Curriculum Vitae

Lars Nerger

Affiliation

Alfred Wegener Institute Helmholtz Center for Polar and Marine Research
Am Handelshafen 12
D-27570 Bremerhaven, Germany

Phone: +49 (471) 4831 1558
Fax: +49 (471) 4831 1590
Email: Lars.Nerger@awi.de

Education

2004	PhD in Applied Mathematics, Alfred Wegener Institute, Bremerhaven, and University of Bremen, Germany Thesis title: "Parallel Filter Algorithms for Data Assimilation in Oceanography" Advisors: Prof. Dr. Wolfgang Hiller and Dr. Jens Schröter
2000	MSc ("Diplom") in Physics, Albert Einstein Institute, Golm, and University of Bremen, Germany Thesis title: "Investigations of 3D Binary Black Hole Systems" Advisor: Dr. Bernd Brügmann
1996-1997	Year abroad at the University of Maryland at College Park, USA. Attending courses in physics.
1995	BSc ("Vordiplom") in Physics, University of Bremen, Germany

Professional experience

2008-present	Lead Consultant, Bremen Supercomputing Competence Center BremHLR, University of Bremen, Germany
2007-present	Research Scientist, since 2012 Senior Research Scientist and Group Leader 'BremHLR', since 2018 Group Leader 'Data Assimilation', Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany
2014-2020	Speaker for work package 4.1 'Operational Analysis and Forecasting' of the research program PACES-II of the Alfred Wegener Institute and the Helmholtz Center Geesthacht, Germany
2005-2007	Research Associate, NASA Goddard Space Flight Center, Global Modeling and Assimilation Office, Greenbelt, Maryland, USA and University of Maryland Baltimore County, Goddard Earth Sciences and Technology Center, Baltimore, Maryland, USA (Group of Dr. Watson W. Gregg)
2004-2005	Postdoc, Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany (Project "Community Ocean Model/Finite Element Ocean model" lead by Dr. Jens Schröter)
2000-2004	Scientist (Ph.D. position), Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany (Groups of Dr. Jens Schröter and Prof. Wolfgang Hiller)
1999-2000	Research for Diploma thesis, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam, Germany (Group of Dr. Edward Seidel)

Awards

Editors Citation for Excellence in Refereeing for JGR-Oceans, 2008

Fellowship of the graduate program "Complex Dynamical Systems", University of Bremen, 2000

Scholarship of the "German Academic Exchange Service" (Deutscher Akademischer Austauschdienst, DAAD) to study Physics at the University of Maryland at College Park, USA, 1996-1997.

Research Contracts and Grants

SOCRA – A Surface Ocean CO2 Reanalysis, AWI INSPIRES, Principal Investigator, 2021-2024

InfoWas – Development of a model-based information system on water quality in the North and Baltic Seas, BMDV, Co-Principal Investigator, 2021-2023

SEAMLESS – Services based on Ecosystem data AssiMiLation: Essential Science and Solutions, EU H2020, Co-Principal Investigator and leader of work package 2, 2020-2023

UQ – Uncertainty Quantification - From Data to Reliable Knowledge, Helmholtz Association, Co-Principal Investigator, 2019-2024

ESM – Advanced Earth System Modeling Capacity, Helmholtz Association, Co-Investigator and task team leader for work package 2, 2017-2021

IPSO – Improving the prediction of photo-physiology in the Southern Ocean by accounting for iron limitation, optical properties and spectral satellite data, AWI Strategy Fund, Principal Investigator, 2016-2019

MeRamo – Supporting the implementation of the EU marine strategy framework directive by an assimilative ecosystem model, BMVI, Co-Principal Investigator, 2016-2018

DeMarine2; sub-project 2: 4D State Variables, BMWi, Co-Principal Investigator, 2012-2015

SANGOMA – Stochastic Assimilation for the next generation ocean model applications, EU FP7, Co-Principal Investigator and leader of work package 2, 2011-2015

Research Grant of German Federal Maritime and Hydrographic Agency (BSH), Extension of data assimilation system for the North and Baltic Seas, Principal Investigator, 2011-2013

