Alberto Canarini

University Assistant

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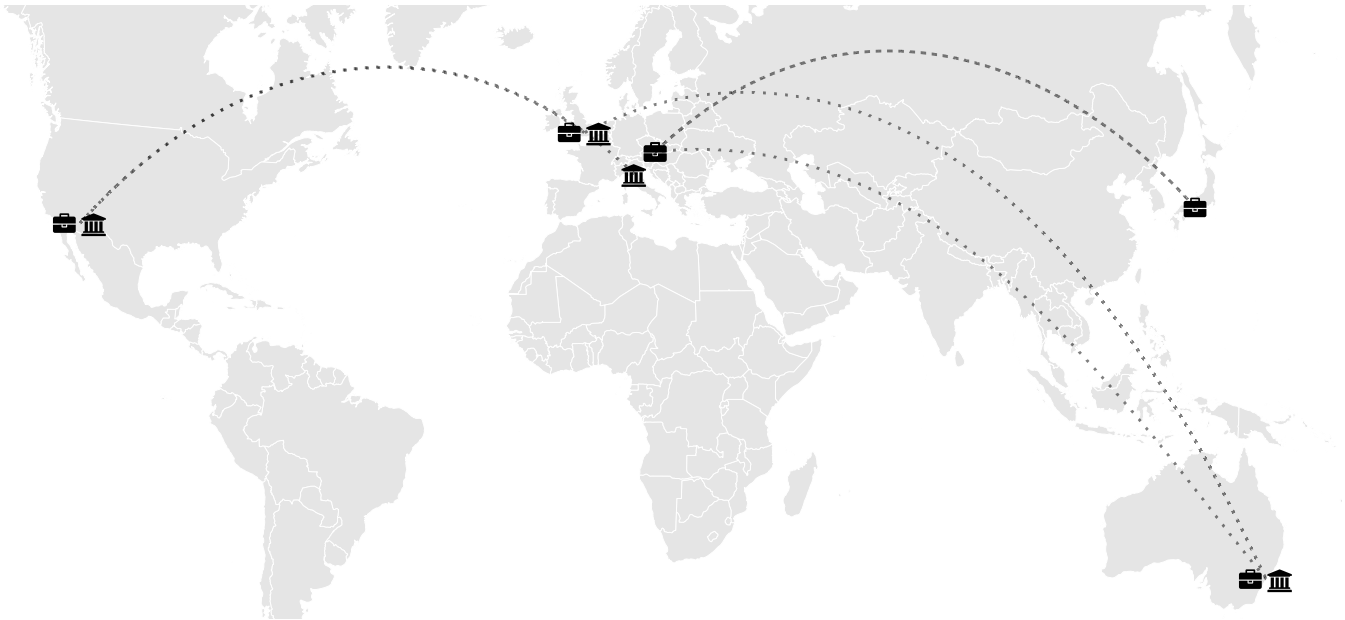
Short Introduction

My primary research interest is understanding the role of soil microbial community on the biogeochemical cycles of carbon and nutrients, in managed and natural ecosystems. My main focus has been on understanding how different climate change factors can affect soil microbial activity and functioning, and how this feedback to global warming. My early work (PhD) was focused on the investigation of drought effects on carbon cycling. In 2017 I joined the group of Prof. Andreas Richter in the Department of Microbiology and Ecosystem Science at the University of Vienna (Austria) as a Postdoctoral researcher. Here, I led a group carrying out research on an international climate change experiment (named "ClimGrass") investigating concomitant effects of elevated CO2, warming and drought on soil microbial communities and their role for biogeochemical carbon and nitrogen cycles, on managed montane grassland. In 2018 I obtained the position of University Assistant in the same group. I achieved several breakthroughs, including the development of a new application to study microbial growth in soil. I have worked on plant-microbe interactions, both empirically and theoretically. In 2019 I have published a review article which quickly became one of the highest cited papers in the field of plant root exudates (>500 citations). I then successfully obtained a JSPS fellowship award (from the Japanese Society for the Promotion of Science) to conduct my own project. This award is given on a competitive selection of project proposal (success rate in 2020 was 10.8%). In 2022 I returned to Vienna as University Assistant at the Centre for Microbiology and Environmental Systems Science.

