

The model of radiative heat transfer effects in the atmospheric boundary layer*

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During nighttime, clear-sky conditions and, in absence of significant advection, the influence of divergence of net long-wave radiative flux on thermodynamic processes could be dominant in the atmospheric boundary layer. The model which parameterizes such processes by height (35 grid points up to 2000 m) is accomplished based on the emissivity concept.

The test of the model is performed on the Wangara experiment data. The results are analysed and discussed concerning a complex structure of the atmospheric boundary layer. The modelled radiative cooling rate is comparable with the total cooling rate, especially in the lower part of the nocturnal boundary layer (region of smaller wind speeds).

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