

Education

Ph.D., Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, 2004. Thesis: “Sampling, Analysis and Source-Appportionment of Ambient Carbonaceous Aerosols.”

M. Tech., Energy Systems Engineering, Indian Institute of Technology–Bombay, Mumbai, India, 1999. Master’s Dissertation: “Simulation of a Hybrid Electric Vehicle.”

B.E., Automobile Eng., University of Mumbai (formerly Bombay), Mumbai, India, 1996.

Work experience

October 2025 to date. Independent consultant, Bengaluru, India

July 2023 to September 2025. Center for Study of Science, Technology, and Policy (CSTEP). Bengaluru, India

Sector Head, Air Quality and Principal Research Scientist

- Lead a team of 25 researchers and policy analysts across three groups help government bodies develop clean air action plans through advanced modeling and measurements
- Raising project, thematic, and core funding by cultivating philanthropic funders and writing grant proposals
- Guiding sectoral strategy, advising on institutional structures and practices, developing external collaborations
- Writing/advising on policy briefs, technical reports, op-eds, etc.
- Mentoring junior staff

Feb 2021 to May 2023. Qatar Environment & Energy Research Institute, Doha, Qatar

Senior Scientist

- Lead, Air Quality Sensors Group, Environment & Sustainability Center
- Sensor evaluation and applications for air quality monitoring (ambient, indoors, at sports facilities) and monitoring of natural gas emissions (methane and VOC leak detection)
- Proposal development, mentoring of junior research staff

November 2018 to November 2022. OSU-Efluve/CNRS, Creteil, France

MOPGA Laureate (Make Our Planet Great Again); visiting researcher (since Feb 2021)

- Project “Make Air Quality Great Again”
- Established the *Africa qualité de l'air (AfriqAir)* network
 - African, European, and American partners collaboratively building a hybrid air quality monitoring network of reference-grade/expensive monitors and lower-cost sensors in Nairobi, Abidjan, Accra, Kigali, Kinshasa, and other African cities
 - **Capacity building:** training local faculty, students, and NGOs in these cities on instrument operation, sensor calibration, and air quality data analysis
- Developing new multinational collaborative proposals for air quality studies in Africa
- Mentoring students and postdoctoral researchers across three continents

Nov 2017 to date. Kigali Collaborative Research Center, Kigali, Rwanda: Research Fellow

Feb 2013 to date. Carnegie Mellon University, Pittsburgh, PA, USA

Research Scientist (till November 2018)/ Adjunct Faculty (since November 2018)

- Proposal development, leading teams, mentoring students and postdoctoral researchers
- Led the development of the Real-time, Affordable, Multi-Pollutant (RAMP) system, a lower-cost air quality monitor, in collaboration with SenSevere (now Sensit). Deployed over 60 RAMPs in Pennsylvania, Puerto Rico, and several African countries
- Methane and air pollutant emissions from the US natural gas sector: some projects in collaboration with NGOs and gas companies (production, processing, distribution)
- Studies of aerosol optical properties and black carbon (BC) mixing state through field experiments (SOAS, SOAS-2) and lab studies (SAAS-PNNL, SAAS-CMU)

Jan 2012 to Jan 2013. RTI International, Research Triangle Park, NC

Research Environmental Scientist

- Proposal development; set up a new Atmospheric Chemistry Lab, including acquisition of aerosol instrumentation and a new computing cluster for regional air quality modeling

Jan 2007 to Dec 2011. Droplet Measurement Technologies (DMT), Boulder, CO

Research Scientist (2009 to 2011); Postdoctoral Research Scientist (2007 to 2009).

- In-house testing, development, and application of DMT instruments (SP2, PAX, PASS-3)
- Proposal development, sales and customer service, development of data analysis tools.
- Studied BC aging during atmospheric transport and aerosol-cloud interactions using the DMT single particle soot photometer (SP2) in various field NSF/DOE-funded campaigns (MILAGRO, CARES, ICE-L, ICE-T, PacDEX)

Nov 2004 to Dec 2006. University of Illinois at Urbana-Champaign, Urbana, IL

Postdoctoral Research Associate. Characterized diesel vehicle emissions in Thailand, and particulate emissions from biomass combustion. Studied morphology of organic aerosol collected on filter samples for subsequent optical and thermal analysis.

