

Srinidhi Balasubramanian

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EDUCATION

University of Illinois at Urbana-Champaign (UIUC), Urbana, IL Ph.D. Candidate, Civil and Environmental Engineering (CEE) <i>Research Focus: Air Quality, Biogeochemical Cycles</i>	2010-Present
Indian Institute of Technology Bombay (IITB), Mumbai, India Masters in Technology, Environmental Science and Engineering	2008-2010
Sardar Patel College of Engineering (SPCE), Mumbai University, India Bachelors of Engineering, Civil Engineering	2004-2008

AWARDS

Fellowships and Scholarships

- *Richard S. and Mary E. Engelbrecht Fellowship, CEE, UIUC* 2017
- *Faculty for the Future Fellowship, Schlumberger Foundation* 2013-2015
- *Ravindar K. and Kavita Kinra Fellowship, CEE, UIUC* 2010-2012
- *Ratan Tata Scholarship, Ratan Tata Foundation* 2006-2008

Awards

- *Graduate Conference Travel Award, UIUC* 2014 & 2016
- *3rd Place Platform Paper Award, 107th Annual Conference & Exhibition, Air & Waste Management Association* 2014
- *Racheff Student Travel Award, Environmental Engineering & Science Program, CEE, UIUC* 2012 & 2014
- *Lake Michigan States Travel Scholarship, Air & Waste Management Association* 2013 & 2014
- *List of Teachers Ranked as Excellent by their Students, UIUC* 2013
- *Outstanding Student Paper Award, American Geophysical Union Fall Meeting* 2013
- *Shri Rajit Bhagwati Memorial Medal, Outstanding Master's Student, IITB* 2010
- *Kulpati's Gold Medal, Highest grades in Civil Engineering, SPCE* 2008

RESEARCH EXPERIENCE (DISSERTATION)

Graduate Research Assistant, CEE, UIUC (in progress) 2010-Present

Dissertation Title: *Ammonia Emissions from Chemical Fertilizer Usage Impact Regional Air Quality in the Midwest United States*

Advisor(s): *Professor Mark J. Rood and Dr. Sotiria Koloutsou-Vakakis*

- Developed an improved ammonia emissions inventory for fertilizer usage for Midwest United States
- Evaluated model performance and behavior of the biogeochemical, DeNitrification DeComposition (DNDC) model for estimating temporal trends in ammonia emissions post fertilizer usage
 - Established and operationalized state-of-art air quality modeling ensemble with focus on implementing the Sparse Matrix Operator Kernel Emissions (SMOKE) processing system and a regional air quality model (Comprehensive Air Quality Model with Extensions, CAMx) and related suite of pre- and post-processors
- Evaluated impact of ammonia emissions from the Midwest United States, on regional air quality

Graduate Student, Center for Environmental Science and Engineering, IITB 2008-2010

Thesis Title: *Indoor Air Quality in School Microenvironments*

- Conducted year-long indoor air quality measurements in three different school microenvironments
- Modeled ventilation using a computational fluids dynamic model
- Developed an index to characterize indoor air quality based on measurements and modeling results

RESEARCH PUBLICATIONS

Peer Reviewed Publications

- **Balasubramanian, S.**, Koloutsou-Vakakis, S., McFarland, D. M. and Rood, M.J. (2015) '*Reconsidering Emissions of Ammonia from Chemical Fertilizer Usage in Midwest United States*'. Journal of Geophysical Research: Atmospheres, 120, 6232-6246. <http://dx.doi.org/10.1002/2015JD023219>.
- **Balasubramanian, S.**, Nelson, A.J., Koloutsou-Vakakis, S., Lin, J., Rood, M.J., Myles, L. and Bernacchi, C. (2017) '*Evaluation of DeNitrification DeComposition Model for Estimating Ammonia Fluxes from Chemical Fertilizer Application*'. Agricultural and Forest Meteorology, 237-238, 123-134. <http://dx.doi.org/10.1016/j.agrformet.2017.02.006>.
- Nelson, A.J., Koloutsou-Vakakis, S., Rood, M.J., Myles, L., Lehmann, C., Bernacchi, C., **Balasubramanian, S.**, Joo, E., Heuer, M., Vieira-Filho, M. and Lin, J. '*Season-Long Ammonia Flux Measurements Above Fertilized Corn in Central Illinois, USA, Using Relaxed Eddy Accumulation*'. Agricultural and Forest Meteorology, 239, 202-212. <https://doi.org/10.1016/j.agrformet.2017.03.010>.

Publications under Development

- **Balasubramanian, S.**, Koloutsou-Vakakis, S., Fu, K., McFarland, D. M. and Rood, M.J. Tentative title: '*Implications of fertilizer usage on air quality in Midwest United States*'.

