Inne Vanderkelen

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Belgian, °Leuven, 23 August 1994

website

Education

2017-2022 Vrije Universiteit Brussel, Department of Hydrology and Hydraulic Engineering
PhD in CLIMATE SCIENCE (awarded with "congratulations of the jury")
Thesis: "Changing storage: A global perspective on reservoirs in a changing climate."

2015-2017 KU Leuven and Vrije Universiteit Brussel
MSc in GEOGRAPHY, specialization Earth and Climate, Summa cum laude (88 %),
Thesis: "Projecting the future levels of Lake Victoria: a water balance model study".

2012-2015 KU Leuven
Bachelor in GEOGRAPHY, minor mathematics and physics, cum laude (72 %)

Experience

2022 – present Postdoctoral researcher at University of Bern: Wyss Academy for Nature, Climate and Environmental Physics and Oeschger Center for Climate Change Research,
Responsibilities: conducting independent research, setting up climate models, conducting simulations, provide teaching and outreach, collaborating interdisciplinary, managing projects, presenting on scientific conferences, PhD mentoring and proposal writing.

2017 – 2022 Scientific Researcher in climate science (FWO PhD fellow)
My responsibilities included: conducting research, climate model simulations, developing code, international collaborations (e.g. with NCAR), writing and publishing scientific papers, providing teaching and outreach.

Awards & fellowships

2023 Wiley Top Downloaded Article award for Vanderkelen et al., 2021 in JGR: Atmospheres
2022 **"Felicitations of the jury" distinction on PhD thesis** (top 2% PhDs Faculty of Engineering, VUB)
2022 **CESM Graduate Student Award** from NCAR Climate and Global Dynamics Laboratory, for key contributions to the implementation of reservoirs and their management in CESM
2022 Regional Finalist of the Green Impact International Special Awards, category Sustainability Hero
2021 **Andrew Slater award for best graduate student** contribution at LMWG annual meeting [$500]
2020 **Prize Ernest Dubois awarded by the King Baudouin Foundation** [€ 20,000]
2018 **Research foundation – Flanders (FWO): PhD Fellowship** [~ € 175,000]
2018 VUB NSE Doctoral school – Travel grant for attending EGU General Assembly [€ 500]
2018 Third best poster prize at Flemish Supercomputer Centre User Day [400 node days]
2018 EGU Highlight Article award for Vanderkelen et al. (2018a and b, Hydrol. Earth Syst. Sci.).
2017 Best MSc thesis in Geography, awarded by the Alumni Geography and Tourism Leuven [€ 200]

Skills

Languages

Dutch	Mother tongue	Spanish	Basics (A2)
English	Excellent	German	Basics (B1)
French	Good		

Software

Climate models and software:	CESM, CLM, ILAMB, mizuRoute
Programming languages:	Python (numpy, xarray, matplotlib, (geo)pandas, cartopy), git, CDO, NCO, bash, Fortran, Matlab, R , Google Earth Engine
Remote sensing and GIS:	QGIS, ArcGIS
Office applications:	LaTeX, MS Office, Notion, Zotero, Mendeley
Operating systems:	Linux, Windows

Scientific contributions

International peer-reviewed publications (16).

von Schuckmann, K., Minère, A., Gues, F., Cuesta-Valero, F. J., Kirchengast, G., Adusumilli, S., Straneo, F., Allan, R., Barker, P. M., Beltrami, H., Boyer, T., Cheng, L., Church, J., Desbruyeres, D., Dolman, H., Domingues, C. M., García-García, A., Giglio, D., Gilson, J. E., Gorfer, M., Haimberger, L., Hendricks, S., Hosoda, S., Johnson, G. C., Killick, R., King, B., Kolodziejczyk, N., Korosov, A., Krinner, G., Kuusela, M., Langer, M., Lavergne, T., Lawrence, I., Li, Y., Lyman, J., Marzeion, B., Mayer, M., MacDougall, A. H., McDougall, T., Monselesan, D. P., Nitzbon, J., Otosaka, I., Peng, J., Purkey, S., Roemmich, D., Sato, K., Sato, K., Savita, A., Schweiger, A., Shepherd, A., Seneviratne, S. I., Simons, L., Slater, D. A., Slater, T., Smith, N., Steiner, A., Suga, T., Szekely, T., Thiery, W., Timmermans, M.-L., **Vanderkelen, I.,** Wijffels, S. E., Wu, T., and Zemp, M.: Heat stored in the Earth system 1960–2020: Where does the energy go?, Earth Syst. Sci. Data, in press. https://doi.org/10.5194/essd-2022-239

