

Curriculum Vitae - Oskar Franklin

Personal Information

Work address: International Institute for Applied Systems Analysis (IIASA), Schlossplatz 1, A-2361 Laxenburg, Austria
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Positions

2004 – 2023 Senior Research scholar, International Institute for Applied Systems Analysis (IIASA), Austria, Ecosystem Services and Management Program (current position)
 2012 – 2023 Visiting researcher, Department of Forest Ecology and Management, Swedish University of Agricultural Sciences
 2009/01 – 2009/04 Visiting scientist, University of New South Wales, BEES, Sydney, Australia
 2006/11 – 2007/03 Visiting scientist, University of New South Wales, BEES, Sydney, Australia
 1997/01 – 2003/09 Ph.D. student, Department of Ecology and Environmental Research, Swedish University of Agricultural Sciences, Sweden
 1995/09 -1996/12 Radiation protection officer, Swedish Radiation Protection Institute SSI. Supervision and regulation of environmental issues and emissions from nuclear power plants
 1994/10 -1994/12 Researcher/MSc student, CSIRO division of Applied Physics, Australia. Thesis project on computer simulation of blood cell aggregation

Education and degrees

2003/09/26 Ph.D. in Systems Ecology. Thesis: *Plant and Forest Dynamics in Response to Nitrogen Availability*. Supervisor: Prof. Göran I. Ågren, Department of Ecology and Environmental Research, Swedish University of Agricultural Sciences. Extra curricular courses: popular science writing, web design and project management
 1996 M.Sc. Physics Engineering, Uppsala University +1 year at University of Melbourne + 3 months thesis work at CSIRO in Sydney, Australia
 1989 -1995 University courses in Biology, Chemistry, Psychology (3 year-credits in total)

Supervision and teaching

2009 - 2022 Supervisor of 5 postdocs: Peter Fransson (Sweden), Florian Hofhansl (Austria), Christina Kaiser (Austria), Marianne Hall (Sweden), Tobias Eriksson (Sweden)
 2005 - 2022 Supervisor of 18 Ph.D. students from 8 different countries in the IIASA YSSP program, of which two, Per Bodin (Sweden) and Cesar Terrer (U.K.), received the Peccei Award for best YSSP project based on external review. Co-supervisor of Ph.D. student Peter Fransson at Umeå University, Sweden
 1997 – 2003 Teaching in university courses in technical ecology, basic ecology, and global environmental problems at the Swedish University of Agricultural Sciences. Secretary and Website manager of the forestry PhD student union, Uppsala, Sweden

Project management

2021 - 2026	Project: Forests and wildlife under pressure – systems analysis for sustainable solutions Project owner: Høgskolen i Innlandet - Hedmark (974251760), Norway Role: Co-PI (PI of modelling part) Funder: The Research Council of Norway
2019 - 2028	Project: Future Silviculture Project owner: Department of Forest Ecology and Management, Swedish University of Agricultural Sciences, Sweden Role: Co-PI (PI of modelling part) Funder: Knut and Alice Wallenberg Stiftelse
2018 – 2019	Project: Mediated modelling of forest ecosystems services to support management Project owner: IIASA Role: PI Funder: Swedish Environment Protection Agency
2016 - 2018	Project: Dynamic Vegetation Models –The Next Generation Project owner: IIASA Role: PI Funder: IIASA

Prizes and Awards

2006	Prize for best oral presentation at the ESF-JSPS Frontier Science Conference for Young Researchers on Climate Change 2006 in Stockholm. Presentation title: <i>Forest production and carbon storage-potentials of European forestry</i>
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Invited lectures and talks

