

DEREK PHILIP BROWN

*Cooperative Institute for Research in Environmental Sciences (CIRES) (303) 590-5276 •
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EDUCATION

- **University of Colorado at Boulder:** Ph.D. in progress, Department of Atmospheric and Oceanic Sciences (ATOC) . Advisor: Dr. David Noone. Thesis topic: Evaluation of the atmospheric moisture budget using isotopic measurements from the Tropospheric Emission Spectrometer (TES)
- **University of Colorado at Boulder:** M.S., 2006, Department of Atmospheric and Oceanic Sciences (ATOC)
- **University of Colorado at Boulder:** B.A., 1996, Department of Ecology and Evolutionary Biology (EBIO)

RELEVANT COURSEWORK

- **Remote Sensing:** Remote Sensing of the Atmosphere and Oceans
- **Dynamics:** Atmospheric Dynamics I and II, Planetary Atmospheres, Physical Oceanography
- **Modeling:** Climate and Environmental Modeling, Climate Analysis and Modeling
- **Chemistry, Aerosols, and Clouds:** Clouds and Aerosols, Principles of Atmospheric Chemistry
- **Other graduate courses:** Mountain Climatology, Desert Meteorology, Independent Research on the Global Relative Humidity Budget
- **Mathematics:** Calculus I and II, Multivariate Calculus, Differential Equations, Linear Algebra
- **Physics:** Mechanics, Electricity, Magnetism
- **Statistics:** Statistical Methods and Probability

COMPUTER SKILLS

- **Operating Systems:** Unix, Linux, Windows
- **Languages:** IDL, Fortran, HTML, C
- **Software:** Word, Excel, PowerPoint, Photoshop, Endnote

ACADEMIC AWARDS

- **U.S. Department of Energy Graduate Education Fellowship (GREF),** \$19,200/year, 2006-2009

RESEARCH/WORK EXPERIENCE

- **Cooperative Institute for Research in Environmental Sciences (CIRES),** Boulder, CO, USA
 - Title: Research Assistant, June 2005-present
 - Description: Investigation of the hydrological cycle using stable water isotopes, NCEP dataset analysis, and climate modeling
 - Advisor: Dr. David Noone (dcn@colorado.edu)

- **Mount Washington Weather Observatory (MWO)**, Coos County, NH, USA
 - Titles: WMO Certified Weather Observer, Head of Summit Safety Committee, Volunteer Coordinator, August 2002-August 2003
 - Description: METAR and synoptic weather observations, monthly data analysis and assimilation, instrument calibration and repair, educational outreach, daily weather broadcasting, product testing
 - Supervisor: Ken Rancourt (krancourt@mountwashington.org)
- **Connecticut Weather Center (CWT)**, Danbury, CT, USA
 - Title: Intern, June 2002-August 2002
 - Description: Updating weather center website, weather observation, educational outreach
 - Supervisor: William Jacquemin (weatherlab@ctweather.com)

TEACHING EXPERIENCE

- **University of Colorado Atmospheric and Oceanic Sciences Department (ATOC)**
 - Lab Instructor: Weather and the Atmosphere Lab, 2 sections in Fall 2004, 1 section in Spring 2005, and 1 section in Summer 2006
 - Fill-in Lecturer: Principles of Climate in Fall 2007 and the graduate level course, Dynamics of the Atmosphere in Spring 2006 and 2007
 - Teaching Assistant: Weather and the Atmosphere, Spring 2005

RESEARCH INTERESTS

My broad research goal is to characterize the global hydrological regime using global satellite observations of the isotopic composition of water vapor in the troposphere. My current research involves using trajectory analysis and a quasi-Lagrangian model to identify the changes in both the amount of water vapor and the isotopic composition of air parcels en route, in order to map water residence times, rainfall recycling rates, and convective detrainment rates in the low to mid-troposphere.

