

Aleksi Nummelin

Curriculum Vitae, December 2020

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Education

- 10/2016 PhD, climate dynamics and physical oceanography, Geophysical Institute, University of Bergen.
Thesis: [The Arctic Ocean in a Fresh and Warm Future](#)
Supervisors: Prof. C. Li, Prof. L. H. Smedsrud and Dr. B. Risebrobakken
- 4/2012 Master of Science (major: geophysics, minors: meteorology, methodological sciences), Department of Physics, University of Helsinki.
Thesis: [Convection in the Greenland Sea: model and observations.](#)
Supervisor: Prof. B. Rudels
- 6/2010 Bachelor of Science (major: geophysics, minors: physics, meteorology), Department of Physics, University of Helsinki.
Thesis: Denmark Strait Overflow
Supervisor: Prof. B. Rudels

Work Experience

- 12/2018 – Senior Researcher, NORCE Norwegian Research Centre AS, Bergen, Norway. Development of the Norwegian Earth System Model (NorESM).
- 1/2020 – Scientist (adjunct, 45 %), Department of Geosciences, University of Oslo, Oslo, Norway. Simulations of Eocene-Oligocene transition sensitivity to changing topography with NorESM and development of a topography aware mesoscale parameterization for ocean models.
- 1/2019 – 12/2019 Scientist (adjunct, 20 %), Department of Geosciences, University of Oslo, Oslo, Norway. Simulations of Eocene-Oligocene transition sensitivity to changing topography with NorESM.
- 1/2017 – 12/2018 Postdoctoral Fellow, Earth & Planetary Sciences, Johns Hopkins University. Development of tracer inversion method for estimating ocean kinematics, especially lateral diffusivity, from satellite observations.
- 8/2016 – 12/2016 Scientist, Geophysical Institute, University of Bergen
- 8/2012 – 8/2016 PhD research focusing on model simulations and data analysis of ocean circulation changes under freshwater forcing. University of Bergen
Supervisors: C. Li, L. H. Smedsrud, B. Risebrobakken.
- 5/2009 – 8/2012 Research assistant, Finnish Meteorological Institute (FMI). Analysis of model and observational data. Participation in the Argo program in the Baltic Sea. Supervisors: Dr. T. Stipa, Prof. B. Rudels and Dr. J. Haapala.
- 7– 8/2008 & 5 – 6/2007 Summer intern, Finnish Institute of Marine Research. Analysis of model results for project report. Supervisor: Dr. T. Stipa.

Research & Teaching Experience

- 2020 Lecturer in a CHESSE graduate research school 'Modelling Workshop'.
- 2017 – 2018 Participation in the Johns Hopkins [Teaching Academy](#)
- 7/2015 Lecturer in *A Changing Arctic* -course as part of the International Summer School (ISS) at University of Oslo, Norway
- 1–6/2014 Graduate Student Trainee with Professor Bruno Tremblay, Department of Atmospheric and Oceanic Sciences, McGill University, Canada

2013–2015	Teaching assistant in following courses <i>numerical modelling, data-analysis in meteorology and oceanography, dynamical meteorology, and seminar in atmospheric sciences</i> , University of Bergen, Norway
1–5/2012	Teaching assistant, <i>introduction to oceanography</i> , University of Helsinki, Finland
summers 2010/11	Research cruises in the North Atlantic and Nordic Seas on board F/S Meteor (M82-1) and F/S Poseidon (P418/2). Tasks included CTD work including post-processing of the CTD and ADCP data. Chief scientists: Prof. D. Quadfasel (M82-1) and Dr. K. Latarius (P418/2), both University of Hamburg, Germany.

Supervision

2015–2016	Co-supervisor, MSc thesis, Musa Ssemujju: Monsoon in North East Bangladesh
2014	Co-supervisor, MSc thesis, Emilie Otilde Lotsberg: A view on possible regime shifts in the North Atlantic subpolar gyre in the mid 1920s and 1990s

Publications

Nummelin, A., Busecke, J. J. M., Haine, T. W. N., & Abernathey, R. P. (2020). Diagnosing the Scale and Space Dependent Horizontal Eddy Diffusivity at the Global Surface Ocean, *Journal of Physical Oceanography*, <https://doi.org/10.1175/JPO-D-19-0256.1>.

Seland, Ø., Bentsen, M., Olivié, D., Toniazzi, T., Gjermundsen, A., Graff, L. S., Debernard, J. B., Gupta, A. K., He, Y.-C., Kirkevåg, A., Schwinger, J., Tjiputra, J., Aas, K. S., Bethke, I., Fan, Y., Griesfeller, J., Grini, A., Guo, C., Ilıcak, M., Karset, I. H. H., Landgren, O., Liakka, J., Moseid, K. O., **Nummelin, A.**, Spensberger, C., Tang, H., Zhang, Z., Heinze, C., Iversen, T., and Schulz, M. (2020): Overview of the Norwegian Earth System Model (NorESM2) and key climate response of CMIP6 DECK, historical, and scenario simulations, *Geosci. Model Dev.*, 13, 6165–6200, <https://doi.org/10.5194/gmd-13-6165-2020>.

