

MARINER 1969: RESULTS OF THE INFRARED RADIOMETER EXPERIMENT*

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Abstract. The energy radiated by Mars in the wavelength bands 8–12 and 18–25 μ has been measured during the flyby of Mariner 1969 with linear resolution of 50 km at closest approach. From the laboratory energy calibrations and assuming unit emissivity, the temperature of the surface materials has been derived. The main results are summarized as follows:

(a) The temperatures near the equator (Mariner 6), as function of local time, on the average agree with the values expected on the basis of the gross thermophysical properties of the soil determined from ground-based measurements.

(b) The temperature fluctuations around their mean seem to correspond to variations in albedo over the classical features of the planet, with the possible exception of one area.

(c) The lowest temperatures measured by channel 2 of Mariner 7, during the polar swath, were 148 K, while at the edge of the polar cap the temperature was 230 K.

A small amount of instrumental responsivity to off-axis radiation will change these nominal temperatures slightly, in the general sense that the low temperatures, when properly corrected, will decrease by a few degrees, while the high temperatures will increase by a similar amount.

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