

# Mariana Belferman

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**Geophysicist in the field of earthquake simulation (physical and mathematical Modeling) with mathematical mindset, and high research and technical skills, creative and motivated to learn and develop.**

## Experience

2014-2022: University of Haifa

- Development of an analytical algorithm for calculating the change in the earthquake recurrence interval influenced by the poro-elastic and plastic parameters of the environment.
- Development of a poro-elasto-plastic analytical and numerical model describing the geodynamic process.
- Solve the equations of elasticity and poro-plasticity using numerical method (FEM).

2009-2012: Tel Aviv University

- Development of a mechanical elasto-static three-dimensional heterogenic numerical model.
- Solution of elasticity equations by the Newton-Raphson method.

## Programming skills

Great experience with MATLAB and COMSOL Multiphysics.

Broad knowledge in UNIX operating systems (Mandriva, Solaris and Red Hat Linux).

Basic knowledge C, C++.

## Education

2014-2022 Ph.D. with distinction in Geophysics. The Dr. Moses Strauss Department of Marine Geosciences, Leon H. Charney School of Marine Sciences, **University of Haifa**, Mt. Carmel, Haifa, Israel.

2008-2012 M.Sc. with distinction in Geophysics. Department of geophysics and planetary sciences **Tel Aviv University**, Israel.

2004-2008 B.Sc. with distinction in Geophysics and Mathematics. Department of geophysics and planetary sciences **Tel Aviv University**, Israel.

## Languages

Hebrew (as Native); English (excellent); Russian (Native)

## Academic employment

Since 2017 Lecturer and teaching assistant. Physics Department, SCE - Sami Shamoon College of Engineering.

2018-2020 Coordinator of Physics. Odessey – Academic Studies Program in Sciences, Ben-Gurion University.

2018-2022 Teaching assistant. Odessey – Academic Studies Program in Sciences, Ben-Gurion University.

2016-2017 Lecturer. Structural Engineering Department, SCE - Sami Shamoon College of Engineering.

2013-2014 Teaching assistant. Physics Department, SCE - Sami Shamoon College of Engineering.

2012-2017 Lecturer and teaching assistant. Academic Prep School, SCE - Sami Shamoon College of Engineering.

2010-2011 Teaching assistant. Department of geophysics and planetary sciences Tel Aviv University.

## Publications

**Belferman, M., Katsman, R., & Agnon, A. (2018).** Effect of large-scale surface water level fluctuations on earthquake recurrence interval under strike-slip faulting. *Tectonophysics*.

### Under review papers

**Belferman, M., Agnon, A. Katsman, R., & Ben-Avraham Zvi (2021).** Identifying plausible historical scenarios for coupled lake level and seismicity rate changes: The case for the Dead Sea during the last two millennia. Submitted after review: *Natural Hazards and Earth System Sciences (NHES)*

**Belferman M., Katsman R., Agnon A., and Ben-Avraham Z., (2022).** New simulator for earthquakes triggered by surface water level changes: historic Dead Sea as a case study. The article approved by supervisors for submission for peer-reviewed journal (last stages of article editing before submission)

## Papers and abstracts – proceedings of conferences

### Contributed conference presentations

1. **Belferman, M., Katsman R., Agnon A., Ben Avraham Z.,** Influence of surface water level changes on the earthquake occurrence: the Dead Sea during the last two millennia as a case study. Israel Geological Society annual meeting, Nir Etzion, Israel, 2022.
2. **Belferman, M., Katsman R., Agnon A.,** Rheological and the hydrological control of influence by the water load on the fault instability and recurrence interval: case study Dead Sea Transform. European Geosciences Union General Assembly, Vienna, Austria 2017.
3. **Belferman, M., Katsman R., Agnon A.,** Rapid and delayed seismic responses induced by fluctuations of historical water bodies in the Dead Sea Rift. Israel Geological Society annual meeting, Mitzpe Ramon, Israel, 2017.
4. **Belferman, M., Katsman R., Agnon A., Ben Avraham Z.,** Tectonic and hydrological controls on multiscale deformations in the Levant: numerical modeling and theoretical analysis. Vienna, Austria, 2016.
5. **Belferman, M., Katsman R., Agnon A., Ben Avraham Z.,** Tectonic and hydrological controls on multiscale deformations in the Levant: numerical modeling and theoretical analysis. Elat, Israel, 2016.
6. **Belferman, M., Katsman R., Agnon A., Ben Avraham Z.,** New thermo-mechanical fluid flow modeling of multiscale deformations in the Levant basin. Grenoble, France, 2015.
7. **Belferman, M., Katsman R., Agnon A., Ben Avraham Z.,** New thermo-mechanical fluid flow modeling of multiscale deformations in the Levant basin: formulation, verification, and preliminary analysis. Vienna, Austria, 2015.
8. **Belferman, M., Katsman R., Agnon A., Ben Avraham Z.,** New glance on multiscale deformations in the Levant basin: formulation and verification of the new thermo-hydro mechanical model. Tiberias, Israel, 2015.
9. **Belferman, M., Ben Avraham Z., Lyakhovsky V.,** Coulomb failure stress change in heterogeneous crust; case study for the 7.2 Mw Nuweiba earthquake. Akko, Israel, 2013.
10. Kukuliev (**Belferman**), M., Ben Avraham Z., Lyakhovsky V., Coulomb Failure Stress Change in heterogeneous crust; case study for the Nuweiba Earthquake. Eilat, Israel, 2010.
11. Kukuliev (**Belferman**), M., Ben Avraham Z., Lyakhovsky V., Modeling of the Coulomb Failure Stress Change after the Mw 7.2 Nuweiba Earthquake, Kfar - Blum, Israel, 2009.

### Seminar presentations

1. **Belferman, M., Katsman R., Agnon A., Ben Avraham Z.,** Modeling of multiscale deformations in the Levant basin: implication to earthquakes induced by the water level changes. Tel Aviv University, Tal Aviv, Israel, 2015.
2. Kukuliev (**Belferman**), M., Ben Avraham Z., Lyakhovsky V., Modeling of the Coulomb Failure Stress Change after the Mw 7.2 Nuweiba Earthquake, Bremen University, Bremen, Germany, 2010.

## Awards

2012 - Graduated with honors M.Sc. with distinction in Geophysics at the Tel-Aviv University.

2009 - Awarded certificate of merit at the 2009 Israel Geological Society annual meeting for best poster, presented my M.Sc. thesis.