

Personal Information

Mauro Morichetti

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Education and Work Experiences

Jan 2024/Jan 2024 **Researcher** at Institute for Agriculture and Forestry Systems in the Mediterranean, National Research Council of Italy (CNR-ISAFoM), unit of Perugia, Italy.

Forest Modeling Laboratory – A multidisciplinary research laboratory that studies and analyzes the quantitative and qualitative representation of the interactions underlying the productivity, resistance, and resilience to perturbations of forest ecosystems and their responses to ecological and climate forcing.

Sept 2019/Dec 2023 **Postdoctoral Research Fellow** at Institute of Atmospheric Sciences and Climate, National Research Council of Italy (CNR-ISAC), unit of Lecce, Italy.
ENI-CNR Arctic Joint Research Center "ALDO PONTREMOLI" – Application of chemical transport model (WRF-Chem) to study the impact of short-lived climate forcers into the atmosphere, the cryosphere and on climate change in the Arctic.

3-7 Jul 2023 **ISAC Summer School 2023 "The challenge of precipitation prediction"**
Castro (LE), Italy.

The purpose of the Summer School is to provide an intensive and comprehensive review of the current knowledge of precipitation predictions, considering in particular severe weather conditions.

- 9-11 May 2023** **I have been part in the Scientific Committee of the “European WRF-Chem Workshop 2023”** Lecce (LE), Italy.
- The WRF-Chem Workshop is intended to discuss regional air quality applications of the WRF-Chem model, and some more over-all topics. Other purposes of the workshop are to provide understanding and helping on the WRF-Chem atmospheric transport model, with a focus on the practical implementation for beginners, and to reinforce network between worldwide users.
- 20-24 Jun 2022** **ISAC Summer School 2022” “Atmospheric composition and Meteorology”** Castro (LE), Italy.
- The purpose of the various is to provide an overview of the current physical knowledge of the atmosphere both from a modeling and experimental point of view in various topics, such as turbulence, severe convective weather, precipitation, and chemical transport models.
- 15 Feb-30 Mar 2021** **MCAA Italian Chapter: Science Communication Talk Series** – online.
- The event is a series of talks and labs aiming at providing inputs on science communication.
- 14-16 Jun 2021** **High Performance Computing Course: Data Science with R** at CINECA Bologna, Italy.
- The purpose of this course was to present researchers and scientists with R implementation of Machine Learning methods.
- Feb/Aug 2019** **Postdoctoral Research Fellow** at the Department of Industrial Engineer and Mathematical Science (DIISM), Polytechnic University of Marche (Ancona), Italy.
- The main field of study was the settings and applications of air pollution modelling. The most important software used are WRF, WRF-CHEM and AERMOD.

Feb 2019

PhD in Industrial Engineering at the Department of Industrial Engineer and Mathematical Science (DIISM), Polytechnic University of Marche (Ancona), Italy.

PhD Thesis written in English language: “Air pollution from natural and anthropogenic sources over Mediterranean region: assessment of an online coupled meteorological and air quality model”.

13-15 Aug 2018

Fundamentals of Atmospheric Chemistry and Aerosol Modeling at NCAR (National Center of Atmospheric Research), Boulder (CO), USA.

In the workshop it has been introduced the fundamentals of atmospheric chemistry and aerosol modeling on different scales through CTM at different scales (box models, regional and global models).

May/Sep 2018

I have got the **NCAR's Advanced Study Program's Graduate Student (GVP) Fellowship** at the NCAR (National Center of Atmospheric Research), Boulder (CO), USA.

I have spent 4 months in the **ACOM** section (Atmospheric Chemistry and Observation Modeling) conducting a study on the direct and indirect effects of aerosols in the Mediterranean basin: *“Sources and transport of natural and anthropogenic aerosols to southern Europe: evaluation of WRF-Chem model”.*

21-23 Feb 2018

High Performance Computing Course: Introduction to Parallel Computing with MPI and OpenMP at CINECA Bologna, Italy.

Introduction to Parallel Programming was given in this course either for Shared Memory and Message Passing paradigms: the MPI (Message Passing Interface) library for distributed architectures and OpenMP system for shared memory and multicore architectures.

