

## Alessandro Bigi

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## Professional profile

- Jan 2019 – now
- **Associate professor** at Dept of Engineering, University of Modena and Reggio Emilia.  
*Duties:* Lecturer in the Environmental Engineering MS degree (Air Pollution, Reaction Engineering, Fate of Environmental Pollutants) and in one course of the Vehicle Engineering MS degree (Air pollution by vehicular emissions). Advisor for MS, BS and PhD students. Participation of Department internal commissions. Maintenance, deployment and refurbishment of air quality instruments, lab-work, field-work, data analysis, publishing
- Jan 2016 – Dec 2018
- **Assistant professor** at Dept of Engineering, University of Modena and Reggio Emilia.  
*Duties:* Lecturer in the Environmental Engineering MS degree. Advisor for MS, BS and PhD students. Maintenance, deployment and refurbishment of air quality instruments, lab-work, field-work, data analysis, publishing
- Jun 2017 – Aug 2017
- **Swiss National Science Foundation short-visit Fellow** at EMPA.  
Project: “: Assessment of small sensors for urban air quality measurements”.  
*Tutor:* Christoph Hüglin *Duties:* Calibration and performance analysis of NO, NO<sub>2</sub> low cost sensors within a real world application testing machine learning algorithms
- Sep 2015
- **Visiting scientist** at EUPHORE group of Fundacion CEAM within the Pionners Into Practice programme of CLIMATE-KIC.  
*Duties:* analysis of data from an instrument intercomparison campaign at EUPHORE
- Jan 2011 – Dec 2015
- **Fixed-term Researcher** at Dept of Engineering, University of Modena and Reggio Emilia.  
*Duties:* Teaching for MS degree in Environmental Engineering, advising MS and BS students, instrument maintenance, deployment and upgrading, lab-work, field-work, data analysis, publishing
- Jun 2012 – Aug 2012
- **Swiss National Science Foundation short-visit Fellow** at Paul Scherrer Institute.  
Project: “Characterization, calibration and validation of an Ice Selective Inlet (ISI)”.  
*Tutor:* Ernest Weingartner *Duties:* Calibration of ISI parts in the lab, ISI testing at AIDA cloud chamber during IN19 campaign
- Jun 2009 – Aug 2009
- **Honorary Research Fellow** at School of Geography, Earth and Environmental Sciences, University of Birmingham, U.K.  
*Host:* Prof. Roy M. Harrison *Duties:* climatological analysis of air quality at a long term monitoring site
- Feb 2007 – Dec 2010
- **INTERMECH project grantee** at Dept of Mechanical and Civil Engineering, University of Modena and Reggio Emilia.  
*Supervisor:* Prof. Grazia Ghermandi. *Duties:* measurement of particle size number distribution by D/SMPS and weight concentration of PM by TEOM-FDMS, instrument maintenance and calibration, data analysis
- Oct 2003 – Jan 2007
- **Project grantee** at Dept of Agricultural Economics and Engineering, University of Bologna.  
*Supervisor:* Dr. Donatella Pavanelli. *Duties:* surface erosion assessment, catchment basins characterisation, statistical analysis of hydrological variables, instrument maintenance
- Jan 2003 – Sept 2003
- **CAD designer** at an architecture studio and at a surveying studio

## Education

### *Graduate*

- Oct 2008
- Environmental acoustic consultant degree
- Short courses
- EUSAAR - Advanced Aerosol Training Course, Hyytiälä Forest Station, Finland. (2009)
  - Global Atmosphere Watch Training & Education Centre (GAWTEC XVI). Environmental Research Station Schneefernerhaus, Germany. (2009)
  - Aerosol school: Atmospheric aerosol monitoring problems and interpretation tools. University of Bari. (2008)
  - Estimate of uncertainty in hydrological modelling. University of Bologna, Bertinoro. (2008)
  - Stochastic processes and time series analysis. Tuscia University, Viterbo. (2007)
  - International school on hydrogeological risk prevention and management. Session one - rainfall estimation and forecast - ARPA-SIMC (Regional Meteo Service) Bologna. (2004)
  - Introduction to Fortran90, CINECA (North-East Interregional Centre for Advanced Computing). (2004)
  - Soil hydrology - Faculty of Agriculture, Federico II University, Naples. (2004)
- Courses
- Bayesian statistical inference - Prof. Daniela Cocchi, University of Bologna. (2006)
  - Advanced statistics and probability - Prof. Paola Monari, Prof. Patrizia Agati, University of Bologna. (2005)
  - Time series and multidimensional series analysis - Prof. Marilena Pillati, University of Bologna. (2004)
  - Statistics and probability - Prof. Angela Montanari, University of Bologna. (2004)
- Jul 2007
- **PhD in Physical Modelling for Environmental Protection.** Advisor: Prof. Alberto Montanari, Faculty of Engineering, University of Bologna. Project: A spatially-distributed physically-based erosion model at a basin scale.
- Oct 2002
- **Environmental Engineer Master Degree** at the University of Bologna. MS Thesis: Study of the dynamics of the erosive processes in catchment basins through a physical model. Advisors: Prof. Alberto Montanari, Prof. Chris Paola and Prof. Les E. Hasbargen

