

## *Curriculum Vitae*

**Atul K. Jain**  
Professor

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### ***Professional Address***

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### **Educational Background and Professional Experience**

#### **Education Background**

B.Sc. (Physics, Chemistry and Mathematics) Meerut University, India, 1980  
M.Sc. (Mathematics) Meerut University, India, 1983  
Ph.D. (Atmospheric Sciences) Indian Institute of Technology, New Delhi, India, 1988

#### **Professional Experience**

January 1988–December, 1990

Research Associate, Center for Applied Climatology and Environmental Studies, Department of Geography, University of Münster, D-4400 Münster, Germany.

January 1991–December 1992

Senior Research Associate, Center for Applied Climatology and Environmental Studies, Department of Geography, University of Münster, D-4400 Münster, Germany.

January 1993–November 1994

Post Doctoral Research Staff Member, Global Climate Research Division, Lawrence Livermore National Laboratory, Livermore, CA 94550, USA.

December 1994 - May 2000

Assistant Research Professor/Research Scientist, Department of Atmospheric Sciences, University of Illinois at Urbana-Champaign, IL, USA.

June 2000 – July 2002

Associate Research Professor, Department of Atmospheric Sciences, University of Illinois at Urbana-Champaign, IL, USA.

January 2001 - May 2001

Associate Research Professor, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, IL, USA.

January 2002 – May 2002

Visiting Lecturer, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, IL, USA.

August 2002 – August 2006

Assistant Professor, Department of Atmospheric Sciences, University of Illinois at Urbana-Champaign, IL, USA.

August 2006 – August 2010

Associate Professor, Department of Atmospheric Sciences, University of Illinois at Urbana-Champaign, IL, USA.

August 2010 – Cont.

Professor, Department of Atmospheric Sciences, University of Illinois at Urbana-Champaign, IL, USA.

January 2004-present

Faculty Affiliate, Program in Ecology and Evolutionary Biology, University of Illinois at Urbana-Champaign, IL, USA.

### **Honors, Recognitions, and Outstanding Achievements**

Invited Expert<sup>§</sup>, Dahlen Workshop on Limiting The Greenhouse Effect: Options for Controlling Atmospheric CO<sub>2</sub> Accumulation, Berlin, Dec. 9-14, 1990.

Invited Author, UN Intergovernmental Panel on Climate Change (IPCC) Report “*Climate Change 1994: Radiative Forcing of Climate Change*”, 1995.

Invited Author, UN Intergovernmental Panel on Climate Change (IPCC) Report “*Climate Change 1995: The Science of Climate*”, 1996.

Invited Lead Author, UN Intergovernmental Panel on Climate Change (IPCC) Report “*Implications of Proposed CO<sub>2</sub> Emissions Limitations*”, 1997.

Invited Author, UN Intergovernmental Panel on Climate Change (IPCC) Report “*Implications of Proposed CO<sub>2</sub> Emissions Limitations*”, 1997.

Invited Lead Author, UN Intergovernmental Panel on Climate Change (IPCC) Report “*An Introduction to Simple Climate Models used in the IPCC Second Assessment Report*”, 1997.

Invited Author, UN Intergovernmental Panel on Climate Change (IPCC) Report “*Aviation and The Global Atmosphere*”, 1999.

Invited Author, UN Intergovernmental Panel on Climate Change (IPCC) Report “*Climate Change 2001: The Scientific Basis*”, 2001.

Invited Expert<sup>§</sup>, Second United Nations Framework Convention on Climate Change (UNFCCC) Expert Meeting on “*The Scientific and Methodological Assessment of Contributions to Climate Change*”, Bracknell, UK, Sept. 25-27, 2002.

Recipient of the *National Science Foundation Career Award*, March 2003.

Invited Expert<sup>§</sup>, Department of Energy (DOE) workshop on *Integrated Assessment: Characterizing Key Policy Issues*, June 28-29, 1994.

Invited Expert<sup>§</sup>, Third United Nations Framework Convention on Climate Change (UNFCCC) Expert Meeting on “*The Scientific and Methodological Assessment of Contributions to Climate Change*”, Berlin, Germany, Sept. 9-8, 2003.

Invited to brief Swiss “Environmental Expert” group (including parliamentarians, NGOs, trade groups) on climate sensitivity and uncertainty, *The US Department of State*, Chicago, IL, October 30, 2003.

Invited Expert<sup>§</sup>, *Fourth Expert Meeting on the scientific and methodological aspects of the proposal by Brazil / MATCH*, Cologne, Germany, 6-7 May, 2004.

Invited Participant, 2004 *Beckman Frontier of Sciences Symposium*, US National Academy of Sciences, Irvine, CA.

Nominated *Dean’s Teaching Fellow for AY 2004/2005*

Appointed *Center for Advance Studies Fellow for AY 2005/2006*

*Incomplete List of Teachers Ranked as Excellent*, Fall 2005, for ENVS 301

Invited Expert<sup>s</sup>, *Sixth Expert Meeting on the scientific and methodological aspects of the proposal by Brazil / MATCH*, Louvain-La-Neuve, Belgium, March 13-14, 2006.

*Incomplete List of Teachers Ranked as Excellent*, Fall 2006, for ENVS 301.

*List of Teachers Ranked as Excellent*, Fall 2007, for ENVS 301.

2007 Nobel Peace Prize, shared based on work with Intergovernmental Panel on Climate Change

Invited Panelist, for a panel discussion on global warming at the *21<sup>st</sup> Annual Environmental Conference and Expo*, Iowa-Illinois Safety Council, Stony Creek Inn, Moline, IL, September 27, 2007

Invited to participate as a keynote speaker at the *First Global Summit on Sustainable Development and Biodiversity 2008*, to be held in India, Dec 10-12, 2008.

Appointed *National Center for Super Computing Application (NCSA) Fellow for AY 2008/2009*

Appointed a member of the *NASA-LCLUC (Land Cover and Land Use Change) Science Team (2008-cont.)*.

Appointed a member of the *NASA-MAIRS (Monsoon Asia Integrated Regional Study) Science Team (2008-cont.)*.

Elected a representative from electoral group VII for service on the *UIUC LAS Council on General Education (AY 2008-cont.)*.

Received *Green Ambassador of India Award* for contribution towards promoting Global Agenda for ecological health of the Planet through Research and Scientific Contribution, First Global Summit on Sustainable Development and Biodiversity 2008, Raipur, Chhattisgarh, India, February 7-9, 2009.

Delivered a keynote talk at the *American Physical Society/Ohio-Region Section Meeting (OSAPS)*, Youngstown State University, Youngstown, OH, March 28, 2008.

Delivered a keynote talk at the *First Global Summit on Sustainable Development and Biodiversity (GLOSS 2008)*, Raipur, Chhattisgarh, India, February 7-9, 2009.

UIUC reorganization on the *Nobel Laureate page of the University of Illinois website (<http://illinois.edu/about/overview/facts/nobel.html>)* of 2007 Nobel Peace Prize that I shared based on work with Intergovernmental Panel on Climate Change.

Invited Discussion Panelist, *First Annual Integrated Assessment Modeling Group meeting*, NCAR, Boulder, CO., August 4-5, 2010.

Invited to deliver a series of lectures at the *United Nations (UN) Center for Space Science and Technology for Asia Pacific*, Dehradun, India, December 5-8, 2010.

Invited Discussion Panelist, *Advancing Land-use Modeling and Analysis for Carbon Cycling Studies Workshop*, Princeton University, Princeton, NJ, May 17-19, 2011.

Invited Discussion Panelist, *Societal Dimensions of Earth System Modeling Workshop*, Organized by NCAR to identify the types of activities that a Societal Dimensions working group could undertake and their potential benefits to the community, NCAR, Boulder, CO, May 25-26, 2011.

