1. Record Nr.	UNINA9910962221303321
Autore	Chau K. W.
Titolo	Modelling for Coastal Hydraulics and Engineering / / K. W. Chau
Pubbl/distr/stampa	Boca Raton, FL : , : CRC Press, , 2014
ISBN	9786612569050
	9781498717960
	1498717969
	9780429182921
	0429182929
	9781482266467
	1482266466
	9781282569058
	1282569058
	9780203884768
	0203884760
Edizione	[First edition.]
Descrizione fisica	1 online resource (240 p.)
Disciplina	627
	627/.580151
Soggetti	Coastal engineering - Mathematics
	Coastal engineering - Data processing
	Hydraulic engineering - Mathematics
	Coasts - Computer simulation
	Coast changes - Mathematical models
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Book Cover; Title; Copyright; Contents; 1 Introduction; 2 Coastal modelling; 3 Conventional modelling techniques for coastal engineering; 4 Finite difference methods; 5 Finite element methods; 6 Soft computing techniques; 7 Artificial neural networks; 8 Fuzzy inference systems; 9 Evolutionary algorithms; 10 Knowledge-based systems; 11 Conclusions; References; Index
Sommario/riassunto	"Mechanistic models are often employed to simulate processes in

coastal environments. However, these predictive tools are highly specialized, involve certain assumptions and limitations, and can be manipulated only by experienced engineers who have a thorough understanding of the underlying principles. This results in significant constraints on their manipulation as well as large gaps in understanding and expectations between the developers and users of a model. Recent advancements in soft computing technologies make it possible to integrate machine learning capabilities into numerical modelling systems in order to bridge the gaps and lessen the demands on human experts. This book reviews the state-of-the-art in conventional coastal modelling as well as in the increasingly popular integration of various artificial intelligence technologies into coastal modelling. Conventional hydrodynamic and water quality modelling techniques comprise finite difference and finite element methods. The novel algorithms and methods include knowledge-based systems, genetic algorithms, artificial neural networks, and fuzzy inference systems. Different soft computing methods contribute towards accurate and reliable prediction of coastal processes. Combining these techniques and harnessing their benefits has the potential to make extremely powerful modelling tools."--Provided by publisher.