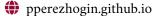
# **Pavel Perezhogin**

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## **Education and Employment**

2021 - Now

**Postdoctoral Associate** in Mathematics Department. Courant Institute of Mathematical Sciences, New York University, as part of M<sup>2</sup>LInES project.

Advisor: Dr. Laure Zanna

2017 - 2021

PhD in Mathematical Modeling, Numerical Methods and Software.
Marchuk Institute of Numerical Mathematics of the Russian Academy of Sciences (INM RAS)

Thesis Title: Stochastic and deterministic subgrid parameterizations for two-dimensional turbulence and their application in ocean circulation models (in Russian).

Advisor: Dr. Andrey Glazunov

2011 - 2017

**BSc&MSc** in Applied Mathematics and Physics. Moscow Institute of Physics and Technology (MIPT), Department of Control and Applied Mathematics.

### **Awards**

2018

**Medal of the Russian Academy of Sciences** for students for the best scientific work in oceanology, atmospheric physics and geography.

## **Additional Experience**

Teaching

Invited guest lectures "Machine Learning in Geophysics", Russia, Moscow, INM RAS (2023).

Mentoring

Grad. student Ivan Kobzar (co-advised with Andrey Glazunov, 2021) and Undergrad. Matias Ortiz (co-advised with Laure Zanna, 2023).

Reviewer

Journal of Advances in Modeling Earth Systems (JAMES) | Ocean Modeling | Geoscientific Model Development (GMD)

#### Selected Talks

Note: *extended list* of **31** presentations for **2016-2023** years can be found at **\$\Pi\$** pperezhogin.github.io/talks

2023

Courant Atmosphere Ocean Science Colloquium (**invited**) | AGU Fall Meeting | APS Division of Fluid Dynamics | CESM Workshop | CPT Annual Meeting | NEMO Machine Learning WG (**invited**) | CESM Ocean Model WG meeting

2022 AGU Fall Meeting | CPT Annual Meeting | NEMO Eddy Closure WG (invited)

2017-2021

TRR 181 Seminar (2021, invited) | EGU General Assembly (2020, 2021, online) | AGU Fall Meeting (2020, online) | ECMWF Annual seminar (2020, online) | Winter School in Les Houches (2019, poster) | 32nd-IUGG (2018) | CITES-2017

### **Selected Publications**

Note: *full list* of publications (20), including peer-reviewed in international journals (6) and Russian journals (8); preprints (2), conference papers (3) and open source education/software (1) can be found at pperezhogin.github.io/publications

#### **PREPRINTS**

Perezhogin, P., Zhang, C., Adcroft, A., Fernandez-Granda, C., & Zanna, L. (2023). Implementation of a data-driven equation-discovery mesoscale parameterization into an ocean model.

Odoi:https://doi.org/10.48550/arXiv.2311.02517

#### PEER REVIEWED

- Perezhogin, P., & Glazunov, A. (2023). Subgrid parameterizations of ocean mesoscale eddies based on germano decomposition. *Journal of Advances in Modeling Earth Systems*, 15(10).

  Odoi:https://doi.org/10.1029/2023ms003771
- Perezhogin, P., Zanna, L., & Fernandez-Granda, C. (2023). Generative data-driven approaches for stochastic subgrid parameterizations in an idealized ocean model. *Journal of Advances in Modeling Earth Systems*, 15(10), e2023MS003681. Odoi:https://doi.org/10.1029/2023MS003681
- Ross, A., Li, Z., **Perezhogin**, **P.**, Fernandez-Granda, C., & Zanna, L. (2023). Benchmarking of machine learning ocean subgrid parameterizations in an idealized model. *Journal of Advances in Modeling Earth Systems*, 15(1), e2022MS003258. Odoi:https://doi.org/10.1029/2022MS003258
- Zhang, C., **Perezhogin**, **P.**, Gultekin, C., Adcroft, A., Fernandez-Granda, C., & Zanna, L. (2023). Implementation and evaluation of a machine learned mesoscale eddy parameterization into a numerical ocean circulation model. *Journal of Advances in Modeling Earth Systems*, 15(10), e2023MS003697. Odi:https://doi.org/10.1029/2023MS003697
- Perezhogin, P., Chernov, I., & Iakovlev, N. (2021). Advanced parallel implementation of the coupled ocean—ice model femao (version 2.0) with load balancing. *Geoscientific Model Development*, 14(2), 843–857. Odi:https://doi.org/10.5194/gmd-14-843-2021
- Perezhogin, P. (2020). Testing of kinetic energy backscatter parameterizations in the nemo ocean model. Russian Journal of Numerical Analysis and Mathematical Modelling, 35(2), 69–82.

  Odoi:https://doi.org/10.1515/rnam-2020-0006
- Perezhogin, P., Glazunov, A. V., & Gritsun, A. S. (2019). Stochastic and deterministic kinetic energy backscatter parameterizations for simulation of the two-dimensional turbulence. Russian Journal of Numerical Analysis and Mathematical Modelling, 34(4), 197–213.

  6 doi:https://doi.org/10.1515/rnam-2019-0017
- Perezhogin, P., Glazunov, A. V., Mortikov, E. V., & Dymnikov, V. P. (2017). Comparison of numerical advection schemes in two-dimensional turbulence simulation. *Russian Journal of Numerical Analysis and Mathematical Modelling*, 32(1), 47–60. Odoi:https://doi.org/10.1515/rnam-2017-0005