

Curriculum Vitae

Charles F. Pavloski, Jr., Ph.D.

Institute for Computational and Data Sciences
The Pennsylvania State University
214N Computer Building
University Park, Pennsylvania 16802

Cell Phone: (814)-883-2371

Office: (814)-863-3094

Email: cfp102@psu.edu

September 2020

Current Job Description

Research and Development Engineer for Earth Sciences and ICDS Research Innovations with Scientists and Engineers (RISE) Team Lead

As a Research and Development Engineer for Earth Sciences and the Institute for Computational and Data Sciences (ICDS) Research Innovations with Scientists and Engineers (RISE) Team Lead, I direct a highly skilled group of Masters and Ph.D. level scientists and engineers as we tackle high-level computational projects and problems for Penn State's advanced research community. My job duties also include: researching, specifying, designing, developing, and implementing scientific software application solutions, combining earth sciences disciplinary knowledge and knowledge of High Performance Parallel Computing (HPC); formulating and defining system scope and objectives for assigned projects; providing guidance or conducting program design, coding, testing, debugging, and writing documentation; preparing detailed specifications from which programs will be written; solving problems considering computer equipment capacity and limitations, operating time, scientific software application limitations; installing and configuring software and hardware as needed. In addition, as the Software R&D Engineer for Earth Science, I engage and initiate research projects that connect simulation and modeling methods developed by faculty to ICS resources.

Education

Ph.D. in Meteorology, The Pennsylvania State University, University Park, Pennsylvania, 2005. "An Operational Shortwave Optical Depth Retrieval for Broken Cloud Fields". Advisor: Dr. Eugene Clothiaux.

Master of Science in Meteorology, The Pennsylvania State University, University Park, Pennsylvania, 1993. "An Observational Study of the Mesoscale Inhomogeneities at Cirrus Cloud Levels". Advisor: Dr. Dennis Thomson.

Bachelor of Science in Meteorology, The Pennsylvania State University, University Park, Pennsylvania, 1991.

Scientific and Professional Work Experience

ICS Research Innovations with Scientists and Engineers (RISE) Team Lead, Institute for Computational and Data Sciences, The Pennsylvania State University, University Park, Pennsylvania August 2019 to present.

ICS-Advanced Cyberinfrastructure Chief Architect (Interim), Institute for Cyber Science, The Pennsylvania State University, University Park, Pennsylvania. August 2018 to August 2019.

Advanced Technical Services Team Lead, Institute for Cyber Science, The Pennsylvania State University, University Park, Pennsylvania. June 2018 to August 2018.

Research and Development Software Engineer for Earth Sciences, Institute for Cyber Science, The Pennsylvania State University, University Park, Pennsylvania. September 2016 to June 2018.

Computational Scientist (Consultant), Department of Meteorology, The Pennsylvania State University, University Park, Pennsylvania. September 2016 to present.

Director of Meteorological Computing and Senior Research Associate, Department of Meteorology, The Pennsylvania State University, University Park, Pennsylvania. June 2011 to August 2016.

Computational Science Consultant, Institute for Cyber Science, The Pennsylvania State University, University Park, Pennsylvania. June 2014 to August 2016.

Director of Meteorological Computing and Research Associate, Department of Meteorology, The Pennsylvania State University, University Park, Pennsylvania. January 2003 to June 2011.

Research Assistant and Ph.D. Graduate Student, Department of Meteorology, The Pennsylvania State University, University Park, Pennsylvania. Advisor: Dr. Eugene Clothiaux, June 1999 to December 2002.

Research Assistant, Department of Meteorology, The Pennsylvania State University, University Park, Pennsylvania. Supervisor: Dr. Thomas Ackerman, June 1993 to June 1999.

Graduate Assistant, Department of Meteorology, The Pennsylvania State University, University Park, Pennsylvania. Advisor: Dr. Dennis Thomson, August 1991 to June 1993.

Laboratory Chemist, Q.C. Incorporated, Southampton, Pennsylvania, summer 1991 and June 1989 to June 1990.

