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## Anthropogenic land use change and fire history during the Holocene in the Iberian Peninsula

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Anthropogenic land-use change and ecosystem management have a demonstrable impact on modern fire regimes. However, when in time this influence was first felt is still an open question. We investigate whether an anthropogenic signal can be identified in Holocene fire records from the Iberian Peninsula, a region with abundant palaeoenvironmental and archaeological data. We analyse sedimentary charcoal data from 49 sites across the Peninsula covering part or all of the past 12,000 years to construct the fire history for the region. We compare these records to the summed probabilities of radiocarbon-dated archaeological sites, which provides an index for changes in human impact on land use and land cover due to the growth or decrease in human population through time. This reconstruction is based on 8200 radiocarbon dates covering the timespan between 12000 and 3500 uncal BP. Our analyses confirm that the broad trends in fire history are well aligned with the likely impact of climate changes during the Holocene. The charcoal records indicate a rapid increase in fire at the end of the Younger Dryas, a reduction in fire during the middle Holocene as a result of wetter conditions across the Peninsula, and an increase in fire concordant with the increased aridity registered during the interval after 3000 yr BP. However, finer-scale temporal variations are superimposed upon these broadscale changes. Similarly, although the most pronounced change in population reflects population growth associated with the onset of agriculture in the mid-Holocene, the summed probability record of population shows considerable finer-scale temporal variation. In addition to analyses of the temporal correlations between the two data sets, we consider whether there are distinct geographic patterns that could provide additional insights into the relationship between human activities and fire across Iberia.