

## PERSONAL INFORMATION

## Prof. Micòl Mastrocicco



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SCOPUS ID: 23493153300

Sex Female | Date of birth 10/05/1974 | Nationality Italian

## WORK EXPERIENCE

2015-now

**Associate Professor of Applied Geology and Hydrology**

DISTABIF - Department of Environmental, Biological and Pharmaceutical Sciences and Technologies. University of Campania "Luigi Vanvitelli", Via Vivaldi 43, CASERTA, 81100, Italy. <https://www.distabif.unicampania.it/>

- Main research activities: (i) water resources management and protection, with a focus on salinization processes and water and nitrogen balance at basin scale; (ii) characterization and monitoring of contaminated sites via the application of different assessment methods and the implementation of groundwater flow and solute transport modelling; (iii) natural treatment processes for aquifer storage and recovery and for managed aquifer recharge.
- Main responsibilities: (i) member of the didactic commission of the Master's Degree Course in Sciences and Technologies for the Environment and the Territory (STAT); (ii) scientific board member of the PhD in Environment, Design and Innovation; (iii) head of the geological and hydrogeological mapping laboratory of DISTABIF

2005-2015

**Post Doc Researcher**

Physics & Earth Sciences Department, University of Ferrara, Via Saragat 1, FERRARA, 44100, Italy. <http://fst.unife.it/en/departement-of-physics-and-earth-science>

- Main research activities: (i) hydrogeology and hydrochemistry in lowland areas; (ii) monitoring and modelling natural attenuation processes in alluvial aquifers; (iii) impact of the Holocene evolution on aquifer salinization processes.
- Main responsibilities: (i) lecturer for the bachelor's degree in Geological Sciences of "Hydrology"; (ii) lecturer for the master's degree in Geological Sciences, Georesources and Territory of "Applied Hydrogeology" and "Mathematical modelling in hydrogeology"

## EDUCATION AND TRAINING

2000-2003

**Ph.D. in Applied Geology**

Thesis Title: "Characterization and modelling of hydrocarbon contaminated aquifers for the evaluation of natural attenuation potential". Department of Earth Sciences, University of Ferrara, Italy. Final mark: Excellent.

During the Ph.D. she attend a 6-month training period at Groundwater Protection and Restoration Group - University of Sheffield (UK). <https://www.sheffield.ac.uk/gprg/home>

1994-1999

**Master's Degree in Earth Sciences, Earth Resources and Geological risks**

Thesis Title: "Morphostructural analysis of circular and linear shapes in the north-eastern alpine area through the use of Landsat TM images". Department of Earth Sciences, University of Ferrara, Italy. Final mark: 110/110 cum laude.

Mother tongue Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
Spanish	B2	B2	A2	A2	B1

Communication skills

- Good communication skills gained through participation in numerous scientific and institutional meetings both at national and international level and through the experience as a lecturer of academic courses for many years

Organisational/managerial skills

- Leadership: (i) currently responsible for a team of 6 people: Ph.D. students and Research Fellows; (ii) principal investigator and coordinator of research units in national and international projects
- Organization: (i) member of the scientific and organizing committee for workshops, intensive training courses and capacity building trainings; (ii) member of the scientific committee in conferences

Job-related skills

- many years of experience in: (i) design and implementation of monitoring networks on site (hydraulic head, water flow, water quality); (ii) surface water and groundwater sampling technologies (integrated depth profiling and multilevel sampling); (iii) soil and sediment sampling; (iv) hydrological monitoring on site (infiltration tests, erosion plots) (v) design and operation of lab experiments (batches, columns' elution, 3D tanks)

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

- good command of office suite (word processor, spread sheet, presentation software)
- good command of numerous software for data interpolation and water flow and transport simulations: SURFER, GRAPHER, AQUACHEM, MODFLOW, SEAWAT, MT3D-MS, HYDRUS

Other skills

- many years of experience in: (i) writing scientific reports and papers; (ii) drafting, reviewing, and evaluating national and international project proposals; (iii) tutoring ungraduated, graduated, and Ph.D. students

ADDITIONAL INFORMATION

ASN - National scientific qualification as full professor (10/06/2021 - 10/06/2030)

