

## CURRICULUM VITAE – MEGAN M. BELA

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### PERSONAL INFORMATION

[megan.bela@noaa.gov](mailto:megan.bela@noaa.gov)  
<https://www.esrl.noaa.gov/csl/staff/megan.bela/>

### EDUCATION

**University of Colorado, Boulder, CO, PhD in Atmospheric and Oceanic Sciences (ATOC), Atmosphere Track** (2011-2016). Thesis advisor: Owen B. Toon. Dissertation title: Cloud and Biomass Burning Effects on the Abundance of Ozone and its Precursors over the Amazon Basin and Central and Southeast U.S.

**Stanford University, Stanford, CA, MS, Environmental Fluid Mechanics and Hydrology** (2006-2007)

**Stanford University, Stanford, CA, BS, Environmental Engineering; Honors in Environmental Science, Technology and Policy; Minor in Spanish and Portuguese** (2001-2005)

### RELEVANT RESEARCH EXPERIENCE

**5/20-present** Research Scientist II, CU Boulder CIRES and NOAA Chemical Sciences Laboratory, Boulder, CO

**10/17-4/20** Research Scientist I, CU Boulder CIRES and NOAA Chemical Sciences Laboratory, Boulder, CO

**10/16-10/17** NRC Postdoctoral Research Associate, NOAA-ESRL Global Systems Division, Boulder, CO

**8/11-8/16** Graduate Research Associate, Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, CO and Graduate Visitor, National Center for Atmospheric Research, Boulder, CO

**2/09-6/11** Research Associate, National Institute for Space Research, São José dos Campos, Brazil

**2/08-1/09** Fulbright Scholar, Institute of Physics, University of São Paulo, São Paulo, Brazil

**1/06-3/07** Research Assistant, Environmental Fluid Mechanics Laboratory, Stanford University, CA

**1/06-3/07** Research Assistant, NASA-Ames Research Center, Moffett Field, CA

### FELLOWSHIPS

National Research Council (NRC) Research Associateship Programs (RAP) Postdoctoral Fellowship, 2016-2017

Summer Graduate School Fellowship, University of Colorado, Boulder, 2016

Fulbright Scholarship (Brazil), 2008

EPA-STAR Graduate Fellowship, 2005

American Meteorological Society Industry/Government Graduate Fellowship, 2005

ACADEMIC ADVISING PhD co-advisor, Janaína Nascimento, Program for Climate and the Environment, Institute of Physics, University of São Paulo (IF-USP) and National Institute of Amazonian Research (INPA), Brazil, 2019 to present; host for Ms. Nascimento's research visit to NOAA ESRL CSL, 2018-2019

PEER-REVIEWED PUBLICATIONS **Bela, M. M.**, Kille, N., McKeen, S. A., Romero-Alvarez, J., Ahmadov, R., Pereira, G., Schmidt, C., Pierce, R.B., O'Neill, S.M., Zhang, X., Kondragunta, S., Wiedinmyer, C., Volkamer, R.: Quantifying Carbon Monoxide Emissions on the Scale of Large Wildfires, to be submitted to *Geophys. Res. Lett.*, 2021.

Wang, S., Coggon, M. M., Gkatzelis, G., Warneke, C., Bourgeois, I., Ryerson, T., Peischl, J., Veres, P., Neuman, A., Hair, J., Shingler, T., Fenn, M., Diskin, G., Huey, L. G., Hall, S. R., Ullmann, K., **Bela, M. M.**, Schwantes, S., McDonald, B., Kumar, R., Orlando, J. J., Flocke, F. M., Emmons, L. K., Chemical Tomography in Fresh Wildland Fire Plume: a Large Eddy Simulation Modeling Study, to be submitted to *J. Geophys. Res. Atmos.*, 2021.

Nascimento, J. P., **Bela, M. M.**, Meller, B., Rizzo, L. V., Barbosa, H. M. J., Artaxo, P., et al.: Chemical Impact of the Change of NO<sub>x</sub>-VOC Regime on the Formation of O<sub>3</sub> and SOA in Central Amazônia, in prep., 2021.

Nascimento, J. P., **Bela, M. M.**, Meller, B., Banducci, A. L., Rizzo, L. V., Vara-Vela, A. L., Barbosa, H. M. J., Gomes, H., Rafee, S. A. A., Franco, M. A., Carbone, S., Cirino, G. G., Souza, R. A. F., McKeen, S. A., Artaxo, P.: Aerosols from anthropogenic and biogenic sources and their interactions: modeling aerosol formation, optical properties and impacts over the central Amazon Basin, *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2020-1002>, in review, 2020.