Weather Forecasting Intern, National Weather Service, Philadelphia, Pennsylvania, June 1990 to August 1990.

Formal Professional Information Technology Training

Red Hat Certified System Administrator (RHEL 7) – Current through Jun 24, 2019 (Cert ID 160-133-468)

Current External Committees (National)

Unidata Strategic Advisory Committee (2016-2022) – Member, Committee Chair (2020-22)
<http://www.unidata.ucar.edu/committees/stratcom/members.html>

Current University and College Committees

Co-Chair RCCI HPC Working Group – Faculty Governance Committee, Co-Chair (2018-present)
Penn State Institute for Cyber Science Coordinating Committee (2016-present)
Penn State RCCI Ad-Hoc Storage Task Force, Co-Chair (2020)

Former University and College Committees

Penn State Cyberinfrastructure Data Center Planning Committee (closed)
Penn State University Research Data and Computing Committee (superseded)
Penn State Meteorology Strategic Plan Committee for 2013-2018 (closed)
Penn State Cyberinfrastructure Governance Committee – IT Career Track Working Group
Penn State Cyberinfrastructure Governance Committee – HPC Working Group
Penn State Research Network Committee (meets on demand)
Penn State College of Earth and Mineral Sciences Information Technology Leadership Committee
Penn State Meteorology Digital Weather Applications Committee
Penn State Meteorology FT&R Faculty Governance Committee
Penn State Meteorology Department Computing Committee (Co-Chair)
Penn State Cyberinfrastructure Coordinating Committee
Penn State Cyberinfrastructure Governance Committee
Penn State ITLC Research Computing Working Group Committee (2012-present)

Teaching Experience

Instructor, CSE 597, Applications to Parallel Programming, (Spring Semester 2018)
Co-Instructor, Meteorology 498A, Methods for Scientific Data Management, (Spring Semester 2014)
Instructor - Meteorology 2/3L, Introduction to Meteorology: Weather and Society. (Spring Semester 2002)
Teaching Assistant - Meteorology 535, Atmospheric Radiative Transfer. (Fall Semester 2000)

Teaching Assistant - Meteorology 446, Laboratory in Atmospheric Physics II. (Spring Semester 1992)
Teaching Assistant - Meteorology 445, Laboratory in Atmospheric Physics I. (Fall Semester 1991)

Funded Proposals as Lead PI

A Prototype Cloud-Based Virtualization System for Unidata Applications, UCAR - Principal Investigator - 2016

AWIPS II Prototype Testing Equipment for a Standalone Experimental EDEX/LDM/CAVE System for Penn State and Unidata, UCAR – Principal Investigator - 2014

IDD Ingest Relay Replacement in Support of THREDDS/RAMADDA at Penn State, UCAR - Principal Investigator - 2011

Addition of a Community THREDDS/RAMADDA Server System at Penn State - UCAR - Principal Investigator - 2010

Transition of Unidata IDD Relay Service to a 64-bit Architecture – UCAR - Principal Investigator - 2005

Funded Proposals (Contributing Scientist)

“Improving our understanding of tornadic storms using VORTEX2 observations and idealized simulations”, National Science Foundation, 09/1/2015 - 08/31/2020, \$899,953, Co-PI

“Using VORTEX2 Observations and Idealized Simulations to Understand the Lifecycle of Tornadoes”, National Science Foundation, 08/15/2012 - 07/31/2016, \$1,076,764, IT Specialist

“Quantification of the regional impact of terrestrial processes on the carbon cycle using atmospheric inversions”, National Aeronautics and Space Administration, 06/01/2014 - 05/31/2017, \$274,398, Research Associate

“Improving weather prediction and precipitation estimation through advanced ensemble assimilation using GPM microwave brightness temperature with coherent microphysics parameters”, National Aeronautics and Space Administration, 01/01/2016 - 01/20/2019, \$177,786, Research Associate

