

**PERSONAL  
INFORMATION****ANTONIO CANTELLI**

 Rome - 22/02/1980  
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**PROFESSIONAL EXPERIENCE**

from December 2018

**Sr. Research Associate**

CMCC Foundation - Euro-mediterranean Center on Climate Change  
BU: CSP - Simulation and Prediction Division



- Under the research program “C3S\_330\_CMCC Operational Seasonal Forecasts” I deal with:
  - Production of seasonal forecasts products (monthly releases) with SPS3/SPS3.5 systems
  - Development and maintenance of the operating suite:
    - creation of a versioned production environment for the operational SPS3
    - improvement of the multi-architecture portability for SPS3
    - creation of a user interface installer for the SPS3 suite
    - implementation of an automatic notification system for production
    - optimization and bugfix of the operating procedures
  - Sensitivity analysis for land component of SPS3 aimed at improving the initial conditions quality of the operational chain
- Insurance risk analysis for meteorological severe events

**Business sector** R&D**Keywords** Climate Change, Seasonal forecast, C3S Copernicus

November 2016 - Dec. 2018

**Sr. Data Scientist**

GENERALI ITALIA S.p.A.  
BU: Business Transformation – Advanced Analytics



Within the division of Advanced Analytics, I dealt with:

- Development, tuning and production of machine learning models (classifiers, regressors, pattern recognition models)
- Supervision and support of analytical projects
- Application of clustering algorithms for customer base segmentation
- Analytical and technical support for database enrichment
- Scientific advisor for machine learning and advanced analytics

**Business sector** Fintech, Insurance**Keywords** Machine learning, Python, R, SQL

May 2012 – October 2016

**Post-doc researcher**

DIMA (Department of Mechanical Engineering) - University of Rome, "La Sapienza"

As part of the project PONR&amp;C SNIFF financed by European Structural Funds, my main responsibilities were:



- Development of inverse dispersion models for urban releases for early warning applications
- Meteorological data and short-term forecasts analyst
- Development of web-based applications for the production of maps and graphs and for visualization of scientific data

- Web Interface for wireless air quality and meteorological smart sensors
- Preparation of technical reports and publication of papers on scientific journals

The activities involved the intensive use of advanced modelling tools on Linux OS (WRF, RAMS, FLEXPART), together with tools for visualization and analysis of scientific data (Python, R, Fortran, NCL)

**Business sector** R&D, Environmental Engineering

**Keywords** Inverse Modeling, Air dispersion, Smart Sensor Network, Optimization Algorithms

## EDUCATION AND TRAINING

November 2008 – June 2012

Università di Roma “La Sapienza”

### PhD in Hydraulic and Environmental Engineering

Cantelli A., (2012) *Analysis of the urban heterogeneity impact on the urban heat island modelling, within a mesoscale meteorological model by a sub-grid parametric scheme*. PhD Thesis.

Final Grade: Judgment of the commission “*excellent*” (highest)

Supervisor: Prof. Paolo Monti (DICEA - La Sapienza)

**Research area** Mesoscale models, Urban Heat Island, Land surface models

September 2004 – December 2007

Università di Roma “La Sapienza”

### Master Degree in Engineering for the Environment and the Territory

Thesis: *Analysis of urban heat island by mesoscale numerical simulation*.

Final Grade: 110/110

Supervisor: Prof. Paolo Monti (DICEA - La Sapienza)

**Topics** Mesoscale models, Meteorology

## PERSONAL SKILLS

Mother Tongue

Italian

	Listening	Reading	Speaking
English	C1	C1	B2

Levels: B1/2: Intermediate - C1/2 Advanced

Common European Framework of Reference for Languages

### Relevant Training courses

- *Design thinking and UX*, H-Farm, Giugno 2018.
- *Explore Statistics with R*, Karolinska Institutet, Ottobre 2016.
- *Scientific and Technical Computing*, CINECA, Italia, Novembre 2014.

