Special Issue on Innovative Approaches to Forest Monitoring Using Sensing Techniques

Preface

Biological diversity is rapidly declining, posing a severe global challenge. Addressing this issue necessitates advanced technologies and tools to effectively measure impacts and manage risks within the forestry sector. Forests are pivotal in the global climate change mitigation and adaptation narrative, primarily through their role in carbon sequestration. However, significant uncertainties remain in accurately estimating the carbon stock and its sequestration capacity within forest ecosystems, which are critical in achieving carbon neutrality.

Recent advancements in smart sensing technologies have revolutionized our ability to monitor forest growth and assess forest volumes, which are closely tied to forest structures such as the crown, stems, roots, and soil. Among the available technologies, LiDAR and various external sensors stand out for their accuracy and cost-effectiveness. These technologies are rapidly evolving and finding applications in fields related to forest carbon management.

This Special Issue is dedicated to highlighting the crucial contributions of these innovative sensing technologies in detecting forest species and structures, thus enhancing the precision of forest carbon measurements. We aim to showcase both theoretical and experimental studies that incorporate sensor technologies capable of more efficiently detecting and managing forest carbon. Our goal is to promote practices that support carbon neutrality through improved forest carbon management.

By bringing together the latest research and developments in this field, we hope to foster a better understanding of the dynamic interplay between forest ecosystems and climate change mitigation efforts and to encourage the adoption of these technologies in wider environmental and conservation strategies.

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