



● SCIENTIFIC PERFORMANCE INDICATORS

Scopus

I D = 41661225600, documents = 64, citations = 1599, h-index = 23

Web of Science

I D = A-5468-2015, documents = 57, citations = 1465, h-index = 22

● WORK EXPERIENCE

ASSOCIATE PROFESSOR – 06/2022 – Current – TRENTO

Institution: Department of Civil, Environmental and Mechanical Engineering, University of Trento.

ASSISTANT PROFESSOR (RTD-B) – 06/2019 – 06/2022

Institution: Department of Civil, Environmental and Mechanical Engineering, University of Trento.

ASSISTANT PROFESSOR (RTD-A) – 02/2017 – 06/2019

Institution: Department of Civil, Environmental and Mechanical Engineering, University of Trento.

Description: Research activity mainly in the framework of the European LI FE project "BrennerLEC - Brenner Lower Emissions Corridor". The research focused on the evaluation of pollutant dispersion and transport in the Adige Valley, by means of both observations and numerical modelling. Different field campaigns were performed in the framework of the project, using meteorological and air quality sensors, including turbulence measurements. An operative forecasting system for air quality composed of meteorological and air quality models was also developed.

POST-DOC RESEARCHER – 02/2015 – 01/2017

Institution: University of Trento – Department of Civil, Environmental and Mechanical Engineering - Grant of the Caritro Foundation - Winner of the 2014 call for "Young researchers" of the Caritro Foundation.

Title: High-resolution forecasts of the thermal comfort in the main urban areas of the Province of Trento.

Description: The project focused on the development of an operational forecasting system for evaluating the citizens' thermal comfort in the major urban areas of the Province of Trento. The modeling chain is composed of the WRF meteorological model, with a resolution of 1 km in the inner domain, coupled with an offline urban parameterization scheme, to achieve a final resolution of 100 m. The operational forecasting chain is still active and weather maps, updated twice a day, are available at meteo.unitn.it.

POST-DOC RESEARCHER – 08/2012 – 01/2015

Institution: University of Trento – Department of Civil, Environmental and Mechanical Engineering

Title: Evaluation of boundary-layer processes and pollutant dispersion in the areas surrounding the A22 highway in the provinces of Bolzano, Trento and Verona.

Description: The research activity focused on the evaluation of boundary-layer processes typical of Alpine valleys and directly connected to pollutant dispersion (e.g. thermally-driven circulations, thermal inversions...), by means of both high-resolution numerical simulations (including large-eddy simulations) with the WRF model and data analysis.

Institution: University of Trento – Faculty of Engineering – Department of Civil and Environmental Engineering
Title: Study of meteorological phenomena at the urban scale in an Alpine valley: experimental and modeling approaches

Description: The research activity focused on the development of an urban parameterization scheme to take into account with mesoscale meteorological models the alterations induced by urban areas on local meteorological conditions.

● **EDUCATION AND TRAINING**

2008 – 2012

PHD IN ENVIRONMENTAL ENGINEERING

Institution: University of Trento, Department of Civil, Environmental and Mechanical Engineering

Thesis: Urban scale phenomena and boundary layer processes in mountain valleys

Description: The PhD research activity focused on the evaluation of the urban climate of the city of Trento, adopted as a representative case study of urban weather and climate phenomena in a mid-sized city lying in a mountain valley. First the intensity of the urban heat island was assessed analysing data from surface weather stations. The investigation of the urban climate of Trento focused then on a smaller spatial scale, analyzing in detail the thermal field inside an urban canyon, by means of two experimental campaigns and the use of a simple model. Finally, high-resolution (500 m) numerical simulations with the mesoscale meteorological WRF model were performed to study the urban climate of Trento in the Adige Valley context.

2004 – 2008

MASTER DEGREE IN ENVIRONMENTAL AND LAND ENGINEERING

Institution: University of Trento, I taly

Thesis: Field measurements and numerical simulations of daily temperature cycles in an urban canyon

2001 – 2004

BACHELOR DEGREE IN ENVIRONMENTAL AND LAND ENGINEERING

Institution: University of Trento, I taly

Thesis: Meteorological measurements to support air quality monitoring networks

1996 – 2001

5 YEARS DIPLOMA IN CLASSICAL STUDIES

Institution: Liceo Classico “Giovanni Prati”

● **LANGUAGE SKILLS**

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH C1		C1	C1	C1	C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● **PUBLICATIONS: JOURNAL ARTICLES**

1.

Nigro D., L. Giovannini, S. Bordoni, S. Dafis, M.M. Miglietta, 2026: Dry intrusions and warm-core development in Medicanes: Insights from a multi-case analysis and the peculiar evolution of Ianos. Quarterly Journal of the Royal Meteorological Society, e70255. <https://doi.org/10.1002/qj.70255>.

2.

Gucci F., A. Zonato, M. Falocchi, D. Zardi, L. Giovannini, 2026: Observations and numerical simulations of a valley-exit wind in the Alpine Bolzano basin. *Quarterly Journal of the Royal Meteorological Society*, e70215. <https://doi.org/10.1002/qj.70215>.

3.

Di Santo D., C. He, F. Chen, A. Zonato, L. Giovannini, 2026: Machine learning-based analysis of atmospheric process sensitivity to land surface properties over complex terrain. *Journal of Geophysical Research: Atmospheres*, 131, e2025JD045540. <https://doi.org/10.1029/2025JD045540>.

4.

Degiacomi T, A. Zonato, S. Davolio, M. M. Miglietta, L. Giovannini, 2025: Deep banded orographic convection over an idealized mountain range: influence of upstream atmospheric conditions. *Journal of the Atmospheric Sciences*, <https://doi.org/10.1175/JAS-D-24-0056.1>.

5.

Dallan E., T. Perez-Ciria, L. Giovannini, S. Davolio, D. Zardi, M. Borga, 2025: Rainfall elasticity functions explain divergent runoff sensitivity to rainfall errors in hydrological models, *Journal of Hydrology*, 653, 132746, <https://doi.org/10.1016/j.jhydrol.2025.132746>.

6.

Serrao L., L. Giovannini, L. E. B. Terrones, H. A. Huamaní Yupanqui, G. Zolezzi, D. Zardi, 2025: Integrating farmers' perceptions into climate change assessment in the data-scarce Peruvian Amazon. *Climatic Change* 178, 55, <https://doi.org/10.1007/s10584-025-03891-x>

7.

Di Santo D., C. He, F. Chen, L. Giovannini, 2025: ML-AMPSI T: Machine Learning-based Automated Multi-method Parameter Sensitivity and Importance analysis Tool. *Geoscientific Model Development*, 18, 433–459, <https://doi.org/10.5194/gmd-18-433-2025>.

8.

Bozzoli M., A. Crespi, M. Matiu, B. Majone, L. Giovannini, D. Zardi, Y. Brugnara, A. Bozzo, D. Cat Berro, L. Mercalli, G. Bertoldi, 2024: Long-term snowfall trends and variability in the Alps. *International Journal of Climatology*, 44, 4571-4591, <https://doi.org/10.1002/joc.8597>.

9.

Gerosa G. A., A. Finco, L. Giovannini, D. Zardi, R. Marzuoli, 2024: Comparing airborne and along-sidewall ground-based measurements to retrieve thermal and PM10 concentration profiles in two Alpine valleys. *Journal of Applied Meteorology and Climatology*, 63, 1327-1341, <https://doi.org/10.1175/JAMC-D-23-0232.1>.

10.

Carotenuto F., A. Bisignano, L. Brilli, G. Gualtieri, L. Giovannini, 2023: Low-cost air quality monitoring networks for long-term field campaigns: A review. *Meteorological Applications*, 30, e2161, <https://doi.org/10.1002/met.2161>.