Cuchiara, G. C., Fried, A., Barth, M. C., **Bela, M. M.**, Homeyer, C. R., Gaubert, B., Walega, J., Weibring, P., Richter, D., Wennberg, P., Crouse, J., Kim, M., Diskin, G., Hanisco, T. M., Wolfe, G. M., Beyersdorf, A., Peischl, J., Pollack, I. B., St. Clair, J. M., Woods, S., Tanelli, S., Bui, T. P., Dean-Day, J., Huey, G. L.: Vertical Transport, Entrainment, and Scavenging Processes Affecting Trace Gases in a Modeled and Observed SEAC4RS Case Study. *J. Geophys. Res. Atmos.*, 125, e2019JD031957. <https://doi.org/10.1029/2019JD031957>

Li, Y., Pickering, K. E., Barth, M. C., **Bela, M. M.**, Cummings, K. A., and Allen, D. J. (2019). Wet Scavenging in WRF-Chem Simulations of Parameterized Convection for a Severe Storm during the DC3 Field Campaign. *J. Geophys. Res. Atmos.*, 124, 7413-7428. <https://doi.org/10.1029/2019JD030484>

**Bela, M. M.**, Barth, M. C., Toon, O., Fried, A., Ziegler, C.; Li, Y., Cummings, K., Pickering, K. E., Allen, D. J., Homeyer, C., Mecikalski, R. M., Carey, L., Biggerstaff, M. I., Betten, D. P., Alford, A. A., Morrison, H., Yang, Q. (2018). Effects of scavenging, entrainment, and aqueous chemistry on peroxides and formaldehyde in deep convective outflow over the central and Southeast United States. *J. Geophys. Res. Atmos.*, 123. <https://doi.org/10.1029/2018JD028271>

Li, Y., Pickering, K. E., Barth, M. C., **Bela, M. M.**, Cummings, K. A., Allen, D. J. (2018). Evaluation of parameterized convective transport of trace gases in

simulation of storms observed during the DC3 field campaign. *J. Geophys. Res. Atmos.*, 123, 11,238-11,261. <https://doi.org/10.1029/2018JD028779>

Li, Y., Pickering, K. E., Allen, D. J., Barth, M. C., **Bela, M. M.**, Cummings, K., Carey, L., Mecikalski, R. M., Fierro, A., Campos, T., Weinheimer, A., Ryerson, T., Diskin, G. (2017): Evaluation of Deep Convective Transport in Storms of Different Scales during the DC3 Field Campaign Using WRF-Chem with Lightning Data Assimilation, *J. Geophys. Res. Atmos.*, 122, 7140-7163, [doi:10.1002/2017JD026461](https://doi.org/10.1002/2017JD026461).

**Bela, M. M.**, Barth, M. C., Toon, O., Fried, A., Li, Y., Cummings, K., Pickering, K. E., Homeyer, C., Morrison, H., Yang, Q., Allen, D. J., Diskin, G., O'Sullivan, D., Huey, G., Chen, D., Liu, X., Wennberg, P. O., Crouse, J. D., Teng, A. P., St. Clair, J. M., Flocke, F. (2016): Wet scavenging of soluble gases in DC3 deep convective storms using WRF-Chem simulations and aircraft observations, *J. Geophys. Res. Atmos.*, 121, 4233-4257, [doi:10.1002/2015JD024623](https://doi.org/10.1002/2015JD024623).

Barth, M. C., **Bela, M. M.**, Fried, A., Wennberg, P. O., Crouse, J. D., St. Clair, J. M., Blake, N., Blake, D., Homeyer, C., Brune, W., Zhang, L., Mao, J., Ren, X., Ryerson, T., Pollack, I., Peischl, J., Cohen, T., Nault, B., Huey, L.G., Liu, X., Cantrell, C. (2016): Convective transport and scavenging of peroxides by thunderstorms observed over the central U.S. during DC3, *J. Geophys. Res. Atmos.*, 121, 4272-4295, [doi:10.1002/2015JD024570](https://doi.org/10.1002/2015JD024570).