- 06-09 Jun 2017** **NCL (NCAR Command Language) Workshop** at NCAR (National Center of Atmospheric Research) Boulder (CO), USA.
Introduction to NCL: a free interpreted language designed specifically for scientific data processing and visualization.
- Apr/Sep 2017** **Visiting PHD-Student** at the NCAR (National Center of Atmospheric Research), Boulder (CO), USA.
I have spent 5 months in the ACOM section (Atmospheric Chemistry and Observation Modeling) studying the effects of biogenic volatile organic compounds (e.g., isoprene) on secondary pollutants (e.g. ozone): *“The influence of biogenic emissions on trace gases: update of MEGAN emissions database”*.
- 17-20 Oct 2016** **High Performance Computing Course: Introduction to modern Fortran** at CINECA Bologna, Italy.
The course introduced the basic elements of the language, program units, arrays and array syntax, and management of dynamic memory.
- 20-24 Jun 2016** **ISAC Summer School 2016 “Advances in severe weather analysis: models and observations”** Castro (LE), Italy.
The aim of the course was to provide a complete view of the most recent research on the intense meteorological events, discussing general and specific aspects.
- Apr/Jul 2014** **Internship (Leonardo Project) carried out in a Company: “Blue Economy Solution GmbH”, Berlin (Germany).**
The principal role was to assist the chairman of the Company in a **project a Biogas Plant.**
The main language spoken at work was English.

Feb 2014 Passed the examination for admission to the Professional Register of Engineers (Register of Macerata - A1696).

Oct 2013 Master's Degree in environmental engineering at the Polytechnic University of Marche (Ancona) Italy, with a final grade of 110/110.
Master Thesis written in English language: "Research and Evaluation of Heavy Metals Uptake by Trees in the Vicinity of an Incinerator".

Jan/Jul 2013 Internship (Erasmus Project) carried out in the department of Environmental Protection at Faculty of Environmental Engineering of the Vilnius Gediminas Technical University (Lithuania).

Dec 2010 Bachelor's Degree in environmental engineering at the Polytechnic University of Marche (Ancona) Italy, with final grade of 90/110.
Bachelor Thesis written in Italian language: "Stima delle Emissioni in Aria del Macrosettore 4 Mediante Metodologia CORINAIR".

Publications

2023 **Airspace Contamination by Volcanic Ash from Sequences of Etna Paroxysms: Coupling the WRF-Chem Dispersion Model with Near-Source L-Band Radar Observations**

Umberto Rizza, Franck Donnadieu, Mauro Morichetti, Elenio Avolio, Giuseppe Castorina, Agostino Semprebello and Clothilde Biensan
Remote Sensing, Vol. 15 N. 15, Pag. 3760, Multidisciplinary Digital Publishing Institute

2023 **Exposure Assessment of Ambient PM2.5 Levels during a Sequence of Dust Episodes: A Case Study Coupling the WRF-Chem Model with GIS-Based Postprocessing**

Enrico Mancinelli, Elenio Avolio, Mauro Morichetti, Simone Virgili, Giorgio Passerini, Alessandra Chiappini, Fabio Grasso and Umberto Rizza

International Journal of Environmental Research and Public Health, Vol. 20, Pag. 5598, Multidisciplinary Digital Publishing Institute.

2023 Performance of the WRF Model for the Forecasting of the V-Shaped Storm Recorded on 11–12 November 2019 in the Eastern Sicily

Giuseppe Castorina, Maria Teresa Caccamo, Agostino Semprebello, Vincenzo Insinga, Francesco Italiano, Salvatore Magazù, Mauro Morichetti and Umberto Rizza

Atmosphere, Vol. 15, Pag. 390, Multidisciplinary Digital Publishing Institute.

2023 On the Interplay between Desert Dust and Meteorology Based on WRF-Chem Simulations and Remote Sensing Observations in the Mediterranean Basin

Umberto Rizza, Francesca Barnaba, Elenio Avolio, Mauro Morichetti, Luca Di Liberto, Annachiara Bellini, Simone Virgili, Giorgio Passerini and Enrico Mancinelli

Remote Sensing, Vol. 15 N. 2, Pag. 435, Multidisciplinary Digital Publishing Institute

2022 Comparison and evaluation of updates to WRF-Chem (v3. 9) biogenic emissions using MEGAN

Mauro Morichetti, Sasha Madronich, Giorgio Passerini, Umberto Rizza, Enrico Mancinelli, Simone Virgili and Mary Barth

Geoscientific Model Development

2021 Investigation of an Intense Dust Outbreak in the Mediterranean Using XMed-Dry Network, Multiplatform Observations, and Numerical Modeling

Umberto Rizza, Konrad Kandler, Melanie Eknayan, Giorgio Passerini, Enrico Mancinelli, Simone Virgili, Mauro Morichetti, Michael Nolle, Konstantinos Eleftheriadis, Vasiliki Vasilatou and Pierina Ielpo

Applied Sciences, Vol. 11 N. 4, Pag. 1566, Multidisciplinary Digital Publishing Institute.

