

## COVER PHOTOGRAPH AND FRONT MATTER: MAN O'WAR BAY ALONG THE JURASSIC COAST OF DORSETT, SOUTHERN ENGLAND

Source: Journal of Coastal Research, 32(5)

Published By: Coastal Education and Research Foundation

URL: https://doi.org/10.2112/1551-5036-32.5.ii

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at <u>www.bioone.org/terms-of-use</u>.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

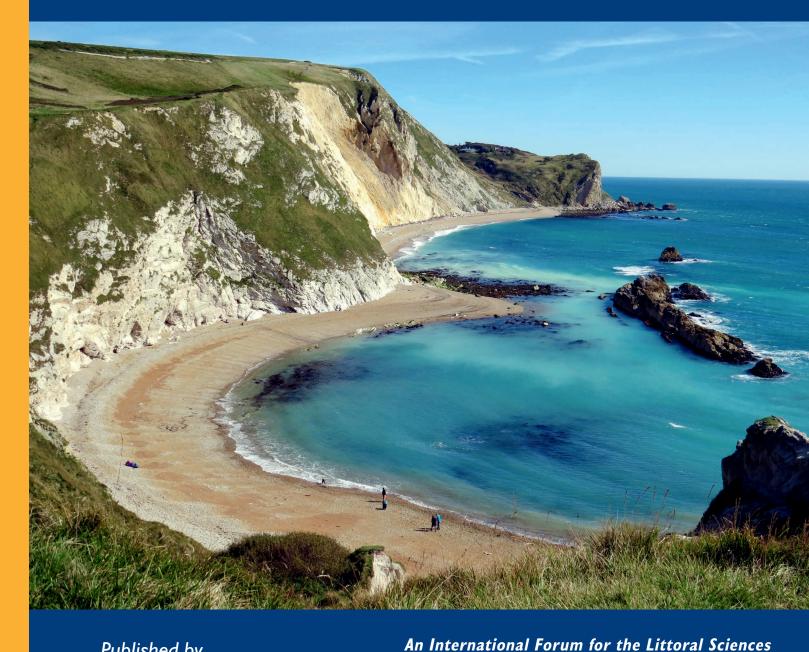
BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

ISSN 0749-0208

## Journal of

# Coastal Research

VOL. 32, NO. 5 • CERF • September 2016



Published by





**Charles W. Finkl** Editor-in-Chief



## JOURNAL OF COASTAL RESEARCH

#### An International Forum for the Littoral Sciences

CHEF-HERAUSGEBER

25 Jake Ridge Trail Fletcher, NC 28732. U.S.A.

BOOK REVIEW EDITOR J. Andrew G. Cooper School of Environmental Sciences University of Ulster Coleraine, N. Ireland jag.cooper@ulster.ac.uk

### **EDITOR-IN-CHIEF** Charles W. Finkl

Coastal Education and Research Foundation. Inc. [CERF] **Editorial Offices:** (Editorial Office, Coconut Creek)

5130 NW 54th Street Coconut Creek, FL CERF/JCR Website: http://www.CERF-JCR.org 33073. U.S.A.

ASSOCIATE EDITORS

DEPUTY EDITOR-IN-CHIEF Christopher Makowski

Coastal Education and Research Foundation, Inc. [CERF] 5130 NW 54th Street Coconut Creek, FL 33073, U.S.A. cmakowski@cerf-jcr.com

EDITORIAL ASSISTANT Barbara Russell Coastal Education and Research Foundation, Inc. [CERF] 5130 NW 54th Street Coconut Creek, FL 33073, U.S.A. barbara@cerf-jcr.com

Karl F. Nordstrom

Coastal Geomorphology

#### **COMITÉ DE REDACTION**

17600 River Ford Drive

jon@mediamine.net

Davidson, NC 28036, U.S.A.

