

## **KAMALJIT BANGER**

PhD Candidate, School of Forestry & Wildlife Sciences,  
602 Duncan Drive, Auburn University, Alabama-36849  
Phone: +1-352-281-2442; e-mail: [kamal.banger@gmail.com](mailto:kamal.banger@gmail.com)  
Google-scholar: <https://scholar.google.com/citations?user=Daz0fu8AAAAI&hl=en&oi=ao>

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### **EDUCATION**

August, 2010-present: PhD candidate, Auburn University, USA (anticipated, June, 2015)

2010: MS Soil & Water Science, University of Florida, USA

2007: MS Soil Science & Agricultural Chemistry, University of Agricultural Sciences, India

2005: BS Agriculture (Soil Science Honors), Punjab Agricultural University, India

### **PROFESSIONAL EMPLOYEMENT**

**Graduate Research Assistant**, Fall 2010– Present, School of Forestry & Wildlife Sciences, Auburn University. My PhD work involves quantifying the impact of land use and land management, climate, and atmospheric nitrogen deposition on carbon and nitrogen cycling in the tropics. This task involves the use of biogeochemistry (e. g. soil-plant-nutrient dynamics) and synthesis (e. g., to identify the mechanisms from previous field experiments) in addition to the computer programming for developing modeling algorithms. To reduce uncertainties in biogeochemical cycles in the tropical ecosystems, I coupled the phosphorus cycle with carbon, nitrogen, and hydrological cycles in a modeling framework.

**Graduate Research Assistant**, Fall 2008-June, 2010, Soil & Water Sciences, University of Florida, Gainesville, Florida. I worked on evaluating the effects of urbanization on soil contamination (Polycyclic Aromatic Hydrocarbons) as well as nutrient (nitrogen and phosphorus) transport from an urbanizing watershed in Florida.

**Research Fellow**, October.2007-April, 2008, Punjab Agricultural University, India. I planned and conducted laboratory experiments on estimation of soil physical properties (texture, bulk density, water content, and conductivity), and chemical analysis (plant available nutrients). In addition, I supervised two field coordinators working on soil and water sample collection at Regional Research Station, Punjab Agricultural University, India.

### **RESEARCH EXPERTISE**

- Systems modeling
- Carbon, nitrogen, phosphorus, and water budgets in terrestrial ecosystems
- Assessment of global environmental change on agricultural productivity
- Decision support systems for Climate change adaption and mitigation strategies
- Soil contamination & Water quality
- Experimental Design

### **PROFESSIONAL AFFILIATIONS**

- Soil Science Society of America
- American Geophysical Union
- Ecological Society of America

