Natural Disasters

Flood and cyclone

- Lecture Objective:
  - Making students aware about cause, effects and control of flood and cyclone
- Lecture Outcome:
  - Students will learn about the types of floods, causes, effects and control of flood
  - Students will learn about the types of cyclone, causes, effects and management of cyclone

Floods

- The accumulation of a large quantity of water at a place or the presence of more water than can be handled by the drainage of the area is known as flood.
- Types of Floods
  - Flash floods
  - River floods
  - Coastal floods

Floods

- Flash flood
  - Flash floods are defined as those flood events where the rise in water is either during or within a few hours of the rainfall that produces the rise.
- Causes of flash flood
  - Dam failure
  - Sudden snowmelt or thawing of glaciers
  - A sudden release of water by a debris flow or ice jam
  - Steeply-slopped watershed

Flash floods

Floods

- River flood
  - A river flood occurs when a river overspills its banks; that is, when its flow can no longer be contained within its channel.
- Causes of river Floods
  - Heavy rain
  - Snow melt in Spring
  - Deforestation
  - Weather events like cyclones

River flood

Floods

- Coastal floods
  - When a coastal process—such as waves, tides, storm surge, or heavy rainfall from coastal storms—produces that flood, it is called a coastal flood.
- Causes of coastal floods
  - Rising Sea Levels
  - Tsunamis
  - Reclaimed Land

Coastal floods

Floods

- Effects of floods
  - Damage to agricultural crops
  - Damage to life and property
  - Disturbances in transportation
  - Increase in populations of disease vectors and pathogens
  - Loss of biodiversity
  - Economic crisis

Floods

- Control of floods
  - Plantation on slopes
  - Drainage management
  - Flood plain zoning
  - Forecasting

Cyclone

- In northern hemisphere, a cyclone refers to an area of low atmospheric pressure surrounded by a wind system in a counter-clockwise direction.
- Types of cyclone
  - Tropical Cyclones (Hurricanes, Cyclone, Typhoons and Tornadoes)
  - Mesocyclones
  - Extratropical Cyclones
  - Arctic Hurricanes

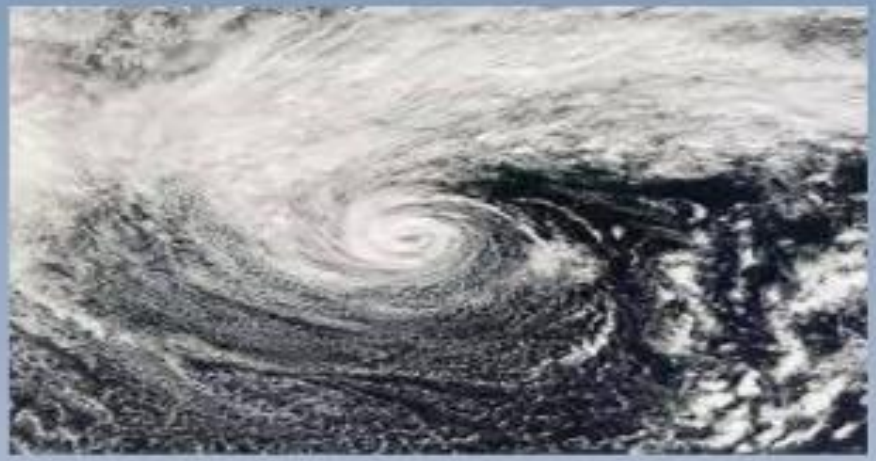
Cyclones	Anti cyclones
It is a low pressure system with surroundings of high pressure.	It is a high pressure system with surroundings of low pressure.
It blows anti clockwise in the Northern Hemisphere.	It blows clockwise in the Northern Hemisphere.
It blows clockwise in the Southern Hemisphere.	It blows anti clockwise in the Southern Hemisphere.
It is associated with cloudy skies, heavy rainfall with stormy winds.	It is associated with clear skies, mild winds and dry conditions.
It can cause great damage to lives and property if precautions are not taken.	The weather is settled and pleasant.

TROPICAL CYCLONES

Tropical cyclones are what most people are familiar with because these are cyclones that occur over the tropical ocean regions. Hurricanes and typhoons are actually types of tropical cyclones, but they have different names so that it's clear where that storm is occurring. Hurricanes are found in the Atlantic and Northeast pacific, typhoons are found in Northwest pacific.

