



Cecilia Magnani

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WORK EXPERIENCE

PhD student in Polar Sciences

CNR ISAC | Ca Foscari University [01/10/2024 – Current]

City: Bologna | Venice | **Country:** Italy

Investigating the influence of aerosol size, chemical composition and aging on Cloud Condensation Nuclei activity in mountain and polar environments:

- Cloud Condensation Nuclei
- Chemical characterization of aerosols
- Particle Number Size Distribution

Research Assistant

National Research Council - The Institute of Atmospheric Sciences and Climate (CNR - ISAC) [09/2022 – 30/11/2024]

City: Bologna | **Country:** Italy | **Business or sector:** Professional, scientific and technical activities

Link: <https://riurbans.eu/project/#at-a-glance>

Supervisor: Dr. Marinoni Angela

Representative for the Pilot City Milan in EU Horizon 2020 RI-URBANS

- Manage and maintain the ToF-ACSM (Time-of-Flight Aerosol Chemical Speciation Monitor) instrument, including regular maintenance, calibration, and data analysis of the chemical composition of the atmosphere.
- Conduct source apportionment using the Source Finder (SOFI) software within the IGOR environment, applying Positive Matrix Factorization (PMF) techniques.
- Represent the Pilot City Milan in Task 4.1 of the project, participate in monthly meetings, and present preliminary results regularly.

Research Team Member at Ottavio Vittori Observatory, Monte Cimone

- Support the regular maintenance of instruments at the Ottavio Vittori Observatory.
- Work with key instruments: Condensation Particle Counter (CPC), Scanning Mobility Particle Sizer (SMPS), Time of Flight Aerosol Chemical Speciation Monitor (ToF-ACSM), Multi-Angle Absorption Photometer (MAAP), Aethalometer Model AE33 (AE-33), Nephelometer (Neph) and Cloud Condensation Nuclei Counter (CCN).
- Install and manage the new Near Real-Time (NRT) software developed by ACTRIS RI for data flow to the central database, and collaborate with the European task leader to address issues and debug the software.

Acquired Competencies

- **Atmospheric Chemistry:** Extensive experience in analyzing the non-refractory portion of submicron atmospheric aerosol using the Time-of-Flight Aerosol Chemical Speciation Monitor (ToF-ACSM), coupled with advanced data analysis techniques such as Positive Matrix Factorization (PMF) for source apportionment.
- **Physical Properties of the Atmosphere:** Expertise in particle number size distribution (PNSD) analysis using the Scanning Mobility Particle Sizer (SMPS), measuring total particle concentrations with the Condensation Particle Counter (CPC), and determining cloud condensation nuclei (CCN) concentrations with the CCN counter.
- **Optical Properties of Aerosols:** Proficient in analyzing the optical properties of aerosols using the Aethalometer Model AE33 (AE33) and Nephelometer (Neph), with strong skills in related data processing and interpretation methods.

Data Entry Operator

ARPAE Emilia Romagna [03/2021 – 04/2022]

City: Bologna | Country: Italy

- Digitized precipitation charts from meteorological stations across the Emilia-Romagna region using the GADI program and ColComp graphical tablet.

Intern

ARPAE Emilia Romagna [03/2021 – 05/2021]

City: Bologna | Country: Italy

- Training in numerical modeling, marine and coastal dynamics, radar meteorology, environmental meteorology, operational meteorology, and climatology.
- Laboratory activities in radar meteorology, numerical modeling, and operational meteorology.

Intern

Air Force Mountain Center on Mount Cimone with University of Bologna [12/2018 – 03/2019]

City: Bologna | Country: Italy

- Study of greenhouse gas concentration analyses, specifically carbon dioxide and methane, conducted using the PICARRO G2301 Greenhouse Gas Analyzer at the Air Force Mountain Center on Mount Cimone and the central office in Sestola (MO).

EDUCATION AND TRAINING

Master Degree in Physics of the Earth System

Alma Mater Studiorum - University of Bologna [10/2019 – 05/2022]

City: Bologna | Country: Italy | Website: <https://corsi.unibo.it/2cycle/PhysicsEarthSystem> | Field(s) of study: Atmospheric Physics | Final grade: 110/110 cum laude | Level in EQF: EQF level 7 | Thesis: development and validation of snow cover maps for studying snowpack variability in Emilia-Romagna from 2000 to 2020 - Supervisors: Dr. Levizzani Vincenzo, Dr. Pavan Valentina, Dr. Pirola Alessandro and Dr. Chatzidaki Efthymia

Link: <https://amslaurea.unibo.it/26151/>

Extensive expertise in atmospheric sciences, atmospheric physics, meteorology, climatology, oceanography, and radiative transfer, cloud physics, atmospheric chemistry, and remote sensing techniques. Experienced in satellite data analysis (MODIS, Sentinel-3) and geospatial data processing software (QGIS).

