

EDUCATION

McGill University

PhD candidate in Earth & Planetary Sciences

Montreal, Canada

Sept 2019 - June 2024

- Advisor: Prof Christie Rowe, GPA: 4.0
- Thesis Topic:- Subduction Sandwich: Investigating the evolution and deformation of a subduction plate boundary interface from the overriding to the downgoing plate

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

Near-Trench Geodesy Community Experiment-Cascadia Subduction Zone

Led By: David Schmidt and Noel Jackson

July 2024

- Participated in the servicing of strainmeters and placement of transponders on existing benchmarks along the Cascadia trench near Astoria, Oregon.
- Participated in a Conductivity-Temperature-Density (CTD) cast at one of the site locations and logged the events as the ROV Jason conducted the operations at each of the sites.
- Interviewed and wrote blog posts to summarize our operations at sea for public outreach.

Angel Island Geological Map

Led By: Meghomita Das and Christie Rowe

Mar 2022

- Updated and re-mapped the lithological units of Angel Island
- Collected data and samples to develop the tectonostratigraphic model of the island.
- Conducted detrital zircon geochronology to estimate the depositional age of the clastic units of this island

Penrose Conference on Geological Fingerprints of Slow Slip to Santa Catalina Island

Led By: John Platt, Christie Rowe, Jamie Kirkpatrick, Melodie French, David Schmidt

April 2022

- Studied the general subduction architecture of Catalina Islands as part of the Franciscan Subduction Complex
- Observed potential geological signatures of slow slip earthquakes and their relevance to their observed geophysical and geodetic characteristics

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

2016-2018

- 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.

1. **Das, M.**, Anfinson, O., Rowe, C., Schroeder, N. (2024) *Age, sedimentology and deformation history of the Mesozoic Franciscan Accretionary Complex, Angel Island, California*, *GSA Bulletin*, 2024.
DOI:<https://doi.org/10.1130/B37239.1>
2. **Das, M.**, Kirkpatrick, J., Rowe, C., Mookerjee, M. (2023) *Deformation within blueschist-facies metachert mylonite: Implications for deformation at the lower limits of seismogenic zone* in preparation for submission in *Tectonics* 2024.
3. **Das, M.**, Rowe, C., Tarling, M., Angombe, M., Richard, D., Boianju, I. (2023) *Subduction architecture of Angel Island in the Franciscan Complex* in preparation for submission in *Geosphere*, 2023.
4. **Das, M.**, Rowe, C., Mookerjee, M., Kirkpatrick, J., (2023) *Microstructural investigations along a blueschist facies paleomegathrust: Implications for deformation mechanisms for deep slow slip behavior* Talk presented at European Geosciences Union General Assembly, Vienna, Austria, April 2023.
5. **Das, M.**, Rowe, C., Anfinson, O., (2022) *Mapping the metaclastics of Angel Island: A study in structural geology and geochronology* Invited speaker for Northern California Geological Society Speaker Seminar Series, California, USA, September 2022.
6. **Das, M.**, (2022) *Montreal Survival Guide: Developing inclusive resource maps for Peoples of Color to foster a sense of belonging in a new environment* Poster presented at Communication Science Conference (ComSciCon) Flagship Workshop, Boston, USA, August 2022.
7. **Das, M.**, Boianju, I., Angombe, M., Crotty, C., Qudsi, Z., Prush, V., Kotowski, A., Gomez, N., Rowe, C., Douglas, P., Kirkpatrick, J., Mckenzie, J., (2022) *EDI in action: Initiatives and changes in McGill's EPS in collaboration with URGE* Talk presented at Geological Association of Canada-Mineralogical Association of Canada (GAC-MAC) Annual Meeting, Halifax, Canada, May 2022.
8. **Das, M.**, Rowe, C., Mookerjee, M., Anfinson, O., (2022) *Investigating deformation along a paleomegathrust: Insights from microstructural study of blueschist metachert from the Franciscan Complex, California* Poster presented at Geological Association of Canada-Mineralogical Association of Canada (GAC-MAC) Annual Meeting, Halifax, Canada, May 2022.
9. **Das, M.**, Richard, D., Rowe, C., Anfinson, O., Mookerjee, M. (2022) *Investigating the rock record for slow slip signatures: Insights from Angel Island, Franciscan Complex* Poster presented at Geological Society of America (GSA) Penrose Conference Workshop 2022 on the Fingerprints of Slow Earthquakes, Santa Catalina Islands, USA, April 2022.
10. **Das, M.**, Rowe, C., Anfinson, O., Schroeder, N., Jones, M., and Lentini, F. (2021) *Structural and depositional evolution of the Angel Island "terrane", Franciscan Complex, Forearc, California*, Poster presented at American Geophysical Union (AGU) Annual Fall Meeting 2021, New Orleans, USA, December 2021.
11. Boianju, I., **Das, M.**, Angombe, M., Prush, V., Rowe, C., Gomez, N., Kirkpatrick, J. (2021) *McGill University URGE Pod actions to address systemic racism and support inclusivity are beginning with a centralized onboarding process*, Poster presented at American Geophysical Union (AGU) Annual Fall Meeting, 2021, New Orleans, USA, December 2021.
12. Rodzinyak, K., Rowe, C., Boianju, I., **Das, M.**, Lambert, C., Daoust, P., Wu, R. (2021) *Metro@Monteregie: Bridging the gap between theoretical classroom knowledge and the field: Digital Field Trips in the Montreal Area*, Poster accepted at American Geophysical Union (AGU) Annual Fall Meeting 2021, New Orleans, USA, December 2021.
13. **Das, M.** (2021) *Deep subduction zone dynamics: Implications of deep tremor and slow slip from the rock record*, Invited speaker for Geology seminar series, Sonoma State University-Department of Geology, Sonoma, USA, October 2021.