Professional Service

Member of OceanPredict Data Assimilation Task Team, since 2023

Co-Organizer and member of Scientific Advisory Committee of ISDA-Online ("International Symposium on Data Assimilation - Online"), monthly events on different topics of data assimilation (see https://isda-online.univie.ac.at)

Convener of short course "Practical Ensemble Data Assimilation with the Parallel Data Assimilation Framework" at the EGU General Assembly 2021, online

Co-convener of session "Inverse problems, Predictability, and Uncertainty Quantification in Geosciences using data assimilation and its combination with machine learning" at the EGU General Assembly 2021, online

Co-convener of session "Earth System Models and coupled atmosphere-hydrological simulations: model development, applications and coupled data assimilation" at the EGU General Assembly 2020, online

Convener of short course "Data assimilation in the geosciences - Practical data assimilation with the Parallel Data Assimilation Framework" at the EGU General Assembly 2019, Vienna, Austria

Co-convener of session "Remote Sensing and Coupled Data Assimilation for Earth System Models and their Compartments" at the EGU General Assembly 2019, Vienna, Austria

Co-organizer of AGU Special Collection "Data assimilation for Earth system models", 2021 – 2023

Associate Editor, *Monthly Weather Review*, 2017 – 2021

Guest Associate Editor, *Ocean Dynamics*, 2015 – 2016

Member of NEMO data assimilation group, since 2016

Scientific Advisory Committee and Organization Committee of Liège Colloquium on Oceanography 2015, '*Marine Environmental Monitoring and Prediction*', May 4–8, 2015

Local organizer of HLRN/VI-HPS Workshop on tuning of parallel programs on supercomputers, Bremen, Germany, September 9–11, 2009

Reviewer for Biogeochemistry, Computers and Fluids, Computers and Geosciences, Computational Geosciences, Environmental Modelling & Software, Frontiers in Marine Science, Geoscientific Model Development, Journal of Geophysical Research - Oceans, Journal of Uncertainty Quantification, Tellus A, Journal of Marine Systems, Monthly Weather Review, Ocean Dynamics, Ocean Modeling, Ocean Science, Quarterly Journal of the Royal Meteorological Society

Proposal-reviewer for ASEE (USA), NSERC (Canada), Gauss Centre for Supercomputing (Germany), Marsden Fund (New Zealand)

Teaching experience

2021 – 2023 Course 'Data Assimilation with Applications in Ocean Dynamics', MSc program 'Geodetic Engineering', summer term, University of Bonn, Germany

2021, 2020, 2014 Course 'Parallel programming with MPI and OpenMP' (1-week course; with Dr. H. Stüben, University of Hamburg) University of Bremen, Germany

2020 Training 'Introduction to Data Assimilation' (2 days), German Federal Maritime and Hydrographic Agency, Hamburg, Germany

2019 Lecture 'Introduction to Ensemble Data Assimilation' and training session 'Data Assimilation with the Parallel Data Assimilation Framework' (1 day), Sun Yat-sen University, Zhuhai, China

2019 Lecture 'Introduction to Data Assimilation Methodology' (1.5 hours), ESM School, Bad Aibling, Germany

2022, 2019, 2017, 2016 Lecture 'Introduction to Ensemble Data Assimilation' (2.5 hours), HPSC TerrSys Fall School, Bonn, Germany

2011-2018 Course 'Parallel programming with MPI and OpenMP', Jacobs University Bremen, 1-week course, annually in January 2011 and 2013 to 2018. With Dr. H. Stüben, University of Hamburg.

Student supervision

PhD: Frauke Bunsen (since 9/2021, jointly with Judith Hauck), Ahmadreza Masoum (since 6/2021, co-advising with Gerrit Lohmann), Nabir Mamnun (since 8/2020), Imke Sievers (1/2022 – 4/2022, visiting student from Aarhus University, Denmark), Chao Min (12/2021 – 12/2022, visiting student from Sun Yat-sen University, Zhuhai, China), Xiaoyu Liu (3/2021 – 2/2022, visiting student from Peking University, China), Qinghua Yang (10/2013 – 9/2014, visiting from NMEFC China, co-advising with Thomas Jung), Paul Kirchgessner (8/2012 – 4/2016)

