# Publications

## Peer-reviewed articles

**2026**

Krüger, J., **Kjellsson, J.**, Lohmann, K., Matei, D., Pilch-Kedzierski, R. Improved European heat event simulation in General Circulation Models with an eddy-permitting ocean. Nature Communications Earth & Environment, 7, 123. DOI: 10.1038/s43247-025-03145-9
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**2025**

Savita, A., **Kjellsson, J.**, Latif, M., Nnamchi, H., Wahl, S., (2025) Causes of Eurasian Winter-Cooling During the late 20$^{th}$ and Early 21$^{st}$ Century. Geophysical Research Letters, 52. DOI: 10.1029/2024GL114140
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Liu, Y., **Kjellsson, J.**, Savita, A., Park, W. (2025) Impact of horizontal resolution and model time step on European precipitation extremes in the OpenIFS atmosphere model. Geosci. Model Dev., 18, 5435–5449, DOI: 10.5194/gmd-18-5435-2025
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**2024**

Ayres, H., Ferreira, D., Park, W, **Kjellsson, J.**, Ödalen, M. (2024) A comparison of the atmospheric response to the Weddell Sea polynya in AGCMs of varying resolutions. Weather Clim. Dynam., 5, 805–820, doi: 10.5194/wcd-5-805-2024
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Savita, A., **Kjellsson, J.**, Pilch-Kedzierski, R., Latif, M., Rahm, T., Wahl, S., Park, W. (2024) ECMWF-OpenIFS climate sensitivity to horizontal resolutions and model time step. Geoscientific Model Development. 17, 1813–1829, doi: 10.5194/gmd-2023-101
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**2023**

Krüger, J., **Kjellsson, J.**, Pilch Kedzerski, R., Claus, M. (2023) Connecting North Atlantic SST variability to European heat events in recent decades. Tellus A: Dynamic Meteorology and Oceanography, 75(1), 358-374, doi: 10.16993/tellusa.3235
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Latif, M., Bayr, T., **Kjellsson, J.,** Lübbecke, J.F, Martin, T., Nnamchi, H.C., Park, W., Savita, A., Sun, J., Dommenget, D. (2023) Strengthening atmospheric circulation and trade winds slowed tropical Pacific surface warming. Nat. Communications Earth & Environment, 4, doi: 10.1038/s43247-023-00912-4
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**2022**

Streffing, J., …, **Kjellsson, J.** et al. (2022) AWI-CM3 coupled climate model: description and evaluation experiments for a prototype post-CMIP6 model. Geosci. Mod. Dev., 15, 6399-6427, doi: 10.5194/gmd-15-6399-2022
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**2021**

Nnamchi, H., Latif, M., Keenlyside, N., **Kjellsson, J.**, Richter, I. (2021) Diabatic heating governs the seasonality of the Atlantic Niño. Nat. Comm., 12 (1), doi: 10.1038/s41467-020-

20452-1
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**2020**

Groeskamp, S., **Kjellsson, J.** (2020) NEED: The Northern European Enclosure Dam for if climate change mitigation fails. Bull. Am. Met. Soc. 101 (11), doi: 10.1175/BAMS-D-19-0145.1
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Chafik, L., Hártun, H., **Kjellsson, J.**, Larsen, K., Rossby, T., Berx, B. (2020) Discovery of an unrecognised pathway carrying overflow waters toward the Faroe Bank Channel. Nat Comm., 11 (1), doi: 10.1038/s41467-020-17426-8
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**2018**

van Sebille, E., et al. (2018), Lagrangian ocean analysis: Fundamentals and practices, Ocean Modelling, 121, 49–75, 10.1016/j.ocemod.2017.11.008.
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**2017**

Döös, K., **Kjellsson, J.**, Zika, J., Laliberté, F., Brodeau, L., Campino, A. (2017), The coupled ocean-atmosphere hydrothermohaline circulation, Journal of Climate, 30(2), 10.1175/JCLI−D−15−0759.1.
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**Kjellsson, J.**, Zanna, L. (2017), The Impact of Horizontal Resolution on Energy Transfers in Global Ocean Models, Fluids, 2 (3), 45, 10.3390/fluids2030045.
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Döös, K., Jönsson, B., **Kjellsson, J.** (2017), Evaluation of oceanic and atmospheric trajectory schemes in the TRACMASS trajectory model v6.0, Geoscientific Model Development, 10 (4), 1733–1749, 10.5194/gmd−10−1733−2017.
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**2015**

**Kjellsson, J.**, Holland, P., Marshall, G., Mathiot, P., Aksenov, Y., Coward, A., Bacon, S., Megann, A., Ridley, J. (2015), Model sensitivity of the Weddell and Ross seas, Antarctica, to vertical mixing and freshwater forcing, Ocean Modelling, 94, 141–152, 10.1016/j.ocemod.2015.08.003.
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Laliberté, F., Zika, J., Mudryk, L., Kushner, P., **Kjellsson, J.**, Döös, K. (2015), Constrained work output of the moist atmospheric heat engine in a warming climate, Science, 347(6221), 10.1126/science.1257103.
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**Kjellsson, J.** (2015), Weakening of the global atmospheric circulation with global warming, Climate Dynamics, 45 (3-4), 975–988, 10.1007/s00382−014−2337−8.
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**2014**