14. Schroeder, N., Anfinson, O., Lentini, F., Jones, M., Rowe, C., and **Das, M.** (2021) *The exhumational history and structural geology of Angel Island State Park*, Poster presented at Sonoma State University Department of Geology Research Symposium, Sonoma, USA, May 2021.
15. **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, San Francisco, USA, December 2020.
16. **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, Montreal, Canada, October 2020.
17. **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.
18. **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 Lorne Trottier Accelerator Fellowship (\$5000 CAD) (2022)
2. Awarded the Graduate Mobility Award-McGill University (\$5304 CAD) (2022)
3. Awarded the Lorne Trottier Accelerator Fellowship (\$5000 CAD) (2021)
4. Awarded Fonds de recherche du Quebec Nature et Technologie (FRQNT) B2X Doctoral Fellowship (\$21000 CAD/yr) (2021-2024)
5. Awarded MITACS Global Research Link Award (\$6000 CAD) (2021)
6. Awarded the Graduate Mobility Award-McGill University (\$1980 CAD) (2021)
7. Awarded the Richard Chambers Memorial Scholarship by the Northern California Geological Society (\$1500 USD) (2021)
8. Awarded the Geological Society of America Graduate Student Research Grant (\$1205 USD) (2020-2021)
9. Awarded the Geraldine Davidson Fellowship by Department of Earth and Planetary sciences, McGill University (\$2500 CAD) (2020-2021)
10. Awarded the David Stewart Memorial Fellowship by McGill University (\$10000 CAD) (2019-2020)
11. Qualified and secured All India Rank 228 out of 5795 candidates appearing in Graduate Aptitude Test in Engineering (GATE) (2018)
12. Institute Academic Prize for securing second highest GPA aggregate in MSc Applied Geology, IIT Bombay (INR 2000). (2017)
13. 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)
14. Awarded the Indian Academy of Sciences Summer Research Fellowship (INR 16000). (2016)
15. Secured an All India Rank 2 out of 1700 candidates appearing in Joint Admissions Test for Masters (JAM). (2016)
16. Secured highest GPA aggregate in Geology at the Bachelors of Science level, St. Xavier's College, Mumbai (INR 12000). (2016)

