

# Chapter 1 Section 2

## Energy Transfer in the Atmosphere



### Objectives:



Describe what happens to the energy Earth receives from the sun.

Compare and contrast radiation, conduction, and convection.

Explain the water cycle and its effect on weather patterns and climate.

# SUN

The source of energy for Earth's atmosphere



# I. Energy from the Sun

The sun gives off different types of radiation.

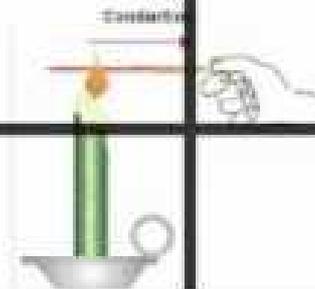
When Earth receives energy from the sun it can...

- get reflected back into space.
- be absorbed by the atmosphere
- be absorbed by land and water.

Break it down, Ow, Come on, Ow, Let's go, Ow  
I touched the hot pan when I was cooking  
~~Ow, Ow, Ow, Come on~~

I'll be screaming out when I feel the sting

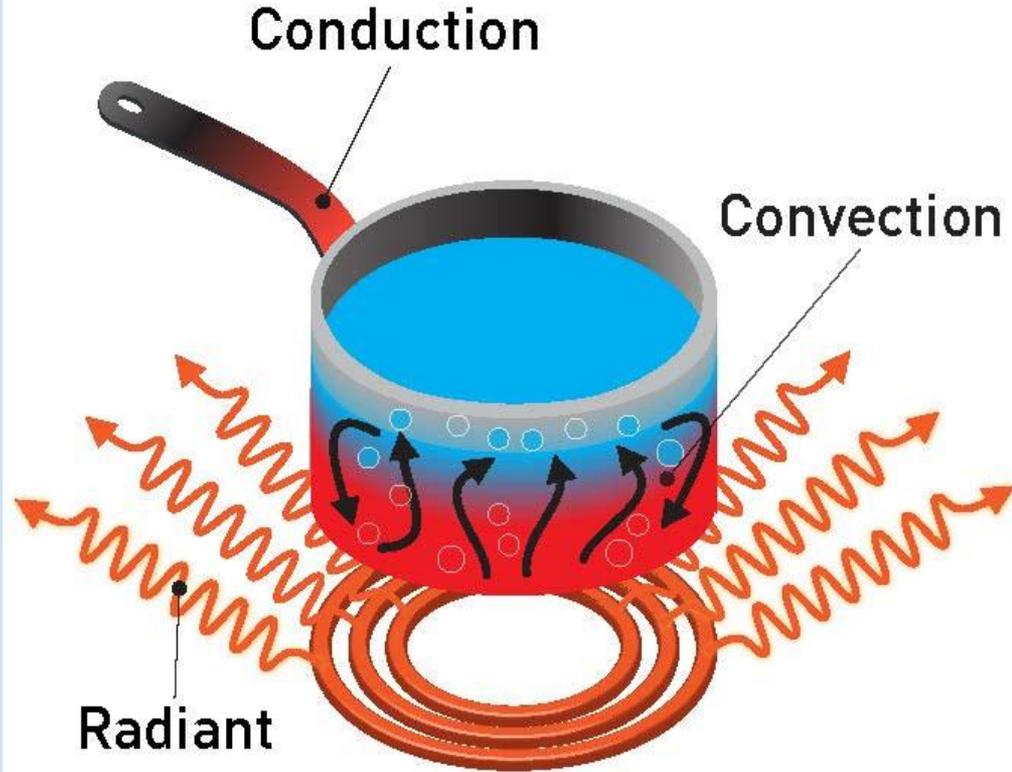
Conduction's the transfer of heat of things joined  
It happens when substances directly touch  
Conductors will make the heat travel faster  
Good ones are copper, iron, steel, silver



