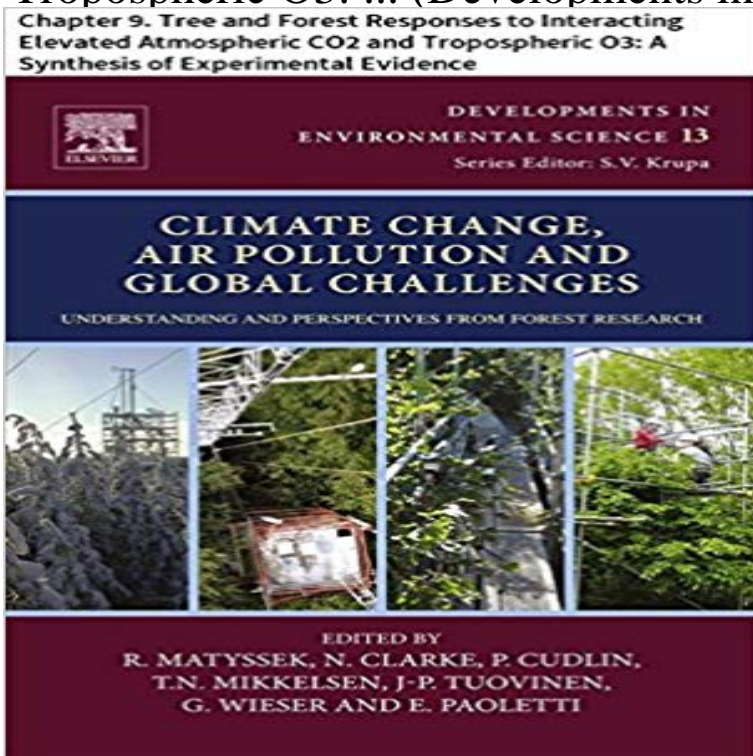


Climate Change, Air Pollution and Global Challenges: Chapter 9. Tree and Forest Responses to Interacting Elevated Atmospheric CO₂ and Tropospheric O₃: ... (Developments in Environmental Science)



Goods and services provided by forests will be needed in greater amounts in the coming decades, yet are threatened by climate change and air pollution. In this chapter, we survey the peer-reviewed literature on elevated atmospheric CO₂ (eCO₂) and tropospheric O₃ (eO₃) interaction experiments, and discuss implications of results for policy development and social welfare. We located 58 studies reporting data on physiology, biomass production, litter quality and decomposition. Studies were abundant for young and intermediate ages, but non-existent for mature forests. Most plant parameters increased with exposure to eCO₂, decreased under eO₃ and were often intermediate for the eCO₂?eO₃ interaction, though this latter treatment was not always statistically significant. Current environmental policy could make better use of existing science, but more work, especially on mature forest ecosystems, is needed in step with process-model development to better predict forest responses and guide policy for future changes in air quality and climate.

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