

Weather



Weather Basics:

- Weather is the DAILY condition of the Earth's atmosphere.
- There are 4 factors that interact to cause weather:
 - 1. Heat energy
 - 2. Air pressure
 - 3. Winds
 - 4. Moisture

1. Heat Energy

- Almost all of the Earth's energy comes from the sun.
- Heat is spread through the atmosphere in 3 ways:
 - 1. Conduction- direct transfer of energy from one substance to another (like touching a stove)
 - 2. Convection- the movement of heat in a liquid or gas (hot air rises, cooler air sinks)
 - 3. Radiation- transfer of heat through empty space (sun's rays traveling to Earth)

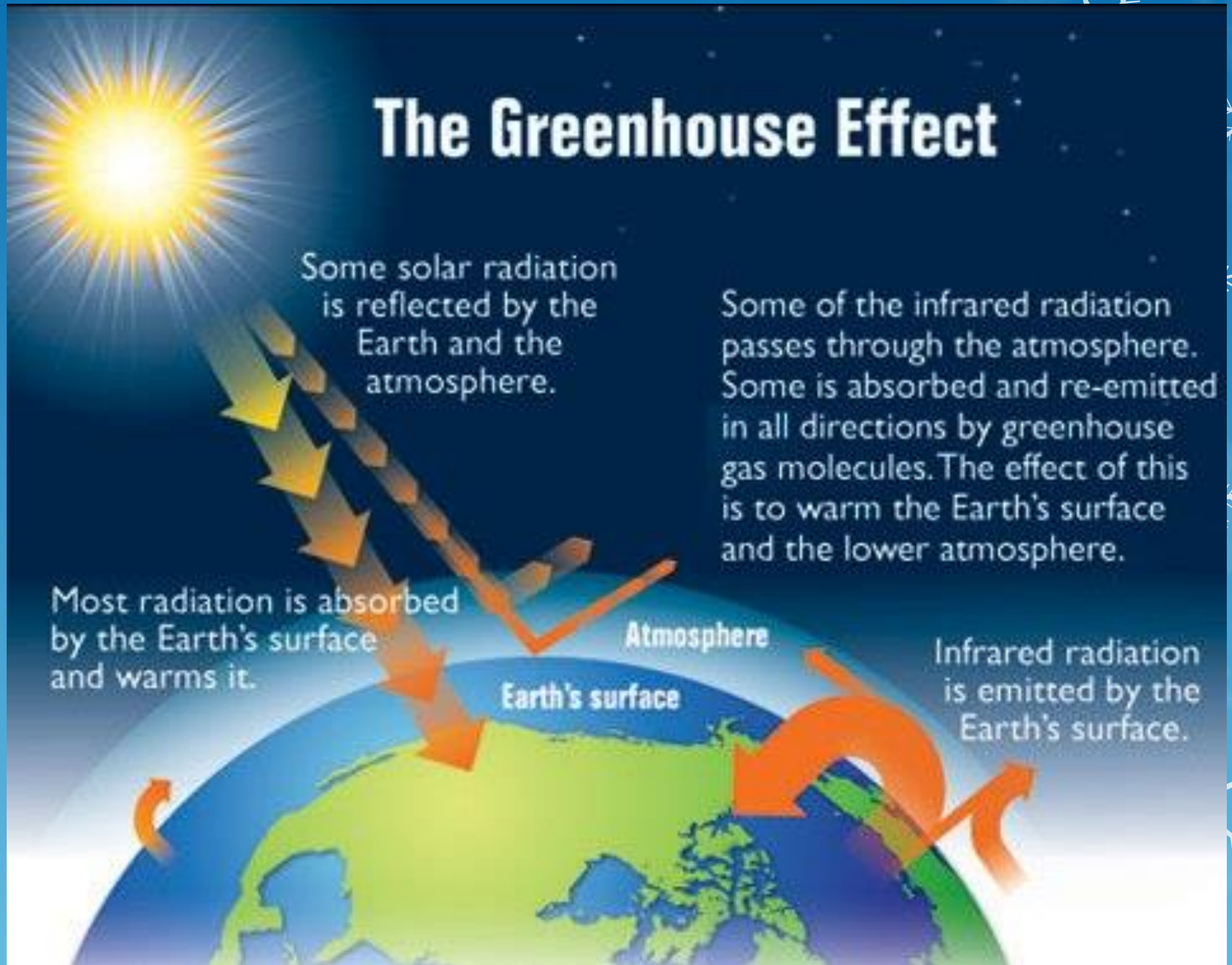
The Greenhouse Effect

Some solar radiation is reflected by the Earth and the atmosphere.

