

George Ban-Weiss, Ph.D.

Work Address:
3620 South Vermont Ave KAP210
Astani Dept of Civil and Environmental
Engineering

Phone: +1 213 740 9124
Email: banweiss@usc.edu
Website: <http://www-bcf.usc.edu/~banweiss/>

Education:

| | | | |
|-------|---|------------------------|----------|
| Ph.D. | <i>University of California, Berkeley</i> | Mechanical Engineering | May 2008 |
| M.S. | <i>University of California, Berkeley</i> | Mechanical Engineering | May 2005 |
| B.S. | <i>University of California, Berkeley</i> | Mechanical Engineering | May 2003 |

Awards and Honors

- Named by MIT Technology Review as one of the world's 35 top innovators under the age of 35 (2014)
- Rose Hills Foundation Research Fellowship (2014)
- Charles Lee Powell Foundation Research Award (2014)
- Invited to present research at the Hot City Cool Roofs Symposium, which brought together scientists and policy makers, including then-mayor Villaraigosa. Results contributed to an update to the Municipal Building Code for Los Angeles requiring that all new and refurbished homes use cool roofs.
- Part of the development team that won a 2016 R&D 100 award. The developed technology, termed the "cool roof time machine", simulates outdoor soiling and weathering processes in the lab, reproducing in less than three days the solar reflectance of roofing products naturally aged for three years (2016).

Academic Positions:

- | | | |
|--|--|-------------------|
| • Civil and Environmental Engineering University of Southern California | Assistant Professor | Aug 2013-current |
| • Heat Island & Climate Science Groups Lawrence Berkeley National Lab | Project Scientist | Apr 2012-Aug 2013 |
| • Heat Island Group Atmospheric Sciences Dept, Lawrence Berkeley National Lab | Postdoctoral Research Associate | Oct 2010-Apr 2012 |
| • Dept of Global Ecology Carnegie Institution, Stanford | Postdoctoral Research Scientist | Oct 2008-Oct 2010 |

Industry Position:

- | | | |
|--|-----------------------------------|-------------------|
| • Powerlight Corporation Berkeley, CA | Product Development Intern | Aug 2004-Aug 2005 |
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Encyclopedia articles / book chapters:

- (1) **Ban-Weiss GA** and Collins WD (2015) *Aerosols: Role in Radiative Transfer*. Encyclopedia of Atmospheric Sciences 2nd Edition, Pages 66-75. DOI 10.1016/B978-0-12-382225-3.00053-0

Peer-Reviewed Publications:

As of January 2017 from Web of Science:
Citations = >900.
H-index = 16

Underline = “Corresponding” senior author
“*” = Ban-Weiss’ research group members at USC

2017:

- (33) Rosado P, **Ban-Weiss GA**, Mohegh A*, Levinson R (2017) Influence of street setbacks on solar reflection and air cooling by reflective streets in urban canyons. *Solar Energy*. 144, 144-157.
doi:10.1016/j.solener.2016.12.026

- (32) Shirmohammadi F, Sowlat M, Hasheminassab S, Saffari A, **Ban-Weiss GA**, Sioutas C (2017) Emission rates of particle number, mass and black carbon by the Los Angeles Airport (LAX) and its impact on air quality in Los Angeles. *Atmospheric Environment*. 151, 82-93,
doi:10.1016/j.atmosenv.2016.12.005

2016:

- (31) Vahmani P*, Sun F, Hall A, **Ban-Weiss GA** (2016) Investigating the climate impacts of urbanization and the potential for cool roofs to counter future climate change in Los Angeles. *Environmental Research Letters*. 11, doi:10.1088/1748-9326/11/12/124027

This paper resulted in the following press:

- Los Angeles Times Article
 - <http://www.latimes.com/projects/la-sci-cooling-los-angeles/>
- ~10 minute radio interviews on public radio (KPCC and KCRW)
 - <http://www.scpr.org/programs/airtalk/2017/02/13/55022/can-los-angeles-lower-its-own-temperature-by-three/>
 - <http://www.kcrw.com/news-culture/shows/press-play-with-madeleine-brand/trumps-new-immigration-rules-and-unconventional-phone-calls#seg-mayor-garcetti-aims-to-make-la-3-degrees-cooler>

- (30) Vahmani P* and **Ban-Weiss GA** (2016) Climatic consequences of adopting drought tolerant vegetation over Los Angeles as a response to California drought. *Geophysical Research Letters*. 43, doi:10.1002/2016GL069658

This paper resulted in the following press:

- Chosen by the editors at Geophysical Research Letters to be featured as an EOS Research Spotlight

