

SYNOPSIS

Jorge Humberto Amorim is a Researcher at the Swedish Meteorological and Hydrological Institute (SMHI), Air Quality Research Unit, in Norrköping (Sweden), where he has the role of Research Leader for urban air quality and climate. He was born in Viana do Castelo, Portugal, in 1976. In 2000, he received a degree in Environmental Engineering from the University of Aveiro (UA). He obtained a Master of Science in Atmospheric Pollution in 2003, and a PhD in Sciences Applied to the Environment in 2008 from the same University. From 2009 to 2014 he was a Post-Doc fellow in the Associate Laboratory Centre for Environmental and Marine Studies (CESAM), at UA and the Pacific Northwest Research Station (Seattle, USA), with financial support from the Portuguese Foundation for Science and Technology (FCT). Between 2010 and 2014 he worked as Invited Assistant Professor (for the 1st and 2nd cycles) at UA and at the Higher Institute of Maia (ISMAI). He supervised six Master Thesis.

He has 40 scientific publications indexed to the Web of Science (h-index 14) and 46 to Scopus (h-index 14). He (co-)authored more than 35 books or chapters of books and 60 papers in International Conference Proceedings with peer-review. He has participated in several EC R&D projects, COST Actions, bilateral cooperation in Europe and with South-America, and national projects in Portugal and Sweden. He has been assigned as Expert Evaluator in several Research Programmes.

His scientific activity is focused on the numerical modelling of atmospheric processes in cities, from micro to urban scale. The aim is to provide high-resolution climate and air quality data for the evaluation of the effects of heat and air pollution on the wellbeing and health of urban dwellers. Research interests include: urban air quality and human exposure, urban climate and human comfort, and urban green infrastructure.

PERSONAL DATA



Full name:	Jorge Humberto de Melo Rosa Amorim
Date and Place of birth:	6 th of June 1976, Viana do Castelo, Portugal
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ACADEMIC DEGREES

2008 – Ph.D. in Sciences Applied to the Environment.
2003 – M.Sc. in Atmospheric Pollution.
2000 – B.Sc. in Environmental Engineering (pre-Bologna 5 years licentiate's degree).
All degrees by the University of Aveiro, in Portugal.

CAREER

Since February 2015 – Researcher at the Swedish Meteorological and Hydrological Institute (SMHI), Air Quality Research Unit, Sweden.
September 2011 to June 2014 – Invited Assistant Professor (1st and 2nd cycles) at the Higher Institute of Maia ('Instituto Superior da Maia' - ISMAI), Portugal.

September 2010 to January 2012 – Invited Assistant Professor (1st and 2nd cycles) at the University of Aveiro (UA), Portugal.

July 2009 to January 2015 – Post-Doc fellow in the Associate Laboratory Centre for Environmental and Marine Studies (CESAM), at the UA (Portugal) and the Pacific Northwest Research Station (Seattle, United States). Financial support from the Portuguese Ministry of Science, Technology and Higher Education, through the Foundation for Science and Technology (FCT) (scholarship n.º SFRH/BPD/48121/2008). Supervisors: Dr. Ana Isabel Miranda (UA, CESAM) and Dr. Roger Ottmar (United States Department of Agriculture, Pacific Northwest Research Station).

January 2009 to June 2009 – Post-Doc fellow at the UA/CESAM, in the scope of the Collaborative Project (n.º 211345/EC) BRIDGE: “Sustainable Urban Planning Decision Support Accounting for Urban Metabolism”.

April 2008 to December 2008 – PhD fellow at the UA, in the scope of the CCDD-Norte Protocol “Execution Program for the Air Quality Improvement Plan in the North Region”.

April 2007 to March 2008 – PhD fellow at the UA, in the scope of the AMRIA Protocol: “Implementation of the Water Framework Directive”.

April 2003 to March 2007 – PhD fellow in Sciences Applied to the Environment at the UA, with financial support from the Foundation for Science and Technology - FCT (scholarship n.º SFRH/BD/11044/2002). Supervisor: Dr. Carlos Borrego (UA, CESAM).

April 2002 to March 2003 – MSc fellow at the UA, in the scope of the ERAS Project “Extension Retardant Application System” (EVG1-2001-00019).

November 2001 to March 2002 – MSc fellow at the UA, in the scope of the LIFE Project “Compilation and Characterization of Anthropogenic Pollutant Emissions in the Setúbal Peninsula and Surrounding Area” (ENV/p/556/98).

November 2000 to October 2001 – MSc fellow at the UA, in the scope of the SUTRA Project (EVK4-CT-1999-00013).

