

**COASTAL
ENGINEERING
2012**

Proceedings of the 33rd International Conference

COASTAL ENGINEERING 2012

**1 July – 6 July 2012
Santander, Spain**

Edited by

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Abstract: This *Proceedings* contains 428 papers and 39 posters presented at the 33rd International Conference on Coastal Engineering, which was held in Santander, Spain, 1 July to 6 July 2012. The *Proceedings* is divided into six parts: Waves; Swash, Nearshore Currents, and Long Waves; Sediment Transport and Morphology; Coastal Structures; Coastal Management, Environment, and Risk, and Posters. The individual papers cover a broad range of topics including theory, numerical and physical modeling, field measurements, case studies, design, and management. These papers provide engineers, scientists, and planners state-of-the-art information on coastal engineering and coastal processes.

Foreword

The 33rd International Conference on Coastal Engineering (ICCE 2012) was held in Santander, Spain, 1 July to 6 July 2012. The Local Organizing Committee, led by Iñigo J. Losada and Raúl Medina, is acknowledged for their dedicated preparation over many years that led to a successful conference with broad participation. Eight-hundred attendees from 45 countries gathered at the Santander Convention Center to discuss research and applications in coastal engineering. The papers contained in this *Proceedings* cover a wide range of topics including waves; swash, nearshore currents, and long waves; coastal management, risk, and environmental restoration; sediment transport and morphology; and coastal structures. The authors have provided state-of-the-art contributions, and this volume could not be produced without their commitment to solving coastal engineering challenges. The members of the ASCE/COPRI Coastal Engineering Research Council (CERC) and the ICCE 2012 Technical Review Committee reviewed 877 abstracts and selected the 524 paper and 110 posters that were presented at the conference. The dedication of the Council members has led to the continued high quality and popularity of the International Conference on Coastal Engineering.

Preparation of these proceedings would not be possible without the assistance of many colleagues. Thank you to Prof. Robert A. Dalrymple, CERC Chairman, and Prof. Billy L. Edge, CERC Vice Chairman, for their guidance and encouragement. Additional thanks go to Iñigo J. Losada for answering our many requests for information and for his gracious hospitality in Santander.

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Proceedings Dedication

This *Proceedings* is dedicated to Professor Yoshimi Goda, who passed away on January 19, 2012. Professor Goda's research ability was much appreciated and recognized from his early years. His research activities in coastal engineering started from the employment at the Port and Harbor Research Institute (PHRI), Ministry of Transport of Japan, just after his graduation from Tokyo University in 1957. He was sent to the United States in 1961 by a Japanese government program to take classes and conduct research at the Massachusetts Institute of Technology under Professor Arthur T. Ippen. His research at MIT was on the theoretical analysis of harbor resonance. After he returned, he became the chief of the Wave Laboratory in 1967 and supervised young researchers in PHRI. He was promoted to director of the Marine Hydrodynamic Division in 1978 and transferred to director of the Hydraulic Engineering Division in 1980. Subsequent promotions saw him becoming the deputy director general in 1984 and later the director general of PHRI in 1986. He left PHRI in 1988 to accept a professorship at Yokohama National University. He retired from the university with the title of Professor Emeritus in 2000 and simultaneously was offered the job of an adviser to the consultant company, Ecoh.



He energetically carried out new research efforts at the forefront of coastal engineering to apply properties of random sea waves to the practical design of coastal and harbor facilities. Consequently, he attained high-quality research results, which are very popular; for examples, Professor Goda's formula for wave pressure, his analysis of random wave transformation and his study on statistical properties of random seas. These results were introduced into the technical standards of port and harbor facilities in Japan. His research was extremely fruitful and greatly contributed to the development of coastal engineering in Japan as well as in the world. He also published books on coastal engineering for practitioners, in both Japanese and English. His motto in research was that it should be useful for practitioners.

He received several awards from the Japanese Society of Civil Engineering for his outstanding research results and book publications and also from the Japanese government for his enormous contribution to the progress of Japanese ports. He received the International Coastal Engineering Award from ASCE. The authors had frequently suggested Professor Goda to take rest for a while from his work because he worked much more than the average person. Instead, he surprised the authors with the publication of a new book (in Japanese), titled "Coastal Engineering—Its birth and development—", in January 2012. Less than one month later after the publication, Professor Goda passed away, leaving the book for the coastal engineering community. The authors will continue their research activities in the future according to the late Professor Goda's desire, which they will cherish along with his memory.

Contributed by:

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IN MEMORIAM

Eco Wiebe Bijker

29 June 1924 – 27 February 2012



Eco Wiebe Bijker, Ph.D., M.Sc., a professor emeritus at the Netherlands' Delft University of Technology who was world renowned for his contributions to the field of coastal engineering, passed away on February 27, 2012 at the age of 87. Born on June 29, 1924, in Utrecht, the Netherlands, Eco received a bachelor's degree in civil engineering from the Utrecht Polytechnic School in 1944 and a master's degree with distinction, also in civil engineering, from Delft University of Technology in 1949. During the first 19 years of his career he first joined and later led the branch of the famous Delft Hydraulics Laboratory in De Voorst, Marknesse, the Netherlands. There he was involved in the research that laid the foundation for the Delta Project, protecting the Southern Netherlands Delta against flooding. Concerned with coastal engineering subjects, he embarked on including the effect of wave agitation in alongshore sediment transport. This resulted in the first theoretical and practical formulation of wave effects in alongshore sediment transport, the Bijker formula, which laid the basis for earning a doctorate in Technical Sciences at Delft University of Technology in 1967.

While he already started to teach and inspire international students at IHE in Delft in 1957, he extended his efforts to Netherlands' students in 1968 when he took the Chair of Coastal Engineering at Delft University of Technology. Until his retirement in 1992, he continued teaching with remarkable and appreciated results. By his teaching to international and national students he contributed importantly to the understanding of coastal processes by the present generation. During his Delft appointment he accepted the first editor-in-chief role of the now well-established Elsevier's journal Coastal Engineering, the prime coastal engineering journal. Nearing the end of his career he led the organizing committee that successfully hosted the 1990 International Conference of Coastal Engineering in Delft, the Netherlands. He received many national and international distinctions, such as the International Coastal Engineering Award of the ASCE and the award of Knight in the Dannebrog Order (Denmark).

Contributed by Ida Broker

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Cover Photos: Coastal scenery viewed from Santander. Credit: Gabriel Barajas