



Surge-type Glaciers

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Why in News

Scientists from the **Wadia Institute of Himalayan Geology (WIHG)**, Dehradun have found a **seasonal advancement** in 220 **surging** or **surge-type glaciers** in the **Karakoram Range of Ladakh**.

WIHG is an **autonomous institute** under the Department of Science and Technology (DST).

Key Points

- Surging or Surge-type glaciers are a certain type of glaciers that have **shown advancement in volume and length** over a period of time.
 - Such glaciers **go against the normal trend of considerable reduction in volume and length** of most glaciers in the Himalaya in recent decades.
- Surging glaciers **represent 40%** of the **total glaciated area** of the **Karakoram range**.
- Surging glaciers **do not flow at a constant speed**, rather are subjected to **cyclical flow instabilities**.
- The oscillation of such glaciers have been broadly classified into two phases:
 - **Active (Surge) Phase-** brief (months to years) rapid flow.
 - **Quiescent Phase-** lengthy (tens to hundreds of years) slow flow or stagnation.
- It was inferred that **surge during winter** is more controlled because there is low amount of meltwater which flows unsteadily underneath the glaciers.
- The surging **stops in summer** because of the channelised flow of the melted water.

Significance of Studying Surging Glaciers

- Surging glaciers **can lead to the destruction** of villages, roads and bridges.
- They can also **advance across a river valley** and **form an ice-dammed lake**. These lakes can form **catastrophic outburst floods**.

- Therefore, **monitoring** of glacier surges, ice-dammed lake formation and drainage is of **paramount importance**.

Glaciers

- **Masses of ice moving as sheets** over the land (**continental glacier** or **piedmont glacier** if a vast sheet of ice is spread over the plains at the foot of mountains) or as **linear flows down the slopes** of mountains in **broad trough-like valleys** (mountain and valley glaciers) are called **glaciers**.
- The **movement** of glaciers is **slow** unlike water flow ranging from a few centimetres to a few meters per day. Glaciers move basically because of the **force of gravity**.
- **Erosion** by glaciers is **tremendous** because of **friction caused by sheer weight of the ice**.
 - The material plucked from the land by glaciers (usually large-sized angular blocks and fragments) get dragged along the floors or sides of the valleys and cause great **damage through abrasion and plucking**.
 - Glaciers can cause **significant damage to even un-weathered rocks** and can reduce high mountains into low hills and plains.
- As glaciers continue to move, debris gets removed, **divides get lowered** and **eventually the slope is reduced** to such an extent that **glaciers stop moving**, leaving only a mass of low hills and vast outwash plains along with other depositional features.