# A. Radiation

The energy that is transferred in the form of rays and waves

Warms your face



## B. Conduction

The direct transfer of heat from one substance to another

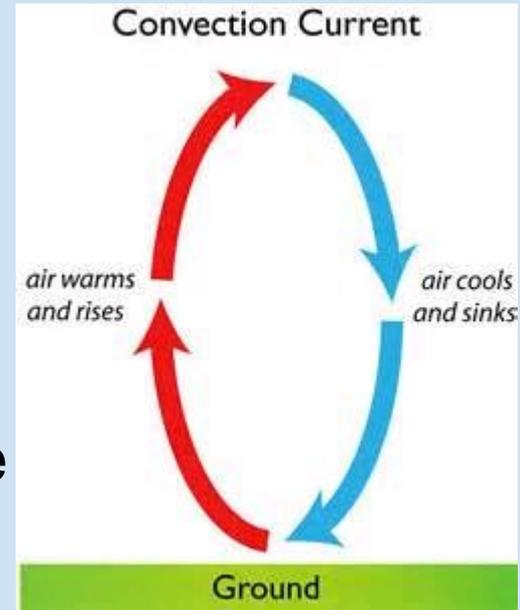
When the sun's radiation is absorbed by an object like asphalt and we walk on it we feel the heat because of conduction.

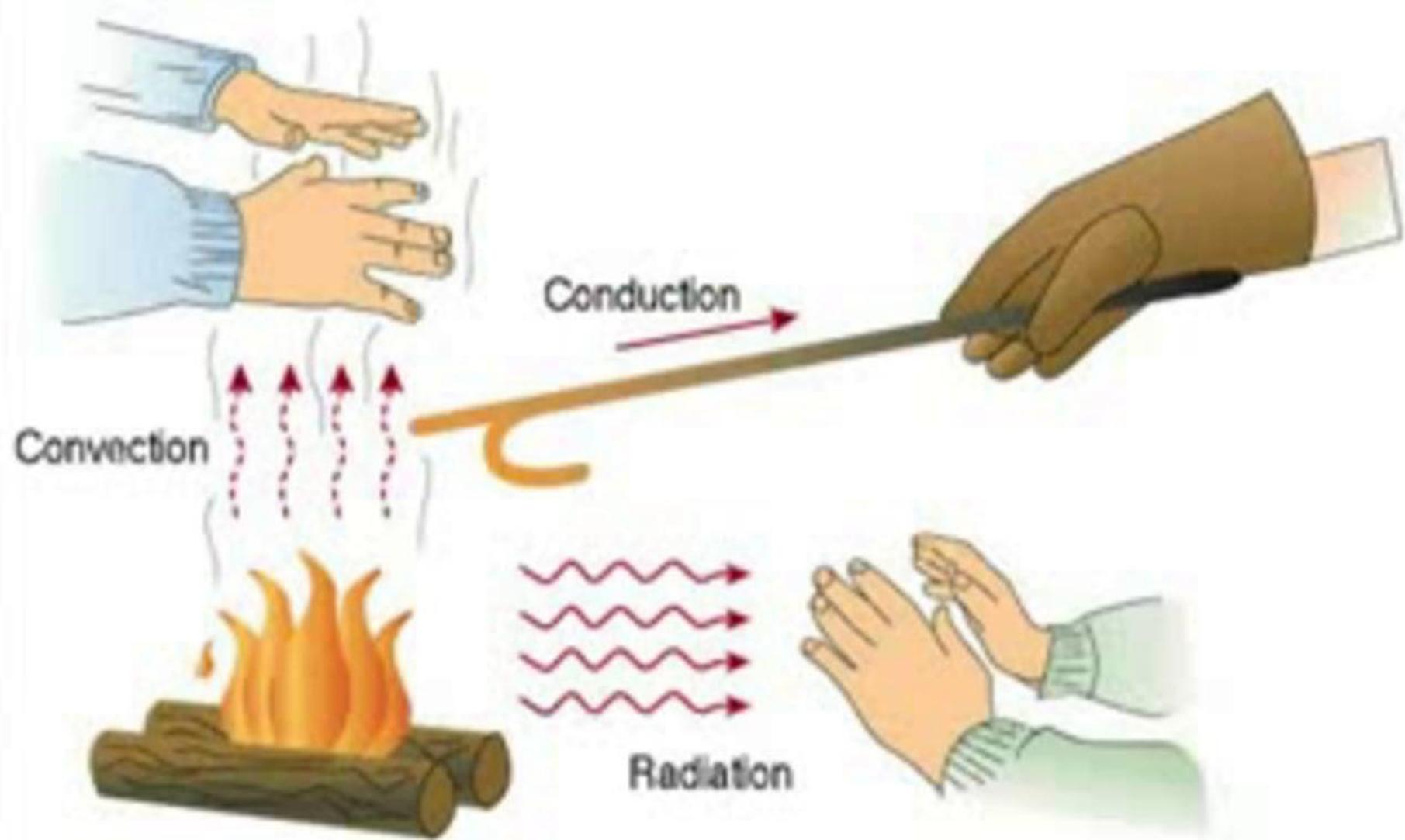


# C. Convection

The transfer of heat through liquid or gas is called convection.