Appointed Member, *National Academy of Sciences Committee on Needs and Research Requirements for Land-Change Modeling*, October 2011 – December 2012.

Invited to give a series of lectures at *the United Nations (UN) Center for Space Science and Technology for Asia Pacific*, Dehradun, India, November 18-26, 2011.

Invited Author<sup>§</sup>, *UN Intergovernmental Panel on Climate Change (IPCC) WG I Fifth Assessment Report*, “*Climate Change 2013: The Physical Science Basis*” (Published in 2013).

Invited Author<sup>§</sup>, *UN Intergovernmental Panel on Climate Change (IPCC) WG III Fifth Assessment Report*, “*Mitigation of Climate Change*” (Published in 2014).

Invited Author<sup>§</sup>, *National Academic of Sciences report entitled “Advancing Land Change Modeling: Opportunity and Research Requirements,”* National Academy Press, 500 Fifth Street, N.W., Lockbox 285, Washington, DC 20055 (Published in 2014).

<sup>§</sup>*These meetings, for which I was invited expert, are convened by government or international agencies to develop policy based upon the best scientific information.*

### Conference/Workshop Chair

Session Chair, *Fall 1995 American Geophysical Union (AGU) Meeting* titled *Global Carbon Cycle's Role in Global Change II*, Dec. 11-15, 1995.

Session Chair, *Fall 1995 American Geophysical Union (AGU) Meeting*, session titled “*Global Carbon Cycle's Role in Global Change*”, San Francisco, CA, Dec. 11-15, 1995.

Session Chair, *Spring 1996 American Geophysical Union (AGU) Meeting*, session titled “*Global Carbon Cycle's Role in Global Change*”, Baltimore, MD, May 20-24, 1996.

Session Chair, *Intl. Conference on Climate Change and Environmental Policy*, session titled “*The Role of Agriculture in Mitigating Climate Change*”, University of Illinois @ Urbana-Champaign, Nov 11-12, 2002.

Session Chair, *Intl. Conference on Climate Change and Environmental Policy*, session titled “*The Role of Agriculture in Mitigating Climate Change*”, University of Illinois @ Urbana-Champaign, Nov 11-12, 2002.

Session Chair, *Fall 2007 American Geophysical Union (AGU) Meeting*, session titled “*The Role of Climate, Carbon and Limiting Nutrient Cycles and Human Activities in Terrestrial Ecosystems*”, San Francisco, CA, Dec. 10-14, 2007.

Session Chair, *Fall 2008 American Geophysical Union (AGU) Meeting*, session title “*Impact on Terrestrial Ecosystems of CO<sub>2</sub>, Climate, Limiting Nutrients, Human Activities, and Biofuel Production*” at 2008 FALL AGU Meeting”, San Francisco, CA, Dec. 15-19, 2008.

Session Chair, *Fall 2009 American Geophysical Union (AGU) Meeting*, session title “*The Role of Climate, Carbon and Limiting Nutrient Cycles and Human Activities in the Terrestrial Ecosystems*”, San Francisco, CA, Dec. 14-18, 2009.

Session Chair, *Fall 2010 American Geophysical Union (AGU) Meeting*, session title “*Improving predictions of the global carbon cycle and climate: New mechanisms, feedback loops and approaches for model evaluation*”, San Francisco, CA, Dec. 13-17, 2010.

Session Chair, *Fall 2010 American Geophysical Union (AGU) Meeting*, session title “*Attribution of the Change in CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O Atmospheric Abundances to Historical, National, and Natural Emissions*”, San Francisco, CA, Dec. 13-17, 2010.

Session Chair, *Fall 2011 American Geophysical Union (AGU) Meeting*, session title “*Improving predictions of the global carbon cycle and climate: New mechanisms, feedback loops and approaches for model evaluation*”, San Francisco, CA, Dec. 5-9, 2011.

- Session Chair, *National Research Council Workshop - Needs and Research for Land Change Modeling*, session title “Land-Climate Interactions”, Chapel Hill, NC, February 15-17, 2012.
- Session Chair, *Fall 2012 American Geophysical Union (AGU) Meeting*, session title “Improving predictions of the global carbon cycle and climate: New mechanisms, feedback loops and approaches for model evaluation”, San Francisco, CA, Dec. 3-7, 2012.
- Session Chair, Workshop on *Land Cover and Land Use Change Dynamics and their Impacts in South Asia*, session title “LCLUC Forestry and Carbon Cycle”, Karunya University, Coimbatore, India, January 7-14, 2013.
- Session Chair, *9<sup>th</sup> International Carbon Dioxide Conference*, session title “Past and Present Changes and Variability”, Beijing, China, June 3-7, 2013.
- Session Chair, *Fall 2013 American Geophysical Union (AGU) Meeting*, session title “Improving predictions of the global carbon cycle and climate: New mechanisms, feedback loops and approaches for model evaluation”, San Francisco, CA, Dec. 9-13, 2013.
- Session Chair, *Global Change Research Symposium Human and Ecosystem Response to Global Change Evidence and Application*, session title “Coupled Human and Natural System”, Brindisi/Ostuni, Italy, Sept 16-18, 2014.
- Session Chair, *Fall 2014 American Geophysical Union (AGU) Meeting*, session title “Improving predictions of the global carbon cycle and climate: New mechanisms, feedback loops and approaches for model evaluation”, San Francisco, CA, Dec. 15-19, 2014.
- Session Chair, *iSEE Congress 2015: Water Planet, Water Crises? Meeting the World’s Water-Food-Energy Needs Sustainably*, session title “Vulnerability of Water Resources to Climate Change”, Urbana, IL, Sept 14-16, 2015.
- Session Chair, *Asiaflux Workshop 2015: Challenges and Significance of Ecosystem Research in Asia to Better Understand Climate Change*, session title “The role of climate, carbon cycle and human activities in tropical ecosystem”s, Pune, India, Nov. 22-29, 2015.
- Session Chair, *Fall 2015 American Geophysical Union (AGU) Meeting*, session title “Improving predictions of the global carbon cycle and climate: New mechanisms, feedback loops and approaches for model evaluation”, San Francisco, CA, Dec. 13-18, 2015.
- Session Chair, *International Land Model Benchmarking (ILAMB) Workshop in the U.S.*, session title “CMIP6 Evaluation Priorities: Land Use Model Intercomparison Project (LUMIP)”, Washington DC, May 16–18, 2016

### Review Panelist

- NASA Review Panelist for NRA-03-OES-03, *Interdisciplinary Science in the NASA Earth Science Enterprise*, June 2003.
- Invited Review Panelist, *NSF peer review panel for Integrative Research and Education Traineeship Program (IGERT)*, Arlington VA, June 1-2, 2009.
- Invited Review Panelist, *U.S. Department of State/National Academies Review Panel for the Pakistan-U.S. Science and Technology Cooperative Program*, National Academic of Sciences, Washington, DC, June 16-17, 2010.
- Invited Review Panelist, U.S. Department of Energy (DOE) review panel to evaluate *Lawrence Berkley National Laboratory’s (LBNL) Climate Science Plan*, LBNL, Berkley, CA, September 8-9, 2010.
- Invited Review Panelist, *U.S. Department of Energy (DOE) Review Panel on Next Generation Ecosystem Experiment (NGEE)*, Arlington, Virginia, Aug 3-4, 2011.

Invited Review Panelist, *U.S. NASA Review Panel on Interdisciplinary Research in Earth Science (IDS)*, Bethesda, MD, March 1-2, 2012.

Invited Review Panelist, *U.S. NASA Review Panel on Modeling, Analysis and Prediction (MAP) program*, Teleconference, January 28, 2013.

Invited Review Panelist, *U.S. Department of Energy (DOE) Review Panel on Earth System Modeling (ESM) and Terrestrial Ecosystem Sciences (TES)*, Washington, DC, March 4, 2013.