17. 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

- Office of Science Education Science Communication Research Assistant, McGill University (2023)
- Earth & Planetary Science Department, McGill University Teaching Assistant: General Geology, Understanding Planet Earth, Terrestrial Planets, Earth & Life History (2019-2022)
- 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)

OUTREACH

- Participated as a selected workshop attendee for American Geophysical Union (AGU) Chapman Conference: Second National Conference on Justice in Geosciences 2022 held at Washington DC, USA.
- Participated as a selected workshop attendee (out of 300+ applicants) at the ComSciCon (Communication Science Conference) Flagship Workshop 2022 held at Massachusetts Institute of Technology, Cambridge, USA.
- Organized and developed activity for Volcano Hazards Communication and Policy Workshop as part of the SHAD Canada Program in collaboration with EPS Outreach Team.
- Acquired sponsorship and funding for EDI In Action: Best Practices and Future Directions Workshop for Science and Policy Exchange, Montreal.
- Developed an inclusive resource documents (titled *Montreal Survival Guide*) as part of our department's new graduate student onboarding process.
- Trained in inquiry-based teaching pedagogy with implementation in Earth Science based outreach workshops.
- Organized and developed activities for Young Scientist workshop-Volcanoes as part of the Redpath Museum of Natural History in collaboration with EPS Outreach Team.
- Developed virtual geological field trip guides for Redpath Museum of Natural History and Metro @ Monteregie Project in collaboration with EPS.

OUTREACH AUTHORSHIP

1. **Das, M.** (2023) *Clean up on the disaster aisle*, news release for Temblor Earthquake News, August 2023. DOI: <http://doi.org/10.32858/temblor.316>
2. **Das, M.** (2023) *Wasatch corridor in Utah prone to big quakes and shakes*, news release for Temblor Earthquake News, January 2023. DOI: <http://doi.org/10.32858/temblor.293>
3. **Das, M.** (2023) *Harnessing citizen science helps develop efficient earthquake early warning*, news release for Temblor Earthquake News, January 2023. DOI: <http://doi.org/10.32858/temblor.292>
4. **Das, M.** (2022) *Magnitude 5.1 earthquake strikes near San Jose, California*, news release for Temblor Earthquake News, October 2022. DOI: <http://doi.org/10.32858/temblor.278>