When air is warmed, the particles rise, move apart and create less pressure. New particles take their place and become heated too. As the particles rise they cool and lower toward the surface creating a cycle or a convection current.





No matter how the heat  
Different temperatures meet  
No matter where heat's from  
Hot to cold how it's done

Radiation heat  
It goes through the skies  
Convection fluids rise  
It's where the heat's applied  
Don't get too close  
You touch the fire  
Conduction heat goes by  
Three ways heat is supplied

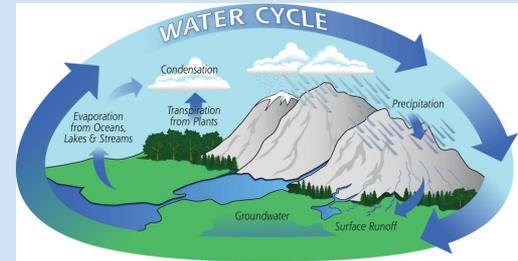
### Heat Transfer

Conduction, Convection and Radiation



# III. The Water Cycle

The cycling of water within the atmosphere and the hydrosphere.



## Hydrosphere

All the waters of Earth

97% salt water

3% fresh water -  $\frac{2}{3}$  is frozen in the ice caps.



# THE WATER CYCLE



# Water Cycle

The sun's energy cause water to change from a liquid to a gas by a process called **evaporation**.

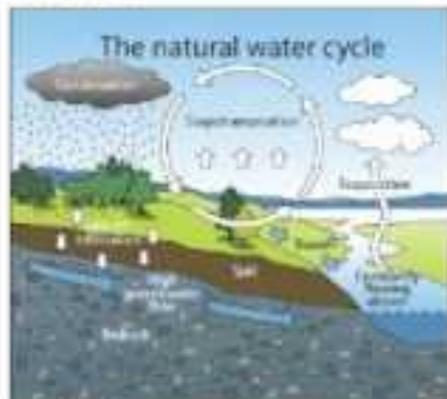
When the water vapor cools, it changes back into liquid through a process called **condensation**. Clouds form and then the water returns to earth in a process called **precipitation**. The water then **runs -off** the land and back into collection areas such as a lake or ocean starting the process all over again.

# The Water Cycle (The Hydrologic Cycle)



That's right water droplets are in flight  
Water droplets are in flight  
It's H<sub>2</sub>O, from the sky back to the Earth below  
Water's in flight

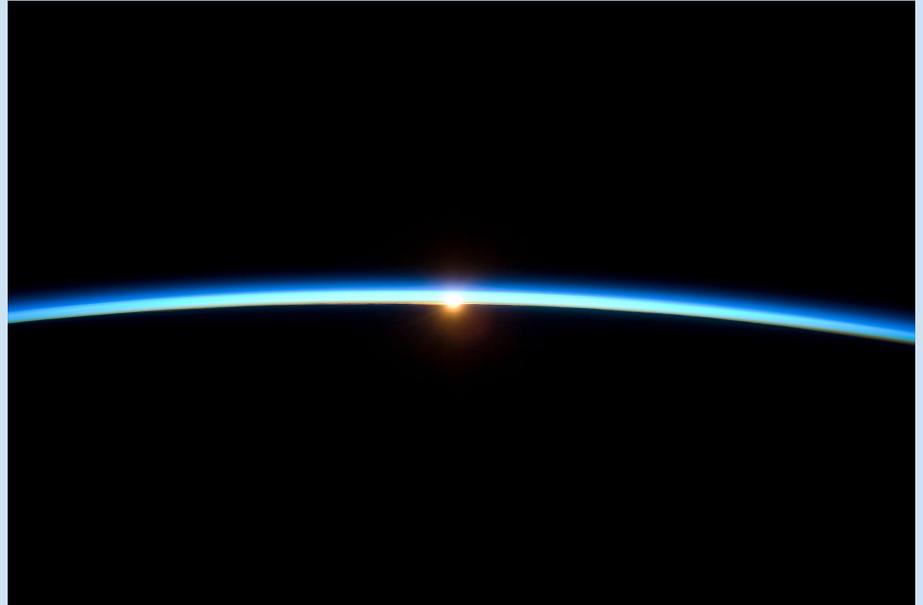
Evaporation  
Then Condensation  
Precipitation  
And Surface Runoff  
Cycle of Water, Cycle of Water,  
Cycle of Water,

