Sara Sayyadi

Environmental Geophysicist
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EDUCATION

2023 **Ph.D, Geophysics**, University of Iceland, Reykjavik, Iceland

Dissertation: " Geophysical constraints on the formation of the volcanic island of Surtsey in 1963-1967 and its internal structure"

Supervisors: Prof. Magnús Tumi Gudmundsson, Prof. Páll Einarsson, Prof. James D.L. White

2014 **M.S., Geophysics,** University of Tehran,

Dissertation: "Imaging of salt-body by using 3D gravity inversion based on Adaptive-learning"

2007 **B.S., Physics**, Mazandaran University, Babolsar

Research Subject: Effects of living in HLNRA (high levels of natural radiation areas) regions for habitats

PROFESSIONAL APPOINTMENTS

07/2024-present **Postdoctoral Fellow,** Nevada University, In Prof. Adrian Harpold group

Job description:

- Working in CTEMPs (Center for Transformative Environmental Monitoring Programs) focuses on advancing environmental monitoring technologies and providing cutting-edge tools for environmental research.(https://ctemps.org/)
- Collaborating in Hydrogeophyscis project in U.S. Critical Zone Collaborative Network

01/2023-07/2024 **Postdoctoral Fellow (**Scientist), GFZ, Hydrology group, Potsdam, Germany

Job description: Working in Hydrogravimetry group with research focuses on changes in water storage using ground-based gravimetry satellite gravimetry (GRACE and follow-on missions), and GNSS reflectometry
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CURRENT PROJECTS

• Co-developing a proposal on Seismic Hazard Assessment in the Reno-Fernley Corridor with DAS, Nodal, and Gravity-Based

• Co-leading a long-term DAS experiment at UNR Farm focused on environmental and installation effects on DAS coupling and performance. The project integrates controlled irrigation, fiber cable comparisons, and environmental sensing to improve signal interpretation under variable field conditions.

11/2017-01/2023 Graduate Research Assistant, University of Iceland, Earth Science Group

Job description: Conducted research and filed works related to using geophysics methods in volcanology.

Teaching Experience

University of Nevada

Teaching Assistant and Fieldwork mentoring

- AGU CTEMPs Training on Fiber Optic Sensing Systems, December 2024
- Mackay School Department Welcome – ScienceFIT (introduction to geophysics exploration methods to fresh students),August 2024
- workshop for DAS and DTS, Sagehen UC Reserve and USFS Research Watershed, California, August 2024: https://ctemps.org/sites/ctemps.org/files/fiberoptic_distributed_acoustic_and_temperature_sensing.pdf

Primary Instructor at class and Field

University of Iceland,

Earth Science Institute, Reykjavik, Iceland (fall semester of 2020 and 2022)

Course: Geophysical Exploration for graduate and undergraduate students.

Course Description:

https://ugla.hi.is/kennsluskra/index.php?sid=&tab=nam&chapter=namskeid&id=70571520226

Azad University, Tehran, Iran

Course: Physics II Lab for undergraduate students in the engineering department (Electric, computer, and mechanic engineering).

STUDENT MENTORING & ADVISING

2025 Mentor for RESESS (Research Experience in Solid Earth Science for Students) summer intern – EarthScope Consortium program on DAS and seismic applications in hydrogeophysics

2022 Mentoring Master students at university of Iceland for Magnetic and Gravity project

2017 Bachelor thesis in Geomagnetic (Help to prepare data and data processing)

GRANTS & FELLOWSHIPS

2025 EarthScope Consortium support for mentoring RESESS summer intern on hydrogeophysics project using DAS and seismic data

2025 Teaching program funding, GETSI/NAGT Field Workshop, Summer 2025 – Participant and instructor for interdisciplinary field geophysics teaching (https://serc.carleton.edu/getsi/workshops/Summ2025_field/index.html)

