

ICCE 2006 San Diego

CONTENTS

[Volume 1 Waves](#) (p1), [Swash, Nearshore Currents, and Long Waves](#) (p847)

[Volume 2 Coastal Management, Risk, and Ecosystem Restoration](#) (p1703)

[Volume 3 Sediment Transport and Morphology](#) (p2205)

[Volume 4](#)

[Volume 5 Coastal Structures](#) (p4275)

VOLUME ONE

Waves.

A Note on Water Wave Celerities on a Compressible Fluid

Robert A. Dalrymple and Benedict D. Rogers.....

Simplified Nonlinear Boussinesq Modelling of Waves - An Enhancement of Higher Order Harmonics

Yao Yao, Paul H. Taylor and A. G. L. Borthwick..... 14

Development of a Boussinesq - RANS VOF Hybrid Wave Model

Khairil Irfan Sitanggang, Patrick J. Lynett and Philip L.-F. Liu24

Initiation of the Breaking Process in Boussinesq-Type Wave Models

Giuseppe Roberto Tomasicchio, Feiice D'Alessandro and Paolo Veltri36

An Efficient Curvilinear Non-Hydrostatic Model for Free-Surface Waves

Chin H. Wu, Doo-Yong Choi and Hengliang Yuan49

Irrotational, Rotational and Turbulent Flows in Breaking Waves

Yasunori Watanabe and Ayumi Saruwatari62

Finite Volume Solution of Boussinesq-Type Equations on an Unstructured Grid

WalidEl Asmar, OkeyNwogu73

Improvements to Shallow Water Frequency Domain Models

Jayaram Veeramony, James M. Kainatu and K. L. Edwards.....86

A Hybrid Model for Nearshore Nonlinear Wave Evolution

Kacey L. Edwards, Jayaram Veeramony and James M. Kaihatu97

A Stochastic Model for Nonlinear Surface Waves over Topography

Tim T. Janssen, Tom H. C. Herbers and Jurjen A. Battjes 110

Non-Linear Random Wave Groups in Finite Water Depth

Feiice Arena, Vincenzo Nava, Diego Pavone and Alessandra Romolo..... 123

Frequency-Domain Nonlinear Wave Transformation Model Incorporating Incident and Reflected Wave Coupling

Kazuhiko Honda and Hajime Mase 136

Progress on a Convolution Method for Nonlinear, Dispersive Wave Transformation over Gently Varying Bathymetry

Hemming A. Schäffer..... 149

The Importance of Directionality in the Evolution of Large Waves in Intermediate and Shallow Water

Vasiliki Katsardi and Chris Swan 157

Incorporation of Wave Transmission and Overtopping Effects into a Multidirectional Random Wave Transformation Model

Kazuya Oki, Hajime Mase and Tetsuo Sakai 170

The Relative Trough Froude Number for Termination of Wave Breaking Takashi Okamoto, David R. Basco and Conceição Juana Fortes	180
Estimation of Incident and Reflected Waves Using Multiple Sensors Miguel Figueres and Josep R. Medina	193
On the Run-Up and Draw-Down of Breaking Solitary Waves Kao-Shu Hwang, Yu-Hsuan Chang, Hwung-Hweng Hwung and Hsin-Hung Chen	201
Turbulent Interfacial Boundary Conditions for Spilling Breakers Shubhra K. Misra, Maurizio Brocchini and James T. Kirby	214
Whitecaps: Effects of Wave Age and Air Stability Dag Myrhaug, Lars Erik Holmedal and Olav H. Slaattelid	227
Large Eddy Simulation of Regular Waves Breaking over a Sloping Beach Pierre Lubin, Hubert Branger and Olivier Kimmoun	238
Investigation of Decomposition Methods of Turbulent Flow Field Beneath Wind Waves Sang-Ho Oh, Natsuki Mizutani and Kyung-Duck Suh	251
Numerical Simulation of 3-D Wave Breaking on Breakwater Nguyen Danh Thao and Tomoya Shibayama	261
SPH-LES Two-Phase Simulation of Wave Breaking and Wave-Structure Interaction Giovanni Cuomo, Andrea Panizzo and Robert A. Dalrymple	274
Nonlinear Wave Interaction with Submerged and Surface-Piercing Porous Structures Okey Nwogu and Zeki Demirebilek	287
Development of a Strictly Combined BEM - VOF Method and Its Application to Wave Propagation Through 3 Domains Sang-Ho Kim, Masaru Yamashiro, Akinori Yoshida, Noriaki Hashimoto and Shuguang Yan	300
Velocity Measurements in Aerated Region of Plunging Breaking Wave Ho-Joon Lim and Kuang-An Chang	313
Laboratory Study of Turbulent Flow Structures in Breaking Waves by Particle Image Velocimetry Francis C. K. Ting	325
Experimental Study of the Plunging Wave Process Sin Hwei Lydia Lim and Eng Soon Chan	337
Turbulent Features beneath Breaking Waves Stefan Schimmels, Zhu Zhang and Torsten Schlurmann	347
Nonlinear Surf Zone Wave Properties as Estimated from Boussinesq Modelling: Random Waves and Complex Bathymetries Rodrigo Cienfuegos, Eric Barthelemy, Philippe Bonneton and Xavier Gondran ...	360
Wave Height Distributions along a Beach Profile M ^a Carmen Castillo and Miguel A. Losada	372

A Modified Model for Wave Decay on Beaches Ching-Piao Tsai and Hong-Bin Chen	382
Experimental Wave Breaking in SW AN Leo Holthuijsen and N. Booij	392
On Visually Observed Waves at San Clemente, California, USA Chuck Mesa	403
Wave Field Modifications by Bathymetric Anomalies with Gradual Transitions in Depth: A Review Christopher J. Bender and Robert G. Dean	412
Inverse Methodology for Coastal Wave Data Assimilation Alexandre B. Coli, João Alfredo Santos and Antonio Alberto Pires-Silva	425
Wave Celerity Estimation and Depth Inversion Using Linear Feature Extraction from Nearshore Video Images Jeseon Yoo, Hermann Fritz, Kevin Haas, Paul Work and Christopher Barnes	438
Bathymetric Estimation Based on Wave Refraction Patterns Kristen D. Splinter and Robert A. Holman	451
Wave Propagation over a Shallow Muddy Shelf: A Field Experiment Sergio Jaramillo, Alexandra Sheremet and Mead Allison	464
Numerical and Experimental Study on Wave Propagation over Mud Ali Oveysi, Mohsen Soltanpour, Tomoya Shibayama and Yugo Masuya	472
Irregular Wave Transformation on Mud Profiles Including the Fluidization of Mud Layer Mohsen Soltanpour, S. Abbas Haghshenas and Tomoya Shibayama	482
Dumping of Gravity Waves by Fields of Flexible Vegetation Sávio Freire Lima, Claudio Freitas Neves and Nara Maria Luzzi Rosauro	491
Three-Dimensional Modeling of Air-Sea Interaction Jennifer L. Regis and Donald N. Slinn	504
Improved Shallow-Water Spectral Wave Modeling Jane McKee Smith and Donald T. Resio	513
Implementation and Test of Improved Methods for Evaluation of Nonlinear Quadruplet Interactions in a Third Generation Wave Model Michel Benoit	526
Modelling and Measuring Waves in Coastal Waters Judith Wolf, Pedro Osuna, John Howarth and Alejandro Souza	539
Wave Transformation in Front of the Dutch Coast Jacco Groeneweg, Mathijs van Ledden and Marcel Zijlema	552
Application of Adjoint WAM to NOWPHAS Wave Observation Data for Establishment of Reasonable Wave Observation Network Noriaki Hashimoto, Kuniaki Matsuura, Toshihiko Nagai and Hiroyasu Kawai....	565

Wave Height Background Errors Simulation and Forecasting via Stochastic Methods in Deep and Intermediate Waters	
Zoe Theocharis, Constantine Memos and Demetris Koutsoyiannis.....	578
A Revised System for Long-Term Wave Hindcasting and Its Applicability	
Masataka Yamaguchi and Yoshio Hatada.....	590
Wave Regime Characterization on the Portuguese Coast Using Hindcast and Wave Propagation Models	
Rui Capitão, Conceição Fortes, Fernando Carvalho, Alexandre Coli and Liliana Pinheiro.....	603
Long-Term Prediction of Nearshore Wave Climate with an Application to Cliff Erosion	
Peter Stansby, Jianguo Zhou, Cuiping Kuang, Mike Walkden, Jim Hall and Mark Dickson.....	616
Medium-Term Wave and Current Modelling for a Mesotidal Wadden Sea Coast	
Agnieszka Herman, Ralf Kaiser and Hanz D. Niemeier.....	628
A Model for Deformation of Linear Waves on a Current with Arbitrary Reflection/Transmission Boundaries	
Akira Watanabe, Hidetaka Kobayashi and Toshimitsu Takagi.....	640
Numerical Modelling of Wave-Current Interaction in Tidal Areas Using an Unstructured Finite Volume Technique	
Ole R. Sørensen, Henrik Kofoed-Hansen and Oliver P. Jones.....	653
A Numerical Study of Coupling of Waves with a Current over a Cut-Cell Mesh	
Tingqui Li, Peter Troch and Julien De Rouck.....	666
Estimating Freak Wave Occurrence in the Agulhas Current with SW AN	
A. J. Lansen, Leo H. Holthuijsen and Andre J. van der Westhuysen.....	677
Typhoon Early Warning System Based on a Coupled Atmosphere-Ocean-Wave Model	
Jun Yoshino, Tomokazu Murakami, Masanori Hayashi and Takashi Yasuda.....	689
Wave Height Long Term Prediction Based on the Use of the Spread Parameter	
Rosanna Gencarelli, Giuseppe Roberto Tomasicchio and Paolo Veltri.....	701
Freak Wave Prediction from Directional Spectra	
Nobuhito Mori and Peter A. E. M. Janssen.....	714
A Boundary Element Solution Applied to the Description of Extreme Waves in Coastal Waters	
Caroline H. Hague and Chris Swan.....	726
Estimation of Extreme Wave Conditions from Hindcast Simulations with Application to the Wave Climate along French Coasts	
Florence Lafon and Michel Benoit.....	739
Generation of Extreme Wave Conditions from an Accelerating Tropical Cyclone	
David P. Callaghan, Jeff Callaghan, Peter Nielsen and Tom Baidock.....	752

