



Ella Joyce Virayo

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Education & Training

Bachelor of Science in Geology | University of the Philippines Diliman | 01/08/2019 - 30/07/2023

Thesis: LAHARZ modelling of lahar flows around Mount Arayat, Philippines

Advisers: Alfredo Mahar Francisco A. Lagmay, Ph.D.; Likha G. Minimo, Ph.D.

Final grade: Cum Laude

Work experience

Senior GIS Specialist (Project Technical Specialist) | Philippine Institute of Volcanology and Seismology - Geospatial Analytics and Technology Solutions | 23/09/2025 - Current | Quezon City, Philippines

- Developed 5 Python functions (fuzzy membership and raster reclassification) in Visual Studio Code; synthesized 17 geohazard maps into a multi-hazard thematic layer by fuzzy overlay analysis
- Coded a Python site suitability model prototype for schools and housing, for integration to the national-level Disaster Risk Reduction and Climate Change Adaptation (DRR-CCA) Central Platform
- Performed spatial analysis (Getis-Ord Gi* and Local Moran's I) to determine Philippine malnutrition hotspots/clustering for the Food and Nutrition Research Institute
- Conducted fieldwork in 3 municipalities in Cavite and Batangas; collected local geospatial data for pilot area selection of site suitability model testing

Geologist (Science Research Specialist) | Mines and Geosciences Bureau | 19/02/2024 - 19/09/2025 | Quezon City, Philippines

- Modeled karst subsidence susceptibility of 3 municipalities using Weights of Evidence (WoE); used ILWIS and ArcGIS for computation methods and Python for semi-automation
- Produced 28 thematic map layers for 4 geohazard fieldworks using ArcGIS and QGIS
- Performed geohazard field assessments to populate sinkhole and landslide inventories; conducted ground penetrating radar (GPR) surveys to characterize subsurface cavities in karst terrains
- Issued geohazard advisories to local government units (LGUs) and member-agencies of the National Disaster Risk Reduction and Management Council (NDRRMC) on rain-induced landslides, floods, and sinkholes during tropical cyclone events
- Co-authored 2 karst hazard mapping technical reports and 3 conference papers on disaster risk reduction and management
- Contributed technical input in the NDRRMC Standard Operating Procedures and Guidelines Handbook

Research Fellow | Decision Engineering, Criteria Integration & Design Evaluation Laboratory (DECIDE Lab) | 01/05/2025 - 23/06/2025 | Taguig City, Philippines

- Provided technical assistance and mentorship to 21 undergraduate researchers of the DECIDE Lab in geographic information systems (GIS) software use and spatial data management for nuclear site suitability research
- Produced 6 hands-on GIS exercises for DECIDE Lab members; facilitated weekly check-ins on GIS skill-building progress

GIS Specialist | SPLIT Project - Department of Agrarian Reform | 23/10/2023 - 31/01/2024 | Quezon City, Philippines

- Executed topology check of land ownership awards of Southern Luzon and Central Mindanao; ensured correct projections and spatial alignment using QGIS
- Standardized and cleaned land ownership databases of Bicol and Central Visayas before field validation
- Verified land ownership adherence to forestland laws through QGIS vector buffer analysis

- Led a training on LAHARZ lahar hazard modeling to the hazard assessment team of University of the Philippines Resilience Institute (UP RI) - Nationwide Operational Assessment of Hazards (NOAH)
- Rendered an earthquake epicenter map for the UP RI - NOAH Center

Volunteering

DECIDE Lab Geographic Information System (GIS) Training for Sustainable and Renewable Energy | 10/06/2025 - 23/06/2025 | Technological University of the Philippines - Taguig

- Trained 21 undergraduate engineering students of the Decision Engineering, Criteria Integration and Design Evaluation Laboratory (DECIDE) Lab for 80 hours on fundamental GIS: obtaining datasets, projections, map creation, vector and raster analysis, and basic spatial analysis for identifying suitable site locations

Geology Summit 2023 | University of the Philippines Geology Majors' Society

- Spearheaded a nationwide educational outreach to enhance geoscientific knowledge for 245 high school students and teachers
- Led a diverse team of 28 in executing program workflows, including external partnerships, program branding, and publicity
- Managed online engagement and logistics for 3 online events via Zoom, ensuring seamless program delivery

Taguyod: Alalay Kay Bantay | 16/11/2020 - 02/01/2021 | University of the Philippines Geology Majors' Society

- Led the creatives team in conceptualizing and producing publicity materials (calls for donation, business partnership features) on Facebook and Instagram

Conferences & Seminars

European Union TAIEX Workshop on Earth Observation and Early Warning for Disaster Risk Reduction | 20/05/2025 - 21/05/2025 | Makati City, Philippines

- Represented the Mines and Geosciences Bureau in a collaborative workshop with EU Copernicus, CopPhil Programme and Philippine government agencies to integrate earth observation technologies in disaster risk reduction initiatives
- Gained insights in technical sessions on CEMS (GloFAS & GFM), GDACS, and Galileo EWSS; engaged in discussions with remote sensing applications using Copernicus for geohazards assessments

Geological Convention 2024 | 04/12/2024 - 05/12/2024 | Manila, Philippines

Poster presenter

The duty of Mines and Geosciences Bureau (MGB) in national and local disaster preparedness, response, and early recovery: A case study of Typhoon Carina - **E.J. Virayo**, E.M. Tubalado, M.G.A. Mendoza, J.K. Equila, J.B. Capino, M.K. Cabahug, A.G. Gatbunton, & K.L. Queaño

Usability of Google Earth Engine (GEE) cloud-based mapping tool in Rapid Flood Assessment: A Case Study of July 2024 flooding incidents in the Provinces of Bataan and Pampanga - E.M. Tubalado, A.G. Gatbunton, J.K. Equila, M.G.A. Mendoza, **E.J. Virayo**, J.B. Capino, M.K. Cabahug, R. Madrideo, & K.L. Queaño

Accelerating the landslide and flood hazards monitoring and early warning: A window to the Philippine disaster risk management system - J.K. Equila, M.G.A. Mendoza, E.M. Tubalado, J.B. Capino, M.K. Cabahug, **E.J. Virayo**, A.G. Gatbunton, & K.L. Queaño

Geological Convention 2022 | 05/12/2022 - 07/12/2022 | Taguig City, Philippines

- Participated in plenary discussions on geohazards and environmental geology

Honours and Awards

3rd Place - AWS Hackathon: AI-Powered DOST in 2026 and Beyond | Amazon Web Services | 15/12/2025

Co-developed an interactive, educational web map named BalikTanawPH, a geovisualization tool for Philippine historical information.

Skills

geographic information systems | Python (computer programming) | prepare scientific reports | write technical reports | use geographic information systems | compile GIS-data | evaluate spatial information | geography | prepare visual data | create GIS reports | identify GIS issues | handle geospatial technologies | geological mapping | collect mapping data | apply digital mapping | collect geological data | geophysics | ground penetrating radar | graphic design | Adobe Photoshop | digital arts | Infographics | graphics editor software | project management

Language Skills

Mother tongue(s): **Tagalog** | **English**