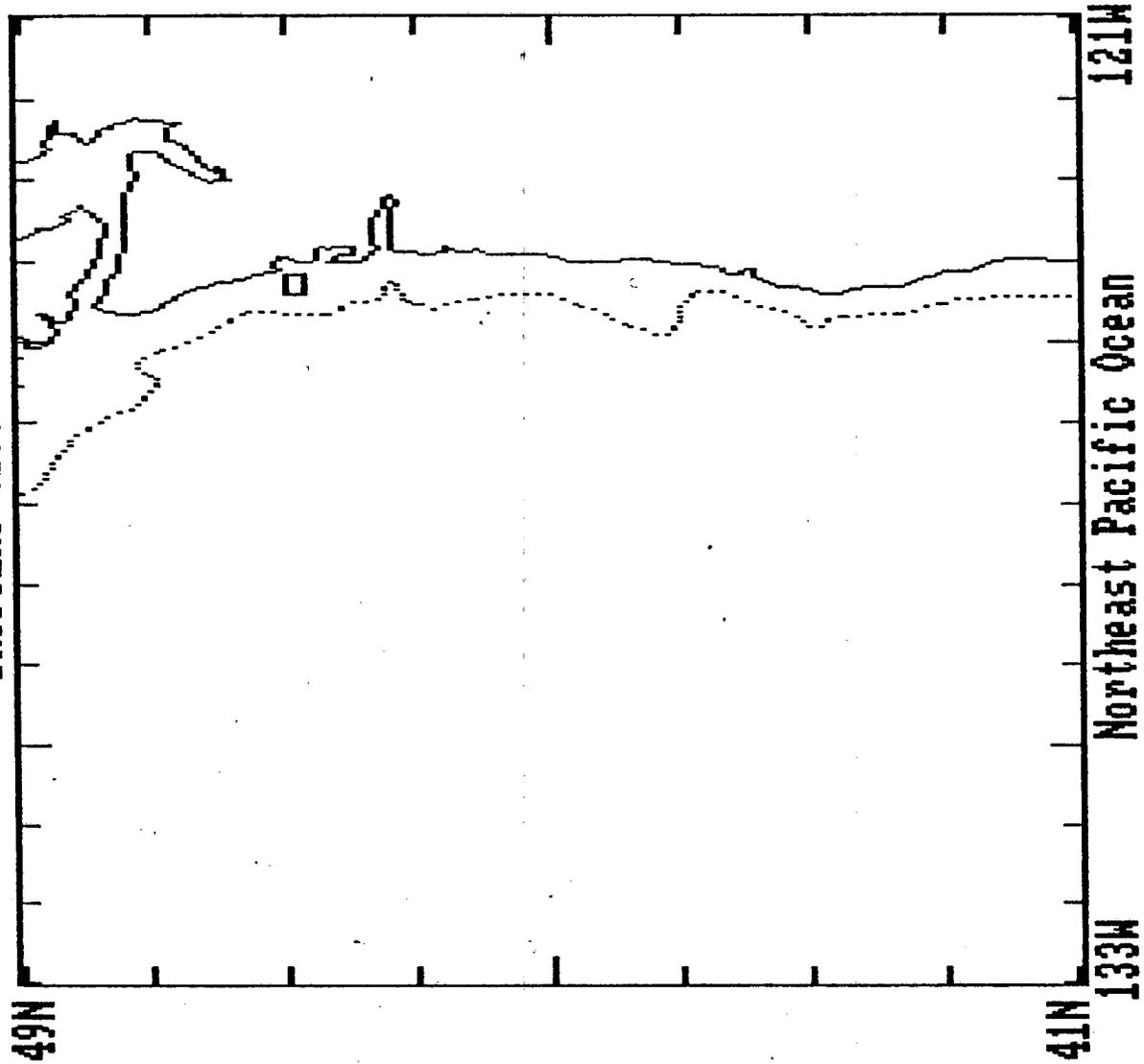
HYDROGRAPHIC SURVEY
COVERAGE BY AREA



HYDROGRAPHIC CASTS (1983)



DRIFTERS (1984)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

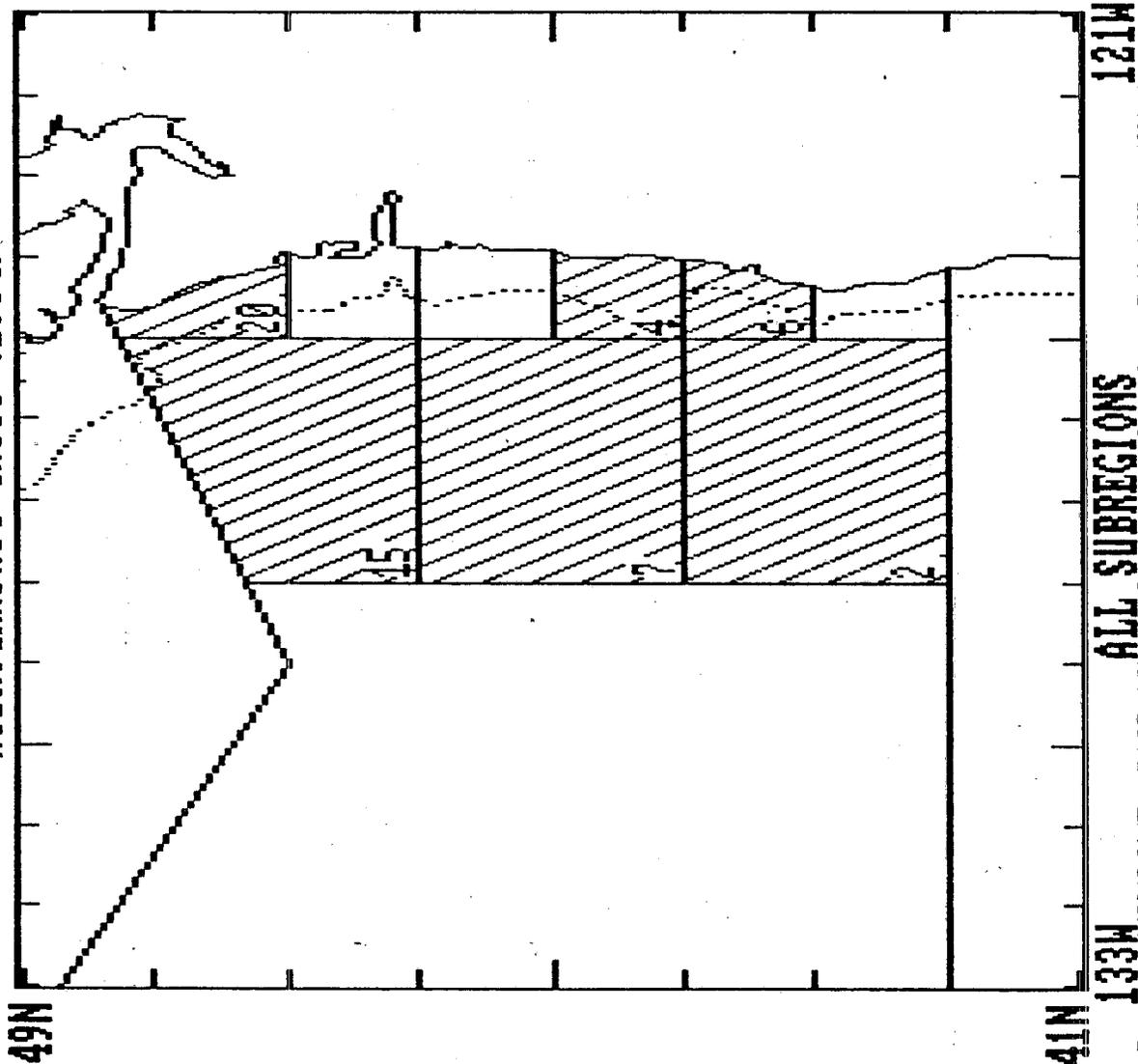
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

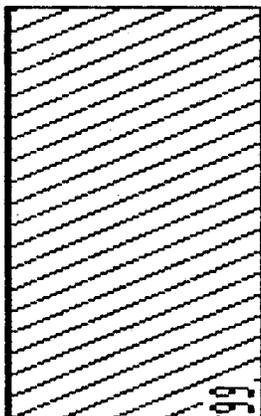
HYDROGRAPHIC CASTS (1984)



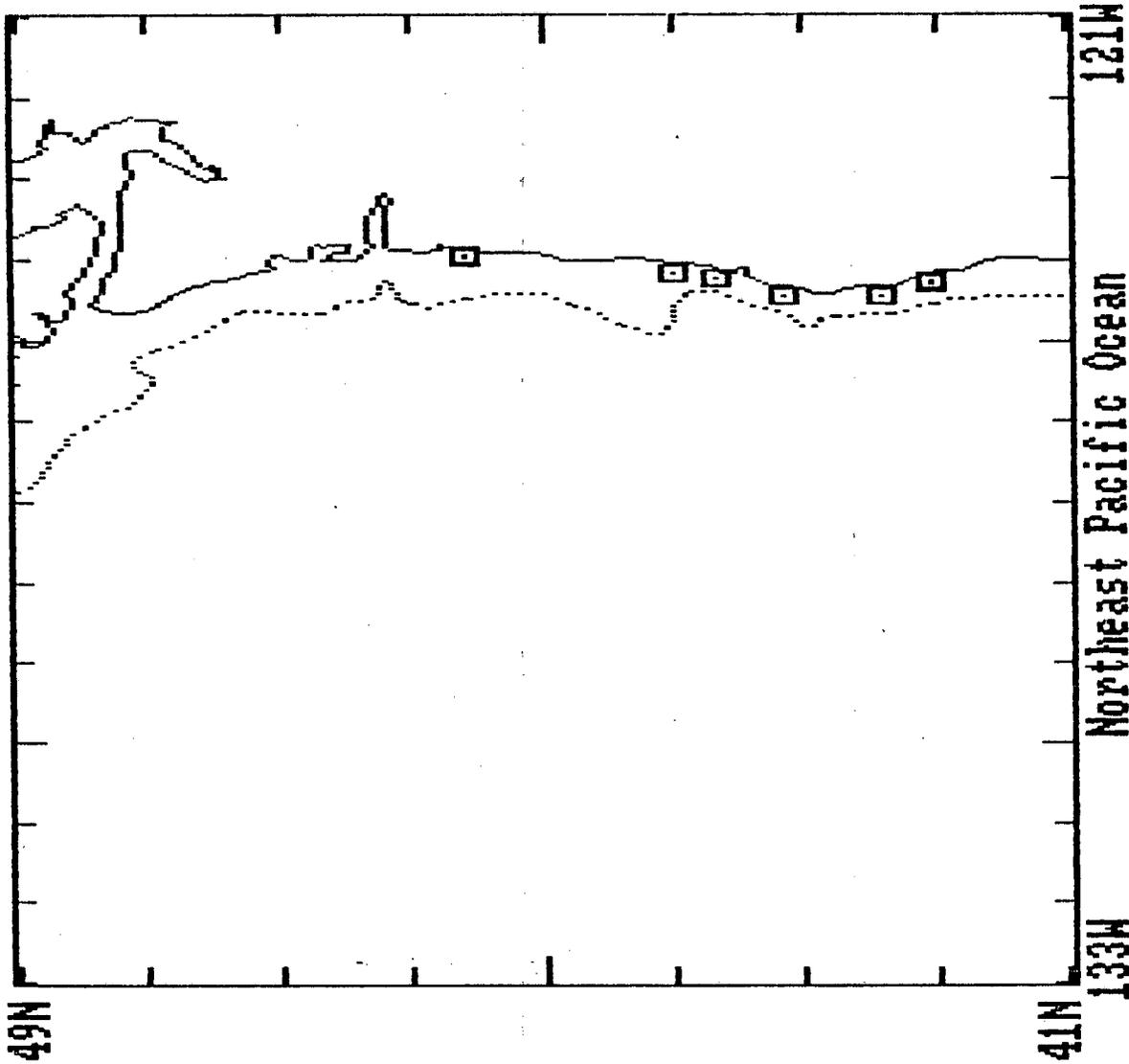
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



MOORED CURRENT METERS (1985)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

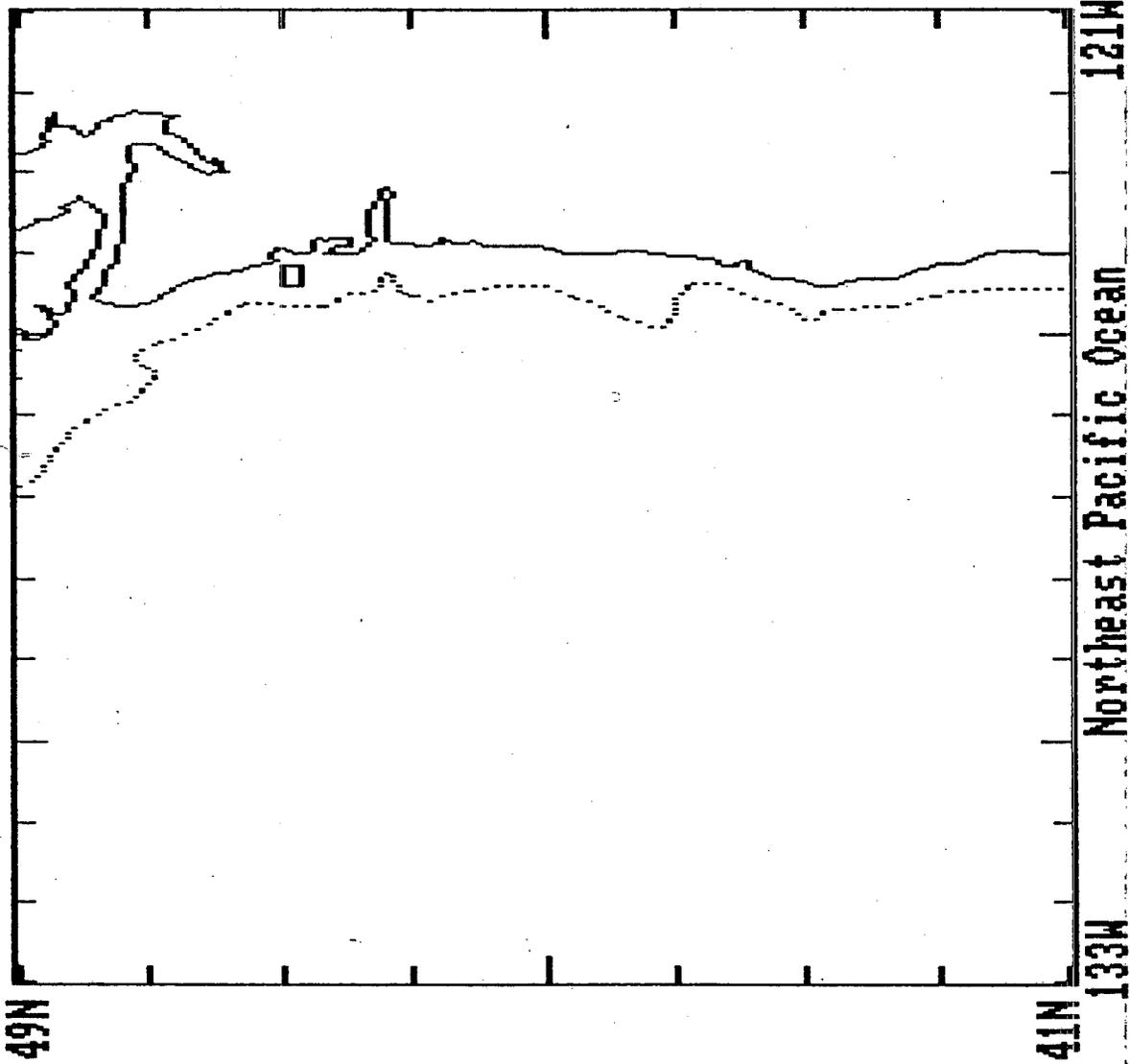
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△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA

DRIFTERS (1985)