2021/09	Invited keynote presentation in the CLand workshop at Laboratoire des Sciences du Climat et de l'Environnement (LSCE). Title: <i>Organizing principles for vegetation dynamics</i>
2021/02	Invited presentation for CAVELab Computational & Applied Vegetation Ecology, University of Ghent. Title: <i>A tree's quest for light</i>
2017/03	Invited keynote presentation in the Annual AGFOREE meeting on Ecological and economical modelling of sustainable natural resources in University of Helsinki. Title: <i>Forest modeling from a tree's perspective</i>
2016/04	Invited presentation and session convener at EGU Meeting, Vienna, Austria. Title: <i>Predicting plants –modeling traits as a function of environment</i>
2015/12	Invited presentation at AGU Fall Meeting, San Francisco, USA. Title: <i>Modeling Dynamic Height and Crown Growth in Trees</i>
2014/03	Invited presentation at Biolink -Linking belowground biodiversity and ecosystem function in European forests - 2nd Annual Meeting, Krakow. Title: <i>Modeling ectomycorrhizal forest: A plant-microbe system perspective</i>
2013/01	Invited presentation at University of Natural Resources and Life Sciences, Vienna, Austria. Title: <i>Modeling carbon allocation in trees</i>
2012/11	Invited presentation at Umeå University, Sweden. Title: <i>Economics for plants and fungi</i>
2012/05	Invited presentation at 2 nd International Enzymes in the Environment RCN Workshop: Incorporating Enzymes and Microbial Physiology into Biogeochemical Models. Title: <i>Extracellular enzyme production from a rational microbe's perspective</i>

Review and editor activities

2019	Evaluator of Ph.D. project by Marko Kvakic at French National Institute for Research in Agronomy (INRA) Bordeaux - Nouvelle Aquitaine, France
2015 -2018	Member of the research review panel of The Swedish Research Council FORMAS
2016	Proposal reviewer for FWO -Research Foundation – Flanders, Belgium
2016, 2017	Guest editor for Proceedings the National Academy of Sciences of USA (PNAS)
2008	Grant evaluator for The Netherlands Organisation for Scientific Research (NWO)
2010 - 2021	Article reviewer for many journals, including: Nature Ecology and Evolution, Nature Communications, Proceedings the National Academy of Sciences of USA (PNAS), PLoS ONE, Proceedings of the Royal Society of London American Naturalist, Ecology Letters, Ecology, Global Change Biology, Biogeosciences, Biology Letters, Ecosphere, Functional Ecology, New Phytologist, Oecologia, Tree Physiology, Geophysical Research Letters.

Publication list - Oskar Franklin

Publications in international peer-reviewed journals

Number of citations = 3287, hi=28. Publications at:

