

Curriculum vitae et studiorum

Dino Zardi

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Working address

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Dino Zardi was born on 10 October 1966 in San Giorgio di Mantova (Italy).

Presently full professor for the scientific-educational sector FIS/06 “*Physics for the Earth system and the circumterrestrial medium*” at the University of Trento, Department of Civil, Environmental and Mechanical Engineering, where he is responsible of the Atmospheric Physics Group (<http://apg.ing.unitn.it>).

Education

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| 1985 | School Leaving Certificate with full marks (60/60) at the Lyceum “Virgilio”, Mantova, Italy |
| 1985 – 1991 | First degree (“Laurea”) in Physics <i>cum laude</i> at the University of Bologna (Italy).
Dissertation “ <i>On some mathematical models of turbulence in fluids</i> ”.
Supervisors: prof. Francesco Mainardi, University of Bologna, Department of Physics, dott. Francesco Tampieri, Institute FISBAT-CNR, Bologna. |
| 1992 – 1995 | Doctoral degree in Hydrodynamics at the University of Genova (Italy).
Dissertation “ <i>Modal competition in the oscillations of some hydrodynamic systems</i> ”
Supervisor: Prof. Giovanni Seminara. |

Academic positions

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|----------------|---|
| 1995 – 2002 | Assistant Professor of Atmospheric Physics (GEO/12) at the University of Trento |
| 2002 – 2006 | Associate Professor of Hydraulics (ICAR/01) at the University of Trento |
| 2006 – 2018 | Associate Professor of Atmospheric Physics (FIS/06) at the University of Trento |
| 2012 | National Scientific Habilitation as full professor in the area 04/A4 - Geophysics . |
| 2013 | National Scientific Habilitation as full professor in the area 02/C1 Astronomy, astrophysics, terrestrial and planetary physics . |
| 2018 – present | Full Professor of Atmospheric Physics (FIS/06) at the University of Trento |

Languages

Italian: mothertongue

English: fluent

Memberships

2000 – present: Associate Fellow of the Royal Meteorological Society

2000 – present: Member of the American Meteorological Society.

2004 – present: delegate of the Rector of the University of Trento in the Steering Committee of Italian National University Consortium for the Physics of the Atmospheres and the Hydrospheres (CINFAI: www.cinfai.it)

1998 – present: Member of the European Geosciences Union.

2010 – 2016: Corresponding fellow of the Academy of Agriculture, Sciences and Letters in Verona (www.aasivr.it)

2016 – present: Effective fellow of the Academy of Agriculture, Sciences and Letters in Verona

2013 – present: Member of the Italian Society for Climate Sciences

2015 – 2016: Member of the Italian Geophysical Association; elected member of the Steering Committee.

2016 – 2016 President of the Italian Association of Atmospheric Sciences and Meteorology (AISAM) www.aisam.eu

International cooperation

April-July 2001: Visiting scientist at the Mesoscale and Microscale Meteorology Division, National Center for Atmospheric Research (NCAR), Boulder, Colorado, USA. Invited by Dr. Richard Rotunno.

2002-2004: Main organiser of the *Summer School on Mountain Meteorology* (see Appendix 1 for further details)

2002-2006: Member of the Scientific Steering Committee of the Mesoscale Alpine Programme (<http://www.map.ethz.ch>).

June-August 2010: Visiting scientist at the Mesoscale and Microscale Meteorology Division, at the National Center for Atmospheric Research (NCAR), Boulder, Colorado, USA. Invited by Dr. Richard Rotunno.

Academic year 2010/2011 - Appointed “Guest Professor from Italy” at the Institute of Meteorology and Geophysics, University of Innsbruck, Austria.

2005-2008: Project manager of the EU funded project FORALPS (see Appendix 2 for further details)

2005-2007: Member of the ALPNAP Project Steering Group (<http://www.alpnep.org/index.html>)

2011 - present: Member of the Editorial Board of *Tethys* Journal of Mediterranean Meteorology and Climatology (<http://www.tethys.cat/en>)

Winter Semesters 2009-10, 2010-11 and 2011-12: Lecturer of *Mountain Meteorology* (30 hours), Institute of Meteorology and Geophysics, University of Innsbruck, Austria (<http://imgi.uibk.ac.at/>).

2012 - present: Member of the Scientific Steering Committee of the International Conference on Alpine Meteorology (<http://www.map.ethz.ch>).

Member of the Programme Committee of the International Conference on Alpine Meteorology. Innsbruck Austria, 31 August – 4 September 2015 (<http://www.uibk.ac.at/congress/icam2015/>).

Convenor of the session “*Atmospheric processes over complex terrain*” at the European Geosciences Union General Assembly:

- 2014 (<http://meetingorganizer.copernicus.org/EGU2014/session/14954>),
- 2015 (<http://meetingorganizer.copernicus.org/EGU2015/session/17084>)
- 2016 (<http://meetingorganizer.copernicus.org/EGU2016/session/19967>).

Organiser of the 35th International Conference on Alpine Meteorology in Riva del Garda (Trento), 2-6 September 2019.

Overview of scientific achievements

Entering as assistant professor at the Department of Civil and Environmental Engineering of the University of Trento in 1995, Dino Zardi had to establish *ex novo* a research activity in the field of atmospheric physics, as no previous one had been ever activated there (neither at this Department, nor at any other in the same university).

Accordingly he has implemented and managed various research lines, especially focused on atmospheric and climate processes in mountain environments, and related to environmental and land engineering applications.

In particular he promoted the following actions:

- a) Set-up and use of a system for airborne atmospheric measurement based on a light airplane;
- b) Setup of a laboratory equipped with instruments for ground based measurements in the atmospheric boundary layer (incl. conventional weather stations, sonic anemometer, sodar, fast response hygrometer, HoBo sensors for air temperature and humidity);
- c) Analysis of time series of data collected by ground meteorological stations for the characterisation of local scale and mesoscale atmospheric processes;
- d) Mathematical and numerical modelling of valley winds;
- e) Reconstruction and climatological analysis of long time series of atmospheric measurements from historical observation for detection of impacts from global climate change and variability at local scale;
- f) Development of a simple mathematical and numerical model reproducing the mechanisms implied in the processes for production of artificial snow for skiing purposes;
- g) Analysis of urban-scale atmospheric phenomena, including the setup and management since 2002 of an urban observatory in the city of Trento, on top of an old building tower: <http://www.ing.unitn.it/~prometeo/home.htm>

The above activities have been supported within the following research projects (an asterisk * indicates those in which Dino Zardi has acted as P. I.):

Project title	Funding Agency	Duration	Budget (k€)
Vortex, turbulent and chaotic flows: engineering and environmental applications.	Italian Ministry of University and Scientific and Technological Research	1998-99	35
Advanced applications of informatics: Informatics for the environment (*)	Autonomous Province of Trento	1997-99	70
Study of the atmospheric boundary layer dynamics in the Adige Valley (*)	Environmental Protection Agency, Autonomous Province of Trento	1999-2001	40
Analysis of coherent structures in environmental fluid flows	Italian Ministry of University and Scientific and Technological Research	2000-01	45
Study of emissions, atmospheric diffusion and deposition of contaminants from sources located within Bolzano area.	Municipality of Bolzano	2000-01	72
Study of atmospheric dynamics in alpine valleys (*)	Italian National Institute for Research on the Mountain (INRM)	2001-02	36
Assessment of possible tendencies in environmental variables relevant for safety and civil protection in Trentino and proposals for improving the observational resources for environmental monitoring and control	Special project for Land Security, Autonomous Province of Trento	2001-02	47

Environmental impact study of a project for a waste incinerator in Trento	Società Industriale Trentina SpA	2001-03	240
SALTO: Study on missing blooming of Lake Tovel (Trento)	Autonomous Province of Trento, “Fondo Unico per la Ricerca”	2001-04	90
AQUAPAST: Water and speleothemes as tools for high resolution palaeoclimate reconstruction in the Trento Province	Autonomous Province of Trento, “Fondo Unico per la Ricerca”	2001-04	94
GEPRI: Late frost in Trentino: climatology, micro-meteorological characterisation and applied modelling.	Autonomous Province of Trento, “Fondo Unico per la Ricerca”	2002-05	90
Detection of possible systematic errors in the strong precipitation forecasts from the global scale ECMWF numerical model (*)	Autonomous Province of Trento, Service for Prevention of Public Disasters	2004-05	36
Wind power in Trentino: Part I – Preliminary assessment (*)	Autonomous Province of Trento, Service for Energy	2005	46
Analysis of total daily precipitation 24-h forecast provided by ALADIN and ECMWF models and of data from rain gauge measurements for forecast verification in the years of 2003-2004 (*),	Autonomous Province of Trento, Service for Prevention of Public Disasters	2005	24
Analysis of the emission of fine particulate matter from the industrial area south of Bolzano and assessment of their impact on air quality for the urban area.	Municipality of Bolzano	2005	30
FORALPS: Meteo-hydrological forecasting and observation for water resource management in the Alps www.foralps.net (*)	European Union, Community Initiative Programme Interreg III B “Alpine Space”	2005-07	600 (Lead Partners’ budget) 2,800 (Overall Project budget)
ALPNAP: Monitoring and Minimisation of Traffic-Induced Noise and Air Pollution Along Major Alpine Transport Routes www.alpnep.info	European Union, Community Initiative Programme Interreg III B “Alpine Space”	2005-08	208
Environmental impact study of the movement to an underground settlement of a factory for treatment of building materials	Tassullo SpA	2005-06	40
Development of software for the <i>downscaling</i> at hydrological basin scale of precipitation forecast (sub-contract of the UE Interreg III B CADSES project “HYDROCARE”)	Autonomous Province of Trento, Service for Hydraulic Works, Office for Dams	2006-07	120
Technical and scientific assistance for the Air Quality Plan.	Municipality of Verona and 17 minor municipalities in the surroundings	2009-10	194
Assessment of the impact of the Brenner Highway on air quality in the Adige Valley between Bolzano and Verona	Autostrada del Brennero SpA	2012-14	208

