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## ENVIRONMENTAL ENGINEERING | REVIEW ARTICLE

# Practical aspects of meteorology and oceanography for mariners: A guide for the perplexed

L. C. Aroucha<sup>1\*</sup>, H. O. Duarte<sup>2</sup>, E. L. Droguett<sup>3</sup> and D. R. A. Veleda<sup>1</sup>

**Abstract:** This paper aims to review and summarize the practical aspects of meteorology and oceanography for navigation, highlighting their influence on shiphandling. It is a review for: gathering, in a summarized way, some useful information for mariners, oceanographers, coastal managers, maritime students and maritime engineers; raising important topics for discussion about the theme; and identifying shortcomings that need more research. Aspects of navigation in Brazilian waters, specifically METÁREA V, are introduced as an example, bringing to light, when applicable, the practical aspects for shallow and restricted waters navigation. The parameters analysed were: clouds, rain, smog, fog, breeze, winds, waves, tides, and coastal and tidal currents. The passage of cold fronts can change winds direction. Also, local winds can overlap the effects of breezes, depending on its intensity. Dense fog, that can reduce visibility to less than 100 m, and rain, which according to its intensity, can reduce visibility to less than 500 m, are examples of some parameters that were checked and are able to reduce visibility when navigating. In addition, were reviewed the concepts of occurrence of rain and squall, and of frontal systems and the expected changes in local weather, pressure and air temperature with their approach. The importance of waves, tides and currents is

### ABOUT THE AUTHOR

Léo Costa Aroucha is a recently graduated oceanographer, formed at Federal University of Pernambuco - UFPE, Brazil; Heitor de Oliveira Duarte is an assistant professor at the Mechanical Engineering Department, UFPE, Brazil; Enrique López Droguett is an associated professor at the Mechanical Engineering Department, Universidad de Chile, Chile; Dóris Regina Aires Veleda is an assistant professor at the Oceanography Department, UFPE, Brazil. Key research activities of the authors are mainly focused on ocean-atmospheric processes and dynamics, highlighting their influence, in particular, at Tropical Atlantic Ocean. Also, the group is also interested for topics in Risk Analysis and Navigation, especially ecological risk assessment and shallow and restricted water effect on ships manoeuvrability, respectively. This research allowed that the group research activities were brought together, since it evolves meteorology, oceanography, risk analysis and shallow and restricted water effects.

### PUBLIC INTEREST STATEMENT

Whether on a private boat, on a tanker, or on a cruise, the weather can become a serious threat when sailing. In addition, the oceanic waves and tides also influence on a ship manoeuvre, especially at shallow waters, when ships movements are restricted. This review article summarizes the main aspects of atmosphere and ocean that affect navigation, focusing at Brazilian waters and highlighting shallow waters navigation features. It contains practical hints and tips to follow when navigating in bad weather, being useful as a guide. The paper assesses weather behaviour at Brazilian coast. Also, it points that is crucial that mariners know what to do when facing adverse atmospheric conditions, in order to avoid maritime accidents, economic lost and human lives. Topics that need more research, particularly the processes already affected by climate change, are also discussed. Noticeably, new technologies would be important for the development of innovative tools that could allow a safer navigation in bad weather.

# Mariners Guide To Oceanography

**N Noddings**



## **Mariners Guide To Oceanography:**

*The Mariner's Guide to Oceanography* Nixon Griffis,1985      *A Mariner's Guide to Marine Weather Services* ,1999

*NavCivGuide* Thomas J Cutler,2008-09-01 The success of the U S Navy in its more than two centuries of existence is due not only to the essential contributions of Sailors on active duty and in the reserve but to the civilians who have worked as part of the Navy since its earliest days But active and reserve Sailors go to boot camp or officer candidate school to prepare them for their new unique occupation And the Navy has long provided The Bluejacket s Manual to incoming Sailors to serve as an introduction and as a continuing reference so that they will feel more comfortable in a new and otherwise alien world where floors suddenly become decks where 1337 is a time in the here and now instead of a date from ancient history and where uniforms are anything but While it is impractical to send all civilian workers to a centralized indoctrination course it is possible to provide a common reference specially designed to acquaint civilians with this very special world they have entered This book is that common reference guide designed specifically for those civilians who like the Sailors in the Fleet serve the nation and the Navy and who need help in understanding where they are and what it is all about All organizations and occupations have their own idiosyncrasies and a big step toward fitting in has always been learning how to talk the talk and walk the walk Like The Bluejacket s Manual this guide provides the words and steps needed to serve as an introduction for new employees and as a ready reference for veteran workers      **Accessions List** Environmental Science Information

Center. Library and Information Services Division,1985      *Guide to Marine Observing and Reporting* ,1983      **Mariners Weather Log** ,1995 Mariners Weather Log contains articles news and information about marine weather events and phenomenon storms at sea weather forecasting the NWS Voluntary Observing Ship VOS Program Port Meteorological Officers PMOs cooperating ships officers and their vessels It provides meteorological information to the maritime community and contains a comprehensive chronicle on marine weather It recognizes ships officers for their efforts as voluntary weather observers and allows NWS to maintain contact with and communicate with over 10 000 shipboard observers ships officers in the merchant marine NOAA Corps Coast Guard Navy etc      **Accessions List** United States. National Environmental Satellite, Data, and Information Service. Library and Information Services Division,1983      [Accessions List](#) Assessment and Information Services Center (U.S.). Library and Information Services Division,1983      **Motorboating - ND** ,1985-01

**Motorboating - ND** ,1985-01      **Motorboating - ND** ,1985-01      **Twelve Days of Terror** Richard G. Fernicola,2016-05-02 Examines the wave of shark attacks along the New Jersey coast in July 1916 that left four swimmers dead and a fifth seriously injured and speculates on the number and type of sharks involved in the attacks      *Motorboating - ND* ,1985-07      **Cruising World** ,1991-05      [Oceanography](#) Tom Garrison,1993 Written for an introduction to oceanography course this book covers the geological physical biological and ecological aspects      **Worldwide Marine Radiofacsimile Broadcast Schedules** ,2003      *Cruising World* ,1992-01      **Bibliography of Nautical Books** Alan

Obin,2000-02 This is the 15th annual edition of the Bibliography of Nautical Books a reference guide to over 14 000 nautical publications It deals specifically with the year 2000      Monthly Catalog of United States Government Publications ,2004  
    Environmental Data Service United States. Environmental Data Service,1974

## **Mariners Guide To Oceanography** Book Review: Unveiling the Magic of Language

In a digital era where connections and knowledge reign supreme, the enchanting power of language has become more apparent than ever. Its ability to stir emotions, provoke thought, and instigate transformation is really remarkable. This extraordinary book, aptly titled "**Mariners Guide To Oceanography**," published by a highly acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound impact on our existence. Throughout this critique, we will delve to the book is central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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### **Mariners Guide To Oceanography Introduction**

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