MSc in Mathematics at University of Bremen, jointly with A. Bunse-Gerstner: Charlotte Breitkreuz (10/2015 – 2/2016), Andrea Klus (5/2012 – 1/2013), Svenja Schulte (7/2011 – 7/2012), Paul Kirchgessner (7/2011 – 5/2012)

MSc Geodetic Engineering, University of Bonn: Sophie Vliegen (4/2022 – 10/2022)

Michael Kühl - intern, AWI (8/2008 – 9/2008)

Postdoc and Project Scientist supervision

Sophie Vliegen (since 1/2023), Changliang Chao (since 12/2022, visiting from Chinese Meteorological Agency), Anju Sathyanarayanan (since 5/2021), Yuchen Sun (6/2022 – 1/2023), Farshid Daryabor (5/2021 – 12/2021), Qi Tang (2017 – 2020), Himansu Pradhan (2016 – 2019), Longjiang Mu (2018 – 2020, jointly with Helge Goessling), Michael Goodliff (2017 – 2018), Svetlana Losa (2011 – 2015)

Member in PhD Commmittees

Sebastian Friedemann, Computer Science, Université Grenoble Alpes, Grenoble, France, 7/2022 (Rapporteur)

Haonan Ren, Meteorology, University of Reading, Reading, UK, 1/2023 (external examiner)

Published Software

PDAF – *Parallel Data Assimilation Framework*, Open-source software for ensemble-based data assimilation, accessible via http://pdaf.awi.de

Publications

Refereed Journals

N. Williams, N. Byrne, D. Feltham, P. J. van Leeuwen, R. Bannister, D. Schroeder, A. Ridout, L. Nerger (2023) The effects of assimilating a sub-grid-scale sea ice thickness distribution in a new Arctic sea ice data assimilation system. The Cryosphere, **17**, 2509-2532

L. Mu, L. Nerger, J. Streffing, Q. Tang, B. Niraula, L. Zampieri, S. N. Loza, H. F. Goessling. (2022) Sea-ice forecasts with an upgraded AWI Coupled Prediction System, Journal of Advances in Modeling Earth Systems, **14**, e2022MS003176

N. Mamnun, C. Voelker, M. Vrekoussis, L. Nerger. (2022) Uncertainties in ocean biogeochemical simulations: Application of ensemble data assimilation to a one-dimensional model. Frontiers in Marine Science, **9**, 984236

L. Nerger (2022) Data assimilation for nonlinear systems with a hybrid nonlinear-Kalman ensemble transform filter, *Q. J. Meteorol. Soc.*, **148**, 620-640

Q. Tang, L. Mu, H. F. Goessling, T. Semmler, L. Nerger (2021) Strongly coupled data assimilation of ocean observations into an ocean-atmosphere model, *Geophys. Res. Lett*, **48**, e2021GL094941

H. Luo, Q. Yang, L. Mu, X. Tian-Kunze, L. Nerger, M. Mazloff, L. Kaleschke, D. Chen (2021) DASSO: a data assimilation system for the Southern Ocean that utilizes both sea-ice concentration and thickness observations. *Journal of Glaciology*, **67**, 1235-1240

Q. Tang, L. Mu, D. Sidorenko, H. Goessling, T. Semmler, L. Nerger (2020) Improving the ocean and atmosphere in a coupled ocean-atmosphere model by assimilating satellite sea surface temperature and subsurface profile data. *Q. J. Roy. Met. Soc.*, **146**, 4014-4029

L. Nerger, Q. Tang, L. Mu (2020). Efficient ensemble data assimilation for coupled models with the Parallel Data Assimilation Framework: Example of AWI-CM. *Geosci. Model Dev.*, **13**, 4304–4321

L. Mu, L. Nerger, Q. Tang, S. N. Losa, D. Sidorenko, Q. Wang, T. Semmler, L. Zampieri, M. Losch, H. F. Goessling (2020) Towards a data assimilation system for seamless sea ice prediction based o the AWI climate model. *J. Adv. Mod. Earth Syst.*, **12**, e2019MS001937

