

Curriculum Vitae



Dr. Ivan Kuznetsov

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for Polar and Marine Research
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Professional career

- **Researcher, 2018 – up to the present time**

MOSAIC project, Physical oceanography of polar seas, The Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research

- **Researcher, 2015 – 2018**

New Technologies group at Institute of Coastal Research, Centre for Materials and Coastal Research (HZG), Germany

- **Researcher, 2011 – 2015**

Oceanographic research group, Swedish Meteorological and Hydrological Institute (SMHI), Sweden

- **Postdoc, 2009 – 2011**

Department of Physical Oceanography and Instrumentation, Leibniz Institute for Baltic Sea Research (IOW), Germany

Education

- **2005 – 2009**

Ph. D. Student (Physical Oceanography), Department of Physical Oceanography and Instrumentation, Leibniz Institute for Baltic Sea Research, Germany

Thesis: “Simulation of oxygen dynamics in the Baltic Sea deep water”

- **2004 – 2005**

Ph. D. Student (Ocean Bio-hydrochemistry), P.P. Shirshov Institute of Oceanology of the Russian Academy of Sciences, Moscow, Russia

Thesis: “Mathematical modelling of Black Sea hydrochemical structure forming”

- **1998 – 2004**

Master Student (Physics), Lomonosov Moscow State University, Faculty of Physics, Chair of Physics of Sea and Inland Water, Moscow, Russia

Master of Science in Physics under supervision of Dr. B.I. Samolyubov.

Diploma thesis: “Three-dimensional structure of current at stratified artificial lake”

Research interests

- Investigation (sub)mesoscale processes in the Arctic by means of observations and modeling
- Performing marine field studies and processing of oceanographic field data and big model data sets
- Investigating coastal ecosystem processes using cutting-edge numerical modeling techniques
- Developing and applying coupled physical – biogeochemical coastal models, with a special focus on the coastal physics, carbonate system, oxygen and nutrients cycles
- Understanding regional ocean climate dynamics through climate sensitivity experiments

Publications

Publication statistics according to Google Scholar:

Link: <https://scholar.google.com/citations?hl=en&user=2MCsUkMAAAAJ>

Papers in peer-reviewed international scientific journals:

1. Hoppmann, M., **Kuznetsov, I.**, Fang, Y.-C., and Rabe, B. (2022). Mesoscale observations of temperature and salinity in the Arctic Transpolar Drift: a high-resolution dataset from the MOSAiC Distributed Network. *Earth Syst. Sci. Data Discuss.* <https://doi.org/10.5194/essd-2022-66>
2. Rabe, B. et al. (2022). Overview of the MOSAiC expedition: Physical oceanography. *Elementa: Science of the Anthropocene*. 10 (1). <https://doi.org/10.1525/elementa.2021.00062>
3. Neder, C., Fofonova, V., Androsov, A., **Kuznetsov, I.**, Abelec, D., Falk, U., Schlosse R.I., Sahade, R., Jerosch, K. (2022). Modelling suspended particulate matter dynamics at an Antarctic fjord impacted by glacier melt. *Journal of Marine Systems*, 231, <https://doi.org/10.1016/j.jmarsys.2022.103734>
4. Fofonova, V., Kärnä, T., Klingbeil, K., Androsov, A., **Kuznetsov, I.**, Sidorenko, D., Danilov, S., Burchard, H. and Wiltshire, K.-H. (2021). Plume spreading test case for coastal ocean models. *Geosci. Model Dev.*, 14, 6945–6975, <https://doi.org/10.5194/gmd-14-6945-2021>.
5. Rodionov A.A., Androsov A.A., Fofonova V.V., **Kuznetsov I.S.** and Voltzinger N.E. (2021) Modeling the Tidal Dynamics of the Northern Straits of the Kuril Ridge. *Fundamental and applied hydrophysics*. 14(3), 20-34. doi: 10.7868/S2073667321030023

