Winds, Storms and Cyclones

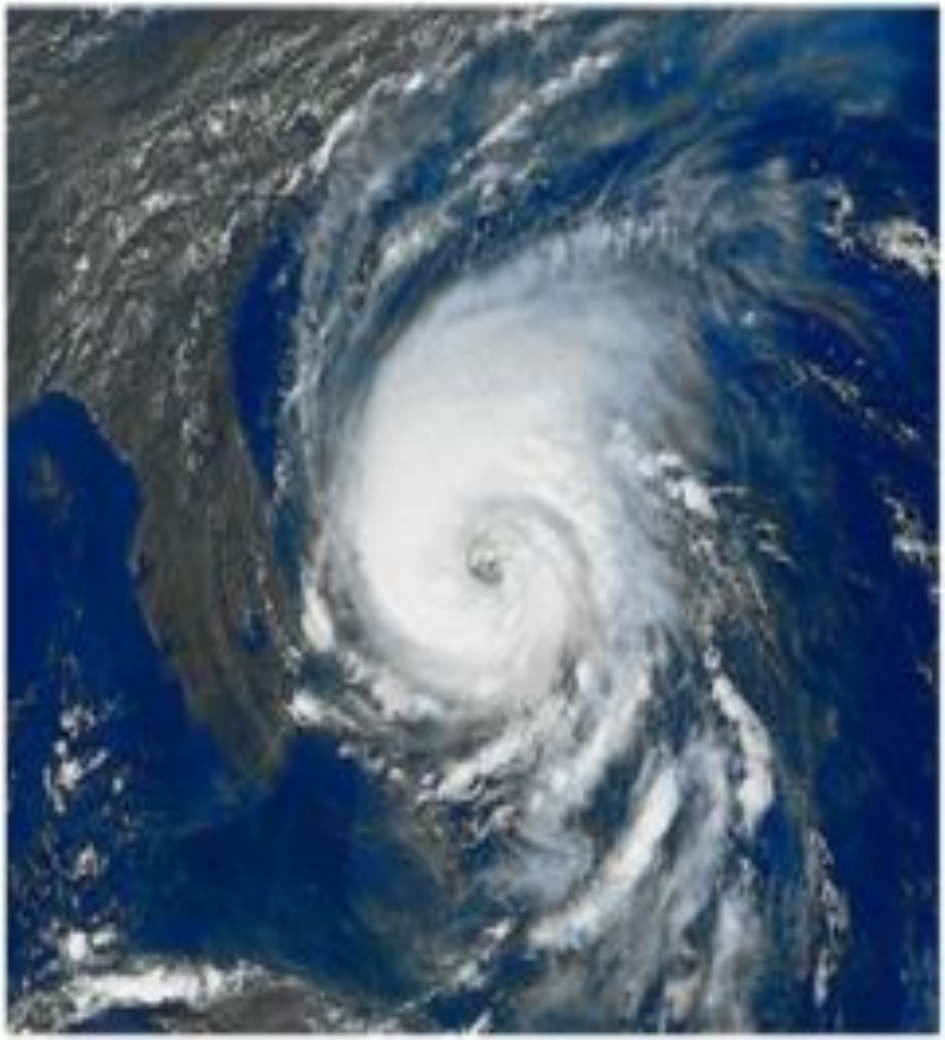
CHAPTER-8

Wind

Moving air is called Wind.

- **Since air is a mixture of gases, wind is the flow of gases on a large scale.**
- **Winds are caused by heating difference between different parts of the world and the movement of the earth.**

- **Winds can be of classified on the basis of:**
  - **Duration: Long and Short**
  - **Strength: High, medium and low**
  - **Speed: Slow and Fast**
- **High strength winds for longer duration, like cyclone or hurricanes, may cause hazardous effects.**



Twister/Tornado/Cyclone/Storm

Applications of wind include Windmills (to generate electricity), fan, flying kite, Hair Dryer etc.

Pressure exerted by Air -

Atmospheric pressure is the pressure exerted by the weight of air in the atmosphere of Earth (or that of another planet).

- **All gases in the atmosphere exert pressure on each other, the earth and the objects on earth including humans.**
- **The pressure exerted on a human body by atmosphere is compensated by the pressure exerted by the gases inside human body.**

- **The force or the pressure exerted by air/wind makes loose paper, hair, flags, leaves of trees**
- **Manual tasks like riding bicycle or rowing boat against the wind requires more muscular energy, than normal, due to the opposing pressure exerted by wind.Similarly, If riding and rowing are being done in the direction of wind, then these tasks require less muscular energy than normal.**

<u>Examples of pressure being exerted by Air</u> -

- **Distortion of tin can or bottle -**
  - **Closed Tin can half filled with boiling water.**
  - **The can will have hot water as well as steam.**
  - **Now, pouring cold water will make the steam condense and become water.**
  - **This reduces air inside the can.**
  - **Since the pressure of air inside can becomes lower than air outside, the can's shape will become distorted.**

Tin can with hot water inside

Distorted Tin can poured with cold/normal water

- **Sucking a straw decreases pressure inside it, this makes the outside atmospheric pressure become higher and the fluid thus goes up through the straw.**
- **Tyre tube bursts when over filled with air due to the fact that the pressure inside the tube becomes higher than the outer atmospheric pressure.**

PLENARY -

Question:

Name the factor responsible for the increase of speed of wind or I should say cyclones.

Answer:

Factors like wind speed, wind direction, temperature and humidity contribute to the development of cyclones .

ASSESSMENT / EVALUATION -

Q. Paheli kept an empty bottle made of plastic inside a refrigerator. After few hours, when she opened the refrigerator, she found the bottle had collapsed. Explain the possible reason.

A. On cooling the air, contraction of air takes place. The air inside the bottle contracts due to low temperature. Hence, the bottle collapses due to the outside pressure.

Q. The advanced technologies issue the alerts and warnings of unexpected storm. Comment.

A. The technologies that include satellites and radars issue the information of expected storm in advance in the form of cyclone warnings. It is issued in two stages, i.e. a cyclone alert is issued 48 h in advance of any expected storm and cyclone warning is issued 24 h in advance. The message is broadcasted every hour or half hour when a cyclone is nearest the coast.