# 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 $M^2$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.

## Selected Talks

2023 — Courant Atmosphere Ocean Science Colloquium (**invited**) | AGU Fall Meeting (**oral**) | APS Division of Fluid Dynamics (**oral**) | CESM Workshop (**oral**) | CPT Annual Meeting (**oral**) | NEMO Machine Learning WG (**invited**) | CESM Ocean Model WG meeting (**online**)

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

2020-2021 — TRR 181 Seminar (**2021, invited**) | EGU General Assembly (**2020, 2021, online**) | AGU Fall Meeting (**2020, online**) | ECMWF Annual seminar (**2020, online**)

## 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 Publications

### PREPRINTS

1. **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. doi:https://doi.org/10.48550/arXiv.2311.02517

### PEER REVIEWED

1. **Perezhogin**, **P.**, & Glazunov, A. (2023). Subgrid parameterizations of ocean mesoscale eddies based on germano decomposition. *Journal of Advances in Modeling Earth Systems*, *15*(10). doi:https://doi.org/10.1029/2023ms003771
2. **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. doi:https://doi.org/10.1029/2023MS003681
3. 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. doi:https://doi.org/10.1029/2022MS003258
4. 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. doi:https://doi.org/10.1029/2023MS003697
5. **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. doi:https://doi.org/10.5194/gmd-14-843-2021
6. **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. doi:https://doi.org/10.1515/rnam-2020-0006