Extreme events at historical time-scales: are they visible in the paleoenvironmental records?

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To a large extent, the temporal definition of an extreme event depends on the context and the level of analysis that we are able to deploy. It should be massive and concentrated compared to the challenges a system is facing on everyday basis, it should provide a shock, and it should require major efforts to absorb its impacts. On historical timescales, extreme events happen over hours, days, months, at the longest, years. Compared to the process through which environmental archives develop, these are very short timescales, possibly with no chance of being recorded in the sediments. However, if we consider that an extreme event should have massive impacts, and these should be last for longer than the event itself, there is a good chance we could actually observe the environmental change associated with the extreme event in the sediments.

In my talk, I will look at two plague pandemics – the first, 6th-8th c. AD, and the second, 14th-18th c. AD – and their initial outbreaks (known as the Justinianic Plague and the Black Death) in order to see their reflection in the sediments throughout Europe and the Mediterranean, primarily in the pollen data. As I will demonstrate, in some cases the impact was minimal, barely visible, while in others it was indeed massive. This will bring me back to the definition of the extreme event: is it possible to have an extreme event that did not have any impact? Can the same event – the spread of a new pathogen, in our case – become extreme in one social-geographical context and not in another?