

# Cloudburst in Himachal

written by iasexam.com | 16/08/2023



**Context-** In Himachal Pradesh, more than 50 people died in accidents related to heavy rains in 24 hours.

## Key Highlights

- A cloudburst is a localized but intense rainstorm.
- Short bursts of very heavy rain in a small geographic area can cause widespread destruction.
- However, not all heavy rains are cloudbursts.
- A cloudburst has a very precise definition.
  - Rainfall of 10 cm or more per hour over an area of about 10 km x 10 km is classified as cloudburst.
  - According to this definition, even 5 cm of rain in the same area within half an hour would be classified as cloudburst.

## How common are cloudbursts?

- Cloudbursts are not uncommon, especially during the monsoon months.
- Most of them occur in the Himalayan states, where the local topology, wind regimes and temperature gradients between the lower and upper atmosphere facilitate the occurrence of such events.

## The result of cloudburst

- Due to the nature of the terrain, heavy rains often cause landslides and flash floods that cause widespread destruction downstream.
- Although these events take place in very small areas that often lack precipitation measuring equipment. But the consequences of these events are not limited to small areas.

## Forecasting of cloudbursts

- The India Meteorological Department forecasts rainfall, but it does not predict the amount of rain – in fact, no meteorological department does.
- Forecasts can include light, heavy or very heavy rain, but meteorologists do not predict exactly how much rain is likely to fall in any one place.
- Forecasts also apply to a relatively large geographic area, usually a region, state, meteorological subdivision, or, at best, a region. Forecasts for smaller areas become increasingly uncertain.
- In theory, it is not impossible to predict the amount of precipitation even for a very small area.
- This requires a very dense network of weather instruments and computing capabilities that seem impossible with current technology. Therefore, certain clouds cannot be predicted.

## Are cloudburst incidents increasing?

- The long-term trend does not indicate that cloudbursts as defined by the IMD are increasing.
- But extreme rainfall events, like other extreme weather events, are increasing – not just in India, but around the world. Although India's total rainfall has not changed significantly, an increasing proportion of rainfall falls within a short period of time.
- This means that wet weather is very wet, alternating with prolonged dry periods even during the rainy season.
- This pattern due to climate change suggests that cloud events may also be increasing.

## What is a landslide and what causes it?

- A landslide is defined as the movement of rock, debris or soil down a slope.
- Landslides are a type of “mass loss”, meaning the downward movement of soil and rock under the direct influence of gravity.
- Landslides occur mainly in mountainous terrains with favorable soil, rock, geology and slope conditions.
- Natural causes that trigger it are heavy rains, earthquakes, melting snow and landslides caused by floods.
- Landslides can also be caused by anthropogenic activities such as excavation, felling of hills and trees, overdevelopment of infrastructure and overgrazing by livestock.
- Landslides caused by rainfall are more common in India.

## How prone is India to landslides?

- India is considered to be among the top five countries in the world.
- India reports at least one landslide death per 100 square kilometers per year.
- Variability in rainfall patterns is the biggest cause of landslides in the country and the Himalayas and Western Ghats remain highly vulnerable.
- Excluding snow-covered areas, approximately 12.6% of the country's geographical land area (0.42 million square kilometers) is prone to landslides.
  - Up to 66.5% of landslides originate from the Northwest Himalayas.
  - About 18.8% of the northeastern Himalayas and
  - About 14.7% of the Western Ghats.

## What causes heavy rains in Himachal, Uttarakhand?

- The heavy rains in Himachal Pradesh and Uttarakhand are attributed to the northward movement of the monsoon trough and its interaction with a weak western disturbance.
- A monsoon depression is an extended area of low pressure that extends from the so-called warm area (low pressure over the sea) over Pakistan to the top of the Bay of Bengal region (Odisha, parts of West Bengal and Bangladesh).
- According to the Indian Meteorological Department, it is one of the semi-permanent features of the monsoon cycle.
- Currently, the monsoon trough is north of its normal position and lies in the foothills of the Himalayas.
- Monsoon depression gradually shifts southward resulting in reduced rainfall over hills and increased rainfall over east central India.