

Dr Mauro Masiol PhD

Marie Curie Research Fellow

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About

Mauro's research focuses on the chemical and physical characterization of atmospheric pollutants. He is currently employed on the CHEERS project funded under a European Union Marie Curie Intra-European Fellowships and aiming to investigate the impact of aircraft emissions upon particulate matter concentrations and size distributions.

Qualifications

PhD (Environmental Sciences): Università Ca' Foscari Venezia (Italy), 2009

MS (Environmental Sciences): Università Ca' Foscari Venezia (Italy), 2005

BS (Environmental Sciences): Università Ca' Foscari Venezia (Italy), 2003

Biography

Aug 2013-present: Marie Curie Postdoctoral Research Fellow, School of Geography, Earth and Environmental Sciences, University of Birmingham

Oct 2009–Jul 2013: Postdoctoral Research Fellow, Dept. Environmental Sciences, Informatics and Statistics, Università Ca' Foscari di Venezia (Italy)

Apr 2009–Sep 2009: Research Fellow, Dept. Physics and Astronomy "Galileo Galilei", University of Padua (Italy)

Jun 2006–Jan 2009: Associate of Technology, Italian Institute for Nuclear Physics (INFN), Legnaro Laboratories (LNL)

During his career he also worked at: the Industrial Hygiene and Toxicology Laboratory Lab of the Venice Health Service (LIE TI, Azienda ULSS 12) as Environmental Specialist; the Institute of Marine Science of the National Research Council (CNR-ISMAR); the Italian National Institute of Oceanography and Experimental Geophysics (OGS) as collaborator.

Research

Scopus author ID: [16646347800 \(http://www.scopus.com/authid/detail.url?authorid=16646347800\)](http://www.scopus.com/authid/detail.url?authorid=16646347800)

Atmospheric sciences:

- Atmospheric chemistry and composition
- Airborne particulate matter
- Source apportionment
- Local and external sources of particulate matter
- Individual particle analysis using electron microscopy techniques
- Development of statistical and chemometric methods
- Air pollution and human exposure

Earth Sciences:

- Sedimentary processes in transitional systems
- Sediment texture and characterization
- Sediment geochemistry and pollution

Currently, he is employed in the Marie Curie funded project titled **CHEERS "Chemical and Physical Properties and Source Apportionment of Airport Emissions in the context of European Air Quality Directives"**. Abstract: While knowledge of anthropogenic sources of air pollution is increasing rapidly, there are major deficiencies in knowledge of the emissions of air pollutants from airports and their impacts upon air quality. Given the forecast future growth in the volume of air traffic, a significant increase of pollution levels generated by airports is probable. The main goals of the CHEERS project arise from the research needs associated with this source. The project focuses primarily upon (i) the determination of the impact of aircraft emissions upon particulate matter concentrations and size distributions used as an indicator of particle sources and formation mechanisms, and (ii) on the PM_{2.5} source apportionment to quantify the impact of aircraft, road traffic and other airport emissions upon local air quality.

A field study will be carried out close to a runway at London Heathrow Airport which is recognized as a major source of air pollution and a location where EU air quality Limit Values are currently exceeded. Simultaneous deployment of fast-response instruments will allow a disaggregation of the contributions of different sources to PM, and analysis of particle size distributions will throw light on the atmospheric dispersion and processing of aircraft emissions.

A concurrent PM_{2.5} sampling campaign will be carried out at two sites, one heavily impacted by aircraft emissions and the other representing the local background. Samples will be analyzed chemically to give mass closure and to provide data on the concentrations of elemental, ionic and organic molecular marker constituents indicative of emission sources, allowing a molecular marker-based chemical mass balance study to quantify the contributions of the various sources of PM.

Since air pollution problems associated with airports are common across the EU, this study will have implications far beyond the southern UK and will help in the design of air pollution mitigation strategies on both local and regional scales.