July 2000 to Sept 2004. Carnegie Mellon University, Pittsburgh, PA

Graduate Research Assistant. Source-receptor modeling of ambient organic aerosol. Instrument response of carbonaceous aerosol under different analytical protocols. Evaluation of sampling artifacts associated with organic aerosol measurement.

4/1999 to 10/1999. Department of Mechanical Engineering, IIT-Bombay, Project Engineer.

7/1996 to 7/1997. Mahindra & Mahindra Ltd, Nashik, India. Trainee Engineer.

Funding as Principal Investigator (PI) or Co-PI (before CSTEP and QEERI)

- **PI**, “Make Air Quality Great Again (MAQGA): Low-cost sensors, satellites, and models to measure and predict air quality with high resolution.” Agence Nationale de la Recherche, €1.56 million (2018-2022)
- **PI**, “Democratization of Measurement and Modeling Tools for Community Action on Air Quality, and Improved Spatial Resolution of Air Pollutant Concentrations.” US Environmental Protection Agency, \$749,945

- **Lead PI**, “Collaborative Research: Aging of Black Carbon During Atmospheric Transport: Understanding Results From the DOE's 2010 CARES and 2012 ClearfLo Campaigns.” US Department of Energy-ASR. \$397,000 (CMU total \$227,000; 2012-2016)
- **Co-PI**, “Expanding the RAMP network in Southwestern PA: New sources, data gaps, and community group support.” Heinz Endowments, \$250,000 (2018-2019)
- **Co-PI**, “Aerosol Optical Properties and Biogenic SOA: Effect on Hygroscopic Properties and Light Absorption.” US EPA, \$398,318 (CMU total \$141,000; 2012-2017; Lead PI: Andrey Khlystov, Desert Research Institute, Nevada)
- **Co-PI**, “Measurement of Methane Emissions and Leakage from Natural Gas Extraction and Processing Facilities in Appalachia, the Rockies, and the Gulf Coast.” NOAA. \$600,000 (2014-2017; Lead PI: Allen Robinson)
- **Co-PI**, “Measurements and modeling to quantify emissions of methane and VOCs from shale gas operations.” DOE-NETL. \$1,001,990 (2013-2016; Lead PI: Albert Presto)
- **Co-PI**, “ICE-T: In-cloud BC and dust over the Caribbean Sea.” NSF (2011-2013). \$204k
- “Development of a real-time, low-cost sensor package for distributed measurement of ambient air quality.” Heinz Endowments, \$15,000 (2016)
- “Measurement of BC from Associated Natural Gas Flaring.” CATF (2014). \$15,000
- “Measurement of BC in and downwind of Sacramento, CA during CARES.” US DOE-ARM (2010-2011). \$56,000
- “Measurement of Black Carbon emissions from Combustion Sources using a Single Particle Soot Photometer (SP2) and a Photoacoustic Soot Spectrometer (PASS-3).” US Environmental Protection Agency, (2009-2010). \$44,969

Mentoring/supervision (before CSTEP)

Postdoctoral research associates:

Michael Giordano, Julien Bahino, Carl Malings, Aja Ellis, Misha Schurman

Graduate students:

Main supervisor for Bonaventure Karikumutima; Co-supervisor for Ezekiel Waiguru, Rebecca Tanzer, S. Rose Eilenberg, Georges Saliba

Research assistants:

Hanadi Al-Mohsin, Aliaksei Hauryliuk, Damien Jenny, Haofan Li, Srinivasa P.N. Kumar, Melissa Sullivan

Policy briefs/reports

1. Clean Air Fund, The Advocacy Team, CSTEP, Berkeley Air Monitoring Group, Orbis Air (2025). “Tackling Black Carbon: How to Unlock Fast Climate and Clean Air Benefits.” <https://www.cleanairfund.org/resource/tackling-black-carbon-report/>
2. CSTEP (2024). “Stubble management: Harnessing ex-situ options and market mechanisms.” (CSTEP-PB-2024-04) <https://cstep.in/publications-details.php?id=2923>
3. Clean Air Fund, CSTEP, Berkeley Air Monitoring Group, Orbis Air, Daniel McDougall (2023). “The Case for Action on Black Carbon: Avoiding climate tipping points, building resilience and delivering clean air.” <https://www.cleanairfund.org/resource/black-carbon/>

