

Paolo Giani

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EDUCATION

- Jan. 2019 – Present **Ph.D.** in Environmental Fluid Dynamics UNIVERSITY OF NOTRE DAME, USA
Research topics: With the *Atmospheric Chemistry and Aerosol Modeling* research group, I am currently investigating both theoretical aspects of atmospheric modeling and a wide range of practical applications, including urban and regional air pollution simulations and renewable energy assessments.
Current GPA: 4.0/4.0
- Sep. 2015 – Apr. 2018 **M.Sc.** in Environmental Engineering POLITECNICO DI MILANO, ITALY
Thesis title: “Improving organic aerosol modelling with CAMx: a case study in the Po Valley area”
International experience: Six months-long *study abroad* period at the Chalmers University of Technology in Göteborg (Sweden); Summer school on *smart urban mobility* at RWTH Aachen University (Germany)
Final degree mark: 110/110 with honors
GPA: 29.54/30.00
- Sep. 2012 – Sep. 2015 **B.Sc.** in Environmental Engineering POLITECNICO DI MILANO, ITALY
Thesis title: “Influence of climate change on the frequency of daytime temperature inversions and stagnation events in the Po valley: historical trend and future projections”
Final degree mark: 110/110 with honors
GPA: 28.81/30.00

REFEREED PUBLICATIONS

1. **P. Giani**, M. G. Genton, and P. Crippa. Modeling the convective boundary layer in the Terra Incognita: Evaluation of different strategies with real-case simulations. *Under Review in Monthly Weather Review*, 2021
2. P. Sicard, P. Crippa, A. De Marco, S. Castruccio, **P. Giani**, J. Cuesta, E. Paoletti, Z. Feng, and A. Anav. High spatial resolution WRF-Chem model over Asia: physics and chemistry evaluation. *Atmospheric Environment*, 244:118004, 2021
3. **P. Giani**, S. Castruccio, A. Anav, D. Howard, W. Hu, and P. Crippa. Short-term and long-term health impacts of air pollution reductions from COVID-19 lockdowns in China and Europe: a modelling study. *The Lancet Planetary Health*, 4(10):e474–e482, 2020
4. **P. Giani**, F. Tagle, M. G. Genton, S. Castruccio, and P. Crippa. Closing the gap between wind energy targets and implementation for emerging countries. *Applied Energy*, 269:115085, 2020
5. **P. Giani**, A. Anav, A. De Marco, Z. Feng, and P. Crippa. Exploring sources of uncertainty in premature mortality estimates from fine particulate matter: the case of China. *Environmental Research Letters*, 15(6):064027, 2020
6. **P. Giani**, A. Balzarini, G. Pirovano, S. Gilardoni, M. Paglione, C. Colombi, V. L. Gianelle, C. A. Belis, V. Poluzzi, and G. Lonati. Influence of semi-and intermediate-volatile organic compounds (S/IVOC) parameterizations, volatility distributions and aging schemes on organic aerosol modelling in winter conditions. *Atmospheric environment*, 213:11–24, 2019
7. S. Caserini, **P. Giani**, C. Cacciamani, S. Ozgen, and G. Lonati. Influence of climate change on the frequency of daytime temperature inversions and stagnation events in the Po Valley: historical trend and future projections. *Atmospheric Research*, 184:15–23, 2017

AWARDS AND FELLOWSHIPS

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|--------------------------------------------------------------------------------------|------|
| Graduate School Professional Development Awards (GSPDA) for AGU conference | 2021 |
| Graduate Student Union Conference Presentation Grant for AGU conference | 2021 |
| Best oral presentation award at the MSCAR student conference (2 nd place) | 2021 |
| Dondanville Family Award for Outstanding Teaching by a Graduate Student | 2021 |

Richard and Peggy Notebaert Premier Fellowship	2019 - PRESENT
Ermenegildo Zegna Founder's Scholarship	2019
Graduate Student Union Conference Presentation Grant for JSM conference	2019

WORK EXPERIENCE

January 2022 – May 2022	Graduate Research assistant	LOS ALAMOS NATIONAL LABORATORY, LOS ALAMOS (NM)
	Main activities: Graduate Research assistant in the Information Systems and Modeling Group.	
July 2018 – Dec. 2018	Intern for the Air Quality Modeling group	ENERGY SYSTEM RESEARCH, MILAN (ITALY)
	Main activities: Development of a new tool for health risk assessment of air pollution. Application of such tool to different mobility scenarios, with a special focus on the benefits that can derive from the increase in the number of electric vehicles on the car fleet.	
Apr. 2019 – Dec. 2019	Exam invigilator	BRITISH COUNCIL, MILAN (ITALY)
	Main activities: Proctoring English language examinations (IELTS and Cambridge Assessment English).	
May 2017 – Apr. 2018	Master Thesis internship	ENERGY SYSTEM RESEARCH, MILAN (ITALY)
	Main activities: Collaboration with the <i>Energy System Research</i> centre for my master thesis project, entitled: "Sensitivity analysis of secondary organic aerosol modeling with respect to different chemical mechanisms over the Po Valley area".	

