

## MAAYAN YEHUDAI, Ph.D.

Climate-Geochemistry Minerva Postdoc Fellow, Max Planck Institute for Chemistry  
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## Curriculum Vitae

### Current position

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**Post-Doc Fellow of the Minerva Stiftung at the Max Planck Institute for Chemistry, department of Climate-Geochemistry (2020-present)**

*(Parental leave: January – October, 2022)*

Host PIs: Dr. Alfredo Martinez Garcia and Prof. Gerald Haug

Focus: Nitrogen isotope and organic biogeochemistry, paleoceanography and paleoclimate

### Education

- 2014-2020      **PhD, Earth and Environmental science, Columbia University**  
Advisors: profs. Jerry McManus, Steven L. Goldstein and Gisela Winckler  
Focus: Geochemistry, paleoceanography and paleoclimate.  
Thesis title: *Geochemical studies of marine sediments from the Atlantic Ocean: Implications for past transitions in ocean circulation and dust deposition*
- 2011-2014      **M.Sc., Oceanography**  
Institute of Earth Sciences, the Hebrew University of Jerusalem.  
Advisors: profs. Mordechai Stein and Boaz Lazar  
Thesis title: *Calclitic corals from the northern red sea as paleo-hydrological monitors.*
- 2007-2010      **B.Sc., Geology and environmental Sciences**  
Ben Gurion University in the Negev, Be'er Sheva.  
Senior thesis title: *Distribution of magmatic and serpentine filled fractures in Troodos ophiolite, Cyprus.*  
Supervisor: prof. Yaron Katzir

### Research Interests

Earth Surface processes, Paleoclimatology, Paleoceanography, Isotope Geochemistry, Biogeochemistry, Chemical-Oceanography, past/present Carbon Cycle dynamics, Past Ocean circulation, Global Nutrient Budgets

## Research Experience

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### **Postdoc Minerva Fellowship position at the Max Planck Institute for Chemistry, 2020-present**

Advisors: Prof. Gerald Haug and Dr. Alfredo Martinez-Garcia

Projects:

- Pliocene-Pleistocene changes reconstruction in subtropical Atlantic productivity from N-isotopes
- Climatic and Anthropogenic impacts on Nutrient Cycling in the northern Gulf of Aqaba- insights from N-isotopes

#### Skills acquired:

*Lab:* Deep-ocean sediments and corals sample processing (picking, crushing), clean lab procedures and maintenance, mass spectroscopy (Thermo MAT253 Plus).

*Field work:* (future) Campaigns in the Red Sea for the purpose of seawater, coral and sediment samplings.

### **PhD student, Lamont Doherty Earth Observatory, Columbia University, 2014-2020**

Advisors: Profs. Jerry F. McManus, Steven L. Goldstein, Gisela Winckler

Projects:

- Reconstruction of Atlantic Ocean circulation across the Mid-Pleistocene-Transition using Nd isotopes.
- Long-term changes in dust deposition at the nutrient poor Great Bahama Bank.

#### Skills acquired:

*Lab:* Deep-ocean sediments-sample processing (picking, crushing), clean lab procedures and maintenance (cleaning, dissolution, column chemistry), mass spectrometry (Atom ICP-MS, multi collector ICP MS, ELEMENT ICP MS)

*Quantitative and computational:* Age model tuning; proxy-data processing, time series analysis.

*Field work:* Graduate students field trip to the Bahamas carbonate platform (June 2015)

Gulf of Mexico oceanographic cruise participant (NSF funded) to study carbonate chemistry changes due to Hurricane activity (September 2017).

Graduate student field trip to Basin and Range tectonic region, Nevada (November 2016)

Graduate student Sevier Foreland and Orogen field trip, Utah (May-June 2019)

### **MSc student, Hebrew University of Jerusalem, Israel, 2011-2014**

Advisors: Profs Mordechai Stein and Boas Lazar

Project:

U-Th dating of uplifted altered coral reefs at the Gulf of Aqaba, Jordan

#### Skills acquired:

*Quantitative and computational:* Developed a quantitative model and a numerical solution to date the timing of uplifted coral terraces' alteration to calcite through interaction with freshwater, and the original reef deposition age, at The Gulf of Aqaba

*Field work:* excursions to north-eastern Gulf of Aqaba, Eilat and Barbados, Coralreefs mapping and sampling

*Lab:* Sample processing, column chemistry, mass spectrometry (multi collector ICP-MS), XRD

### **BSc student, Ben Gurion University in the Negev, Israel, 2007-2010**

Senior Thesis Advisor: Prof. Yaron Katzir

Project:

The petrography and structure of peridotite hosted fractures filled with primary igneous minerals and secondary hydrous minerals, in the Troodos ophiolite.