#### MITHERAUSGEBER

Edward J. Anthony Coastal Geomorphology Dunkerque, France Kenneth Banks Coral Reef Geomorphology Plantation, Florida Patrick Barnard Coastal Geomorphology Santa Cruz, California Lindino Benedet Oceanography, Modeling Florianopolis, SC, Brazil David M. Bush Coastal Geology & Hazards Carrollton, Georgia Ilya V. Buynevich Coastal Geology Philadelphia, Pennsylvania Javier A. Carrió Sediment Processes Valencia, Spain Mark Crowell Coastal Zone Management McLean, Virginia Omar Defeo Sandy Beach Ecology Montevideo, Uruguay J. Javier Diez Coastal Geomorphology Madrid, Spain Joseph F. Donoghue Coastal Morphology & Hazards Orlando, Florida Jean Ellis Aeolian Sediment Transport Columbia, South Carolina Luciana Esteves Coastal Flooding & Erosion Bournemouth, England, UK **Oscar Manuel Ferreira** Storm Impacts Faro, Portugal Duncan M. FitzGerald Sediment Transport Boston, Massachusetts Chip Fletcher Coastal Geology Honolulu, Hawaii

Marine Cartography Szczecin, Poland Allen Gontz Geophysics, Stratigraphy San Diego, California Gary B. Griggs Coastal Engineering & Hazards Santa Cruz, California Pramod Hanamgond Coastal Geomorphology Belgaum, India Hans Hanson Coastal Protection Lund, Sweden Simon Haslett Paleoceanography Swansea, Wales, UK David Hill Nearshore Hydrodynamics Corvallis, Oregon Michael Hilton Dune Geomorphology & Ecology Dunedin, New Zealand Carl H. Hobbs, III Coastal Geology, Sand Mining Gloucester Point, Virginia James R. Houston Sea-Level Change Vicksburg, Mississippi Wenrui Huang Coastal Hydrodynamics Tallahassee, Florida Michael G. Hughes Coastal Morphodynamics Canberra, ACT, Australia Federico I. Isla Sea-Level Change Mar Del Plata, Argentina Nancy L. Jackson Coastal Geomorphology Newark, New Jersey Markes E. Johnson Paleoshores, Coastal Sand Dunes Williamstown, Massachusetts Timothy R. Keen Waves & Circulation Stennis Space Center, Mississippi Dieter H. Kelletat Coastal Geomorphology Essen/Cologne, Germany

Kazimierz K. Furmańczyk

Joseph T. Kelley Sea-Level Change Orono, Maine Vic Klemas Remote Sensing Newark, Delaware Nobuhisa Kobayashi Coastal Engineering Newark, Delaware Vladimir N. Kosmynin Coral Reefs, Coastal Ecology Tallahassee, Florida Joseph L. Kowalski Estuarine Plant Ecology Edinburg, Texas Michael J. Lace Coastal Landforms & Processes West Branch, Iowa Stephen P. Leatherman Barrier Islands, Beach Erosion Miami, Florida **Charles Lemckert** Environmental Fluid Dynamics Southport, Qld, Australia Ioannis Liritzis Geophysical Proxy Data Rhodes, Greece Jeffrey H. List Shoreline Change Processes Woods Hole, Massachusetts Michel M. de Mahiques Sediment Processes São Paulo, Brazil Gonzalo C. Malvárez-Garcia Beach Morphodynamics Seville, Spain Ashish J. Mehta Coastal Engineering Gainesville, Florida

Nobuo Mimura Environmental Engineering

Ibaraki, Japan Fatima Navas Coastal Morphodynamics

Seville, Spain **Robert Nicholls** Global Climate Change Southampton, England, UK New Brunswick, New Jersey Julian Orford Gravel Beaches, Storm Events Belfast, Northern Ireland, UK Phil D. Oshorne Sediment Dynamics Shoreline, Washington Hugh Parker Airborne Lidar Bathymetry Adelaide, SA, Australia Charitha B. Pattiaratchi Physical Oceanography Crawley, WA, Australia Carlos Pereira da Silva Coastal Zone Management Lisbon, Portugal Michael Phillips Coastal Geomorphology Swansea, Wales, UK Orrin H. Pilkey, Jr. Coastal Geology Durham, North Carolina Paolo A. Pirazzoli Sea-Level Changes Paris, France Nobert P. Psuty Coastal Geomorphology

New Brunswick, New Jersey Ulrich Radtke Coastal Geomorphology Duisburg-Essen, Germany Elijah W. Ramsey, III Coastal Image Processing