PUBLICATIONS

- **Brown, D.**, and D. Noone, 2008: Using HDO and H₂O Measurements from the Tropospheric Emission Spectrometer to Constrain a Quasi-Lagrangian Mass Transport Model, J. Cote (Ed.), Report No. 38. World Meteorological Organization, 1-03.
- **Brown, D.**, J. Worden, and D. Noone, 2008: Comparison of atmospheric hydrology over convective continental regions using water vapor isotope measurements from space. *Journal of Geophysical Research*, 113, doi:10.1029/2007JD009676.
- **Brown, D.**, and D. Noone, 2008: Using isotope constraints to model monsoonal moisture exchange. *Research Activities in Atmospheric and Oceanic Modeling*, J. Cote (Ed.), Report No. 37. World Meteorological Organization, 1-03.

- **Brown, D.**, and D. Noone, 2007: The dominant controls on tropospheric hydrology over continental convective regions using isotope measurements from space Research Activities in Atmospheric and Oceanic Modeling, J. Cote (Ed.), Report No. 36, World Meteorological Organization, 1-03.
- **Brown, D.**, and D. Noone, 2006: Variations in the relative humidity budget from the NCAR/NCEP Reanalysis from 1979-2004. Research Activities in Atmospheric and Oceanic Modeling, J. Cote (Ed.), Report No. 35, World Meteorological Organization, 2-07.
- Rancourt, K., and **D. Brown**, 2002: The Mount Washington Observatory, 1917M, 100. Jahresbericht des Sonnblick-Vereines

PRESENTATIONS

Talks:

- **Brown, D.**, 2009: Characterizing Hydrology Over Convectively Active Regions Using Isotopic Measurements from the Tropospheric Emission Spectrometer, Alpine Summer School on Monsoon Systems, Valsavarenche, Valle d'Aosta, Italy, June, 2009
- **Brown, D.**, 2009: Using HDO and H₂O Measurements From TES to Constrain a Quasi-Lagrangian Moisture Transport Model, Tropospheric Emission Spectrometer Science Team Meeting, National Center for Atmospheric Research, Boulder, CO, February, 2009
- **Brown, D.**, 2008: Using Measurements of the Isotopic Composition of Water Vapor to Model Regional Moisture Exchange, Global Change Education Program End-Of-Summer Workshop, Washington DC, August, 2008
- **Brown, D.**, 2007: Comparison of atmospheric hydrology over convective continental regions using isotope measurements from space, Global Change Education Program End-Of-Summer Workshop, Washington DC, August, 2007
- **Brown, D.**, 2006: Seasonality of the Amazonian Water Cycle Using Stable Isotope Data from TES Aboard NASA's AURA Spacecraft, Los Alamos National Laboratory, October, 2006

Posters:

- **Brown, D.P.**, J. Worden and D. Noone, 2009: Using HDO and H₂O Measurements from the Tropospheric Emission Spectrometer to Constrain a Quasi-Lagrangian Moisture Transport Model. CIRES 4th Institute-Wide Symposium, April, 2009, Boulder, Colorado

- **Brown, D.**, J. Worden and D. Noone., 2008: Optimal Estimates of Regional Moisture Exchange Using Isotopic Ratios of Water Vapor From the Tropospheric Emission Spectrometer. *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract A23C-0317.
- Worden, J., **D. Brown** and D. Noone., 2008: Isotopic Variations of Water Vapor in Regions of Deep Convection. *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract A23C-0316.
- **Brown, D.**, J. Worden and D. Noone., 2008: Using Measurements of the Isotopic Composition of Water Vapor to Model Regional Moisture Exchange. AGU Chapman Conference on Atmospheric Water Vapor and Its Role in Climate, Kailua-Kona, Hawaii, USA 20-24 October 2008
- **Brown, D.**, J. Worden and D. Noone., 2007: Comparative Hydrology Over Monsoonal Regions Using Seasonal Distributions of Stable Water Isotopes. *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract A43D-1577.
- Noone, D., **D. Brown** and J. Worden, 2007: Global scale water isotope observations and the impact of the terrestrial biosphere on atmospheric hydrology, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract B12C-08, (invited).
- Worden, J., D. Noone, **D. Brown** and K. Bowman. 2007: Annual variability of Tropospheric Water Vapour Isotopes as observed by TES. *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract H31I-02.
- **Brown, D.P.**, J. Worden and D. Noone, 2006: Seasonal effects of the land surface on the Amazonian water cycle using stable isotope data from TES aboard NASA's AURA spacecraft. *Eos Trans. AGU*, 87 Fall Meet. Suppl., Abstract A41B-0039.
- **Brown, D.**, J. Worden and D. Noone., 2007: Comparative Hydrology Over Monsoonal Regions Using Seasonal Distributions of Stable Water Isotopes. Atmospheric and Oceanic Sciences Student Poster Conference, Boulder, Colorado, October, 2007
- **Brown, D.P.**, J. Worden and D. Noone, 2007: Seasonal effects of the land surface on the Amazonian water cycle using stable isotope data from TES aboard NASA's AURA spacecraft. CIRES 2nd Institute-Wide Symposium, April, 2007, Boulder, Colorado