Career Journey Overview



Research Output in Brief

I have been able to publish my work in multidisciplinary peer-reviewed journals with high impact such as Nature Communications (IF 17.6) and in leading journals for climate change science (Global Change Biology; IF 13.2), microbiology (The ISME Journal; IF 10.3) and soil science (Soil Biology & Biochemistry IF 7.6). These 24 articles resulted in over +1000 citations to date. I have attended and presented my work in many international conferences around the world. I was invited to deliver several invited talks in conferences and research institutes of my field. In addition, I have been solicited to contribute to conferences organisation as both main convener and co-convener. I have also published a chapter in the book "Encyclopedia of Soils in the Environment, Second Edition" entitled: "Climate change impacts on soil biology".

Education and Qualifications

Italian National Scientific Habilitation (ASN), 2nd level — *Italy*

Ecology (05 / C1) — *2023- 2034*

The University of Sydney, Faculty of Agriculture and Environment — *Sydney, AU*

Doctor of Philosophy, Life and Environmental Sciences — *Mar 2013 - Feb 2017*

- Dissertation: Drought effects on soil carbon stability mediated by rhizodeposition and microbes

Southwark College — *London, UK*

English proficiency qualification (IELTS), grade:7.5/9 — *Mar 2012 – May 2012*

University of Ferrara, Faculty of science — *Ferrara, Italy*

Master in Ecology and Evolution, grade:110/110 cum laude — *Oct 2009 – Dec 2011*

University of Bologna, Faculty of biological science — *Bologna, Italy*

Bachelor in Biology, grade:110/110 cum laude — *Oct 2006 – Oct 2009*

Professional Experience

Kyoto University, Center for Ecological Research — *Japan*

JSPS Post-Doc Fellow — *Sep 2020- Oct 2022*

Collaborators: Ass. Prof. Hirokazu Toju and Prof. Toby Kiers

- General role: Conducting research on plant-microbe interactions affecting plant nutrient acquisition (project funded by the Japanese Society for the Promotion of Science and Human Frontier Science Program)

University of Vienna, Department of Microbiology and Ecosystem Science — *Austria*

University Assistant (Post doc level) — *Oct 2018- Sep 2020*

Supervisor: Professor Andreas Richter

- General role: Conducting research regarding global change effects on C and nutrient cycles, with primary focus on grassland ecosystems

University of Vienna, Department of Microbiology and Ecosystem Science — *Austria*

Postdoctoral researcher — *Mar 2017- Sep 2018*

Supervisor: Prof. Andreas Richter

- General role: Coordinating a team and conducting own experiments during the field campaign and laboratory analysis of a climate change manipulation experiment

The University of Sydney, Faculty of Agriculture and Environment — *Australia*

Postgraduate student — *Mar 2013- Feb 2017*

Supervisor: Associate Professor Feike Dijkstra

- Project: “Drought effects on soil carbon stability mediated by rhizodeposition and microbes

Queen Mary University of London, Faculty of Science and Engineering — *England*

Undergraduate student — *Oct 2010- Apr 2011*

Supervisor: Dr. Jenny Schmid-Araya

- Project: “Effects of invertebrate feeding strategies on aquatic bacterial abundance and activity

USDA-ARS, Arid Land Agricultural Research Center — *USA*

Undergraduate student — *Mar - May 2009*

Supervisor: Dr. Michael Salvucci and Dr. Csengele Barta

- Project: “Effects of environmental constraints on photosynthesis and assimilate partitioning between carbohydrates and isoprenoid products in guayule.”

Grants and Awards

Ecological memory of extreme drought events in soil microbial communities (EcoMEMO) — *2024-2029*

ERC Starting Grant — *1.451.568 €*

- Role: Principal Investigator

Ecology and chemistry of plant-microbiome interactions in iron-deficient soil — *2020-2022*

Grant-in-Aid for JSPS Fellows — *¥2.800.000 = 21.500€*

- Role: Principal Investigator

JSPS Postdoctoral Fellowship *2020-2022*

Japanese Society for the Promotion of Science

International Postgraduate Research Scholarship (IPRS) *2013-2016*

Australian Government, Department of Education and Training

Australian Postgraduate Award (APA) *2013-2016*

Australian Government, Department of Education and Training

Rhizosphere 4 Travelling award *Jun 2015*

Rhizosphere 4 conference committee

ISOECOL IX Travelling award *Aug 2014*

ISOECOL IX conference committee

Erasmus LLP scholarship award *2010-2011*

Ferrara University, 1st classified

Project participation

Ecology and chemistry of plant-microbiome interactions in iron-deficient soil *2020-2022*

