Curriculum Vitae

Mohd Tarique,

Scientist D, Marine Minerals Section,
National Centre for Polar and Ocean Research (NCPOR),
Ministry of Earth Sciences, Government of India,
Headland Sada Vasco-da Gama, Goa, India, 403804
Email: mohdtarique@ncpor.res.in; mt919@cantab.ac.uk
Phone no. (office): +91-832-2525673; Personal website: https://sites.google.com/view/mtarique

SUMMARY

Geologist and geochemist specializing in isotope geochemistry, with expertise in hydrothermal vent systems, paleoclimate reconstruction, and global biogeochemical cycles. Proficient in advanced analytical techniques (MC-ICPMS, TIMS, LA-ICPMS) and method development for non-traditional isotopes.

RESEARCH INTERESTS

- Method development for non-traditional isotopes measurement using MC-ICPMS and TIMS.
- Geochemistry of rock-water interactions at deep-sea hydrothermal sites and role of hydrothermal fluxes in global geochemical budgets.
- Role of weathering and erosion on flux of elements to river, global biogeochemical cycle and climate.
- Development and application of paleoclimate proxies/tracers to better understand the deep ocean mineralization, ocean circulation, biogeochemistry, past climate and carbon-cycle perturbations.
- Reconstruction of seawater carbonate chemistry and atmospheric CO_2 at seasonal to millennial scale.
- Use of geochemical approach to understand the impact of ocean acidification on calcifying marine organisms and ocean biogeochemistry.

EDUCATION

Ph.D. in Geochemistry (2023)
National Centre for Polar and Ocean Research & Mangalore University, India
Thesis: Trace elements and boron isotope study in marine carbonates: Reconstruction of paleo-pH and oceanographic conditions. *Supervisor:* Waliur Rahaman
M.Sc. Geology (2015, 1st Class), Indian Institute of Technology (IIT), Kharagpur, India
B.Sc. Geology (Hons.) (2013, 1st Class), Aligarh Muslim University (AMU), Aligarh, India

PROFESSIONAL EXPERIENCE

Scientist-D (2024 – Present), National Centre for Polar and Ocean Research, India
Postdoctoral Fellow (2022 – 2024), University of Cambridge, UK
Mentors: Mike Bickle (FRS) and Ed Tipper; *Focus*: Isotope geochemistry of Himalayan springs.
Project Scientist-I (2022), National Centre for Polar and Ocean Research, India
Mentor: Waliur Rahaman; *Focus:* Boron isotope geochemistry of foraminifera.
Project Assistant (2020 – 2022), Indian Institute of Science (IISc), Bangalore
Mentor: Sambuddha Misra; *Focus:* Lithium isotope geochemistry of foraminifera
Junior/Senior Research Fellow (2015 – 2020), National Centre for Polar and Ocean Research, India
Mentor: Waliur Rahaman; *Focus:* Boron isotope geochemistry of foraminifera and corals.

Laboratory and Instrumentation

Column Chromatography: Column chromatography for purification of Li, B, Mg, Sr and Nd.
MC-ICPMS (Thermo-Fisher Scientific, Neptune Plus): Developing protocol and high precision

analysis of B, Li, Mg, Sr and Nd isotopes.
TIMS (Thermo-Fisher Scientific, Triton Plus): Sr isotopes analysis.
LA-HR-ICPMS (Thermo-Fisher Scientific, Element XR): Trace-elements and Pb isotope analysis.
Quadrupole ICP-MS (Agilent 7700, 7900, Thermo iCAP): Major and trace-element analysis.
ICP-OES (Agilent 5100, 5110), Analysis of major and trace elements.

OTHER LABORATORY/RESEARCH SKILLS

- Geochemical Lab Management – Skilled in clean lab operations, maintenance, and coordination.
- Marine Sampling – Experience in shipboard sediment core and seawater sampling.
- Carbonate Sample Preparation – Separation, identification, picking and cleaning of foraminifera; Subsampling of corals and bivalves using micromill; thin-section preparation.
- Sediment Leaching – Sequential leaching to isolate different sediment phases.
- Sample Digestion –Acid digestion (soil, sediment, rocks) and Li-borate fusion methods.
- Processing water samples – seawater, river water and ice cores for trace elements and isotopes.
- Data Handling – Processing large datasets and applying statistical methods using Python.

RESEARCH CRUISE/FIELD WORK

Exploration of hydrothermal sulphides (5 April – 6 May 2025)
Exploration of hydrothermal sulphides at Central and Southwest Indian Ridge, Indian Ocean
Geological field work, Nepal Himalayas (5 Nov – 20 Dec 2022, 5 – 29 Apr & 3 – 13 Oct 2023)
Spring, river water and sand collection for analysis of trace elements and isotopes
Southern Ocean Expedition (6 Jan – 28 Feb 2017)
Collection of seawater for trace elements and isotope analysis

FELLOWSHIPS AND AWARDS

Best paper award – Outstanding Early Career Researcher (ECR) paper award, NCPOR, India, 2024
Postdoctoral Fellowship – Postdoctoral fellowship at University of Cambridge, UK, 2022
Best poster award – (1st prize), National Conference on Polar Sciences, NCPOR, India, 2017
Best oral presentation award – (3rd prize), 52 convention Indian Geophysical Union, India, 2015
National Eligibility Test (NET), CSIR, All India rank of 56, June 2015
Graduate Aptitude Test in Engineering (GATE), All India rank of 273, June 2015
Junior Research Fellowship (JRF), UGC, All India rank of 33, June 2014