Tsujino, H., Urakawa, L. S., Griffies, S. M., Danabasoglu, G., Adcroft, A. J., Amaral, A. E., Arsouze, T., Bentsen, M., Bernardello, R., Böning, C. W., Bozec, A., Chassignet, E. P., Danilov, S., Dussin, R., Exarchou, E., Fogli, P. G., Fox-Kemper, B., Guo, C., Ilıcak, M., Iovino, D., Kim, W. M., Koldunov, N., Lapin, V., Li, Y., Lin, P., Lindsay, K., Liu, H., Long, M. C., Komuro, Y., Marsland, S. J., Masina, S., **Nummelin, A.**, Rieck, J. K., Ruprich-Robert, Y., Scheinert, M., Sicardi, V., Sidorenko, D., Suzuki, T., Tatebe, H., Wang, Q., Yeager, S. G., and Yu, Z. (2020). Evaluation of global ocean–sea-ice model simulations based on the experimental protocols of the Ocean Model Intercomparison Project phase 2 (OMIP-2), *Geosci. Model Dev.*, 13, 3643–3708, <https://doi.org/10.5194/gmd-13-3643-2020>.

Fransner F., Counillon F. Bethke I., Tjiputra J., Samuelsen A., **Nummelin A.**, and Olsen A. (2020). Ocean Biogeochemical Predictions-Initialization and Limits of Predictability. *Frontiers in Marine Science*, 7, doi: 10.3389/fmars.2020.00386, <https://www.frontiersin.org/article/10.3389/fmars.2020.00386>.

Lambert, E., **Nummelin, A.**, Pemberton, P., & Ilıcak, M. (2019). Tracing the imprint of river runoff variability on Arctic water mass transformation. *Journal of Geophysical Research: Oceans*, 124. <https://doi.org/10.1029/2017JC013704>

Nummelin, A., S. Jeffress, and T. Haine (2018): Statistical Inversion of Surface Ocean Kinematics from Sea Surface Temperature Observations. *J. Atmos. Oceanic Technol.*, 35, 1913–1933, doi: [10.1175/JTECH-D-18-0057.1](https://doi.org/10.1175/JTECH-D-18-0057.1)

Jensen M., **A. Nummelin**, S. Nielsen, H. Sadatzki, E. Sessford, B. Risebrobakken and A. Born. A (2018). A spatio-temporal reconstruction of sea-surface temperatures in the North Atlantic during Dansgaard-Oeschger events 5-8, 14, 901-922, doi: 10.5194/cp-14-901-2018

Schemm, S., **A. Nummelin**, N.G. Kvamstø, and Ø. Breivik (2017), The Ocean Version of the Lagrangian Analysis Tool LAGRANTO. *J. Atmos. Oceanic Technol.*, 34, 1723-1741, doi: 10.1175/JTECH-D-16-0198.1

Nummelin, A., C. Li, and P. J. Hezel (2017), Connecting ocean heat transport changes from the midlatitudes to the Arctic Ocean, *Geophys. Res. Lett.*, 44, doi:10.1002/2016GL071333.

Nummelin A., M. Ilicak, C. Li, and L. H. Smedsrud (2016), Consequences of future increased Arctic runoff on Arctic Ocean stratification, circulation, and sea ice cover, *J. Geophys. Res. Oceans*, 120, doi:10.1002/2015JC011156

Nummelin A., C. Li, and L. H. Smedsrud (2015), Response of Arctic Ocean stratification to changing river runoff in a column model, *J. Geophys. Res. Oceans*, 120, 2655–2675, doi:10.1002/2014JC010571

Rudels B., M. Korhonen, G. Budéus, A. Beszczynska-Möller, U. Schauer, **A. Nummelin**, D. Quadfasel, and H. Valdimarsson, (2012) The East Greenland Current and its impacts on the Nordic Seas: observed trends in the past decade *ICES J. Mar. Sci.* 69(5):841-851. doi:10.1093/icesjms/fss079

Roiha P., A. Westerlund, **A. Nummelin**, and T. Stipa (2010) Ensemble forecasting of harmful algal blooms in the Baltic Sea, *J. Mar Systems*, Vol. 83, Issues 3–4. doi:10.1016/j.jmarsys.2010.02.015

Outreach

2018	Fluid dynamics demonstrations, Johns Hopkins Annual Physics Fair
2013 & 2015	Presentations in Forskningsdagene UNG, youth science night, Bergen
2013–	Contributing author, http://www.scisnack.com/ science blog

Scientific Tools

Analysis	Currently Python – also experience with tools such as Matlab, R, and Ferret.
Numerical models	Number of hydrodynamic models from Norwegian Earth System Model to GOTM 1-D turbulence model.
Instrumentations	Shipboard equipment (CTD, ADCP), active remote control of Argo floats

Language

Finnish	<i>Native</i>	English	<i>Excellent</i>	French	<i>Basics</i>
Norwegian	<i>Fluent</i>	Swedish	<i>Fluent</i>		

Service

2019	Co-organizer: Workshop on Machine Learning in the Earth's Climate System
2018	Expert reviewer, IPCC Special Report on Oceans & Cryosphere in a Changing Climate
2015–	Reviewer for <i>Journal of Physical Oceanography</i> , <i>Journal of Geophysical Research: Oceans</i> , <i>Geophysical Research Letters</i> , and <i>Climate Dynamics</i>
2016,2019	Organizing committee member, annual meeting of the Bjerknes Centre for Climate Research
10/2012–9/2015	Organizing committee member, Geophysical Institute Colloquium
6/2013–1/2014	Head of the organizing committee, ResClim modelling workshop

References

Professor Thomas Haine, postdoc supervisor, +1 410 516 7048, thomas.haine@jhu.edu
 Professor Camille Li, PhD supervisor, +47 55 58 37 05, camille.li@uib.no