

The Dust Veil Event, 536 CE

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the similar phenomenon on the Eurasian steppes, in particular Kazakhstan, in the wake of Nikita Khrushchev's "virgin lands campaign" of the 1950s and early 1960s, are the best known examples.

Scientists, environmental historians, and the governments and farming populations of the afflicted regions debate the causes of such disasters: some blame natural fluctuations of the climate while others blame ill-advised plowing up of grasslands with levels of moisture that are marginal for grain cultivation. We are left with a bifurcated understanding of the plowing up of the grasslands: a foolhardy venture into marginal environments that was bound to lead to disaster, or a development of highly productive, even sustainable, agriculture (interrupted by periodic shortfalls) that has put vast amounts of food made from grain into the homes of the globe's ever-growing population.

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In recent years, questions of human-environmental interaction, and particularly the cultural impact of natural disasters, have become more prominent in humanities research. It has become clear that natural disasters do not necessarily result in the collapse of societies but act as catalysts for social, political, and economic transformation. One such event with a truly global influence was the dust veil of 536 CE. This event resulted in the transformation of societies around the globe including China, the Mediterranean, Scandinavia, and the American Southwest. It signaled the dawn of the Middle Ages in Eurasia. Because of its scale and importance, this event should be part of humanity's collective environmental memory.

Between 536 and 551, tree-ring growth was very low throughout Eurasia and many other parts of the world. Contemporary writers in southern Europe described what modern climate scientists call a "dust veil event" that sharply reduced the amount of solar radiation reaching the earth's surface. Although scientists have sought to explain the dust veil in terms of a comet hitting the earth, it has recently become clear that we are dealing with one or more huge

volcanic eruptions in the tropics. These eruptions put enough dust into the atmosphere to affect the earth's climate for years.

The resulting depressed temperatures and disrupted weather patterns reduced biological productivity, including that of food crops, resulting in famine and social disruption around the globe during the sixth century. In a contemporary report, Michael the Syrian wrote that “the sun became dark and its darkness lasted for one and a half years . . .” John of Ephesus and Procopius of Caesarea described the same events. In Britain, the period 535-555 saw the worst weather of the sixth century. In Mesopotamia there were heavy snowfalls, and in Arabia there was flooding followed by famine. In China, there was drought and famine, and yellow dust rained down like snow. It has also been suggested that the occurrence of the Justinian Plague, a pandemic that affected the Byzantine Empire in the years 541-542, is linked to the climatic events five years earlier.

In Sweden, archaeological evidence indicates that 75 percent of villages were abandoned in the mid-sixth century. Scandinavian narratives also seem to refer to the events of 536 CE. The epic *Edda* includes a reference to “Fimbulwinter” (the “mighty” winter) and describes terrible cold and snow in years without a summer. It has been suggested that the sharp agrarian decline and demographic disaster in Scandinavia may have been the catalyst for the social, religious, and political change that led to the Viking diaspora.

In contrast to many other climatic events, the 536 event seems to have struck all regions of the globe. Evidence indicates far-reaching consequences for all advanced societies at that time, although the various regions were almost certainly affected differently by the dust veil. For this reason, the 536 CE event is an important test case for comparing the environmental resilience of different societies.

Neolithic Agricultural Revolution, c. 10,000 BCE

Edmund Russell, University of Kansas, USA

I nominate the Neolithic agricultural revolution. It revolutionized the way people interacted with other species, which revolutionized