Skills acquired:

*Computational:* statistical analysis of fractures spatial distribution and direction

*Field work:* Troodos ophiolite, Cyprus, fracture system mapping, sampling and crack measurements

*Lab:* sample processing and thin section petrographic data acquisition and analysis

## **Teaching experience**

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Teaching assistant at Columbia University (see evaluations in separate files attached):

**The Carbon Cycle** (with prof. Wallace Broecker, *see note attached as separate document*), 2017

Responsibilities:

prepared recap-lectures for the end of each class, crafted homework assignments and graded them, graded exams and ran office hours (see WB note of evaluation in a separate file attached).

**The Climate System** (With profs. Jerry McManus and Adam Sobel), 2016

Responsibilities:

Prepared and instructed labs and report assignments and graded them, worked in collaboration with other TAs to grade and develop lab reports, ran office hours.

**Barbados Field trip** (With prof. Steve Goldstein), 2016

Responsibilities:

Student research mini-projects mentoring, as prep for the field trip.

**Oceanography (With prof. Bärbel Hönlisch)**, 2015

Responsibilities: Created and graded homework assignments and exams, ran office hours.

Teaching experience at the Hebrew University for the following courses (2011-2013):

**Minerals and rocks, Magmatic and metamorphic petrology, Petrology lab, Stratigraphy, Geology and geophysics of the marine environment** (at the Inter-University institute in Eilat),

Responsibilities:

prepared recap-lectures, prepared and instructed labs and report assignments and graded them, crafted homework assignments and graded them, graded exams and ran office hours.

## Publications

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**Yehudai M.**, Kim J., Jaume-Seguí M., Goldstein S. L., Pena L. D., and Bickert T. (2021) Evidence for a Northern Hemispheric trigger of the 100,000-year glacial cyclicity, *PNAS*, doi:<https://doi.org/10.1073/pnas.2020260118> (**ranked 98% percentile attention score according to Altmetric**)

**Yehudai M.**, Lazar B., Kohn-Bar N., Shaked Y., Agnon A. and Stein M. (2017), U-Th dating of calcitic corals from the Gulf of Aqaba, *Geochimica et Cosmochimica Acta*

Bar N., Agnon A., **Yehudai M.**, Lazar B., Shaked Y. and Stein M. (2018) Last interglacial sea levels and regional tectonics from fossil coral reefs in the northeast Gulf of Aqaba, *Quaternary Science Reviews*

Farmer J.R., Hönisch B., Haynes L.L., Kroon D., Jung S., Ford H.L., Raymo M.E., Bell D.B., Jaume-Seguí M., Goldstein S.L., Pena L.D., **Yehudai M.**, and Kim J. (2019), Deep Atlantic Ocean carbon storage and the rise of 100,000-year glacial cycles, *Nature Geoscience*

Farmer J.R., Goldstein S.L., Haynes L.L., Hönisch B., Kim J., Pena L., Jaume-Seguí M. & **Yehudai M.**, (2019) Data constraints on ocean-carbon cycle feedbacks at the mid-Pleistocene transition. *Past Glob. Chang. Mag.* 27, doi:<https://doi.org/10.22498/pages.27.2.62>

Jaume-Seguí, M., Goldstein, S.L., Pena, L.D., Kim, J., **Yehudai, M.**, Knudson, K.P., Bolge, L., Ferretti, P., (2020) Distinguishing glacial AMOC and interglacial non-AMOC Nd isotopic signals in the deep western Atlantic over the last 1 myr. *Paleoceanography and paleoclimate*, doi:<https://doi.org/10.1029/2020PA003877>

Kim, J., Jaume-Seguí, M., **Yehudai, M.**, Knudson, K. P., Goldstein, S. L., Pena, L. D., and Ferretti, P., (2021) North Atlantic Deep Water during Pleistocene interglacials and glacials. *Quaternary Science Reviews*, doi:<https://doi.org/10.1016/j.quascirev.2021.107146>

### Under review / in preparation

**Yehudai M.**, Ridge S., Tweed L. and Goldstein S. L., Addressing the nagging concentration problem in Nd-isotopes as ocean mixing tracers, *under review, GRL*

**Yehudai M.**, Kim J., Jaume-Seguí M., Goldstein S. L., Pena L. D., and Bickert T., Modes in Atlantic overturning circulation over the past 1.5 Million years, *in prep for EPSL*

**Yehudai M.**, Goldstein S.L., Geochemical overview of the “regolith hypothesis”, *in prep for QSR*

**Yehudai M.**, Frammer J.R, Straub M., Studer A., Martinez-Garcia A., Sigman D and Haug G., Controls of North Atlantic nitrogen fixation over the Pliocene-Pleistocene transition, *in prep for Nat. Geo.*

