

PERSONAL INFORMATION

Rossella Ferretti



 University of L'Aquila, Department of Physics and Chemistry - CETEMPS

 0862433081  3394786479

 rossella.ferretti@univaq.it

 <https://scholar.google.com/citations?user=QFX-2PEAAAAJ&hl=it>

ORCID ID <https://orcid.org/my-orcid?orcid=0000-0003-1630-2698>

Date of birth 03/05/1956 | Nationality Italy

Current Position Full Professor

RESEARCH INTERESTS

Summary

Rossella Ferretti received the Ph.D. degree in geophysics from the School of Geophysical Sciences, Georgia Institute of Technology, Atlanta GA, USA, in 1986, and the second Ph.D. degree in physics and "Laurea" in physics, "summa cum laude," from the University of Rome "La Sapienza," Rome, Italy, in 1987. She is the Director of the master's degree in Atmospheric Science and Technology, University of L'Aquila-University of Rome "Sapienza." From September 2015 to February 2017, she was the Lead Scientist for Nowcasting and NWP, at the Danish Meteorological Institute Copenhagen, Denmark. During 2013–2015, she was the Vice-Coordinator/Director of the Virtual Operational Italian Meteorological Center (VOC), L'Aquila, Italy, during the HyMex campaign (September–November 2012). Since 2021, she has been a Full Professor at the Department of Physics, University of L'Aquila, L'Aquila, Italy. During 1998–2015, she has taught at least three graduate and undergraduate classes every academic year, among them: Dynamic meteorology, climatology, mesoscale modeling, and laboratory for computational physics. During 2017–2018, she has taught: Dynamic meteorology, physics of fluid, introduction to computational physics. During 2016 – 2018, she taught the following class "Errors source in NWP" for the Master di II livello in "Analisi e Mitigazione del Rischio Idrogeologico" – Dipartimento di Scienze della Terra. From 2001–today, she led the Meteorological Modelling Group, Center of Excellence for Prediction of Severe Events (CETEMPS), University of L'Aquila, and in charge of the operational weather forecast at CETEMPS (<http://cetemps.aquila.infn.it>). She is the author of more than 60 papers in international peer refereed journals. She is an expert in mesoscale modeling. She developed a deep knowledge of the mesoscale modeling MM5 and of the new generation weather research and forecasting model (WRF) from NCAR and is the in charge of several national and international projects. She is the Referee for several international journals, Guest Editor for the Quarterly Journal of the Royal Meteorological Society for the special issue "Hymex campaign," Reviewer for the Research Council of Norway for a proposal on orographic precipitation, and for the Netherlands e-Science Center (NLeSC), the Netherlands Organization for Scientific Research (NWO), and the Italian Super Computing Resource Allocation promoted by CINECA.

Bibliometric Indicators

h-index=17 H WOS
 h-index=18 H SCOPUS
 h-index=22 H GOOGLE SCHOLAR
 CI=1345

WORK EXPERIENCE

- 2023 Director of Center of Excellence CETEMPS – University of L'Aquila
- 2022 Member of CIRIAF (UNIPG). Member of ISCRA (CINECA).
- 2021- present Full Professor, University of L'Aquila (Italy), Department of Physics and Chemistry.
- 2021 Member of the committee for a competition for a position of Full Professor at the University of Piemonte Orientale. Member of the committee for a competition for a position of RTDa at University of Naples, Parthenope and University of Milan.
- 2021 Re-elected Chairman of the Laurea Magistrale in Atmospheric Science and Technology at the University of L'Aquila and at the University of Rome (<http://www.lmast.it>).
- 2019 Member of several committee for RTDa competitions.