11.

Zonato, A., A. Martilli, J.L. Santiago, D. Zardi, L. Giovannini, 2023: On a new one-dimensional k- ϵ turbulence closure for building-induced drag. *Quarterly Journal of the Royal Meteorological Society*, 149, 1674-1689, <https://doi.org/10.1002/qj.4476>.

12.

Sioni F., S. Davolio, F. Grazzini, L. Giovannini, 2023: Revisiting the atmospheric dynamics of the two century floods over north-eastern Italy. *Atmospheric Research*, 286, 106662, <https://doi.org/10.1016/j.atmosres.2023.106662>.

13.

Bertazza E., A. Bisignano, M. Falocchi, L. Giovannini, 2023: Effects of COVI D-19 lockdown measures on nitrogen dioxide and black carbon concentrations close to a major Italian motorway. *Meteorological Applications*, 30, e2123, <https://doi.org/10.1002/met.2123>.

14.

Bertoldi G., M. Bozzoli, A. Crespi, M. Matiu, L. Giovannini, D. Zardi, B. Majone, 2023: Diverging snowfall trends across months and elevation in the northeastern Italian Alps. *International Journal of Climatology*, 43, 2794-2819, <https://doi.org/10.1002/joc.8002>.

15.

Gucci F., L. Giovannini, I. Stiperski, D. Zardi, N. Vercauteren, 2023: Sources of anisotropy in the Reynolds stress tensor in the Stable Boundary Layer. *Quarterly Journal of the Royal Meteorological Society*, 149, 277-299, <https://doi.org/10.1002/qj.4407>.

16.

Saad M., N. Ahmed, L. Giovannini, M. Mahmood, M.U. Rafi, M.A. Qaisrani, 2022: Evaluation of possible integration of solar chimney power plants with high-rise buildings: A numerical analysis. *Journal of Building Engineering*, 60, 105188, <https://doi.org/10.1016/j.jobbe.2022.105188>.

17.

Zonato A., A. Martilli, P.A. Jimenez, J. Dudhia, D. Zardi, L. Giovannini, 2022: A new $k-\epsilon$ turbulence parameterization for mesoscale meteorological models, *Monthly Weather Review*, 150, 2157-2174, <https://doi.org/10.1175/MWR-D-21-0299.1>.

18.

Bisignano A., F. Carotenuto, A. Zaldei, L. Giovannini, 2022: Field calibration of a low-cost sensors network to assess traffic-related air pollution along the Brenner highway. *Atmospheric Environment*, 275, 119008, <https://doi.org/10.1016/j.atmosenv.2022.119008>.

19.

Urgnani R., A. Finco, M. Chiesa, R. Marzuoli, L. Bignotti, A. Riccio, E. Chianese, G. Tirimberio, L. Giovannini, D. Zardi, G. Gerosa, 2022: Size-segregated aerosol fluxes, deposition velocities, and chemical composition in an Alpine valley. *Atmospheric Research*, 268, 105995, <https://doi.org/10.1016/j.atmosres.2021.105995>.

20.

Zonato A., A. Martilli, E. Gutierrez, F. Chen, C. He, M. Barlage, D. Zardi, L. Giovannini, 2021: Exploring the effects of rooftop mitigation strategies on urban temperatures and energy consumption. *Journal of Geophysical Research: Atmospheres*, 126(21), e2021JD035002, <https://doi.org/10.1029/2021JD035002>.

21.

Tomasi M., S. Favargiotti, M. van Lierop, L. Giovannini, A. Zonato, 2021: Verona adapt. Modelling as a planning instrument: Applying a climate-responsive approach in Verona, Italy. *Sustainability*, 13(12), 6851. <https://doi.org/10.3390/su13126851>.

22.

Amadori M., L. Giovannini, M. Toffolon, S. Piccolroaz, D. Zardi, M. Bresciani, C. Giardino, G. Luciani, M. Kliphuis, H. van Haren, H.A. Dijkstra, 2021: Multi-scale evaluation of a 3D lake model forced by an atmospheric model against standard monitoring data. *Environmental Modelling and Software*, 139, 105017, <https://doi.org/10.1016/j.envsoft.2021.105017>.

23.

Pappaccogli G., L. Giovannini, D. Zardi, A. Martilli, 2021: Assessing the ability of WRF-BEP + BEM in reproducing the wintertime building energy consumption of an Italian Alpine city. *Journal of Geophysical Research: Atmospheres*, 126(8), e2020JD033652, <https://doi.org/10.1029/2020JD033652>.

24.

Matiu M., A. Crespi, G. Bertoldi, C.M. Carmagnola, C. Marty, S. Morin, W. Schöner, D. Cat Berro, G. Chiogna, L. De Gregorio, S. Kotlarski, B. Majone, G. Resch, S. Terzago, M. Valt, W. Beozzo, P. Cianfarra, I. Gouttevin, G. Marcolini, C. Notarnicola, M. Petitta, S.C. Scherrer, U. Strasser, M. Winkler, M. Zebisch, A. Cicogna, R. Cremonini, A. Debernardi, M. Faletto, M. Gaddo, L. Giovannini, L. Mercalli, J.-M. Soubeyroux, A. Sušnik, A. Trenti, S. Urbani, V. Weilguni, 2021: Observed snow depth trends in the European Alps 1971 to 2019, *The Cryosphere*, 15, 1343-1382. <https://doi.org/10.5194/tc-15-1343-2021>.

25.

Giovannini L., S. Davolio, M. Zaramella, D. Zardi, M. Borga, 2021: Multi-model convection-resolving simulations of the October 2018 Vaia storm over northeastern Italy. *Atmospheric Research*, 253, 105455. <https://doi.org/10.1016/j.atmosres.2021.105455>.

26.

Falocchi M., D. Zardi, L. Giovannini, 2021: Meteorological normalization of NO₂ concentrations in the Province of Bolzano (Italy Alps). *Atmospheric Environment*, 246, 118040. <https://doi.org/10.1016/j.atmosenv.2020.118048>.

27.

Zardi D., M. Falocchi, L. Giovannini, W. Tirlir, E. Tomasi, E. Ferrero, S. Alessandrini, P.A. Jimenez Munoz, B. Kosovic, L. Delle Monache, G. Antonacci, 2021: The Bolzano Tracer Experiment (BTEX). *Bulletin of the American Meteorological Society*, 102(5), E966–E989. <https://doi.org/10.1175/BAMS-D-19-0024.1>.

28.

Ghirardi N., M. Amadori, G. Free, L. Giovannini, M. Toffolon, C. Giardino, M. Bresciani, 2021: Using remote sensing and numerical modelling to quantify a turbidity discharge event in Lake Garda. *Journal of Limnology*, 80(1), 1981. <https://doi.org/10.4081/jlimnol.2020.1981>.

29.

Pappacogli G., L. Giovannini, D. Zardi, A. Martilli, 2020: Sensitivity analysis of urban microclimatic conditions and building energy consumption on urban parameters by means of idealized numerical simulations. *Urban Climate*, 34, 100677, <https://doi.org/10.1016/j.uclim.2020.100677>.

30.

Giovannini L., E. Ferrero, T. Karl, M.W. Rotach, C. Staquet, S. Trini Castelli, D. Zardi, 2020: Atmospheric pollutant dispersion over complex terrain: challenges and needs for improving air quality measurements and modeling. *Atmosphere*, 11, 646, <https://doi.org/10.3390/atmos11060646>.

31.

Falocchi M., W. Tirlir, L. Giovannini, E. Tomasi, G. Antonacci, D. Zardi, 2020: A dataset of tracer concentrations and meteorological observations from the Bolzano Tracer EXperiment (BTEX) to characterize pollutant dispersion processes in an Alpine valley. *Earth System Science Data*, 12, 277-291, <https://doi.org/10.5194/essd-12-277-2020>.