Cuesta-Valero, F. J., Beltrami, H., García-García, A., Krinner, G., Langer, M., MacDougall, A. H., Nitzbon, J., Peng, J., von Schuckmann, K., Seneviratne, S. I., Smith, N., Thiery, W., **Vanderkelen, I.**, and Wu, T. (2023): Continental heat storage: Contributions from ground, inland waters, and permafrost thawing, Earth Syst. Dynam., in press. https://doi.org/10.5194/esd-2022-32

Yao Y., **Vanderkelen I.,** Lombardozzi D., Swenson S., Lawrence D., Jägermeyer J., Grant L., Thiery W. (2022). Implementation and evaluation of irrigation techniques in the Community Terrestrial Systems Model. Journal of Advances in Modeling Earth Systems, 14, e2022MS00307, https://doi.org/10.1029/2022MS003074

De Hertog S., Haverman F., **Vanderkelen I.,** Guo S., Manola I., Luo F., Coumo D., Davin E. L., Duveiller G., Lejeune Q., Pongratz J., Schleussner C. F., Seneviratne S. I., Thiery W. (2022). Comparing Earth System Models under drastic land cover and land management changes for their effects on biogeophysics. Earth System Dynamics, 13, 1305–1350, https://doi.org/10.5194/esd-13-1305-2022

Golub, M., Thiery, W., Marcé, R., Pierson, D., **Vanderkelen, I.,** Mercado, D., Woolway, R. I., Grant, L., Jennings, E., Schewe, J., Zhao, F., Frieler, K., Mengel, M., Bogomolov, V. Y., Bouffard, D., Couture, R.-M., Debolskiy, A. V., Droppers, B., Gal, G., Guo, M., Janssen, A. B. G., Kirillin, G., Ladwig, R., Magee, M., Moore, T., Perroud, M., Piccolroaz, S., Raaman Vinnaa, L., Schmid, M., Shatwell, T., Stepanenko, V. M., Tan, Z., Yao, H., Adrian, R., Allan, M., Anneville, O., Arvola, L., Atkins, K., Boegman, L., Carey, C., Christianson, K., de Eyto, E., DeGasperi, C., Grechushnikova, M., Hejzlar, J., Joehnk, K., Jones, I. D., Laas, A., Mackay, E. B., Mammarella, I., Markensten, H., McBride, C., Özkundakci, D., Potes, M., Rinke, K., Robertson, D., Rusak, J., Salgado, R., van den Linden, L., Verburg, P., Wain, D., Ward, N. K., Wollrab, S., and Zdorovennova, G. (2022). A framework for ensemble modelling of climate change impacts on lakes worldwide: the ISIMIP Lake Sector, Geoscientific Model Development, 15, 4597–4623, https://doi.org/10.5194/gmd-15-4597-2022

Vanderkelen I., Gharari S., Mizukami N., Clark M., Lawrence D. M., Swenson S., Pokhrel Y., Hanasaki N., van Griensven A., Thiery W. (2022). Evaluating a reservoir parametrization in a vector-based global routing model for Earth System Model coupling. Geoscientific Model Development, 15, 4163-4192. https://doi.org/10.5194/gmd-15-4163-2022

Nakulopa, F., **Vanderkelen, I.,** van de Walle, J., van Lipzig, N. P. M., Tabari, H., Jacobs, L., Tweheyo, C., Dewitte, O., & Thiery, W. (2022). Evaluation of high-resolution precipitation products over the Mountains of the Moon (Uganda). Journal of Hydrometeorology, 23(5), 747–768. https://doi.org/10.1175/JHM-D-21-0106.1

