

1 Surface temperature of the Earth

Calculate the temperature of the surface of the Earth on the assumption that as a black body in thermal equilibrium it reradiates as much thermal radiation as it receives from the Sun. Assume also that the surface of the Earth is a constant temperature over the day-night cycle. Use the sun's surface temperature $T_{\odot} = 5800\text{K}$; and the sun's radius $R_{\odot} = 7 \times 10^{10}\text{cm}$; and the Earth-Sun distance of $1.5 \times 10^{13}\text{cm}$.