

EIRIK MYRVOLL-NILSEN

CONTACT INFORMATION

Home Address:

Skippergata 32 - 423, 9008 Tromsø, Norway

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EDUCATION

UiT The Arctic University of Norway

PhD in Science

Tromsø, Norway

Sep 2016–May 2020

Title: *Efficient Bayesian analysis of long memory processes applied to climate*

Disputation date: 22 May 2020

Supervisor: Sigrunn Holbek Sørbye, Martin Rypdal and Håvard Rue

Department of Mathematics and Statistics

Norwegian University of Science and Technology (NTNU)

Master of Technology: Applied Physics and Mathematics

Trondheim, Norway

Aug 2011–Sep 2016

Programme Option: Industrial Mathematics

Supervisor: Håvard Rue and Sigrunn Holbek Sørbye

Department of Mathematical Sciences

Bachelor of Science: Mathematical Sciences

August 2010–June 2014

Programme Option: Mathematics

Department of Mathematical Sciences

RESEARCH EXPERIENCE

UiT The Arctic University of Norway

Postdoctoral Researcher

Tromsø, Norway

Feb 2023–

Object detection, deep learning and data integration.

Researcher

Jan 2022–Jan 2023

Bayesian detection of early warning signals.

PhD Candidate

Sep 2016–Dec 2019

Long-range dependence and applications in climate science.

Potsdam Institute for Climate Impact Research (PIK)

Postdoctoral Researcher

Potsdam, Germany

July 2020–Dec 2021

Dating uncertainty quantification and synchronization of layer-counted proxy data.

MOBILITY

The University of North Carolina at Chapel Hill (UNC)

Visiting Scholar

Chapel Hill, NC, USA

April 2024–April 2025

Data integration methods and applications for multiomics breast cancer data.

SUPERVISION EXPERIENCE

PhD Candidates

L. Hallali (main supervisor since February 2025)

Jan 2022–

D. Adamek (co-supervisor)

April 2025–

J. Zavadil (co-supervisor)

Sep 2024–

Master Students

S. Laux (Co-supervisor)

Sep 2025–Jun 2026

J. Knudsen (main supervisor)

Jan 2025–June 2025

T. Skotnes (main supervisor)

Sep 2023–Jan 2024

TEACHING EXPERIENCE AND COURSES

UiT The Arctic University of Norway

- Teacher and course administrator (*STA-2004 Statistical Methods*) Tromsø, Norway
Jan 2026–June 2026
- Teacher and course administrator (*STA-1001 Statistics and Probability*) Tromsø, Norway
Jan 2020–June 2020

UiT Result

- *UNIPED-600 Development Program in Research Supervision* Tromsø, Norway
Oct 2022–June 2023

Norwegian University of Science and Technology

- Research Assistant (*TDT4102 Procedural and Object-Oriented Programming*) Trondheim, Norway
Jan 2016–April 2016
- Senior Teaching Assistant (*TDT4102 Procedural and Object-Oriented Programming*) Trondheim, Norway
Jan 2015–April 2015
- Teaching Assistant (*TMA4240 Statistics*) Trondheim, Norway
Fall 2014 and 2015
- Teaching Assistant (*TDT4102 Procedural and Object-Oriented Programming*) Trondheim, Norway
Spring 2013 and 2014
- NTNU Learning Assistant Training Program (*LAOS*) Trondheim, Norway
Fall 2014

Tutoring

- Mentor/tutor in mathematics for secondary and high school students (*Ent3r*) Trondheim, Norway
Sep 2014–May 2015
- Tutor in programming for children (*Kodeklubben Trondheim*) Trondheim, Norway
Jan 2014–April 2014
- Tutor in mathematics at local secondary schools (*Vektorprogrammet*) Trondheim, Norway
Jan 2013–Nov 2013

INSTITUTIONAL EXPERIENCE

Norwegian Statistical Association (**NSF**)

- Treasurer June 2023–

Faculty of Science and Technology (NT-Fak), UiT

- Deputy Board Member (*Temporary Employees*) Jan 2023–Dec 2023

The Association of Doctoral Organisations in Norway (**SiN**)

- President May 2018–May 2019
- Vice President May 2017–May 2018

Tromsø Doctoral Students (TODOS, now **ArcticDOC**)

- Vice President Jan 2017–June 2018
- TODOS Representative, Strategisk Forskningsutvalg (**SFU**) Jan 2017–June 2018

Student parliament of NTNU (**Studenttinget**)

- Student representative (*IME Faculty*) Jan 2015–Nov 2015

ACADEMIC AND COMMUNITY SERVICE

Manuscript Peer Review

- Earth System Dynamics, three times 2021–2024
- Journal of Climate, once 2022

Outreach and Dissemination

- Contributed to an AI outreach activity for teenagers during UiT's **AI-Day** June 2026
- Contributed to an AI exhibition for children and young adults at the Northern Norwegian Science Centre Jan 2024–March 2024
- Organized scientific outreach events for children as part of the Ent3r program 2013–2015