Lafavette, Louisiana Kirt Rusenko Sea Turtles, Dune Restoration

Boca Raton, Florida Anja Scheffers

Coastal Evolution Lismore, NSW, Australia Vic Semeniuk Mangroves Perth, WA, Australia



Coastal Geomorphology Sydney, NSW, Australia Pravi Shrestha Coastal Engineering Irvine, California Alejandro J. Souza Coastal & Sediment Processes Liverpool, England, UK Tom Spencer Biogeomorphology Cambridge, England, UK Marcel Stive Coastal Hydrodynamics Delft, The Netherlands Vallam Sundar Coastal Engineering Chennai, India Adam D. Switzer Coastal Hazards, Sea-Level Change NTU, Singapore E. Robert Thieler Marine Geology Woods Hole, Massachusetts Arthur C. Trembanis Coastal Morphodynamics Newark, Delaware Frank Van Der Meulen Coastal Zone Management Delft, The Netherlands Ian J. Walker Coastal Dunes & Sediments Tempe, Arizona **Ping Wang** Beach Morphodynamics Tampa, Florida Allan Williams Coastal Geology Swansea, Wales, UK Harry F. Williams Paleotempestology Denton, Texas Colin D. Woodroffe

Coastal Geomorphology Wollongong, NSW, Australia Robert S. Young Coastal Processes Cullowhee, North Carolina **Guoliang Yu** Sediment Transport Shangai, China

THE JOURNAL OF COASTAL RESEARCH (JCR) (ISSN 0749–0208) IS PUBLISHED BIMONTHLY FOR \$115.00 FOR INDIVIDUAL US CERF MEMBERS, \$125.00 FOR INDIVIDUAL INTERNATIONAL CERF MEMBERS, \$519.00 FOR US INSTITUTIONS, AND \$541.00 FOR INTERNATIONAL INSTITUTIONS BY THE COASTAL EDUCATION AND RESEARCH FOUNDATION, INC. (CERF), 5130 NW 54TH STREET, COCONUT CREEK, FL 33073–3713. PERIODICALS POSTAGE PAID AT FORT LAUDERDALE, FL AND ADDITIONAL MAILING OFFICES. **POSTMASTER:** SEND ADDRESS CHANGES TO *JOURNAL OF COASTAL* RESEARCH, ALLEN PRESS ASSOCIATION MANAGEMENT, P.O. BOX 1897, LAWRENCE, KS 66044-3018.

© 2016 Coastal Education and Research Foundation, Inc. [CERF].