An Extreme Value Model for Wave Climate Considering Duration and Seasonality Fernando J. Mendez, Melisa Menendez, Alberto Luceno, Raul Medina, Nicholas E. Graham.....	761
Numerical Simulation of Extreme Events from Focused Directionally Spread Wavefields David R. Fuhrman and Per A. Madsen	772
Non-Gaussian Properties of Surface Elevation in Crossing Sea States in Shallow Water Alessandro Toffoli, Miguel Onorato, Alfred R. Osborne and J. Monbaliu	782
Probabilistic Analysis of Typhoon Induced Hydraulic Boundary Conditions for Suo-Nada Bay Elwyn N. Klaver, J. K. Vrijling, S. N. Jonkman, Pieter H. A. J. M. Van Gelder, Leo H. Holthuijsen, S. Takahashi and H. Kawai	791
Extreme Waves Revisited Kenneth Willems, Agustin Sanchez-Arcilla, Jesus Gomez Aguar, Julien De Rouck, Peter Troch and R. Bolanos	802
Generation of Reflection-Free Waves in a Numerical Flume using PID Feedback Control Naresh Subramaniam, Francis F. Li, David M. Ingram and Clive G. Mingham....	812
Active Absorption of Waves in a 3D Basin Oscar Cruz-Castro, Billy L. Edge, Lambert N. Romijnders and Aimee Thurlow ..	821
Risk-Based Predictions for Ship Underkeel Clearance Michael J. Briggs, Andrew L. Silver and Leon E. Borgman	834
Swash, Nearshore Currents, and Long Waves	847 ↑
Swash Zone Boundary Condition: The Longshore Flow Matteo Antuono, Maurizio Brocchini and Giovanna Grosso	849
The Influence of the Nearshore Bathymetry on the Evolution of Breaking Wave-Induced Macrovortices Luciano Soldini, Carlo Lorenzoni, Maurizio Brocchini and Andrew B. Kennedy .	861
Fluid Acceleration in the Swash Zone Ali Farhadzadeh, Jack A. Puleo and Nobuhisa Kobayashi	874
Optical Measurements of Swash Kinematics Margaret Palmsten and Robert Holman	887
Modelling Inner Surf Hydrodynamics During Storm Surges J. S .M. van Thiel de Vries, J. van de Graaff, B. Raubenheimer, A. J. H. M. Reniers and M. J. F. Stive	896
Swash Zone Characteristics at Ocean Beach, San Francisco, CA L. H. Erikson, D. M. Hanes, P. M. Barnard and A. E. Gibbs	909
Bore-Driven Swash on Beaches: Numerical Modelling and Large-Scale Laboratory Experiments Tom O'Donoghue, Luke J. Hondebrink and Dubravka Pokrajac	922

Air-Bubble Measurements of the Surf Zone Breaking Waves by Bubble Tracking Velocimetry	
Hiroaki Kashima, Nobuhito Mori and Shohachi Kakuno	934
A Note on Setup Sensitivity and Prediction Accuracy	
Alex Apotsos, Britt Raubenheimer, Steve Elgar, Robert T. Guza and Jerry Smith.....	946
Three Dimensional Numerical Simulations of Wetting and Drying Bed Due to Tidal Currents Using Fractional Step Method	
Mäzen Abualtayef, Masamitsu Kuroiwa, Kentarou Tanaka, Yuhei Matsubara and Junichi Nakahira.....	959
Estimation of Time-Dependent Wave Set-Up Height in a River Entrance	
Hyun-seok Lee and Hitoshi Tanaka	972
A 2DH Implicit Model to Numerically Study Hydrodynamics and Sediment Transport Trends of a Real Shallow Tidal Embayment: The Arcachon Lagoon (France)	
Aurelie Le Dissez, Aldo Sottolichio and Jean-Paul Caltagirone.....	985
A Simple and Efficient Well-Balanced Model for 2DH Bore Propagation and Run-Up over a Sloping Beach	
Fabien Marche and Philippe Bonneton	998
Calculation of Infragravity Edge Wave along a Long and Straight Coast	
Guan-YuChen.....	1011
A New Look at Wave Group Forced Nearshore Circulation	
Joseph W. Long and H. Tuba Özkan-Haller.....	1018
Quasi-3D Nearshore Circulation Equations: A CL-Vortex Force Formulation	
Fengyan Shi, James T. Kirby and Kevin Haas	1028
Numerical Modeling of Alongshore Swash Zone Currents	
Qin Chen and Riccardo Briganti.....	1040
The Middle Way of Surf Modeling	
Daniel C. Conley and Eugen Rusu.....	1053
Wave-Averaged and Wave-Resolving Numerical Modeling of Vorticity Transport in the Nearshore Region: The SANDYDUCK Case Study	
Riccardo Briganti, James T. Kirby, Fengyan Shi, Maurizio Brocchini, Q. J. Chen and Bruce L. Lipphardt	1066
Video Observations of Longshore Currents, Myrtle Beach, South Carolina	
Kevin A. Haas and M. Kemal Cambazoglu	1079
Very Low Frequency Rip Current Pulsations During High-Energy Wave Conditions on a Meso-Macro Tidal Beach	
Natalie Bonneton, Philippe Bonneton, Nadia Senechal and Bruno Castelle	1087

Observations of Cross Shore Infragravity Energy and Related Pulsating Bottom Currents	
Hans R. Moritz, Guy R. Gelfenbaum and Nicholas C. Kraus.....	1097
A Rip Current Forecasting System	
Amaya Alvarez-Ellacuria, Alejandro Orfila, Guillermo Vizoso, Raul Medina and Joaquin Tintore.....	1110
Video-based Image Processing of Laboratory-Scale Rip Currents	
Liang He and Jack A. Puleo	1122
Characteristics of Rip Current on Large Cusps	
Ichiro Deguchi, Susumu Araki, Satoshi Takeda and Takumi Yoshii.....	1135
An Evaluation of Inexpensive Handheld Global Positioning Systems for Position and Velocity Estimates	
Jamie MacMahan, Jeff Brown and Ed Thornton.....	1146
Seiching in a Large Wave Flume	
James T. Kirby, H. Tuba Özkan-Haller and Merrick C. Haller	1159
Experimental and Numerical Investigations of Forced Oscillations in Rectangular Tanks	
Muthukumar Narayanaswamy, Jannette Frandsen and Robert A. Dalrymple	1172
Atmospherically Generated Large-Scale Water-Level Fluctuations in a Closed Basin	
Martijn P.C. de Jong, Marcel Bottema, R. J. Labeur, J.A. Battjes and Chris Stoiker	1184
Large Amplitude Seiche in St Joseph Bay, FL - Observations and Implications	
David D. McGehee.....	1197
Characteristics of Seiches in the Port of Rotterdam during Design Storm Conditions	
Martijn P.C. de Jong, Johan Dekker and Gijsbert Kant.....	1210
3D Non-Hydrostatic Modeling of Bottom and Bank Stability Subjected by Ship Propeller Jets	
Vladimir Maderich, Yulia Kanarska, Scott Fenical, Igor Brovchenko, Kateryna Terletska and Matteo Tirindelli	1222
Numerical Modeling of Passing Vessel Impacts on Berthed Vessels and Shoreline	
Scott Fenical, Pavlo Kolomiets, Sergey Kiwa and Mark Zheleznyak.....	1234
Ship Motion Modeling in Los Angeles and Long Beach Harbors	
George T. J. Tzong, Ching-Piau Lai, Jiin-Jen Lee and Fei Zhuang	1247
Characteristics of Moored Ship Oscillations due to Long Period Waves	
Ken-ichi Uzaki, Nobuhiro Matsunaga, Yasuhiro Nishii, Yoshito Ikehata and Yasuhara Kishira	1260
Basic Performance of Long-Wave Absorbing System Using Seawalls	
Shigeo Takahashi and Kojiro Suzuki	1270

Field Measurements of Harbour Resonance at Marina Di Carrara Ivano Melito, Giovanni Cuomo, Giorgio Bellotti and Leopoldo Franco.....	1280
Long Wave Oscillations inside the Gijon Harbor. Implications for Risk in Harbor Operations Obdulia Fernández de Ybarra Gimeno, Daniel Gonzalez-Marco, Jose Moyano, Agustin Sanchez-Arcilla and Joan Pau Sierra.....	1293
Observation of the Kuroshio Current in the Southwest East China Sea by Long-Range Ocean Radar Shoichiro Kojima and Kenji Sato.....	1306
Characteristics of Abnormal High Storm Surge on the Coasts Facing the Sea Hidenori Shibaki, Jon-In Kim and Katsuyuki Suzuyama	1317
A Hurricane Wave and Surge Forecasting System in Hawaii Jung Lyul Lee	1330
Real-Time and Probabilistic Forecasting System for Waves and Surge in Tropical Cyclones Robert J. Weaver and Donald N. Slinn.....	1342
Generation and Propagation Forecast of Storm Surge in the Seto Inland Sea Katsuaki Komai, Tadashi Hibino and Tatsuo Ohgama.....	1349
Coupling of a Storm Surge Model and Nearshore Wave Model Zhanxian Wang and Peter J. Vickery	1362
The Relative Importance of Runup and Setup on Beach Flooding Daniel Gonzalez-Marco, Jose Maria Aisina, Agustin Sanchez-Arcilla and E. TonatihuMendoza	1373
Simulation of the 1953 Storm Surge Flood in the Netherlands and Application of a Method to Estimate Loss of Life Sebastiaan N. Jonkman, D. van den Hengel and J.K. Vrijling.....	1386
The Role of Wave Setup in Predicting Back-Bay Storm Water Levels: Long Island, New York, USA Jennifer L. Irish and Rafael Canizares	1395
On the Classification of Coastal Storms Using Principles of Momentum Conservation David R. Basco and Chris A. Klentzman	1407
A Coupled Numerical Model for Tsunamis Generated by Subaerial and Submarine Mass Failures Stephane Abadie, Stephan Grilli and Stephane Glockner.....	1420
Tsunami Waves Generated by Landslides along a Straight Sloping Coast: New Three-Dimensional Experiments Giorgio Bellotti, Marcello Di Risio, Andrea Panizzo and Paolo De Girolamo	1431
Some Considerations of Tsunamis in Harbors Caused by Distant Tectonic Events Fredric Raichlen.....	1443

