

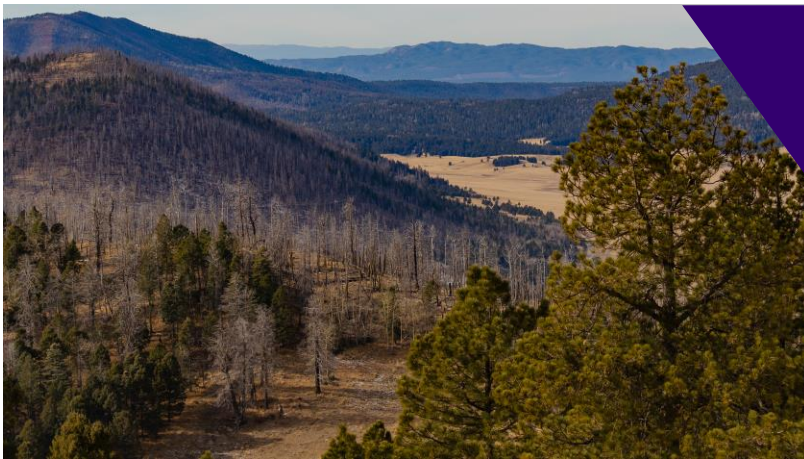
Biology Seminar

Speaker: **Anna Trugman Ph.D.**

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Plant physiology, forest ecology, and carbon cycle uncertainty in a changing climate



**Monday May 8, 2023
12:00PM PST | HCK 132**

Widespread tree mortality following disturbances such as droughts, fire, and pest and pathogen outbreaks has emerged as an environmentally and economically devastating

‘ecological surprise’. Increases in disturbance-driven tree mortality with further climate change has the potential to massively disrupt terrestrial ecosystem productivity and biodiversity, causing Earth’s forests to release carbon into the atmosphere. In this talk, I examine potential biodiversity and carbon impacts of climate change on forests in the continental United States through a fusion of historical and future climate projections, plant physiological measurements, large observational databases, and trait-based ecosystem models. First, I combine forest inventory measurements and plant physiological models to understanding the extent to which drought disturbance may drive biogeographic shifts in species composition. Importantly, observed turnovers are not keeping pace with the required compositional shifts to mitigate increases in drought stress. Next, I conduct a multi-method synthesis of contiguous US forest carbon storage potential through a fusion of forest inventory plots, machine learning/niche models, and mechanistic land surface model outputs. Across contrasting approaches, there are diverging signs and magnitudes of projected future forest carbon storage potential. Collectively, these results highlight physiological and ecological unknowns governing uncertainty in forest responses to future climate change.