

Tina J. Cartwright, PhD.

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Education

- 2012 Post Baccalaureate Teacher Certificate
Marshall University, Huntington, West Virginia
General Science, grades 5-Adult
- 2004 PhD Meteorology
Florida State University, Tallahassee, Florida
Dissertation: Warm-Season Mesoscale Superensemble Precipitation Forecasts.
Advisor: T.N. Krishnamurti
- 1997 MS Meteorology
Florida State University, Tallahassee, Florida
Thesis: Radar Derived Estimates of Latent Heating in the Subtropics.
Advisor: Peter S. Ray
- 1994 BA Geography
West Virginia University, Morgantown, West Virginia
Summa Cum Laude with minor in Physics.

Experience

- Aug. 2007 - present ASSOCIATE PROFESSOR, Marshall University.
Leading several College of Education's initiatives in science education, including elementary and secondary science education programs. Leading four National Science Foundation's science education grant programs, three as the Principal Investigator (\$2+M) and one as the co-PI (\$2M).
- Jan. 2007 - Aug. 2007 MU-ADVANCE PROGRAM DIRECTOR, Marshall University.
Leading the three-year, \$1.2M grant from the National Science Foundation's (NSF) ADVANCE program at Marshall University. Developing new strategies to increase the participation of women in the sciences and engineering fields.

- June 2005 - May 2008 - WEST VIRGINIA STATE CLIMATOLOGIST, West Virginia State University.
Investigating the effects of climate on the environment, including the state's people, land, rivers and lakes. Providing statewide weather data. Collaborating between Land Grant programs and Agriculture Extension Agents to develop value added forecast products for the use of statewide agriculture industry.
- Sept. 2000 - Dec. 2006 - APPLIED METEOROLOGY PROGRAM DIRECTOR, West Virginia State University/West Virginia State Community and Technical College, Institute, WV.
Developed a bachelor and associate degree program in meteorology. Conducted a needs analysis for a new academic program. Created course curriculum. Instructed meteorology courses including Weather and Climate, Physical Climatology, Severe Local Storms, Weather System Analysis and Elementary Meteorology.

Publications

- Cartwright, T. (2016) Designing and implementing an elementary science after-school field experience. *Innovations in Science Teacher Education*, 1(2). Retrieved from <http://innovations.theaste.org/designing-and-implementing-an-elementary-science-after-school-field-experience/>
- Cartwright, T. & Smith, S. (2016). Tackling science instruction through “science talk” and service learning. In Heider, K. (ed) *Service learning as pedagogy in early childhood education*. Springer, Heidelberg.
- Petcovic, H. L., Turner, S. P., Geraghty Ward, E., Cartwright, T., LaDue, N., Mogk, D., Bentley, A.P. K., and Her, X. (2016). *Geo-Needs: Stakeholder needs assessment for broadening participation in the geoscience workforce (Geo-Needs Focus Group Meetings Report)*. Available from the Geo-Needs website: <http://serc.carleton.edu/geoneeds/index.html>.
- Cartwright, T., Smith, S. & Hallar, B. (2014) Confronting barriers to teaching elementary science: Afterschool science teaching experiences for preservice teachers. *Teacher Education & Practice*, 27 (2-3), 464-487.
- Cartwright, T. & Atwood, J. (2014) Elementary pre-service teachers' response-shift bias: Self-efficacy and attitudes toward science'. *International Journal of Science Education*, 36(14), 2421-2437.
- Cartwright, T. (2012) Science talk: Preservice teachers facilitating science learning in diverse afterschool environments. *School Science and Mathematics*, 112(6), 384-391.
- Cartwright, T., Miranda, R., Hermann, R., & Hemler, D. (2012) Clear skies ahead: Clearing up confusion about clouds. *Science Scope*, 45(10), 61-67.
- Cartwright, T. J. & Krishnamurti, T.N. (2005) Warm Season Mesoscale Superensemble Precipitation Forecasts. *Weather and Forecasting*, 45, 278-292.

Cartwright, T. J. & Ray, P.A (1998) Radar Derived Estimates of Latent Heating in the Subtropics. *Monthly Weather Review*, 125, 726 - 742.

Krishnamurti, T. N., C. P. Wagner, T. J. Cartwright, and D. Oosterhof (1997). Wave Trains Excited by Cross-Equatorial Passage of the Monsoon Annual Cycle. *Monthly Weather Review*, 125, 2709 - 2715.

Grants & Contracts

Principal Investigator: Collaborative Research: GEO-CCP Foundry – Building Institutional Capacity for Broadening Participation in the Geosciences. MU Subaward, NSF - IUSE, 1/1/2015 – 12/31/2016, \$22K. Collaborative award with 2 additional institutions: Western Michigan University, University of Montana.

