

Andrea E. Orton
Lecturer
Department of Earth, Atmospheric, and Planetary Sciences
Purdue University

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Professional Goal

My professional goal is to advance the scientific understanding of climate change and to produce viable solutions to protect society from potential climate change consequences.

Education

- PhD, Purdue University, May 2020 (Atmospheric Science)
Thesis title: Meteorological Response to CO₂ Sequestration and Storage in Antarctica
- Master of Science, Purdue University, August 2015 (Atmospheric Science)
Thesis title: Removal of CO₂ from the Terrestrial Atmosphere to Curtail Global Warming: From Methodology to Laboratory Prototype
Advisor: Dr. Ernest M. Agee
- Bachelor of Science, Purdue University, May 2013 (Atmospheric Science)

Honors and Awards

- Purdue Climate Change Research Center Fall 2019 Travel Grant Award
- ***Purdue Cagiantas Fellowship Recipient (August 2018-August 2019)***
- Purdue Climate Change Research Center Fall 2017 Travel Grant Award
- Purdue EAPS June L. and Tan Sun Chen Research Scholarship (Spring 2017)
- Purdue EAPS Henry Silver Graduate Scholarship Award (Spring 2016)
- **Purdue's Department Earth, Atmospheric, and Planetary Science Teaching Honor Roll (Fall 2015, Fall 2016, Spring 2017, Fall 2017, Spring 2018, Spring 2021, Spring 2022, Spring 2023, Summer 2023)**
- ***Purdue Charles C. Chappelle Fellowship Recipient (2013-2014)***
- ***Purdue Student Innovators Reception for Creativity in Science and Engineering (2012)***

Professional Experience

- Visiting Assistant Professor, Purdue University (January 2022 – Dec. 2023)
- Postdoctoral Appointee, Argonne Leadership Computing Facility (Oct. 2020-November 2021)
- Online Course Instructor, Purdue University EAPS Department (June 2020-August 2020)
- National Center of Atmospheric Research (NCAR) Visitor (November-December 2018): Sponsored by Dr. Rich Neale
- Undergraduate Research Assistant to Dr. Ernest M. Agee (2010—2013)

Professional Membership

- American Meteorological Society

Professional Conferences

- 100th AMS Annual Meeting, January 2020
- 29th Supercomputing Conference, November 2017
 - 11th Annual Student Cluster Competition: "Mystery Application" Developer and Judge
 - MPAS-Atmosphere 5.1

Publications

3. **Orton, Andrea**, Agee, Ernest, and Michael Baldwin, 2023: Meteorological Response to CO₂ Sequestration and Storage in Antarctica, *in preparation*
2. Agee, Ernest and **Andrea Orton**, 2016: An Initial Laboratory Prototype Experiment for Sequestration of Atmospheric CO₂. *J. Appl. Meteor. & Clim.* **55**, 1763-1770.
1. Agee, Ernest, **Andrea Orton** and John Rogers, 2013: CO₂ Snow Deposition in Antarctica to Curtail Anthropogenic Global Warming. *J. Appl. Meteor. & Clim.* **52**, 281-288. **Selected as Bulletin of the American Meteorological Society Paper of Note in May 2013 issue.**

Presentations

1. Invited Lecturer for Presentation: *Laboratory Sequestration of CO₂ from Terrestrial Air*
 - Purdue University EAPS 117 Course: Introduction to Atmospheric Science (March 2015)
 - Purdue University EAPS 221 Course: Survey of Atmospheric Science (March 2015)

- Purdue University CE 557 Course: Air Quality Management (December 2014)
- 2. Purdue Graduate EXPO Presentation (February 2015): *Laboratory Sequestration of CO₂ from Terrestrial Air*
- 3. Purdue Graduate EXPO Presentation (February 2019): *Meteorological Response to CO₂ Sequestration and Storage in Antarctica*
- 4. **100th AMS Annual Meeting (January 2020): *Meteorological Response to CO₂ Sequestration and Storage in Antarctica***

Teaching Experience

1. Instructor
 - a. EAPS 13800 Thunderstorms and Tornadoes
 - b. EAPS 22100 Survey of the Atmosphere
 - c. EAPS 43100, 43200, 43300 Synoptic Lab I, II, III
 - d. EAPS 42300 Dynamics II
 - e. EAPS 52600 Introduction to Geofluid Dynamics
 - f. EAPS 32700 Climate, Science, and Society
 - g. EAPS 42200 Dynamics I
 - h. EAPS 43400 Weather Analysis & Forecasting
 - i. EAPS 59100: Numerical Weather Prediction with Cloud Computing
2. Lab Instructor
 - a. **EAPS 431: Synoptic Lab I Thermodynamics (Fall 2019)**
 - i. ***Taught atmospheric thermodynamics with Python code in quantitative lab assignments to junior level undergraduates***
 - b. **EAPS 432: Synoptic Lab II Dynamics (Fall 2019)**
 - i. ***Taught atmospheric dynamics with Python, nmap2, gdplot2 in quantitative lab assignments to junior/senior level undergraduates***
 - c. EAPS 312 Capstone Environmental Science for Elementary Teachers (Fall 2014, Fall 2015, Fall 2016, Spring 2017, Fall 2017)
 - d. EAPS 102 Earth Science for Elementary Education (Spring 2018)
3. Teaching Assistant
 - a. EAPS 105 The Planets (Spring 2016)
 - b. EAPS 117 Introduction to Atmospheric Science (Spring 2012, Spring 2013, Spring 2015, Spring 2016, Fall 2016, Fall 2017)
 - c. EAPS 138 Thunderstorms and Tornadoes (Fall 2014, Fall 2015, Spring 2017, Spring 2018)
 - d. EAPS 320 Physics of Climate (Spring 2015)