6. Androssov, A., Voltzinger, N., **Kuznetsov, I.**, & Fofonova, V. (2020). Modeling of nonhydrostatic dynamics and hydrology of the lombok strait. *Water (Switzerland)*, 12(11), 1–21. <https://doi.org/10.3390/w12113092>
7. Katlein, C., Mohrholz, V., Sheikin, I., Itkin, P., Divine, D. V., Stroeve, J., Jutila, A., Krampe, D., Shimanchuk, E., Raphael, I., Rabe, B., **Kuznetsov, I.**, Mallet, M., Liu, H., Hoppmann, M., Fang, Y.-C., Dumitrascu, A., Arndt, S., Anhaus, P., Nicolaus, M., Matero, I., Oggier, M., Eicken, H., Haas, C. (2020). Platelet Ice Under Arctic Pack Ice in Winter. *Geophysical Research Letters*, 47(16). <https://doi.org/10.1029/2020GL088898>
8. **Kuznetsov, I.**, Androssov, A., Fofonova, V., Danilov, S., Rakowsky, N., Harig, S., & Wiltshire, K. H. (2020). Evaluation and application of newly designed finite volume coastal model FESOM-C, effect of variable resolution in the Southeastern North Sea. *Water (Switzerland)*, 12(5). <https://doi.org/10.3390/w12051412>
9. Gogina, M., Zettler, M. L., Wählström, I., Andersson, H., Radtke, H., **Kuznetsov, I.**, & MacKenzie, B. R. (2020). A combination of species distribution and ocean-biogeochemical models suggests that climate change overrides eutrophication as the driver of future distributions of a key benthic crustacean in the estuarine ecosystem of the Baltic Sea. *ICES Journal of Marine Science*, 77(6), 2089–2105. <https://doi.org/10.1093/icesjms/fsaa107>
10. Fofonova, V., Androssov, A., Sander, L., **Kuznetsov, I.**, Amorim, F., Hass, H. C., and Wiltshire, K. H.: Non-linear aspects of the tidal dynamics in the Sylt-Rømø Bight, south-eastern North Sea, *Ocean Sci. Discuss.*, <https://doi.org/10.5194/os-2019-73>, accepted, 2019.
11. Androssov, A., Fofonova, V., **Kuznetsov, I.**, Danilov, S., Rakowsky, N., Harig, S., Brix, H., and Wiltshire, K. H.: FESOM-C v.2: coastal dynamics on hybrid unstructured meshes, *Geosci. Model Dev.*, 12, 1009–1028, <https://doi.org/10.5194/gmd-12-1009-2019>, 2019.
12. Meier HEM, Edman M, Eilola K, Placke M, Neumann T, Andersson HC, Brunnabend S-E, Dieterich C, Frauen C, Friedland R, Gröger M, Gustafsson BG, Gustafsson E, Isaev A, Kniebusch M, **Kuznetsov I**, Müller-Karulis B, Naumann M, Omstedt A, Ryabchenko V, Saraiva Sand Savchuk OP (2019) Assessment of Uncertainties in Scenario Simulations of Biogeochemical Cycles in the Baltic Sea. *Front. Mar. Sci.* 6:46. doi: 10.3389/fmars.2019.00046
13. Nemo-Nordic 1.0: a NEMO-based ocean model for the Baltic and North seas—research and operational applications. Robinson Hordoir, Lars Axell, Anders Höglund, Christian Dieterich, Filippa Fransner, Matthias Gröger, Ye Liu, Per Pemberton, Semjon Schimanke, Helen Andersson, Patrik Ljungemyr, Petter Nygren, Saeed Falahat, Adam Nord, Anette Jönsson, Iréne Lake, Kristofer Döös, Magnus Hieronymus, Heiner Dietze, Ulrike Löptien, Ivan Kuznetsov, Antti Westerlund, Laura Tuomi, Jari Haapala **2019**
14. Assessment of Eutrophication Abatement Scenarios for the Baltic Sea by Multi-Model

