Alexandra L. Jones

Alexandra.Jones@noaa.gov https://www.gfdl.noaa.gov/alexandra-l-jones-homepage
201 Forrestal Rd. Princeton, NJ 08540 (609)452-6518

CAREER INTERESTS

Working at the intersection of atmospheric science and high performance computing with special interests in remote sensing, radiative transfer modeling, and creative problem solving. I excel in an environment with quick deadlines, a variety of concurrent tasks, and an opportunity to make a larger impact.

EDUCATION

B.S., magna cum laude, Atmospheric Science,	University at Albany, 2007
Certificate in Geographic Information Systems,	University at Albany, 2007
M.S. Atmospheric Science,	University of Illinois, 2010
Ph.D. Atmospheric Science,	University of Illinois, 2016

COMPUTING

Languages, Models, APS, & Software: FORTRAN, R, NCL, MATLAB, ARTS, WRF, C++, GEMPAK, CSH, C#, MPI, OpenMP, DDT, CrayPat, Apprentice2, Tau, RFM, RRTMg, Python, DISORT, MPI, netCDF, parallel netCDf.
HPC Platforms Used: Cobalt, Ember, Ranger, Stampede, Blue Waters, Gaea.

HONORS AND AWARDS

Blue Waters Graduate Fellowship	Academic Year 2014-2015

Title: *High Accuracy 3D Radiative Transfer in Cloudy Atmospheres*

NASA Earth and Space Sciences Fellowship	Academic Years 2011-2014

Title: *3D Radiative Impact on Dynamical and Physical Properties of Modeled Marine Trade Wind Cumulus*

Ogura Outstanding Published Student Paper	2012

Honorable Mention

JGR-Atmosphere's List of Top Weekly Downloaded Articles	June 2012

Title: *Reducing the resolution bias in cloud fraction from satellite derived clear-conservative cloud masks*

RELEVANT EXPERIENCE

Postdoctoral Research Associate	February 2016-Present

Princeton, University, Cooperative Institute for Climate Science

- Develop and optimize a parallel workflow to compute line-by-line fluxes on the native grid of several GCMs and compare them to each model's internal flux calculations. The goal is to quantify the spread in direct aerosol forcing due to radiative parameterization error as part of RFMIP.

- Develop predictive equation to relate aerosol optical properties to error in radiative transfer parameterization.

- Use large datasets of climate properties and error in radiative transfer to assess the impacts on the hydrological cycle via energy budget analysis

Doctoral Fellow	Fall 2011-January 2016

University of Illinois, Dept. of Atmospheric Sciences

- Developed monochromatic (I3RC+emission) and broadband (MCBRaT3D) 3D Monte Carlo Atmospheric Radiative Transfer Models using object oriented FORTRAN to study the influence of realistic solar and thermal ra-

diative transfer on cloud dynamics and micro- and macrophysical properties and determine the impacts of 3D biases on remotely sensed products.

- Created a high spectral resolution database of liquid water droplet single scattering properties for use within a high spectral resolution broadband radiative transfer model and to evaluate biases in band-resolved representations of water droplet single scattering properties
- Ran atmospheric fluid dynamics model, WRF, in large-eddy-scale mode and evaluated boundary layer thermodynamic and cloud properties against the RICO and BOMEX LES intercomparison cases.

Research Assistant   Fall 2007-Fall 2009, Summer 2009-Summer 2010
University of Illinois, Dept. of Atmospheric Sciences   Spring 2011-Summer 2011

- Conducted a study quantifying the cloud fraction bias of trade wind cumulus clouds due to inadequate pixel resolution
- Developed a pattern recognition technique to correct satellite derived cloud amount for overestimation due to inadequate pixel resolution
- Worked with algorithm specialists at NASA's JPL to implement the technique in the regular processing of data from Terra's MISR instrument

Teaching Assistant   Spring 2009, Fall 2010
University of Illinois, Dept. of Atmospheric Sciences
- Taught 3 weekly 50 minute lab sections of ATMS 100 "Intro to Meteorology"
- Developed a lab on atmospheric optics

Research Assistant   Fall 2006-Summer 2007
Integrated Environmental Data, Albany, NY
- Analyzed wind field and reflectivity data from SODAR and RADAR facilities to study bird migration patterns in the vicinity of a wind turbine farm

Volunteer Research Assistant   June-August 2006
Buffalo State College, The Lake Breeze Project
- Collected, quality controlled, and analyzed temperature data from field sites to observe the extent and effects of the Lake Erie breeze on temperatures in the Buffalo, NY area.