Grant-in-Aid for JSPS Fellows *¥2800000 = 21500€*

- Role: Principal Investigator

Tracking trade across symbiotic networks *2020-2022*

Human Frontier Science Project *1.000.000€*

- Role: Post-doc

ClimGrass - Grassland carbon dynamics in a changing climate *2017-2019*

Austrian Science Fund (FWF) *400.000€*

- Role: Post-doc

Drought effects on soil carbon and nitrogen cycling mediated by rhizosphere processes *2013-2016*

ARC Future Fellowship *745.000$ (AUD)*

- Role: PhD student

Book Chapters and Editorials

Canarini, A., Fuchslueger, L., Joly, F.-X., & Richter, A. (2023). Climate change impacts on soil biology. In M. J. Goss & M. Oliver (Eds.), *Encyclopedia of soils in the environment (second edition)* (pp. 578–586). Academic Press. https://doi.org/10.1016/B978-0-12-822974-3.00244-5

Preece, C., **Canarini, A.**, Verbruggen, E., & Fuchslueger, L. (2021). Editorial: Exchanges at the root-soil interface: Resource trading in the rhizosphere that drives ecosystem functioning. *Frontiers in Forests and Global Change*, *4*. https://www.frontiersin.org/articles/10.3389/ffgc.2021.747492

Peer-reviewed Articles (28)

Martin, V., Schmidt, H., **Canarini, A.**, Koranda, M., Hausmann, B., Müller, C. W., & Richter, A. (2024). Soil cover shapes organic matter pools and microbial communities in soils of maritime Antarctica. *Geoderma*, *446*, 116894. https://doi.org/10.1016/j.geoderma.2024.116894

Yang, L., **Canarini, A.**, Zhang, W., Lang, M., Chen, Y., Cui, Z., Kuzyakov, Y., Richter, A., Chen, X., Zhang, F., & Tian, J. (2024). Microbial life-history strategies mediate microbial carbon pump efficacy in response to N management depending on stoichiometry of microbial demand. *Global Change Biology*, *30*(5), e17311. https://doi.org/10.1111/gcb.17311 e17311 GCB-23-3048.R1

Gorka, S., Darcy, S., Horak, J., Imai, B., Mohrlok, M., Salas, E., Richter, A., Schmidt, H., Wanek, W., Kaiser, C., & **Canarini, A.** (2023). Beyond PLFA: Concurrent extraction of neutral and glycolipid fatty acids provides new insights into soil microbial communities. *Soil Biology and Biochemistry*, *187*, 109205. https://doi.org/10.1016/j.soilbio.2023.109205

Metze, D., Schnecker, J., **Canarini, A.**, Fuchslueger, L., Koch, B. J., Stone, B. W., Hungate, B. A., Hausmann, B.,

Schmidt, H., Schaumberger, A., Bahn, M., Kaiser, C., & Richter, A. (2023). Microbial growth under drought is confined to distinct taxa and modified by potential future climate conditions. *Nature Communications*, *14*(1), 1–12. https://doi.org/10.1038/s41467-023-41524-y

Fujita, H., Ushio, M., Suzuki, K., Abe, M. S., Yamamichi, M., Iwayama, K., **Canarini, A.**, Hayashi, I., Fukushima, K., Fukuda, S., Kiers, E. T., & Toju, H. (2023). Alternative stable states, nonlinear behavior, and predictability of microbiome dynamics. *Microbiome*, *11*(1), 63. https://doi.org/10.1186/s40168-023-01474-5

Zheng, J., **Canarini, A.**, Fujii, K., Mmari, W. N., Kilasara, M. M., & Funakawa, S. (2023). Cropland intensification mediates the radiative balance of greenhouse gas emissions and soil carbon sequestration in maize systems of sub-Saharan Africa. *Global Change Biology*, *29*(6), 1514–1529. https://doi.org/10.1111/gcb.16550 https://doi.org/10.1111/

