

bhanu@ncpor.res.in; bhanuglacio@gmail.com

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Dr. BHANU PRATAP



Current affiliation:

Scientist 'C'

National Centre for Polar & Ocean Research, Ministry of Earth Sciences (Govt. of India), Goa.

Education

PhD (Geo Sciences): 2011-2016

Centre for Glaciology, Wadia Institute of Himalayan Geology (WIHG) MoU with University of Petroleum and Energy Studies (UPES), Dehradun, India.

Post Master Diploma (Natural Resource Management): 2008-2009

Forest Research Institute, Dehradun, India.

MSc (Physics): 2005-2007

Barkatullah University, Bhopal.

Research Experience

2018-2020: **Project Scientist 'C'**

National Centre for Polar and Ocean Research (NCPOR), Goa.

2016-2018: **Project Scientist 'B'** (NCPOR)

2012-2016: **Senior Research Fellow**,
Centre for Glaciology, WIHG, Dehradun.

2009-2012: **Junior Research Fellow**,
Centre for Glaciology, WIHG, Dehradun.

Key Skills

Instrumentation

- Himalaya
 - Trimble DGPS
 - Ground Penetrating Radar
 - Ice corer and Steam Drill
 - Water Level Recorder
 - Automatic weather station
- Antarctica
 - Ice penetrating radar (GSSI SIR-30, SIR-4000, Pulse Ekko, ApRES)
 - Trimble DGPS

Data Processing software

- OpendTect
- MATLAB
 - QGIS
- Origin
- MS office

Scientific Expeditions

2018 - 2019: Member of 38th Indian Scientific Expedition to Antarctica (leader- MADICE project).

2017 – 2018: Member of 37th Indian Scientific Expedition to Antarctica (team member-MADICE project).

2016 – 2017: Member of 36th Indian Scientific Expedition to Antarctica (team member-MADICE project).

2010-2019: More than 20 Scientific Expeditions to the Glaciers of the western, central and Nepal Himalaya.

Scientific Journal Reviews

Annals of Glaciology, Arctic Antarctic and Alpine Research, Progress in Physical Geography, Geocarto International, IEEE JSTARS, Environmental Processes, JESS.

Research Interest

Himalaya:

- Glaciological mass balance observations and modeling of Indian Himalayan glaciers to understand the impact of climate variation over last few decades.
- Analysis of air temperature, lapse rate and glacier surface melting, and the factors affecting the ablation process.
- Study of glacier's morpho-dynamics characteristics and ice volume estimation.
- Statistical modeling for equilibrium and disequilibrium state of Himalayan glaciers and the response of debris-covered glaciers in the current climatic condition.

Antarctica

- OpendTect and MatLab based 1D and 3D evolution of subsurface stratigraphy of ice rises and ice shelf to estimate surface mass balance contribution of the coastal region of the Antarctica.
- Processing and analysis of ground penetrating radar (GPR), Differential GPS recording and interpretation to create digital elevation model (DEM) and for intimate connections of accumulation rate, and factors responsible for its spatial variation.
- Geographical Information (QGIS) analysis and application for elevation changes, slope, crevasse and feature identification.

Field Survey skills

Ice radar operation (GSSI SIR-30, SIR-4000, Pulse Ekko, ApRES), surveying with DGPS, phase sensitive radar deployment and analysis of ice thickness and basal melting, meteorological station (AWS) set-up, geomorphological mapping, sampling techniques for snow/ice density measurement, stake networking for glaciers mass balance and real time crevasse radar operation with field safety training, and operation of vehicles (e.g. Skidoo, Piston bully, 4X4 vehicle etc).