Climatic Atlas of Trentino – Subproject: Analysis and mapping of solar radiation in the Province of Trento.	Autonomous Province of Trento, Service of Environmental Assessment	2012-13	40
Climatic Atlas of Trentino – Subproject: Analysis of synoptic-scale situations and related weather in the Province of Trento.	Autonomous Province of Trento, Service of Environmental Assessment	2012-13	40
Climatic Atlas of Trentino – Subproject: Preliminary activities for the production of a wind atlas for the Province of Trento.	Autonomous Province of Trento, Service of Environmental Assessment	2012-13	25
Climatic Atlas of Trentino – Subproject: Wind atlas for the Province of Trento.	Autonomous Province of Trento, Service of Environmental Assessment	2013-15	70
Climatic Atlas of Trentino – Subproject: Spatialisation of atmospheric variables. (*)	Autonomous Province of Trento, Service of Environmental Assessment	2015	17
High-resolution forecast of thermal comfort conditions in the main urban areas of the Province of Trento	CARITRO Foundation	2015-17	65
Climatic Atlas of Trentino – Subproject: Reconstruction and analysis of the historic time series of temperature measurements in Trento 1816-2015	Autonomous Province of Trento, Service of Environmental Assessment	2016-17	10
BrennerLEC	European Union, LIFE Programme	2016-20	470,12

Community service

1998 - 2008: Secretary of the Council of the School of Environmental and Land Planning Engineering staff at the University of Trento since 1998.

1996 - 2000 and 2001-2004: elected representative of the Assistant Professors in the Board of Directors of the University of Trento.

1998 - 2000 and 2001-2003: elected representative of the Assistant Professors in the Council of the Faculty of Engineering of the University of Trento.

1999 - present: member of the Council of the Doctoral School on Environmental Engineering at the University of Trento.

2010 - present: member of the Executive committee of the Doctoral School on Environmental Engineering at the University of Trento

2002 - present: member of the Board of Governors of the University Center for Advanced Studies of Hydrogeological Risk of Mountain Areas (CUDAM) established in 2001 at the University of Trento.

2004 - present: delegate of the Rector of the University of Trento in the Steering Committee of Italian National University Consortium for the Physics of the Atmospheres and the Hydrospheres (CINFAI: www.cinfai.it)

Reviewer for the following journals:

- Journal of Applied Meteorology,
- Journal of Geophysical Research
- Journal of the Atmospheric Sciences,
- Quarterly Journal of the Royal Meteorological Society,
- Atmospheric Environment,
- Natural Hazards and Earth System Sciences
- Boundary-Layer Meteorology

- Meteorology and Atmospheric Physics
- Atmospheric Chemistry and Physics
- Journal of Fluid Mechanics
- Meteorologische Zeitschrift.

Educational Activities

University lectures and student supervision

Course of *Atmospheric Physics* for the master degree School of Environmental and Land Planning Engineering, since its inception in the academic year 1995/96 till present.

Course of *Meteorology* for the master degree School of Environmental and Land Planning Engineering, since the academic year 2004/05 till present.

Course of *Electronics* in the academic year 1999/2000 and *Electronic Instruments and Measurements* in 2000/2001 for the bachelor degree in Environmental Engineering.

Class lectures of *Fluid Mechanics* for the students of the Doctoral Program in Environmental Engineering every other year 2001-2009.

Class lectures of *Geophysical Fluid Dynamics* for the students of the Doctoral Program in Environmental Engineering every year since 2011.

Supervisor of more than 100 master dissertations on various topics of atmospheric dynamics and environmental fluid mechanics.

Supervisor or co-supervisor of 8 PhD Candidates in the Doctoral School on the Department of Civil, Environmental and Mechanical Engineering at the University of Trento:

Candidate	Duration	Title
1. Massimiliano de Franceschi	1999 – 2003	Investigation of Atmospheric Boundary Layer Dynamics in Alpine Valleys
2. Gabriele Rampanelli	1999 – 2004	Investigation of Diurnal Atmospheric Boundary Layer Dynamics in Alpine Valleys
3. Alessio Bertò	2001 – 2005	Lagrangian trajectory analysis for the identification of moist airflows producing intense precipitation events over the Alps
4. Stefano Serafin	2002 – 2006	Boundary Layer Processes and Thermally Driven Flows over Complex Terrain
5. Lorenzo Giovannini	2008 – 2012	Urban scale phenomena and boundary layer processes in mountain valleys
6. Lavinia Laiti	2009 – 2013	Investigation of local atmospheric circulations in the Alpine region: a combined approach of field measurements and numerical modelling
7. Maria Pina Castelli	2010 – 2015	Estimation of atmospheric attenuation of solar radiation using satellite data
8. Elena Tomasi	2014 – present	Assessments of parameterisations of surface processes in numerical weather prediction models
9. Gianluca Pappaccogli	2015 – present	Effects of vegetation in urban-scale atmospheric processes
10. Andrea Zonato	2017 – present	Numerical modelling of the effects of green roofs and facades on building energetics and urban environment

Post-doc assistants

Candidate	Duration	Project Title
1. Massimiliano de Franceschi	2004 – 2008	Investigation of Atmospheric Boundary Layer Dynamics in Alpine Valleys
2. Stefano Serafin	2006 – 2010	Boundary Layer Processes and Thermally Driven Flows over Complex Terrain
3. Lorenzo Giovannini	2012 – present	Urban scale phenomena and boundary layer processes in mountain valleys
4. Lavinia Laiti	2013 – present	Investigation of local atmospheric circulations in the Alpine region: a combined approach of field measurements and numerical modelling
5. Marco Falocchi	2015 – present	Characterisation of atmospheric processes in support of monitoring actions of the fate of emissions from the incinerator of Bolzano.

Doctoral Evaluation Committees

Member of Doctoral Evaluation Committees at the Universities of Trento, Milano, Ferrara, Trieste, Roma “La Sapienza”, at the Swiss Federal Institute of Technology in Zurich, Institute for Atmospheric and Climate Science, and at the University of Innsbruck, Institute of Meteorology and Geophysics.

Invited seminars and talks

22 June 2000

“Klima seminar” - Swiss Federal Institute of Technology, Zurich (CH)

“Analysis of airborne atmospheric measurements in Alpine valleys”

Invited by dr. Mathias Rotach

7 June 2001

Department of Civil and Environmental Engineering, Stanford University (USA)

“Measurements and analysis of atmospheric boundary layer processes and valley wind systems in the Alps”

Invited by: Prof. Robert Street

7 November 2001

“Measurement and analysis of atmospheric boundary layer processes and local scale flows in Alpine valleys”

University of L’Aquila (Italy), Department of Physics

Invited by: Prof. Guido Visconti

23 October 2003

“Investigating physical mechanisms of up-slope/up-valley winds”

Department of Meteorology, University of Munich

Invited by prof. Joseph Egger

2 February 2007

“Physical mechanisms of atmospheric flows and turbulence in thermally driven up-slope/up-valley winds”

International Centre for Theoretical Physics, Trieste, Italy

Invited by Dr. Fulvio Stel

6 June 2009

“Urban waste treatment and the atmosphere”

27th Day of the Environment, National Academy of Lincei, Rome

Invited by Prof. Giovanni Seminara

13 October 2010

“History of meteorological observations in Verona: 1755-2010”

Academy of Agriculture, Sciences and Letters in Verona

Invited by the President, DR. Galeazzo Sciarretta.

23 February 2011

“Atmospheric boundary layer processes in Alpine valleys and implications for air quality ”

Institute for Applied Remote Sensing, European Academy, Bolzano

Invited by dr. Marcello Petitta

9 June 2011

“Diurnal mountain and valley winds: dynamics, phenomena and interactions with coastal processes”

Invited talk at the conference 3rd International Meeting on Meteorology and Climatology of the Mediterranean (IMCM2011)

Invited by prof. Joan Cuxart Rodamillans

22 September 2015

“Atmospheric processes over complex terrain: open problems for atmospheric physics and operational challenges for meteorology”

Invited talk at the Annual meeting of the Italian Physical Society (SIF).

Invited by Dr. Vincenzo Levizzani, CNR-ISAC.

16 December 2015

“Thermally driven up-slope flows: state of the art and open questions”

Invited talk at the American Geophysical Union Fall Meeting

Session A33Q: Observations and Predictability of the Atmosphere over Complex Terrain.

Primary Convener: Eric Pardyjak, University of Utah.

Conveners: Daniel Nadeau, Laval University; Harindra Fernando, University of Notre Dame; Joshua Hacker, National Center for Atmospheric Research

Note: the abstract had to be withdrawn due to unforeseen troubles which prevented my participation to the meeting.