Member of the Collegium of the Ph.D. Course ENVIRONMENT, DESIGN AND INNOVATION (DOT1349551), University of Campania "Luigi Vanvitelli" from 13-03-2018

Member of the Collegium of the Ph.D. Course SCIENCE AND ENGINEERING FOR ENVIRONMENT AND SUSTAINABILITY (DOT22EYEP), University of Campania "Luigi Vanvitelli" from 06-05-2022

Evaluator of project proposals for "ERA-NET cofund ACQUATICPOLLUTANTS - Joint Transnational Call 2020", from 30-07-2020 to today

Foreign Expert of the "National Center of Science and Technology Evaluation" of Kazakhstan, for the evaluation of research project proposals admitted for funding on the basis of competitive calls from 01-09-2020

Evaluator of project proposals for the European Science Foundation, from 01-09-2020

## Publications

**From 2009 to 2022: 125 peer review papers; HI 25; 1770 citation; Tot. IF: 521.5.**

Only the papers published in the last 5 years are reported below

- Alessandrino, L., Colombani, N., Aschonitis, V.G., Mastrocicco, M. (2022) Nitrate and Dissolved Organic Carbon Release in Sandy Soils at Different Liquid/Solid Ratios Amended with Graphene and Classical Soil Improvers. *Applied Sciences (Switzerland)*, 12 (12), 6220. DOI: 10.3390/app12126220
- Rama, F., Busico, G., Arumi, J.L., Kazakis, N., Colombani, N., Marfella, L., Hirata, R., Kruse, E.E., Sweeney, P., Mastrocicco, M. (2022) Assessment of intrinsic aquifer vulnerability at continental scale through a critical application of the drastic framework: The case of South America. *Science of the Total Environment*, 823, 153748. DOI: 10.1016/j.scitotenv.2022.153748
- Soana, E., Vincenzi, F., Colombani, N., Mastrocicco, M., Fano, E.A., Castaldelli, G. (2022) Soil Denitrification, the Missing Piece in the Puzzle of Nitrogen Budget in Lowland Agricultural Basins. *Ecosystems*, 25(3), 633-647. DOI: 10.1007/s10021-021-00676-y
- Kazakis, N., Busico, G., Ntona, M.-M., Philippou, K., Kaprara, E., Mitrakas, M., Bannenberg, M., Ioannidou, A., Pashalidis, I., Colombani, N., Mastrocicco, M., Voudouris, K. (2022) The origin of Uranium in groundwater of the eastern Halkidiki region, northern Greece. *Science of the Total Environment*, 812, art. no. 152445. DOI: 10.1016/j.scitotenv.2021.152445
- Barron, A., Sun, J., Passaretti, S., Sbarbati, C., Barbieri, M., Colombani, N., Jamieson, J., Bostick, B.C., Zheng, Y., Mastrocicco, M., Petitta, M., Prommer, H. (2022) In situ arsenic immobilisation for coastal aquifers using stimulated iron cycling: Lab-based viability assessment. *Applied Geochemistry*, 136, art. no. 105155. DOI: 10.1016/j.apgeochem.2021.105155
- Alessandrino, L., Colombani, N., Eusebi, A.L., Aschonitis, V., Mastrocicco, M. (2022) Testing graphene versus classical soil improvers in a sandy calcisol. *Catena*, 208, art. no. 105754. DOI: 10.1016/j.catena.2021.105754
- Mastrocicco, M. (2021) Studies on water resources salinization along the Italian coast: 30 years of work. *Acque Sotterranee - Italian Journal of Groundwater*, 10(4), art. no. 2021-AS39-537. DOI: 10.7343/as-2021-537
