

# Raul Benjamin C. Mendoza

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## 1. Career History

Department of Earth, Ocean and Atmospheric Sciences, University of British Columbia

- Graduate Teaching Assistant 2

Sept. 2022 – May 2023

Courses: *Field Geology* (1 field school), *Seismology* (1 term), *Analysis of Time Series and Inverse Theory for Earth Scientists* (1 term)

National Institute of Geological Sciences, University of the Philippines Diliman

- Instructor 7
- Instructor 6
- Instructor 4

Jul. 2021 – Jan. 2022

Jan. 2020 – Jul. 2021

Aug. 2017 – Dec. 2019

Courses: *Principles of Geology* (13 courses / 7 semesters), *Principles of Geology – Laboratory* (1 course / 1 semester), *Field Methods in Geology* (1 course / 1 semester), *Technical Drawing and Field Methods in Geology* (5 courses / 3 semesters), *Structural Geology – Laboratory* (8 courses / 4 semesters), *Principles of Geomorphology – Laboratory* (7 courses / 4 semesters), and *Field Geology* (2 summer courses)

## 2. Educational Record

University of British Columbia

- PhD Geophysics (*ongoing*)

2022 - present

University of the Philippines Diliman

- MS Geology
- BS Geology, magna cum laude

2017 - 2021

2013 - 2017

## 3. Awards and Grants

University of British Columbia Four Year Doctoral Fellowship	2023-2027	C\$18,200.00 per year
Earth, Ocean and Atmospheric Sciences Department Awards: Egil H. Lorntzen Scholarship	2022	C\$5,000.00
University of the Philippines Geology Merit Award	2021	Php10,000.00
National Institute of Geological Sciences Research Grant - Analysis of Coulomb Stress Interactions between Active Faults in Southwest Luzon Island and the 12 January 2020 Taal Volcano Eruption Sequence	2020	Php36,000.00
National Institute of Geological Sciences Research Grant - Effects of Coulomb stress transfer from recent strong earthquakes in the Visayan Basin on the Central Cebu Fault	2019	Php36,000.00
Office of the Vice Chancellor for Research and Development - National Institute of Geological Sciences (NIGS) Research Dissemination Grant	2018	Php45,000.00
National Institute of Geological Sciences Research Grant - Coulomb stress transfer modelling of moderate to large earthquakes across eastern Philippines over the past 40 years	2018	Php36,000.00

## 4. Research Skills and Interests

I am primarily interested in assessing earthquake hazards using structural geology, geomorphology, seismology, and geodesy. I have experience in seismic hazard modelling, Coulomb stress transfer modelling, and tsunami modelling. I regularly use *QGIS*, *ArcGIS*, and *GMT* to predict ground motion, and calculate geomorphic indices to detect tectonic activity. I have used *R* to generate histograms from my raster products. I have written short programs with *Python* and *Bash*.

My field experiences include geological mapping, fault mapping, coastal terrace uplift surveying, coastal microatoll surveying, and earthquake damage documentation. Throughout these surveys I had the opportunity to use rangefinders, total stations, real-time kinematic GPS receivers, ground-penetrating radar, and the fundamental compass and rock pick.

As a former faculty member, I have a passion for teaching to improve the level of Earth science education in my home country. I am hoping to expand my expertise to include seismology, geodesy, and geophysics so that I may contribute to the disaster resilience of the earthquake-prone Philippine islands.

## 5. Published Work

### Journal Publications

1. Rimando, J.M., Williamson, A.L., Mendoza, R.B.C., & Hobbs, T.E. (2022). **Source Model and Characteristics of the 27 July 2022 Mw 7.0 Northwestern Luzon Earthquake, Philippines.** *Seismica*, vol. 1.1, doi: [10.26443/seismica.v1i1.217](https://doi.org/10.26443/seismica.v1i1.217).
2. Mendoza, R.B., Ramos, N., & Dimalanta, C. (2022). **High-resolution peak ground acceleration modeling using geographic information systems: A case study of the potentially active Central Cebu Fault System, Philippines.** *Journal of Asian Earth Sciences*: X, 100097, doi: [10.1016/j.jaesx.2022.100097](https://doi.org/10.1016/j.jaesx.2022.100097).

### Conference Proceedings

1. (Accepted) Mendoza, R.B., & Hobbs, T.E. (2023). **Modelling the contribution of possible active fault sources to the seismic hazard in Vancouver, British Columbia.** *Proceedings of the Pacific Conference on Earthquake Engineering - Canadian Conference on Earthquake Engineering 2023*.