http://scholar.google.at/citations?user=i_G8t64AAAAJ&hl=en

- Bonner, M.T.L., **Franklin, O.**, Hasegawa, S. & Näsholm, T. (2022) Those who can don't want to, and those who want to can't: An eco-evolutionary mechanism of soil carbon persistence. *Soil Biology and Biochemistry*, 174, 108813.
- Żebrowski, P., Dieckmann, U., Brännström, Å., **Franklin, O.** & Rovenskaya, E. (2022) Sharing the Burdens of Climate Mitigation and Adaptation: Incorporating Fairness Perspectives into Policy Optimization Models. *Sustainability*, 14, 3737.
- Harrison, S.P., Cramer, W., **Franklin, O.**, Prentice, I.C., Wang, H., Brännström, Å., de Boer, H., Dieckmann, U., Joshi, J., Keenan, T.F., Lavergne, A., Manzoni, S., Mengoli, G., Morfopoulos, C., Peñuelas, J., Pietsch, S., Rebel, K.T., Ryu, Y., Smith, N.G., Stocker, B.D. & Wright, I.J. (2021) Eco-evolutionary optimality as a means to improve vegetation and land-surface models. *New Phytologist*, 231, 2125-2141.
- Henriksson, N., **Franklin, O.**, Tarvainen, L., Marshall, J., Lundberg-Felten, J., Eilertsen, L. & Näsholm, T. (2021) The mycorrhizal tragedy of the commons. *Ecology Letters*, 24, 1215-1224.
- Henriksson, N., Lim, H., Marshall, J., **Franklin, O.**, McMurtrie, R.E., Lutter, R., Magh, R., Lundmark, T. & Näsholm, T. (2021) Tree water uptake enhances nitrogen acquisition in a fertilized boreal forest – but not under nitrogen-poor conditions. *New Phytologist*, 232, 113-122
- Deckmyn, G., Flores, O., Mayer, M., Domene, X., Schnepf, A., Kuka, K., Van Looy, K., Rasse, D.P., Briones, M.J.I., Barot, S., Berg, M., Vanguelova, E., Ostonen, I., Vereecken, H., Suz, L.M., Frey, B., Frossard, A., Tiunov, A., Frouz, J., Grebenc, T., Öpik, M., Javaux, M., Uvarov, A., Vindušková, O., Henning Krogh, P., **Franklin, O.**, Jiménez, J. & Curiel Yuste, J. (2020) KEYLINK: towards a more integrative soil representation for inclusion in ecosystem scale models. I. review and model concept. *PeerJ*, 8, e9750.
- Franklin, O.**, Harrison, S.P., Dewar, R., Fariior, C.E., Brännström, Å., Dieckmann, U., Pietsch, S., Falster, D., Cramer, W., Loreau, M., Wang, H., Mäkelä, A., Rebel, K.T., Meron, E., Schymanski, S.J., Rovenskaya, E., Stocker, B.D., Zaehle, S., Manzoni, S., van Oijen, M., Wright, I.J., Ciais, P., van Bodegom, P.M., Peñuelas, J., Hofhansl, F., Terrer, C., Soudzilovskaia, N.A., Midgley, G. & Prentice, I.C. (2020) Organizing principles for vegetation dynamics. *Nature Plants*, 6, 444-453.
- Fransson, P., Brännström, Å. & **Franklin, O.** (2020) A tree's quest for light—optimal height and diameter growth under a shading canopy. *Tree Physiology*, 41, 1-11.
- Fransson, P., **Franklin, O.**, Lindroos, O., Nilsson, U. & Brännström, Å. (2019) A simulation-based approach to a near-optimal thinning strategy: allowing harvesting times to be determined for individual trees. *Canadian Journal of Forest Research*, 320-331.
- Fransson, P., Nilsson, U., Lindroos, O., **Franklin, O.** & Brännström, Å. (2019) Model-based investigation on the effects of spatial evenness, and size selection in thinning of *Picea abies* stands. *Scandinavian Journal of Forest Research*, 34, 189-199.
- Lenzner, B., Leclère, D., **Franklin, O.**, Seebens, H., Roura-Pascual, N., Obersteiner, M., Dullinger, S. & Essl, F. (2019) A Framework for Global Twenty-First Century Scenarios and Models of Biological Invasions. *BioScience*, 69, 697-710.
- Terrer, C., Jackson, R.B., Prentice, I.C., Keenan, T.F., Kaiser, C., Vicca, S., Fisher, J.B., Reich, P.B., Stocker, B.D., Hungate, B.A., Peñuelas, J., McCallum, I., Soudzilovskaia, N.A., Cernusak, L.A., Talhelm, A.F., Van Sundert, K., Piao, S., Newton, P.C.D., Hovenden, M.J., Blumenthal, D.M., Liu, Y.Y., Müller, C., Winter, K., Field, C.B., Viechtbauer, W., Van Lissa, C.J., Hoosbeek, M.R., Watanabe, M., Koike, T.,