POLAR CYCLONES

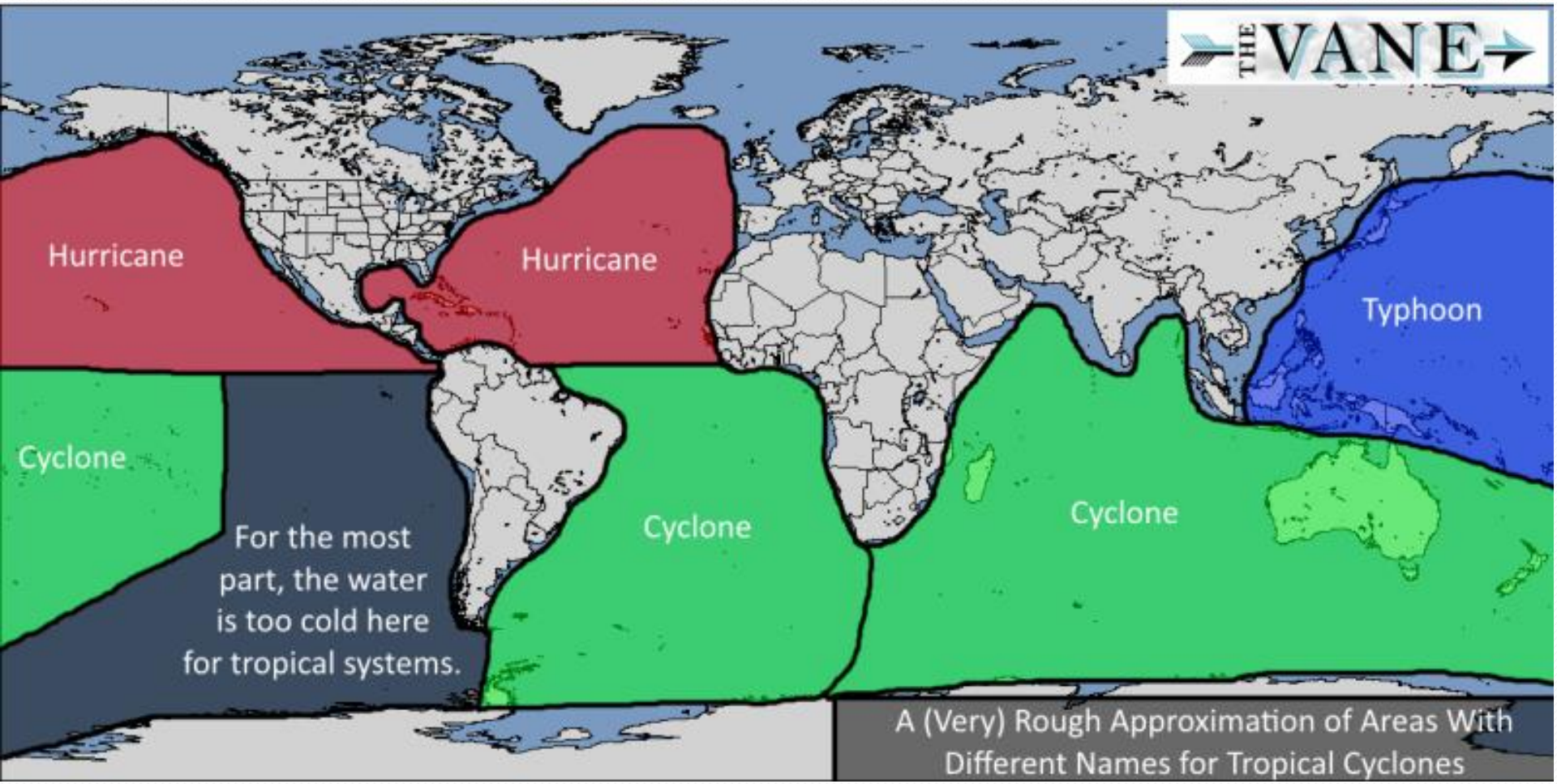
Polar cyclones are cyclones that occur in polar region like Greenland, Siberia and Antarctica. Unlike tropical cyclones, Polar Cyclones are usually stronger in winter months.



MESOCYCLONE

Mesocyclone is a cyclone that occurs when part of a thunderstorm cloud starts to spin, which may eventually lead to a tornado. 'Meso' means 'middle'.

Tropical Cyclones



Tropical Cyclone

Hurricane - Typhoon - Cyclone

What is the difference?