Ensemble Simulations H. E. Markus Meier, Moa K. Edman, Kari J. Eilola, Manja Placke, Thomas Neumann, Helén C. Andersson, Sandra-Esther Brunnabend, Christian Dieterich, Claudia Frauen, René Friedland, Matthias Gröger, Bo G. Gustafsson, Erik Gustafsson, Alexey Isaev, Madline Kniebusch, Ivan Kuznetsov, Bärbel Müller-Karulis, Anders Omstedt, Vladimir Ryabchenko, Sofia Saraiva⁸ and Oleg P. Savchuk 2018

15. Fransner, F., Gustafsson, E., Tedesco, L., Vichi, M., Hordoir, R., Roquet, F., Spilling, K., **Kuznetsov, I.**, Eilola, K., Mörtz, C.-M., Humborg, C. and Nycander, J. Non-Redfieldian Dynamics Explain Seasonal pCO₂ Drawdown in the Gulf of Bothnia. J. Geophys. Res. Oceans. Accepted Author Manuscript. doi:10.1002/2017JC013019
16. Robinson Hordoir, Lars Axell, Ulrike Löptien, Heiner Dietze, **Ivan Kuznetsov**: Influence of sea level rise on the dynamics of salt inflows in the Baltic Sea. Journal of Geophysical Research: Oceans 09/2015; 120(10)., DOI:10.1002/2014JC010642
17. Elin Almroth-Rosell, Kari Eilola, **Ivan Kuznetsov**, Per O.J. Hall, H.E. Markus Meier: A new approach to model oxygen dependent benthic phosphate fluxes in the Baltic Sea. Journal of Marine Systems 11/2014; 144., DOI:10.1016/j.jmarsys.2014.11.007
18. Thomas Neumann, Kari Eilola, Bo Gustafsson, Bärbel Müller-Karulis, **Ivan Kuznetsov**, H E Markus Meier, Oleg P Savchuk: Extremes of Temperature, Oxygen and Blooms in the Baltic Sea in a Changing Climate. AMBIO A Journal of the Human Environment 09/2012; 41(6)., DOI:10.1007/s13280-012-0321-2
19. H.E.M. Meier, B. Müller-Karulis, H. C. Andersson, C. Dieterich, K. Eilola, B. Gustafsson, A. Höglund, R. Hordoir, **I. Kuznetsov**, T. Neumann, Z. Ranjbar, O. P. Savchuk, S. Schimanke: Impact of Climate Change on Ecological Quality Indicators and Biogeochemical Fluxes in the Baltic Sea: A Multi-Model Ensemble Study. AMBIO A Journal of the Human Environment 09/2012; 41(6)., DOI:10.1007/s13280-012-0320-3
20. Markus H E Meier, Helen C. Andersson, Berit Arheimer, Thorsten Blenckner, Boris Chubarenko, Chantal Donnelly, Kari Eilola, Bo G. Gustafsson, Anders Hansson, Jonathan Havenhand, Anders Höglund, **Ivan Kuznetsov**, Brian R. MacKenzie, Bärbel Müller-Karulis, Thomas Neumann, Susa Niiranen, Joanna Piwowarczyk, Urmars Raudsepp, Marcus Reckermann, Tuija Ruoho-Airola, Oleg P. Savchuk, Frederik Schenk, Semjon Schimanke, Germo Väli, Jan-Marcin Weslawski, Eduardo Zorita: Comparing Reconstructed Past Variations and Future Projections of the Baltic Sea Ecosystem – First Results from Multi-Model Ensemble Simulations. Environmental Research Letters 09/2012; 7(3)., DOI:10.1088/1748-9326/7/3/034005
21. **Ivan Kuznetsov**, Thomas Neumann: Simulation of carbon dynamics in the Baltic Sea with a 3D model. Journal of Marine Systems 01/2012; DOI:10.1016/j.jmarsys.2012.10.011
22. H. E. M. Meier, H. C. Andersson, K. Eilola, B. G. Gustafsson, **I. Kuznetsov**, B. Müller-Karulis, T. Neumann, O. P. Savchuk: Hypoxia in future climates: A model ensemble study for the Baltic Sea. Geophysical Research Letters 12/2011; 38(24)., DOI:10.1029/2011GL049929
23. K. Eilola, B. G. Gustafsson, **I. Kuznetsov**, H.E.M. Meier, T. Neumann, O. P. Savchuk: Evaluation of biogeochemical cycles in an ensemble of three state-of-the-art numerical models of the Baltic Sea. Journal of Marine Systems 11/2011; 88(2)., DOI:10.1016/j.jmarsys.2011.05.004
24. **Ivan Kuznetsov**, Thomas Neumann, Bernd Schneider, Evgeniy Yakushev: Processes regulating pCO₂ in the surface waters of the central eastern Gotland Sea: a model study. Oceanologia 09/2011; 53(3)., DOI:10.5697/oc.53-3.745
25. Saminsky G.A., Debolskaya E.I., **Kuznetsov I.S.**, Yakushev E.V.: Mathematical model of anaerobic infection in reservoirs. Water: chemistry and ecology. 12, 2001; pp. 8-17

