



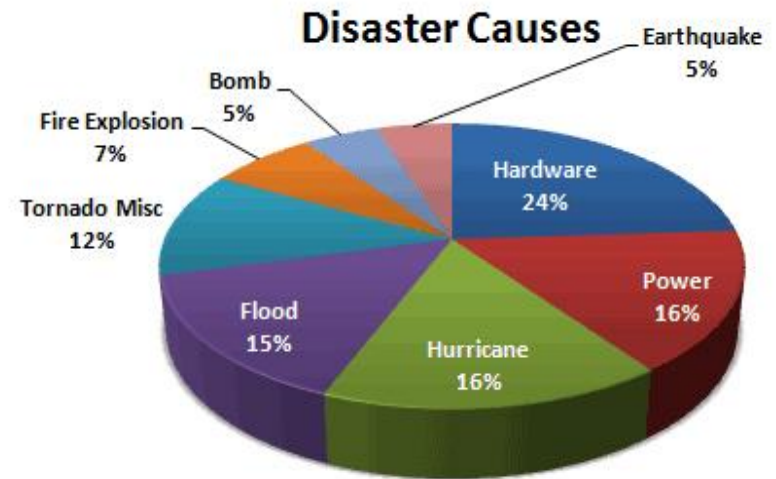
DISASTER MANAGMENT

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WHAT IS DISASTERS?

Disasters can be defined as a sudden, accidental event of great magnitude that causes considerable damage to life and property.

They are sudden, drastic and normally occur without any alarm or warning. Some disasters may be short lived such as earthquakes and some other may be of long duration, such as floods.



- However, irrespective of the duration of a disaster, the damage in the form of deaths, injuries and losses of property is immense.

The magnitude of the disasters can be judged by the fact that only during the past two decades, occurrences of floods, earthquakes, landslides, cyclones, etc. have killed several million people.

TYPES OF DISASTER

Natural Disaster

When disasters occur due to natural forces they are called natural disasters, over which man has hardly any control.



Some common natural disasters are earthquakes, landslides floods, droughts, cyclones, etc. Tsunamis, volcanic eruptions and wildfires are also included under natural disasters. These disasters cause enormous loss to life and property.

Man-made Disaster

When the disasters are due to carelessness of human or mishandling of dangerous equipment's they are called man-made disasters. Common examples of these disasters are train accidents, aero plane crashes, collapse of buildings, bridges, mines, tunnels, etc.



IMPACT OF DISASTER

The affect it makes can also be termed as Impacts of Disasters. Impact of Disaster could be :-

- a. Impact on Human Life
- b. Impact on Economy
- c. Impact on Ecology and Environment
- d. Psychological Impacts
- e. Social Impacts
- f. Health Impact

Impact on Ecology and Environment.

The immediate affect a disaster makes is the change of ecology and environment of the affected area. Some new geological features like lakes can be formed which disturbs the ecological and environmental balance of the area. Destruction of roads, buildings and other infrastructure has its impact on the ecology and environment beside economic impacts.

EARTHQUAKE ENVIRONMENTAL EFFECTS

Earthquake environmental effects are the effects caused by an [earthquake](#), including surface [faulting](#), [tsunamis](#), [soil liquefactions](#), ground resonance, [landslides](#) and ground failure, either directly linked to the earthquake source or provoked by the ground shaking.

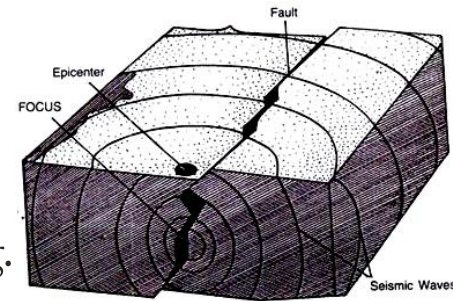


Fig. 18.1 Elements of earthquake.

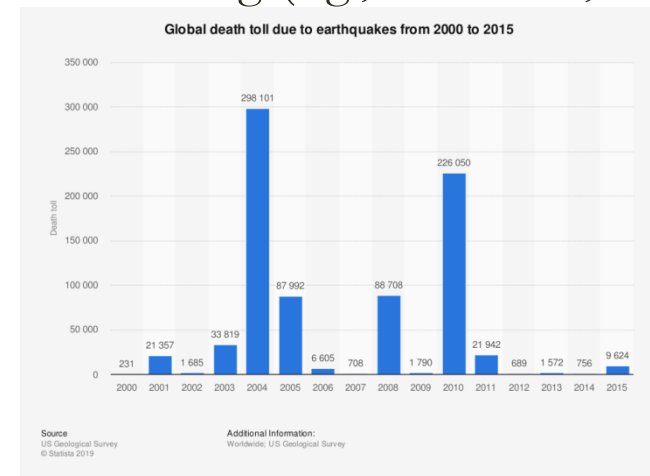
- Earthquake environmental effects are divided into two main types:
- **Primary effects:** which are the surface expression of the seismogenic source (e.g., surface faulting), normally observed for crustal earthquakes above a given magnitude threshold (typically $M_w = 5.5-6.0$);
- **Secondary effects:** mostly this is the intensity of the ground shaking (e.g., landslides, liquefaction, etc.).



