

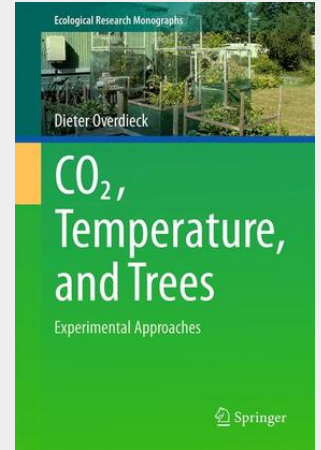
Overdieck

CO₂, Temperature, and Trees

Experimental Approaches

This comprehensive book discusses the ecophysiological features of trees affected by the two most prominent factors of climate change: atmospheric CO₂ concentration and temperature. It starts with the introduction of experimental methods at the leaf, branch, the whole-tree, and tree group scales, and in the following chapters elaborates on specific topics including photosynthesis of leaves, respiration of plant organs, water use efficiency, the production of and/or distribution patterns of carbohydrates, secondary metabolites, and nutrients, anatomy of cells and tissues, height and stem-diameter growth, biomass accumulation, leaf phenology and longevity, and model ecosystems (soil-litter-plant enclosures). The current knowledge is neatly summarized, and the author presents valuable data derived from his 30 years of experimental research, some of which is published here for the first time. Using numerous examples the book answers the fundamental questions such as: What are the interactions of elevated CO₂ concentration and temperature on tree growth and matter partitioning? How do different tree groups react? Are there any effects on organisms living together with trees? What kinds of models can be used to interpret the results from experiments on trees? This volume is highly recommended for researchers, postdocs, and graduate students in the relevant fields. It is also a valuable resource for undergraduate students, decision-makers in the fields of forest management and environmental protection, and any other scientists who are interested in the effect of global change on ecosystems.

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