CONTRIBUTION ON EDUCATION

Graduation Courses and disciplines:

- Environmental Engineering (Univ. Aveiro): Fluid Mechanics; Thermodynamics
- Quality, Environmental and Safety Management (ISMAI): Environmental Impact Assessment

Post-Graduation Courses and disciplines:

- Master on Quality Management Systems (ISMAI): Environmental Technologies; Environmental Assessment

Experience as scientific adviser

Supervisor of PhD Thesis:

Phuong Ngoc Chau, on-going. Machine Learning approach for spatial and temporal prediction of urban air quality. University of Dalarna, Sweden.

Supervisor of Master Thesis:

Oliveira H, 2014. Wind erosion of biochar-amended soil: a wind tunnel experiment. Supervisors: Borrego C, Verheijen F, Amorim JH. Master on Environmental Engineering. University of Aveiro, Portugal.

Pereira S, 2014. Impacte da queima residencial de biomassa na qualidade do ar (Impact of residential biomass burning on air quality). Supervisors: Lopes M, Amorim JH. Master on Environmental Engineering. University of Aveiro, Portugal.

Teixeira R, 2012. Simulação da qualidade do ar interior em ambiente escolar (Indoor air quality simulation in a school environment). Supervisor: Amorim JH. Master on Environmental Engineering. University of Aveiro, Portugal.

Teixeira AI, 2010. Estudo do comportamento de fogos florestais com base no modelo FARSITE (Study of forest fires behavior based on FARSITE model). Supervisors: Miranda AI, Amorim JH. Master on Environmental Engineering. University of Aveiro, Portugal.

Nunes D, 2009. Estimativa das emissões de incêndios florestais na Europa (Estimation of forest fire emissions in Europe). Supervisors: Miranda AI, Amorim JH. Master on Environmental Engineering. University of Aveiro, Portugal.

Rodrigues V, 2009. Simulação do efeito da vegetação na qualidade do ar em zonas urbanas (Simulation of the effect of vegetation on air quality in urban areas). Supervisors: Borrego C, Amorim JH. Master on Environmental Engineering. University of Aveiro, Portugal.

R&D ACTIVITY AND SCOPUS

Research on the numerical modelling of atmospheric processes in cities, from micro to urban scale. The aim is to provide high-resolution climate and air quality data for the evaluation of the effects of heat and air pollution on the wellbeing and health of urban dwellers. Research interests include: urban air quality and human exposure, urban climate and human comfort, and urban green infrastructure.

PUBLISHED WORKS

Peer-reviewed publications: 40 in Web of Science (h-index: 14), 46 in Scopus (h-index: 14)

Total number of citations: 673 in Web of Science, 764 in Scopus

Books or chapters of books: >35

Papers in International Conference Proceedings with peer-review: >60

PATENTS AND TRADEMARKS

He has two registered trademark, the air quality software URBAIR, which is owned by the University of Aveiro (*marca nacional* nº 504274 in the *Boletim da Propriedade Industrial* nº 234/2012 on 05.12.2012) and the air quality model VADIS - Pollutant Dispersion in the Atmosphere under Variable Wind Conditions (n.º 474/2017, IGAC, 2017.02.10).

PARTICIPATION IN R&D PROJECTS

EU Framework Programmes

2017-2020 :: Clarity - "Integrated Climate Adaptation Service Tools for Improving Resilience Measure Efficiency".

2015-2017 :: UrbanSIS - "Urban SIS: Climate information for European Cities". Framework Agreement for Copernicus Services (C3S_441_Lot3 Sectoral Information System: Proof of Concept) between the European Centre for Medium-Range Weather Forecasts (ECMWF) and SMHI. Leader of WP3 on "Urban downscaling"

2010-2012 :: SINPHONIE - "Schools Indoor Pollution and Health: Observatory Network in Europe"

2008-2011 :: BRIDGE - "Sustainable Urban Planning Decision support accounting for urban metabolism" (211345/EC)

2000-2002 :: SUTRA - "Sustainable Urban Transportation" (EVK4-CT-1999-00013)

SATURN - "Studying Atmospheric Pollution in Urban Areas" (EUROTRAC sub-project)

2002-2005 :: ERAS - "Extension Retardant Application System" (EVG1-2001-00019)

2001-2004 :: SPREAD - "Forest Fire Spread Prevention and Mitigation" (EVG1-2001-00027)

2002-2006 :: EUFIRELAB - "Euro-Mediterranean Wildland Fire Laboratory, a "wall-less" Laboratory for Wildland Fire Sciences and Technologies in the Euro-Mediterranean Region" (EVR1-CT-2002-40028).

