

Claus Beier
Professor
Forest and Landscape Ecology
Postal address:
Rolighedsvej 23
1958
Frederiksberg C
Email: cbe@ign.ku.dk
Mobile: +4593565244
Phone: +4535334233
Web address: <https://ign.ku.dk/>



Short presentation

My research concentrates on ecosystem responses to air pollution and climate change - in particular impacts on ecosystem functioning and feedback to the atmosphere. I have in particular used ecosystem manipulation to understand these impacts - latest through the VILLUM foundation Centre of Excellence CLIMAITE, where KU, DTU and AU collaborated to investigate impacts of single and multifactor climate change on shrubland ecosystems. Currently my particular research focus is on extreme events and impacts on ecosystem functioning

Employment

Professor

Forest and Landscape Ecology
Frederiksberg C
1 May 2015 → nu

Research Director

NIVA - Norsk Institut for Vannforskning
Oslo, Norway
1 Aug 2013 → 1 May 2015

Head of Research Center

Technical University of Denmark
Kongens Lyngby, Denmark
1 Jan 2012 → 1 Aug 2013

Head of Research Programme

Technical University of Denmark
Kongens Lyngby, Denmark
1 May 2006 → 31 Dec 2011

Senior Researcher

Forskningscenter Risø
Roskilde, Denmark
1 Jun 1996 → 30 Apr 2006

Senior Researcher

Forskningscentret for Skov & Landskab
Denmark
1 May 1992 → 31 May 1996

PostDoc

Technical University of Denmark
Kongens Lyngby, Denmark
1 Aug 1989 → 30 Apr 1992

PhD

Technical University of Denmark
Kongens Lyngby, Denmark
1 Apr 1985 → 31 Jul 1989

Publications

Extreme drought impacts have been underestimated in grasslands and shrublands globally

Smith, M. D., Wilkins, K. D., Holdrege, M. C., Wilfahrt, P., Collins, S. L., Knapp, A. K., Sala, O. E., Dukes, J. S., Phillips, R. P., Yahdjian, L., Gherardi, L. A., Ohlert, T., Beier, C., Fraser, L. H., Jentsch, A., Loik, M. E., Maestre, F. T., Power, S. A., Yu, Q., Felton, A. J. & 153 others, Munson, S. M., Luo, Y., Abdoli, H., Abedi, M., Alados, C. L., Alberti, J., Alon, M., An, H., Anacker, B., Anderson, M., Auge, H., Bachle, S., Bahalkeh, K., Bahn, M., Batbaatar, A., Bauerle, T., Beard, K. H., Behn, K., Beil, I., Biancari, L., Blindow, I., Bondaruk, V. F., Borer, E. T., Bork, E. W., Bruschetti, C. M., Byrne, K. M., Cahill, J. F., Calvo, D. A., Carbognani, M., Cardoni, A., Carlyle, C. N., Castillo-Garcia, M., Chang, S. X., Chieppa, J., Cianciaruso, M. V., Cohen, O., Cordeiro, A. L., Cusack, D. F., Dahlke, S., Daleo, P., D'Antonio, C. M., Dietterich, L. H., Doherty, T. S., Dubbert, M., Ebeling, A., Eisenhauer, N., Fischer, F. M., Forte, T. G. W., Gebauer, T., Gozalo, B., Greenville, A. C., Guidoni-Martins, K. G., Hannusch, H. J., Haugum, S. V., Hautier, Y., Hefting, M., Henry, H. A. L., Hoss, D., Iribarne, O., Isbell, F., Johnson, Y., Jordan, S., Kelly, E. F., Kimmel, K., Kreyling, J., Kröel-Dulay, G., Ingrisch, J., Kröpfl, A., Kübert, A., Kulmatiski, A., Lamb, E. G., Larsen, Klaus Steenberg, Larson, J., Leder, C. V., Linstädter, A., Liu, J., Liu, S., Lodge, A. G., Longo, G., Loydi, A., Luan, J., Lawson, J., Lubbe, F. C., Macfarlane, C., Mackie-Haas, K., Malyshev, A. V., Maturano-Ruiz, A., Merchant, T., Metcalfe, D. B., Mori, A. S., Mudongo, E., Newman, G. S., Nielsen, U. N., Nimmo, D., Niu, Y., Nobre, P., O'Connor, R. C., Ogaya, R., Oñativia, G. R., Orbán, I., Osborne, B., Otfinowski, R., Pärtel, M., Penuelas, J., Peri, P. L., Peter, G., Petraglia, A., Picon-Cochard, C., Pillar, V. D., Piñeiro-Guerra, J. M., Ploughe, L. W., Plowes, R. M., Portales-Reyes, C., Prober, S. M., Pueyo, Y., Reed, S. C., Ritchie, E. G., Rodríguez, D. A., Rogers, W. E., Roscher, C., Sánchez, A. M., Santos, B. A., Scarfó, M. C., Seabloom, E. W., Shi, B., Souza, L., Stampfli, A., Standish, R. J., Sternberg, M., Sun, W., Sünnemann, M., Tedder, M., Thorvaldsen, P., Tian, D., Tielbörger, K., Valdecantos, A., van den Brink, L., Vandvik, V., Vankoughnett, M. R., Velle, L. G., Wang, C., Wang, Yi, Wardle, G. M., Werner, C., Wei, C., Wiehl, G., Williams, J. L., Wolf, A. A., Zeiter, M., Zhang, F., Zhu, J., Zong, N. & Zuo, X., 2024, In: Proceedings of the National Academy of Sciences of the United States of America. 121, 4, e2309881120.