Principal Investigator: Supporting Community Initiatives in Teaching, Learning and Knowing Science (SCI-TALKS). NSF - ITEST, 8/1/2011 – 5/31/2016, \$1.2M.

Co-Principal Investigator: Appalachian Math-Science Partnership – MU Subaward. NSF - MSP, 8/1/2007-7/31/2010, \$2M.

Principal Investigator: COMMunities Educating Tomorrow's Scientists (COMETS). NSF - AYS, 12/15/2006-12/1/2009, \$799,990.

Principal Investigator: Integrated Design for Geoscience Education: Upward Bound. NSF – Geoscience Education, 6/1/2006-5/31/2008, \$148,642.

Program Director: Marshall University ADVANCE. NSF - ADVANCE, 9/1/2006 – 8/31/2009, \$1.2M.

Professional Development and Service

July 2012 - present
THE GLOBE PROGRAM: Secretary on the Evaluation Working Group
Served as the secretary for the international organization The GLOBE Program. This was an elected position with the selected member group to provide GLOBE leadership support on evaluating the impacts of the 20 year international environmental education program which extends across more than 100 countries and 20,000 trained teachers.

Jan. 2015 - present
ELECTIONS COMMITTEE CO-CHAIR: ASTE organization.
Served as the co-chair for the international Association for Science Teacher Education. Duties include planning and preparing for the election of new board and elections committee members.

Sept. 2011 - Sept. 2014
NEXT GENERATION SCIENCE STANDARDS WRITING TEAM FOR WEST VIRGINIA: Selected team member by West Virginia Department of Education. Served as member of the team of educators from West Virginia working on the Next Generation Science Standards. Duties include providing feedback and suggestions to the Achieve writing team who are creating the new Common Core standards in science.

- Sept. 2010 -
Sept. 2013 SECRETARY AND EXECUTIVE COMMITTEE MEMBER FOR MID-ATLANTIC ASSOCIATION FOR SCIENCE TEACHER EDUCATORS: Professional regional organization of the international ASTE. Served as secretary and executive committee member for the regional organization MA-ASTE. Duties include planning and preparing for upcoming annual conferences, writing and editing by-laws for organization.
- 2007 - 2015 NATIONAL SCIENCE FOUNDATION PANEL REVIEWER: National Science Foundation, Rosslyn VA. Served as panel reviewer for multiple programs at NSF, Geoscience Education and ITEST (Innovative Technology Experiences for Students and Teachers) and IUSE (Improving Undergraduate STEM Education. Reviewed submitted proposals and constructed panel review responses that are utilized by NSF to select future funded programs.
- Oct. 11, 2015 -
2010 GOVERNOR'S COMMISSION ON GRADUATE STUDIES IN STEM APPOINTMENT: Office of the Governor, Charleston, WV. Served on panel to identify the challenges facing graduate STEM education in WV. Wrote recommendations for the Governor and Legislature to improve graduate student support, improve faculty recruitment and retention, improve undergraduate preparation for nationally competitive scholarships and fellowships, and support expanded library capacity.
- June & Oct.,
2006 WV CENTER FOR PROFESSIONAL DEVELOPMENT WORKSHOP LEADER: Charleston, WV. Facilitated two workshops for the WVCPD. In June 2006, I led a two-day workshop for Pre-AP: Strategies in Science – Creating a Learner-Centered Classroom. Learning strategies addressed inquiry-base dlearning, discussion and discourse techniques, the five-stage instruction model, and inductive reasoning. The workshop provided both certification in the GLOBE program and strategies for designing meaningful investigations for the middle-school classroom. In October 2006, I lead a one-day workshop for Pre-AP: Strategies in Science – Inquiry-based Laboratories for Middle Schools. Through activities and discussions centered on the GLOBE program, participants learned to use inquiry-based laboratories to teach science processing, critical thinking, and problem-solving skills. Topics addressed include traditional versus inquiry-based laboratory activities and using inquiry-based labs to teach critical thinking skills.
- June 5-14,
2015 AMS SUMMER POLICY COLLOQUIUM PARTICIPANT: American Meteorological Society, Washington, DC. Obtained an overview of policy basics, and how decisions are made governing the course and future of atmospheric science. Spoke with federal officials and Congressional staffers about current atmospheric policy issues. Investigated multiple case studies of current issues in depth and detail. Developed skills and experiences to understand and influence the atmospheric policy process.

Sept. 19-23,
2015

THE GLOBE PROGRAM TRAINER CERTIFICATION: UCAR, Boulder, Colorado.