26. E.V. Yakushev, **I.S. Kuznetsov**, O.I. Podymov, H. Burchard, T. Neumann, F. Pollehne: Modeling the influence of oxygenated inflows on the biogeochemical structure of the Gotland Sea, central Baltic Sea: Changes in the distribution of manganese. *Computers & Geosciences* 04/2011; 37(4-4)., DOI:10.1016/j.cageo.2011.01.001
27. **I. Kuznetsov**, T. Neumann, H. Burchard: Model study on the ecosystem impact of a variable C:N:P ratio for cyanobacteria in the Baltic Proper. *Ecological Modelling* 11/2008; 219(1-2)., DOI:10.1016/j.ecolmodel.2008.08.002
28. E. Yakushev, **I. Kuznetsov**, O. Podymov, V. Chasovnikov: Estimating dissolved oxygen balance in water column of the Black Sea (mathematical modeling). *Science of Kuban*. 2008. ISSN 1562-9856. (2), p. 66-71. (in Russian)
29. E. I. Debolskaya, E. V. Yakushev, **I. S. Kuznetsov**: Analysis of the hydrophysical structure of the Sea of Azov in the period of the bottom anoxia development. *Journal of Marine Systems* 04/2008; 70(3-4)., DOI:10.1016/j.jmarsys.2007.02.027
30. E. V. Yakushev, F. Pollehne, G. Jost, **I. Kuznetsov**, B. Schneider, L. Umlauf: Analysis of the water column oxic/anoxic interface in the Black and Baltic seas with a numerical model. *Marine Chemistry* 12/2007; 107(3-3)., DOI:10.1016/j.marchem.2007.06.003
31. E. I. Debol'skaya, E. V. Yakushev, **I. S. Kuznetsov**: Estimating the Characteristics of the Vertical Turbulent Viscosity in the Upper 200-m Layer of the Black Sea. *Oceanology* 08/2007; 47(4)., DOI:10.1134/S0001437007040042
32. Samolubov B.I., **Kuznetsov I.S.**, Shilnev A.V., V.V. Kremenetskij: Density flow and impurity transfer in White Bay of Imandra lake. *Hydraulic engineering construction*, Moscow, 10, 2002. pp. 46-49. (in Russian) ***

Reports:

1. **Ivan Kuznetsov**, Cristian Dieterich, Robinson Hordoir, Lars Axell, Anders Höglund, Kari Eilola, Semjon Schimanke: Model study on the variability of ecosystem parameters in the Skagerrak-Kattegat area, effect of load reduction in the North Sea and possible effect of BSAP on Skagerrak-Kattegat area. Report Series: Oceanografi: 119, 2016. Affiliation: SMHI
1. H. E. M. Meier, K. Eilola, B. G. Gustafsson, **I. Kuznetsov**, T. Neumann, O. P. Savchuk: Uncertainty assessment of projected ecological quality indicators in future climate. Report Series: Oceanografi: 112, Affiliation: SMHI
2. K. Eilola, B. G. Gustafson, R. Hordoir, A. Höglund, **I. Kuznetsov**, H. E. M. Meier: Quality assessment of state-of-the-art coupled physical-biogeochemical models in hind cast simulations 1970-2005. Report Series: Oceanografi: Nr 101/2010
3. Evgeniy V. Yakushev, Falk Pollehne, Günter Jost, **Ivan Kuznetsov**, Bernd Schneider, Lars Umlauf: Redox Layer Model (ROLM): a tool for analysis of the water column oxic/anoxic interface processes. 2006. Marine science reports. N. 68, Institut für Ostseeforschung Warnemünde.