32.

Zonato A., A. Martilli, S. di Sabatino, D. Zardi, L. Giovannini, 2020: Evaluating the performance of a novel WUDAPT averaging technique to define urban morphology with mesoscale models. *Urban Climate*, 31, 100584, <https://doi.org/10.1016/j.uclim.2020.100584>.

33.

Tomasi E., L. Giovannini, M. Falocchi, G. Antonacci, P.A. Jiménez, B. Kosovic, S. Alessandrini, D. Zardi, L. Delle Monache, E. Ferrero, 2019: Turbulence parameterizations for dispersion in subkilometer horizontally non-homogeneous flows. *Atmospheric Research*, 228, 122-136, <https://doi.org/10.1016/j.atmosres.2019.05.018>.

34.

Falocchi M., L. Giovannini, M. de Franceschi, D. Zardi, 2019: A method to determine the characteristic time scales of quasi-isotropic surface-layer turbulence over complex terrain: A case study in the Adige Valley (Italy Alps). *Quarterly Journal of the Royal Meteorological Society*, 145, 495-512, <https://doi.org/10.1002/qj.3444>.

35.

De Wekker S.F.J., M. Kossmann, J.C. Knierel, L. Giovannini, E.D. Gutmann, D. Zardi, 2018: Meteorological applications benefiting from an improved understanding of atmospheric exchange processes over mountains. *Atmosphere*, 9, 371, <https://doi.org/10.3390/atmos9100371>.

36.

Amadori M., S. Piccolroaz, L. Giovannini, D. Zardi, M. Toffolon, 2018: Wind variability and Earth's rotation as drivers of transport in a deep, elongated subalpine lake: The case of Lake Garda. *Journal of Limnology*, 77, 505-521, <https://doi.org/10.4081/jlimnol.2018.1814>.

37.

Falocchi M., L. Giovannini, M. de Franceschi, D. Zardi, 2018: A refinement of McMillen (1988) recursive digital filter for the analysis of atmospheric turbulence. *Boundary-Layer Meteorology*, 168, 517-523, <https://doi.org/10.1007/s10546-018-0355-5>.

38.

Laiti L., L. Giovannini, D. Zardi, G. Belluardo, D. Moser, 2018: Estimating hourly beam and diffuse solar radiation in an Alpine Valley: a critical assessment of decomposition models. *Atmosphere*, 9, 117, <https://doi.org/10.3390/atmos9040117>.

39.

Pappaccogli G., L. Giovannini, F. Cappelletti, D. Zardi, 2018: Challenges in the application of a WRF/Urban-TRNSYS model chain for estimating the cooling demand of buildings: a case study in Bolzano (Italy). *Science and Technology for the Built Environment*, 24, 529-544, <https://doi.org/10.1080/23744731.2018.1447214>.

40.

Tomasi E., L. Giovannini, D. Zardi, M. de Franceschi, 2017: Optimization of Noah and Noah_MP land surface schemes in snow-melting conditions over complex terrain. *Monthly Weather Review*, 145, 4727-4745, <https://doi.org/10.1175/MWR-D-16-0408.1>.

41.

Giovannini L., L. Laiti, S. Serafin, D. Zardi, 2017: The thermally driven diurnal wind system of the Adige Valley in the Italian Alps. *Quarterly Journal of the Royal Meteorological Society*, 143, 2389-2402, <https://doi.org/10.1002/qj.3092>.

42.

Santo M., M. Toffolon, G. Zanier, L. Giovannini, V. Armenio, 2017: Large eddy simulation (LES) of wind-driven circulation in a peri-alpine lake: Detection of turbulent structures and implications of a complex surrounding orography. *Journal of Geophysical Research: Oceans*, 122, 4704-4722, <https://doi.org/10.1002/2016JC012284>.

43.

Panziera L., L. Giovannini, L. Laiti, D. Zardi, 2016: The relation between circulation types and regional Alpine climate. Part I : the dependence of the predictive skill on the vertical level of the classification for Trentino. *International Journal of Climatology*, 36, 2189-2199, <https://doi.org/10.1002/joc.4487>.

44.

Schiavon M., M. Redivo, G. Antonacci, E.C. Rada, M. Ragazzi, D. Zardi, L. Giovannini, 2015: Assessing the air quality impact of nitrogen oxides and benzene from road traffic and domestic heating and the associated cancer risk in an urban area of Verona (Italy). *Atmospheric Environment*, 120, 234-243, <https://doi.org/10.1016/j.atmosenv.2015.08.054>.

45.

Panziera L., L. Giovannini, L. Laiti, D. Zardi, 2015: The relation between circulation types and regional Alpine climate. Part I : synoptic climatology of Trentino. *International Journal of Climatology*, 35, 4655-4672, <https://doi.org/10.1002/joc.4314>.

46.

Giovannini L., L. Laiti, D. Zardi, M. de Franceschi, 2015: Climatological characteristics of the Ora del Garda wind in the Alps. *International Journal of Climatology*, 35, 4103-4115, <https://doi.org/10.1002/joc.4270>.

47.

Laiti L., D. Zardi, M. de Franceschi, G. Rampanelli, L. Giovannini, 2014: Analysis of the diurnal development of a lake-valley circulation in the Alps based on airborne and surface measurements. *Atmospheric Chemistry and Physics*, 14, 9771-9786, <https://doi.org/10.5194/acp-14-9771-2014>.

48.

Giovannini L., D. Zardi, M. de Franceschi, 2014: Effects of changes in observational sites position and surrounding urbanisation on the temperature time series of the city of Trento. *Urban Climate*, 10, 509-529, <https://doi.org/10.1016/j.uclim.2014.04.003>.

49.

Giovannini L., D. Zardi, M. de Franceschi, F. Chen, 2014: Numerical simulations of boundary-layer processes and urban-induced alterations in an Alpine valley. *International Journal of Climatology*, 34(4), 1111-1131, <https://doi.org/10.1002/joc.3750>.

50.

Giovannini L., D. Zardi, M. de Franceschi, 2013: Characterization of the thermal structure inside an urban canyon: field measurements and validation of a simple model. *Journal of Applied Meteorology and Climatology*, 52, 64-81, <https://doi.org/10.1175/JAMC-D-12-06.1>.

51.

Giovannini L., D. Zardi, M. de Franceschi, 2011: Analysis of the urban thermal fingerprint of the city of Trento in the Alps. *Journal of Applied Meteorology and Climatology*, 50, 1145-1162, <https://doi.org/10.1175/2010JAMC2613.1>.

● PUBLICATIONS: EDITORIALS

1.

Kossmann M., L. Giovannini, 2023: Editorial: Atmospheric processes and applications in urban, coastal and mountainous terrain. 30, e2129, <https://doi.org/10.1002/met.2129>.