Zheng, J., Fujii, K., Koba, K., Wanek, W., Müller, C., Jansen-Willems, A. B., Nakajima, Y., Wagai, R., & **Canarini, A.** (2023). Revisiting process-based simulations of soil nitrite dynamics: Tighter cycling between nitrite and nitrate than considered previously. *Soil Biology and Biochemistry*, *178*, 108958. https://doi.org/10.1016/j.soilbio.2023.108958

Fujita, H., Ushio, M., Suzuki, K., Abe, M. S., Yamamichi, M., Okazaki, Y., **Canarini, A.**, Hayashi, I., Fukushima, K., Fukuda, S., Kiers, E. T., & Toju, H. (2023). Facilitative interaction networks in experimental microbial community dynamics. *Frontiers in Microbiology*, *14*. https://doi.org/https://doi.org/10.3389/fmicb.2023.1153952

Fujita, H., Ushio, M., Suzuki, K., Abe, M. S., Yamamichi, M., Okazaki, Y., **Canarini, A.**, Hayashi, I., Fukushima, K., Fukuda, S., Kiers, E. T., & Toju, H. (2023). Metagenomic analysis of ecological niche overlap and community collapse in microbiome dynamics. *Frontiers in Microbiology*, *14*. https://doi.org/https://doi.org/10.3389/fmicb.2023.1261137

Verbrigghe, N., Meeran, K., Bahn, M., **Canarini, A.**, Fransen, E., Fuchslueger, L., Ingrisch, J., Janssens, I. A., Richter, A., Sigurdsson, B. D., Soong, J. L., & Vicca, S. (2022). Long-term warming reduced microbial biomass but increased recent plant-derived C in microbes of a subarctic grassland. *Soil Biology and Biochemistry*, *167*, 108590. https://doi.org/10.1016/j.soilbio.2022.108590

Gavazov, K., **Canarini, A.**, Jassey, V. E. J., Mills, R., Richter, A., Sundqvist, M. K., Väisänen, M., Walker, T. W. N., Wardle, D. A., & Dorrepaal, E. (2022). Plant-microbial linkages underpin carbon sequestration in contrasting mountain tundra vegetation types. *Soil Biology and Biochemistry*, *165*, 108530. https://doi.org/10.1016/j.soilbio.2021.108530

Maxwell, T. L., **Canarini, A.**, Bogdanovic, I., Böckle, T., Martin, V., Noll, L., Prommer, J., Séneca, J., Simon, E., Piepho, H.-P., Herndl, M., Pötsch, E. M., Kaiser, C., Richter, A., Bahn, M., & Wanek, W. (2022). Contrasting drivers of belowground nitrogen cycling in a montane grassland exposed to a multifactorial global change experiment with elevated CO2, warming, and drought. *Global Change Biology*, *28*(7), 2425–2441. https://doi.org/10.1111/gcb.16035

Alteio, L. V., Séneca, J., **Canarini, A.**, Angel, R., Jansa, J., Guseva, K., Kaiser, C., Richter, A., & Schmidt, H. (2021). A critical perspective on interpreting amplicon sequencing data in soil ecological research. *Soil Biology and Biochemistry*, *160*, 108357. https://doi.org/10.1016/j.soilbio.2021.108357

Canarini, A., Schmidt, H., Fuchslueger, L., Martin, V., Herbold, C. W., Zezula, D., Gündler, P., Hasibeder, R., Jecmenica, M., Bahn, M., & Richter, A. (2021). Ecological memory of recurrent drought modifies soil processes via changes in soil microbial community. *Nature Communications*, *12*(1), 5308. https://doi.org/10.1038/s41467-021-2567

Meeran, K., Ingrisch, J., Reinthaler, D., **Canarini, A.**, Müller, L., Pötsch, E. M., Richter, A., Wanek, W., & Bahn, M. (2021). Warming and elevated CO2 intensify drought and recovery responses of grassland carbon allocation to soil respiration. *Global Change Biology*, *27*(14), 3230–3243. https://doi.org/10.1111/gcb.15628