H. K. Pradhan, C. Voelker, S. N. Losa, A. Bracher, L. Nerger (2020) Global assimilation of ocean-color data of phytoplankton functional types: Impact of different datasets. *J. Geophys. Res. Oceans*, **125**, e2019JC015586

M. Goodliff, T. Bruening, F. Schwichtenberg, X. Li, A. Lindenthal, I. Lorkowski, L. Nerger (2019) Temperature assimilation into a coastal ocean-biogeochemical model: Assessment of weakly and strongly-coupled data assimilation, *Oce. Dyn.*, **69**, 1217-1237

P. J. van Leeuwen, H. R. Künsch, L. Nerger, R. Potthast, S. Reich (2019) Particle filters for high-dimensional geoscience applications: A review. *Q. J. Roy. Met. Soc.*, **145**, 2335-2365

X. Liang, M. Losch, L. Nerger, L. Mu, Q. Yang, C. Liu (2019) Using sea surface temperature observations to constrain upper ocean properties in an Arctic sea ice-ocean data assimilation system. *J. Geophys. Res. Oceans*, **124**, 4723–4743

A. Androsov, L. Nerger, R. Schnur, J. Schröter, A. Albertella, R. Rummel, R. Savcenko, W. Bosch, S. Skachko, S. Danilov (2019) On the assimilation of absolute geodetic dynamic topography in a global ocean model: impact on the deep ocean state. *Journal of Geodesy*, **93**, 141-157

H. K. Pradhan, C. Voelker, S. N. Losa, A. Bracher, L. Nerger (2019) Assimilation of global total chlorophyll OC-CCI data and its impact on individual phytoplankton fields. *J. Geophys. Res. Oceans*, **124**, 470-490

J. Liu, Z. Chan, Y. Hu, Y. Zhang, Y. Ding, Y. Cheng, X. Cheng, Q. Yang, L. Nerger, G. Spreen, R. Horton R. Inoue, C. Yang, M. Li, M. Song (2019) Towards reliable Arctic sea ice prediction using multivariate data assimilation. *Science Bulletin*, **64**, 63-72

L. Mu, M. Losch, Q. Yang, R. Ricker, S. N. Losa, L. Nerger, J. Zhang (2018) Arctic-wide sea-ice thickness estimates from combining satellite remote sensing data and a dynamic ice-ocean model with data assimilation during the CryoSat-2 period. *J. Geophys. Res. Oceans*, **123**, 7763-7780

S. Vetra-Carvalho, P. J. van Leeuwen, L. Nerger, A. Barth, M. U. Altaf, P. Brasseur, P. Kirchgessner, J.-M. Beckers (2018) State-of-the-art stochastic data assimilation methods for high-dimensional non-Gaussian problems. *Tellus A*, **70:1**, 1445364

L. Mu, Q. Yang, M. Losch, S.N. Losa, R. Ricker, L. Nerger, X. Liang (2018) Improving sea ice thickness estimates by assimilating CryoSat-2 and SMOS sea ice thickness data simultaneously. *Q. J. Roy. Met. Soc.*, **144**, 529-538

A. Barth, Y. Yan, L Nerger, J.-M. Beckers (2017) The 47th Liege Colloquium: marine environmental monitoring, modelling and prediction (Editorial) *Oce. Dyn.*, **67**, 1367–1368

X. Liang, Q. Yang, L. Nerger, S. N. Losa, B. Zhao, F. Zheng, L. Zhang, L. Wu (2017) Assimilating Copernicus SST data into a pan-Arctic ice-ocean coupled model with a local SEIK filter. *Journal of Atmospheric and Oceanic Technology*, **34**, 1985–1999

P. Kirchgessner, J. Tödter, B. Ahrens, L. Nerger (2017) The smoother extension of the nonlinear ensemble transform filter. *Tellus A*, **69:1**, 1327766

Q. Yang, M. Losch, S. Losa, T. Jung, L. Nerger, T. Lavergne (2016) Brief communication: The challenge and benefit of using sea ice concentration satellite data products with uncertainty estimates in summer sea ice data assimilation. *The Cryosphere*, **10**, 761–774