- Busico, G., Alessandrino, L., Mastrocicco, M. (2021) Denitrification in intrinsic and specific groundwater vulnerability assessment: A review. *Applied Sciences (Switzerland)*, 11 (22), art. no. 10657. DOI: 10.3390/app112210657
- Alessandrino, L., Gervasio, M.P., Vincenzi, F., Colombani, N., Castaldelli, G., Mastrocicco, M. (2021) Nutrients and carbon fate in two lowland contrasting soils amended with compost. *Catena*, 206, art. no. 105493. DOI: 10.1016/j.catena.2021.105493
- Khosravi, K., Barzegar, R., Golkarian, A., Busico, G., Cuoco, E., Mastrocicco, M., Colombani, N., Tedesco, D., Ntona, M.M., Kazakis, N. (2021) Predictive modeling of selected trace elements in groundwater using hybrid algorithms of iterative classifier optimizer. *Journal of Contaminant Hydrology*, 242, art. no. 103849. DOI: 10.1016/j.jconhyd.2021.103849
- Busico, G., Buffardi, C., Ntona, M.M., Vigliotti, M., Colombani, N., Mastrocicco, M., Ruberti, D. (2021) Actual and forecasted vulnerability assessment to seawater intrusion via galdit-susi in the volturmo river mouth (Italy). *Remote Sensing*, 13 (18), art. no. 3632. DOI: 10.3390/rs13183632
- Colombani, N., Fronzi, D., Palpacelli, S., Gaiolini, M., Gervasio, M.P., Marcellini, M., Mastrocicco, M., Tazioli, A. (2021) Modelling shallow groundwater evaporation rates from a large tank experiment. *Water Resources Management*, 35, 3339-3354. DOI:10.1007/s11269-021-02896-2
- Grilli, E., Carvalho, S.C.P., Chiti, T., Coppola, E., D'Ascoli, R., La Mantia, T., Marzaioli, R., Mastrocicco, M., Pulido, F., Rutigliano, F.A., Quatrini, P., Castaldi, S. (2021) Critical range of soil organic carbon in southern Europe lands under desertification risk. *Journal of Environmental Management*, 287, art. no. 112285. DOI: 10.1016/j.jenvman.2021.112285
- Mastrocicco, M. (2021) Special issue "focus on the salinization issue in the mediterranean area". *Water (Switzerland)*, 13 (5), art. no. 681. DOI: 10.3390/w13050681
- Jahromi, M.N., Gomeh, Z., Busico, G., Barzegar, R., Samany, N.N., Aalami, M.T., Tedesco, D., Mastrocicco, M., Kazakis, N. (2021) Developing a SINTACS-based method to map groundwater multi-pollutant vulnerability using evolutionary algorithms. *Environmental Science and Pollution Research*, 28 (7), 7854-7869. DOI: 10.1007/s11356-020-11089-0
- Soana, E., Vincenzi, F., Colombani, N., Mastrocicco, M., Fano, E.A., Castaldelli, G. (2021) Soil Denitrification, the Missing Piece in the Puzzle of Nitrogen Budget in Lowland Agricultural Basins. *Ecosystems*. DOI: 10.1007/s10021-021-00676-y
- Mastrocicco, M., Gervasio, M.P., Busico, G., Colombani, N. (2021) Natural and anthropogenic factors driving groundwater resources salinization for agriculture use in the Campania plains (Southern Italy). *Science of the Total Environment*, 758, art. no. 144033. DOI: 10.1016/j.scitotenv.2020.144033
- Mastrocicco, M., Colombani, N. (2021) The issue of groundwater salinization in coastal areas of the mediterranean region: A review. *Water (Switzerland)*, 13 (1), art. no. 90. DOI: 10.3390/w13010090