Or This paper meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

**RÉDACTEUR-EN-CHEF** 

Jon Finkl

Media Mine

e-mail: cfinkl@cerf-jcr.com

WEB DESIGN & DEVELOPMENT

Andrew D. Short



## JOURNAL OF COASTAL RESEARCH

An International Forum for the Littoral Sciences

#### **Supporting Scientific Institutions**



- Consorzio Nazionale Interuniversitario per le Scienze del Mare (Co.N.I.S.Ma.) [Rome, Italy; www.conisma.it/]
- Delft University of Technology [Department of Hydraulic Engineering, Delft, The Netherlands;
- http://www.citg.tudelft.nl/over-faculteit/afdelingen/hydraulic-engineering/]
- Duke University [Earth and Ocean Sciences Division, Durham, North Carolina, U.S.A.; https://nicholas.duke.edu/marinelab]
- Griffith University [Center for Infrastructure Engineering and Management, Southport, Queensland, Australia; https://www.griffith.edu.au/]
- Ibaraki University [Center for Water Environmental Studies, Mito, Japan; http://www.cwes.ibaraki.ac.jp/]
- International Geographical Union (IGU) [Commission on Coastal System (CCS); http://www.igu-ccs.org]
- Royal Belgian Institute of Natural Sciences [Management Unit of the North Sea Mathematical Models (MUMM), Brussels, Belgium; http://www.mumm.ac.be/EN/index.php]
- Rutgers University [Institute of Marine and Coastal Sciences (IMCS), New Brunswick, New Jersey, U.S.A.; http://marine.rutgers.edu/main/]
- Universidad de la República [Marine Science Unit, Montevideo, Uruguay; http://www.imber.info/Science/National-Network/URUGUAY]
- Universidade Nova de Lisboa [e-Geo Center for Geographical and Regional Planning Studies, Lisbon, Portugal; http://e-geo.fcsh.unl.pt/]
- University of California, Santa Cruz [Institute of Marine Sciences, Santa Cruz, California, U.S.A.; http://ims.ucsc.edu/]
- University of Delaware [School of Marine Science and Policy, Newark, Delaware, U.S.A.; http://www.ocean.udel.edu]
- University of Maine [Climate Change Institute, Orono, Maine, U.S.A.; http://climatechange.umaine.edu/]
- University of Sydney [Coastal Studies Unit, Sydney, New South Wales, Australia; http://sydney.edu.au/]
- University of Szczecin [Institute of Marine and Coastal Science, Szczecin, Poland; http://www.wnoz.ztikm.szczecin.pl/en/1/inom/structure/]
- University of Ulster [Environmental Sciences Research Institute, Coleraine, Northern Ireland; http://www.ulster.ac.uk/es/research/]
- University of Wales, Trinity Saint David [Swansea Metropolitan University, Mount Pleasant, Swansea, South Wales, U.K.;
- http://www.uwtsd.ac.uk/]
  U.S. Army Corps of Engineers [Coastal and Hydraulics Laboratory (CHL), Vicksburg, Mississippi, U.S.A.; http://chl.erdc.usace.army.mil/]
- U.S. Geological Survey [National Wetlands Research Center, Lafayette, Louisiana, U.S.A.; http://cinterdc.usace.army.in

#### Aims and Scope of the Journal

*Journal of Coastal Research*, an International Forum for the Littoral Sciences, is dedicated to all aspects of coastal research. These include geology, biology, geomorphology (physical geography), climate, littoral oceanography, hydrography, coastal hydraulics, environmental (resource) management, engineering, and remote sensing. Although each field functions effectively within its ownpurview, the cross-disciplinary nature of coastal studies requires familiarity with other fields as well. Hence, the scope of topics is necessarily broad in order to address the complexity of coastal biophysical and socio-economic interactions. Because of the wide range of interrelated topics, the journal invites original contributions and manuscripts dealing with theory, methodology, techniques, and field or applied topic studies on interdisciplinary coastal issues.

The journal encourages the dissemination of knowledge and understanding of the coastal zone by promoting cooperation and communication between specialists in different disciplines. Natural scientists, for example, are encouraged to collaborate with professionals in other fields to prepare contributions relating to the coastal zone that foster increased appreciation of coastal environments and processes. By means of this journal, with its scholarly and professional papers, systematic review articles, book and symposia reviews, communications and news, and special topical issues, an international forum for the development of integrated coastal research is provided.

#### Advertising, Editorial, and Subscription Information

Advertising and Editorial Office: All advertising and editorial correspondence should be sent to Dr. Charles W. Finkl, Editor-in-Chief, Journal of Coastal Research, 5130 NW 54th Street, Coconut Creek, FL 33073, U.S.A. PHONE: 828-333-2300. E-MAIL: cfinkl@cerf-jcr.com

**Subscription Information**: The *Journal of Coastal Research* is a bimonthly publication. Calendar-year (2016) print and online subscription prices for the JCR are: \$115.00 for US CERF members / \$125.00 for International CERF members (\$95.00 for online only), and \$519.00 for US institutions / \$541.00 for International institutions (\$437.00 for online only). Additional surface charges may apply to subscribers located outside of the USA. For additional membership and subscription forms and information, please go to www.CERF-JCR.org. To obtain a membership or subscription form by mail, please send request to Journal of Coastal Research, P.O. Box 7065, Lawrence, KS 66044. Back Issues and Special Issues of the JCR, when available, can be directly purchased at www.CERF-JCR.org.