- Leshyk, V.O., Polley, H.W. & **Franklin, O.** (2019) Nitrogen and phosphorus constrain the CO₂ fertilization of global plant biomass. *Nature Climate Change*,
- Wildemeersch, M., **Franklin, O.**, Seidl, R., Rogelj, J., Moorthy, I. & Thurner, S. (2019) Modelling the multi-scaled nature of pest outbreaks. *Ecological Modelling*, 409, 108745.
- Franklin, O.**, Cambui, C.A., Gruffman, L., Palmroth, S., Oren, R. & Näsholm, T. (2017) The carbon bonus of organic nitrogen enhances nitrogen use efficiency of plants. *Plant, Cell & Environment*, 40, 25-35.
- Högberg, P., Näsholm, T., **Franklin, O.** & Högberg, M.N. (2017) Tamm Review: On the nature of the nitrogen limitation to plant growth in Fennoscandian boreal forests. *Forest Ecology and Management*,
- Palmqvist, K., **Franklin, O.** & Näsholm, T. (2017) Symbiosis constraints: Strong mycobiont control limits nutrient response in lichens. *Ecology and Evolution*, 7, 7420-7433.
- Terrer, C., Vicca, S., Hungate, B.A., Phillips, R.P., Reich, P.B., **Franklin, O.**, Stocker, B.D., Fisher, J.B. & Prentice, I.C. (2017) Response to Comment on "Mycorrhizal association as a primary control of the CO₂ fertilization effect". *Science*, 355, 358-358.
- Evans, S., Dieckmann, U., **Franklin, O.** & Kaiser, C. (2016) Synergistic effects of diffusion and microbial physiology reproduce the Birch effect in a micro-scale model. *Soil Biology and Biochemistry*, 93, 28-37.
- Kaiser, C., **Franklin, O.**, Richter, A. & Dieckmann, U. (2015) Social dynamics within decomposer communities lead to nitrogen retention and organic matter build-up in soils. *Nature Communications*, 6
- Shanafelt, D.W., Dieckmann, U., Jonas, M., **Franklin, O.**, Loreau, M. & Perrings, C. (2015) Biodiversity, productivity, and the spatial insurance hypothesis revisited. *Journal of Theoretical Biology*, 380, 426-435.
- Franklin, O.**, Näsholm, T., Högberg, P. & Högberg, M.N. (2014) Forests trapped in nitrogen limitation – an ecological market perspective on ectomycorrhizal symbiosis. *New Phytologist*, 203, 657-666.
- Franklin, O.**, Palmroth, S. & Näsholm, T. (2014) How eco-evolutionary principles can guide tree breeding and tree biotechnology for enhanced productivity. *Tree Physiology*, 34, 1149-1166.
- Jonas, M., Ometto, J.P., Batistella, M., **Franklin, O.**, Hall, M., Lapola, D.M., Moran, E.F., Tramberend, S., Queiroz, B.L., Schaffartzik, A., Shvidenko, A., Nilsson, S.B. & Nobre, C.A. (2014) Sustaining ecosystem services: Overcoming the dilemma posed by local actions and planetary boundaries. *Earth's Future*, 2, 2013EF000224.
- Kaiser, C., **Franklin, O.**, Dieckmann, U. & Richter, A. (2014) Microbial community dynamics alleviate stoichiometric constraints during litter decay. *Ecology Letters*, 17, 680-690.
- Lindh, M., Zhang, L., Falster, D., **Franklin, O.** & Brännström, Å. (2014) Plant diversity and drought: The role of deep roots. *Ecological Modelling*, 290, 85-93.
- Näsholm, T., Palmroth, S., Ganeteg, U., Moshelion, M., Hurry, V. & **Franklin, O.** (2014) Genetics of superior growth traits in trees are being mapped but will the faster-growing risk-takers make it in the wild? *Tree Physiology*, 34, 1141-1148.
- Hall, M., Medlyn, B.E., Abramowitz, G., **Franklin, O.**, Räntfors, M., Linder, S. & Wallin, G. (2013) Which are the most important parameters for modelling carbon assimilation in boreal Norway spruce under elevated [CO₂] and temperature conditions? *Tree Physiology*, 33, 1156-1176.
- McCallum, I., **Franklin, O.**, Moltchanova, E., Merbold, L., Schmulius, C., Shvidenko, A., Schepaschenko, D. & Fritz, S. (2013) Improved light and temperature responses for light-use-efficiency-based GPP models. *Biogeosciences*, 10, 6577-6590.
- Näsholm, T., Högberg, P., **Franklin, O.**, Metcalfe, D., Keel, S.G., Campbell, C., Hurry, V., Linder, S. & Högberg, M.N. (2013) Are ectomycorrhizal fungi alleviating or aggravating nitrogen limitation of tree growth in boreal forests? *New Phytologist*, 198, 214-221.

