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Abstract Title:

*New Insights on Climate Response Signals found in Bristlecone Pines (*Pinus longaeva*) from Methuselah Walk, White Mountains, California*

is part of the Paper Session:

Dendrochronology IV: Research from the North American Dendroecological Fieldweek

scheduled on Wednesday, 4/13/11 at 8:00 AM.

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Abstract:

Bristlecone pine (*Pinus longaeva* D.K. Bailey) trees that grow in the White Mountains of California are well-known for their great ages (in excess of 4000 years) and previously have been used to better understand climate trends on centennial to millennial time scales. Tree-ring chronologies developed from this species primarily have been used to reconstruct temperature and precipitation, and have been used recently to provide evidence for increasing temperature trends in the 20th and 21st Centuries above that expected by natural variations. The main objective in our study was to explore possible climate-tree growth relationships using expanded networks of both climate variable types and station/divisional sites applied to the Methuselah Walk (MW) bristlecone pine (BCP) data set. This lower treeline site is known to be more responsive to precipitation. We found the climate-tree growth relationship to be stable over the 20th Century for some climate drivers, but not all, and we strongly encourage all future research to first analyze the stability of this relationship. Current year's May precipitation and Standardized Precipitation Index (NOAA division and PRISM) were significant to BCP growth, as was March maximum temperature (Bishop, CA). Relationships with PDSI and PDO were not stable through the 20th Century. The strongest relationship we found was for current year's June-August streamflow data for nearby Big Pine Creek, a climate data type not previously explored for BCP. Future research will use the MW data set to develop more robust reconstructions of climate based on these analyses.

Keywords:

dendroclimatology, dendrochronology, tree rings, bristlecone pines