**Kjellsson, J.**, Döös, K., Laliberté, F., Zika, J. (2014), The Atmospheric General Circulation in Thermodynamical Coordinates, J. Atmos. Sci., 71, 916–928.
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**2013**

**Kjellsson, J.**, Döös, K., Soomere, T. (2013), Evaluation and Tuning of Model Trajectories and Spreading Rates in the Baltic Sea using Surface Drifter Observations, in Preventive Methods for Coastal Protection, edited by T. Soomere and E. Quak, Springer International Publishing. DOI: 10.1007/978-3-319-00440-2_8.
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Döös, K., **Kjellsson, J.**, Jönsson, B. (2013), TRACMASS - A Lagrangian Trajectory Model, in Preventive Methods for Coastal Protection, edited by T. Soomere and E. Quak, Springer International Publishing.
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**2012**

**Kjellsson, J.**, Döös, K. (2012), Lagrangian decomposition of the Hadley and Ferrel cells, Geophysical Research Letters, 39(15), 10.1029/2012GL052420.
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**Kjellsson, J.**, Döös, K. (2012), Surface drifters and model trajectories in the Baltic Sea, Boreal Environment Research, 17, 447–459.
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## Anthologies

**Kjellsson, J.** (2014), Atmospheric & Oceanic Applications of Eulerian and Lagrangian Transport Modelling, Ph.D. thesis, Stockholm University. URN: urn:nbn:se:su:diva-97348
[http link]

**Kjellsson, J.** (2009), Lagrangian Decomposition of the Hadley Cells, Master thesis, Stockholm University. URN: urn:nbn:se:su:diva-8732
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## Other academic articles

Maisonnave, E., **Kjellsson, J.** (2021) OASIS Dedicated Support, 5th annual summer, Technical Report, TR/CMGC/21/150, CECI, UMR CERFACS/CNRS No 5318, France
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Groeskamp, S., **Kjellsson, J.** (2021) NEED Northern European Enclosure Dam, Europhysics News, 52 (2), doi: 10.1051/epn/2021201
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**Kjellsson, J.**, Streffing, J., Carver, G., Koehler, M. (2020), From weather forecasting to climate modelling using OpenIFS, ECMWF Newsletter, 164, doi: 10.21957/469hc10jk5
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Hannachi, A., **Kjellsson, J.**, Tjernström, M., Carver, G. (2012), Teaching with OpenIFS at Stockholm University: leading the learning experience, ECMWF Newsletter, 134, doi: 10.21957/v4u9zv8r
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## In progress

**Kjellsson, J.**, Park, W. Multi-centennial variability of AMOC variability in the FOCI-OpenIFS climate model. In prep.

**Kjellsson, J.**, Wahl, S., Bischof, S., Kummer, L., Martin, T., Pilch-Kedzierski, R., Zeller, M., Ödalen, M., Park, W. Reducing Southern Ocean surface biases in the FOCI climate model. In review for Journal of Advances in Modelling Earth Systems. doi: 10.22541/essoar.169447339.96217761/v1

**Kjellsson, J.**, et al. FOCI 3.0: Tuning strategy, mean state climate and CMIP DECK integrations. In prep. for Geoscientific Model Development.

Ayres, H.C., Ferreira, D., Wong, C., **Kjellsson, J.**, Ödalen, M. Robust Coupled Ocean–Atmosphere Processes of the Weddell Sea Polynya in CMIP6 Models. Submitted to Journal of Climate

Gözlet, M.S, **Kjellsson, J.**, Latif, M. Recent and future trends in jet-stream waviness on the Northern Hemisphere. Submitted to GRL.

Jong, T., Puthiyaveettil, N., **Kjellsson, J.**, Bidlot, J., Park, W. Impact of Wave coupling and Charnock capping on tropical sea surface temperature and circulation in a climate model. In prep.

Ödalen, M., Savita, A., **Kjellsson, J.**, Wahl, S., Ferreira, D., Ayres, H., Roquet, F., Park, W. Coupled climate effects of eddy rich model resolution in and south of the Agulhas. In prep.

Ojha, S., **Kjellsson, J.**, Martin, T., Chafik, L., Maisonnave, E., Park, W., (2025) Meridional heat transport in the North Atlantic region: Effects of ocean and atmosphere grid resolutions. In prep.

Savita, A., Nnamchi, H., **Kjellsson, J.**, Latif, M., Wahl, S. North Atlantic Sea Surface Temperature-Driven Predictability of the North Atlantic Oscillation. In prep.

Sieker, T., **Kjellsson, J.**, Park, W., (2025) Coupled model bias in the North Atlantic in the FOCI-OpenIFS coupled climate model. Accepted for Climate Dynamics.

StPierre, M., **Kjellsson, J.**, Park, W., Borchert, L.F., Latif, M., (2025) Emergence time of CO2-forced European summer climate trends. In review for Scientific Reports.

StPierre, M., Latif, M., **Kjellsson, J.**, Park, W., Borchert, L., (2024) Evident decrease in future European soil moisture in the Kiel Climate Model grand ensemble. In review for Climate Dynamics.
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