EDUCATION AND TRAINING

| | |
|--------------|--|
| 1987 | Ph.D. in Geophysics, at the School of Geophysical Sciences of the Georgia Institute of Technology (Atlanta GA, USA), with the Thesis: " <i>Wave disturbances associated with the Red River Valley severe weather outbreak of 10-11 April 1979</i> ". |
| 1987 | The above US Ph.D. is officially acknowledged by the Italian Ministry of the University (MIUR) as an Italian PhD in Physics. |
| 1980 | "Laurea" in Physics, " <i>Summa cum laude</i> ", at the University of Rome "La Sapienza" with the Thesis: " <i>Simulation of SO₂ dispersion in the atmosphere of the urban area of Rome using a dispersion model</i> ". |
| 2013 | Qualified as Full Professor for the area 04/A4 Geophysics, Italian National Scientific Qualification, Procedure 2012. (https://abilitazione.cineca.it/ministero.php/public/esitoAbilitati/settore/04%252FA4/fascia/1). |
| 2006 to 2021 | Associate Professor, University of L'Aquila (Italy), Department of Physics. |
| 1990-2006 | Researcher, University of L'Aquila (Italy), Department of Physics |

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s) English

| COMPRESIONE | | PARLATO | | PRODUZIONE SCRITTA |
|-------------|---------|-------------|------------------|--------------------|
| Ascolto | Lettura | Interazione | Produzione orale | |
| C1 | C1 | C1 | C1 | C1 |

Danish: only basics

Levels: A1/2: Basic user – B1/2: Independent user – C1/2 Proficient user
Common European Framework of Reference for Languages

INSTITUTIONAL RESPONSIBILITIES

| | |
|------------------|---|
| 2022 | Rector's delegate for the PNRR- PE3 'Rischi ambientali naturali e antropici' Member of the ISCRA Panel at CINECA |
| 2018 to present | Member of the Comitato di indirizzo del CRC (Section of CIRIAF, University of Perugia) |
| 2018 to present | Chairman of the newly established Laurea Magistrale in Atmospheric Science and Technology at the University of L'Aquila and at the University of Rome (http://www.lmast.it). |
| 2016 | Member of the committee for a scientific agreement between University of L'Aquila and ISAC-CNR. |
| 9/2015 to 2/2017 | Danish Meteorological Institute (DMI) representative in the Task Team of Service (Improve public weather services across Europe & impact based warnings) in EUMETNET Strategy Implementation Group. DMI representative at the Hirlam Advisory Committee of the Hirlam-C Consortia. DMI representative at the Energy Horizon2020 Reference Group in Denmark. |
| 2014 to present | Lead Scientist at the DMI for Nowcasting and NWP. |
| 2013-2015 | Member of the teaching committee for PhD School FERIA at University of Naples 'Parthenope'. |
| 2001 to present | Vice-Director of the Center of Excellence for Prediction of Severe Events (CETEMPS). Leads the Meteorological Modelling group and is in charge of the operational weather forecast at CETEMPS at the University of L'Aquila (http://cetemps.aquila.infn.it). |

NATIONAL AND INTERNATIONAL GRANTS
(as principal investigator)

ECMWF: "Investigating the impact of radar data assimilation using 3D-Var, 4D-Var and ensemble Kalman Filter into the high resolution weather forecast", funded through computer time; Regione Abruzzo: high resolution weather forecast; Presidenza del Consiglio dei Ministri Dipartimento della Protezione Civile (DPC): IDRA I and IDRA II, Test and tune of high resolution weather forecast; ESA: METAWAVE,

Mitigation of Electromagnetic Transmission errors induced by Atmospheric Water Vapour Effects, Data Assimilation within a numerical weather prediction model; EU: TOUGH project for GPS data assimilation; EU: SCOUT-O3 study of deep convection in the tropical area; Italian Space Agency (ASI): NOWCASTING, for flood forecasting; National Research Council (CNR): Modellistica delle precipitazioni intense tramite un modello non idrostatico' and 'Modellistica a mesoscala e scala locale per lo studio delle brezze e degli inquinanti in area urbana'.

TEACHING ACTIVITY

1998-2022 She has taught at least three graduate and/or undergraduate classes every academic year; among them: Dynamic Meteorology, Climatology, Mesoscale modelling, Laboratory for Computational Physics, Physics of Fluids, Introduction to Physics, Foundations of Meteorology: Synoptic and Physical Meteorology, Atmospheric Dynamics: Meteorological Modeling and Climate Modeling, Laboratory of Mechanics and Thermodynamics

2006-2007, 2007-2008, 2008-2009, 2009-2010

Modellistica Meteorologica (Scienze e Tecnologia della Navigazione, Università Parthenope, Napoli).