Q. Yang, M. Losch, S. N. Losa, T. Jung, L. Nerger (2016) Taking into account atmospheric uncertainty improves sequential assimilation of SMOS sea ice thickness data in an ice-ocean model. *J. Atm. & Oce. Tech.*, **33**, 397–497

J. Tödter, P. Kirchgessner, L. Nerger, and B. Ahrens (2016) Assessment of a nonlinear ensemble transform filter for high-dimensional data assimilation. *Mon. Wea. Rev.*, **144**, 409–427

S. Brune, L. Nerger, and J. Baehr (2015) Assimilation of oceanic observations in a global coupled Earth system model with the SEIK filter, *Oce. Mod.*, **96**, 254–264

Q. Yang, S. N. Losa, M. Losch, T. Jung, L. Nerger (2015) The role of atmospheric uncertainty in Arctic summer sea ice data assimilation and prediction. *Q. J. Roy. Met. Soc.*,**141**, 2314–2323

L. Nerger (2015) On serial observation processing in localized ensemble Kalman filters. *Mon. Wea. Rev.*, **143**, 1554–1567

Q. Yang, S. N. Losa, M. Losch, J. Liu, Z. Zhang, L. Nerger, H. Yang (2015) Assimilating summer sea ice concentration into a coupled ice-ocean model using a local SEIK filter. *Annals of Glaciology*, **56(69)**, 38–44

Q. Yang, S. N. Losa, M. Losch, X. Tian-Kunze, L. Nerger, J. Liu, L. Kaleschke, Z. Zhang (2014) Assimilating SMOS sea ice thickness into a coupled ice-ocean model using a local SEIK filter. *J. Geophys. Res. Oceans*, **119**, 6680–6692

L. Nerger, S. Schulte, A. Bunse-Gerstner (2014) On the influence of model nonlinearity and localization on ensemble Kalman smoothing. *Q. J. Roy. Met. Soc.*, **141**, 2249–2259

S. N. Losa, S. Danilov, J. Schröter, T. Janjić, L. Nerger, F. Janssen (2014) Assimilating NOAA SST data into the BSH operational circulation model for the North and Baltic Seas: Part 2. Sensitivity of the forecast's skill to the prior model error statistics. *J. Mar. Syst.*, **129**, 259–270

P. Kirchgessner, L. Nerger, A. Bunse-Gerstner (2014) On the choice of an optimal localization radius in ensemble Kalman filter methods. *Mon. Wea. Rev.*, **142**, 2165–2175

A. Fournier, L. Nerger, J. Aubert (2013) An ensemble Kalman filter for the time-dependent analysis of the geomagnetic field. *Geochemistry, Geophysics, Geosystems*, **14**, 4035–4053

L. Nerger, W. Hiller (2013) Software for ensemble-based data assimilation systems – implementation strategies and scalability. *Computers & Geosciences*, **55**, 110–118

S. N. Losa, S. Danilov, J. Schröter, L. Nerger, S. Massmann, F. Janssen (2012) Assimilating NOAA SST data into the BSH operational circulation model for the North and Baltic Seas: Inference about the data. *J. Mar. Syst.*, **105-108**, 152–162

L. Nerger, T. Janjić, J. Schröter, and W. Hiller (2012) A unification of ensemble square-root Kalman filters. *Mon. Wea. Rev.*, **140**, 2335–2345

L. Nerger, T. Janjić, J. Schröter, and W. Hiller (2012) A regulated localization scheme for ensemble-based Kalman filters. *Q. J. Roy. Met. Soc.*, **138**, 802–812

T. Janjić, L. Nerger, A. Albertella, J. Schröter, and S. Skachko (2011) On domain localization in ensemble based Kalman filter algorithms. *Mon. Wea. Rev.*, **139**, 2046–2060

L. Nerger and W. W. Gregg (2008) Improving Assimilation of SeaWiFS Data by the Application of Bias Correction with a Local SEIK Filter. *J. Mar. Syst.*, **73**, 87–102

L. Nerger and W. W. Gregg (2007) Assimilation of SeaWiFS Data into a Global Ocean-biogeochemical Model using a local SEIK filter. *J. Mar. Syst.*, **68**, 237–254

