Sergio Ibarra Espinosa

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Google Scholar: https://scholar.google.com.br/citations?user=8ohZGHEAAAAJ&hl
ORCID: 0000-0002-3162-1905. Citations: 1325. Index H: 20,
https://ibarraespinosa.github.io/

Objective

Highly motivated Atmospheric Scientist with a PhD and over 18 years of experience in climate science and atmospheric modeling. Seeking to leverage expertise in regional emission inventory development, data analysis, and open-source computational tool development.

Experience

Postdoctoral Associate at Cooperative Institute for Research in Environmental Sciences, University of Colorado-Boulder, NOAA Global Monitoring Laboratory, USA 01/03/20122 – present

- Researched CH_4 and other non-CO_2 posteriori emissions over North America, gaining significant experience with atmospheric flux dynamics and inverse modeling concepts relevant to data assimilation for GHG emissions.
- Developed an R package to read and process NOAA GML ObsPack, demonstrating computational skills and experience with diverse in situ atmospheric observational data, and enhancing data analysis workflows.
- Analyzed wind patterns and footprints from aircraft measurements, providing insights into atmospheric transport relevant to atmospheric prediction.
- Contributed to quantifying the impact of COVID-19 on US methane emissions, presenting findings at multiple AGU Fall meetings and submitted manuscripts.

Post-Doc in Atmospheric Sciences, Nuclear and Energy Research Institute, Brazil 01/08/2021 – 01/02/2022

- Participated in the METROCLIMA project to estimate priori and posteriori CO_2 fluxes, gaining experience with data assimilation concepts applicable to Earth system prediction.

Post-Doc in Atmospheric Sciences, Chinese Academy of Sciences 01/01/2019 – 15/07/2019

- Developed comprehensive vehicle emissions inventories for China using the VEIN model, demonstrating expertise in creating detailed atmospheric input datasets for regional modeling.

Post-Doc in Atmospheric Sciences, Universidade de São Paulo (USP) 01/11/2017 – 30/07/2021

- Evaluated the impact of environmental policies on emissions and air quality using the WRF-Chem model, demonstrating strong skills in running and analyzing output from a widely-used atmospheric model.
- Utilized real-time GPS and travel demand data for high spatial and temporal resolution emissions inventories, showcasing expertise in handling large atmospheric-related datasets.
- Developed the VEIN (Vehicular Emissions Inventories) and EIXPORT R packages (over 50,000 and 40,000 direct downloads respectively), demonstrating technical leadership and ability to develop software tools for atmospheric science applications, relevant to enhancing community models.

Centro Nacional del Medio Ambiente, Santiago, Chile 01/09/2007 – 30/08/2013

- Led emissions inventory projects and authored technical reports for government ministries, demonstrating experience in policy-relevant scientific work.
- Estimated emissions at airports using modeling software (EDMS).

- Assessed and evaluated international emission inventories (CLRTAP, NEI, Australia NPI, Japan JPRTR), gaining a broad understanding of global emissions accounting practices relevant to decarbonization efforts.
- Completed GHG emissions inventory projects for various municipalities and ministries.

Education

PhD in Atmospheric Sciences, Universidade de São Paulo (USP) 01/09/2013 – 30/10/2017

- PhD thesis: Air pollution modeling in São Paulo using bottom-up vehicular emissions inventories, demonstrating expertise in developing detailed urban atmospheric datasets and modeling their impact.
- Developed the R package VEIN (Vehicular Emissions Inventories) (https://CRAN.R-project.org/package=vein), widely used internationally, showcasing technical leadership and tool development for atmospheric science.
- Developed the R package EIXPORT (https://CRAN.R-project.org/package=eixport), for exporting emissions data to atmospheric models, demonstrating experience with model coupling and data preparation.
- Generated emission inputs and ran WRF-Chem model, demonstrating hands-on experience with atmospheric modeling.
- Internship at TRL Transport Research Lab UK as an emissions analyst, gaining international experience in atmospheric-related assessment.

Masters in Environmental Planning and Management from the Universidad de Chile, Santiago 01/03/2010 – 01/12/2011

- Master thesis: Identification of Improvements into estimation of vehicular emissions in Santiago, Chile, focusing on urban atmospheric challenges.