The Journal of Coastal Research is currently surveyed in Applied Science & Technology Abstracts; Applied Science & Technology Index (H.W. Wilson); Aquatic Sciences & Fisheries Abstracts; BIOBASE; Biological Abstracts; BIOSIS Previews (Thomson); CAB International Abstracts (CABI); CSA Civil Engineering Abstracts (ProQuest); Current Awareness in Biological Sciences (Elsevier); Current Contents/Agriculture, Biology, & Environmental Sciences (Thomson); Ecology Abstracts (ProQuest); Environmental Sciences & Pollution Management; GeoAbstracts [Geographical Abstracts: Physical Geography; Ecological Abstracts; Geological Abstracts; GEOBASE] (Elsevier); GeoRef; Meteorological & Geoastrophysical Abstracts (ProQuest); Oceanic Abstracts (ProQuest); Oceanographic Literature Review (Elsevier); Physical Sciences Digest (CSA, Ebsco); Pollution Abstracts (ProQuest); Referativnyi Zhurnal; Science Citation Index; SciSearch (Thomson); SCOPUS; Water Resources Abstracts (Bethesda); Zoological Record (Thomson).



## **COVER PHOTOGRAPH**





**Man O'War Bay along the Jurassic Coast of Dorsett, southern England.** The Jurassic Coast is a designated World Heritage Site along the English Channel coast of southern England. Stretching a distance of nearly 155 km, this segment of coastline provides over 180 million years of coastal geologic history through the presence of Triassic, Jurassic, and Cretaceous cliffs. The coast is also unique in that stretches of both concordant and discordant shorelines can be found, along with a plethora of coastal landforms. For example, in Man O'War Bay, as shown above, the limestone has been tilted up so forcefully by regional folding and faulting that a nearly vertical orientation now exists at this location. Of particular interest is that this resistant bed of limestone results in forming an offshore barrier, partially protecting the Bay from wave attack and erosion. (Photograph taken 30 September 2015 by Gary Griggs, University of California, Santa Cruz, California, U.S.A.)

#### COASTAL EDUCATION AND RESEARCH FOUNDATION

5130 NW 54th Street Coconut Creek, FL 33073, U.S.A.

**Officers of the Foundation** 

Founded in 1983 by: Charles W. Finkl, Sr. (Deceased), Charles W. Finkl, Jnr., Rhodes W. Fairbridge (Deceased), and Maurice L. Schwartz (Deceased)

President & **Executive Director:** Charles W. Finkl

**Senior Vice President & Assistant Director:** Christopher Makowski

Secretary: Heather M. Vollmer **Executive Assistant:** Barbara Russell

#### **Regional Vice Presidents**

North America James R. Houston Victor V. Klemas Orrin H. Pilkey, Jr.

**South America** Omar Defeo

Southeast Asia Nobuo Mimura

Marcel J.F. Stive **Eastern Europe** 

Charles Lemckert Vic Semeniuk Andrew D. Short

#### **Board of Directors (Trustees)**

J. Andrew G. Cooper Victor V. Klemas Charles W. Finkl Charles Lemckert Erlend J. Frederickson Chris Makowski Gary B. Griggs Carlos Pereira da Silva James R. Houston **Michael Phillips** Robert Huff Orrin H. Pilkey, Jr. Joseph T. Kelley Norbert P. Psuty

Yong-Sik Cho

Hany Elwany

Nicholas K. Coch

Elijah W. Ramsey, III Vic Semeniuk Andrew D. Short Daniel J. Stanley Marcel J.F. Stive Allan Williams

#### **Lifetime Members**

Björn Kjerfve Erik van Wellen Frédéric Bouchette **Charles** Lemckert Ya Ping Wang **Charles** Thibault Wei Zhang

#### **Patron Members**

Carl H. Hobbs, III Norbert P. Psuty Luis Antonio Timothy W. Kana Robert S. Young **Buenfil-Lopez** Georges Chapalain

#### **CERF** Society Information

The Coastal Education and Research Foundation [CERF] is a nonprofit society dedicated to the advancement of the coastal sciences. The Foundation is devoted to the multi-disciplinary study of the complex problems of the coastal zone. The purpose of CERF is to help translate and interpret coastal issues for the public and to assist professional research and public information programs. The Foundation specifically supports and encourages field and laboratory studies on a local, national, and international basis. Through the medium of scientific publications, television, and radio CERF brings accurate information to the public and coastal specialists on all aspects of coastal issues in an effort to maintain or improve the quality of shoreline resources.

