



Detecting lightning infrasound using a large aperture micro-barometer array

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Lightning generates sound waves across a wide range of frequencies, including infrasonic waves below 20 Hz. Source mechanism for these low frequency pulses is still area for debate. Infrasound pulses detected after rapid changes of electrostatic field during the thunderstorm activity were analyzed. The measurements were done by large aperture array of absolute micro-barometers located in Western part of the Czech Republic (Western Bohemia Czech Infrasound). The distances between four measuring sites are in the range 4-10 km. The infrasound source position was calculated from the time delays of the signal arrival assuming propagation of spherical waves from the source. For further processing, only cases with a sufficient signal-to-noise ratio on all four micro-barometers were selected. The effect of sound speed due to temperature variation with height and wind speed is taken into account. The comparison with the lightning discharge location determined by Lightning detection network is shown. For most selected cases, the infrasound source position corresponds to the indicated horizontal position of the flash. The vertical position is typically located at the altitude of 3-4 km; thus, the sources of the selected infrasound events are most likely intracloud discharges.