**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

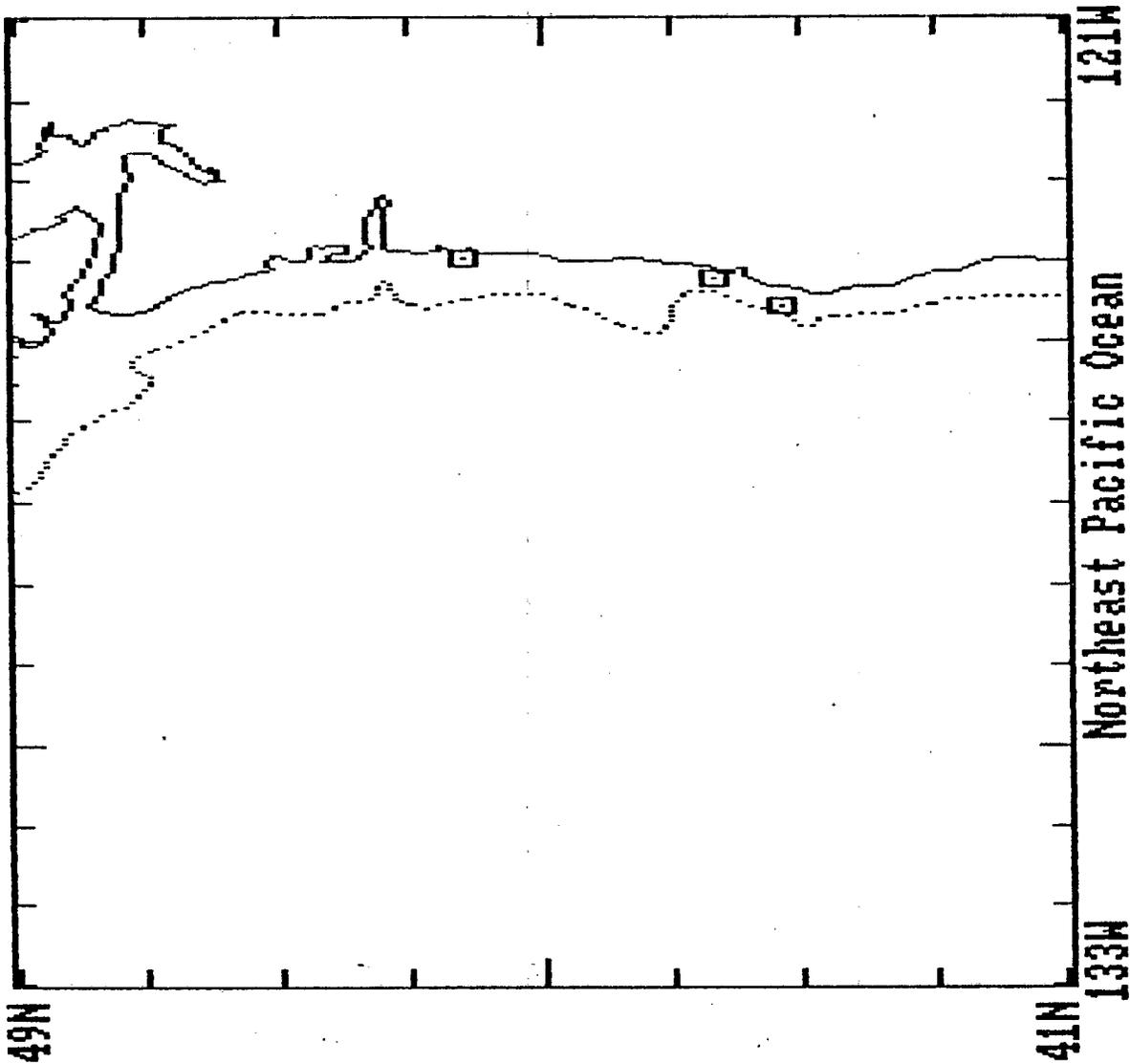
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△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

MOORED CURRENT METERS (1986)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

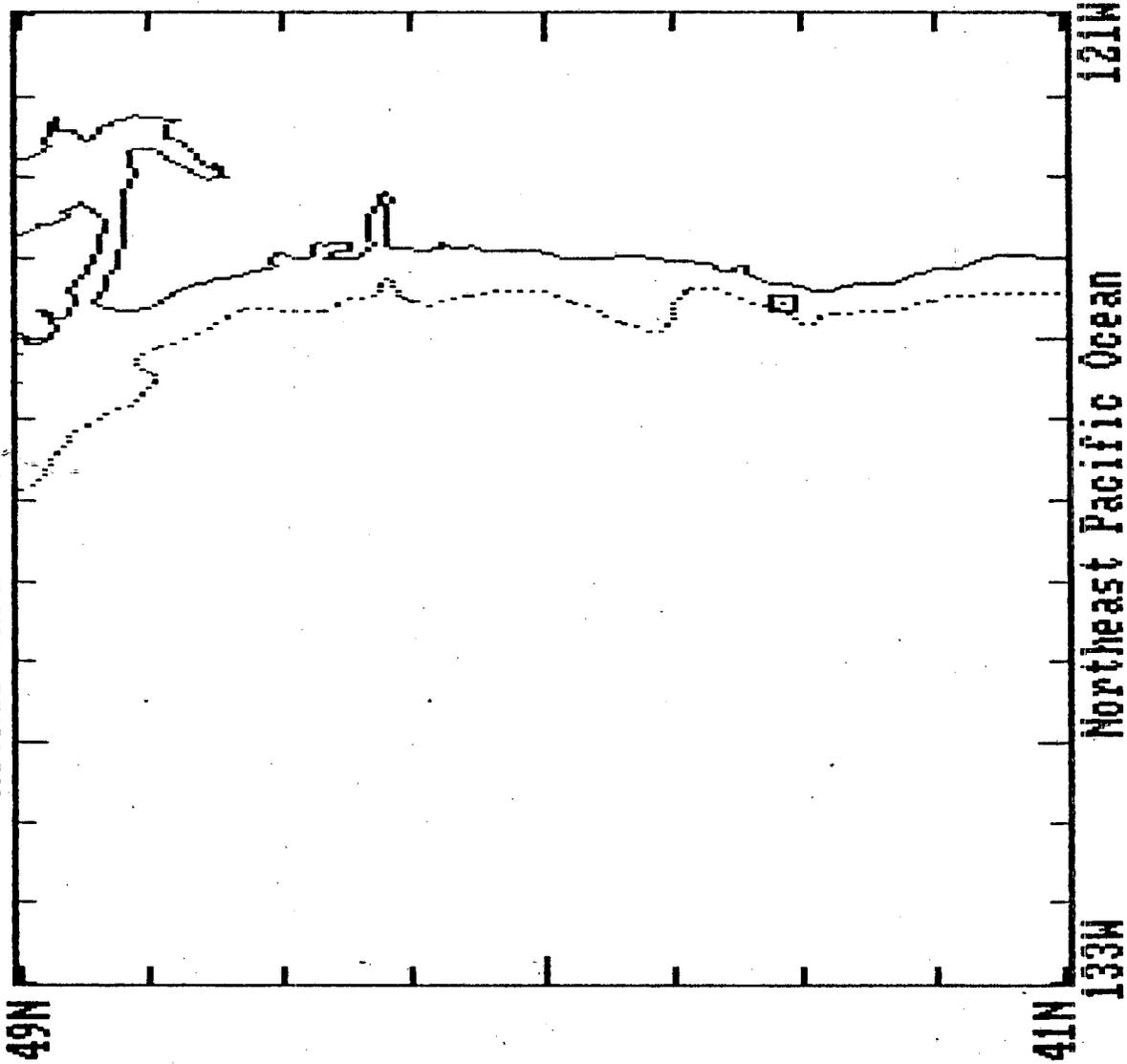
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△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

MOORED CURRENT METERS (1987)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

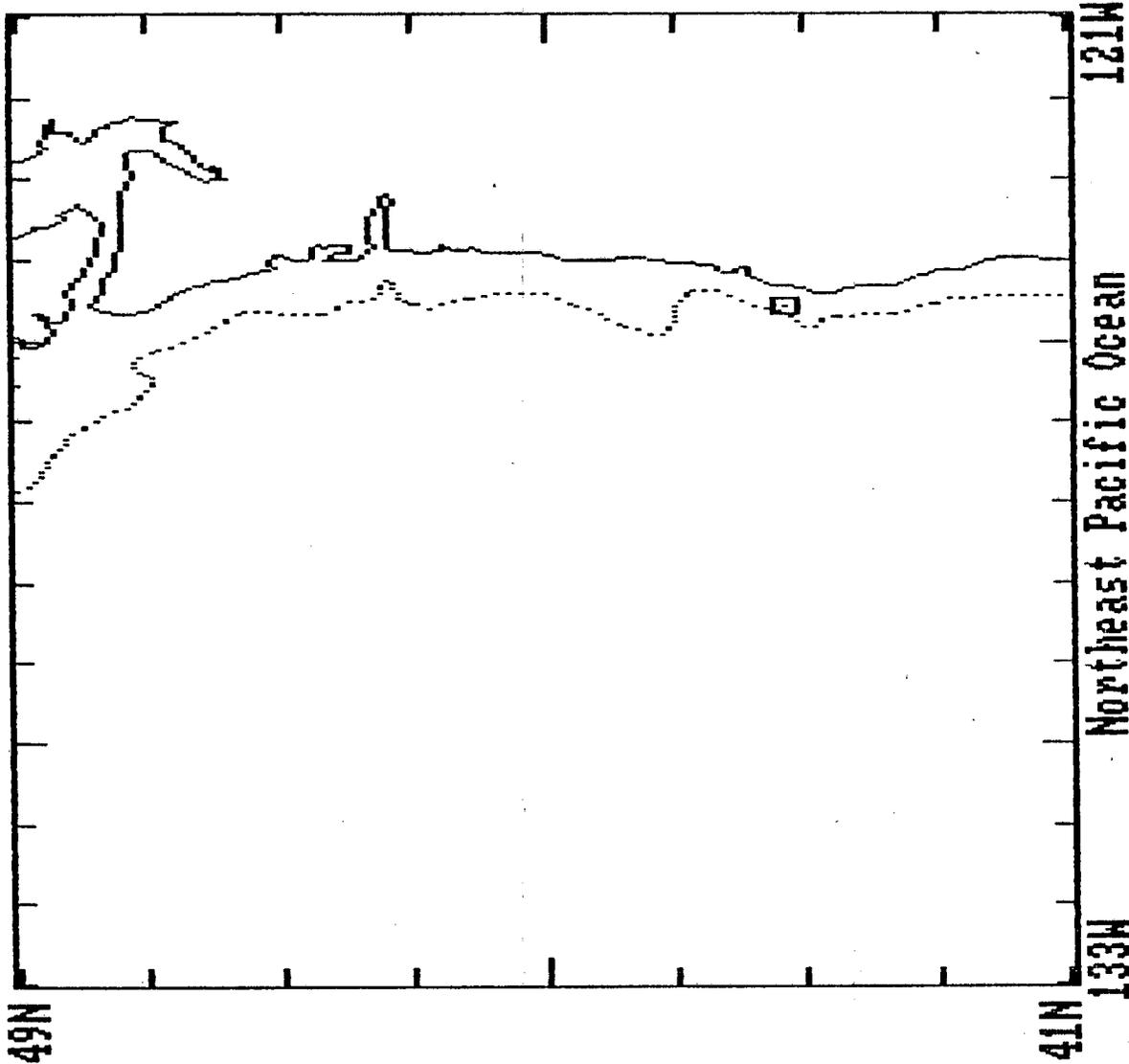
□ = CURRENT METER

△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA

MOORED CURRENT METERS (1988)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

