



## PERSONAL INFORMATION

## Maria Gabriella Villani

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Researcher in ENEA, Italian National Agency for New Technologies, Energies and Sustainable Economic Development

## EDUCATION AND TRAINING

- 2003–2006** ITA Dottorato di Ricerca (DR)  
Università degli Studi di Urbino “Carlo Bo”, Facoltà di Scienze Ambientali, Campus Scientifico Sogesta, Loc. Crocicchia IT-61029 Urbino (Italy)  
Atmospheric sciences: computational modelling for mechanisms of exchange and transport in the atmosphere.
- 2002** Master of Science, Major in Geography  
Department of Geography, Indiana University, SB 210, 701 East Kirkwood Avenue IN 47405-7100 Bloomington Indiana (USA)  
Research on turbulence and diffusion characteristics of air flow within a forest environment.
- 1998** Laurea in Physics  
Università degli Studi di Padova, Dipartimento di Fisica “Galileo Galilei”, via Marzotto 8 IT-35131 Padova (Italy)

## MAIN FIELDS OF INTEREST

Air pollution in urban environments.

Duties:

Support, maintenance, application of the air quality MicroSwift MicroSpray (MSS- PMSS) modelling chain systems at the urban microscale.

Support of an interface for the DeltaTool (developed by European Commission DG Joint Research Centre) and the validation of MINNI atmospheric modelling system.

Data extraction of the EEA EIONET e-reporting air quality data (reporting under air quality Directives 2004/107/EC and 2008/50/EC).

## Publications

### Peer review papers:

1. *Sensors and Actuators B-Chemical* vol. 238, January 2017, p. 706-715, doi: 10.1016/j.snb.2016.07.036. Authors: Spinelle L., Gerboles M., Villani M.G., Aleixandre M., Bonavicola F. Title: Field calibration of a cluster of low-cost commercially available sensors for air quality monitoring. Part B: NO, CO and CO<sub>2</sub>.
2. *Chemosensors* 2016, 4(4), 24; doi:10.3390/chemosensors4040024. Authors: Villani M.G., Cignini F., Ortenzi F., Suriano D., and Prato M. Title: The Smart Ring Experience in l'Aquila (Italy): Integrating Smart Mobility Public Services with Air Quality Indexes .
3. *Sensors and Actuators B-Chemical* vol. 215 p. 249-257, doi: 10.1016/j.snb.2015.03.031 . Authors: Spinelle L., Gerboles M., Villani M.G., Aleixandre M., Bonavicola F. Title: Field calibration of a cluster of low-cost available sensors for air quality monitoring. Part. A: ozone and nitrogen dioxide.
4. *Atmospheric Chemistry and Physics*, 10, 1249-1267, doi:10.5194/acp-10-1249-2010, 2010. Authors: Villani M.G., Bergamaschi P., Krol M.C., Meirink J.F., and Dentener F. Title: Inverse Modeling of European CH<sub>4</sub> Emissions: Sensitivity to the Observational Network.
5. *Journal of Geophysical Research Atmospheres*, 114(D22301), doi:10.1029/2009JD012287, 2009. Authors: Bergamaschi P., Frankenberg C., Meirink J.F., Krol M.C., Villani M.G., Houweling S., Dentener F.J., Dlugokencky E.J., Miller J.B., Gatti L.V., Engel A., and Levin I. Title: Inverse Modeling of Global and Regional CH<sub>4</sub> Emissions using SCIAMACHY Satellite Retrievals.
6. *Journal of Geophysical Research Atmospheres*, 113(D17301), doi:10.1029/2007JD009740, 2008. Authors: Meirink J.F., Bergamaschi P., Frankenberg C., d'Amelio M.T.S., Dlugokencky E.J., Gatti L.V., Houweling S., Miller J.B., Roeckmann T., Villani M.G., and Krol M. Title: Four-Dimensional Variational Data Assimilation for Inverse Modelling of Atmospheric Methane Emissions: Analysis of SCIAMACHY Observations.
7. *Journal of Geophysical Research Atmospheres*, 111(D21102), doi:10.1029/2006JD007126 2006. Authors: Villani M.G., Maurizi A., Tiesi A., Mona L., Pandolfi M., Pappalardo G., Tampieri F., and Cuomo V. Title: Transport of Volcanic Aerosol in the Troposphere: the Case Study of the 2002 Etna Plume.
8. *Boundary-Layer Meteorology* 118 (3), pp. 503-525, 2006. Authors: Best M.J., Grimmond C.S.B., and Villani M.G. Title: Evaluation of the Urban Tile in MOSES using Surface Energy Balance Observations.
9. *Accademia Nazionale dei Lincei, Atti dei Convegni Lincei*, 227, XXIII giornata dell'ambiente qualità dell'aria nelle città italiane, Roma, 6 giugno 2005. ROMA 2006 Bardi Editore, ISSN: 0391-805X, ISBN: 88- 218-0962-5, 248 pp., 2005. Authors: Tampieri F., D'Isidoro M., Mircea M., Villani MG., Finardi S., Silibello C., Zanini G. Title: La Composizione dell'Atmosfera in Val Padana: Qualità dell'Aria come Problema Regionale.
10. *Atmospheric Environment* 40 (4), pp. 628-638, 2005. Authors: Tiesi A., Villani M. G., D'Isidoro M., Prata A.J., Maurizi A., and Tampieri F. Title: Estimation of Dispersion Coefficient in the Troposphere from Satellite Images of Volcanic Plumes.
11. *Il Nuovo Cimento C*, 28, 151-158, 2005. Authors: D'Isidoro M., Maurizi A., Tampieri F., Tiesi A., and Villani M. G. Title: Assessment of the Numeric Diffusion Effect in the Advection of a Passive Tracer in BOLCHEM.
12. *European Space Agency, (Special Publication) ESA SP*, Issue 582, 2004, Pages 113-118, ISSN: 03796566 CODEN: ESPUD. Authors: Levizzani V., Adamo C., Alberoni P.P., Antonini A., Battaglia A., Baptista J.P.V.P., Bauer P., Buzzi A., Capacci D., Caracciolo C., Cattani E., Celano M., Cimini D., Costa M.J., Davolio S., Dietrich S., Fantini M., Di Michele S., Giuliani G., Hinsman D.E., Kästner M., Khain A., Kidd C., Kidd J., Kniveton D., Lahav R., Layberry R.,

