



THE LABORATORY OF TREE-RING RESEARCH

presents a talk by

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Tree rings and the Truckee River: paralleling the past and the present

Wednesday, October 20, 2021 - 12:00pm to 1:00pm

Room: Zoom Only

The Truckee River Basin, located on the Nevada-California border, is an area of extreme hydrologic variability, being subject to both prolonged multi-decadal droughts and devastating floods; however, due to its brief instrumental record, understanding the full range of this variability is limited. To address concerns over the potential severity of the current post-2000 drought, I created a new streamflow reconstruction of the Truckee River. My work provides a modern parallel to the first such reconstruction on the Truckee River (Hardman and Reil, 1936) which too wished to assess their own multi-decadal drought of the 1920s/1930s within the larger long-term hydroclimatic context. Incorporating their original 1930s tree cores as well as newly sampled material, I developed three new site chronologies which were then combined with other regional chronologies to produce a 1491 to 2003 reconstruction of Truckee River streamflow, an over 400-year extension of the instrumental record (230 years longer than the original reconstruction). In addition to evidence of extended droughts and extreme high streamflow years, this reconstruction shows a marked hydroclimatic shift centered around the 1850s. Prior to then, the Truckee River experienced decadal to multi-decadal periods of higher than average streamflow; subsequently, these periods have been decreasing in length with only 2 instances above 3 consecutive years of high streamflow since 1900. Additionally, since the 1980s, no lower-than-average period has been shorter than 4 years. Whether this represents fundamental shift to a new hydroclimatic regime remains unclear. However, as global temperatures continue to rise, fewer long-term high streamflow episodes may have lasting impacts on water availability in the Truckee River Basin, raising the question further of whether the post-2000 drought is a new megadrought or a sign of aridification.