

Anthony W. King

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Education and Training:

Ph.D.	University of Tennessee, Knoxville	Ecology	1986
M.S.	Arkansas State University, Jonesboro	Biology	1981
B.S.	Arkansas State University, Jonesboro	Zoology	1978

Professional Positions:

Research Staff Member (1992-present), Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN.
 Research Associate (1987-1992), Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN.

Awards and Honors:

2008: Oak Ridge National Laboratory Significant Event Award for publication of U.S. Climate Change Science Program Synthesis and Assessment Product 2.2, *The First State of the Carbon Cycle Report (SOCCR): The North American Carbon Budget and Implications for the Global Carbon Cycle*.

2008: Oak Ridge National Laboratory Outstanding Mentor Award

2002: Outstanding Paper in the Field of Landscape Ecology (with K.A. With, Analysis of landscape sources and sinks: the effect of spatial pattern on avian demography. *Biological Conservation* 100:75-88), U.S. Chapter of the International Society for Landscape Ecology

2001: Scholarly/Professional Articles Award, East Tennessee Chapter of the Society for Technical Communication.

1999: Lockheed Martin Energy Research Corporation, Research Accomplishment Award, Technical Publication.

1999: Technical Communication Award, Merit in Scholarly and Professional Articles, East Tennessee Chapter of the Society for Technical Communication.

1991: Technical Communication Award, Distinguished in Scholarly and Professional Articles East Tennessee Chapter of the Society for Technical Communication.

1991: Martin Marietta Energy Systems Team Technical Achievement Award,.

1986: University of Tennessee Chancellor's Citation for Extraordinary Professional Promise.

1986: University of Tennessee Science Alliance Fellowship.

1985: University of Tennessee Graduate Program in Ecology Fellowship.

1981: Arkansas State University Outstanding Achievement in Biology --- M.S.

1978: Arkansas State University Outstanding Achievement in Zoology---B.S.

Research Interests:

Terrestrial carbon cycle/ecosystem modeling, impact of climate change on ecological and social systems, terrestrial ecosystems as part of the global Earth system, theory of scale and system

organization in ecology, landscape ecology and spatial demography, land-use change, model sensitivity and uncertainty analysis, model evaluation.

Selected Publications

In Review/Submitted

KC, Binita, Anthony W. King, Sujithkumar Surendran Nair. Evidence of an Environmental Kuznets Curve for US Cities. Submitted and in review with *Cities*.

In revision

KC, Binita, JM Shepherd, Anthony W. King, Cassandra Johnson Gaither. Multi-hazard climate risk projections for the United States. Submitted to *Nature Communications*, rejected, in revision.

KC, Binita, AW King, S Surendran Nair. Beyond population: multidimensional typologies, globalization and uniqueness of US cities. Submitted to *PLOS ONE*, rejected, in revision.

Surendran Nair, S, B. Preston, A.W. King. Economic losses from extreme weather in the Gulf Coast region: Contributions from climate regime and socioeconomic exposure. Submitted to *Global Environmental Change*, rejected, in revision for submission to *Environmental Research Letters*.

Published

Jensen AM, J Warren, AW King, D Ricciuto, P Hanson, S Wullschleger. 2018. Simulated projections of boreal forest peatland ecosystem productivity are sensitive to observed seasonality in leaf physiology. *Tree Physiology*: tpy140, <https://doi.org/10.1093/treephys/tpy140>.

Jager, Henriette, Anthony W. King, Sudershan Gangrade, Angelina Hains, Christopher DeRolph, Bibi Naz, Moetasim Ashfaq. 2018. Will future climate change increase the risk of violating minimum flow and maximum temperature thresholds below dams in the Pacific Northwest? *Climate Risk Management* 21:69-84. <https://doi.org/10.1016/j.crm.2018.07.001>

Huntzinger, D.N., A. M. Michalak, C. Schwalm, P. Ciais, A.W. King, Y. Fang, K. Schaefer, Y. Wei, R.B. Cook, J.B. Fisher, D. Hayes, M. Huang, A. Ito, A. K. Jain, H. Lei, C. Lu, F. Maignan, J. Mao, N. Parazoo, S. Peng, B. Poulter, D. Ricciuto, X. Shi, H. Tian, W. Wang, N. Zeng, F. Zhao. 2016. Uncertainty in the response of terrestrial carbon sink to environmental drivers undermines carbon-climate feedback predictions. *Scientific Reports* 7: 4765 | DOI:10.1038/s41598-017-03818-2

Sorokine, A., R. Karthik, A. W. King, B. Budhendra. 2016. Big Data as a Service from an Urban Information System. Pp 34-41 in BigSpatial '16 Proceedings of the 5th ACM SIGSPATIAL International Workshop on Analytics for Big Geospatial Data , Burlingame, CA, October 31, 2016. DOI: <http://dx.doi.org/10.1145/3006386.3006391>

Surendran Nair, S., B. L. Preston, A. W. King and R. Mei. 2016. Using landscape typologies to model socioecological systems: Application to agriculture of the United States Gulf Coast. *Environmental Modelling & Software* 79: 85-95.

