

# Jeremy C. Avise

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## ***Education***

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**Ph.D., Civil and Environmental Engineering, Washington State University (2007)**

Laboratory for Atmospheric Research

**M.S., Environmental Engineering, University of Montana (2001)**

**B.S., Physics, University of Puget Sound, Sigma Pi Sigma Physics National Honor Society (1998)**

**B.S., Mathematics, University of Puget Sound, Pi Sigma Alpha National Honor Society (1998)**

## ***Awards and Service***

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Board of Directors, *Genesee Mountain Village Foundation, gmvfoundation.org* (2008-present)

ARB Silver Superior Accomplishment Award (2012)

Manuscript review for JAWMA, Climatic Change, Atmospheric Environment (2012-present)

Co-Chair, 2013 AMS Annual Meeting (Atmospheric Chemistry)

Peer Reviewer, US EPA STAR Research Grants (2011)

US EPA STAR Graduate Fellow (2003-2006)

## ***Professional Experience***

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**Manager, Regional Air Quality Modeling, California Air Resources Board (2013-present)**

Managing a group of nine scientists with a focus on the following topics:

- Regulatory air quality modeling (SIP model attainment demonstration and regulatory support)
- Chemical Mechanism Development (SAPRC)
- PM<sub>2.5</sub> formation in California
- NO<sub>x</sub>/VOC sensitivity of ozone production in California
- Wildfire impacts on air quality
- Background ozone
- Long-range transport of pollutants
- Statistical Oxidation Model (SOM) application in CMAQ
- Climate change impacts on air quality (WRF/CMAQ, coupled WRF-CMAQ)
- Modeling support for field studies (Discover-AQ, CalNex, ARCTAS)
- WRF model evaluation and improvements (LULC, soil moisture, NEXRAD data)
- Application of model probing tools in CMAQ (DDM, process analysis, etc)
- Emissions inventory development for natural sources (biogenic, wildfire, lightning)

**Adjunct Professor, Washington State University, Laboratory for Atmospheric Research (2013-present)**

- Global change impacts on regional air quality
- Regional photochemical modeling
- Secondary organic aerosol modeling
- Long-range transport of pollutants

**Scientist, California Air Resources Board (2007-2013)**

- Development of a California-specific biogenic emissions inventory using the MEGAN biogenic emissions model adapted to California.
- Regulatory modeling for SIP development.
- Photochemical modeling for field study support (ARCTAS, CalNex, Discover-AQ)
- Emissions processing using SMOKE and in-house emissions inventory tools.
- Analysis of inter-air basin pollutant transport.
- Implementation and evaluation of the SAPRC07 chemical mechanism in CMAQ.

**Research Scientist, Washington State University (2010-2013)**

- Investigate the potential impacts of changes in climate, global emissions, biogenic emissions, wildfire, and land use/land cover on US air quality using multi-scale WRF and CMAQ modeling.

**EPA STAR Fellow, Washington State University (2003-2007)**

- Assess the potential impacts of global changes on regional air quality in the US by employing multi-scale models, including the PCM and MOZART2 global climate and chemistry models, and the regional MM5/SMOKE/CMAQ modeling system.
- Expansion of the AIRPACT (<http://www.airpact.wsu.edu/>) regional air quality daily forecast system to include selected air toxic species and update the system from CALGRID to the CMAQ photochemical transport model.

**Graduate Researcher, Washington State University (2002)**

- Investigate the relationship between urban emissions and regional air quality in the complex terrain region of the Columbia River Gorge using a source footprint modeling system (MM5/CALMET/CALPUFF) for determining potential source regions.

**Graduate Researcher, University of Montana (1999-2001)**

- Measurement and analysis of near-source concentration fluctuations and plume dispersion in the stable atmospheric boundary layer using instantaneous Sulfur Hexafluoride (SF<sub>6</sub>) analyzers and sonic anemometers deployed in a field in eastern Washington.
- Collaboration and interaction with Chinese researchers on the transport and dispersion of pollutants in the atmosphere (visiting student/researcher at Shanghai University, China for 6 months).