Grant L., **Vanderkelen I.,** Gudmundsson L., Tan Z., Perroud M., Stepanenko V. M., Debolskiy A., Droppers B., Janssen A. B. G., Woolway I. R., Schmid M., Schewe J., Zhao F., Golub M., Pierson D., Marcé R., Seneviratne S. I., Kirillin G., Thiery W. (2021). Attribution of worldwide lake systems change to anthropogenic forcing. **Nature Geoscience**, 14, 849–854. https://doi.org/10.1038/s41561-021-00833-x pdf

Vanderkelen, I., Lipzig, N. P. M., Sacks, W. J., Lawrence, D. M., Clark, M. P., Mizukami, N., Pokhrel, Y., & Thiery, W. (2021). Simulating the Impact of Global Reservoir Expansion on the Present-Day Climate. Journal of Geophysical Research: Atmospheres, 126(16), e2020JD034485. https://doi.org/10.1029/2020JD034485 code data **(Wiley's Top Downloaded Article 2021)**

Woolway, R. I., Sharma, S., Weyhenmeyer, G. A., Debolskiy, A., Golub, M., Mercado-Bettín, D., Perroud, M., Stepanenko, V., Tan, Z., Grant, L., Ladwig, R., Mesman, J., Moore, T. N., Shatwell, T., **Vanderkelen, I.,** Austin, J. A., DeGasperi, C. L., Dokulil, M., La Fuente S., Mackay, E. B., Schladow, S. G., Watanabe, S., Marcé, R., Pierson, D. C., Thiery, W., Jennings, E. (2021). Phenological shifts in lake stratification under climate change. **Nature Communications**, 12(1), 2318. https://doi.org/10.1038/s41467-021-22657-4 pdf

Vanderkelen I., van Lipzig N.P.M., Lawrence D. M., Droppers B., Gosling S. N., Janssen A. B. G., Marcé R., Müller-Schmied H., Perroud M., Pierson D., Pokhrel Y., Satoh Y., Schewe J., Seneviratne S. I., Stepanenko V. M., Tan Z., Woolway R. I., Thiery W. (2020) Global heat uptake by inland waters. Geographical Research Letters. 47(12), e2020GL087867. https://doi.org/10.1029/2020GL087867 code

Vanderkelen I., Zscheischler J., Gudmundsson L., Keuler K., Rineau F., Beenaerts N., Vangronsveld J., Vicca S., Thiery W. (2020) A new method for assessing climate impacts in ecotron experiments. International Journal of Biometeorology, 64, 1709–1727. https://doi.org/10.1007/s00484-020-01951-8 code

Sterl, S., **Vanderkelen, I.,** Chawanda, C. J., Russo, D., Brecha, R., van Griensven, A., van Lipzig, N. P. M., Thiery, W. (2020) Smart renewable electricity portfolios in West Africa. **Nature Sustainability** 3, 710–719. https://doi.org/10.1038/s41893-020-0539-0 pdf

Rineau F., Malina R., Beenaerts N., Arnauts N., Bardgett R. D., Berg M. P., Boerema A., Bruckers L., Clerinx J., Davin E. L., De Boeck H. J., De Dobbelaer T., Dondini M., De Laender F., Ellers J., Franken O., Gilbert L., Gudmundsson L., Janssens I. A., Johnson D., Lizin S., Longdoz B., Meire P., Meremans D., Milbau A., Moretti M., Nijs I., Nobel A., Pop I. S., Puetz T., Reyns W., Roy J., Schuetz J., Seneviratne S. I., Smith P., Solmi F., Staes J., Thiery W., Thijs S., **Vanderkelen I.,** Van Landuyt W., Verbruggen E., Witters N., Zscheischler J., Vangronsveld J. (2019) Towards more predictive and interdisciplinary climate change ecosystem experiments. **Nature Climate Change**, 9(11), 809–816. https://doi.org/10.1038/s41558-019-0609-3 pdf

Vanderkelen, I., van Lipzig, N.P.M., Thiery, W. (2018) Modelling the water balance of Lake Victoria (East Africa) - Part 1: Observational analysis. Hydrology and Earth System Sciences, 22, 5509-5525 (**HESS highlight article**). https://doi.org/10.5194/hess-22-5509-2018 code

Vanderkelen, I., van Lipzig, N.P.M., Thiery, W. (2018) Modelling the water balance of Lake Victoria (East Africa) - Part 2: Future projections. Hydrology and Earth System Sciences, 22, 5527-5549 (**HESS highlight article**). https://doi.org/10.5194/hess-22-5527-2018 code

Manuscripts forthcoming (6)

Gharari S., Mizukami N., Clark M., **Vanderkelen I.,** Tefs A., et al., A flexible and unifying framework for lake and reservoir water balance modelling in Earth system modelling. In review in Water Resources Research.

