

Dr. Dolores Asensio

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Main Research Areas

I am broadly interested in plant-soil-atmosphere feedbacks and ecosystem responses to global change factors. My previous research addressed questions from plant physiology to soil biogeochemistry, for example, the responses of plant and soil biogenic volatile organic compounds to drought and warming, the effects of drought on plant carbon allocation to roots or the responses of soil microbes to drought, warming and nitrogen fertilization. My present research focuses on plant physiological responses to abiotic stress induced by climatic extremes. I investigate the effects of single and combined drought and heat stress on grapevine physiology and the applicability of optimal stomatal conductance models during heat waves.

Education

2007: PhD. in Ecology, Center for Ecological Research and Forestry Applications, Universitat Autònoma de Barcelona, Spain

2004: MSc. in Research in Ecology, Center for Ecological Research and Forestry Applications, Universitat Autònoma de Barcelona, Spain

2001: Postgraduate courses, Plant Biology Department, University of Valencia, Spain

2001: BSc. in Biology, major in Biodiversity, University of Valencia, Spain

Positions

2023-present: Assistant Professor Junior (RTD/A), Tree Ecophysiology and Ecosystem group, Free University of Bozen-Bolzano, Italy.

2021-2022: Research Assistant (AR), Tree Ecophysiology and Ecosystem group, Free University of Bozen-Bolzano, Italy.

2015- 2020: Associate Researcher at CSIC-Global Ecology Unit (GEU), Barcelona, Spain.

2013-2015: Postdoctoral researcher at the Autonomous University of Barcelona, Center for Ecological Research and Forestry Applications, Global Ecology Unit, Barcelona, Spain.

2013: Postdoctoral Researcher at the University of Zurich, Geography Department, Soil Science and Biogeochemistry Unit, Zurich, Switzerland.

2012: Research Assistant, CREAM-UAB, Barcelona, Spain.

2009-2010: Postdoctoral Researcher at the University of Colorado, Ecology and Evolutionary Biology Department, Boulder, Colorado, United States.

2008: Postdoctoral researcher at the National Research Council Institute of Biometeorology, Bologna, Italy.

Selected Publications

- Shtai, W., **Asensio D.**, Kadison, A.E. et al. Soil water availability modulates the response of grapevine leaf gas exchange and PSII traits to a simulated heat wave. *Plant Soil* 501, 537–554. <https://doi.org/10.1007/s11104-024-06536-7>
- **Asensio D.**, Zuccarini P, Sardans J, et al. Soil biomass-related enzyme activity indicates minimal functional changes after 16 years of persistent drought treatment in a Mediterranean holm oak forest. *Soil Biology Biochemistry* 189:109281. <https://doi.org/https://doi.org/10.1016/j.soilbio.2023.109281>
- Zuccarini, P., **Asensio D.**, Ogaya, R., Sardans, J., Peñuelas, J. 2020. Effects of seasonal and decadal warming on soil enzymatic activity in a P-deficient Mediterranean shrubland. *Global Change Biology*, 2020; 26:3698–3714. <https://doi.org/10.1111/gcb.15077>
- Peñuelas, J., **Asensio, D.**, Tholl, D., Wenke, K., Rosenkranz, M., Piechulla, B., Schnitzler, J.P. 2014. Biogenic volatile emissions from the soil, Review. *Plant, Cell and Environment* 37(8):1866-91. <https://doi.org/10.1111/pce.12340>
- Margalef, O., Sardans, J., Fernández-Martínez, M., Molowny-Horas, R., Janssens, I.A., Ciais, P., Goll, D., Richter, A., Obersteiner, M., **Asensio, D.**, Peñuelas, J. 2017. Global patterns of phosphatase activity in natural soils. *Scientific Reports* 7: 1337. <http://doi.org/10.1038/s41598-017-01418-8>
- Greenberg, J.P., **Asensio, D.**, Turnipseed, A., Guenther, A.B., Karl, T., Gochis, D. 2012. Contribution of leaf and needle litter to whole ecosystem BVOC fluxes. *Atmospheric Environment* 59: 302–311. <https://doi.org/10.1016/j.atmosenv.2012.04.038>
- Ogaya, R., Peñuelas, J., **Asensio, D.**, Llusà, J. 2011. Chlorophyll fluorescence responses to temperature and water availability in two co-dominant Mediterranean shrub and tree species in a long-term field experiment simulating climate change. *Environmental and Experimental Botany*. <https://doi.org/10.1016/j.envexpbot.2010.10.016>

