



Insolation

The angle of incidence of the sun's rays

- The earth is round, the sun's rays strike the surface at different angles at different places.
- The angle formed by the sun's ray with the tangent of the earth's circle at a point is called angle of incidence.
- The higher the latitude, the less is the angle they make with the surface of the earth.
- Longer the path of the sun's rays, greater is the amount of reflection and absorption of heat by the atmosphere. As a result, the intensity of insolation is less.

Duration of the day

- The duration of day is controlled partly by latitude and partly by the season of the year.
- The amount of insolation has close relationship with the length of the day. It is because insolation is received only during the day.
- The longer the duration of the day, the greater is the amount of insolation received.
- Conversely shorter the duration of the day leads to receipt of less insolation.

Transparency of the atmosphere

- The earth's atmosphere is more or less transparent to short wave solar radiation which has to pass through the atmosphere before striking the earth's surface.
- Thick clouds hinder the insolation to reach the earth while clear sky helps it to reach the surface.
- Water vapour absorbs insolation, resulting in less amount of insolation reaching the surface.

Solar variation

- It is the change in the amount of radiation emitted by the Sun.
- variations have periodic components, the main one being the approximately eleven-year sunspot cycle.
- When there is an increase in sun spots it leads to increase in the amount of solar radiation, but this change is almost negligible

The topographical variations are the major factors modifying the distribution of insolation.

Variability in elevation, surface orientation (slope and aspect), and obstruction by surrounding topographic features creates strong local gradients of insolation.

The insolation received at the surface varies from about 320 Watt/m² in the tropics to about 70 Watt/m² in the poles.

Maximum insolation is received over the subtropical deserts.

