



# THE LABORATORY OF TREE-RING RESEARCH

presents a talk by

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## *Scaling climate sensitivity: How does spatial aggregation affect estimation of the species–environment relationship?*

Wednesday, November 13, 2019 - 12:00pm to 1:00pm

Room: Bannister 424

The practice of aggregation in dendrochronology reveals common climate signals while minimizing non-climatic noise. Especially when analyzed at broad spatial scales, climate emerges as a strong predictor of variability in tree ring width. However, the increasing use of tree ring data to study the impacts of climate change on forests, from local to regional and even global scales, warrants careful thinking about the effect of aggregation on climate sensitivities (i.e., species–environment relationships). The assumption that the relationship between two variables (here, climate and tree growth) holds across scales is known as the ‘ecological fallacy’. Namely, that inferences about the nature of the individual can be made from aggregated information. If the association between climate and tree growth varies with the scale of aggregation, this assumption may lead to biased inference and conclusions, particularly in ecological forecasting — the projection of future tree growth based on inferred climate sensitivities. Focusing on time series of Douglas-fir ring widths derived from forest inventory plots across the four southwestern U. S. states of Arizona, Colorado, New Mexico, and Colorado, I explore the effects of aggregation and spatial scale on climate sensitivities, ring width variability, and the proportion of variation explained by climate predictors.