2023 Travel grants from ICDP for a workshop in New Zealand ($2500)

2022 Travel Grant from the University of Iceland ($1000)

2018 Travel Grant from the University of Iceland ($1000)

2019 Travel Grant from the University of Iceland ($1000)

2021 Erasmus plus grant, 2021($8000)

2020 Teaching Assistant Grant from the University of Iceland, 2020, Iceland ($17000)

2017 Travel Grant for EAGE Near Surface Annual Conference, Sweden, 2017 ($1400)

2015 EAGE travel grant for the annual conference, Italy, 2015 ($1000)

FIELD EXPERIENCE

Extensive field experience across various geophysical techniques, including DAS, DTS, Magnetic and gravity measurements

2024 Seismic array, active and passive seismic survey in Reno,NV

2024 DAS and DTS installation at Sagehen UC Reserve and US Research Watershed, CA

2023-2024 Repeated Gravity measurement for groundwater and soil moisture monitoring

2021-2022 Repeated Gravity survey in Iceland for Geldingadalur on the Reykjanes peninsula-2021

2021 Airborne magnetic survey, explorations on the south coast of Iceland

2017-2020 Several Gravity, Magnetic, and EM Measurements in Iceland

PROFESSIONAL ACTIVITIES & SERVICE

- **Volunteer Event Officer at Optica, Environmental Sensing Technical Group, Mar 2025–Present**
  - Organizing and coordinating events that promote collaboration and knowledge sharing in optical science and engineering.
  https://www.optica.org/get_involved/technical_groups/sen/environmental_sensing_(ie)/

- **Lead Organizer, CTEMPs Workshop Series on Fiber Optic Sensing**
  Organizing and coordinating CTEMPs training workshops, experiments, and field-based instructional activities on Distributed Acoustic and Temperature Sensing (DAS/DTS) for graduate students, postdocs, and early-career researchers across the U.S.

- Member of International Space Science Institute (ISSI) ISSI Working Group "Global Terrestrial Water Storage Product: Error Assessment and Improvements",2024
- Invited reviewer for conference paper of EAGE Annual Conferences in technical section 2015-2024
- Founder and president of the student chapter of SEG, National Observatory Greenstone Belt Geophysical Society, Rio de Janeiro, 2016 (https://wiki.seg.org/wiki/National_Observatory_Greenstone_Belt_Geophysical_Society)
- Invited Chairperson for 79the EAGE Annual Conference & Exhibition, Paris ,2017
- Invited Chairperson for 79the EAGE Annual Conference & Exhibition, Oslo, Norway,2024
- Recognized as an outstanding poster presentation in a technical session at EAGE, Madrid, 2015

PUBLICATIONS

- Internal structure of the volcanic island of Surtsey and surroundings: Constraints from a dense aeromagnetic survey,2024. Journal of Volcanology and Geothermal Research, https://doi.org/10.1016/j.jvolgeores.2024.108096

- Geophysical constraints on the formation of the volcanic island of Surtsey in 1963-1967 and its internal structure, 2023.Thesis. https://hdl.handle.net/20.500.11815/4163

- Seismic activity associated with the 1963–1967 Surtsey eruption off the coast of South Iceland. Bull Volcanol 83**,** 54 (2021). https://doi.org/10.1007/s00445-021-01481-0

- Volcanic tremor associated with the Surtsey eruption of 1963-1967, Jokull (Iceland Journal of Earth Sciences). https://doi.org/10.33799/jokull2021.72.021

PAPERS IN PREPARATION

Observation-Based Analysis of Groundwater Storage Dynamics in the Central Highlands of Vietnam: The influence of hydro-climatic variability/extremes. **Submitted in Hydrological Sciences Journal (HSJ), Dec 2024.**

Integrating Dark Fiber and Nodal Sensors for Enhanced Earthquake Hazard Mapping and Early Warning in Reno,Nevad. Being submitted in March 2025

CONFERENCE PRESENTATION

- Integrating Dark Fiber and Nodal Sensors for Enhanced Earthquake Hazard Mapping and Early Warning in Reno, Nevada, submitted to AGU, 2024

- Sayyadi, S., Rasche, D., Reich, M., Blume, T., and Güntner, A.: Advancing hydrological monitoring: Terrestrial gravimetry surveys in the Selke Catchment, Germany, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-13115, https://doi.org/10.5194/egusphere-egu24-13115, 2024.