Publications

A. Book chapters

1. **Zardi, D.** and C. D. Whiteman, 2013: Diurnal Mountain Wind Systems, Chapter 2 in “Mountain weather research and forecasting – Recent progress and current challenges” (Chow, F. K., S. F. J. De Wekker, and B. Snyder Editors), Springer Atmospheric Sciences, Springer, Berlin.
http://link.springer.com/chapter/10.1007%2F978-94-007-4098-3_2
2. **Zardi, D.**, 2014: *Valley winds*, item in the Encyclopaedia of Atmospheric Sciences 2nd edition (Gerald North Ed.), Elsevier Ltd, Oxford, UK.
<http://www.sciencedirect.com/science/article/pii/B9780123822253002401> .

B. Papers published on peer-reviewed scientific journals

1. Amadori, M., Piccolroaz, S., Giovannini, L., Zardi, D., Toffolon, M., 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* (early view). doi: 10.4081/jlimnol.2018.1814
2. Falocchi, M., Giovannini, L., Franceschi, M., Zardi, D., 2018: A Refinement of the McMillen (1988) Recursive Digital Filter for the Analysis of Atmospheric Turbulence. *Boundary-Layer Meteorol.* **168**: 517.
<https://doi.org/10.1007/s10546-018-0355-5>
3. Laiti, L., L. Giovannini, **D. Zardi**, G. Belluardo and D. Moser. 2018: Estimating Hourly Beam and Diffuse Solar Radiation in an Alpine Valley: A Critical Assessment of Decomposition Models. *Atmosphere*, **9**, 117. doi:10.3390/atmos9040117
<http://www.mdpi.com/2073-4433/9/4/117/pdf>
4. Serafin S., B. Adler, J. Cuxart, S. F. J. De Wekker, A. Gohm, B. Grisogono, N. Kalthoff, D. J. Kirshbaum, M. W. Rotach, J. Schmidli, I. Stiperski, Ž. Večenaj and **D. Zardi**, 2018: Exchange Processes in the Atmospheric Boundary Layer Over Mountainous Terrain. *Atmosphere*, **9**(3), 102-; doi:10.3390/atmos9030102
<http://www.mdpi.com/2073-4433/9/3/102/pdf>
5. Conangla, L., Cuxart, J., Jiménez, M. A., Martínez-Villagrasa, D., Miró, J. R., Tabarelli, D., and **Zardi D.**, 2018: Cold-air pool evolution in a wide Pyrenean valley. *Int. J. Climatol.* (early view). doi: 10.1002/joc.5467
<http://onlinelibrary.wiley.com/enhanced/exportCitation/doi/10.1002/joc.5467>
6. Tomasi, E., L. Giovannini, D. Zardi, and M. de Franceschi, 2017: Optimization of Noah and Noah_MP WRF Land Surface Schemes in Snow-Melting Conditions over Complex Terrain. *Mon. Wea. Rev.* **145**:12, 4727-4745. doi: 10.1175/MWR-D-16-0408.1
<https://doi.org/10.1175/MWR-D-16-0408.1>
7. Bodini, N. and Zardi, D. and Lundquist, J. K., 2017: Three-Dimensional Structure of Wind Turbine Wakes as Measured by Scanning Lidar, *Atmos. Meas. Tech.*, **10**, 2881-2896. <https://doi.org/10.5194/amt-10-2881-2017> doi: 10.5194/amt-2017-86.
8. Giovannini, L., Laiti, L., Serafin, S. and **Zardi, D.**, 2017: The thermally driven diurnal wind system of the Adige Valley in the Italian Alps. *Q. J. R. Meteorol. Soc.*, **143**, 2389–2402. doi: 10.1002/qj.3092 doi:10.1002/qj.3092.
<http://onlinelibrary.wiley.com/doi/10.1002/qj.3092/full>
9. Bodini, N., J. K. Lundquist, **D. Zardi**, and M. Handschy, 2016, Year-to-year correlation, record length, and overconfidence in wind resource assessment, *Wind Energ. Sci.*, **1**, 115-128, 2016. doi:10.5194/wes-1-115-2016.
<http://www.wind-energ-sci.net/1/115/2016/>
10. Panziera, L., L. Giovannini, L. Laiti, and **D. Zardi**, 2016: The relation between circulation types and regional Alpine climate Part II: The dependence of the predictive skill on the level of the classification method for Trentino *Int. J. Climatol.* **36**, 2189–2199. doi: 10.1002/joc.4487
<http://onlinelibrary.wiley.com/doi/10.1002/joc.4487/pdf>

11. Panziera, L., L. Giovannini, L. Laiti, and **D. Zardi**, 2015: The relation between circulation types and regional Alpine climate. Part I: synoptic climatology of Trentino. *Int. J. Climatol.* **35**, 4655–4672 doi: 10.1002/joc.4314 <http://onlinelibrary.wiley.com/doi/10.1002/joc.4314/abstract?campaign=wolearlyview>
12. Brida, C., Casarotto, C., **Zardi, D.**, 2015, Evaluation of meteorological-climatological forces on Trentino glaciers during the Great War, *Rendiconti Online Societa Geologica Italiana*, **36**, 35-38. doi: 10.3301/ROL.2015.138. <http://rendiconti.socgeol.it/244/fulltext.html?ida=2466>
13. M. Schiavon, M. Redivo, G. Antonacci, E. C. Rada, M. Ragazzi, **D. Zardi**, L. Giovannini, 2015 Assessing the impact of nitrogen oxides and benzene emissions from road traffic and domestic heating on air quality and cancer risk in an urban area. *Atmos. Env.* **120**, 234-243. doi:10.1016/j.atmosenv.2015.08.054. <http://www.sciencedirect.com/science/article/pii/S1352231015302995>
14. Giovannini, L., Laiti, L., **Zardi, D.**, de Franceschi M., 2015: Climatological characteristics of the Ora del Garda wind in the Alps. *Int. J. Climatol.*, **35**, 4103-4115. doi: 10.1002/joc.4270. <http://onlinelibrary.wiley.com/doi/10.1002/joc.4270/epdf>
15. **Zardi, D.** and S. Serafin, 2015: An analytic solution for daily-periodic thermally-driven slope flow. *Quart. J. Roy. Meteor. Soc.*, **141**, 1968–1974. doi: 10.1002/qj.2485. <http://onlinelibrary.wiley.com/doi/10.1002/qj.2485/epdf>
16. Estévez, J., Gavilán, P., García-Marín, A.P., **Zardi, D.**, 2015: A method for detecting spurious precipitation signals from automatic weather stations in irrigated areas. *Int. J. Climatol.*, **35**, 1556–1568. doi: 10.1002/joc.4076 <http://onlinelibrary.wiley.com/doi/10.1002/joc.4076/pdf>
17. Laiti, L., **Zardi, D.**, Giovannini, L., de Franceschi M., and G. Rampanelli, 2014: Analysis of the diurnal development of a lake-valley circulation in the Alps based on airborne and surface measurements, *Atmos. Chem. Phys.*, **14**, 9771-9786, doi:10.5194/acp-14-9771-2014. <http://www.atmos-chem-phys.net/14/9771/2014/acp-14-9771-2014.pdf>
18. Laiti, L., Andreis, D., Zottele, F., Giovannini, L., Panziera, L., Toller, G., **Zardi D.**, 2014: A solar atlas for the Trentino region in the Alps: quality control of surface radiation data. *Energy Procedia*, **59**, 336 – 343 (doi: 10.1016/j.egypro.2014.10.386). http://ac.els-cdn.com/S1876610214017536/1-s2.0-S1876610214017536-main.pdf?_tid=7718b860-8483-11e4-8fad-00000aab0f6c&acdnat=1418666270_594a20b3a4a42151496290d3e95fa673
19. Giovannini, L., Antonacci, G., **Zardi, D.**, Laiti, L., Panziera, L., 2014: Sensitivity of simulated wind speed to spatial resolution over complex terrain. *Energy Procedia*, **59**, 323 – 329 (doi: 10.1016/j.egypro.2014.10.384). http://ac.els-cdn.com/S1876610214017512/1-s2.0-S1876610214017512-main.pdf?_tid=0e052f98-8483-11e4-a154-00000aab0f01&acdnat=1418666093_4e199a98735b8b9fb30536f97f393022
20. Castelli, M., Stöckli, R., **Zardi, D.**, Tetzlaff, A., Wagner, J. E., Belluardo, G., Zebisch, M., Petitta, N., 2014: The HelioMont method for assessing solar irradiance over complex terrain: validation and improvements. *Remote Sensing of Environment*. **152**, 603-613. doi:10.1016/j.rse.2014.07.018. <http://www.sciencedirect.com/science/article/pii/S0034425714002673>.
21. Giovannini, L., **Zardi, D.**, de Franceschi, M., 2014: Effects of changes in observational sites and position and surrounding urbanization on the temperature time series of the city of Trento, *Urban Climate*, **10**, 509-529. doi:10.1016/j.uclim.2014.04.003. http://ac.els-cdn.com/S2212095514000297/1-s2.0-S2212095514000297-main.pdf?_tid=1b2036cc-8092-11e4-9eb4-00000aacb361&acdnat=1418232753_37f377cd3fecbea9da2de9323056263f
22. Schiavon, M., Antonacci, G., Rada, E. C., Ragazzi, M., **Zardi, D.**, 2014: Modelling Human Exposure to Air Pollutants in an Urban Area, *Revista de Chimie*, **65**, 61-64. <http://revistadechimie.ro/pdf/SCHIAVON%20M.pdf%201%2014.pdf>
23. Giovannini, L., **Zardi, D.**, de Franceschi, M., Chen, F., 2014: Numerical simulations of boundary-layer processes and urban-induced alterations in an Alpine valley. *Int. J. Climatol.* **34**, 1111–1131. doi: 10.1002/joc.3750. <http://onlinelibrary.wiley.com/doi/10.1002/joc.3750/pdf>.
24. Laiti, L., **D. Zardi**, M. de Franceschi and G. Rampanelli, 2013: Atmospheric boundary layer structures associated with the Ora del Garda wind in the Alps as revealed from airborne and surface measurements. *Atmos. Res.*, **132–133**, 473-489. doi: 10.1016/j.atmosres.2013.07.006. <http://dx.doi.org/10.1016/j.atmosres.2013.07.006>.
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C. Manuscripts under review and in preparation