Fried, A., Barth, M., **Bela, M. M.**, Weibring, P., Richter, D., Walega, J., Li, Y., Pickering, K., Apel, E., Hornbrook, R., Hills, A., Riemer, D., Blake, N., Blake, D., Schroeder, J., Luo, Z., Crawford, J., Olson, J., Rutledge, S., Betten, D., Biggerstaff, M., Diskin, G., Sachse, G., Campos, T., Flocke, G., Weinheimer, A., Cantrell, C., Pollack, I., Peischl, J., Froyd, K., Wisthaler, A., Mikoviny, T., Woods, S. (2016): Convective Transport of Formaldehyde to the Upper Troposphere and Lower Stratosphere and Associated Scavenging in Thunderstorms over the Central United States During the 2012 DC3 Study, *J. Geophys. Res. Atmos.*, 121, 7430-7460, [doi:10.1002/2015JD024477](https://doi.org/10.1002/2015JD024477).

**Bela, M. M.**, Longo, K. M., Freitas, S. R., Moreira, D. S., Beck, V., Wofsy, S. C., Gerbig, C., Wiedemann, K., Andreae, M. O., and Artaxo, P.: Ozone production and transport over the Amazon Basin during the dry-to-wet and wet-to-dry transition seasons, *Atmos. Chem. Phys.*, 15, 757-782, [doi:10.5194/acp-15-757-2015](https://doi.org/10.5194/acp-15-757-2015), 2015.

Yang, Q., R. C. Easter, P. Campuzano-Jost, J. L. Jimenez, J. D. Fast, S. J. Ghan, H. Wang, L. K. Berg, M. C. Barth, Y. Liu, M. B. Shrivastava, B. Singh, H. Morrison, J. Fan, C. L. Ziegler, **M. M. Bela**, E. Apel, G. S. Diskin, T. Mikoviny, and A. Wisthaler (2015): Aerosol transport and wet scavenging in deep convective clouds: A case study and model evaluation using a multiple passive tracer analysis approach, *J. Geophys. Res. Atmos.*, 120, 8448-8468, [doi:10.1002/2015JD023647](https://doi.org/10.1002/2015JD023647).

Archer-Nicholls, S., Lowe, D., Darbyshire, E., Morgan, W. T., **Bela, M. M.**, Pereira, G., Trembath, J., Kaiser, J. W., Longo, K. M., Freitas, S. R., Coe, H., and McFiggans, G.: Characterising Brazilian biomass burning emissions using

WRF-Chem with MOSAIC sectional aerosol, *Geosci. Model Dev. Discuss.*, 7, 6061-6131, [doi:10.5194/gmdd-7-6061-2014](https://doi.org/10.5194/gmdd-7-6061-2014), 2014.

Beck, V., Gerbig, C., Koch, T., **Bela, M. M.**, Longo, K. M., Freitas, S. R., Kaplan, J. O., Prigent, C., Bergamaschi, P., and Heimann, M.: WRF-Chem simulations in the Amazon region during wet and dry season transitions: evaluation of methane models and wetland inundation maps, *Atmos. Chem. Phys.*, 13, 7961-7982, [doi:10.5194/acp-13-7961-2013](https://doi.org/10.5194/acp-13-7961-2013), 2013.

Longo, K. M.; Freitas, S. R.; Pirre, M.; MarÃ©cal, V.; Rodrigues, L. F.; Panetta, J.; Alonso, M. F.; RosÃ¡rio, N. E.; Moreira, D. S.; GÃ¡cita, M. S.; Arteta, J.; Fonseca, R.; Stockler, R.; Katsurayama, D. M.; Fazenda, A.; **Bela, M. M.**: The Chemistry CATT-BRAMS model (CCATT-BRAMS 4.5): a regional atmospheric model system for integrated air quality and weather forecasting and research, *Geoscientific Model Development*, 6, 1389-1405, 2013.

Andreae, M. O., Artaxo, P., Beck, V., **Bela, M. M.**, Freitas, S., Gerbig, C., Longo, K., Munger, J. W., Wiedemann, K. T., and Wofsy, S. C.: Carbon monoxide and related trace gases and aerosols over the Amazon Basin during the wet and dry seasons, *Atmos. Chem. Phys.*, 12, 6041-6065, [doi:10.5194/acp-12-6041-2012](https://doi.org/10.5194/acp-12-6041-2012), 2012.

#### INVITED TALKS

**Bela, M. M.**, McKeen, S. A., Volkamer, R., Kille, N., Ahmadov, R., Pierce, R. B., Schmidt, C., Freitas, S. R., Pereira, G., Trainer, M. K., Angevine, W. M., Frost, G. J., Wiedinmyer, C., O'Neill, S. M., Zhang, X., Kondragunta, S., Grell, G., Wong, K., Zhang, L., Pagowski, M., Marrapu, P., Emissions, Transport, and Chemistry of Smoke from Fires in the Amazon and Western U.S., NOAA ESRL Chemical Sciences Division Seminar, 31 Oct. 2018.

