

Interactive comment on “Seismic monitoring of the Auckland Volcanic Field during New Zealand’s COVID-19 lock-down” by Kasper van Wijk et al.

Anonymous Referee #3

Received and published: 15 November 2020

The manuscript "Seismic monitoring of the Auckland Volcanic Field during New Zealand's COVID-19 lock-down" presented by van Wijk et al., studies the spatio-temporal variability of anthropogenic noise before, during and after one of the most difficult periods in human history during the 21 century: the COVID-19 pandemic. Using both, borehole and surface seismic stations (broadband and short-period), the authors present a very convincing picture of the reduction in anthropogenic ambient noise (RSAM as called in the manuscript) due the lock-down measures to reduce the spread of the virus and how the reduction in noise amplitude could impact geophysical monitoring of an active volcanic field.

In general, the manuscript reads well and the order of ideas and figures is well presented. I would like the authors to edit or re-write to sentence starting in line 29. I would

C1

suggest to include parenthesis for the references, e.g. (Poli et al., 2014) to separate them from the text, otherwise the reading of the whole sentence is very confusing.

Line 44-45: The authors use the frequency band: 0.1 - 50 Hz assuming the cover the range of interest for volcano monitoring and seismic tomography, however, whiting this range, what frequency band is the most affected? It would be interesting to observe the results presented here using/plotting several frequency bands (5 or 6?) to understand better where the noise amplitudes show the maximum reduction and how they are related to different anthropogenic activities or sources (diffuse, harmonic, transient, etc) or/and natural processes (volcanic, wind, ocean, etc.).

Line 73: instead of multiplying by a factor of 25, why didn't the authors normalized the time series presented in figure 7? If i understand it correctly, the main idea of the figure is to compare the relative differences between the observed amplitudes at 3 different stations with the wind speed and more importantly evaluate their temporal correlations.

The fact that authors found 35 more earthquakes (a very low number of events) than Geonet during the lockdown, it doesn't mean they appear because of a reduction in anthropogenic noise, rather, they are found because of the use of a template matching algorithm, that is, systematically more efficient in finding earthquakes when compared with traditional human-based methods. Probably you also could find the same amount of events even without lock down measures. authors can add a sentence like this after line 105.

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2020-152, 2020>.

C2