- <https://eos.org/research-spotlights/switching-to-drought-tolerant-plants-could-alter-urban-climates>
- Los Angeles Times Article
 - <http://www.latimes.com/science/sciencenow/la-sci-sn-lawn-drought-plants-20160801-snap-story.html>
- ~6 minute interview on public radio (KPCC)
 - <http://www.scpr.org/programs/take-two/2016/08/03/50987/drought-plants-may-keep-water-use-low-and-temperat/>
- Article at KQED (San Francisco Bay area public radio)
 - <https://ww2.kqed.org/science/2016/08/31/landscaping-for-drought-could-make-warm-nights-cooler/>

(29) Zhang J*, Zhang K, Liu J, **Ban-Weiss GA** (2016) Revisiting the climate impacts of cool roofs around the globe using an earth system model. *Environmental Research Letters*. 11. doi:10.1088/1748-9326/11/8/084014

(28) Krasowsky T*, McMeeking G, Wang D, Sioutas C, **Ban-Weiss GA** (2016) Real-world measurements of the impact of atmospheric aging on physical and optical properties of ambient black carbon particles. *Atmospheric Environment*. 142, 496-504, doi:10.1016/j.atmosenv.2016.08.010

(27) Taleghani M*, Sailor D, **Ban-Weiss GA** (2016) Micrometeorological simulations to predict the impacts of heat mitigation strategies on pedestrian thermal comfort in a Los Angeles neighborhood. *Environmental Research Letters*. 11, 1-12, doi:10.1088/1748-9326/11/2/024003

(26) Vahmani P* and **Ban-Weiss GA** (2016) Impact of remotely sensed albedo and vegetation fraction on simulation of urban climate in WRF-urban canopy model: A case study of the urban heat island in Los Angeles. *Journal of Geophysical Research*. 121, 1511–1531, doi:10.1002/2015JD023718.

2015:

(25) Zhang J*, Liu J, Tao S, **Ban-Weiss GA** (2015) Long-range transport of black carbon to the Pacific Ocean and its dependence on aging timescale. *Atmospheric Chemistry and Physics*, 15, 11521-11535. DOI 10.5194/acp-15-11521-2015.

(24) Krasowsky T*, Daher N, Sioutas C, **Ban-Weiss GA** (2015) Measurement of particulate matter emissions from in-use locomotives. *Atmospheric Environment*, 113, 187-196.

(23) **Ban-Weiss GA**, Woods J, Levinson R (2015) Using remote sensing to quantify albedo of roofs in seven California cities, Part 1: Methods. *Solar Energy*, 115, 777-790. DOI 10.1016/j.solener.2014.10.022

(22) **Ban-Weiss GA**, Woods J, Millstein D, Levinson R (2015) Using remote sensing to quantify albedo of roofs in seven California cities, Part 2: Results and application to climate modeling. *Solar Energy*, 115, 791-805. DOI 10.1016/j.solener.2014.10.041

(21) Tao W, Liu J, **Ban-Weiss GA**, Hauglustaine DA, Zhang L, Zhang Q, Cheng Y, Yu Y, Tao S (2015) Effects of urban land expansion on the regional meteorology and air quality of eastern China. *Atmospheric Chemistry and Physics*, 15, 8597-8614, DOI 10.5194/acp-15-8597-2015

2014:

- (20) **Ban-Weiss GA**, Jin L, Bauer S, Bennartz R, Liu X, Zhang K, Ming Y, Jiang J (2014) Evaluating clouds, aerosols, and their interactions in three global climate models using COSP and satellite observations. *Journal of Geophysical Research*. 119, 876-901. DOI: 10.1002/2014JD021722

2013:

- (19) **Ban-Weiss GA**, Wray C, Delp W, Ly P, Akbari H, Levinson R (2013) Electricity production and cooling energy savings from installation of building-integrated photovoltaic roof on an office building. *Energy and Buildings*, 56, 210-220, DOI 10.1016/j.enbuild.2012.06.032
- (18) MacCracken MC, Shin HJ, Caldeira K, **Ban-Weiss GA** (2013) Climate response to imposed solar radiation reductions in high latitudes. *Earth System Dynamics*, 4, 301–315, DOI 10.5194/esd-4-301-2013

2012:

- (17) **Ban-Weiss GA**, Cao L, Bala G, Caldeira K (2012) Dependence of Climate Forcing and Response on the Altitude of Black Carbon Aerosols. *Climate Dynamics*, 38, 897-911, DOI 10.1007/s00382-011-1052-y

2011:

