

New study on tectonically active zone of Himalaya

October 27, 2020

In news

A new study finds that newly identified tectonically active zone in Himalayas could alter earthquake study & predictions

Who conducted the study?

- A group of Scientists from **Wadia Institute of Himalayan Geology, Dehradun, an autonomous institute under the Department of Science and Technology** have conducted the study

Key findings

- The **suture zone of the Himalayas or the Indus Suture Zone (ISZ) in the Ladakh region where Indian and Asian Plates are joined has been found to be tectonically active**, as against current understanding that it is a locked zone.
- A group of Scientists have found through observations and detailed mapping of geological features that the suture zone of Himalaya that was conventionally thought to be locked is tectonically active.
- They carried out the mapping of the remote regions of Ladakh that forms the most hinterland part of the Himalaya.
- The study was published recently in the journal **'Technophysics'**.
- The geologists observed that sedimentary beds are tilted and thrust broken, the rivers are associated with uplifted terraces, and the bedrock shows brittle deformation that occurred at much shallower depths.
- These deformed geological features were then dated in

the laboratory at Dehradun using a technique called Optically Stimulated Luminescence (OSL) (method for carrying Luminescence dating of geological sediments) and data of seismicity and denudation rate reviewed.

- The combination of field and lab data suggested the region of the Indus Suture Zone (ISZ) has been neo-tectonically active since the last 78000 – 58000 years and a recent earthquake in 2010 of low magnitude 4.0 near the village of Upshi that occurred due to a thrust rupture.
- Himalaya were known to be made up of north dipping thrusts like the Main Central Thrust (MCT), the Main Boundary Thrust (MBT), and the Main Frontal Thrust (MFT).
- As per the established models, all of these thrusts except MFT are locked, and overall deformation in Himalaya is being accommodated only along with the MFT.
- The new findings, which suggest a more remote fault at the suture zone being neo-tectonically active, could call for a serious relook into the existing evolutionary models using new techniques and a larger geological database.

Implications of the study

This could have major implications in terms of earthquake study, prediction, understanding the seismic structure of the mountain chains well as its evolution.