**Bela, M. M.**, McKeen, S. A., Volkamer, R., Kille, N., Ahmadov, R., Pierce, R. B., Schmidt, C., Freitas, S. R., Pereira, G., Trainer, M. K., Angevine, W. M., Frost, G. J., Wiedinmyer, C., O'Neill, S. M., Zhang, X., Kondragunta, S., Grell, G., Wong, K., Zhang, L., Pagowski, M., Marrapu, P., Emissions, Transport, and Chemistry of Smoke from Fires in the Amazon and Western U.S., Meteorology and Climate - Modeling for Air Quality Conference, Davis, CA, 13-15 Sept 2017.

**Bela, M. M.**, Barth, M. C., Toon, O., Fried, A., Ziegler, C., Homeyer, C., Morrison, H., Cummings, K., Li, Y., Pickering, K. E., Allen, D. J., Yang, Q., Mecikalski, R. M., Carey, L., Biggerstaff, M. I., Betten, D. P., Alford, A. A., Effects of deep convection on upper tropospheric composition of soluble gases over the central U.S., Pacific Northwest National Laboratory, Richland, WA, Nov. 27, 2017.

#### OTHER RECENT PRESENTATIONS

**Bela, M. M.**, Rebecca Schwantes, Stuart A. McKeen, Ravan Ahmadov, Eric James, Jordan Schnell, G. Pereira, Meng Li, Brian McDonald, Chris C. Schmidt, R. Bradley Pierce, Susan M. O'Neill, Xiaoyang Zhang, Shobha Kondragunta, Christine Wiedinmyer, Emily Gargulinski, Amber Soja, Hyun Deok Choi, Effects of Emissions, Transport, and Chemistry on Prediction of Air Quality Impacts from Fires, 101st American Meteorological Society Annual Meeting, 10-15 Jan 2021. (oral)

**Bela, M. M.**, Rebecca Schwantes, Stuart A. McKeen, Ravan Ahmadov, Eric James, Jordan Schnell, G. Pereira, Meng Li, Brian McDonald, Chris C. Schmidt, R. Bradley Pierce, Susan M. O'Neill, Xiaoyang Zhang, Shobha Kondragunta, Christine Wiedinmyer, Emily Gargulinski, Amber Soja, Hyun Deok Choi, Effects of Emissions, Transport, and Chemistry on Prediction of Air Quality Impacts from Fires, Abstract A255-02 presented at Annual Fall Meeting, AGU, 1-17 Dec 2020.

**Bela, M. M.**, N. Kille, S. A. McKeen, R. Ahmadov, G. Pereira, C. Schmidt, R.B. Pierce, S.M. O'Neill, X. Zhang, S. Kondragunta, C. Wiedinmyer, and R. M. Volkamer, Emissions, Transport, and Chemistry of Smoke from Fires in the Western U.S., American Geophysical Union Annual Fall Meeting, San Francisco, CA, 9-13 Dec 2019. (oral)

**Bela, M. M.**, N. Kille, S. A. McKeen, R. Ahmadov, G. Pereira, C. Schmidt, R.B. Pierce, S.M. O'Neill, X. Zhang, S. Kondragunta, C. Wiedinmyer, and R. M. Volkamer, Advances in Quantifying Air Quality Impacts from Wildfires, American Association for Aerosol Research 37th Annual Conference, Portland, OR, 14-18 Oct 2019. (poster)

**Bela, M. M.**, N. Kille, S. A. McKeen, R. Ahmadov, G. Pereira, C. Schmidt, R.B. Pierce, S.M. O'Neill, X. Zhang, S. Kondragunta, C. Wiedinmyer, and R. M. Volkamer, Emissions, Transport, and Chemistry of Smoke from the Oct. 2017 Northern California Fires, Meteorology and Climate - Modeling for Air Quality Conference, Davis, CA, 11-13 Sept 2019. (poster)

**Bela, M. M.**, N. Kille, S. A. McKeen, R. Ahmadov, G. Pereira, C. Schmidt, R.B. Pierce, S.M. O'Neill, X. Zhang, S. Kondragunta, C. Wiedinmyer, and R. M. Volkamer, Emissions, Transport, and Chemistry of Smoke from the Oct. 2017 Northern California Fires, Atmospheric Chemistry Gordon Research Conference, Newry, Maine, 28 Jul to 2 Aug 2019. (poster)

