

## PREFACE

This book is a new volume of the "Environmental Science, Engineering and Technology" Series which is part of the Nova Science Publishers, Inc. publishing program. The realization of this volume has been made possible thanks to the valuable contributions of the authors who share with us their useful recommendations for coastal monitoring based on their own experience. The aim of this book is to assist environmental authorities and technicians in the design of effective environmental monitoring programs.

Consensus exists that any good management program must be able to distinguish between natural variability and changes induced by anthropogenic activities. To achieve this goal is necessary to implement continuous monitoring programs. These programs should not be interrupted due to policies changes in countries and regions. As Dr. Santamaría-del-Angel et al. state in the introductory chapter is essential that these plans change their primarily anthropocentric focus to an ecocentric focus.

Sampling design is critical for the success of these programs. In this book, Dr. Ruzafa and Dr. Marcos present their recommendations for coastal lagoons and estuaries which are among the coastal ecosystems with higher spatio-temporal variability. No potential sources of pollution should be neglected in sampling design, such as submarine groundwater discharge (SGD), which has been recognized as an important link between the continent and the ocean. This continental source, may lead to an important flow of chemical elements from the continent towards the ocean in regions with coastal aquifers. Dr. Attisano et al. describe the methodologies which have been applied to quantify SGD, mainly with the use of radioisotopes, such as radium (Ra) and radon (Rn), and processes that promote SGD oscillation. Sampling design should avoid Type II decision errors (false negatives), which means a problem is not found when in fact it does exist. For instance, anomalous wastewater discharges caused by facilities malfunctioning are introduced by Dr. Sebastián-Frasquet et al. Being able to detect undesired effects is indispensable to adopt preventive and corrective measures.

The need to cover large spatial regions periodically makes necessary the development and application of new technologies such as remote sensing data into monitoring programs. Phytoplankton blooms are one of the main coastal problems that can be monitored thanks to new technologies. In this book, Dr. Santamaría-del-Angel et al. propose the use of the inherent optical properties (IOP) index as an innovative technique to determine if there is a bloom or not, characterize the bloom stage, and the phytoplankton composition.

The development of environmental “diagnostic” tools to allow early warning detection of pollution exposure is presented by Dr. Dondero and Dr. Calisi. In their chapter they analyze insights and perspectives in the biomarker approach, including the detection of the impact of biological pollution in marine environment. As they say “biomarker measurements in bioindicator organisms promise to become valuable tools for environmental monitoring aimed to surveillance, hazard assessment, or to document remediation in marine environments”.

“Monitoring is based on science but the outcome of the work is addressed to policy makers” explains Dr. Karyidis, in whose chapter is discussed the need of communication and collaboration among scientists, stakeholders and policy makers by. In this sense, Dr. Krembs and Dr. Sackmann, from the Washington State Department of Ecology’s (WA Ecology) Marine Monitoring Program, report on recent efforts to re-imagine and restructure an existing long-term marine monitoring program (14 year consistent monitoring data) to attain high public visibility and greater scientific impact. They explain how they have get to “overcome specific challenges for long-term monitoring such inconsistency in funding and staff, changes in sampling and analytical methods as technology evolves, lack of standardized procedures to assess and convey information about data quality, the wide range of temporal and spatial scales that need to be characterized, and trade-offs between measurements that provide overall representativeness versus those that are more sensitive to the detection of local human impacts and perturbations”.

María-Teresa Sebastiá-Frasquet  
Gandía (Spain), December 2014