● PUBLICATIONS: INDEXED CONFERENCE PROCEEDINGS

Indexed conference proceedings

1. Zamparelli V., S. Verde, G. Fornaro, M. Amadori, M. Bresciani, G. De Carolis, C. Giardino, L. Giovannini, S. Piccolroaz, M. Toffolon, F. De Santi, M. Papetti, G. Valerio, 2025: High resolution imaging of Surface Currents and Wind fields over lakes: a case study from Lake Garda, Italy, 2025 *IEEE International Workshop on Metrology for the Sea; Learning to Measure Sea Health Parameters (MetroSea)*, Genoa, Italy, 2025, pp. 252-256, doi: 10.1109/MetroSea66681.2025.11245722.
2. Todeschini I., G. Antonacci, A. Bisignanio, L. Giovannini, R. Cavaliere, 2020: A modelling chain for establishing a low emission corridor through the Alps. *HARMO 2020 - 20th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes*, Proceedings.
3. Pappaccogli G., L. Giovannini, F. Cappelletti, D. Zardi, 2017: Sensitivity of WRF/urban simulations to urban morphology parameters: A case study in the city of Bolzano. *Building Simulation Applications*, Volume 2017-February, 433-440.
4. Tomasi E., G. Antonacci, L. Giovannini, M. Falocchi, S. Alessandrini, E. Ferrero, D. Zardi, 2017: The Bolzano tracer experiment (BTEx): An experiment on tracer gas dispersion from an incinerator stack and on its real-time modelling. *HARMO 2017 - 18th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes*, Proceedings, Volume 2017-October, 141-145.
5. Tomasi E., L. Giovannini, P. Jiménez, B. Kosovic, S. Alessandrini, E. Ferrero, M. Falocchi, D. Zardi, L. Delle Monache, 2017: A 3D planet boundary layer scheme for the representation of dispersion processes in sub-kilometer horizontally non-homogeneous flows. *HARMO 2017 - 18th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes*, Proceedings, Volume 2017-October, 421-425.
6. Tomasi E., L. Giovannini, M. Falocchi, D. Zardi, G. Antonacci, 2016: Preliminary pollutant dispersion modelling with calmet and calpuff over complex terrain in the Bolzano Basin (Italy). *HARMO 2016 - 17th International*

Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Proceedings, Volume 2016-May, 160-164.

7. Tomasi E., G. Antonacci, L. Giovannini, D. Zardi, M. Ragazzi, 2015: Atmospheric dispersion modelling with AERMOD for comparative impact assessment of different pollutant emission sources in an Alpine valley. *WI T Transactions on Ecology and the Environment*, 198, 431-442, doi:10.2495/AI R150371.
8. Laiti L., D. Andreis, F. Zottele, L. Giovannini, L. Panziera, G. Toller, D. Zardi, 2014: A solar atlas for the Trentino region in the Alps: quality control of surface radiation data. *Energy Procedia*, 59C, 336-343, <https://doi.org/10.1016/j.egypro.2014.10.386>.
9. Giovannini L., G. Antonacci, D. Zardi, L. Laiti, L. Panziera, 2014: Sensitivity of simulated wind speed to spatial resolution over complex terrain. *Energy Procedia*, 59C, 323-329, <https://doi.org/10.1016/j.egypro.2014.10.384>.

PUBLICATIONS: CHAPTERS IN BOOKS

Chapters in books

1. Geneletti D., C. Cortinovis, C. Panetta, S. Caridi, G. Formetta, L. Giovannini, L. Laporta, A. Vitti, J. Kato-Huerta, 2026: Ecological Planning Strategies and Nature-based Solutions in the Context of Climate Change Resilience. In: De Toni, A., Arcidiacono, A., Ronchi, S. (eds) *Nature-Positive Cities: Adaptive Spatial Planning in Italy for an Ecological Urban Transition*. SpringerBriefs in Applied Sciences and Technology. Springer, Cham. https://doi.org/10.1007/978-3-032-06617-6_12.
2. Tomasi E., L. Giovannini, M. Falocchi, D. Zardi, G. Antonacci, E. Ferrero, A. Bisignano, S. Alessandrini, L. Mortarini, 2018: Dispersion modeling over complex terrain in the Bolzano basin (IT): preliminary results from a WRF-CALPUFF modeling system. In *Air Pollution Modeling and its Application XXV*, 157-161, https://doi.org/10.1007/978-3-319-57645-9_25.
3. Rizzi C., L. Giovannini, 2017: REDS2ALPS. Le Alpi, le città di valle, i cambiamenti climatici. In *Cambiamenti dell'urbanistica: Responsabilità e strumenti al servizio del paese*. 211-215. ISBN 978-88-6843-633-9.

CONFERENCES AND SEMINARS

Conference presentations

- 50+ oral and poster presentations at national and international conferences

Invited talks

- Giovannini L.: "Forecasting of extreme meteorological events", *Meteorological Extreme Events – Forecasting, Impact, Case studies*, 16-17 December 2024, Bolzano, Italy.
- Giovannini L., D. Zardi, M. Falocchi, W. Tirler, E. Tomasi, E. Ferrero, S. Alessandrini, P. Jiménez, B. Kosovic, L. Delle Monache, G. Antonacci: Measurement and modeling of pollutant dispersion in highly complex terrain: the Bolzano tracer experiment (BTEX). *Meteorology and Climate - Modeling for Air Quality Conference (MAC-MAQ)*, 14-17 September 2021, Virtual.
- Giovannini L., E. Tomasi, M. Falocchi, G. Antonacci, W. Tirler, D. Zardi: A tracer experiment to validate air pollution dispersion models for the characterization of the environmental impact of a waste-to-energy plant in an Alpine valley. *Venice 2020 - 8th Symposium on Energy from Biomass and Waste*, 16-19 November 2020, Virtual.

Organization of conferences

- Organization of the 5th TEAMx Workshop, Trento, 15-17 June 2026 (<https://www.teamx-programme.org/fifth-workshop/>)
- Co-convener of the session "Transport and exchange processes in the atmosphere over mountains - TEAMx observational campaigns (TOC, HEFEX, PC22)" at the European Geosciences Union (EGU) General Assembly 2026, Vienna (Austria), 3-8 May 2026
- Scientific committee of the 4th National Conference of the Italian Association for Atmospheric Sciences and Meteorology (AISAM), Milano, 15-19 February 2022 (<http://congresso.aisam.eu/index.html>)
- Scientific committee of the 35th International Conference on Alpine Meteorology, Riva del Garda, 2-6 September 2019 (www.icam2019.it)
- Organization of the workshop "Turbulence parameterizations for mesoscale atmospheric modelling", University of Trento, 4 June 2019. Guests: Sergej Zilitinkevich (University of Helsinki), Robert Bornstein (University of San José), Ivana Stiperski (University of Innsbruck), Manuela Lehner (University of Innsbruck)
- Organization of the workshop "Com4Cast: Temperature and thermal comfort in the urban areas of Trento and Rovereto", Trento, 17 March 2017.
- Organizing committee of the Festival meteorologia:
 - 1st edition: Rovereto, 16-17 October 2015
 - 2nd edition: Rovereto, 11-12 November 2016
 - 3rd edition: Rovereto, 17-19 November 2017

- 4th edition: Rovereto, 16-18 November 2018
- 5th edition: Rovereto, 15-17 November 2019

Invited seminars

- "Local forecast and uncertainties", Summer school Mass movements under climate change: characterisation and monitoring, University of Padova, Italy, 18 September 2024.
- "Extreme precipitation events over the eastern Italian Alps: role of large-scale forcing and local orography", Seminar Series: Exchange of Recent Research in Atmospheric Sciences, organized by the Goethe University Frankfurt (Germany) and the Universidad Nacional de Colombia, Medellín, 24 March 2022 (online).
- "Cities, energy consumption and urban heat island mitigation", Department of Atmospheric and Cryospheric Sciences, University of Innsbruck, Austria, 29 January 2020.
- "Previsioni casa per casa: la meteorologia a scala urbana nelle città", Accademia di Agricoltura Scienze e Lettere di Verona, Verona, 1 Dicembre 2017.
- "Numerical weather predictions over complex terrain", Institute of Urban Meteorology, Beijing, 18 October 2017.
- "An investigation of the Ora del Garda wind in the Alps from surface and airborne measurements and from high-resolution numerical simulations", ISAC-CNR, Bologna, 26 February 2016.
- "Come valutare con un modello meteorologico gli effetti sul microclima derivanti da cambiamenti d'uso del suolo: un caso studio in Trentino", University of Palermo, Department of Agricultural and Forest Sciences, Palermo, 12 June 2015.