5. **Das, M.** (2022) *Tie rods aren't just a pretty facade. Here's how they help earthquake proof Charleston*, news release for Temblor Earthquake News, October 2022. DOI: <http://doi.org/10.32858/temblor.274>
6. Barak, F.; Beitari, S.; Brewer, G.; Bruneau, A.; **Das, M.**; Ghribi, M.; Isidoro, C.; Miranda-Rottman, S.; Nath, M.; Sidibé, H.; Soo, S.; Suen, C.; Ueda, M.; Watanabe, A.; Xue, J.; Xue, Y.C. (2022) *Drug Policies in Canada: Towards decriminalization and legalization*, Science & Policy Exchange Café Discussion, August 2022. Report Linked here.
7. **Das, M.** (2022) *On the lookout for unique quakes in Oklahoma*, news release for Temblor Earthquake News, August 2022. DOI: <http://doi.org/10.32858/temblor.269>
8. **Das, M.** (2022) *Slow earthquakes rumble through the Pacific Northwest*, news release for Temblor Earthquake News, August 2022. DOI: <http://doi.org/10.32858/temblor.265>
9. **Das, M.** (2022) *Mexico City's urban noise reveals the sinking metropolis' changing seismic hazard*, news release for Temblor Earthquake News, April 2022. DOI: <http://doi.org/10.32858/temblor.255>
10. Anderson, E.; Belluci, M.; Cheuk, A., **Das, M.**; Easson, K.; Gouronnec, A.; Joseph, T.; Landry, C.; MacKeigan, P.; Olajide, A., Soo, S.; Trinh, A-K. (2022) *EDI in Action: Best Practices and Future Directions*, Science & Policy Exchange Public Forum Report, April 2022. Report Linked here.
11. **Das, M.**; Soo, S.; Kotowski, A. (2022) *A Multicontext Approach to inclusive STEM education in the post-pandemic era.*, article submitted to Journal of Science Policy and Governance, January 2022.(Unsuccessful submission)
12. **Das, M.** (2021) *Engaging communities with Canada's earthquake early warning system*, news release for Temblor Earthquake News, December 2021. DOI: <http://doi.org/10.32858/temblor.224>
13. **Das, M.** (2021) *Earthquakes in Montreal? No way!*, article for Science and Policy exchange blog, November 2021. Article Linked here.
14. **Das, M.** (2021) *First written records of earthquakes in ancient Mesoamerica reported*, news release for Temblor Earthquake News, September 2021. DOI: <http://doi.org/10.32858/temblor.206>
15. **Das, M.** (2021) *Can smartphones affixed to buildings detect earthquakes*, news release for Temblor Earthquake News, September 2021. DOI: <http://doi.org/10.32858/temblor.201>
16. **Das, M.** (2021) *Scientists unravel India's 2021 Chamoli disaster*, news release for Temblor Earthquake News, July 2021. DOI: <http://doi.org/10.32858/temblor.188>
17. Rodzinyak, K.; **Das, M.**; (2021) *Celebrating Science Odyssey with some SMOrES*, article for Geolog, McGill University, June 2021.
18. Whelan, M.; **Das, M.** (2021) *Conversations with Prof Olivia Jensen*, faculty interview feature for Geoblog, McGill University, April 2021.
19. Whelan, M.; Das, D.; **Das, M.** (2021) *Conversations with Prof Christie Rowe*, faculty interview feature for Geoblog, McGill University, February 2021.
20. Salas, J.; **Das, M.** (2021) *What it feels like to be queer in the Earth Sciences*, article for Geoblog, McGill University, February 2021.
21. **Das, M.** (2021) *Divided by geography, yet united by the same love of rocks*, article for Office of Science Education, McGill University, January 2021. Article linked here.

POSITIONS OF RESPONSIBILITY

- Palomar Science Writing Fellow for Temblor Earthquake news reporting on the latest research in the field of geohazards (2021-2022)
- Extern responsible for drafting news releases for latest geohazards research at Temblor Earthquake News (2021)
- Graduate Student Representative at Science Equity and Climate Committee, Faculty of Science, McGill University (2021-2022)
- Volunteer at Science and Policy Exchange, non profit organization dedicated to science policy advocacy (2021)
- Editor in Chief, Geoblog, Earth & Planetary Science (EPS) Departmental Blog, McGill University (2021)
- Equity, Diversity, Inclusion Committee Member at McGill University-Earth & Planetary Science (EPS) and Unlearning Racism in Geosciences (URGE) Pod member (2021-2023)
- Field Trip Leader and content developer for the Metro at Monterege virtual geological field trip Project, McGill University-EPS (2020)
- Outreach Team Member, Students at McGill Outreach in Earth Sciences (SMORES), McGill University-EPS (2020-2021)
- Museum Volunteer and Content Developer of Virtual Fossil Trips around Montreal, Redpath Museum, McGill University (2020-2021)
- Department Representative to Post-Graduate Student Society, McGill University (2019-2021)
- Literary Arts Coordinator for Post Graduate Cultural Council, IIT Bombay (2016)

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/MarkUp: LaTeX, MATLAB, Python

Remote Sensing & GIS packages: QGIS, ArcGIS

Instrumentation: ICP-AES, XRF, XRD, SEM-EDS/EBSD

Others: WordPress, MSOffice Suite, Affinity Suite

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