Frieler K., Jan Volkholz, Stefan Lange, Jacob Schewe, Matthias Mengel, María del Rocío Rivas López, Christian Otto, Christopher P.O. Reyer, Dirk Nikolaus Karger, Johanna T. Malle, Simon Treu, Christoph Menz, Julia L. Blanchard, Cheryl S. Harrison, Colleen M. Petrik, Tyler D. Eddy, Kelly Ortega-Cisneros, Camilla Novaglio, Yannick Rousseau, Reg A. Watson, Charles Stock, Xiao Liu, Ryan Heneghan, Derek Tittensor, Olivier Maury, Matthias Büchner, Thomas Vogt, Tingting Wang, Fubao Sun, Inga J. Sauer, Johannes Koch, **Inne Vanderkelen**, Jonas Jägermeyr, Christoph Müller, Jochen Klar, Iliusi D. Vega del Valle, Gitta Lasslop, Sarah Chadburn, Eleanor Burke, Angela Gallego-Sala, Noah Smith, Jinfeng Chang, Stijn Hantson, Chantelle Burton, Anne Gädeke, Fang Li, Simon N. Gosling, Hannes Müller Schmied, Fred Hattermann, Jida Wang, Fangfang Yao, Thomas Hickler, Rafael Marcé, Don Pierson, Wim Thiery, Daniel Mercado-Bettín, Forrest M., and Bechtold M.: Scenario set-up and forcing data for impact model evaluation and impact attribution within the third round of the Inter-Sectoral Model Intercomparison Project (ISIMIP3a). Geoscientific Model Development Discussions, in review. https://doi.org/10.5194/egusphere-2023-281

Vanderkelen I., Davin E. L., Keune J:, Miralles D. G., Wada Y., Müller-Schmied H:, Gosling S., Pokhrel Y:, Satoh Y., Hanasaki N., Burek P., Ostberg S., Grant L., Taranu S., Mengel M., Volkholz J., Thiery W.: Quantifying lifetime water scarcity. In prep.

Pietroiusti R., **Vanderkelen I.**, Otto F., Akurut M., Bally P., van Lipzig N. M. P., Thiery W.: Possible role of climate change in the record-breaking 2020 Lake Victoria levels and floods, in prep for Earth System Dynamics.

Grant, L., **Vanderkelen I.,** Gudmundsson L., Fischer E., Seneviratne S., Thiery W.: The evolution of the global population experiencing unprecedented exposure and its age of emergence. In prep.

Hari, C., Hickler T., Hof C., Reyer C., **Vanderkelen I.,** Voskamp A., Fischer M., Davin E.: Combining future projections of land-use and climate change to assess their impact on biodiversity. In prep.

Hes G., **Vanderkelen I.,** Davin E. L.: Future forest microclimate buffering in CLM5.1. In prep. for Environmental Research Letters.

Reports

Hassler, B., Lauer, A., Reimuth, A., Müller, B., Davin, E., Hirschi, M., Coll, J., Grant, L., Thiery, W., **Vanderkelen, I.,** (2021). Thematic Assessment Report on Task 7.3: Earth Energy Balance, Copernicus Climate Change Service report, 36 p.

Abstracts in proceedings of international conferences

2023 (planned)

- EGU general assembly conference, Vienna, May (PICO, **session highlight**)
- ISIMIP annual workshop, Prague, May (online presentation)
- Swiss Climate Summerschool, Ascona, August (poster).