- Bodin, P. & **Franklin, O.** (2012) Efficient modeling of sun/shade canopy radiation dynamics explicitly accounting for scattering. *Geosci. Model Dev.*, 5, 535-541.
- Franklin, O.**, Johansson, J., Dewar, R.C., Dieckmann, U., McMurtrie, R.E., Brännström, Å. & Dybzinski, R. (2012) Modeling carbon allocation in trees: a search for principles. *Tree Physiology*, 32, 648-666.
- Franklin, O.**, Moltchanova, E., Kraxner, F., Seidl, R., Böttcher, H., Rokityanskiy, D. & Obersteiner, M. (2012b) Large scale forest modeling- deducing productivity and stand density from inventory data. *International Journal of Forestry Research*, 2012, Article ID 934974.
- Franklin, O.**, Hall, E.K., Kaiser, C., Battin, T.J. & Richter, A. (2011) Optimization of biomass composition explains microbial growth-stoichiometry relationships. *American Naturalist*, 177, e29-e42.
- Hall, E.K., Maixner, F., **Franklin, O.**, Daims, H., Richter, A. & Battin, T. (2011) Linking Microbial and Ecosystem Ecology Using Ecological Stoichiometry: A Synthesis of Conceptual and Empirical Approaches. *Ecosystems*, 14, 261-273.
- Leduc, S., Lundgren, J., **Franklin, O.** & Dotzauer, E. (2010) Location of a biomass based methanol production plant: A dynamic problem in northern Sweden. *Applied Energy*, 87, 68-75.
- Dewar, R.C., **Franklin, O.**, Mäkelä, A., Mcmurtrie, R.E. & Valentine, H.T. (2009) Optimal Function Explains Forest Responses to Global Change. *BioScience*, 59, 127-139.
- Franklin, O.**, Aoki, K. & Seidl, R. (2009a) A generic model of thinning and stand density effects on forest growth, mortality and net increment. *Annals of Forest Science*, 66, 815
- Franklin, O.**, McMurtrie, R.E., Iversen, C.M., Crous, K.Y., Finzi, A.C., Tissue, D.T., Ellsworth, D.S., Oren, R. & Norby, R.J. (2009) Forest fine-root production and nitrogen use under elevated CO₂: Contrasting responses in evergreen and deciduous trees explained by a common principle. *Global Change Biology*, 15, 132–144.
- Franklin, O.** (2007) Optimal nitrogen allocation controls tree responses to elevated CO₂. *New Phytologist*, 174, 811-822.
- Koca, D., Smith, B., Bergh, J., Nilsson, U., **Franklin, O.**, Obersteiner, M. & Sykes, M.T. (2006) Increased accuracy in climate impact studies by incorporating forest management practices within a process-based regional ecosystem modelling framework. In: *Meddelanden från Lunds Universitets Geografiska Institutioner, Avhandlingar*, pp. 77-89
- Ågren, G.I. & **Franklin, O.** (2003) Root : shoot ratios, optimization and nitrogen productivity. *Annals of Botany*, 92, 795-800.
- Franklin, O.** (2003) *Plant and Forest Dynamics in Response to Nitrogen Availability*. Swedish University of Agricultural Sciences, Uppsala.
- Franklin, O.**, Hogberg, P., Ekblad, A. & Agren, G.I. (2003) Pine forest floor carbon accumulation in response to N and PK additions: Bomb C-14 modelling and respiration studies. *Ecosystems*, 6, 644-658.
- Franklin, O.** & Ågren, G.I. (2002) Leaf senescence and resorption as mechanisms of maximizing photosynthetic production during canopy development at N limitation. *Functional Ecology*, 16, 727-733.

Other publications

- Franklin, O.**, Krasovskiy, A., Kraxner, F., Platov, A., Schepaschenko, D., Leduc, S. & Mattsson, B. (2020) Moose or spruce: A systems analysis model for managing conflicts between moose and forestry in Sweden. *bioRxiv*, 2020.08.11.241372.
- Franklin, O.**, Moltchanova, E., Krasovskiy, A. & Kraxner, F. (2020) Modeling Risks and Mitigation Options for the Chronic Wasting Disease (CWD) in Scandinavia. *bioRxiv*, 2020.08.10.243782.

- Näsholm, T., Högberg, P., **Franklin, O.** & Högberg, M.N. (2014) Har träden mykorrhiza för att skogen är kvävebegränsad, eller är kanske skogen kvävebegränsad just för att träden har mykorrhiza? *Fakta Skog*,
- Schneider, U.A., Balkovic, J., De Cara, S., **Franklin, O.**, Fritz, S., Havlik, P., Huck, I., Jantke, K., Kallio, A.M.I., Kraxner, F., Moiseyev, A., Obersteiner, M., Ramos, C.I., Schleupner, C., Schmid, E., Schwab, D. & Skalsky, R. (2008) The European Forest and Agricultural Sector Optimization Model - EUFASOM Working Paper FNU-156. In. Hamburg University and Centre for Marine and Atmospheric Science, Hamburg, Germany
- Franklin, O.** (2006) Modeling Forest Production and Carbon Storage Potentials in Response to Management in the European Union 2005 – 2050. In: *INSEA EU FP 6, 2006, Project SSPI-CT-2003/503614* (ed. M. Obersteiner). EU