Topography Change Due to the Dec 2004 Indian Ocean Tsunami - Field and Numerical Study at Kirinda Port, Sri Lanka Takeshi Nishihata, Yoshimitsu Tajima, Yoichi Moriya and Tsunehiro Sekimoto	1456
Disaster Survey of Indian Ocean Tsunami in South Coast of Sri Lanka and Aceh, Indonesia Tomoya Shibayama, Akio Okayasu, Jun Sasaki, Nimal Wijayaratna, Takayuki Suzuki, Ravindra Jayaratne, Masimin, Zouhrawaty Ariff and Ryo Matsumaru.....	1469
Numerical Modeling of Tsunami Runup with Different Approaches Nik Schupiloff and Stefan Schimmels	1477
Numerical Analysis of Tsunami Generation due to Seabed Deformation Taro Kakinuma and Minoru Akiyama.....	1490
3D-SPH Simulation of Landslide Generated Waves Andrea Panizzo, Giovanni Cuomo and Robert A. Dalrymple.....	1503
Numerical Simulation of Three Dimensional Tsunamis Water Waves Generated By Landslides: Comparison between Physical Model Results, VOF, SPH Paolo De Girolamo, Tso-Ren Wu, Philip L.-F. Liu, Andrea Panizzo, Giorgio Bellotti, Marcello Di Risio	1516
Offshore Tsunami Monitoring Network Design Using GPS Buoys and Coastal On-Site Sensors Toshihiko Nagai, Teruyuki Kato, Nobuo Moritani, Hiroaki Izumi, Yukihiro Terada and Masao Mitsui	1529
Mitigation Effects of Mangrove Forests against Tsunami Attack Toshiyuki Asano.....	1541
Assessing Impacts of Tsunamis on Taiwan's and China's Southeast Coastlines Jim-Jen Lee and Ching-Piau Lai.....	1553
Modeling Far-Field Tsunamis for California Ports and Harbors Jose C. Borrero, Burak Uslu, Costas E. Synolakis and Vasily V. Titov.....	1566
Drag and Inertia Forces Due to Tsunami Acting on a Container Resting on Apron Norimi Mizutani, Takashi Tomita, Yusuke Takagi and Shogo Miyajima	1579
Modeling Tsunami and Resonance Response of Alberni Inlet, British Columbia Dilip K. Barua, Norman F. Allyn and Michael C. Quick	1590
Effect of Tsunamis on Moored/Maneuvering Ships John R. Headland, Eric D. Smith, David Dykstra and Teo Ribakovs	1603
Detailed Modeling of Locally Generated Tsunami Propagation into the Ports of Los Angeles and Long Beach David H. Dykstra and Weixia Jin	1616
Inundation during the 26 December 2004 Tsunami Costas E. Synolakis, Jose Borrero, Hermann M. Fritz, Vasily Titov and Emile A. Okai	1625

Governing Equations for Inundated Flow in Vegetated Area and Similarity Laws for Trunk	
Hideo Matsutomi, Khotaro Ohnuma, Akina Suzuki and Kentaro Imai.....	1638
Evaluation of Event and Response Approaches to Estimate the 100-Year Coastal Flood for Pacific Coast Sheltered Waters	
Nicholas J. Garrity, Robert Battalio, Peter J. Hawkes and Dan Roupe	1651
Tsunami Wave Decay in Near and Onshore Areas	
Reinold Schmidt-Koppenhagen, Joachim Grüne and Hocine Oumeraci.....	1664
Application of Three-Dimensional Tsunami Simulator to Estimation of Tsunami Behavior around Structures	
Takashi Tomita, Kazuhiko Honda and Taro Kakinuma	1677
Tsunami Numerical Modelling for the Hyperbolic (Pacific), Parabolic (Atlantic) and Elliptic (Indian) Oceans	
Tad Murty, Ioan Nistor and Niru Nirupama	1689
Coastal Management, Risk, and Ecosystem Restoration.....	1703 ↑
Different Implementation Scenarios for Large Scale Coastal Policy of The Netherlands	
Jan P.M. Mulder, Gertjan Nederbragt, Henk J. Steetzel, Mark van Koningsveld and Zheng Bing Wang	1705
Estimation of Extreme Water Levels as a Tool for Disaster Management	
Jürgen Jensen, Christoph Mudersbach, Sylvin Müller-Navarra and Ingrid Bork..	1718
Bootstrap Resampling for Extreme Wave Heights: Implications for Coastal Risks	
Dominic Reeve, Ying Li, Agustin Sanchez-Arcilla and Jesus Gómez	1730
Risk Analyses of Coastal Flood Defence Systems: Experiences and Research Challenges from Two Case Studies	
Thorsten Piontkowitz, Andreas Kortenhaus, Hocine Oumeraci and Carl-Christian Munk-Nielsen	1740
A Bayesian Approach to Coastal Risk Management	
Colin D. Christian.....	1753
Recent Sea Level Variations at the North Sea and Baltic Sea Coastlines	
Christoph Mudersbach and Jürgen Jensen	1764
Wave Processes in Nearshore Environment for Hazard Identification	
Robert C. MacArthur, Robert G. Dean and Robert Battalio.....	1775
Estimating Eroded Beach Profiles Applicable for the Pacific Coast of the United States	
Ronald M. Noble, Robert C. MacArthur, William G. McDougal and Chia-ChiLu	1788
The Definition of Wave Setup and Runup Using a Response Based Approach	
Claudio Fassardi.....	1800

Application of FEMA Guidelines for Coastal Flood Hazard Mapping to a Site in Northern California	
Dale R. Kerper, Leslie Sakumoto, Julio A. Zyserman and Seungjin Baek.....	1812
Response of the Ft. Pierce, FL Shore Protection Project to the 2004 Hurricane Season	
Edward Albada, Christopher Bender and Kenneth R. Craig	1825
Improvement of Stochastic Typhoon Model for the Purpose of Simulating Typhoons and Storm Surges under Global Warning	
Hiroyasu Kawai, Noriaki Hashimoto and Kuniaki Matsuura.....	1838
Life-Cycle Risk Analysis Approach to Coastal Storm Damage Reduction Planning	
David A. Moser, Mark B. Gravens, Richard M. Males, Michael J. Wittkowski and Cory M. Rogers.....	1851
State of the Art Coastal Flood Hazard Analyses for the U.S. Virgin Islands	
Elena Drei-Horgan, Jeffrey W. Gangai and Zachary Usher	1862
A Risk Based Framework for Predicting Long-Term Beach Evolution	
David Simmonds, Mark Davidson, Dominic Reeve, Andrew Chadwick, Ping Dong, Mark Spivack, Abdulla Kizhisseri, Harshinie Karunarathna and Xingzheng Wu.	1875
Coastal Engineering Support for California's Tsunami Emergency Response	
Lesley Ewing, Fernando Realyvasquez and Orville T. Magoon.....	1885
Combined Topo-Bathymetry, Morphology and Ecological Mapping as a Tool for the Implementation of ICZM Policies	
Rafael Consuegra, Luis Moreno, Javier Mey, Luis Martin Garzo, Santiago Diaz and Beatriz Marti.....	1896
Man, Mangroves and Embankments: Institutional Capacity Building Activities on Guyana Sea Defences	
Frank Wiersma, Cathelijne van Haselen, Henry Opdam, George Howard, Mewburn Amsterdam and Agnes Dalrymple	1906
Managing Managed Realignment of an Exposed Coastal Shoreline	
Laurence Banyard, Andrea Richmond, Paul Fish and Rob Jarman	1912
Sustainable Management of a High Value High Risk Coast: The Role and Effectiveness of Technological Interventions	
Vincent May.....	1925
Beyond the Limits of Coastal Engineering	
J.W. Kamphuis	1938
Restoration of Louisiana Barrier Islands: Engineering Approaches to Hazard Mitigation of Modulating Coastal Environments	
Syed Mozaffar Khalil, Christopher P. Knotts and Beau Täte	1951
Potential Physical Impacts of a Littoral Drift Restoration Project - Mouth of the Columbia River, USA	
David R. Michalsen, Hans R. Moritz and Doris J. McKillip	1964
Restoration of Louisiana's Barrier Islands - Evaluation and Analysis	
Christopher P. Knotts, Gregory M. Grandy and Syed Mozaffar Khalil.....	1977