- 2020** **WRF-Chem optimization for the estimation of Etna volcanic ash fallout**
Eleonora Brega, Maria Teresa Caccamo, Giuseppe Castorina, Salvatore
Magazù, Mauro Morichetti, Gianmarco Munaò, Giorgio Passerini and
Umberto Rizza
Atmospheric and Oceanic Physics.
- 2020** **A Preliminary Investigation on the Statistical Correlations between SARS-
CoV-2 Spread and Local Meteorology**
Passerini Giorgio, Mancinelli Enirco, Morichetti Mauro, Virgili Simone and
Rizza Umberto
*International Journal of Environmental Research and Public Health, Vol. 17
N. 11, Multidisciplinary Digital Publishing Institute.*
- 2020** **WRF Sensitivity Analysis in Wind and Temperature Fields Simulation for
the Northern Sahara and the Mediterranean Basin**
Umberto Rizza, Enrico Mancinelli, Elisa Canepa, Jacques Piazzola, Tathy
Missamou, Christophe Yohia, Mauro Morichetti, Simone Virgili, Giorgio
Passerini and Mario Marcello Miglietta
*Atmosphere, Vol. 11 N. 3, Pag. 259, Multidisciplinary Digital Publishing
Institute.*
- 2020** **A preliminary assessment of mineral dust outbreaks in Italian coastal
cities**
Morichetti Mauro, Passerini Giorgio, Virgili Simone, Mancinelli Enrico and
Rizza Umberto
*International Journal of Environmental Impacts, Management, Mitigation
and Recovery, Vol. 3 N. 2, Pag. 214-225, WIT Press.*
- 2019** **Aerosol Optical Depth of the Main Aerosol Species over Italian Cities
Based on the NASA/MERRA-2 Model Reanalysis**
Umberto Rizza, Enrico Mancinelli, Mauro Morichetti, Giorgio Passerini and
Simone Virgili.

Atmosphere, Vol. 10 N. 11, Pag. 709, Multidisciplinary Digital Publishing Institute.

2019

Air pollution in the Ancona harbor, Italy

Fileni Lorenzo, Mancinelli Enirco, Morichetti Mauro, Passerini Giorgio, Rizza Umberto and Virgili Simone.

Transactions on The Built Environment, Vol. 187, Pag. 199-208, WIT Press.

2018

Influence of wave state and sea spray on the roughness length: Feedback on Medicans

Rizza Umberto, Canepa Elisa, Ricchi Antonio, Bonaldo Davide, Carniel Sandro, Morichetti Mauro, Passerini Giorgio, Santiloni Laura, Scremin Puhales Franciano, Miglietta Mario.

Atmosphere, Vol. 9 N. 8, Pag. 301, Multidisciplinary Digital Publishing Institute.

2018

A cogeneration power plant to integrate cold ironing and district heating and cooling

Esposito Federico, Mancinelli Enrico, Morichetti Mauro, Passerini Giorgio, Rizza Umberto.

International Journal of Energy Production and Management, Vol. 3 N. 3, Pag. 214-225, WIT Press.

2018

Sensitivity of WRF-Chem model to land surface schemes: Assessment in a severe dust outbreak episode in the Central Mediterranean (Apulia Region)

Umberto Rizza, Mario Marcello Miglietta, Cristina Mangia, Pierina Ielpo, Mauro Morichetti, Chiara Iachini, Simone Virgili, Giorgio Passerini.

Atmospheric Research, Vol. 201, Pag. 168-180, Elsevier.

2017

Heavy Metals Uptake by Trees Near a Waste Incinerator

Mauro Morichetti, Giorgio Passerini, Pranas Baltrėnas, Edita Baltrėnaitė, Gianni Corvatta.

10th International Conference "Environmental Engineering", VGTU University, Vilnius Lithuania.

Conferences

18-20 May 2022

The role of SLCFs in Arctic warming: implementation of WRF-Chem for semi-hemispheric simulations of aerosols and ozone

Mauro Morichetti, Umberto Rizza

X National Conference on Atmospheric Particulate PM2022

24-26 Sept 2019

Multisensory analysis of the exceptional 29 October 2018 event over Italy

Giulia Panegrossi, Anna Cinzia Marra, Francesca Barnaba, Umberto Rizza, Davide Gallicchio, Dario Hourngir, Paolo Sanò, Daniele Casella, Leo Pio D'Adderio, Stefano Dietrich, Luca Di Liberto, Mauro Morichetti, Giorgio Passerini.

2° Congresso Nazionale AISAM, Naples, Italy.

23-25 Sept 2019

Assessing the health impact of airborne pollutants in urban environments: introduction and a review of existing evidence

Giorgio Passerini, Enrico Mancinelli, Mauro Morichetti, Umberto Rizza, and Simone Virgili.

SAFE 2019: 8th International Conference on Safety and Security Engineering, Ancona, Italy.

23-25 Sept 2019

Health risk deriving from simultaneous exposure to several airborne pollutants

Enrico Mancinelli, Diletta Bevilacqua, Mauro Morichetti, Giorgio Passerini, Umberto Rizza, and Simone Virgili.

