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Professional Appointments

Present Affiliations

- 2020- Professor of Atmosphere/Ocean Science & Mathematics, **New York University, Courant Institute**, USA.
- 2019- Affiliated Faculty, **New York University, Center for Data Science**, USA.
- 2021- Scientific Director & Lead PI, **M²LInES - Multiscale Machine Learning In Coupled Earth System Modeling**.
- 2021- Geoscience Director, **Learning the Earth with AI and Physics**, NSF Science & Technology Center.
- 2019- Visiting Professor, **University of Oxford**, Dept of Physics, UK.

Previous Affiliations

- 2019-2020 Associate Professor (tenured), **New York University**, Courant Institute, USA.
- 2011-2019 (tenured 07/2016) Associate Professor, prev. Univ. Lecturer, **University of Oxford**, Dept of Physics, UK.
College affiliation: David Richards' Fellow, **Wadham College** (2018-2019).
Visiting Faculty, **Princeton University, AOS and GFDL**, USA.
- 2017-2018 James Martin Research Fellow, Oxford Martin School & Dept of Physics, and Junior Research Fellow, Balliol College **University of Oxford**, UK.
- 2009-2011 College **University of Oxford**, UK.

Education

- 2009 PhD, **Harvard University**, Earth & Planetary Sciences. Adviser: Eli Tziperman.
- 2003 MSc, **Weizmann Institute of Science**, Environmental Sciences.
- 2001 BSc, **Tel Aviv University**, Geophysics, Atmospheric & Planetary Sciences. *Magna Cum Laude*.

Selected Honors, Awards and Fellowships

- 2022 **Principal Lecturer**, Woods Hole Geophysical Fluid Dynamics Summer Program, Data-Driven GFD.
- 2020 **Nicholas P. Fofonoff Award**, American Meteorological Society. Citation: "*For exceptional creativity in the development and application of new concepts in ocean and climate dynamics.*"
- 2020 **Distinguished PhD Visiting Scientist**, Department of Meteorology, University of Reading, UK. Harvard University.

Active Funding

- 2022-2024 **NSF PO + NOAA**, lead PI (9 universities, 3 modeling centres). Climate Process Team: Ocean Transport and Eddy Energy, 2-yr renewal approved (\$2M).
- 2021-2026 **NSF Science and Technology Center** - Learning the Earth with Artificial Intelligence and Physics. Led by Columbia University, with NYU, UC Irvine, Minnesota, teachers College (\$25M).
- 2021-2026 **Schmidt Futures**, Lead PI (other institutions: Princeton, GFDL, Columbia, LDEO, MIT, NCAR, IPSL, IGE Grenoble). **M²LInES - Multiscale Machine Learning In coupled Earth System Modeling**, \$10.3M (\$3.2M to NYU).
- 2020-2025 **VoLo Foundation**, Predicting Extreme Events: Sea level Change along the Gulf of Mexico and US East Coast. \$300K.
- 2020-2023 **NOAA CVP**, lead PI (other institutions: Arizona + GFDL). Drivers of Coastal Sea Level Change Along the Eastern US, \$610K (550K to NYU).

- 2020-2023 **NOAA CVP**, co-PI (led by GMU). What sets the predictability timescales of SST and upper-ocean heat content in the Atlantic and Pacific basins?, \$615K (60K to NYU).
- 2019-2022 **NSF PO**, PI (led by UCSD-Scripps). Collaborative Research: Transient response of regional sea level to Antarctic ice shelf fluxes, \$1.1M (\$464K to NYU).
- 2019-2022 **NSF PO + NOAA**, lead PI (9 universities, 3 modeling centres). Climate Process Team: Ocean Transport and Eddy Energy, \$2.8M (\$782K to NYU).

Mentoring & Teaching

Supervision (+ = co-advised with)

PhD Students: Adam Subel (2021 -); Aurora Basinski (2020-); Andrew Brettin (2020-). **Graduated Oxford PhD Students:** 2021 Matthias Aengenheyster (+ M. Allen); 2020 Thomas Bolton (won best prize for 2nd yr PhD research report, best retreat talk 2018; best talk at AMS AOFD 2019); 2018 Robert Fraser, Tomos David (+ D. Marshall); 2015: Ben Bronselaer.

Postdoctoral Scholars: Abigail Bodner (Simons Junior Fellow), Fabrizio Falasca, Andrew Ross, Ziwei Li, Pavel Perezhgin; Elizabeth Yankovsky; Emily Newsom; *Past:* Arthur Guillaumin.

Project Manager: Johanna Goldman (2021-)

Past Oxford Postdoctoral Scholars: Emily Newsom; Mike Byrne (Marie Curie Fellow); Alex Todd; Chris O'Reilly (+ T. Woollings); Joakim Kjellsson; Stephan Juricke (+ T. Palmer); Markus Huber (funded by a S-NSF fellowship); James Anstey; Fenwick Cooper (+ T. Palmer); Mirek Andrejczuk (+ T. Palmer) ; Luca Porta Mana.

Recent Teaching Activities

2020-present *Lecturer*, **Courant Institute**, NYU; Fundamentals of Atmosphere and Ocean dynamics (undergrad, 2019, 2020, 2021); Machine Learning for Physical Science (grad, 2019); Ocean Dynamics (grad, 2020).