TEACHING EXPERIENCE

Fall 2019 & 2020	Teaching assistant	UNIVERSITY OF NOTRE DAME
	Class: Fluid Mechanics (CE30460)	
	Instructor: Prof. Diogo Bolster	
Spring 2019, 2020, 2021	Teaching assistant	UNIVERSITY OF NOTRE DAME
	Class: Air Quality and Reactive Transport (CE40420)	
	Instructor: Prof. Paola Crippa	
	Invited Talks: <i>Influence of climate change on atmospheric stability in the Po Valley area (2019,2020)</i>	
	<i>The silver lining of the pandemic: assessing the lockdowns impact on air quality (2021)</i>	
	<i>Climate change and atmospheric stability (2021)</i>	
Summer 2019, 2020, 2021	Teaching assistant	UNIVERSITY OF NOTRE DAME
	Class: Pre-college program entitled <i>The Environment: Science, Policy, Ethics</i>	
	Instructors: Prof. Paola Crippa & Prof. Don Howard	
	Invited Talks: <i>Quantifying the health impact related to air pollution: tools and case studies (2019)</i>	
	<i>Quantifying wind energy resources in Saudi Arabia based on high-resolution numerical simulations (2019)</i>	
	<i>Health implications of environmental issues (2020, 2021)</i>	

CONFERENCE PRESENTATIONS

1. **P. Giani**, M. G. Genton, and P. Crippa. Modeling the real convective boundary layer in the 'terra incognita': different approaches to overcome the challenge. Online oral presentation at the *Midwest Student Conference on Atmospheric Research*, September 25 – September 26 2021
2. **P. Giani**, A. Anav, and P. Crippa. A model- and observation-based approach to quantify trends and uncertainty of premature mortality due to PM_{2.5} in China. Online poster presentation at the *International Global Atmospheric Chemistry (IGAC2021) conference, Virtual*, September 13 – September 17, 2021
3. **P. Giani**, A. Anav, and P. Crippa. Spatially explicit health benefits from reduced aerosol concentrations during COVID-19 lockdowns in Europe and China. Oral online presentation at the *European Aerosol Conference (EAC2021), Manchester, UK*, August 30 – September 3, 2021

4. **P. Giani**, M. G. Genton, and P. Crippa. Addressing key challenges of high-resolution numerical weather prediction models for wind energy. Oral online presentation at the *MIT A+B Applied Energy Symposium, Massachusetts Institute of Technology, Cambridge (MA), USA*, August 11–13, 2021
5. **P. Giani**, F. Tagle, M. G. Genton, S. Castruccio, and P. Crippa. Technical and climate implications of the deployment of large-scale wind farms. Oral online presentation at the *MIT A+B Applied Energy Symposium, Massachusetts Institute of Technology, Cambridge (MA), USA*, August 12–14, 2020
6. V. Agresti, A. Balzarini, G. Pirovano, **P. Giani**, M. Gaeta, and F. Lanati. Modelling chain set up for the assessment of policy impacts on air quality and human health. Poster presentation at the *37th International Technical Meeting on Air Pollution Modelling and Its Application (ITM2019), Hamburg, Germany*, September 23–27, 2019
7. **P. Giani**, W. Chen, F. Tagle, M. G. Genton, S. Castruccio, and P. Crippa. A high-resolution ensemble to quantify wind energy resources in Saudi Arabia. Topic-contributed oral presentation at *Joint Statistical Meetings (JSM2019), Denver (CO), USA*, July 27–Aug 1, 2019
8. V. Agresti, **P. Giani**, G. Pirovano, G. Lonati, and N. Pepe. Mobility Scenarios in the Milan area: a modelling assessment of Air Quality. Oral presentation at the *23rd International Transport and Air Pollution Conference, Thessaloniki, Greece*, May 15–17, 2019
9. **P. Giani**, F. Tagle, M. G. Genton, S. Castruccio, and P. Crippa. Quantifying wind energy resources in Saudi Arabia based on high-resolution numerical weather model simulations. Poster presentation at the *2nd annual ND Energy Research Symposium, Notre Dame (IN), USA*, March 20, 2019

SERVICE

- Served as a reviewer for the following international journals:
 - Environmental Science & Technology
 - Atmospheric Chemistry and Physics
 - Environmental Research Letters
 - Joule
 - The Lancet Planetary Health
 - International Journal of Climatology
 - Science of the Total Environment
 - Remote Sensing
 - International Journal of Environmental Research and Public Health
 - Atmosphere
 - Air Quality, Atmosphere & Health
 - CLEAN – Soil, Air, Water
 - Journal of Taibah University for Science
- Member of the University of Notre Dame Committee on Internationalization (UCI) for the 2021–2022 academic year. The University Committee on Internationalization provides a forum for deliberations involving the wider University community in Notre Dame's international activities, including foreign study programs, faculty and student exchanges, foreign language study, library resources, faculty development, and curricular and extracurricular international activities.

SKILLS

- Considerable experience in working with **Linux/Unix** clusters – Installing libraries and software from source code, running parallel jobs with **OpenMP** and **MPI** standards, using version control systems (e.g. **git**)

- Proficient in different programming languages (e.g., **FORTRAN**, **C**, **VBA**) and **Linux/Unix** shell scripting languages (e.g. **Cshell**, **Bash**, **PERL**) as well as meteorological and air quality models and related pre/post-processors (e.g., **CAMx**, **WRF**, **SMOKE**, **AMET**)
- Good knowledge of Computational Fluid Dynamics codes (e.g. **OpenFOAM**), Geographical Information System software (**GIS**) and query database languages (**SQL**).
- Strong knowledge of data analysis tools (e.g., **Matlab**, **R**, **Python** and **Microsoft Excel**).

LANGUAGES

- **English** – Proficient. TOEFL iBT scores (2018): 110/120 (Speaking: 27/30; Writing: 28/30; Reading: 29/30; Listening: 26/30). GRE scores (2018): English (Verbal reasoning) 165/170 – 96th percentile
- **Italian** – Native speaker
- **Spanish** – Intermediate
- **French** – Beginner