Organizational experience

- Responsible for organizing a reading group on multimodal data Spring 2024

Invited activities

- Invited discussant for a webinar panel to discuss a publication in the journal *TEST* March 2025

COMPUTER SKILLS AND SOFTWARE

Computer Languages: R, Python, Matlab, C/C++
Statistical Frameworks: R-INLA, RStan, PyTorch
Workflow Tools: Git, L^AT_EX, Tidyverse

R-packages:

- [INLA.climate](#): Efficient Bayesian modeling of global mean surface temperature and estimation of climate sensitivity.
- [bremla](#): Age uncertainty quantification and synchronization of layer-counted proxy archives.
- [INLA.ews](#): Efficient Bayesian analysis of early warning signals.

LANGUAGES

Norwegian: Native
English: Fluent
German: Elementary

PRESENTATIONS

Oral presentations

- **Myrvoll-Nilsen, E.**, Sørensen, S. Aa., Galata, S., Johansen, T. H., Martinsen, I., Hald, M. and Godtliebse, F. *Automating object detection and classification of foraminifera* . NOBIM 2023, Tromsø, Norway, 7 June 2023 (Oral presentation)
- **Myrvoll-Nilsen, E.** *Part 3 recent progress on a self-consistent framework of abrupt climate changes in proxy reconstructions of past climates*. Dartington Workshop on Tipping Points in the Earth System, Exeter, UK, 13 September 2022 (Oral presentation)
- **Myrvoll-Nilsen, E.**, Riechers, K. and Boers, N. *Synchronization of layer-counted archives using a statistical age-depth model*. EGU 2022, Vienna, Austria, 23 May 2022 (Oral presentation)
- **Myrvoll-Nilsen, E.**, Boers, N., Riechers, K. and Rypdal, M. *Quantification of the dating uncertainties in Greenland ice core records*. NORDSTAT 2021, Tromsø, Norway, 22 June 2021 (Oral presentation)
- **Myrvoll-Nilsen, E.**, Boers, N., Rypdal, M. and Riechers, K. *A statistical model for dating uncertainties in Greenland ice core records*. EGU 2021, Vienna, Austria, 27 April 2021, (Oral presentation)
- **Myrvoll-Nilsen, E.** and Sørbye, S. H. *Incorporating long-range dependency into Bayesian spatio-temporal modeling*. Det 20. Norske statistikermøtet, Sola, Norway, 19 June 2019 (Oral presentation)
- **Myrvoll-Nilsen, E.**, Rypdal, M., Fredriksen, H.-B. and Sørbye, S. H. *A statistical model for global surface temperature response to radiative forcing with long-range dependent noise* . EGU 2019, Vienna, Austria, 9 April 2019 (Oral presentation)
- **Myrvoll-Nilsen, E.**, Sørbye, S. H., Rypdal, M., Fredriksen, H.-B. and Rue, H. *Modeling global surface temperatures in terms of climate forcing and a long-memory stochastic process*. NORDSTAT 2018, Tartu, Estonia, 29 June 2018 (Oral presentation)
- **Myrvoll-Nilsen, E.**, Sørbye, S. H. and Rue, H. *Computationally efficient Bayesian approximation of fractional Gaussian noise*. Det 19. norske statistikermøtet, Fredrikstad, Norway, 14 June 2017 (Oral presentation)

Poster presentations

- **Myrvoll-Nilsen, E.**, Sørensen, S. Aa., Galata, S., Johansen, T. H., Martinsen, I., Hald, M. and Godtliebse, F. *Automating object detection and classification of foraminifera* . VIDAYS 2023, Lillestrøm, Norway, 27 September 2023 (Poster presentation)
- **Myrvoll-Nilsen, E.**, Sørbye, S. H., Rypdal, M., Fredriksen, H.-B. and Rue, H. *Modeling global surface temperatures in terms of climate forcing and a long-memory stochastic process*. BAYSM 2018, Warwick, UK, 2 July 2018 (Poster presentation)