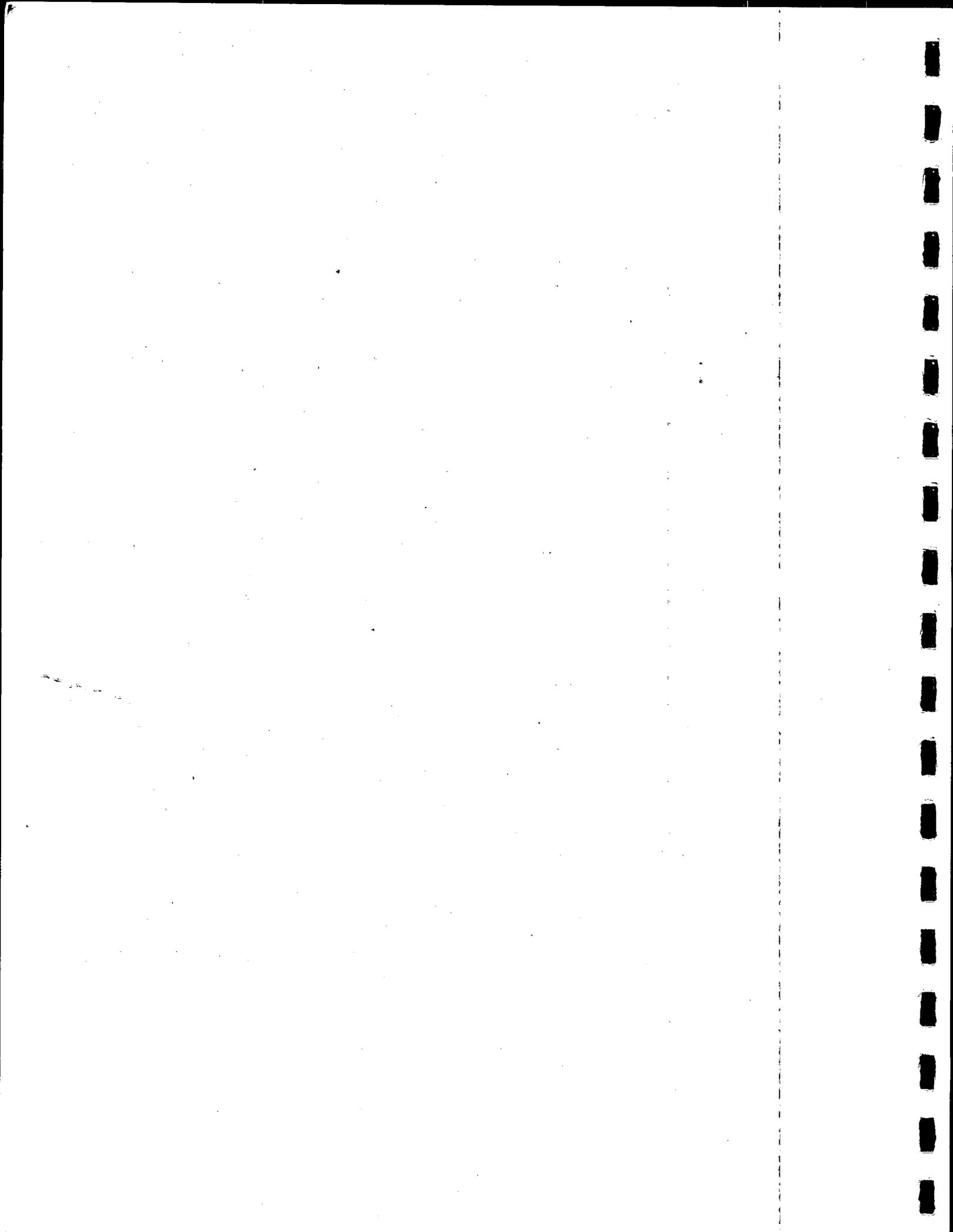
LEGEND

□ = CURRENT METER

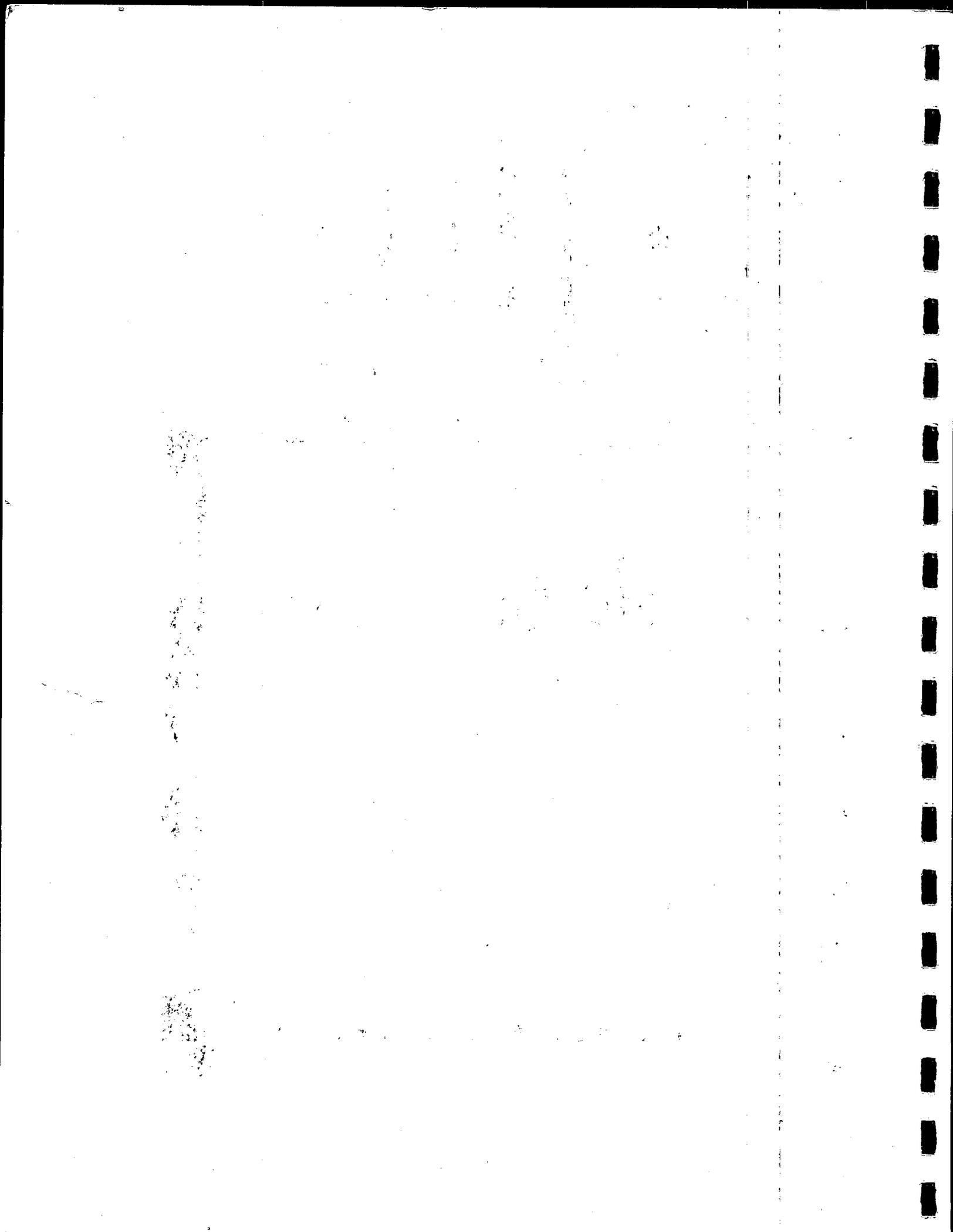
△ = SEA LEVEL SENSOR

‡ = MET. STATION

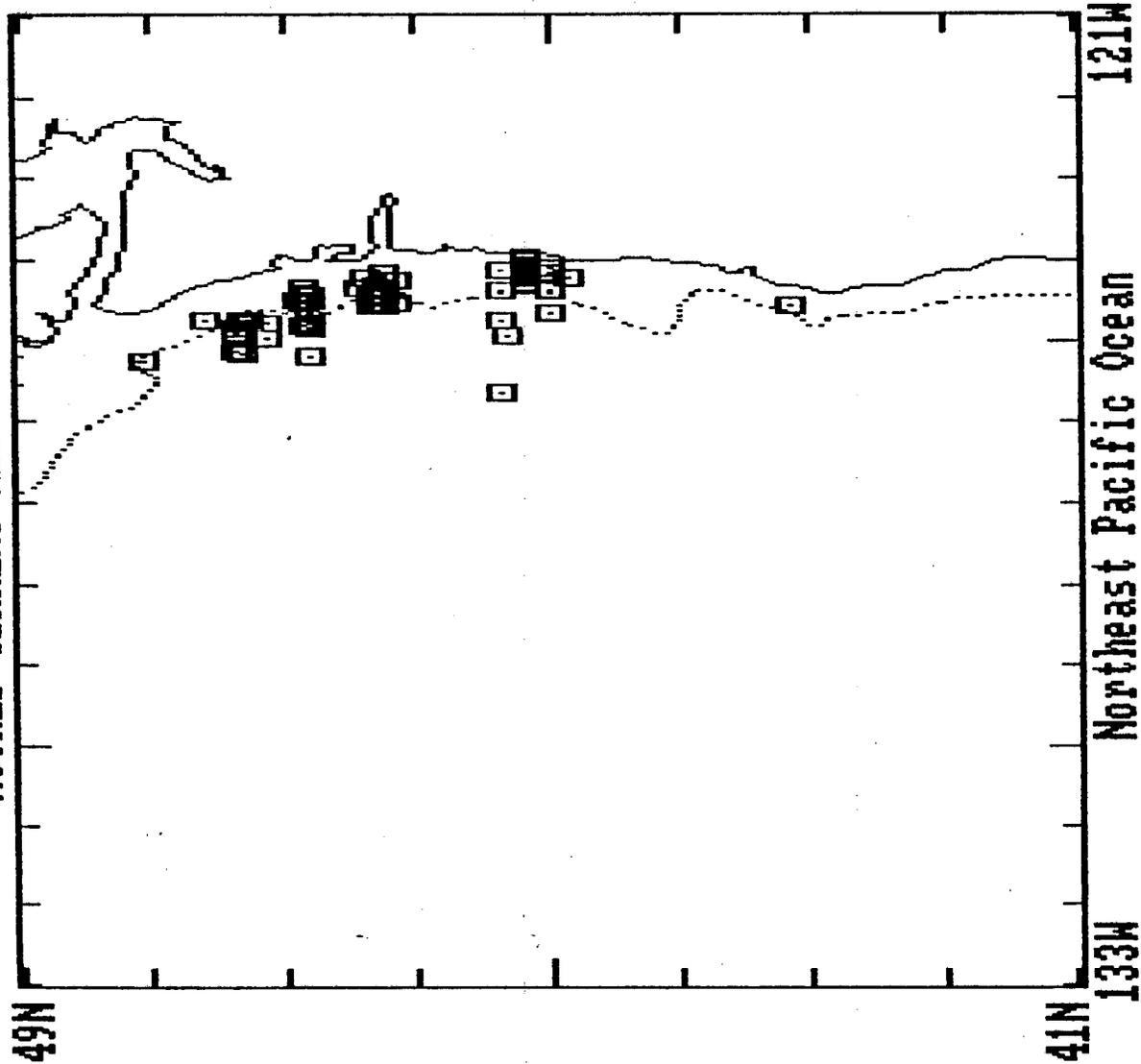
□ = DRIFTER AREA



**E.2 - Plots of All Data Types Binned by
Season**



MOORED CURRENT METER (WINTER)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