L. Nerger, S. Danilov, G. Kivman, W. Hiller, and J. Schröter (2007) Data Assimilation with the Ensemble Kalman Filter and the SEIK Filter applied to a Finite Element Model of the North Atlantic. *J. Mar. Syst.*, **65**, 288–298

L. Nerger, S. Danilov, W. Hiller, and J. Schröter (2006) Using sea level data to constrain a finite-element primitive-equation ocean model with a local SEIK filter. *Ocean Dynamics* **56**, 634–649

L. Nerger, W. Hiller, and J. Schröter (2005) A Comparison of Error Subspace Kalman Filters. *Tellus* **57A**, 715–735

M. Alcubierre, W. Benger, B. Brügmann, G. Lanfermann, L. Nerger, E. Seidel, and R. Takahashi (2001) 3D Grazing Collision of Two Black Holes. *Physical Review Letters* **87**, 271103

Theses

L. Nerger (2004) Parallel Filter Algorithms for Data Assimilation in Oceanography, Ph.D. Thesis, University of Bremen (Available online at http://elib.suub.uni-bremen.de/)

L. Nerger (2000) Investigations of 3D Binary Black Hole Systems, Diploma Thesis, University of Bremen

Proceedings

L. Nerger, S. N. Losa, T. Brüning, F. Janssen (2016) The HBM-PDAF assimilation system for operational forecasts in the North and Baltic Seas, in *Operational Oceanography for Sustainable Blue Growth. Proceedings of the Seventh EuroGOOS International Conference. 28-30 October 2014, Lisbon, Portugal* / Eds. E. Buch, Y. Antoniou, D. Eparkhina, G. Nolan. ISBN 978-2-9601883-1-8

L. Nerger, W. Hiller, and J. Schröter (2005) PDAF - The Parallel Data Assimilation Framework: Experiences with Kalman Filtering, in *Use of High Performance Computing in Meteorology - Proceedings of the 11th ECMWF Workshop* / Eds. W. Zwieflhofer, G. Mozdzynski. Singapore: World Scientific, pp. 63–83

P. Michler, M. F. Pereira Jr., O. Homburg, L. Nerger, J. Gutowski, H. Wenisch, and D. Hommel (1999) Gain characteristics of ZnSe/(Zn,Mg)(S,Se)/(Zn,Mg)(S,Se) quantum-well lasers, in *Proceedings SPIE 3625, Physics and Simulation of Optoelectronic Devices* / Eds. P. Blood et al., pp. 117–126

P. Michler, M. F. Pereira Jr., O. Homburg, L. Nerger, J. Gutowski, H. Wenisch, and D. Hommel (1998) Temperature dependent gain characteristics of ZnSe based separate-confinement heterostructure lasers with binary wells, in *Proceedings of the 2nd International Symposium on Blue Laser and Light Emitting Diodes*, Kisarazu, Chiba, Japan / Eds. A. Yoshikawa et al., Ohmsha Ldt., Tokyo, pp. 528–531

Invited Presentations

L. Nerger (2023) Introduction to Data Assimilation, Workshop on Integrated Hydrological Modelling and Data Assimilation, Université de Neuchatel, Switzerland, August 8, 2023

L. Nerger (2023) Ensemble Data Assimilation into Coupled Models of the Earth System, Seminar, Nanjing University of Information Science and Technology (online), June 29, 2023

L. Nerger (2023) A hybrid nonlinear-Kalman ensemble transform filter for data assimilation in systems with different degrees of nonlinearity, University of Reading, January 25, 2023

L. Nerger (2019) Ensemble Data Assimilation - an Introduction, Lecture at fall school "Terrestrial Modeling and High-performance Computing", Bonn, Germany, September 29, 2022

L. Nerger (2022) Improving coupled modeling through data assimilation – an ocean-centric perspective, University of Cologne, Germany, May 17, 2022

L. Nerger (2021) PDAF – Community Software for Ensemble Data Assimilation, BOOS Annual Meeting, online, November 25, 2021