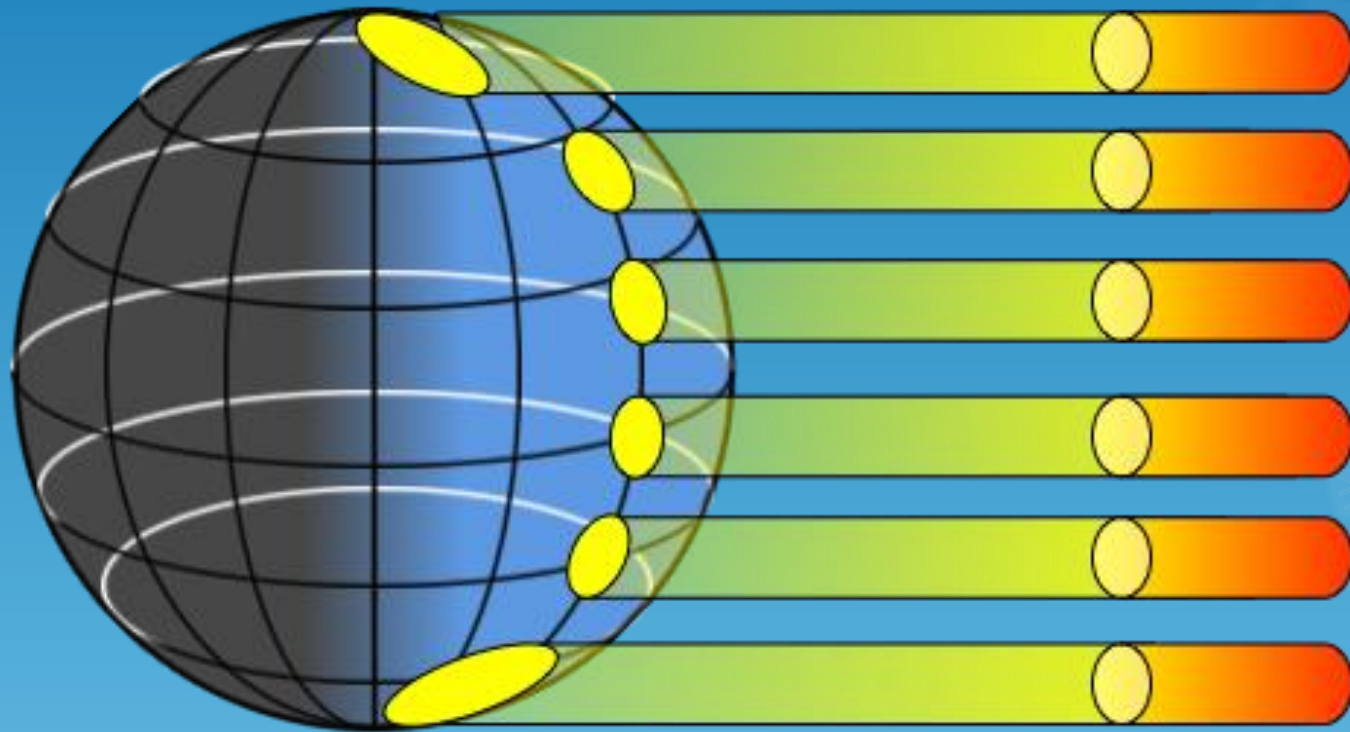
Some of the infrared radiation passes through the atmosphere. Some is absorbed and re-emitted in all directions by greenhouse gas molecules. The effect of this is to warm the Earth's surface and the lower atmosphere.

Most radiation is absorbed by the Earth's surface and warms it.

Infrared radiation is emitted by the Earth's surface.



So why are temperatures different around the world?

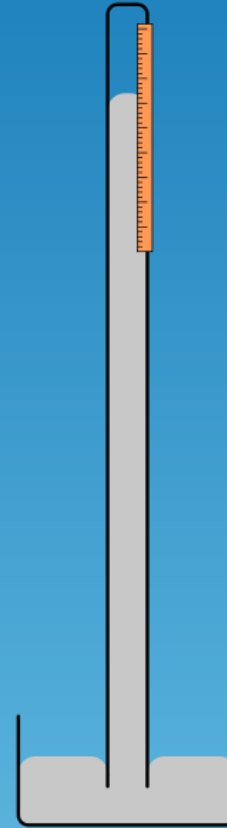


2. Air Pressure

- Air pressure is a measure of the force of air pressing down on the Earth's surface.
- Air pressure is affected by 3 factors:
 - 1. temperature (increasing temp.= decreasing pressure)
 - 2. water vapor (increasing moisture= decreasing pressure)
 - 3. elevation (higher elevation = decreasing pressure)

Measuring Air Pressure

- Air pressure is measured with a barometer.
- High pressure systems produce fair weather with few clouds.
- Low pressure systems usually produce cloudy & rainy weather.