Towards a Cellular Automata Model to Predict the Impacts of Aggregate Extraction on Biological Recoverability Stefania A. Schinaia, Hiroshi Momiji, Steven R. Bishop, Richard R. Simons and Steven Freeman.....	1989
A New Paradigm for Managing the Lower Mississippi River Harley S. Winer.....	2000
Numerical Simulation of Residual Currents in a Semi-Enclosed Bay Mohammad Asad Hussain, Masahiko Isobe and Yukio Koibuchi.....	2012
Performance of Tidal Flap Gate under Rising Sea Level Conditions Steven B. Mitchell, Heidi M. Burgess and Elliot Tinton	2025
Alternative Designs for the Relocation of the San Elijo Lagoon Inlet M. Hany S. Elwany.....	2038
Water Renovation in Micro-Tidal Mediterranean Ports Agustin Sanchez-Arcilla, Manel Grifoll, Marc Mestres, Joan Pau Sierra, Manuel Espino, Ignacio Rodriguez, Javier Romo and Joan Basora	2050
Hydrodynamic Simulation for San Elijo Lagoon Restoration Project Frank H.Y. Wu, Inocencio P. DiRamos, Kalia Shibao and Bruce M. Williams ...	2059
Modelling Hydrodynamics in Eelgrass (<i>Zostera Marina</i>) Beds Jasper T. Dijkstra, Rob E. Uittenbogaard and Marcel J. F. Stive	2069
Quantifying the Influence of Inlet Migration on Tidal Marsh System Health John S. Ramsey, Hugh E. Ruthven, Sean W. Kelley and Brian L. Howes.....	2082
Adour River Plume Monitoring Using Two Combined Remote Sensing Techniques: Satellite (MODIS) and Video (ARGUS) Images Denis Morichon and Damien Dailloux.....	2095
Numerical Modelling of Particle-Laden Buoyant Jets David D. Apsley, Gregory F. Lane-Serff, Giordano Lipari, Pete K. Stansby.....	2106
Development of a Three Dimensional Model to Understand Modified Tidal Entrance Processes Hamid Mirfenderesk, Roger Tomlinson, Stefan Szykarski and Erland B. Rasmussen	2118
Laboratory Investigation of Mixing in the Nearshore Jonathan M. Pearson, Ian Guymmer, T.V. Karambas, O.S. Petersen	2130
Coastal Groundwater Intakes: Numerical Modeling of Coastal Wells for Desalination Source Water William C. Glamore, Doug J. Anderson and Wendy Timms	2143
Hydrodynamic and Sediment Transport Studies for Yosemite Canal Wetland Restoration Project in San Francisco Bay, California Wenkai Qin, Scott M. Noble and Chia-chi Lu	2156

Design of the Upper Newport Bay Ecosystem Restoration Project, Orange County, CA Jane Grandon, Shawn Murphy, Larry Smith, Susan Brodeur and Tom Rossmiller.....	2169
Numerical Models, a Tool for Balancing Regulatory and Stake Holder Concerns in the Restoration of Degraded Wetland Systems Lee L. Weishar and Kirk F. Bosma.....	2182
Metals TMDL Modeling for Ballona Creek in California Ching-Piau Lai and Melinda Becker	2194

VOLUME THREE [↑](#)

Sediment Transport and Morphology	2205 ↑
Wave Boundary Layer Velocities in Oscillatory Sheet Flow Lorna J. Campbell, Tom O'Donoghue and Jan S. Ribberink.....	2207
On Modeling Boundary Layer and Gravity-Driven Fine Sediment Transport Tian-JianHsu	2220
Bottom Boundary Layer under Standing Wave Groups: Eulerian Drift Elena Sánchez-Badorrey, Simona Bramato, Christian Mans, Miguel A. Losada and Edwin A. Cowen.....	2233
Sheet Flow Sediment Transport Modelling Using Convolution Integrals Paul Guard, Ian Teakle, Peter Nielsen and Tom Baidock	2246
Sheetflow Sediment Transport Modeling: Including Boundary Layer Streaming Ian Teakle, Peter Nielsen, Tom Baidock and Paul Guard	2258
Modeling Sand Ripple Evolution under Wave and Current Boundary Layers Allison M. Penko and Donald N. Slinn	2271
Framework for Direct Numerical Simulation of Coupled Two-Phase Wave Bottom Boundary Layer Joseph Calantoni, Donald N. Slinn and K. Todd Holland.....	2278
Numerical Investigations on the Effect of Wave Skewness on Sandbar Migration M. Kemal Cambazoglu, Kevin A. Haas and Daniel M. Hanes	2286
Instantaneous Bed Shear Stresses in Shoaling Waves Emanuele Terrile, Ad J. H. M. Reniers and Marcel J. F. Stive	2299
Shear Stress and Sediment Transport Rate Calculations for Non-Linear Waves Suntoyo, Hitoshi Tanaka and Ahmad Sana	2308
Sediment Transport Patterns in the Neighbourhood of Cylindrical Porous Structures: The "Mar de Trafalgar" Offshore Wind Farm Giovanni Besio and Miguel Angel Losada Rodriguez	2318

Scour Around Monopile Foundation for Off-Shore Wind Turbine in Presence of Steady and Tidal Currents	
Lucia Margheritini, Luca Martinelli, Alberto Lamberti and Peter Frigaard	2330
Numerical Modelling of Scour at Offshore Wind Turbines	
Oliver Göthel and Werner Zielke.....	2343
Three-Dimensional Numerical Model of Flow and Scour Around a Vertical Cylinder	
Shinya Umeda, Liang Cheng, Masatoshi Yuhi and Hajime Ishida	2354
The Role of Turbulent Fluctuations on the Scour of a Short Cylinder	
HeatherD. Smith and Diane L. Foster.....	2367
Scour at a Seawall — Field Measurements and Laboratory Modelling	
A. M. C. Pearce, James S. Sutherland, Charlotte Obhrai, Gerald Müller, David Rycroft and Richard J. S. Whitehouse	2378
Daniage Development in Scour Protections Around Offshore Monopiles	
Leen De Vos, Julien De Rouck and Peter Troch	2391
The Role of Hydrodynamic Forcing in the Development of "Sorted Bedforms"	
Giovanni Coco, A. Brad Murray, Malcolm O. Green, T. Hume and E. R. Thieler	2404
Prediction of Ripple Geometry for Acoustic Response and Hydrodynamic Roughness Applications	
Richard L. Soulsby and Richard J. S. Whitehouse	2415
Statistical Sensitivity of Roughness in the Presence of Ripples	
Carla Faraci and Enrico Foti	2428
Sand Transport over Rippled Beds in Oscillatory Flow	
JebbeJ. van der Werf and Jan S. Ribberink.....	2441
A Suspended-Load Formula over Rippled Beds	
BenoTt Camenen and Magnus Larson	2454
Suspended Sediment Diameter Distribution on Rippled Beds under Regular Waves	
Tetsuya Kakinoki and Gozo Tsujimoto.....	2467
Sediment Suspension Simulation under Oscillatory Flow by SPH-SPS Method	
Shan Zou and Robert A. Dalrymple.....	2477
Observations of Sand Transport in the Surf Zone	
Bradley D. Johnson and Jane M. Smith.....	2485
Longshore Suspended Sediment Transport in Surf and Swash Zones	
Arpit Agarwal, Nobuhisa Kobayashi and Bradley D. Johnson	2498
Cross Shore Suspended Sand Transport on Beaches	
Lauren Schmied, Nobuhisa Kobayashi, Jack Puleo and Andres Payo.....	2511
Fluctuations of Instantaneous Vertical Distribution of Suspended Sediment in the Surf Zone	
R. D. Kosyan, M. V. Krylenko and C. E. Vincent.....	2524

The Role of Wave Breaking Turbulence in Sediment Suspension Observed During CROSSTEX	
Christopher P. Scott, Daniel T. Cox, Sungwon Shin and Timothy B. Maddux....	2537
The Cross-Shore Sediment Transport Experiment (CROSSTEX)	
Timothy B. Maddux, Edwin A. Cowen, Diane L. Foster, Merrick C. Haller and Timothy P. Stanton	2547
Modeling Sediment Transport under Breaking Waves — Crosstex Modeling	
Tyler J. Hesser and Donald N. Slinn.....	2560
Model Simulations of Bar Evolution in a Large Scale Laboratory Beach	
Pablo Teran Cobo, James T. Kirby, Merrick C. Haller, H. Tuba Ozkan-Haller, J. Magallen and G. Guannel.....	2566
Simulation of Beach Profile Evolution under Storm Surge Conditions in Large Wave Flumes	
Jürgen Neue, Hocine Oumeraci and Andreas Kortenhaus	2579
Measurement of High-Frequency Bed Level Changes in the Swash Zone Using Photo-Electronic Erosion Pins (PEEPS)	
Diane P. Hörn and Simon P. H. Lane	2591
Wind-Tunnel Study of Vertical Distribution of Sand Transport Rate by Wind	
Shintaro Hotta, Susumu Kubota, Nagatomo Nakamura and Kouichi Hosaka.....	2604
Intertidal Multiple Sand Bars on Meso-Tidal Beach	
Fumihiko Yamada and Nobuhisa Kobayashi.....	2617
Estimation of Sand Wave Dynamics in the Southern North Sea	
L. L. Dorst, P. C. Roos and S. J. M. H. Hulscher.....	2630
Conceptual Modelling of Straight Sand Bars Morphodynamics for a Microtidal Beach (Gulf of Lions, France)	
Raphael Certain and Jean-Paul Barusseau	2643
Cross Shore Sandbar Migration Predicted by a Time Domain Boussinesq Model Incorporating Undertow	
Wen Long, James T. Kirby and Tian-Jian Hsu.....	2655
Testing High Angle Waves Instability on a Low Energy Beach	
Albert Falques, Gabriela Medellin, Raul Medina, Mauricio Gonzalez and M. Ávila	2668
Modelling Ridge and Runnel System Development from an Intertidal Shore Parallel Bar	
Roland Garnier, Albert Falques, Daniel Calvete and Miquel Caballeria.....	2679
Modelling Non-Linear Nearshore Dynamics of a Barred Coast: Palm Beach, Sydney, Australia	
Marije W. J. Smit, Ad J. H. M. Reniers, Graham Symonds and Gerben B. G. Ruessink	2691

