

- I can explain how Earth receives & gives off energy
- I know where the ozone layer is & what it protects us from
- I can name the factors that affect reflection & scattering
  - Angle
  - Surface characteristics
  - Land vs water

### Insolation: INcoming SOLAR radiation

-Sun's radiation that is received at Earth's surface

•Earth's Surface radiates **INFRARED ENERGY**

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### ABSORPTION

- Most UV radiation is absorbed by the ozone layer
- Ozone layer is made of  $O^3$
- It is found in the Stratosphere

### What is going on with OZONE LAYER?

- Ozone is being destroyed by humans introducing CFCs into the atmosphere.

- Result is more ultraviolet (UV) radiation reaching the surface

### Inside the ozone layer

Antarctica's ozone hole. Dark blue represents severe ozone depletion.

September 1985      September 1999      NASA

### The Ozone Vanishes

1. A layer of ozone in the stratosphere protects the earth by blocking most of the sun's harmful ultraviolet light.
2. Ozone is a molecular made of three oxygen atoms.
3. Chlorine atoms from CFCs attack the ozone and form no chlorine molecules.
4. The chlorine molecule then combines with another oxygen atom to form a new oxygen molecule and a chlorine atom. The chlorine can go on to break apart thousands more ozone molecules.

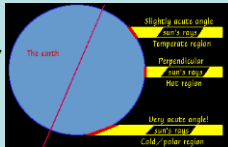
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### 1) ANGLE OF INCIDENCE

- Angle at which the insolation strikes the Earth's surface

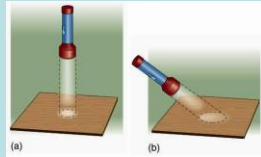
#### Determined by:

- The time of day
- Latitude
- Season



• Higher the **SUN** is in the sky = Higher the **ANGLE OF INCIDENCE**

**\*\*More INSOLATION is absorbed\*\***



### 2) SURFACE CHARACTERISTICS

• **ROUGH & DARKER SURFACES** → insolation is **ABSORBED**

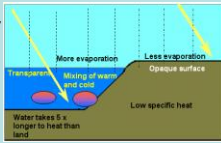


• **LIGHT & SMOOTH SURFACES** → insolation is **REFLECTED**

### 3) LAND & WATER HEATING

WATER **heats up** and **cools off** slower than land:

- Higher specific heat
- Highly transparent to insolation
- Can move freely, so convection currents occur
- Phase changes are constantly taking place



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