L. Nerger (2021) Data Assimilation with Applications in Ocean Dynamics, University of Bonn, Germany, January 26, 2021

L. Nerger, Q. Tang, M. Goodliff (2019) Ensemble Data Assimilation for Coupled Models of the Earth System. Karlsruhe Institute of Technology, Institute for Meteorology and Climate Research, Karlsruhe, Germany, November 19, 2019

L. Nerger (2019) Ensemble Data Assimilation - an Introduction and Ensemble Data Assimilation wit the Parallel Data Assimilation Framework. Lecture and tutorial at Sun Yat-sen University, School of Atmospheric Sciences, Zhuhai, China, November 6, 2019

L. Nerger, Q. Tang, L. Mu, M. Goodliff (2019) Ensemble Data Assimilation for Coupled Models of the Earth System. Sun Yat-sen University, School of Atmospheric Sciences, Zhuhai, China, November 4, 2019

L. Nerger, Q. Tang, L. Mu (2019) Ensemble Data Assimilation into Coupled Models of the Earth System, University of Bonn, Germany, September 27, 2019

L. Nerger (2019) Ensemble Data Assimilation - an Introduction, Lecture at fall school "Terrestrial Modeling and High-performance Computing", Bonn, Germany, September 26, 2019

L. Nerger, Q. Tang, L. Mu (2019) Ensemble Data Assimilation into Coupled Models of the Earth System, University of Potsdam, Germany, September 13, 2019

L. Nerger (2019) Ensemble Data Assimilation with PDAF, Tutorial at the Colloquium of the CRC1788 'Dynamic Earth', Bad Aibling, Germany, June 5, 2019

L. Nerger (2019) Ensemble Data Assimilation - Algorithms, Applications, Software. Keynote at the Colloquium of the CRC1788 'Dynamic Earth', Bad Aibling, Germany, June 4, 2019

L. Nerger, M. Goodliff, F. Schwichtenberg, I. Lorkowski, T. Brüning (2018). Integration von Sentinel-3-Daten in Modellvorhersagen für die Meeresstrategierahmenrichtlinie (in German, "Integration of Sentinel-3 data in modell predictions for the Marine Stategy Framework Directive"), Nationales Forum für Fernerkundung und Copernicus (National forum for remote sensing and Copernicus), Berlin, November 29, 2018

L. Nerger (2018) Ensemble Data Assimilation - Algorithms, Software, Applications. University of Reading, Department of Meteorology, Reading, UK, October 29, 2018

L. Nerger, Q. Tang, D. Sidorenko (2018). Building a Scalable Ensemble Data Assimilation System for Coupled Models with PDAF. University of Reading, Data Assimilation Research Center, Reading, UK, June 13, 2018

L. Nerger (2018) A Hybrid Kalman-nonlinear Ensemble Transform Filter. Global Modeling and Assimilation Office, NASA Goddard Space Flight Center, Greenbelt, USA, February 8, 2018

L. Nerger, P. Kirchgessner, T. Tödter, B. Ahrens (2017) High-Dimensional Nonlinear Data Assimilation with the Nonlinear Ensemble Transform Filter (NETF) and its Smoother Extension, National Marine Environmental Forecasting Center, Beijing, China, November 9, 2017

L. Nerger (2017) Introduction to Ensemble Data Assimilation, Lecture at fall school "Terrestrial Modeling and High-performance Computing", Bonn, Germany, September 28, 2017

L. Nerger (2017) Ensemble Data Assimilation with the Parallel Data Assimilation Framework PDAF. German Weather Service (DWD), Offenbach, Germany, September 25, 2017

L. Nerger (2016) Introduction to Ensemble Data Assimilation, Lecture at fall school "Terrestrial Modeling and High-performance Computing", Bonn, Germany, October 13, 2016

L. Nerger (2016) Ensemble Data Assimilation with the Parallel Data Assimilation Framework PDAF. General Meeting of the Transregional Collaborative Research Center 32, Cologne, Germany, April 15, 2016

L. Nerger (2016) The Parallel Data Assimilation Framework PDAF: Status and Future Developments. Blueprints for Next-Generation Data Assimilation Systems. NCAR, Boulder, USA, March 8–10, 2016

L. Nerger (2016) What is a good Ensemble Kalman Filter? Seminar at NASA Goddard Space Flight Center, Greenbelt, USA, February 18, 2016.