A Fundamental Experimental and Numerical Study of Large Scale Morphodynamics of Sandbanks in Steady and Oscillatory Flows Isabel M. Garcia-Hermosa, Jingmin Huang, Jianguo G. Zhou, Peter K. Stansby, Paul H. Taylor, Richard L. Soulsby and Alistair G. L. Borthwick	2701
Bar and Shoreline Coupling in Artificial Embayed Beaches Elena Ojeda, Jorge Guillen and Francesca Ribas	2714
Investigation of the Evolution of Submerged Sand Bars Hwung-Hweng Hwung, Z.C. Huang and Kao-Shu Hwang	2726
Response of Sand Bar at a Jettied River Entrance to Perpendicular Waves Tu Trong Nguyen and Hitoshi Tanaka.....	2737
Nearshore Sandbar Migration Gonzalo Simarro, Alejandro Orfila and Phillip L.-F. Liu	2750
Nonlinear Modeling of Tidal Sandbanks: Wavelength Evolution and Sand Extraction Pieter C. Roos and Suzanne J. M. H. Hulscher	2761
Time Dependent Beach Profile Response to Climate Evolution Juan M. Santiago, Asunci3n Baquerizo, Alberto Avila and Miguel A. Losada....	2772
Dune Erosion Tests to Study the Influence of Wave Periods Marcel R. A. van Gent, E. Martijn Coeveld, Dirk-Jan R. Walstra, Jan Van de Graaff, Henk J. Steetzel and Marien Boers	2779
Prediction of Dune Erosion through Monitoring of Coastline Undulations S0ren Bjerre Knudsen, Holger Toxvig Madsen and Per S0rensen.....	2792
Morphologie Classification of Coastal Overwash Chantal Donnelly, Ty V. Wamsley, Nicholas C. Kraus, Magnus Larson and HansHanson	2805
Coastal Barrier Breaching: Comparison of Physical and Numerical Models Ty V. Wamsley, Nicholas C. Kraus, Magnus Larson, Hans Hanson and Kenneth J. Connell.....	2818
Numerical Modeling of Wave Overwash on Low-Crested Sand Barriers Thieu Quang Tuan, Henk Jan Verhagen, Paul Visser and Marcel J. F. Stive.....	2831
Breaching of Coastal Dikes Induced by Wave Overtopping Claudia D'Eliso, Hocine Oumeraci and Andreas Kortenhaus	2844
Grass Cover Layer Failure on the Inner Slope of Dikes Martin J. Young and Randa M. Hassan.....	2857
Sediment Transport and Barrier Island Changes During Massive Overwash Events Jose A. Jimenez, Asbury H. Sallenger, Jr. and Laura Fauver	2870
Breaching of Sea Dikes Initiated by Breaking Wave Impact on the Seaward Slope Grzegorz Stanczak, Hocine Oumeraci and Andreas Kortenhaus	2880
Breaching of Dikes Paul J. Visser, Yonghui Zhu and J. K. Vrijling.....	2893

Temporal Changes of Backshore Topography and Sand Grain Size under Wind and Wave Actions	
Keiko Udo, Shuji Yamawaki and Yoshimasa Ito.....	2906
State of Banda Aceh Beach Before and After the Tsunami	
C. Marjolein Dohmen-Janssen, Ella Meilianda, Ben H. P. Maathuis and PohPohWong	2919
Modeling Deposition of Cohesive Sediment	
Gregory F. Lane-Serff.....	2932
Characteristics of Suspended Sediment Transport and Variability of Tidal Flat Sediment in a Tidal River	
Kiyosi Kawanisi	2945
Fine Sediment Transport in Storm Event — The Huanghua Experience	
QunZhao	2956
Monitoring and Modelling Turbid Plumes and Shoreline Effects Resulting from Mining with a Dredger	
Geoffrey Grant Smith, Christoph Soltau, Anel Viljoen, Nadia Weitz and LimaMaartens	2969
Settling and Reproduction of Floating Mud on the Sea Bottom	
Tadashi Hibino, Ryoji Takamido and Tatsuo Ohgama	2982
Prevention of Sedimentation in Brackish Water Harbours	
Horst Nasner, Rainer Pieper, Patrick Torn and Harm Kuhlenkamp	2994
Sediment Transport Processes in Deep Water Navigation Channel, Yangtze Estuary, China	
Qing He, Yuanye Wang, Zhiying Yu and Liu Jin.....	3007
On the Effect of Sand Grain Size on Turbulent Mixing	
RafikAbsi	3019
Relationship Between Local Seabed Slope and Grain Size Distribution of Bed Materials	
Yasuhito Noshi, Akio Kobayashi, Takaaki Uda, Takayuki Kumada and Masumi Serizawa.....	3030
Model for Predicting Changes in Grain Size Distribution of Bed Materials	
Takayuki Kumada, Takaaki Uda, Masumi Serizawa and Yasuhito Noshi	3043
Vertical Sorting and Preferential Transport in Sheet Flow with Bimodal Size Distributions of Sediment	
Christopher S. Thaxton and Joseph Calantoni	3056
The Effects of Grain Size and Bottom Slope on Sand Transport in the Coastal Zone	
Leo C. van Rijn and S. Boer.....	3066
Simultaneous Prediction of Beach Changes and Grain Size Distribution on Coast with Artificial Headlands	
Michio Sumiya, Takaaki Uda, Takayuki Kumada and Masumi Serizawa	3079

Procedures for Improving the Prediction of Equilibrium Grain Sizes, Bed Forms and Roughness in Tidally-Dominated Areas	
Carlos Alejandro Escobar S. and Roberto Mayerle	3092
Response of Mixed Sediment Beaches to Wake Wash from Passenger Only Fast Ferries: Rieh Passage, Washington	
Philip D. Osborne, Neil J. MacDonald and William J. Reynolds	3105
Particle-Based Sediment Transport Modeling	
Neil J. MacDonald and Michael H. Davies	3117
A Boussinesq-Type Wave Driver for a Morphodynamical Model	
Ap van Dongeren, Ivo Wenneker, Dano Roelvink and Andy Rusdin	3129
A Quasi Three-Dimensional Coastal Area Model with Shoreline Change for Mixed-Size Sands	
Masamitsu Kuroiwa, Takayuki Kuchiishi, Yuhei Matsubara and Hideaki Noda..	3142
Three-Dimensional Model for Predicting Beach Changes Based on Bagnold's Concept	
Masumi Serizawa, Takaaki Uda, Toshiro San-nami and Kou Furuike.....	3155
Prediction of Beach Morphological Changes Using a Data-Based Approach	
Yohama Gunawardena, Suzana Ilic, Harry Pinkerton and Renata Romanowicz ..	3168
3D Numerical Modeling of Morphological Change between Fishtail Groins	
Somchai Chonwattana, Sutat Weesakul and S. Vongvisessomjai	3178
Model for Predicting Three-Dimensional Sea Bottom Topography of Statically Stable Beach	
Kazuya Sakai, Takaaki Uda, Masumi Serizawa, Takayuki Kumada and Yasutsugu Kanda	3184
Effectiveness of Wave Hindcasts for Forcing Medium-Scale Morphodynamic Models	
Talal Etri and Roberto Mayerle	3197
Nowcasting of Coastal Processes through Assimilation of Model Computations and Remote Observations	
Anna Cohen, Ap van Dongeren, Dano Roelvink, Nathaniel Plant, Stefan Aarninkhof, Merrick Haller and Patricio Catalan	3207
Wind-Induced Circulation and Morphology on a Natural Beach: Carchuna (Spain)	
Elena Quevedo, Miguel Ortega-Sánchez, Asunciön Baquerizo, Francisco J. de los Santos and Miguel A. Losada	3220
Influence of a Marina Construction on Adjacent Beaches: 'Roda De Bara' Case Study	
Jordi Galofre, Raul Medina, Mauricio Gonzalez and Francisco J. Montoya	3228

VOLUME FOUR [↑](#)

Medium-Term Shoreline Changes at Hasaki, Japan	
Takayuki Suzuki and Yoshiaki Kuriyama	3241

Modeling Bed Morphology under Waves and Currents Bret M. Webb and Donald N. Slinn.....	3254
Numerical Simulation of Coastal Current, Sediment Transport and Topography Change in Coasts Facing the Japan Sea Shigeru Kato and Takao Yamashita	3262
Effect of Bed Roughness on Morphology Model Western Scheldt Estuary, NL D. M. P. K. Dissanayake, J. A. Roelvink and M. van Ormondt.....	3270
Numerical Modeling of the Aveiro Inlet Dynamics Anabela Oliveira, Andre B. Fortunato and J. M. Dias	3282
Model for Predicting Dynamic Changes in River Mouth Bar Kou Furuike, Takaaki Uda, Masumi Serizawa and Toshiro San-nami	3295
Morphological Modeling of a Danish Tidal Inlet Sanne L. Niemann, Jacob H. Jensen, Julio A. Zyserman, Ida Braker and SeungjinBaek	3308
Effect of Barrier Island Morphology on Tidal Basin Wave Climate Ralf Kaiser and Hanz D. Niemeyer.....	3321
Simulation of Coastal Inlets Processes by Advection-Diffusion Transport Model Nobuyuki Ono, Adele M. Buttolph and Nicholas C. Kraus	3331
Natural Sand Bypassing and Response of Ebb Shoal to Jetty Rehabilitation, Ocean City Inlet, Maryland, USA Adele Militello Buttolph, William G. Grosskopf, Gregory P. Bass and Nicholas C. Kraus	3344
A New Formula for Total Longshore Transport Rate Atilla Bayram, Magnus Larson, Hans Hanson and Chris Carr	3357
Predicting Longshore Gradients in Longshore Transport: Comparing the CERC Formula to DelfÖD Jeffrey H. List, Daniel M. Hanes and Peter Ruggiero	3370
Dependence of the CERC Formula K Coefficient on Grain Size David B. King, Jr.....	381
The Closure Depth Paradox: Implications for Sediment Budget at South Padre Island, Texas Daniel J. Heilman, Joel T. Darnell and Matthew P. Mahoney	3391
New Mid-Atlantic Observations of the Depth of Closure William Birkemeier, Michael Forte and Herman C. Miller	3404
Probabilistic Shoreline Change Modeling Peter Ruggiero, Jeffrey H. List, Daniel M. Hanes and Jodi Eshleman	3417
Shoreline Coastal Evolution Model: Two Portuguese Case Studies Carlos Coelho, Fernando Veloso-Gomes and Raquel Silva.....	3430
Theoretical Extrapolation of Open Boundary Condition of One-Line Model Masahiro Miura, Takaaki Uda, Masumi Serizawa and Yasutsugu Kanda.....	3442