**Yehudai M.**, Lazar B. Stein M., Martinez-Garcia A., Sigman D and Haug G., Climatic and Anthropogenic impacts on Nutrient Cycling in the northern Gulf of Aqaba, *in prep for GBC*

## Funding and Awards

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Nominee: AMQUA Next Generation award, 2022

Minerva Postdoctoral Fellowship (Minerva Stiftung, <http://www.minerva.mpg.de/>), 2021

Nominee: K. Patricia Cross Future Leaders Award, 2020 (<https://www.aacu.org/AM20/CrossAward>)

International Conference on Paleoceanography (ICP13) Travel Grant (provided by The Oceanography Society (TOS)), 2019

National Science Foundation fellowship, Urbino Summer School for Paleoclimatology Scholarship, 2017

1<sup>st</sup> Mark Pagani Student Poster Award, Urbino Summer School for Paleoclimatology, 2017

Chevron Student Initiative Fund, Lamont Doherty Earth Observatory, 2017

Outstanding Student Paper Award, American Geophysical Union Fall Meeting, 2016

Nominee: Thirty-fourth Sara Langer Book Prize for contributions to academic and student life at Lamont-Doherty, 2016

Baster scholarship for students in the oceanography department, The Hebrew University of Jerusalem., 2012

## Professional Development

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**Innovative Teaching Summer Institute certification**, Columbia University, 2017

**Urbino Summer school for paleoceanography and paleoclimate**, Urbino, Italy  
(National Science Foundation fellow, Mark Pagani Student Poster Award recipient), 2017

**Communicating Science Course**  
Columbia University, 2016

## Professional administrative experience

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**Pear journal review:** Arabian Journal of Geoscience, Geophysical Research Letters, Nature Communications, Paleoceanography and Paleoclimatology

Climate-Geochemistry **seminar coordinator**, Max Planck Institute for Chemistry, 2020-present

1<sup>st</sup> Wally Broecker Symposium: volunteer, 2019

Goldschmidt geochemical conference, **session co-convener**, 8D: Dynamics and Mechanisms of Warm Climates and Climate Transitions, 2018

Geochemistry **seminar coordinator**, Lamont Doherty Earth Observatory, 2016-2017

Kaplan Symposium: paleoceanography and Paleoclimatology: Volunteer, 2012

Israel Geological Society annual meeting: Volunteer, 2011

## Community and Diversity service

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[Science Abroad](#) organization, Earth Science and geology field manager, 2020-2022

Graduate Student Committee Diversity and Mentoring Chair, Lamont Doherty Earth Observatory, 2018-2019

Lamont-Doherty Professional Conduct Committee Member

[LDEO Gender & Diversity Group](#): Founder and organizer, 2016-2020

Columbia University Graduate Student Advisory Committee: Earth and Environmental Science representative, 2014-2015

Columbia University Graduate Student Advisory Committee: Earth and Environmental Science representative, 2014

## Outreach and Science Communication

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Johannes Gutenberg University, Mainz, Palaeoclimate/Climate Archives M.Sc. module, guest lecturer, 2022-present

UN Ocean Decade Lab Satellite Event on Digital Twin Ocean Cities: Panelist, 2021

[Israel Arts and Science Academy](#) - Climate Awareness Week guest lecturer, 2021

Research as Art annual competition: organizer, 2014-2019

LDEO Open House: Volunteer, GEOTRACES exhibit, 2019

LDEO Open House: Volunteer, Lamont Core Lab, 2017

Sun-Earth Day at American Museum of Natural History: Volunteer, 2017

Girl's Science Day: Experiment instructor, 2015

LDEO Open House: Volunteer, tour guide, 2014

## Invited and Departmental Presentations

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*Lamont Doherty Earth Observatory Geochemistry Seminar*, Oct. 16<sup>th</sup>, 2015

*Ben-Gurion University, Israel*, April 16<sup>th</sup>, 2018

*Weismann institute, Israel*, October 7<sup>th</sup>, 2018

*Hebrew University, Israel*, October 17<sup>th</sup>, 2018

*Cambridge, UK* October 19<sup>th</sup>, 2018

*Max Planck Institute for Chemistry, Mainz, Germany*, April 17<sup>th</sup>, 2019

*Woods Hole Oceanographic Institution, USA*, January 18<sup>th</sup>, 2022

*Max Planck Institute for Chemistry, Mainz, Germany*, October 12<sup>th</sup> 2022