2022

- 1st Land Surface Modelling Summit, Oxford, September (poster)
- Annual CESM meeting: **CESM Graduate Student Award presentation** (oral, **invited**)
- EGU general assembly conference, Vienna, May (oral)
- ISIMIP & PROCLIAS workshop, Potsdam, May (poster)
- Land Model & Biogeochemistry Working Group Winter Meeting, February (online presentation)

2021
- AGU General assembly, December (oral, remote)
- AGU General assembly, December (oral co-author, remote)
- VUB PhD day: Sustainable Development Goals, 27th of May (oral, remote)
- EGU general assembly conference, April (virtual PICO presentation, remote)
- Land Model & Biogeochemistry Working Group Winter Meeting, February (online presentation **– Andrew Slater award for best graduate student presentation**). pdf

2020
- AGU General Assembly, December (oral, remote)
- International Environmental Modelling and Software Society Conference, July (poster & oral, remote)
- International Environmental Modelling and Software Society Conference, July (poster, co-author)
- Cross-sectoral ISIMIP online workshop, June. (oral, remote)
- EGU general assembly conference, May. (online display)
- EGU general assembly conference, May. (online display, co-author)
- EGU general assembly conference, May. (online display, co-author)
- EGU general assembly conference, May. (online display, co-author)

2019
- AGU Fall Meeting, San Francisco, December (poster, co-author)
- 6th Workshop on Parameterization of Lakes in NWP and Climate Modelling, Toulouse, October (oral)
- EGU general assembly conference, Vienna, April (poster).
- CLIMRISK conference, Trento, October (poster, co-author)
- Land Model Working Group Winter Meeting, Boulder, February (oral) pdf.

2018
- Swiss Climate Summerschool, Grindelwald, August (poster).
- Flemish Supercomputer Users day, May (poster – **3rd place best poster prize**).
- EGU general assembly conference, Vienna, April (oral).
- The Disaster Risk Reduction workshop, Kampala, Uganda, 6th of February (oral)

2017
- The 7th Belgian Geography day, Liège, Belgium, 17th of November (oral)
- EGU general assembly conference, Vienna, April (poster).

Contributions to teaching and student representation

Teaching

2022-2023

- Co-lecturer for 'Nature-Based Solutions for climate change adaptation and mitigation' (coordinator Edouard Davin)
  MSc in Climate Sciences (University of Bern)

2018-2022
- Teaching assistant for 'Land-Climate Dynamics' (coordinator Wim Thiery)
  MSc Water Resources Eng., MSc Geography and MSc of Applied Computer Science (VUB and KU Leuven)

2017-2018
- Teaching assistant for 'GIS for Water Resources Engineering' (coordinator Boud Verbeiren)
  MSc in Water Resources Engineering (VUB)

2014-2015
- Student tutor in Peer Assistant Learning sessions for Physical Geography
  BSc Geography (KU Leuven)

MSc thesis supervision (6)

- Rosa Pietroiusti (Geography, 2021-2022)
- Seppe Lampe (Applied Computer Science, 2020-2021)
- An Rubens (Geography, 2020-2021)
- Faluku Nakulopa (Water Resources Engineering, 2019-2020)
- Luke Grant (Water Resources Engineering, 2018-2019)
- Daniela Hernàndez (Civil Engineering, 2017-2018)

Student representation

- Departmental Council of Hydrology and Hydraulic Engineering: PhD representative (2020-2022)
- Permanent Education Commission BSc Geography KU Leuven (2013-2016)
- Interuniversity Education Commission MSc Geography KU Leuven (2015-2017)
- Student council (StuRa): representative of geography and tourism students KU Leuven (2014-2015)

Contributions to research proposals

- FWO PhD fellowship and EUTOPIA applications of Rosa Pietroiusti, submitted in 2022 (funded)
- FWO PhD fellowship application of Seppe Lampe, submitted in 2021 and 2022 (funded)
- FWO PhD fellowship application of Lualawi Admasu, submitted in 2021 (withdrawn before evaluation)

Reviews of research papers

For scientific journals: Geoscientific Model Development, Ecology and Evolution, Journal of Hydrology, Scientific Reports, Geophysical Research Letters, Theoretical and Applied Climatology, Climatic Change

Outreach

2023

- Co-authored article in **Knack** (Flemish magazine) on the Belgian climate case, 28 March 2023

2022

- Interview in **Terzake** (Flemish television) on geoengineering, broadcasted on 25 August 2022
- Interview in VUB podcast series #ScientistsWithACause on PhD research (8 June 2022)
- Presentation on climate change for local organization We-IT in Hoeilaart, (11 May 2022).