PROJECTS

10/2026 – 09/2028

Development of forecasting algorithms to support renewable energy management

Funding: 89'000 €

Funding Body: Caritro Foundation

Role: Co-PI

The project aims to develop innovative services to optimize the management of renewable energy sources, with a focus on wind and photovoltaic power plants. By integrating meteorological observations, high-resolution numerical models and machine-learning algorithms, highly accurate site-specific forecasts of wind and solar radiation will be produced. The project will deliver operational tools, including predictive weather models tailored to individual energy-generation facilities, to support energy managers in production planning, energy trading and dispatching.

06/2026 – 09/2027

Simulation of dispersion scenarios and concentration fields resulting from emissions from the stack of the Trento waste-to-energy plant

Funding: 60'000 €

Funding Body: Environmental Protection Agency of the Province of Trento

Role: Principal investigator (together with prof. Dino Zardi and prof. Massimo Cassiani)

The project aims to assess, through numerical modelling, the dispersion of the emissions expected from the waste-to-energy plant planned for construction in Ischia Podetti, within the Municipality of Trento. The objective of the research is to evaluate the atmospheric transport processes affecting the contaminants emitted from the plant's stack and the resulting ground-level concentrations over a year representative of the area's average meteorological and seasonal conditions.

05/2026 – 05/2027

Cooler for Everyone! Monitoring and communicating climate adaptation in Trento's schoolyards

Funding: 9'000 €

Funding Body: Unicità

Role: Principal Investigator

The project proposes monitoring the microclimatic characteristics of some school areas selected for intervention through meteorological measurements and the estimation of thermal comfort indices. It also includes modelling assessments of the interventions' microclimatic effects, with the aim of optimizing their design. Furthermore, the project proposes initiating participatory processes involving school representatives and students, as well as carrying out targeted educational activities on nature-based solutions (NBS). The project is intended as a pilot initiative to develop a methodology for both physical and non-physical interventions in schoolyards.

01/2025 – 12/2025

Monte Bondone and skiing: Analysing the impact of climate change and assessing the construction of a water-storage reservoir

Funding: 35'000 €

Funding Body: Unicità

Role: Co-PI , responsible for the activities related to the evaluation of climate change effects

The project aims to evaluate the development prospects of the Monte Bondone ski area over the coming years. The research focuses on the mountain's current and future uses, with particular attention to the implications of climate change for skiing, in relation to the proposed construction of a water-storage reservoir.

30/11/2024 – 30/11/2026

Development of new short-term forecast datasets for wind energy production

Funding: 60'000 €

Funding Body: Hypermeteo s.r.l.

Role: Principal Investigator (together with prof. Dino Zardi)

The project aims at improving the performance of the operational weather forecasting chain implemented by Hypermeteo s.r.l. for wind speed simulation, with a forecast lead time of up to 72 hours, considering both physical parameterization schemes and the implementation of post-processing statistical downscaling techniques.

07/2024 – 12/2027

Experimental motorway traffic management measures to improve air quality

Funding: 138'000 €

Funding Body: Environmental Agency of the Province of Trento

Role: PI

The project aims at testing different modelling tools to reproduce pollutant dispersion processes over complex terrain, with the final objective of assessing the impact of the implementation of different policies aiming at reducing pollutant emissions from vehicular traffic. The Adige Valley is taken as a case study, evaluating pollutant dispersion from vehicular traffic on the Brenner highway. The research activity is carried out both using state-of-the-art meteorological and dispersion models and analyzing data from experimental measurements. The Weather Research and Forecasting (WRF) model is used for the meteorological simulations, while atmospheric pollutant dispersion models with different levels of complexity are tested, ranging from regulatory models, widely used by environmental protection agencies, to more advanced tools, including Lagrangian particle models.

09/2023 – 02/2026

GREEN-POLIS - Multi-scale investigation of nature-based solutions for the mitigation of urban heat and pollution island

Funding: 57'000 € (University of Trento); 190'000 € (total project); 193'865 € (total project budget)

Funding Body: Italian Ministry of University and Research (PRIN program)

Role: PI of the Research Unit of the University of Trento

The aim of the research activity is (i) to evaluate the performance of the existing urban parameterizations implemented in the Weather Research and Forecasting (WRF) meteorological model and (ii) to implement new parameterizations to take into account the effects of various nature-based solutions (NBSs) on urban climatic conditions. The performance of urban parameterizations are evaluated against data collected in the city of Bologna, results from building-resolving numerical simulations and laboratory experiments. Finally, a set of mesoscale numerical simulations with the WRF model are carried out to study the impact of different scenarios implementing NBSs in the city of Bologna.

02/2023 – 11/2023

Verification of the estimate of wind energy potential performed by AGSM AIM with numerical simulations in selected areas in the Apennines between Toscana and Emilia Romagna by means of comparison with independent data

Funding: 35'000 €

Funding Body: AGSM-AIM

Role: Principal Investigator (together with prof. Dino Zardi)

Analysis of wind speed data from different sources: observations from permanent weather stations and wind resource assessment field campaigns, wind datasets obtained from simulations with numerical weather prediction models (New European Wind Atlas, AOLI AN Italian wind atlas, wind resource dataset developed by AGSM-AIM).

09/2022 – 09/2023

BrennerLEC AfterLIFE

Funding: 34'000 €

Funding Body: Autobrennero S.p.A.

Role: Principal Investigator (together with prof. Dino Zardi)

Development of a meteorological forecasting chain to support air quality management along the Brenner motorway. Analysis of air quality data from networks of traditional and innovative sensors.

INTERFACE - Investigating the surface energy balance over mountain areas

Funding: 205'345,35 € (University of Trento); 497'180,64 € (total),**Funding body:** European Region Tyrol-South Tyrol-Trentino**Role:** Principal Investigator

The project aims at evaluating the uncertainties connected to the measurement of the surface energy balance at different sites in the Alpine environment, where processes related to the lack of closure are expected to be particularly significant. Measurements at sites located in different contexts and climatic settings, thus differently influenced by advection, will allow the investigation of the relationship between the non-closure of the surface energy balance, the surface heterogeneity and the consequent development of different types of local and mesoscale circulations. The above objectives will be addressed by combining eddy covariance and UAV measurements, integrated by high-resolution numerical simulations.

07/2019 – 02/2023

ASTER - Atmospheric boundary-layer modeling over complex terrain

Funding: 145'442 € (University of Trento); 432'507 € (total)**Funding Body:** European Region Tyrol-South Tyrol-Trentino**Role:** Principal Investigator of the research unit of the University of Trento

The project aims at evaluating the performance of meteorological models in forecasting soil properties and surface and near-surface turbulent fluxes and to assess the models' sensitivity to changes or potential errors in the turbulence and land surface parameterizations or their input parameters. The overall result will be an identification of modeling issues in mountainous terrain related to the turbulence and land surface parameterizations that have a large impact on the forecast. Improvements in these specific areas can thus be expected to have a comparatively large positive impact on numerical model simulations and consequently weather forecasts.

08/2019 – 11/2021

P.E.I. Climate and Agriculture in Mountain Area

Funding: 60'000 €**Funding Body:** Edmund Mach Foundation

Role: Co-PI, coordination of the scientific activities of the research unit of the University of Trento (PI prof. Dino Zardi)
Optimization of the forecast of late frosts in Alpine valleys. Optimization of geostatistical algorithms for the spatialization of observations of minimum and maximum temperatures in complex terrain.

2019 – 2021

Bluetentacles Irrigation Systems

Funding: 100'000 € (University of Trento)**Funding Body:** Tera Engineering s.r.l.

