

A Numerical Simulation Study of Ground-based Glaciogenic Seeding on Winter Orographic Clouds at Daegwallyeong in Korea

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NIMR/KMA performed the ground-based cloud seeding experiments for snow enhancement from January to April 2014 around Daegwallyeong area using the ground-based AgI (silver iodide) generators. This study is to investigate the effect of ground-based glaciogenic seeding on orographic clouds and sensitivity of seeding rates at Daegwallyeong on 4 January 2014 (1st and 2nd experiments) using numerical simulations. Modeling studies on snowfall enhancement experiment are expected to improve its decision-making skills and prediction-analysis capabilities by calculating effective range and time of the seeding effects. A cloud-seeding parameterization of ice nucleation has been implemented into the Weather Research and Forecasting model based on the Morrison microphysics scheme to investigate the ground-based glaciogenic experiments. For the case chosen for seeding simulation, precipitation amount was enhanced through the ground-based seeding in the form of ice, snow, graupel, and cloud water on the downwind area (analysis area). Water vapor might be depleted in the atmosphere through the process of ice nucleation to produce snow, ice, and graupel and further increase accumulated precipitation amount. Result of sensitivity for seeding rates is that precipitation, snow, ice, and cloud water were increased with increasing seeding.

Key words: cloud seeding, silver iodide, seeding effects

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