Peer-reviewed publications ([Google Scholar](#) h-index 49; 70 publications to date)

1. Ezekiel W. Nyaga, Michael R. Giordano, Matthias Beekmann, Daniel M. Westervelt, Michael Gatari, John Mungai, Godwin Opinde, Albert A. Presto, Emilia Tjernström, V. Faye McNeill, **R. Subramanian** (2025). “Seasonal multisite low-cost sensor measurements to estimate spatial and temporal variability of particulate matter pollution in Nairobi, Kenya.” *Atmospheric Pollution Research*, <https://doi.org/10.1016/j.apr.2025.102630>
2. Patrick Attey-Yeboah, Christian Afful, Kelvin Yeboah, Carl H. Korkpoe, Eric S. Coker, **R. Subramanian**, and A. Kofi Amegah (2025). “Utility of low-cost sensor measurement for predicting ambient PM_{2.5} concentrations: evidence from a monitoring network in Accra, Ghana.” *Environmental Science: Atmospheres* 5, 517-529, <https://doi.org/10.1039/D4EA00140K>
3. James Nimo, Mathias A. Borketey, Emmanuel K.-E. Appoh, Abena Kyerewaa Morrison, Yussif Ibrahim-Anyass, Audrey Owusu Tawiah, Raphael E. Arku, Selina Amoah, Esi Nerquaye Tetteh, Tim Brown, Albert A. Presto, **R. Subramanian**, Daniel M. Westervelt, Michael R. Giordano, and Allison Felix Hughes (2025). “Low-Cost PM_{2.5} Sensor Performance Characteristics against Meteorological Influence in Sub-Saharan Africa: Evidence from the Air Sensor Evaluation and Training Facility for the West Africa Project.” *Environmental Science & Technology* 59 (13), 6623-6635, DOI: 10.1021/acs.est.4c09752
4. Julien Bahino, Michael Giordano, Matthias Beekmann, Véronique Yoboué, Arsène Ochou, Corinne Galy-Lacaux, Cathy Liousse, Allison Hughes, James Nimo, Farouk Lemmouchi, Juan Cuesta, A. Kofi Amegah and **R. Subramanian** (2024) “Temporal variability and regional influences of PM_{2.5} in the West African cities of Abidjan (Côte d'Ivoire) and Accra (Ghana).” *Environmental Sciences: Atmospheres* 4, 468-487, <https://doi.org/10.1039/D4EA00012A>
5. Garima Raheja, James Nimo, Emmanuel K.-E. Appoh, Benjamin Essien, Maxwell Sunu, John Nyante, Mawuli Amegah, Reginald Quansah, Raphael E. Arku, Stefani L. Penn, Michael R. Giordano, Zhonghua Zheng, Darby Jack, Steven Chillrud, Kofi Amegah, **R. Subramanian**, Robert Pinder, Ebenezer Appah-Sampong, Esi Nerquaye Tetteh, Mathias A. Borketey, Allison Felix Hughes, and Daniel M. Westervelt (2023). “Low-Cost Sensor Performance Intercomparison, Correction Factor Development, and 2+ Years of Ambient PM_{2.5} Monitoring in Accra, Ghana.” *Environmental Science & Technology* 57 (29), 10708-10720, DOI: 10.1021/acs.est.2c09264
6. Li, J., A. Hauryliuk, C. Malings, S. Rose Eilenberg, **R. Subramanian**, and A.A. Presto. “Characterizing the Aging of Alphasense NO₂ Sensors in Long-Term Field Deployments.” *ACS Sensors* 2021 6 (8), 2952-2959 DOI: 10.1021/acssensors.1c00729
7. Song, R., A.A. Presto, P. Saha, N. Zimmerman, A. Ellis, and **R. Subramanian** (2021). “Spatial variations in urban air pollution: impacts of diesel bus traffic and restaurant cooking at small scales.” *Air Qual Atmos Health* (2021). <https://doi.org/10.1007/s11869-021-01078-8>
8. Giordano, M.R., C. Malings, S.N. Pandis, A.A. Presto, V.F. McNeill, D.M. Westervelt, M. Beekmann, and **R. Subramanian** (2021). “From low-cost sensors to high-quality data: A summary of challenges and best practices for effectively calibrating low-cost particulate matter mass sensors.” *Journal of Aerosol Science*, <https://doi.org/10.1016/j.jaerosci.2021.105833>
9. McFarlane, C., P.K. Isevulambire, R.S. Lumbuenamo, A.M.E. Ndinga, R. Dhammapala, X. Jin, V.F. McNeill, C. Malings, **R. Subramanian**, and D.M. Westervelt. (2021). First Measurements of Ambient PM_{2.5} in Kinshasa, Democratic Republic of Congo and

