

List of publications

Refereed papers:

Hieronymus, M., J. Nycander, J. Nilsson, K. Döös, and R. Hallberg, 2019: Oceanic overturning and heat transport: The role of background diffusivity. *J. Climate*, 0, <https://doi.org/10.1175/JCLI-D-18-0438.1>

Wen, Q., J. Yao, K. Döös, and H. Yang, 2018: Decoding Hosing and Heating Effects on Global Temperature and Meridional Circulations in a Warming Climate. *J. Climate*, 31, 9605-9623, <https://doi.org/10.1175/JCLI-D-18-0297.1>

Hordoir, R., Axell, L., Höglund, A., Dieterich, C., Fransner, F., Gröger, M., Liu, Y., Pemberton, P., Schimanke, S., Andersson, H., Ljungemyr, P., Nygren, P., Falahat, S., Nord, A., Jönsson, A., Lake, I., Döös, K., Hieronymus, M., Dietze, H., Löptien, U., Kuznetsov, I., Westerlund, A., Tuomi, L., and Haapala, J.: Nemo-Nordic 1.0: A NEMO based ocean model for Baltic and North Seas, research and operational applications. *Geoscientific Model Development Discussions*, <https://www.geoscientific-model-dev-discuss.net/gmd-2018-2/>

van Sebille E., ..., K. Döös, ..., 2018: Lagrangian ocean analysis: Fundamentals and practices. *Ocean Modelling*, <https://doi.org/10.1016/j.ocemod.2017.11.008>

Berglund S., K. Döös, J. Nycander, 2017: Lagrangian tracing of the Water-mass transformations in the Atlantic Ocean. *Tellus*, doi:10.1080/16000870.2017.1306311

Döös, K., J. Kjellsson, J. Zika, F. Laliberté, L. Brodeau and A. Aldama Campino, 2017: The Coupled Ocean-Atmosphere Hydrothermohaline Circulation. *Journal of Climate*, doi: <http://dx.doi.org/10.1175/JCLI-D-15-0759.1>

Döös, K., Jönsson, B, and J. Kjellsson, 2016: Evaluation of oceanic and atmospheric trajectory schemes in the TRACMASS trajectory model v6.0. *Geoscientific Model Development Discussions*. DOI: 10.5194/gmd-2016-201

Laliberté, F., J. Zika, L. Mudryk, P. Kushner, J. Kjellsson, J. and K. Döös, 2015: Constrained work output of the moist atmospheric heat engine in a warming climate. *Science*, Vol. 347 no. 6221 pp. 540-543, DOI: 10.1126/science.1257103

Thompson, B., J. Nycander, J. Nilsson, M. Jakobsson, and K. Döös, 2014: Estimating ventilation time scales using overturning stream functions, *Ocean Dynamics*, 64:797-807 DOI 10.1007/s10236-014-0726-5

Ballarotta, M, S. Falahat, L. Brodeau, and K. Döös, 2014: On the glacial and inter-glacial thermohaline circulation and the associated transports of heat and freshwater, *Ocean Science*, 10, 907-921, doi:10.5194/os-10-907-2014

Kjellsson, J., K. Döös, F. Laliberté and J. Zika, 2014: The Atmospheric General Circulation in Thermodynamical Coordinates. *J. Atmos. Sciences*, DOI: 10.1175/JAS-D-13-0173.1

Soomere, T., K. Döös, A. Lehmann, M. Meier, J. Murawski, K. Myrberg, E. Stanev, 2014: The Potential of Current- and Wind-driven Transport for Environmental Management of the Baltic Sea. *Ambio*. doi: 10.1007/s13280-013-0480-9

Ballarotta, M, L. Brodeau, J.Brandefelt, P. Lundberg and K. Döös, 2013: Last Glacial Maximum world ocean simulations at eddy-permitting and coarse resolutions: do eddies contribute to a better consistency between models and palaeoproxies? *Clim. Past*, 9, 2669-2686, doi:10.5194/cp-9-2669-2013.

