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A new North American fire scar network for reconstructing historical pyrogeography, 1600-1900 AD

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The Fire and Climate Synthesis (FACS) project is a collaboration of about 50 fire ecologists to compile and synthesize fire and climate data for western North America. We have compiled nearly 900 multi-century fire-scar based fire histories from the western United States, Canada, and Mexico. The resulting tree-ring based fire history is the largest and most spatially extensive in the world, consisting of annually crossdated fire records for more than 3,000 years (1248 BC – 2011 AD) and representing more than 15,000 site-year fire records. State space analysis indicates that the fire history network represents the full climatic range of annual temperature and precipitation conditions in seven widespread forest types in western North America. Large-scale fire occurrence patterns indicate years in which teleconnections of the El Niño-Southern Oscillation (ENSO) and other climate oscillatory modes regulate regionally synchronous high and low fire occurrence years through expression of regional drought (wet) conditions.

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Terminus ante quem Dating of Wabakwa and the Return of Fire to an ancient WUI, Jemez Mountains, New Mexico.

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Effects of recent warming and fire suppression have created unprecedented changes in fire behavior and severity of wildland fires in some forests of the Western US. Wildland urban interfaces (WUIs) are particularly vulnerable in the context of these changes. One of the best resources we have for informing future fire management and understanding the interactions of climate, humans and wildfires are historical-ecological records. Abundant archaeological and tree-ring records present on the Jemez Plateau provide a unique opportunity to learn about coupled human-natural ecosystems over the past 500 years. We have completed a terminus ante quem tree-ring analysis at the Pueblo ruin site of Wabakwa that provides specific insight into the duration of human occupation of a village within an ancient WUI, and the nature of fire regimes post-occupation.