

FINAL REPORT

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Publications in journals and conferences

Coordinated by:

idæ^a

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LIFE11 /ENV/ES/584

AIRUSE

Testing and development of air quality mitigation measures in Southern Europe

Contents

<u>1. PREAMBLE.....</u>	<u>3</u>
<u>2. 14 PUBLICATIONS IN SCIENTIFIC JOURNALS.....</u>	<u>3</u>
<u>3. 47 ABSTRACTS IN 21 INTERNATIONAL SCIENTIFIC CONFERENCES</u>	<u>5</u>

1. PREAMBLE

The dissemination actions of the project were successful and all results have been widely publicized. AIRUSE results have been published in 14 scientific journals and in 47 abstracts in 21 international scientific conferences.

2. 14 PUBLICATIONS IN SCIENTIFIC JOURNALS

1. Amato, F., et al. – AIRUSE-LIFE+: a harmonized PM speciation and source apportionment in 5 Southern European cities. Article published at *Atmos. Chem. Phys.*, on March 2016.
2. Amato, F., et al. – Effects of water and CMA in mitigating industrial road dust resuspension. Article published at *Atmospheric Environment ELSEVIER*, on February 2016.
3. Amato F., et al.- Effects of Road Dust Suppressants on PM Levels in a Mediterranean Urban Area, article published at *Environmental Science and technology* on June 2014.
4. Amato F., et al. – Urban air quality: The challenge of traffic non-exhaust emissions, article published at *ELSEVIER* on May 2014. This article is an outcome of the Expert's Workshop, organised on the framework of the AIRUSE Project.
5. Holman C., et al. – Review of the efficacy of low emission zones to improve urban air quality in European cities, article published at *ELSEVIER* on April 2015.
6. Karanasiou et al., Grain size segregated chemical patterns of PM_x in Barcelona, NE Spain (under preparation)
7. Diapouli E., Manousakas, M., Vratolis S., et al., AIRUSE-LIFE +: Estimation of natural source contributions to urban ambient air PM₁₀ and PM_{2.5} concentrations in Southern Europe. Implications to compliance with limit values, *Atmos. Chem. Phys. Discuss.*, doi:10.5194/acp-2016-781, 2016
8. Lucarelli F., et al. – The role of PIXE in the AIRUSE project, article published at *Nuclear Instruments & Methods In Physics Research Section B-beam Interactions With Materials And Atoms*, at *ELSEVIER* on September 2015.
9. Vicente E.D., et al. – Particulate and gaseous emissions from the combustion of different biofuels in a pellet stove, article published at *Atmospheric Environment*, at *ELSEVIER* on August 2015.

10. Vicente E.D., et al. (In Press) Particulate phase emission of parent polycyclic aromatic hydrocarbons (PAHs) and their derivatives (alkyl-PAHs, oxygenated-PAHs, azaarenes and nitrated-PAHs) from manually and automatically fired combustion appliances, article published at Air Quality, Atmosphere And Health, SPRINGER, on July 2015.
11. Vicente E.D., et al. (In Press) Emissions from the combustion of eucalypt and pine chips in a fluidized bed reactor, article published at Journal Of Environmental Sciences, at ELSEVIER on July 2015.
12. Vicente E.D., et al. – Influence of operating conditions on composition of particulate matter emissions from residential combustion, article published at Atmospheric Research ELSEVIER on June 2015.
13. Vicente E.D., et al. – Emission of carbon monoxide, total hydrocarbons and particulate matter during wood combustion in a stove operating under distinct conditions, article published at ELSEVIER on November 2014.
14. Querol X., et al. – 2001–2012 trends on air quality in Spain, article published at ELSEVIER on August 2014.

All the articles are available on-line at the [AIRUSE website](http://airuse.eu/en/outreach-dissemination/publications/) at “Publicatons” section (<http://airuse.eu/en/outreach-dissemination/publications/>).