1. **Zardi D.** and de Franceschi M.: A unified model outlining climatological features of the Daily Temperature Cycle at the Earth surface. *Int. J. Climatol.* (in preparation).
2. Poletti, G., **Zardi D.**, and M. de Franceschi: Climatological characterisation of precipitation over Mount Baldo (Southern Alps). Part I – Dataset reconstruction and statistical analysis. *Clim. Dynam.* (in preparation)

3. **Zardi, D.**, and Rotunno R., A simple model for the Convective Boundary Layer development in a mountain valley. *J. Appl. Meteor. Climatol.* (in preparation).
4. Laiti, L., **Zardi, D.**, de Franceschi M., and G. Rampanelli: A Residual Kriging method to retrieve atmospheric boundary-layer structures in a mountain valley by interpolation of airborne data. *J. Geophys. Res.* (in preparation).
5. **D. Zardi**, 2015: Where do we slope?...Some elementary thoughts on our present understanding of thermally driven slope flows. Invited paper for Frontiers Research Topic on "The Atmosphere over Mountainous Regions" to be published in Frontiers in Earth Science, section Atmospheric Science (in preparation).
6. Barraco, N., Giovannini L., **Zardi, D.**, 2015: Evaluation of the urban heat island for the city of Bolzano. *Int. J. Climatol.* (in preparation)

D. Conference Presentations

2015

1. Giovannini, L., Laiti, L., Serafin, Zardi D. 2015: A climatological analysis of diurnal winds in the Adige Valley in the Alps. 5th International Conference on Meteorology and Climatology of the Mediterranean Istanbul (Turkey), 2 -4 March 2015.
2. Laiti, L., Giovannini, L., Zardi, D. 2015: Solar resource assessment in complex orography: a comparison of available datasets for the Trentino region. 5th International Conference on Meteorology and Climatology of the Mediterranean Istanbul (Turkey), 2 -4 March 2015.
3. Lorenzo Giovannini, Lavinia Laiti, and Dino Zardi A nested large-eddy simulation study of the Ora del Garda wind in the Alps. European Geosciences Union General Assembly 2015. Vienna (Austria) 12-17 April 2015.
4. Lavinia Laiti, Lorenzo Giovannini, and Dino Zardi Solar resource assessment in complex orography: a comparison of available datasets for the Trentino region. European Geosciences Union General Assembly 2015. Vienna (Austria) 12-17 April 2015.
5. Gianluca Antonacci, Lorenzo Giovannini, Elena Tomasi, and Dino Zardi Atmospheric dispersion modeling with AERMOD for comparative impact assessment of different pollutant emission sources in an Alpine context. European Geosciences Union General Assembly 2015. Vienna (Austria) 12-17 April 2015.
6. Marco Falocchi, Stefano Barontini, Dino Zardi, and Roberto Ranzi Turbulence measurements in an Alpine valley: The CividatEX Experiment case. European Geosciences Union General Assembly 2015. Vienna (Austria) 12-17 April 2015.
7. Luca Panziera, Lavinia Laiti, Lorenzo Giovannini, and Dino Zardi Are synoptic circulation types able to characterize the climate of an Alpine region? European Geosciences Union General Assembly 2015. Vienna (Austria) 12-17 April 2015.
8. D. Zardi, M. de Franceschi, L. Laiti, L. Giovannini, 2015: Revisiting Albert Defant's (1909) seminal paper "Mountain and valley winds in South Tyrol" - A tribute to a pioneering contribution in mountain meteorology. 33rd International Conference on Alpine Meteorology (ICAM). Innsbruck (Austria), 31 August - 4 September 2015.
9. L. Giovannini, L. Laiti, S. Serafin, D. Zardi, 2015: A climatological analysis of diurnal winds in the Adige valley in the Alps. 33rd International Conference on Alpine Meteorology (ICAM). Innsbruck (Austria), 31 August - 4 September 2015.
10. L. Giovannini, G. Antonacci, D. Zardi, L. Laiti, L. Panziera, 2015: Evaluation of the climatological wind speed simulated by the WRF model over complex terrain. 33rd International Conference on Alpine Meteorology (ICAM). Innsbruck (Austria), 31 August - 4 September 2015.
11. D. Martínez-Villagrasa, L. Conangla, D. Tabarelli, M. A. Jiménez, J. R. Miró, D. Zardi, J. Cuxart, 2015: Slope and valley flows at the Cerdanya valley in the Pyrenees. 33rd International Conference on Alpine Meteorology (ICAM). Innsbruck (Austria), 31 August - 4 September 2015.
12. E. Tomasi, 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. 33rd International Conference on Alpine Meteorology (ICAM). Innsbruck (Austria), 31 August - 4 September 2015.
13. M. Falocchi, S. Barontini, L. Giovannini, D. Zardi, R. Ranzi, 2015: Wind regime and filtering turbulent data in the CividatEX Experiment. 33rd International Conference on Alpine Meteorology (ICAM). Innsbruck (Austria), 31 August - 4 September 2015.
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17. Laiti, L., Giovannini, L., Zardi, D. 2015: The Solar Atlas of Trentino (Italy): A Comparison of Available Solar Datasets for a Small Alpine Region. 3rd International Conference Energy & Meteorology (ICEM), Boulder (Colorado, USA), 22-26 June 2015.
18. L. Giovannini, G. Antonacci, D. Zardi, L. Laiti, L. Panziera, 2015: Evaluation of the climatological wind speed simulated by the WRF model over complex terrain: a case study in Trentino (Italy) 3rd International Conference Energy & Meteorology (ICEM), Boulder (Colorado, USA), 22-26 June 2015.
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22. Tomasi, E., L. Giovannini, D. Zardi, and M. de Franceschi, 2014: High-resolution numerical simulations of wintertime atmospheric boundary layer processes in the Adige Valley during an ALPNAP project field campaign. 21st Symposium on Boundary Layers and Turbulence, Leeds (UK), 9-13 June 2014.
23. Laiti, L., Zardi, D., de Franceschi, M. and G. Rampanelli, 2014: Comparative assessment of methods to retrieve fine-scale atmospheric boundary layer structures from airborne measurements. 21st Symposium on Boundary Layers and Turbulence, Leeds (UK), 9-13 June 2014.
24. Zardi, D., and S. Serafin, 2014: An analytic solution for periodic thermally driven flows over an infinite slope: Defant (1949) revisited. 21st Symposium on Boundary Layers and Turbulence, Leeds (UK), 9-13 June 2014.
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27. Laiti, L., Andreis, D., Zottele, F., Giovannini, L., Panziera, L., Toller, G., and D. Zardi: 2014: A solar radiation atlas for the Trentino region in the Alps: preliminary results. European Geosciences Union General Assembly 2014. Vienna (Austria) 27 April – 2 May 2014.
28. Giovannini, L., Antonacci, G., Zardi, D., Laiti, L., and L. Panziera: 2014. Development of a wind atlas for the Trentino region in the Alps. European Geosciences Union General Assembly 2014. Vienna (Austria) 27 April – 2 May 2014.
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32. Laiti, L., D. Zardi, M. de Franceschi, G. Rampanelli: An investigation of the Ora del Garda wind in the Alps by means of Kriging of airborne and surface measurements. 4th International Meeting on Meteorology and Climatology of the Mediterranean, Banyuls (France), 27 February-1 March 2013.

33. L. Giovannini, D. Zardi, F. Chen and M. de Franceschi, Local circulation systems in the valleys around the city of Trento: a numerical study 4th International Meeting on Meteorology and Climatology of the Mediterranean, Banyuls (France), 27 February-1 March 2013.
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35. Lorenzo Giovannini, Dino Zardi, and Massimiliano de Franceschi, Characterization of the thermal structure inside an urban canyon: field measurements and validation of a simple model, European Geosciences Union General Assembly 2013, Vienna (Austria), 7-12 April 2013.
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43. L. Giovannini, D. Zardi and M. de Franceschi, Numerical simulations of boundary-layer processes in the city of Trento. 8th International Conference in Urban Climatology. Dublin, Ireland, 6-10 August 2012.

