

Insolation

By Lennart Kiil

SOLAR RESOURCE MAP

GLOBAL HORIZONTAL IRRADIATION



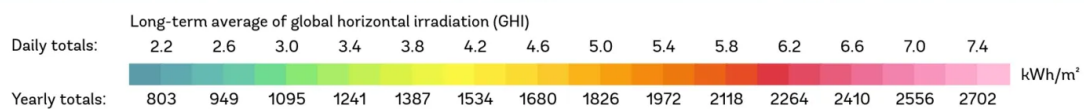
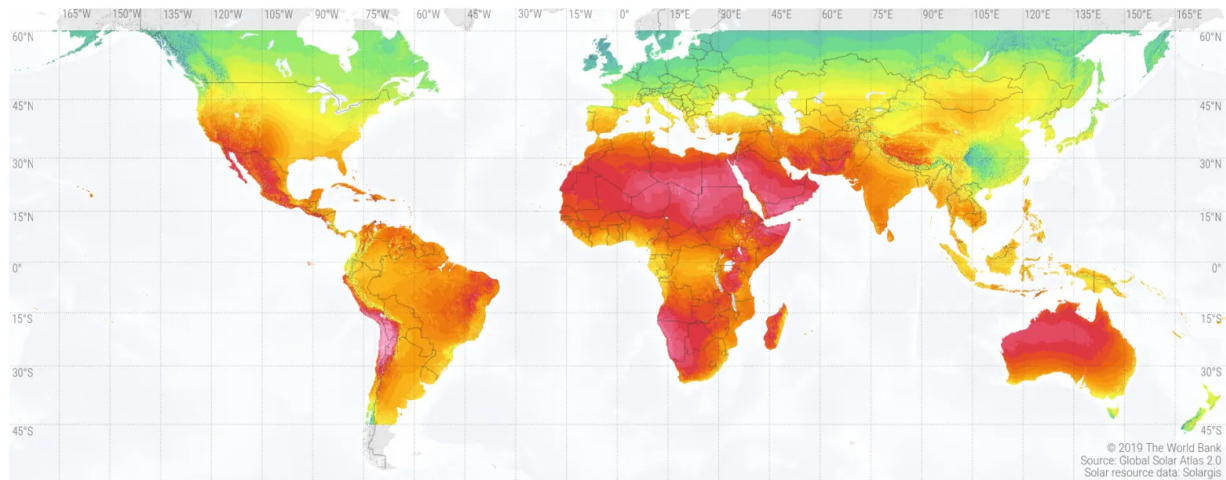
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Global solar irradiation on a horizontal surface, annual average. Most sunlight reaches the deserts near the tropics, least reaches the high latitudes.

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Solar radiation (sunlight) received on a surface.

Insolation is often expressed as Watts per square meter, W/m².

Solar radiation hitting a surface will either be reflected or absorbed. Absorbed solar radiation will heat the surface, while the part that is reflected will not. The **albedo** of an object describes how much solar radiation is reflected.

The amount of solar radiation, sunlight, received at the Earth's surface depends on a number of factors.

Insolation varies with latitude, the location north or south of the equator, because of the change in the angle of the sun rays hitting Earth. The energy a surface receives from the Sun's radiation is at its highest when the surface faces the sun directly.

Therefore, the Earth's surface in the polar regions receive less solar radiation than the equatorial regions, because the surface is at a higher angle towards the Sun. In addition to this, the duration of daylight and seasons varies with latitude.

Only some of the solar radiation arriving at the Earth's outer atmosphere reaches the surface. Some of the solar radiation is absorbed in the atmosphere by its content of gases (including [ozone](#)), dust and clouds. Clouds also reflect some of the solar radiation back into space.

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