

MARIA JHONNIE Z. VILLAREAL

PhD Student - Department of Earth and Planetary Sciences, Northwestern University

Email: mariavillareal@u.northwestern.edu

Experienced geoscientist in geology, water and environmental resources, karst & cave science, and GIS. Applied experience in geothermal energy, mineral resources, project management, and borehole drilling. Active speleologist including international expeditions. Acquired skills in Water Safety & Rescue, Wilderness Search & Rescue, Swiftwater & Floodwaters Rescue Technician, Basic Firearms Safety, Disaster Management, and Incident Command System.

EDUCATIONAL BACKGROUND

MS in Environmental Science, University of Guam

December 2021

- **Presidential Thesis Award.** Hydrogeological Characterization of a High-Discharge Coastal Freshwater Spring System: Ayuyu Cave, Northwest, Guam.

BS in Geological Engineering and Geology, Mapua University, Philippines

- **Best Undergraduate Thesis Award.** Mineralogical & Engineering Characterization of the Suitability of Laterite in Acoje, Zambales as Impermeable Clay Liner for Heap Leaching

AWARDS AND RECOGNITION

2025 Geological Society of America – John W. Hess Research Grant in Karst Research Studies

2025 Geological Society of America – Graduate Student Research Grant

2025 Northwestern Buffet International Travel Research Grant

2024 Geological Society of America – Harold T. Stearns Fellowship Award

2024 Geological Society of America – Graduate Student Research Grant

2021 American Water Works Association - Best Graduate Poster

2021 Carriveau Family Scholarship Award

2019 University of Guam MS Scholarship - under NASA-ACTUAS project.

WORK EXPERIENCE

Water and Environmental Research Institute of the Western Pacific – University of Guam

Research Associate III

Feb 2022 to September 2023

Graduate Research Assistant

May 2019 - December 2021

Instrumentation, testing, and maintenance of the Northern Guam Lens Aquifer (NGLA) deep observation wells and associated infrastructure implemented and managed under the One-Guam Aquifer Monitoring Program (OGAMP); Provided technical support to Monitoring System Expansion and Rehabilitation Project (MSERP) and Comprehensive Water Monitoring Program (CWMP) and OGAMP

Independent Consultancy Work in Geothermal Exploration and Development

Geothermal Geologist

Various geothermal projects/prospects in the Philippines (*Biliran, East Mankayan, Iriga, Negron Cuadrado, Banton Island, Tiwi, and Buguias-Tinoc*), Indonesia (*Banten, Sokoria and Sorik Marapi*) and Peru (*Quella-Apacheta*), primarily tasked at evaluating geothermal potential, through geological/geochemical surveys and geological well-sitting during exploration drilling works.

TRAININGS & WORKSHOPS

Build a Cave Pearl Workshop University of Guam–Northwestern University collaboration 2024

Northwestern Experiential Fieldwork – Yucatan, Mexico 2024

Imaging Science (Building a planet) Workshop, Northwestern University, Illinois, USA 2024

S4 Summer School on Speleothem Science, Sao Paulo, Brazil 2023

NGWA - Introduction to Groundwater Geochemistry – Las Vegas, USA 2022

Visual Karsys Short Course Training, Karst Research Institute, Slovenia 2019

ESRI / ArcGIS

ESRI Arc-Hydro, ESRI Ocean, Weather, & Climate, Education Summit, Imagery and Remote Sensing, ESRI Federal GIS Conference

Rescue and Medical Response + SCUBA

Wilderness Search and Rescue (WISAR) training, Philippine Red Cross – Standard First Aid / Basic Life Support. Incident Command System Executive Course, Swiftwater Rescue – R3 International SCUBA - Ecodiver Training Course – Reef Check. Open Water Dive Certification – SSI.