Conference Proceedings (* indicates peer reviewed)

- ***Balasubramanian, S.**, Wang, M., Koloutsou-Vakakis, S., and Rood, M.J. '*Modeling Temporal Variability in Ammonia Emissions from Chemical Fertilizer Usage in Midwest USA*'. Paper # 12549, Proceedings of the 107th Annual Conference and Exhibition (pages 339-353), Air & Waste Management Association, Chicago, Illinois, Jun 2014.
- ***Balasubramanian, S.**, Koloutsou-Vakakis, S., and Rood, M.J. '*Identifying Spatial Heterogeneity in Ammonia Emissions from Agricultural Fertilization*'. Paper #33187, Proceedings of the 106th Annual Conference and Exhibition (pages 1231-1247), Air & Waste Management Association, Long Beach, California, Jun 2013.
- **Balasubramanian, S.** and Patil, R.S. '*Monitoring of Particulate Matter Concentrations in Naturally Ventilated Schools in Mumbai*'. Paper # I-O-5, Indian Aerosol Science and Technology Association (IASTA) Bulletin (pages 612-615), Darjeeling, India, March 2010.

RESEARCH PRESENTATIONS

Conference Presentations

- **Balasubramanian, S.**, Nelson, A.J., Koloutsou-Vakakis, S., Lin, J., Myles, L. and Rood, M.J., '*Evaluation of DeNitrification DeComposition Model to Estimate Ammonia Fluxes from Chemical Fertilizer Application*'. Poster Presentation in AGU 2016 Fall Meeting, American Geophysical Union, San Francisco, California, Dec 2016.
- **Balasubramanian, S.**, Koloutsou-Vakakis, S., and Rood, M.J. '*Quantifying Uncertainty in Daily Variations of NH₃ Emissions Following Application of Chemical Fertilizers*'. Poster Presentation in AGU 2014 Fall Meeting, American Geophysical Union, San Francisco, California, Dec 2014.
- **Balasubramanian, S.** and Koloutsou-Vakakis, S. '*Preliminary Outcomes from a Week-Long Environmental Engineering Summer Camp for High School Female Students*'. Poster Presentation in AGU 2014 Fall Meeting, American Geophysical Union, San Francisco, California, Dec 2014.
- Myles L., Koloutsou-Vakakis S., Lehmann C., Saylor R., Heuer M., Sibble D., Caldwell J., **Balasubramanian S.**, Nelson A.J., Rood M.J., Bernacchi C. '*NH₃ Emissions from Fertilizer Application: A Collaborative Study in the Midwestern US*'. Platform presentation by Myles, L. in 2014 AGU Fall Meeting, American Geophysical Union, San Francisco, California, Dec 2014.
- **Balasubramanian, S.** '*Impact of Chemical Fertilizer Application on Air Quality*'. Poster Presentation in Schlumberger Faculty for the Future Forum, Boston, Massachusetts, Nov 2014.

Conference Presentations (Continued)

- **Balasubramanian, S.**, Koloutsou-Vakakis, S., Wang, M., Xiong, Y. and Rood, M.J. ‘*Increasing Spatial and Temporal Resolution of Gaseous Ammonia Emissions from Agricultural Chemical Fertilizer Usage*’. Poster Presentation in 2014 Annual Meeting and Scientific Conference, National Atmospheric Deposition Program, Indianapolis, Indiana, Oct 2014.
- **Balasubramanian, S.**, Wang, M., Koloutsou-Vakakis, S., and Rood, M.J. ‘*Modeling Spatial and Temporal Variability in Ammonia Emissions from Agricultural Fertilization*’. Platform Presentation in AGU 2013 Fall Meeting, American Geophysical Union, San Francisco, California, Dec 2013.
- **Balasubramanian, S.**, Koloutsou-Vakakis, S., Lehmann, C. and Rood, M.J. ‘*An Improved High-Spatial Resolution Inventory for Ammonia Emissions from Agricultural Fertilization*’. Platform Presentation in 2012 Annual Meeting and Scientific Conference, National Atmospheric Deposition Program, South Portland, Maine, Oct 2012.

Advanced Graduate Seminar (595AG) Presentations at CEE, UIUC

- ‘*Evaluation of DeNitrification DeComposition Model for Estimating Ammonia Fluxes from Chemical Fertilizer Application*’. Dec 2016.
- ‘*Evaluation of the Predictive Capacity of the DeNitrification DeComposition Model to Estimate Ammonia Emissions from Chemical Fertilizer Usage*’. Dec 2015.
- ‘*Modeling Spatial and Temporal Variability in Emissions of Ammonia to the Atmosphere from Chemical Fertilizer Usage*’. Feb 2014.
- ‘*A High-Spatial Resolution Emission Inventory for Gaseous Ammonia Release from Fertilizer Application*’. Feb 2012.

Invited Lectures

- ‘*Environmental Consequences of Nitrogen Fertilizer Application for Food Production*’. Parkland College, Champaign, Illinois, Dec 2016.
- ‘*An Uncertain Link in the Nitrogen Cycle – Ammonia Emissions from Fertilizer Application*’. IITB, Bombay, India, Jun 2013.