- Sbarbati, C., Barbieri, M., Barron, A., Bostick, B., Colombani, N., Mastrocicco, M., Prommer, H., Passaretti, S., Zheng, Y., Petitta, M. (2020) Redox dependent arsenic occurrence and partitioning in an industrial coastal aquifer: Evidence from high spatial resolution characterization of groundwater and sediments. *Water (Switzerland)*, 12 (10), art. no. 2932, 1-20. DOI: 10.3390/w12102932
- Busico, G., Colombani, N., Fronzi, D., Pellegrini, M., Tazioli, A., Mastrocicco, M. (2020) Evaluating SWAT model performance, considering different soils data input, to quantify actual and future runoff susceptibility in a highly urbanized basin. *Journal of Environmental Management*, 266, art. no. 110625, DOI: 10.1016/j.jenvman.2020.110625
- Mastrocicco, M. (2020) Special issue: Denitrification in agricultural soils. *Applied Sciences (Switzerland)*, DOI: 10.3390/app10113852
- Colombani, N., Mastrocicco, M., Vincenzi, F., Castaldelli, G. (2020) Modeling soil nitrate accumulation and leaching in conventional and conservation agriculture cropping systems. *Water (Switzerland)*, DOI: 10.3390/W12061571
- Bui, D.T., Khosravi, K., Karimi, M., Busico, G., Khozani, Z.S., Nguyen, H., Mastrocicco, M., Tedesco, D., Cuoco, E., Kazakis, N. (2020) Enhancing nitrate and strontium concentration prediction in groundwater by using new data mining algorithm. *Science of the Total Environment*, DOI: 10.1016/j.scitotenv.2020.136836
- Tazioli, A., Colombani, N., Palpacelli, S., Mastrocicco, M., Nanni, T. (2020) Monitoring and modelling interactions between the montagna dei fiori aquifer and the castellano stream (Central Apennines, Italy). *Water (Switzerland)*, DOI: 10.3390/W12040973
- Busico, G., Kazakis, N., Colombani, N., Khosravi, K., Voudouris, K., Mastrocicco, M. (2020) The importance of incorporating denitrification in the assessment of groundwater vulnerability. *Applied Sciences (Switzerland)*, DOI: 10.3390/app10072328
- Busico, G., Kazakis, N., Cuoco, E., Colombani, N., Tedesco, D., Voudouris, K., Mastrocicco, M. (2020) A novel hybrid method of specific vulnerability to anthropogenic pollution using multivariate statistical and regression analyses. *Water Research*, DOI: 10.1016/j.watres.2019.115386
- Mastrocicco, M., Soana, E., Colombani, N., Vincenzi, F., Castaldi, S., Castaldelli, G. Effect of ebullition and groundwater temperature on estimated dinitrogen excess in contrasting agricultural environments (2019) *Science of the Total Environment*, DOI: 10.1016/j.scitotenv.2019.133638
- Colombani, N., Mastrocicco, M., Castaldelli, G., Aravena, R. Contrasting biogeochemical processes revealed by stable isotopes of H<sub>2</sub>O, N, C and S in shallow aquifers underlying agricultural lowlands (2019) *Science of the Total Environment*, DOI: 10.1016/j.scitotenv.2019.07.238
- Mastrocicco, M., Busico, G., Colombani, N., Vigliotti, M., Ruberti, D. Modelling actual and future seawater intrusion in the Variconi coastal wetland (Italy) due to climate and landscape changes (2019) *Water (Switzerland)*, DOI: 10.3390/w11071502
- Mastrocicco, M., Colombani, N., Soana, E., Vincenzi, F., Castaldelli, G. Intense rainfalls trigger nitrite leaching in agricultural soils depleted in organic matter (2019) *Science of the Total Environment*, DOI: 10.1016/j.scitotenv.2019.01.306
- Kazakis, N., Busico, G., Colombani, N., Mastrocicco, M., Pavlou, A., Voudouris, K. GALDIT-SUSI a modified method to account for surface water bodies in the assessment of aquifer vulnerability to seawater intrusion (2019) *Journal of Environmental Management*, DOI: 10.1016/j.jenvman.2019.01.069
- Castaldelli, G., Colombani, N., Soana, E., Vincenzi, F., Fano, E.A., Mastrocicco, M. Reactive nitrogen losses via denitrification assessed in saturated agricultural soils (2019) *Geoderma*, DOI: 10.1016/j.geoderma.2018.09.018
- Mastrocicco, M., Busico, G., Colombani, N. Deciphering interannual temperature variations in springs of the Campania region (Italy) (2019) *Water (Switzerland)*, DOI: 10.3390/w11020288
- Mastrocicco, M., Colombani, N., Castaldelli, G. Direct measurement of dissolved dinitrogen to refine reactive modelling of denitrification in agricultural soils (2019) *Science of the Total Environment*, DOI: 10.1016/j.scitotenv.2018.07.428
- Busico, G., Mastrocicco, M., Cuoco, E., Sima, M., Tedesco, D. Protection from natural and anthropogenic sources: a new rating methodology to delineate "Nitrate Vulnerable Zones" (2019) *Environmental Earth Sciences*, DOI: 10.1007/s12665-019-8118-2
- Ferretti, G., Keiblinger, K.M., Di Giuseppe, D., Faccini, B., Colombani, N., Zechmeister-Boltenstern, S., Coltorti, M., Mastrocicco, M. Short-Term Response of Soil Microbial Biomass to Different Chabazite Zeolite Amendments (2018) *Pedosphere*, DOI: 10.1016/S1002-0160(18)60016-5
- Kazakis, N., Busico, G., Colombani, N., Mastrocicco, M., Voudouris, K. Limitations of GALDIT to map seawater intrusion vulnerability in a highly touristic coastal area (2018) *IOP Conference Series: Earth and Environmental Science*, DOI: 10.1088/1755-1315/191/1/012050