Bachelor in Environmental Science from Universidad Tecnológica Metropolitana, Santiago, Chile 15/09/2003 – 22/06/2007

- Majored in Environmental Engineering and Risk Prevention.
- Bachelor thesis: "Effects of air pollution on Acute Respiratory Infections...", demonstrating early interest in air quality impacts.

Teaching

1. YOUTUBE CHANNEL https://www.youtube.com/channel/UC2oYaS9mpnIDk8w55O8_bTg
2. Course VEIN on the Colombian Conference on Air Quality (CASAP VIII), 5 hours. https://www.casap.com.co/en/pre-congress-courses/
3. 27-02-2020: Universidade de São Paulo (USP). Curso sobre VEIN. https://www.iag.usp.br/atmosfericas/vein.
4. 16-08-2018: Universidade de São Paulo (USP). Curso de R para meteorología IAG/USP. https://iagdevs.github.io/cursoR/.
5. 19-03-2018: Universidade Federal de São Paulo (UNIFESP). Environmental Engineering- 'Controle de Poluição Atmosférica'. Class: 'Estimativas de fontes fixas/móveis e inventários'. Professor Dr. Gyrlene Silva.
6. 27-11-2017 to 1-12-2017 'O modelo VEIN' in Departamento de Engenharia Sanitária e Ambiental (DESA), Universidade Federal de Minas Gerais, Grupo de Poluição do Ar e Meteorologia Aplicada (GPAMA), Prof. Dr. Taciana Albuquerque.
7. Classes for elderly people at the Universidade de Sao Paulo,
    1. 24/06/2020 - 13:00. "Meteorologia para a Terceira Idade: Como meu carro afeta a qualidade do ar que respiramos?" https://www.iag.usp.br/evento/meteorologia-terceira-idade-ibarra-como-meu-carro-afeta-qualidade-ar

2. 28/09/2016 - 13:00. “Associação entre COVID-19, fatores ambientais e distanciamento social (USP 60+)” https://www.iag.usp.br/evento/usp60-ibarra-covid-19-fatores-ambientais
3. 29/09/2021 - 13:00. “Efeitos diretos e indiretos dos aerossóis na meteorologia e nas concentrações de poluentes atmosféricos durante os períodos de seca e chuva no Sudeste do Brasil (USP 60+)” https://www.iag.usp.br/evento/usp60-ibarra-efeitos-aerossois-meteorologia-poluentes-seca-chuva

Outreach

- 01/11/2024 Representing NOAA at the Hispanic Association of Colleges and Universities https://www.hacu.net/hacu/annual_conference1.asp
- Organizer in program Pathways to Steam of CIRS Colorado University. This program consists in introducing science to CITRUS community collegue students from California. The program 20023 considers visits to NOAA, CU, and applied research and measurements. The students were able to study global climate and air pollution problems and perform experiments.
- Participation representing Departamento de Ciências Atmosféricas at the Virada Cientifica, Universidade de Sao Paulo.
- Talk for IAG Science Day,
    1. 2016: Universidade de Sao Paulo: “Que, como e quanta poluição do ar gera a nossa cidade?” https://www.iag.usp.br/evento/iag-science-day
    2. 2018: Universidade de Sao Paulo: “R packages for air pollution studies” https://www.iag.usp.br/evento/scienceday2018
    3. 2019: Universidade de Sao Paulo: “Towards a real-time vehicular emissions inventory” https://www.iag.usp.br/evento/scienceday-2019
    4. 2020: Universidade de Sao Paulo: “How the COVID-19 restrictions impacted vehicular emissions and air quality in São Paulo” https://www.iag.usp.br/evento/scienceday-2020
    5. 2021: Universidade de Sao Paulo: “Comprehensive emissions inventory for Brasil with monthly resolution, 1990-2020” https://www.iag.usp.br/scienceday