**Teaching Experience**

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Lecturer, University of California – Davis (2010)

Guest Lecturer, Washington State University (2004-2007)

English Teacher, Shanghai University, China (2001-2002)

Graduate Teaching Assistant, University of Montana (1999)

**Publications**

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*Journal Articles (peer-reviewed)*

1. Kulkarni, S., D. Chau, J. C. Avise, J. A. DaMassa, and A. P. Kaduwela (2014): An Extended Approach to Calculate Relative Response Factors for use in the Attainment Demonstration of the Ambient Air Quality Standards for 1-hour Ozone, *submitted to Journal of the Air and Waste Management*.
2. Chen, J., J. Lu, J. Avise, J. DaMassa, M. J. Kleeman, and A. Kaduwela (2014): Seasonal Modeling of PM<sub>2.5</sub> in California's San Joaquin Valley, *submitted to Atmospheric Environment*.
3. Pfister, G. G., S. Walters, L. K. Emmons, D. P. Edwards, and J. Avise (2013): Quantifying the contribution of inflow on surface ozone over California, *accepted for publication in J. Geophys. Res.*

4. Zhao, C., L. R. Leung, R. Easter, J. Hand, and J. Avise (2013): Characterization of speciated aerosol direct radiative forcing over California, *J. Geophys. Res.*, 118, 2372-2388, doi:10.1029/2012JD018364.
5. Avise, J., R. G. Abraham, S. H. Chung, B. Lamb, E. P. Salathe, Y. Zhang, D. G. Streets, C. Nolte, D. Loughlin, A. Guenther, C. Wiedinmyer, T. Duhl, and J. Chen (2012): Evaluating the potential effects of climate change on summertime ozone for policy makers, *Journal of the Air & Waste Management Association*, 62(9), 1061-1074, doi:10.1080/10962247.2012.696531.
6. Cai, C., J. Kelly, J. Avise, B. Stockwell, and A. Kaduwela (2011): Photochemical Modeling in California with Two Chemical Mechanisms: Model Intercomparison and Response to Emission Reductions, *Journal of the Air & Waste Management Association*, 61, XXX-XXX, doi:10.3155/1047-3289.61.3.1.
7. Pfister, G. G., J. Avise, C. Wiedinmyer, D. P. Edwards, L. K. Emmons, G. D. Diskin, J. Podolske, and A. Wisthaler (2011): CO source contribution analysis for California during ARCTAS-CARB, *Atmospheric Chemistry and Physics*, 11, 7515-7532, doi:10.5194/acp-11-7515-2011.
8. Kelly, J. T., J. Avise, C. Cai, and A. Kaduwela (2011): Simulating Particle Size Distributions over California and Impact on Lung Deposition Fraction, *Aerosol Science & Technology*, 45, 148-162.
9. Jackson, J.E., M.G. Yost, C. Karr, C. Fitzpatrick, B. Lamb, S.H. Chung, J. Chen, J. Avise, R.A. Rosenblatt, and R.A. Fenske (2010): Public health impacts of climate change in Washington State: Projected mortality risks due to heat events and air pollution, *Climatic Change*, doi: 10.1007/s10584-010-9852-3.
10. Weaver, C., X.-Z. Liang, J. Zhu, P. J. Adams, P. Amar, J. Avise, et al. (2009): A preliminary synthesis of modeled climate change impacts on U.S. regional ozone concentrations, *Bulletin of the American Meteorological Society*, 90, 1843-1863, doi: 10.1175/2009BAMSS2568.1.
11. Chen, J., J. Avise, B. Lamb, C. Wiedinmyer, A. Guenther (2009): Future land use and land cover influences on regional biogenic emissions and air quality in the United States, *Atmospheric Environment*, 43, 5771-5780.
12. Avise, J., J. Chen, B. Lamb, C. Wiedinmyer, A. Guenther, E. Salathe, and C. Mass (2008): Attribution of projected changes in summertime U.S. ozone and PM<sub>2.5</sub> concentrations to global changes, *Atmospheric Chemistry and Physics*, 8, 15131-15163.
13. Chen, J., J. Avise, B. Lamb, E. Salathe, C. Mass, A. Guenther, C. Wiedinmyer, J.-F. Lamarque, S. O'Neill, D. McKenzie, and N. Larkin (2008): The effects of global changes upon regional ozone pollution in the United States, *Atmospheric Chemistry and Physics*, 8, 15165-15205.
14. Chen, J., J. Vaughan, J. Avise, S. O'Neil, and B. Lamb (2008): Enhancement and evaluation of the AIRPACT ozone and PM<sub>2.5</sub> forecast system for the Pacific Northwest, *J. Geophys. Res.*, 113, doi:10.1029/2007JD009554.