2010-2011, 2011-2012

Modellistica Climatologica II (Scienze e Tecnologia della Navigazione, Università Parthenope, Napoli).

ORGANIZATION OF SCIENTIFIC MEETINGS (in the last 10 years)

2022 Scientific committee of SISC 2022
 2020 Member of the scientific committee of 3°AISAM meeting, L'Aquila 19 February 2021
 2019 Member of the scientific committee of 2°AISAM meeting, Napoli, 2019
 2018 Local committee for the ISSAOS Summer school on 'Climate Changes: Regional Modeling, data analysis and uncertainties'
 2012 Coordinator/Director of the Virtual Operational Italian Meteorological Center (VOC) in L'Aquila during the HyMex campaign (Sep-Nov 2012).

FURTHER INFORMATION

She is an expert in Mesoscale modelling; she has a long record of investigation on the role of physical processes in severe weather events and orographic precipitation, and data assimilation of conventional and non-conventional data (satellite data, InSar and radar data). She was invited several times at NCAR to work on orographic precipitation in complex orography. She developed a deep knowledge of the Mesoscale Modelling MM5 and of the new generation Weather Research & Forecasting model (WRF) from NCAR. A few years ago, she worked with the HARMONIE-AROME model both using DMI and ECMWF super-computer. She developed the operational regional ensemble forecast at CETEMPS (http://magritte.aquila.infn.it/meteo/wrf9km_gefs/). During the sabbatico at UNIVPM, in cooperation with OCEAN-LAB of UNIVPM, she developed an operational system for a fully coupled atmosphere-ocean system (<http://oceanlab.univpm.it>).

Digital skills

Programming: Fortran 77 and 90, shell scripting
 Numerical models: MM5, WRF, Harmonie

ATTACHMENT

- List of the top publications in the main research field (in the last ten years)

Personal data

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV

Date: Ancona, 19 April 2022

Signature: Rossella Ferretti



List of the top publications in the main research field (in the last ten years)

