

The Medieval Climate Anomaly and Byzantium: A review of the evidence on climatic fluctuations, economic performance and societal change

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At the beginning of the Medieval Climate Anomaly, in the ninth and tenth century, the medieval eastern Roman empire, more usually known as Byzantium, was recovering from its early medieval crisis and experiencing favourable climatic conditions for the agricultural and demographic growth. Although in the Balkans and Anatolia such favourable climate conditions were prevalent during the eleventh century, parts of the imperial territories were facing significant challenges as a result of external political/military pressure. The apogee of medieval Byzantine socio-economic development, around AD 1150, coincides with a period of adverse climatic conditions for its economy, so it becomes obvious that the winter dryness and high climate variability at this time did not hinder Byzantine society and economy from achieving that level of expansion. Soon after this peak, towards the end of the twelfth century, the populations of the Byzantine world were experiencing unusual climatic conditions with marked dryness and cooler phases. The weakened Byzantine socio-political system must have contributed to the events leading to the fall of Constantinople in AD 1204 and the sack of the city. The final collapse of the Byzantine political control over western Anatolia took place half century later, thus contemporaneous with the strong cooling effect after a tropical volcanic eruption in AD 1257.

We suggest that, regardless of a range of other influential factors, climate change was also an important contributing factor to the socio-economic changes that took place in Byzantium during the Medieval Climate Anomaly. Crucially, therefore, while the relatively sophisticated and complex Byzantine society was certainly influenced by climatic conditions, and while it nevertheless displayed a significant degree of resilience, external pressures as well as tensions within the Byzantine society more broadly contributed to an increasing vulnerability in respect of climate impacts. Our interdisciplinary analysis is based on all available sources of information on the climate and society of Byzantium, that is textual (documentary), archaeological, environmental, climate and climate model-based evidence about the nature and extent of climate variability in the eastern Mediterranean. The key challenge was, therefore, to assess the relative influence to be ascribed to climate variability and change on the one hand, and on the other to the anthropogenic factors in the evolution of Byzantine state and society (such as invasions, changes in international or regional market demand and patterns of production and consumption, etc.). The focus of this interdisciplinary study was to address the possible causal relationships between climatic and socio-economic change and to assess the resilience of the Byzantine socio-economic system in the context of climate change impacts.