## 6. Conference Presentations

### Oral (\*as presenter)

1. \*Mendoza, R.B., & Hobbs, T.E. (2023). **Modelling the contribution of possible active fault sources to the seismic hazard in Vancouver, British Columbia.** Pacific Conference on Earthquake Engineering - Canadian Conference on Earthquake Engineering 2023.
2. \*Mendoza, R.B.C., & Ramos, N.T. (2021). **Analysis of static stress interactions between the January 2020 Taal Volcano eruption and surrounding active faults.** 16th National Institute of Geological Sciences Research Symposium (NIGSCON 2021).
3. \*Mendoza, R.B.C., Ramos, N.T., & Dimalanta, C.B. (2021). **Predicting ground motion from potential earthquakes of the Central Cebu Fault System, Philippines.** 18th Annual Meeting of the Asia Oceania Geosciences Society (AOGS 2021).
4. \*Mendoza, R.B.C., & Ramos, N.T. (2020). **Modelling earthquake-volcano interaction after the Taal Volcano January 2020 Eruptions.** Geological Convention of the Geological Society of the Philippines (GEOCON 2020).
5. \*Mendoza, R.B.C., Ramos, N.T., & Dimalanta, C.B. (2019). **Fault geometry and seismic hazard assessment of the Central Cebu Fault system.** Geological Convention of the Geological Society of the Philippines (GEOCON 2019).
6. Tablizo, M.U., Romaguera, P.J.M., Raganit, R.A.E., Araneta, C.J., Farre, J.J.F., Mendoza, A.S.R.S., Ramos, C.S.S., Dela Cruz, Y.J.R., Borja, A.H., Il, Ambrocio, N.A.B., Calma, V.E.M., Narciso, P.A., Fernando, M.M.T., Martinez, P.A.M., Carolina, G.T., Lumongsod, R.M.G., Mendoza, R.B.C., Jajalla, M.A.B., Lagmay, A.M.F. (2019). **Geology of Naga City, and San Fernando, Cebu, and its implication on the evolution of the Visayan Basin.** GEOCON 2019.
7. Tablizo, M.U., Romaguera, P.J.M., Raganit, R.A.E., Araneta, C.J., Farre, J.J.F., Mendoza, A.S.R.S., Ramos, C.S.S., Dela Cruz, Y.J.R., Borja, A.H., Il, Ambrocio, N.A.B., Calma, V.E.M., Narciso, P.A., Fernando, M.M.T., Martinez, P.A.M., Carolina, G.T., Lumongsod, R.M.G., Mendoza, R.B.C., Jajalla, M.A.B., Lagmay, A.M.F. (2019). **Revisiting the geology of central Cebu: Observations from Naga City and San Fernando.** Earth Science Colloquium 2019.
8. \*Mendoza, R.B.C., Ramos, N.T., & Dimalanta, C.B. (2019). **Fault geometry and seismic hazard of the Central Cebu Fault, Philippines.** 16th Annual Meeting of the Asia Oceania Geosciences Society (AOGS 2019).
9. Nawanao Jr., L.P., Ramos, N.T., Mendoza, R.B.C., & Dimalanta, C.B. (2019). **Tectono-geomorphic signatures of faults in Central Cebu Island, Philippines, derived from morphometric analysis.** AOGS 2019.
10. \*Mendoza, R.B.C., Ramos, N.T., Lumongsod, R.M.G., Maxwell, K.V., & Dimalanta, C.B. (2019). **Seismic hazard potential of the Bogo Fault in Cebu Island through magnitude estimation and peak ground acceleration (PGA) modelling.** 6<sup>th</sup> Philippines-Taiwan Earth Sciences International Conference (PTESIC 2019).
11. Lumongsod, R.M.G., Ramos, N.T., Mendoza, R.B.C., & Dimalanta, C.B. (2018). **GIS-based methods of sinkhole delineation in Cebu City.** 2018 AMCI-ISRI-RWG Technical Seminar.