Volunteer Intern   June-August 2005
Buffalo, NY, National Weather Service Forecast Office
- Shadowed forecasters and hydrometeorological technicians
- Practiced writing products and analyzing surface and upper air maps
- Completed several COMET training modules

PUBLICATIONS
- A. L. Jones, L. Di Girolamo, (2018) Design and Verification of a New Monochromatic Thermal Emission Component for the I3RC Community Monte Carlo Model. J. of Atmos. Sci., 75(3). DOI:10.1175/JAS-D-17-0251.1
- A. L. Jones, D. Feldman, S. Freidenreich, D. Paynter, V. Ramaswamy, W. D. Collins, R. Pincus, (2017) A New Paradigm for Diagnosing Con-

tributions to Model Aerosol Forcing Error. Geophys. Res. Letters, 44. DOI:10.1002/2017GL075933

- A. L. Jones, (2016), High Accuracy Radiative Transfer in Cloudy Atmospheres, Blue Waters Annual Report, University of Illinois Press, Urbana, IL.

- Jones, A. L., (2016), Development of an Accurate 3D Monte Carlo Broadband Atmospheric Radiative Transfer Model, Ph.D. Dissertation, University of Illinois, Urbana, IL.

- A. L. Jones, (2015), High Accuracy Radiative Transfer in Cloudy Atmospheres, Blue Waters Annual Report, University of Illinois Press, Urbana, IL.

- Di Girolamo, L., A. L. Jones, D. Jackson, B. Jewett, and B. Chapman, (2014), Blue Waters Applications of a 3-D Monte Carlo Atmospheric Radiative Transfer Model, Blue Waters Annual Report, University of Illinois Press, Urbana, IL.

- Jones, A. L., L. Di Girolamo, and G. Zhao (2012), Reducing the resolution bias in cloud fraction from satellite derived clear-conservative cloud masks, J. Geophys. Res., 117, D12201, doi:10.1029/2011JD017195.

- Dey, S., L. Di Girolamo, G. Zhao, A. L. Jones, and G. M. McFarquhar (2011), Satellite-observed relationships between aerosol and trade-wind cumulus cloud properties over the Indian Ocean, Geophys. Res. Lett., 38, L01804.

- Jones, A. L. (2010), Evaluating and correcting the effect of sensor spatial resolution on cloud fraction derived from satellite instruments, MS thesis, Dept. of Atmos. Sci., Univ. of Ill., Urbana.

- Zhao, G., L. Di Girolamo, S. Dey, A. L. Jones, and M. Bull (2009), Examination of direct cumulus contamination on MISR-retrieved aerosol optical depth and angstrom coefficient over ocean, Geophys. Res. Lett., 36, L13811.

PRESENTATIONS

- A. L. Jones and L. Di Girolamo, Benchmark Quality Open Source Models for Spectral or Broadband 3D Radiative Transfer in Cloudy Atmospheres, oral presentation at the AMS Conference on Atmospheric Radiation, Vancouver, Canada, July 9-13, 2018.

- A. L. Jones, D. Paynter, S. Freidenreich, D. Feldman, V. Ramaswamy, W. Collins, Benchmark Global Shortwave Absorption Calculations Constrain Intermodel Spread in Aerosol Radiative Forcing and Hydrological Cycle Intensification, oral presentation at the Tri-MIP-athalon, Reading, England, June 11-15, 2018.

- A. L. Jones, D. Paynter, S. Freidenreich, D. Feldman, V. Ramaswamy, W. Collins, Benchmark Global Shortwave Absorption Calculations Constrain Intermodel Spread in Aerosol Radiative Forcing and Hydrological Cycle Intensification, oral presentation at the EGU General Assembly, Vienna, Austria, April 12, 2018.

- A. L. Jones, D. Paynter, S. Freidenreich, D. Feldman, V. Ramaswamy, W. Collins, Characterizing Radiative Parameterization Uncertainty in Modeled Aerosol Instantaneous Radiative Effect as part of RFMIP, oral presentation at the AGU Fall Meeting, New Orleans, LA, December 15, 2017.

- A. L. Jones, Climate Impacts of Radiative Parameterization Errors Using a Global Line-by-Line Framework, University of Illinois Atmospheric Sciences Colloquia Series, Urbana, IL, October 16, 2017.

- A. L. Jones, Climate Impacts of Radiative Parameterization Errors Using a Global Line-by-Line Framework, presented at the GFDL Lunch Time Seminar Series, Princeton, NJ, October 11, 2017.

- A. L. Jones, D. Paynter, S. Freidenreich, D. Feldman, V. Ramaswamy, W. Collins, RFMIP Aerosol-IRF Characterizing Modeled Aerosol Direct Radiative Effect Parameterization Errors Using a Global Line-by-line Model, poster presented at the GRS and GRC on Radiation and Climate, Lewiston, ME, July 15-21, 2017.