Trainer Certification obtained for the Global Learning and Observations to Benefit the Environment (GLOBE) program. Authorized to conduct professional development workshops to train teachers in the protocols which make up the program. Investigated the role and importance of inquiry in the classroom and implemented hands-on teaching methods for earth science education.

Selected Presentations

Bentley, A.P.K., Petocivic, H., Turner, S., LaDue, N., Her, X., Cartwright, T., Mogk, D.W., Ward, E. 2016. Geo-Needs: A Synthesized Ideal Model for Broadening Participation in the Geosciences at Two-Year and Minority-Serving Institutions. Earth Education Rendezvous, Madison, WI. Online Program: serc.carleton.edu/earth_rendezvous/2016/program/posters/thursday/136410.html

Magee, P., Cartwright, T.J., & Hemler, D. "Science Education Field Experience 2.0: Intentional Field Experiences to develop Culturally Relevant, Confident, and Content Expert Teachers," Reno, NV. (January 8, 2016).

Xai, H., Sheldon, T., LaDue, N., Bentley, A.P.K., Petcovic, H., Mogk, D., Cartwright, T. 2015. Geo-Needs: Investigating models for improved access to geosciences at two-year and minority-serving colleges. Abstract ED23D-0873 presented at 2015 Fall Meeting, AGU, San Francisco, Calif., 14-18 Dec.

Cartwright, T.J., Hemler, D., & Magee, P. "The Challenges of Student Understanding of Weather," Mid-Atlantic Association for Science Teacher Education, Lore City, OH. (October 21, 2015).

Cartwright, T.J., Hemler, D., & Magee, P. "Climate Change: Student Conceptions in Australia, the United Kingdom, and the United States," European Science Education Research Association, Helsinki, FI. (August 31, 2015).

Bentley, A.P.K., Petcovic, H., Turner, S.P., Ladue, N.D., Her, X., Cartwright, T., Mogk, D.W., Ward, E. 2015. Geo-needs: Ideal models for broadening participation in the geosciences at two-year and minority-serving colleges. GSA annual Meeting Abstracts with Programs, Baltimore, MD. Vol. 47, No. 7, p. 108.

Magee, P., Cartwright, T.J., Hemler, D., & Govett, A., "Designing and Assessing Science Field Experiences in Teacher Education," Portland, OR. (January 10, 2015).

Cartwright, T.J., & Smith, S. "The Effectiveness of Field Experiences or Elementary Methods Course: After-School Instruction vs. Classroom Observations," Portland, OR. (January 10, 2015).

Cartwright, T. J., Smith, S., & Hallar, B. "Impact of Afterschool Teaching on Elementary Science Preservice Preparation," American Educational Research Association, Philadelphia, PA. (April 6, 2014).

Cartwright, T.J. Malmberg, J., & Atwood, J. "Weather and Climate Change conceptions of Middle School Students," American Meteorological Society, Atlanta, GA. (February 3, 2014).

Cartwright, T.J. Malmberg, J., & Atwood, J. "Weather and Climate Change conceptions of Middle School Students," Association for Science Teacher Education, San Antonio, TX. (January 16, 2014).

Cartwright, T. J., McDilda, K., "Clear Skies Ahead: Clearing up Confusion on Clouds," National Science Teacher's Association, San Antonio, TX. (April 13, 2013).

Cartwright, T. J., 8th Annual North America Regional Meeting, "Climate Change Conceptions of Middle and Early High School Students," The GLOBE Program, San Antonio, TX. (April 10, 2013).

Cartwright, T. J., Atwood, J., "A Comparison of Climate Change Conceptions Across Different International Populations of Middle School and Early High School Students.," Association for Science Teacher Educators, Charleston, South Carolina. (January 10, 2013).

Cartwright, T. J., Atwood, J., Annual Conference, "Response-shift bias of internal and external standards in elementary science pre-service teachers," National Association for Research in Science Teaching, Indianapolis, IA. (March 26, 2012).

Cartwright, T.J., McDilda, K. "Clear Skies Ahead: Clearing up Confusion on Clouds." National Science Teacher's Association, Louisville, KY. (March 19, 2012).

Cartwright, T. J., Smith, S., Annual Conference, "How would they know? Developing elementary preservice teachers' science teaching self-efficacy," National Association for Research in Science Teaching, Minneapolis, MN. (April 4, 2011).

Cartwright, T. J., Smith, S., Adams, C., Annual Conference, "Combined preservice and inservice professional development: fostering collaboration during student teaching," Association for Science Teacher Education, Minneapolis, MN. (January 20, 2011).

Cartwright, T.J., "Science talk: Science discourse as formative assessment in an afterschool science program with preservice teachers." Association for Science Teacher Education, Sacramento, CA. (January, 2010).

