

# Evaluation of microphysical schemes in a meteorological model for winter snowfall events in Hokkaido

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This study evaluated microphysical schemes implemented in a meteorological model SCALE (Nishizawa et al. 2015; Sato et al. 2015) targeting midwinter snowfall events in Hokkaido. Cloud microphysical schemes of a 2-moment bulk scheme (Seiki and Nakajima 2014: SN14), a 1-moment bulk scheme of Roh and Satoh (2014: RS14), and that of Tomita (2008: T08) were evaluated with the simulation for events, based on ground-based measurement by disdrometer. Our analysis elucidated that SN14 successfully simulated the measured relationship between the particle size and terminal velocity distribution (PVSD). On the other hand, T08 overestimated the frequency of graupel with fast fall velocity, and underestimated particle diameters. RS14 also overestimated the frequency of the graupel, but reproduced the fall velocity of graupel particles. Sensitivity experiments indicated that RS14 scheme can be improved by the modification for the slope parameter, mass-diameter( $m$ - $D$ ) relationship, and PVSD relationship of graupel.

## References

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