Nilsson, J.A.U., K. Döös, P. Ruti, V. Artale, A. Coward, L. Brodeau, 2013: Observed and modeled global-ocean turbulence regimes as deduced from surface trajectory data. *J. Phys. Oceanogr.* doi: 10.1175/JPO-D-12-0193.1

Ballarotta, M, K. Döös, P. Lundberg, L. Brodeau and J.Brandefelt, 2013: A Last Glacial Maximum World-Ocean simulation at eddy-permitting resolution - Part 2: Confronting the paleo-proxy data. doi:10.5194/cpd-9-329-2013.

Corell H., K. Döös, 2013: Difference in Particle Transport between Two Coastal Areas in the Baltic Sea Investigated with High-Resolution Trajectory Modeling. *Ambio*. DOI 10.1007/s13280-013-0397-3

Ballarotta, M, L. Brodeau, J.Brandefelt, P. Lundberg and K. Döös, 2013: A Last Glacial Maximum world-ocean simulation at eddy-permitting resolution - Part 1: Experimental design and basic evaluation. *Climate of the Past discussions*. doi:10.5194/cpd-9-297-2013.

Ballarotta, M., S. Drijfhout, T. Kuhlbrodt and K. Döös, 2013: The residual circulation of the Southern Ocean: Which spatio-temporal scales are needed?, *Ocean Modelling*, Volume 64, April 2013, Pages 46-55, <http://dx.doi.org/10.1016/j.ocemod.2013.01.005>.

Corell H., P.O. Moksnes, A. Engqvist, K. Döös, P. R. Jonsson, 2012: Depth distribution of larvae critically affects their dispersal and the efficiency of marine protected areas, *Marine Ecology Progress Series*, doi: 10.3354/meps09963.

Kjellsson, J. and K. Döös, 2012: Lagrangian decomposition of the Hadley and Ferrel Cells, *Geophys. Res. Lett.*, doi:10.1029/2012GL052420.

Kjellsson, J. and K. Döös, 2012: Surface drifters and model trajectories in the Baltic Sea. *Boreal Env. Res.* 17: 447-459, ISSN 1797-2469.

Thompson, B, J. Nycander, J. Nilsson, M Jakobsson, and K Döös, 2012, A model study on first ventilated regime of the Arctic Ocean during early Miocene, *Polar Research* 2012, 31, 10859, doi: 10.3402/polar.v31i0.10859

Döös K., J. Nilsson, J. Nycander, L. Brodeau and M. Ballarotta, 2012: The World Ocean Thermohaline Circulation. *J. Phys. Oceanogr.* doi: 10.1175/JPO-D-11-0163.1

Nilsson Jacobi M., André C., Döös K., Jonsson PR, 2012: Identification of subpopulations from connectivity matrices. *Ecography* 35: 001-013, 2012, doi: 10.1111/j.1600-0587.2012.07281.x

Soomere, T., Delpeche, N., Viikmäe, B., Quak, E., Meier, H. E. M. and Döös, 2011: K. Patterns of current-induced transport in the surface layer of the Gulf of Finland. *Boreal Env. Res.*, 16 (suppl. a): 49-63.

Döös K., V Rupolo, L Brodeau 2011: Dispersion of surface drifters and model-simulated trajectories. *Ocean Modelling*. Volume 39, Issues 3-4, 2011, Pages 301-310, doi:10.1016/j.ocemod.2011.05.005

Jönsson B, K. Döös , P. Lundberg , K. Myrberg, 2011: A Lagrangian-trajectory study of a gradually mixed estuary. *Continental Shelf Research* 31 (2011) 1811-1817, doi:10.1016/j.csr.2011.07.007

Döös, K. and J. Nilsson, 2011: Analysis of the Meridional Energy Transport by Atmospheric Overturning Circulations. *J. Atmos. Sciences* 2011, Vol. 68, doi: 10.1175/2010JAS3493.1

Thompson, B, J. Nilsson, J. Nycander, M Jakobsson, and K Döös, 2010, Ventilation of the Miocene Arctic Ocean: An idealized model study: *Paleoceanography*, v. 25, p. PA4216.