12. Ramos, N.T., Maxwell, K.V., Lumongsod, R.M.G., Mendoza, R.B.C., & Dimalanta, C.B. (2018). **Coastal tectonics and relative sea level history of Cebu Island, Philippines inferred from emergent marine terraces and coastal notches**. International Geoscience Programme Project 639 (IGCP 639).
13. Ramos, N.T., Maxwell, K.V., Lumongsod, R.M.G., Sarmiento, K.J.S., Mendoza, R.B.C., & Dimalanta, C.B. (2018). **Relative sea level changes and long-term deformation in Cebu Island, Philippines inferred from emergent marine terraces and coastal notches**. 15th Annual Meeting of the Asia Oceania Geosciences Society (AOGS 2018).
14. Lumongsod, R.M.G., Abainza, R.L.T., Abajon, J.G.D., Abila, A.L.C., Amiyon, C.J.K., Andaya, P.J.V., IV, Arevalo, M.I.P., Ativo, S.C.J., Ballon, A.D.A., Balmes, J.E., Barcena, B.A.D., Bellen, M.K.L.B., Brotamonte, I.V., Buen, I.M.R., Cabais, M.L.C., Cabaluna, S.B., Jr., Cariño, M.C.M., Carranza, F.A.V., Costa, M.A.V., De Grano, R.A.L., De Guia, L.G.M., De Guzman, O.L.B., Demegillo, J.B.A., Donato, J.C., Ebreo, L.B., Espere, R.S., Jr., Ferrer, K.A.B., Figueroa, A.J.T., Flora, J.R.R., Garcia, M.L.B., Gaviola, J.V.M.J., Gesulga, M.A.J.F., Go, C.M.M., Guiam, C.R., Gutierrez, A.C.S., Halasan, O.P.C., Illoreta, J.M.P., Lafuente, A.F.Z., Lazatin, R.U., Lukman, A.C., Marasigan, R.A.B., Mendoza, C.G.S., Mendoza, R.B.C., Oliva, A.J.D.C., Pabito, E.L., Jr., Padernilla, R.S., Palma, R.V.I., Pangilinan, A.B., Peralta, M.J.V., Popes, M.G., Quierrez, R.N.M., Rastrullo, R.M., Remolador, J.K.O., Ringor, V.E.S., III, Sahagun, J.J.D.R., Sarmiento, L.F.O., Sia, C.E.D.L.R., Taduran, I.D.C., Tan, C.M., Tanciongco, A.M., Tapales, K.T., Tilan, J.M.A., Umbina, J.J.B., Uy, R.S.Z., Yee, J.V.R., Gabo-Ratio, J.A.S., Payot, B.D., Fernando, A.G.S., De Silva, L.P., Jr., Aurelio, J.M.A., Arcilla, C.A., Mendoza, J.P.A., Refran, J.C.A., Guballa, J.D.S., Doyongan, Y.I.L., Hermo, M.I.G., Irapta, P.N.S., Uy, M.A.C., & Gibaga, C.R.L. (2016). **Geology of south central Palawan revisited**. 13<sup>th</sup> National Institute of Geological Sciences Research Symposium (Paladútaan 2016).

#### Poster

1. Ramos, N.T., Maxwell, K.V., Lumongsod, R.M.G., Mendoza, R.B.C., Nawanao Jr., L.P., & Dimalanta, C.B. (2019). **Distribution and morphological patterns of emergent marine terraces in Cebu Island, Philippines: Insights from field data and digital terrain analysis**. AOGS 2019.
2. Ramos, N.T., Nawanao, L.J.P., Mendoza, R.B.C., & Dimalanta, C.B. (2019). **Tectonics and geomorphic development of central Cebu Island (Philippines) inferred from morphometric analysis of drainage basins**. PTESIC 2019.
3. \*Mendoza, R.B.C., Lumongsod, R.M.G., Ramos, N.T., Maxwell, K.V., & Dimalanta, C.B. (2018). **Effects of the Bogo Fault on the emergent karst landscape of northern Cebu**. Geological Convention of the Geological Society of the Philippines (GEOCON 2018).
4. \*Mendoza, R.B.C., & Ramos, N.T. (2018). **Effects of stress transfer on seismic events along the Philippine Trench over the past 40 years: Preliminary results. "Outstanding Student Presentation" - Graduate student poster category**; National Institute of Geological Sciences Research Symposium (Paladútaan 2018).
5. Lumongsod, R.M.G., Ramos, N.T., Maxwell, K.V., Mendoza, R.B.C., & Dimalanta, C.B. (2018). **Characterization of Alternating Gravel and Mud Deposits in Southern Cebu and its Implications on Coastal Hazards**. 2018 South China Sea Tsunami Workshop (SCSTW-10).
6. Lumongsod, R.M.G., Ramos, N.T., Maxwell, K.V., Mendoza, R.B.C., & Dimalanta, C.B. (2018). **Alternating gravel and mud deposits in southern Cebu: Origin and implications for coastal hazards**. 15th Annual Meeting of the Asia Oceania Geosciences Society (AOGS 2018).
7. \*Mendoza, R.B.C., Ramos, N.T., Maxwell, K.V., Lumongsod, R.M., Sarmiento, K.J.S., & Dimalanta, C.B. (2018). **Neotectonics of the Bogo Fault in Cebu, Philippines: Constraints from coastal terraces and surface geology**. AOGS 2018.
8. Tanciongco, A.M., Lumongsod, R.M.G., Mendoza, R.B.C., Abila, A.L.C., Guballa, J.D.S., & Arcilla, C. (2017). **Paleoenvironmental reconstruction of the Isugod Formation and Alfonso XIII Formation, Palawan, Philippines: Microfacies analysis and sandstone provenance**. AOGS 2017.
9. \*Mendoza, R.B.C., Ramos, N.T., Tsutsumi, H., Maxwell, K.V., & Shen, C.C. (2016). **Holocene sea level changes constrained from geomorphic markers in La Union, Philippines**. GEOCON 2016.
10. Lumongsod, R.M.G., Abila, A.L.C., Mendoza, R.B.C., Tanciongco, A.M., & Guballa, J.D.S. (2016). **Paleoenvironmental clues based on sandstone provenance and microfacies analysis of the Isugod Formation and the Alfonso XIII Formation, Palawan, Philippines – preliminary results**. GEOCON 2016.

