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ThunderSeis: Seismic analysis of thunder signals recorded at the Gaisberg mountain, Austria

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Lightning strokes create powerful wavefields of seismoacoustic nature, which we refer to as thunder. Unfortunately, even though bolts of lightning received much attention in such fields as physics of plasma and meteorology, less research was conducted to investigate the thunder itself.

A radio tower on the top of the Gaisberg mountain in Salzburg is permanently instrumented with electrical sensors able to record the current of lightning strokes hitting the tower's top. In October 2020, observations of 5 thunder signals have been made using several one-component seismic sensors. At the same time, this tower is instrumented with a meteorological station, which allows us to model precisely the propagation of seismo-acoustic thunder signals from the above-mentioned lightnings.

These observations and modeling give insight into how thunder is created during the lightning stroke, which is an important milestone for seismo-acoustic observations of atmospheric events.