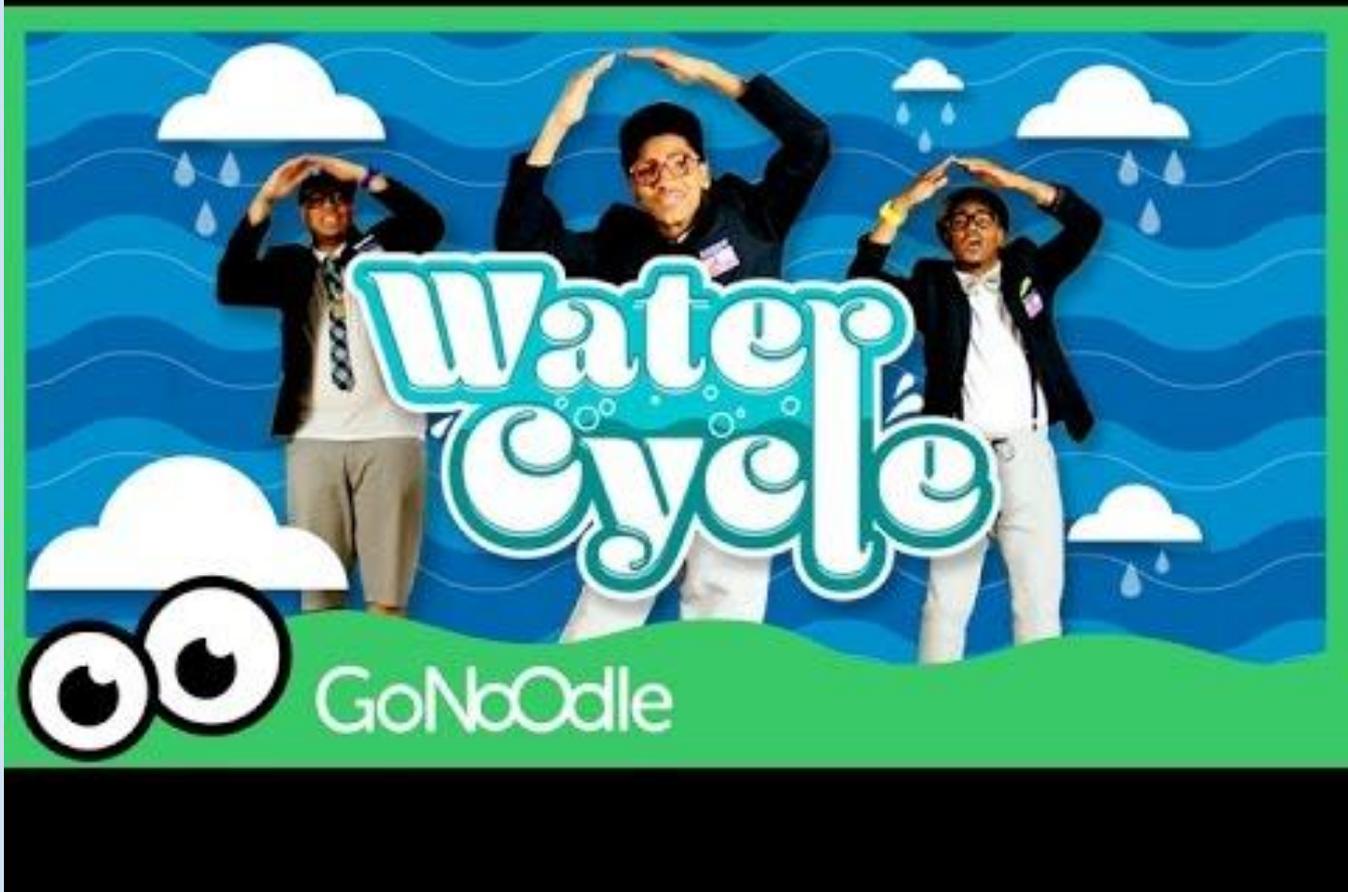


Grab somebody you know and tell them Hey!  
Water droplets are in flight  
Water droplets are in flight  
Water droplets are in flight  
Water droplets are in flight

## IV. Earth's Atmosphere is unique

It helps control how much of the Sun's radiation is absorbed on Earth.