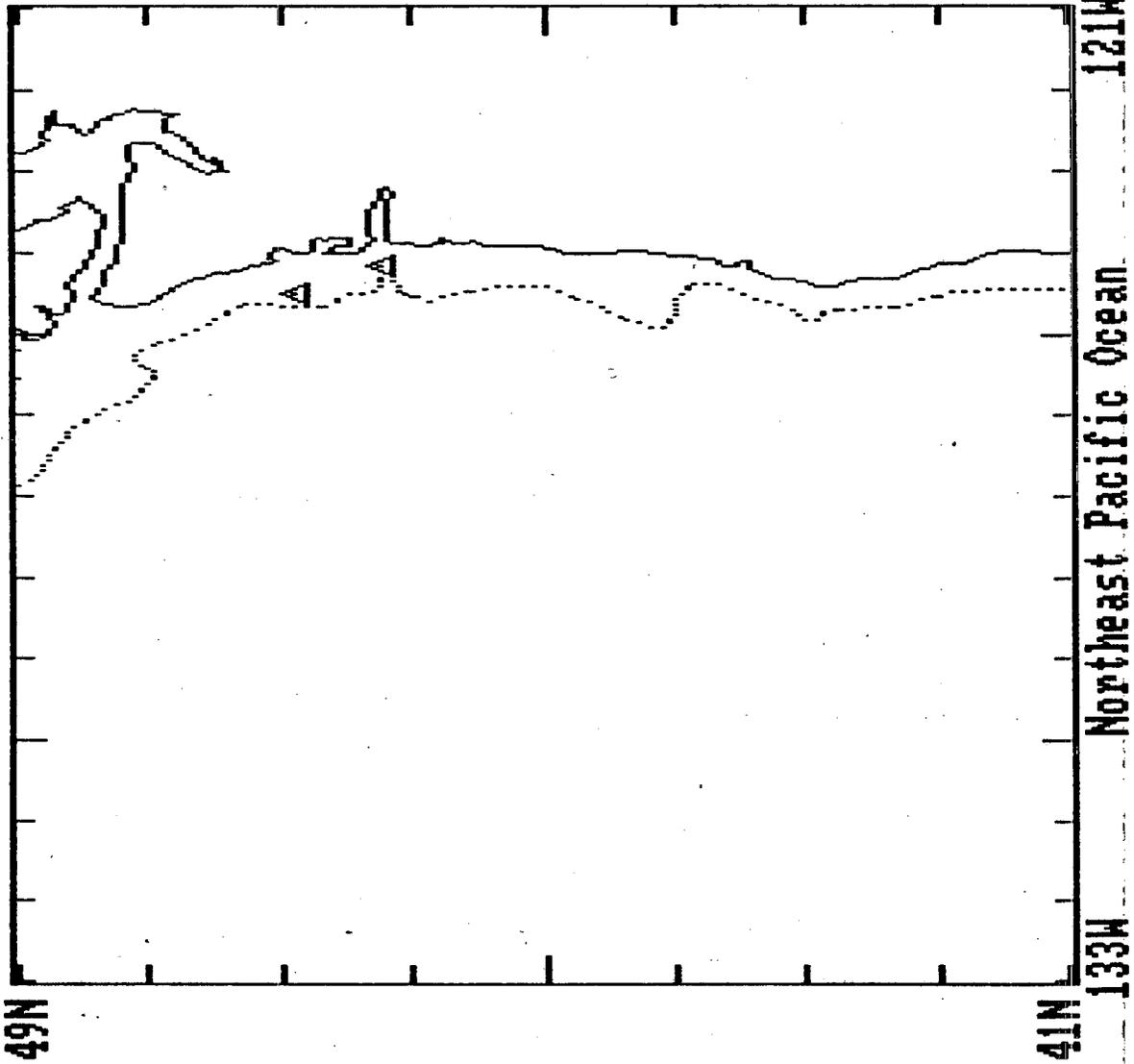
◻ = CURRENT METER

△ = SEA LEVEL SENSOR

‡ = MET. STATION

◻ = DRIFTER AREA

SEA LEVEL SENSOR (WINTER)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

- ◻ = CURRENT METER
- ▲ = SEA LEVEL SENSOR
- † = MET. STATION
- ◻ = DRIFTER AREA

**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

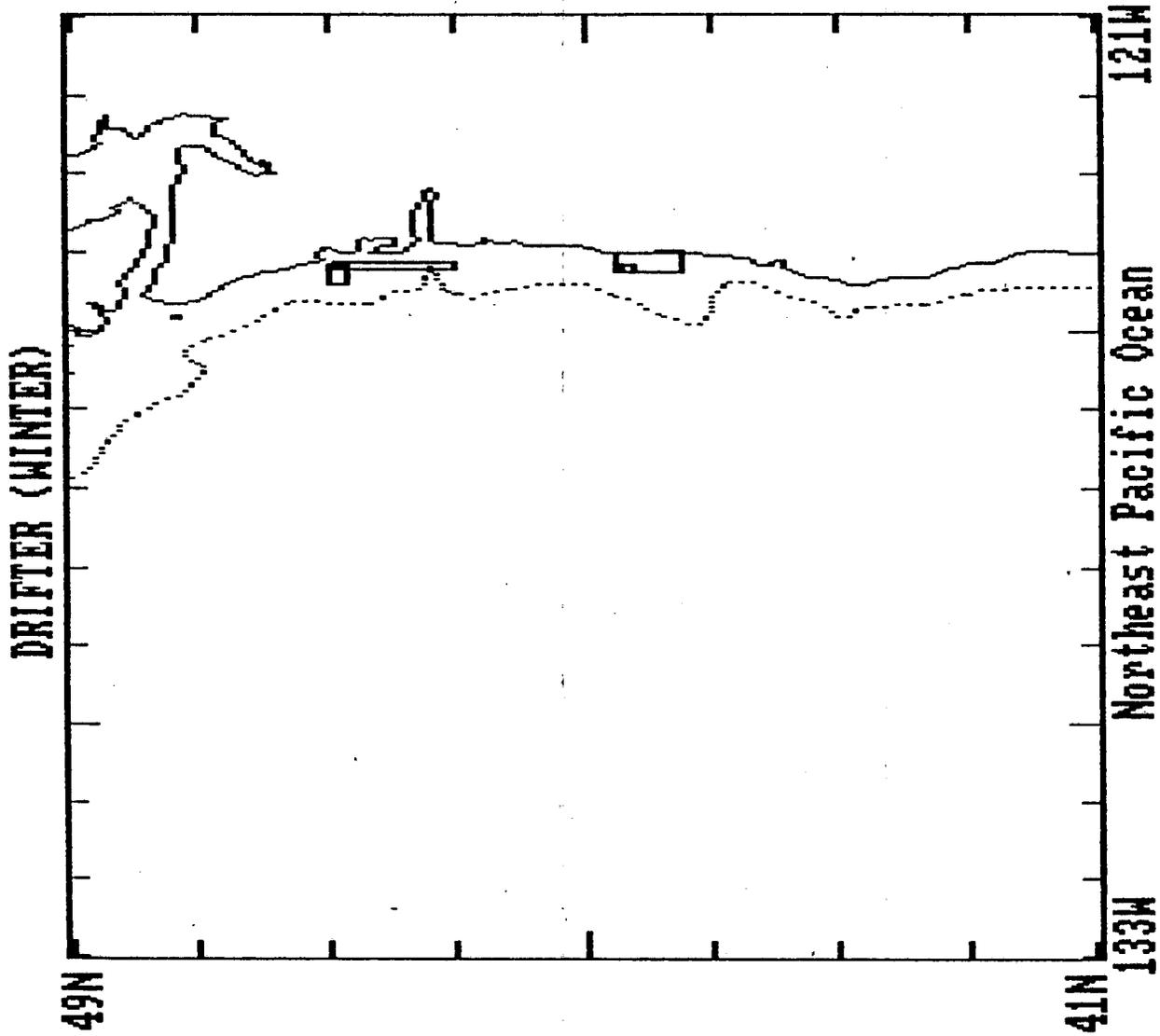
LEGEND

□ = CURRENT METER

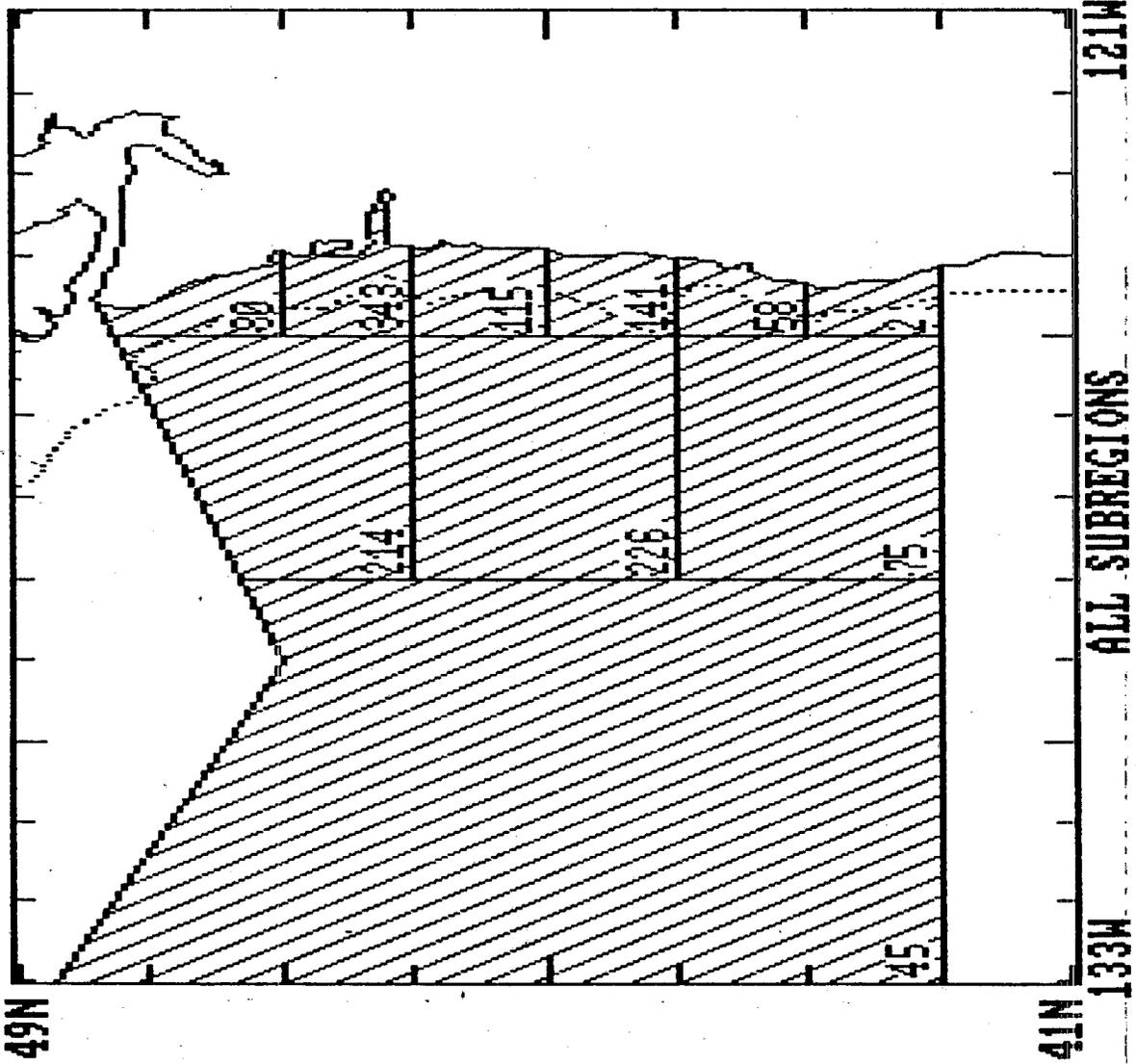
△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA



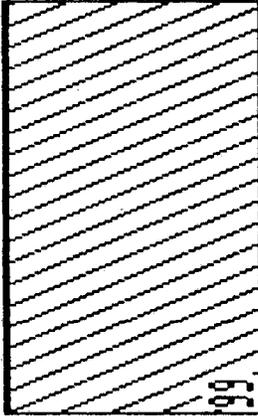
HYDROGRAPHY (WINTER)



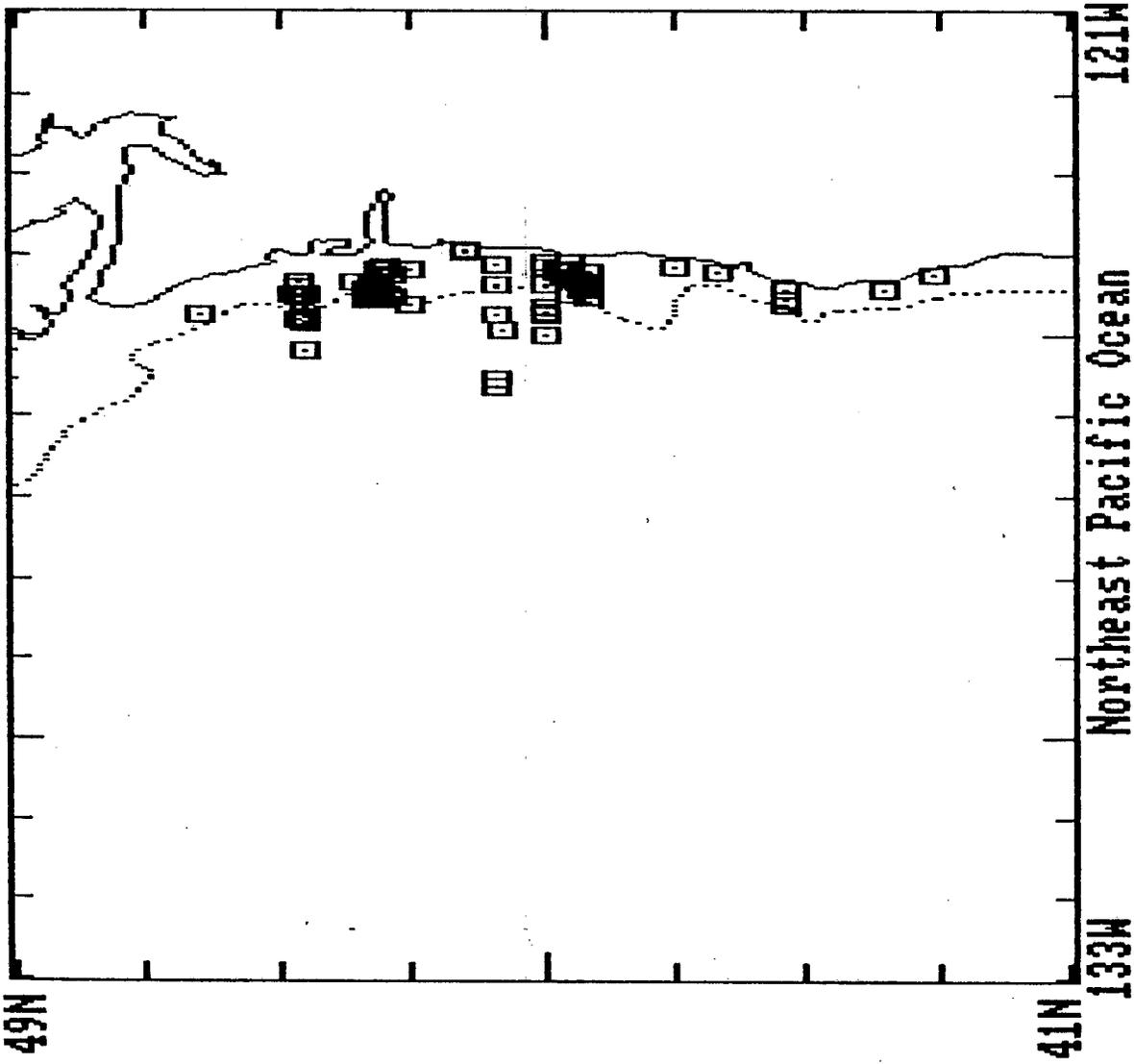
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

HYDROGRAPHIC SURVEY
COVERAGE BY AREA



MOORED CURRENT METER (SPRING)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