**Bela, M. M.**, N. Kille, S. A. McKeen, R. Ahmadov, G. Pereira, C. Schmidt, R.B. Pierce, S.M. O'Neill, X. Zhang, S. Kondragunta, C. Wiedinmyer, and R. M. Volkamer, Emissions, Transport, and Chemistry of Smoke from the Oct. 2017 Northern California Fires, WRF Workshop, Boulder, CO, USA, 10-14 June 2019. (poster)

**Bela, M. M.**, S. A. McKeen, R. Volkamer, N. Kille, R. Ahmadov, R. B. Pierce, C. Schmidt, S. R. Freitas, G. Pereira, M. K. Trainer, W. M. Angevine, G. J. Frost, C. Wiedinmyer, S. M. O'Neill, X. Zhang, and S. Kondragunta, Emissions, Transport, and Chemistry of Smoke from Fires in the Western U.S., 99th American Meteorological Society Annual Meeting, Phoenix, AZ, 6-10 Jan 2019. (oral)

**Bela, M. M.**, S. A. McKeen, R. Volkamer, N. Kille, R. Ahmadov, R. B. Pierce, C. Schmidt, S. R. Freitas, G. Pereira, M. K. Trainer, W. M. Angevine, G. J. Frost, C. Wiedinmyer, S. M. O'Neill, X. Zhang, and S. Kondragunta, Emissions, Transport, and Chemistry of Smoke from Fires in the Western U.S., American Geophysical Union Annual Fall Meeting, Washington, D.C., 10-14 Dec 2018. (oral)

**Bela, M. M.**, S. A. McKeen, R. Volkamer, N. Kille, R. Ahmadov, R. B. Pierce, C. Schmidt, S. R. Freitas, G. Pereira, M. K. Trainer, W. M. Angevine, G.

J. Frost, C. Wiedinmyer, S. M. O'Neill, X. Zhang, S. Kondragunta, A. Soja, and H.-D. Choi, Emissions, Transport, and Chemistry of Smoke from the Oct. 2017 Northern California Fires, 15th International Global Atmospheric Chemistry Science Conference, Takamatsu, Japan, 25-29 Sept 2018. (poster)

Bela, M. M., **S. A. McKeen**, R. Ahmadov, G. Pereira, S. R. Freitas, M. K. Trainer, W. M. Angevine, G. J. Frost, R. Volkamer, N. Kille, A. Zelenyuk-Imre, L. Riihimaki, R. B. Pierce, C. Schmidt, C. Weidinmyer, and P. E. Saide, Improving Prediction of Aerosol and Ozone Formation from Wildfire Emissions in the Western U.S. Oct. 2017 Northern California Fires Case Study, WRF Workshop, Boulder, CO, USA, 11-15 June 2018. (oral)

**Bela, M. M.**, McKeen, S. A., Volkamer, R., Kille, N., Ahmadov, R., Pierce, R. B., Schmidt, C., Freitas, S. R., Pereira, G., Trainer, M. K., Angevine, W. M., Frost, G. J., Wiedinmyer, C., O'Neill, S. M., Zhang, X., Kondragunta, S., Grell, G., Wong, K., Zhang, L., Pagowski, M., Marrapu, P., Emissions, Transport, and Chemistry of Smoke from Fires in the Amazon and Western U.S., NOAA ESRL Chemical Sciences Division First Friday Forum, 9 Oct. 2018.

PREVIOUS  
PRESENTATIONS

AGU 2016 (oral), 2015, 2014, 2013 (poster); Gordon Research Conference in Atmospheric Chemistry 2015 (poster); WRF Workshop 2017 (oral); AMS 2014 (oral); IGAC 2016, 2014 (poster); EGU 2013 (poster)

WORKSHOP  
PARTICIPATION

System for Integrated Modeling of the Atmosphere (SIMA) Community Workshop 2020

SERVICE

Reviewer, J. Geophys. Res. Atmos., Atmos. Chem. Phys., Environ. Sci. Pollut. R.

NCAR WRF-Chem Tutorial, Presenter and Practical Exercises Developer, 2012, 2017-2018

WRF-Chem and PREP-CHEM-SRC emissions pre-processor technical support, 2008-2019

LEADERSHIP

USGEO Satellite Needs Working Group, 2018 to present

AWARDS

2nd Place, Oral Presentation student award, 16th Atmospheric Chemistry Conference, AMS, 2014

1st Place, Aerosols, Clouds, and Precipitation, ATOC Poster Conference, 2014

LANGUAGE SKILLS

Portuguese: Full Professional Proficiency

Spanish: Professional Working Proficiency

French: Elementary Proficiency