- (16) **Ban-Weiss GA**, Bala G, Cao L, Pongratz J, Caldeira K (2011) Climate Forcing and Response to Idealized Changes in Surface Latent and Sensible Heat. *Environmental Research Letters*, 6, DOI 10.1088/1748-9326/6/3/034032 *
- *Environmental Research Letters Highlight Paper of 2011**
- (15) Anderson RG, Canadell JG, Randerson JT, Jackson RB, Hungate BA, Baldocchi DD, **Ban-Weiss GA**, Bonan GB, Caldeira K, Cao L, Diffenbaugh NS, Gurney KR, Kueppers LM, Law BE, Luysaert S, O'Halloran TL (2011) Biophysical Considerations in Forestry for Climate Protection. *Frontiers in Ecology and the Environment*, 9, 174-182. DOI 10.1890/090179
- (14) Bala G, Caldeira K, Nemani R, Cao L, **Ban-Weiss GA**, Shin HJ (2011) Albedo Enhancement of Marine Clouds to Counteract Global Warming: Impacts on the Hydrological Cycle. *Climate Dynamics*, 37, 915-931. DOI 10.1007/s00382-010-0868-1
- (13) Levinson R, Pan H, **Ban-Weiss GA**, Rosado P, Paolini R, Akbari H (2011) Potential Benefits of Solar Reflective Car Shells: Cooler Cabins, Fuel Savings and Emission Reductions. *Applied Energy*, 88, 4343-4357, DOI 10.1016/j.apenergy.2011.05.006
- (12) Sleiman, M, **Ban-Weiss GA**, Gilbert H, Francois D, Berdahl P, Kirchstetter T, Destailats H, Levinson R (2011) Soiling of Building Envelope Surfaces and its Effect on Solar Reflectance-Part I: Analysis of Roofing Product Databases. *Solar Energy Materials and Solar Cells*, 95, 3385-3399. DOI 10.1016/j.solmat.2011.08.002

2010:

- (11) **Ban-Weiss GA**, Lunden MM, Kirchstetter TW, Harley RA (2010) Size-Resolved Particle Number and Volume Emission Factors for On-Road Gasoline and Diesel Motor Vehicles. *Journal of Aerosol Science*, 41, 5-12, DOI 10.1016/j.jaerosci.2009.08.001

- (10) **Ban-Weiss, GA**, Caldeira K (2010) Geoengineering as an Optimization Problem. *Environmental Research Letters*, 5, 1-9. DOI 10.1088/1748-9326
- (9) Cao L, Bala B, Caldeira K, Nemani R, **Ban-Weiss GA** (2010) Importance of Carbon Dioxide Physiological Forcing to Future Climate Change. *Proceedings of the National Academy of Sciences*, 107, 9513-9518. DOI 10.1073/pnas.0913000107
- (8) Strawa, AW, Kirchstetter TW, Hallar AG, **Ban-Weiss GA**, McLaughlin JP, Harley RA, Lunden MM, Kean AJ (2010) Optical and Physical Properties of Primary On-Road Vehicle Particle Emissions and Their Implications for Climate Change. *Journal of Aerosol Science*, 41, 36-50. DOI 10.1016/j.jaerosci.2009.08.010

2009:

- (7) **Ban-Weiss GA**, Kirchstetter TW, Lunden MM, Harley RA (2009) Measurement of Black Carbon and Particle Number Emission Factors from Individual Heavy-Duty Trucks. *Environmental Science and Technology*, 43, 1419-1424. DOI 10.1021/es8021039
- (6) Cao L, Bala B, Caldeira K, Nemani R, **Ban-Weiss GA** (2009) Climate Response to Physiological Forcing of Carbon Dioxide Simulated by the Coupled Community Atmosphere Model (CAM3.1) and Community Land Model (CLM3.0). *Geophysical Research Letters*, 36, L10402, DOI 10.1029/2009GL037724
- (5) Kean AJ, Littlejohn D, **Ban-Weiss GA**, Harley RA, Kirchstetter TW, Lunden MM (2009) Trends in On-Road Vehicle Emissions of Ammonia. *Atmospheric Environment*, 43, 1565-1570. DOI 10.1016/j.atmosenv.2008.09.085

2008:

- (4) **Ban-Weiss GA**, McLaughlin, JP, Harley RA, Kean AJ, Grosjean E, Grosjean D (2008) Carbonyl and Nitrogen Dioxide Emissions From Gasoline- and Diesel-Powered Motor Vehicles. *Environmental Science and Technology*, 42, 3944-3950. DOI 10.1021/es8002487
- (3) **Ban-Weiss GA**, McLaughlin JP, Harley RA, Lunden MM, Kirchstetter TW, Kean AJ, Strawa AW, Stevenson ED, Kendall GR (2008). Long-Term Changes in Emissions of Nitrogen Oxides and Particulate Matter from On-Road Gasoline and Diesel Vehicles. *Atmospheric Environment*, 42, 220-232. DOI 10.1016/j.atmosenv.2007.09.049
- (2) Lee DY, Park SS, **Ban-Weiss GA**, Fanucchi MV, Plopper CG, Wexler AS (2008). Bifurcation Model for Characterization of Pulmonary Architecture. *The Anatomical Record*, 291, 379-389. DOI 10.1002/ar.20643