L. Nerger (2015), Ensemble Data Assimilation with the Parallel Data Assimilation Framework, National Marine Environmental Forecasting Center, Beijing, China, November 16, 2015

L. Nerger (2015), Ensemble Data Assimilation with the Parallel Data Assimilation Framework, First Institute of Oceanography, Qingdao, China, November 13, 2015

L. Nerger (2015), The HBM-PDAF assimilation system for forecasts of physics and biogeochemistry in the North and Baltic Seas. University of Reading, Data Assimilation Research Center, Reading, UK, August 5, 2015

L. Nerger (2014) Ensemble Data Assimilation: Algorithms and Software. National Marine Environmental Forecasting Center, Beijing, China, October 10, 2014

L. Nerger (2014), Aspects of Localization in Ensemble Kalman Filters. University of Reading, Data Assimilation Research Center, Reading, UK, July 3, 2014

L. Nerger (2013) Ensemble Data Assimilation: Algorithmic and Practical Aspects. University of Frankfurt, Institute of Meteorology, Germany, November 21, 2013

L. Nerger (2013) Ensemble Smoothers under the Influence of Nonlinearity. University of Reading, Data Assimilation Research Center, Reading, UK, July 2, 2013

L. Nerger (2013) Using Ensemble Kalman Filters to Assimilate Dynamic Ocean Topography Data into a Global Ocean Model. University of Bonn, Institute for Geodesy and Geo-information, Germany, June 20, 2013

L. Nerger (2013) Data Assimilation – Theoretical and Algorithmic Aspects. Korea Institute of Atmospheric Prediction Systems (KIAPS), Seoul, Korea, May 28, 2013

L. Nerger (2013) Data Assimilation – Practical Aspects and Case Studies. Korea Institute of Atmospheric Prediction Systems (KIAPS), Seoul, Korea, May 30, 2013

L. Nerger, W. Hiller, J. Schröter (2012) Numerical Aspects of Ensemble Square-root Kalman Filters. NUMDIFF-13: Numerical treatment of differential equations, Halle (Saale), Germany, September 11, 2012

L. Nerger (2011) The Data Assimilation Zoo. Section: Kalman Filters. University of Maryland, Department of Atmospheric and Oceanographic Science, College Park, MD, USA, March 9, 2011.

L. Nerger (2011) The Parallel Data Assimilation Framework for scalable sequential data assimilation. Workshop on Programming Environments for Data Assimilation: Software and Applications, Deltares, Delft, Netherlands, January 31, 2011

L. Nerger (2009) Ensemble Data Assimilation. NERC FREE (Flood Risk From Extreme Events) Ensemble Workshop, Reading, UK, September 23-24, 2009.

L. Nerger (2009) An Overview on Data Assimilation. GKSS Research Center, Geesthacht, Germany, March 10, 2009.

L. Nerger (2008) The local SEIK filter and its application for state estimation in a global ocean-biogeochemical model. University of Reading, Environmental Systems Science Centre, Reading, UK, November 6, 2008.

L. Nerger (2008) Improving Assimilation of SeaWiFS Data by the Application of Bias Correction with a Local SEIK Filter. Global Modeling and Assimilation Office. NASA Goddard Space Flight Center, Greenbelt, USA, March 10, 2008.

L. Nerger (2007) The SEIK Filter and its Application in Oceanography. Norwegian Meteorological Institute, Oslo, Norway, November 8, 2007.

L. Nerger (2007) Data Assimilation into Ocean-biogeochemical Models. University of Kiel, Germany, February 1, 2007.

L. Nerger (2006) Assimilation with the Ensemble Kalman Filter and the SEIK filter in the North Atlantic. Johns Hopkins University, Department of Earth and Planetary Sciences, Baltimore, MD, USA, April 12, 2006.

L. Nerger, W. Hiller, and J. Schröter (2004) Parallel Error Subspace Kalman Filters. Global Modeling and Assimilation Office, NASA Goddard Space Flight Center, Greenbelt, USA, September 7, 2004.