COST (European Cooperation in Science and Technology) Actions

2013-2017 :: COST Action FP1204 - "Green Infrastructure approach: linking environmental with social aspects in studying and managing urban forests"

2011-2014 :: COST Action ES1006 - "Evaluation, improvement and guidance for the use of local-scale emergency prediction and response tools for airborne hazards in built environments"

2008-2012 :: COST Action TU0801 - "Semantic Enrichment of 3d City Models for Sustainable Urban Development"

2005-2009 :: COST Action 732 - "Quality Assurance and Improvement of Micro-Scale Meteorological Models".

Bilateral research actions in Europe

"Improvement of CFD models for the simulation of flow and air quality in urban areas", cooperation with *Ecole Centrale de Nantes*, Nantes (France). Agreement Portugal-France: Program PESSOA 2010-11.

"Forest fires impact on air quality", cooperation with the *Laboratoire d'Aerologie*, CNRS, Toulouse (France). Agreement Portugal-France: Program PESSOA 2010-11.

Bilateral cooperation projects Sweden/Brazil

2015-2018 :: ParCur ("Emissions of particulate matter and black carbon and related impact on air quality in the metropolitan region of Curitiba (Paraná)", under the "MoU between the Ministry of the Environment of the Kingdom of Sweden and the Ministry of the Environment of the Federative Republic of Brazil on cooperation in the fields of environmental protection, climate change and sustainable development" (Nov. 20, 2013).

2018-... :: Green infrastructure in tropical cities for reducing thermal stress and adapting to climate change – the example of Fortaleza, Ceará"

R&D projects in Sweden

2020-2022 :: Effectively designing and communicating next generation climate simulations over Sweden (EDUCAS) – funding from the Swedish Research Council FORMAS.

2019-2021 :: Heat stress in Swedish cities and the role of urban nature (GreenWave) – funding from the Swedish Research Council FORMAS. (Principal Investigator)

2018-2019 :: Green infrastructure and climate in Nordic cities, today and in the future: state-of-the-art and knowledge gaps on interactions and impacts (G.I.Nord) – funding from the Swedish Research Council FORMAS. (Principal Investigator)

2017-2019 :: Modelling Road Traffic Air Pollution Dispersion and Sound Propagation in Urban Environments – funding from the Swedish Research Council FORMAS.

2016-2018 :: Multi-scale modelling of urban weather on the example of Stockholm (MUMS) – funding from the Swedish Research Council FORMAS.

2015-2020 :: Hazard Support: Risk-based decision support for adaptation to future natural hazards – funding from the Swedish Civil Contingencies Agency (Myndigheten för samhällsskydd och beredskap, MSB)

2014-2016 :: Swedish Clean Air and Climate Research Program (SCAC) – funding from the Swedish EPA

R&D projects in Portugal

2013-2015 :: CLICURB ("Urban Atmospheric Quality, Climate Change and Resilience"; EXCL/AAG-MAA/0383/2012), with the financial support of the Portuguese National Science Foundation FCT

2013-2015 :: VitalResponder 2.0 ("Intelligent Management of Critical Events of Stress, Fatigue and Smoke Intoxication in Forest Firefighting; PTDC/EEI-ELC/2760/2012), with the financial support of FCT

2010-2013 :: SMARTDECISION ("Intelligent Vehicle Routing System for Enhanced Air Quality in Urban Areas"; PTDC/SEN-TRA/115117/2009), with the financial support of FCT

2010-2013 :: INSPIRAR ("Air Quality Exposure and Human Health in Industrialized Urban Areas"; PTDC/AAC-AMB/103895/2008), with the financial support of FCT

LTER-RAVE ("Long term monitoring in the Ria de Aveiro: towards a deeper understanding of ecological, environmental and economic processes"; LTER/BIA-BEC/0063/2009), with the financial support of FCT

2005-2008 :: INTERFACE project ("Effect of wildland-urban interface fires on air quality"; POCI/AMB/60660/2004), with the financial support of FCT

2005-2008 :: PAREXPO ("Particulate Matter in Ambient Air and Human Exposure"; POCI/AMB/57393/2004), with the financial support of FCT

2008-2010 :: FUMEXP ("Exposure of firefighters to smoke and related health effects", PTDC/AMB/66707/2006), with the financial support of FCT

2004-2008 :: SAUDAR ("Health and the Air we breath"), with the financial support of Fundação Calouste Gulbenkian

1998-2000 :: CONVEC project ("Study of the Conditions of Development of a Convection Column During a Forest Fire and its Effects on Air Quality"; PEAM/IF/0014/97).

