Rahul Dey

Project Scientist
National Centre for Polar and Ocean Research

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I am a climate scientist, specializing in the analysis of ice cores to unravel the climatic history of Antarctica. With a keen eye for detail and a passion for uncovering Earth's ancient secrets, I work towards understanding the changing climate of Antarctica over the past few centuries and the possible causative factors.

Education

PhD in Earth Science
May 2018 - present

National Centre for Polar and Ocean Research | PhD registered at Goa University
Advisor: Dr Thamban Meloth
Dissertation: *Reconstruction of Antarctic climate variability using high resolution ice core stratigraphy*

MSc in Applied Geology
June 2015 - May 2017

University of Allahabad
Advisor: Prof Siddhartha Sankar Das
Dissertation: Calcareous spherules in the north-western Arabian Sea: implications of late Quaternary marine sedimentation and paleoclimate

BSc in Physics and Geology
June 2012 - May 2015

University of Allahabad

Research Experience

National Centre for Polar and Ocean Research

Research Fellow

July 2017 – March 2023

- Field expedition for collection of shallow snow core from coastal Dronning Maud Land (DML), East Antarctica.
- Processing and line scan imaging of ice cores, and analysis for stable isotopes and major ions.
- Verified the potential of Visual Stratigraphy as an additional proxy for use in coastal Antarctic ice cores with/without summertime melting.
- Developed a method for better and faster estimation of melt proportion from line-scan images of ice cores.

Project Scientist I

March 2023 - present

- Established chronology of two shallow ice cores (122 m and 50 m) from the summit of two ice rises in coastal DML.
- Reconstructed past snow accumulation rates at the ice core sites, studied the influence of sea ice cover on snow accumulation rates at the coastal sites
- Co-mentored three master's dissertation students and two master's internship students in ice core analysis and paleoclimate reconstruction.

Skills

- Line scan imaging of ice cores using Intermediate Layer Core Scanner (ILCS)
- Stable water isotope analysis using LGR Triple Water Isotope Analyzer
- Major Ion analysis using Ion Chromatography
- Programming and statistical analysis in MATLAB (advanced), R (intermediate), CDO (intermediate) and NCL (intermediate)
- Working with regional and global climate models outputs like ERA5, MERRA and RACMO

Publications

The firn symposium team. *Firn on ice sheets* (accepted). *Nature Reviews Earth and Environment*

Marie G. P. Cavitte, Hugues Goosse, Kenichi Matsuoka, Sarah Wauthy, Vikram Goel, **Rahul Dey**, et. al., (2023). Investigating the spatial representativeness of Antarctic ice cores: A comparison of ice core and radar-derived surface mass balance. *The Cryosphere.* doi: 10.5194/tc-17-4779-2023

Rahul Dey et al., (2023). Application of visual stratigraphy from line scan images to constrain chronology and melt features of a firn core from coastal Antarctica. *Journal of Glaciology.* doi: 10.1017/jog.2022.59

Vikas Dev, Vishvesh Kumar Pathak, **Rahul Dey**, et al., (2022). Calcareous peloids in the north-western Arabian Sea: implications of late Quaternary marine sedimentation and paleoclimate. *Arabian Journal of Geosciences.* doi: 10.1007/s12517-021-08652-5

Bhanu Pratap, **Rahul Dey**, et al., (2022). Three-decade spatial patterns in surface mass balance of the Nivlisen Ice Shelf, central Dronning Maud Land, East Antarctica. *Journal of Glaciology.* doi: 10.1017/jog.2021.93

Conference presentations

"250 years of summertime melting and snow accumulation in the coastal Dronning Maud Land, East Antarctica" | 2023
IUGG 2023 General Assembly | Berlin, Germany | Oral

"Sea ice influenced climate variability in coastal Antarctica" | 2023
National Conference on Polar Sciences | Goa, India | Poster

"Role of sea ice cover in controlling the snow accumulation variability and stable isotopic composition of precipitation in coastal Antarctica" | 2022
IPICS 3rd Open Science Conference | Crans-Montana | Poster

"What controls the stable isotope ratios of precipitation in coastal Antarctica?" | 2022
SCAR 2022 Open Science Conference | Virtual | Oral

"Snow accumulation variability over the past century in coastal Dronning Maud Land, East Antarctica: insights from ice core records." | 2019
National Conference on Polar Sciences | Goa, India | Oral

"Trends in snow accumulation and summer melt during the last century in coastal Dronning Maud Land, East Antarctica: insights from ice core records" | 2019
International Conference on Climate Change Impacts, Vulnerabilities, and Adaptation | Kharagpur, India | Oral

Fellowships and Awards

Young Scientist Award
National Conference on Polar Sciences (2019)

University topper in MSc Applied Geology
Department of Earth and Planetary Sciences, University of Allahabad, India (2017)

Junior Research Fellowship for pursuing PhD research
All India Rank - 49
Jointly organized by Council for Scientific and Industrial Research & University Grants Commission, India (2016)

Early Career Organization Affiliations

- Association of Polar Early Career Sciences (APECS)
- Indian Polar Research Network (IPRN)
- Young Earth System Scientists (YESS)
- Ice Core Young Scientist (ICYS)

References

Dr Thamban Meloth
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