2021

- Press release on VUB Today for study on lake attribution (Grant et al., 2021)
- Interview in 'Kerk en Leven' on Women in Science. (8th August 2021). pdf
- Speaker on 'Soapbox Science' event (Brussels, 26th June 2021). aftermovie

2020

- Interview in '**Planeet Frank**' podcast (by Frank Deboosere, Flemish TV weather forecaster)

2019

- Interview in **Karrewiet** on the European Green Deal (children's news; broadcasted on national television on the 12th of December 2019).
- Interview on water-related problems in Belgium for the #klimaatraad series of **CANVAS** (Flemish TV channel). Appeared online on the 19th of July 2019.
- Co-organized a EUGreenWeek Partner Event: "BridgeOverWater: connecting science and policy", in Brussels, Belgium, May, 2019
- Presentation about climate change and framing the climate protests to 6th grade secondary school students in Koninklijk Atheneum Laken, Brussels, Belgium, April 2019.
- Presentation about climate change and the climate protests to 6th grade primary school students in Kessel-Lo, March 2019
- Co-organized "water4climate" march to ask for Comprehensive water policy taking into account the potential effects of climate change, Brussels March 2019.

- Led workshop "Water in the city, measuring is knowing", with 6th grade secondary school students about measuring precipitation. Brussels, March 2019.
- Taught 3 courses to 3rd and 4th grade secondary school students on climate science in Brussels for the Prometeruse project, Spring 2019.

2018
- Co-authored blog article on climate impacts of individuals, November 2018.
- Interview in **Karrewiet** on 1.5 °C warming (children's news; broadcasted on national television on the 1st of October 2018), and mentioned on VUB Today.
- Theater performance "The climate projections" by Frank Theys. Brussels, March 2018.
- Led workshop "Water in the city, measuring is knowing" with 6th grade secondary school students about measuring precipitation. Brussels, March 2018.

Other experience

International exchanges
- National Center for Atmospheric Research (NCAR), Boulder CO, USA (Research stay, spring 2019)
- ETH Zürich, Institute for Atmospheric and Climate Science (Erasmus exchange, fall 2016)

Summer schools
- International Swiss Climate Summerschool (Ascona, Switzerland, 2023, admitted)
- Introduction to Machine Learning (FLAMES summer school, Hasselt, 2021)
- CTSM tutorial (NCAR, Boulder, 2019)
- International Swiss Climate Summer School (Grindelwald, Switzerland, 2018)
- CESM tutorial (NCAR, Boulder CO, 2017)

Trainings
- Project management, University of Bern (Spring 2023)
- Coaching Mentoring and Training (COMET) career program for female postdocs, University of Bern (Spring 2023 – Autumn 2024)
- Travel Safety and Security Training, Wyss Academy for Nature at the University of Bern (Winter 2023)
- Writing for Women retreat including peer-coaching, University of Bern (Winter 2023)
- Personal effectiveness with MS Outlook training (Winter 2020)
- Summer school on Science communication 'Zeg 't eens' (Summer 2018)
- Media Training (Spring 2018)
- Education training for teaching assistants (Spring 2018)
- Writing Articles and Abstracts in the Natural and Applied Sciences (Spring 2018)
- Efficient Networking Skills (Fall 2017)

Voluntary work

2018 – 2021	Coordinator of the Green team of the Hydrology department, as part of the VUB Green impact project (Golden award in 2019, 2020, platinum in 2021)
2015 – 2016	Contact Person of the Leuven entity for the European Geography Association for geography students (EGEA)
2014 – 2015	President of the university association for geography students Merkator Leuven vzw
2012 – 2016	Certified head leader on youth camps with Kazou (2012-2016)

Other

2016	GIS and data quality control student job at GIM (Geo Information company)
2010 – 2015	Student job in logistics at Hof Ten Doenberge (Nursery home)
2008 – now	Saxophone player (graduated music school after 12 years instrument study)