BAR ORYAN

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Education and Work Experience

Postdoctoral Research Scientist: *March 2022– Current*
École Normale Supérieure, Paris, France.
Advisor: Jean-Arthur Olive

Doctor of Philosophy in Geophysics: *Sep 2016 – Feb 2022*
Lamont-Doherty Earth Observatory, Columbia University, New York, USA.
Advisors: Prof. Roger W. Buck.
Prof. Michael Steckler.

Master of Science in Geophysics: *July 2014 - July 2016*
Tel Aviv University, Tel Aviv, Israel. Advisor: Prof. Zvi Ben-Avraham.

- Thesis: New heat flow measurements of the Dead Sea and its implication for the Dead Sea basin heat flow paradox.

Bachelor of Science in Physics and Geosciences: *Oct 2010- Jun 2014*
Tel Aviv University, Tel Aviv, Israel.

Publications

- **Oryan, B.**, Olive, J., Malatesta, L. C. & Jolivet, R. How elastic earthquake cycles generate inelastic deformation? (in prep.)
- **Oryan, B**., et al., (2022, in review), New GNSS and geological data from the Indo-Burman subduction zone indicate active convergence on both a locked megathrust and the Kabaw Fault, JGR solid earth.
- Steckler, M. S., **Oryan, B**., et al., (2022). Synthesis of the distribution of subsidence of the lower Ganges-Brahmaputra Delta, Bangladesh. Earth-Science Reviews, 224, 103887.
- **Oryan, B.,** & Savage, H., (2021) Regional heat flow analysis reveals frictionally weak Dead Sea fault. Geochemistry, Geophysics, Geosystems.
- **Oryan, B**., & Buck, W. R. (2020). Larger tsunamis from megathrust earthquakes where slab dip is reduced. Nature Geoscience, 1-6.
- **Oryan, B**., Villinger, H., Lazar, M., Schwab, M. J., Neugebauer, I., & Ben-Avraham, Z. (2019). Heat flow in the Dead Sea from the ICDP boreholes and its implication for the structure of the basin. Quaternary Science Reviews, 210, 103-112.
- Malinverno, A., Cook, A. E., Daigle, H., & **Oryan, B**. (2018). Glacial cycles influence marine methane hydrate formation. Geophysical Research Letters, 45(2), 724-732.

Awards & Grants

- NASA Earth Surface and Interior grant ($650,000). *2022*
  GNSS and InSAR Surface Deformation Constraints on a 3-D Geodetic Model of the IndoBurma Subduction Zone. Steckler M., Lindsey E, **Oryan B**., et al.
- AGU 2020 Outstanding Student Presentation Award. *2021*
- Lamont-Doherty Earth Observatory Climate Center ($10,000). *2021*
  Temporal dynamics of tree-growth and photosynthesis and their environmental drivers in the Lamont Sanctuary Forest Preserve. Rao M., Pacheco-Solana B., **Oryan, B**., et al.
- Chevron Student Incentive Fund ($3,200). *2020*
  Developing the LDEO PhenoCam network to track the fate of forest carbon from photosynthesis to growth. **Oryan, B**. and Rao M.
- Chateaubriand Fellowship ($5,000). *2020*
  Finical support to work with Dr. Jean-Arthur Olive at the Laboratoire de Géologie de l'Ecole Normale Supérieure (ENS).
- Stork Fund ($12,500). *2019*
  Dept. of Earth and Environmental Sciences graduate student fieldtrip to Peru. **Oryan, B**. and Myers, E.
- Dean's fellow, Department of Earth and Environmental Sciences, Columbia University. *2016*
- M.Sc. Excellence Scholarship, Tel Aviv University. *2015*

Recent Presentations

- JpGU 2022 (invited talk): May 2022
  Recorded shallow upper plate earthquakes during the interseismic period indicate non-recoverable forearc deformation and produce long-term coastal uplift
- EGU 2022 (talk): May 2022
  Long-term coastal uplift due to non-recoverable forearc deformation during the interseismic phase of the subduction earthquake cycle
- AGU Fall 2021 (invited union talk):
  Using InSAR and GNSS velocities to constrain the Indo-Burma Detachment Geometry.
- AGU Fall 2021 (poster): Dec 2021
  Non-recoverable deformation during the interseismic phase of the subduction earthquake cycle.
- Caltech Seismo Lab Seminar (invited talk): Oct 2021
  Permanent deformation across various time scales: Accounting for subduction upper plate failure over "purely elastic" seismic cycles.
- Hebrew University, Institute of Earth Sciences Seminar, online (talk): June 2021
  Larger tsunamis from megathrust earthquakes where slab dip is reduced.
- Weizmann Institute of science, Department of Earth and Planetary Sciences Seminar, online (talk): Apr 2021
  Larger tsunamis from megathrust earthquakes where slab dip is reduced.
- AGU Fall 2020, online (poster): Dec 2020
  The Indo-Burma Detachment Geometry Constrained by an Updated Vertical and Horizontal GPS Velocity Field in Bangladesh.
- International Geodynamics Series, online (talk): Nov 2020
  Larger tsunamis from megathrust earthquakes where slab dip is reduced.
- UC Santa Cruz Seismo Coffee Hour, online (talk): Oct 2020
  Locally-observed frictional heating shows evidence of a weak Dead Sea transform fault.

- Lamont-Doherty MGG Seamier, online (talk): May 2020
  Deviation from the standard subduction earthquake cycle model and its effect on upper plate deformation.

Teaching Experience

- Instructor, Stroke Field Course, Department of Earth and Environmental Sciences, Columbia university. *Spring-Summer 2019*
  Led and organized a geological field trip to Peru.
- Mentor, Lamont-Doherty Earth Observatory Summer intern program. *Summer 2019*
  Served as mentor for a group of low-income high school students.
- Teaching assistant, Life Systems, Department of Earth and Environmental Sciences, Columbia University. *Spring 2019*
- Teaching assistant, Geodynamics, Department of Earth and Environmental Sciences, Columbia University. *Fall 2018*
- Teaching assistant, Lab in Geosciences, Tel Aviv University. *Fall 2015*
  Designed and developed a lab experiment emulating the heat flow of the Earth for an undergrad class.
- AP calculus and electromagnetism tutor, undergrad students, Tel Aviv University. *Fall 2014*
- Elementary school science teacher, Kathmandu, Nepal. *Winter 2010*

Field Work

- HT-RESIST EM research cruise, New Zealand. *Winter 2019*
  Deployment and recovery of 120 EM receivers as well as 500 line-km of EM source.
- Borehole temperature profile measurements, Dead Sea, Israel. *Summer 2015*
  ICDP Dead Sea borehole temperature measurement.
- Thermal conductivity measurements, IODP core repository, Bremen, Germany. *Summer 2014*
  Thermal conductivity measurements of the ICDP Dead Sea cores using KD2 pro probe and optical apparatus.

Outreach

- Permanent science writer at the Little Big Science NGO. *2018 - current*
- Lamont Doherty research as art committee. *2018*
- Lamont Doherty open house. *2016 - 2021*
- Earth-Sun Day at the American Museum of Natural History. *2017*

Computational Skills

Programming languages:

- Python.
- Matlab.
- Arduino.
- C.
- Fortran.
- GPU CUDA Fortran.

Operating systems:

- Linux.
- Windows.
- Mac.

Languages

- Hebrew (native).
- English (proficient).