6th Unit 4: Weather and Climate part 2

*Lesson 4: How can humans protect themselves from severe weather?*

*Vocab: thunderstorms, lightning, thunder, hurricane, storm surge, tornado*

Thunderstorm- an intense local storm that forms strong wind, heavy rain, lightning, thunder, and sometimes hail

\*severe weather is weather that can cause property damage and sometimes death

* Form from rising air
  + Get their energy from warm humid air
  + Warm air mixes with cool air high in the atmo. and cool very fast creates storm
    - Step 1 warm air rises forms a cumulus cloud
    - Step 2 ice crystals form and fall pulling cool air down with them
    - Step 3 the cold air moving down (downdraft) stops more warm humid air from rising ending the storm
  + Lightning is a discharge of electrical energy
    - Electric discharge between positively and negatively charged areas
  + Thunder is the sound caused of rapidly expanding air
    - Heated by the energy of the lightning
    - Air expands fast and moves at the speed of sound
    - Lighting travels faster (sp. Of light) so we experience it first

Hurricanes- a tropical low-pressure system w/ winds blowing @ speeds of 119 k/h

* Over the pacific ocean its called a typhoon
* Over the indian ocean its called a cyclone
* Over the atlantic ocean its called a hurricane
* Need water to form and grow
  + Thunderstorm over water continues to pick up water and energy (heat)
  + Clouds get pushed up high causing lots of wind
  + If it moves over land or cooler water it will die out
* Can cause extensive damage
  + Wind, heavy rain, maybe tornados
  + Storm surge- a huge mass of water
    - Causes sea level rise and rivers to flood
    - Can be the most destructive part of the storm

Tornado- destructive, rotating column of air that has very high wind and is sometimes funnel shaped

* Form when a thunderstorm meets horizontal wind at a high altitude
* The wind causes the warm rising air to spin
* Most happen in the mid-west (Tornado alley) during the spring and early summer
* Winds can be 400 km/hr
* Injuries happen when people are hit w/ flying objects

Be PREPARED!!!!!!!

* Plan ahead and collect supplies
  + Water, battery operated radio, flashlight, clothing, batteries, canned food, blankets, generator, plywood/shutters, gas, etc.
* Listen for updates
  + Watch- conditions are good for severe weather
  + Warning- storm spotted or expected w/ in 24 hours
* Follow safety rules and guideline

Tornado

* Get inside; no windows, inside room
* Protect your head
* Get low

Hurricanes

* Leave the area
* Go to a shelter or board windows
* Be careful after the storm watch for power lines and flooding

Thunderstorms

* Seek shelter for 30 min after the last bolt
* Stay away from tall or metal objects and windows
* Get in a car the rubber tires are an insulator

The sun

* Avoid UV rays and sunburn w/ sunscreen and protective clothing
* Limit time in sun; 30 spf protect you for about an hour
* Avoid overheating by drinking lots of water and limiting time in the sun

*Lesson 5: What tools do we use to predict weather?*

*Vocab: weather forecasting, meteorology, station model*

Weather forecasting- analysis of data to predict future weather conditions

* Study to the elements of weather and atmosphere is called meteorology
* 8 things observed:
  + Air temp., humidity, wind direction, wind speed, clouds, precipitation, atmo. pressure, and visibility
  + More data better prediction

Data collection

* Ground stations
  + Collect from lower atmo. At places like airports
* RADAR
  + Uses radio waves and bounces them off the clouds
  + Heavy rain bounces back (reflects) a lot of the radio waves
* Balloons and aircraft
  + Studies the middle atmosphere
  + Radiosonde sends info. to a ground station
* satellites
  + Track things happening like hurricanes

Reading weather maps

* Station model- is a set of symbols that represent the weather at a particular weather station
  + Gives you wind speed, cloud coverage, temp. and dew point, wind direction
* Surface weather map- shows locations of fronts, air pressure, and precipitation on a map
  + Air pressure is shown with isobars, or lines that connect area of the same pressure
  + The center of the isobar circles is marked with a H for high and L for low pressure
  + Colored lines show fronts and the direction they are moving
* Upper-air chart- based on weather balloon data help show if weather systems will form, pressure, and location of jet streams
  + Pilots use to find turbulence and flight paths

Types of forecasts

* Short term= 0-3 days
* Medium term= 3-7 days
* Long range= weeks to months
* The smaller the range the better the prediction
* Long range usually gives info like warmer than normal or drier than last year