Zarroug M., J. Nycander and K. Döös, 2010. Energetics of tidally generated internal waves for nonuniform stratification. *Tellus* (2010), 62A, 71-79. DOI: 10.1111/j.1600-0870.2009.00415.x

Corell H., J. Nilsson, K. Döös, G. Broström, 2009. Wind sensitivity of the inter-ocean heat exchange. *Tellus A*, Volume 61, Number 5, October 2009 , pp. 635-653(19). DOI: 10.1111/j.1600-

0870.2009.00414.x

Döös, K., J. Nycander and A.C. Coward, 2008: Lagrangian decomposition of the Deacon Cell. *J. Geophys. Res.*, DOI: 10.1029/ 2007JC004351

Jönsson, B., K. Döös, J. Nycander, P. Lundberg, 2008: Standing waves in the Gulf of Finland and their relationship to the basin-wide Baltic seiches. *J. Geophys. Res.* DOI: 10.1029/ 2006JC003862

Nycander, J., G. Broström, J. Nilsson, K. Döös 2007: Thermodynamic analysis of the ocean circulation. *J. Phys. Oceanogr.* 37, 2038-2052.

Döös K., A. Engqvist, 2007: Assessment of water exchange between a discharge region and the open sea - A comparison of different methodological concepts. *Estuarine, Coastal and Shelf Science*. *Estuarine, Coastal and Shelf Science* 74 (2007) 585-597, doi:10.1016/j.ecss.2007.05.022.

Engqvist A., K. Döös and O. Andrejev, 2006: Modeling Water Exchange and Contaminant Transport through a Baltic Coastal Region. *Ambio* Vol. 35, No. 8.

Döös, K., 2005: The wind-driven overturning circulation of the World Ocean, *Ocean Sci. Discuss.*, 2, 473-505, doi:10.5194/osd-2-473-2005, 2005.

Huber M., H. Brinkhuis, C. Stickley, K. Döös, A. Sluijs, J. Warnaar, S. Schellenberg, G. Williams, 2004: Eocene circulation of the Southern Ocean: was Antarctica kept warm by subtropical waters? *Paleoceanography*, Vol. 19. PA4026.

Jönsson B. , P. Lundberg , K. Döös, 2004: Baltic Sub-Basin Turnover Times Examined Using the Rossby Centre Ocean Model. *Ambio*, Vol 23, No 4-5, 2257-260.

Döös, K., M. Meier and R. Döscher, 2004: The Baltic Haline Conveyor Belt or The Overturning Circulation and Mixing in the Baltic. *Ambio*, Vol23, No 4-5, 261-266.

Sigray P., P. Lundberg and K. Döös, , 2004: Observations of transport variability in the Baltic Sea by parasitic use of a fibre-optical cable. *J. Atmos. Oceanic. Technology*, Vol. 21, No. 7, pp. 1112-1120.

Döös, K., J. Nycander, P. Sigray, 2003: Slope dependent friction in a barotropic model . *J. Geophys. Res.* Vol. 109, C1C01008, pp13.

Drijfhout S., P. De Vries, K. Döös, A. Coward 2003: Impact of eddy-induced transport of the Lagrangian structure of the upper branch of the thermohaline circulation. *J. Phys. Oceanogr.* 33, 2141-2155.

Nycander J. and K. Döös 2003: Open boundary conditions for barotropic waves. *J. Geophys. Res.* VOL. 108, NO. C5

Speich S., B. Blanke, P. de Vries , K. Döös, S. Drijfhout , A. Ganachaud and R. Marsh 2002: Tasman leakage: a new route in the global ocean conveyor belt. *Geophysical Res. Letters*, VOL. 29, NO. 10.

Nycander J., K Döös and A. C. Coward 2002: Chaotic and regular trajectories in the Antarctic Circumpolar. *Tellus - Series A*, Vol. 54, issue 1, p.99-106.

Blanke B., S. Speich, G. Madec and K. Döös 2001: A Global Diagnostic of Inter-ocean Mass Transfers. *J. Phys. Oceanogr.* vol. 31, No. 6, 1623-1642

Vries, P. de and K. Döös, 2001: Calculating Lagrangian trajectories using time-dependent velocity fields. *J. Atmos. Oceanic Technology*. Vol. 18, No. 6, 1092-1101.