Selected Invited Talks

- KEY NOTE Ibarra-Espinosa S., Hu L., Miller S., Harkins C., McDonald B.,Youmi O., Bruhwhiler L., McKain K., Sweeney C., Andrews A. (2023). COVID-19 impacts on the US methane emissions. June 2024 Air Pollution Conference Brazil and 5th CMAS South America, Sao Paulo, Brazil. https://airpollutionconference.com /
- Colorado University, invited by Dr. Shelly Miller: “Environmental planning for the road transport sector using the VEIN model. Application in Southern California Association of Governments (SCAG)”
- National Technological University of South Lima, invited by Dr. Odon Sanchez: “VEIN v1.0.5: an R package for bottom-up vehicular emissions inventories”. https://ibarraespinosa.github.io/2023PERU/#1
- Harvard University, invited by Dr. Francecsca Dominici: “Association between COVID-19 and residential mobility index in Sao Paulo, Brazil
- Universidad Nacional Tecnológica de Lima Sur invited by Dr. Odon Sanchez: “VEIN v0.9: an R package for bottom-up vehicular emissions inventories” https://ibarraespinosa.github.io/2021PERU/
- George Mason University invited by Dr. Daniel Tong: “Air pollution modelling with VEIN and other r-packages.”
- CETESB invited by Marcelo Bales ‘Modelagem da poluição atmosférica em São Paulo utilizando inventários de emissões veiculares bottom-up’ https://cetesb.sp.gov.br/escolasuperior/palestra-modelagem-da-poluicao-atmosferica-em-sao-paulo-utilizando-inventarios-de-emissoes-veiculares-bottom-up/.
- Ibarra-Espinosa, S. (2023-6-27) Modelo de inventario de emisiones vehiculares Universidad

Nacional Tecnologica de Lima Sur. Lima, Peru.
https://www.youtube.com/watch?v=vT8OX8ewCTw

Skills & Computational Language

- Computational Languages: R (18 years, advanced), Python (intermediate), Fortran (intermediate), Bash (basic), Latex (medium), Markdown (advanced).
- Data Analysis & Modeling: Expertise in atmospheric modeling, WRF-Chem, MUSICA, CAM-CHEM, MPAS CHEM, HYSPLIT, spatial data science (R packages: stars, terra, sf, QGIS), statistical analysis (Negative-Binomial and quasi-poisson regressions), and foundational understanding of Machine Learning concepts applicable to atmospheric data. Experience generating and working with diverse atmospheric data products, including processing observational data (NOAA GML ObsPack).
- Software Development: Author of 10+ R packages for atmospheric science applications, including VEIN, EIXPORT, RTORF and PYTORF (for processing observations and running parallel HYSPLIT), demonstrating ability to develop tools for atmospheric data processing and modeling workflows.
- Other Skills: Experience in performing rigorous analysis with short deadlines, excellent personal organization, attention to detail, strong communication skills, collaborative research experience.
- Certifications in R, python, fortran and machine learning.
    - https://udemy-certificate.s3.amazonaws.com/pdf/UC-778343f6-ee02-4c0b-b8cc-faa1395ca283.pdf
    - https://udemy-certificate.s3.amazonaws.com/pdf/UC-848e65cd-8660-43a2-9d7c-0acc73f64a18.pdf
    - https://udemy-certificate.s3.amazonaws.com/pdf/UC-16cf2592-70d2-4996-963f-f54298305ae1.pdf
    - DataCamp Intermediate R Credential ID faf6cc11d34247170abfc82b21174195f4d29eb1
    - DataCamp Reporting with R Markdown Credential ID ac6c6a4d4f5152345614fda1713a50ca3d8e721c
    - DataCamp Writing Functions in R Credential ID f02b318e45b9b2da8662d3e9f82ef8fe4b3531f0
- Colorado State University: Foundation Models for the Atmosphere Workshop. https://fm4a.github.io/ August 18 - August 21, 2025.

Languages

Portuguese (fluent); English (advanced); Spanish (fluent). Lived 9 years in Brazil (PhD in Portuguese). Advanced English courses and test scores (TOEIC, TOEFL) provided. Currently living in the US since 2022.