TEACHING EXPERIENCE

University Teaching

Instructor, Graduate Academy for College Teaching, UIUC *Fall 2015 & 2016*

- Implemented training session for new teaching assistants on developing and utilizing course syllabus as a teaching tool

Ph.D. Meaningful Teaching Experience (Course: Air Quality Modeling), UIUC *Fall 2013*

- Developed and taught modules on a regulatory air quality modeling and atmospheric deposition
- Implemented project based learning using regulatory air quality model AERMOD
- Recognized in List of Teachers Ranked as Excellent by their Students, compiled by the Center for Innovation in Teaching & Learning

Teaching Assistant (Course: Environmental Science), IITB *2008-2010*

- Grading and weekly office hours for a course with 375 undergraduate students

Community Teaching

Girls Adventures in Mathematics, Engineering and Sciences (GAMES) camp for high-school female students, UIUC *2011-2016*

Graduate Student Instructor, Environmental Engineering and Sustainability Track (2016)

- Taught modules on biogeochemical cycles and visualization tools and employed hands-on learning

Graduate Student Coordinator, Environmental Engineering and Sustainability Track (2012-2015)

- Co-developed a week-long camp in engineering for high-school female students with faculty

Graduate Student Coordinator, Environmental Engineering and Sustainability Track (Continued)

- Developed new teaching modules in air quality, biogeochemical cycles and visualization tools
- Implemented hands-on learning using software training, guided worksheets and field visits
- Supervised teaching instructors and student assistants and managed camp logistics
- Designed study to assess preliminary learning and motivational outcomes from the camp

Graduate Student Instructor, Structural Engineering Track (2011)

- Developed and implemented a hands-on module on life cycle analysis and green buildings

Guest Instructor (Advance Placement Environmental Science), Urbana High School 2013 & 2014

- Three hours of instruction in introductory air quality and biogeochemical cycles

Student Tutor, Women in Mathematics, Science and Engineering, UIUC 2012-2013

- Tutored undergraduate women in physics, biology and calculus at a residence hall

Workshop

Panelist, Environmental Education Resource Guides (EERGs) – Train the Trainer Workshop, 109th Annual Conference & Exhibition, Air & Waste Management Association, New Orleans, Louisiana 2016

- Developed and demonstrated lessons on stratospheric ozone depletion and air quality for middle school and high-school respectively

Invited Lectures

- ‘The A-Z of Tutoring’, Florida Avenue Residence Hall, UIUC 2013
- ‘Safe Drinking Water in Slums in Mega-Cities: A case study of Mumbai’, CEE, UIUC 2010

MENTORING AND SERVICE EXPERIENCE

Mentoring Experience

Graduate Student Mentor, Civil and Environmental Engineering, UIUC 2013-Present

- Supervised a graduate student for an independent study to develop a gridded emissions inventory
- Trained three undergraduates in research methods through the NSF and CEE Research Experience for Undergraduates (REU) programs
- Co-developed research publications with undergraduate mentees and presented research findings at the Undergraduate Research Symposium at UIUC

Peer Mentor, Civil and Environmental Engineering, CEE, UIUC 2014-2015

- Peer mentor to newer PhD students through PhD Professional Development Certificate Program of CEE department at UIUC.

Service in Professional Organizations

- *EERGs Contributor*, K-12 Environmental Education Committee, Air & Waste Management Association 2015-Present
- *Student Consultant on Teaching*, Academy of Excellence in Engineering, UIUC 2015-2017
- *Journal Reviewer: Ecological Modeling, Environmental Science & Technology, Environmental Technology & Innovation, Atmospheric Environment* 2014-Present
- *Vice-President*, American Society of Engineering Education, UIUC Chapter 2014- 2015
- *Internal Publicity Coordinator*, Graduate Society of Women Engineers, UIUC Chapter 2013- 2014
- *Chairperson*, Environmental Engineering Graduate Advisory Committee, CEE, UIUC 2011- 2012
- *Publicity Secretary*, Environmental Science and Engineering Association, IITB 2009-2010
- *General Secretary*, General Student Council, SPCE 2006-2007

Service in the Community

Asha for Education: 501(c)(3) non-profit organization supporting underprivileged children's education

- *Projects Coordinator*, UIUC Chapter 2013-2015
- *Events Coordinator*, UIUC Chapter 2012-2013
- *Chapter Coordinator*, UIUC Chapter 2011-2012

PROFESSIONAL DEVELOPMENT

Certifications

- *SMOKE Training*, Community Modeling and Analysis System Center, Chapel Hill, NC 2015
- *PhD Professional Development Certificate*, CEE, UIUC 2012-2014
- *Certificate in Foundations of Teaching*, Center for Innovation in Teaching & Learning, UIUC 2014
- *Weather Research and Forecasting Training*, NCAR, Boulder, CO 2013

Community Development Project

- *Collaborator*, Reach out Water Solutions with University of Chicago, Acara Challenge, IITB 2009

Professional Membership

- Association of Environmental Engineering & Science Professors 2017-Present
- American Society of Engineering Education 2014-Present
- American Geophysical Union 2013-Present
- Society of Women Engineers 2008-Present
- Air & Waste Management Association 2008-Present