Lev Naumov, Ph. D.

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Lev Naumov

Citizenship: Germany, Russia
Location: Rostock, Germany

Employment

2020 – Present **Research Scientist** Leibniz Institute for Baltic Sea Research Warnemünde.
As a research scientist at the IOW, I studied the oxygen dynamics in the Baltic Sea employing the coupled MOM-ERGOM model. I ran the model simulations, validated the model, conducted a statistical analysis of the model output, and modified the model.

2019 – 2020 **Student-Researcher** St. Petersburg branch of the Shirshov Institute of Oceanology of Russian Academy of Sciences.
As a student-researcher at the St. Petersburg branch of the IO RAS, I conducted the statistical analysis of the regional climate model's output (more than 1 TB of data).

2018 – 2020 **Student-Researcher** St. Petersburg State University.
As a student-researcher at SPBU, I estimated the quality of the DT2018 satellite altimetry product by comparing it to the previous DT2014 product and observations. In addition, I studied thermohaline fluxes and mesoscale dynamics in the Lofoten Basin located in the Norwegian Sea.

2018 – 2019 **Student-Researcher** Russian State Hydrometeorological University.
As a student-researcher at RSHU, I carried out coupled 1D GOTM-ERSEM model simulations to reveal the influence of some benthic fauna on the benthic-pelagic fluxes of nutrients in the Gulf of Finland. I also carried out model validation and statistical analysis of the model output.

Education

2020 – 2024 **Ph.D. Physical Oceanography** in University of Rostock.
Thesis title: *Dynamics of oxygen in coastal seas - the Baltic Sea example.*

2018 – 2020 **M.Sc. Operational Oceanography** in Russian State Hydrometeorological University.
Thesis title: *Thermohaline advection in the Norwegian Sea and its influence on the mesoscale eddies dynamics in the Lofoten Basin region (in Russian).*

2014 – 2018 **B.Sc. Applied Hydrometeorology with a focus on Applied Oceanography** in Russian State Hydrometeorological University.
Thesis title: *Sea ice variability in the Kara Sea and its forecast (in Russian).*

Research Publications

Journal Articles

1. **L. Naumov** and H. E. M. Meier, "Major Baltic Inflows do not have long-lasting consequences for 20th-century hypoxia in the central Baltic Sea," en, *Communications Earth & Environment*, vol. 7, no. 1, p. 205, Jan. 2026, ISSN: 2662-4435. DOI: 10.1038/s43247-026-03245-0. (visited on 03/02/2026).

2. L. Barghorn, H. E. M. Meier, H. Radtke, T. Neumann, and **L. Naumov**, "Warm saltwater inflows strengthen oxygen depletion in the western Baltic Sea," en, *Climate Dynamics*, vol. 63, no. 1, p. 29, Dec. 2024, ISSN: 1432-0894. DOI: 10.1007/s00382-024-07501-x. (visited on 02/06/2025).

3. H. E. M. Meier, L. Barghorn, F. Börgel, M. Gröger, **L. Naumov**, and H. Radtke, "Multidecadal climate variability dominated past trends in the water balance of the baltic sea watershed," *npj Climate and Atmospheric Science*, vol. 6, pp. 1–9, 2023. DOI: 10.1038/s41612-023-00380-9.

4. **L. Naumov**, H. E. M. Meier, and T. Neumann, "Dynamics of oxygen sources and sinks in the baltic sea under different nutrient inputs," *Frontiers in Marine Science*, vol. 10, 2023, ISSN: 2296-7745. DOI: 10.3389/fmars.2023.1233324.

5. **L. Naumov**, T. Neumann, H. Radtke, and H. E. M. Meier, "Limited ventilation of the central baltic sea due to elevated oxygen consumption," *Frontiers in Marine Science*, vol. 10, 2023, ISSN: 2296-7745. DOI: 10.3389/fmars.2023.1175643.

6. **L. Naumov**, S. Gordeeva, and T. Belonenko, "Quality assessment of a satellite altimetry data product DT18 in the norwegian sea: A comparison to tide gauge records and drifters data," *Advances in Space Research*, vol. 68, no. 2, 2021, ISSN: 0273-1177. DOI: 10.1016/j.asr.2019.09.029.

7. **L. M. Naumov** and S. M. Gordeeva, "Lateral heat and salt transports in the lofoten basin: Comparison based on three databases (in Russian)," *Fundamental and Applied Hydrophysics*, vol. 13, no. 3, 2020, ISSN: 20736673. DOI: 10.7868/S207366732003003X.