1. Barbariol F., S. Davison, F. M. Falcieri, R. Ferretti, A. Ricchi, M. Sclavo, A. Benetazzo: Wind waves in the Mediterranean Sea: an ERA5 reanalysis wind based climatology. *Frontiers in Marine Science*, 8, 2021. doi: 10.3389/fmars.2021.760614
2. Mazzarella V., R. Ferretti, Picciotti E., F.S. Marzano: Investigating 3D and 4D Variational Rapid-Update-Cycling Assimilation of Weather Radar Reflectivity for a heavy rain event in Central Italy. *NHESS*, 21, 2849-2865, 2021. <https://doi.org/10.5194/nhe-21-2849-2021>
3. R. Ferretti, A. Lombardi, B. Tomassetti, L. Sangelantoni, V. Colaiuda, V. Mazzarella, I. Maiello, and M. Verdecchia: A meteorological-hydrological regional ensemble forecast for early warning system over small Apennine's catchments in Central Italy. *HESS*, 24, 3135-3156, 2020. <https://doi.org/10.5194/hess-24-3135-2020>
4. Pierdicca N., I. Maiello, E. Sansosti, G. Venuti, R. Ferretti, A. Gatti, M. Manzo, A. Monti Guarnieri, F. Murgia, S. Barindelli, E. Realini, S. Verde, S. Zoffoli: The excess path delay from Sentinel-1 interferometry for improving weather forecast. *JSTAR*, 2020.
5. Mazzarella V., I. Maiello, R. Ferretti, V. Capozzi, E. Picciotti, P. P. Alberoni, F. S. Marzano and G. Budillon: Reflectivity and velocity radar data assimilation for two flash flood events in central Italy: a comparison between 3D and 4D variational methods. *QJRMS*, 146, 348-366, 2019. <https://doi.org/10.1002/qj.3679>
6. Sangelantoni S., R. Ferretti, G. Redaelli: Toward a Regional-Scale Seasonal Climate Prediction System over Central Italy based on Dynamical Downscaling. *Climate*, 2019, 7, 120; doi:10.3390/cli7100120
7. Sangelantoni S., B. Tomassetti, V. Colaiuda, A. Lombardi, M. Verdecchia, R. Ferretti, G. Redaelli: On the use of original and bias-corrected climate simulations in regional-scale hydrological scenarios in the Mediterranean basin. *Atmosphere* 2019, 10(12), 799; <https://doi.org/10.3390/atmos10120799>
8. Hobbs, S. E. A.M. Guarnieri, A. Broquetas, J-C. Calvet, N. Casagli, M. Chini, R. Ferretti, T. Nagler, N. Pierdicca, C. Prudhomme, G. Wadge: G-CLASS: geosynchronous radar for water cycle science – orbit selection and system design. *The Journal of Engineering*, 2019. doi:10.1049/joe.2019.0601
9. Pierdicca N., I. Maiello, F. Murgia, G. Venuti, E. Sansosti, S. Verde, A. Gatti, C. Bignami, R. Ferretti, E. Realini, S. Barindelli, A. Monti Guarnieri: Atmospheric slant delay from SAR interferometry, GNSS and numerical weather prediction model: A comparison study in view of a geosynchronous SAR mission. *IGARSS 2018 - 2018 IEEE International Geoscience and Remote Sensing Symposium*, 2018, doi:10.1109/IGARSS.2018.8518656
10. Maiello I., S. Gentile, R. Ferretti, L. Baldini, N. Roberto, E. Picciotti, P. P. Alberoni, F.S. Marzano: Effects of Multiple Doppler Radar data assimilation on the numerical simulation of a Flash Flood Event during the HyMeX campaign. *HESS*, Vol. 21, 5459-5476, <https://doi.org/10.5194/hess-21-5459-2017>, 2017.
11. Pichelli E., R. Rotunno and R. Ferretti: Effects of the Alps and Apennines on forecasts for Po Valley convection in two HyMeX cases. *Q. J. R. Meteorol. Soc.*, *QJRMS*, Vol. 143, 2017, Pages 2420-2435. DOI: 10.1002/qj.3096.2017.
12. Ducrocq V., Davolio S., Ferretti R., C. Flamant, Homar-Santander V., Kalthoff N., Richard E. and Wernli H., : Introduction to the HyMeX Special Issue on 'Advances in understanding and forecasting of heavy precipitation in the Mediterranean through the HyMeX SOP1 field campaign'. *Q. J. R. Meteorol. Soc.*, 142 (Suppl 1): 2016 DOI:10.1002/qj.2856
13. Gentile S. and R. Ferretti: Seeking for key meteorological parameters to better understand Hector. *Nat. Hazards Earth Syst. Sci.*, 16, 431-447, 2016. <http://www.nat-hazards-earth-syst-sci.net/16/431/2016/> doi:10.5194/nhe-16-431-2016
14. S.Khodayar, Fosser G., Berthou S., Davolio S., Drobinski P., Ducrocq V., Ferretti R., Nuret M., Pichelli E., Richard E.: A seamless weather-climate multi-model intercomparison on the representation of high impact weather in the Western Mediterranean: HyMeX IOP12. *Q. J. R. Meteorol. Soc.*, 2016, DOI:10.1002/qj.2700.
15. S. Davolio, R. Ferretti, L. Baldini, G. Bartolini, M. Casaioli, D. Cimini, V. Colaiuda, M. Ferrario, S. Gentile, N. Loglisci, I. Maiello, A. Manzato, S. Mariani, C. Marsigli, F. S. Marzano, M. M. Miglietta, A. Montani, G. Panegrossi, F. Pasi, E. Pichelli, A. Pucillo, A. Zinzi: The role of the Italian scientific community in the first HyMeX SOP: an outstanding multidisciplinary experience. *Met Zeit.*, DOI 10.1127/metz/2015/0624, 2015.
16. Pichelli, E., R. Ferretti, Cimini D., Panegrossi G., Perissin D., Pierdicca N., F. Rocca, and B. Rommen: InSAR water vapor data assimilation into mesoscale model MM5: Technique and Pilot Study, *JSTARS (Selected Topics in Applied Earth Observations and Remote Sensing, IEEE, Volume: PP, Issue: 99, DOI: 10.1109/JSTARS.2014.2357685, 2015.*
17. Pichelli E., R. Ferretti, M. Cacciani, A.M. Siani, V. Ciardini, T. Di Iorio : The role of urban boundary layer investigated by high resolution models and ground based observations in Rome area: a step for understanding parameterizations potentialities. *Atmos. Meas. Tech.*, 7, 315-332, 2014. www.atmos-meas-tech.net/7/315/2014/doi:10.5194/amt-7-315-2014.
18. Maiello I., R. Ferretti, S. Gentile, M. Montopoli, E. Picciotti, F.S. Marzano, C. Faccani: Impact of Radar Data Assimilation using WRF Three-dimensional variational system for the simulation of a Heavy Rainfall Case in Central Italy. *Atmos. Meas. Tech.*, 7, 2919-2935, 2014, www.atmos-meas-tech.net/7/2919/2014/ doi:10.5194/amt-7-2919-2014.