Coseismic surface faulting induced by the 1915 [Fucino](#), Central Italy, earthquake



Coseismic liquefaction induced by one of the [2012 Emilia, Northern Italy, earthquakes](#)





Quick facts:

Indonesia earthquake, tsunami and natural disasters



The citizens of Indonesia have endured numerous natural disasters, including over a dozen major natural disaster events in the last 30 years.

Table 18.2 A brief list of recent major Indian earthquakes

Date	Details
October, 2005	Jammu and Kashmir, intensity 7.4, about 40,000 people died
26 th January, 2001	Gujarat, intensity 7.9, about 20,000 people died.
29 th March, 1999	Chamoli, Uttaranchal, intensity 6.8, about 1000 people died
22 nd May, 1997	Jabalpur and Mandla, M.P., about 50 people died
30 th September, 1993	Latur and Osmanabad, Maharashtra, about 10,000 people died
20 th October, 1991	Uttarkashi, Uttaranchal, intensity 6.6, about 1000 people died

FLOOD

Flooding may occur as an overflow of water from water bodies, such as a river, lake, or ocean, in which the water overtops or breaks levees, resulting in some of that water escaping its usual boundaries,^[2] or it may occur due to an accumulation of rainwater on saturated ground in an areal flood. While the size of a lake or other body of water will vary with seasonal changes in precipitation and snow melt, these changes in size are unlikely to be considered significant unless they flood property or drown domestic animals.

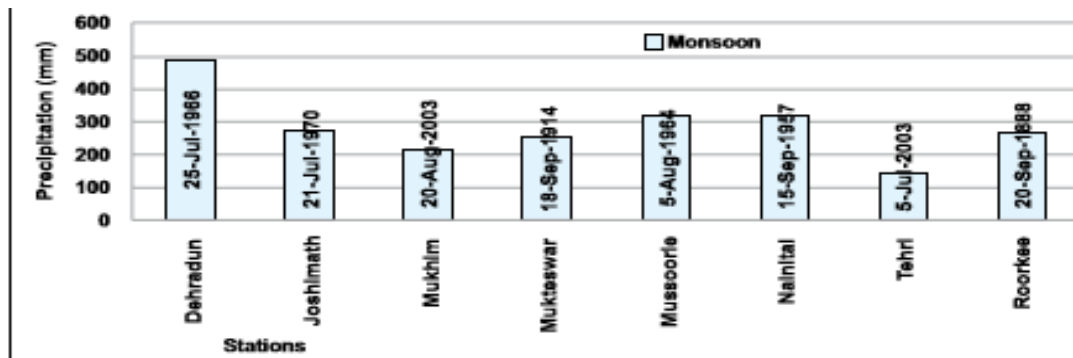
Floods can also occur in rivers when the flow rate exceeds the capacity of the river channel, particularly at bends or meanders in the waterway.