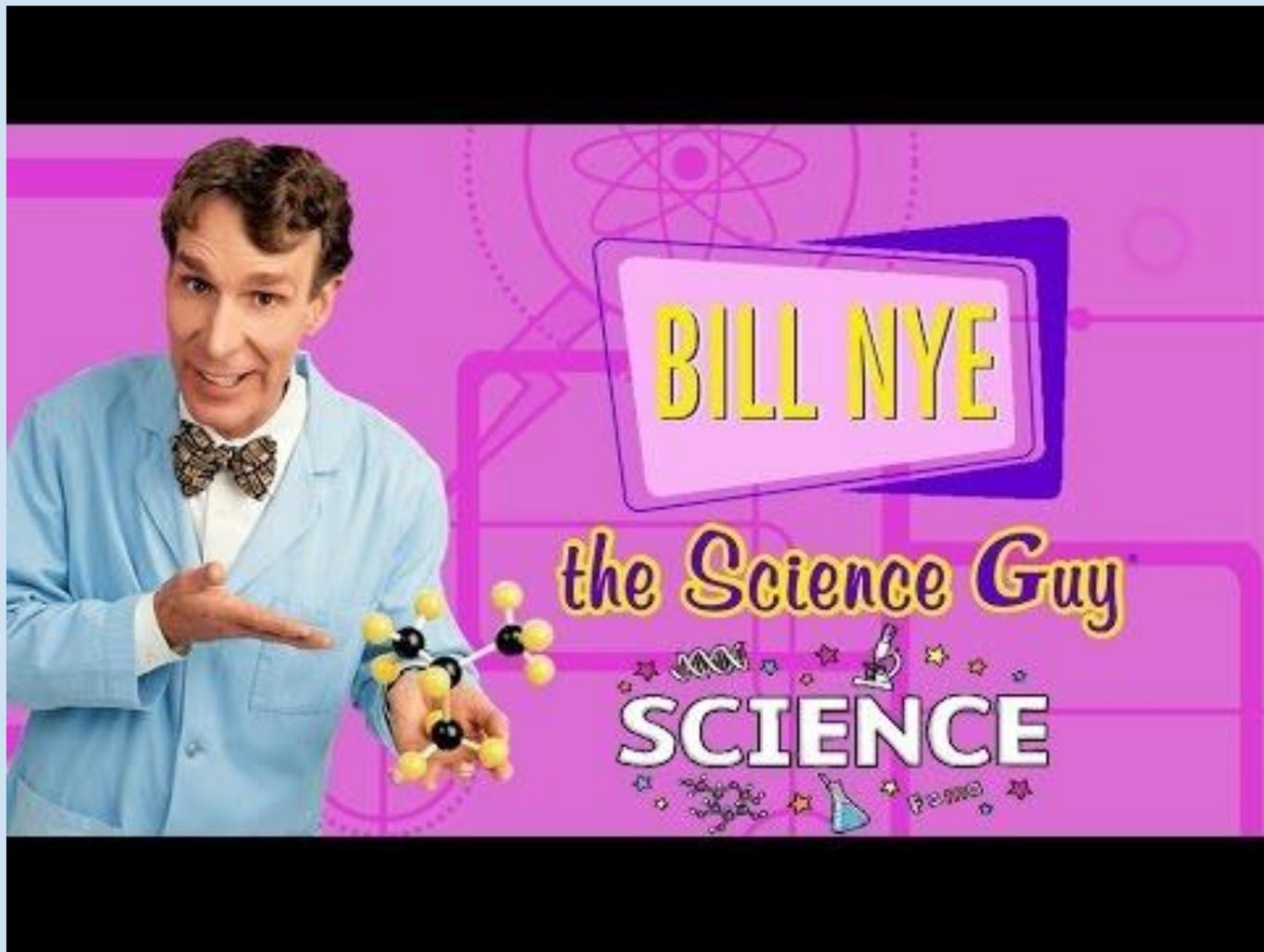




# Water Cycle



GoNoOdle



**BILL NYE**

*the Science Guy*

**SCIENCE**