

Name: Cecilia Tirelli
Position: Research Fellow
Title: PhD
Gender: Female

Education and training

2007: Laurea in Physics at University of Modena and Reggio Emilia

2012: PhD in Remote Sensing at “La Sapienza” University of Rome

Work Experience

2012 - 2013: Research fellow at ISAC-CNR Tor Vergata Rome (L'Istituto di Scienze dell'Atmosfera e del Clima – Consiglio Nazionale delle Ricerche)

2013 - 2014; Research fellow at CETEMPS (Centro di Eccellenza per l'integrazione di Tecniche di Telerilevamento e Modellistica Numerica per la Previsione di Eventi Meteorologici Severi, University of L'Aquila)

2014 - 2015 Research position at ISAC-CNR (Bologna)

2015 to present: Research fellow at IFAC-CNR (Istituto di Fisica Applicata “Nello Carrara”)

Competences and Expertise

Her research in Remote Sensing is focused on the study of atmospheric constituents: aerosol and gases (SO₂ and CO₂ in particular). She worked with on ground active (LIDAR) and passive instruments detecting in the VIS/TIR part of the electromagnetic spectrum (Multifilter Rotating Shadowband Radiometer, Optical and Aerodynamic Particle Counters, AERONET CIMEL) and in the analysis of active (CALIPSO) and passive multispectral (MODIS) and hyperspectral satellite measurements (IASI, GOSAT, CHRIS). Her research topics are the aerosols microphysical and optical properties retrieval and simulation in urban and rural environments; the study of aerosols role in the atmospheric correction of satellite data; the CO₂ retrieval from satellite measurements.

During the PhD she carried out a study for the realization of a complex system of multispectral (MFRSR) and multiangular (Bistatic Lidar) remote sensing measurements in the city of Rome for the characterization of urban aerosol microphysical and optical properties and vertical distribution in the boundary layer. She developed a novel in situ calibration algorithm for MFRSR instrument in urban location to assure reliable and thorough values of spectral optical depth and Angstrom coefficient. Moreover, during the thesis, she realized a complete analysis to identify the optimal characteristics of a bistatic lidar system for aerosols optical properties and vertical distribution estimation in an urban boundary layer.

As a research fellow, she worked on the development of algorithms for the study of the dependence of optical particle sizers (OPCs) measurements on the aerosol microphysical properties for the comparison with aerodynamic particles sizer measurements with the aim of the characterization of Saharan dust intrusions in the boundary layer. She also worked on activities for development and application of radiative transfer models to passive remote sounding of the Earth's atmosphere from space and high altitude platforms. Recently she started to work on CO₂ retrieval from satellite.

As PhD student and research fellow she was involved in national and international research projects supported by the EU (DIAPASON, 2012, 2013; ACTRIS, 2014; KLIMA-IASI, 2015-2016), by ASI and by PNRA (Italian Programme for Antarctic Research)

The list of publications of Cecilia Tirelli includes papers in peer-reviewed journals, articles or extended abstracts in national and international conference proceedings.