“Quantification of the sensitivity of NASA CMS Flux inversions to uncertainty in atmospheric transport”, National Aeronautics and Space Administration, 08/08/2013 - 12/31/2016, \$335,991, Research Associate

“Quantification of the sensitivity of NASA CMS Flux inversions to uncertainty in atmospheric transport”, National Aeronautics and Space Administration, 08/08/2013 - 12/31/2016, \$163,054, Research Associate

“Quantification of the sensitivity of NASA CMS Flux inversions to uncertainty in atmospheric transport”, National Aeronautics and Space Administration, 08/08/2013 - 08/07/2016, \$172,937, Research Associate

“Combined Laboratory and Modeling Studies of Ice Vapor Growth at Low Temperatures”, National Science Foundation, 08/01/2014 - 07/31/2017, \$435,824, Co-PI

“Combined Laboratory and Modeling Studies of Ice Vapor Growth at Low Temperatures”, National Science Foundation, 08/01/2014 - 07/31/2017, \$201,356, Co-PI

“Combined Laboratory and Modeling Studies of Ice Vapor Growth at Low Temperatures National Science Foundation, 08/01/2014 - 07/31/2017, \$234,468, Research Associate

“Estimation of Urban Greenhouse Gas Emissions Using Regional Atmospheric Inversions National Institute of Standards and Technology”, 10/01/2010 - 09/30/2016, \$1,738,469, Co-PI

“Estimation of Urban Greenhouse Gas Emissions Using Regional Atmospheric Inversions National Institute of Standards and Technology”, 10/01/2010 - 09/30/2016, \$1,029,035, Research Associate

“Continuous, regional methane emissions estimate in northern Pennsylvania gas fields using atmospheric inversions”, U.S. Department of Energy, 10/01/2013 - 09/30/2016, \$1,782,725, Co-PI

“Continuous, regional methane emissions estimate in northern Pennsylvania gas fields using atmospheric inversions”, U.S. Department of Energy, 10/01/2013 - 09/30/2016, \$418,308, Co-PI

“Continuous, regional methane emissions estimate in northern Pennsylvania gas fields using atmospheric inversions”, U.S. Department of Energy, 10/01/2013 - 09/30/2016, \$681,730, Co-PI

Refereed Publications

Barker, H. W., C. F. Pavloski, M. Ovtchinnikov and E. E. Clothiaux, 2004: Assessing a Cloud Optical Depth Retrieval with Model-generated Data and the Frozen Turbulence Assumption, *Journal of Atmospheric Sciences*, 61, 2951-2956.

Pavloski, Charles F., William Brune, and George Young, 1995: Developing an Undergraduate Laboratory in Atmospheric Physics. *Bulletin of the American Meteorological Society*, 76, 235-240.

Conference Proceedings, Presentations and Sessions

Pavloski, Charles F., A. Lavelly, C. Blanton, J. Staph, R. Gilmore, “Getting SysAdmins and Scientists to Play Nice”, Birds of a Feather Panel, PEARC 2018, Pittsburgh, PA

Stauffer, D.R., G.K. Hunter, A. Deng, J.R. Zielonka, K. Dedrick, C. Broadwater, A. Grose, C. Pavloski, and J. Toffler, 2009: Realtime high-resolution mesoscale modeling for the Defense Threat Reduction Agency, 23rd Conference on WAF/19th Conference on NWP, Omaha, NE, Jun 1-5, 10 pp.

Pavloski, Charles F., E. E. Clothiaux, H. W. Barker, A. Marshak, L. Hinkelman and T. P. Ackerman, 2003: Inferring Cloud Optical Depth in Realistic Cumulus Fields: Error Analysis for Simulated and Observed Clouds. Proceedings of the Thirteenth Atmospheric Radiation Measurement (ARM) Science Team Meeting, March 31 to April 4, 2003, Broomfield, Colorado. Available from the DOE ARM Program Web Site.