- Mastrocicco, M., Colombani, N. A special issue of Geosciences: Groundwater pollution (2018) Geosciences (Switzerland), DOI: 10.3390/geosciences8070262
- Colombani, N., Di Giuseppe, D., Kebede, S., Mastrocicco, M. Assessment of the anthropogenic fluoride export in Addis Ababa urban environment (Ethiopia) (2018) Journal of Geochemical Exploration, DOI: 10.1016/j.gexplo.2018.04.008
- Castaldelli, G., Colombani, N., Tamburini, E., Vincenzi, F., Mastrocicco, M. Soil type and microclimatic conditions as drivers of urea transformation kinetics in maize plots (2018) Catena, DOI: 10.1016/j.catena.2018.04.009
- Sbarbati, C., Colombani, N., Mastrocicco, M., Petitta, M., Aravena, R. Reactive and mixing processes governing ammonium and nitrate coexistence in a polluted coastal aquifer (2018) Geosciences (Switzerland), DOI: 10.3390/geosciences8060210
- Colombani, N., Kebede, S., Salemi, E., Mastrocicco, M. Recognition of the anthropogenic contribution to the input of fluoride in urban recharge (2018) Environmental Earth Sciences, DOI: 10.1007/s12665-018-7632-y
- Ferretti, G., Keiblinger, K.M., Di Giuseppe, D., Faccini, B., Colombani, N., Zechmeister-Boltenstern, S., Coltorti, M., Mastrocicco, M. Short-Term Response of Soil Microbial Biomass to Different Chabazite Zeolite Amendments (2018) Pedosphere, DOI: 10.1016/S1002-0160(18)60016-5
- Golshan, M., Colombani, N., Mastrocicco, M. Assessing aquifer salinization with multiple techniques along the Southern Caspian Sea shore (Iran) (2018) Water (Switzerland), DOI: 10.3390/w10040348
- Faccini, B., Di Giuseppe, D., Ferretti, G., Coltorti, M., Colombani, N., Mastrocicco, M. Natural and NH<sub>4</sub><sup>+</sup>-enriched zeolite amendment effects on nitrate leaching from a reclaimed agricultural soil (Ferrara Province, Italy) (2018) Nutrient Cycling in Agroecosystems, DOI: 10.1007/s10705-017-9904-4
- Busico, G., Cuoco, E., Kazakis, N., Colombani, N., Mastrocicco, M., Tedesco, D., Voudouris, K. Multivariate statistical analysis to characterize/discriminate between anthropogenic and geogenic trace elements occurrence in the Campania Plain, Southern Italy (2018) Environmental Pollution, DOI: 10.1016/j.envpol.2017.11.053