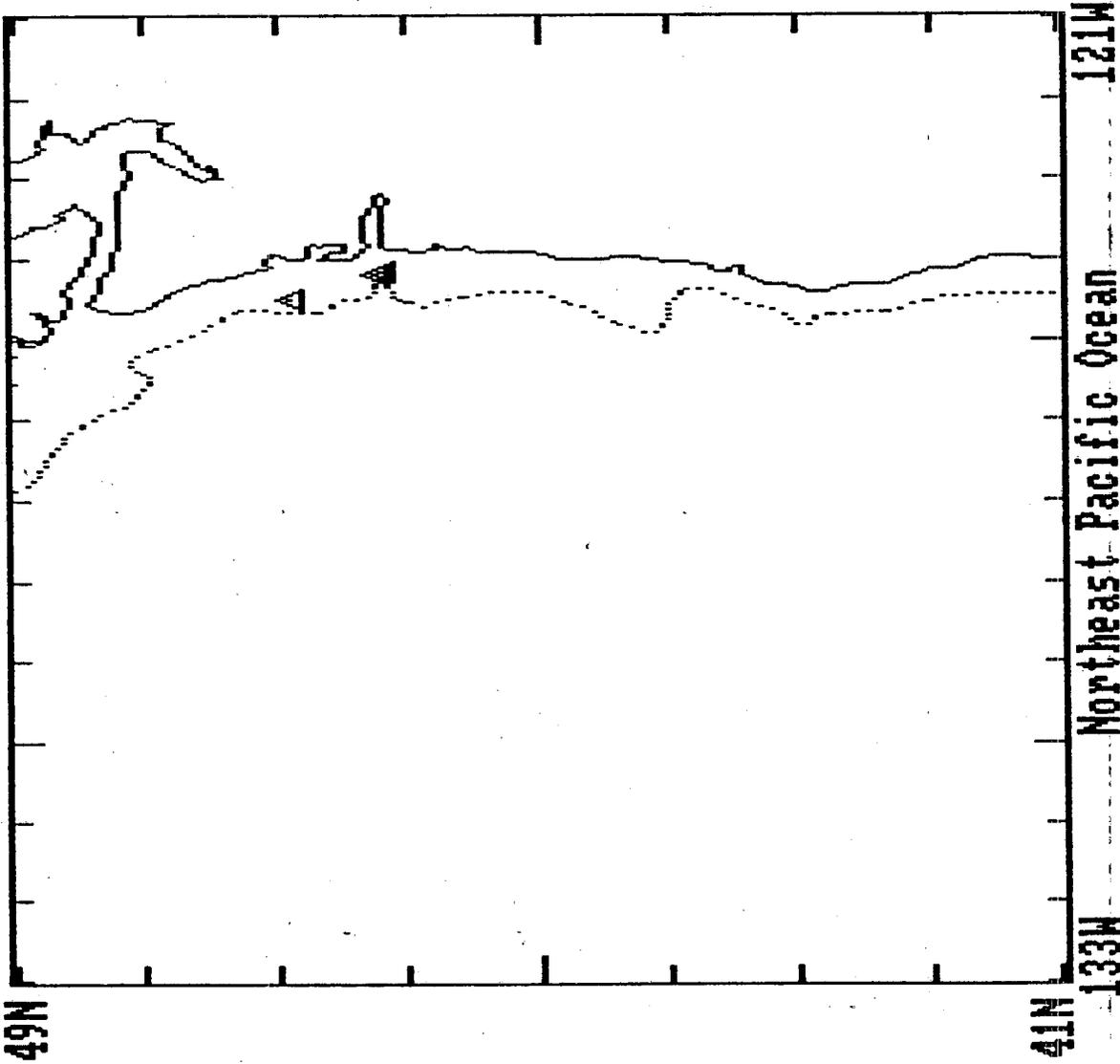
□ = CURRENT METER

△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA

SEA LEVEL SENSOR (SPRING)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

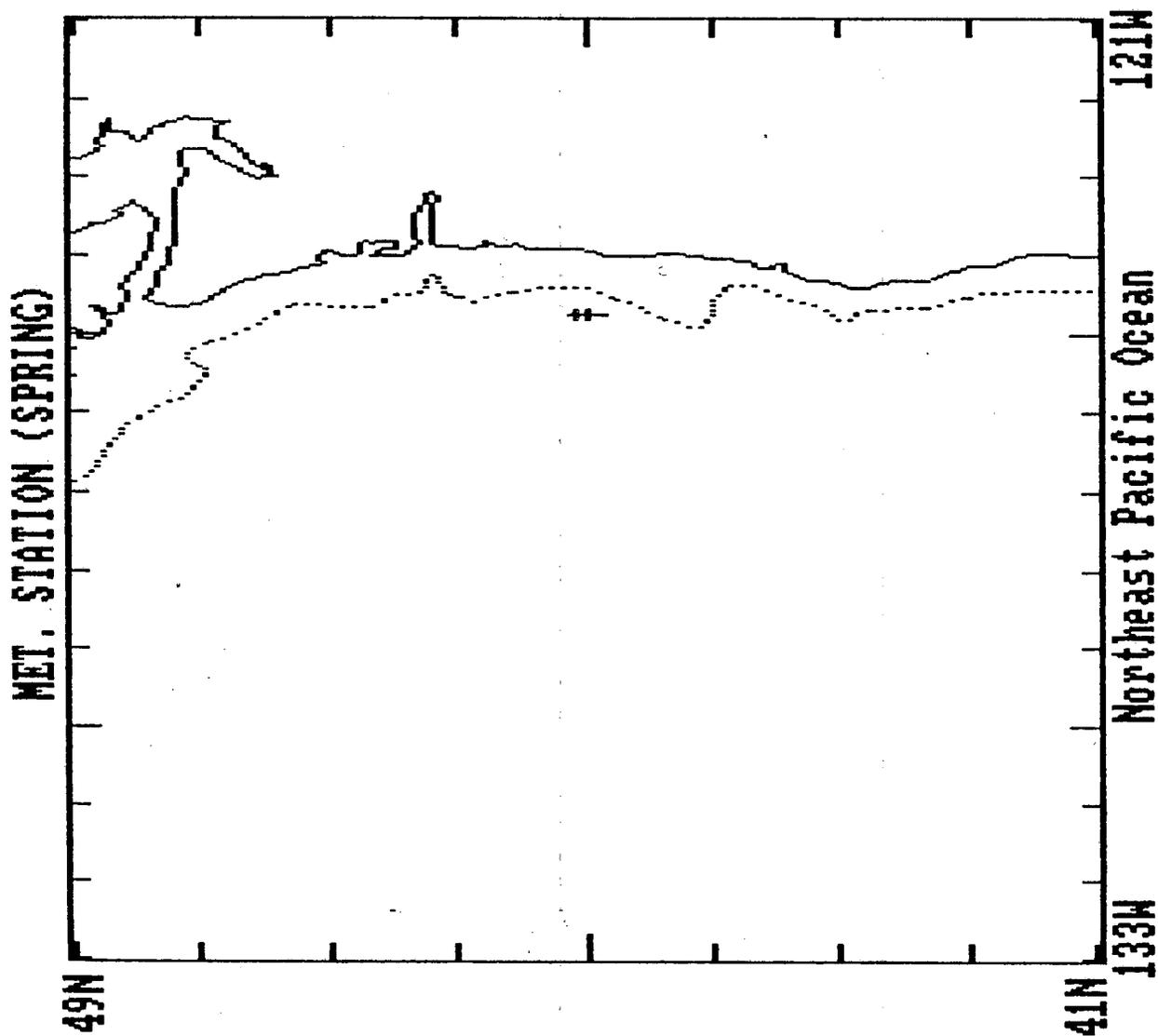
LEGEND

□ = CURRENT METER

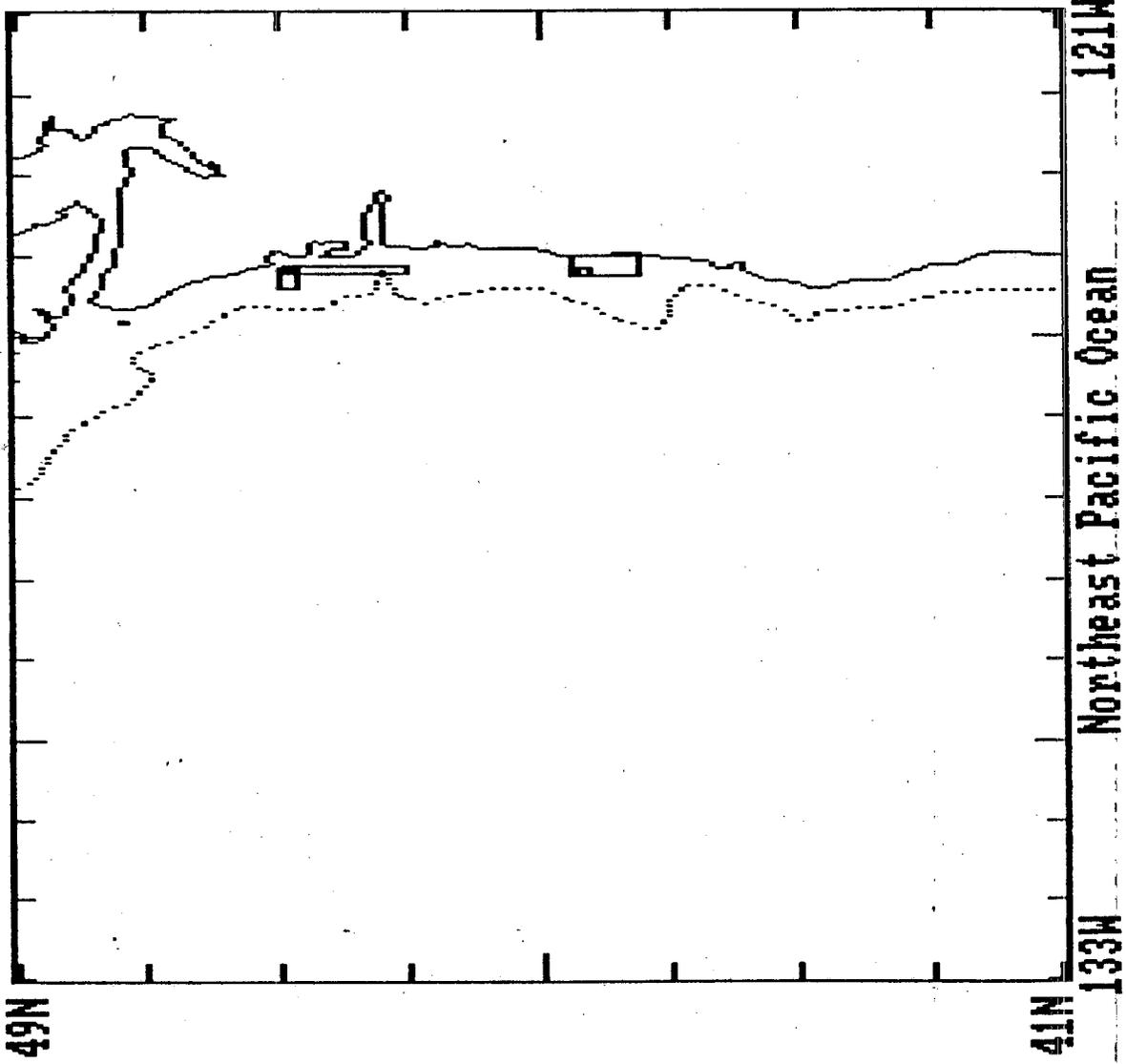
△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA



DRIFTER (SPRING)



**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

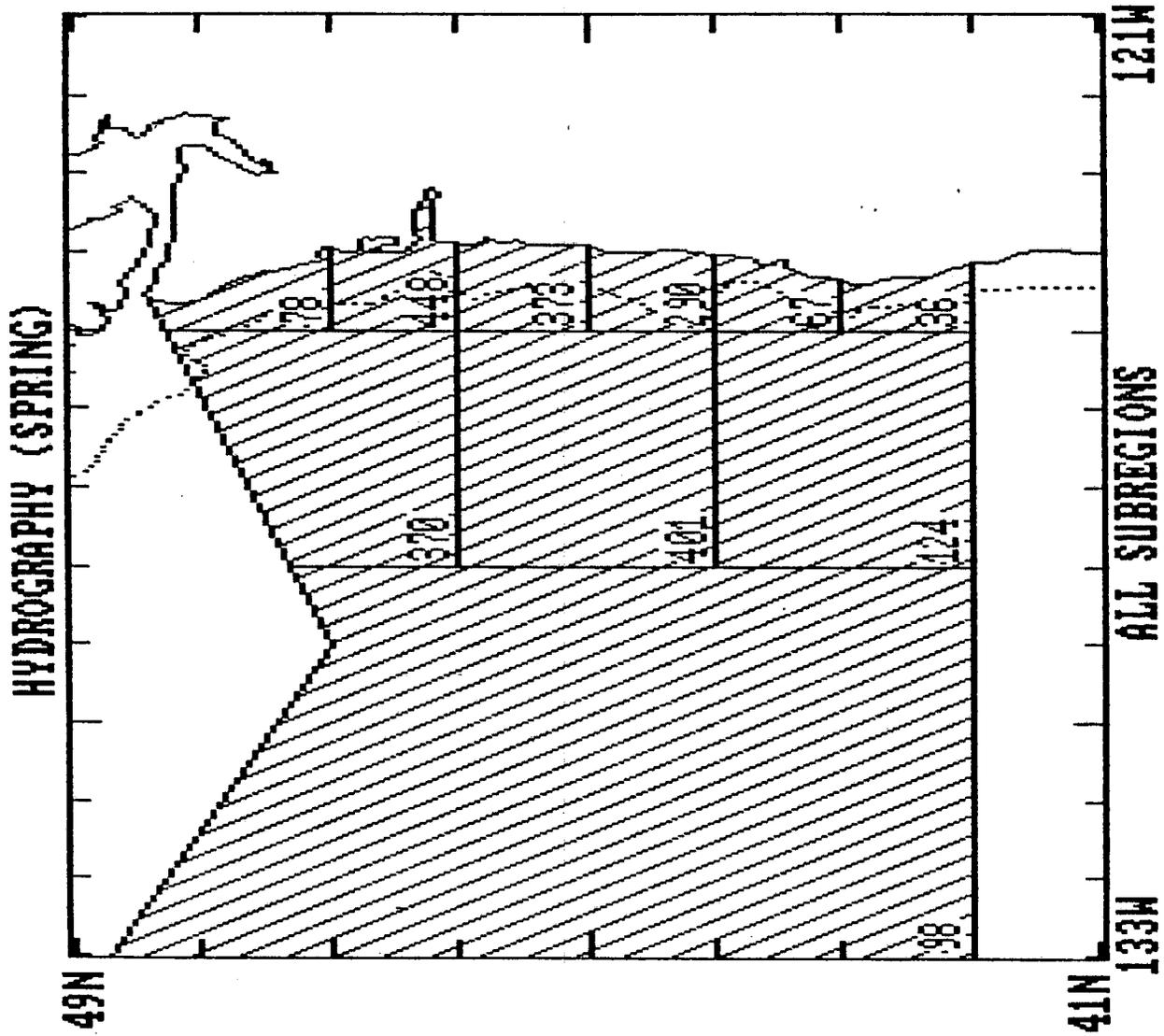
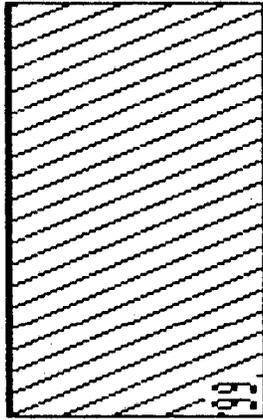
‡ = MET. STATION

□ = DRIFTER AREA

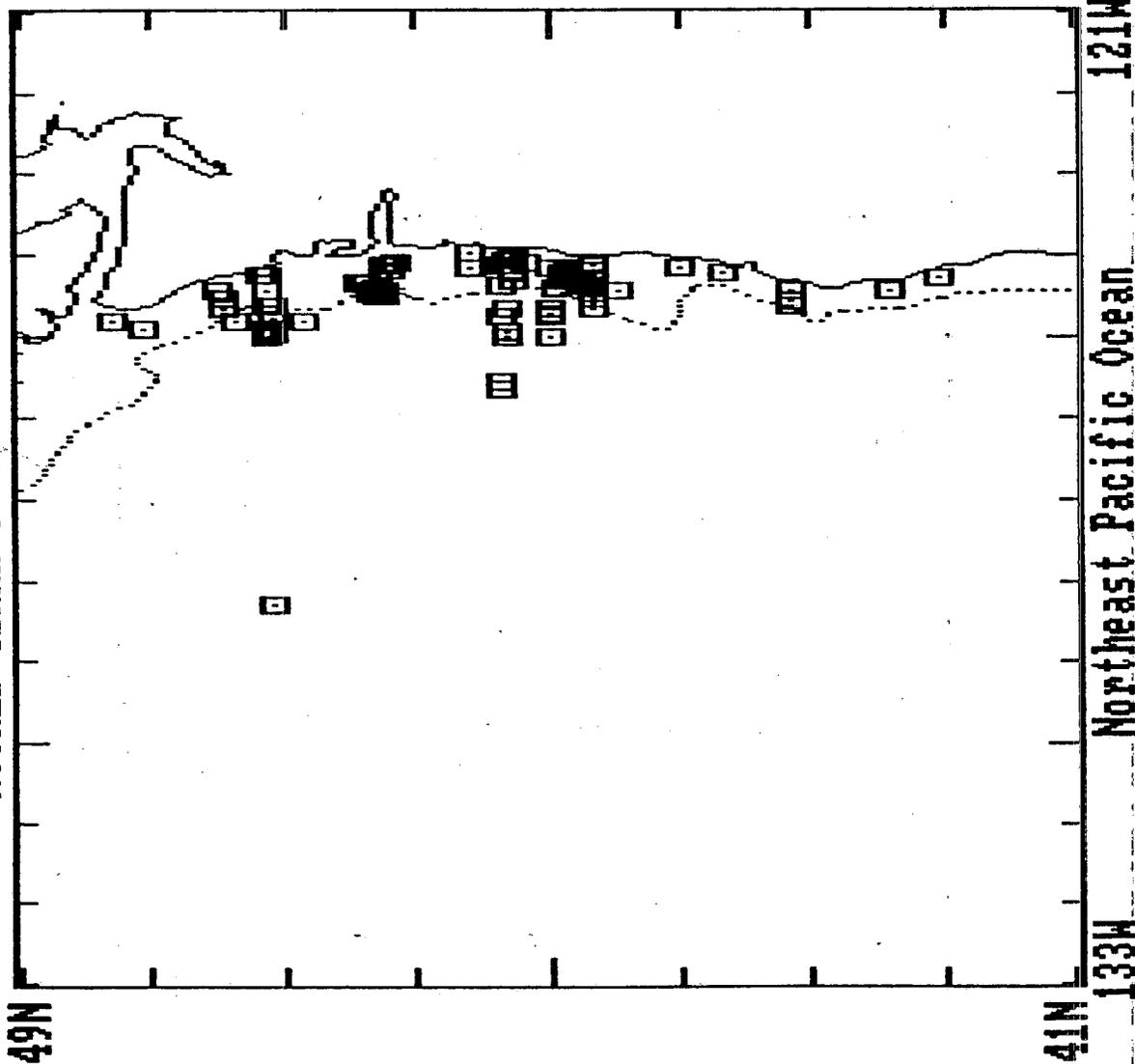
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



MOORED CURRENT METER (SUMMER)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

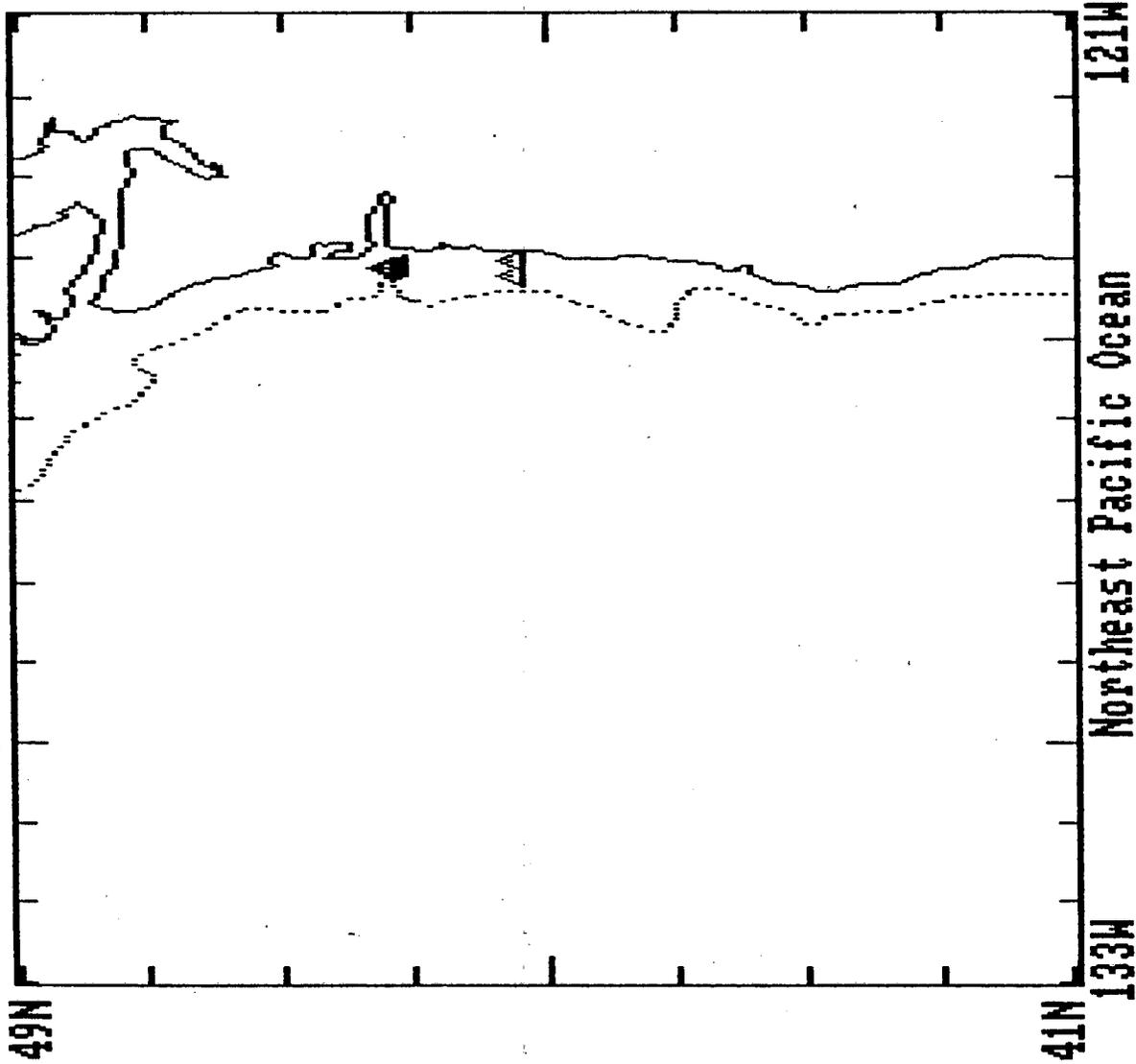
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

