

EDUCATION

McGill University

PhD candidate in Earth & Planetary Sciences

Montreal, Canada

Sept 2019 - Present

- Advisor: Prof Christie Rowe, GPA: 4.0
- Thesis Topic: Deep Subduction Zone Dynamics- Insights from the rock record of exhumed subduction zones

Indian Institute of Technology Bombay

Masters of Science in Applied Geology, GPA: 9.49/10

Mumbai, India

Jul 2016 - Jul 2019

- PG Diploma in Earth Sciences, 2019, GPA: 9.94/10
- Dissertation: Lateral Variation along Katrol Hill Fault, near Bhuj, Gujarat. Advised by Prof Malay Mukul.
- Teaching Assistant: Structural Geology 413, Paleontology 433, Geology for Civil Engineers

St. Xavier's College (Autonomous)

Bachelor of Science in Geology

Mumbai, India

Jun 2013 - Jul 2016

- Cumulative GPA: 3.87/4.0, Top of Class (36 students) and third in the Science Batch of 2016 (250 students)

FIELD EXPERIENCE

Canadian Tectonics Group Fieldtrip to Newfoundland & Labrador

Led By: Prof John Waldron

Oct 2019

- Studied the tectonics of the west Newfoundland Appalachians Range
- Focused on the evolution of the Laurentian continental margin and obduction of oceanic crustal rocks at Gros Morne National Park, Port-au-Port Peninsula, and Table Point

Inversion Tectonics Mapping Project in Kutch Basin, western India

Advisor: Prof Malay Mukul

Dec 2016, 2017, 2018

- Structural mapping of extensional and compressional regime fault-related structures and investigating the influence of fault displacement on topographic evolution

Appalachian Fold-Thrust Belt Fieldtrip

Advisor: Prof Gautam Mitra

May 2017-July 2017

- Structural mapping of the multiple deformation phases that led to the evolution of a fold-thrust belt from New York to Virginia, United States.

Field Survey and Structural Geology Field Trip to Malvan, western India

Advisor: Prof H Samant

Oct 2015

- Field survey techniques and analysis of sedimentary deformation structures
- Completed first order interpretation of stress field orientation using gneissosity planes, joint-plane orientation, and computed strain using $R_f - \phi$ method

Deccan Volcanic Province Field Trip

Advisor: Prof H Samant

Jan 2015

- Mapped 12 distinct lava flow episodes and zeolite assemblages of the Lohagadh and Khandala Formations along the Western Ghats of India

RESEARCH EXPERIENCE

Mineral prospectivity mapping for orogenic gold deposits using GIS

Advisor: Prof. Alok Porval

Jan 2019-May 2019

- Project involved developing a conceptual and GIS model to target gold deposits within the Arunta region of Australia. We used built-in ArcGIS mineral mapping algorithms (Machine Learning-Neural Network, Weight of Evidence, and Fuzzy Logic).
- Based on the analysis, certain areas with higher probability of finding gold ore deposits were identified. The main controls for the mineralization within these areas were fault pathways and distance to source of metal.

Lateral Variation in deformation along the Katrol Hill Fault, Bhuj, Gujarat, India.

Advisor: Prof. Malay Mukul

Dec 2017-July 2019

- Project included collection of bed orientation data and oriented samples from three N-S traverses along strike of the Katrol Hill Fault. Analysis included: Stereographic projections, petrographic study and Fry Plot.
- Based on analysis, local variations in attitude of the fault plane and strain were observed.

Microstructural study of the Towanda fault zone in the Appalachian Plateau, USA.

Advisors: Prof. Gautam Mitra

May 2017-July 2017

- Collected samples to identify the deformation pattern of the Towanda Fault Zone. Inferred multiple phases of deformation based on overprinting relation of microstructures.
- Supplementary work included: Mapping a particular horse within the fault system and defining the fracture density populations across it. Also observed deformation patterns and stages of deformation along a portion of the Northern Appalachians.

Optically Stimulated Luminescence (OSL) Dating - Sample Processing and Analysis.

Advisor: Dr. M Ravi Kumar & Dr. Siddharth Prizomvala

May 2016-June 2016

- Dated Quaternary sediments using OSL methods to determine paleoseismological uplift rates along a river terrace within the Gujarat basin. Interpreted depositional environments to study paleo-basin characteristics.
- Supplementary work included: Using XRF to determine the concentrations of U, Th, K in the samples and using minimum age model to determine the timing of uplift.

PRESENTATIONS

1. **Das, M.**, Boianju, I., and Rowe, C. (2020) *Chasing the Franciscan megathrust and its implications for Deep Subduction Zone Dynamics: Insights from Angel Island, Franciscan Complex*, Poster presented at American Geophysical Union (AGU) Annual Fall Meeting 2020, December 2020.
2. **Das, M.**, Boianju, I., and Rowe, C. (2020) *Pillows, Schists, and a lot of Wacke: Subdividing the formerly "coherent" Angel Island Terrane, Franciscan Complex*, Poster presented at Geological Society of America (GSA) Annual Fall Meeting 2020, October 2020.
3. **Das, M.** and Rowe, C. (2020) *Deep Subduction Zone Dynamics: Insights from exhumed Subduction Zones*, Brown Bag Seminar, McGill University-Earth and Planetary Science, Montreal, Canada, April 2020.
4. **Das, M.** and Mukul, M. (2018) *Lateral variation along the Katrol Hill Fault, near Bhuj, Gujarat*, Poster presented at International Symposium of the Hiroshima Institute of Plate Convergence Region Research, Hiroshima University, Hiroshima, Japan, Jan 2018.

