

Clim. Past Discuss., referee comment RC1
<https://doi.org/10.5194/cp-2021-147-RC1>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on cp-2021-147

Joseph Manning (Referee)

Referee comment on "Recession or resilience? Long-range socioeconomic consequences of the 17th century volcanic eruptions in northern Fennoscandia" by Heli Huhtamaa et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2021-147-RC1>, 2021

This is an important paper that presents human and natural data that assesses the impact of three 17th century eruptions: Huaynaputina in 1600 (southern Peru), the double eruption of Koma-ga-take (Japan) and Mt Parker (Philippines) in 1640/41 and a hitherto unidentified eruption in 1695 (UE 1695). Volcanic eruptions can provide discrete windows onto a particular society, its vulnerabilities, and its responses to precipitation and temperature shocks in short time scales. The impact of eruptions must always be assessed against the background climate state, natural variability, and the structure of the particular society. Therefore highly resolved historical data must be integrated with climate proxy data. This article does just this, and presents novel historical (tax records) and climate data (tree rings) from Ostrobothnia (Finland).

Although the region supported a very small population (ca. 91-150 persons), it is the basic method here, assigning historical causation with respect to short term climate shocks in a socio-economic system with high spatial variability, that matters. The Abstract concisely conveys the paper's arguments and data used, the paper is well written and the arguments are very clear.

Since both the location and the timing of an eruption matters a great deal perhaps something more can be said here. The use of the term "Recession" in the Title and in the paper could perhaps be changed. I am not sure that "recession" used in an economic sense is the right one here, especially in a region with a very small population. The basic point, rather, is that certain parts of the population and certain regions were more vulnerable to the shocks than others were. With respect to the shocks to grain production, I wonder if something could be said about grain storage. One might expect that the ability of households to store grain for a year or two could mitigate a short-term shock. On land abandonment, are there other factors that can be treated?, e.g. a lack of heirs might also result in state seizure of property. Figure 7 might be rethought, a more robust coupled natural-human system model with feedbacks might convey other aspects discussed in this fine study, although I take the point that here, the impact of an eruption on society is mediated by many other factors that must be considered in detail, and only examples that

have highly resolved historical and climate data integrated into the analysis allow us the ability to assess how large eruptions impact societies, which, in turn, will allow policy makers to better plan for future eruptions (and potentially the impact of geoengineering).