SEA LEVEL SENSOR (SUMMER)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

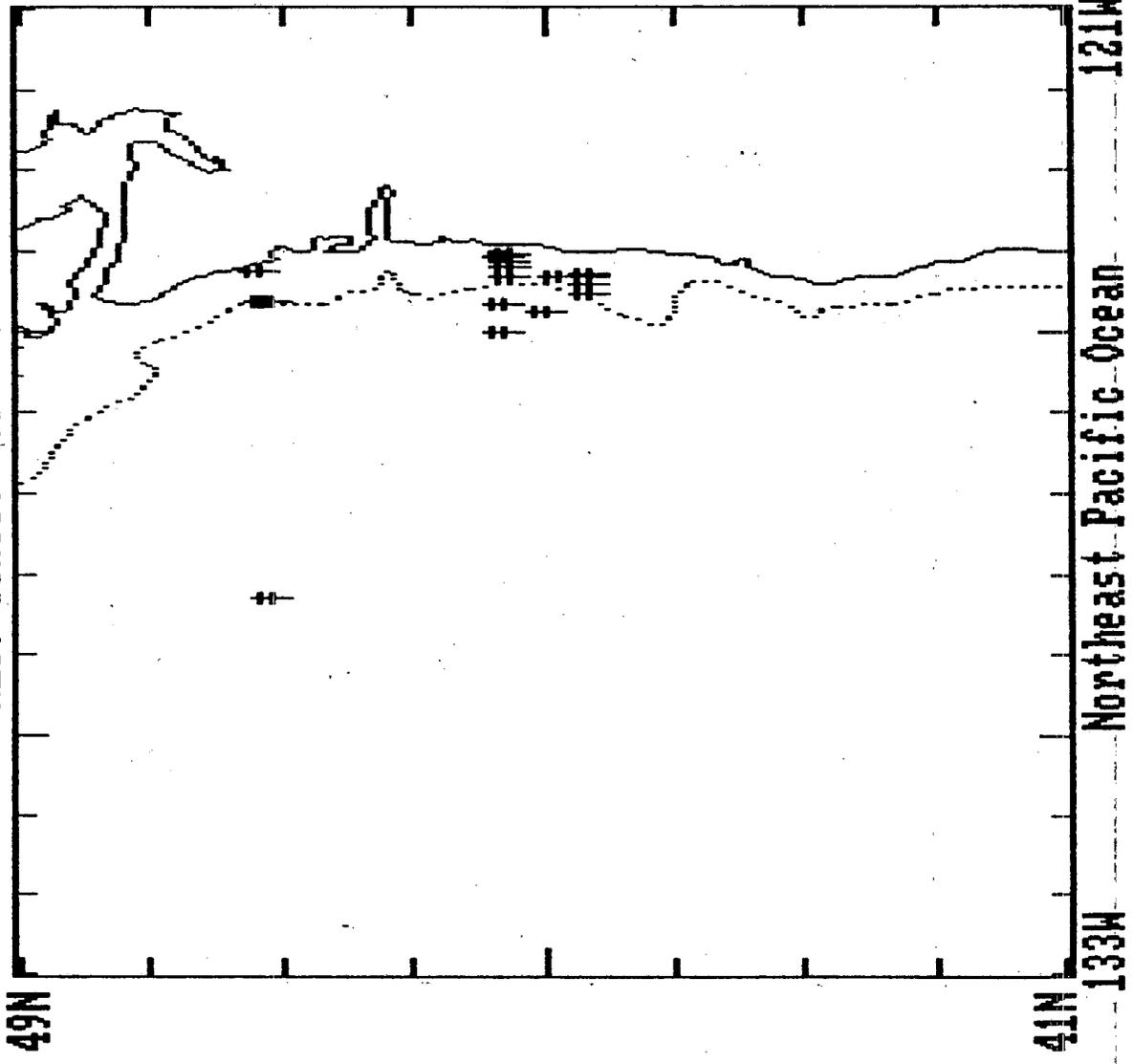
□ = CURRENT METER

△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA

MET. STATION (SUMMER)

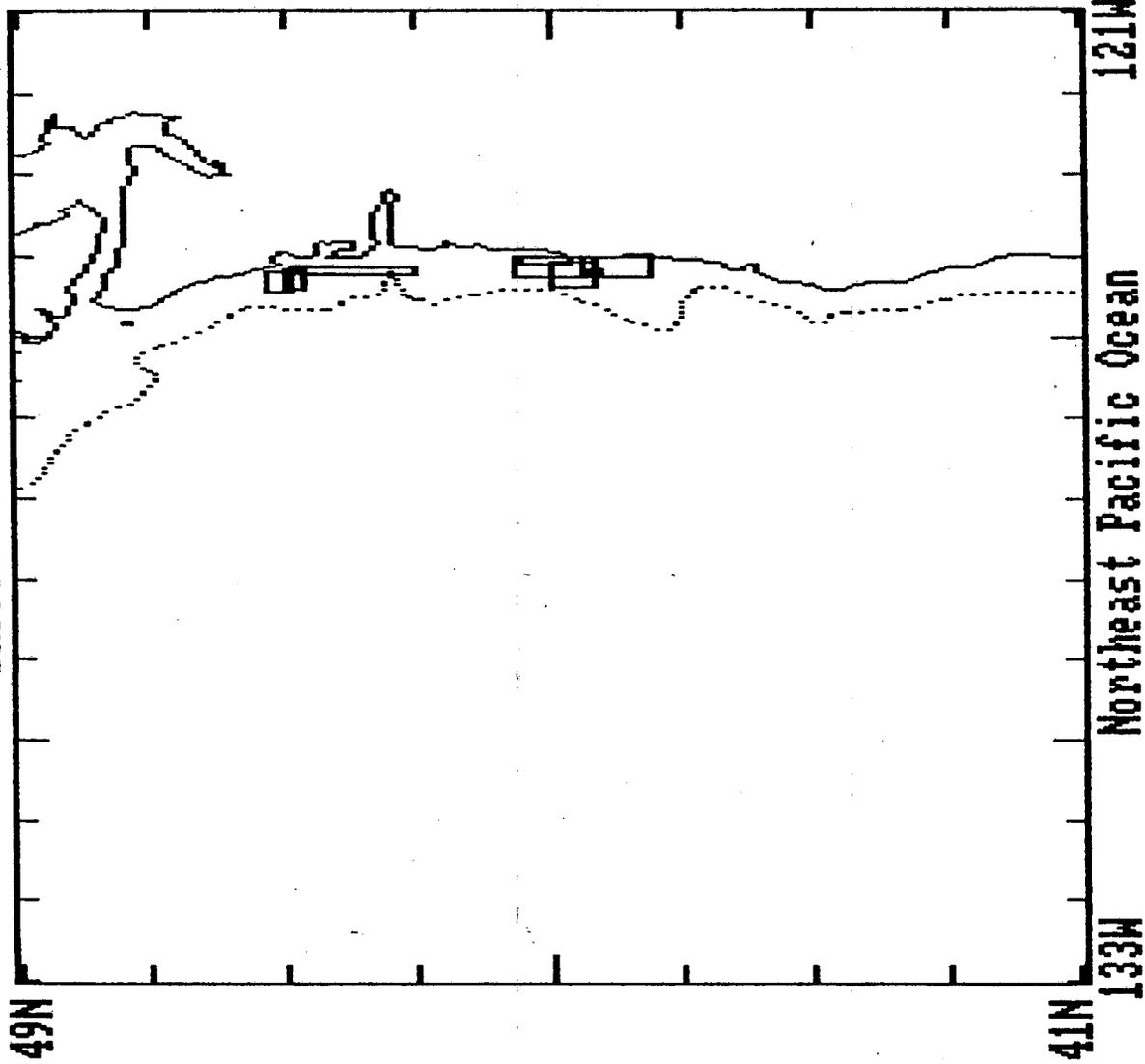


**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

- ◻ = CURRENT METER
- △ = SEA LEVEL SENSOR
- † = MET. STATION
- ◻ = DRIFTER AREA

DRIFTER (SUMMER)



**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

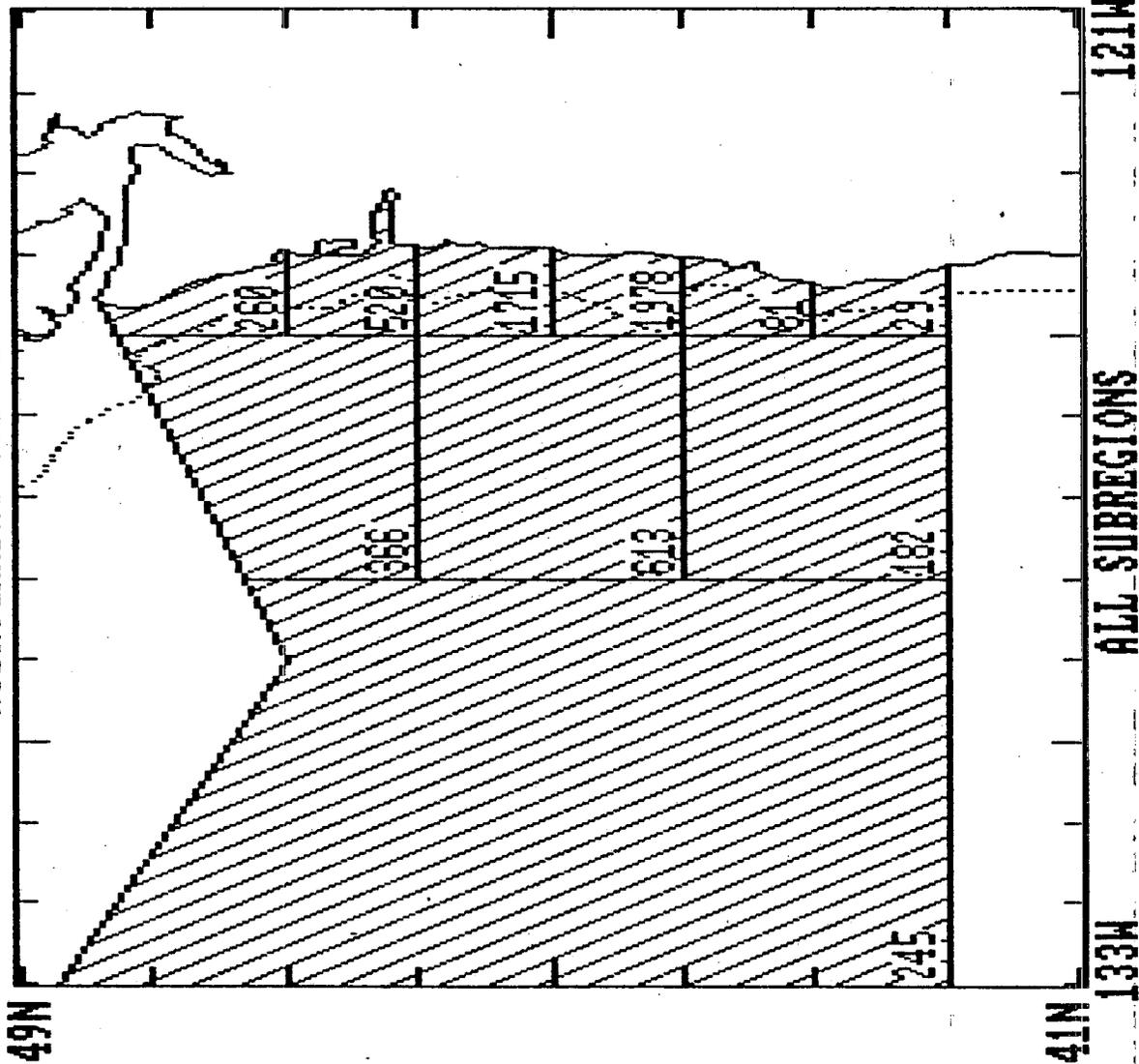
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

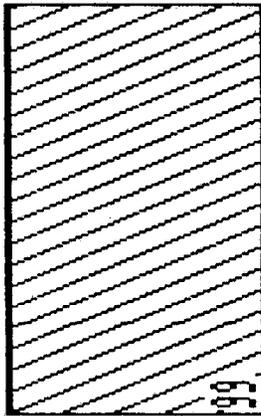
HYDROGRAPHY (SUMMER)



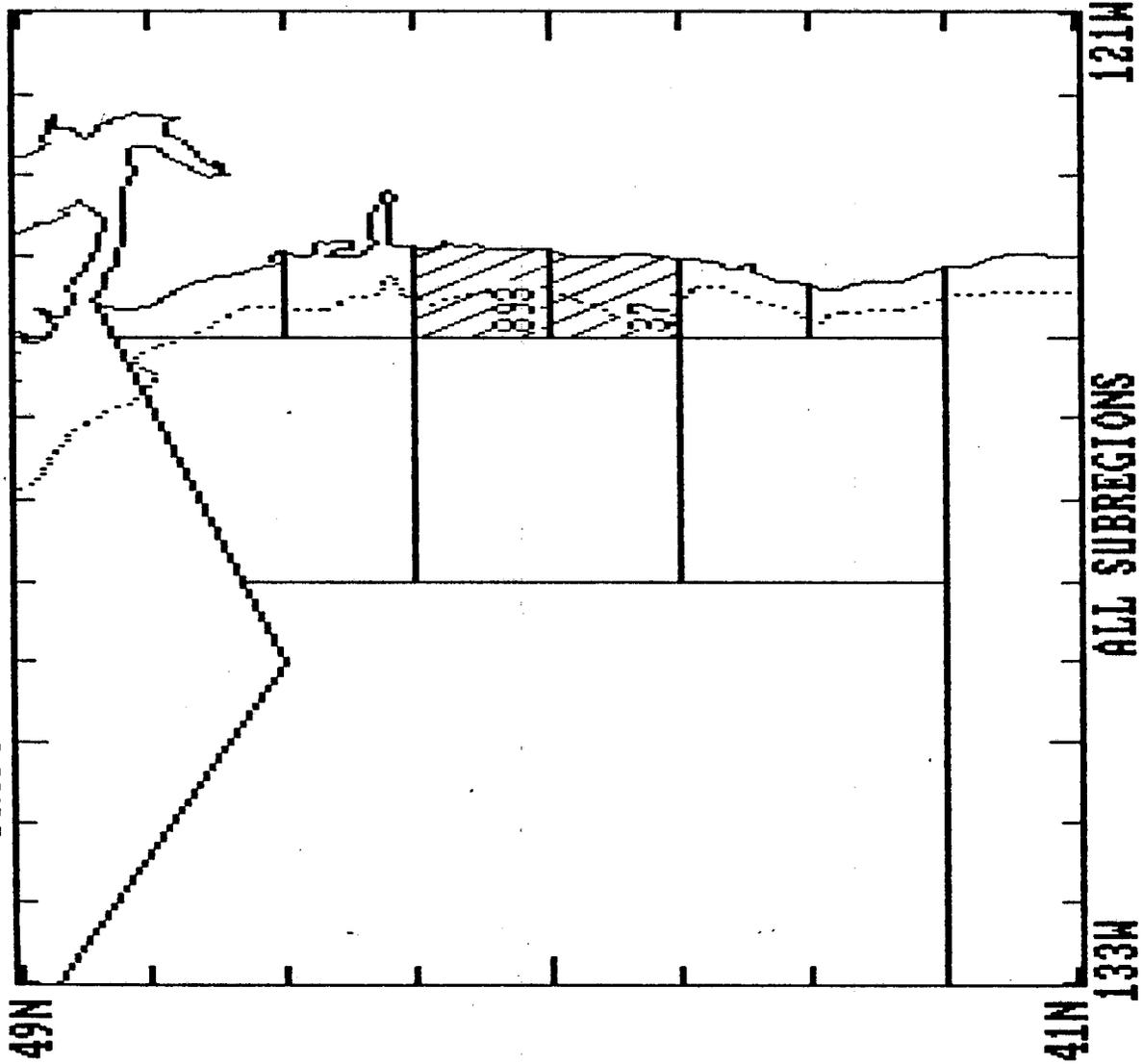
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



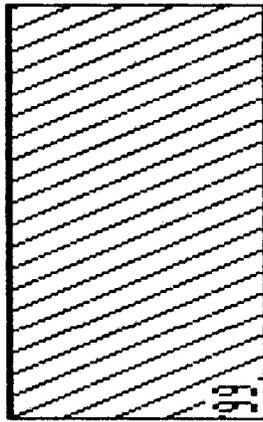
PROFILING CURRENT METER (SUMMER)



