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Climatological triggers of major plague outbreaks in late medieval England

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The climatological context of major plague outbreaks in late medieval and early modern Europe has gained renewed attention in recent years. Research on outbreaks in the Third Pandemic, which began in the late nineteenth century, has shown that in central and eastern Asia plague is linked to specific meteorological conditions, but the relationship between weather and plague in medieval Europe remains obscure. Europe's geographical diversity and the range of climate zones necessitates the focusing upon regional outbreaks of plague to highlight the meteorological parameters contributing to major epidemics.
Yersinia pestis arrived in the British Isles in 1348, and this paper investigates the period until c. 1500: a time when public health measures, such as quarantining, were not yet established and the disease could spread comparatively unhindered. The impact of plague on the English society was devastating. Apart from the massive demographic shock constituted by the Great Pestilence, recurrent plague waves caused England's population dynamics to become mortality-driven.
The geographical and temporal focus of this study allows for the combination of a series of English major plague waves, verified in the original texts, with the high-quality climate reconstructions based on both documentary sources and proxy data available for this region. These data include temperature reconstructions based on grain and vine harvest dates, tree-ring based drought indices as well as temperature indices derived from documentary sources. The detailed analysis of the mechanisms contributing to English plague waves presented in this paper, reveals a complex interplay of time-lag responses and concurrent conditions involving temperature and precipitation parameters. Due to the complicated epidemiology of plague marked by the involvement of rodent hosts and insect vectors, the roots of a large-scale plague waves in late medieval England reach back at least one year before the outbreak, and the meteorological triggers encompass summer as well as winter conditions.