Séneca, J., Pjevac, P., **Canarini, A.**, Herbold, C. W., Zioutis, C., Dietrich, M., Simon, E., Prommer, J., Bahn, M., Pötsch, E. M., Wagner, M., Wanek, W., & Richter, A. (2020). Composition and activity of nitrifier communities in soil are unresponsive to elevated temperature and CO2, but strongly affected by drought. *The ISME Journal*, *14*(12), 3038–3053. https://doi.org/10.1038/s41396-020-00735-7

Simon, E., **Canarini, A.**, Martin, V., Séneca, J., Böckle, T., Reinthaler, D., Pötsch, E. M., Piepho, H.-P., Bahn, M., Wanek, W., & Richter, A. (2020). Microbial growth and carbon use efficiency show seasonal responses in a multifactorial climate change experiment. *Communications Biology*, *3*(1), 1–10. https://doi.org/10.1038/s42003-020-01317-1

Canarini, A., Wanek, W., Watzka, M., Sandén, T., Spiegel, H., Šantrůček, J., & Schnecker, J. (2020). Quantifying microbial growth and carbon use efficiency in dry soil environments via 18O water vapor equilibration. *Global Change Biology*, *26*(9), 5333–5341. https://doi.org/10.1111/gcb.15168

Canarini, A., Kaiser, C., Merchant, A., Richter, A., & Wanek, W. (2019). Root Exudation of Primary Metabolites: Mechanisms and Their Roles in Plant Responses to Environmental Stimuli. *Frontiers in Plant Science*, *10*. https://www.frontiersin.org/articles/10.3389/fpls.2019.00157

Canarini, A., Mariotte, P., Ingram, L., Merchant, A., & Dijkstra, F. A. (2018). Mineral-Associated Soil Carbon is Resistant to Drought but Sensitive to Legumes and Microbial Biomass in an Australian Grassland. *Ecosystems*, *21*(2), 349–359. https://doi.org/10.1007/s10021-017-0152-x

Canarini, A., Kiær, L. P., & Dijkstra, F. A. (2017). Soil carbon loss regulated by drought intensity and available substrate: A meta-analysis. *Soil Biology and Biochemistry*, *112*, 90–99. https://doi.org/10.1016/j.soilbio.2017.04.020

Carrillo, Y., Bell, C., Koyama, A., **Canarini, A.**, Boot, C. M., Wallenstein, M., & Pendall, E. (2017). Plant traits, stoichiometry and microbes as drivers of decomposition in the rhizosphere in a temperate grassland. *Journal of Ecology*, *105*(6), 1750–1765. https://doi.org/10.1111/1365-2745.12772

Mariotte, P., **Canarini, A.**, & Dijkstra, F. A. (2017). Stoichiometric N:P flexibility and mycorrhizal symbiosis favour plant resistance against drought. *Journal of Ecology*, *105*(4), 958–967. https://doi.org/10.1111/1365-2745.12731

Canarini, A., Carrillo, Y., Mariotte, P., Ingram, L., & Dijkstra, F. A. (2016). Soil microbial community resistance to drought and links to C stabilization in an Australian grassland. *Soil Biology and Biochemistry*, *103*, 171–180. https://doi.org/10.1016/j.soilbio.2016.08.024

Canarini, A., Merchant, A., & Dijkstra, F. A. (2016). Drought effects on Helianthus annuus and Glycine max metabolites: From phloem to root exudates. *Rhizosphere*, *2*, 85–97. https://doi.org/10.1016/j.rhisph.2016.06.003

Dijkstra, F. A., Carrillo, Y., Aspinwall, M. J., Maier, C., **Canarini, A.**, Tahaei, H., Choat, B., & Tissue, D. T. (2016). Water, nitrogen and phosphorus use efficiencies of four tree species in response to variable water and nutrient supply. *Plant and Soil*, *406*(1), 187–199. https://doi.org/10.1007/s11104-016-2873-6

Canarini, A., & Dijkstra, F. A. (2015). Dry-rewetting cycles regulate wheat carbon rhizodeposition, stabilization and nitrogen cycling. *Soil Biology and Biochemistry*, *81*, 195–203. https://doi.org/10.1016/j.soilbio.2014.11.014

Salvucci, M. E., Barta, C., Byers, J. A., & **Canarini, A.** (2010). Photosynthesis and assimilate partitioning between carbohydrates and isoprenoid products in vegetatively active and dormant guayule: Physiological and environmental constraints on rubber accumulation in a semiarid shrub. *Physiologia Plantarum*, *140*(4), 368–379. https://doi.org/10.1111/j.1399-3054.2010.01409.x