Barker, H. W., Charles F. Pavloski, M. **Ovtchinnikov**, **E. Kassianov**, and A. Marshak, 2003: Inferring Cloud Optical Depth using Spectrally Varying Surface Albedo: Frozen Turbulence vs. Time Evolution. Proceedings of the Thirteenth Atmospheric Radiation Measurement (ARM) Science Team Meeting, March 31 to April 4, 2003, Broomfield, Colorado. Available from the DOE ARM Program Web Site.

Pavloski, Charles F., E. E. Clothiaux, H. W. Barker, A. Marshak and T. P. Ackerman, 2002: Field Tests of the Cloud-Surface Interaction Based Broken Cloud Field Optical Depth Retrieval: Results from the ARM SGP 2001 Summer-Fall NFOV Campaign. Proceedings of the Twelfth Atmospheric Radiation Measurement (ARM) Science Team Meeting, April 8 to 12, 2002, Tampa, Florida. Available from the DOE ARM Program Web Site.

Marshak A., K. Evans, Y. Knyazikhin, W. Wiscombe, H. Barker, C. Pavloski, M. Miller and A. Davis, 2002 CIMEL measurements of zenith radiances at the ARM SGP site. Proceedings of the Twelfth Atmospheric Radiation Measurement (ARM) Science Team Meeting, April 8 to 12, 2002, Tampa, Florida. Available from the DOE ARM Program Web Site.

Beaulne, A., H. W. Barker, J. P. Blanchet, C. F. Pavloski, E. E. Clothiaux and A. Marshak, 2002: Numerical Tests of the Cloud-Surface Interaction Based Broken Cloud Field Optical Depth Retrieval: Sensitivity to Surface Albedo, Droplet Phase Function, Aerosol and Instrument Noise. Proceedings of the Twelfth Atmospheric Radiation Measurement (ARM) Science Team Meeting, April 8 to 12, 2002, Tampa, Florida. Available from the DOE ARM Program Web Site.

Marshak A., H. Barker, K. Evans, C. Pavloski, B. Holben and W. Wiscombe, 2002 Analysis of cloud optical thickness retrieved from CIMEL measurements. From the Proceedings of the Spring 2002 American Geophysical Union Meeting.

Pavloski, Charles F., E. E. Clothiaux, H. W. Barker, A. Marshak and T. P. Ackerman, 2001: A New Instrument for Inferring the Optical Depth of Broken Clouds Above Green Vegetation. Proceedings from the Eighth International Association of Meteorology and Atmospheric Sciences Meeting, July 10 to 18, 2001, Innsbruck, Austria. To be published.

Pavloski, Charles F., E. E. Clothiaux, H. W. Barker, A. Marshak and T. P. Ackerman, 2001: Inferring Optical Depth of Broken Clouds above Green Vegetation: Part II: A New Spectrometer for the SGP Site. Proceedings of the Eleventh Atmospheric Radiation Measurement (ARM) Science Team Meeting, March 19 to 23, 2001, Atlanta, Georgia. Available from the DOE ARM Program Web Site.

Barker H. W., A. Marshak, C. F. Pavloski, E. E. Clothiaux and T. P. Ackerman, 2001: Inferring Optical Depth of Broken Clouds above Green Vegetation: Part I: Methodology for Surface- and Aircraft-based Observations. Proceedings of the Eleventh Atmospheric Radiation Measurement (ARM) Science Team Meeting, March 19 to 23, 2001, Atlanta, Georgia. To be published.

Pavloski, Charles F., M. Reynolds, H. Ishida, M. Sasaki, T. P. Ackerman and C. N. Long, 2000: Preliminary Analysis of Shortwave Aerosol Optical Depths Measured During Nauru99. Proceedings of the Tenth Atmospheric Radiation Measurement (ARM) Science Team Meeting, March 13 to 17, 2000, San Antonio, Texas. Available from the DOE ARM Program Web Site.