Kimura S, Döös K, Coward AC, 1999: Numerical simulation to resolve the issue of downstream migration of the Japanese eel. *Marine Ecology Progress Series*, Vol. 186, p. 303-306.

Döös, K., 1999: The Influence of the Rossby waves on the Seasonal Cycle in the Tropical Atlantic. *J. Geophys. Res.* Vol. 104, No. C12, 29,591-29,598.

Döös K. and A.C. Coward 1997: The Southern Ocean as the major upwelling zone of the North Atlantic Deep Water. *WOCE Newsletter*, No. 27, July 1997, 3-17.

Thompson S.R., D.P. Stevens and K. Döös 1997: The importance of interocean exchange south of Africa in a numerical model. *J. Geophys. Res.* Vol. 102, No. C2, p. 3303.

Döös, K., 1996: The meridional circulation in the Southern Ocean and its seasonal variability. *J. Geophys. Res.* Vol. 101, No. C3, 6393-6407.

Döös, K., 1995: Inter-ocean exchange of water masses. *J. Geophys. Res.* Vol. 100, No. C7, 13499-13514.

Döös, K., 1994: Semi-analytical simulation of the Meridional Cells in the Southern Ocean. *J. Phys. Oceanogr.* 24, 1281-1293.

Döös, K. and D. J. Webb 1994: The Deacon Cell and the other meridional cells in the Southern Ocean. *J. Phys. Oceanogr.* 24, 429-442.

Review articles and book chapters

Kjellsson, J., K. Döös, T. Soomere, 2013: Preventive Methods for Coastal Pollution: towards the Use of Ocean Dynamics for Pollution Control. Book Chapter 8: Evaluation and Tuning of Model Trajectories and Spreading Rates in the Baltic Sea using Surface-drifter Observations. Springer International Publishing. DOI: 10.1007/978-3-319-00440-2_8

Döös, K., J. Kjellsson, B. Jönsson, 2013: Preventive Methods for Coastal Pollution: towards the Use of Ocean Dynamics for Pollution Control. Book Chapter 7: TRACMASS - A Lagrangian Trajectory Model. Springer International Publishing. DOI: 10.1007/978-3-319-00440-2_7

Döös K., A. Engqvist, 2008: Book review of "Lagrangian Analysis and Prediction of Coastal and Ocean Dynamics for Marine Geophysical Researches". *Mar Geophys. Res.* DOI 10.1007/s11001-008-9048-7.

Döös K. and P. Lundberg 2001: Antarctic-expeditionens oceanografiska aktiviteter. *Ymer* 2001, p. 193-200.

Gwilliam, C.S., Coward, A.C., de Cuevas, B.A., Webb, D.J., Rourke, E., Thompson, S.R. & K. Doos. 1997. The OCCAM Global Ocean Model pp 24-30 in *Numerical Simulations in the Environmental and Earth Sciences*, Mexico City, 1995, (Eds. Garcia-Garcia, F., Cisneros, G., Fernandez-Eguiarte, A., Alvarez, R.), Cambridge University Press, 281pps.

Döös, K. and D. J. Webb 1996: The Deacon Cell and downward angular momentum transport. pp. 22-23 in *Understanding ocean circulation: UK WOCE: the first six years* (ed. R.T.Pollard & D.Smythe-Wright), Southampton: Southampton Oceanography Centre. 32 pp.

Webb, D., Thompson, S. and Döös, K. Heat transport in FRAM, In: Pollard, R. and Smythe-Wright, D. eds. *Understanding Ocean Circulation: UK WOCE, The First Six Years*, Swindon, NERC, 1996, p.22.

Döös K., 1989: Etude numérique de la variabilité saisonnière de 1982 à 1984 dans l'océan Atlantique tropical. Thèse de doctorat de l'Université Paris VI.

Book:

Döös K., 2018: Basic Numerical Methods in Meteorology and Oceanography. Stockholm University Press. pp 186.

Open-access computer programs:

The Lagrangian trajectory code TRACMASS: <http://tracmass.org/>

The Barotropic ocean circulation model BAROCEAN: <http://doos.misu.su.se/code/barocean.zip>