COOPERATION WITH PRIVATE COMPANIES AND GOVERNMENT

He has also provided consultancy services to the Institute of Environment and Planning (IDAD) under both International and National contracts with private companies and government agencies, in the areas of air quality impact and impact/risk assessment. List of contracts:

International contracts for consultants' services

"Desarrollo de una Estrategia Ambiental Integrada para una Movilidad Sustentable en Bogotá, Colombia", under the Contract for Consultants' Services signed between the Clean Air Institute (CAI), United States, and the University of Aveiro.

"Air quality study for the Medellin municipality in the Aburra Valley, Colombia", under the Contract for Consultants' Services signed between the Clean Air Institute (CAI) in United States, and the University of Aveiro.

Contracts for consultants' services in Sweden

"Riskbild 3, Södermanland - Extrema vädersituationer", under the Contract for Consultants' Services signed between the County Board (Länsstyrelsen) of Södermanland and SMHI.

Contracts for consultants' services in Portugal

"Air Quality Assessment in the Oil Refinery of Matosinhos", under the contract with the oil company Petrogal

"Lourenço Peixinho Avenue", under the contract with the Aveiro Town Council

"Air Quality Forecast over Portugal", under the contract with Portuguese Environmental Protection Agency (APA)

"Diesel Particle Filters testing in high-duty vehicles", under the contract with the North Regional Coordination and Development Commission (CCDR-N)

"Numerical Simulation of the Effect of Forest Fires on Air Quality and Human Exposure in the Municipality of Trofa", under the contract with the Trofa Town Council

"Evaluation of the Air Quality Impact of the Use of Natural Gas and Fuel Cells on Public Transportation in the City of Porto", under the contract with the *Sociedade de Transportes Colectivos do Porto* (STCP)

"Integrated Decision Support System for Serious Accidents - RISCAV", under the contract with the Administration of the Aveiro Port (APA)

"Study of Solutions for the Emission of Scrap Metal Particles in the Port of Leixões", under the contract with the Administration of the Leixões Port (APDL).

"Wind analysis in the Carla Sacramento athletics track", under the contract with the Seixal Town Council.

PEER REVIEW AND EVALUATION

Expert Evaluator for European Commission's Research Programme Horizon 2020 (2021)

Expert Evaluator for the Swedish Research Council for Sustainable Development (FORMAS) (2019).

Expert Evaluator for the Polish National Science Center (2018 and 2021).

Expert Evaluator for the Romanian Executive Agency for Higher Education, Research, Development and Innovation (UEFISCDI) (2016).

Expert Evaluator for the Portuguese Calouste Gulbenkian Foundation (2009).

Evaluator of several Master Thesis.

Reviewer for the scientific journals "Atmospheric Environment", "Atmospheric Research", "Landscape and Urban Planning", "International Journal of Wildland Fire", "Fire Safety Journal", and "Atmospheric Pollution Research", "Urban Forestry & Urban Greening".

MEMBER OF NATIONAL AND INTERNATIONAL SCIENTIFIC ORGANIZATIONS

Member of the Associate Laboratory "Centre for Environmental and Marine Studies" (CESAM) between 2005 and 2015.

OTHER PROFESSIONAL ACTIVITIES

Participation in the elaboration of several proposals of research projects under the EU's framework programmes FP5, FP6, FP7, and H2020; as also national calls in Sweden and Portugal.

Member of the Organizing Committee of the following National/International conferences: National Conference on "Firefighters Exposure to Smoke and related Health Effects" (Univ.

Aveiro, Dec 17, 2010); International Workshop "Forest Fires Research: Beyond Burnt Area Statistics" (Univ. Aveiro, May 26, 2010); 29th "International Technical Meeting on Air Pollution Modelling and Its Application" (Univ. Aveiro, Sep. 24-28, 2007); National Conference on "Impact of Forest Fires on Urban Air Quality" (Univ. Aveiro, Dec 3, 2008); National Conference on "Sustainable Transportation for the City of Tomorrow" (Univ. Aveiro, Jan, 2005); "6th GLOREAM Workshop – Global and regional atmospheric modelling" (Univ. Aveiro, 2002); "1st National Meeting of Environmental Engineering Students" (Univ. Algarve, Oct 5-7, 2000).

Responsible for the organization of several meetings of European and National projects.

Participation in several air quality field campaigns, wind-tunnel experiments and real scale fire experiments (between 2000 and 2015).

Participation in science dissemination activities carried out at the Univ. Aveiro (e.g., Science and Technology Week), in particular with wind tunnel demonstrations for young students.