Under Review

Canarini, A., Fuchslueger, L., Schnecker, J., Metze, D., Nelson, D., Kahmen, A., Watzka, M., Poetsch, E. M., Schaumberger, A., Bahn, M., & Richter, A. (2023). *Soil fungi remain active and invest in storage compounds during drought independent of future climate conditions*. bioRxiv. https://doi.org/10.1101/2023.10.23.563577

Skills and Techniques

Computatonal

- Experience in programming with R;
- Experience in bioinformatics (amplicon sequencing and transcriptome);
- Extensive statistical knowledge (multivariate analysis; meta-analysis; linear and non-linear models; response surface models etc.).

Soil biogeochemistry

- Implementation of field experiments (e.g. rain out shelter manipulations for drought experiments) as well as laboratory incubations;

- High throughput PLFA extraction;
- Use of stable isotopes technique to trace element partitioning between soil-plant-atmosphere;
- Use of stable isotopes (18O) to trace soil microbial community level physiological parameters (growth, CUE);
- Use of stable isotopes probing of soil microbial community, such as PLFA-SIP (13C and 2H);
- Quantification of multiple soil parameters (available nutrients, microbial biomass, physical and density fractionation techniques, enzyme activity);
- Expertiese in measuring soil respiration in teh lab and in the field.

Microbiology

- Use of stable isotopes probing of soil microbial community such as DNA qSIP (18O)
- Collection, preparation and sequencing of samples for rDNA amplicon sequencing of16S/ITS and AMF-specific regions;
- Expertise in single-strain fungal cultivation for controlled experiments.

Plant Physiology

- Collection and extraction of plant samples for metabolomics analysis, by use of gas or liquid-chromatography coupled to mass spectrometry or to isotope ratio mass spectrometry for compound specific stable isotope approaches.
- Use of many laboratory techniques for quantification of different plant parameters (metabolites, carbon, nitrogen, phosphorous and energy content);
- Expertise in implementing and managing experiments in controlled environment conditions (growth chambers) for isotope technique applications;
- Expertise in sterile plant growth manipualtions;
- Expertise in plant RNA extraction and library preparation.

Teaching Experience

Primary Instructor

University of Vienna: Soil Ecology and Biogeochemistry *May 2023*

Course design; two weeks of laboratory work; grading assignments and exams

Teaching Assistant

The University of Sydney: Introduction to Statistical Methods *March-June 2016*

Support to student in practical workl; organizing student activities; grading exams

The University of Sydney: Sustaining our landscapes *March-Apr 2016*

Support to student in practical workl; organizing student activities; grading exams

Student supervision

- Co-supervision of one PhD student, three Master students and one Bachelor student for their research projects under the supervision of Prof. Andreas Richter (October 2017-present)
- Co-supervision of two Bachelor students for their internship programs under the supervision of Prof. Feike Dijkstra, The University of Sydney (January-May 2014 and 2015)

Selected Presentations

Canarini, A. (2023). *Effects of multiple climate change factors and their seasonal variation on the soil microbial community and its functions* (Invited Talk). EGU 2023, Vienna Austria.

Canarini, A., Zheng, J., Koba, K., Séneca, J., Fujii, K., Furukawa, S., Honjo, M., Kudoh, H., Nishino, T., Kobae, Y., Hiruma, K., Narisawa, K., Field, K., Huang, Y.-T., Kiers, T., & Toju, H. (2023). *Fungal root endophytes and their role in carbon to nitrogen exchange with plants* (Poster). EGU 2023, Vienna Austria.

Canarini, A., Fuchslueger, L., Schnecker, J., Watzka, M., Pötsch, E. M., Schaumberger, A., Bahn, M., & Richter, A. (2021). *Deuterium stable isotope probing of fatty acids reveals climate change effects on soil microbial physiology.* (Talk). EGU 2021, Vienna Austria.

Canarini, A. (2021). *Soil microorganisms and climate change: Current knowledge and prospects* (Invited Talk). Center for Ecological Research Seminars, Kyoto University, Japan.

