Infrasound multi-site observation of thunders 3: preparation process for SATREPS

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Infrasound, low-frequency sound of 20 Hz or less, is considered as one of the remote-sensing method of lightning/thunders. Sensor network to be deployed for a SATREPS project, Philippine, is planned in Manila region in early 2019. Here, we will deploy two types of infrasound sensors. Small but impulsive pressure changes caused by the rapid expansion of the heated plasma along the path of lightning strikes can be detected by infrasound sensors with higher sensitivity range of 1 mPa. Thus, we will use multiple film type (DC type) infrasound sensor for low frequency measurements. But for the thunder infrasound signals, lower-cost microphone type (AC type) sensors can be applied for measurements. Thus, we will mainly use many microphone type infrasound sensors in Metro Manila region.
For calibrating the both sensors, in order to evaluate precise pressure level as well as detectable frequency range, we used a chamber with a pushing/pulling mechanism on it. The infrasound multi-site observation can reveal the lightning activities as close as 100 m scale when the infrasound sensors can be installed with a mesh of 10 km scale or shorter by using the speed of sound as a precise remote-sensing scale. Recently, we also checked capability of remote-sensing in Fukui area and Kanazawa area by using real thunder signals with some other methods to compare.
In this talk, we will introduce a possibility of infrasonic remote-sensing and its calibration phase, in order to realize future disaster-mitigation studies.

Keywords: Infrasound, Calibration, Remote sensing