Michalchik, V., Coulter, B., Cartwright, T.J., Pirog, K., Feldman, A. "Teacher's experience in informal STEM Settings: What lessons can we learn?." National Association for Research in Science Teaching, Philadelphia, PA. (March 24, 2010).

Cartwright, T.J., McDilda, K. "Changes in Earth and Sky: Weather Adages for Classroom Connections." National Science Teacher's Association, Philadelphia, PA. (March 19, 2010).

McDilda, K., Cartwright, T.J. "So you Want to Make Supermodels and Super Scientists!" National Science Teacher's Association, Philadelphia, PA. (March 18, 2010).

Cartwright, T.J., "Using Video Data to Assess Impacts of OST on Pre-Service Teaching Practices." Out-of-School-Time STEM: Building Experience, Building Bridges. National Science Foundation, Washington, DC. (October 19, 2009).

Synergistic Activities

- 2015 NSF IDEAS Lab for Broadening Diversity in the Geosciences Participant
- 2014 Elected to the Elections Committee for the ASTE organization
- 2014 NSF Geosciences Ideas Lab Participant
- 2012 WVDE selected West Virginia Review Team for Next Generation Science Standards
- 2011 NSF panel reviewer for ITEST – Innovative Technology Experiences for Students and Teachers
- 2011 Principal Investigator for \$1.2M NSF ITEST program called SCI-Talks to support pre-service teachers leading science after-school in community-based locations in WV
- 2010 Elected secretary of the Mid-Atlantic Association for Science Teacher Educators
- 2010 NSF panel reviewer for Geoscience Education
- 2009 Presider and assessor for both the ASTE and NARST conventions
- 2009 Featured presentation at the first Teaching Conference at Marshall University on formative assessment for faculty and graduate teaching assistants
- 2008 Invited Speaker at the University of Costa Rica, San Jose, CR
- 2008 Invited Presenter at 21st Century Community Learning Centers Annual Conference
- 2008 NSF panel reviewer for programs: ITEST – Innovative Technology Experiences for Students and Teachers, and OEDG – Opportunities for Enhancing Diversity in Geosciences
- 2007 Professional Development Coordinator for NSF program STEM Fusion for WV High School Science and Math teachers
- 2007 Participated in NSF-supported Videocases for Science Teaching Analysis Program through the LessonLab Research Institute to improve elementary science instruction
- 2007 International Teacher Workshop on GLOBE in Costa Rica, sponsored by the National Science Foundation and Omar Dengo Foundation
- 2007 WV Department of Education WESTEST Science Content Review Committee
- 2007 Principal Investigator for \$800K NSF Academies for Young Scientist program COMMunities Educating Tomorrow's Scientist (COMETS) for after-school minority youth in grades 2-5 in Charleston, WV
- 2007 Appointed to Advisory Board for West Virginia Parent Connections, a U.S. Department of Education, Office of Innovation and Improvement program

2006 Principal Investigator for \$148 K NSF Geoscience Education program Integrated Design for Geoscience Education for High-school Upward Bound students in WV

2006 Facilitated multiple NASA teacher workshops in partnership with NASA IV&V Educator Resource Center in Fairmont, WV

2005 Served as governor appointed member on West Virginia's Commission on Graduate Studies in Science, Technology, Engineering and Mathematics

2005 Became a certified GLOBE program Teacher Trainer

Awards & Honors

May 2012 Pickens Queen Teaching Award, Marshall University

April 2009 Sarah Denman Faces of Appalachia Fellowship, Marshall University

May 2008 Outstanding Alumni Geography Department, West Virginia University

Feb. 2007 Outstanding Young West Virginia Researcher, WV EPSCoR

Aug. 1994 -
May 2001 National Physical Science Consortium Graduate Fellowship

Aug. 1993 -
May 1994 Barry M. Goldwater Undergraduate Research Scholarship

Aug. 1992 -
May 1994 AMS/Technology Undergraduate Scholarship

1994 Phi Beta Kappa, West Virginia University

1993 Phi Kappa Phi Honor Society, West Virginia University

Professional Affiliations

Phi Kappa Phi charter member of chapter at Marshall University, 2010

NARST member, March 2009 - present

ASTE member, January 2008 - present

Mid-Atlantic ASTE member, September 2007 - present

SSMA member, April 2010 - present

Faculty Advisor, AMS Student Chapter, West Virginia State University, Oct. 2004 – Dec. 2006

American Geophysical Union Member, 2005.

Board of Women and Minorities for American Meteorological Society, Jan. 1998 – Jan. 2000

Chi Epsilon Pi, Meteorology Honor Society, inducted 1995, secretary Aug. 1996 - May 1997.

American Meteorological Society Member, 1994