#### Projects **EU and International Projects**

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|-----------|---|
| 2017-2022 | Scientific collaborator of DESERT-ADAPT: Preparing desertification areas for increased climate change (LIFE 16 CCA/IT/000011)   |
| 2016-2019 | Scientific collaborator of CRP F33022: Groundwater system assessment in the vicinity of Garigliano Nuclear Power Plant (Southern Italy) (Project supported by IAEA)   |
| 2011-2015 | Scientific collaborator of ZEOLIFE: water pollution reduction and water saving using a natural zeolite cycle (Project supported by LIFE+ 2007-2013)   |
| 2010-2012 | Scientific coordinator of GEO.POWER: Geothermal energy to address energy performance strategies in residential and industrial buildings (INTERREG IVC 2007-2013)  |
| 2009-2012 | Scientific collaborator of EUWATER: Transnational integrated management of water resources in agriculture for the EU WATER emergency control (Project supported by South East Europe Transnational Cooperation Programme) |
| 2001-2005 | Scientific collaborator of CORONA: Confidence in fORecasting Of Natural Attenuation (Project supported by the V Framework Programme).   |

#### **National Projects**

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|-----------|--|
| 2018-2020 | Scientific collaborator of Intervention for the reduction of Arsenic concentrations dissolved in groundwater: laboratory phase, simulation models and field pilot test (ENI) |
| 2018-2020 | Scientific collaborator of Agronomic techniques for the prevention of nitrate pollution and the conservation of organic matter" (PSR 5005490)                                |
| 2018-2019 | Project Manager of Numerical modelling related to the supply aquifer of the Castel Trosino - Ascoli Piceno (CIIP - Primary Plants Integrated Cycles)                         |

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|-----------|--|
| 2015-2019 | Project Manager of "Numerical modelling of the aquifer of the Albule Waters basin" (Comune di Guidonia)  |
| 2016-2018 | Project Manager of "The water resources of Monte Paganuccio and Cesana hydrostructures. Management, protection and use of groundwater in the two hydrostructures, for drinking water purposes, in harmony with the preservation of the surface water system" (Marche Multiservizi) |
| 2013-2015 | Project Manager of "Florobasco: Analysis of alternatives for the horticultural industry sectors aimed at reducing pollution and produce renewable energy" (Veneto Agricoltura)   |
| 2011-2014 | Scientific collaborator of "Characterization and numerical modelling of groundwater flow and transport of the Gela Refinery" (ENI)   |
| 2012-2014 | Project Manager of "REDAFI - Forest areas of infiltration and reduction of nitrogen from digestate" (Veneto Agricoltura)   |
| 2010-2011 | Project Manager of "RiduCaReflui: Reduction of pollutant load generated from manure in the drainage basin of the venetian lagoon" (Veneto Agricoltura)   |

**Reviewing and editorial activities**

- Reviewer for more than 30 peer review international journals with 150 certified reviews
- Sentinel of Science Award of Publons as one of the top 1 per cent of researchers contributing to the peer review of the field of "Environmental Science".
- Associate Editor of Acque Sotterranee – Italian Journal of Groundwater, PAGEPress, pISSN 1828-454X, eISSN 2280-6458.
- Member of the Editorial Board of: Water, MDPI ISSN 2073-4441; Applied Sciences, MDPI ISSN 2076-3417; Geofluids, Hindawi OnLine ISSN 1468-8123; Geology, Ecology and Landscapes, (INWASCON). Taylor & Francis, Online ISSN: 2474-9508; International Journal of Earth and Environmental Science; Graphy Publications, ISSN: 2456-351X.

**Memberships**

- Member of CONISMA National Inter-University Consortium for Marine Sciences
- Member of IAHS International Association of Hydrological Sciences
- Member of IAH International Association of Hydrogeology.
- Member of EWRA European Water Resources Association.
- Member of AIGA Associazione Italiana Geologia Applicata e Ambientale

**Personal data**

The processing of personal data is authorized pursuant to current legislation. The undersigned, Prof. Micòl Mastrocicco, born in Rovigo on 10 May 1974, residing in Salara (RO), Via Bosco Papino 82, CF MSTMCL74E50H620J, aware that, pursuant to art. 76 of the D.P.R. 445/2000 and s.m.i., the false declarations are punished according to the penal code and the special laws on the subject, DECLARES, pursuant to and for the purposes of articles 46 and 47 of the D.P.R. 445/2000 and s.m.i., to possess the above mentioned qualifications and that what reported in this curriculum is true.

**Signature**Caserta, 13<sup>th</sup> July 2022

Prof. Micòl Mastrocicco