Invited Review Panelist, *U.S. Department of State/National Academies Review Panel for the Pakistan-U.S. Science and Technology Cooperative Program*, National Academic of Sciences, Washington, DC, May 16-17, 2013.

Invited Review Panelist, *U.S. Department of Energy Early Career Panel Review for Climate and Environmental Science Division*, Gaithersburg, MD, Feb 8-9, 2015.

Invited Review Panelist, *U.S. Department of State/National Academies Review Panel for the Pakistan-U.S. Science and Technology Cooperative Program*, National Academic of Sciences, April 20, 2015.

Invited Review Panelist, *U.S. Department of Energy Early Career Panel Review for Climate and Environmental Science Division Research Program*, in the topic area of “Human Component in Climate Models”, February 19, 2016.

#### **Membership in Professional Societies**

Member, American Geophysical Union

Member, American Meteorological Society

#### **Editorships of Journals or Other Learned Publications**

*Associate Editor*, International Journal of Integrated Energy Systems, July 2008 – Cont.

*Editorial Board Member*, Journal Earth Science India (eISSN: 0974 – 8350), January-cont., 2011.

*Editorial Board Member*, Agronomy – An Open Access Journal, January 2015 – Cont.

#### **Financial Grants and Contracts Received**

#### **Financial Grants and Contracts Received**

Awarded grants and contracts totaling approximately \$25 million from the following sources since appointed to the University of Illinois:

Electric Power Research Institute (EPRI)

Energy Bioscience Institute (EBI), University of Illinois (UIUC)

Environmental Council Earth and Society Initiative, University of Illinois (UIUC)

National Center for Super Computing Applications (NCSA), University of Illinois (UIUC)

The U.S. Department Of Energy (DOE)

The U.S. Environmental Protection Agency (EPA)

The U. S National Aeronautics and Space Administration (NASA)

The U. S National Science Foundation (NSF)

The U.S. Department Of Agriculture (USDA)

The U.S. Geological Survey (USGS)

#### **Current Funded Project**

The U.S. National Aeronautics and Space Administration (NASA) funded project entitled “Land Cover and Land Use Changes and Their Effects on Carbon Dynamics in South and South East Asia: A Synthesis Study”, April 1, 2014 – March 2017 (Total Funded Amount \$800,000).

- U.S. National Science Foundation (NSF), Collaborative Research EaSM2: Linking Human and Earth System Models to Assess Regional Impacts and Adaption in Urban Systems and their Hinterlands, April 2013-May 2018 (*Lead PI: Brian O'Neill of NCAR*) (Total Funded Amount \$4,168,877).
- The U.S. Department Of Energy (DOE) funded project entitled "Investigating the impacts of changes in land cover and land management on climate using ACME", September 2016 – August 2019 (Total Funded Amount \$649,653).
- The U.S. Department Of Agriculture (USDA) funded project entitled "Useful to Usable (U2U): Transforming Climate Variability and Change Information for Cereal Crop Producers, Total award money \$5 million for five years", April 2011 – March 2017 (*Lead PI: L. Prokopy of Purdue University*) (Total Funded Amount \$5,000,000).

## Research Publications

### Articles in Journals

- Lal M. and **AK Jain**, 1985: The effect of atmospheric aerosols on earth's climate as calculated with 1-D radiative-convective model, *Proc. Indian National Science Academy*, A15, 735-740.
- Jain AK**, M Lal and MC Sinha, 1986: On the meridional variation of climatic changes due to doubling of CO<sub>2</sub> content in the atmosphere, *Theoretical and Applied Climatology*, 37, 15-20.
- Lal, M., **A.K. Jain** and M.C. Sinha, 1987: Possible climate implications of depletion of Antarctic ozone, *Tellus*, 39B, 326-328.
- Lal M and **AK Jain**, 1988: Climatic effect of observed changes in atmospheric trace gases at Antarctica, *Atmospheric Environment*, 22, 2047-48.
- Bach W. and **AK Jain**, 1990: CFC greenhouse potential of scenarios possible under the Montreal Protocol, *Intl. J. Climatology*, 10, pp 439-450.
- Bach W and **AK Jain**, 1991: Towards Climate Conventions Scenario Analysis for a Climatic Protection Policy, *Ambio*, 20, 322-329.
- Bach W and **AK Jain**, 1992: Climate and Ecosystem Protection Requires Burden Sharing: The Specific Task After Rio (I), *Prospective in Energy*, 2, 67-93.
- Bach W and **AK Jain**, 1993: Climate and Ecosystem Protection Requires Binding Emission Targets: The Specific Task After Rio(II), *Prospective in Energy*, 2/3, 173-214.
- Jain AK** and W Bach, 1994: The effectiveness of measures to reduce the man-made greenhouse effect: the application of a climate-policy-model, *Theoretical and Applied Climatology*, 49, 103-118.
- Jain AK**, HS Khashgi, MI Hoffert, and DJ Wuebbles, 1995: Distribution of Radiocarbon as a Test of Global Carbon Cycle Models, *Global Biogeochemical Cycles*, vol. 9, 153-166.
- Wuebbles DJ, **AK Jain**, K.O. Patten, and K.E. Grant, 1995: Sensitivity of Direct Global Warming Potentials to Uncertainties, *Climatic Change*, 29, 265-297.
- Hammitt JK, **AK Jain**, J.L. Adams, and D.J. Wuebbles, 1996: A welfare-based "Economic-Damage Index" for comparing greenhouse-gas emissions, *Nature*, 381, 301-303.
- Hammitt, J. K., **A.K. Jain**, D.J. Wuebbles, and J.L. Adams, J. L. 1996: Costing the earth, *Nature*, 383, 571.
- Jain, A. K.**, H.S. Khashgi, and D.J. Wuebbles, 1996: A globally Aggregated Reconstruction of Cycles of Carbon and its Isotopes, *Tellus*, 48B, 583-600.
- Khashgi, H.S., **A.K. Jain**, and D.J. Wuebbles, 1996: Accounting for the Missing Sink with the CO<sub>2</sub> Fertilization Effect, *Climatic Change*, 33, 31-62.
- Jain, A.K.**, H.S. Khashgi, and D.J. Wuebbles, 1997: Is there an imbalance in the global budget of bomb-produced radiocarbon? *J. Geophys. Res.*, 102, 1,327-1,333.

