

POSSIBILITIES OF ATMOSPHERE OPTICAL CHARACTERISTICS MEASUREMENT DURING AEROLOGICAL SOUNDING

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The vertical profile of the solar radiation attenuation coefficient determines many atmospheric processes. However, only values of solar radiation on the Earth's surface in different wavelength ranges are now measured in network observations. Measurement of the vertical profile of the optical properties of the atmosphere is made by using of actinometric radiosondes, which are expensive devices, so they are used for scientific research only. To carry out network observations it is necessary to supplement the radiosonde with an optical sensor, the cost of which is comparable to a temperature or humidity sensor cost. To exercise the method of optical measurements a radiosonde was installed the simplest optical sensor as a conventional photodiode. At first data processing has shown that a device is able to measure the cloud top height. Then data processing has been improved to evaluate the vertical profile of the light attenuation coefficient in the atmosphere what made possible to detect layers with high concentrations of aerosol. It is also able to accurately determine the height of the air mass separation between the troposphere and stratosphere. The use of this simple sensor will provide a forecasting system with new information, as well as collect data on the radiation properties of the atmosphere for climate research.

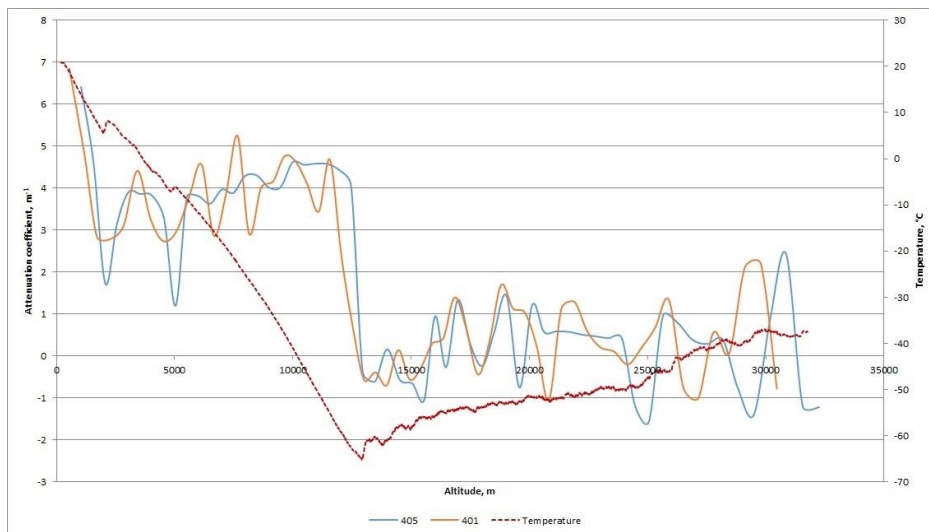


Fig.1. The reduction in light intensity calculated from data of the two parallel flying radiosondes. The abscissa shows the meters. The brown line is temperature. Both radiosondes (blue and yellow lines) showed a decrease in the attenuation coefficient in inversions.