- Brazzaville, Republic of Congo Using Field-calibrated Low-cost Sensors. *Aerosol Air Qual. Res.* <https://doi.org/10.4209/aaqr.200619>
10. **Subramanian, R.**, A.S. Kagabo, V. Baharane, S. Guhirwa, C. Sindayigaya, C. Malings, N.J. Williams, E. Kalisa, H. Li, P. Adams, A.L. Robinson, H.L. DeWitt, J. Gasore, and P. Jaramillo (2020). “Air pollution in Kigali, Rwanda: spatial and temporal variability, source contributions, and the impact of car-free Sundays.” *Clean Air Journal*, 30(2): 12-23. <https://doi.org/10.17159/caj/2020/30/2.8023>
 11. Eilenberg, S.R., **R. Subramanian**, C. Malings, A. Hauryliuk, A.A. Presto, and A.L. Robinson (2020). “Using a network of lower-cost monitors to identify the influence of modifiable factors driving spatial patterns in fine particulate matter concentrations in an urban environment.” *J Expo Sci Environ Epidemiol* 30, 949–961. <https://doi.org/10.1038/s41370-020-0255-x>
 12. Malings, C., Westervelt, D., Hauryliuk, A., Presto, A. A., Grieshop, A., Bittner, A., Beekmann, M., and **Subramanian, R.** (2020): Application of Low-Cost Fine Particulate Mass Monitors to Convert Satellite Aerosol Optical Depth Measurements to Surface Concentrations in North America and Africa, *Atmos. Meas. Tech.*, 13, 3873–3892, <https://doi.org/10.5194/amt-13-3873-2020>
 13. Zimmerman, N., H.Z. Li, A. Ellis, A. Hauryliuk, E.S. Robinson, P. Gu, R.U. Shah, Q. Ye, L. Snell, **R Subramanian**, A.L. Robinson, J.S. Apte, and A.A. Presto (2019). “Improving Correlations between Land Use and Air Pollutant Concentrations Using Wavelet Analysis: Insights from a Low-cost Sensor Network.” *Aerosol and Air Quality Research*, <https://doi.org/10.4209/aaqr.2019.03.0124>
 14. Malings, C., R. Tanzer, A. Hauryliuk, P.K. Saha, A.L. Robinson, A.A. Presto, and **R. Subramanian** (2020) “Fine Particle Mass Monitoring with Low-Cost Sensors: Corrections and Long-Term Performance Evaluation.” *Aerosol Science & Technology*, 54(2): 160-174, <https://doi.org/10.1080/02786826.2019.1623863>
 15. Williams, R., R Duvall, V Kilaru, G Hagler, L Hassinger, K Benedict, J Rice, A Kaufman, R Judge, G Pierce, G Allen, M Bergin, RC Cohen, P Fransioli, M Gerboles, R Habre, M Hannigan, D Jack, P Louie, NA Martin, M Penza, A Polidori, **R Subramanian**, K Ray, J Schauer, E Seto, G Thurston, J Turner, AS Wexler, Z Ning (2019) “Deliberating performance targets workshop: Potential paths for emerging PM_{2.5} and O₃ air sensor progress.” *Atmospheric Environment: X*, <https://doi.org/10.1016/j.aeaoa.2019.100031>
 16. Li, H.Z., P. Gu, Q. Ye, N. Zimmerman, E.S. Robinson, **R. Subramanian**, J.S. Apte, A.L. Robinson, and A.A. Presto (2019) “Spatially dense air pollutant sampling: Implications of spatial variability on the representativeness of stationary air pollutant monitors.” *Atmospheric Environment X*, <https://doi.org/10.1016/j.aeaoa.2019.100012>
 17. Saha, P. K., N. Zimmerman, C. Malings, A. Hauryliuk, H.Z. Li, L. Snell, **R. Subramanian**, E.M. Lipsky, J.S. Apte, A.L. Robinson, and A.A. Presto (2019) “Quantifying High-resolution Spatial Variations and Local Source Impacts of Urban Ultrafine Particle Concentration.” *Science of the Total Environment*, 655:473-481, <https://doi.org/10.1016/j.scitotenv.2018.11.197>
 18. Tanzer, R., C. Malings, A. Hauryliuk, **R. Subramanian**, and A.A. Presto (2019) “Demonstration of a low-cost multi-pollutant network to quantify spatial variations in air pollutant source impacts and to evaluate environmental justice.” *International Journal of Environmental Research and Public Health*, 16(14), <https://doi.org/10.3390/ijerph16142523>