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#### 7. Membership in International and National Organizations

- Seismological Society of America: 2022
  - Sakura Science Club: since 2019
  - Asia Oceania Geosciences Society (AOGS): since 2017
  - University of the Philippines Alumni Association: since 2017
  - Geological Society of the Philippines (GSP): 2016 - 2021
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## 8. Outreach and Public Presentations

- Resource speaker, *Structural Geology Lab methods*, Annual Geology Board Review organized by UP Cwm Zena'na (2022, 2021, 2020).
  - Resource speaker, *Structural Geology (Laboratory)*, Society of USEP Geologists Geology Board Review (2022, 2021).
  - Resource speaker, *Curious Minds: Meet the Scientists (A Webinar for Kids)* organized by the College of Science, UP Diliman (2021).
  - Resource speaker and field instructor, National Geology Congress organized by the UP Geological Society.  
*Google Earth as a Tool for Teaching Geology* (2021, 2020)  
*Field Methods* (2020, 2019)  
*Minerals* (2018)
  - Museum guide, UP National Institute of Geological Sciences Museum (2020, 2019, 2018).
  - Speaker, Geo-lecture series: *Geology and Geohazards in Central Cebu Island, Philippines*, an information and education campaign attended by elementary and high school science teachers, and geologists from the Mines and Geosciences Bureau divisions of Regions 5, 7, and 8 (2019).
  - Junior advisor, UP Geological Society (2019, 2018).
  - Resource speaker, *Structural Geology*, Mining Engineering Board Review organized by UP MINERS (2019).
  - Exhibitor, National Science and Technology Week organized by the Department of Science and Technology (2019).
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## 9. Field Experiences

March 2024: Southern Coast Mountains, British Columbia, Canada

- (Planned) 1-week sub-bottom profiling survey searching for evidence of active faulting in the Coast Mountains north of Vancouver for PhD dissertation project.

August-September 2023: Southern Coast Mountains, British Columbia, Canada

- 2-week ground and LiDAR survey searching for evidence of active faulting in the Coast Mountains north of Vancouver for PhD dissertation project.

June 2023: Squamish, British Columbia, Canada

- Assisted in LiDAR survey for active faults for 2 days.

May 2023: Oliver, British Columbia, Canada

- Assisted Field Geology class for 12 days.

September 2022: Southern Coast Mountains, British Columbia, Canada

- Conducted 12-day fieldwork searching for evidence of active faulting in the Coast Mountains north of Vancouver for PhD dissertation project.

May 2022: Quadra Island, Canada

- Joined 8-day field school with the first cohort of the Pacific Rim Ocean Data Mobilization and Technology (PRODIGY) training program. Assembled and deployed DIY seismic sensor.

August 2021: Pasig City, Philippines

- Joined 1-day Quick Response Team assessment of the Topaz Road deep cracks.

November 2020: Rizal, Philippines

- Collected structural field data for producing a virtual fieldwork for students of Structural Geology class.

June-July 2019: Cebu Island, Philippines

- Co-supervised 3-week Field Geology class, including logistics, communication with local government units, and data analysis.
- Stayed for another week to lead a fault mapping team for MS thesis data collection.

April 2019: Bulacan province, Philippines

- Co-supervised 2-day Field Methods class. Assisted in travel logistics.

April 2019: Zambales province, Philippines

- Documented earthquake damage from April 22, 2019 Castillejos Earthquake.