Role: Co-PI, coordination of the scientific activities of the Atmospheric Physics Group of the University of Trento (PIs prof. Dino Zardi and prof. Alfonso Vitti)

Development of a decision support system (DSS) for optimizing water use in agriculture. The main task of the Atmospheric Physics Group of the University of Trento was the development of a targeted meteorological forecasting chain to provide suitable information to the DSS.

2019 – 2021

Assessment of the reliability of a meteorological model in the estimate of wind speed and velocity in potential wind farm sites

Funding: 38'000 €**Funding Body:** AGSM Verona**Role:** Collaborator

Assessment of the performance of a meteorological model in reproducing the climatology of wind speed and direction over complex terrain.

2019 – 2021

Scientific support for the Energetic-Environmental Provincial Plan

Funding: 29'400 €**Funding Body:** Autonomous Province of Trento**Role:** Collaborator

Downscaling of climate projections to 2030 in the Province of Trento in order to evaluate variations in temperature and in heating and cooling degree days.

2019 – 2021

Meteorological normalization of NO₂ concentrations in the Province of Bolzano

Funding: 16'500 €

Funding Body: Autonomous Province of Bolzano

Role: Co-PI , coordination of the scientific activities (PI prof. Dino Zardi)

Application of a meteorological normalization procedure based on a random forest predictive model to 8-year-long series of nitrogen dioxide (NO₂) concentrations measured at five air quality stations in the Province of Bolzano, in order to disentangle the contribution of weather conditions on observed pollutant concentrations.

2018 – 2021

OT4CLIMA - Development of innovative observational technologies to study the impacts of climate change on the environment

Funding: 67'875 € (University of Trento); 4'494'621,38 € (total); 9'049'470,47 € (total project budget)

Funding Body: Italian Ministry of Education, Universities and Research

Role: Collaborator

The project aims at developing innovative techniques and methodologies for environmental measurements, to advance knowledge and understanding of the impacts of climate change. Both long-term impacts and extreme events are taken into account, with particular attention to the impacts on vegetation and ecosystems.

2017 – 2021

BrennerLEC - Brenner Lower Emissions Corridor

Funding: 282'000 € (University of Trento); 1'922'772 € (total project); 4'018'005 € (total project budget)

Funding Body: European Union - LIFE Environment Program

Role: Member of the "Core Team" of the project, co-PI of the research unit of the University of Trento (PI prof. Dino Zardi).

The objective of BrennerLEC is the creation of a holistic concept of "Low Emission Corridor" (LEC) for the A22 highway. The project aims at implementing and validating a set of different dynamic policies that have the goal to provide a clear environmental benefit in terms of air quality, climate protection and noise abatement. The research unit of the University of Trento developed a meteorological and air quality forecasting system, and led the analysis of data from different meteorological and air quality stations specifically installed for the project.

2015 – 2018

Evaluation of pollutants emission and dispersion from the incinerator of the city of Bolzano

Funding: 194'000 € (University of Trento), 520'000 € (total project budget)

Funding Body: EcoCenter S.p.A.

Role: Collaborator

The project aimed at evaluating pollutant emission and dispersion from the incinerator of Bolzano. Meteorological conditions critical for pollutants' dispersion in the Bolzano basin were evaluated by means of simulations with the WRF model. In order to improve model performance, data assimilation techniques were applied, feeding the model with both conventional (surface weather stations) and nonconventional (sodar, lidar and thermal profiler) measured data. Moreover, as part of the experiment, two controlled releases of a passive gas tracer (sulfur hexafluoride, SF₆) were performed through the stack of the incinerator, in order to evaluate the ability of air quality models to simulate dispersion patterns in the area.

02/2015 – 01/2017

High-resolution forecasts of the thermal comfort in the main urban areas of the Province of Trento

Funding: 45'000 € (total project budget 71'000 €)

Funding Body: Caritro Foundation

Role: Principal Investigator

Development of an operational forecasting system for evaluating the citizens' thermal comfort in the major urban areas of the Province of Trento. The modeling chain is composed of the WRF meteorological model, run down to a resolution of 1 km, coupled with an offline urban parameterization scheme, to achieve a final resolution of 100 m. The operational forecasting chain is still active and weather maps, updated twice a day, are available at meteo.unitn.it.

2014 – 2015

Evaluation of air pollutant emissions in the Municipality of Campo di Trens (BZ)

Funding: 20'000 €

Funding Body: Autobrennero S.p.A.

Role: Collaborator

Simulations with the AERMOD dispersion model were performed to assess the impact on air quality of different pollutant emission sources in the area surrounding Campo di Trens: vehicular traffic, the domestic sector and local production activities.

2013 – 2015

Development of a wind atlas for the Province of Trento

Funding: 95'000 €

Funding Body: Autonomous Province of Trento

Role: Collaborator

Development of a wind atlas for the Province of Trento based on ten-year-long simulations performed with the WRF model, assimilating both quality-checked data from surface weather stations and radiosoundings. Maps available online: <https://climatlas.fbk.eu/view/mappe/>. Final relation: https://climatlas.fbk.eu/static/Relazione_finale_Atlante_Eolico.pdf

2013 – 2014

Analysis of synoptic-scale situations and related weather in the Province of Trento

Funding: 40'000 €

Funding Body: Autonomous Province of Trento

Role: Collaborator

Evaluation of the relation between synoptic circulation types and the climate of the Province of Trento, considering a data set of surface temperature, rainfall, solar radiation and wind measurements. Synoptic patterns were classified over different isobaric levels by means of an existing classification method according to their degree of zonality, meridionality and vorticity. Distinct seasonal anomalies of mean daily temperature, total daily rainfall, daily solar irradiation and mean daily wind intensity were associated with the different circulation types. Final relation: https://climatlas.fbk.eu/static/Relazione_finale_Analisi_Sinottica.pdf.

2013 – 2014

Analysis and mapping of solar radiation in the Province of Trento

Funding: 40'000 €

Funding Body: Autonomous Province of Trento

Role: Collaborator

Development of a solar atlas for the Province of Trento based on quality-checked surface and satellite measurements for the period 2004-2012, using geostatistic interpolation. Maps available online: <https://dati.trentino.it/dataset/atlane-solare-del-trentino-2004-2012>. Final relation: https://climatlas.fbk.eu/static/Relazione_Atlante_Solare_Trentino.pdf.

2012 – 2014

Assessment of the impact of the Brenner highway on air quality in the Adige Valley between Bolzano and Verona

Funding: 208'000 €

Funding Body: Autobrennero S.p.A.

Role: Collaborator

Evaluation of boundary-layer processes typical of Alpine valleys and directly connected to pollutants' dispersion, by means of both high-resolution numerical simulations and data analysis. Setup of a network of low-cost air quality sensors.

● **TEACHING ACTIVITY**

Academic Year 2025-2026

- **Atmospheric Physics and Modelling**, Master in Environmental and Land Engineering, University of Trento (main responsible - 60 h)
- **Renewable Energy and Meteorology**, Master in Energy Engineering, University of Trento (main responsible - 60 h)
- **Atmospheric Boundary Layer and Turbulence**, Master in Environmental Meteorology, University of Trento (20 h)
- **Turbulence in environmental flows**, Master in Environmental and Land Engineering, University of Trento (10 h)
- **Numerical Modelling of Weather and Climate**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (main responsible - 12 h)
- **On water. Designing climate-responsive landscape and infrastructure**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (9 h)

Academic Year 2024-2025

- **Atmospheric Physics and Modelling**, Master in Environmental and Land Engineering, University of Trento (main responsible - 60 h)
- **Renewable Energy and Meteorology**, Master in Energy Engineering, University of Trento (main responsible - 60 h)
- **Atmospheric Boundary Layer and Turbulence**, Master in Environmental Meteorology, University of Trento (20 h)
- **Turbulence in environmental flows**, Master in Environmental and Land Engineering, University of Trento (10 h)
- **Numerical Modelling of Weather and Climate**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (main responsible - 12 h)