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44. Giovannini, L., Chen F., Zardi D. and M. de Franceschi, 2011: High-resolution numerical simulations of daily-periodic local circulations in Alpine valleys including urban environments. 31st International Conference on Alpine Meteorology, Aviemore (Scotland), 23-27 May 2011.
45. Giovannini L., Zardi D., Bee E., de Franceschi M., Santin M. and S. Serafin., 2011: Characterization of daily-periodic valley winds in the valleys around Trento. 31st International Conference on Alpine Meteorology, Aviemore (Scotland), 23-27 May 2011.
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50. Serafin S. and D. Zardi, 2010: Daytime heat transfer processes related to slope flows and turbulent convection in an idealized mountain valley, 14th AMS Conference on Mountain Meteorology, Lake Tahoe Vicinity, CA, 30 August-3 September 2010

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54. D. Zardi, G. Poletti, M. de Franceschi and A. Bellin, 2009, Analysis of precipitation patterns on Mount Baldo (Italy), 30th International Conference on Alpine Meteorology, Rastatt (Germany), 11-15 May 2009.
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58. G. Rampanelli and D. Zardi, 2008, Reconstruction and analysis of the temperature record of Trento (1816-2006) American Meteorological Society 13th Conference on Mountain Meteorology and 17th Conference on Applied Climatology, Whistler Mountain (Canada) 11-15 August 2008.
59. M. Andrighetti, D. Zardi and M. de Franceschi, 2008, The temperature series of Verona (1741-2006), American Meteorological Society 13th Conference on Mountain Meteorology and 17th Conference on Applied Climatology, Whistler Mountain (Canada) 11-15 August 2008.

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F. Book reviews

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APPENDIX 1

Summer School on Mountain Meteorology (2002-2004)

Dino Zardi, in co-operation with Richard Rotunno (NCAR), promoted and organized, the *Summer School on Mountain Meteorology* in Trento.

The following three editions were organized in the years 2002, 2003 and 2004:

2002 - Airflow modifications by mountains	
Lecturers	Topic
Andrea Buzzi Istituto di Scienze dell'Atmosfera e del Clima, CNR-ISAC, Bologna	<i>Effects of mountains on synoptic scale flows</i>
Joe Klemp Mesoscale and Microscale Meteorology Division, National Center for Atmospheric Research, Boulder, Colorado, USA	<i>Stratified flow over infinitely long ridges</i>
Richard Rotunno Mesoscale and Microscale Meteorology Division, National Center for Atmospheric Research, Boulder, Colorado, USA	<i>Stratified flow past three dimensional obstacles</i>
Reinhold Steinacker Institute for Meteorology and Geophysics, University of Vienna, Austria	<i>Observation of orographic flow modification</i>

2003 - "Thermally driven winds in mountainous terrain"	
Lecturers	Topics
C. David Whiteman Atmospheric Science Technical Group Pacific Northwest National Laboratory, Richland, WA, USA	<i>General principles/ observations of diurnal wind systems in mountainous terrain</i>
Richard McNider Department of Atmospheric Science, University of Alabama in Huntsville, AL, USA	<i>Modelling of mountain-valley winds</i>
Donald Lenschow Mesoscale and Microscale Meteorology Division, National Center for Atmospheric Research, Boulder, CO, USA	<i>Observations and models of boundary layer processes over complex terrain.</i>
Franz Fiedler Institute for Meteorology and Climate Research, Karlsruhe University, Karlsruhe, Germany	<i>Meteorological applications in mountain valleys</i>

2004 - "Orographic effects on precipitation"	
Lecturers	Topics
Jürg Joss MeteoSwiss, Locarno Monti, Switzerland	<i>Radar detection and estimation of orographic precipitation</i>
Franco Prodi Istituto di Scienze dell'Atmosfera e del Clima, CNR-ISAC,	<i>Microphysics of orographic clouds and precipitation</i>
Evelyne Richard Aerology Laboratory, Toulouse, France	<i>Numerical models and forecasting of orographic precipitation</i>
Richard Rotunno National Center for Atmospheric Research, Boulder, USA	<i>Observations and theory of orographic precipitation</i>

The School was attended by students from various countries:

Country	Participants		
	2002	2003	2004
ARGENTINA	-	-	2
AUSTRIA	2	2	5
BELGIUM	-	1	-
BULGARIA	1	1	-
CANADA	1	1	2
CHINA	-	1	2
CROATIA	1	2	2
FRANCE	1	3	1
GERMANY	4	-	-
INDIA	-	1	3
ISRAEL	-	-	1
ITALY	22	19	30
MOROCCO	-	-	1
MEXICO	-	-	1
NORWAY	1	1	1
POLAND	-	1	1
UNITED KINGDOM	1	1	1
RUSSIA	-	1	-
SLOVENIA	-	2	-
SPAIN	-	1	-
SWEDEN	-	-	1
SWITZERLAND	6	2	1
UKRAINE	-	-	1
USA	5	4	4
TOTAL	45	43	60

More on the School website: <http://www3.unitn.it/events/ssmm2004/index.htm>.

APPENDIX 2

The international project FORALPS -Meteo-Hydrological Forecast and Observations for improved water resources management in the ALPS

Dino Zardi was the main promoter and the project manager of the project FORALPS, approved under the European Union Programme INTERREG III B Alpine Space, for a total duration of 39 months (01.01.2005-31.08.2008).

Project lead partner: University of Trento, Department of Civil and Environmental Engineering

Project partners:

- Autonomous Province of Bolzano - Hydrographic Office (Italy)
- Autonomous Province of Trento – Office for Forecasts and Organization (Italy)
- Central Office for Meteorology and Geodynamics, Regional Office for Carinthia (Austria)
- Central Office for Meteorology and Geodynamics, Regional Office for Salzburg and Oberösterreich (Austria)
- Central Office for Meteorology and Geodynamics, Regional Office for Tirol and Vorarlberg (Austria)
- Central Office for Meteorology and Geodynamics, Regional Office for Vienna, Niederösterreich and Burgenland (Austria)
- Environmental Agency of the Republic of Slovenia (Slovenia)
- Italian Agency for Environmental Protection and Technical Services (Italy)
- Regional Agency for Environmental Protection and Prevention of Veneto (Italy)
- Regional Agency for Environmental Protection of Friuli-Venezia Giulia, Regional Meteorological Observatory (Italy)
- Regional Agency for Environmental Protection of Lombardia (Italy)
- Valle d'Aosta Autonomous Region - Meteorological Office (Italy)

Total project cost: EUR: 2,748,562.82

Outline: The project aimed at improving and integrating instruments to support the management of environmental resources in alpine areas, in particular water. This goal was achieved by adopting innovative techniques for monitoring and reconstructing the time evolution of meteo-hydrological processes. The competence areas of the partners covered uniformly the central-eastern Alps, where the territories of various countries and regions intertwine, thus requiring a transnational and interregional approach to issues faced by the project. Climatic databases of variables relevant for water resources availability were collected and analyzed. Pilot activities at selected target areas were performed, such as use of micro-radars and numerical modeling of meteorological and rainfall-runoff processes. The above actions were preliminary to operational activities. Evaluation of social and financial impact of improved meteo-hydrological information were also performed to stimulate the adoption of best practices of sustainable planning

Objectives: 1. Investigate frequency, seasonality, areal extent and spatial pattern of precipitation events in the Alpine Space region 2. Monitoring and optimal observation coverage 3. Meteorological forecast to improve the integrated modeling of the water cycle 4. Optimization of forecasts for verification procedures 5. Identification of an optimal combination of input parameters for hydrological models 6. Estimation of water supplies in alpine catchments 7. Assessment of the financial and economic impacts of water resource management

Project activities and results: series of daily precipitation, snow and temperature measurements available from national and regional services were digitalized, integrated with historical metadata, validated and homogenized, in order to create a rich and homogeneous climatological database. Climatological information were also uploaded in a web-GIS system, thus creating a tool able to extract temporal series, make statistical comparisons, show historical and present trends, allow data acquisition as support for planning and decision making. Some partners commissioned the development of innovative microradar prototypes for high resolution monitoring of rainfall in narrow valleys. These were tested at selected target areas in connection with existing long-range radars. In order to accomplish a wise management of environmental resources based on sustainable development principles, suitable criteria, models, and quantitative input were used. In particular, for water resource management hydrological models were implemented and used in the project. They provided a quantitative estimation of resources availability in alpine water bodies, including glaciers and underground water. The impact of hydraulic works on surface runoff and water resource availability were evaluated on test cases as well. FORALPS will provide an assessment of the managerial, economic and financial aspects deriving from the transfer of recent advances into technological applications (improvement in the environmental monitoring and modelling, development, setup and application of up-to-date instruments), procedures (e.g. environmental impact studies and assessment), and “best practices” (e.g. sustainable planning management of environmental and land resources).

More on the project website: www.foralps.net.

APPENDIX 3

The Italian Festival of Meteorology (Festivalmeteorologia)

Dino Zardi is the creator and main organiser of the Italian Festival of Meteorology (Festivalmeteorologia). The event is jointly organised by the University of Trento and the City of Rovereto. It will take place on 16 and 17 October 2015 in the city of Rovereto (Italy) and consists in a series of activities, including conferences, stands of exhibitors, projections of movies, demonstrations of simple experiments and so on.

In particular, during the conferences, experts from various bodies will give talks about different aspects of the state and perspectives of meteorology in Italy.

“Institutional” speakers are invited from the National Weather Service, the Regional Weather Services, Institutes of the National Research Council (CNR), the Italian Space Agency (ASI), the European Center for Medium Range Weather Forecasting (ECMWF), the World Meteorological Organisation, the American Meteorological Society, the Italian Geophysical Society.

Also talks will be given by selected representatives of private companies, national and foreign universities, high schools, associations.

The festival will offer a unique and unprecedented opportunity, at a national level, for public and private weather services, research institutes, universities, companies, associations, students and people interested in meteorology to meet and provide a vision of the “system” of meteorology in Italy.

More on the website: www.festivalmeteorologia.it .