Lensky I., Malguzzi P., Mantovani S., Marzano F.S., Maurizi A., Medaglia C.M., Melani S., Meneguzzo F., Messeri G., Mugnai A., Natali S., Orlandi A., Ortolani A., Panegrossi G., Pasqui M., Pinori S., Poli V., Porcù F., Prodi F., Purdom J.F.W., Rosenfeld D., Sanderson V., Schmelz J., Smith E.A., Solomon R., Steinwagner J., Tampieri F., Tapiador F.J., Tassa A., Torricella F., Tripoli G.J., Turk F.J., Vicente G.A., Villani M.G. Title: Precipitation estimation: From the Rao to EURAINSAT and beyond.

13. *Boundary-Layer Meteorology* 114, 539-556, 2004. Authors: Villani M.G., Maurizi A., and Tampieri F. Title: Discussion and Applications of Slab Models of the Convective Boundary Layer Based on the Turbulent Kinetic Energy Budget Parameterisations.

14. *Boundary-Layer Meteorology* 108, 343-364, 2003. Authors: Villani M.G., Schmid H.P., Su H-B, Hutton J., and Vogel C. Title: Turbulence Statistics Measurements in a Northern Hardwood Forest.

#### **Selected extended abstracts presented at international conferences:**

1. ECSA-2, 2nd International Electronic Conference on Sensors and Applications, 15-30 November 2015, Authors: MG Villani, F. Cignini, F. Orteni, D. Suriano, M. Prato. Title: The "Smart Ring" Experience in l'Aquila (Italy): Integrating Smart Mobility Public Services with Air Quality Indexes.

