

## Improvement of Radio Acoustic Sounding System aiming to the operational meteorological instruments

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Radio Acoustic Sounding System (RASS) is one of the most promising remote-sensing techniques to measure atmospheric temperature profile by combining a wind profiling radar and acoustic source. RASS has an advantage in the availability in the temperature measurement regardless the weather condition and day-and-night.

The reduction of noise from the ground-based acoustic source is very important subject to make a RASS measurement for practical use. Authors introduced the high-directional speaker system (LRAD-1000) into the RASS measurement of L-band wind profiling radar to reduce the noise pollution problem. LRAD-100 has very low side-lobe emission by combining DSP-controlled acoustics at two center frequencies. This paper demonstrates the performance of noise reduction and temperature measurements by applying LRAD-100 to L-band wind profiling radar.

The vertical resolution of RASS measurement is determined by the pulse-width of wind profiling radar. This paper also aims to improve the vertical resolution of RASS measurement to detect the distinct peak of inversion layers. We propose a new method to use oversampled data to obtain high-resolution temperature profile. The improvement of height resolution can be derived by extracting the information of overwrapped height from the over-sampled data. The results is presented in the paper.

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