

# Short-lived but least understood

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**New Delhi, Aug. 6:** The devastation near Leh was caused by a cloudburst which weather scientists have described as a short-lived and least understood among all known storms, the mechanisms underlying its birth and decay still a puzzle.

Cloudbursts are localised phenomena spanning less than 10km in contrast to thunderstorms or cyclones that affect areas across hundreds or even thousands of kilometres, according to scientists trying to unravel cloudburst physics.

“What we know is that they are very short-lived events and they bring intense rainfall over a very small area,” said Raghavendra Ashrit, an atmospheric physicist at the National Centre for Medium Range Weather Forecasting, New Delhi. “There is a very quick formation of a single large cloud with a large amount of moisture and a similar fast release through intense rainfall.”

The source of this cloudburst was an intense convective cloud cluster that developed over east of Leh by about 9.30pm on Thursday. Scientists say it began disgorging its moisture between 1.30am

and 2am but no one knows how much rain it delivered.

A typical cloudburst may yield 100mm to 200mm rainfall within an hour. But there were no rain gauges or weather instruments within the affected

## WHAT IS A CLOUDBURST?



It refers to sudden and copious rainfall over a small area

which often lasts only a few minutes but can trigger floods. Cloudbursts are caused by rapid condensation of very high clouds, sometimes with tops above 15km

## WHY IS THIS ONE UNUSUAL?

Ladakh is an unusual area for a cloudburst because it is a cold desert region where the average rainfall for August has been only 15.4mm. The highest rainfall ever recorded over Leh during a 24-hour period was 51.4mm on August 2, 1933 — 77 years ago. A perspective: Calcutta received 96.2mm rainfall last week when it rained for 24 hours on Friday-Saturday. A typical cloudburst can deliver 100mm to 200mm rainfall in an hour

areas yesterday. An air force observatory near Leh, some distance away from the cloudburst zone, only recorded 12.8 mm which, scientists point out, is not cloudburst-level rainfall. A senior IMD official could not immediately say how many weather observation points are operational in Ladakh.

The fast evolution of the cloudburst makes it difficult for weather scientists to track them in real time, he said. It might have been possible to monitor the build-up if a weather radar had been located within a few hundred kilometres.

No one really knows how frequent or rare cloudbursts are, said Ashrit. He was part of an attempt to record cloudbursts in Himachal Pradesh between 2003 and 2004. The exercise suggested that two or three cloudbursts usually occur in August.

“But we’ve had no firm count since then — if they occur in remote, unpopulated areas, it’s hard to notice them,” he said.

Some scientists have speculated that the mountainous environment may provide the lift for fast cloud formation, but others point out that cloudbursts are also known to occur

in the plains of Africa in the absence of high mountains. Their fleeting existence poses the toughest challenge for meteorologists. A tropical cyclone that forms over the Bay of Bengal or the Arabian Sea may evolve over three to six days during which it travels thousands of kilometres. A

thunderstorm such as the *kalbaisakhi* of eastern India has a life-cycle — development, movement and decay — that lasts three to five hours, Ashrit said.

In contrast, he said, cloudbursts build up and burn out within 30 minutes, certainly less than an hour.