8. V. N. Malinin, S. M. Gordeeva, and **L. M. Naumov**, "Total precipitable water of the atmosphere as a climate forcing factor (in Russian)," *Sovremennye Problemy Distantsionnogo Zondirovaniya Zemli iz Kosmosa*, vol. 15, no. 3, pp. 243–251, 2018, ISSN: 24110280 20707401. DOI: 10.21046/2070-7401-2018-15-3-243-251.

9. V. N. Malinin, S. M. Gordeeva, **L. M. Naumov**, A. A. Ershova, and A. S. Averkiev, "To the evaluation of trends in the components of ocean-atmosphere moisture exchange," *Fundamental and Applied Hydrophysics*, vol. 11, no. 4, 2018, ISSN: 20736673. DOI: 10.7868/S2073667318040044.

Conference Proceedings

1. **L. Naumov**, H. E. M. Meier, and T. Neumann, "Oxygen dynamics in the baltic sea under reduced nutrient input," in *EGU General Assembly 2024*, Conference held 14–19 Apr 2024, Vienna, Austria, EGU24-12994, 2024. DOI: 10.5194/egusphere-egu24-12994.

2. **L. Naumov**, T. Neumann, H. Radtke, and H. E. M. Meier, "Baltic sea oxygen dynamics under reduced nutrient input scenarios," in *Proceedings of the 5th Baltic Earth Conference: New Challenges for Baltic Sea Earth System Research*, Jūrmala, Latvia, 2024, pp. 16–17.

3. **L. Naumov**, T. Neumann, H. Radtke, and H. E. M. Meier, "Elevated oxygen consumption in the central baltic sea reduces ventilation," in *XXVIII General Assembly of the International Union of Geodesy and Geophysics (IUGG)*, Berlin, Germany, 2023. DOI: 10.57757/iugg23-3478.

4. **L. Naumov**, T. Neumann, H. Radtke, and H. E. M. Meier, "Oxygen dynamics in the baltic sea: A budget," in *Proceedings of the 4th Baltic Earth Conference: Assessing the Baltic Sea Earth System*, Jastarnia, Poland, 2022, pp. 56–57.

5. **L. M. Naumov** and S. M. Gordeeva, "Advective fluxes of heat, mass, and salt in the lofoten vortex area based on the reanalyses data (in Russian)," in *Proceedings of the 5th Young Scientists Conference Complex Research of the World Ocean*, Kaliningrad, Russia, 2020, pp. 139–140.

6. **L. M. Naumov** and S. M. Gordeeva, "Statistical estimates of the vorticity at the lofoten basin borders (in Russian)," in *Proceedings of the 18th All-Russian Conference Current Problems in Remote Sensing of the Earth from Space*, Moscow, Russia, 2020, p. 168.

7. T. R. Eremina, **L. M. Naumov**, and A. V. Isaev, "Modeling of biogeochemical processes in the gulf of finland sediments using benthos module of the ersem model (in Russian)," in *Hydrometheorology and Ecology: Scientific Achievements and Perspectives of Development. Proceedings of the 3rd All-Russian Conference*, St. Petersburg, Russia, 2019, pp. 329–332.

8. **L. M. Naumov** and S. M. Gordeeva, "Fluxes of mass, salt, and heat through the lofoten basin (in Russian)," in *Proceedings of the 17th All-Russian Conference Current Problems in Remote Sensing of the Earth from Space*, Moscow, Russia, 2019, p. 313.

9. **L. M. Naumov** and S. M. Gordeeva, "Thermohaline advection in the lofoten vortex region (in Russian)," in *Hydrometheorology and Ecology: Scientific Achievements and Perspectives of Development. Proceedings of the 3rd All-Russian Conference*, St. Petersburg, Russia, 2019, pp. 642–646.

10. **L. M. Naumov**, S. M. Gordeeva, and T. V. Belonenko, "Statistical analysis of DT18 satellite altimetry product in the open ocean and coastal waters (in Russian)," in *Proceedings of the 17th All-Russian Conference Current Problems in Remote Sensing of the Earth from Space*, Moscow, Russia, 2019, p. 312.

11. **L. M. Naumov**, "External factors governing sea ice concentration in the Kara Sea (in Russian)," in *Proceedings of the 4th Young Scientists Conference Complex Research of the World Ocean*, St. Petersburg, Russia, 2018, pp. 287–288.

12. **L. M. Naumov**, S. M. Gordeeva, and T. V. Belonenko, "Verification of the DT18 satellite altimetry product in the polar region (in Russian)," in *Hydrometheorology and Ecology: Scientific Achievements and Perspectives of Development. Proceedings of the 2nd All-Russian Conference*, St. Petersburg, Russia, 2018, pp. 473–476.

