THE UNIVERSITY OF ARIZONA

School of Natural Resources and the Environment

Seminar Series: Fall 2023

UNDERSTANDING THE PHYSIOLOGY OF GROWTH IN THE CONTEXT OF WATER AVAILABILITY

SPEAKER: Richard L. Peters, University of Basel

DATE: Wednesday, December 6th

TIME: 3:00-4:00 pm

LOCATION: ENR2 S210 & Zoom

ABSTRACT:

Forests are predicted to face future environmental conditions that have no analogy in the recent past. As global water limitation intensifies, there is an urgent need for a comprehensive understanding of tree species-specific water-use strategies regulated by stomata and their impact on growth. Existing stomatal control models emphasize the significance of hydraulic safety in delineating water-use regulation boundaries in trees during drought. In this presentation, I share data suggesting that the mechanisms governing stomatal regulation in temperate trees are more intricate and extend beyond prioritizing hydraulic safety alone.

The data were collected at the Swiss Canopy Crane II site near Basel, Switzerland (visit: https://ppe.duw.unibas.ch/en/sccii/), where the University of Basel conducts unique experiments on approximately 30-meter-tall individuals representing nine temperate European tree species. Moreover, since 2023, our Physiological Plant Ecology group has initiated one of the larger rain exclusion experiments in Europe, investigating tree physiological responses and acclimation. During my talk, I will present some of our preliminary findings, offering insights into the multifaceted nature of stomatal regulation in response to drought conditions and its relevance for tree growth.

Key words: European forests, manipulative experiments, rain exclusion, drought acclimation potential, whole-tree water relations, dendrometers

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