2007:

- (1) **Ban-Weiss GA**, Chen JY, Buchholz BA, Dibble RW (2007) A Numerical Investigation Into the Anomalous Slight NO_x Increase When Burning Biodiesel; A New (Old) Theory. *Fuel Processing Technology*, 88, 659-667. DOI 10.1016/j.fuproc.2007.01.007

Conference Papers:

- (1) Ban-Weiss, G.A., Gupta, R., Chen, J.Y., Dibble, R.W. *A Numerical and Experimental Investigation Into the Anomalous Slight NO_x Increase When Burning Biodiesel; A New (Old) Theory*. Western States Combustion Institute Conference Paper. Stanford University, October 18, 2005.

Reports:

- (1) Ly P, Ban-Weiss G, Wray C, Delp, W, Akbari H, Levinson R (2013) ***Building Integrated building integrated photovoltaic (BIPV) roofs for sustainability and energy efficiency***. Environmental Security Technology Certification Program (ESTCP). Energy and Water ESTCP Number: EW-200813

Oral Presentations:

Investigating the climate impacts of urbanization, and the potential for cool roofs to counter future climate change in Southern California, American Meteorological Society, 13th Annual Symposium on the Urban Environment, Seattle, WA, January 26, 2017.

Opportunities for improving heat resilience in cities using land cover change, Resilience By Design University, California College of the Arts, San Francisco, CA, October 7, 2016. **Invited Speaker**

Quantifying the urban heat island effect in LA, and the climate impacts of heat mitigation strategies from neighborhood to global scale, Los Angeles Regional Collaborative (LARC), Los Angeles, CA, October 5, 2016. **Invited Speaker***

*Included attendance from the Los Angeles Mayor's Office of Sustainability

On the impacts of heat mitigation strategies from neighborhood to global scale, Consortium on urban heat islands with academia and Los Angeles Mayor Sustainability Office, Los Angeles, CA, July 7, 2016. **Invited Speaker.** (Presentation given by my graduate student, Jiachen Zhang)

Investigating optimal urban heat mitigation strategies for vulnerable populations in a changing climate. California Energy Commission, Sacramento, CA May 13, 2016. **Invited Speaker**

Assessing Aerosol-cloud Interactions at Global Scale Using Climate Models and Satellite Observations. Yoram Kaufman Symposium. NASA Goddard Space Center, Greenbelt, MD, June 23, 2016. (Accepted talk, but canceled due to medical leave.)

Assessing Aerosol-cloud Interactions at Global Scale Using Climate Models and Satellite Observations. 96th American Meteorological Society Annual Meeting. New Orleans, LA. January 11, 2016. (canceled due to medical leave.) **Invited Speaker.**

Urban Heat Island and Air Pollution Mitigation as Climate Change Adaptation. National Academy of the Sciences, U.S.-Iran Symposium on Climate Change: Impacts and Mitigation. UC Irvine, CA. March 31, 2015. **Invited Speaker.**

Evaluating Aerosols, Clouds, and Their Interactions in Three Global Climate Models. 13th AeroCom Workshop. Steamboat Springs, CO. October 1, 2014.

Cool Roofs That Reflect the High Notes to Space. EmTech2014. Massachusetts Institute of Technology (MIT). Boston, MA, Sept 24, 2014. **Invited Speaker.**
<http://www.technologyreview.com/emtech/14/video/watch/innovators-under-35-george-ban-weiss/>

Evaluating Aerosols, Clouds, and Their Interactions in Three Global Climate Models Using COSP and Satellite Measurements. 32nd Annual Conference of the American Association for Aerosol Research. Portland, OR. October 3, 2013.