Development and Application of an N-Line Model on the Joetsu-Ogata Coast, Japan Yasuyuki Baba, Benoit Camenen and Takao Yamashita.....	3455
Contour Line Change Model for Beaches with Nearshore Hardbottom Mohamed A. Dabees, J. William Kamphuis and Kenneth K. Humiston.....	3465
Parabolic Bay Slipe Equation Revisited for Practical Applications Melissa M-J. Yu and John R-C. Hsu	3478
Monitoring Shoreline Changes at Cancun Beach, Mexico: Effects of Hurricane Wilma Rodolfo Silva-Casarin, Ismael Marino-Tapia, C. Enriquez-Ortiz, Edgar Mendoza-Baldwin, E. Escalante-Mancera and F. Ruiz-Renteria.....	3491
Airborne Laser Derived Shoreline and Volume Changes Caused by Hurricane Charley William Robertson, V, Keqi Zhang, Stephen Leatherman and Dean Whitman....	3504
Characteristic Shoreline Change Patterns Identified Using EOF Analysis Thomas O. Herrington, Jon K. Miller and Robert G. Dean	3516
Preconditioned EOF Study of Multi-Scale Morphodynamics on Eroding Coast Masatoshi Yuhi, Fumihiko Yamada and Hajime Ishida	3529
Instability of a Coastline with Very Oblique Wave Incidence Lucia Ugucioni, Rolf Deigaard and Jergen Fredsae.....	3542
An Engineering Scale Model for Predicting the Shoreline Response to Variations in Waves and Water Levels Jon K. Miller and Robert G. Dean	3554
Shoreline "Hot Spot" Development Due to Sand Mining Offshore Jupiter Island, Florida Sean W. Kelley and John S. Ramsey	3567
Evolution of Dredged Pits Offshore Louisiana and Buffers around Seabed Infrastructure Robert B. Nairn, Qimiao Lu and Barry S. Drucker	3578
Morphological Modeling For Structural Improvements Along a Shoreline Erosion Hotspot Laurel W. Krynock, Johnny D. Martin, Alison I. Sleath, Peter J. Elkan, James D. White and Lee Rosenberg.....	3591
Jetty Spur Design at Coastal Inlets William C. Seabergh, Zeki Demirebilek and Lihwa Lin.....	3604
Physical Model Investigation of Morphology Development at Headland Structures Mark B. Gravens, Ping Wang, Nicholas C. Kraus and Hans Hanson.....	3617
Shoreline Response to Detached Breakwaters and Tidal Current: Comparison of Numerical and Physical Models Hans Hanson, Magnus Larson, Nicholas C. Kraus and Mark B. Gravens.....	3630

Shoreline Response to Revetment Construction: A Decade of Monitoring at Fort Fisher, NC	
William A. Dennis	3643
Groins, Headlands, and Cutting an Island in Two in the Maldives	
Kevin R. Bodge and Steve Howard	3656
Interactions of Tidal Inlet Migration and a Large-Scale Groyne	
Florian Ladage, Hans-Joachim Stephan and Hanz Dieter Niemeier	3669
Beach Morphology behind an Impermeable Submerged Breakwater under Obliquely Incident Waves	
Roshan Suminda Ranasinghe and Shinji Sato	3682
Morphological Changes around Large-Scale Submerged Breakwaters on the Niigata Coast, Japan	
Yoshiaki Kuriyama, Satomi Yamaguchi, Masaharu Ikegami, Seiki Takano and Jyunichi Tanaka	3695
Beach Variability near Groynes	
Adrian Pedrozo-Acuna, Dominic E. Reeve and Mark Spivack	3708
Application of Porous ("Leaky") Rock Terminal Structures	
Erik J. Olsen and Kevin R. Bodge	3719
Planform Response in Relation to Height of Breakwaters	
Laurits M. Bernitt and John Jensen	3732
Beach Improvement Using Coastal Structures: Case Study of Santa Pola, Costa Blanca, Spain	
Pedro Fernandez Carrasco, Suzane Popovic, Donald D. Treadwell, Orville T. Magoon and Ronald M. Noble	3743
Evaluation of the Use of Submerged Prefabricated Structures to Stabilize a Beach Fill	
Donald K. Stauble, J. B. Smith, Randall Wise and Stewart C. Farrell	3750
Methodology of Shore Protection in Taiwan at the Crossroads	
John R-C. Hsu, Jyh-Cheng Chu, S-R. Liaw and C-Y. Lee	3762
Innovative Shoreline Protection Scheme for the City of Marataizes, Espirito Santo, Brazil	
Berry Elfrink, Domenico Accetta and Karsten Mangor	3775
Beach Erosion and Coastal Protection Plan along the Southern Romanian Black Sea Shore	
Keiji Kuroki, Yoshimi Goda, Nicolae Panin, Adrian Stanica, Danut I. Diaconeasa and Gheroghe Babu	3788
Controlling Entrainment of Sediment into a Small Harbor with Channel-Type Breakwater	
Seongjin Yoon, Ichiro Deguchi and Kyuhan Kim	3800
California Harbors: Where Does the Sand Go?	
Craig S. Connor, Thomas R. Kendall, Karen G. Berresford, Peter A. Mull, Susan M. Ming and Jeffrey C. Cole	3810

Improving Sand Bypassing at Santa Barbara Harbor, CA	
James A. Bailard	3823
Nearshore Morphodynamic-Numerical Computation of the Influence of Harbour Jetties	
Peter Mewis	3835
Beris Fishing Port, Interfering in the Equilibrium Shape of a Bay	
Fatemeh Hajivalie and Mohsen Soltanpour.....	3 843
Morphological Evolution of a Shoreline on a Decadal Time Scale	
Margery Overton, Helena Mitsova, Juan Jose Recalde and Nicole Vanderbeke ..	3851
Design of the Restoration of Shell Island, Louisiana with Application of a Dynamic Morphosedimentary Model	
Thomas Campbell, Gordon Thomson and Lindino Benedet	3 862
Coastal Engineering Evaluation of Sebastian Inlet, FL	
Robert G. Dean and Paden Woodruff, III	3873
Shoreline Evolution in a Groin Field by Reservoir Model Approach	
Nicholas C. Kraus and Brian K. Barten	3886
Model for Predicting Movement of Sand Supplied to Offshore Zone	
Chu-ichi Oya, Takaaki Uda, Satoquo Seino, Kou Furuike and Yuki-yoshi Hoshigami.....	3899
Model for Predicting Dynamically Stable Beach Based on Analogy with Two-Dimensional Potential Flow	
Takaaki Uda, Masumi Serizawa, Toshiro San-nami and Kou Furuike.....	3911
Modeling Sediment Storage and Transfer for Simulating Regional Coastal Evolution	
Magnus Larson, Nicholas C. Kraus and Kenneth J. Connell	3924
Predicting Closure and Breaching Frequencies of Small Tidal Inlets — A Quantified Conceptual Model	
Bob Battalio, Don Danmeier and Phil Williams	3937
Dredging Shallow Draft Navigation Channels: The North Carolina Experience	
Paul Tschirky, Johnny Martin, Beth Sciaudone and John Morris	3950
Morphologie Evolution of Subsiding Barrier Island Systems	
Julie Dean Rosati, Robert G. Dean, Nicholas C. Kraus and Gregory W. Stone ...	3963
Synoptic Predictive Morphodynamic Model for Beach Management: Trafalgar (Spain)	
Miguel Ortega-Sánchez, Sandra Fachin, Francisco Sancho, Francisco J. de los Santos and Miguel A. Losada.....	3976
Field Measurements of Velocity Moment Shape Functions (the X-SHORE Project)	
Jonathan Tinker, Paul Russell, Gerd Masselink, Tim O'Hare, Tony Butt, M. Austin, Peter Ganderton and Edith Gallagher	3987
Assessing the Accuracy and Applicability of a Multi-Decadal Beach Survey Dataset	
Mitchell D. Harley, Ian L. Turner, Andrew D. Short and Roshanka Ranasinghe..	4000