Publications

1. Singh, A.T., Sharma, P., Sharma, Laluraj C.M., Patel L., **Pratap B.**, Oulkar S & Thamban M. (2020). Water discharge and suspended sediment dynamics in the Chandra River, Western Himalaya. *J Earth Syst Sci* 129, 206.
2. Shukla, T., Mehta, M., Dobhal, D. P., Bohra, A., **Pratap, B.**, & Kumar, A. (2020). Late-Holocene climate response and glacial fluctuations revealed by the sediment record of the monsoon-dominated Chorabari Lake, Central Himalaya. *The Holocene*, 0959683620908654. **(IF-2.54)**
3. Singh, A. T., Rahaman, W., Sharma, P., Laluraj, C. M., Patel, L. K., **Pratap, B.**, & Thamban, M. (2019). Moisture Sources for Precipitation and Hydrograph Components of the Sutri Dhaka Glacier Basin, Western Himalayas. *Water*, 11(11), 2242. **(IF-2.52)**
4. **Pratap, B.**, Sharma, P., Patel, L., Singh, A. T., Gaddam, V. K., Oulkar, S., & Thamban, M. (2019). Reconciling High Glacier Surface Melting in Summer with Air Temperature in the Semi-Arid Zone of Western Himalaya. *Water*, 11(8), 1561. **(IF-2.52)**
5. Lindbäck, K., Moholdt, G., Nicholls, K. W., Hattermann, T., **Pratap, B.**, Thamban, M., & Matsuoka, K. (2019). Spatial and temporal variations in basal melting at Nivlisen ice shelf, East Antarctica, derived from phase-sensitive radars. *The Cryosphere*, 13(10), 2579-2595. **(IF-4.79)**
6. Yadav, J. S., **Pratap, B.**, Gupta, A. K., Dobhal, D. P., Yadav, R. B. S., & Tiwari, S. K. (2019). Spatio-temporal variability of near-surface air temperature in the Dokriani glacier catchment (DGC), central Himalaya. *Theoretical and Applied Climatology*, 136(3-4), 1513-1532. **(IF-2.72)**
7. Bhambri, R., Hewitt, K., Kawishwar, P., & **Pratap, B.** (2017). Surge-type and surge-modified glaciers in the Karakoram. *Scientific reports*, 7(1), 1-14. **(IF-4.12)**
8. Bhambri, R., Mehta, M., Dobhal, D. P., Gupta, A. K., **Pratap, B.**, Kesarwani, K., & Verma, A. (2016). Devastation in the Kedarnath (Mandakini) Valley, Garhwal Himalaya, during 16–17 June 2013: a remote sensing and ground-based assessment. *Natural Hazards*, 80(3), 1801-1822. **(IF-2.32)**
9. **Pratap, B.**, Dobhal, D. P., Bhambri, R., Mehta, M., & Tewari, V. C. (2016). Four decades of glacier mass balance observations in the Indian Himalaya. *Regional Environmental Change*, 16(3), 643-658. **(IF-3.15)**
10. **Pratap, B.**, Dobhal, D. P., Mehta, M., & Bhambri, R. (2015). Influence of debris cover and altitude on glacier surface melting: a case study on Dokriani Glacier, central Himalaya, India. *Annals of Glaciology*, 56(70), 9-16. **(IF-3.13)**
11. Mehta, M., Dobhal, D. P., **Pratap, B.**, Majeed, Z., Gupta, A. K., & Srivastava, P. (2014). Late quaternary glacial advances in the tons river valley, Garhwal Himalaya, India and regional synchronicity. *The Holocene*, 24(10), 1336-1350. **(IF-2.51)**

12. Mehta, M., Dobhal, D. P., Kesarwani, K., Pratap, B., Kumar, A., & Verma, A. (2014). Monitoring of glacier changes and response time in Chorabari Glacier, Central Himalaya, Garhwal, India. *Current Science*, 281-289. **(IF-0.75)**.
13. Bhambri, R., Bolch, T., Kawishwar, P., Dobhal, D. P., Srivastava, D., & **Pratap, B.** (2013). Heterogeneity in glacier response in the upper Shyok valley, northeast Karakoram. *The Cryosphere*, 7(5), 1385-1398. **(IF-4.79)**
14. **Pratap, B.**, Dobhal, D. P., Bhambri, R. A. K. E. S. H., & Mehta, M. A. N. I. S. H. (2013). Near-surface temperature lapse rate in Dokriani Glacier catchment, Garhwal Himalaya, India. *Himalayan Geology*, 34, 183-186. **(IF-0.41)**
15. Mehta, M., Dobhal, D. P., **Pratap, B.**, Verma, A., Kumar, A., & Srivastava, D. (2013). Glacier changes in Upper Tons River basin, Garhwal Himalaya, Uttarakhand, India. *Zeitschrift für Geomorphologie*, 57(2), 225-244. **(IF-1.10)**
16. **Pratap, B.**, Srivastava, D., Dobhal, D. P., & Swaroop, S. (2012). Flow Characteristics of the Dunagiri Glacier, Garhwal Himalaya. *Jour. Ind. Geol. Cong*, 4(1), 113-118.
17. Kesarwani, K., **Pratap, B.**, Bhambri, R., Mehta, M., Kumar, A., Karakoti, I., ... & Dobhal, D. P. (2012). Meteorological observations at Chorabari and Dokriani glaciers, Garhwal Himalaya, India. *J. Ind. Geol. Cong*, 4(1), 125-128.
18. Dobhal, D. P., & **Pratap, B.** (2015). Variable response of glaciers to climate change in Uttarakhand Himalaya, India. In *Dynamics of Climate Change and Water Resources of Northwestern Himalaya* (pp. 141-150). Springer, Cham.