2. EEDAL 2015, Luzern (CH) 26-28.08.2015, Authors: P. Zangheri, MG Villani, S. Fumagalli, G. Leonardi, V. Tarantini, A. Antonelli, G. Ruggieri and M. Forni. Title: A first application of the second edition of standard IEC 62552 for household refrigerating appliances energy performance measurements .

3. EEDAL 2015, Luzern (CH) 26-28.08.2015. Authors: P. Zangheri, G. Ruggieri, S. Fumagalli, P. Pistochini, MG Villani, V. Tarantini and M. Bau. Title: Monitoring the energy consumption of refrigerators and washing machines of a sample of households in the Northern Italy.

4. IEEE Sensors 2014, Valencia, Spain, 3-5 November 2014, Authors: Spinelle L., Gerboles M. Villani M.G., Alexandre M., Bonavicola F. Title: Calibration of a Cluster of Low Cost Sensors for Measurements of Air Pollution in Ambient Air.

5. IEEE Sensors 2014, Valencia, Spain, 3-5 November 2014, Authors: Penza M., Suriano D., Villani M.G., Spinelle L., Gerboles M. Title: Towards Air quality Indexes in Smart Cities by Calibrated Low-Cost Sensors Applied to Networks.

6. COST Action TD1105 *EuNetAir* 2nd International Workshop *EuNetAir*, Brindisi, Italy, 25-26 March 2014. Authors: Suriano D., Penza M., Cassano G., Villani M.G., Assennato G., Nocioni A. Title: Development of a Portable Sensor System for Air Quality Monitoring.

7. EEDAL 2013, Portugal, 11-13 September 2013. Authors:

Pistochini P., Zangheri P., Fumagalli S., Chiesa M., Bottani G., Gallo E., Leonardi G., Longoni V., Scarano D., Tarantini V., Villani M.G.. Title: Energy&Appliances 2015 Project: A New Approach for Testing Appliances with Respect to End-Users Behaviour.

#### **Technical reports:**

1. Technical report for Expert Contract [C391843VILL], with the European Commission, Joint Research Centre, IES H02, Air and Climate Unit, via Fermi 2749, 21027 Ispra(VA), Italy. Title: "R toolbox development for on the fly calibration of network of sensors".

2. Report ENEA RdS/2014/068, Ricerca di sistema elettrico. Authors: Gozo N., Annunziato M., Fumagalli S., Giuliani G., Honorati Consonni C., Marino F., Villani M.G., Progetto Lumière, Osservatorio per la Pubblica Illuminazione e modello di Management per gli impianti e il servizio.

3. Come On Labels Common appliance policy – All for one, One for all – Energy Labels, (Contract N°: IEE/09/628/SI2.558219), Work package 6 - Deliverable 6.15, Final Report,

September 2012. Authors: M. G. Villani, M. Presutto. Title: State of the appliances in Italy: an overview of household equipment in use, final report for Come On Labels.

4. Report ENEA RdS/2011/317, Ricerca di sistema elettrico. Author: Villani M.G. Title: Inchiesta su caratteristiche e utilizzo degli elettrodomestici del freddo, del lavaggio e della cottura da parte degli utenti finali.

5. Report ENEA RdS/2011/177, Ricerca di sistema elettrico. Authors: Villani M.G., Longoni V., Bottani GP., Tarantini V., Leonardi G. Title: Il laboratorio ENEA sugli elettrodomestici del freddo e forni elettrici. Parte II: caratteristiche, prime prove e potenzialità del laboratorio FIRELAB.

6. Report ENEA RdS/2010/254, Ricerca di sistema elettrico. Authors: Villani M.G., Leonardi G., Longoni V., Tarantini V., Bottani GB., Scarano D., Pollidori R. Title: Il laboratorio ENEA sugli elettrodomestici del freddo e forni elettrici: caratteristiche e potenzialità di prova.

7. Report ENEA RdS/2010/255, Ricerca del sistema elettrico. Authors: Presutto M., Villani M.G., Scarano D., Fumagalli S. Title: Il mercato degli elettrodomestici e la sua evoluzione temporale.

**Personal Data** "Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 -Codice in materia di protezione dei dati personali-".

Signature