## Conferences Talks

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**Yehudai, M.**, Kim, J., Jaume-Seguí, M., Goldstein, S. L., Pena, & Bickert, T., Northern Hemispheric trigger for The Mid-Pleistocene Transition, *Goldschmidt geochemical conference*, Boston, 2018

**Yehudai M.**, Northern Hemispheric trigger for the Mid-Pleistocene-Transition, *AGU Fall Meeting*, Dec. 2018 (**Invited**)

## Selected Conferences Abstracts and Posters

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**Yehudai M.** Tweed L.E., Ridge S, Wu Y. and Goldstein S. L., Addressing the nagging problem of Nd end-member concentrations in using Nd-isotopes as past ocean-mixing tracers, *AGU Fall Meeting Abstracts*, 2021

**Yehudai, M.**, Goldstein, S. L., Pena L., Kim, J., Jaume-Seguí, M., Basak C., Knudson K, Hartman A. E., & Lupien R, The Atlantic Meridional Overturning Circulation Over Time from Nd Isotopes, *European Geophysical Union General Assembly Conference Abstracts*, 2020

**Yehudai, M.**, Kim, J., Jaume-Seguí, M., Goldstein, S. L., Pena L., & Bickert, T., Northern Hemispheric trigger for The Mid-Pleistocene Transition, *European Geophysical Union General Assembly Conference Abstracts*, Vienna, Austria, 2018

**Yehudai, M.**, Kim, J., Jaume-Seguí, M., Goldstein, S. L., Pena, L. D., Haynes, L., Hönisch, B., Farmer, J., Ford, H., Raymo, M.E., & Bickert, T., The Equatorial Atlantic Ocean Thermohaline Circulation Across the Mid-Pleistocene Transition, *Past Global Changes Open Science Meeting*, abstract ID-02357, Zaragoza, Spain, 2017

**Yehudai, M.**, Kim, J., Jaume-Seguí, M., Goldstein, S. L., Pena, L. D., Haynes, L., Hönisch, B., Farmer, J., Ford, H., Raymo, M.E., Ferretti, P. & Bickert, T., Changes in North to Equatorial Atlantic Ocean Thermohaline Circulation Across the Mid-Pleistocene Transition, *International Conference of Paleoceanography*, abstract #596, Utrecht, Netherlands, 2016

**Yehudai, M.**, Kim, J., Jaume-Seguí, M., Goldstein, S. L., Pena, L. D., Haynes, L., Hönisch, B., Farmer, J., Ford, H., Raymo, M.E., & Bickert, T., Changes in Atlantic Ocean Thermohaline Circulation Across the Mid-Pleistocene Transition, *American Geological Union Fall Meeting*, abstract ID-197873, San Francisco, USA, 2016

**Yehudai M.**, Lazar B., Kohn N., Shaked Y., Agnon A. & Stein M., U-Th dating of calcitic corals from the Gulf of Aqaba indicates freshwater activity during sapropels S5 and S4, *American Geophysical Union Fall Meeting*, abstract #PP33D-1270, San Francisco, USA, 2014

**Yehudai M.**, Lazar B., Kohn N., Shaked Y., Agnon A. & Stein M., Calcitic Corals from the Northern Red Sea as Paleohydrological Monitors, *Mineralogical Magazine, Goldschmidt geochemical conference*, Abstract ID- 77(5) 2557, Florence, Italy, 2013

**Yehudai M.**, Abelson M., Katzir Y., Distribution of magmatic and serpentine filled fractures in Troodos ophiolite, Cyprus, *Israel Geological Society annual meeting*, Israel, 2011

## Selected Media Coverage

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““Sticky” Ice Sheets May Have Led to More Intense Glacial Cycles”, C. Chaisson, Jan. 5<sup>th</sup> 2022), Eos, 103, <https://doi.org/10.1029/2022EO220002>.

“Seafloor cores suggest sticky, thick glaciers caused mysterious shift in ice age rhythms” *Science, Earth news*, P. Voosen, Aug. 22<sup>nd</sup> 2018, <http://www.sciencemag.org/news/2018/08/seafloor-cores-suggest-sticky-thick-glaciers-caused-mysterious-shift-ice-age-rhythms>

“Are glaciers behind perplexing shift in paleoclimate Ice Age patterns?” *Glacier Hub featured story*, N. Belew, Sept. 19<sup>th</sup>, 2018, <http://glacierhub.org/2018/09/19/are-glaciers-behind-perplexing-shift-in-paleoclimate-ice-age-patterns/>

### Memberships

2016-2020	The New York Academy of Sciences: member
2016-present	European Association of Geochemistry
2014-present	American Geophysical Union
2010-2020	Israel Geological society