3. 47 ABSTRACTS IN 21 INTERNATIONAL SCIENTIFIC CONFERENCES

1. 10th National Environmental Conference (10CNA) on November 6-8th 2013 held in University of Aveiro.
 - *Vicente E., et al.: Influência das Condições Operatórias nas Emissões de Partículas da Combustão Doméstica*
2. European Aerosol Conference (EAC 2013) on September 1-6th 2013 held in Praga
 - *Nava S., et al., Study of the aerosol elemental composition with high time resolution: preliminary results from the AIRUSE LIFE+ Project*
 - *Karanasiou A., et al.: Overview of the AIRUSE project: Testing and Development of air quality mitigation measures in Southern Europe*
3. 7th International Workshop on Sand/Duststorms and Associated Dustfall, on 2-4 December 2013, held in Frascati (Rome), Italy.
 - *Calzolari G., et al.: Study of Saharan dustfall in Southern Europe: preliminary results from the AIRUSE LIFE+ Project*
4. On March 11-14, 2014 A.S. Fonseca from the CB presented the results of a campaign about nanoparticle emission monitoring during laser melting and ablation of industrial ceramic tiles, at the NanoSpain 2014 Conference held in Zaragoza as a result of networking between AIRUSE and CERAMGLASS, both LIFE projects.
5. On April 27, 2014 Márcio Duarte from AB UAVR presented AIRUSE results at the European Geophysical Union (EGU) General Assembly, in Vienna with 2 subjects:
 - *Emission factors from biomass burning in three types of appliances: fireplace, woodstove and pellet stove*
 - *Urban aerosol in Oporto, Portugal: Chemical characterization of PM10 and PM2.5*
6. On April 29, 2014 in the meeting of the FAIRMODE project F. Amato from CB IDAEA-CSIC presented a review of scientific data and gaps of knowledge on the non-exhaust sources of particulate matter. The meeting was organized in Oslo, by the JRC (EC), on source apportionment models inter-comparison and harmonization.
7. On 21-23 May 2014 in the 6th Convegno Nazionale sul Particolato Atmosferico (PM2014), held in Genova, Italy S. Nava from AB UNIFI gave an oral presentation entitled: Studio del particolato in quattro città del sud europa: primi risultati del progetto europeo life+ airuse.
8. On 1- 6 June, 2014 4 oral presentations with results of the AIRUSE project were presented in the DUST 2014, International Conference on Atmospheric Dust, with the corresponding publications:
 - *African dust outbreaks and air quality in southern Europe: Is it only dust that matters? Plenary talk by Xavier Querol project manager of AIRUSE*
 - *Effects of road dust suppressants on PM levels in a Mediterranean urban area. Oral presentation by Fulvio Amato from CB*
 - *Sahara dust long-range transport over southern Europe: first results from LIFE+ AIRUSE project. Oral presentation by Evangelia Diapouli from AB NCSR.D.*

- *Study of the aerosol elemental composition in four southern Europe cities: first results from the LIFE + AIRUSE project. Oral presentation Franco Lucarelli from AB UNIFI*
9. On 3-5 June 2014 Célia Alves from AB UAVR presented AIRUSE results with a poster presentation entitled “Influence of operating conditions on emissions of particulate matter from a Portuguese woodstove” at the World Bioenergy conference held at Jonkoping, Sweden
 10. On 15-19 June, 2014 Célia Alves from AB UAVR presented AIRUSE results with two poster presentations at the AIRMON 2014 8th International Symposium on Modern Principles for Air Monitoring and Biomonitoring in Marseille, France.
 - *Particulate and gaseous emissions from residential pellet combustion, Vicente et al.,*
 - *Gaseous and particulate emissions from the combustion of wood in a Portuguese stove Duarte et al.,*
 11. On 23 - 26 June, 2014 Estela Vicente from AB UAVR presented AIRUSE results in the 22nd European Biomass Conference and Exhibition (EUBCE) held in Hamburg, (Germany) with a poster presentation entitled: Emissions from the combustion of eucalyptus and pine chips in a fluidised bed reactor.
 12. On 7-9 July 2014 AB UAVR presented AIRUSE results with a poster presentation entitled “Research on particulate matter formation and emission during biomass combustion” at 2nd Iberian Meeting on Aerosol Science and Technology in Tarragona, Spain.
 13. On 28 August, - 5 September, 2014 in the International Aerosol Conference IAC 2014, held in Busan, Korea AIRUSE was presented with:
 - *Lucarelli et al.: Study of the aerosol elemental composition in four Southern Europe cities: first results from the Life+ AIRUSE project.*
 - *Eleftheriadis et al. Long-range Transport of Sahara Dust in Southern Europe: Initial Results from LIFE+ AIRUSE Project.*
 14. On 19-21 November, 2014 during SPEIC14 – Scientific conference on combustion and related fields, held in Lisboa Estela Vicente and Marcio Duarte from AB UAVR presented 2 works with results from the AIRUSE project
 15. On 25 February-3 March 2015 in the 14th International Conference on Particle-Induced X-ray Emission (PIXE2015), held in Somerset West, South Africa, Franco Lucarelli from AB UNIFI gave an oral presentation entitled The role of PIXE in the AIRUSE project: Testing and development of air quality mitigation measures in Southern Europe
 16. On 22 - 23 October, 2015 Claire Holman and Xavier Querol presented AIRUSE to Routes to Clean Air, Air Quality Conference 2015 in Bristol UK.
 17. On June 19, 2015 X. Querol and F.Lucarelli presented AIRUSE in the DIAPASON LIFE project final conference, in Rome, Italy
 18. On June 14-19, 2015 members from UAVR presented AIRUSE to BIOMAP 7 – 7th International Workshop on Biomonitoring of Atmospheric Pollution, held in Lisboa, Portugal

