

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 #2

Received and published: 9 November 2020

I find this is a generally well-written manuscript and an interesting look into a unique period of seismic data. I have two main suggestions for improvement that I think would strengthen this study’s arguments significantly using the methods that they’ve already demonstrated.

First, I think that discussion of changes in earthquake detection during COVID lockdowns would be benefitted by the further context of comparison with other changes in anthropogenic seismic noise levels. Rather than only comparing lockdown to non-lockdown data, adding comparisons of night to day and weekend to weekday could give better insight into how anthropogenic noise affects event detection. The lockdown period is short enough (on the scale of earthquake occurrence rates) that I’m not fully convinced by the authors’ claim that there was no change in detection rate during that

C1

period, so it would be helpful to back that up through comparison to other low-noise times for which more data exist.

Second, I believe that this study would be helped with further exploration (or at least explanation) into the frequency domain. The authors say that the 0.1-50 Hz range is of interest to volcano monitoring and contains anthropogenic seismic noise, but don’t go into further detail and should at the very least provide more background on that choice of range and show a spectrogram for at least one station. Dividing that range into a few smaller ranges and processing them individually would provide more information about the change in the seismic noise environment (e.g. deconvolving effects of changing wind and water vs changing anthropogenic activity), as well strengthen the authors’ arguments regarding those noise levels’ effects on event detection.

As for smaller technical corrections, the main things I found were: the authors need to ensure that all data in a figure is included in the one key (e.g. figure 7’s key does not contain a red line for wind speed, and figure 8 has two keys instead of one), decide whether to use “lock-down” or “lockdown”, and ensure that figures are more colorblind-friendly (e.g. not using red and green for the two different lockdown levels).

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

C2