

# University Academic Curriculum Vitae

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**Personal information** Lorenzo Giovannini

**Education since leaving school**

- 2004: Bachelor degree in Environmental and Land Engineering, University of Trento, Italy
- 2008: Master degree in Environmental and Land Engineering, University of Trento, Italy
- 2012, PhD in Environmental Engineering, University of Trento, Italy

**Present appointment**

- Associate professor (from June 2022), University of Trento

**Professional experience**

From / to	Job title	Name of academic Institution
06/2019-06/2022	Assistant professor (RTD-b)	University of Trento
02/2017-06/2019	Assistant professor (RTD-a)	University of Trento
08/2012-01/2017	Post-doc researcher	University of Trento

**Experience in academic teaching (last five years)**

- **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, upcoming semester)
  - Atmospheric Boundary Layer and Turbulence, Master in Environmental Meteorology, University of Trento (20 h, upcoming semester)
  - Numerical Modelling of Weather and Climate, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (main responsible - 21 h, upcoming semester)
  - Turbulence in environmental flows, Doctoral School in Civil, Environmental and Mechanical Engineering, University of Trento (10 h, upcoming semester)
- **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).
- **Postgraduate supervision (PhD level):** supervision of 8 PhD students in the last five years.

#### **Other academic responsibilities**

- 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 post-doc researchers 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 Meteorological Applications of the Royal Meteorological Society
- Guest editor of the special issue "Atmospheric processes and applications in urban, coastal and mountainous terrain" for Meteorological Applications

## Conference organization

- Scientific committee of the 4<sup>th</sup> 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 35<sup>th</sup> International Conference on Alpine Meteorology, Riva del Garda, 2-6 September 2019 ([www.icam2019.it](http://www.icam2019.it))
- Organizing committee of the Festivalmeteorologia:
  - 1<sup>st</sup> edition: Rovereto, 16-17 October 2015
  - 2<sup>nd</sup> edition: Rovereto, 11-12 November 2016
  - 3<sup>rd</sup> edition: Rovereto, 17-19 November 2017
  - 4<sup>th</sup> edition: Rovereto, 16-18 November 2018
  - 5<sup>th</sup> edition: Rovereto, 15-17 November 2019

## 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/>)

## Research interests

- **Main areas of research**
  - **Urban meteorology:** analysis of urban phenomena with experimental campaigns and numerical modelling. Development of urban parameterizations for mesoscale meteorological models
  - **Mountain meteorology:** analysis of atmospheric processes typical of mountain areas by means of both data analysis and numerical modelling
  - **Atmospheric numerical modelling:** experience in running high-resolution simulations with the WRF model in urban areas and complex terrain. Responsible for an operational forecasting system at 1 km resolution for South Tyrol and Trentino based on the WRF model (<https://meteo.unitn.it>)

## Projects

- Research grants and projects (last 5 years)

From / to	Role	Funding Body	Title	Funding
09/2023 – 09/2025	PI of the Research Unit of the University of Trento	Italian Ministry of University and Research (PRIN program)	GREEN-POLIS - Multi-scale investigation of nature-based solutions for the mitigation of urban heat and pollution island	57'000 € (University of Trento); 190'000 € (total project); 193'865 € (total project budget)
02/2023 – 11/2023	Principal Investigator (together with prof. Dino Zardi)	AGSM-AIM	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	35'000 €
2022-2023	Principal Investigator (together with prof. Dino Zardi)	Autobrennero S.p.A.	BrennerLEC AfterLIFE	34'000 €
2022-2026	Principal Investigator	European Region Tyrol-South Tyrol-Trentino	INTERFACE - Investigating the surface energy balance over mountain areas	205'345,35 € (University of Trento); 497'180,64 € (total)