19. On February 25-3 March, 2015 F. Lucarelli presented F. Lucarelli from AB UNIFI gave an oral presentation entitled: The role of PIXE in the AIRUSE project: Testing and development of air quality mitigation measures in Southern Europe at the 4th International Conference on Particle-Induced X-ray Emission (PIXE2015) in Western Cape, South Africa.

20. On September 6-11, 2015 AIRUSE presented 16 works:

- *Alves C., et al. - Biomass burning emission factors and chemical profiles in Southern Europe,*
- *Amato F., et al. – Are dust binders efficient in Southern Europe? Alternatives for efficient urban and industrial dust mitigation in Mediterranean areas*
- *Lucarelli F., et al. – Synergistic daily and hourly PM source apportionment in urban environments of Southern Europe*
- *Harrison R., et al. – Review of the efficiency of major air quality measures for road traffic in Europe,*
- *Querol X., et al. – A harmonized PM speciation and source apportionment to ambient PM in 5 Southern European cities,*
- *Eleftheriadis K., et al. – Natural contributions to urban PM in Southern Europe and strategies to minimise human exposure.*
- *Gianelle V., Colombi C., et al. – Contribution of biomass burning to ambient PM_{2.5} in 5 Southern European cities*
- *Karanasiou A., Harrison R., et al. – Grain size segregated chemical patterns of PM_x (from UFP to PM₁₀) in Barcelona, NE Spain,*
- *Monfort E., et al. – Are industrial emissions inventories accurate enough to develop air quality plans?,*
- *Vicente E.D., et al. – Emission of parent, nitrated and oxygenated polycyclic aromatic hydrocarbons from manually and automatically fired residential combustion appliances,*
- *Alves C., et al. - Mitigation strategies for biomass burning emission in Southern Europe, poster published at European Aerosol Conference (EAC2015) on September 2015.*
- *Alves C., et al. - Emissions of anhydrosugars from diverse residential biomass combustion equipment,*
- *Pandolfi M., et al. – 2003-2014 trends of PM₁₀ and PM₁ source contributions in Barcelona, NE Spain*
- *Alves C., et al. - Determination of road dust loadings and chemical composition using in situ and laboratory resuspension experiments*
- *Coz E., et al. – A link between optical absorption wavelength dependence and morphology in black carbon particles from residential woodstove emissions*
- *Custodio D., et al. – Wet scavenging of tropospheric pollutants in Oporto.*

21. On September 4-9, 2016 AIRUSE participated at the EAC 2016 with 5 works

- *Karanasiou et al., Long term measurements of carbonaceous aerosols in PM_x, Barcelona, Spain-Influence of African dust.*
- *Manousakas et al., Source apportionment of PM_{2.5} collected in a traffic site and in an urban background site in Athens, Greece: Comparison of the chemical profiles and the contributions*
- *Galzolari G. et al., Different approaches for crustal and marine contribution estimates: which are the uncertainties?*

- *Castro A. et al., Impact of wood combustion in an open fireplace on indoor residential air quality: Respirable Fraction.*
- *Pandolfi et al., Trends of pm source contributions and chemical tracers in NE Spain during 2004-2014: A multi exponential approach*

All the Publications are available on-line at the [AIRUSE website](http://airuse.eu/en/outreach-dissemination/publications/) at “Publicatons” section (<http://airuse.eu/en/outreach-dissemination/publications/>).



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