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a green concern

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FLOODS

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FROM EDITOR'S DESK

Rivers...an essential part of an ecosystem....necessary for survival of every life-form..flowing in a calm way...meeting ocean at the end..

BUT...in recent times we've witnessed different avatars of this river...some creating devastating effects...These various embodiments of rivers have been happening since ages, but, they are happening at an alarming rate in current situation of climate change..

This issue of Greenergy magazine makes you aware of such a devastating embodiment of rivers...that is FLOODS....So let's get well acquainted with what are floods, what causes floods, measures to be taken, and all about it..!!

- MS. ARATI PATIL

GREEN COVER ARTICLES

1. RIVERS AND FLOODS

- VEDANTHI JOSHI

2. WHAT ARE DIFFERENT FLOODS ?

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3. HEART-BREAKING FLOODS IN 2021

- PRANITA HERWADE-KUMBHOJKAR



RIVERS AND FLOODS

- Rivers
- A river is referred to as a natural flowing water resource, containing freshwater, and eventually merges with an ocean, sea or other rivers.
- Small rivers can also be known as streams, rivulet, brook, creek, rill.

The single raindrop never feels responsible for the flood

Floods are the most common natural severe weather disaster. It is referred to as an overflow of water that submerges in a dryland area

Floods are one of the serious natural hazards that has large consequences on life and nature. They destroy human settlements and the environment also, loss of human life and animals, destruction of crops, loss of livestock.



- Types of rivers

According to biotic classification:

1. Crenon
2. Rhithron
3. Potamon

According to topographical classification:

1. Bedrock rivers
2. Alluvial rivers

According to subsurface rivers:

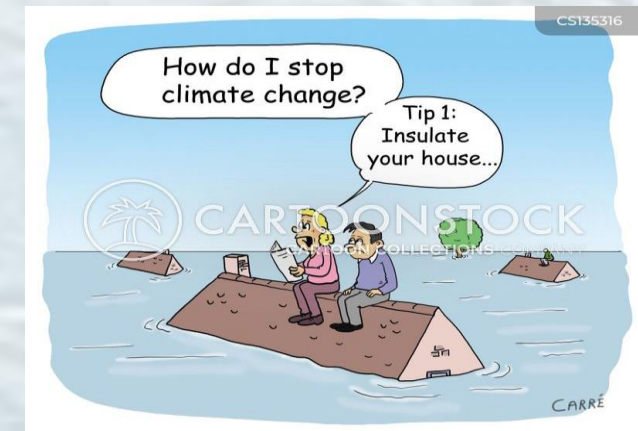
1. Subterranean
2. Subglacial

According to permanence of flow:

1. Perennial
2. Ephemeral

According to WWF, 'If you thought that floods are natural disasters that happened only in poorer continents like Africa and Asia, then you are wrong. First, not all floods are caused by nature. They are man-made too. And second, even countries like the USA and the UK get floods that cause huge losses to life and property.'

Floods can be prevented by introducing new innovative techniques by the government and individually into practice.



- **Types of rivers**

According to stream order classification of rivers:

1. Fleuve
2. Riviere

Some measures to prevent flooding

1. **Creating a 'SPONGE CITY':** This can be achieved by using irrigating gardens, urban farms, recharging depleted aquifers, replacing or replenishing the water used to flush toilets, and processing it so that it can be clean enough to use as drinking water.
2. **Green roofs can help absorb rainwater and mitigate flooding.**



- 3. Creating flood plains and overflow areas for flowing rivers and streams. This will retain and absorb water, thus, preventing nearby towns from flooding.**
- 4. Separating rainwater from the sewer system to enhance the water management system and protect the sewer system from damage.**
- 5. Sustainable drainage systems in the city or town: Introducing permeable pavement, sidewalks and gardens.**
- 6. Proper Maintenance or cleaning of a sewer system.**



Some measures to take during floods

- 1. During this event, focus on the safety of yourself and your family. Be prepared to act quickly and contact emergency services.**
- 2. Check in with other people in your household - if they are not at home make sure they are somewhere safe.**
- 3. Gather essential items together either upstairs or in a high place.**
- 4. Turn off gas, electricity and water supplies when flood water is about to enter your home.**
- 5. Move your family and pets upstairs, or to a high place with a means of escape.**
- 6. Turn off gas, electricity and water supplies when flood water is about to enter your home.**
- 7. Keep listening to local radio for updates or call flood helpline services. Flood water can rise quickly, stay calm and reassure those around you.**



DON'T LEAVE THE NEEDY ANIMALS BEHIND DURING FLOODS. DO HELP THEM, THEY NEED US.

BE KIND TO ALL KIND



- MS. VEDANTHI JOSHI
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WHAT ARE DIFFERENT FLOODS ?

We may think that flood is an straightforward term, it rains and then the water has. Nowhere to go. However, its not quiet straightforward.

There are several different types of floods. Each one bears a different impact in terms of how it occurs, how it is forecast, the damage it causes, and type of protection you need.

1. Fluvial floods (river floods)

A fluvial, or river flood, occurs when the water level in a river, lake or stream rises and overflows onto the surrounding banks, shores and neighboring land. The water level rise could be due to extreme rainfall from tropical storm systems, long-lasting thunderstorms, combined rainfall and snowmelt, and ice jams.

Though river floods can usually be predicted ahead of time, the potential for unexpected major property damage is great if a dam or dike breaks. However, most of the causes of river floods often stem from storms that allow for enough warning for those in surrounding areas to evacuate safely

2. Pluvial floods (flash floods and surface water)

Pluvial flooding can happen in any location, urban or rural; even in areas with no water bodies in the vicinity. A pluvial flood occurs when an extreme rainfall event creates a flood independent of an overflowing water body.