### *Undergraduate*

- Jun 2002 – Sept 2002
- **Visiting undergraduate research assistant** at the St Anthony Falls Lab - University of Minnesota, Twin Cities. Tutor: Prof. Chris Paola and Prof. Les E. Hasbargen
- Sept 2000 – May 2001
- **Visiting student** at the Department of Civil Engineering - University of Minnesota, Twin Cities

## Awards

- Reviewer for the journals: Nature Communications, Atmospheric Environment, Journal of Environmental Monitoring, Atmosphere
- Invited seminar at the Regional Environmental Agency Emilia-Romagna (2014)
- Author of one of the top-50 most cited articles in Atmospheric Environment (period 2010-2011)
- Young Scientist's Travel Award for Europeans at the 2006 EGU General Assembly
- Young Scientist's Travel Award for Europeans at the 2004 EGU General Assembly
- Invited seminar at the Civil and Environmental Engineering Dept, University of Trento (2002)
- Scholarship from the Faculty of Engineering of the University of Bologna for the MS Thesis project (2002)
- Sommerfeld scholarship from the Civil Engineering Dept - University of Minnesota, Twin Cities (2001)
- Overseas scholarship from the University of Bologna as visiting student in the U.S. (2000)

## Selected publications

- A. Bigi, M. Mueller, S. K. Grange, G. Ghermandi, and C. Hueglin. Performance of NO, NO<sub>2</sub> low cost sensors and three calibration approaches within a real world application. *Atmospheric Measurement Techniques*, 11(6):3717–3735, 2018.
- A. Bigi, F. Bianchi, G. De Gennaro, A. Di Gilio, P. Fermo, G. Ghermandi, A. S. H. Prévôt, M. Urbani, G. Valli, R. Vecchi, and A. Piazzalunga. Hourly composition of gas and particle phase pollutants at a central urban background site in milan, italy. *Atmospheric Research*, 186:83–94, 2017.
- V. Bernardoni, M. Elser, G. Valli, S. Valentini, A. Bigi, P. Fermo, A. Piazzalunga, and R. Vecchi. Size-segregated aerosol in a hot-spot pollution urban area: Chemical composition and three-way source apportionment. *Environmental Pollution*, 231, Part 1:601 – 611, 2017.
- F. Despini, C. Ferrari, A. Bigi, A. Libbra, S. Teggi, A. Muscio, and G. Ghermandi. Correlation between remote sensing data and ground based measurements for solar reflectance retrieving. *Energy and Buildings*, 114:227–233, 2016.
- A. Bigi and G. Ghermandi. Trends and variability of atmospheric PM<sub>2.5</sub> and PM<sub>10-2.5</sub> concentration in the Po valley, Italy. *Atmospheric Chemistry and Physics*, 16(24):15777–15788, 2016.
- F. Bianchi, P. Barmet, L. Stirnweis, I. El Haddad, S. M. Platt, M. Saurer, C. Lötscher, R. Siegwolf, A. Bigi, C. R. Hoyle, P.F. DeCarlo, J. G. Slowik, A. S. H. Prévôt, U. Baltensperger, and J. Dommen. Contribution of methane to aerosol carbon mass. *Atmospheric Environment*, 141:41 – 47, 2016.
- P. Kupiszewski, E. Weingartner, P. Vochezer, M. Schnaiter, A. Bigi, M. Gysel, B. Rosati, E. Toprak, S. Mertes, and U. Baltensperger. The Ice Selective Inlet: a novel technique for exclusive extraction of pristine ice crystals in mixed-phase clouds. *Atmospheric Measurement Techniques*, 8(8):3087–3106, 2015.
- A. Bigi and G. Ghermandi. Long-term trend and variability of atmospheric PM<sub>10</sub> concentration in the Po valley. *Atmospheric Chemistry and Physics*, 14(10):4895–4907, 2014.
- G. Ghermandi, S. Fabbi, M. Zaccanti, A. Bigi, and S. Teggi. Micro-scale simulation of atmospheric emissions from power-plant stacks in the po valley. *Atmospheric Pollution Research*, 6(3):382–388, 2015.
- A. Bigi, G. Ghermandi, and R. M. Harrison. Analysis of the air pollution climate at a background site in the Po valley. *Journal of Environmental Monitoring*, 14:552–563, 2012.
- A. Bigi and R. M. Harrison. Analysis of the air pollution climate at a central urban background site. *Atmospheric Environment*, 44:2004–2012, 2010.
- A. Bigi, L. E. Hasbargen, A. Montanari, and C. Paola. Knickpoints and hillslope failures: Interactions in a steady state experimental landscape. *Tectonics, climate, and landscape evolution*, Special Paper 398 of Penrose Conference Series, pages 295–307. Geological Society of America, 2006.
- Pavanelli, D. and Bigi, A. Indirect analysis methods to estimate suspended sediment concentration: reliability and relationship of turbidity and settleable solids *Biosystems Engineering*, 90:75–83, 2005.