APPENDIX 4

DETAILS OF TEACHING ACTIVITIES

Courses taught at the University of Trento

Academic year	Course	Duration or ECTS	Programme
1999/2000	Fisica dell'Atmosfera	½ annualità	Laurea in Ingegneria per l'Ambiente e il Territorio V.O.
	Elettronica	½ annualità	Diploma Universitario in Ingegneria per l'Ambiente e le Risorse
	Meccanica dei fluidi	12 ore	Corso di dottorato di ricerca in Ingegneria Ambientale
2000/2001	Fisica dell'Atmosfera	½ annualità	Laurea in Ingegneria per l'Ambiente e il Territorio V.O.
	Strumentazione e misure elettroniche	½ annualità	Diploma Universitario in Ingegneria per l'Ambiente e le Risorse
2001/2002	Fisica dell'Atmosfera	½ annualità	Laurea in Ingegneria per l'Ambiente e il Territorio
2002/2003	Fisica dell'Atmosfera	½ annualità	Laurea in Ingegneria per l'Ambiente e il Territorio
	Meteorologia	5 CFU	Laurea in Ingegneria del Controllo Ambientale
2003/2004	Fisica dell'Atmosfera	½ annualità	Laurea in Ingegneria per l'Ambiente e il Territorio V.O.
	Meteorologia	5 CFU	Laurea in Ingegneria del Controllo Ambientale
	Laboratorio di Fisica Ambientale	5 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N.O.
	Meccanica dei fluidi	12 ore	Corso di dottorato di ricerca in Ingegneria Ambientale
2004/2005	Fisica dell'Atmosfera	½ annualità	Laurea in Ingegneria per l'Ambiente e il Territorio V.O.
	Meteorologia	5 CFU	Laurea in Ingegneria del Controllo Ambientale
	Agrometeorologia	3 CFU	Laurea specialistica in Enologia e Viticoltura
	Meccanica dei fluidi	12 ore	Corso di dottorato di ricerca in Ingegneria Ambientale
2005/2006	Fisica dell'Atmosfera	5 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N.O.
	Meteorologia	5 CFU	Laurea in Ingegneria del Controllo Ambientale N.O.
	Laboratorio di Fisica Ambientale	5 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N.O.
	Termodinamica dell'atmosfera	4 ore	Corso di Laurea in Fisica, Percorso di approfondimento
2006/2007	Fisica dell'Atmosfera	5 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Meteorologia	5 CFU	Laurea in Ingegneria del Controllo Ambientale N.O.
	Laboratorio di Fisica Ambientale	5 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Termodinamica dell'atmosfera	4 ore	Corso di Laurea in Fisica, Percorso di approfondimento
2007/2008	Fisica dell'Atmosfera	5 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Meteorologia	5 CFU	Laurea in Ingegneria del Controllo Ambientale N.O.
	Laboratorio di Fisica Ambientale	5 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Termodinamica dell'atmosfera	4 ore	Corso di Laurea in Fisica, Percorso di approfondimento
	Fluid Mechanics	12 ore	Corso di dottorato di ricerca in Ingegneria Ambientale
2008/2009	Fisica dell'Atmosfera	5 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Meteorologia	5 CFU	Laurea in Ingegneria del Controllo Ambientale N.O.
	Laboratorio di Fisica Ambientale	5 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.

	Termodinamica dell'atmosfera	4 ore	Corso di Laurea in Fisica, Percorso di approfondimento
	Agrometeorologia e Viticoltura	30 ore	Corso di laurea in Ingegneria delle industrie alimentari
2009/2010	Sabbatic leave		
2010/2011	Fondamenti di meteorologia e climatologia	6 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Fisica dell'atmosfera e del clima	6 CFU	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
2011/2012	Fondamenti di meteorologia e climatologia	6 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Fisica dell'atmosfera e del clima	6 CFU	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Modellistica ambientale	4 ore	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
2012/2013	Fondamenti di meteorologia e climatologia	6 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Fisica dell'atmosfera e del clima	6 CFU	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Modellistica ambientale	5 ore	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
2013/2014	Fondamenti di meteorologia e climatologia	6 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Fisica dell'atmosfera e del clima	6 CFU	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Modellistica ambientale	2 ore	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Fisica dell'atmosfera	6 CFU	Laurea in fisica N.O.
	Geophysical Fluid Dynamics	6 ore	Scuola di dottorato
	Agrometeorologia e gestione delle risorse idriche – Modulo agrometeorologia	30 ore	Corso di laurea interateneo in viticoltura ed enologia
	Wind Power Systems	10 ore	Corso di laurea magistrale interateneo in Ingegneria Energetica
2014/2015	Fondamenti di meteorologia e climatologia	6 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Fisica dell'atmosfera e del clima	6 CFU	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Modellistica ambientale	4 ore	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Geophysical Fluid Dynamics	6 ore	Scuola di dottorato
	Agrometeorologia e gestione delle risorse idriche – Modulo agrometeorologia	30 ore	Corso di laurea interateneo in viticoltura ed enologia
	Fisica	6 CFU	Corso di laurea interateneo in viticoltura ed enologia
	Wind Power Systems	6 ore	Corso di laurea magistrale interateneo in Ingegneria Energetica
2015/2016	Fondamenti di meteorologia e climatologia	6 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Fisica dell'atmosfera e del clima	6 CFU	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Modellistica ambientale	4 ore	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Fisica	6 CFU	Corso di laurea interateneo in viticoltura ed enologia
	Wind Power Systems	6 ore	Corso di laurea magistrale interateneo in Ingegneria Energetica

	Renewable energy and Meteorology	6 CFU	Corso di laurea magistrale interateneo in Ingegneria Energetica
2016/2017	Fondamenti di meteorologia e climatologia	6 CFU	Laurea in Ingegneria per l'Ambiente e il Territorio N. O.
	Fisica dell'atmosfera e del clima	6 CFU	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Modellistica ambientale	4 ore	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Fisica	6 CFU	Corso di laurea interateneo in viticoltura ed enologia
	Wind Power Systems	6 ore	Corso di laurea magistrale interateneo in Ingegneria Energetica
	Renewable energy and Meteorology	6 CFU	Corso di laurea magistrale interateneo in Ingegneria Energetica
2017/2018	Fisica dell'atmosfera e del clima	6 CFU	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Modellistica ambientale	4 ore	Laurea magistrale in Ingegneria del Controllo Ambientale N.O.
	Fisica	6 CFU	Corso di laurea interateneo in viticoltura ed enologia
	Renewable energy and Meteorology	6 CFU	Corso di laurea magistrale interateneo in Ingegneria Energetica

Courses taught at the Free University of Bolzano

2011/2012	Agrometeorologia	3 CFU	Laurea in Scienze agrarie e agroambientali N. O.
2013/2014	Fisica	6 CFU	Laurea in Scienze agrarie e agroambientali N. O.
2014/2015	Fisica	6 CFU	Laurea in Scienze agrarie e agroambientali N. O.
2015/2016	Fisica	6 CFU	Laurea in Scienze agrarie e agroambientali N. O.

APPENDIX 5

MASTER AND BACHELOR THESES SUPERVISED

Corso di laurea in Ingegneria per l'Ambiente il Territorio V. O.

1. Ferrari Andrea	<i>Misure in bassa atmosfera mediante motoalante attrezzato</i>
2. Daves Bruno	<i>Studio della circolazione atmosferica nota come Ora del Garda</i>
3. Chiogna Roberto	<i>Studio della convezione naturale in una cavità con pareti inclinate</i>
4. Tranquillini Mattia	<i>Misure meteorologiche per la caratterizzazione della circolazione atmosferica nota come Ora del Garda</i>
5. Gerola Roberto	<i>Un modello idrodinamico per le circolazioni atmosferiche in una valle alpina</i>
6. Rampanelli Gabriele	<i>Misure in quota e modellazione numerica di strutture termo-convettive in prossimità di versanti</i>
7. de Franceschi Massimiliano	<i>Misure di flussi turbolenti nello strato limite atmosferico mediante anemometro sonico</i>
8. Rossi Daniela	<i>Un modello per l'evoluzione dello strato limite convettivo in valli alpine</i>
9. Uez Chiara	<i>Modellazione numerica della convezione naturale in una cavità</i>
10. Beozzo Walter	<i>Studio delle emissioni e della diffusione atmosferica di inquinanti dall'incenerimento di rifiuti urbani in ambiente vallivo</i>
11. Spoladore Andrea	<i>Un modello per l'evoluzione dello strato limite convettivo in valli alpine</i>
12. Antonacci Gianluca	<i>Modellazione numerica di processi di dispersione in atmosfera: applicazione alla Conca di Bolzano</i>
13. Bonmassar Nicola	<i>Caratterizzazione climatologica della Conca di Bolzano e applicazione alla diffusione di inquinanti in atmosfera</i>
14. Bertoldi Giacomo	<i>Uno studio delle interazioni suolo-atmosfera a scala di bacino attraverso un modello distribuito</i>
15. Borsatto Monica	<i>Studio degli aspetti idraulici e termodinamici nei dispositivi di innevamento artificiale</i>
16. Carollo Mirko	<i>Valutazione del regime dei venti a scala locale nell'area a Nord di Trento</i>
17. Lanzingher Giulio	<i>Analisi dell'evoluzione del Föhn da sud tramite radiosondaggi MAP-SOP.</i>
18. Seu Efisio	<i>Miglioramento delle previsioni del vento per impianti eolici mediante filtri di Kalman: applicazione al caso della Sardegna.</i>
19. Tettamanti Roberto	<i>Simulazione numerica di venti catabatici mediante applicazione di un modello meteorologico non idrostatico</i>
20. Vitti Alfonso	<i>Modellazione tridimensionale mediante GIS-GRASS di venti di pendio forzati termicamente.</i>
21. Rea Roberto	<i>Simulazione di processi di evaporazione su un versante mediante modellazione tridimensionale in GIS-GRASS</i>
22. Dalla Nora Stefano	<i>Simulazione numerica di una corrente forzata da flusso termico al suolo su un pendio.</i>
23. Pasquale Luciano	<i>Analisi sperimentale di un dispositivo per la produzione di neve.</i>
24. Doff Alessia	<i>Analisi di un evento meteorico intenso mediante elaborazione integrata di misure pluviometriche e dati da radar meteorologico.</i>
25. Endrici Giorgia	<i>Il trasporto di sostanze odorigene in atmosfera: valutazione olfattometrica e simulazione di un caso mediante modello.</i>
26. Formaggio Fabrizio	<i>Studio della struttura verticale dello strato limite atmosferico mediante SODAR</i>

