The Thermal Indicatrix of the Moon's Radiation in IR Spectral Range (10-12 micron)

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In the report the outcomes of research of the thermal radiation of the surface of the Moon in the spectral range 10-12 microns are adduced. A main material of research is the measurements of radiation temperature of the lunar surface transmitted by the GOMS geostationary Earth satellite. The first Russian geostationary artificial meteorological satellite (GOMS) was launched on October 31, 1994, in accordance with the program "Meteorological Service for the Population". Four photographs of the Earth in which the Moon is also seen were obtained during one year of the GOMS mission (1995-1996). The satellite data are calibrated by comparing cosmic images of the Moon with ground-based measurements. The results of long-standing ground-based measurements of the Moon's radiation have been collected in a computer database, which is used for statistical analysis of the radiation temperature of the lunar areas. In the outcome of computer modeling of the Moon's images the space indicatrix of the thermal radiation of the lunar surface is constructed in a vector and analytical form. The formulas and graphics of the dependence of the radiation temperature from angle of reflection, angle of incidence of solar rays and azimith are derived. The database was used for a construction of an analytical model of the Moon's thermal field by means of the formula of the space indicatrix of thermal IR radiation. The diagrams of the thermal fields of the Moon and the map of the thermal inertia of the lunar surface are presented.