PUBLICATIONS

- Villareal, M.J.Z.**, Robles, E.C., Dia, M., & Soriano, L. (2023). Karst Potential Map of the Philippines. Zenodo. <https://doi.org/10.5281/zenodo.10404471>
- Van de Lagemaat S.H.A., Pastor- Galán D., Zanderink B.B.G., **Villareal, M.J.Z.**, Jenson, J.W., Dekkers M.J., & van Hinsbergen D.J.J. (2023). A critical reappraisal of paleomagnetic evidence for Philippine Sea Plate rotation. Tectonophysics, Volume 863, 230010. <https://doi.org/10.1016/j.tecto.2023.230010>
- Villareal, M.J.Z.**, Jenson, J.W., & Bautista K.K. (2022). Drilling Deep Observation Wells in Carbonate Island Karst - The Monitoring System Expansion and Rehabilitation Program, Guam. Universities Council on Water Resources Conference, Fort Collins, Colorado. Poster.
- Villareal, M.J.Z.**, Jenson, J.W., King R.P., & Aban E.L. (2021). Hydrogeological Characterization of a High-Discharge Coastal Freshwater Karst Spring System. WERI Technical Report #176. Water and Environmental Research Institute of the Western Pacific – University of Guam.
- Villareal, M.J.Z.**, Licup A.C., Omac-Canarias X.L., Sarmiento Z.F. (2020). Structural Control of the Sorik Marapi Geothermal Field – Surface and Subsurface Evidence. Proceedings World Geothermal Congress 2020 Reykjavik, Iceland.
- Omac-Canarias X.L., Licup A.C., **Villareal, M.J.Z.**, & Sarmiento Z.F. (2020). Comparative Subsurface Geology and Hydrothermal Alteration of Pad A and Pad E Wells in Sorik Marapi, North Sumatra, Indonesia. Proceedings World Geothermal Congress 2020 Reykjavik, Iceland

PRESENTATIONS AND POSTERS

- | | |
|--|------|
| 16 th Annual Conference on Island Sustainability | 2025 |
| 5 th Asian Trans-disciplinary Karst Conference | 2024 |
| 3 rd NASA Guam Research Symposium - <i>Hånom Fresko yan Acho' Tåsi</i> , Guam | 2024 |
| National Speleological Society 2023 Congress, Elkins, West Virginia, USA | 2023 |
| UCOWR-NIWR - Water Resources Annual Water Resources Conference, Colorado, USA | 2023 |
| 2 nd NASA Guam Research Symposium - <i>Hånom Fresko yan Acho' Tåsi</i> , Guam | 2023 |
| UIS: 19 th Speleological Congress –University of Savoie Mont Blanc, France | 2022 |
| American Water Works Association- Western Pacific, Guam | 2022 |
| Online Learning Event on Assessment of Different Cave Values – Karst Hydrogeology | 2021 |
| International Tropical Island Water Conference, Hawai'i EPSCoR 'Ike Wai, Hawaii, USA | 2021 |
| American Water Works Association – Hawaii Section Annual Conference | 2021 |
| World Geothermal Congress, Reykjavik, Iceland | 2021 |
| Summer School on Speleology, Universidad Gadjah Mada, Yogyakarta, Indonesia | 2018 |
| 5th Indonesia International Geothermal Convention & Exhibition, Jakarta, Indonesia | 2017 |
| 17 th International Congress of Speleology, Australia | 2017 |

CONFERENCES

- | | |
|--|------|
| Geological Society of America Connects, Anaheim, California | 2024 |
| Geological Society of America Connects, Pittsburgh, USA | 2023 |
| KR9: Climate Change – The Karst Record –University of Innsbruck, Austria | 2022 |
| Mini-S4: Speleothem Science –University of Innsbruck, Austria | 2022 |
| S4 Summer School on Speleothem Science | 2022 |
| 3 rd Asian Trans-Disciplinary Karst Conference - Philippines | 2019 |
| 27 th International Karst School, Karst Research Institute ZRC SAZU, Slovenia | 2019 |
| 6 th International Geothermal Conference and Exhibition, Indonesia | 2018 |
| Summer School Speleology. Universidad Gadjah Mada, Indonesia | 2018 |