April 2019: Cebu Island, Philippines

- Conducted a 3-day ground-penetrating radar survey to image the Bogo Fault in Cebu Island. Assisted in travel logistics.
- Stayed for another 3 days to lead a fault mapping team for MS thesis data collection.

April 2019: Mindoro Island, Philippines

- Attended 3-day Active Tectonics class fieldwork. Collected tsunami deposits using a geoslicer. Conducted a ground-penetrating radar survey. Assisted in travel logistics.

April 2019: San Roque Dam, Philippines

- Attended 3-day Advanced Structural Geology class fieldwork. Collected structural data from fault- and joint-sets related to the movement of the Philippine Fault.

March 2019: Rizal province, Philippines

- Co-supervised 2-day Field Methods class fieldwork. Assisted in travel logistics.

October 2018: Baguio city, Philippines

- Co-supervised 3-day Structural Geology class fieldwork. Assisted in travel logistics.

June 2018: Ilocos Sur province, Philippines

- Co-supervised Field Geology class fieldwork for 1-week. Assisted in travel logistics.

June 2018: Cebu Island, Philippines

- Attended 3-week Advanced Field Geology class fieldwork. Collected structural and geological data. Refined formational boundaries. Reinterpreted stratigraphic relations.

May 2018: Ilocos Sur province, Philippines

- Conducted 2-day reconnaissance for Field Geology class fieldwork.

April 2018: Zambales province, Philippines

- Attended 4-day Igneous Petrology class fieldwork. Examined outcrops of an ophiolite sequence. Collected mantle xenoliths and observed volcanic strata on Mt. Pinatubo.

April 2018: Bulacan province, Philippines

- Co-supervised 2-day Field Methods class. Assisted in travel logistics.

March 2018: Ilocos Norte and Ilocos Sur provinces, Philippines

- Assisted in 5-day coastal microatoll survey with collaborators from the Earth Observatory of Singapore: deployed water level loggers, conducted total station geodetic survey, assisted in drone survey, and assisted with coral-cutting team. Assisted in travel logistics.

March 2018: Taal Lake, Philippines

- Co-supervised undergraduate students' field trip on Taal Lake, Taal Volcano, and the volcanic monitoring station.

February 2018: Zambales province, Philippines

- Co-supervised 2-day Field Methods class fieldwork. Assisted in travel logistics.

January 2018: Cebu Island, Philippines

- Assisted in 11-day coastal terrace uplift survey. Assisted in travel logistics.

May 2017: Rizal province, Philippines

- Attended 2-day Geology of the Philippines and Southeast Asia class fieldwork.

March 2017: Ilocos Norte and Ilocos Sur provinces, Philippines

- Assisted in 2-week coastal microatoll survey with collaborators from the Earth Observatory of Singapore: deployed water level loggers, conducted total station geodetic survey.

June 2016: Palawan Island, Philippines

- Attended 1-month Field Geology fieldwork. Collected structural and geological data. Refined formational boundaries. Reinterpreted stratigraphic relations.

April 2016: Pangasinan province, Philippines

- Attended 3-day Paleontology class fieldwork.

April 2016: Ilocos Norte and Ilocos Sur provinces, Philippines

- Attended 4-day Principles of Stratigraphy class fieldwork.

November 2015: Ilocos Norte and Ilocos Sur provinces, Philippines

- Assisted in 1-week coastal terrace uplift survey.

October 2015: Baguio city, Philippines

- Attended 3-day Structural Geology class fieldwork.

July 2015: Batangas province and Mindoro Island, Philippines

- Assisted in 1-week coastal terrace uplift survey.

April 2015: Bulacan province, Philippines

- Attended Field Methods class fieldwork.

February 2015: Rizal province, Philippines

- Attended Field Methods class fieldwork.

February 2015: Ilocos Norte and Ilocos Sur provinces, Philippines

- Assisted in 4-day coastal terrace uplift survey.

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## 10. Others

- Organizer, department board game social events for graduate students (May 2023 – present).
- Member, Department of Earth, Ocean and Atmospheric Sciences Safety Committee (February 2023 – present).
- Judge for the Outstanding Student Presentation Award, 16th National Institute of Geological Sciences Research Symposium (2021).

- Featured graduate student, [UP National Institute of Geological Sciences Museum](#) (30 June 2020).
- Research visit, Kanazawa University, Japan, through the Sakura Science Exchange Program (17 October – 01 November 2019).
- Radio interview, "Structural Geology and Geomorphology" on the [Sciencia Na Kayo!](#) program of DZUP Radio (11 May 2018).