

TBD

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This study improved a single-moment bulk cloud microphysics scheme to realistically simulate supercooled-liquid water within low-level mixed-phase clouds in polar regions. For reference, we used simulated results from a double moment bulk cloud microphysics scheme. Budget analysis showed that underestimation of supercooled liquid water originated from strong Bergeron-Findeisen process when using the single moment bulk scheme. We newly introduced several thresholds to suppress growth of cloud ice, snow, and graupel.