Mao, J., D. M. Ricciuto, P. E. Thornton, J. M. Warren, A. W. King, X. Shi, C. M. Iversen and R. J. Norby. 2016. Evaluating the Community Land Model in a pine stand with shading manipulations and ¹³CO₂ labeling. *Biogeosciences* 13(3): 641-657.

Ito, A., M. Inatomi, D. N. Huntzinger, C. Schwalm, A. M. Michalak, R. Cook, A. W. King, J. Mao, Y. Wei, W. M. Post, W. Wang, M. A. Arain, S. Huang, D. J. Hayes, D. M. Ricciuto, X.

- Shi, M. Huang, H. Lei, H. Tian, C. Lu, J. Yang, B. Tao, A. Jain, B. Poulter, S. Peng, P. Ciais, J. B. Fisher, N. Parazoo, K. Schaefer, C. Peng, N. Zeng and F. Zhao 2016. Decadal trends in the seasonal-cycle amplitude of terrestrial CO₂ exchange resulting from the ensemble of terrestrial biosphere models. *Tellus B*, 68, may. 2016.
- Xu, X., D. Hui, A. W. King, X. Song, P. E. Thornton and L. Zhang. 2015. Convergence of microbial assimilations of soil carbon, nitrogen, phosphorus, and sulfur in terrestrial ecosystems. *Scientific Reports* 5: 17445.
- King, A. W., Andres, R. J., Davis, K. J., Hafer, M., Hayes, D. J., Huntzinger, D. N., de Jong, B., Kurz, W. A., McGuire, A. D., Vargas, R., Wei, Y., West, T. O., and Woodall, C. W. 2015. North America's net terrestrial carbon exchange with the atmosphere 1990–2009. *Biogeosciences* 12, 399–414.
- Schwalm, C. R., D. N. Huntzinger, J. B. Fisher, A. M. Michalak, K. Bowman, P. Ciais, R. Cook, B. El-Masri, D. Hayes, M. Huang, A. Ito, A. Jain, A. W. King, H. Lei, J. Liu, C. Lu, J. Mao, S. Peng, B. Poulter, D. Ricciuto, K. Schaefer, X. Shi, B. Tao, H. Tian, W. Wang, Y. Wei, J. Yang, and N. Zeng (2015), Toward “optimal” integration of terrestrial biosphere models. *Geophys. Res. Lett.*, 42, 4418–4428. doi:10.1002/2015GL064002.
- Preston, Benjamin L., Anthony W King; Syeda M Absar; Kathleen M Ernst; Sujithkumar S Nair; Esther S Parish. 2015. Scale and the Representation of Human Agency in the Modeling of Agricultural Systems. *Current Opinion in Environmental Sustainability*. doi:10.1016/j.cosust.2015.05.010. Available online <http://www.sciencedirect.com/science/article/pii/S1877343515000524>
- Mao, J., W. Fu, X. Shi, D. M. Ricciuto, J. B. Fisher, R. E. Dickinson, Y. Wei, W. Shem, S. Piao, K. Wang, C. R. Schwalm, H. Tian, M. Mu, A. Arain, P. Ciais, R. Cook, Y. Dai, D. Hayes, F. M. Hoffman, M. Huang, S. Huang, D. N. Huntzinger, A. Ito, A. Jain, A. W. King, H. Lei, C. Lu, A. M. Michalak, N. Parazoo, C. Peng, S. Peng, B. Poulter, K. Schaefer, E. Jafarov, P. E. Thornton, W. Wang, N. Zeng, Z. Zeng, F. Zhao, Q. Zhu and Z. Zhu (2015). "Disentangling climatic and anthropogenic controls on global terrestrial evapotranspiration trends." *Environmental Research Letters* 10(9): 094008.
- Jiafu Mao, Daniel M. Ricciuto, Peter E. Thornton, Jeffrey M. Warren, Anthony W. King, Xiaoying Shi, Colleen M. Iversen and Richard J. Norby. 2015. Evaluating the Community Land Model in a pine stand with ¹³CO₂ and shading manipulations. *Biogeosciences Discuss.*, 12, 6971–7015.
- King, A. W., Andres, R. J., Davis, K. J., Hafer, M., Hayes, D. J., Huntzinger, D. N., de Jong, B., Kurz, W. A., McGuire, A. D., Vargas, R., Wei, Y., West, T. O., and Woodall, C. W. 2014: North America's net terrestrial carbon exchange with the atmosphere 1990–2009, *Biogeosciences Discuss.*, 11, 11027-11059, doi:10.5194/bgd-11-11027-2014, 2014.
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- Wang, D., Y. Xu, P. Thornton, A. King, C. Steed, L. Gu, J. Schuchart. 2014. A Functional Testing Platform for the Community Land Model. *Environmental Modelling and Software*. 55:25-31.
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- D. N. Huntzinger, C. Schwalm, A. M. Michalak, K. Schaefer, A. W. King, Y. Wei, A. Jacobson, S. Liu, R. B. Cook, W. M. Post, G. Berthier, D. Hayes, M. Huang, A. Ito, H. Lei, C. Lu, J. Mao, C. H. Peng, S. Peng, B. Poulter, D. Ricciuto, X. Shi, H. Tian, W. Wang, N. Zeng, F. Zhao, and Q. Zhu. 2013. The North American Carbon Program Multi-scale synthesis and Terrestrial Model Intercomparison Project – Part 1: Overview and experimental design. *Geosci. Model Dev. Discuss.* 6:3977-4008. www.geosci-model-dev-discuss.net/6/3977/2013/ doi:10.5194/gmdd-6-3977-2013.
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- King, A.W., D.J. Hayes, D.N. Huntzinger, T.O. West, W.M. Post. 2012. North America carbon dioxide sources and sinks: magnitude, attribution, and uncertainty. *Frontiers in Ecology and Environment* 10:512-519.
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World Wide Web