Michalsky, J. J., B. Schmid, R. N. Halthore, C. F. Pavloski, T. P. Ackerman, M. C. Beaharnois, L. C. Harrison, J. M. Livingston, and P. B. Russel, 1999: Comparison of Sunphotometric Measurements During the Fall 1997 ARM Intensive Observation Period. Proceedings from the American Meteorological Society 10th Conference on Atmospheric Radiation, 28 June to 2 July, 1999, Madison, Wisconsin.

Pavloski, Charles F., T. P. Ackerman, 1999: High Speed Cloud Optical Depth Retrievals from a Narrow Field of View, Narrowband, Shortwave, Zenith Pointing Radiometer. Proceedings of the Ninth Atmospheric Radiation Measurement (ARM) Science Team Meeting, March 22 to 26, 1999, San Antonio, Texas. Available from the DOE ARM Program Web Site.

Pavloski, Charles F., T. P. Ackerman, S. Kato, and E. E. Clothiaux, 1998: Using a Sun Photometer as a Narrow Field of View, Vertically Pointing, Narrowband Radiometer: Instrument Design and Concept Verification. Proceedings of the Eighth Atmospheric Radiation Measurement (ARM) Science Team Meeting, March 23 to 27, 1998, Tucson, Arizona. Available from the DOE ARM Program Web Site.

Long, C. N., C. F. Pavloski, and T. P. Ackerman, 1996: A Rotating Shadow Arm Broadband Solar Radiometer: Instrument Design and Concept Verification Using ARM SGP Radiometer Measurements. Proceedings of the Sixth Atmospheric Radiation Measurement (ARM) Science Team Meeting, March 3 to 7, 1996, San Antonio, Texas. (US DOE Document - CONF--9603149). pp 185-187.

Scientific Field Experiment Participation

January – February, 2006: The Department of Energy's TWP -ICE Intensive Observation Period, Darwin, Australia

July- November, 2001: PSU Narrow Field-of-View Cloud Optical Depth Campaign: Atmospheric Radiation Measurement Intensive Operations Period at the Southern Great Plains.

June-July, 2001: Surface, MISR and Air MISR Aerosol Comparison Project, Central Pennsylvania.

January, 2000: Sun Photometer Calibration Expedition at the Mauna Loa Observatory in support of Nauru99.

June-July, 1999: Nauru99: Atmospheric Radiation Measurement Program Intensive Operations Period in the Tropical Western Pacific.

January, 1998: Sun Photometer Calibration Expedition at the Mauna Loa Observatory.

September-October, 1997: Cloud IOP: Atmospheric Radiation Measurement Intensive Operations Period at the Southern Great Plains.

October, 1996: Penn State Continental Stratus Experiment, Rock Springs, PA.

Conferences and Workshops

September 2020: Open Science Grid 2020, Virtual Conference

July 2020: PEARC20, Virtual Conference

September 2019: NSF Large Facilities Workshop (Invited), Washington, DC

July 2019: PEARC19, Chicago, IL

July 2019, IBM AI/ML Workshop (Invited), Yorktown Heights, NY

June 2019: Lenovo United States' June Briefing (Invited) - Big Data, AI, HPC, Raleigh, NC

April 2019: NSF Large Facilities Workshop (Invited), TACC, Austin, TX

March 2019: Dell HPC Community Days, Austin, TX

February 2019: NZ eResearch Conference, Auckland, NZ

February 2019: Data Science & Artificial Intelligence in the Humanities, Arts & Social Sciences, Monash University, Melbourne, AU

November 2018: SC18, Dallas, TX

November 2018: APLU-AUU Workshop on Accelerating Public Access to Research Data, Washington, DC

September 2018: UCAR GeoDAARs Workshop (Invited), Boulder, CO

July 2018: PEARC18, Pittsburgh, PA

July 2017: PEARC17, New Orleans, Louisiana

June 2017: UCAR - Workshop on Modeling Research in the Cloud (Invited), Boulder, CO

