

Michele Martinazzo

 Michele231 |  UNIBO webpage |  michele.martinazzo2@unibo.it

RESEARCH ACTIVITIES

Research Fellow at the University of Bologna since February 2024, I conduct my research in the field of radiative transfer and its application for satellite and ground-based remote sensing. Specifically, my primary focus involve using ground-based remote sensing to detect and characterize aerosols in urban areas, as part of the European project RETURN.

In parallel, I actively participated in various projects sponsored by the Italian Space Agency (ASI) and the European Space Agency (ESA). Namely the ASI *FORUM-scienza* and *FIT-FORUM*, for the development of software for the supporting of the future [ESA FORUM mission](#), and the ESA *FORUM end-to-end simulator*.

PROFESSIONAL PREPARATION AND APPOINTMENTS

Tutoring Activities:

- International School on Satellite Meteorology (University of Naples Federico II) Sep 2024
- Radiative Transfer: Theory and Modeling (University of Bologna) Feb 2024 - Jun 2024
- Radiative Transfer: Theory and Modeling (University of Bologna) Feb 2023 - Jun 2023
- Radiative Transfer and Remote Sensing (University of Bologna) Feb 2022 - Jun 2022
- Laboratory of Atmospheric Physics (University of Bologna) Oct 2021 - Dec 2021

Postdoctoral Research Fellow at the University of Bologna Jan 2024 - Present

- Remote sensing ground-based measurements for aerosol detection and properties retrieval in urban environment. Multi-Risk sciEnce for commUnities under a changiNg climate (RETURN) project.

Visiting Student at University of Wisconsin-Madison Aug 2022 - Nov 2022

- General study on the use of fast radiative transfer code for the NASA PREFIRE (Polar Radiant Energy in the Far-InfraRed Experiment) mission.

World Meteorological Organization (WMO) Meteorologist Certification Oct 2021

Funded Internship at University of Florida Jul 2017 - Sep 2017

- Implementation of an interferometric measurement system for the stability of macroscopic structure at the level of the picometer.

EDUCATION

2024 Ph.D. (Physics of Atmosphere and Meteorology) at **University of Bologna**

2020 M.Sc. (Physics of Earth System) at **University of Bologna**

– *Cloud Optical Properties Parameterization for Infrared High Spectral Resolution Fast Codes*

2018 B.Sc. (Physics) at **University of Padova**

– *Implementation of an interferometric measurement system for the stability of macroscopic structure at the level of the picometer*

HONORS AND AWARDS

2021 Best Thesis Award, Department of Physics and Astronomy, University of Bologna.

PROJECTS

pyUFO

[pyUFO Repository](#)

pyUFO is a Python library specifically designed to assist with the management of satellite field of view (FOV) data. The current version of the library provides the ability to project a general FOV shape onto a sphere, returning the latitude and longitude of the FOV contour.

σ -IASI

[\$\sigma\$ -IASI Repository](#)

The radiative transfer code σ -IASI consists of a monochromatic radiative transfer model, which has been designed for the fast computation of spectral radiance and its derivatives (Jacobian) with respect to a given set of geophysical parameters.

PUBLICATIONS

Masiello, Guido et al. (2024). “The new σ -IASI code for all sky radiative transfer calculations in the spectral range 10 to 2760 cm⁻¹: σ -IASI/F2N”. In: *Journal of Quantitative Spectroscopy and Radiative Transfer* 312, p. 108814. ISSN: 0022-4073. DOI: <https://doi.org/10.1016/j.jqsrt.2023.108814>. URL: <https://www.sciencedirect.com/science/article/pii/S0022407323003321>.

Serio, Carmine et al. (2024). “Demonstration of a physical inversion scheme for all-sky, day-night IASI observations and application to the analysis of the onset of the Antarctica ozone hole: Assessment of retrievals and consistency of forward modeling”. In: *Journal of Quantitative Spectroscopy and Radiative Transfer* 329, pp. 1–19. DOI: <https://dx.doi.org/10.1016/j.jqsrt.2024.109211>.