Morphodynamics of Nearshore Rhythmic Forms: An Energy-Based Classification Clara Armaroli, Paolo Ciavola, Simone Caleffi and M. Gardelli.....	4009
Application of Old Maps for Studying Long-Term Shoreline Change Hitoshi Tanaka, Genki Takahashi, Hideo Matsutomi and Norihiro Izumi	4022
Long-Term Morphological Evolution of the Tidal Inlet "Norderneyer Seegat" Jan-Moritz Müller, Tjerk Zitman, Marcel Stive and Hanz Dieter Niemeyer.....	4035
Morphodynamic Modelling for Design of a Beach Restoration Project Stephen Luger, Gordon Prestedge, Andy McClarty, Christoph Soltau, Koos Schoonees and Chris Fleming	4046
Coastal Processes Quantification in Support of a Decision Matrix Approach for Coastal Enhancement Design at Jumeirah, Dubai Gary P. Mocke, S. G. Fernando, P. C. Fernando, F. Smit, David Finch, S. Ward, H. Johnson, J. Zyserman and T. Stewart	4056
Beach-^c: Life-Cycle Risk Analysis of Shore Protection Projects Richard M. Males, Mark B. Gravens, David A. Moser and Cory M. Rodgers.....	4069
Beach Nourishment in Cunit, Spain: Shifting from Hard to Soft Protection Christian M. Appendini, Jose Maria Medina Villaverde, Jordi Galofre, Jose Santos Lopez Gutierrez and Alejandro Palmeiro	4082
Recharge of Mixed Sand and Gravel Beaches Kaiming She, Diane P. Hörn, Paul Canning, I. M. R. Thomas.....	4092
Effects of Wave Diffraction and Initial Bathymetric Conditions on Beach Fill Volume Change Predictions Lindino Benedet, Marcel J. F. Stive, Willem M. Hartog, Dirk-Jan R. Walstra and Mark Van Koningsveld.....	4103
Analysis of an Unexpected Groin Failure at a Low Crested Defence Scheine Luca Martinelli, Barbara Zanuttigh, M. Gabriella Gaeta and Alberto Lamberti...	4116
Beach Renourishment Strategies Andres Payo, Nobuhisa Kobayashi and Kyuhan Kim	4129
Towards a Better Understanding and Design of Shoreface Nourishments Ruud Spanhoff and Jan van de Graaff	4141
Cat Island Chain Restoration, Green Bay Michael Fullarton, Robert B. Nairn, Chris J. Petykowski, James P. Selegean and Lars T. Barber	4154
A Critical Review of Beach Restoration Projects in the Northern Coast of Cadiz (Spain) after Thirteen Years Gregorio Gómez-Pina, Lorenzo Fages, Jose Luis Ramirez, Juan J. Munoz-Perez and Javier Enriquez.....	4167
Beach Nourishment at Ostend, Belgium: Design and Monitoring Peter De Wolf, Toon Verwaest, Stefaan Gysens, Koen Trouw, Chantal Martens and Julien De Rouck.....	4179

Monitoring and Modeling Nearshore Dredge Disposal for Indirect Beach Nourishment, Ocean Beach, San Francisco	
Patrick L. Barnard, Daniel M. Hanes, Jamie Lescinski and Edwin Elias	4192
Response of a Shoreline Sand Wave to Beach Nourishment	
Kathelijne M. Wijnberg, Stefan G. J. Aarninkhof and Ruud Spanhoff	4205
Application of Beach-J5c: Walton County, Florida Hurricane and Storm Damage Reduction Project	
Linda S. Lillycrop, Mark B. Gravens, Bernard E. Moseby, Richard M. Males and David A. Moser	4218
Lifetime Estimation of Beach Nourishments in Belgium: A Practical Guide for the Use of One-Line Models and Comparison with the Dutch Practices	
Chantal Martens, Toon Verwaest, Ruud Spanhoff, Ann Skou, Koen Trouw, Peter De Wolf and Stefaan Gysens	4231
Nourishment of Tidal Basins	
Mark van Koningsveld, Zheng B. Wang, Maarten Kluyver and Marcel J. F. Stive.....	4244
Impacts of High Energy Events on Sediment Budgets, Beach Systems and Offshore Sand Resources along the Southeast Coast of Florida	
Charles W. Finkl, Lindino Benedet and Jeffrey L. Andrews	4255
A Development of the Low-Cost Bathymetry System for Coastal Management by Fishing Echo Sounders and Sensor Network Technologies	
Katsumori Hatanaka and Masaaki Wada.....	4265

VOLUME FIVE [↑](#)

Coastal Structures	4275
Fully Nonlinear Water Wave Interaction with Immersed Tunnel and Seabed Foundation	
Dong-Soo Hur, Do Sam Kim, Sung Tae Kee and Chang Hoon Kim.....	4277
A New International Standard for 'Actions from Waves and Currents on Coastal Structures'	
Alf T0rum, Hans Burcharth, Yoshimi Goda, Andreas Kortenhaus and DaveKriebel.....	4290
Reflection and Transmission of Regular Waves by Multiple-Row Curtainwall-Pile Breakwaters	
Kyung-Duck Suh and Chang-Hwan Ji.....	4303
Wave Reflection and Wave Run-Up at Rubble Mound Breakwaters	
Markus Muttray, Hocine Oumeraci and Erik ten Oever.....	4314
Study of Reflection of Perforated Vertical Breakwaters	
Joaquin M. Garrido and Josep R. Medina	4325

Wave Reflection from Coastal Structures	
Barbara Zanuttigh and Jentsje W. van der Meer.....	4337
Transmission and Reflection of Modular Detached Breakwaters	
Josep R. Medina, Juan J. Munoz-Perez and Gregorio Gómez-Pina	4350
Resolving Transformed Wave Directions near Coastal Structures	
Torstein Pedersen, Judah Goldberg and Atle Lohrmann	4362
Wave Set-Up Induced Flow in Seawater Exchange Structures with Blockwork Mounds	
Yoshihiro Ohmura	4374
Numerical and Experimental Investigation of Wave Interaction with Overtopped Vertical Breakwaters	
Javier L. Lara, Inigo J. Losada, Raul Guanche and Cesar Vidal	4386
Highly Accurate Prediction of the Transformation of Multi-Directional Waves Reflected from Coastal Structures	
Changhoon Lee, Min Kyun Kim, Jinwook Lee, Sung Bum Yoon and Yong JunCho	4398
Scale Effects in Rubble Mound Breakwaters Considering Wave Energy Balance	
Damiano Scarcella, M. Izaskun Benedicto, Antonio Moflino and Miguel A. Losada	4410
The Interaction of Breaking Solitary Waves with an Armored Bottom	
Catherine Petroff and Fredric Raichlen.....	4417
Group Interaction Effects of Slender Cylinders under Wave Attack	
Uwe Sparboom, A. Hildebrandt and Hocine Oumeraci.....	4430
Wave Loads Fragility of Suspended Deck Structures	
Giorgio Lupoi and Giovanni Cuomo	4443
Environmental Loads Design Criteria for Nearshore Structures	
Dov S. Rosen and Avigdor Kaplan.....	4456
Laboratory Measurements of Wave Forces on Heavily Overtopped Vertical Wall	
Steven A. Hughes, David L. Kriebel, Harley S. Winer, Edward R. Blodgett and William C. Seabergh	4469
New Prediction Method for Wave-in-Deck Loads on Exposed Piers/Jetties/Bridges	
William Allsop, Giovanni Cuomo and Matteo Tirindelli.....	4482
Water Wave Impact on Walls and the Role of Air	
D. Howell Peregrine, Henrik Bredmose, Geoffery N. Bullock, Allison C. Hunt and Charlotte Obhrai.....	4494
Numerical Analysis of Time-Changing Wave Force Acting on Drifting Rigid Structure with Solid-Gas-Liquid Phase Flow Model	
Koji Kawasaki and Mitsuya Hakamata.....	4507
Effect of Breaker Types on Breaking Wave Loads on a Slender Vertical and Inclined Pile	
Kai Irschik, Hocine Oumeraci and A. Kortenhaus.....	4520

Numerical Model for Wave-Induced Residual Pore Pressure in a Porous Seabed Around the Head of a Breakwater	
Dong-Sheng Jeng and Jian Li	4532
Field Observations and Numerical Simulations for the Response Properties of Pore Water Pressures in the Seabed beneath a Composite Breakwater	
Tomotsuka Takayama, Tomohiro Yasuda, Daiki Tsujio and Shotaro Taniguchi..	4545
Development of Residual Pore Pressure in the Sand Bed beneath a Caisson Breakwater	
Matthias Kudella and Hocine Oumeraci	4554
A Comparison of Overtopping Performance of Different Rubble Mound Breakwater Armour	
Tom Bruce, Jentsje van der Meer, Leopoldo Franco and Jonathan M. Pearson ...	4567
Wave Transformation, Impact, and Overtopping on a Rubble Mound Breakwater: Large Scale Measurements and Numerical Modeling	
Sungwon Shin, Daniel T. Cox, In-Chul Kim and Solomon Yim	4580
Wave Overtopping of Rubble Mound Breakwaters with Crest Elements	
E. Martijn Coeveld, Marcela M. Busnelli, Marcel R.A. van Gent and G. Wolters	4592
Overtopping of Rubble Mound Breakwaters with Front Reservoir	
H. F. Burcharth and T. Lykke Andersen	4605
Laboratory Investigation on Wave Overtopping of Composite Breakwaters: The Port of Civitavecchia Case	
Marcello Di-Risio, Gian-Mario Beltrami and Paolo De-Girolamo	4616
Overtopping and Transmission: An Interpretation of Spectral Change at Low Crested Rubble-Mound Structures	
Alberto Lamberti, Barbara Zanuttigh and Luca Martinelli.....	4628
Spatial Distribution of Wave Overtopping Along Seawall in Multidirectional Waves	
Yoshiharu Matsumi, Ken-ichi Ohno and Akira Kimura	4641
The Wave Overtopping Simulator	
Jentsje W. van der Meer, Patrizia Bernardini, Wout Snijders and Eric Regeling..	4654
Irregulär Wave Runup and Overtopping On Revetments And Cobble Beaches	
Francisco Javier de los Santos, Nobuhisa Kobayashi and Miguel Angel Losada..	4667
Reduction of Wave Overtopping at Seadikes: Stilling Wave Basin (SWB)	
Jimmy Geeraerts, Julien De Rouck, Charlotte Beels, Stefaan Gysens, Peter De Wolf	4680
Effect of Wind on Water Spray and Wave Overtopping Generated Above Flaring Shaped Seawall	
Yuji Kamikubo, Keisuke Murakami, Isao Irie and Hideaki Hata.....	4692
Wave Overtopping at Vertical Seawalls: Field and Laboratory Measurements of Spatial Distributions	
Tim Pullen, William Allsop and Tom Bruce	4702