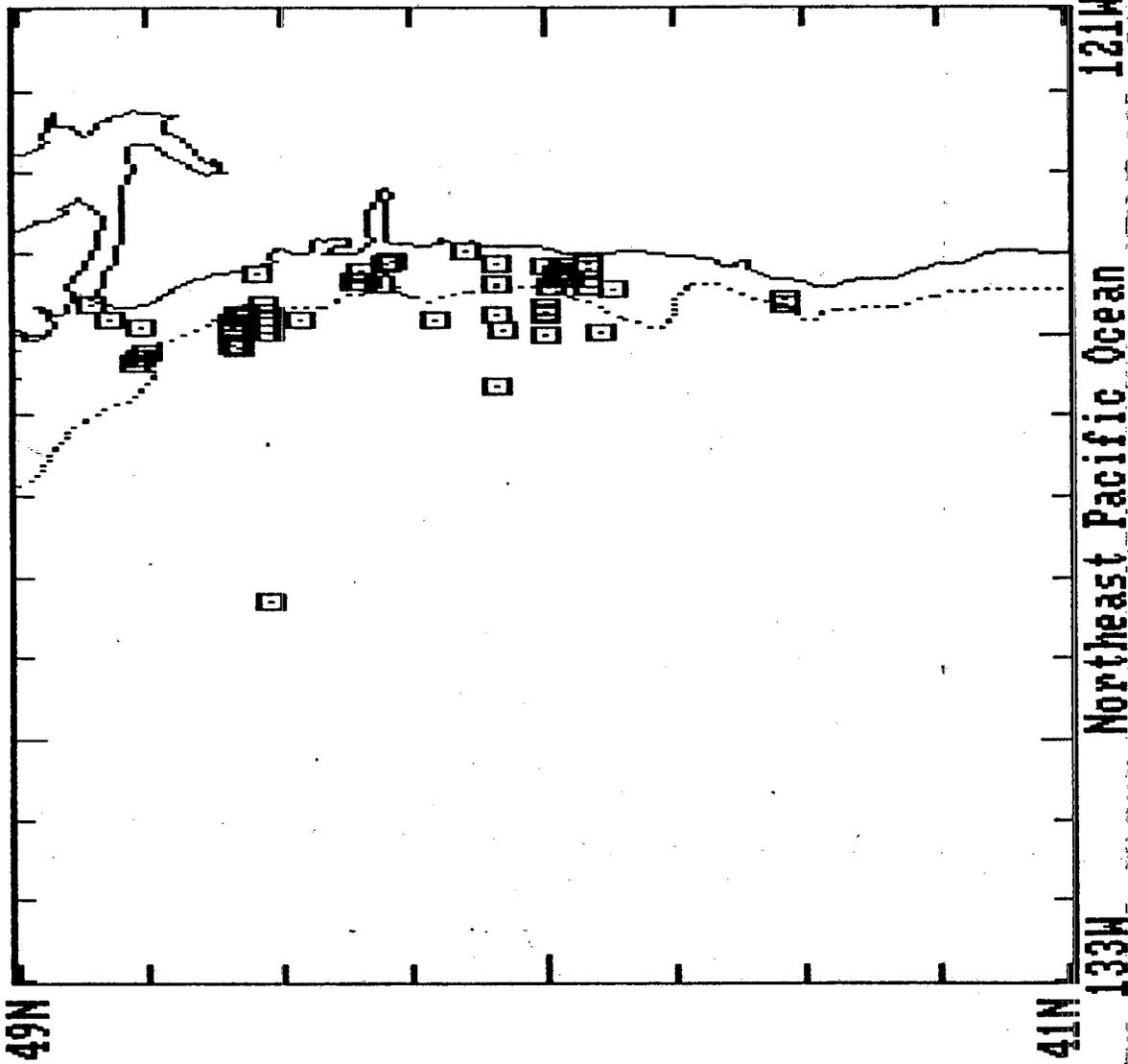
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

PROFILING CURRENT METER
COVERAGE BY AREA



MOORED CURRENT METER (FALL)



MMS COASTAL CIRCULATION WASHINGTON AND OREGON STUDY LOCATIONS

LEGEND

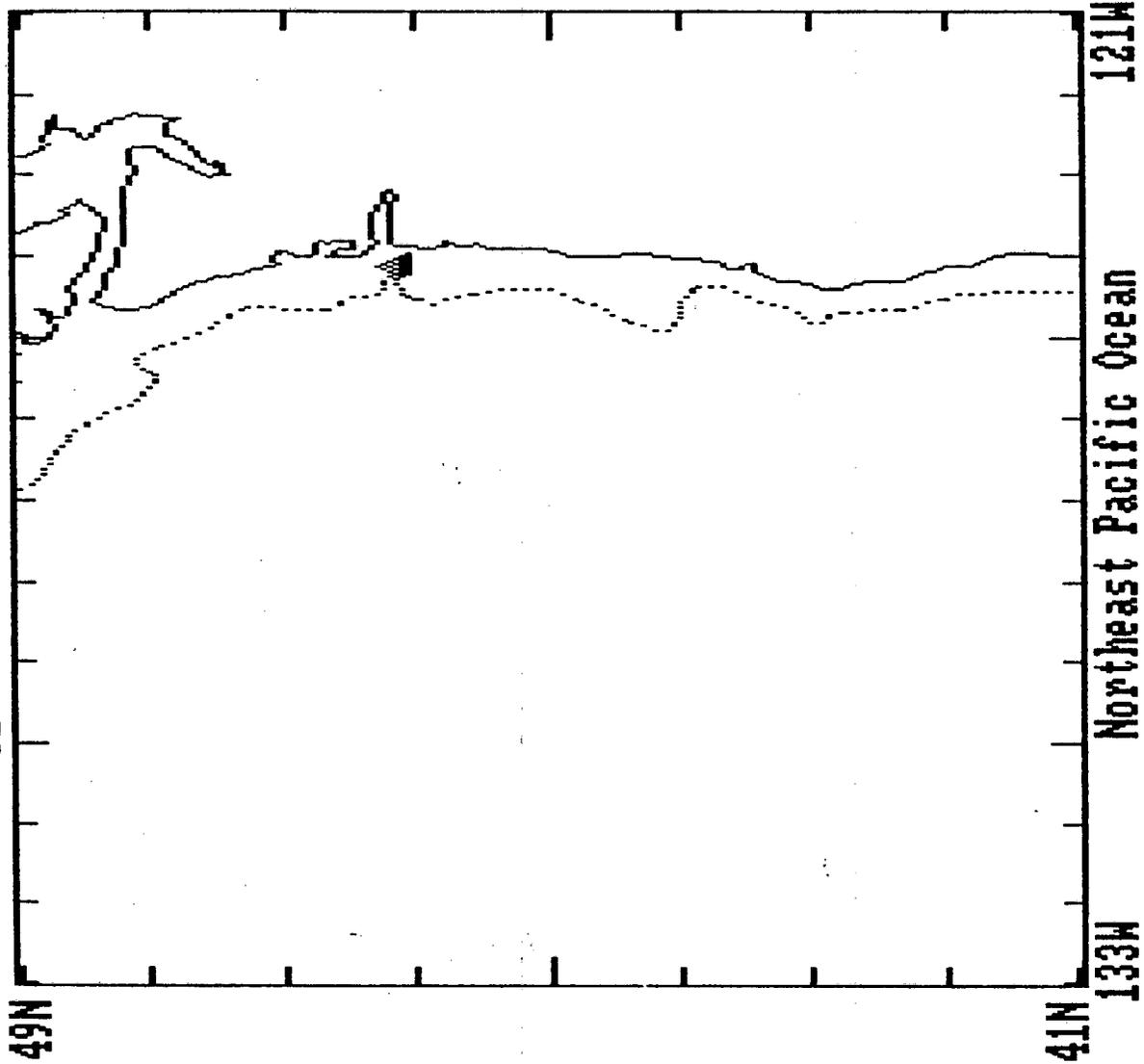
□ = CURRENT METER

△ = SEA LEVEL SENSOR

‡ = MET. STATION

□ = DRIFTER AREA

SEA LEVEL SENSOR (FALL)



MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

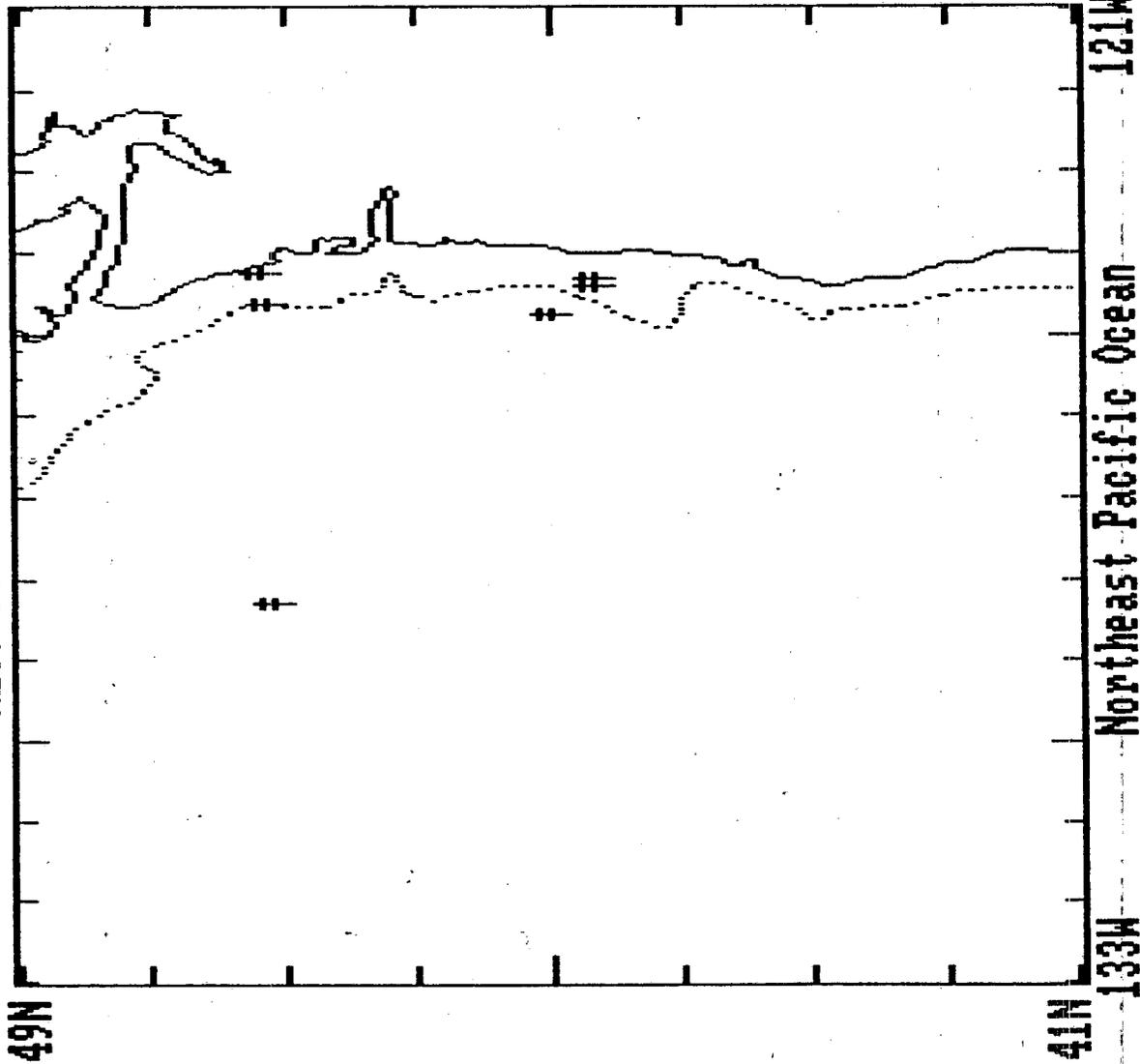
□ = CURRENT METER

△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA

MET. STATION (FALL)