19. Malings, C., R. Tanzer, A. Hauryliuk, S.P.N. Kumar, N. Zimmerman, L.B. Kara, A.A. Presto, and **R. Subramanian** (2019) “Development of a General Calibration Model and Long-Term Performance Evaluation of Low-Cost Sensors for Air Pollutant Gas Monitoring.” *Atmos. Meas. Tech.*, **12**:903-920, <https://doi.org/10.5194/amt-12-903-2019>
20. Tasoglou, A., **R. Subramanian**, and S.N. Pandis (2018) “An inter-comparison of black carbon related instruments in a laboratory study of biomass burning aerosol.” *Aerosol Science and Technology*, <https://doi.org/10.1080/02786826.2018.1515473>
21. Bilsback, K. R., S.R. Eilenberg, N. Good, L. Heck, M. Johnson, J.K. Kodros, E.M. Lipsky, C. L'Orange, J.R. Pierce, A.L. Robinson, **R. Subramanian**, J. Tryner, A. Wilson, and J. Volckens. (2018) “The Firepower Sweep Test: A Novel Approach to Cookstove Laboratory Testing.” *Indoor Air*, 28:936–949. <https://doi.org/10.1111/ina.12497>
22. Saliba, G., **R. Subramanian**, K. Bilsback, C. L'Orange, J. Volckens, M. Johnson, and A.L. Robinson (2018). “Aerosol optical properties and climate implications of emissions from traditional and improved cookstoves.” *Environmental Science & Technology*, 52(22): 13647-13656, <https://doi.org/10.1021/acs.est.8b05434>
23. **Subramanian, R.**, A. Ellis, E. Torres-Delgado, C. Malings, R. Tanzer, F. Rivera, M. Morales, D. Baumgardner, A. Presto, O.L. Mayol-Bracero (2018). “Air quality in Puerto Rico in the aftermath of Hurricane Maria: A case study on the use of lower-cost air quality monitors.” *ACS Earth & Space Science*. DOI: 10.1021/acsearthspacechem.8b00079
24. Eilenberg, S.R., K.R. Bilsback, M. Johnson, J.K. Kodros, E.M. Lipsky, C. L'Orange, J.R. Pierce, **R. Subramanian**, J. Volckens, and A.L. Robinson. (2018) “Field measurements of solid-fuel cookstove emissions from uncontrolled cooking in China, Honduras, Uganda, and India.” *Atmospheric Environment*, <https://doi.org/10.1016/j.atmosenv.2018.06.041>
25. Omara, M., N. Zimmerman, M. Sullivan, X. Li, A. Ellis, R. Cesa, **R. Subramanian**, A. Presto, and A.L. Robinson (2018) “Methane emissions from natural gas production sites in the United States: Data synthesis and national estimate.” *Environmental Science & Technology*, DOI: 10.1021/acs.est.8b03535.
26. Zimmerman, N., A.A. Presto, S.P.N. Kumar, J. Gu, A. Hauryliuk, E.S. Robinson, A.L. Robinson, and **R. Subramanian** (2018). “A machine learning calibration model using random forests to improve sensor performance for lower-cost air quality monitoring.” *Atmospheric Measurement Techniques*, <https://doi.org/10.5194/amt-11-291-2018>
27. Gyawali, M., W.P. Arnott, R.A. Zaveri, C. Song, B. Flowers, M.K. Dubey, A. Setyan, Q. Zhang, S. China, C. Mazzoleni, K. Gorkowski, **R. Subramanian**, H. Moosmüller (2017). “Evolution of Multispectral Aerosol Absorption Properties in a Biogenically-Influenced Urban Environment during the CARES Campaign.” *Atmosphere*, 8(11), <http://dx.doi.org/10.3390/atmos8110217>
28. Tasoglou, A., G. Saliba, **R. Subramanian**, and S.N. Pandis (2017). “Absorption of chemically aged biomass burning carbonaceous aerosol.” *Journal of Aerosol Science*, **113**: 141-152, <https://doi.org/10.1016/j.jaerosci.2017.07.011>
29. Ahern, A.T., **R. Subramanian**, G. Saliba, E.M. Lipsky, N.M. Donahue, R.C. Sullivan (2016). “Effect of Secondary Organic Aerosol Coating Thickness on the Real-Time Detection and Characterization of Biomass Burning Soot by Two Particle Mass Spectrometers.” *Atmospheric Measurement Techniques*, 9(12): 6117–6137.
30. Ellis, A.; R. Edwards, M. Saunders, R. K. Chakrabarty, **R. Subramanian**, N. E. Timms, van Riessen, A. M. Smith, D. Lambrinidis, L. J. Nunes, P. Vallelonga, I. D. Goodwin, A. D. Moy, M. A. J. Curran, and T. D. van Ommen (2016). “Individual particle morphology,

