

# Preface

The utility of measurements of reflected and emitted radiation from the Earth system captured by space-borne sensors on satellites has been realized in numerous scientific disciplines in recent decades. This form of data collection (called satellite remote sensing) has enjoyed wide application in efforts to study the Earth system because space-borne sensors can monitor the planet consistently and at spatial scales not accessible by other methods of observation (Kerr and Ostrovsky 2003). In addition, the occurrence of significant environmental change has brought the tools of satellite remote sensing to the forefront of research on the physical characteristics and processes of Earth's biosphere (Myneni et al. 1997; Nemani et al. 2003; Pettorelli et al. 2005). With an eye toward assessing global environmental change, scientists have harnessed the capabilities of satellite remote sensing to derive various metrics of the biophysical characteristics of terrestrial and oceanic ecosystems.

The purpose of this edited volume is to highlight selected *Biophysical Applications of Satellite Remote Sensing* in terrestrial and oceanic ecosystems for the benefit of scientists, educators, and students. While the applications presented in this volume are distinct because they focus on particular biophysical characteristics of terrestrial and oceanic ecosystems, they all relate, in some form, to ecosystem productivity. As a collection of diverse metrics unified by the common theme of productivity, this volume provides the reader with a sampling of tools that can be used to better understand Earth's living systems. Within each chapter, the reader will find a discussion of the theoretical basis for the biophysical application, methods of validation, research findings, and future research directions. [Chapters 1–6](#) focus on applications of satellite remote sensing to the study of terrestrial ecosystems, while [Chaps. 7](#) and [8](#) concentrate on oceanic ecosystems.

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