


Training on Glacier Studies and Remote Sensing

INTRODUCTION



The large concentration of seasonal snow and glaciers in the Himalayas provides a sustainable water source for major north Indian rivers such as Indus, Ganga, Brahmaputra and their numerous tributaries. However, the rise in temperature in the Himalayan region has caused rapid loss of glacier extent, mass, and snow cover, influencing water availability. In addition, retreating glaciers have also created new hazards like flash floods from glacier lakes, affecting the safety and livelihood of people living in the mountains. Therefore, continuous monitoring of the Himalayan cryosphere is essential to assess future risks. Due to the region's difficult topographical and weather conditions, satellite-based technology is used extensively to monitor the Himalayan cryosphere. However, trained human resources to apply advanced techniques and generate reliable data on glaciers are lacking in India. Therefore, the Divecha Centre for Climate Change organizes training for students who wish to work in glaciology. Lectures and tutorials will be given by the Centre's faculty members and well-known researchers from other departments.

Dates	Venue:	Contact:
June 03 - 14, 2025	Divecha Centre for Climate Change, IISc	Dr. Anil Kulkarni Distinguished Scientist DCCC, IISc glacier.dccc@iisc.ac.in



Training on Glacier Studies and Remote Sensing

Organised by:
Divecha Centre for Climate Change
Indian Institute of Science
Bengaluru - 560 012
Karnataka, India

FACULTY

Faculties from IISc and Guest lectures by eminent scientists.

ELIGIBILITY

Post Graduate M.Sc., M.Tech., M.E. and PhD students from recognized Institutes/Universities.

REGISTRATION

Candidates can apply through the following link.
Link: <https://forms.gle/SHJZxC8B13ftJxwQ6>

No registration fees for the trainees.

DEADLINE

Last date for application submission: April 19, 2025
Intimation to selected candidates: May 02, 2025

ACCOMMODATION

Accommodation will be provided to deserving candidates by Divecha Centre for Climate Change.

SYLLABUS

- 1. Distribution of Glaciers and snow cover**
Overview of Cryosphere, Importance of glaciers, precipitation and formation of snow, distribution of glaciers/snow
- 2. Application of remote sensing in glaciology**
Fundamentals of Remote Sensing, spectral reflectance of glacier features, Identification and mapping of glacial features, Glacier inventory and retreat estimation, Permafrost studies.
- 3. Climate and climate change**
Climate change and climate variability, General circulation of atmosphere and oceans, snowball earth and paleoclimate.
- 4. Monitoring of glaciers**
Development of algorithms to map snow, debris cover and glacier lakes. Application of microwave remote sensing in cryosphere studies, Introduction to Rheology.
- 5. Glacier Mass Balance**
Concept of glacier mass balance, methods of glacier mass balance estimation-Glaciological, Geodetic and AAR methods.
- 6. Ice and Snow ablation**
Physics of snowmelt, Energy balance and heat fluxes, Snowmelt and Hydrological model.

Practical:
Glacier Depth estimation, Topographic corrections of reflectance, Supra glacier debris cover mapping, Glacier inventory, Glacier mass balance modelling, Runoff Estimates in the Himalayan river and demonstration of various tools developed at Divecha Centre for climate change

General Information