- coatings, and impurities of black carbon aerosols in Antarctic ice and tropical rainfall.” *Geophysical Research Letters*, doi: 10.1002/2016GL071042
31. Saliba, G., **R. Subramanian**, R. Saleh, A.T. Ahern, E.M. Lipsky, A. Tasoglou, R.C. Sullivan, J. Bhandari, C. Mazzoleni, and A.L. Robinson (2016). “Optical Properties of Black Carbon in Cook Stove Emissions Coated with Secondary Organic Aerosols: Measurements and Modeling.” *Aerosol Science & Technology*, 50(11): 1264-1276.
32. Omara, M., M. R. Sullivan, X. Li, **R. Subramanian**, A. L. Robinson and A. A. Presto (2016). “Methane Emissions from Conventional and Unconventional Natural Gas Production Sites in the Marcellus Shale Basin.” *Environmental Science & Technology*, 50(4): 2099-2107
33. Weyant, C.L., P. B. Shepson, **R. Subramanian**, M. O. L. Cambaliza, A. Heimbürger, D. McCabe, E. Baum, B. H. Stirm and T. C. Bond (2016). “Black Carbon Emissions from Associated Natural Gas Flaring.” *Environmental Science & Technology*, 50(4): 2075-2081
34. Marchese, A.J., T.L. Vaughn, D.J. Zimmerle, D.M. Martinez, L.L. Williams, A.L. Robinson, Mitchell, A.L., **R. Subramanian**, D.S. Tkacik, J.R. Roscioli, and S.C. Herndon (2015.) “Methane emissions from United States natural gas gathering and processing.” *Environmental Science & Technology*, 49(17): 10718-10727. doi: 10.1021/acs.est.5b02275
35. Zimmerle, D.J., L.L. Williams, T.L. Vaughn, C. Quinn, **R. Subramanian**, G.P. Duggan, B. Wilson, J.D. Opsomer, A.J. Marchese, D.M. Martinez, and A.L. Robinson (2015.) “Methane emissions from the natural gas transmission and storage system in the United States.” *Environmental Science & Technology*, 49(15): 9374-9383. doi: 10.1021/acs.est.5b01669
36. **Subramanian, R.**, L.L. Williams, T.L. Vaughn, D.J. Zimmerle, J.R. Roscioli, S.C. Herndon, T.I. Yacovitch, C. Floerchinger, D.S. Tkacik, A.L. Mitchell, M.R. Sullivan, T.R. Dallmann, and A.L. Robinson (2015.) “Methane Emissions from Natural Gas Compressor Stations in the Transmission and Storage Sector: Measurements and Comparisons with the EPA Greenhouse Gas Reporting Program Protocol.” *Environmental Science & Technology*, 49 (5), pp 3252–3261. DOI: 10.1021/es5060258.
37. Roscioli, J.R., T.I. Yacovitch, C. Floerchinger, A.L. Mitchell, D.S. Tkacik, **R. Subramanian**, D.M. Martinez, T.L. Vaughn, L.L. Williams, D.J. Zimmerle, A.L. Robinson, S.C. Herndon, and A.J. Marchese (2015.) “Measurements of methane emissions from natural gas gathering facilities and processing plants: measurement methods.” *Atmospheric Measurement Techniques*, 8, pp 2017-2035, DOI:10.5194/amt-8-2017-2015.
38. Mitchell, A.L., D.S. Tkacik, J.R. Roscioli, S.C. Herndon, T.I. Yacovitch, D.M. Martinez, T.L. Vaughn, L.L. Williams, M.R. Sullivan, C. Floerchinger, M. Omara, A.L. Robinson, **R. Subramanian**, D.J. Zimmerle, A.J. Marchese, and A.L. Robinson (2015.) “Measurements of Methane Emissions from Natural Gas Gathering Facilities and Processing Plants: Measurement Results.” *Environmental Science & Technology*, 49 (5), pp 3219–3227. DOI: 10.1021/es5052809.
39. Ellis, A.; R. Edwards, M. Saunders, R. K. Chakrabarty, **R. Subramanian**, A. van Riessen, A. M. Smith, D. Lambrinidis, L. J. Nunes, P. Vallelonga, I. D. Goodwin, A. D. Moy, M. A. J. Curran, and T. D. van Ommen (2015). “Characterizing black carbon in rain and ice cores using coupled tangential flow filtration and transmission electron microscopy.” *Atmospheric Measurement Techniques*, 8(9): 3959-3969, doi:10.5194/amt-8-3959-2015