UTTARAKHAND FLASH FLOODS - JUNE 2013

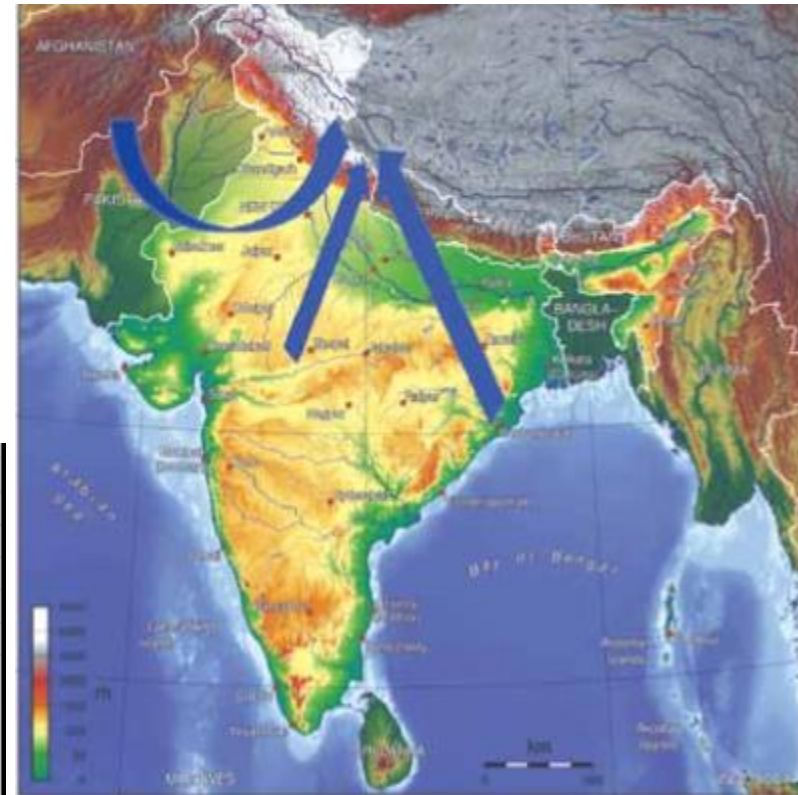
THE DISASTER:

The State of Uttarakhand, being part of the Himalayan region, is extremely vulnerable to natural disasters.

Natural hazards, like earthquakes, landslides, avalanches, cloudbursts, hailstorms, Glacial Lake Outburst Floods (GLOFs), flash floods, lightning, and forest fires, etc. have been a cause of major disasters in the State.



Historical record of extreme precipitation in Uttarakhand



Map showing fusion of Westerlies and Monsoon clouds in June 2013

PRE-DISASTER SCENARIO OF THE DISASTER SITE AT KEDARNATH TEMPLE TOWN



The Kedarnath temple site is just a short distance from the snout of two mountain glaciers, as this image from 50 years ago



Pre-disaster images suggest development has occurred in an entirely haphazard manner. The Kedarnath temple surrounded by building

POST-DISASTER SCENARIO OF THE DISASTER SITE AT KEDARNATH TEMPLE TOWN



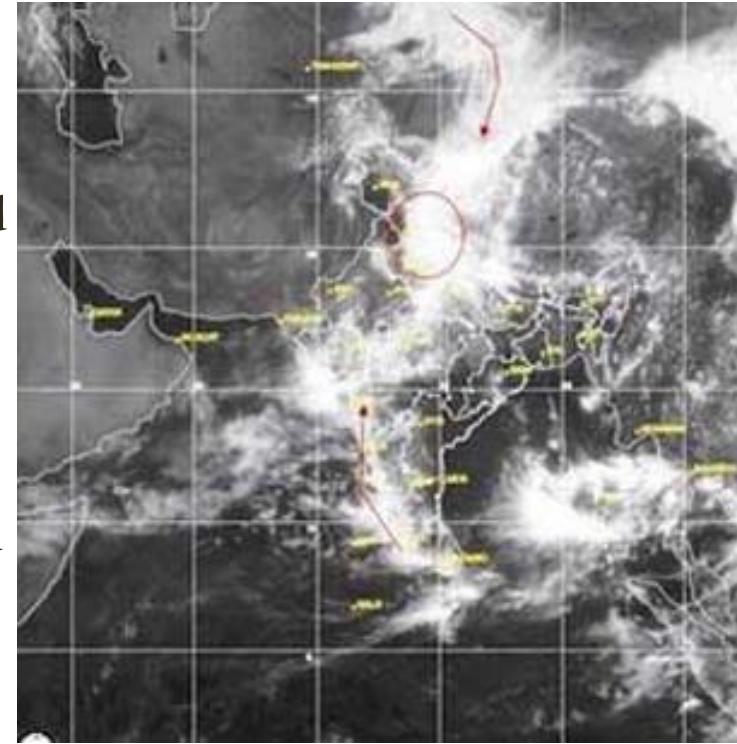
The level of destruction of the temple town by the debris flow was very high, and was quite shocking



IMPACT OF DISASTER

Irreparable losses in terms of human lives, damage to private properties and public infrastructure, damage to landscape and ecosystems, livelihoods and local entrepreneurships.

- than nine million people affected by flash floods disaster.
- In terms of human casualties, several people died and over 4,021 people were reported missing (presumed to be dead).
- 4,200 villages were affected;
- 11,091 livestock were lost and
- 2,513 houses completely damaged.



The Indian Meteorological Department image (17th June 2013) suggested heavy rainfall on the higher reaches of Uttarakhand, Himachal and Nepal Himalaya

More than 70,000 tourists and 1,00,000 local residents were stranded in the difficult mountain terrain of the upper reaches of the Himalaya