Because CERF is concerned with broad environmental issues, our efforts concentrate on significant problems such as maintenance of good quality (potable) water with adequate supply, and hazards associated with potential beach erosion, flooding, and susceptibility of developed shorelines to storm surge and wave attack. By focusing attention on these potential man-made and natural hazards, it is hoped that our research efforts will help others improve the quality of life in diverse coastal areas. CERF thus aims to stimulate awareness of coastal (marine and freshwater shorelines) land and water problems; initiate and foster research and innovation to promote long-term coastal productivity; establish an educational forum for the debate of contentious coastal issues; and develop new principles and approaches for enlightened coastal management, and encourage their adoption and use.

#### $\Box\,$ CERF MEMBERSHIP $\Box\,$

Members are individuals that support the aims of the foundation through personal and group efforts or by donations. Memberships are available in different categories with privileges.

Subscription information is available online at www.cerf-jcr.org. Subscriptions office: Allen Press, Inc., P.O. Box 1897, Lawrence, KS 66044, U.S.A. CERF@allenpress.com

#### **Editor-in-Chief**

Charles W. Finkl Ph.D., CSci, CMarSci, FIMarEST, CPGS, CPSSc, PWS, M.ASCE

Dr. Charles W. Finkl is President and Executive Director of the Coastal Education and Research Foundation (CERF), publisher of the JCR. Charlie, a founding editor of the Journal of Coastal Research, has served as Editor-in-Chief for the past 30 years. He is a Research Professor in the Department of Geosciences at Florida Atlantic University in Boca Raton, Florida. He received his Bachelor and Master of Science degrees from Oregon State University and the Ph.D. from the University of Western Australia. He is a member of more than 20 professional societies and has published more than 200 professional papers, books, and reports. He is a Chartered Marine Scientist (CMarSci) [Institute of Marine Engineering, Science and Technology], Certified Professional Geological Scientist (CPGS) [American Institute of Professional Geologists (AIPG)], Certified Professional Soil Scientist (CPSSc) [American Registry of Certified Professionals in Agronomy, Crops, and Soils], and a Professional Wetland Scientist (PWS) [Society of Wetland Scientists]. Charlie has field experience in parts of the USA, Caribbean area, Brazil, Honduras, Russia, South Africa, Western Europe, Australasia, and South Pacific islands. He is also the Series Editor of the Encyclopedia of Earth Sciences Series that is published by Springer (Germany). There are more than twenty-eight volumes in the Series and about twenty-five are available online. Charlie also serves on the Editorial Board of the International Journal of Environmental Studies (Routledge) and is an occasional peer reviewer for many other professional journals.

Charlie has interests and expertise in the general areas of surficial geology, coastal and marine geomorphology (including coastal classification), coastal/marine biophysical environments, exploration geochemistry, soils and weathering (regolith geology), coastal zone management and engineering applications or impacts on natural systems (including erosion control and shore protection), coastal hydrology including submarine freshwater and mineralized seeps, subaerial and marine structural geology, natural hazard mitigation in coastal zones, marine environments and coastal wetland protection and restoration, and remote sensing (e.g., land cover classification in coastal wetlands, advection-diffusion turbidity plumes in coastal waters, delineation of bottom types and sand resources), effluent disposal and pollution of wetlands and estuaries, water resources mapping and conservation, time series studies of wetland hydroperiod and soil moisture.

#### **Official Meeting of CERF** International Coastal Symposium (ICS)

The International Coastal Symposium (ICS) was originally set up by Per Bruun (deceased) and Charlie Finkl as the official meeting of the Coastal Education and Research Foundation (CERF), with one of the first meetings being held in Hilton Head, South Carolina, in 1993. After the repeated success of these meetings, CERF moved the ICS to the international scene holding these conferences in conjunction with local sponsors in Australia, Brazil, Iceland, New Zealand, Northern Ireland, Poland, and Portugal. The ICS brings together delegates from all over the world to collaborate and discuss the most current coastal research studies and projects. During the ICS 2014, which was held in Durban, South Africa, a grand celebration took place to mark the 30th Anniversary of CERF and the JCR. Our next ICS meeting is scheduled for May of 2018 in Busan, South Korea. For more information, please visit www.cerf-jcr.org.