Evaluating Aerosols, Clouds, and Their Interactions in Three Global Climate Models Using COSP and Satellite Measurements. Department of Energy (DOE), Atmospheric System Research (ASR), Science Team Meeting. Potomac, Maryland, March 21, 2013. **Invited Speaker.**

Research and Outreach For Cool Roofs in California and Beyond, Hot City Cool Roofs Symposium, March 8, 2013. **Invited Speaker** (spoke after Mayor Villaraigosa, mayor of Los Angeles).*

***Results that I showed during this presentation contributed to an update to the Municipal Building Code for Los Angeles requiring that all new and refurbished homes use cool roofs.**

Evaluating Aerosol Indirect Effects in Three Global Climate Models using COSP and Satellite Measurements. FASTER (FASt-physics System TESTbed and Research) meeting. NASA GISS, New York, New York, August 24, 2012. **Invited Speaker.**

Cool ideas for California. Presented to California Secretary for Natural Resources, California Secretary for Environmental Protection (reports to Governor of CA), and Director of Lawrence Berkeley Laboratory, Berkeley, CA. January 20, 2012. **Invited Speaker.**

Aerosols: From the Tailpipe to Climate Change. Sonoma Technology Inc., Petaluma, CA. Oct 19, 2011. **Invited Speaker.**

Update to Provisional Aged Solar Reflectance of Roofing Products. California Energy Commission, 2013 Energy Efficiency Building Standards Staff Workshop. Sacramento, CA. June 10, 2011. **Invited Speaker.**

Characterization of Gas- and Particle-Phase Emissions From On-Road Motor Vehicles. NASA Ames Research Center, Mountain View, CA. May 13, 2008. **Invited Speaker.**

Long-Term Changes in Gas- and Particle-Phase Emissions from On-Road Diesel and Gasoline Vehicles. Diesel Engine-Efficiency and Emissions Research (DEER) Conference. Detroit, MI, August 14, 2007.

On-Road Measurement of Light-Duty Gasoline and Heavy-Duty Diesel Vehicle Emission Trends. 17th CRC On-Road Vehicle Emissions Workshop. San Diego, CA. March 27, 2007.

A Numerical and Experimental Investigation Into the Anomalous Slight NO_x Increase When Burning Biodiesel; A New (Old) Theory. Western States Combustion Institute Meeting. Stanford University, October 18, 2005.

Poster Presentations:

Ban-Weiss GA, Vahmani P, Climatic consequences of adopting drought tolerant vegetation over Los Angeles as a response to California drought. American Geophysical Union (AGU) Fall Meeting. San Francisco, CA. December 13, 2016.

Krasowsky T, Daher N, Sioutas C, Ban-Weiss GA, *Measurement of Particulate Matter Emission Factors from In-Use Locomotives.* American Geophysical Union (AGU) Fall Meeting. San Francisco, CA, December 17, 2014.

Zhang J, Liu J, Tao S, Ban-Weiss GA. Investigating the Vertical Distribution and Source Attribution of

Black Carbon over the Pacific Ocean American Geophysical Union (AGU) Fall Meeting. San Francisco, CA, December 16, 2014.

Krasowsky T, Daher N, Sioutas C, Ban-Weiss GA, *Measurement of Black Carbon, Lung Deposited Surface Area, Particle Number, and Fine Particle (PM_{2.5}) Emission Factors from Individual Locomotives*. ESRN workshop. University of Southern California. Los Angeles, CA, May 2, 2014.

Ban-Weiss GA, Bauer S, Bennartz R, Liu X, Zhang K, Ming Y, Jiang J, *Evaluating Aerosols, Clouds, and Their Interactions in Three Global Climate Models Using COSP and Satellite Measurements*. Berkeley Atmospheric Science Symposium. Berkeley, CA, February 8, 2013.

Ban-Weiss GA, Bauer S, Bennartz R, Liu X, Zhang K, Ming Y, Jiang J, *Evaluating Aerosols, Clouds, and Their Interactions in Three Global Climate Models Using COSP and Satellite Measurements*. American Geophysical Union (AGU) Fall Meeting. San Francisco, CA, December 4, 2012.

Ban-Weiss, G.A. *Next Generation Materials for Cool Roofing Applications*. LBNL Accelerated Aging of Building Materials Conference. Berkeley, CA, July 28, 2011

Ban-Weiss, G.A., Bala, G., Cao, L., Pongratz, J., Caldeira, K. *Understanding the Climate Consequences of Evapotranspiration Changes: A Theoretical Perspective*. American Geophysical Union (AGU) Fall Meeting. San Francisco, CA, December 15, 2010.

Ban-Weiss, G.A., Caldeira, K., Cao, L., Bala, G. *Climate Response to Black Carbon Aerosols: Dependence on Altitude*. American Geophysical Union (AGU) Fall Meeting. San Francisco, CA, December 15, 2009.

Ban-Weiss, G.A., Harley, R.A., Lunden, M.A., Kirchstetter, T.W. *Measurement of Black Carbon and Particle Number Emission Factors From Individual Heavy-Duty Trucks*. International Conference on Carbonaceous Particles in the Atmosphere. Lawrence Berkeley National Laboratory. August 12, 2008.

