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Climatic conditions of automobile transport operation in Moscow region

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Adverse weather terms and climate conditions of the region have a major impact on the safety and operation of roads. Weather affects driver behavior, vehicle performance, traffic velocity. Climate conditions are one of the key factors in road design. The investigation of climatological conditions of automobile transport operation in Moscow region by road automatic weather stations (RAWS) data and regular weather station data are presented. The relationship between RAWS data and regular weather station data were detected as high so we can use regular weather station data for these investigations. Some roads in Moscow region with favorable and adverse weather conditions were shown. Climatological characteristics which affect the automobile transport operation (the precipitation sum, the number of weak, medium and extreme snowfalls, number of crossings of the freezing point by the air temperature, temperature of road surface, frequency of fog, the duration of adverse period for traffic and others) were selected for analysis. The investigation results of their spatial distribution in region and changes for 60-years period (from 1950 to 2010) are reported. The tendency of the solid precipitation sum increase in (1981-2010) as compared with (1951-1980) has been detected as well as increasing of number of medium snowfalls. But the number of weak snowfalls decreased. The increasing of solid precipitation sum and number of medium and extreme snowfalls has negative influence on automobile transport functioning. Herewith tendencies of increasing of the coldest pentad average temperature and decreasing of number of days with temperature below -25° C and cold period duration occurred on investigated territory. These tendencies have positive influence on this branch of the economy. The number of crossings of the freezing point by the air temperature was maximum in 1970-80, tendency of decrease at last 20 years was found.