Bachelor Degree in Physics

Alma Mater Studiorum - University of Bologna [10/2015 – 03/2019]

City: Bologna | Country: Italy | Website: <https://corsi.unibo.it/1cycle/Physics> | Field(s) of study: Physics | Final grade: 97/110 | Level in EQF: EQF level 6 | Thesis: Monitoring of CO₂ and CH₄ at the Air Force Mountain Center on the summit of Mount Cimone - Supervisors: Dr. Porcù Federico, T.Col. Vocino Antonio and Ten. Caracciolo di Torchiareolo Luigi

Link: <https://amslaurea.unibo.it/17680/>

Solid foundation in basic and applied physical and mathematical sciences, along with an informatics background, with specialized coursework in Earth system physics, atmospheric physics, and meteorology

Scientific High School

A.Sorbelli - Scientific High School [09/2010 – 06/2015]

City: Pavullo nel Frignano | Country: Italy | Level in EQF: EQF level 4

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING B2 READING B2 WRITING B2

SPOKEN PRODUCTION B2 SPOKEN INTERACTION B2

Spanish

LISTENING A1 READING A1 WRITING A1

SPOKEN PRODUCTION A1 SPOKEN INTERACTION A1

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

DIGITAL SKILLS

Programming Skills

LaTeX (very good) / GNU Plot : basic level / C++ : basic level / Python: intermediate level / Bash: basic level

Software Skills

QGIS: basic level / LabVIEW: basic level / The Source Finder (SOFI): intermediate level / IGOR: intermediate level / Grafana tool: basic level

PUBLICATIONS

[2024]

One year of aerosol chemical composition and source apportionment in Milan Magnani, C on behalf of Renzi L., Paglione M., Rinaldi M., Petit JE., Timonen H., Zannoni N., Mazzini M., and Marinoni A.

[2024]

Deliverable D32 (D4.11): Initial Analysis of the hot spot pilot results

- *Authors:* Apituley A., Alves Gouveia D., den Hoed M., Knoop S., de Haij M., Nicolae D., Perfetti C., Renzi L., Zannoni N., Mardonez Balderrama V. P., **Magnani C.**, Pasqualini F., Di Liberto L., Barnaba F., Marinoni A., Colombi C., Putaud J. P., Cavalli F., Speet B., Hensen A., de Roode S., Argo M., Bianchi F.
- WP4 - Pilot implementations for testing and demonstrating services
- 26/03/2024

[2024]

Aerosol chemical composition and source apportionment in the Po Valley: one year measurement in two Italian sites, Milan and Bologna Magnani, C, Renzi L., Paglione M., Rinaldi M., Rapuano M. and Marinoni A.

Atmospheric Chemistry and Physics (ACP)

In preparation, planned 2024

CONFERENCES AND SEMINARS

[25/08/2024 – 30/08/2024] Tampere (Finland)

The European Aerosol Conference 2024

- *Talk as Presenting Author:* **Magnani, C.**, Renzi L., Paglione M., Rinaldi M., Zannoni N., Orsini D., Petit JE., Timonen H., Calzolari F., Marinoni A., Aerosol chemical composition and source apportionment in the Po Valley: one year measurement in the frame of RI-URBANS project
- *Talk as Co-Author:* Mardonez Balderrama V.P., Boniardi L., Renzi L., **Magnani C.**, Rapuano M., Zanatta M., Perfetti C., Bigi A., Marinoni A., Black carbon mapping through bicycle-based sampling in Milan, Italy

[09/07/2024 – 10/07/2024] Rome (Italy)

2nd ITINERIS General Meeting

- *Poster as Co-Author:* Rapuano M., Paglione M., **Magnani C.**, Marinoni A. and Rinaldi M., Diurnal and seasonal variability of aerosol chemical composition in an urban background site (Bologna): role of emissions through source apportionment methodologies
- *Poster as Co-Author:* Pasqualini F., Bracci A., Perfetti C., Renzi L., Zannoni N., Zanatta M., **Magnani C.**, Ferraccioli F., Paganini P., Latini D., Barnaba F., Cairo F., Di Liberto L. and Marinoni A., Strengthened atmospheric observations of mobile exploratory platforms through ITINERIS project