27. Parolari Elena	<i>Analisi climatologica delle serie storiche di temperatura e precipitazione di Riva del Garda (1870-1999).</i>
28. Sitta Marco	<i>Misure di flussi turbolenti in atmosfera per lo studio di gelate tardive.</i>
29. Tarolli Michele	<i>Analisi climatologica delle serie storiche di temperatura e precipitazione della Val di Fiemme (1882-2002)</i>
30. Franceschini Michela	<i>Analisi climatologica di serie storiche di temperatura e precipitazione in Val d'Adige.</i>
31. Andreatta Stefano	<i>Parametrizzazione dello strato limite convettivo per modelli meteorologici</i>
32. Bissoli Chiara	<i>Valutazione della risorsa eolica in area prealpina.</i>
33. Azzolini Emilie	<i>Simulazione di trasporto di inquinanti da traffico veicolare in area urbana: il caso di Verona.</i>
34. Ferrari Alessandro	<i>Caratterizzazione climatologica della costa occidentale del Lago di Garda per la gestione ottimale di coltivazioni di limoni.</i>
35. Bozzo Alvise	<i>Parametrizzazione della turbolenza nei modelli dello strato limite atmosferico</i>
36. Finco Luana	<i>Caratterizzazione meteo-climatologica dell'Altopiano dei Sette Comuni vicentini.</i>
37. Costa Michele	<i>Caratterizzazione meteo-climatica del Monte Baldo</i>
38. Soraperra Ingemar	<i>Un modello per lo studio del funzionamento di dispositivi per la produzione di neve programmata.</i>
39. Ambrosi Eleonora	<i>Ricostruzione e analisi climatologica delle serie storiche di temperatura e precipitazione di Castel d'Ario (Mantova)</i>
40. Andrighetti Michele	<i>Ricostruzione e analisi climatologia della serie storica di temperatura di Verona (1741-2005)</i>
41. Soraperra Ingemar	<i>Studio del funzionamento di dispositivi per la produzione di neve</i>
42. Belotti Flavia	<i>Confronto tra campagne di monitoraggio dell'inquinamento atmosferico in una valle alpina</i>
43. Di Falco Giulia	<i>Analisi di alcuni aspetti meteo-climatici del territorio circostante la città di Verona</i>
44. Caresia Diego	<i>Simulazione numerica della circolazione atmosferica nota come "Ora del Garda"</i>
45. Carlin Monica	<i>Analisi integrata di misure meteorologiche e di qualità dell'aria in Val Belluna</i>
46. Coda Samuel	<i>Analisi e verifiche sperimentali delle prestazioni di impianti per il "solar cooling" in Trentino</i>

Corso di laurea specialistica in Ingegneria per l'Ambiente il Territorio

1. Lorenzo Giovannini	<i>Misure di campo e simulazione mediante modello numerico di cicli diurni di temperatura in canyon urbano</i>
2. Debora Lucia Manzana	<i>Simulazione numerica dello sviluppo dei venti di valle</i>
3. Laiti Lavinia	<i>Simulazione numerica di circolazioni a regime di brezza nell'area compresa tra il Lago di Garda e le Prealpi</i>
4. Panelatti Franco	<i>Simulazione numerica di correnti atmosferiche a regime di brezza in Valle dell'Adige</i>
5. Poletti Giacomo	<i>Caratterizzazione pluviometrica del Monte Baldo</i>
6. De Carlo Salvatore	<i>Il campo eolico sperimentale di Trento: studio della risorsa eolica e dell'interazione vento-macchina</i>
7. Chisté Alessandro	<i>Determinazione della distribuzione spaziale di particolato atmosferico in ambiente alpino mediante analisi di misure al suolo e da satellite</i>
8. Redolfi Marco	<i>Testing digital filters for the analysis of turbulence in the atmospheric surface layer</i>
9. Salvadori Neila	<i>On-road remote sensing measurements of vehicle emissions: analysis of gaseous and particulate matter emissions in Michigan (USA)</i>
10. Lasorsa Marco	<i>Simulazione numerica di scenari meteorologici e di qualità dell'aria per l'area urbana di Verona mediante modello CALMET-CALPUF</i>
11. Nodari Benedetta	<i>Applicazione di metodi numerici per la valutazione del potenziale eolico in terreni complessi</i>

Corso di laurea magistrale in Ingegneria per l'Ambiente il Territorio

1. Segata Alessio	<i>Verifica delle previsioni di precipitazione fornite dal modello meteorologico numerico WRF in Trentino</i>
2. Fronza Federico	<i>Numerical simulation of thermally driven slope flows: a comparison with Prandtl (1942) theory.</i>
3. Mengarda Cecilia	<i>Caratterizzazione meteo-climatologica e valutazione della dispersione di inquinanti atmosferici nell'area di Vipitenzo (BZ)</i>
4. Nardi Mirco	<i>Revisione di un metodo per l'analisi di misure di turbolenza atmosferica e applicazione su campagne di misure in Val d'Adige</i>
5. Tomasi Elena	<i>Simulazioni numeriche ad alta risoluzione di processi dello strato limite atmosferico nella Valle dell'Adige durante una campagna di misura invernale del progetto ALPNAP.</i>
6. Tovazzi Martina	<i>Analisi di dati da misure di turbolenza atmosferica nel campo eolico sperimentale di Trento</i>
7. Girotto Giulia	<i>Single particle characterization of atmospheric carbonaceous particles influenced by biomass burning</i>
8. Yang Yang Gao	<i>Analisi climatologica e sviluppo di una formula semi-empirica per il ciclo diurno di temperatura dell'aria nella provincia di Bolzano</i>
9. Bodini Nicola	<i>Three-dimensional structure of wind turbine wakes as measured by scanning lidar</i>
10. Amadori Marina	<i>Caratterizzazione di fenomeni di trasporto nel Lago di Garda mediante modellazione integrata idrodinamica e meteorologica</i>
11. Tabarelli Michele	<i>Studio dei processi di formazione di inversioni termiche al suolo e cold pool nella Val Cerdanya (Catalunya)</i>
12. Calderini Giulia	<i>Simulazione numerica di scenari per la qualità dell'aria in un'area della città di Mantova</i>

13. Gasperotti Michele	<i>Misure meteorologiche per la caratterizzazione delle condizioni microclimatiche a supporto della verifica di un modello previsionale del campo termico nella città di Rovereto</i>
14. Zecchini Fabio	<i>Misure meteorologiche per la caratterizzazione delle condizioni microclimatiche a supporto della verifica di un modello previsionale del campo termico nella città di Trento</i>

Corso di laurea in Ingegneria Edile Architettura (N.O.)

1.Tanara Andrea	<i>Sopraelevazioni in legno con soluzioni di raffrescamento evaporativo: un caso di studio a Gardolo (TN)</i>
2.Zandomeneghi Marco	<i>Sopraelevazioni in legno con soluzioni di raffrescamento tramite ventilazione naturale: il caso di studio del Villaggio Rosa a Trento</i>
3.Anna Codemo	<i>Trento city microclimate changes</i>

Corso di diploma universitario in Ingegneria per l'Ambiente e le Risorse

1. Fortarel Daniele	<i>Rilevamento di strutture termiche in bassa atmosfera mediante misure in quota.</i>
2. Passeri Mario	<i>Raccolta di misure meteorologiche al suolo a supporto dell'innevamento artificiale.</i>
3. Noriller Federico	<i>L'Osservatorio Climatologico di Roncafort: ricognizione del patrimonio osservativo ed elaborazione di soluzioni innovative.</i>
4. Galvani Marco	<i>Impatto delle emissioni odorose in atmosfera da un impianto industriale: studio di un caso.</i>

Corso di laurea in Ingegneria per l'Ambiente e il Territorio (N.O.)

