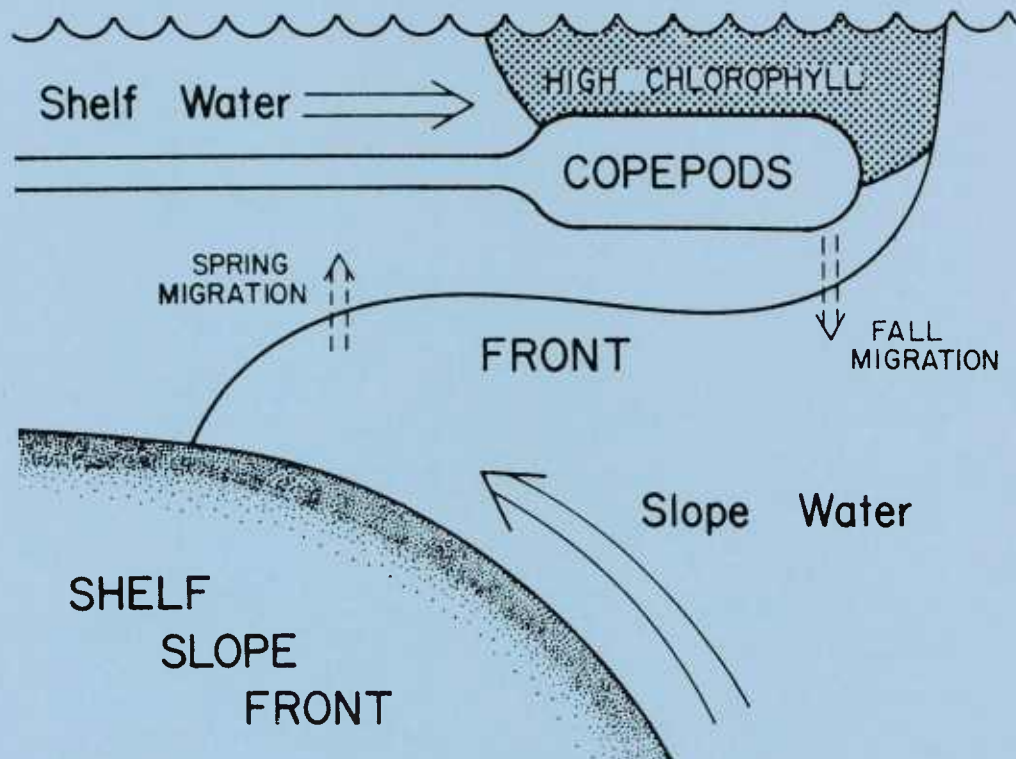


REPORT DOCUMENTATION PAGE					
1a. REPORT SECURITY CLASSIFICATION Unclassified		1b. RESTRICTIVE MARKINGS None			
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.			
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S) NORDA Technical Note 303		5. MONITORING ORGANIZATION REPORT NUMBER(S) NORDA Technical Note 303			
6. NAME OF PERFORMING ORGANIZATION Naval Ocean Research and Development Activity		7a. NAME OF MONITORING ORGANIZATION Naval Ocean Research and Development Activity			
6c. ADDRESS (City, State, and ZIP Code) Ocean Science Directorate NSTL, Mississippi 39529-5004		7b. ADDRESS (City, State, and ZIP Code) Ocean Science Directorate NSTL, Mississippi 39529-5004			
8a. NAME OF FUNDING/SPONSORING ORGANIZATION Naval Ocean Research and Development Activity	8b. OFFICE SYMBOL <i>(If applicable)</i>	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER			
8c. ADDRESS (City, State, and ZIP Code) Ocean Science Directorate NSTL, Mississippi 39529-5004		10. SOURCE OF FUNDING NOS.			
		PROGRAM ELEMENT NO. 61153N	PROJECT NO.	TASK NO.	WORK UNIT NO.
11. TITLE (Include Security Classification) Bibliography of Research on Ocean Fronts, 1964-1984					
12. PERSONAL AUTHOR(S) Laura B. Gilham, Joseph J. Mika, and Denis A. Wiesenburg					
13a. TYPE OF REPORT Final	13b. TIME COVERED From _____ To _____	14. DATE OF REPORT (Yr., Mo., Day) August 1985	15. PAGE COUNT 56		
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) ocean fronts, remote sensing, dynamic chemical processes			
FIELD	GROUP				SUB. GR.
19. ABSTRACT (Continue on reverse if necessary and identify by block number) This report contains a bibliography of published papers describing research related to oceanic fronts. The citations cover research on physical, chemical and biological oceanographic studies of ocean fronts and also observations made by remote sensing. The papers listed cover the period from 1964 to 1984. A few earlier papers, considered classics, are also included. This bibliography was assembled by the School of Library Service of the University of Southern Mississippi as the first step in a program by the Naval Ocean Research and Development Activity to study the dynamic chemical processes associated with ocean frontal boundaries. Over 750 citations are included. The methods employed in obtaining and screening papers for inclusion in the bibliography are described.					
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input checked="" type="checkbox"/> DTIC USERS <input type="checkbox"/>		21. ABSTRACT SECURITY CLASSIFICATION Unclassified			
22a. NAME OF RESPONSIBLE INDIVIDUAL Denis A. Wiesenburg		22b. TELEPHONE NUMBER (Include Area Code) (601) 688-5491	22c. OFFICE SYMBOL Code 333		