- Good, D.A., Francisco, J.S., **A.K. Jain**, and D.J. Wuebbles, 1998: Lifetimes and global warming potentials for Dimethyl Ethers and for Fluorinated Ethers: CH<sub>3</sub>OCF<sub>3</sub> (E143a), CHF<sub>2</sub>OCHF<sub>2</sub> (E134), CHF<sub>2</sub>OCF<sub>3</sub> (E125), *J. Geophys. Res.* **103**, 28,181-28,186.
- Hayhoe, K., **A. Jain** and D. Wuebbles, 1998: Trade-Offs in Fossil Fuel Use: The Effects of CO<sub>2</sub>, CH<sub>4</sub> and SO<sub>2</sub> Aerosol Emissions on Climate, *World Resources Review*, **10**, 321-333.
- Hoffert M.I., K. Caldeira, **A.K. Jain**, E.F. Haites, L.D.D. Harvey, S. D. Potter, M.E. Schlesinger, S. H. Schneider, R.G. Watts, T. M. L Wigley, and D. J. Wuebbles. 1998: Energy Implications of CO<sub>2</sub> Stabilization, *Nature*, **395**, 881-884.
- Wuebbles, D. J., **A.K. Jain**, K.O. Patten, and P.S. Connell, 1998: Evaluation of ozone depletion potentials for chlorobromomethane (CH<sub>2</sub>ClBr) and 1-Bromo-Propane (C<sub>3</sub>H<sub>7</sub>Br), *Atmospheric Environment*, **32**, 107-113.
- Calm, J.M., D.J. Wuebbles, and **A.K. Jain**, 1999: Impacts on global ozone and climate from use and emissions of 2,2-dichloro-1,1,1-trifluoromethane (HCFC-123), *Climatic Change*, **42**, 439-474.
- Hayhoe, K.A.S., **A.K. Jain**, H.M.Pitcher, C.N. MacCracken, M.J. Gibbs, D.J. Wuebbles, R. Harvey, and D. Kruger, 1999: Cost implications of multi-greenhouse gas reduction targets for the U.S., *Science*, **286**, 905-906.
- Kheshgi, H.S., **A.K. Jain**, R. Kotamarthi, D.J. Wuebbles, 1999: Future atmospheric methane concentrations in the context of the stabilization of greenhouse gas concentrations, *J. Geophys. Res.*, **104**, 19,183-19,190.
- Kheshgi, H. S., **A.K. Jain**, and D. J. Wuebbles, 1999: The global carbon budget and its uncertainty derived from carbon dioxide and carbon isotopes, *J. Geophys. Res.*, **104**, 31,127-31,144.
- Wuebbles, D.J., **A. Jain**, J. Edmond, D. Harvey, K. Hayhoe, 1999: Global change: state of the science, *Environmental Pollution*, **100**, 57-86.
- Jain, A.K.**, B. P. Briegleb, K. Minschwaner, D. J. Wuebbles, 2000. Radiative forcings and global warming potentials of thirty-nine greenhouse gases, *J. Geophys. Res.*, **105**, 20,773-20,790
- Li, Z., Z. Tao, V. Naik, D. A. Good, J. Hansen, G.R. Jeong, J. S. Francisco, **A.K. Jain**, D. J. Wuebbles, 2000: Global warming potential assessment for potential CFC replacement compounds: I. CF<sub>3</sub>OCF=CF<sub>2</sub>, *J. Geophys. Res.* **105**, 4019-4029.
- Naik, V., **A.K. Jain**, K.O. Patten, and D.J. Wuebbles, 2000: Consistent sets of atmospheric lifetimes and radiative forcings on climate for CFC replacements: HCFCs and HFCs, *J. Geophys. Res.*, **105**, 6,903-6,914.
- Hayhoe, K.A.S., H.S. Kheshgi, **A.K. Jain** and D. Wuebbles, 2001: Natural gas substitution in the utility sector: Climatic effects of CO<sub>2</sub>, CH<sub>4</sub> and SO<sub>2</sub> emissions, *Climatic Change*, **54**, 107-139.
- Jain, A.K.**, Z. Li, V. Naik, D. J. Wuebbles, D. A. Good, J.C. Hanson, J. S. Francisco, 2001: Evaluation of lifetime and radiative forcing on climate for 1,2,2,2-Tetrafluorethyl Trifluoromethyl Ether (CF<sub>3</sub>OCHF<sub>2</sub>CF<sub>3</sub>), *J. Geophys. Res.*, **106**, 12,615-12,618.
- Wuebbles, D.J., and **A.K. Jain**, 2001: Concerns about climate change and the role of fossil fuel use, *Fuel Processing Technology*, **71**, 99-119.
- Hoffert, M.I, K. Caldeira, G. Benford, D. R. Criswell, C. Green, H. Herzog, **A. K. Jain**, H. S. Kheshgi, K. S. Lackner, J. S. Lewis, H. D. Lightfoot, W. Manheimer, J.C. Mankins, G. Marland, M. E. Mauel, L. John Perkins, M.E. Schlesinger, T. Volk, T. M.L. Wigley, 2002: Advanced Technology Paths to Global Climate Stability: Energy for a Greenhouse Planet, *Science* **298**, 981-987.
- Calderia, K, **A. Jain**, M. Hoffert, 2003: Energy implications of uncertainty in climate sensitivity to increased atmospheric CO<sub>2</sub> concentration, *Science*, **299**, 2052-2054.
- Hoffert, M.I, K. Caldeira, G. Benford, D. R. Criswell, C. Green, H. Herzog, **A. K. Jain**, H. S. Kheshgi, K. S. Lackner, J. S. Lewis, H. D. Lightfoot, W. Manheimer, J.C. Mankins, G. Marland,



- M. E. Mauel, L. John Perkins, M.E. Schlesinger, T. Volk, T. M.L. Wigley, 2003: Planning for future energy resources, *Science*, 300, 581-584.
- Kheshgi, H.S., and **A.K. Jain**, 2003, Projecting future climate change: Implications of carbon cycle model intercomparison, *Global Biogeochemical Cycles*, 17(2), 1047, doi:10.1029/2001GB001842.
- Mueller, K., L. Cao, K. Caldeira, and **A. K. Jain**, 2004: Differing methods of accounting ocean carbon sequestration efficiency, *J. Geophys. Res.-Ocean*, 109, C12018, doi:10.1029/2003JC002252.
- West, T.O., G. Marland, A.W. King, W.M. Post, **A.K. Jain**, and K. Andrasko, 2004: Carbon management response curves: estimates of temporal soil carbon dynamics, *Environmental Management*, 33(4), 507-518.
- Cao, L., and **A. K. Jain**, 2005: An earth system model of intermediate complexity: simulation of the role of ocean mixing parameterizations and climate change in estimated uptake for natural and bomb radiocarbon and anthropogenic CO<sub>2</sub>, *J. Geophys. Res.-Ocean*, 110, C09002, doi:10.1029/2005JC002919.
- Jain, A.K.**, and L. Cao, 2005: Assessing the effectiveness of direct injection for ocean carbon sequestration under the influence of climate change, *Geophys. Res. Lett.*, 32, GRL09609, doi:10.1029/2005GL022818.
- Jain, A.K.** and X. Yang, 2005: Modeling the Effects of Two Different Land Cover Change Data Sets on the Carbon Stocks of Plants and Soils in Concert With CO<sub>2</sub> and Climate Change, *Global Biogeochemical Cycles*, 19, GB2015, doi:10.1029/2004GB002349.
- Jain, A.K.**, T. West, X. Yang, W. Post, 2005: Assessing the Impact of Changes in Climate and CO<sub>2</sub> on Potential Carbon Sequestration in Agricultural Soil, *Geophys. Res. Lett.*, 32, L19711, doi:10.1029/2005GL023922.
- Tao, Z. and **A.K. Jain**, 2005: Modeling of Global Biogenic Emissions for Key Indirect Greenhouse Gases and Their Response to Atmospheric CO<sub>2</sub> increases and Changes in Land Cover and Climate, *J. Geophys. Res.-Atmosphere*, 110, D21309, doi:10.1029/2005JD005874.
- Jain, A.K.**, Z. Tao, X. Yang, C. Gillespie, 2006: Estimates of Global Biomass and Biofuel Burning Emissions for Reactive Greenhouse Gases (CO, NMHCs, and NO<sub>x</sub>) and CO<sub>2</sub>, *J. Geophys. Res - Atmosphere*, 111, D06304, doi:10.1029/2005JD006237.
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- Land Use, Carbon Cycle and Climate Change, *Frontiers of Environmental Change Research: Climate Change Drivers, Impacts, and Policy*, Brown University, Providence RI, September 15-16, 2005.
- Estimates of Global Biomass Burning Emissions for Reactive Greenhouse Gases (CO, NMHCs, and NO<sub>x</sub>) and CO<sub>2</sub>, *International Conference on Mesoscale Processes in Atmosphere Ocean and Environmental Systems*, New Delhi, India, February 14-17, 2006.
- Human Influence on North America Terrestrial carbon Budget, *AAAS Annual Meeting "Grand Challenges, Great Opportunities"*, St. Louis, Missouri, USA, February 16-20, 2006.
- Carbon implications of Land Cover and land Use Changes, *Expert Meeting on the scientific and methodological aspects of the proposal by Brazil / MATCH*, Louvain-La-Neuve, Belgium, March 13-14, 2006.
- Estimates of Global Biomass Burning Emissions for CO<sub>2</sub>, *Community Climate System Model (CCSM) Biogeochemistry Working Group Meeting*, NCAR, Boulder CO., March 28-30, 2006.
- Integrated Assessment Modeling of Climate and Carbon Cycle, *NOAA, Alaska Fisheries Science Center*, Seattle WA 98115, July 27, 2006.
- Land Use Scenarios: Linking Biophysical and Socio-Economic Models, *Community Climate System Model (CCSM) Joint Working Groups Session on Land, Chemistry, and Biogeochemistry*, NCAR, Boulder CO., February 26-28, 2007.
- Estimating the Radiative Forcing of Climate, *ExxonMobil Research and Engineering Company*, Annandale, NJ, March 20 - 21, 2007.
- A Quick Look at the Science of Climate Change, *21<sup>st</sup> Annual Environmental Conference and Expo, Iowa-Illinois Safety Council*, Stoney Creek Inn, Moline, IL, September 27, 2007
- Terrestrial Carbon Sequestration: Net Greenhouse Gas Accounting and Biogeochemical Cycles *Argonne National Laboratory*, Argonne, IL, December 5, 2007
- Soil Carbon Sequestration Potential, *Workshop on Biologically Enhanced Carbon Sequestration (BECS)*, Lawrence Berkeley National Laboratory, Berkeley, CA, October 29, 2007.
- Global Warming and Climate Change Science, *American Physical Society/Ohio-Region Section Meeting (OSAPS)*, Youngstown State University, Youngstown, OH, March 28, 2008.

