1.	Record Nr.	UNINA9910299420103321
	Autore	Omstedt Anders
	Titolo	Guide to Process Based Modeling of Lakes and Coastal Seas / / by Anders Omstedt
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
	ISBN	3-319-17990-X
	Edizione	[2nd ed. 2015.]
	Descrizione fisica	1 online resource (291 p.)
	Disciplina	532.05015118
	Soggetti	Oceanography Coasts Marine sciences Freshwater Coastal Sciences Marine & Freshwater Sciences
	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	Introduction -- Background Physics and Biogeochemistry -- Physical Aspects -- Biogeochemical Aspects -- Construction of Nets of Sub-basins -- Solutions Manual -- Summary and Conclusions.
	Sommario/riassunto	This new edition of Guide to Process Based Modeling of Lakes and Coastal Seas brings the modeling up to date, taking into account multiple stressors acting on aquatic systems. The combination of acidification and increasing amounts of anoxic waters associated with eutrophication puts severe stress on the marine environment. The detection and attribution of anthropogenic changes in coastal seas are therefore crucial and transparent modeling tools are increasingly important. Modeling the marine CO_2–O_2 system makes systematic studies on climate change and eutrophication possible and is fundamental for understanding the Earth system. This second edition also includes new sections on detection and attribution and on modeling future changes, as well as improved exercises, updated software, and datasets. This unique book will stimulate students and researchers to develop their modeling skills and make model codes and

data transparent to other research groups. It uses the general equation solver PROBE to introduce process-oriented numerical modeling and to build understanding of the subject step by step. The equation solver has been used in many applications, particularly in Sweden and Finland with their numerous lakes, archipelago seas, fjords, and coastal zones. It has also been used for process studies in the Polar Seas and the Mediterranean Sea and the approach is suitable for applications in many other environmental applications. Guide to Process Based Modeling of Lakes and Coastal Seas: • is a unique teaching tool for systematic learning of aquatic modeling; • approaches lake and ocean modeling from a new angle; • introduces aquatic numerical modeling using a process-based approach; • enables the thorough understanding of the physics and biogeochemistry of lakes and coastal seas; • provides software, datasets, and algorithms needed to reproduce all calculations and results in the book; • provides a number of creative and stimulating exercises with solutions; • addresses the interaction between climate change and eutrophication and is a good basis for learning Earth System Sciences.