Ban-Weiss, G.A., McLaughlin, J.P., Harley, R.A., Lunden, M.M., Kirchstetter, T.W., Kean, A.J. *Long-Term Changes in Gas- and Particle-Phase Emissions from On-Road Diesel and Gasoline Vehicles*. UC Berkeley Energy Symposium: Leadership at the Nexus of Science, Policy, & Business. UC Berkeley, March 7, 2008.

Ban-Weiss, G.A., McLaughlin, J.P., Harley, R.A., Lunden, M.M, Kirchstetter, T.W., Kean, A.J. *Long-Term Changes in Gas- and Particle-Phase Emissions from On-Road Diesel and Gasoline Vehicles*. American Geophysical Union (AGU) Fall Meeting. San Francisco, CA, December 11, 2007.

Ban-Weiss, G.A., McLaughlin, J.P., Harley, R.A., Lunden, M.M, Kirchstetter, T.W., Kean, A.J. *Long-Term Changes in Gas- and Particle-Phase Emissions from On-Road Diesel and Gasoline Vehicles*. 7th annual Berkeley Atmospheric Science Center Symposium. Berkeley, CA, October 5, 2007.

Lunden, M.M., Ban-Weiss, G.A., Kirchstetter, T.W., McLaughlin, J.P., Harley, R.A. *Characteristics of On-Road Light-Duty and Heavy-Duty Vehicle Particulate Emissions*. American Association for Aerosol Research (AAAR) 26th Annual Conference. Reno, NV. September 25, 2007.

Strawa, A.W., Hallar, A.G., Kirchstetter, T.W., Lunden, M.M., Ban-Weiss, G.A., Harley, R.A., McLaughlin, J.P., Kean, A.J. *Measurement of the Optical Properties of On-Road Light-Duty and Heavy-Duty Vehicle Particulate Emissions*. American Association for Aerosol Research (AAAR) 26th Annual Conference. Reno, NV. September 25, 2007.

Ban-Weiss, G.A., McLaughlin, J.P., Harley, R.A., Lunden, M.M., Kirchstetter, T.W., Kean, A.J. A. *Long-Term Changes in Gas- and Particle-Phase Emissions from On-Road Diesel and Gasoline Vehicles*. Diesel Engine-Efficiency and Emissions Research (DEER) Conference. Detroit, MI, August 14, 2007.

Ban-Weiss, G.A., McLaughlin, J.P., Harley, R.A., Lunden, M.M., Kirchstetter, T.W., Kean, A.J. *On-Road Measurement of Gasoline and Diesel Engine Emission Trends*. University of California Transportation Center Annual Conference. UC Los Angeles, Feb 16, 2007.

Ban-Weiss, G.A., McLaughlin, J.P., Harley, R.A., Lunden, M.M., Kirchstetter, T.W., Kean, A.J. *On-Road Measurement of Gasoline and Diesel Engine Emission Trends*. Berkeley Energy Resource Collaborative (BERC) Conference - Challenges, Opportunities, and the Role of UC Berkeley in Creating a Sustainable Energy Future. UC Berkeley, March 21, 2006.

Ban-Weiss, G.A., Harley, R.A. *Heavy-Duty Diesel Emissions in CA: Past, Present, and Future*. University of California Transportation Center Annual Conference. UC Berkeley, Feb 10, 2006.

Research Funding Awards (as a USC investigator)

7)

“Development of a multi-scale model to determine optimal urban heat mitigation strategies for vulnerable populations in a changing climate”

Sponsor: National Science Foundation

\$210,061 (for Ban-Weiss’ group)

June 1 2015 – May 31 2018

PI: George Ban-Weiss

co-PI: David Sailor (Arizona State University)

6)

“CyberSEES: Type 1: A Novel Machine Learning Framework for Urban Heat Island Causal Analysis: a Marriage of Observations and Physical Models”

Sponsor: National Science Foundation

\$200,000 (for Ban-Weiss’ group)

May 16 2015 – January 31 2019

PI: Yan Liu (USC)

Co-PI: George Ban-Weiss

5)

“Solar-reflective “cool” walls: benefits, technologies, and implementation”

Sponsor: California Energy Commission, Electric Program Investment Charge (EPIC) program

Prime: Lawrence Berkeley National Laboratory.

\$250,000 (for Ban-Weiss’ group)

July 2 2015 – June 30 2018

USC PI: George Ban-Weiss

LBNL PI: Ronnen Levinson

4)

“Monitoring the Urban Heat Island Effect and the Efficacy of Future Countermeasures”

Sponsor: California Energy Commission, Electric Program Investment Charge (EPIC) program

Prime: Lawrence Berkeley National Laboratory.

