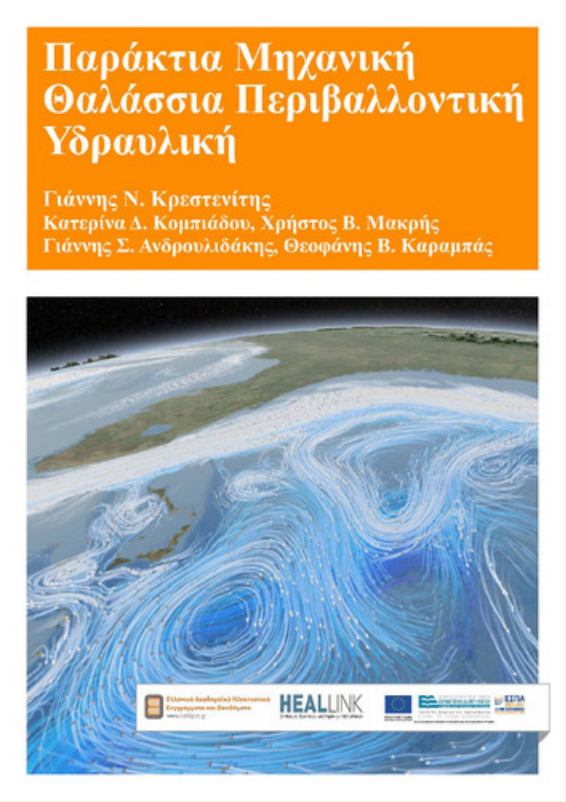

METADATA

Title: Coastal engineering - Marine environmental hydraulics

Other Titles: Marine hydrodynamic circulation. Sea level changes. Transport & dispersion of pollutants

Language: Greek

ISBN: 978-960-603-253-0

Subject: ENGINEERING AND TECHNOLOGY, NATURAL SCIENCES AND AGRICULTURAL SCIENCES

Keywords: Coastal Engineering / Physical Oceanography / Maritime Hydraulics / Hydrodynamic Coastal Circulation / Outfalls

Bibliographic Reference: Krestenitis, I., Kombiadou, K., Makris, C., Androulidakis, I., & Karampas, T. (2015). Coastal engineering - Marine environmental hydraulics [Undergraduate textbook]. Kallipos, Open Academic Editions. http://dx.doi.org/10.57713/kallipos-747

Abstract

The book is addressed to Civil Engineers and Engineers or Scientists of other disciplines who are conducting undergraduate or postgraduate studies in Coastal Engineering and Marine Environmental Hydraulics. It includes concepts of coastal physical oceanography (physical parameters of seawater, measurements and analysis of these parameters and characterization of seawater masses), topics of dynamic oceanography (coastal currents, wind, inertial and geostrophic currents), the basic equations describing these phenomena, simplified calculation equations, monitoring methodologies and modern techniques for obtaining and processing measurements (satellite imagery, altimetry, etc.). Sea level changes and their natural causes such as astronomical tides, seismogenic changes of the sea floor (tsunamis), meteorological systems - storm surge and climate change are analysed. The impacts of coastal flooding are also discussed and data are provided for simplified analytic calculations and coastal zone vulnerability assessments. In order to understand the processes of transport and diffusion of pollutants in the marine environment, the book presents these processes and their mathematical simulation, as well as the physical, chemical and biological parameters and processes in the marine ecosystem. Given the increasing demand on environmentally safe and technically sound disposal of treated wastewater in the marine environment, a chapter is devoted to the hydraulic calculations of submarine wastewater disposal systems, as well as the calculations of dilution – dispersion in the near- and the far-field. Finally, the following are included: mathematical models and numerical analysis methods for problems of coastal hydrodynamic circulation, storm tides and transport-dispersion of pollutants.

The Project is funded by the National Development Programme 2021-2025 of the Ministry of Education and Religious Affairs and implemented by the Special Account for Research Funds of the National Technical University of Athens and the Hellenic Academic Libraries Link.