Western Europe Carlos Pereira da Silva Michael Phillips

Kazimierz K. Furmanczyk Oceania

# **Journal of Coastal Research**

#### VOL. 32, NO. 5 (pages 1005–1246) ISSN 0749-0208

September 2016

CONTENTS

#### **RESEARCH ARTICLES**

Using Wind Direction and Shoreline Morphology to Model Sand Dune Mobilization	
	1005
Needs Assessment of Coastal Land Managers for Drought Onset Indicators in the Southeastern United States Casey B. Nolan, Daniel L. Tufford, and David R. Chalcraft	1016
Coastal Geomorphology and Ground Thermal Regime of the Varandey Area, Northern Russia	1010
	1025
Assessing the Resilience of Coastal Systems: A Probabilistic Approach	1032
Seasonal and Tidal Dynamics of Water Temperature, Salinity, Chlorophyll-a, Suspended Particulate Matter, Particulate Organic Matter, and Zooplankton Abundance in a Shallow, Mixed Estuary (Bahía Blanca, Argentina)	
María C. Menéndez, Ana L. Delgado, Anabela A. Berasategui, María C. Piccolo, and Mónica S. Hoffmeyer	1051
Importance of Microtopography in Determining Plant Community Distribution in Baltic Coastal Wetlands	1000
	1062 1071
Contribution of Outer-Shelf Deep Water to the Nutrient Inventories in the Euphotic Zone of the Changiang River Plume	1071
during Summer	
Hai-yan Jin, Jie Xu, Da-ji Huang, and Huan-xin Weng	1081
Numerical Modelling of Pore Pressure Accumulations in Marine Sediments around Submerged Breakwaters under Combined Wave and Current Loadings	1092
Geochemical Characteristics and Provenance of Holocene Sediments (Core STAT22) in the Beibu Gulf, South China	
Sea	1105
Modeling Salt Panne Land-Cover Suitability under Sea-Level Rise Anna C. Linhoss and William V. Underwood	1116
Application of a Hybrid Approach for Tide-Surge Modeling in the Persian Gulf	1126
	1120
Guo-Jia Hou, Xin Luan, Da-Lei Song, and Xue-Yan Ma	1135
Evaluation of Elemental Composition of Avicennia marina and Associated Soil, Karachi Coast, Pakistan	
Noreen Noor, Syed Shahid Shaukat, and Shahid Naseem	1142
Observations of Cyclone-Induced Storm Surge in Coastal BangladeshSoyee Chiu and Christopher Small	1149
Analysis of a 10-Year Record of Nearshore Directional Wave Spectra and Implications to Littoral Processes Research and Engineering Practice	1162
Determination of Geometry and Measurement of Maritime-Terrestrial Lines by Means of Fractals: Application to the	
Coast of Cantabria (Spain) Felipe Piña-García, Raúl Pereda-García, Julio Manuel de Luis-Ruiz,	
Rubén Pérez-Álvarez, and Raúl Husillos-Rodríguez	1174
Hydrodynamic Performance of Ichthyoid Rudder at Different Rudder Angle Settings Dagang Zhao, Chunyu Guo, and Yumin Su	1184
Dagang Dhao, Olunyu Guo, aliu Tullili Su	1104

#### **REVIEW ARTICLES**

Canons of Coastal Engineering in the United Kingdom: Seawalls/Groynes, a Century of Change?	
Allan T. Williams, Alessio Giardino, and Enzo Pranzini	1196
Evolution of the Bengal Delta and Its Prevailing Processes	
Jakia Akter Maminul Haque Sarker Joana Ponescu, and Dano Roelvink	1212

#### **TECHNICAL COMMUNICATIONS**

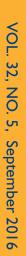
#### **BOOK REVIEWS**

Oil Spill Impacts: Taxonomic and Ontological Approaches by Y. W	uCharles W. Finkl 1246
---	------------------------





Downloaded From: https://complete.bioone.org/journals/Journal-of-Coastal-Research on 18 Apr 2024 Terms of Use: https://complete.bioone.org/terms-of-use



Journal of Coastal Research