40. Fast, J. D., J. Allan, R. Bahreini, J. Craven, L. Emmons, R. Ferrare, P.L. Hayes, A. Hodzic, J. Holloway, C. Hostetler, J.L. Jimenez, H. Jonsson, S. Liu, Y. Liu, A. Metcalf, A. Middlebrook, J. Nowak, M. Pekour, A. Perring, L. Russell, A. Sedlacek, J. Seinfeld, A. Setyan, J. Shilling, M. Shrivastava, S. Springston, C. Song, **R. Subramanian**, J.W. Taylor, V. Vinoj, Q. Yang, R.A. Zaveri, and Q. Zhang (2014). "Modeling regional aerosol and aerosol precursor variability over California and its sensitivity to emissions and long-range transport during the 2010 CalNex and CARES campaigns." *Atmos. Chem. Phys.*, 14, 10013-10060, <https://doi.org/10.5194/acp-14-10013-2014>
41. Takahama, S., L.M. Russell, C.A. Shores, L.C. Marr, J. Zheng, M. Levy, R. Zhang, E. Castillo, J.G. Rodriguez-Ventura, P.J.E. Quintana, **R. Subramanian**, M. Zavala, and L.T. Molina (2014.) "Diesel vehicle and urban burning contributions to black carbon concentrations and size distributions in Tijuana, Mexico, during the Cal-Mex 2010 campaign." *Atmospheric Environment*, 88:341-352, doi:10.1016/j.atmosenv.2013.09.057
42. Torres, A., T.C. Bond, C.M.B. Lehmann, **R. Subramanian**, and O.L. Hadley (2014.) "Measuring Organic Carbon and Black Carbon in Rainwater: Evaluation of Methods." *Aerosol Science and Technology*, 48:3, 239-250, DOI: 10.1080/02786826.2013.868596
43. Phillips, V. T. J., P. J. Demott, C. Andronache, K. A. Pratt, K. A. Prather, **R. Subramanian** and C. Twohy (2013). "Improvements to an Empirical Parameterization of Heterogeneous Ice Nucleation and Its Comparison with Observations." *Journal of the Atmospheric Sciences*, 70(2): 378-409
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Selected editorials/commentary