Books chapters:

1. E. V. Yakushev, E. I. Debolskaya, **I. S. Kuznetsov**, A. Staalstrøm: Modelling of the Meromictic Fjord Hunnbunn (Norway) with an Oxygen Depletion Model (OxyDep). *Chemical Structure of Pelagic Redox Interfaces*, Yakushev, Evgeniy V edited by Yakushev E, 01/2013; Springer Berlin / Heidelberg., DOI:10.1007/698_2011_110

Scientific activities

- European Geoscience Union (EGU) General Assembly Conference, 2022
- International MOSAiC Science Conference, Potsdam, Germany, 2022
- European Geoscience Union (EGU) General Assembly Conference, online, 2021
- American Geophysical Union (AGU) fall meeting, online, 2020
- MOSAiC Final Implementation Workshop, Potsdam, Germany, 2019
- Themes 2018, Venice, Italy, 2018
- European Geosciences Union General Assembly, Vienna, Austria, 2018
- Workshop on "Coastal Ocean Modelling", Hamburg, Germany, 2018
- Advances in Marine Ecosystem Modelling Research, Plymouth, UK, 2017
- The 11th Baltic Sea Science Congress, Rostock, Germany, 2017
- Baltic Earth meeting on Scenario Simulations for the Baltic Sea 1960-2100, Warnemünde, Germany, 2016
- ECSA 56 Coastal systems in transition: From a 'natural' to an 'anthropogenically-modified' state conference, Bremen, Germany, 2016
- The 26th General Assembly of the International Union of Geodesy and Geophysics, Prague, Czech Republic, 2015
- Baltic Earth meeting on Scenario Simulations for the Baltic Sea 1960-2100, Norrköping, Sweden, 2014
- ECOSUPPORT & RECOCA Stakeholder Conference, Stockholm, Sweden, 2011
- JOINT ECOSUPPORT & RECOCA FINAL CONFERENCE, Stockholm, Sweden, 2011
- The Baltic Sea Science Congress, St. Petersburg, Russia, 2011
- ECOSUPPORT Workshop on "Scenarios and long-term hindcasts" at BNI, Stockholm, Sweden, 2011
- ECOSUPPORT General Assembly, Norrköping, Sweden, 2010
- ECOSUPPORT workshop on data integration and exchange, Denmark, 2010
- Workshop ECOSUPPORT WP2, BNI, Stockholm, Sweden, 2010
- BONUS ANNUAL CONFERENCE 2010, Vilnius, Lithuania, 2010
- ECOSUPPORT Workshop: The marine ecosystem in changing climate - On the added value of coupled climate-environmental modeling for the Baltic Sea. SMHI, Norrköping, Sweden, 2009.
- ECOSUPPORT Data Integration and Modelling Workshop, SMHI, Norrköping, Sweden, 2009
- The Baltic Sea Science Congress, Tallinn, Estonia, 17 - 21 August, 2009
- KOLLOQUIUM MEERESFORSCHUNG im WANDEL: anlässlich des 80. Geburtstages von Prof. Dr. Dr. h. c. Gotthilf Hempel, Bremerhaven, Germany, 2009
- The 6th European Conference on Ecological Modelling, Trieste, Italy, 2007
- The Baltic Sea Science Congress, Rostock, Germany, 2007
- Nordic Marine Sciences Conference, Oslo, Norway, 2006
- International conference on Extreme Hydrological Events: theory, modeling, forecasting, Moscow, Russia, 2004
- VI conference "Dynamics and thermics of rivers, artificial lakes and littoral sea regions", WPI RAS, Moscow, Russia, 2004

Languages

- Russian (native speaker)
- English (fluent)
- German (good knowledge)