Selected Academic Service

Service within NYU

- 2021- Lead, Climate Faculty Cluster Hire Initiative (Courant, Tandon, CDS).
- 2021- Faculty Steering Committee, NYU's All-University Climate Change Initiative.
- 2019- Appointment Committee, Dept of Mathematics, Courant Institute.
- 2019- PhD Advisory Group, Center for Data Science.
- 2021-2022 Chair, Faculty Search Math/CAOS; Member, Faculty Search Tandon CUE
- 2019- Examiner, Math + CAOS, Courant (only a subset): PhD thesis defense; PhD thesis committees; General + Special Topic Exam.
- 2019- CAOS PhD committee
- 2020- CAOS colloquium organizer
- 2019- Presentations (only a subset): Alumni events; Board of Trustees Select Committee; AI Research Faculty.

External activities (Current)

- 2023 Co-organizer, **Simons Foundation**, Symposium on Multi-scale Physics: Astrophysics to Climate Science.
- 2021- Advisory Board Member, NSF CSSI Collaboration **DJ4Earth**.
- 2021- **NOAA C&GC Postdoctoral Fellowship**, Steering Committee Member.
- 01/2021- **Oceanic Research Awards Committee American Meteorological Society**. Chair-Elect (10/2021-).
- 2020- **CESM** Advisory Board Member.
- 2020- **NSF AI Institute AI2ES** External Advisory Board Member.
- 2020- **Ocean Model Development Panel** Member, **CLIVAR**.
- 2019- Editor, **Journal of Climate**, **American Meteorological Society**.
- 2019- Mentor, **MPOWER** (Mentoring Physical Oceanography Women to Increase Retention) + Invited Senior Scientist, Patullo Conference 2021.

- 2019- Steering Committee Member, [FAFMIP](#) (Flux-anomaly-forced model intercomparison project, CMIP6).
- 2006- **Reviewer**, *Proposals*: National Academies, NSF, NOAA, NERC, ISF, Irish Research Council, KAUST/CRG. *Articles*: J. of Climate, J. Phys. Ocean., Nature, Science, GRL, JAMES, Clim. Dyn., Ocean Modelling, J. of Phys. A, ERL, Q. J. Roy. Met. Soc., Phil. Trans. of the Royal Society. *Books*: SIAM, Cambridge University Press.

Recent Activities

- 2021- 2022 **National Academies of Sciences, Engineering, and Medicine's** Workshop Planning Committee Member on [Machine Learning and Artificial Intelligence to Advance Earth System Science](#).
- 2021-2022 Member, Scientific Organizing Committee, US Clivar. Workshop on the Pattern Effect: Coupling of SST patterns, radiative feedbacks, and climate sensitivity (May 2022).
- 2019-2022 Member of the [Working Group on Emerging Data Science Tools for Climate](#), **US CLIVAR**.
- 2021 Co-director [Kavli Institute for Theoretical Physics](#) Program and conference on Machine Learning and the Physics of Climate.
- 2017- 2020 [Schmidt Science Fellowship](#) Panel Member, **Schmidt Futures**, Earth Sciences.
- 2020 Co-organizer, **Columbia University**, Machine Learning in Science & Engineering, Environmental Science.

Presentations

Invited Departmental Seminars (about 20 in the last 3 years; 73 since 2009:

Upcoming: LEAP Columbia; MPI Hamburg; Princeton (Geosciences)

- 2022:** UW Data-Driven Methods for Science and Engineering; Brown/DOE Physics Informed ML for multiscale systems; NCAR MMM; UCLA Statistics;
- 2021:** Caltech (CLiMA); U. of Toronto (Physics); Harvard Widely Applied Math; Harvard (Institute for Applied Computational Science); CU Boulder (Applied Math); Stanford (Earth Sciences); NYU (Tandon); U of Oxford (Physics).
- 2020:** MIT (EAPS), U of Rhode Island (Oceanography); CSU (Atmospheric Science); GISS (Sea Level Seminar); Univ of Reading (Met Dept as part of Distinguished PhD visitor scientist);

Invited Workshops and Conferences (28 in the last year; 76 Invited since 2009:)

Upcoming: APS-GPC webinar; Nature Physics + Turing Institute; AGU fall 2022; Simons Foundation: Wave Turbulence Workshop;

- 2022:** ML for Theoretical Physics; AISTATS, Valencia, Spain (plenary); Aspen Workshop on Machine Learning and Climate Science; CESM Annual Meeting (plenary).
- 2021:** AI4ESP Workshop DOE; NeurIPS ML for Physical Sciences; AGU Fall 2021 (x 2); The science of global sea-level projections: progress, challenges and future directions (London) ; UN AI For Good: Accelerating Climate Science with AI ; KITP Public Lecture ; NOAA workshop on leveraging AI in Environmental Sciences ; Climate and Carbon feedback workshop (UK) ; NYU Climate Connections ; IMSI Confronting climate change (Chicago) ; Eddy - Mean Flow and Waves (Hamburg) ; Scaling Cascades for Complex Systems (Berlin, plenary) ; SIAM Mathematical & Computational Issues in the Geosciences (Milano) ; One World Mathematics of Climate (webinar) ; SIAM Annual Meeting (Spokane, plenary) ; Data Science Coast To Coast DSC2C ; AI4Climate (Paris) ; CESM workshop: Machine Learning Working Group ; CESM Ocean Model Working Group meeting.

Many talks are available on the [Group YouTube Channel](#) or [M²LInES channel](#).

Publications

For papers, visit my [Google Scholar Page](#)

For software, visit our [GitHub repos](#)