



Cecilia Magnani

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WORK EXPERIENCE

CNR ISAC | Ca Foscari University – Bologna | Venice, Italy

PhD student in Polar Sciences

[01/10/2024 – Current]

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

National Research Council - The Institute of Atmospheric Sciences and Climate (CNR - ISAC) – Bologna, Italy

Business or sector: Professional, scientific and technical activities

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

Research Assistant

[09/2022 – 30/11/2024]

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.

 **ARPAE Emilia Romagna** – Bologna, Italy

Data Entry Operator

[03/2021 – 04/2022]

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

 **ARPAE Emilia Romagna** – Bologna, Italy

Intern

[03/2021 – 05/2021]

- 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.

 **Air Force Mountain Center on Mount Cimone with University of Bologna** – Bologna, Italy

Intern

[12/2018 – 03/2019]

- 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 Torchiarolo 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

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

[2025]

Urban CO2 and CH4 atmospheric measurements in the Milan city area (northern Italy)

- *Authors:* Cristofanelli P., Zannoni N., Apadurla F., Barnaba F., Bracci A., Bellini A., Calzolari F., Di Liberto L., Manca G., Mardonez V., **Magnani C.**, Montaguti S., Renzi L., Zazzeri G. and Marinoni A.
- *Journal/Conference:* EGU General Assembly 2025, under review for publication in Atmospheric Environment

[2026]

Online Aerosol Characterization in the Po Valley: A Comparative Study of Bologna and Milan

- Rapuano M., **Magnani, C.**, Renzi L., Paglione M., Rinaldi M. and Marinoni A., Atmospheric Chemistry and Physics (ACP)
- In preparation, planned 2026

[2026]

Centralized Near Real-Time Source Apportionment of Organic Aerosols: Results of a Pilot Study Across Europe

- Petit J.E., [...], **Magnani, C.**, Rapuano M., Renzi L., Paglione M., Rinaldi M. and Marinoni A.
- In preparation, planned 2026

[2026]

Characterization and applications of multi-decadal black carbon observations at a Mediterranean mountain site

- Zanatta, M., Bonasoni P., Cristofanelli P., Eckhardt S., Evangeliou N., **Magnani C.**, Perfetti C., Putero D., Renzi L., Vogel F., and Marinoni A.
- In preparation, planned 2026

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 J.E., 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

[31/08/2025 – 06/09/2025] Lecce

The European Aerosol Conference 2025

- *Poster as Presenting Author:* **Magnani, C.**, Zanatta M., Vogel F., Renzi L., Mazzini M., Decesari S., Cristofanelli P., Gambaro A., Marinoni A., Cloud Condensation Nuclei properties and variability at Mt. Cimone station
- *Talk as Co-Author:* Mazzini M., Bettineschi M., Ciarelli G., Arduini J., Maione M., **Magnani C.**, Cristofanelli P., Bonasoni P., Bianchi F., Marinoni A., Particle Size Distribution and New Particle Formation in the Mediterranean Free Troposphere: Two Decades of Observations at Monte Cimone
- *Poster as Co-Author:* Rapuano M., **Magnani C.**, Rinaldi M., Paglione M., Bracci A., Pasqualini F., Renzi L., Mazzini M., Montaguti S., Calidonna C. R., Zanatta M., Perfetti C., Zannoni N., Decesari S., Marinoni A., Chemical composition, sources and vertical transport of non-refractory submicron aerosol in Po Valley: simultaneous online measurements at Bologna (54 m a.s.l.) and Mt. Cimone (2165 m a.s.l.)
- *Poster as Co-Author:* Zanatta M., Bonasoni P., Cristofanelli P., Eckhardt S., Evangeliou N., **Magnani C.**, Putero D., Renzi L., Vogel F., Marinoni A., Decreasing or increasing pollution in the Mediterranean atmosphere? 16 years of black carbon observations at the Monte Cimone GAW Global Station integrated with FLEXPART and COPERNICUS products
- *Poster as Co-Author:* Balderrama Mardonez V. P., Renzi L., Boniardi L., **Magnani C.**, Rapuano M., Zanatta M., Bigi A., Pasqualini F., Colombi C., Marinoni A., Bicycle-based mapping of black carbon across the streets of Milan

[27/04/2025 – 02/05/2025] Vienna (Austria)

EGU General Assembly 2025

- *Talk as Co-Author:* Cristofanelli P., Zannoni N., Apadula F., Barnaba F., Bracci A., Bellini A., Calzolari F., Diliberto L., Manca G., Mardonez V., **Magnani, C.**, Montaguti S., Renzi L., Zazzeri G., and Marinoni A.: Urban CO₂ and CH₄ atmospheric measurements in the Milan city area (northern Italy)

Link: <https://doi.org/10.5194/egusphere-egu25-17963>

[20/04/2026 – 23/04/2026] Oslo (Norway)

ACTRIS Science Conference 2026

- *Talk as Presenting Author:* **Magnani C.**, Zanatta M., Vogel V., Renzi L., Mazzini M., Decesari S., Cristofanelli P. and Marinoni A., Impact of particle size variability on cloud condensation nuclei population in a mountain environment (*accepted for oral presentation*).
- *Talk as Co-Author:* Rapuano M., Simon L., Paglione M., **Magnani C.**, Renzi L., Brem B., Modini R.L., Zanatta M., Decesari S., Mohr C., Gysel-Beer M., Rinaldi M., Marinoni A., Studying the Boundary Layer Dynamics Influence

on aerosol composition: A multi-site ACTRIS comparison across different altitudes over Italy and Switzerland (*accepted for oral presentation*).