13. V. N. Malinin, S. M. Gordeeva, and **L. M. Naumov**, "To the evaluation of trends in the components of ocean-atmosphere moisture exchange based on the satellite data (in Russian)," in *Proceedings of the 15th All-Russian Conference Current Problems in Remote Sensing of the Earth from Space*, Moscow, Russia, 2017, p. 186.

14. **L. M. Naumov** and S. M. Gordeeva, "Variability of sea ice concentration and sea ice forms in the Kara Sea in modern climate," in *Proceedings of the 3rd PICES-ICES Early Career Scientist Conference*, Busan, Republic of Korea, 2017, p. 21.

15. **L. M. Naumov**, "Polynjas area dynamics in the Kara Sea (in Russian)," in *Proceedings of the 2nd Young Scientists Conference Complex Research of the World Ocean*, Moscow, Russia, 2016, pp. 200–203.

16. **L. M. Naumov** and S. M. Gordeeva, "Sea ice in the Kara Sea in modern climate (in Russian)," in *Proceedings of the 14th All-Russian Conference Current Problems in Remote Sensing of the Earth from Space*, Moscow, Russia, 2016, p. 275.

Books and Chapters

1. S. M. Gordeeva and **L. M. Naumov**, *Handling of Hydrometeorological Databases in the Internet Network (in Russian)*. St.Petersburg, Russia: Russian State Hydrometeorological University, 2020.

Skills

Coding	**Advanced:** Python (numpy, scipy, pandas, xarray, matplotlib, and scikit-learn libraries), Linux/Unix environment, work on the computational clusters. **Good:** Fortran, Git, Bash. **Beginner:** R, Matlab, LaTeX, HTML, CSS, JavaScript.
Scientific programs	**Various programs for netCDF files pre- and postprocessing** (Panoply, CDO, NCO, Ferret, ncview).
	Program for statistical analysis (Past4).
Numerical models	**A set of numerical models of physical and biogeochemical processes in the ocean** (GOTM, MITgcm, MOM5, ERGOM, ERSEM).
Basic programs	**MS Office programs** (Word, Excel, Power Point).

Skills (continued)

Statistical analysis	**Single- and multivariate statistical technics** (Hypothesis testing, linear regression, correlation analysis, PCA decomposition, cluster analysis, spectral analysis, wavelet).
Misc.	**Academic research, scientific writing**.
Hobbies	**Outdoor activity, board games, cycling**.

Languages

Russian	**Mother tongue** (C2 CEFR).
German	**Advanced level** (C2 CEFR).
English	**Advanced level** (C1 CEFR).

Awards and Achievements

2019 **Laureate of The Best Student of St. Petersburg award**. Government of St. Petersburg, St. Petersburg.

2018 **1st place in the young scientists research competition**. St. Petersburg branch of Shirshov Institute of Oceanology of Russian Academy of Sciences, St. Petersburg.

1st place in the students research competition. Russian State Hydrometeorological University, St. Petersburg.

2017 **2nd place in the students research competition**. Russian State Hydrometeorological University, St. Petersburg.

2016 **2nd place in the young scientists research competition**. St. Petersburg branch of Shirshov Institute of Oceanology of Russian Academy of Sciences, St. Petersburg.

2nd place in the students research competition. Russian State Hydrometeorological University, St. Petersburg.

Teaching

2024 **"Open Ship 2024" event**. Rostock, Germany.
Popular science lecture titled "Death Zones in the Baltic Sea: Natural Phenomenon or the Result of Human Activities?" (in German).

2022 **Summer School "Climate of the Baltic Sea Region"**. Baltic Earth, Askö, Sweden.
Exercises dedicated to introduction to Python and statistical analysis of the oceanographic data.

2021 **Code Generation Tool (CGT) seminar**. IOW, Rostock, Germany.
Biogeochemical modeling exercises with CGT.

Grants and Scholarships

2018 **St.Petersburg Government Grant for young scientists**. Was given by the government of St.Petersburg.

2017 **St.Petersburg Government Grant for young scientists**. Was given by the government of St.Petersburg.

Grants and Scholarships (continued)

2016 **St.Petersburg Government Scholarship**. Was given by the government of St.Petersburg.

Schools and Workshops

2023 **Winter School for young scientists**. IOW, Rostock, Germany.

2019 **Winter School "Analysis of Climate Variability"**. IOW, Rostock, Germany.

2018 **Summer School "Climate of the Baltic Sea Region"**. Baltic Earth, Askö, Sweden.

Personal references

Prof. Dr. H.E. Markus Meier
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Dr. Markus Meier was my supervisor during my Ph.D. studies at IOW.

Dr. Thomas Neumann
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Dr. Thomas Neumann scientifically supported me during my Ph.D. at IOW.