Recent presentations at conferences

- European Geosciences Union General Assembly 2024 (EGU24), Vienna (Austria), 14-19 April. Session BG3.38. Oral presentation. Title: “Applicability of optimal stomatal conductance models during a simulated heat wave in grapevine”. Asensio D., Hammerle A., Niedrist G., Shtai W., Kadison, Schwarz M., Raifer B., Andreotti C., Zanotelli D., Haas F., Tagliavini M., Wohlfahrt G.
- European Geosciences Union General Assembly 2023 (EGU23), Vienna (Austria), 23-28 April. Session BG3.15. Oral presentation. Title: “Vineyard water and carbon dioxide exchange during a heat wave”. Zanotelli D (presenter), Asensio D., Schwarz M., Benyahia F., Hammerle A. Ben Abdelkader A., Bastos

Campos F., Callesen T, Andreotti C., Montagnani L., Tagliavini M., Wohlfahrt G.

- European Geosciences Union General Assembly 2022 (EGU 2022). Vienna (Austria), 23-27 May. Session BG3.23. Title: “Interactive effects of high temperatures and drought on grapevine physiology during a simulated heat wave”. Asensio, D., Shtai, W., Kadison, A., Schwarz, M., Hoellrigl, J., Steiner, M., Raifer, B., Andreotti, C., Hammerle, A., Zanotelli, D., Hass, F., Niedrist, G., Wohlfahrt, G., and Tagliavini, M. Short Oral presentation.

Membership in national and international research groups in the last five years

2023-2025	CarboST. Autonome Provinz Bozen – Südtirol <i>A monitoring system for carbon fluxes in South Tyrolean ecosystems</i> . Role: Research collaborator within the Tree Ecophysiology and Ecosystem group, University of Bolzano.
2023	Agritech Project – Task 4.2.2: Tools for management of water scarcity. Experimental studies directed to understand the impact of soil water availability on apple tree physiology during heatwaves and on post-stress, together with N. Guiliani and Prof. M. Tagliavini. Role: Research collaborator within the Tree ecophysiology and Ecosystem group, University of Bolzano.
2020-2022	CLEVAS. Autonome Provinz Bozen – Südtirol. <i>Effect of climate extremes on grapevine production in South Tyrol: early detection of abiotic stress and consequences for wine quality</i> . Role: Postdoctoral researcher within the Tree Ecophysiology and Ecosystem group, University of Bolzano.

Teaching Experience

2023-present	Quality of horticultural products. Master in Food Sciences for Innovation and Authenticity, University of Bolzano. RTDa, 3 credits. Statistical methods for agricultural and environmental research. PhD Programme in Mountain Environment and Agriculture. RTDa, 5 hours. Scientific method in horticultural research, Master in Horticultural Science (IMaHS). RTDa, 10 hours. Agricultural Ecology and Principles of Plant Production. Bachelor in Sustainable Agriculture and Forestry in Mountain Environments, University of Bolzano. RTDa, 12 hours.
2022-2023	Orchard and vineyard management, Master in Horticultural Science (IMaHS). Teaching assistant, 12 hours Scientific method in horticultural research, Master in Horticultural Science (IMaHS). RTDa, 10 hours.

Agricultural Ecology and Principles of Plant Production. Bachelor in Sustainable Agriculture and Forestry in Mountain Environments, University of Bolzano. **RTDa, 12 hours.**

Sustainable cultivation methods for quality production. Bachelor in Enogastronomy in Mountain Areas. **RTDa, 12 hours.**

2021-2022 Orchard and vineyard management, Master in Horticultural Science (IMaHS). **Teaching assistant, 12 hours**

Agricultural Ecology and Principles of Plant Production. Bachelor in Sustainable Agriculture and Forestry in Mountain Environments, University of Bolzano. **Teaching assistant, 12 hours.**

2010 Stream Ecology Laboratory. Bachelor in Biology. University of Colorado, Boulder, Colorado, United States. **Teaching assistant, 5 hours.**