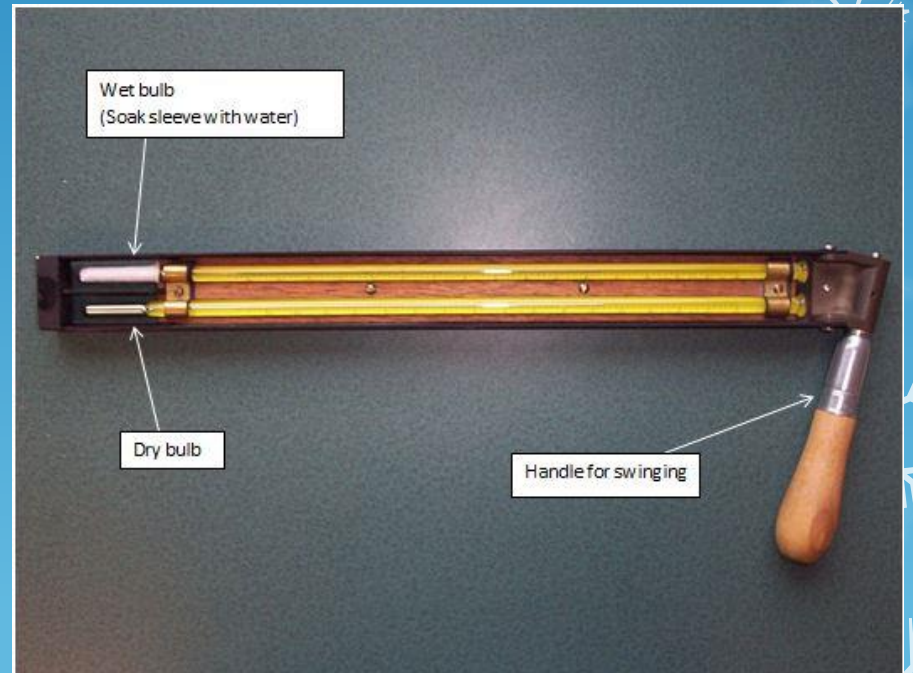


3. Winds

- Wind is simply the movement of air from one place to another.
- Air moves from areas of high pressure to areas of low pressure.
- There are 2 types of winds:
 - 1. Local winds
 - 2. Global winds

4. Moisture

- Humidity- water vapor or moisture in the air.
- Meteorologists refer to relative humidity, which is the percentage of moisture the air holds relative to the amount it COULD hold at a particular temperature.
- A sling psychrometer is the tool used to measure relative humidity.



Difference between Dry and Wet Bulb (F)



Dry Bulb Temperature (F)

	1	2	3	4	5	6	7	8	9	10	15	20	25
30	89	78	67	56	46	36	26	16	6				
35	91	81	72	63	54	45	36	27	19	10			
40	92	83	75	68	60	52	45	37	29	22			
45	93	86	78	71	64	57	51	44	38	31			
50	93	87	80	74	67	61	55	49	43	38	10		
55	94	88	82	76	70	65	59	54	49	43	19		
60	94	89	83	78	73	68	63	58	53	48	26	5	
65	95	90	85	80	75	70	66	61	56	52	31	12	
70	95	90	86	81	77	72	68	64	59	55	36	19	3
75	96	91	86	82	78	74	70	66	62	58	40	24	9
80	96	91	87	83	79	75	72	68	64	61	44	29	15
85	96	92	88	84	80	76	73	70	66	62	46	32	20
90	96	92	89	85	81	78	74	71	68	65	49	36	24
95	96	93	89	86	82	79	76	72	69	66	52	38	28



Clouds

- Three major types:
 - 1. Cumulus- fluffy, cotton ball-like
 - 2. Stratus- smooth gray clouds that cover the whole sky
 - 3. Cirrus- feathery or fibrous clouds
- All other names for clouds come from these three.

