



Ilenia Manco

✉ Email: ilenia.manco@cmcc.it

in LinkedIn: www.linkedin.com/in/ilenia-manco-71991117a

👤 ResearchGate: https://www.researchgate.net/profile/Ilenia-Manco?ev=hdr_xprf

ABOUT MYSELF

Climate scientist with a Ph.D. in Atmospheric Physics and Oceanography, specializing in deep-learning models for climate downscaling. She earned her Master Degree in Climate Science (110/110 cum laude with special mention) at the University of Naples "Parthenope" in 2021, where her thesis focused on developing and validating an optimized WRF configuration over Italy. Certified by the World Meteorological Organization in Meteorological Training, she has been a junior researcher at CMCC's Regional Models and Geo-Hydrological Impacts Division since 2021. Her expertise spans statistical and dynamical downscaling, benchmarking AI-driven methods against physics-based models, and applying machine-learning (including deep-learning) techniques to address several climate and weather challenges, such as identifying climate patterns and improving extreme-event forecasts.

EDUCATION AND TRAINING

Ph.D. in Atmospheric Physics and Oceanography

Alma Mater Studiorum - Università di Bologna [10/2021 – 04/2025]

City: Bologna | Country: Italy | Website: <https://phd.unibo.it/future-earth-climate-change-societal-challenges/en>

| Field(s) of study: Natural sciences, mathematics and statistics | Thesis: AI-ASSISTED CLIMATE DOWNSCALING FOR RAPID ASSESSMENT OF ERA5 REANALYSIS ACROSS DIFFERENT GEOGRAPHICAL DOMAINS

Developed a novel cGAN model that generates a fully deep-learning-based high-resolution (~2.2 km) dataset for two key atmospheric fields, 2-m temperature and total cumulative precipitation, from ERA5 (0.25°) reanalysis data, faithfully reproducing spatial patterns and percentile distributions, and demonstrating its robustness and reproducibility both over the Italian Peninsula and across the United States during an intership with NCAR.

Master's Degree

Università degli Studi di Napoli Parthenope [09/2019 – 04/2021]

City: Napoli | Country: Italy | Field(s) of study: Natural sciences, mathematics and statistics | Final grade: 110/110 cum laude and special mention | Thesis: Development and analysis of an optimized configuration of the WRF model in Italy: validation of the results obtained from sensitivity tests

FORECASTER

Università degli Studi di Napoli Parthenope [10/2019 – 10/2020]

Drafting of weather reports in the short term, valid for the territory of Campania and for the city of Naples. Activity carried out continuously, on an average weekly basis, in full compliance with the protocols that regulate the drafting of weather reports within the Meteorological Center of the University of Naples Parthenope.

FORECASTER (30TH SUMMER UNIVERSIADE)

Università degli Studi di Napoli Parthenope [06/2019 – 07/2019]

Internship activities carried out in the framework of the agreement between the Department of Science and Technology and FISU (International University Sports Faith Ration) on the occasion of the event "30THSUMMER UNIVERSIADE". Drafting in Italian and English of daily weather reports and 3 hours, compiled for the locations where competitions and outdoor training were held. Development of a medium- and long-term meteorological trend. Real-time monitoring of radar and satellite products during adverse weather events.

Bachelor's Degree

Università degli Studi di Napoli Parthenope [09/2017 – 12/2019]

City: Napoli | Country: Italy | Field(s) of study: Natural sciences, mathematics and statistics | Final grade: 110/110 cum laude and special mention | Thesis: Thunderstorms and tornadoes: genesis, development and identification through radar measurements

OCEANOGRAPHIC CAMPAIGN "EVATIR 2019" ON THE SHIP "Dalla Porta"

IAMC-CNR [08/2019 – 08/2019]

Scientific High School Diploma

ISIS "Rita Levi Montalcini" [09/2009 – 07/2014]

Final grade: 100/100

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING C1 READING C1 WRITING C1
SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

French

LISTENING B2 READING B2 WRITING B2
SPOKEN PRODUCTION B1 SPOKEN INTERACTION B2

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

WORK EXPERIENCE

 **IAMC-CNR** – Italy

Country: Italy

Post-doctoral researcher

[15/04/2025 – Current]

She coordinates a team focused on advanced machine-learning and deep-learning techniques for meteorological and climate applications, including the identification of recurring patterns and their evolution under various emission scenarios during extreme events, lightning event forecasting, and the generation of high-resolution forecasts using generative methods. Conducts climate simulations with physics-based models and benchmarks statistical versus dynamical downscaling approaches.