PROJECT PARTICIPATION

- **HAWAII Field Experiment**, funded by the National Science Foundation, Mauna Loa Observatory, Hawaii, October 8th to November 8th, 2008
 - Objectives:
 - Evaluate surface-based water vapor analyzers for climate applications.

- Perform a validation of remotely sensed isotope concentrations
- Evaluate which mechanisms control mid-troposphere water vapor in the subtropics
- Personal Contributions:
 - Performed flask and cryogenic water vapor observations
 - Data acquisition and troubleshooting for three automated analyzers
 - Disassembly and shipping of analyzers at project completion

CONFERENCES/WORKSHOPS ATTENDED

- Alpine Summer School on Monsoon Systems, June 8-13, 2009, Valsavarenche, Valle d'Aosta, Italy
- Cooperative Institute for Research in Environmental Sciences 4th Institute-Wide Symposium, April 2009, Boulder, CO, USA
- Tropospheric Emission Spectrometer Science Team Annual Meeting, February 23-25, 2009, National Center for Atmospheric Research, Boulder, CO, USA
- American Geophysical Union Fall Meeting , December 15-19, 2008, San Francisco, CA, USA.
- American Geophysical Union Chapman Conference on Atmospheric Water Vapor and Its Role in Climate , October 20-24, 2008, Kailua-Kona, HI, USA.
- Global Change Education Program End-of-Summer-Workshop , August 17-19, 2008, Washington, DC, USA.
- Numerical Analysis Techniques in IDL Laboratory for Atmospheric and Space Physics , May 29th, 2008, Boulder, CO, USA.
- American Geophysical Union Fall Meeting , December 10-14, 2007, San Francisco, CA, USA.
- Department of Atmospheric and Oceanic Sciences Student Poster Conference, University of Colorado, Boulder, CO, October, 2007
- Global Change Education Program End-of-Summer-Workshop , August 12-14, 2007, Washington, DC, USA.
- Global Change Education Program Orientation and Workshop , June 3-10, 2007, Little Rock, AR, USA.
- Cooperative Institute for Research in Environmental Sciences 2nd Institute-Wide Symposium, April, 2007, Boulder, CO, USA
- American Geophysical Union Fall Meeting , December 11-15, 2006, San Francisco, CA, USA.
- Global Change Education Program Orientation and Workshop , June 11-18, 2006, Portland, OR, USA.
- National Oceanic and Atmospheric Administration 7th International Conference on Carbon Dioxide , September 26-30, 2005, Broomfield, CO, USA.

PROFESSIONAL SOCIETIES

- American Geophysical Union
- American Meteorological Society

VOLUNTEER/SERVICE

- **Reviewer:** Journal of Geophysical Research - Atmospheres, 2008

- **Volunteer:** NOAA sponsored 7th International Conference on Carbon Dioxide, Broomfield, CO, USA, Sept 26-30, 2005
 - Duties: Information distribution at conference, chaperone for scientific trip to the National Ice Core Laboratory
- **Product Tester:** L.L. Bean, Inc. clothing and outdoor gear, 2003-present
 - Duties: Field test the latest L.L. Bean products and give feedback on quality and durability.

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