19. Gentile S., R. Ferretti and F.S. Marzano : Investigating Hector convective development and microphysical structure by high resolution model simulations, ground-based radar data and TRMM satellite data. *J. Atmo. Sci.*, 71, 1353-1370, 2014, doi: 10.1175/JAS-D-13-0107.1, 2014.
20. R. Ferretti, E. Pichelli, S. Gentile, I. Maiello, D. Cimini, S. Davolio, M. M. Miglietta, G. Panegrossi, L. Baldini, F. Pasi, F. S. Marzano, A. Zinzi, S. Mariani, M. Casaioli, G. Bartolini, N. Loglisci, A. Montani, C. Marsigli, A. Manzato, A. Pucillo, M. E. Ferrario, V. Colaiuda, and R. Rotunno: Overview of the first HyMeX Special Observation Period over Italy: observations and model results. *Hydr. Earth Syst. Sci.*, 18, 1953-1977, 2014, doi:10.5194/hess-18-1953-2014, 2014.
21. V. Ducrocq, I. Braud, S. Davolio, R. Ferretti, C. Flamant, A. Jansa, N. Kalthoff, E. Richard, I. Taupier-Letage, P.-A. Ayrat, S. Belamari, A. Berne, M. Borga, B. Boudevillain, O. Bock, J.-L. Boichard, M.-N. Bouin, O. Bousquet, C. Bouvier, J. Chiggiato, D. Cimini, U. Corsmeier, L. Coppola, P. Cocquerez, E. Defer, J. Delano^e, P. Di Girolamo, A. Doerenbecher, P. Drobinski, Y. Dufournet, N. Fourri^e, J. J. Gourley, L. Labatut, D. Lambert, J. Le Coz, F. S. Marzano, G. Molini^e, A. Montani, G. Nord, M. Nuret, K. Ramage, B. Rison, O. Roussot, F. Said, A. Schwarzenboeck, P. Testor, J. Van-Baelen, B. Vincendon, M. Aran, J. Tamayo : HyMeX-SOP1, the field campaign dedicated to heavy precipitation and flash-flooding in the northwestern Mediterranean. *BAMS.*, 95, 1083-1100, 2014.
22. Cimini D., N.Pierdicca, E. Pichelli, R. Ferretti, V. Mattio, S. Bonafoni, M. Montopoli, and D. Perissin : On the accuracy of integrated water vapor 1 estimates and the potential for mitigating electromagnetic path delay error in InSAR. *Atmos. Meas. Tech.*, 5, 1015-1030, 2012 www.atmos-meas-tech.net/5/1015/2012/doi:10.5194/amt-5-1015-2012.