Post-degree researcher

[01/03/2024 – 14/04/2025]

Internship

[08/2024 – 11/2025]

Affiliation

[11/2022 – 01/2024]

Oceanographic Campaign

[08/2022 – 08/2022]

Post-degree researcher

[05/2021 – 10/2022]

CERTIFICATES & BADGES

[01/2024 – 06/2024]

AcES – Academic English Skills

Badge certifying advanced written and oral academic English proficiency, including: development of an academic voice; clear, coherent text production; performance anxiety management; use of academic phrasebank and AWL vocabulary; paraphrasing and citation without plagiarism; and presentation and discussion skills for research contexts.

Link: <https://bestr.it/award/show/CiHTdRgPQdqvFnB952JyOA>

[01/2023 – 04/2023]

MOOC Machine Learning in Weather & Climate

Organized by the European Centre for Medium-Range Weather Forecast (ECMWF) in partnership with the International Foundation Big Data and Artificial Intelligence for Human Development (IFAB). Different certificates:

- Machine Learning in Weather & Climate
- Concepts of Machine Learning
- Practical Machine Learning and Applications in Weather & Climate

These tiers cover a wide range of topics, including the main topics, from the processing of observations to data assimilation, post-processing, and forecasting

DIGITAL SKILLS

Technical Skills & Tools

Programming & Environments:

- Python, MATLAB, R, Linux, Windows

Climate Data Libraries & Tools:

- xarray, netCDF4, cfrib, Iris
- CDO, NCO, Panoply, Ocean Data View (ODV)

AI / ML Libraries:

- TensorFlow, Keras, PyTorch, scikit-learn

Data Analysis & Visualization:

- Pandas, NumPy, Matplotlib, Cartopy, Seaborn

Workflow & Collaboration:

Jupyter Notebook, QGIS, Microsoft Office (Word, PowerPoint, Outlook, Teams)

PROJECTS

REMHI-CMCC

PNRR-HAMMON (current)

PNRR-HPC (current)

IRIDE (current)

SILVANUS

GLORI4DE

HIGHLANDER

ADRIACLIM

FRAMESPORT

STREAM

[2021 – 2023]

University of Study of Naples "Parthenope"

AEROMAT

CONFERENCES & SEMINARS

[12/05/2025 – 14/05/2025] Milano, Italy

AI-WEEK

[26/05/2025 – 29/05/2025] Lecce, Italy

Annual Meeting CMCC

Oral presentation

[22/04/2025 – 24/04/2025] Lecce, Italy

Workshop CMCC - NCAR

Oral presentation

[09/02/2025 – 14/02/2025] Pune, India

India-Italy Workshop on "Machine Learning Applications in Climate and Ocean Science"

Oral Presentation and Poster Session

[25/11/2024 – 27/11/2024] Bologna, Italy

IDEA-S4S

Oral presentation

[24/09/2024 – 27/09/2024] Lecce, Italy

MEDCLIVAR-SISC 2024

Oral presentation

[26/05/2024 – 28/05/2024] Lecce (remote)

Annual Meeting CMCC

Oral presentation

[22/04/2024 – 24/04/2024] London, UK

Climate Informatics 2024

Oral presentation

[10/03/2024 – 17/03/2024] Reading, UK

Training course: EUMETSAT/ECMWF NWP-SAF satellite data assimilation

[23/11/2023 – 27/11/2023] Rwanda (remote)

WCRP OSC

Poster

[19/12/2022 – 20/12/2022] Lecce, Italy

Winter Meeting CMCC

Oral presentation

[27/11/2022 – 02/12/2022] Prague, CZ

IS-ENES3 Central Eastern Europe Autumn School

School and oral presentation, Charles University in Prague

[21/06/2022 – 22/06/2022] Bologna, Italy

Seconda Conferenza Nazionale sulle Previsioni Meteorologiche e Climatiche

Poster

[28/02/2022 – 01/03/2022] Bologna, Italy

IDEA-S4S

Oral presentation

[15/02/2022 – 19/02/2022] Milano, Italy

Quarto Congresso Nazionale AISAM

Poster

Autorizzo il trattamento dei miei dati personali presenti nel CV ai sensi dell'art. 13 d. lgs. 30 giugno 2003 n. 196 - "Codice in materia di protezione dei dati personali" e dell'art. 13 GDPR 679/16 - "Regolamento europeo sulla protezione dei dati personali".