2019-2021	Principal Investigator of the research unit of the University of Trento	European Region Tyrol-South Tyrol-Trentino	ASTER - Atmospheric boundary-layer modeling over complex terrain	145'442 € (University of Trento); 432'507 € (total)
2019-2021	Co-PI, coordination of the scientific activities of the research unit of the University of Trento (PI prof. Dino Zardi)	Edmund Mach Foundation	P.E.I. Climate and Agriculture in Mountain Area	60'000 €
2019-2021	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)	Tera Engineering s.r.l.	Bluetentacles Irrigation Systems	100'000 € (University of Trento)
2019-2021	Collaborator	AGSM Verona	Assessment of the reliability of a meteorological model in the estimate of wind speed and direction in potential wind farm sites	38'000 €
2019-2021	Collaborator	Autonomous Province of Trento	Scientific support for the Energetic-Environmental Provincial Plan	29'400 €
2019-2021	Co-PI, coordination of the scientific activities (PI prof. Dino Zardi)	Autonomous Province of Bolzano	Meteorological normalization of NO <sub>2</sub> concentrations in the Province of Bolzano	16'500 €
2019-2021	Collaborator	Italian Ministry of Education, Universities and Research	OT4CLIMA - Development of innovative observational technologies to study the impacts of climate change on the environment	67'875 € (University of Trento); 4'494'621,38 € (total); 9'049'470,47 € (total project budget)
2017-2021	Member of the "Core Team" of the project, co-PI of the research unit of the University of Trento (PI prof. Dino Zardi).	European Union - LIFE Environment Program	BrennerLEC - Brenner Lower Emissions Corridor	282'000 € (University of Trento); 1'922'772 € (total project); 4'018'005 € (total project budget)

## Publications

- Journal articles in refereed academic journals
  1. 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 (6), e2161. <https://doi.org/10.1002/met.2161>.
  2. Zonato, A., A. Martilli, J.L. Santiago, D. Zardi, L. Giovannini, 2023: On a new one-dimensional  $k-\epsilon$  turbulence closure for building-induced drag. *Quarterly Journal of the Royal Meteorological Society*, 149, 1674-1689, <https://doi.org/10.1002/qj.4476>.
  3. 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>.

4. Bertazza E., A. Bisignano, M. Falocchi, L. Giovannini, 2023: Effects of COVID-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>.
5. Bertoldi G., M. Bozzoli, A. Crespi, Michael 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>.
6. 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>.
7. 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>.
8. 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>.
9. 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>.
10. Ugnani 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>.
11. 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>.
12. 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>.
13. 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>.
14. 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>.
15. 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>.
16. 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>.
  17. Falocchi M., D. Zardi, L. Giovannini, 2021: Meteorological normalization of NO<sub>2</sub> concentrations in the Province of Bolzano (Italian Alps). *Atmospheric Environment*, 246, 118040. <https://doi.org/10.1016/j.atmosenv.2020.118048>.
  18. 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>.
  19. 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>.
  20. 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>.
  21. 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>.
  22. 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>.
  23. 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>.
  24. 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 nonhomogeneous flows. *Atmospheric Research*, 228, 122-136, <https://doi.org/10.1016/j.atmosres.2019.05.018>.
  25. 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 (Italian Alps). *Quarterly Journal of the Royal Meteorological Society*, 145, 495-512, <https://doi.org/10.1002/qj.3444>.
26. 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>.
  27. 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>.
  28. 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>.
  29. 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>.
  30. 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>.
  31. 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>.
  32. 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>.
  33. 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>.
  34. Panziera L., L. Giovannini, L. Laiti, D. Zardi, 2016: The relation between circulation types and regional Alpine climate. Part II: 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>.
  35. 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>.
  36. 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>.

37. 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>.
  38. 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>.
  39. 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>.
  40. 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>.
  41. 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>.
  42. 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>.
- Editorials in refereed academic journals
    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>.
  - Chapters in books
    1. 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](https://doi.org/10.1007/978-3-319-57645-9_25).
    2. 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.
  - Indexed conference papers
    1. Todeschini I., G. Antonacci, A. Bisignano, 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*.
    2. 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.
    3. 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.

4. 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 subkilometer horizontally non-homogeneous flows. HARMO 2017 - 18th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Proceedings, Volume 2017-October, 421-425.
5. 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 (IT). HARMO 2016 - 17th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Proceedings, Volume 2016-May, 160-164.
6. 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. WIT Transactions on Ecology and the Environment, 198, 431-442, doi:10.2495/AIR150371.
7. 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>.
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>.

#### **Invited conference talks**

- Giovannini L., D. Zardi, M. Falocchi, W. Tirlor, 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. Tirlor, 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 - 8 Symposium on Energy from Biomass and Waste, 16-19 November 2020, Virtual.

#### **Invited seminars**

- "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.
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- "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.

**Language  
competence**

**Italian:** first language  
**English:** C1 level

Trento, 23 January 2024