

# **Improvement of vertical resolution by applying variational assimilation to the oversampled radar data**

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The improvement of vertical resolution was achieved from the oversampled MST radar data with noises. The previous method numerically extracted the detailed structure from the oversampled data (Torres and Zrnic, 2003a, b). However, this whitening method is largely affected by the observation noise.

Aiming at more robust estimation, a new method applied one dimensional assimilation method (1D-Var) to the oversampled data. Provided the simple rectangular pulse, the simulation using the data of radiosonde represent sharp inversion structure.

This method was applied to the data of the MU radar steered to the East direction. Sharp structure of vertical wind velocities was shown in the 1D-Var results. The validation with high resolution radiosonde is expected to validate the results.