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Temperature and Methods of Temperature Observations by Means of Optoelectronic Equipment for Earth Remote Sensing Space Systems

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Abstract. The paper presents methodical aspects of spectral-energetic and temperature calibrations of the optoelectronic ERS infrared equipment. Main operating principle of infrared radiometers, the terms and the concepts used at temperature acquisition by means of ERS equipment from space are outlined. Specific characteristics and methods of remote temperature acquisition of objects by means of optoelectronic ERS equipment in wavelength range $\Delta\lambda$ = 3–14 microns are described. The following requirements for the radiometer are considered: type of spectral characteristic, linearity of the transformation characteristic, noise characteristics, stability of instrumentation characteristics, traceability of radiometric measurements to standards. Relevant literature sources are provided for each presented parameter.
The principles and methods of remote object temperature acquisition presented by the authors describe radiometric characteristics and do not address the issues of image formation and its geometric parameters.
Keywords: temperature, earth remote sensing (ERS), metrological characteristics, radiometer, calibration, measuring complex, spectral characteristic, spectral radiance, space system
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