Drought encouraged Attila's Huns to attack the Roman empire, tree rings suggest

Spatial agreement between reconstructed and measured European summer drought. High-resolution, 0.5° spatial correlation coefficients (color scale) between the tree-ring stable isotope (TRSI) proxy record and the gridded European-wide self-calibrated Palmer Drought Severity Index (scPDSI) target data calculated over the common period 1901–2018 CE. (Created by Ulf Büntgen.). Credit: Journal of Roman Archaeology (2022). DOI: 10.1017/S1047759422000332
Hunnic peoples migrated westward across Eurasia, switched between farming and herding, and became violent raiders in response to severe drought in the Danube frontier provinces of the Roman empire, a new study argues.

Hungary has just experienced its driest summer since meteorological measurements began, devastating the country's usually productive farmland. Archaeologists now suggest that similar conditions in the 5th century may have encouraged animal herders to become raiders, with devastating consequences for the Roman empire.

The study, published today in the *Journal of Roman Archaeology*, argues that extreme drought spells from the 430s—450s CE disrupted ways of life in the Danube frontier provinces of the eastern Roman empire, forcing Hunnic peoples to adopt new strategies to 'buffer against severe economic challenges'.

The authors, Associate Professor Susanne Hakenbeck from Cambridge's Department of Archaeology and Professor Ulf Büntgen from the University's Department of Geography, came to their conclusions after assessing a new tree ring-based hydroclimate reconstruction, as well as archaeological and historical evidence.

The Hunnic incursions into eastern and central Europe in the 4th and 5th centuries CE have long been viewed as the initial crisis that triggered the so-called 'Great Migrations' of 'Barbarian Tribes', leading to the fall of the Roman empire. But where the Huns came from and what their impact on the late Roman provinces actually was unclear.

New climate data reconstructed from tree rings by Prof Büntgen and colleagues provides information about yearly changes in climate over the
last 2000 years. It shows that Hungary experienced episodes of unusually dry summers in the 4th and 5th centuries. Hakenbeck and Büntgen point out that climatic fluctuations, in particular drought spells from 420 to 450 CE, would have reduced crop yields and pasture for animals beyond the floodplains of the Danube and Tisza.

Büntgen said, "Tree ring data gives us an amazing opportunity to link climatic conditions to human activity on a year-by-year basis. We found that periods of drought recorded in biochemical signals in tree-rings coincided with an intensification of raiding activity in the region."

Recent isotopic analysis of skeletons from the region, including by Dr. Hakenbeck, suggests that Hunnic peoples responded to climate stress by migrating and by mixing agricultural and pastoral diets.

Hakenbeck said, "If resource scarcity became too extreme, settled populations may have been forced to move, diversify their subsistence practices and switch between farming and mobile animal herding. These could have been important insurance strategies during a climatic downturn."

But the study also argues that some Hunnic peoples dramatically changed their social and political organization to become violent raiders.

**From herders to raiders**

Hunnic attacks on the Roman frontier intensified after Attila came to power in the late 430s. The Huns increasingly demanded gold payments and eventually a strip of Roman territory along the Danube. In 451 CE, the Huns invaded Gaul and a year later they invaded northern Italy.

Traditionally, the Huns have been cast as violent barbarians driven by an "infinite thirst for gold". But, as this study points out, the historical
sources documenting these events were primary written by elite Romans who had little direct experience of the peoples and events they described.

"Historical sources tell us that Roman and Hun diplomacy was extremely complex," Dr. Hakenbeck said. "Initially it involved mutually beneficial arrangements, resulting in Hun elites gaining access to vast amounts of gold. This system of collaboration broke down in the 440s, leading to regular raids of Roman lands and increasing demands for gold."

The study argues that if current dating of events is correct, the most devastating Hunnic incursions of 447, 451 and 452 CE coincided with extremely dry summers in the Carpathian Basin.

Hakenbeck said, "Climate-induced economic disruption may have required Attila and others of high rank to extract gold from the Roman provinces to keep war bands and maintain inter-elite loyalties. Former horse-riding animal herders appear to have become raiders."

Historical sources describe the Huns at this time as a highly stratified group with a military organization that was difficult to counter, even for the Roman armies.

The study suggests that one reason why the Huns attacked the provinces of Thrace and Illyricum in 422, 442, and 447 CE was to acquire food and livestock, rather than gold, but accepts that concrete evidence is needed to confirm this. The authors also suggest that Attila demanded a strip of land 'five days' journey wide' along the Danube because this could have offered better grazing in a time of drought.

Hakenbeck said, "Climate alters what environments can provide and this can lead people to make decisions that affect their economy, and their social and political organization. Such decisions are not straightforwardly
rational, nor are their consequences necessarily successful in the long term."

"This example from history shows that people respond to climate stress in complex and unpredictable ways, and that short-term solutions can have negative consequences in the long term."

By the 450s CE, just a few decades of their appearance in central Europe, the Huns had disappeared. Attila himself died in 453 CE.


Provided by University of Cambridge

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