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Abstract Title:
Climate as a Driver of Wildfire Across Land-Ownership Boundaries in Northwestern New Mexico, U.S.A.

is part of the Poster Session:
Topics in Biogeography

scheduled on Thursday, 4/15/10 at 10:00 AM.

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Abstract:
Our research examines the fire history of ponderosa pine (Pinus ponderosa) forests across land-ownership boundaries in northwestern New Mexico. Climate serves as a driver of wildfire and may have helped create existing similarities or differences in fire behavior and activity across a large spatial scale. The study area includes four sites: one near the northern boundary of El Malpais National Monument and three in the Zuni Mountains of Cibola National Forest. At each site, we collected cross sections from between 30 and 40 fire-scarred snags, stumps, logs, and living trees. At one site, we also extracted cores from 60 living old-growth ponderosa pine to develop a reference tree-ring chronology for dating purposes. We used these samples to reconstruct fire history and analyze the relationships between fire and climate, examining the influence of both short-term climate drivers of wildfire (such as seasonal precipitation) and longer-term drivers (such as the El Niño-Southern Oscillation, the Pacific Decadal Oscillation and Atlantic Multidecadal Oscillation). Fire scars were crossdated via skeleton plots and COFECHA and entered into FHX2 software for statistical analyses, both temporally and spatially. We are finding that climate-driven surface fires occurred synchronously across the four sites, despite their being separated by topographic barriers and different land-use histories, possibly spreading between land-ownership areas. These findings have important implications for developing more customized fire management policies. We explored whether warm or cold phases of the PDO and AMO worked synchronously or asynchronously to influence fire activity in the region.

Keywords:

dendrochronology, ponderosa pine, wildfire, climate, El Malpais National Monument, Cibola National Forest, Zuni Mountains

New Query