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- Biogeochemical Cycles and Climate Change, *The Joint Global Change Research Institute, University of Maryland*, College Park, MD, May 1, 2008.
- The Role of Nitrogen Dynamics in Terrestrial Biosphere, *Department of Global Ecology, Carnegie Institute of Sciences*, Stanford, CA, June 26, 2008.
- Integration of Bioenergy Crop Growth Model into ISAM, *Conference on Greenhouse Gas Emissions from Biofuels*, EBI, Berkeley, University of California, Berkeley, CA, June 9-10, 2008.
- Interactions between Climate Change and Earth's Climate System, *2008 Summer Teacher Institute - Climate Change: Biological & Social Implications*, University of Chicago, June 23-25, 2008
- The Role of Nitrogen Dynamics in Terrestrial Biosphere, *Department of Geography, Northern Illinois University*, DeKalb, IL, October 24, 2008.
- Modeling Miscanthus and Switchgrass Yields, *EBI Workshop on Bioenergy Crop Modeling and Land Use, UC-Berkeley*, October 9-10, 2008.
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- Land Cover and Land Use Change and Its Effect on Monsoon Asia Region, *NASA-LCLUC Science Team Meeting with MAIRS, GOFCEGOLD and SEA START Programs on Land Cover/Land Use Change Processes in Monsoon Asia Region*, Khon Khan, Thailand, January 12-17, 2009.
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- Confronting Global Warming, *First Global Summit on Sustainable Development and Biodiversity (GLOSS, 2008)*, February 7 – 9, 2009.
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- Integrated Assessment Modeling of Biogeochemical Cycles, Climate Change and Impacts, *School of Geography, Beijing Normal University*, Beijing, China, April 26, 2009.
- Integrated Assessment of Climate Change, *Institute of Atmospheric Physics, Chinese Academic of Sciences*, Beijing, China, April 27, 2009.
- Implications of Human Activities on Global Climate, *Conference on Mathematical Models of Dynamics and Control of Environmental Changes: Scaling from Genomes to Ecosystems*, Shanghai, China, April 26 – May 1, 2009
- Integration of Nitrogen Dynamics into a Global Terrestrial Ecosystem Model, *The National Center for Ecological Analysis and Synthesis (NCEAS) for the “Benchmarking Ecosystem Response Models with Experimental Data from Long-Term CO2 Enrichment Experiments”*, NCEAS, Santa Barbara, CA, May 4 – 7, 2009
- Biomass Potential: Economics and Resource Use, *ExxonMobil Research and Engineering Company*, Annandale, NJ, May 12, 2009.
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- Integration of Biophysical and Economic Analysis to Study the Cost of Producing Bioenergy Crops in the United States, *2009 ASA-CSSA-SSSA Annual Meetings*, Pittsburgh, PA, Nov. 1-5, 2009.
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- LCLUC and Associated Changes in Biogeochemical and Biophysical Processes and Fluxes in Asian Monsoon Region, National Remote Sensing Centre (NRSC), *Indian Space Research Organisation (ISRO), Balanagar Hyderabad, India*, January 8, 2010.
- Impact of Land Use Changes on the Terrestrial CO<sub>2</sub> and N<sub>2</sub>O, *Center for Atmospheric and Oceanic Science, Indian Institute of Science, Bangalore, India*, January 12, 2010.
- Land-Use Change and Associated Changes in Biogeochemical and Biophysical Processes in Monsoon Asian Region (MAR), *NASA 2010 LCLUC Spring Science Team Meeting*, Bethesda, MD, April 20-22.
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- The implications of growing bioenergy crops on water resources, carbon and nitrogen dynamics in the US, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Trends and Drivers of Land Use/Cover Change in India, *International LCLUC Regional Science Team Meeting in South and Southeast Asia*, Yangon, Myanmar, January 13-15, 2016.
- Land Cover and Land Use Changes: Global, Regional and Country Scale Emissions, *Global Carbon Project- LUC4C Workshop: Carbon Emissions from Land Use Change: Bringing together the latest products for improved global and regional estimates*, LSCE, Paris, France, February 8-10, 2016.
- Integrated Assessment Modeling of Biogeochemical Cycles, Climate Change and Impacts, *Indian Institute of Tropical Meteorology (IITM)*, Pune, India, March 21, 2016.
- Implementation of Dynamic Rooting Depth and Phenology into a Land Surface Model: Evaluation of Carbon, Water, and Energy fluxes for the High Latitude Ecosystems, *US-International Association for Landscape Ecology (IALE) 2016 Annual Meeting*, Asheville, North Carolina, April 3 – 7, 2016.
- The Implications of Growing Bioenergy Crops on Water Resources, Carbon and Nitrogen Dynamics in the United States, *Department of Agricultural and Biological Engineering at UIUC*, April 15, 2016.
- Land Cover and Land Use Change (LCLUC) Dynamics in South and South East Asia (SSEA), *NASA-LCLUC Science Team Meeting*, April 18-19, 2016, North Bethesda, Maryland.

#### Other Presentations

- Jain, A. K., Coupled Terrestrial-Ocean Carbon Cycle ISAM Model Results, Fifth Expert Meeting on the Scientific and Methodological Aspects of the Proposal by Brazil / MATCH, Rio de Janeiro, Brazil, April 10-13, 2005.
- Yang, X., A. Jain, and W. Post, Modeling the combined effects of CO<sub>2</sub>, nitrogen and climate on the carbon dynamics of plants and soils, Scientific Assembly of the International Association of Meteorology and Atmospheric Sciences of the International Union of Geodesy and Geophysics (IAMAS2005), Beijing, China, August 2-11, 2005.
- Jain, A.K., X. Yang, T. West, W. Post, Assessing the effectiveness of soil carbon sequestration in North America and its impact on net terrestrial uptake of CO<sub>2</sub>, Seventh International Carbon Dioxide Conference, Boulder, CO, Sept 25-30, 2005.
- Jain A.K., X. Yang, W.M. Post, Assessing the Effectiveness of Soil Carbon Sequestration in North America, American Geophysical Union (AGU) Fall 2006 meeting, San Francisco, CA, December 11 – 15, 2006.
- Jain A.K., X. Yang, W.M. Post, North America Terrestrial Carbon Budget: A Model Analysis of the Combined Effects of CO<sub>2</sub>, Nitrogen, Climate, Land Use Changes and Management, The U.S. North American Carbon Program (NACP) Investigators Meeting, Colorado Springs, CO, January 21 - 24, 2007.
- Taheripour, F., X. Yang, A. K. Jain, Future Changes in Global Land Use Emissions, 10th Annual Conference on Global Economic Analysis, Purdue University, West Lafayette, June 7-9, 2007.