Media and Press

1. Ibarra-Espinosa S., Rehbein A., Freitas ED. (2021). Isolamento de 50% em São Paulo reduziria casos de Covid-19 e metade das mortes. https://revistagalileu.globo.com/Ciencia/Saude/noticia/2021/04/isolamento-de-50-em-sao-paulo-reduziria-casos-de-covid-19-e-metade-das-mortes.html
2. Ibarra-Espinosa S., Rehbein A., Freitas ED. (2021). Indicadores de poluição e mobilidade ajudam a prever aumento de casos e mortes por COVID-19 em São Paulo.

https://agencia.fapesp.br/indicadores-de-poluicao-e-mobilidade-ajudam-a-prever-aumento-de-casos-e-mortes-por-covid-19-em-sao-paulo/35539/
3. Ibarra-Espinosa S. (2018). Software calcula emissões de poluentes por veículo, via e horário. Jornal da USP. https://jornal.usp.br/ciencias/ciencias-ambientais/software-calcula-emissoes-de-poluentes-por-veiculo-via-e-horario/
4. Ibarra-Espinosa S. (2018). Sistema mede poluição do ar 'rua por rua' em São Paulo. BBC NEWS Brasil. https://www.bbc.com/portuguese/brasil-44459485.
5. Ibarra-Espinosa S. (2018). Sistema mede poluição do ar 'rua por rua' em São Paulo. TERRA https://www.terra.com.br/noticias/brasil/sistema-mede-poluicao-do-ar-rua-por-rua-em-sao-paulo,ed1c06f9efd4df1ea9ee56b6ae295bb1qdevdzpd.html
6. Ibarra-Espinosa S. (2018). Sistema mede poluição do ar 'rua por rua' em São Paulo. UOL. https://noticias.uol.com.br/ultimas-noticias/bbc/2018/06/12/sistema-mede-poluicao-do-ar-rua-por-rua-em-sao-paulo.htm.
7. Ibarra-Espinosa (2018). Software facilita realização de inventário de emissões veiculares. Diário Oficial. http://diariooficial.imprensaoficial.com.br/nav_v4/index.asp?c=5&e=20180628&p=1

Awards

- Best PhD 2018 in Atmospheric Sciences. Destaque Doutorado Meteorologia Sergio Alejandro Ibarra Espinosa. Departamento de Ciências Atmosféricas Instituto de Astronomia, Geofísica e Ciências Atmosféricas, Universidade de São Paulo
- PhD Scholarship from Chilean Government: “Becas Chile”
- Master Scholarship from “Centro Nacional del Medio Ambiente” Scholarship.
- Travel grant from organization to the 2017 Japan Geoscience Union (JPGU) meeting, Chiba, Japan.
- Travel grant from IAG/USP to European Geosciences Union General Assembly Vienna | Austria 2018.
- Travel Grant from organization to 11th International Conference on Southern Hemisphere Meteorology and Oceanography, 2015, Santiago.
- Travel grant from organization 2018 Joint 14th iCACGP Quadrennial Symposium IGAC.

Contact information for 3 recommenders

1. Dr. Arlyn Andrews, Former Leader, Carbon Cycle Group, NOAA GML arlyn.andrews@formerfedsandfriends.com
2. Dr. Kathryn McKain, Physical Scientist, NOAA GML kathryn.mckain@noaa.gov
3. Dr. Edmilson Dias de Freitas, Former Supervisor, University of São Paulo edmilson.freitas@iag.usp.br