### Soft skills

- Motivating and inspiring
- Self-organization and adaptability
- Time management and priority management
- Enthusiasm

### Hard skills

#### Environmental Modelling:

- Numerical Weather prediction modelling (**WRF**, RAMS),
- Urban and rural Surface Energy balance modelling (BEP, BEM, TEB),
- Air Pollutant dispersion modelling (CALPUFF, AERMOD, FLEXPART)
- Data Analysis (R, Python, Matlab),
- Experience in scientific data manipulation (NetCDF, HDF5, GRIB),

#### AI & Machine Learning:

- Supervised ( NeuralNetworks, Gradient Boosting, RandomForest, SVM, Regression)
- Unsupervised (Clustering k-means, hierarchical, Anomaly detection, Bayesian alg.)
- Optimization (Genetic Algorithms, Simulated Annealing)

**Coding & Scripting:**

- **Python** (Machine Learning, ETL, Pandas Lib, Scikit-learn), **R**, **Bash**, SQL Developer, Fortran90
- Binary and strongly formatted data (netcdf, hdf5, grib)

**Parallel & cloud computing:**

- (MPI) library: mpich2/openmpi, Apache Spark, HPC (IBM LSF), Amazon web services

**Virtualization:**

- Docker

**Data Visualization**

- IBM SPSS Modeler, Tableau, Matplotlib, Kibana

**Operative systems:**

- Professional knowledge of Linux based OS (>7 yrs) – Debian, CentOS, RedHat

**PUBLICATIONS**

link [https://scholar.google.it/citations?user=wEx\\_5lcAAAAJ&hl=it](https://scholar.google.it/citations?user=wEx_5lcAAAAJ&hl=it)

**Inverse Modelling and Air Pollution Forecast**

- Cantelli, A.; D'Orta, F.; Cattini, A.; Sebastianelli, F.; Cedola, L., 2015, Application of genetic algorithm for the simultaneous identification of atmospheric pollution sources, *Atmospheric Environment*, Vol. 115, pp 36-46.
- Cantelli, A., Leuzzi, G., Monti, P., Viotti, P., 2012, An inverse modelling approach for estimating vehicular emissions in urban coastal areas of the Messina Strait. *Int. J. Environ. Poll.*, Vol. 50, Nos. 1/2/3/4, pp.274-282.
- Cantelli, A., Leuzzi, G., Monti, P., Viotti, P., Villanova, M., Majetta, S., 2011. An inverse modelling method to identify vehicular emissions in urban complex area. *Proc. of the 14th Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes – 2-6 October 2011, Kos, Greece*, pp.617-621.

**Urban Meteorology and Urban Modelling**

- Cantelli, Antonio; Monti, Paolo; Leuzzi, Giovanni. Development and integration of a subgrid urban surface scheme in a limited area model. *International Journal of Environment and Pollution*, 2014, 55.1: 230-237.
- Cantelli, A., Monti, P., Leuzzi, G., 2013, Numerical study of the urban geometrical representation impact in a surface energy budget model. *Environmental Fluid Mechanics*, 1-Sep-2013, doi:10.1007/s10652-013-9309-0.
- Cantelli, A., Monti, P., Leuzzi, G., 2011, An investigation of the urban heat island of Rome through a canyon based subgrid scheme. *Int. J. Environ. Poll.*, Vol. 47, Nos. 1-4, pp.239-247.
- Cantelli, A., Monti, P., Leuzzi, G., 2011. The role of geometric factors in urban canyon modelling: new parametrizations and sensitivity analysis. *Proc. of the 14th Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes – 2-6 October 2011, Kos, Greece*, pp. 584-588.
- Cantelli, A., Monti, P., Leuzzi, G., 2010. Influence of the urban heat island parametrization on precipitation forecasting in limited area model. *Proc. of the 6th International Symposium on Environmental Hydraulics*, Vol. 2, pp.1151-1156.

**Alpine Meteorology**

- Cantelli, A., Monti, P., Leuzzi, G., Valerio, G. e Pilotti, M., 2017. Numerical simulations of katabatic winds in an alpine valley, *Wind and Structures Int. J.*, pp.565-578.
- G Valerio, A Cantelli, P Monti, G Leuzzi, 2017. A modeling approach to identify the effective forcing exerted by wind on a prealpine lake surrounded by a complex topography, *Water Resources Research*, 2017

Personal declaration

I authorize the processing of my personal data pursuant to art. 13 d. lgs. 30 June 2003 n ° 196 - "Code regarding the protection of personal data" and art. 13 GDPR 679/16 - "European regulation on the protection of personal data".

Venezia 20 July 2020

Antonio Costelli