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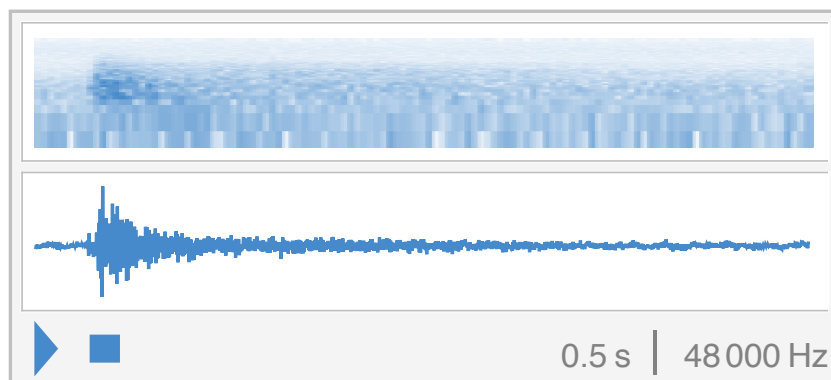
Interesting auroral sound event: April 19, 2021

New auroral sound recordings extend the earlier belief that a visible aurora must be above the head in order to be audible. The Auroral Acoustics study that started in January 2000 has often confirmed the fact that the loudest sounds, that also may occur several times during an aurora night, can be associated with 'aurora in the zenith' cases. However, everything is relative. A less intense geomagnetic storm may also produce sounds, but they are not very loud, and only few of them can be detected during the night. Therefore, they are more difficult to be observed by a human ear. Without the association with a visible aurora, they are typically explained by some random sound event in the environment. E.g., in winter they are associated with so called 'frost crackling', a phenomenon never studied in acoustics as far as I know.

A geomagnetic activity with Kp 3–4 occurred during the night April 18–19. At 0:08 UTC (3.08 LT) an auroral sound event was recorded in southern Finland (Fiskars Village) without any visible aurora. Its RMS SPL is around 35 dB. At the same time an active auroral arch was photographed about 300 km to the North-East from Fiskars with a drone (<https://www.taivaanvahti.fi/observations/show/97798>).

This is one of those auroral sound events measured during the last years under a moderate geomagnetic activity without any visible aurora. These events confirm the present hypothesis that the sound producing mechanism is not directly connected to the auroral light, but the sounds are triggered by the geomagnetic activity that also controls the visible aurora. When the activity is low the sounds are soft and rare, when high, the sounds are loud, and they occur more often during the night.

The mentioned sound event was the loudest during the night and is it similar to many recorded under visible auroras and also without them. The night was clear and absolutely calm and the temperature dropped from 16°C to 1°C. The true acoustic characteristic of the sound is better perceived when its speed is lowered by -75%. In that version the echoes from the environment are nicely heard. The sound sample consists of a standard version and a low-speed version for comparison.



Clap sound recorded April 19, 2021 at Fiskars Village, Finland

*All comments are welcome!