Vertical Distribution of Wave Overtopping for Design of Multi Level Overtopping Based Wave Energy Converters	
Jens Peter Kofoed	4714
Prediction of Wave Overtopping on Coastal Structures by Using Extended Boussinesq and SPH Models	
Eun-Sug Lee, Damien Violeau, Michel Benoit, Reza Issa, D. Laurence, P. Stansby	4727
Irregulär Wave Overtopping at Vertical Walls - Learning from Regulär Wave Tests	
Karl-Friedrich Daemrich, Jens Meyering, Nino Ohle and Claus Zimmermann.....	4740
Conversion Ratio of Wind Velocity from Prototype to Experimental Model on Wave-Overtopping	
Masaru Yamashiro, Akinori Yoshida, Hiroki Hashimoto and Isao Irie	4753
The Role of Wind in Wave Runup and Overtopping of Coastal Structures	
Jose A. González-Escrivá.....	4766
Numerical and Experimental Study of New Breakwater Promoting Vertical Circulation Flow	
Toru Endo and Takaaki Shigematsu.....	4779
Development of Water Exchangeable Breakwater Using Vertical Walls with Small Aperture	
Yasuhiro Kasai, Nobuhito Mori, Hiroaki Kashima, Shohachi Kakuno and Tsuneharu Orihashi	4792
Fully Reinforced 80T Dolos and Sloping Top Caisson in Hososhima Port	
Minoru Hanzawa, Toshihiro Kato, Yasuharu Kishira, Yasuhiro Ozawa, Yuji Niidome, Toshiharu Murakami, Akira Ono, Kazuyuki Hidaka, Hideki Yoshida and Isao Tanaka.....	4803
Weight and Stability Assessment of Single Layers of Orderly Placed or Pitched Natural Rock	
Nisa Nurmohamed, Gosse Jan Steendam and Jentsje W. van der Meer	4815
The Effect of Foreshore Slope on Breakwater Stability	
Henk Jan Verhagen, Bas Reedijk and Markus Muttray	4828
Theoretical and Experimental Study on the Placement of Xbloc Armour Units	
Erik ten Oever, Henk Jan Verhagen, Martijn Klabbers and Bas Reedijk.....	4841
Optimizing Breakwater Design	
Roberto Minguez, M ^o Carmen Castillo, Enrique Castillo and Miguel Losada	4849
Reconstruction of Port Oriel Breakwater — First Xbloc Application in Europe	
Arnoud van den Berge, Pieter Bakker, Markus Muttray, Martijn Klabbers and Duncan McAllister	4862
Keystone Harbor, WA: Coastal Engineering for Design of New Ferry Terminal	
Matteo Tirindelli, Scott Fenical, Vladimir Shepsis, Dan Cox and Charles Torres	4871

Effect of Sea Level Rise on Sliding Distance of a Caisson Breakwater — Optimization with Probabilistic Design Method Akio Okayasu and Kazuhiko Sakai	4883
Confirmation of Sliding Stability on Long Footing Caisson by Numerical Simulation and Irregular Wave Experiment Keiji Esaki, Tomotsuka Takayama and Tomohiro Yasuda	4894
Computational Reproduction of Caisson Sliding Failure Due to Typhoon Tokage Tae-Min Kim, Tomohiro Yasuda, Hajime Mase and Tomotsuka Takayama	4907
Resonance of Fluid in Narrow Joint Gaps of Caisson-Type Seawall Takehisa Saitoh, Guoping Miao and Hajime Ishida.....	4919
Wave Transmission at Low-Crested Structures Using Neural Networks Reinoud P. van Oosten, Jordi Peixó Marco, Jentsje W. van der Meer, M. R. A. van Gent and Henk Jan Verhagen.....	4932
Irregular Wave Transformation over Deforming Submerged Breakwater Takao Ota, Nobuhisa Kobayashi and Akira Kimura.....	4945
Piling-Up and Filtration at Low Crested Breakwaters of Different Permeability Lorenzo Cappiotti, Emanuela Clementi, Pierluigi Aminti and Alberto Lamberti..	4957
Wave Transmission and Wave-Induced Current in Presence of Submerged Breakwaters Mojtaba Tajziehchi and Ronald Cox.....	4970
CFD Added Design of Reef Breakwaters Valeri Penchev, Jens Scheffermann and Claus Zimmermann.....	4983
Integral Artificial Surf Reef Design Martijn Henriquez, Tim T. Janssen, Ad J. H. M. Reniers, H. D. Van Ettinger and Marcel J. F. Stive	4996
Numerical Study on the Effect of Porous Submerged Mound to Dissipate Non-Breaking Long Waves Yoshimitsu Tajima, Masayuki Kozuka, Kaori Ohshima and Yoichi Moriya.....	5008
Study of Hydrodynamic Induced by Low Crested Structures through Image Processing Renata Archetti and Alberto Lamberti	5021
Port of Pecém Berm Breakwater, Design and Post-Construction Monitoring Otavio Sayao, Domenico Accetta, Valtair Pires, Antonio Paulo Pinto, Paulo Cesar Freire and Denise Silva	5034
Wave Height Limits for the Statically Stable Icelandic-Type Berm Breakwater Sigurdur Sigurdarson, Omar Bjarki Smarason, Gisli Viggosson and Sverre Bjordal.....	5046
Experimental Verification of a Mound Breakwater Built with an S-Profile Maria Clavero, Izaskun Benedicto, Edgar Mendoza-Baldwin, Rodolfo Silva, Victoria Ramos and Miguel A. Losada	5059

Influence of Wave Steepness on Stability of Placed Block Revetments	
Mark Klein Breteler, Robert 't Hart and Theo Stoutjesdijk.....	5067
Processes Affecting the Stability of Revetments Made With Sand Containers	
Juan Recio and Hocine Oumeraci	5080
Stability Tests of Geotextile Sand Containers for Monopile Scour Protection	
Joachim Grüne, Uwe Sparboom, Reinold Schmidt-Kopenhagen, Zeya Wang and Hocine Oumeraci	5093
GOLFKLAP a Model to Determine the Impact of Waves on Dike Structures with an Asphaltic Concrete Layer	
Arjan K. de Looff, Robert 't Hart, Kees Montauban and Martin F.C. van de Ven.....	5106
Performance of Coastal Armoring Structures under Hurricane Conditions	
Jeffrey R. Tabar, Gene Chalecki and Kathryn Ketteridge	5116
Mechanism of Coastal Structure Damage Due to Tsunamis, and Case Studies of Coastal Damage from Indian Ocean Tsunami	
Yoshimichi Yamamoto, Hiroaki Takanashi and Takashi Tomita	5126
Mitigation of Tsunami Inundation Disaster by Raising a Crown Height of Existing Seawalls	
Keisuke Murakami and Toshiro Yamaguchi.....	5139
Wave Force on Coastal Dike Due to Tsunami	
Fuminori Kato, Shigeki Inagaki and Masaya Fukuhama.....	5150
Effects of Soliton Fission and Wave Breaking on Tsunami Force Acting on Breakwater	
Masaaki Ikeno, Masafumi Matsuyama, Tsutomu Sakakiyama and Ken Yanagisawa.....	5162
Reinforced Concrete Armor Units for Coastal Structures	
Donald D. Treadwell and Orville T. Magoon.....	5175
Challenges, Innovative Techniques, and Ongoing Monitoring of Kaunalapau Breakwater Construction, Lanai, Hawaii	
Jessica R. Hays, Thomas D. Smith and Scott P. Sullivan.....	5185
Breakwater Damage and Rehabilitation — Terceira Island, Azores	
Douglas Scott, David J. Werren, Tim Kenny and Chris J. Petykowski	5195
Monitoring Effectiveness of Coastal Structures Maintained by the U.S. Army Corps of Engineers	
Lyndell Haies	5208
Subsidence of King Harbor Breakwater at Redondo Beach	
Robert F. Dill, M. Hany S. Elwany, Jeffrey A. Johnson and Neil F. Marshall	5221
Damage Progression on Cube Armored Breakwaters	
Maria Esther Gómez-Martin and Josep Ramon Medina	5229

Monitoring of the Coastal Defence Works of Costa Da Caparica, Portugal	
Fernando Veloso-Gomes, Francisco Taveira-Pinto, Joaquim Pais-Barbosa, João Costa and Antonio Rodrigues	5241
New Tools for Risk Assessment of Rubble-Mound Breakwaters	
Isaac Almeida de Sousa and João Alfredo Santos	5254
Expert Judgement of Uncertainties in Coastal Structure Design	
Holger Schüttrumpf, Andreas Kortenhaus, Karsten Peters and Peter Fröhle	5267
Extreme Responses at Breakwaters - Application of Importance Sampling Methods	
Thomas Davey, Tom Bruce, William Allsop and Julian Wolfram	5279
Response-Based Coastal Flood Analysis	
David Divoky and William G. McDougal	5291
Use of "Statistical" Depth of Closure to Resolve Historical Changes in Shorezone Volume, Huntington Beach Littoral Cell, CA, USA	
Peter E. Gadd, Craig B. Leidersdorf, Greg Hearon, Arthur T. Shak and Joseph Ryan	5302
Strudel Scour Formation off Arctic River Deltas	
Craig B. Leidersdorf, Gregory E. Hearon, Kennon D. Vaudrey and GregSwank	5312

