Muhamed E. Elshalkany

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RESEARCH INTERESTS

I have extensive experience in both teaching and research in the fields of Geophysics, Remote Sensing, and GIS. I use these techniques to address geological and geophysical issues. My current research activities involve the use of geophysical data (seismic, GPR, resistivity, and remote sensing data) to develop sustainable groundwater resources in the Saint Catherine area, Sinai, Egypt. I am also using time domain electromagnetic (TDEM), gravity, and passive seismic geophysical techniques to characterize the subsurface lithology and structures on the west coast of the Baffin Bay area, Texas.

Education

2021 – 2023   M.Sc. student in the Physical and Environmental Sciences department, Texas A&M University – Corpus Christi, TX, United States of America.
- o   Thesis title: Development of sustainable groundwater resources in the Basement Terrains of South Sinai, Egypt.
- o   GPA: 4.0

2014 – 2018   **Bachelor of Science**: Geology Department (Geophysics program) Faculty of Science, Suez Canal University, Ismailia, Egypt.

- o   Excellent with honors degree.
- o   Ranked the 1st out of my classmates.
- o   GPA: 85%.

B.Sc. Project: Zohr – A newborn carbonate play in the Levantine Basin, East-Mediterranean.

WORK AND TEACHING EXPERIENCE

2021 – Present   **Research Assistant:** Department of Physical and Environmental Sciences, Texas A&M University – Corpus Christi, TX, United States of America.

2019 – 2021   Teaching and Research Assistant: Geology Department, Faculty of Science, Suez Canal University, Egypt.

- o I have been involved in teaching graduate and undergraduate labs for the following courses:

• Principles of Geophysics	• Physical Geology	• Geomorphology
• Geophysical Exploration	• EM Exploration	• Electro-Seismic Geophysics
• Magnetic Exploration	• Advanced Geophysics	• Radiometry Exploration
• Radioactive Ore Deposits	• Subsurface Geology	• Well Logging
• Geophysical Exploration	• Electrical Exploration	• Field Geophysics
• Magnetic Exploration	• Petrophysics	• Survey and Maps

FIELD TRIPS AND TRAINING

- **August 2022,** One week field trip to saint Catherine, South Sinai, Egypt.
  - o Collecting electrical resistivity and ground penetrating radar (GPR) for my research.
- **June 2022,** one-week TAI4ES 2022 Summer School,
  - o The foundations of trustworthiness for AI,
  - o Explanatory AI (XAI) and how explanations, physics, and robustness can help build trust in AI,
  - o The relationship between ethics and trustworthiness,
  - o How machine-learning systems have been developed for a range of environmental science applications.
- **May 2022,** two-day Strengthening American Infrastructure Conference 2022 at TAMU-CC.
  - o Lessons for Disaster Science and Communication,
  - o The Relevance of Culture in Disaster Work,
  - o How and Why Scientists and Engineers Benefit from Training in Science Communication,
  - o Risk Perception in Policy and Decision Making,
  - o Effective Crisis Communication: Prevention and Response,
  - o Key Insights for the Built and Natural Environment from Decision Science,
  - o Emergency Management Risk Communication: Prevention, Mitigation, and Preparedness,
  - o The Power of First-Person Storytelling as Science Communication,

- o Key Insights for the Built and Natural Environments from Behavioral Economics,
- o Panel Discussion- Feedback from Stakeholders.

- **December 2019,** As a team member in Quality Assurance Unit in faculty of science.

  - o Indicators of Success of the Department of Geology.

- **Nov- Dec 2019,** several geological field trips to many locations at Saint Catherine, South Sinai and Qusier, Red Sea within the Egyptian territories with special emphasis to the application of geophysical tools to solve various geological problems.
  - o Collected structural data,
  - o Collected geophysical data,
  - o Collected rock samples.

- **December 2019,** participate in organizing Sinai Environmental Development Forum– Suez Canal University**.**
  - o Conference Coordinator.