They are essentially the same type of weather phenomenon.
It only depends on WHERE the storm forms and happens.

HURRICANE	Northeast Pacific Ocean and Atlantic Ocean
TYPHOON	Northwest Pacific Ocean
CYCLONE	South Pacific Ocean and Indian Ocean.

THE STORM SPINS

Northern Hemisphere: counter-clockwise / anti-clockwise
Southern Hemisphere: clockwise

Hurricane vs Tornado

HURRICANE

- Forms over water
- Huge: 60-1000 miles across
- Wind speed usually less than 180 mph
- Last up to three weeks
- Several days warning
- Less than 100 tropical cyclones annually

TORNADO

- Forms over land
- Smaller: A few feet up to 2 miles across
- Wind speed up to 300 mph
- Lasts minutes up to a couple hours
- Minutes of warning
- More than 2000 tornado per year globally

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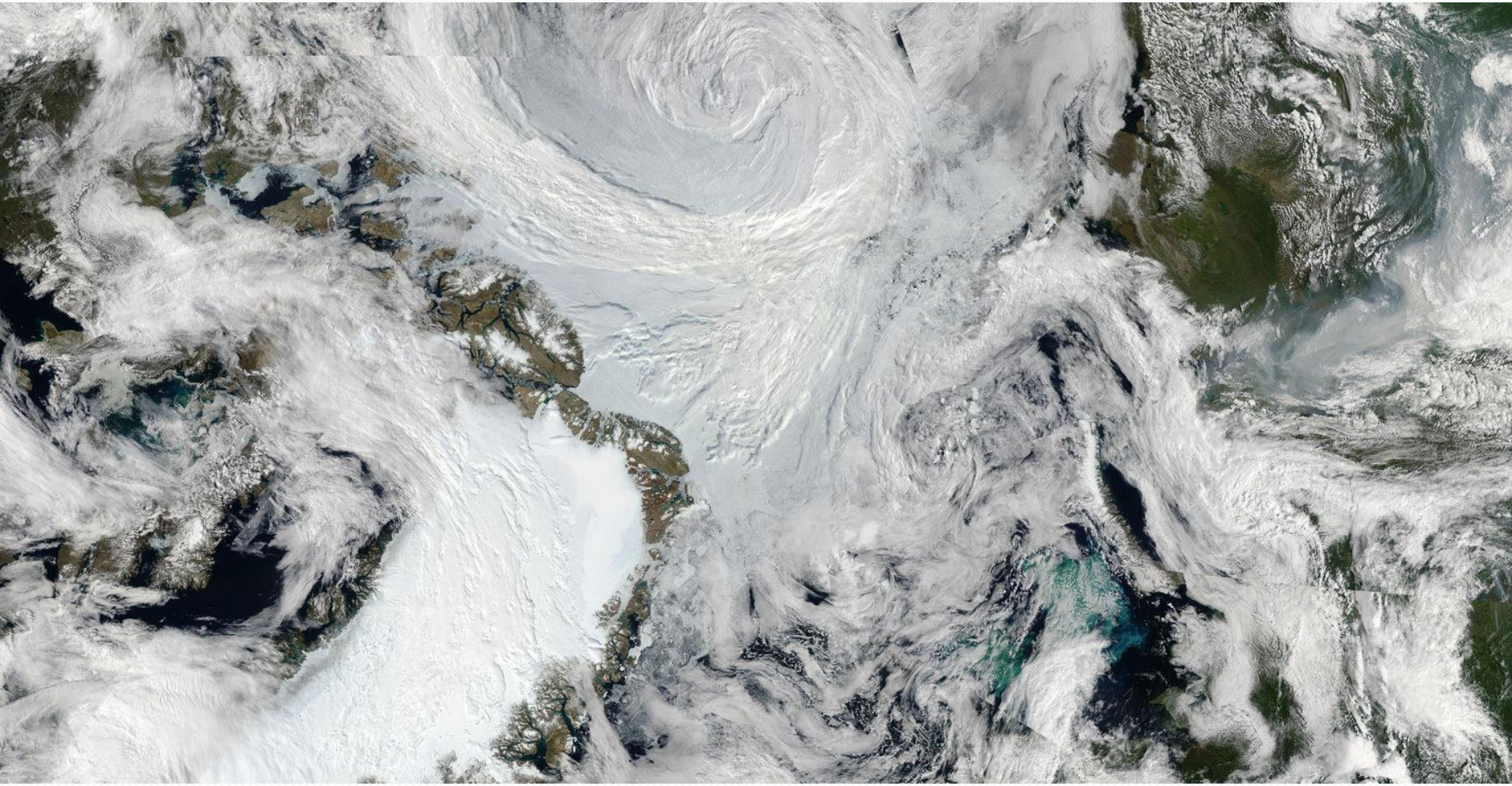
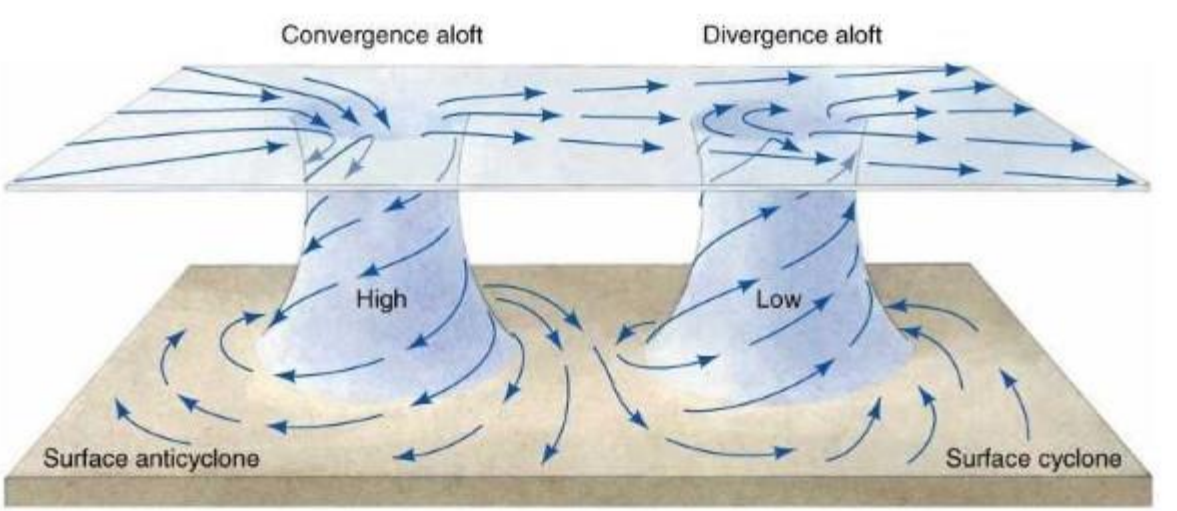
Mesocyclone