There are two common types of pluvial flooding:

- i. Surface water floods - occurs when an urban drainage system is overwhelmed and water flows out into streets and nearby structures. the level of water is usually shallow (rarely more than 1 meter deep). It occurs gradually, which provides people time to move to safe locations, and It creates no immediate threat to lives but may cause significant economic damage.**
- ii. Flash floods – Flash flooding begins within 6 hours of the start of heavy rainfall, and is often caused by severe thunderstorms, hurricanes, tropical storms or other weather patterns. It can also be the result of a dam or levee breaking or a mudslide. Urban areas are more prone to flash floods than suburban or rural areas, and the damage is likely to be greater with less soil to soak up the water. Flash floods can be powerful enough to move boulders, pull out trees, destroy bridges, damage homes and trigger mudslides. Most flood-related deaths are the result of flash foods.**

3. Coastal flood (storm surge)

Heavy storms or other extreme weather conditions combined with high tides can cause sea levels to rise above normal, force sea water to the land and cause coastal flooding. Storm surge is created when high winds from a windstorm force water onshore — this is the leading cause of coastal flooding and often the greatest threat associated with a windstorm. The effects increase depending on the tide - windstorms that occur during high tide result in devastating storm surge floods. In this type of flood, water overwhelms low-lying land and often causes devastating loss of life and property.

No matter the type of flood, the damage that can happen to your home can be severe. Each home flooding situation is different and requires an expert to know the correct steps that need to be taken and how to best recover from the damage.

- MS. BAKSHISH Z.

THE MAIN TYPES OF FLOODS



HEART-BREAKING FLOODS OF 2021

As climate change is accelerating, our atmospheric conditions are becoming extremely dynamic. The frequency of extreme weather conditions, such as heavy rainfall, flood, drought, cyclones, and so on, has increased in the past few years. Recently, the world experienced one of the dangerous flood situations, one in Germany and another in Uttarakhand, India. Let's understand the reasons, situations, and consequences of these floods in the article below



Uttarakhand Flood 2021:

On February 07, 2021, Uttarakhand state experienced a sudden flood in the middle of the day in the Dhaul Ganga, Rishi Ganga, and Alaknanda rivers. The high mountain areas were triggered with large-scale devastation as all three rivers are intricately linked tributaries of the Ganga.

A portion of the Nanda Devi glacier burst caused the release of the water trapped behind the ice. It caused an avalanche that immediately turned into flash floods in Chamoli district.

Two power project plants, NTPC's Tapovan-Vishnugad hydel project and the Rishi Ganga Hydel Project, were damaged extensively. About 204 labourers are missing and few of them were trapped in tunnels as water rushed in suddenly

The flash floods washed away the Dhauliganga Dam hitting hardest to the Chamoli district. Uttarakhand Police reports that a bridge in the Tapovan area is connected to 13 villages; that bridge was washed away in the flood. Some of the most severely hit places by the floods include Rini, Joshimath, Tapovan Vishnugad Hydropower Plant, Nanda Devi National Park, and Sridhar. Authorities evacuated many villages to empty two dams farther down the river to control and stop the floodwaters to reach the towns of Rishikesh and Haridwar. It required three National Disaster Response Force (NDRF) teams and two C-130J Super Hercules to carry out the rescue mission.

BBC News reports four scientists from the Wadia Institute of Himalayan Geology, Dehradun, India flew over the site in a helicopter after the evidence. They took photographs and other data to understand the reasons behind the disaster. They believe that the hanging glacier that plunged into the Rishiganga basin was attached to a subsidiary peak, Raunthi, just below Nanda Ghunti. The director of Wadia Institute, Dr Kalachand Sain states that climate change is the major factor in the rapid freezing and thawing of ice causing glacier fractures. The study was confirmed by the International Charter 'Space and Major Disasters' published in June 2021 and declared a large rock and ice avalanche caused the disaster. This result was based on seismic records, earth observation satellites, numerical model results and eyewitness videos.



Germany Flood 2021:

In July 2021, between July 12 and 15, heavy rains caused disastrous floods across western Germany. The states of North Rhine-Westphalia and Rhineland-Palatinate were hard hit along with neighbouring countries of Belgium and the Netherlands. Small streams and rivers were turned into torrential currents. Dams were threatened to break, electricity and cellphone networks were shut down and some of the villages were entirely destroyed. It is the region's worst natural catastrophe in recent generations that killed at least 220 people in Germany.



Scientists who studied the reasons behind this event claim that it is 1.2 to 9 times more likely that the event is due to human-caused climate change. 39 scientists and researchers studies with the World Weather Attribution (WWA) project found that the most extreme rain was a once-in-400-year event (referring to the region hit by these floods). The study claims that climate change has increased the intensity of daily extreme rainfall by 3 to 19 percent. The weather records and computer simulations compared today's picture tell that the world is 1.2 degree warmer than prehistoric times (late 1800s). If the Earth gets more warmer than the frequency and intensity of such rain events will increase by 0.8 to 6 percent in a single day, increasing the possibility of such events by 1.2 to 1.4 times than current possibilities.

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GREEN TOONS



GREEN-O-PEDIA

Did You Know That?

1. The Congo River is the world's deepest river with measured depths in excess of 220 meters (720 feet)
2. Ganges river is known as National River of India.
3. Onyx River: Despite being only 32 kilometers (20 miles) in length it is the longest river in Antarctica.
4. Rio Negro: It is a unique river for its unusual color – black.



5. Caño Cristales is a Colombian river. The river is called the “River of Five Colors” or the “Liquid Rainbow”, and is referred to as the most beautiful river in the world due to its striking colors.

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