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Mapping and characterising tree mortality in California at individual tree level using deep learning

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Exploring the impacts of unprecedented climate extremes on forest ecosystems: hypotheses to guide modeling and experimental studies

Holm, J. A., Medvigy, D. M., Smith, B., Dukes, J. S., Beier, Claus, Mishurov, M., Xu, X., Lichstein, J. W., Allen, C. D., Larsen, Klaus Steenberg, Luo, Y., Ficken, C., Pockman, W. T., Anderegg, W. R. L. & Rammig, A., 2022, 45 p. (Biogeosciences Discussions; No. 65, Vol. 2022).

Field experiments underestimate aboveground biomass response to drought

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The TeaComposition initiative: Unleashing the power of international collaboration to understand litter decomposition

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Exploring the impacts of unprecedented climate extremes on forest ecosystems: hypotheses to guide modeling and experimental studies

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Understanding ecosystems of the future will require more than realistic climate change experiments - A response to Korell et al.

De Boeck, H. J., Bloor, J. M. G., Aerts, R., Bahn, M., Beier, C., Emmett, B. A., Estiarte, M., Gruenzweig, J. M., Halbritter, A. H., Holub, P., Jentsch, A., Klem, K., Kreyling, J., Kroel-Dulay, G., Larsen, K. S., Milcu, A., Roy, J., Sigurdsson, B. D., Smith, M. D., Sternberg, M. & 4 others, Vandvik, V., Wohlgemuth, T., Nijs, I. & Knapp, A. K., 2020, In: Global Change Biology. 26, 2, p. e6-e7 2 p.

A meta-analysis of 1,119 manipulative experiments on terrestrial carbon-cycling responses to global change

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Accumulation of soil carbon under elevated CO₂ unaffected by warming and drought

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Accumulation of soil carbon under elevated CO₂ unaffected by warming and drought

Dietzen, Christiana Amalie, Larsen, Klaus Steenberg, Ambus, Per Lennart, Michelsen, Anders, Arndal, M. F., Beier, Claus, Reinsch, S. & Schmidt, Inger Kappel, 2019, In: *Global Change Biology*. 25, 9, p. 2970-2977 8 p.

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On the problems of using linear models in ecological manipulation experiments: lessons learned from a climate experiment

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Early stage litter decomposition across biomes

Djukic, I., Kepfer Rojas, Sebastian, Schmidt, Inger Kappel, Larsen, Klaus Steenberg, Beier, Claus, Berg, B. & Verheyen, K., 2018, In: *Science of the Total Environment*. 628-629, p. 1369-1394 26 p.

Early stage litter decomposition across biomes

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Fine Root Growth and Vertical Distribution in Response to Elevated CO₂, Warming and Drought in a Mixed Heathland–Grassland

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Isotopic methods for non-destructive assessment of carbon dynamics in shrublands under long-term climate change manipulation

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Long-term and realistic global change manipulations had low impact on diversity of soil biota in temperate heathland

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Pushing precipitation to the extremes in distributed experiments: recommendations for simulating wet and dry years

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Responses of enchytraeids to increased temperature, drought and atmospheric CO₂: results of an eight-year field experiment in dry heathland

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Other

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