Academic Year 2023-2024

- **Atmospheric Physics and Modelling**, Master in Environmental and Land Engineering, University of Trento (main responsible - 60 h)
- **Renewable Energy and Meteorology**, Master in Energy Engineering, University of Trento (main responsible - 60 h)
- **Atmospheric Boundary Layer and Turbulence**, Master in Environmental Meteorology, University of Trento (20 h)
- **Numerical Modelling of Weather and Climate**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (main responsible - 21 h)
- **Turbulence in environmental flows**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (10 h)

Academic Year 2022-2023

- **Atmospheric Physics and Modelling**, Master in Environmental and Land Engineering, University of Trento (main responsible - 60 h)
- **Renewable Energy and Meteorology**, Master in Energy Engineering, University of Trento (main responsible - 60 h)
- **Atmospheric Boundary Layer and Turbulence**, Master in Environmental Meteorology, University of Trento (20 h)
- **Numerical Modelling of Weather and Climate**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (main responsible - 21 h)
- **Turbulence in environmental flows**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (10 h)

Academic Year 2021-2022

- **Physics of the Atmosphere and of the Climate**, Master in Environmental and Land Engineering, University of Trento (main responsible - 60 h)
- **Renewable Energy and Meteorology**, Master in Energy Engineering, University of Trento (main responsible - 60 h)
- **Atmospheric Boundary Layer and Turbulence**, Master in Environmental Meteorology, University of Trento (20 h)
- **Numerical Modelling of Weather and Climate**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (main responsible - 15 h)
- **Understanding turbulence dynamics by simulations and measurements**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (6 h)

Academic Year 2020-2021

- **Physics of the Atmosphere and of the Climate**, Master in Environmental and Land Engineering, University of Trento (main responsible - 60 h).
- **Renewable Energy and Meteorology**, Master in Energy Engineering, University of Trento (main responsible - 45 h).
- **Atmospheric Boundary Layer and Turbulence**, Master in Environmental Meteorology, University of Trento (19 h).
- **Numerical Modelling of Weather and Climate**, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (main responsible - 15 h)

Academic Year 2019-2020

- **Physics of the Atmosphere and of the Climate**, Master in Environmental and Land Engineering, University of Trento (**main responsible - 40 h**).
- **Air Pollution Modeling**, Master in Environmental Meteorology, University of Trento (**40 h**).
- **Fundamentals of Meteorology and Climatology**, Bachelor in Environmental and Land Engineering, University of Trento (**16 h**).

Academic Year 2018-2019

- **Physics of the Atmosphere and of the Climate**, Master in Environmental and Land Engineering, University of Trento (**main responsible - 60 h**).
- **Air Pollution Modeling**, Master in Environmental Meteorology, University of Trento (**main responsible - 43 h**).
- **Fundamentals of Meteorology and Climatology**, Bachelor in Environmental and Land Engineering, University of Trento (**12 h**).

Academic Year 2017-2018

- **Fundamentals of Meteorology and Climatology**, Bachelor in Environmental and Land Engineering, University of Trento (**main responsible - 68 h**).
- **Physics of the Atmosphere and of the Climate**, Master in Environmental and Land Engineering, University of Trento (**8 h**).
- **Master CasaClima**, module "Fundamentals of climatology and meteorology for urban-scale building design", Master 2nd level in "BEE – Building, Energy and Environment. CasaClima", Free University of Bozen - Bolzano (**contract professor - 4 h**)

Academic Year 2016-2017

- **Fundamentals of Meteorology and Climatology**, Bachelor in Environmental and Land Engineering, University of Trento (**main responsible - 68 h**).
- **Physics**, Bachelor in Viticulture and Enology, University of Trento (**teaching assistant - 19 h**)
- **Renewable Energy and Meteorology**, Master in Energy Engineering, University of Trento (**contract professor - 24 h**).

Academic Year 2015-2016

- **Fundamentals of Meteorology and Climatology**, Bachelor in Environmental and Land Engineering, University of Trento (**teaching assistant - 57 h**)
- **Physics**, Bachelor in Viticulture and Enology, University of Trento (**teaching assistant - 20 h**)
- **Renewable Energy and Meteorology**, Master in Energy Engineering, University of Trento (**contract professor - 22 h**).

Academic Year 2014-2015

- **Fundamentals of Meteorology and Climatology**, Bachelor in Environmental and Land Engineering, University of Trento (**teaching assistant - 56 h**)
- **District Heating Systems Design**, Master in Energy Engineering, University of Trento (**teaching assistant - 10 h**)
- **Physics**, Bachelor in Viticulture and Enology, University of Trento (**teaching assistant - 20 h**)
- **Master CasaClima**, module "Fundamentals of climatology and meteorology for urban-scale building design", Master 2nd level in "Building Energy Performance. Design, Optimization and Service – CasaClima", Free University of Bozen - Bolzano (**contract professor - 8 h**)

Academic Year 2013-2014

- **Fundamentals of Meteorology and Climatology**, Bachelor in Environmental and Land Engineering, University of Trento (**teaching assistant - 22 h**)
- **District Heating Systems Design**, Master in Energy Engineering, University of Trento (**teaching assistant - 10 h**)

- **Agrometeorology**, Bachelor in Agricultural Science and Agricultural Technology, Free University of Bolzano (teaching assistant - 14 h)

Academic Year 2009-2010

- **Agrometeorology (teaching assistant - 18 h)**, Bachelor in Agricultural Science and Agricultural Technology, Free University of Bolzano

MENTORING

PhD students

Simone I ppoliti (XXXXI cycle): Development and evaluation of methodologies and tools for seasonal meteorological forecasts to support water resource management and optimize hydroelectric energy production. University of Trento, Doctoral programme in Agrifood and Environmental Sciences.

Ahmed Njimongbet (XXXX cycle): Assessment of atmospheric dispersion processes in a mountain valley to support the implementation of vehicle emission reduction policies. University of Trento, Doctoral programme in Civil, Environmental and Mechanical Engineering.

Mira Shivani Sankar (XXXI X cycle): Study of mass and energy exchanges between ecosystems and the atmosphere in the Alpine region, University School for Advanced Studies I USS Pavia, PhD in Sustainable Development and Climate change

Sebastiano Carpentari (XXXI X cycle): Investigating the role of local and mesoscale circulations in the surface energy balance closure over mountain areas. University of Trento, Doctoral programme in Civil, Environmental and Mechanical Engineering.

Dario Di Santo (XXXVI cycle): Simulation of turbulent transport and exchange processes in the atmospheric boundary layer over mountain regions. University of Trento, Doctoral programme in Civil, Environmental and Mechanical Engineering.

Rossella Urgnani (XXXI V cycle): Measurement and analysis of vertical distribution, surface fluxes, and chemical composition of atmospheric aerosol in two Italian Alpine valleys. University of Trento, Doctoral programme in Civil, Environmental and Mechanical Engineering.

Livia Serrao (XXXI V cycle): Global environmental change in tropical data-scarcity contexts: analysis of climate alterations and recent river-floodplain dynamics to support agricultural practices. University of Trento, Doctoral programme in Civil, Environmental and Mechanical Engineering.

Federica I ve (XXXI V cycle): Improving numerical simulation methods for the assessment of wind resource availability and related power production for wind farms over complex terrain. University of Trento, Doctoral programme in Civil, Environmental and Mechanical Engineering.

Federica Gucci (XXXI V cycle): Turbulence parameterizations for high-resolution meteorological simulations over complex terrain. University of Trento, Doctoral programme in Civil, Environmental and Mechanical Engineering.

Andrea Zonato (XXXI I I cycle): Modeling the urban boundary layer in complex terrain. University of Trento, Doctoral programme in Civil, Environmental and Mechanical Engineering.

