## Contents

### Part I  Remote Sensing, Mapping and Survey of Coastal Biophysical Environments

1  Remote Sensing of Coastal Ecosystems and Environments  
   Victor V. Klemas  
   3

2  Advanced Techniques for Mapping Biophysical Environments on Carbonate Banks Using Laser Airborne Depth Sounding (LADS) and IKONOS Satellite Imagery  
   Charles W. Finkl, Christopher Makowski, and Heather Vollmer  
   31

3  Terrestrial Laser Scanner Surveying in Coastal Settings  
   Michael A. O’Neal  
   65

4  Advances in Applied Remote Sensing to Coastal Environments Using Free Satellite Imagery  
   Cristina Lira and Rui Taborda  
   77

5  Remote Sensing and Modeling of Coral Reef Resilience  
   Anders Knudby, Simon J. Pittman, Joseph Maina, and Gwilym Rowlands  
   103

6  An Assessment of Physiographic Habitats, Geomorphology and Evolution of Chilika Lagoon (Odisha, India) Using Geospatial Technology  
   Ashis Kr. Paul, Sk. Majharul Islam, and Subrata Jana  
   135

7  Foreshore Applications of X-Band Radar  
   G.M. Jahid Hasan and Satoshi Takewaka  
   161

### Part II  Advances in the Study and Interpretation of Coastal Oceans, Estuaries, Sea-Level Variation, and Water Quality

8  Digital Ocean Technological Advances  
   Xin Zhang, Xiaoyi Jiang, Suixiang Shi, and Tianhe Chi  
   195
9 A New Statistical-Empirical Hybrid Based Model to Estimate Seasonal Sea-Level Variation in the Gulf of Paria from River Discharge ............................................ 215
Carol Subrath-Ali

10 Advances in Modeling of Water Quality in Estuaries ........... 237
Isabella Ascione Kenov, Francisco Campuzano, Guilherme Franz, Rodrigo Fernandes, Claudia Viegas, João Sobrinho, Hilda de Pablo, Andreia Amaral, Ligia Pinto, Marcos Mateus, and Ramiro Neves

11 Advances in Video Monitoring of the Beach and Nearshore: The Long-Term Perspective ........................................ 277
Ana Nobre Silva and Rui Taborda

12 Application of Advanced Remote Sensing Techniques to Improve Modeling Estuary Water Quality ................................. 295
A.K.M. Azad Hossain, Yafei Jia, Xiaobo Chao, and Mustafa Altinakar

Part III Advances in Coastal Modeling Using Field Data, Remote Sensing, GIS, and Numerical Simulations

13 Developments in Salt Marsh Topography Analysis Using Airborne Infrared Photography ........................................ 317
Francisco Andrade, Jackson Blanton, M. Adelaide Ferreira, and Julie Amft

Richard L. Miller, Ramón López, Ryan P. Mulligan, Robert E. Reed, Cheng-Chien Liu, Christopher J. Buonassissi, and Matthew M. Brown

15 Simulation Management Systems Developed by the Northern Gulf Coastal Hazards Collaboratory (NG-CHC): An Overview of Cyberinfrastructure to Support the Coastal Modeling Community in the Gulf of Mexico ........................................ 365
16 Advancement of Technology for Detecting Shoreline Changes in East Coast of India and Comparison with Prototype Behavior................................. 395
Ramasamy Manivanan

17 Advances in Remote Sensing of Coastal Wetlands: LiDAR, SAR, and Object-Oriented Case Studies from North Carolina............. 405
Thomas R. Allen

Part IV Advances in the Management of Coastal Resources Using Remote Sensing Data and GIS

18 Numerical Modelling and Satellite Remote Sensing as Tools for Research and Management of Marine Fishery Resources....... 431
Grinson George

19 Identifying Suitable Sites of Shrimp Culture in Southwest Bangladesh Using GIS and Remote Sensing Data....................... 453
Shak Md. Bazlur Rahaman, Khandaker Anisul Huq, and Md. Mujibor Rahman

20 A Multi-criteria Approach for Erosion Risk Assessment Using a New Concept of Spatial Unit Analysis, Wave Model and High Resolution DEMs................................. 481
Helena Granja, José Pinho, and João Mendes

Index........................................................................................................................................ 495