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Snow cover statistical model for assessment of vehicles mobility

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Improvement of the infrastructure of the northern territories and efficiency of their industrial development can be achieved through the use of rationally designed vehicles with optimum parameters of the trafficability and performance.
In the Russian Federation the significant volume of transportations is carried out in the winter time on snow-covered terrain (temporary winter roads, snowy deserts, the entrances to the mining areas, and the coast of the Arctic Ocean). The solution of questions of mobility in snow-covered terrain conditions from the scientific and technical point of view, mainly lies in the research of the vehicle-terrain interactions for snow.
Thus, if one of the objectives is to ensure the vehicle trafficability on the virgin snow, the choice of vehicle must be associated with changing over the year weather conditions.
When developing the model of the snow cover for prediction of the mobility of transportation and technological vehicles there were used statistical data on changes in snow depth and density depending on the duration of the winter period. The group of parameters that can be expressed through the snow density (rigidity, cohesion and angle of internal friction) was also considered. Furthermore, terrain features, microprofile, distribution of slopes, landscape peculiarities were also taken into account in the model. These data were obtained by processing information provided by the hydrometeorological stations.
Thus, the developed stochastic model of the snow distribution in Russia, allows to make a valid prediction of the possibility of overcoming the snow-covered territories during the winter period.