Publications with peer review process

1. Schuch, D.; Zhang, Y.; **Ibarra-Espinosa, S.**; Andrade, M; Gavidia-Calderon, M; Bell, M. Multi-Year Application and Evaluation of the WRF-Chem Model for Two Major Urban Areas in Brazil - Part I: Initial Application and Model Improvement. Accepted. Atmospheric Environment 2025.
2. Schuch, D.; Zhang, Y.; **Ibarra-Espinosa, S.**; Andrade, M; Gavidia-Calderon, M; Bell, M. Multi-Year Evaluation and Application of the WRF-Chem Model for Two Major Urban Areas in Brazil Part II: Multi-Year Evaluation and Urban-centric Analysis. Accepted. Atmospheric Environment 2025.
3. **Ibarra-Espinosa, S.**; Hu, L.; Harkins, C.; McDonald, B. C.; Miller, S. M.; Oh, Y.; Bruhwiler, L.; Sweeney, C.; Andrews, A. Reduced U.S. Methane Emissions during the COVID-19 Pandemic. Under review Environ. Sci. Technol. 2025.
4. **Ibarra-Espinosa, S.**; de Freitas, E. D.; Gaubert, B.; Lichtig, P.; Ropkins, K.; da Silva, I.; Pereira, G. M.; Schuch, D.; Nascimento, J.; Hoinaski, L.; et al. A Century of Vehicular Emissions in Brazil: Unveiling the Impacts of Unique Fuel Mix on Air Quality. Under Review in Environmental Science and Technology. 2025
5. Hu, L., Andrews, A.E., Montzka, S.A., Miller, S.M., Bruhwiler, L., Oh, Y., Sweeney, C., Miller, J.B., McKain, K., **Ibarra Espinosa, S**. and Davis, K., 2025. An Unexpected Seasonal Cycle in US Oil and Gas Methane Emissions. Environmental Science & Technology, 59(20), pp.9968-9979.
6. Mera, Z., Rosero, F., Rosero, R., Tapia, F. and **Ibarra-Espinosa, S.**, 2025. Effect of idling and power demand on fuel consumption and CO_2 emissions from taxis. Enfoque UTE, 16(1), pp.1-9.
7. Meotti, B., **Ibarra-Espinosa, S**. and Hoinaski, L., 2025. Improving spatial disaggregation of vehicular emission inventories. Environmental Technology, pp.1-14.
8. Pimiento-Quiroga, N.A., Prist, P.R., **Ibarra-Espinosa, S.**, Barrozo, L.V. and Metzger, J.P., 2025. Air regulation service is affected by green areas cover and fragmentation: An analysis using demand, supply and flow during COVID-19 quarantine. Landscape and Urban Planning, 254, p.105230.
9. Lichtig, Pablo, Benjamin Gaubert, Louisa K. Emmons, Duseong S. Jo, Patrick Callaghan, **Sergio Ibarra-Espinosa**, Laura Dawidowski, Guy P. Brasseur, and Gabriele Pfister. "Multiscale CO budget estimates across South America: quantifying local sources and long range transport." Journal of Geophysical Research: Atmospheres 129, no. 8 (2024): e2023JD040434.
10. Tivey, J.; Davies, H.C.; Levine, J.G.; Zietsman, J.; Bartington, S.; **Ibarra-Espinosa, S.**; Ropkins, K. Meta-Analysis as Early Evidence on the Particulate Emissions Impact of EURO VI on Battery Electric Bus Fleet Transitions. Sustainability 2023, 15, 1522. https://doi.org/10.3390/su15021522
11. **Ibarra-Espinosa S**, Rehbein A, Dias de Freitas E, Martins LD, Andrade MD, Landulfo E. Changes in a bottom-up vehicular emissions inventory and its impact on air pollution during COVID-19 lockdown in São Paulo, Brazil. Frontiers in Sustainable Cities.:104. 10.3389/frsc.2022.883112
12. Rodrigo J. Seguel, Laura Gallardo, Mauricio Osses, Néstor Y. Rojas, Thiago Nogueira, Camilo Menares, Maria de Fatima Andrade, Luis C. Belalcázar, Paula Carrasco, Henk Eskes, Zoë L. Fleming, Nicolas Huneeus, **Sergio Ibarra-Espinosa**, Eduardo Landulfo, Manuel Leiva, Sonia C. Mangones, Fernando G. Morais, Gregori A. Moreira, Nicolás Pantoja, Santiago Parraguez, Jhojan P. Rojas, Roberto Rondanelli, Izabel da Silva Andrade, Richard Toro, Alexandre C. Yoshida; Photochemical sensitivity to emissions and local meteorology in Bogotá, Santiago, and São Paulo: An analysis of the initial COVID-19 lockdowns. Elementa: Science of the Anthropocene 4 January 2022; 10 (1): 00044. doi: https://doi.org/10.1525/elementa.2021.00044
13. **Ibarra-Espinosa, S.**, Freitas, E. D. D., Andrade, M. D. F., & Landulfo, E. (2022). Effects of Evaporative Emissions Control Measurements on Ozone Concentrations in Brazil. Atmosphere, 13(1), 82.
14. **Ibarra-Espinosa, S.**, da Silva, G. A. M., Rehbein, A., Vara-Vela, A., & de Freitas, E. D. (2022). Atmospheric effects of air pollution during dry and wet periods in São Paulo. Environmental Science: Atmospheres.
15. **Ibarra-Espinosa, S.**, Mera, Z., Rosero, R., & Díaz, M. V. (2021, November). Spatial and temporal characterization of vehicular emissions in Ecuador using VEIN. In 2021 Congreso Colombiano y Conferencia Internacional de Calidad de Aire y Salud Pública (CASAP) (pp. 1-5). IEEE.
16. **Ibarra-Espinosa S**, Dias de Freitas E, Ropkins K, Dominici F, Rehbein A. Negative-Binomial and quasi-poisson regressions between COVID-19, mobility and environment in São Paulo, Brazil. Environ Res. 2022 Mar;204(Pt D):112369. doi: 10.1016/j.envres.2021.112369. Epub 2021 Nov 9. PMID: 34767818; PMCID: PMC8577054.
17. Ranjeet S. Sokhi, Vikas Singh, Xavier Querol, Sandro Finardi, Admir Créso Targino, Maria de Fatima Andrade, Radenko Pavlovic, Rebecca M. Garland, Jordi Massagué, Shaofei Kong, Alexander Baklanov, Lu Ren, Oksana Tarasova, Greg Carmichael, Vincent-Henri Peuch, Patricia Camacho Rodriguez, Vrinda Anand, Graciela Arbilla, Kaitlin Badali, Gufran Beig, Luis Carlos Belalcazar, Andrea Bolignano, Peter Brimblecombe, Alejandro Casallas, Jean-Pierre Charland, Jason Choi,

