

# CSIR-NGRI to install early warning system against floods, rockslides, and avalanches in Himalayan States

**SPECIAL**

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The National Geophysical Research Institute (NGRI) of the Council of Scientific and Industrial Research has begun field studies to put in place an early-warning system in the Himalayan States against major and sudden floods, rockslides, landslips, glacier lake bursts and avalanches and to prevent Chamoli kind of disasters in future.

“Right now, we are able

to detect the major events through geophysical and seismological observations, but are yet to demonstrate the minimum threshold or the maximum distance from which we can give an early warning of natural disasters, which are 10 times less intense than what happened at Chamoli, with the help of various instruments. Our scientists are working on those systems,” NGRI Director V.M. Tiwari said.

The scientists in the institute have identified a few locations in the higher reaches of Uttarakhand for



Water gushing down from the Chufalagad river after a cloudburst in Chamoli in 2019.

“densification” of seismometers and river gauges to take the total number to 100 from 60. The objective is to closely monitor the

river flows in specific areas along the catchment to detect any sudden rise in water levels or flooding threshold that can lead to a hazard. “A 5 cm of rainfall or a glacier melt may not be hazardous, but if there is a heavy rockfall or sudden lake burst, there could be massive flooding. What is the minimal level of time required and distance from which an early warning can be given will be assessed after discussions with the various stakeholders,” Mr. Tiwari said in an exclusive interaction.

Scientists have decided

to take cognisance of the vibrations or “noise” recorded by the seismometers, which need not be due to earthquakes but can also be because of vehicular traffic, animal movement, rain, river flows and so on.

These instruments are crucial for the safety of large infrastructure projects and hydroelectric power plants in this region. Currently, scientists are able to detect and assess a sudden flow 30-40 km away since the seismic wave is faster than the flow, and hence, the ad-

vance warning comes at least half an hour before.

The NGRI has started utilising Machine Learning to detect these observations faster than the normal approach because time becomes crucial during a warning, he said.

“We are working on cost-effective measures. Although our instruments can withstand minus-20 degrees Celsius, they need fuel cells when there is no sunlight. We are going to start in a modest manner in Uttarakhand and parts of Arunachal Pradesh,” Mr. Tiwari said. [nwda.gov.in](http://nwda.gov.in)