\$82,000 (for Ban-Weiss’ group)

August 16 2015 – May 15 2017

USC PI: George Ban-Weiss

LBNL PI: Ronnen Levinson

3)

“Determining climate-relevant properties of atmospheric particles: from emissions sources to aging in the atmosphere”

Sponsor: Charles Lee Powell Foundation Research Award

\$160,278.

Bundle grant for research and equipment

2)

“Can increased use of urban vegetation and “cool” roofs and pavements counter the effects of future climate change while simultaneously improving air quality in Los Angeles?”

Sponsor: The Rose Hills Foundation 2014 Research Fellowship.

\$150,000 (for Ban-Weiss’ group).

July 1 2014 – June 30 2016

PI: George Ban-Weiss

1)

“Life-Cycle Assessment and Co-benefits of Cool Pavements”

Sponsor: California Air Resources Board.

Prime: Lawrence Berkeley National Laboratory.

\$68,000 (for Ban-Weiss’ group)

August 16 2013 – March 31 2016

USC PI: George Ban-Weiss

LBNL PI: Ronnen Levinson

Research Group

- **Graduate Students**

Trevor Krasowsky (PhD)

Aug 2013 – current

Mohammadhassan Mohegh (PhD)

Aug 2013 – current

Jiachen Zhang (PhD)

August 2014 – current

Mo Chen (PhD)*

August 2015 – current

*Co-advised with Prof Kelly Sanders

Yun Li (PhD)

August 2016 – current

- **Postdoctoral Researchers**

Pouya Vahmani
September 2014 – March 2016
Now at Lawrence Berkeley National Laboratory

- **Visiting Scholars**

Mohammad Taleghani, PhD
Now at University of Salford in Manchester (UK)

Professional Activity / Service (outside of USC):

- **General Activities**

Contributor to California's Fourth Climate Assessment, including quarterly meetings and providing guidance (since January 2016)

Assisting the LA Mayor's Office of Sustainability with their sustainability plan (since summer 2015)

Panelist for Staff Workshop on Actionable Climate Science for the Electricity and Natural Gas Sectors, California Energy Commission, March 16, 2017

- **Conference chair (since 2013)**

Session creator and session chair at American Geophysical Union Fall Meeting. *Towards understanding the 3-dimensional distribution of gases, aerosols and clouds via synergistic use of models and satellite, aircraft, and ground based observations*, December, 2015.

Session chair at National Academy of the Sciences, U.S.-Iran Symposium on Climate Change: Impacts and Mitigation. *Environmental impacts of climate change*. UC Irvine, CA. March 31, 2015.

Session creator and session chair at American Geophysical Union Fall Meeting. *Constraining aerosol indirect forcing in climate models with observations*, December 13, 2013.

Co-chair ASCE International Workshop on Computing in Civil Engineering, *Computing for Sustainability and Environment*, June 23-25 2013.

- **Peer reviewer (since 2013)**

Reviewer for the following journals: Atmospheric Chemistry and Physics, Environmental Science and Technology, Atmospheric Environment, Geophysical Research Letters, Journal of Geophysical Research

Invited "expert reviewer" for the Nobel Prize winning Intergovernmental Panel on Climate Change (IPCC), 5th Assessment Report (AR5), Jan 2013.

Service to USC

- **Student Screening Exam committees**

Spring 2014

Arian Saffari.

Spring 2015

Trevor Krasowsky
Mohammadhassan Mohegh
Rebecca Peer

Spring 2016

Jiachen Zhang
Farimah Shirmohammadi

Spring 2017

Mo Chen
Christopher Lovett
Mohammad Sowlatt
Measrainsey Meng

- **Student Qualifying Exam committees**

Dongbin Wang
February 7, 2014

Sina Hasheminassab
February 28, 2014

Arian Safari
November 4, 2014

Zheng Yang
October 15, 2014

Jun Hu (Earth Sciences)
October 4, 2016

Trevor Krasowsky
May 12, 2016

Simin Ahmadi Karvigh
January 18, 2017

- **Dissertation committees**

Sylvia Dee (Earth Sciences)
Sina Hasheminassab
Arian Safari

- **Other mentorship**

Participating in the faculty mentorship program. Acting as faculty mentor for Assistant Professor Daniel McCurry

- **Other CEE Department committees**

Research space committee – Spring 2015

Department website committee - since Spring 2014

Environmental Engineering B.S. and M.S. Curriculum Committee – since Spring 2014

PhD Admissions and Fellowships Committee, Civil and Environmental Engineering – since Spring 2014

Marketing (Newsletter) Committee, Civil and Environmental Engineering – Fall 2013, Spring 2014, Fall 2015

TA/RA Awards Committee (Dept Awards), Civil and Environmental Engineering – Fall 2013 and 2014

Committee for Nomination of University Outstanding TA Award – Fall 2013 and 2014

TA Committee, Civil and Environmental Engineering – Spring 2014

Department Seminar Series Committee, Civil and Environmental Engineering – Fall 2013

Multiple Visitor Request Committees – Fall 2013, Spring 2014

- **Viterbi committees**

Fleischer Prize committee – Since Fall 2014

- **University committees**

Center for High Performance Computing (HPC) Faculty advisory committee (since March 2017)

Rose Hills Fellowship Reviewer. March 2015

Rose Hills Fellowship Reviewer, February 2017

- **USC Proposal / Grant reviewer**

Rose Hills Fellowship. March 2015.