- A. L. Jones, D. Paynter, S. Freidenreich, D. Feldman, V. Ramaswamy, W. Collins, Reducing the Spread in Modeled Aerosol Radiative Forcing with a Global, Scattering Line-by-Line Model as Part of RFMIP, poster presented at the GFDL Research Symposium, Princeton, NJ, February 1, 2017.

- A. L. Jones, D. Paynter, S. Freidenreich, D. Feldman, V. Ramaswamy, W. Collins, Reducing the Spread in Modeled Aerosol Radiative Forcing with a Global, Scattering Line-by-Line Model as Part of RFMIP, poster presented at the AGU Fall Meeting, San Francisco, CA, December 12, 2016.

- A. L. Jones, High Accuracy 3D Radiative Transfer in Cloudy Atmospheres, paper presented at the Blue Waters Symposium, Sunriver, OR, June 13, 2016.

- A. L. Jones, High Accuracy 3D Radiative Transfer in Cloudy Atmospheres, paper presented at the Blue Waters Symposium, Sunriver, OR, May 12, 2015.

- A. L. Jones, Development of a Highly Accurate 3D Radiative Transfer Model, presented as part of the University of Illinois Atmospheric Sciences Colloquia Series, Urbana, IL, April 1, 2015.

- A. L. Jones, and L. Di Girolamo, A New Spectrally Integrating 3D Monte Carlo Radiative Transfer Model, paper presented at 14th Conference on Atmospheric Radiation, AMS, Boston, MA, July 7-11, 2014.

- A. L. Jones, How does radiative cooling impact the shell of descending air around modeled tradewind cumulus clouds?, 5th Midwest Cloud and Aerosol Forum, West Lafayette, IN, September 12, 2013.

- A. L. Jones, and L. Di Girolamo, A 3D Monte Carlo Radiative Transfer Model for Future Model Parameterizations and Satellite Retrieval Algorithms, Gordon Research Conference and Seminar on Radiation and Climate, New London, NH, July 6-11, 2013.

- A. L. Jones, and L. Di Girolamo, The Use of Monte Carlo Methods to Simulate 3D Radiative Transfer, School of Earth Society and Environment Annual Research Review, University of Illinois, Urbana, IL, March 1, 2013.

- A. L. Jones et al, Benchmarking WRF Against the BOMEX LES Intercomparison, Pan-GASS Conference, GEWEX, Boulder, CO, September 10-14, 2012.

- A. L. Jones, 3D Radiative Impact on Modeled Marine Trade Wind Cumulus, 3rd Midwest Cloud and Aerosol Forum, West Lafayette, IN, August 24, 2012.

- A. L. Jones, How does radiative cooling impact the shell of descending air around modeled trade wind cumulus clouds?, 2nd Midwest Cloud and Aerosol Forum, Urbana, IL, March 2, 2012.

- A. L. Jones, 3D Radiative Impact on Trade Wind Cumulus Properties, 1st Midwest Cloud and Aerosol Forum, Urbana, IL, September 23, 2011.

- A. L. Jones, and L. Di Girolamo, Reducing Bias Due to the Resolution Effect in Satellite Derived Cloud Fraction, Gordon Research Conference and Seminar on Radiation and Climate, Waterville, ME July 9-10, 2011.

- A. L. Jones, L. Di Girolamo, and G. Zhao (2010), Reducing bias in satellite derived cloud fraction estimates caused by finite resolution measurements, 13th Conference on Atmospheric Radiation, Portland, OR, June 30, 2010.

- A. L. Jones, Reducing bias in Satellite derived Cloud Fraction estimates caused by Finite Resolution measurements, presented as part of the University of Illinois Atmospheric Sciences Colloquia Series, Urbana, IL, September 23, 2009.

SERVICE AND PROFESSIONAL ACTIVITIES	*Session Co-chair*, AMS Radiation Conference	2018
	Board Member, GFDLEA	2017-2019
	Reviewer, GRL	2016-present
	Member, Hot Air Society Ch. of Toastmasters	2016-present
	Reviewer, QJRMS	2014-present
	Discussion Leader, GRS on Radiation and Climate	2013
	Co-Founder and Co-Convener, Midwest Cloud and Aerosol Forum	2011-2013
	Associate Chair, GRS on Radiation and Climate	2009-2011
	Chair, Exit Survey Committee, Dept. of Atmos. Sci., Univ. IL	Fall 2009
	Co-chair, Student Ch. of the AMS, Univ. IL	AY 08-09
	Treasurer, Dept. Atmos. Sci. Student Organization	AY 08-09
	Treasurer, Student Ch. of the AMS at the Univ. Albany	AYs 05-07
	Member, AGU	2008-present
	Member, Dept. Atmos. Sci. Student Organization	2007-2015
	Member, AMS	2005-present
	Volunteer, Hurr. Katrina Relief, New Orleans, LA Feb. 17-26, May 22-27, 2006	