

Vertical Distribution of the Monthly Average Values of the Air Temperature above the Territory of Kakheti in 2012-2017

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Abstract : Studies of the vertical distribution of the air temperature in the atmosphere have great value for the solution of different problems of meteorology and climatology (meteorological forecast of showers, thunderstorms, and hail, weather modification, estimation of climate change, etc.). From the end of May 2015 in Kakheti after 25-year interruption, the work of anti-hail service was restored. Therefore, in connection with climate change, the need for the detailed study of the contemporary regime of the vertical distribution of the air temperature above this territory arose. In particular, the indicated information is necessary for the optimum selection of rocket means with the works on the weather modification (fight with the hail, the regulation of atmospheric precipitations, etc.). Construction of the detailed maps of the potential damage distribution of agricultural crops from the hail, etc. taking into account the dimensions of hailstones in the clouds according to the data of radar measurements and height of locality are the most important factors. For now, in Georgia, there is no aerological probing of atmosphere. To solve given problem we processed information about air temperature profiles above Telavi, at 27 km above earth's surface. Information was gathered during four observation time (4, 10, 16, 22 hours with local time. After research, we found vertical distribution of the average monthly values of the air temperature above Kakheti in 2012-2017 from January to December. Research was conducted from 0.543 to 27 km above sea level during four periods of research. In particular, it is obtained: -during January the monthly average air temperature linearly diminishes with 2.6 °C on the earth's surface to -57.1 °C at the height of 10 km, then little it changes up to the height of 26 km; the gradient of the air temperature in the layer of the atmosphere from 0.543 to 8 km - 6.3 °C/km; height of zero isotherm - is 1.33 km. -during July the air temperature linearly diminishes with 23.5 °C to -64.7 °C at the height of 17 km, then it grows to -47.5 °C at the height of 27 km; the gradient of the air temperature of - 6.1 °C/km; height of zero isotherm - is 4.39 km, which on 0.16 km is higher than in the sixties of past century.

Keywords : hail, Kakheti, meteorology, vertical distribution of the air temperature

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