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Understanding the impacts of elevated CO₂ and vapor pressure deficit on tree mortality - **CRADA 599 (Abstract)**

CRADA 599 (PNNL 71073)

June 2023

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Abstract

Many studies have examined the effects of rising CO₂ on gas exchange and growth of plants. However, concurrent with the rise in CO₂ has been the rise in temperature and associated drying of the atmosphere, or vapor pressure deficit (VPD), which increases tree mortality. Little attention has been given to the net outcome of these antagonistic drivers of plant performance. The net balance of rising CO₂ and VPD upon plant and ecosystem function is possibly the largest uncertainty in model projections of the terrestrial carbon and water cycles. The purpose of this CRADA is to improve our predictive understanding of tree mortality under our changing environment. We will collaborate with WSU to provide a mechanistic understanding of the relative impacts of CO₂ and VPD on tree mortality that scales across the globe. Ultimately, we will understand the potential impacts and mechanisms underlying CO₂ and VPD responses and will enable improved prediction of future tree mortality.

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