**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

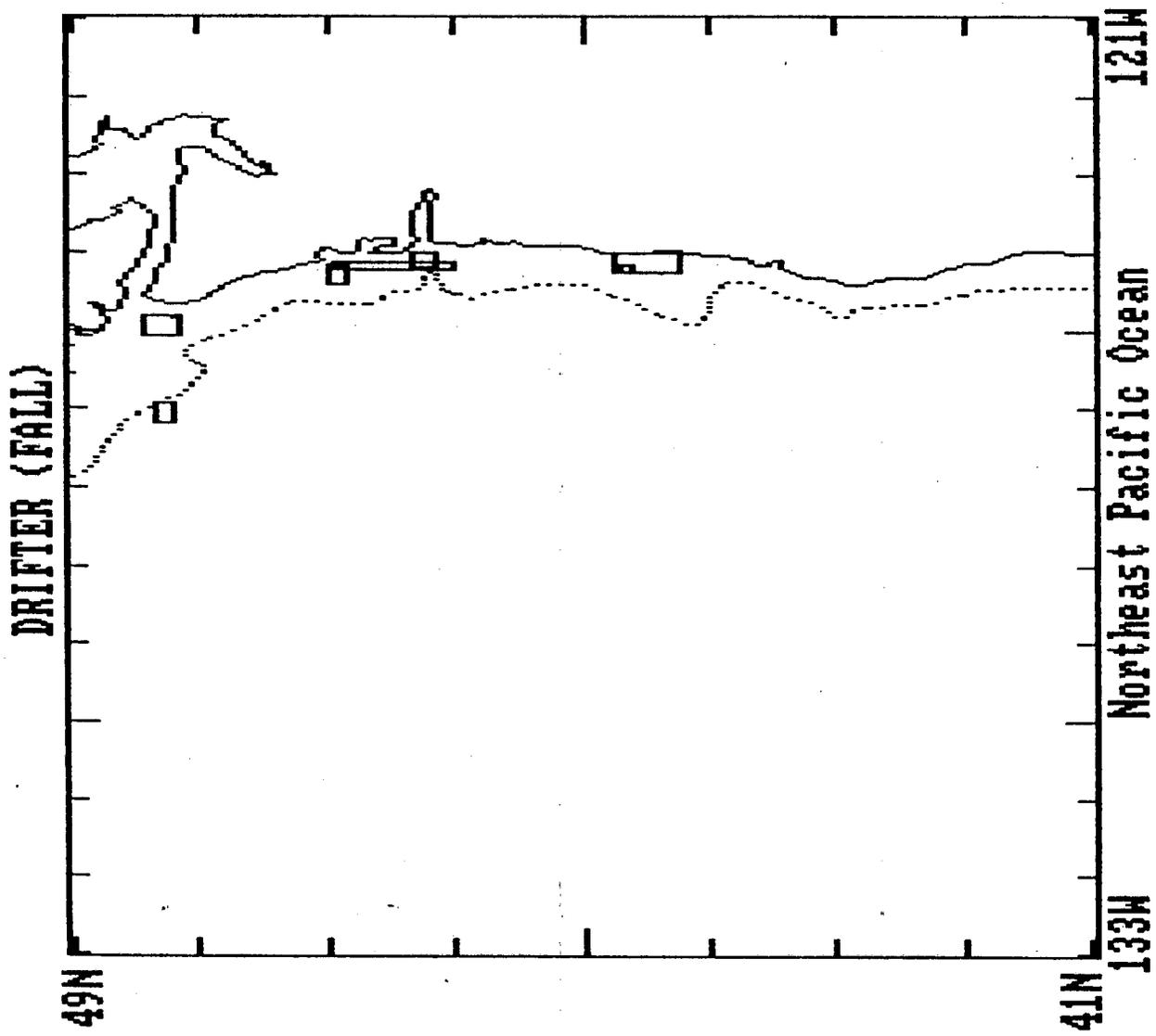
LEGEND

□ = CURRENT METER

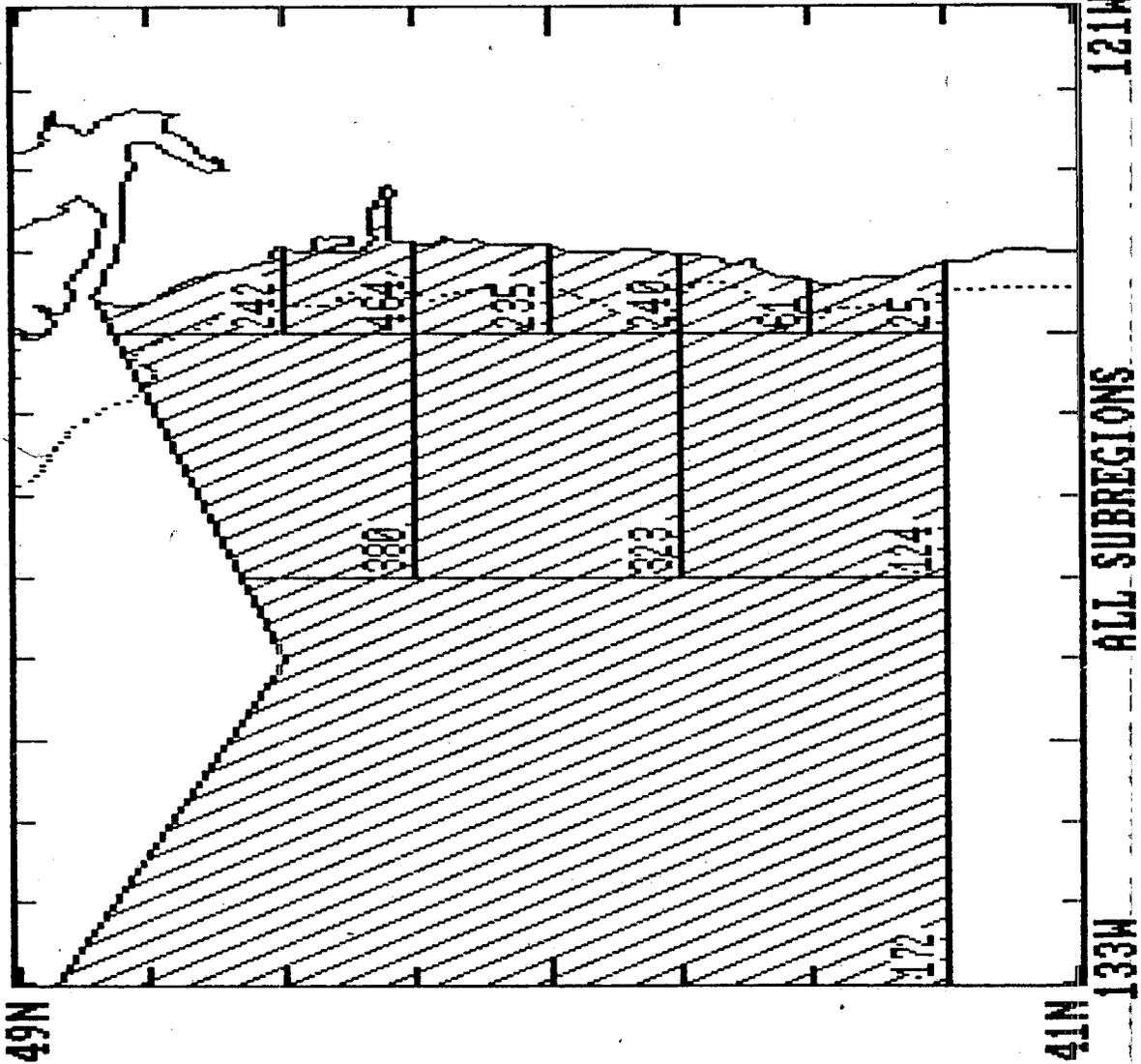
△ = SEA LEVEL SENSOR

† = MET. STATION

□ = DRIFTER AREA



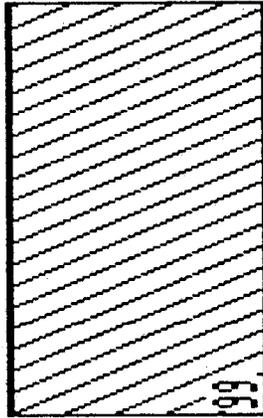
HYDROGRAPHY (FALL)



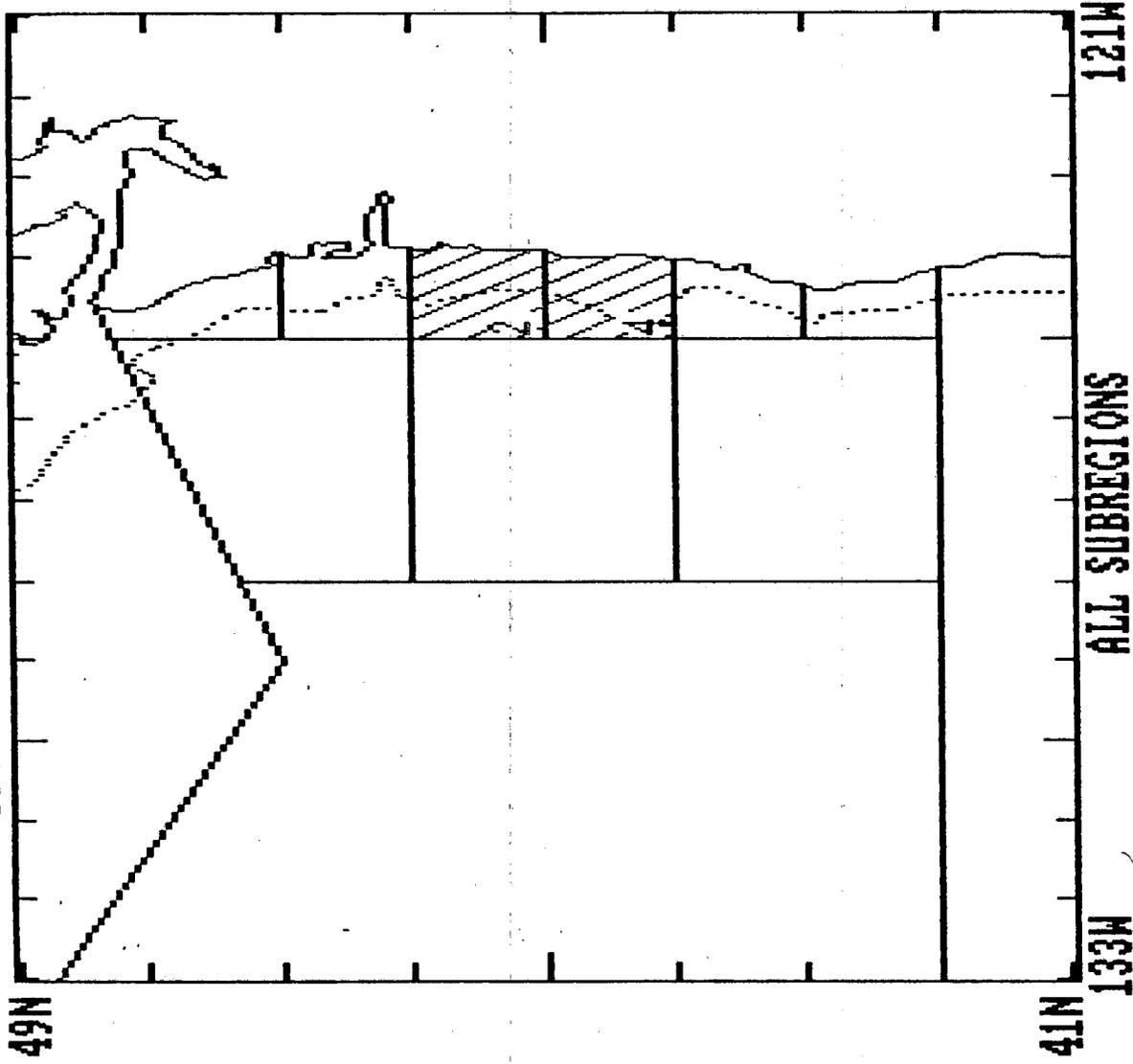
**MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS**

LEGEND

**HYDROGRAPHIC SURVEY
COVERAGE BY AREA**



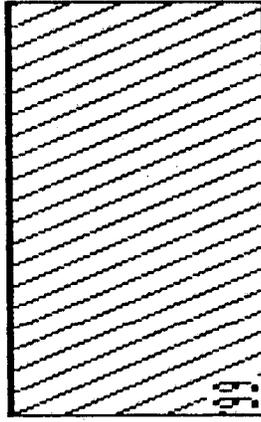
PROFILING CURRENT METER (FALL)

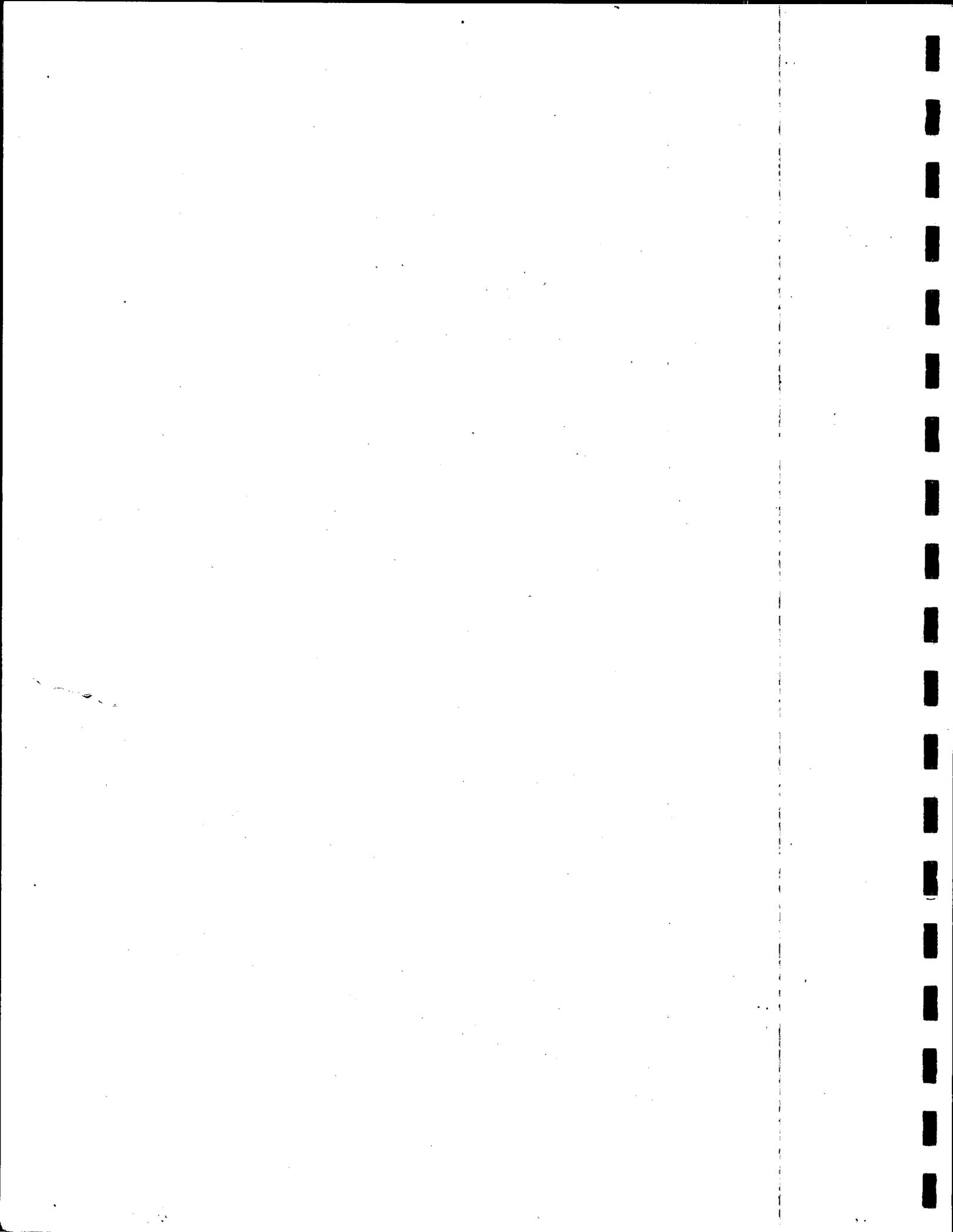


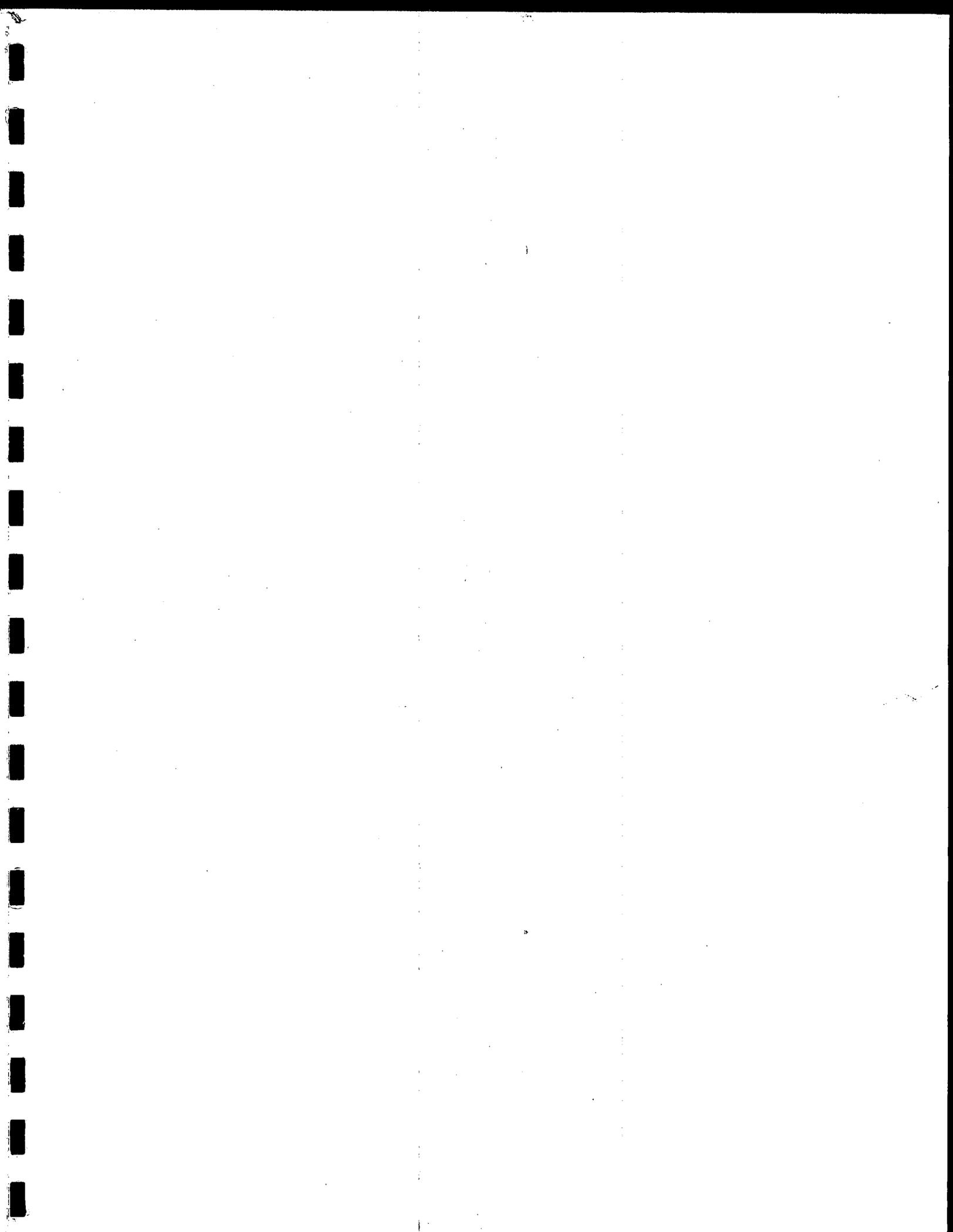
MMS COASTAL CIRCULATION
WASHINGTON AND OREGON
STUDY LOCATIONS

LEGEND

PROFILING CURRENT METER
COVERAGE BY AREA







As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. Administration.

