Meghomita Das, PhD

Email : meghomitadas@gmail.com

www.meghomita.com

Education

McGill University — Montreal, Canada

PhD candidate in Earth & Planetary Sciences — *Sept 2019 - Dec 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
- Disciplines covered for the fruition of this study: Geochronology, Geological Field Mapping, Grain-scale deformation, Metamorphic petrology, Sedimentology and provenance study.
- Analytical methods applied for the study: SEM-EDS, EBSD, LA-ICP-MS, Agisoft Metashape, MOVE, Raman Spectroscopy.

Indian Institute of Technology Bombay — Mumbai, India

Masters of Science in Applied Geology, GPA: 9.49/10 — *July 2016 - July 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.
- Methods applied for the study: Strain Analysis using Fry-method, Geological Mapping, Kinematic analysis.

St. Xavier's College (Autonomous) — Mumbai, India

Bachelor of Science in Geology — *June 2013 - July 2016*

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

Work Experience

Core-Logging Exploration Geologist, Bayside Geosciences

Musselwhite Gold Mine, Orla Mining Ltd., Ontario, Canada — *May 2025 - present*

- Geological core, orienting and geo-technical logging of BIF-hosted Au deposits with focus on Surface Deep Directional Drilling project.
- Conducting QA/QC of sampling procedures, lithology data, mineralized zones and structural data, and photo-documentation of logged data.
- Softwares/Programs proficiency: Vulcan, Leapfrog Geo, Imago, and Visual Logger.

Field Experience

Near-Trench Geodesy Community Experiment-Cascadia Subduction Zone

Led By: David Schmidt and Noel Jackson — *Jul 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 and proposed a new tectonostratigraphic model of the island.

- Conducted detrital zircon geochronology (LA-ICP-MS) to estimate the depositional age of the clastic units of this island
- Conducted high-resolution SEM-EBSD grain-scale maps of blueschist-facies cherts to identify deformation mechanisms at deep subduction depths.

Penrose Conference on Geological Fingerprints of Slow Slip to Santa Catalina Island
Led By: John Platt, Christie Rowe, Jamie Kirkpatrick, Melodie French, David Schmidt *Apr 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 relavance 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 - Jul 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 - 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-Jul 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-Jul 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-Jun 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.

Teaching Assistantship

Office of Science Education: Science Communication Research Assistant
Mentor: Dr Diane Dechief *2023-2024*

- Mentored 4 undergraduate research assistants with their science communication pieces for Office of Science Education blog.
- Edited and assisted them in crafting science story-telling pieces by means of interviews, popular science articles and infographics.
- Analyzed and compiled survey responses from five years of ComSciCON-Canada, a science communication conference held annually for Canadian graduate students. The survey analysis focused on gauging the relevance of science communication in society, funding support for science communication, and increasing sense of belonging among STEM students.

Earth & Planetary Sciences, McGill University: Teaching Assistant for Undergraduate Program
Instructors: Various *2019-2022*

- Trained in effective online and in-person teaching and pedagogical strategies such as place- and inquiry-based pedagogies.
- Designed and delivered laboratory exercises and course materials for introductory and upper-level undergraduate geology courses, such as Terrestrial Planets, General Geology, Earth & Life History, and Understanding Planet Earth.
- Developed grading rubric and feedback systems to help students achieve success with term paper evaluations, laboratory exercise problem set assignments, and semester exams questionnaires. Held office hours to provide one-one support to students and mentored them through their course projects.
- Received positive evaluation from 175+ students over three years with positive recruitment among undeclared undergraduates to geology and earth science major programs.

Earth Sciences, Indian Institute of Technology Bombay: Teaching Assistant for Graduate Program
Mentor: Various *2018-2019*

- Delivered course material and laboratory exercises to first-year graduate students and upper-level undergraduate civil engineering courses, such as Structural Geology & Field Methods, Paleontology, and Introductory Geology for Civil Engineers.
- Held office hours to provide one-one support to students and ideate on term and coursework projects while addressing doubts from students regarding course materials.
- Developed grading rubric and feedback systems to help students achieve success with term paper evaluations, laboratory exercise problem set assignments, and semester exams questionnaires.

Internships

- Structural Geology Research Group, University of Rochester, Rochester, NY: Summer Research Intern as part of SN Bose Indo-US Internship Program, sponsored by the Government of India. (2017)
- Paleoseismology & Active Tectonics Research Group, Institute of Seismological Research, Gandhinagar, Gujarat, India: Summer Research Intern, sponsored by the Indian Academy of Sciences Internship Program (2016)

Presentations & Publications

- **Das, M.**, Rowe, C., Boianju, I., Angombe, M., Tarling, M., Richard, D., (2025) *Subduction architecture of Angel Island, San Francisco Bay, California: Contributions from Franciscan accretion and recent strike-slip faulting* in review, Geosphere, 2025.
- **Das, M.**, Anfinson, O., Rowe, C., Schroeder, N. (2025) *Age, sedimentology and deformation history of the Mesozoic Franciscan Accretionary Complex, Angel Island, California, GSA Bulletin, 2025. DOI:https://doi.org/10.1130/B37239.1*
- **Das, M.**, Kirkpatrick, J., Rowe, C., Mookerjee, M. (2025) *Deformation within blueschist-facies metachert mylonite: Implications for deformation at the lower limits of seismogenic zone* in preparation for submission in Tectonics 2025.
- **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.
- **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.
- **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.
- **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, Haifax, Canada, May 2022.
- **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, Haifax, Canada, May 2022.
- **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.

- **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.
- 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.
- 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.
- **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.
- 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.
- **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.
- **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.
- **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.
- **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, January 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 ($25000 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. 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)
13. Awarded the Indian Academy of Sciences Summer Research Fellowship (INR 16000). (2016)
14. Secured an All India Rank 2 out of 1700 candidates appearing in Joint Admissions Test for Masters. (2016)
15. Secured highest GPA aggregate in Geology at the Bachelors of Science level, St. Xavier's College, Mumbai (INR 12000). (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

- **Das, M.** (2021-2023) *Articles written as a writing fellow for Temblor Earthquake News*, Writing Portfolio Linked Here.
- Agube, V.; Beitari, S.; Chen, M.; **Das, M.**; Easson, K.; Ghribi, M.; Hiebert, M.; Pineda, S.; Sidibé, H.; Soo, S.; Xue, Y.C.; Zborlaski, A. (2022) *Unlocking Science: The rise of Open Science in Canada*, Science & Policy Exchange Café Discussion, Sept 2022. Report Linked here.
- 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.
- 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.

- **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.(Report available upon request)
- Rodzinyak, K.; **Das, M.**; (2021) *Celebrating Science Odyssey with some SMOrES*, article for Geolog, McGill University, June 2021.
- Whelan, M.; **Das, M.** (2021) *Conversations with Prof Olivia Jensen*, faculty interview feature for Geoblog, McGill University, April 2021.
- Whelan, M.; Das, D.; **Das, M.** (2021) *Conversations with Prof Christie Rowe*, faculty interview feature for Geoblog, McGill University, February 2021.
- Salas, J.; **Das, M** (2021) *What it feels like to be queer in the Earth Sciences*, article for Geoblog, McGill University, February 2021.
- **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 Univeristy-Earth & Planetary Science (EPS) and Unlearning Racism in Geosciences (URGE) Pod member (2021-2023)
- Field Trip Leader and content developer 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 (2020-2021)
- 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)

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 *Jul 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, Agisoft, MOVE
- **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)