- Yang, X., A. Jain, and W. Post, Examining the role of nitrogen cycling on the terrestrial response to CO<sub>2</sub>, climate, and nitrogen deposition, American Geophysical Union (AGU) Fall 2007 meeting, San Francisco, CA, December 10 – 14, 2007.
- Yang, X., A. Jain, and W. Post, Examining the role of nitrogen cycling on the terrestrial response to CO<sub>2</sub>, climate, and nitrogen deposition, American Geophysical Union (AGU) Fall 2007 meeting, San Francisco, CA, December 10 – 14, 2007.
- Richardson, T. X. Yang, A. Jain, B. O'Neill, Estimates of Geographically Explicit Future CO<sub>2</sub> Emissions from Land Cover/ Land Use Changes, American Geophysical Union (AGU) Fall 2007 meeting, San Francisco, CA, December 10 – 14, 2007.
- Khanna, M. , A. K. Jain, H. Onal, and J. Scheffran, Meeting the Demand for Biofuels: Impact on Land Use and Carbon Mitigation, U.S. DOE sponsored Workshop Joint Genomics: GTL Metabolic Engineering 2008 and USDA-DOE Plant Feedstock Genomics for Bioenergy Awardee Workshop 2008, Bethesda, MD, February 10-13, 2008.
- Barman, R, A.K. Jain, Estimation of Land Use Suitability Using an Integrated Science Assessment Approach, The joint CCSM Land Model and Biogeochemistry Working Group meetings at NCAR, 20-22 February 2008.
- Jain A.K. and X. Yang, North America Terrestrial Carbon Budget: A Model Analysis of the Combined Effects of CO<sub>2</sub>, Nitrogen, Climate, Land Use Changes and Management, 2008 NASA Carbon Cycle and Ecosystems Joint Science Workshop, College Park, MD, April 28 – May 2, 2008.
- Jain, A.K., X. Yang, H. Ksheshgi, D. McGuire, W. Post, Nitrogen Attenuation of Terrestrial Carbon Cycle Response to Global Environmental Change, American Geophysical Union (AGU) Fall 2008 meeting, San Francisco, CA, December 15 – 19, 2008
- Barman, R., A. Jain, W. Post and M. Sivapalan, X. Yang, Modeling Nitrogen Leaching with a Biogeochemical Model Coupled with Soil Hydrology Model, American Geophysical Union (AGU) Fall 2008 meeting, San Francisco, CA, December 15 – 19, 2008.
- Ksheshgi, H, A. K. Jain, X. Yang, Nitrogen Attenuation of Terrestrial Carbon Cycle Response, Joint IPCC-WCRP-IGBP Workshop: New Science Directions and Activities Relevant to the IPCC AR5, University of Hawaii, Honolulu, Hawaii, March 2-6, 2009.
- Jain A.K., X. Yang, North America Terrestrial Carbon Budget: A Model Analysis of the Combined Effects of CO<sub>2</sub>, Nitrogen, Climate, Land Use Changes and Management, 2009 Joint Assembly, May 24-27, 2009, Toronto, Canada.
- Jain, A.K. and M. Erickson, Application of an Integrated Biogeochemical Crop Growth Model for Predicting Potential US Biofuel Crop Yields, Energy Biosciences Institute 2009 Research Retreat, Urbana, IL, June 19-22, 2009.
- Khanna, M., A. K. Jain, H. Onal, and J. Scheffran, Economic and Environmental Impacts of Biofuels: Application to Illinois, Energy Biosciences Institute 2009 Research Retreat, Urbana, IL, June 19-22, 2009.
- Khanna, M., A. K. Jain, H. Onal, and J. Scheffran, Economic and Environmental Impacts of Biofuels: Implications for Land Use and Policy, Energy Biosciences Institute 2009 Research Retreat, Urbana, IL, June 19-22, 2009.
- Jain, A.K., X. Yang, T. Richardson, Impact of Land Use Change and Nitrogen Deposition on the Carbon and Nitrogen Stocks of Plants and Soils, Second Integrated Land Ecosystem-Atmosphere Study (iLEAPS) Science Conference, Melbourne, Australia, August 24-28, 2009.
- Richardson, T., X. Yang and A. Jain, Estimates of Historical Global Sources and Sinks of Carbon from Land Cover and Land Use Changes, American Geophysical Union (AGU) Fall 2009 meeting, San Francisco, CA, December 14 – 18, 2009.
- Yang, X., A. Jain, V.R. Kotamarthi, 2009: Modeling of N<sub>2</sub>O and NO emissions from soils in terrestrial ecosystems, American Geophysical Union (AGU) Fall 2009 meeting, San Francisco, CA, December 14 – 18, 2009.

- Khanna, M., A. K. Jain, H. Onal, and J. Scheffran, 2010: Application of an Integrated Biogeochemical Crop Growth Model for Predicting Potential U.S. Biofuel Crop Yields, Energy Bioscience Institute 2009 Research Retreat, Urbana, IL, June 19-22, 2010.
- Khanna, M., A. K. Jain, H. Onal, and J. Scheffran, 2010: Meeting the demand of biofuel: Impact on land use and carbon mitigation, U.S. DOE sponsored Genomic Science 2010 Awardee Workshop VIII and Knowledgebase Workshop, Crystal City, VA, February 7-10, 2010.
- Jain, A., M. Liang, R. Barman, X. Yang, P.S. Roy and A. Roy, 2010: Impact of Land Use Changes & N Deposition & Fertilizer on Carbon & Nitrogen Stock of Plants and Soils in Asia, 5th International Nitrogen Conference 2010, New Delhi, India. Dec 3-7, 2010.
- Jain, A., M. Liang, R. Barman, X. Yang, P. Meiyappan, 2010: Impacts of Land Use Change, Nitrogen Deposition and Nitrogen Fertilizers on Carbon and Nitrogen Stocks of Plants and Soils, Fall 2010 American Geophysical Union (AGU) Meeting, San Francisco, CA, 13-17 December 2010.
- Liang, M., Y. Song, R. Barman, A. Jain)An Integrated Biogeochemical and Biophysical Analysis of Bioenergy Crops, Fall 2010 American Geophysical Union (AGU) Meeting, San Francisco, CA, 13-17 December 2010.
- Barman, R., A. Jain, M. Liang and A. D. McGuire, 2010: Investigating the interactions between biogeophysical and biogeochemical processes in the northern high latitudes using a land surface model; feedbacks and climatic impacts, Fall 2010 American Geophysical Union (AGU) Meeting, San Francisco, CA, 13-17 December 2010.
- Yang, X., W. Post, P. Thornton, A. Jain, 2010: The Distribution of Soil Phosphorus in Terrestrial Ecosystems, Fall 2010 American Geophysical Union (AGU) Meeting, San Francisco, CA, 13-17 December 2010.
- Jain, A., P. Meiyappan, R. Nemani, S. Ganguly, D. Skole, W. Chomentowski, B. O'Neill, 2011: LCLUC and its Effects on Carbon and Nitrogen Dynamics in Monsoon Asian Region, NASA 2011 LCLUC Spring Science Team Meeting, University of Maryland, College Park, MD, March 28-30, 2011.
- Barman, R., A. Jain, R. Jacob, F. Hoffmann, M. Vertenstein, and L. Kale (2011). Coupling an alternative land surface model (the ISAM) with the CESM, 16th Annual CESM Workshop, Breckenridge, Boulder, CO, June 20-23, 2011.
- Song, Y, P. Meiyappan, A. Jain, M. Khanna and H. Huang, 2011: An Integrated Biogeochemical, Biophysical and Economic Analysis of Bioenergy Crops, Ecological Society of America (ESA) annual meeting, Austin, TX, August 7-12, 2011.
- Barman, R, F. Hoffman, Y. Song, P. Meiyappan, A. Jain, R. Jacob, M. Vertenstein (2011): Studying Uncertainties in Climate-Terrestrial Biogeochemical Feedbacks in the Northern High Latitudes using a Flexible Earth System Modeling Framework, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 5 – 9, 2011.
- Meiyappan, P, R. Barman, A. Jain, G. McIsaac, and P Lawrence (2011): Impacts of Future Land-Use Change on Nitrogen Leaching and Global Water Quality, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 5 – 9, 2011.
- Song, Y. R. Barman and A. Jain (2011): Energy Crops and their Implications on Soil Carbon Sequestration, Surface Energy and Water Balance, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 5 – 9, 2011.
- Barman, R., P. Meiyappan, Y. Song, B. E. Masri, A. K. Jain, D. M. Lawrence (2012): Intercomparison of Energy, Water and Carbon Fluxes in the CESM-ISAM framework, CESM Land Model and Biogeochemistry Working Groups Meeting, NCAR, Boulder, CO, March 27 – February 2, 2012.
- Barman, R. P. Meiyappan, Y. Song, B. Masri, A. K. Jain (2012): Modeling the Impacts of Multiple LCLUC Datasets on Energy, Water and Carbon Fluxes, NASA LCLUC Science Team meeting, Rockville, MD, April 2 - 5, 2012.