Gianluca Pappaccogli (XXXI cycle): Numerical modelling of urban atmospheric processes and energetics from city to building scale: case study in Bolzano. Free University of Bolzano. Doctoral programme in Sustainable Energy and Technologies. (co-supervisor)

Elena Tomasi (XXI X cycle): Improving air quality assessment over complex terrain by optimizing meteorological and pollutant transport modeling. University of Trento, Doctoral programme in Civil, Environmental and Mechanical Engineering. (co-supervisor)

Master students

• Supervisor of 30 master students

- Master degree in Environmental and Land Engineering: Lorenzo Bonanno, Gianluca Borghi, Mattia Degasperi, Alberto De Luca, Gianluca Pelagatti, Elisa Veronesi
- Master degree in Environmental Meteorology: Noemi Ambrosi, Carlo Bee, Elia Benzoni, Michele Bozzoli, Ilaria Carcereri, Lucia Cisco, Tullio Degiacomi, Carlo Guzzon, Simone I ppoliti, Daniele Nigro, Antonio Palmeri, Andrea Perbellini, Nicola Pierotti, Francesco Sioni, Laura Trentini
- Master degree in Energy Engineering: Leonardo Baggieri, Giacomo Begali, Gaia Borselli, Anna La Vista, Diego Magalini, Federica Medici
- Master degree in Physics: Federica Allegretti, Enrico De Antoni
- Five-year Master degree in Architecture and Building Engineering: Marika Tomasi

• Co-supervisor of 20 master students

- Master degree in Environmental and Land Engineering: Ginevra Angeli Duodo, Giulia Calderini, Diego Cardelli, Yangyang Gao, Michele Gasperotti, Emma Ghezzi, Cecilia Mengarda, Mirco Nardi, Alessio Segata, Andrea Terenzi, Elena Tomasi, Martina Tovazzi, Fabio Zecchini

- Five-year Master degree in Architecture and Building Engineering: Anna Codemo, Marco Tanara, Andrea Zandomeneghi
- Master degree in Physics: Pietro Breviglieri, Federica Gucci
- Master degree in Civil Engineering: Lorenzo Bignone, Laura Lion

Bachelor students

•Supervisor of 7 bachelor students

- Bachelor degree in Physics*: Alberto Cocco, Alessia Lavio, Filippo Marion, Martina Talarico
- Bachelor degree in Environmental and Land Engineering*: Daniele Bugnotti, Francesco Nardelli, Stefano Santini

•Co-supervisor of 11 bachelor students

- Bachelor degree in Physics*: Riccardo Alvarez, Nicola Barraco, Mattia Marchio, Tommaso Pallaveri, Mirco Vinante
- Bachelor degree in Environmental and Land Engineering*: Pietro Nicolis, Stefano Tasin
- Bachelor degree in Computer Science*: Andrea Bonora, Federico Izzo
- Bachelor degree in Environmental Control Engineering*: Giuseppe Spampinato
- Bachelor degree in Civil Engineering*: Veronica Pisoni

● SERVICE TO UNIVERSITY AND INTERNATIONAL SCIENTIFIC COMMUNITIES

Service to university

2025-today: coordinator of the "Harmonisation" working group of the Green Office of the University of Trento
 2024-today: deputy coordinator of the Teaching Council in Environmental Engineering
 2021-today: academic tutor for the master in Energy Engineering
 2019-today: academic tutor for the master in Environmental Meteorology
 2018-today: representative of the University of Trento in the working group "Climate Change" of the Network of Universities for Sustainable Development
 2017-today: member of the Department Council of the Department of Civil, Environmental and Mechanical Engineering of the University of Trento
 2017-today: member of the Doctoral School Committee of the Doctoral Programme in Civil, Environmental and Mechanical Engineering of the University of Trento
 2013-2015: elected representative of the post-doc research fellows in the Department Council of the Department of Civil, Environmental and Mechanical Engineering of the University of Trento

Editorial activity

- Associate editor** for the international journal Quarterly Journal of the Royal Meteorological Society
- Associate editor** for the international journal Meteorological Applications
- Guest editor** of the special issue "Atmospheric processes and applications in urban, coastal and mountainous terrain" for Meteorological Applications

Reviewing experience

Reviewer for National Science Foundation, Swiss Federal Institute for Forest, Snow and Landscape Research, Advances in Meteorology, Atmosphere, Atmospheric Chemistry and Physics, Atmospheric Environment, Atmospheric Measurement Techniques, Atmospheric Research, Boundary-Layer Meteorology, Bulletin of Atmospheric Science and Technology, Bulletin of the American Meteorological Society, Climate Dynamics, Environmental Pollution, Geoscientific Model Development, Hydrological Sciences Journal, International Journal of Biometeorology, International Journal of Climatology, Journal of Applied Meteorology and Climatology, Journal of Environmental Management, Journal of Geophysical Research: Atmospheres, Journal of Hydrometeorology, Journal of Hydrology, Meteorological Applications, Meteorologische Zeitschrift, Monthly Weather Review, Natural Hazards and Earth System Sciences, Proceedings of the National Academy of Sciences, Pure and Applied Geophysics, Quarterly Journal of the Royal Meteorological Society, Sustainability, Sustainable Cities and Society, Theoretical and Applied Climatology, Urban Climate, Water.

International committees

- Leader of the Working Group "Surface-Atmosphere Exchange" of the TEAMx international programme (<http://www.teamx-programme.org/>)
- Leader of the Task Team "Thermally-driven Winds and Transport" of the Mountain Boundary Layer Working Group of the TEAMx international programme (<http://www.teamx-programme.org/>)

● HONOURS AND AWARDS

Awards

- Royal Meteorological Society 2020 Meteorological Applications Editors' Award
- Bursary to attend the 8th International Conference on the Urban Climate and 10th Symposium on the Urban Environment (Dublin, Ireland, 6-10 August 2012)
- National Centre for Atmospheric Science (NCAS) bursary to attend the 31st International Conference on Alpine Meteorology (Aviemore, Scotland, 23-27 May 2011).

Italian National habilitation

- Italian national habilitation for full professor:
 - Physics of the Earth System, Planets, Space and Climate (PHYS-05/B) - (12/06/2026 - 12/06/2038)
 - Oceanography, Meteorology and Climatology (GEOS-04/C) - (10/06/2026 - 10/06/2038)

● EXPERIENCE ABROAD

21/07/2025 – 25/07/2025

Visiting scientist at the University of Innsbruck

Visiting scientist at the University of Innsbruck as Scientist in Charge for the TEAMx Observational Campaign (TOC) summer Extensive Observation Periods (sEOP).

07/2019 – 07/2019

Visiting scientist at the National Center for Atmospheric Research (NCAR)

Visiting scientist at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado, as supervisor of the PhD student Andrea Zonato. Collaboration with dr. Fei Chen.

10/2017 – 10/2017

Visiting scientist at the Institute of Urban Meteorology in Beijing

Visiting scientist at the Institute of Urban Meteorology in Beijing, China, as a member of the MOUNTain Terrain Atmospheric Observations and Modeling (MOUNTAOM) research group, composed of experts in mountain meteorology to coordinate meteorological activities for the 2022 Beijing Winter Olympics.

07/2017 – 07/2017

Visiting scientist at the National Center for Atmospheric Research (NCAR)

Visiting scientist at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado, as supervisor of the PhD student Elena Tomasi. Collaboration with dr. Branko Kosovic and dr. Pedro Jimenez.

07/2010 – 02/2011

Visiting student at the National Center for Atmospheric Research (NCAR)

Visiting student at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado, under the supervision of dr. Fei Chen.

Trento , 26/08/2026

Lorenzo Giovannini