[08/06/2024 – 09/06/2024] Sestola/Monte Cimone

20th Anniversary of the Atmospheric Path

- *Talk as Presenting Author:* **Magnani, C.** and Mazzini, M., The New Format of the Atmospheric Path, 20th Anniversary of the Atmospheric Path

[13/05/2024 – 16/05/2024] Rennes (France)

ACTRIS Science Conference 2024

- *Talk as Co-Author:* Zanatta M., Renzi L., **Magnani C.**, Putero D., Cristofanelli P., Vogel F., Bonasoni P. and Marinoni A., 16 years of black carbon observations at the Monte Cimone GAW Global Station

[11/09/2023 – 15/09/2023] Physics Department of the University of Salerno, Fisciano (Italy)

Italian Physical Society - 109th National Congress

- *Talk as Presenting Author:* **Magnani, C.**, Renzi L., Paglione M., Rinaldi M., Zannoni N., Orsini D., Petit JE., Timonen H., Calzolari F., Marinoni A., Estimation of major emission sources of Atmospheric particulate matter and analysis of seasonal and diurnal variability for the cities of Milan and Bologna,

[21/06/2022 – 22/06/2022] Bologna (Italy)

Italian Association of Atmospheric Sciences and Meteorology (AISAM), 2nd Conference on Weather and Climate Forecasting

- *Poster as Mentored Undergraduate:* **Magnani, C.**, Pavan V., Pirola A., Chatzidaki E. and Levizzani V., Satellite estimation of snow cover extent in Emilia-Romagna and its validation using ground-based total snow depth data

HONOURS AND AWARDS

[09/09/2024] Italian Physics Society

Best presentation awards

- Best Communication Award for the Geophysics and Environmental Physics Section at the 109th National Congress of the Italian Physics Society: Publication of an open access paper in *Nuovo Cimento* journal

NEWSLETTERS

[2022]

Abstract of: Development and validation of snow cover maps for studying snowpack variability in Emilia-Romagna from 2000 to 2020

Magnani, C., Pavan V., Pirola A., Chatzidaki E. and Levizzani V., Newsletter AISAM, n.10, p.34, 2022

Link: https://aisam.eu/wp-content/uploads/2022/06/NEWSLETTER-AISAM_010_2022.pdf

WORKSHOPS

[21/04/2024 – 27/04/2024]

WCCAP Calibration Workshop - Leibniz Institute for Tropospheric Research

- Participated in the WCCAP Calibration Workshop, calibration and intercomparison to ensure data quality of Monte Cimone Observatory instrumentation as part of ACTRIS RI.
- Received training on proper calibration procedures and the latest developments in Near Real-Time (NRT) software on-site.
- The workshop allowed me to acquire and refine both theoretical and practical knowledge on particle number size distribution analysis using the Scanning Mobility Particle Sizer (SMPS), total particle concentration measurement with the Condensation Particle Counter (CPC), as well as the maintenance and proper use of these and other optical instruments such as the aethalometer, nephelometer, and MAAP.

[31/01/2024]

Measurements of Nanoparticles Workshop

- Attended a workshop featuring presentations on new results and advancements in atmospheric aerosol analysis.
- Reviewed new instrumentation and technologies for aerosol measurement, including demonstrations.

[23/03/2023]

Tof-ACSM Data Submission Workshop

- Received training on the new tool for submitting Tof-ACSM data to EBAS, designed to comply with FAIR principles (Findable, Accessible, Interoperable, Reusable).

[13/02/2023 – 15/02/2023]

Tof-ACSM Training

- 2 days of lectures about the instrument and data processing software (Tofware).
- 1 day of hands-on training with the instrument, including calibration and cleaning procedures

OUTREACH

Path of the Atmosphere: guided visit to the Mt.Cimone laboratories

- Conducted guided tours of the Ottavio Vittori Observatory at Monte Cimone during summer visits (approximately 8 days).
- Contributed to the development of new informational panels for the "Path of the Atmosphere," aimed at raising awareness about climate issues, pollution, and the role of the observatory.

Researchers' Night: a scientific research outreach event

- Participated in the event for two consecutive years (2022 and 2023), conducting climate and air quality-themed experiments with participants to engage the public in scientific research and education.