- El-Masri, B. and A. K. Jain (2012): Modeling the above and below ground carbon and nitrogen stocks in northern high latitude terrestrial ecosystems, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 3 – 7, 2012.
- Jain, A.K. and Y. Song (2012): Impact of climate change and variability on crop productivity, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 3 – 7, 2012.
- Song, Y., A.K. Jain, W. Landuyt, H. Kheshgi (2012): Implications of Growing Bioenergy Crops on Hydrological Cycle, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 3 – 7, 2012.
- Walker A. P.; S. Zaehle; M. G. De Kauwe; M. C. Dietze; P. J. Hanson; T. Hickler; A. K. Jain; Y. Luo; H. R. McCarthy; B. E. Medlyn; W. J. Parton; P. E. Thornton; S. Wang; Y. Wang; D. Warland; E. Weng; R. Oren; R. J. Norby, 2012: Climatic drivers of variability in the response of NPP to elevated CO<sub>2</sub>. A model-data comparison at two FACE sites in the south eastern US, Fall 2012 American Geophysical Union (AGU) Meeting, San Francisco, CA, 3-7 December 2012.
- Jain, A.K. (2013) Modeling the Above and Below Ground C and N Stocks in Northern High Latitude Terrestrial Ecosystems, CESM Land Model and Biogeochemistry Working Groups Meeting, NCAR, Boulder, CO, February 20 – 22, 2013.
- Yang, X., W.M. Post, A. Jain, P. Thornton (2013): Towards a representation of phosphorous dynamics in earth system models: Development of global scale supporting datasets and CLM-CNP, CESM Land Model and Biogeochemistry Working Groups Meeting, NCAR, Boulder, CO, February 20 – 22, 2013.
- Jain, A., B. El-Masri, R. Barman (2013): Carbon exchange in the northern high latitude terrestrial ecosystems over the last three decades, European Geosciences Union General Assembly 2013, Vienna, Austria, April 7-12, 2013.
- Jain, A.K., B. El-Masri, Y. Jin (2013): Implementation of Prognostic LAI in a land surface model to improve water, energy, and carbon fluxes. US-International Association for Landscape Ecology, Austin, TX, April 14-18, 2013.
- El-Masri, B., A.K. Jain (2013): Carbon Dynamics in Amazonia. LBA-DMIP workshop, Ft. Collins, CO, April 22-23, 2013.
- Jain AK, P Meiyappan, Y Song, J House (2013): CO<sub>2</sub> Emissions from Land use Change Affected More by Nitrogen Cycle, than by the Choice of Land Cover Data, 9th International Carbon Dioxide Conference, Beijing, China, June 3-7, 2013.
- House J, R Houghton, AK Jain, et al. (2013): Reconciling global and regional trends in LULUCF fluxes, 9th International Carbon Dioxide Conference, Beijing, China, June 3-7, 2013.
- Jain AK (2013): Land Use Changes and Its Effects on Carbon and Nitrogen Dynamics In South And South East Asia Region, 11th Asia Flux International Workshop, Seoul, Korea, August 21-24, 2013.
- Andresen J, AK Jain, DS Niyogi, G Alagarwamy, L Biehl, P Delamater, O Doering, AA Elias, R Elmore, B Gramig, C Hart, O Kellner, X Liu, E Mohankumar, LS Prokopy, C Song, D Todey, M Widhalm (2013), Assessing the Impact of Climatic Variability and Change on Maize Production in the Midwestern USA, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 9 – 13, 2013.
- ElMasri, B, R Barman, AK Jain (2013), The interaction between biogeophysical and biogeochemical processes and their feedback on permafrost soil carbon stocks, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 9 – 13, 2013.
- Jain AK and Y. Song (2013): Estimated impact of environmental variables on crop productivity, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 9 – 13, 2013.
- Jain AK, Y Jin, B El-Masri, X Yang (2013), Modeling of N<sub>2</sub>O emissions from soils in terrestrial ecosystems, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 9 – 13, 2013.