- Geological characteristics of Surtsey volcanic island studied with a gravity survey, 28th IUGG General Assembly, 2023 Berlin. DOI: 10.57757/IUGG23-4525

- Surtsey Volcano, Iceland, 50 Years After Eruption Geochemical, Mineralogical, Microbial Systems and Physical Properties of Basaltic Lapilli Tuff (ICDP in the Second Quarter of its First Century", 2023, at GFZ, Potsdam)

- An aeromagnetic survey over the volcanic island of Surtsey off the south coast of Iceland, EGU, Vienna, 2022. https://meetingorganizer.copernicus.org/EGU22/EGU22-11029.html
- Volcanic tremor intensity and characteristics associated with the Surtsey eruption of 1963-1967, The 35th Nordic Geological Winter Meeting 2022.

- Characteristics of seismic activity associated with the 1963-1967 Surtsey eruptions off the south coast of Iceland, oral Presentation at IUGG 2019, Montreal.

- Onset and early evolution of submarine-to-emergent explosive activity during the Surtsey eruptions, Iceland, 1963-1967, EGU, Vienna, 2019. https://meetingorganizer.copernicus.org/EGU2019/EGU2019-15773-1.pdf

- 3D Constraint Gravity Inversion Modeling on Mining Deposit Based on Circular Cylinder (Poster presentation in the Student section at Environmental and Engineering Geophysics in Copenhagen 2018) DOI: https://doi.org/10.3997/2214-4609.201801695

- Aji Chai Salt dome through 3D binary Inversion in Genetic algorithm (Poster presentation in technical part at Environmental and Engineering Geophysics in Malmo 2017) DOI: https://doi.org/10.3997/2214-4609.201702114

- Annual Seminar at Observatory National Institute in Brazil for the proposed project: 3D inversion of magnetic data by using Adaptive-Learning algorithm, Feb 2016

- Imaging Ajichay salt body in Iran by 3D Gravity inversion through Adaptive – AdaptiveLearning procedure (accepted at Near Surface Conference in Barcelona, September 2016.)

- Improved 3D gravity inversion based on Adaptive-learning method with inclined Cylinder-Case study-Charak Anticline (poster presentation in the technical part EAGE International conference 2015-Madrid) DOI: 10.3997/2214-4609.201412762.

- Investigating in the separation of Charak anticline based on 3D gravity inversion by using minimum momentum inertia in Lewi method (Islamic Azad University, Mashhad, Iran the Second International Applied Geological Congress 2015) http://www.civilica.com/Paper-IAGC02-IAGC02_202.html, COI: IAGC02_202

- Exploration of salt dome in Ghara'aghaj by Gravity method (National Conference of Geology and Exploration of Resources 2015-shiraz, Iran)

- 3D Inversion of Gravity data based on Adaptive-learning algorithm (sixteenths Iranian Geophysics Conference (IGC-16), 2014

DEVELOPED TOOLS AND LIBRARIES

- Gravity data Train correction in Fortran

- Gravity data, Network adjustment for CG5 and CG6 gravimeters (Python)
- Land Magnetic and Airborne Magnetics data processing (Python)
- 3D Gravity Inversion algorithm (Python and Matlab)

TRAINING

2025 Mentoring Workshop for Undergraduate Research Mentors, NAGT Professional Development Series (https://nagt.org/nagt/profdev/workshops/online/mentoring2025/index.html)

2022 IMPROVE/NordVulk Summer School, Geothermal and magmatic systems, (Krafla-Mývatn area), North Iceland, 2022

2022 DJI Matrice 600 Pro Drone and the magnetometer by ISOR, Reykjavik University

2021 Artificial Intelligence and Machine Learning program in, Toronto, Canada: (some projects are available at: https://github.com/SaraSayyadi)

2019 Leapfrog software for Geothermal Fundamentals, Reykjavik University, January 2019

SKILLS

- Proficient in Leapfrog software for Geothermal Fundamentals
- Experience in Artificial Intelligence and Machine Learning with Python programming
- Competence in 3D Constraint Gravity Inversion Modeling and drone magnetometry

LANGUAGES

English: Fluent French: High Intermediate
German: Basic Icelandic: Basic