Naval Ocean Research and
Development Activity
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Bibliography of Research on Ocean Fronts, 1964-1984



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Approved for Public Release
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ABSTRACT

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ACKNOWLEDGEMENTS

We would like to thank the authors who provided us with reprints and related information, and NASA Librarian Marilyn Umfress and NAVOCEANO Librarian Ann Loomis for their assistance in guiding us through the data base searches. NAVOCEANO Library Technician Dianne Sellier provided endless help with our numerous interlibrary loan requests. Special thanks goes to Ms. Mary Wade who typed the bibliography and made the initial corrections and to Ms. Janet H. Watkins who made the final corrections and revisions. This work was funded by the Naval Ocean Research and Development Activity (program element 61153N, Herbert Eppert, Jr., program manager) through office of Naval Research Contract No. N00014-84-G-0121 to the University of Southern Mississippi.

BIBLIOGRAPHY OF RESEARCH ON OCEANIC FRONTS, 1964-1984

INTRODUCTION

Ocean fronts can be defined as oceanic areas where horizontal gradients of various measurable parameters are intense. These areas are generally boundaries between different water masses which exhibit notable differences in temperature, salinity, chlorophyll and other properties. One example of an ocean front is the shelf-slope front off the eastern coast of the United States which separates the cold, fresher, nutrient-rich shelf water from the warmer, saltier slope water. The Gulf Stream boundary is an example of another type of ocean front, a current boundary front.

Fronts are located throughout the world's oceans. Figure 1 is a map showing the locations of the various frontal boundaries as compiled by the Naval Oceanographic Office. Fronts are areas of high interest to oceanographers because they represent regions of strong anomalies in the ocean. Acoustic propagation changes significantly at frontal boundaries and thus makes a knowledge of frontal locations and processes important to naval fleet operations. Fronts also represent areas of high biological activity that are often productive fishing grounds which can be commercially exploited. Chemists are interested in ocean frontal boundaries since they represent oceanic interfaces where chemical processes are very dynamic.

In 1984 the Naval Ocean Research and Development Activity (NORDA) initiated a program to study the interactions of chemical, biological, and physical processes at oceanic fronts. This program is called Chemical Dynamics in Ocean Frontal Areas. In initiating this program, NORDA contracted the School of Library Service of the University of Southern Mississippi to undertake a literature search to identify the published research articles and reports dealing with studies of ocean fronts and frontal processes. This document is the result of that work. It gives the complete citation for all papers on ocean fronts published between January 1964 and July 1984. The manner in which the search was performed is detailed. NORDA plans to update this document periodically. Authors cited or others who are interested in studies of ocean fronts are requested to send corrections and additions for the next revision to Dr. Denis A. Wiesenburg, NORDA Code 333, NSTL, Mississippi 39529, telephone (601) 688-5491.

SOURCES OF INFORMATION

The core for the bibliography was formed from a database search executed through Oceanic Abstracts which provided over 400 citations. The terms used in the original search were truncated versions of the following:

front; frontal boundaries; frontal zone; and not beach.

This search was later enhanced by adding the following search terms:

tropical convergence; subtropical convergence; midtasman convergence; antarctic convergence and antarctic divergence.

The search term "siome" was tried, but produced no hits. Periodically, the search was re-executed to retrieve new additions to the database. The last Oceanic Abstracts search was executed in July 1984.

