



Innovative teaching and learning strategies in River sea interactions for student.

Project No. 610327-EPP-1-2019-1-DE-EPPKA2-CBHE-JP



River sea interactions (Text book) Created by: Prof. Dr. Bui Hong Long, MSc. Phan Minh Thu

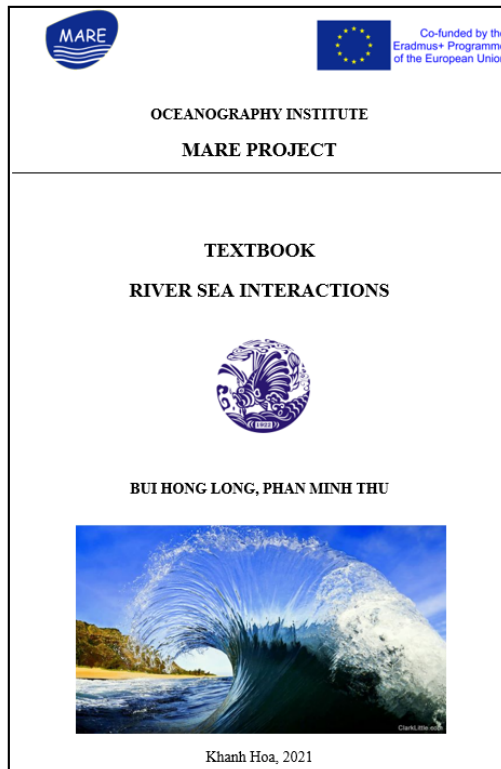


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PREFACE

River-Sea interaction and related issues: The estuaries and continental shelf areas cover 5.2% of the earth's surface area and only 2% of the ocean volume. But they are the bridge between the continents and the oceans. Every year, the world's major rivers pour about 20,199 m³ of sediment along the shores of the oceans, forming large deltas such as: Hoang Ha, Truong Giang, Mekong, Hong, Nile, Mississippi, etc. In the world, there are more than 50 major deltas distributed on almost all continents with a total population of about 325 million people, there are often major political-economic centers such as: Shanghai. Therefore, in the interaction, River-sea, estuary and delta will be most affected. According to studies, most of the world's deltas have been facing 3 major problems in the world: - Shrinking Deltas; - The lands of the delta are being subsided; - Sinking Deltas. The cause is thought to be a mixture of climate change and human impact. The Red River Delta and the Mekong River Delta are the major river deltas of the world and the region. Every year, the Red River system discharges into the sea about 130,106 tons of sediment, while the sediment discharge of the Mekong River discharges into the sea every year about 160 million tons). Vietnam is one of the most vulnerable countries in the world to the effects of climate change. Increasing temperature, drought, saltwater intrusion... getting worse, sea level rise and increasing frequency of storms threaten food security, livelihoods and lives of millions of Vietnamese people. + Vietnam is located in the belt affected by natural disasters, storms, floods, and droughts are high compared to other regions in the world. In the Central region alone, the average annual direct and indirect impacts of 3-5 storms, tropical depressions and droughts often occur, making the process of opening and closing and shifting the estuaries in the region. China is very complicated. The influence and impact of the river towards the sea, the upper limit on the mainland of the sea into the river is currently a scientific issue that needs to be clarified. They are very important in determining the scope of coastal management. + Identify front areas (Hydrology, tides, ...) to discover potential areas for food sources, high biological productivity...

Identify areas affected by river water and affected by physical processes such as stratification, disturbances caused by wind, waves, tides and currents. Studying the interaction processes of Vietnam's rivers and seas under the impact and influence of socio-economic development and climate change.



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The lecture **River sea interactions** consists of 5 chapters with the following contents:

CHAPTER 1. ESTUARY AND CREEK

CHAPTER 2: DELTA

CHAPTER 3. KINEMATICS OF THE ESTUARY

CHAPTER 4: VIETNAM ESTUARIES

CHAPTER 5. NATURAL DISASTERS IN THE ESTUARY

This book offers oceanographic knowledge applied to marine fishing at the following levels: Understand the concept of oceanographic and fishery elements; Understand the influence of oceanographic factors on fisheries; Gain skills to forecast fishing grounds and fish concentration areas. Application of models, programs to calculate and report changes in reserves, output and allowable exploitation, Fisheries statistical data analysis; Applying knowledge of oceanography and fisheries in forecasting fishing grounds.

The target audience are bachelor's level students, interested in marine pollution control and management of marine resources and environment.



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Biography of author

Assoc. Prof. Dr. Bui Hong Long held the position of Director of the Institute of Oceanography from 2006 to 2013. He was the Chairman of the Intergovernmental Commission on Oceanography (IOC VN) from 2013 to 2020. He is currently a member of the Editorial Board of Vietnam Marine Science and Technology Journal (VAST). He also joins the Executive Committee of the Vietnam Association of Marine Science and Technology. Assoc. Prof. Dr. Bui Hong Long completed a Bachelor's degree in Oceanography from the University of Natural Sciences (Hanoi University), and then studied for a Doctorate in Oceanography at Saint Petersburg University of Meteorology and Hydrology, Russia in 1987. Assoc. Prof. Dr. Bui Hong Long's research interest in **Marine and coastal dynamics, Applied Oceanography**. He has led and participated in many national and international research projects with more than 35 projects. Up to now, he has more than 45 books and 100 research papers published in prestigious domestic and foreign journals.