PUBLICATIONS

1. **Mohd Tarique**, Waliur Rahaman, Sambuddha Misra, **2025;** Boron isotope analysis in marine biogenic carbonates; ***Analytical Isotope Geochemistry – Techniques and Data Interpretation, Springer*** : DOI: https://doi.org/10.1007/978-3-031-88388-0_5
2. Cong Duan, Haoyu Wang, Shijia Sun, **Mohd Tarique**, Edward Tipper, Tamsin Whitfield, Mark, R. Gilbert, Panagiota Angeli, **2025**; Extractive separations of lithium isotopes with benzo-15-crown-5 and ionic liquids: a comparative study between stirred vessels and small channel contactors, ***Separation and Purification Technology***, 131525; DOI: https://doi.org/10.1016/j.seppur.2025.131525
3. Waliur Rahaman, I V Satya Chanakya, Iravati Ray, **Mohd Tarique**, Fousiya A A, Reshmi Das, Sambuddha Misra, **2024**; Anthropogenic Lead Source Evolution and Deposition: Trends in the Indian Ocean, ***Science of The Total Environment***, 955, 177312; DOI: https://doi.org/10.1016/j.scitotenv.2024.177312
4. D. Lahiri, Iravati Ray, Rupam Ray, I V Satya Chanakya, **Mohd Tarique**, Sambuddha Misra, Waliur Rahaman, Manish Tiwari, X. Wang, Reshmi Das, **2024**; Source apportionment and emission projections of heavy metals from traffic sources in eastern India: Insights from elemental and Pb isotopic compositions, ***Journal of Hazardous Materials***, 480, 135810; DOI: https://doi.org/10.1016/j.jhazmat.2024.135810
5. **Mohd Tarique**, Waliur Rahaman, N. Lathika, Priyesh Prabhat, Meloth Thamban, Sambuddha Misra, **2023**; Enhanced CO_2 degassing from tropical ocean during colder climatic events of the last glacial cycle, ***Palaeoceanography and paleoclimatology***, 38, e2022PA004570, DOI: https://doi.org/10.1029/2022PA004570

6. Mohd Amir, Debajyoti Paul, P Anchana, **Mohd Tarique**, Waliur Rahaman, **2023;** Geochemical evidence for west-flowing paleo-Yamuna River in the northwest India during the late Quaternary and its implication for Harappan Civilization, ***Geochemistry***, 126021, DOI: https://doi.org/10.1016/j.chemer.2023.126021
7. Waliur Rahaman, N. Lathika, Priyesh Prabhat, **Mohd.Tarique**, Ravi Mishra and Meloth Thamban, **2023**; Eolian versus fluvial supply to the northern Arabian Sea during the Holocene based on Nd isotope and geochemical records, ***Geoscience Frontier***, 14, 101618, DOI: https://doi.org/10.1016/j.gsf.2023.101618
8. **Mohd Tarique** and Waliur Rahaman, **2022;** Recent ocean acidification trends from boron isotope record of corals: Role of oceanographic processes and anthropogenic CO_2 forcing, ***Journal of Earth System Science***, 131 (3), 165, DOI: https://doi.org/10.1007/s12040-022-01907-z
9. Priyesh Prabhat, Waliur Rahaman, N Lathika, **Mohd Tarique**, Ravi Mishra and Meloth Thamban, **2022**; Modern-like deep water circulation in Indian Ocean caused by Central American Seaway closure, ***Nature Communications,*** 13 (1), 7561, DOI: https://doi.org/10.1038/s41467-022-35145-0
10. Waliur Rahaman, **Mohd Tarique**, Fousiya A A, Priyesh Prabhat, Hema Achyuthan, **2022**; Tracing impact of El Niño Southern Oscillation on coastal hydrology using coral $^{87}Sr/^{86}Sr$ record from Lakshadweep, South-Eastern Arabian Sea, ***Science of The Total Environment,*** 843, 157035 DOI: https://doi.org/10.1016/j.scitotenv.2022.157035
11. **Mohd Tarique**, Waliur Rahaman, Fousiya A. A., N. Lathika., Meloth Thamban, Hema Achyuthan, Sambuddha Misra, **2021**; Surface pH record (1990–2013) of the Arabian Sea from boron isotopes of Lakshadweep corals—trend, variability, and control. ***Journal of Geophysical Research: Biogeosciences***, 126: e2020JG006122, DOI: https://www.doi.org/10.1029/2020JG006122
12. N. Lathika, Waliur Rahaman, **Mohd Tarique**, Naveen Gandhi, Avinash Kumar, Meloth Thamban, **2021**; Deep water circulation in the Arabian Sea during the last glacial cycle: Implications for paleo-redox condition, carbon sink and atmospheric CO_2 variability, ***Quaternary Science Reviews***, 257: 106853 DOI: https://www.doi.org/10.1016/j.quascirev.2021.106853
13. Waliur Rahaman, Lukas Smik, Deniz Köseoğlu, N Lathika, **Mohd Tarique**, Meloth Thamban, Alan Haywood, Simon T Belt, Jochen Knies, **2020**; Reduced Arctic sea ice extent during the mid-Pliocene Warm Period concurrent with increased Atlantic-climate regime, ***Earth and Planetary Science Letters***, 550: 116535, DOI: https://www.doi.org/10.1016/j.epsl.2020.116535