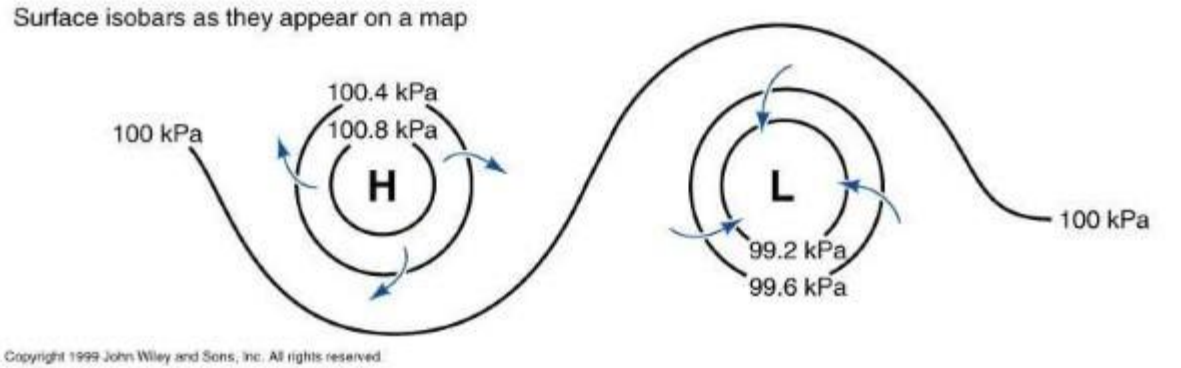
Extratropical Cyclones

Arctic Hurricanes



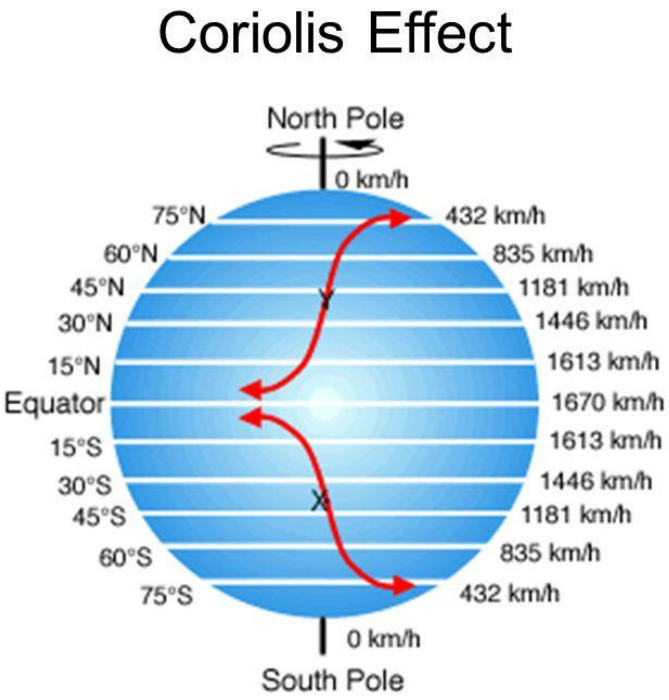
Cyclone and Anticyclone

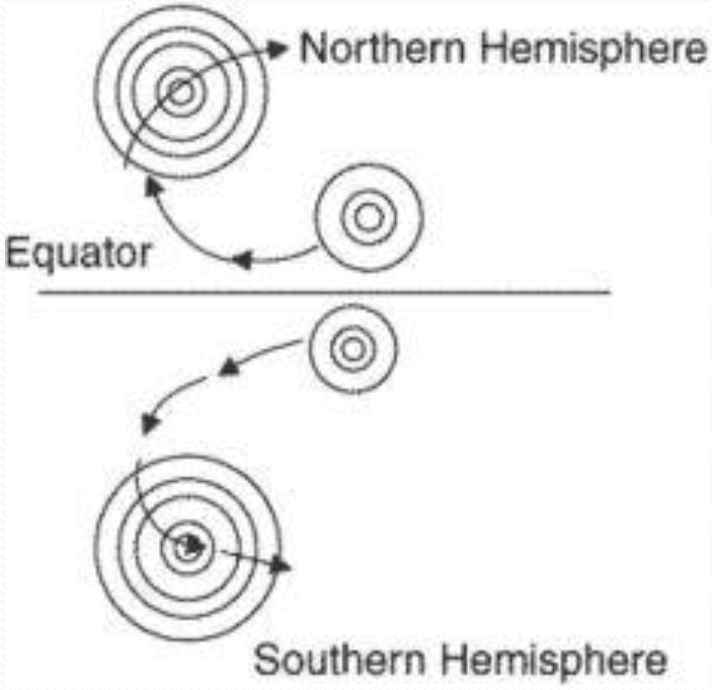




Cyclone and hemispheres

- counterclockwise rotation in the Northern Hemisphere
- clockwise rotation in the Southern Hemisphere





Cyclones

- Effects of Cyclones
  - They damage installations, communication systems, trees, etc.
  - Results in loss of life and property
  - They may cause river floods and submergence of low-lying areas
- Management of Cyclones
  - Proper construction of houses and Construction of cyclone shelters in the cyclone-prone areas
  - Relief tasks
  - Development of warning systems
  - Community preparedness at all levels to deal with emergency situations

EFFECTS OF CYCLONES

- Cyclones cause heavy rainfall and landslides.

- They cause lot of harm to towns and villages, causing severe damage kuccha houses. Coastal businesses like shipyards and oil wells are destroyers and cause many deaths in the ocean and money can also lost if the ship is carrying expensive cargo.

- They harm the ecosystem of the surrounding regions.

- Civic facilities are disturbed.

- Agricultural land is severely affected, especially in terms of water supply and soil erosion.

- It cause harm to human, plant and animal life.

- Communications systems are badly affected due to cyclones.

- Cyclones are the upper ocean heat content, the vertical shear of the environment wind, interaction with other weather systems, impact of dry air and landfall.

- Social costs includes, loss of life and livelihood, loss of crops leading to food scarcity.

- Education and other services destroyed, increased burden government to rebuild areas affected, and meant for other projects must now be used repair the damage done by the cyclones.

- Cyclones can make the sewage pipes block up and stop working and sewage can split everywhere which also causes disease.