

Understanding fire activity outside the range of modern environmental conditions

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Fire regimes around the world are shifting due to changing land cover, human activities, and climate. Each of these factors operate over a wide range of spatial and temporal scales that can affect the locations, seasonality, size, frequency, and other aspects of fire in a given region. Examining very long-term (paleo) fire history records, which come from charcoal, soot, and other traces of biomass burned and deposited in sediments, has yielded insights into how many slow “background” processes, such as changing global temperatures, vegetation succession, and population growth have affected broad-scale patterns of burning. Although paleofire records lack the spatial specificity of modern fire data, aggregating hundreds of records from around the world has also provided benchmarks for models under conditions very different than those of today. Validating fire models under paleo conditions can help to improve simulations of future fire activity given higher atmospheric CO₂ levels, warmer global temperatures, and/or very different land covers, for example, than exists today. This presentation will provide an overview of lessons learned from paleofire data, and how such data can be used to support modeling and prediction efforts.