

WEEK 7

Solar radiation is radiant energy emitted by the sun from a nuclear fusion reaction that creates electromagnetic energy. The spectrum of solar radiation is close to that of a black body with a temperature of about 5800 K. About half of the radiation is in the visible short-wave part of the electromagnetic spectrum. The other half is mostly in the near-infrared part, with some in the

Direct beam solar radiation and diffuse solar radiation.

As sunlight passes through the atmosphere, some of it enters the surface of the Earth direct and undisturbed - the so-called beam solar radiation. Beam solar radiation throws sharp .

Solar radiation absorption is due to some atmospheric components, especially ozone, water and carbon dioxide. Stratospheric ozone absorbs almost all the ultraviolet component of the solar radiation for wavelength less than 0.29 μm , water vapor has important absorption bands in the infrared field, centered at 1.0, 1.4, and 1.8 μm . Over 2.5 μm the atmosphere becomes practically opaque to solar radiation for the strong absorption due to water and carbon dioxide.

The sun to the zenith crosses the minimum thickness of the atmosphere, the sun with an elevated zenith angle crosses a large thickness of the atmosphere.

The maximum yearly average solar radiation density is the solar constant, which is the solar irradiance, its value is 1367 W/m^2

Solar energy: availability

The solar radiation, available on the Earth's surface for conversion in other energy forms, depends on the sun position, the weather condition, the site altitude over the sea level.