HONORS & AWARDS

1. Awarded the Graduate Mobility Award-McGill University (\$1980 CAD) (2021)
2. Awarded the Richard Chambers Memorial Scholarship by the Northern California Geological Society (\$1500 USD) (2021)
3. Awarded the Geological Society of America Graduate Student Research Grant (\$1205 USD) (2020-2021)
4. Awarded the Geraldine Davidson Fellowship by Department of Earth and Planetary sciences, McGill University (\$2500 CAD) (2020-2021)
5. Awarded the David Stewart Memorial Fellowship by McGill University (\$10000 CAD) (2019-2020)
6. Qualified and secured All India Rank 228 out of 5795 candidates appearing in Graduate Aptitude Test in Engineering (GATE) (2018)
7. Institute Academic Prize for securing second highest GPA aggregate in MSc Applied Geology, IIT Bombay (INR 2000). (2017)
8. Awarded the prestigious SN Bose Scholars for a summer internship program to the USA sponsored by WINSTEP Forward, and Indo-US Science and Technology Forum (\$2500 USD). (2017)
9. Awarded the Indian Academy of Sciences Summer Research Fellowship (INR 16000). (2016)
10. Secured an All India Rank 2 out of 1700 candidates appearing in Joint Admissions Test for Masters (JAM). (2016)
11. Secured highest GPA aggregate in Geology at the Bachelors of Science level, St. Xavier's College, Mumbai (INR 12000). (2016)
12. Awarded the A.V. Krishnamurthy Award for securing the highest aggregate in Physics at the freshman Bachelors of Science level, St. Xavier's College, Mumbai (INR 7500). (2014)

INTERNSHIPS & TEACHING ASSISTANTSHIP

- Earth & Planetary Science Department, McGill University Teaching Assistant: General Geology, Understanding Planet Earth, Terrestrial Planets (2019-present)
- Department of Earth Sciences, IIT Bombay Teaching Assistant: Structural Geology, Paleontology, and Geology for Civil Engineers (2018-2019)
- University of Rochester, Rochester, NY: Summer Research Intern (2017)
- Institute of Seismological Research, Gandhinagar, Gujarat, India: Summer Research Intern (2016)

LEADERSHIP & OUTREACH

- Equity, Diversity, Inclusion Committee Member at McGill University-Earth & Planetary Science (EPS) and Unlearning Racism in Geosciences (URGE) Pod member (2021)
- Field Trip Leader for the Metro at Monteregie virtual geological field trip Project, McGill University-EPS (2020)
- Outreach Team Member, Students at McGill Outreach in Earth Sciences (SMORES), McGill University-EPS (2020)
- Museum Volunteer and Content Developer of Virtual Fossil Trips, Redpath Museum, McGill University (2020)

- Department Representative to Post-Graduate Student Society, McGill University (2019-2021)
- President for Protolith Department Fest, IIT Bombay (2017)
- Literary Arts Coordinator for Post Graduate Cultural Council, IIT Bombay (2016)
- Geology Student Representative to the Board of Studies, St. Xavier's College (2015)
- Vice-President (Management) for Paradigm Science Fest, St. Xavier's College (2015)
- Editorial Board Member for TERRA-Department Magazine, St. Xavier's College (2014)
- Volunteer at Teach for India, Mumbai (2013)

INDUSTRY EXPERIENCE

TATA Steel Ltd.: Noamundi Iron Ore Mines

Jharkhand, India

Mine site trainee

Dec 2017

- Introduced to primary & secondary in-situ ore processing systems. Completed training for upstream and downstream processes including extraction of ore, development of mine plans, storage, and dispatch of ore.
- Participated in sample collection and quality control programs within the mines. Responsibilities included collection of samples, chemical analysis of samples using ICP-OES, integrating the chemical analysis data using GPS to enable on-site, real-time visualization of chemical data.

GMDC: Tadkeshwar Lignite Mines

Surat, India

Mine site trainee

July 2017

- Participated in sample collection and quality control programs within the mines. Received introduction to the various on-site departments of the mining facility: environmental regulation, mine survey, and geology departments.
- Received introduction to the various mine survey techniques used at this open-pit lignite mine, including total survey stations and DATAMINE software to develop monthly mining plans and estimation of reserves.

SKILLS

Programming: LaTeX

Remote Sensing & GIS packages: QGIS, ArcGIS, IDRISI, ERDAS Imagine

Instrumentation: ICP-AES, XRF, XRD

Languages: Bengali (Native), English (Fluent), Spanish (Advanced Beginner DELE A-1), Japanese (Beginner), American Sign Language (Beginner)