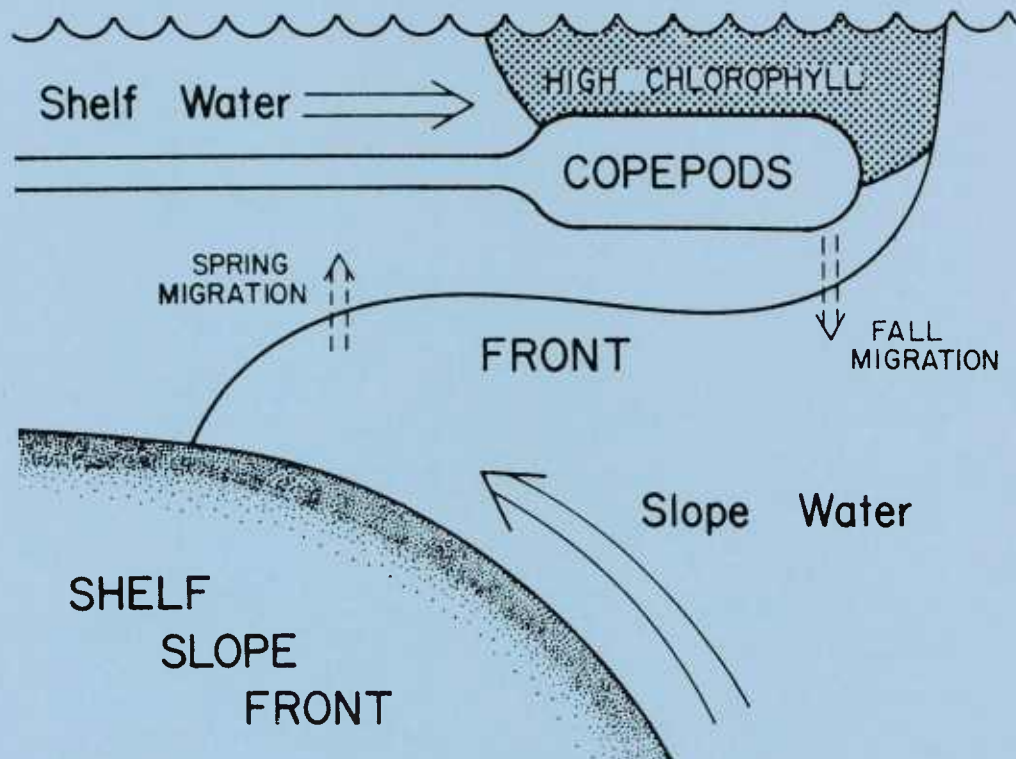


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Bibliography of Research on Ocean Fronts, 1964-1984



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ABSTRACT

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.

TABLE OF CONTENTS

	PAGE
ACKNOWLEDGEMENTS	iii
INTRODUCTION	1
SOURCES OF INFORMATION	1
REFERENCES	3
BIBLIOGRAPHICAL CITATIONS ON OCEAN FRONTS	4

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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:

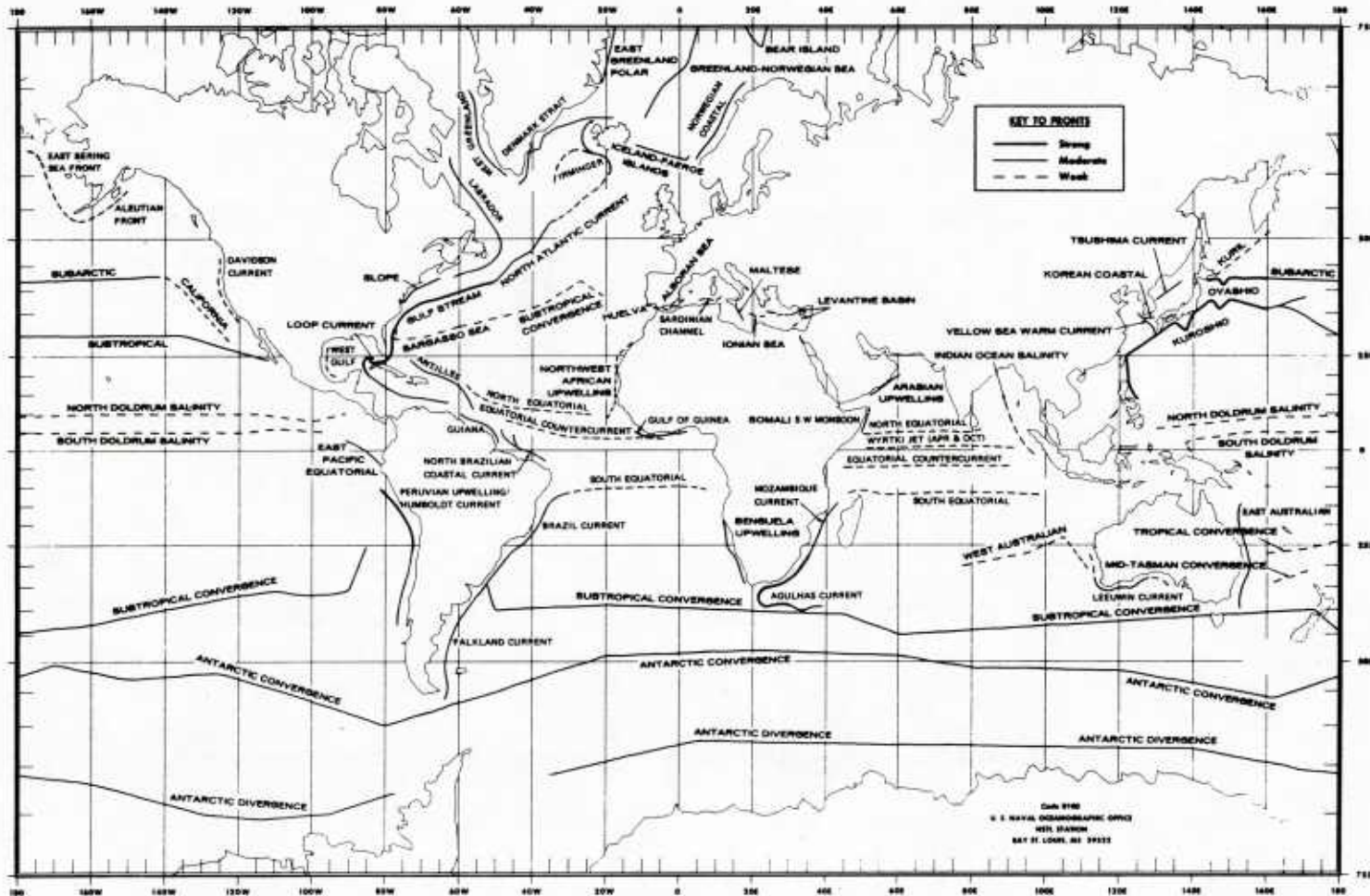
front; frontal boundaries; frontal zone; and not beach.

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



2

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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