Eleftherios Chourdakis, Isabelle Coll, Marty Collins, Josef Cyrys, Cleyton Martins da Silva, Alessandro Domenico Di Giosa, Anna Di Leo, Camilo Ferro, Mario Gavidia, Amiya Gayen, Alexander Ginzburg, Fabrice Godefroy, Yuri Alexandra Gonzalez, Marco Guevara-Luna, Sk. Mafizul Haque, Henno Havenga, Monica Jaimes-Palomera, Dennis Herod, Urmas Hõrrak, Tareq Hussein, **Sergio Ibarra**, Marko Kaasik, Ravindra Khaiwal, Jhoon Kim, Anu Kousa, Jaakko Kukkonen, Markku Kulmala, Joel Kuula, Nathalie La Violette, Guido Lanzani, Xi Liu, Stephanie MacDougall, Patrick M. Manseau, Giada Marchegiani, Brian C. McDonald, Rajasree VP Meethal, Swasti Vardhan Mishra, Luisa T. Molina, Dennis Mooibroek, Suman Mor, Nicolas Moussiopoulos, Fabio Murena, Jarkko V. Niemi, Steffen Noe, Thiago Nogueira, Michael Norman, Olivia Rivera Hernandez, Juan Luis Pérez-Camaño, Tuukka Petäjä, Stuart Piketh, Aditi Rathod, Ken Reid, Armando Retama, Antonio Terrazas-Ahumada, Néstor Y. Rojas, Jhojan P. Rojas, Roberto San José, Odón Sánchez, Rodrigo J. Seguel, Salla Sillanpää, Yushan Su, Nigel Tapper, Hilkka Timonen, Domenico Toscano, George Tsegas, Guus J. M. Velders, Christos Vlachokostas, Erika von Schneidemesser, Ravi Yadav, Rasa Zalakeviciutea nd Miguel Zavala. (2021). A global observational analysis to understand changes in air quality during exceptionally low anthropogenic emission conditions. Environment International. *Accepted*

