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THERMAL INFLUENCE OF FORESTED AREAS DURING SNOWMELT
ON THE FORMATION OF WEATHER CONDITIONS
(based on calculations of the regional numerical weather forecast system COSMO/ICON-Ru)

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Numerical weather prediction systems require the initial data, including information about the state of the earth's surface. Snow cover data is mandatory, among which the position of the snow line is crucial for the numerical weather forecasting for the coming days. Currently, these data are based on satellite measurements, adjusted by daily snow depth data from weather stations located in open terrains. This does not allow for a reliable assessment of the extent of snow cover. In forests, tree canopies may be free of the snow, as the snow can be moved beneath tree branches and partially melted. This can cause the canopies to heat up and warm the surrounding air. The processes of snow accumulation and vertical redistribution in forest landscapes are generally not taken into account in forecast models and initial data proceeding. This sometimes leads to significant model temperature errors for lower atmospheric levels. The presentation provides the examples of the influence of initial snow cover data (using the COSMO/ICON-Ru forecasting system) on the behavior of calculated meteorological parameters for some next days. Near-surface air temperature, cloudiness (especially low-level), precipitation, and their phases were found to be most sensitive to this factor. Indicators of a decrease of forecasts skill in the spring, when the described factors are most noticeable, are presented. In these cases, it is typical for the forecast of near-surface temperature to "stick" at 0°C (all the heat goes to the snow melting on the surface of the model cell) if the factor of snow-free tree canopies is not taken into account when forming the initial data. Proposals for algorithms for correcting snow boundary data are considered.

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