

# What are cloud burst incidents and are the rising across India?

Writer - Amitabh Sinha (Editor)

The article is related to  
General Studies-Paper-III  
(Environment & Ecology)

Indian Express

22 August, 2022

**A cloudburst is a localised but intense rainfall activity. Short spells of very heavy rainfall over a small geographical area can cause widespread destruction, especially in hilly regions where this phenomenon is the most common.**

Over 20 people have been killed in destruction caused by cloudbursts and flash floods in different parts of Himachal Pradesh and Uttarakhand over the last three days. Isolated areas in these two states have reported heavy rainfall during this time, triggering landslides and flash floods that have disrupted rail and road traffic, and resulted in house and wall collapses.

## **What are cloudbursts?**

A cloudburst is a localised but intense rainfall activity. Short spells of very heavy rainfall over a small geographical area can cause widespread destruction, especially in hilly regions where this phenomenon is the most common.

Not all instances of very heavy rainfall, however, are cloudbursts. A cloudburst has a very specific definition: Rainfall of 10 cm or more in an hour over a roughly 10 km x 10-km area is classified as a cloudburst event. By this definition, 5 cm of rainfall in a half- hour period over the same area would also be categorized as a cloudburst.

To put this in perspective, in a normal year, India, as a whole, receives about 116 cm of rainfall over the entire year. This means if the entire rainfall everywhere in India during a year was spread evenly over its area, the total accumulated water would be 116 cm high. There are, of course, huge geographical variations in rainfall within the country, and some areas receive over 10 times more than that amount in a year. But on average, any place in India can be expected to receive about 116 cm of rain in a year.

During a cloudburst event, a place receives about 10% of this annual rainfall within an hour. It is a worse situation than what Mumbai had experienced on July 26, 2005, which is one of the most extreme instances of rainfall in India in recent years. At that time, Mumbai had received 94 cm of rain over a 24-hour period, resulting in deaths of over 400 people and more than USD 1 billion in economic losses.

## How common are cloudbursts?

Cloudbursts are not uncommon events, particularly during the monsoon months. Most of these happen in the Himalayan states where the local topology, wind systems, and temperature gradients between the lower and upper atmosphere facilitate the occurrence of such events.

However, not every event that is described as a cloudburst is actually, by definition, a cloudburst. That is because these events are highly localized. They take place in very small areas which are often devoid of rainfall measuring instruments. The consequences of these events, however, are not confined to the small areas. Because of the nature of terrain, the heavy rainfall events often trigger landslides and flash floods, causing extensive destruction downstream. This is the reason why every sudden downpour that leads to destruction of life and property in the hilly areas gets described as a “cloudburst”, irrespective of whether the amount of rainfall meets the defining criteria. At the same time, it is also possible that actual cloudburst events in remote locations aren’t recorded.

## Can cloudbursts be forecast?

The India Meteorological Department forecasts rainfall events well in advance, but it does not predict the quantum of rainfall — in fact, no meteorological agency does. The forecasts can be about light, heavy, or very heavy rainfall, but weather scientists do not have the capability to predict exactly how much rain is likely to fall at any given place.

Additionally, the forecasts are for a relatively large geographical area, usually a region, a state, a meteorological sub-division, or at best a district. As they zoom in over smaller areas, the forecasts get more and more uncertain. Theoretically, it is not impossible to forecast rainfall over a very small area as well, but it requires a very dense network of weather instruments, and computing capabilities that seem unfeasible with current technologies.

As a result, specific cloudburst events cannot be forecast. No forecast ever mentions a possibility of a cloudburst. But there are warnings for heavy to very heavy rainfall events, and these are routinely forecast four to five days in advance. Possibility of extremely heavy rainfall, which could result in cloudburst kind of situations, are forecast six to 12 hours in advance.

## Are cloudburst incidents increasing?

There is no long-term trend that suggests that cloudbursts, as defined by the IMD, are rising. What is well established, however, is that incidents of extreme rainfall, as also other extreme weather events, are increasing — not just in India but across the world. While the overall amount of rainfall in India has not changed substantially, an increasing proportion of rainfall is happening in a short span of time. That means that the wet spells are very wet, and are interspersed with prolonged dry spells even in the rainy season.

This kind of pattern, attributed to climate change, does suggest that cloudburst events might also be on the rise.

## Expected Question (Prelims Exams)

**Q. Consider the following statements –**

1. A cloudburst event is an event of intense rainfall of short duration over a small area.
2. Cloud burst is a natural phenomenon, but it happens unexpectedly and suddenly.

Which of the above statements is/are correct?

- (a) 2 only
- (b) 1 only
- (c) Both 1 and 2
- (d) Neither 1, nor 2

**Ans. (c)**

## Expected Question (Mains Exams)

**Q . While throwing light on the causes and effects behind cloudburst, discuss how it is different from regular rain? (250 Words)**

World

Committed To Excellence

**Note: - The question of the main examination given for practice is designed keeping in mind the upcoming UPSC main examination. Therefore, to get an answer to this question, you can take the help of this source as well as other sources related to this topic.**