Published

- Rypdal, M., Fredriksen, H.-B., **Myrvoll-Nilsen, E.**, Rypdal, K., and Sørbye, S. H. (2018): Emergent scale invariance and climate sensitivity. *Climate*; **6**(4), 93. doi.org/10.3390/cli6040093.
- Sørbye, S. H., **Myrvoll-Nilsen, E.** and Rue, H. (2019): An approximate fractional Gaussian noise model with $\mathcal{O}(n)$ computational cost. *Statistics and computing*; **29**(4), pp 821–833. doi.org/10.1007/s11222-018-9843-1.
- **Myrvoll-Nilsen, E.**, Fredriksen, H.-B., Sørbye, S. H. and Rypdal, M. (2019): Warming trends and long-range dependent climate variability since year 1900: a Bayesian approach. *Frontiers in Environmental Science*; **7**(214). doi.org/10.3389/feart.2019.00214
- **Myrvoll-Nilsen, E.**, Sørbye, Sh. H., Fredriksen, H.-B., Rue, H. and Rypdal, M. (2020): Statistical estimation of global surface temperature response to forcing under the assumption of temporal scaling. *Earth System Dynamics*; **11**, pp 329–345. doi.org/10.5194/esd-11-329-2020.
- **Myrvoll-Nilsen, E.** (2020): Efficient Bayesian analysis of long memory process applied to climate. PhD thesis, UiT The Arctic University of Norway, Tromsø. <https://munin.uit.no/handle/10037/18148>.
- **Myrvoll-Nilsen, E.**, Riechers, K., Rypdal, M. and Boers, N. (2022): Comprehensive uncertainty estimation of the timing of Greenland warmings in the Greenland ice core records. *Climate of the Past*; **18**, pp 1275–1294. doi.org/10.5194/cp-18-1275-2022.
- Godtliebsen, F., **Myrvoll-Nilsen, E.** and Holmström, L. (2024): Comments on: Data Integration Via Analysis of Subspaces (DIVAS). *TEST*; **33**(3), pp 683–685. doi.org/10.1007/s11749-024-00937-7.
- Martinsen, I., Sørensen, S. Aa., Ortega, S., Godtliebsen, F., Tejedor, M. A. and **Myrvoll-Nilsen, E.**: Quantifying Uncertainty in Foraminifera Classification: How Deep Learning Methods Compare to Human Experts. *Artificial Intelligence in Geosciences*; **100145**. doi.org/10.1016/j.aiig.2025.100145.
- **Myrvoll-Nilsen, E.**, Hallali, L. and Rypdal, M. (2025): Bayesian analysis of early warning signals using a time-dependent model. *Earth System Dynamics*; **16**(5), pp 1539–1556. doi.org/10.5194/esd-16-1539-2025.
- Hallali, L., **Myrvoll-Nilsen, E.** and Franzke, C. L. E. (2025): Assessing AMOC stability using a Bayesian nested time-dependent autoregressive model. *Nonlinear Processes in Geophysics*; **32**, pp 383–395. <https://doi.org/10.5194/npg-32-383-2025>.
- Cotronei, A., **Myrvoll-Nilsen, E.** and Rypdal, M. (2026): Evaluating model uncertainty in critical threshold estimations from time series data: application to the Atlantic meridional Overturning Circulation. *Frontiers in Climate*; **8**:1761461. <https://doi.org/10.3389/fclim.2026.1761461>.
- Hummel, C., Cotronei, A., **Myrvoll-Nilsen, E.**, Aksamit, N. O. and Rypdal, M. (2026): Nonlinear forcing in early warning signals reveals no destabilization of the Atlantic Meridional Overturning Circulation. *Frontiers in Climate*; **8**:1826661. <https://doi.org/10.3389/fclim.2026.182666>.

Unpublished

- (Accepted) **Myrvoll-Nilsen, E.**, Riechers, K. and Boers, N.: Synchronization of layer-counted paleoclimatic proxy archives using a Bayesian regression modeling framework. *Accepted* for publication in *Bayesian Analysis*.
- (Submitted) Morr, A., Ben-Yami, M., Groenke, B., Schötz, C., Cotronei, A., **Myrvoll-Nilsen, E.**, Bathiany, S., Rypdal, M. and Boers, N.: Extrapolation from historical data cannot reliably predict the time of a potential AMOC collapse. Submitted to *Nature Communications*.
- (Submitted) Sørbye, S. H., **Myrvoll-Nilsen, E.**, Rue, H.: Bayesian identification of early warning signals for long-range dependent climatic time series. Submitted to *Advances in Statistical Climatology, Meteorology and Oceanography*.
- (In preparation) **Myrvoll-Nilsen, E.**, Riechers, K. and Boers, N.: Greenland Dansgaard-Oeschger events led their low-latitude counterparts.
- (In preparation) Hallali, L., Hummel, C., **Myrvoll-Nilsen, E.**, Boers, N.: Heterogeneous stability loss in the Arctic cryosphere.

NON-ACADEMIC WORK EXPERIENCE

Gassco AS

Summer intern: Regularity modeling of Kollnes processing plant

Karmøy, Norway

June 2014–August 2014

Andersen Airport Service AS

Summer intern: Courier

Karmøy, Norway

June 2012–August 2012

Posten

Summer intern: Customer consultant

Haugesund, Norway

June 2011–August 2011