DOD Climate Science Support: SOUTHCOM Updates and revisions.
<http://www.ornl.gov/sci/knowledgediscovery/QDR/southcom.html>

Current Professional Activities/Research Projects:

Senior Investigator, Department of Energy, Office of Science project, Terrestrial Ecosystem Science Scientific Focus Area: *Carbon Cycle Modeling*, (P. Thornton, Co-PI).

Recent Professional Activities/Projects:

Co-PI, Urban Typologies: Towards an ORNL Urban Information System. Oak Ridge National Laboratory LDRD Project (Oct 2015-Sep 2016)
Member, Carbon Cycle Program Scientific Steering Group (2010-2014)
Member, North American Carbon Program Scientific Steering Group (2010-2014).

- Technical Input to National Climate Assessment: *North America carbon dioxide sources and sinks: magnitude, attribution, and uncertainty*, King, AW, DJ Hayes, DN Huntzinger, TO West, WM Post.
- Technical Input to National Climate Assessment: *Management opportunities to enhance terrestrial CO₂ sinks*. Post, WM, RC Izaurrealde, TO West, MA Liebig, AW King.
- Defense Environmental International Cooperation (DEIC) Concept Paper: *Multiple Stressor Scenarios for Regional Security Planning*. Goran, WD, *et al.* March 2012
- PI, Department of Defense, OUSD(P) Project, *Projection and Analysis of Climate Change Impact on Defense Interests*.
- Investigator, ORNL LDRD Project, *Modeling Long-term Population Resettlement under Climate Change Scenarios*, (B. Bahduri, PI).
- Senior Investigator, Department of Energy, Office of Science project, *Investigation of the Magnitudes and Probabilities of Abrupt Climate TransitionS (IMPACTS) Project*, (W.M. Post, Co-PI).
- PI, Department of Energy, Office of Science Project, *Multi-agent simulation of Hierarchical Organization*.
- Senior Investigator, contracted project with Parson Brinckerhoff America, Inc., *Assessment of the Vulnerability of New York City to Sea-Level Rise*, (B. Preston, PI).
- Co-Chair, North American Carbon Program Scientific Steering Group (2008-2010).
- Co-PI, B. Ross (Lead) (2008-2009), *Projection and Analysis of Climate Change Impact on Defense Interests*, scientific assessment in support of US Dept of Defense 2010 Quadrennial Defense Review.
- Primary Contributor, *QDR Climate Change Support*
<http://www.ornl.gov/sci/knowledgediscovery/QDR/>
- PI, ORNL LDRD Project (2009-2010). *Mitigation of Atmospheric CO₂ through Management of Woody Biomass*
- PI, ORNL LDRD Project (2010). *Scale Dependency in Dynamical Downscaling of Extreme Climate Events over Complex Topography*
- PI, ORNL Program Development (2010). *Translating Climate Science to Sponsor Needs: A Program Development Plan of Action*
- Co-PI, ORNL LDRD Project, W.C. Lenhardt (PI) (2009-2010) *Enhancing Climate Impact Integrated Assessment for Water through Climate Informatics*
- Co-PI, ORNL LDRD Project, T. Wilbanks PI (2008-2009), *Possible Impacts of Relatively Severe Climate Change*. Lead for collaboration on North India with colleagues at TERI, New Delhi

Educational Outreach:

Instructor, Oak Ridge Institute of Continued Learning, *Climate Change in the United States: The US Global Change Research Program Climate Science Special Report*, February-April 2018.

Instructor, with Binita KC, Oak Ridge Institute of Continued Learning, *The Impacts of Climate Change on Human Health*, Sept-Dec 2017

Instructor, with Melissa Allen, Oak Ridge Institute of Continued Learning, *Growing Cities in a Changing Climate: The Challenge of Urban Sustainability*, February-March 2017.

Instructor, Oak Ridge Institute of Continued Learning, *Urbanization and the Environment: The New Science of the City*, June-August 2016.

Instructor, Oak Ridge Institute of Continued Learning, *Climate Change and National Security*, June 8-August 7, 2015.

Instructor, Oak Ridge Institute of Continued Learning, *Adaptation to Climate Change: An Ecological Perspective*, Feb-Apr 2013.