- **Oct- Nov 2017,** Seven weeks Geoscientists Training Initiative (GTI) session training under supervision of a number of petroleum companies geoscientists.
  - o Soft Skills,
  - o Seismic Acquisition & Processing,
  - o Seismic Interpretation,
  - o Operations &Well Setting,
  - o Well Logging & Formation Evaluation,
  - o Geomodelling,
  - o Case Study.

- **August 2017,** One week field training at General Petroleum Company (GPC).
  - o Exploring and Producing oil and gas.

- **August 2017**, One week field training at AGIBA Petroleum Company.
  - o Exploring and Producing oil and gas.

- **July 2017,** Two weeks office training at Suez Oil Company (SUCO).
  - o Soft Skills,
  - o Seismic Acquisition & Processing,
  - o Seismic Interpretation,
  - o Operations &Well Setting,
  - o Well Logging & Formation Evaluation,
  - o Geomodelling,
  - o Case Study.

- **March 2017,** one day session training of the story of exploration organized by AAPG- SCU student chapter.
  - o Seismic Interpretation Techniques.

- **March 2017,** One week Field trip to Qusier, Red Sea, Egypt.
  - Collected structural data,
  - Collected geophysical data,
  - Collected rock samples.

- **April 2015,** One day field trip to Abu Rawash, Giza, Egypt.
  - Collected structural data.

Professional Affiliations

- 2022- Present: American Geophysical Union (AGU).
- 2022- Present: Society of Exploration Geophysicists (SEG).

Publications

- Elshalkany*, M., Ahmed, M.,2023, Groundwater Resources in the Basement Terrains of South Sinai, Egypt, Using Spatial Analysis and Near-Surface Geophysical Techniques, Journal of Hydrology, *in preparation*. (IF 2022: 5.722)

Abstracts for Presentations at Professional Meetings

- Elshalkany*, M., Ahmed, M., 2022, Controls of Subsurface Heterogeneity on Groundwater Discharge in Coastal Environments: AGU, Chicago, IL, December.2022.
- Elshalkany*, M., Ahmed, M., 2022, Groundwater resources in Sinai's basement terrains: Optimal recharge and extraction locations: SEG, Houston, Texas, August. 2022.

Awards and Honors

- 2022: College of Science and Engineering Graduate Fall Scholarship 2022-2023 ($1000).
- 2022: Corpus Christi Geological Society (CCGS) scholarship for the Summer/Fall 2022 semester ($600).
- 2018: Outstanding Undergraduate Student Award, Suez Canal University.

Technical Experience

- **Programming languages**
  - Python, R.
- **Geophysics Software**
  - Seismic: SeisImager, Kingdom Suite, Petrel.
  - Ground Penetrating Radar (GPR): RADAN.
  - Electric Resistivity: IX1D.

- **GIS Software**
  - Arc GIS (Arc Map, Arc Catalog, Arc Globe, and Arc Scene).
- **Remote Sensing and Image Processing**
  - ENVI, ERDAS.
- **Statistical and Mapping Software**
  - Grapher, Golden Surfer.

- **Languages**

  Arabic   Native language
  English   very good (speaking, reading, writing)

- Excellent communication skills with a focus on team building.
- Outstanding organizational, multitasking, and problem-solving abilities.

Volunteering Activities

2022- Present: Ping Pong Player, Table tennis club at Texas A&M University -Corpus Christi.

2021- Present: Student Member, Society of Exploration Geophysicists (SEG) student chapter at Texas A&M University -Corpus Christi.

January 2017 - December 2021, Vice President of AAPG "American Association of Petroleum Geologists", Suez Canal University Chapter, faculty of science, Suez Canal University, lsmalia, Egypt.

May 2016-December 2017, Public Relationship of EAGE "European Association of Geologists and Petroleum Engineer", Suez Canal University Chapter, faculty of science, Suez Canal University, lsmalia, Egypt.

September 2014-May 2018, Team Leader, Football Team at the Faculty of Science, Suez Canal University, ismailia, Egypt.