MEAN POSITIONS OF OCEANIC FRONTS

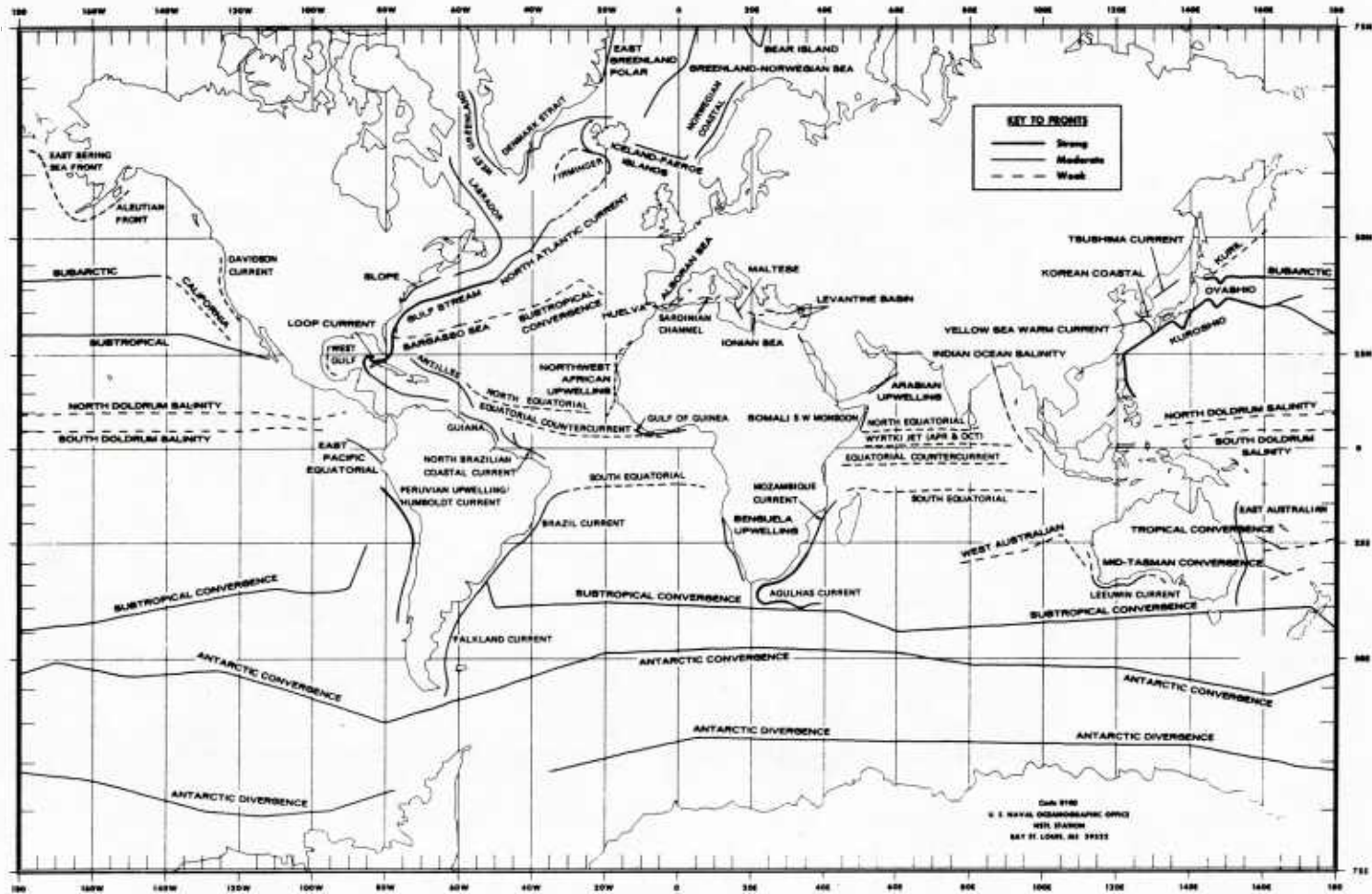


Figure 1. Location of major oceanic fronts as compiled by the U.S. Naval Oceanographic Office.

Similar searches were executed through the Chemical Abstracts and Biosis databases providing further citations. An additional database search in Science Citation Index was executed, using the names of several of the more prolific authors on the subject of ocean fronts. This provided yet another source for citations. Current issues of several major oceanographic journals were also scanned for the most recent articles, not yet incorporated in the computer databases. Some of those journals were Deep-Sea Research, Journal of Physical Oceanography, Journal of Geophysical Research, Limnology and Oceanography, and Biological Oceanography. For most of the articles included, the author was contacted for a reprint. In the process of requesting reprints from authors, additional pertinent references were received and added.

Several more citations were discovered in an unpublished bibliography on ocean fronts which had been compiled by Dr. C.N.K. Mooers of the Naval Postgraduate School. All papers from M.J. Bowman and W.E. Esaias's (1978) book, "Ocean Fronts in Coastal Processes" were included along with the papers in the Royal Society of London's Circulation and Fronts in Continental Shelf Seas (Royal Society of London, 1981). Pertinent papers from the Chapman Conference on Oceanic Fronts, Oct. 11-14, 1977 in New Orleans (Csanady, 1978) were also included.

Papers on the following subjects were excluded from the bibliography: atmospheric fronts and frontogenesis; effect of atmospheric fronts on waves, etc.; beach fronts; wave fronts; and reef fronts. Although several papers mention eddies and rings, no special effort was made to include papers dealing with these subjects; however, they were not excluded when discovered.

All citations are ordered alphabetically by primary author's name and then by succeeding author and date. Citations of foreign language journals and reports list the English language source if it was available. Citations are given in the format of the journal Limnology and Oceanography. All abbreviations follow the guidelines established by the American National Standards Institute, Standards Committee Z39 (American National Standards Institute, 1971).

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