1. Record Nr. UNINA9910797577803321

Autore	Wolanski Eric
Titolo	Estuarine ecohydrology : an introduction / / Eric Wolanski, TropWATER and College of Marine and Environmental Sciences, James Cook University, Townsville, Queensland, Australia, and Australian Institute of Marine Science, Townsville, Australia ; Michael Elliott, Institute of Estuarine and Coastal Studies (IECS), The University of Hull, Hull, UK
Pubbl/distr/stampa	Amsterdam, NLD : , : Elsevier Science, , [2016] ©2016
ISBN	0-444-63414-2
Edizione	[Second edition.]
Descrizione fisica	1 online resource (334 pages)
Disciplina	577.786
Soggetti	Ecohydrology Estuarine ecology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Estuarine water circulation -- Estuarine sediment dynamics -- Tidal wetlands -- Estuarine ecological structure and functioning -- Ecohydrology models -- Ecohydrology solutions. Front Cover; Estuarine Ecohydrology -- An Introduction; Copyright; Dedication; Contents; About the Authors; Preface to the 2nd Edition; Chapter 1: Introduction; 1.1. What is an estuary?; 1.2. Humanity and estuaries; 1.2.1. Sedimentation from erosion from cleared land in the catchment; 1.2.2. Overfishing and trawling; 1.2.3. Destruction of wetlands; 1.2.4. Eutrophication; 1.2.5. Chemical pollution; 1.2.6. Dams; 1.2.7. Dykes for flood protection and land claim; 1.2.8. Sinking deltas; 1.2.9. Bioinvasions; 1.2.10. Climate change; 1.2.11. Human health risks; 1.2.12. Lack of governance. 1.3. Ecohydrology as the solution1.4. Ecohydrological science: The structure of this book; Chapter 2: Estuarine water circulation; 2.1. The tides at sea; 2.2. The residence time of water; 2.2.1. Vertically well-mixed estuary; 2.2.2. Vertically stratified estuary; 2.3. The age of water; 2.4. Exposure time versus residence time; 2.5. Stratification; 2.5.1. Vertical mixing; 2.5.2. Types of estuarine circulation; 2.5.3. The special case of extremely muddy estuaries; 2.5.4. Microturbulence; 2.6. Lateral

stratification, trapping, and streakiness; 2.7. The importance of the bathymetry on currents.
2.8. The importance of coastal currents and waves for estuarine flushing2.9. The importance of storms on the estuarine circulation; 2.10. The special case of lagoons; 2.11. The influence of the Earth rotation; 2.12. Ship waves; Chapter 3: Estuarine sediment dynamics; 3.1. Geomorphological time scales; 3.2. Sediment properties and dynamics; 3.2.1. Classifying sediments: The distinction between mud, silt and sand; 3.2.2. The role of the sediment in estuarine ecology; 3.2.3. Sand dynamics; 3.2.3.1. Processes and modelling; 3.2.3.2. The importance of the biology: Ecosystem engineers.
3.2.3.3. Muddy sand3.2.4. Mud dynamics; 3.2.4.1. Laboratory and field results; 3.2.4.2. The role of the biology in fine sediment dynamics; Erosion; Settling; Consolidation; 3.2.4.3. Asymmetric mixing; 3.2.4.4. Estuarine fine sediment circulation; 3.2.4.5. Mud controls the water circulation; 3.3. Stability of the banks; 3.4. Tidal pumping; 3.5. Some engineering implications; 3.6. Biological implications of the export of estuarine mud to coastal waters; 3.7. Net sediment budgets; 3.7.1. Net erosion or progradation; 3.7.2. Formation of mudflats.
3.7.3. Formation of tidal wetlands by the vegetation colonising mudflats3.8. The size of the mouth; 3.9. Mud and human health; Chapter 4: Tidal wetlands; 4.1. Description; 4.2. Hydrodynamics; 4.3. Wave attenuation by wetland vegetation; 4.3.1. Mangroves; 4.3.2. Salt marsh; 4.3.3. Sea grass; 4.4. Ecological processes within a tidal wetland; 4.4.1. Mangroves; 4.4.2. Salt marshes; 4.4.3. Supratidal mudflats; 4.5. Enhancement of estuarine fisheries; 4.6. Groundwater flow; 4.6.1. Mangroves; 4.6.2. Salt marshes; 4.6.3. Groundwater impact on estuaries; 4.7. Wetlands as bioengineers.

Sommario/riassunto

Estuarine Ecohydrology, Second Edition, provides an ecohydrology viewpoint of an estuary as an ecosystem by focusing on its principal components, the river, the estuarine waters, the sediment, the nutrients, the wetlands, the oceanic influence, and the aquatic food web, as well as models of the health of an estuary ecosystem. Estuaries, the intersection of freshwater and coastal ecosystems, exhibit complex physical and biological processes which must be understood in order to sustain and restore them when necessary.