Martinazzo, Michele and Tiziano Maestri (2023). “The MAMA Algorithm for Fast Computations of Upwelling Far- and Mid-Infrared Radiances in the Presence of Clouds”. In: *Remote Sensing* 15.18. ISSN: 2072-4292. DOI: [10.3390/rs15184454](https://doi.org/10.3390/rs15184454). URL: <https://www.mdpi.com/2072-4292/15/18/4454>.

Di Natale, G. et al. (2022). “Consistency test of precipitating ice cloud retrieval properties obtained from the observations of different instruments operating at Dome C (Antarctica)”. In: *Atmospheric Measurement Techniques* 15.24, pp. 7235–7258. DOI: [10.5194/amt-15-7235-2022](https://doi.org/10.5194/amt-15-7235-2022). URL: <https://amt.copernicus.org/articles/15/7235/2022/>.

Cossich, W. et al. (2021). “Ice and mixed-phase cloud statistics on the Antarctic Plateau”. In: *Atmospheric Chemistry and Physics* 21.18, pp. 13811–13833. DOI: [10.5194/acp-21-13811-2021](https://doi.org/10.5194/acp-21-13811-2021). URL: <https://acp.copernicus.org/articles/21/13811/2021/>.

Martinazzo, Michele, Davide Magurno, et al. (2021). “Assessment of the accuracy of scaling methods for radiance simulations at far and mid infrared wavelengths”. In: *Journal of Quantitative Spectroscopy and Radiative Transfer* 271, p. 107739. ISSN: 0022-4073. DOI: <https://doi.org/10.1016/j.jqsrt.2021.107739>. URL: <https://www.sciencedirect.com/science/article/pii/S0022407321002326>.

CONFERENCES AND WORKSHOP ABSTRACT

- 2024 [Poster] Martinazzo, M. et al. *"IASI cloud detection on the Antarctic plateau and comparison with ground-based interferometric measurements"*, IASI conference 2024.
- 2024 [Oral] Martinazzo, M. *"Scaling methodologies for fast computation of upwelling Far- and Mid-Infrared radiances in the presence of clouds"*, European Space Agency 2st FORUM Early Career Seminar.
- 2024 [Poster] Martinazzo, M. and Maestri, T. *"Fast computations of upwelling Far- and Mid-infrared radiances in the presence of clouds: the MAMA algorithm"*, European Space Agency ATMOS-2024.
- 2023 [Poster] Martinazzo, M. and Maestri, T. *"The MAMA Algorithm for Fast Computations of Upwelling Far- and Mid-Infrared Radiances in the Presence of Clouds"*, 2nd Earth Explorer 9 FORUM workshop.
- 2023 [LT] Martinazzo, M. et al. *"Cloud Identification and Classification from Ground Based and Satellite Sensors on the Antarctic Plateau"* EGU General Assembly 2023.
- 2023 [Poster] Masin, F. et al. *"About the use of Satellite Hyperspectral Images for Methane Detection"* EGU General Assembly 2023.
- 2022 [Oral] Martinazzo, M. et al. *"Cloud Detection and Properties from Ground-Based and Satellite Sensors on the Antarctic Plateau"*. AMS Collective Madison Meeting.
- 2022 [Oral] Cossich, W. et al. *"Cloud occurrence on the Antarctic plateau: ground-based detection and satellite products"*. EGU General Assembly 2022.
- 2022 [Oral] Martinazzo, M. et al. *"A New Cloud Properties Parameterization Implemented in the Fast Radiative Transfer Code sigma-FORUM"*. EGU General Assembly 2022.
- 2021 [Poster] Martinazzo, M. et al. *"Assessment of Accuracy of Scaling Methods for the Computation of Satellite Spectral Radiances at Longwaves"*. European Space Agency ATMOS-2021.
- 2021 [Oral] Martinazzo, M. et al. *Simulation of Clouds and Aerosols in Fast Radiative Transfer Codes*. European Space Agency 1st FORUM Early Career Seminar.

SKILLS

Programing Languages FORTRAN95, FORTRAN2003, C++11, Python, Matlab, Bash
Spoken Languages Italian (Native), English (Proficient)