Other activities

Member of the Italian Aerosol Society

Publications

Masiol, M., Squizzato, S., Ceccato, D., Pavoni, B. (2015). The size distribution of chemical elements of atmospheric aerosol at a semi-rural coastal site in Venice (Italy). The role of atmospheric circulation. *Chemosphere* 119, 400–406, DOI:10.1016/j.chemosphere.2014.06.086

Masiol, M., Facca, C., Visin, F., Sfriso, A., Pavoni, B. (2014). Interannual heavy element and nutrient concentration trends in the top sediments of Venice Lagoon (Italy). *Marine Pollution Bulletin* 89, 49–58, DOI:10.1016/j.marpolbul.2014.10.036

Masiol, M., Squizzato, S., Rampazzo, G., Pavoni, B. (2014). Source apportionment of PM_{2.5} at multiple sites in Venice (Italy): Spatial variability and the role of weather. *Atmospheric Environment* 98, 78–88, DOI:10.1016/j.atmosenv.2014.08.059

Squizzato, S., **Masiol, M.**, Visin, F., Canal, A., Rampazzo, G., Pavoni, B. (2014). PM_{2.5} chemical composition in an industrial zone included in a large urban settlement: main sources and local background. *Environmental Science: Processes & Impacts* 16, 1913–1922, DOI:10.1039/C4EM00111G

Masiol, M., Harrison, R.M (2014). Aircraft engine exhaust emissions and other airport-related contributions to ambient air pollution: A review. *Atmospheric Environment* 95, 409–455, DOI:10.1016/j.atmosenv.2014.05.070

Masiol, M., Agostinelli, C., Formenton, G., Tarabotti, E., Pavoni, B. (2014). Thirteen years of air pollution hourly monitoring in a large city: potential sources, trends, cycles and effects of car-free days. *Science of the Total Environment* 494–495, 84–96, DOI:10.1016/j.scitotenv.2014.06.122

Md B. Khan, **Masiol, M.**, Hofer, A., Pavoni, B. (2014). Harmful elements in estuarine and coastal systems. In: C. Bini, J. Bech (Eds.), PHEs, *Environment and Human Health*, pp 37–83, Springer Netherlands, ISBN: 978-94-017-8965-3, DOI:10.1007/978-94-017-8965-3_2

Valotto, G., Squizzato, S., **Masiol, M.**, Zannoni, D., Visin, F., Rampazzo, G. (2014). Elemental characterization, sources and wind dependence of PM₁ near Venice, Italy. *Atmospheric Research* 143, 371–379, DOI:10.1016/j.atmosres.2014.03.007

Masiol, M., Formenton, G., Giraldo, G., Pasqualetto, A., Tieppo, P., Pavoni, B. (2014). The dark side of the tradition: The pollution effect of Epiphany folk fires in the eastern Po Valley (Italy). *Science of the Total Environment* 473–474, 549–564. DOI: 10.1016/j.scitotenv.2013.12.077

Tositti, L., Brattich, E., **Masiol, M.**, Baldacci, D., Ceccato, D., Parmeggiani, S., Straquadanio, M., Zappoli, S. (2014). Source apportionment of particulate matter in a large city of southeastern Po Valley (Bologna, Italy). *Environmental Science and Pollution Research* 21, 872–890. DOI: 10.1007/s11356-013-1911-7

Masiol M., Formenton G., Pasqualetto A., Pavoni B. (2013). Seasonal trends and spatial variations of PM₁₀-bounded polycyclic aromatic hydrocarbons in Veneto Region, Northeast Italy. *Atmospheric Environment* 79, 811–821, DOI: 10.1016/j.atmosenv.2013.07.025

Squizzato, S., **Masiol, M.**, Brunelli, A., Pistollato, S., Tarabotti, E., Rampazzo, G., Pavoni, B. (2013). Factors determining the formation of secondary inorganic aerosol: a case study in the Po Valley (Italy). *Atmospheric Chemistry and Physics* 13, 1927–1939, DOI: 10.5194/acp-13-1927-2013

Pecorari, E., Squizzato, S., **Masiol, M.**, Radice, P., Pavoni, B., Rampazzo, G. (2013). Using a photochemical model to assess the horizontal, vertical and time distribution of PM_{2.5} in a complex area: Relationships between the regional and local sources and the meteorological conditions. *Science of the Total Environment* 443, 681–691, DOI: 10.1016/j.scitotenv.2012.11.047