Canarini, A., Wanek, W., Watzka, M., Sandén, T., Spiegel, H., Imminger, S., Woebken, D., Šantrůček, J., & Schnecker, J. (2020). *Quantifying microbial growth and carbon use efficiency in dry soil environments via 18O water vapor equilibration* (Talk). EGU 2020, Vienna, Austria.

Canarini, A., Martin, V., Zezula, D., Fuchslueger, L., Gündler, P., Jecmenica, M., Bahn, M., & Richter, A. (2019). *Drought legacy affects microbial response to a subsequent extreme drought.* (Poster). AGU 2019, San Francisco, USA.

Canarini, A., Cantwell-Jones, A., Séneca, J., Dietrich, M., Simon, E., Meeran, K., Ingrisch, J., Reinthaler, D., Müller, L., Bahn, M., Piepho, H.-P., Wanek, W., & Richter, A. (2019). *Effects of climate change on plant carbon allocation to the soil microbial community* (Talk). EGU 2019, Vienna, Austria.

Canarini, A., Martin, V., Zezula, D., Fuchslueger, L., Gündler, P., Bahn, M., & Richter, A. (2018). *Drought legacy affects microbial response to a subsequent extreme drought.* (PICO poster). EGU 2018, Vienna, Austria.

Canarini, A., & Dijkstra, F. A. (2015). *Drought effects on plant-microbes interactions* (Invited Talk). University of Sydney 2015 Research Symposium: Soil to save our planet. Sydney, Australia.

Canarini, A., & Dijkstra, F. A. (2015). *Drought effects on rhizodeposition: From phloem to root exudates* (Poster). Rhizosphere 4, Maastricht, The Netherlands.

Canarini, A., & Dijkstra, F. A. (2014). *Dry-rewetting cycles regulate wheat carbon rhizodeposition, stabilization and nitrogen cycling.* (Poster). 9th International Conference on Applications of Stable Isotope Techniques to Ecological Studies (ISOECOL IX), Perth, Australia.

Canarini, A., & Dijkstra, F. A. (2014). *Food production: Below the surface* (Poster). University of Sydney 2014 Research Symposium: The quest for quality food. Sydney, Australia.

Conference Organization

EGU 2023 (EGU General Assembly 2023) *Vienna*

Session: Responses of soil biota to land use, environmental stress and climate change *2023*

- Role: Main Convener

EGU 2022 (EGU General Assembly 2022) *Vienna*

Session: Soil microbial responses to environmental stress and climate change *2022*

- Role: Co-Convener

EGU 2021 (EGU General Assembly 2021) *Vienna*

Session: Responses of terrestrial biogeochemical cycles to environmental stress and climate change *2021*

- Role: Co-Convener

EGU 2020 (EGU General Assembly 2020) *Vienna*

Session: Responses of terrestrial biogeochemical cycles to climate change *2020*

- Role: Main Convener

Professional Service

Ad Hoc Reviewer and Editorial Work

- Peer-reviewed more than 50 articles in ecological journals including: Nature Climate Change, Ecology Letters, Nature Communications, Global Change Biology, New Phytologist, The ISME Journal, Journal of Ecology, Frontiers, Soil Biology and Biochemistry, Ecology and Evolution, Science of Total Environment, Geoderma, Journal of applied ecology, Scientific reports, Communications Biology, Plant and Soil.
- Review Editor in Frontiers in Environmental Science (Soil Processes section)
- Guest Associate Editor in Frontiers in Forests and Global Change (Editorial published in 2021)
- Guest Editor in Biogeosciences
- Associate Editor in Ecology and Evolution

Proposal Reviewer

Research Südtirol/Alto Adige 2022, Proposal *Italy, 2023*

Referee

Czech Science Foundation (GACR), Proposal *Czech Republic, 2022*

Referee

Laboratory of Excellence ARBRE, Proposal *France, 2021*

Referee

National Research and Development Agency (ANID), Regular Proposal *Chile, 2021*

Referee

European Research Council (ERC), Advanced grant *2019*

Remote referee

Spoken Languages

- Italian: Native
- English: Fluent (speaking, reading, writing)
- German: Beginner (speaking, reading, writing)
- Japanese: Intermediate (speaking, listening)
- Spanish: Intermediate (speaking, listening)