SAFE 2019: 8th International Conference on Safety and Security Engineering, Ancona, Italy.

- 23-25 Sept 2019** **Implementing a chemical transport model (WRF-Chem) to investigate secondary air pollutants on a regional scale**
Mauro Morichetti, Enrico Mancinelli, Giorgio Passerini, Simone Virgili and Umberto Rizza.
SAFE 2019: 8th International Conference on Safety and Security Engineering, Ancona, Italy.
- 7-8 May 2019** **The influence of biogenic emissions on trace gases: MEGAN sensitivity study**
Mauro Morichetti, Mary Barth, Christine Wiedinmyer, Sasha Madronich, Giorgio Passerini, Diletta Bevilacqua and Umberto Rizza.
European WRF-Chem Workshop 2019, Munich, Germany.
- 10 – 13 Sept 2018** **Recent results on Tropical-like cyclones in the Mediterranean Sea**
Mario Marcello Miglietta, Antonio Ricchi, Davide Bonaldo, Sandro Carniel, Elisa Canepa, Giorgio Passerini, Mauro Morichetti, Umberto Rizza.
1° National Congress AISAM, Bologna, Italy.
- 3 – 7 Sept 2018** **Aerosol-related applications of a coupled weather and chemical transport modelling system: the case study of Vernazza, Cinque Terre**
Francesco Ferrari, Federico Cassola, Andrea Mazzino, Mauro Morichetti, Giorgio Passerini, Mario Marcello Miglietta, and Umberto Rizza
EMS, Budapest, Hungary
- 29 – 31 May 2018** **Evaluation of WRF-Chem model for Saharan dust outbreaks in southern Italy**
Umberto Rizza, Pierina Ielpo, Mario Marcello Miglietta, Cristina Mangia, Mauro Morichetti, Simone Virgili, Giorgio Passerini, Francesca Barnaba, Gian Paolo Gobbi, Luca Di Liberto.
III International Conference on Atmospheric Dust - DUST 2018 Bari, Italy.

- 29 May - 2 Jun 2018** **Numerical simulation of a Mediterranean Hurricane coupling SWAN and WRF-Chem models: investigation of feedbacks among sea spray, drag coefficients, and roughness length**
U. Rizza, E. Canepa, A. Ricchi, S. Carniel, M. Morichetti, G. Passerini, L. Santiloni, F. Scremin Puhales, M. M. Miglietta.
11th HyMeX Workshop, Lecce, Italy.
- 29 May - 2 Jun 2018** **Numerical simulation of heavy precipitation events in Liguria (Italy): sensitivity to microphysics, SST and natural aerosols**
F. Cassola, F. Ferrari, A. Mazzino, M. M. Miglietta, U. Rizza, M. Morichetti.
11th HyMeX Workshop, Lecce, Italy.
- 23 – 25 May 2018** **Implementazione del modello WRF-Chem per il trasporto di polveri minerali/vulcaniche e spray marino nel bacino del Mediterraneo**
Umberto Rizza, Cristina Mangia, Pierina Ielpo, Mario Marcello Miglietta, Mauro Morichetti, Simone Virgili, Ferdinando De Tomasi, Giorgio Passerini.
VIII Convegno Nazionale sul Particolato Atmosferico – Matera, Italy.
- 9 - 12 Oct 2017** **Evaluation of WRF-CHEM model against data during a high PM10 episode in Southern Italy**
Umberto Rizza, C.Mangia, P.Ielpo, M.M.Miglietta, F.Grasso, G.Passerini, M. Morichetti, C. Iachini, S. Virgili, F. de Tomasi, G.P. Gobbi, F. Barnaba, L. Di Liberto.
18th International Conference on Harmonization within Atmospheric Dispersion Modelling for Regulatory Purposes, Bologna, Italy.
- 4 – 8 Sept 2017** **Numerical analysis of a Mediterranean Hurricane coupling the SWAN, WRF and WRF-Chem models: investigation of feedbacks among sea spray, drag coefficients, and latent heat flux**
Umberto Rizza, Elisa Canepa, Giorgio Passerini, Mauro Morichetti, Sandro Carniel, Mario Marcello Miglietta, and Antonio Ricchi.

EMS Annual Meeting: European Conference for Applied Meteorology and Climatology, Dublin, Ireland.

Language skills

Excellent knowledge of written and spoken English learned from daily use at work and improved thanks to the experience abroad.

Computer Skills

Excellent knowledge of Windows and Microsoft Office tools (Word, Excel, and PowerPoint) gained from daily use. Examination ECDL (European Computer Driving License) achieved on 09/06/2005.

Good knowledge of programming language Fortran, NCL (NCAR Command Language) **and R-data.**

Basic knowledge of computer-aided design software (AutoCAD) and Geographic Information Systems (ArcGIS, QuantumGIS).