## **PUBLISHED RESEARCH PAPERS**

- **Banger, K.**, Toor, GS, Kukal, SS, Sudhir, K, & Hanumanthraju, TH, (2009). Impact of long term additions of chemical fertilizers and farm yard manure on carbon and nitrogen sequestration under rice-cowpea system in semi-arid tropics. (*Plant & Soil*, 318; 27-35).
- **Banger, K.**, Toor, GS, Biswas, A, Sidhu, SS, & Sudhir, K, (2010). Soil Organic Carbon Fractions after 16 years Applications of Commercial Fertilizers and Organic Manure in a Typic Rhodalfs in Semi-arid Tropics (*Nutrient Cycling in Agroecosystems*, 86(3):391-399).
- **Banger, K.**, Toor, GS, Ma, L, & Chirenje, T, (2010). Polycyclic Aromatic Hydrocarbons in Four Urban Land Use Soils of Miami, Florida. (*Soil & Sediment Contamination*, 19: 2, 231-243).
- **Banger, K.**, Tian, HQ, & Lu, C, (2012). “Do Nitrogen Fertilizers Stimulate or Inhibit Methane Emissions from Rice Fields” (*Global Change Biology*, 18, 3259–3267).
- **Banger, K.**, Tian, HQ, & Bo, T, (2013). “Contemporary land cover and land use patterns in India estimated by different regional and global datasets” (*Journal of Land Use Science*, doi 10.1080/1747423X.2013.858786).
- Tian, HQ, **Banger, K.**, Tao, Bo, & Dadhwal, VK, (2014). “History of land use in India during 1880-2010: Large-scale land transformations reconstructed from satellite data and historical archives” (*Global & Planetary Change*, doi:10.1016/j.gloplacha.2014.07.005).
- **Banger, K.**, Tian, HQ, Tao, Bo, Lu, C, Ren, W, & Yang, J, (2015). “Magnitude and drivers for soil organic carbon stocks in India during 1901–2010” (accepted in *Soil Science Society of America Journal*, in press).
- **Banger, K.**, Tian, HQ, Bo Tao, Ren, W, Pan, S, Shree, SRS, & Yang, J, (2015). “Contribution of multiple environmental factors on terrestrial net primary productivity in India during 1901–2010” (revisions submitted in *Climatic Change*).
- Sidhu, SS, Dhaliwal, SS, **Banger, K.**, Dhadli HS, & Aulakh SS, (2010). An assessment of changes in groundwater quality with the variations in depth of aquifers in north-eastern districts of Punjab. (*Indian Journal of Ecology*, 37(2): 162-164).
- Sidhu, SS, Brar, JS, Biswas, A, **Banger, K.**, & Saroa, GS, (2012). Arsenic contamination in soil-water-plant (Rice, *Oryza sativa* L.) continuum in Northern districts of Punjab, Northwest India. (*Bulletin of Environmental Contamination & Toxicology*, doi 10.1007/s00128-012-0799-0).
- Tian, HQ, Chen, G, Lu, C,, Xu, X, Ren, W, **Banger, K.**, Zhang, B, Bo Tao, Pan, S, Liu, M, & Zhang C, (2013). “Recent trends in global soil methane and nitrous oxide fluxes: Magnitude and spatiotemporal patterns” (*Biogeoscience discussions*, doi10.5194/bgd-10-1-2013).
- Pan, S, Tian, HQ, Dangal, S, Zhang, C, Yang, J, Tao, B, Ouyang, Z, Wang, X, Lu, C, Ren, W, **Banger, K.**, Yang, Q, Zhang, B, & Li, X, (2014). Complex spatiotemporal responses of global terrestrial primary production to climate change and increasing atmospheric CO<sub>2</sub> in the 21st century. (*PloS ONE*; doi: 10.1371/journal.pone.0112810).

- Pan, S, Tian, HQ, Danggal, SRS, Ouyang, Z, Lu, C, Yang, J, Tao Bo, Ren W, **Banger K.**, Yang, Q, & Zhang, B, (2014). Inter-annual and spatial variations of net primary production in the global terrestrial ecosystem during 2000-2009. (*Journal of Geographical Sciences, in press*).
- Yang, Q, Tian, HQ, Xia, Li, Bo Tao, Ren, W, Chen, G, Lu, C, Yang, J, Pan, S, **Banger, K.**, & Zhang, B, (2014). Spatiotemporal patterns of evapotranspiration along the North American east coast as influenced by multiple environmental changes. (*Ecohydrology*, doi 10.1002/eco.1538).
- Tian, HQ, Chen, G, Lu, C, Xu, X, Ren, W, Zhang, B, **Banger, K.**, Bo Tao, Pan, S, Liu, M, Zhang, C, Bruhwiler, L, & Wofsy, S, (2015). Global methane and nitrous oxide emissions from terrestrial ecosystems due to multiple environmental changes. (*Ecosystem Health and Sustainability*, doi.org/10.1890/EHS14-0015.1).

### **PROBLEM SOLVING AND TECHNICAL SKILLS**

- **Field Experiments & Laboratory skills:** Designing and conducting field experiments, soil sampling, stream water sampling, estimation of basic soil properties (bulk density, water content, soil texture, soil pH, soil EC), plant available nutrients (nitrogen, phosphorus, and micronutrients), and biological properties (microbial biomass carbon, soil respiration).
  - **Handling Laboratory instruments:** CHNS analyzer, Discrete analyzer for (nitrogen and phosphorus forms), Atomic Absorption Spectrophotometer, High-performance liquid chromatography, Gas chromatography, Pressure plate, Double ring infiltrometer
  - **Synthesis:** Meta-analysis, Metawin software
  - **Statistical software:** SAS programing (basics), SigmaPlot
  - **Computer skills:** C++ programing
  - **Remote Sensing & Geographical Information Systems:** Advanced GIS, ArcMacro Language (AML programing), Geostatistics and Kringing, land cover & land use data development
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