Rose Hills Fellowship, March 2017

- **USC Panels**

Viterbi Academic Career Mentoring Panel Series – Career in Industry vs. Research Labs vs. Academia.
April 16, 2015

Public Outreach

Summer 2015

Hosted two middle school teachers from LA Unified School District in my lab as part of USC's Research Experience for teachers program. Developed curriculum with these teachers for their science classes

May 2013

Video Glossary entry for "Heat Island". Lawrence Berkeley Lab. <http://videoglossary.lbl.gov/#n76>

2011-2012

Part of a team developing science curriculum for 6th graders based on Heat Island research. Taught lessons in 6th grade classrooms in Berkeley Unified School District.

Nov 2011

Career day at Albany highschool. "Postdoctoral Research Scientist & Professional Jazz Bassist"

Selected Press (since 2012)

Los Angeles Times Article, <http://www.latimes.com/projects/la-sci-cooling-los-angeles/>

Public radio (KPCC), Air talk, 10 minute radio interview, Can Los Angeles lower its own temperature by 3 degrees? <http://www.scpr.org/programs/airtalk/2017/02/13/55022/can-los-angeles-lower-its-own-temperature-by-three/>

Public radio (KCRW), Press play, 10 minute radio interview, Mayor Garcetti aims to make LA three degrees cooler, <http://www.kcrw.com/news-culture/shows/press-play-with-madeleine-brand/trumps-new-immigration-rules-and-unconventional-phone-calls#seg-mayor-garcetti-aims-to-make-la-3-degrees-cooler>

Los Angeles Time Article, Will replacing thirsty lawns with drought-tolerant plants make L.A. hotter? <http://www.latimes.com/science/sciencenow/la-sci-sn-lawn-drought-plants-20160801-snap-story.html>

Public radio (KPCC), Take two, 6 minute radio interview, Drought plants may keep water use low, but temperatures high, <http://www.scpr.org/programs/take-two/2016/08/03/50987/drought-plants-may-keep-water-use-low-and-temperat/>

Article at KQED (San Francisco Bay area public radio), Landscaping for Drought Could Make Warm Nights Cooler, <https://ww2.kqed.org/science/2016/08/31/landscaping-for-drought-could-make-warm-nights-cooler/>

Chosen by the editors at GRL to be featured as an **EOS Research Spotlight**, Switching to Drought-Tolerant Plants Could Alter Urban Climates, <https://eos.org/research-spotlights/switching-to-drought-tolerant-plants-could-alter-urban-climates>

89.3 KPCC (NPR affiliate). Map: Is your roof adding to LA's 'heat island'? Sept 2014 <http://www.scpr.org/news/2014/09/25/46947/map-is-your-roof-adding-to-la-s-heat-island/>

Wolf E, *Cool Play: Innovator Aims to Combat Global Warming From the Rooftops Down*, **UC Berkeley Alumni Magazine**, Sept 2014.

<http://alumni.berkeley.edu/california-magazine/just-in/2014-09-05/cool-play-innovator-aims-combat-global-warming-rooftops-down>

Popescu A, *A USC professor who studies climate and pollution influences policy in California*, **MIT Technology Review** Aug 2014. <http://www.technologyreview.com/lists/innovators-under-35/2014/humanitarian/george-ban-weiss/>

X Yi, *Viterbi professors named to MIT's list of innovators*, **Daily Trojan**. Aug 2014, <http://dailytrojan.com/2014/08/27/viterbi-professors-named-to-mits-list-of-innovators/>

Young Berkeley engineers recognized as innovators, humanitarians, **Berkeley Engineering**, Aug 2014, <http://engineering.berkeley.edu/2014/08/young-berkeley-engineers-recognized-innovators-humanitarians>

Live interview on **The Weather Channel**. *Reducing the urban heat island*. June 22, 2013. http://www.youtube.com/watch?feature=player_detailpage&v=U-7q55gDxqQ

Robbins J, *Why Trees Matter*, **New York Times**, “A study by the Carnegie Institution for Science also found that water vapor from forests lowers ambient temperatures.” April 11, 2012