- Talk as Co-Author: Marinoni A., Vogel F., Mazzini M., **Magnani C.**, Renzi L., Zanatta M., Eckhardt S., Evangeliou N., Long-term aerosol in-situ observations at the Monte Cimone: two decades of Saharan dust events, black carbon observation and new particle formation in the Mediterranean free troposphere (*accepted for oral presentation*).

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

GRANT

[14/07/2025 – 18/07/2025]

ITINERIS – ACTRIS Pilot Access Call: KALI-28 Investigation for ToF-ACSM Efficiency (KITE)

- Transnational Access (TNA) **project submitted and awarded** (1000 €)
- **Project Leader** of the *KALI-28 Investigation for ToF-ACSM Efficiency (KITE)* project, conducted within a Transnational Access (TNA) framework and awarded under the ITINERIS – ACTRIS Pilot Access Call.
- The project involved hands-on training on the calibration procedures of the Time-of-Flight Aerosol Chemical Speciation Monitor (ToF-ACSM) using the KALI-28 calibration system, provided to the research team at the observatory.

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

[01/12/2024 – 07/12/2024]

WCCAP TROPOS CCNC Workshop - Leibniz Institute for Tropospheric Research

Hands-on training on maintenance, operation, and calibration of the Cloud Condensation Nuclei Counter (CCNC).

[10/12/2024 – 11/12/2024]

ZeFir Workshop (online)

Training on the ZeFir software tool for atmospheric data analysis.

[19/05/2025 – 21/05/2025]

ITINERIS Atmospheric Standardized Observations: Methods and Maintenance in Observatories – In-Situ

Course covering in-situ atmospheric measurement techniques for researchers at National Facilities, advanced students, and ACTRIS/ICOS professionals.

[15/06/2025 – 27/06/2025]

ITINERIS Atmospheric Data Acquisition, Processing, and Submission – In-Situ

Course focused on data handling for ACTRIS and ICOS aerosol measurements, including processing and submission of in-situ data.

[26/10/2025 – 28/10/2025]

Ny-Ålesund Atmospheric Flagship Workshop (Oslo, Norway)

The workshop provided an opportunity for researchers working on atmospheric science topics related to Ny-Ålesund to discuss common research interests and plan future collaborations.

GIVEN SEMINARS AND WORKSHOPS

[04/07/2025 – 04/07/2025]

ITINERIS – ACTRIS Pilot Access Call: TRAIning on tools for evaluation of the CoEfficient of AIR Visibility (TraCE-VAir)

Theoretical and hands-on training on the cleaning and maintenance procedures of the Condensation Particle Counter (CPC, Model 3750), including the preparation of an original, unpublished technical manual.

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.

[12/03/2025 – 12/03/2025]

A Climate Observatory Among the Clouds – “Un pozzo di scienza” series

Online meeting with high school students (scientific and socio-economic tracks) from Emilia-Romagna, Italy. Event promoted by the Hera Group under the patronage of the Regional School Office and supported by the cooperative “La Lumaca”

[2024]

Interviewee – TV program “Buone Cose” (TRC Modena, Emilia-Romagna)

On-site television interview at Mt. Cimone Climate Observatory about atmospheric research, air quality, and climate change.

[2023]

Featured in the short film “Qui prima che altrove”

Di Davide Carnevale, Emanuele De Santis, Marco Pissard e Sofia Zanotti

Link: https://vimeo.com/891170464?turnstile=0.C0LFY-GUyBFExIzjG6-27Bjcq55qKE5YqYlPKbgDbpZGtDRGgtazr1SuN-jDHWVvwGaBO2TaitSVP-ZnUqv2eUawjDiWE4PCIFcC7VowjSy50leLH_7xD2BziDG9nN0tswxJqv8jNfhFeq1DvTjvuYqfL0FdH5RoSFvQNUVyCmwXS HF4C0pmRTnbedgGUByj5uCD_aJndA59oiBH2JMz8R3mcwpRQaY60OYRP0Pit3LPiqJPpju-mE7hjCgrztRx37tWpRwzoMP14FFuh8hkLIMHMEWB4wsFoCdGdiaghB_jwATiWM-CeiNcFS4Wt86sPeK2n-AZWN5AflpotjWAKTJBKrvYc9xC9VirCaFP6COL6S1yydtnyz_tzv0A-APIBUGaeyEGO0gj30HpulFIJQXB2NbrbGuXXebhApdnVSkqBNi9p9BYIGBNCF2uldMwD0iiPxi8qY_tjCdm5mKOBXZdh xbdzo_9g0NaAvNYkaxfuPB5kk6siuWNHRES2zKQRDhpbXpvNPNVKS8og4LMazEcBtxmqvrbITNI0illmn6vZWuCYvBIK4XkRaKUcGd-ktexhp_g82caxpfkxbzbLV2awQFZNzQixSf1CmAX8CbLaEi8NKOeUq5gA0WYkvJlmlw7IH5_7ssFXhoCvErqu9Gitvy20bEsE0suRJDpmbIrNqEIX9whs7g1_HifktmwS5NIXD81WLUqxEZC-WXCxxqAyF5NDDnawkrL4MvH8neTR1zBbTKvrXxKOTqYqrLglOwudl6Yvo2UGgaXZOH4tGwsQR_WKKbKMdTf0asww8u0l-T4aF3koDNZFoBgLtXIDyZPuSxWYb4o6iv8bBMfXMVzai9bjY-wf8l8E4knf42NWqvJHvFPMkICv_20SXSSS_QKkHuqnAVyRIKSLCi-tsBEHcKwqsnlw4AqOimPCzLkbl1Y6TDRJMr87l.GTsvBflvSo6HD8_ggaqmFA.d4988b304dd352d68d23f25a5ba34c8c442956e6f2908c513ae430fdc1da985c