Masiol, M., Squizzato, S., Ceccato, D., Rampazzo, G., Pavoni, B. (2012). Determining the influence of different atmospheric circulation patterns on PM₁₀ chemical composition in a source apportionment study. *Atmospheric Environment* 63, 117–124, DOI: 10.1016/j.atmosenv.2012.09.025

Masiol, M., Centanni, E., Squizzato, S., Hofer, A., Pecorari, E., Rampazzo, G., Pavoni, B. (2012). GC-MS analyses and chemometric processing to discriminate the local and long-distance sources of PAHs associated to atmospheric PM_{2.5}. *Environmental Science and Pollution Research* 19(8), 3142–3151, DOI: 10.1007/s11356-012-0858-4

Masiol, M., Hofer, A., Squizzato, S., Piazza, R., Rampazzo, G., Pavoni, B. (2012). Carcinogenic and mutagenic risk associated to airborne particle-phase polycyclic aromatic hydrocarbons: a source apportionment. *Atmospheric Environment* 60, 375–382, DOI: 10.1016/j.atmosenv.2012.06.073

Masiol, M., Squizzato, S., Ceccato, D., Rampazzo, G., Pavoni, B. (2012). A chemometric approach to determine local and regional sources of PM₁₀ and its geochemical composition in a coastal area. *Atmospheric Environment* 54, 127–133, DOI: 10.1016/j.atmosenv.2012.02.089

Squizzato, S., **Masiol, M.**, Innocente, E., Pecorari, E., Rampazzo, G., Pavoni, B. (2012). A procedure to assess local and long-range transport contributions to PM_{2.5} and secondary inorganic aerosol. *Journal of Aerosol Science* 46(7), 64–76, DOI: 10.1016/j.jaerosci.2011.12.001

Capraro, F., Bizzotto, A., **Masiol, M.**, Pavoni, B. (2011). Chemical analyses of spring waters and factor analysis to monitor the functioning of a karstic system. The role of precipitations regimen and anthropic pressures. *Journal of Environmental Monitoring* 13(9), 2543–2549, DOI: 10.1039/c1em10317b

Masiol, M., Rampazzo, G., Ceccato, D., Squizzato, S., Pavoni, B. (2010). Characterization of PM₁₀ sources in a coastal area near Venice (Italy): An application of factor-cluster analysis. *Chemosphere* 80(7), 771–778, DOI: 10.1016/j.chemosphere.2010.05.008

Molinaroli, E., Guerzoni, S., Sarretta, A., **Masiol, M.**, Pistolato, M. (2009). Thirty-year changes (1970 to 2000) in bathymetry and sediment texture recorded in the Lagoon of Venice sub-basins, Italy. *Marine Geology* 258(1–4), 115–125, DOI: 10.1016/j.margeo.2008.12.001

Rampazzo, G., **Masiol, M.**, Visin, F., Pavoni, B. (2008). Gaseous and PM₁₀-bound pollutants monitored in three sites with differing environmental conditions in the Venice area (Italy). *Water, Air, and Soil Pollution* 195(1–4), 161–176, DOI: 10.1007/s11270-008-9735-7

Rampazzo, G., **Masiol, M.**, Visin, F., Rampado, E., Pavoni, B. (2008). Geochemical characterization of PM₁₀ emitted by glass factories in Murano, Venice (Italy). *Chemosphere* 71(11), 2068–2075, DOI: 10.1016/j.chemosphere.2008.01.039

Sarretta, A., **Masiol, M.**, Molinaroli, E. (2007). Development of algebra algorithms for automated generation of grain-size distribution maps. *Earth Surface Processes and Landforms* 32(7), 1116–1127, DOI: 10.1002/esp.1464

Molinaroli, E., **Masiol, M.** (2006). Particolato atmosferico e ambiente mediterraneo. Il caso delle polveri sahariane [Atmospheric particulate matter and the Mediterranean environment. The Saharan dust case of study]. Aracne Editrice, Rome, Italy, pp. 224. ISBN: 88-548-0453-3 [Book, in Italian]