1. Giovannini Lorenzo	<i>Le misure meteorologiche a supporto delle reti di monitoraggio della qualità dell'aria</i>
2. Costisella Chiara	<i>Valutazione delle possibili fonti di errore nella misura "in-situ" delle precipitazioni</i>
3. Morari Massimiliano	<i>Utilizzo di sistemi UAV per il monitoraggio ambientale</i>
4. Nardelli Daniel	<i>Strumentazione meteorologica in ambienti estremi</i>
5. Tomio Giulia	<i>Sensori di temperatura utilizzati nelle osservazioni storiche a Trento (1816-1921)</i>
6. Vecchietti Elisabetta	<i>Strumenti e metodi per misure di evapotraspirazione</i>
7. Carlon Elisa	<i>Misure di laboratorio per la caratterizzazione di strumenti per l'innevamento artificiale</i>
8. Chistè, Alessandro	<i>Misure in situ di proprietà delle nubi</i>
9. Marco Tamiozzo	<i>Analisi di serie di misure pluviometriche relative al Monte Baldo</i>
10. Grott Francesca	<i>Palloni frenati per lo studio dei processi atmosferici</i>
11. Lora Chiara	<i>Utilizzo di sensori di temperatura per l'indagine della struttura termica in bassa atmosfera</i>
12. Moser Massimo	<i>Utilizzo del radar meteorologico per il monitoraggio di eventi di precipitazione</i>
13. Poletti Giacomo	<i>Caratterizzazione della piovosità nel bacino del fiume Chiese</i>
14. Tonini Hermann	<i>Metodi e tecniche per lo studio di fenomeni meteorologici estremi</i>
15. Schiavon Marco	<i>Analisi climatologica del ciclo diurno di temperatura dell'aria nell'area periurbana di Verona</i>

16. Trainotti Andrea	<i>Analisi di impatto di fattori meteorologici sulla gestione di un impianto idroelettrico: la Centrale AGSM di Maso Corona ad Ala (TN)</i>
17. Turrini Sebastiano	<i>Strumentazione avanzata per misure di precipitazione</i>
18. Vicenzi Matteo	<i>Analisi di serie di misure di precipitazione relative al Monte Baldo per il periodo 1950-1974</i>
19. Zanol Alessio	<i>Le misure atmosferiche tramite radiosondaggi</i>
20. 20. Tamiozzo Marco	<i>Analisi di serie di misure pluviometriche relative al Monte Baldo</i>
21. Pisaturo Giuseppe Roberto	<i>Confronto delle temperature massime e minime registrate presso la stazione meteorologica di Trento Laste con strumenti diversi</i>
22. Bee Elena	<i>Analisi delle circolazioni a regime di brezza nella Valle dell'Adige</i>
23. Nicolis Pietro	<i>Analisi delle misure di temperatura dell'aria presso le stazioni storiche di Trento</i>
24. Tasin Stefano	<i>Analisi di dati di pressione atmosferica per la determinazione delle circolazioni a regime di brezza nella Valle dell'Adige</i>
25. Yang Yang Gao	<i>Il ciclo diurno di temperatura dell'aria per la città di Bolzano: analisi climatologica e calibrazione di una formula semi-empirica</i>
26. Tosi Tommaso	<i>Caratterizzazione dell'impianto eolico di Rivoli Veronese (VR)</i>

Corso di laurea in Ingegneria del Controllo Ambientale (N.O.)

1. Piccoli Claudia	<i>Analisi comparativa di alcune stazioni meteorologiche nell'area della Città di Trento.</i>
2. Cipriano Francesca	<i>Valutazione di effetti meteorologici sulla qualità dell'aria nella città di Verona.</i>
3. Marzadro Alessandra	<i>Analisi di fenomeni meteorologici a scala locale sul Lago di Tovel nella stagione estiva.</i>
4. Moscardi Alberto	<i>Criteri tecnici e normativi per una valorizzazione del potenziale eolico compatibile con l'ambiente.</i>
5. Molinari Massimo	<i>Studio di processi dello strato limite atmosferico nell'area della città di Trento: la stagione estiva.</i>
6. Ferrari Simone	<i>Studio per l'installazione di una stazione meteorologica sulla torre del Molino Vittoria a Trento</i>
7. Aniello Marco	<i>Misure atmosferiche e analisi meteorologica per lo studio di gelate tardive</i>
8. Gaio Matteo	<i>Studio di un radiometro netto a quattro canali per la valutazione di bilanci di radiazione al suolo</i>
9. Santin Marco	<i>Analisi del ciclo diurno delle variabili meteorologiche connesse allo sviluppo di circolazioni</i>
10. Bertagnolli Nicola	<i>Analisi meteorologica di episodi di inquinamento invernale nella zona di Trento.</i>
11. De Sero Giacomo	<i>Valutazione di profili verticali di temperatura in area urbana a Trento a supporto della qualità dell'aria</i>
12. Zini Michele	<i>Analisi secolare di dati storici di precipitazione misurata a Cles (Trento) nel periodo 1896-2005.</i>
13. Santin Marco	<i>Analisi del ciclo diurno delle variabili meteorologiche connesse allo sviluppo di circolazioni locali nella Val d'Adige</i>
14. Felicetti Maurizio	<i>Valutazione di profili verticali di temperatura da misure al suolo a supporto della qualità dell'aria</i>
15. Ravanelli Daniele	<i>Caratterizzazione micrometeorologica di un canyon urbano nel periodo invernale</i>

16. Spampinato Giuseppe	<i>Confronto di misure di temperatura dell'aria effettuate in simultanea presso i siti delle stazioni storiche di Trento</i>
17. Zambanini Manuel	<i>Analisi di dati meteorologici per la caratterizzazione climatologica della zona di Levico Terme (TN)</i>

Corso di laurea in Fisica, Università degli studi di Trento (V.O.)

1. Renato Moretta	<i>Elaborazione dei dati di una campagna di misura della qualità dell'aria in Valle dell'Adige ed analisi dei fattori meteorologici sul trasporto di inquinanti in atmosfera</i>
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Corso di laurea in Fisica, Università degli studi di Trento (N.O.)

1. Barraco Nicola	<i>Evaluation of the urban heat island for the city of Bolzano</i>
2. Breviglieri Pietro	<i>Analysis of turbulence measurements from an ultrasonic anemometer for the evaluation of planetary boundary layer parameters</i>
3. Brida Christian	<i>Evaluation of meteo-climatological forcing on some alpine glaciers</i>
Giordani Antonio	<i>The dispersion of pollutants in the atmosphere: the Gaussian plume model Its formulation and application</i>
5 Andrea Baccarini	<i>Instrumented-backpack soundings of the vertical atmospheric structure around the Pico volcano in the Azores: a resource for investigating the vertical distribution of aerosols across the marine boundary layer</i>
6. Mattia Marchio	<i>History and analysis of the precipitation series of Trento (1919-1993)</i>
7. Mirco Vinante	<i>Climatological Analysis of temperature data series in Trento</i>

Corso di laurea in Fisica, Università degli studi di Bologna (V. O.)

1. Petrolli Renzo	<i>Misure nello strato limite atmosferico mediante velivolo attrezzato</i>
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Corso di laurea in Architettura, Politecnico di Milano (V. O.)

1. Federica Lanfossi e Fabio Luce	<i>Conoscenza, conservazione e comunicazione: un processo analitico per studiare la Specola di Mantova e delinearne il recupero</i>
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APPENDIX 6

The project of a joint program of a Master of Science in Environmental Meteorology

Dino Zardi has been appointed by the University of Trento the responsibility of drafting and drive through the required procedures for final approval the project of a joint program of *MSc in Environmental Meteorology*.

The programme is jointly managed by the University of Trento and the University of Innsbruck.

Candidates successfully completing the curriculum will be granted a double MSc degree in Environmental Meteorology by the two Universities. In the Italian university system, the degree belongs to the class LM-75 Sciences and technologies for the environment

At the University of Trento the bodies contributing to the programme are:

- the Department of Civil, Environmental and Mechanical Engineering (DICAM)
- the Centre for Agriculture, food and Environment (C3A)
- the Department of Physics (DF)

At the University of Innsbruck it is the Institute of Atmospheric and Cryospheric Sciences (ACINN).

The curriculum offers interdisciplinary competences on atmospheric processes for various applications to the environment, such as:

- air quality monitoring and management
- support to environmental impact assessment analyses;
- support to civil protection operations;
- agricultural and forest meteorology
- support to the assessment of power from renewable energy resources;
- support to the adoption of measures for energy efficiency of buildings
- support to water resources monitoring and management
- meteorological assistance to transport infrastructures (airports, highways, railways,...)
- support to the assessment of measures for mitigation or adaptation to climate change impacts.

As a requirement for the admission, students need to have a Bachelor in Meteorology, Physics, Chemistry, Engineering, Environmental Sciences, or any other subject providing a sound basis in mathematics, physics and chemistry. The maximum number of students admitted per year is 25 students from the European Union and up to 5 students from third countries.

Teaching activities are organized so a for the first year in the 1st e 2nd semester all the lectures are offered at the University of Trento, while in the second year in the 1st semester the lectures are offered at the University of Innsbruck. The 2nd semester is free of mandatory courses, so that students may attend optional courses at either University, or work on their MSc thesis (see Table below)

Year	Sem.	Course	ECTS	Total ECTS Semester
1	1W	Introduction to meteorology and climatology	9	30
		Environmental fluid mechanics	9	
		Environmental measurements	6	
		Environmental physical chemistry	6	
	1S	Air pollution modelling (including boundary layer)	9	30 (36)
		Numerical methods for environmental processes	6	
		Hydrology	9	
		Agricultural and forest meteorology	6	
		(Optional) Laboratory of atmospheric physics and chemistry	6	
2	2W	Atmospheric radiation and remote sensing	5	30 (24)
		Reading, writing and presenting scientific contents	3	
		Atmospheric chemistry and biogeochemistry	6	
		Dynamical and synoptic meteorology	6	
		Optional courses	10	
	2S	Master Thesis	30	30
		Optional courses (if not already attended in 3W semester)		

The programme is going to start in the academic year 2018/19: <https://offertaformativa.unitn.it/en/lm/environmental-meteorology>.