18. Nogueira, T., Kamigauti. L., Pereira, G., Gavidia-Calderon, M., **Ibarra-Espinosa, S**., Oliveira, G., Miranda, R., Vasconcellos, P., Freitas, E., Andrade. M. (2021). Evolution of Vehicle Emission Factors in a Megacity Affected by Extensive Biofuel Use: Results of Tunnel Measurements in São Paulo, Brazil. Environmental Science & Technology, Accepted, 2021.
19. Gavidia-Calderón, M. E., **Ibarra-Espinosa, S**., Kim, Y., Zhang, Y., and Andrade, M. D. F.: Simulation of O_3 and NO_X in Sao Paulo street urban canyons with VEIN (v0.2.2) and MUNICH (v1.0). (202a). Geosci. Model Dev. Discuss. [preprint], https://doi.org/10.5194/gmd-2020-282, Accepted, 2021.
20. **Ibarra-Espinosa, S**., Zhang, X., Xiu, A., Gao, C., Wang, S., Ba, Q., Gao C. and Chen, W. (2021). A comprehensive spatial and temporal vehicular emissions for northeast China. Atmospheric Environment, 244, 117952.
21. Bolaño-Ortiz, T. R., Camargo-Caicedo, Y., Puliafito, S. E., Ruggeri, M. F., Bolaño-Diaz, S., Pascual-Flores, R., Saturno J., **Ibarra-Espinosa S.**, Mayol-Bracero O., Torres-Delgado E. and Cereceda-Balic, F. (2020). Spread of SARS-CoV-2 through Latin America and the Caribbean region: a look from its economic conditions, climate and air pollution indicators. Environmental research, 191, 109938.
22. Pinto, J. A., Kumar, P., Alonso, M. F., Andreão, W. L., Pedruzzi, R., **Ibarra-Espinosa, S**., Maciel F. and de Almeida Albuquerque, T. T. (2020). Coupled models using radar network database to assess vehicular emissions in current and future scenarios. Science of The Total Environment, 143207.
23. Freitas, E.D., M.F. Andrade, **Ibarra-Espinosa, S.A**., Gavidia-Calderón. (2020). Redução nas concentrações de poluentes durante o surto de COVID-19 na Cidade de São Paulo. Diálogos socioambientais na macrometrópole paulista. URL https://periodicos.ufabc.edu.br/index.php/dialogossocioambientais/issue/view/20. ISSN 2596-2183
24. **Ibarra-Espinosa, S.**, Ynoue, R. Y., Ropkins, K., Zhang, X., & de Freitas, E. D. (2020). High spatial and temporal resolution vehicular emissions in south-east Brazil with traffic data from real-time GPS and travel demand models. Atmospheric Environment, 222, 117136.
25. **Ibarra-Espinosa, S**., Ynoue, R., Giannotti, M., Ropkins, K., & de Freitas, E. D. (2019). Generating traffic flow and speed regional model data using internet GPS vehicle records. MethodsX, 6, 2065-2075.
26. Pinto, J. A., Kumar, P., Alonso, M. F., Andreão, W. L., Pedruzzi, R., **Espinosa, S. I**., & de Almeida Albuquerque, T. T. (2020). Kriging method application and traffic behavior profiles from local radar network database: A proposal to support traffic solutions and air pollution control strategies. Sustainable Cities and Society, 102062.
27. Ma S, Zhang X, Gao C, Tong DQ, Xiu A, Wu G, Cao X, Huang L, Zhao H, Zhang S, **Ibarra-Espinosa S**, Wang X, Li X, Mo D. Multimodel simulations of a springtime dust storm over northeastern china: Implications of an evaluation of four commonly used air quality models (CMAQ v5.2.1, CAMx v6.50, CHIMERE v2017r4, and WRF-chem v3.9.1). Geoscientific Model Development 2019,12(11):4603-25.
28. Rehbein, A, Ambrizzi, T, Mechoso, CR, **Espinosa, SAI**, Myers, TA. Mesoscale convective systems over the Amazon basin: The GoAmazon2014/5 program. Int J Climatol. 2019, 1– 20. https://doi.org/10.1002/joc.6173.
29. Schuch, D., de Freitas, E. D., **Espinosa, S. I**., Martins, L. D., Carvalho, V. S. B., Ramin, B. F., ... & de Fatima Andrade, M. (2019). A two decades study on ozone variability and trend over the main urban areas of the São Paulo state, Brazil. Environmental Science and Pollution Research, 26(31), 31699-31716.
30. Chiquetto, J. B., Ynoue, R. Y., **Ibarra-Espinosa, S. A**., Ribeiro, F. N. D., Cabral-Miranda, W., & Silva, M.

E. S. (2020). Ozone Pollution and Urban Mobility Scenarios in the São Paulo Megacity. Ambiente & Sociedade, 23.
31. Chiquetto, J.B., Silva, M.E.S., Cabral-Miranda, W., Ribeiro, F.N.D., **Ibarra-Espinosa, S.A.**, Ynoue, R.Y. Air Quality Standards and Extreme Ozone Events in the São Paulo Megacity. Sustainability 2019, 11, 3725.
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