- Meiyappen, P., M. Dalton, B. O'Neill, AK Jain (2013) Spatial modeling of agricultural land-use change at global scale, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 9 – 13, 2013.
- Niyogi DS, X Liu, J Andresen, AK Jain; A Kumar, O Kellner, AA Elias (2013), Can Crop Models Simulate the ENSO Impacts on Regional Corn Yield in U.S. Corn Belt?, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 9 – 13, 2013.
- Song Y, AK Jain, W Landuyt, HS Kheshgi (2013), Estimates of spatial and temporal variation of energy crops biomass yields in the US, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 9 – 13, 2013.
- Walker AP, S Zaehle, MG De Kauwe, BE Medlyn, M Dietze, T Hickler, CM Iversen, AK Jain, Y Luo, HR McCarthy, WJ Parton, C Prentice, PE Thornton, S Wang, Y Wang, D Warlind, J Warren, E Weng, PJ Hanson, R Oren, RJ Norby (2013), Model-experiment synthesis at two FACE sites in the southeastern US. Forest ecosystem responses to elevated CO<sub>2</sub>, American Geophysical Union (AGU) Fall meeting, San Francisco, CA, December 9 – 13, 2013.
- Harper A, et al. (Co-authors list include **AK Jain**) (2014): The carbon cycle response of the Amazon forest during the 2010 drought in dynamic global vegetation models, Fall 2014 American Geophysical Union (AGU) Meeting, San Francisco, CA, Dec. 15-19, 2014.
- Huntzinger D et al. (Co-Authors list include **AK Jain**) (2014): Trends in the Global Net Land Sink and Their Sensitivity to Environmental Forcing Factors: Results From the Multi-Scale Synthesis and Terrestrial Model Intercomparison Project (MsTMIP) , Fall 2014 American Geophysical Union (AGU) Meeting, San Francisco, CA, Dec. 15-19, 2014.
- Schwalm C et al. (Co-authors list include **AK Jain**) (2014): Attributing Changes in Gross Primary Productivity from 1901 to 2010, Fall 2014 American Geophysical Union (AGU) Meeting, San Francisco, CA, Dec. 15-19, 2014.
- Shu S, Forrest Hoffman, J Kumar, W Hargrove, **A Jain** (2014): Data Mining Approach for Evaluating Vegetation Dynamics in Earth System Models (ESMs) Using Satellite Remote Sensing Products, Fall 2014 American Geophysical Union (AGU) Meeting, San Francisco, CA, Dec. 15-19, 2014.
- Song Y, **A Jain**, W Landuyt, H Kheshgi (2014): The Interplay of Bioenergy Crop Production and Water Resource Availability in the US, Fall 2014 American Geophysical Union (AGU) Meeting, San Francisco, CA, Dec. 15-19, 2014.
- Jain AK**, B El-Masri and S Shu (2015): Implementation of Dynamic Rooting Depth and Phenology into a Land Surface Model: Evaluation of Carbon, Water, and Energy fluxes for the High Latitude Ecosystems, 2015 AGU Joint Assembly, Montreal, Canada, May 4-7 2015.
- Gahlot, S., SB Roy, S Shu and **AK Jain** (2015). Understanding Carbon Dynamics in India Using a Land-Surface Model, *Asia Flux Workshop 2015: Challenges and Significance of Ecosystem Research in Asia to Better Understand Climate Change*, November 22-29, 2015, Pune, India.
- Ahlström A, MR Raupach, G Schurgers, B Smith, A Arneth, M Jung, M Reichstein, J Canadell, Pierre Friedlingstein, **AK Jain**, E Kato, B Poulter, S Sitch, B David Stocker, N Viovy, Y Wang, A Wiltshire, S Zaehle, N Zeng (2015). The dominant role of semi-arid lands in the trend and variability of the land CO<sub>2</sub> sink, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Cervarich M, S Shu, **AK Jain**, B Poulter, B Stocker, A Arneth, N Viovy, E Kato, A Wiltshire, C Koven, S Sitch, N Zeng, P Friedlingstein (2015). Impact of land use change on the land atmosphere carbon flux of South and South East Asia: A Synthesis of Dynamic Vegetation Model Results, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Huntzinger DN, AM Michalak, C Schwalm, P Ciais, KM Schaefer, AW King, Y Wei, RB Cook, JB Fisher, DJ Hayes, M Huang, A Ito, **AK Jain**, H Lei, C Lu, F Maignan, J Mao, N Parazoo, S Peng, B Poulter, DM Ricciuto, X Shi, H Tian, W Wang, N Zeng, F Zhao (2015). Nitrogen Dynamics are a Key Factor in Explaining Global Land Carbon Sink, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.

- Jain AK**, P Meiyappan, J House (2015) Increased influence of nitrogen limitation on CO<sub>2</sub> emissions from future land use and land-use change, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Jain AK**, Y Song, HS Kheshgi, W Landuyt (2015). The Implications of Growing Bioenergy Crops on Water Resources, Carbon and Nitrogen Dynamics, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Mao J, W Fu, X Shi, DM Ricciuto, JB Fisher, RE Dickinson, Y Wei, W Shem, S Piao, K Wang, CR Schwalm, H Tian, M Mu, MA Arain, P Ciais, RB Cook, YJ Dai, DJ Hayes, FM Hoffman, M Huang, S Huang, DN Huntzinger, A Ito, **AK Jain**, AW King, H Lei, C Lu, AM Michalak, N Parazoo, C Peng, S Peng, B Poulter, KM Schaefer, EE Jafarov, PE Thornton, WWang, N Zeng, Z Zeng, F Zhao, Q Zhu, Z Zhu (2015). Disentangling climatic and anthropogenic controls on global terrestrial evapotranspiration trends, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Meiyappan P, PS Roy, Y Sharma, **AK Jain**, R Ramachandran, PK Joshi (2015). Dynamics of land change in India: a fine-scale spatial analysis, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Rao S, **AK Jain**, S Shu (2015). The Lifestyle Carbon Dividend: Assessment of the Carbon Sequestration Potential of Grasslands and Pasturelands Reverted to Native Forests, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Schwalm C, W Anderegg, F Biondi, GW Koch, ME Litvak, J Shaw, A Wolf, DN Huntzinger, AM Michalak, KM Schaefer, JB Fisher, RB Cook, Y Wei, Y Fang, DJ Hayes, M Huang, **AK Jain**, H Tian (2015). Global Patterns of Drought Recovery, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Shu S, U Mishra, FM Hoffman, CD Koven, **AK Jain** (2015). Interactions Between Soil Organic Carbon Concentration and Soil Thermal and Hydraulic Dynamics and Its Impact on Soil Carbon Storage in Northern High-latitudes, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Song Y, **AK Jain**, P Lawrence, HS Kheshgi (2015) The Impact Of Climate Change On Production Of Multiple Food Crops In The 21st Century- An Analysis Based On Two Land Surface Models, *Fall 2015 American Geophysical Union (AGU) Meeting*, San Francisco, CA, Dec. 13-18, 2015.
- Shu, S, F Hoffman, J Kumar, W Hargrove, AK Jain (2016). Synthesis of satellite NDVI products and vegetation phenology in Earth system models using a data mining approach, *US-International Association for Landscape Ecology (IALE) 2016 Annual Meeting*, Asheville, North Carolina, April 3 – 7, 2016.
- Thomas RT, IC Prentice, H Graven, P Ciais, JB Fisher, M Huang, DN Huntzinger, A Ito, A Jacobson, **A Jain**, J Mao, A Michalak, S Peng, B Poulter, DM Ricciuto, X Shi, C Schwalm, H Tian, N Zeng (2016), CO<sub>2</sub> and greening observations indicate increasing light-use efficiency in northern terrestrial ecosystems, *European Geophysical Union General Assembly 2016*, Vienna, Austria, April 17–22, 2016.

## Teaching and Supervising Activities

### Courses Taught

ATMS140, Climate and Global Change  
 ENV5 301, Environmental Issues Today  
 ATMS 307, Climate Processes  
 ENSU 302, Air Pollution to Global Change  
 ATMS/CEE 345 Atmospheric Dispersion Modeling  
 ATMS 491, Integrated Assessment of Climate Change  
 ATMS 447, Climate Change Assessment  
 ATMS 449, Biogeochemical Cycles

### Supervision of Graduate Students

Cao, Long	Ph.D.	Completed in March 2007
Yang, Xiojuan	Ph.D.	Completed in May 2009
Richardson, Tosha	M.S.	Completed in December 2009
Barman, Rahul	Ph.D.	Completed in August 2014
Jin, Ying	M.S.	Completed in May 2015
Song, Yang	Ph.D.	Completed in July 2015
Meiyappan, Prasanth	Ph.D. candidate	Completed in May 2016
Shu, Shijie	Ph.D. candidate	Present, plans to complete by May 2017
Cervarich, Matthew	Ph.D. candidate	Present, plans to complete by May 2018
Suravi Shraस्था	M.S. candidate	Present, plans to complete by May 2017

### D. Supervision of Postdoctoral and Research Fellows

Dr. Vivek Hardikar (July 1997-April 1998)  
 Dr. Chung Chi Wang (October 1998-August 1999)  
 Dr. Katharine H. Hayhoe (January 1998- July 2003)  
 Dr. Zhining Tao (July 2003 – June 2004)  
 Dr. Victoria Wittig (June 2008 – June 2009)  
 Mr. Matthew Erickson (August 2008 – August 2009)  
 Dr. Xiaojuan Yang (May 2009 – April 2010)  
 Dr. Miaoling Liang (May 2009 – February 2011)  
 Dr. Bassil El-Masri (December 2011 – July 2014)  
 Dr. Yang Song (September 2015- March 2016)  
 Dr. Kazi Ahmed (January 2016 – August 2016)