November 2016: SC16, Salt Lake City, Utah

July 2016: PSU MacAdmins Conference, University Park, Pennsylvania

June 2016: Tech Pros, PSU Abington Campus, Abington, Pennsylvania

July 2015: PSU MacAdmins Conference, University Park, Pennsylvania

June 2015: Tech Pros, PSU York Campus, York, Pennsylvania

July 2014: PSU MacAdmins Conference, University Park, Pennsylvania

June 2014: Tech Pros, Behrend Campus, Erie, Pennsylvania

June 2014: PSU Systems Management Workshop, University Park, Pennsylvania

February 2011: Cyber-Infrastructure (CI) Day, University Park, Pennsylvania

April 2008: High Performance Computing Workshop, Cornell College, Ithaca, New York

July 2005: Gordon Conference on Atmospheric Radiation, Colby College, Maine.

April 2003: The Thirteenth Atmospheric Radiation Measurement (ARM) Science Team Meeting, Broomfield, Colorado

April 2002: The Twelfth Atmospheric Radiation Measurement (ARM) Science Team Meeting, St. Petersburg, Florida

July 2001: The Eighth International Association of Meteorology and Atmospheric Sciences Meeting, Innsbruck, Austria

March 2001: The Eleventh Atmospheric Radiation Measurement (ARM) Science Team Meeting, Atlanta, Georgia

June 2000: Gordon Conference on Atmospheric Radiation, Connecticut College, Connecticut.

March 2000: The Tenth Atmospheric Radiation Measurement (ARM) Science Team Meeting, San Antonio, Texas

March 1999: The Ninth Atmospheric Radiation Measurement (ARM) Science Team Meeting, San Antonio, Texas

March 1998: The Eighth Atmospheric Radiation Measurement (ARM) Science Team Meeting, Tucson, Arizona

Thesis Publications

Pavloski, Charles F., 1993: An Observational Study of the Mesoscale Inhomogeneities at Cirrus Cloud Levels. M.S. Thesis. The Pennsylvania State University, University Park, PA. 65pp.

Pavloski, Charles F., 2005: An Operational Shortwave Cloud Optical Depth Retrieval for Broken Cloud. Ph.D. Thesis. The Pennsylvania State University, University Park, PA. 136 pp.

Other Awards

Penn State University's Vice Provost for Information Technology Resource Responsibility Award, April 2010

Special Award for Outstanding Contributions to the Undergraduate Academic Program of the College of Earth and Mineral Sciences, Meteorology Department, June 1992.

Deans' List, Penn State University, Spring 1990.

Community Service

Oak Grove Homeowners' Association Board Member – Lemont, Pennsylvania, 2015 - present

Past Exalted Ruler (Lodge President) – State College B. P. O. Elks Lodge #1600 – Lodge Year 2011-2012

Cubmaster – Cub Pack #67, Lemont, PA – Boys Scouts of America – 2010 – 2016

Advancement Chair – BSA Troop #367, Lemont PA - Boys Scouts of America – 2016-2018

Head Coach – State College Little League – 2014 (Minors), Assistant in 2012, 2013 and 2015

Chairman, State College Elks Annual Christmas Charity – 2010

Chairman, State College Elks Annual Charity Golf Tournament - 2009

Parks and Recreation Advisory Board Member – Harris Township, 2007-2009

Professional and Social Memberships

Member, Chi Epsilon Pi since 1991, Meteorological Honor Society at the Pennsylvania State University.

Member, American Meteorological Society since 1991.

Member of the Benevolent and Protective Order of Elks, Lodge #1600, State College, Pennsylvania, since 2005.

Member of the Sons of the American Legion, Post #245, State College, Pennsylvania, since 2008.

Life Member of the Veterans of Foreign Wars Auxiliary, Post #5285, Pine Grove Mills, Pennsylvania, since 2015.

Member of the Free and Accepted Masons, Old Fort Lodge #537, Centre Hall, Pennsylvania, since 2010.

Life Member of the Penn State Alumni Association since 2010.

Member of the Association for Computing Machinery (ACM) since 2016.

Member of Moose International #206, Bellefonte, Pennsylvania since 2019.