1. **R Subramanian** (2024). "As Diwali nears, how can India harness tech for clean air?" <https://www.context.news/net-zero/opinion/as-diwali-nears-how-can-india-harness-tech-for-clean-air>
2. Clare Paton-Walsh*, **R Subramanian***, James H Crawford, Laura Dawidowski, H Langley DeWitt, Lisa Emberson, Louisa Emmons, Rebecca M Garland, Yugo Kanaya, Aderiana Mbandi, Kerri A Pratt, Nestor Y Rojas, Abdus Salam, Kateřina Šindelářová, Vinayak Sinha, N'Datchoh Evelyne Touré, Liya E Yu and Mei Zheng (2023). "The International Global Atmospheric Chemistry project comments on the revised WHO air quality guidelines." *Environ. Res. Lett.* 18 111001, DOI 10.1088/1748-9326/ad039f
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4. **Subramanian, R.** & M. Pai. (2022). "How to fight Covid-19 with ventilation and air purifiers." *The Hindu*, February 16, 2022. <https://www.thehindu.com/opinion/op-ed/oped-by-madhukar-pai-and-subramanian-on-the-importance-of-ventilation-and-air-purifiers-to-keep-off-covid/article65052559.ece>
5. **Subramanian, R.** & M. Pai. (2022). "The best masks to ward off Omicron." *The Hindu*, January 10, 2022. <https://www.thehindu.com/opinion/op-ed/the-best-masks-to-ward-off-omicron/article38208963.ece>
6. **Subramanian, R.** & R. Garland (2021). Editorial: "The powerful potential of low-cost sensors for air quality research in Africa." *Clean Air Journal*, 31(1). <https://doi.org/10.17159/caj/2021/31/1.11274>

Selected invited/highlighted conference presentations

EGU General Assembly (May 2025) “A decade of research with low-cost air quality sensors: air pollution insights, key learnings, and the road ahead.” EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-14577, <https://doi.org/10.5194/egusphere-egu25-14577>

INSU-INSIS Atelier “Mesure de la qualité de l’air” (September 2021) Conférence introductive de l’atelier: “Current issues and future needs in air quality low cost sensor development and applications” <https://premc.org/insu-insis-air/>

EGU General Assembly (May 2020) “MOPGA/Make Air Quality Great Again: Filling in the air quality data gap in Africa using lower-cost RAMP monitors.” Online at <https://meetingorganizer.copernicus.org/EGU2020/EGU2020-10942.html>

Colloque sur la chimie atmosphérique (June 2019) “Air quality in Pittsburgh, Kigali, and Paris with well-characterized low-cost sensors.” Lyon Villeurbanne, France

Air Sensors International Conference (September 2018) invited presentations in sessions on “Data Analytics” (Title: “Machine learning and data analytics to calibrate sensors and map air quality”) and “Source Characterization” (Title: “Characterizing point, line, and area sources with RAMP monitors.”) Oakland, CA

American Meteorological Society’s 18th Conference on Atmospheric Chemistry (Jan 2016) “Emissions of Methane, Volatile Organic Compounds, and Black Carbon from Natural Gas and Oil Development, and an Examination of the Fat-Tail Problem.” New Orleans, LA

Pipeline Safety Trust Conference (November 2015) “Methane emissions from the US Natural Gas Infrastructure.” New Orleans, LA

Selected Service

- Steering Committee (2022-2026), WMO/GAW Global Air Quality Forecasting and Information System ([GAFIS](#))
- Steering Committee (2022-2027), the [IGAC Project](#)
- Steering Committee (2022-), ASIC Community
- Member of the American Association for Aerosol Research (AAAR) since 2002
- Chair of the AAAR Internet Committee (October 2021-October 2024)
- Technical Program Committee for the Air Sensors International Conference, Pasadena, CA, USA (May 2022) and ASIC-India, Bengaluru, India (August 2022)
- Guest Editor for a themed collection on “dense networks and low-cost sensors” in the Royal Society of Chemistry’s new journal, *Environmental Science: Atmospheres*
- Guest Editor for a feature on “low-cost sensors for air quality research” in *Clean Air Journal*
- Reviewer for *Aerosol Science & Technology*, *Atmospheric Chemistry & Physics*, *Atmospheric Measurement Techniques*, *Atmospheric Environment*, *Environmental Science & Technology*, *Journal of Aerosol Science*, *Journal of Geophysical Research-Atmospheres*, *Nature*, *Science of the Total Environment*, and more.