### ***Selected Presentations and Posters***

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- Avise, J., B. Lamb, R. G. Abraham, S. Chung, E. Salathe, Y. Zhang, A. Guenther, C. Wiedinmyer, T. Strand, D. McKenzie, E. N. Stavros, S. Larkin, and T. Duhl (2013). Policy Relevant Pollutant Background Simulations for the US using a Multi-scale Regional Climate Modeling System. *2013 AMS Annual Meeting*, Austin, TX.
- Avise, J., R. G. Abraham, S. H. Chung, B. Lamb, E. P. Salathe, Y. Zhang, D. G. Streets, C. Nolte, D. Loughlin, A. Guenther, C. Wiedinmyer, T. Duhl, and J. Chen (2010). Influence of global changes on modeled ozone response to changes in local emissions and the policy implications for ozone abatement strategies in the US. *2010 AGU Fall Meeting*. San Francisco, CA.
- Avise, J., J. Chen, A. Guenther, B. Lamb, C. Wiedinmyer (2007). Impact of future land-use change on predicted BVOC emissions and their impact on regional air quality in the US. *2007 Gordon Research Conference for Biogenic Hydrocarbons*, Ventura, CA.
- Avise, J., J. Chen, B. Lamb, C. Wiedinmyer, A. Guenther, J.-F. Lamarque, E. Salathe, C. Mass, S. O'Neill, D. McKenzie, and N. K. Larkin (2005). Influence of Global Change on Regional Air Quality in the Pacific Northwest and Northern Midwest. *2005 NOAA/EPA Golden Jubilee Symposium on air Quality Modeling and its Applications*. Durham, NC.

- Avise, J., J. Chen, B. Lamb, C. Wiedinmyer, A. Guenther, J.-F. Lamarque, E. Salathe, C. Mass, S. O'Neill, D. McKenzie, and N. K. Larkin (2005). Influence of Global Change on Regional Air Quality in the Pacific Northwest and Northern Midwest Regions. *2005 EPA Science Forum, Collaborative Science for Environmental Solutions*. Washington, DC.
- Avise, J., J. Chen, B. Lamb, C. Wiedinmyer, A. Guenther, J.-F. Lamarque, E. Salathe, and C. Mass (2004). Influence of Global Change and Asian Emissions on Regional Air Quality in the Pacific Northwest. *2004 AGU Fall Meeting, Global Climate Change*. San Francisco, CA.
- Avise, J., Y. Xie, J. Chen, and B. Lamb (2004). Source Footprint Analysis for Regional Particulate and Visibility Impact. *84th AMS Annual Meeting*. Seattle, WA.
- Avise, J., H. Peterson, and B. Lamb (2000). Concentration fluctuations and Plume Dispersion Within 100 meters of an Isolated Source During Stable Conditions. *80th AMS Annual Meeting*. Long Beach, CA.
- Avise, J., M. Dunleavy, and H. Peterson (1999). Near-source plume behavior under stable conditions. *39th Annual PNWIS/A&WMA Conference*. Kennewick, WA.