Methods in Biogeochemistry of Wetlands, SSSA Book Series 10

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Wetlands are commonly acknowledged as very important component of natural environments and are frequently protected for ecological reasons. Whatever one’s wetland management objectives might be (e.g., utilization, restoration or protection), it is important understanding how they “tick” from biogeochemical perspective. Methods in Biogeochemistry of Wetlands is focused on reviewing biogeochemical methods and their application for wetlands studies. More than 100 authors have described, in 49 chapters, an assortment of analytical methods, but more importantly, they have also shared their customized modifications and laboratory tips that make these methods work in challenging, biogeochemically complex wetland environments. Hence, most of the chapters are oriented toward method concepts and testing, technical solutions, data calculations, and verification rather than on particular case studies. Many chapters provide very detailed and vital step-by-step descriptions and explanation of how to make a method work and be useful in wetland studies. Methods of greater complexity that require highly specialized laboratories (e.g. stable isotope analyses or dating), on the other hand, are described from an experimental design and data user perspective, which will be more beneficial for rather a laboratory customers than for a researchers working by themselves in a laboratory.

The broad coverage of the book makes it difficult to provide a brief list of all the included methods. The greatest value of this book actually lies in this very broad selection and comprehensive description of methods. A wetland researcher will find in this volume essentially all the most important methods for biogeochemical studies of wetlands. The majority of the chapters focus on physico-chemical methods from field-based measurements (e.g. monitoring of redox potential, gas emissions, water budget, flux of materials) to advanced laboratory techniques (e.g. Membrane Inlet Mass Spectrometry (MIMS), Isotope Ratio Mass Spectrometry (IRMS), or methods determining enzymes activity, nutrients cycling, heavy metals concentrations, nitrification and denitrification and toxic organic compounds). The book also includes three chapters with a particular focus on sampling methods, covering sediments, flora and pore water sampling requirements, and a few others cover photosynthetic measurements and biomass production estimation. The occasional overlaps in descriptions of methods in different chapters should be seen as beneficial, particularly since many readers very likely will prefer to study the details of a few selected chapters that relate to their own particular interests.

This book can be particularly recommended for researchers and graduate students who want to learn what methods are most useful for their wetland projects. They do not need to read thousands of pages from cover to cover to select a particular method of interest, as well-designed compact abstracts precede each chapter and allow quick orientation regarding the main methods objectives, challenges and benefits. Due to the almost encyclopaedic character of this book, it is a ‘must have’ in every environmental sciences library.