

Floods and Management

By:

Dr. Parveen Kumar

Asst. Professor

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Introduction

- **Floods** are natural phenomena – Water related disaster.
- **Flood** - a natural event that can have far reaching effects on people and the environment. **Flood is too much water in the ‘wrong’ place!**
- **India** - most common and widespread of all natural disasters - **40 million hectares** of land affected (NFC report).
- "**India Flood Prone Areas**" - West Bengal, Orissa, Andhra Pradesh, Kerala, Assam, Bihar, Gujrat, Uttar Pradesh, Haryana and Punjab (**12.5%** area of the country as per GSI).
- **South West Monsoon** rains causes rivers like **Brahmaputra, Ganga, Yamuna** etc. to swell their banks to cause floods.

Map of Top Ten Flood Prone Areas In India



Causes of Floods

Physical	Human
Intense or prolonged precipitation	Deforestation
Snow/ ice melt	Unsustainable farming
Landslides	Urbanization
Volcanic eruptions	Poor dam construction
Storm surges	Climate change

A flood is caused by a combination of **heavy rainfall** causing river / oceans to **over flow** their banks, and can happen at **any time of the year**.



Types of Flood

- **Flash flood** – Cloud burst
- **River flood** – overflow of river
- **Coastal flood** – Tsunami & Tides
- **Urban flood** – Poor drainage
- **Catastrophic flood** – affect large area



Flash



Coastal



Japan Tsunami

Effects of Flood

- **Primary effects** – direct effects
 - Property damage
 - Building damage
 - Rail, road, and air service damage
 - Bridges damage
 - Communication breakdown
 - Electricity supply cut off
 - Crop damage
- **Secondary effects** – after effects
 - Food scarcity
 - Water contamination
 - Water born diseases
 - Snake bite
 - Electricity and fire hazard
 - Economic and social disruption
- **Tertiary effects** – long term impacts
 - Psychological impacts due to loss of life and property



Benefits of Floods

- **Recharging** of ground water.
- Make soil more **fertile** and provide **nutrients**.
- Flood waters provide **water resources** in arid and **semi-arid** regions.
- Freshwater floods play an important role in **maintaining ecosystems** in rivers.
- Flooding leads to **improved fisheries** for a few years.
- Hydropower: **renewable source of energy**.

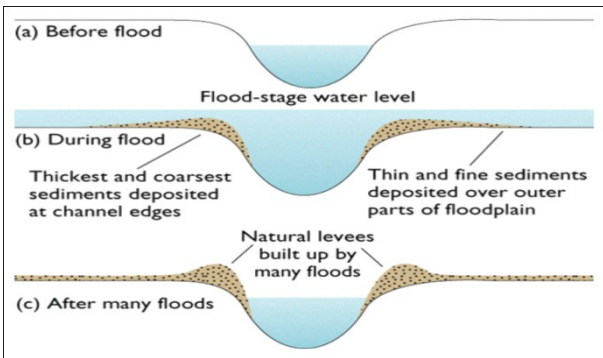
Flood Management

- **Structural measures:**

- **Defenses** - levees, bunds, reservoirs, and weirs - river flood.
- **Emergency measures** - sandbags or portable inflatable tubes.
- **Coastal defenses** - sea walls, beach nourishment, and barrier islands.
- **Flood resistant design**
- **Infrastructure**
- **Deforestation** - reduce
- **Afforestation** - river flood plain and coastal areas.

- **Non-structural Measures:**

- Public awareness
- Training
- Flood forecasting
- Evacuation
- Rescue



LEVEES



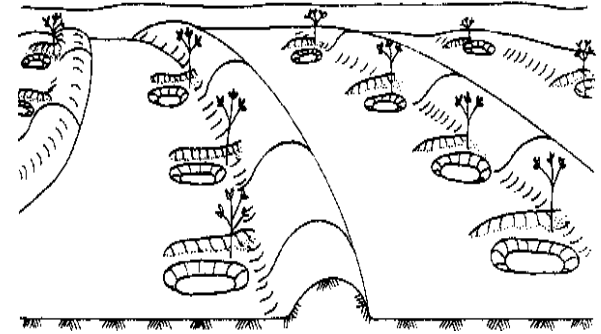
WEIR



BEACH NOURISHMENT

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BUNDS



SEA WALL



BARRIER ISLAND

Preparing for a Flood

- Contact the local **geologist** to find out if your **home** is located in a flash-flood-prone area.
- Learn about **emergency plans**, warning signals, **evacuation routes**, and locations of emergency **shelters**.
- "**Family contact**" in case your family is separated.
- **Home hazards** e.g. turn off electrical power, gas and water supplies before you evacuate.
- **Fire extinguisher**
- Drains and sewer - **backflow valves** to prevent floodwaters from entering.

Emergency Supplies

- Water and non-perishable **food - 3-5 day** supply.
- **First aid kit** and prescription medicines.
- Battery-powered **radio, flashlights**, and extra batteries.
- **Sleeping bags** or extra blankets.
- Water-purifying supplies e.g. **chlorine** or **iodine** tablets.
- **Baby food** and diapers.
- Personal **hygiene supplies** e.g. soap, toothpaste etc.
- **Emergency kit for car** with food, maps, tools, fire extinguisher, sleeping bags, etc.
- **Rubber boots** and waterproof gloves.
- **Insect repellent**, screens, or long-sleeved clothing for protection from mosquitoes.

Further Readings

1. [Flood, https://en.wikipedia.org/wiki/Flood](https://en.wikipedia.org/wiki/Flood)
2. Floods, <https://www.english-online.at/geography/floods/floods-and-flooding.htm>.
3. Flooding, <http://www.watersafetykids.co.uk/pdfs/Flooding.pdf>.
4. Floods 101 | National Geographic, <https://www.youtube.com/watch?v=4PXj7bOD7IY>
5. Kerala Floods - The Complete Picture, <https://www.youtube.com/watch?v=-kHEI76Bnc>
6. Kerala Floods: A natural calamity or a man-made disaster?, <https://www.youtube.com/watch?v=TZGPbfI280>.

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Thank you for attention!!!