

CHAPTER 8: Winds, Storms and Cyclones

- Cyclones and storms are natural disaster which causes a loss of property and life.
- Wind: moving air is called wind.
- AIR PRESSURE:
 - 1.) The air around us exerts a pressure created by tree leaves, banners etc., when the wind is blowing.
 - 2.) This air pressure is created on all the objects in the surroundings.

- HIGH SPEED WINDS REDUCE AIR PRESSURE
 - The increase in wind speed is directly related to decrease or reduction in air pressure.
 - As the wind blows, it moves from area of high pressure to area of low pressure.
 - If there is larger difference in pressure, it helps the air to move too quickly.
- AIR EXPANDS ON HEATING
 - Whenever air is heated, it expands as the molecules get even further away from one another.
 - Due to this reason air requires more space and this becomes lighter.
 - From this one can conclude that in warmer air is lighter as compared to colder air.
 - E.g. ,smoke rises up higher in the environment.
 - When air pressure is lower, the air in that area rises up and the cold air enters the same area.
 - Convection of air is created due to this phenomenon.
- GENERATION OF WIND CURRENTS
 - The surface of the earth has uneven heating which generates air currents.
 - a.) Uneven heating between the equator and poles.**
 - Equator receives the most amount of heat from the sun and is hotter as compared to other regions.
 - Due to this air becomes lighter and rises up. The cold air from the north then enters the space created by the warm air rising up.
 - At poles, the air is very cold as compared to the adjoining area. The warm air in the adjoining area rises up and the cold air from the poles moves into the warmer area.
 - Rotation of earth allows change of direction of air.
 - b.) Uneven heating of land and water.**
 - In summer the land gets heated up quickly, so the air on the land also gets heated up and rises higher. Hence the ocean breeze moves from sea toward the land. This is the monsoon breeze which brings in the rain.
 - In winter the direction of breeze gets retreated and flows from land to the ocean.
 - Rain can have disastrous consequences as well.

- THUNDERSTORMS AND CYCLONES:
 - In area where the climate is hot and humid like in the tropics leads to the development of thunderstorm.
 - As the temperature is increasing the wind which is rising up also carries droplets of water with it.

- These water droplets condense when the temperature drops and falls down.
- The movement of the water falling downwards and air rising up creates friction and generates lightening and sound.
- This is called the thunderstorm.
- Precautions to be taken during thunderstorm:
 - 1.) If you are in open space stay away from large trees.
 - 2.) Do not lie on the grounds
 - 3.) Do not use a metallic umbrella
 - 4.) Do not stay near the windows.
 - 5.) Cars and buses are a good place

- Vapors are formed when water is heated and condenses into liquid form when it is cooled.
- Structure of a cyclone:
 - 1) The center of cyclone is called the cyclones eye.
 - 2) When air is aggressively rotating at a very high speed of greater than 10 to 15 km a cyclone is generated.
 - 3) The eye has a diameter of 10 to 30 km where no clouds or heavy air is present.
 - 4) It is a region free of clouds and has lightwinds.
 - 5) Surrounding the eye, there is a region in which cloud are present for 150 km in size.
 - 6) This area has high wind speed of around 150–250km/hand causes heavyrain.
 - 7) Away from this region the windspeed gradually decreases.
 - 8) It is a complex process, after the heat given out after formation of raindrops which increases the pressure.
 - 9) As the cooler air takes its place the cycle is repeated.
 - 10) The process stops with the decrease in pressure and the high-speed wind revolves around it.
 - 11) Wind speed, direction, temperature and humidity contribute to the development of cyclones.

- DESTRUCTION CAUSED BY CYCLONES
 - Cyclones can be very destructive.
 - Cyclones produce large water waves even if the distance is more than thousand km away.
 - The eye of the cyclone has significantly low pressure, which draws water in the center to a height up to 3–12 meters.
 - Due to this, seawater enters the costal areas and causes loss of property, crops and life.
 - High speed wind and heavy rainfall worsens the situations.
 - Cyclone are also called as hurricanes or typhoon or tornados.
 - The tornado sucks dusts, debris to the center near its base and throws it out toward the top.

- EFFECTIVE SAFETYMEASURES:
 - Follow the weather and warning forecast, TV, radio, or newspapers.
 - During the time of emergency, good communication with the government and other protective services is essential.
 - Be active during the cyclone, in moving to the cyclone shelters incyclone prone areas.

- Store water for emergency
- Stay away from the wet power supply lines.
- Cooperate with your neighbors, friends and the emergency helping squads.

➤ Conclusion:

- Wind speed play's role in the formation of storms or cyclones
- The device that measures the windspeed is called an anemometer
- Cyclone can cause loss of property and life.