

Amy R. Hudson
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EDUCATION

Ph.D. student in School of Natural Resources and the Environment and Laboratory of Tree-Ring Research Fall 2015 – Present

University of Arizona in Tucson, AZ

Dissertation title: Spatio-temporal feedbacks between phenology and climate

Minor: Statistics

Advisors: David Moore, PhD. and Valerie Trouet, PhD.

M.S. in Environmental Science and Technology December 2012

University of Maryland in College Park, MD

Thesis title: Assessing the uncertainty of emergy analyses with Monte Carlo simulations

Advisor: David Tilley, PhD.

B.S. in Mathematics December 2009

University of Maryland in College Park, MD

RESEARCH EXPERIENCE

Graduate Research Assistant Spring 2016 – Present

University of Arizona in Tucson, AZ

Principle Investigator: Valerie Trouet, Ph.D.

- Conducted fieldwork for tree-ring sample collection in north central Wyoming.
- Dated, measured, and performed analyses on WY tree-ring samples.
- Used exploratory data analyses to determine future locations and species for sampling to help in reconstructing the Northern Pacific Jet Stream.
- Assisted in developing an undergraduate course in statistics.

Co-PI: Dave Moore, Ph.D.

- Researching the influence of the jet stream on Northern American phenology with cloned lilacs.
- Data assimilation sensitivity of Leaf Area Increment in a Global Community Land Model.

Associate Extension Specialist- Natural Resources Spring 2014 – Spring 2015

University of Maryland in College Park, MD

PI: Robert Tjaden, Ph.D.

- Analyzed surveys focused on Maryland loggers, forest landowners, and forest industries.
- Assisted in the: design of a confidence index for the future of forestry in the State of Maryland, development of policy recommendations to help the forest industry be profitable and sustainable in the future, and implementation of an extension outreach program to explain findings.

Mickey Leland Energy Fellow (MLEF) Summers 2009, 2010

Department of Energy in Germantown, MD

- Frequently reviewed and recommended improvements in MLEF program policies and procedures using data aggregation and validation.

Undergraduate Researcher

Fall 2008 – Spring 2009

Louis Stokes Alliance for Minority Participation (LSAMP)
University of Maryland in College Park, MD

Mentor: Daniel Kirk-Davidoff, Ph.D.

- Reduced uncertainty levels of oceanic heat dispersal in relation to climate sensitivity.
- Compared current models and began aggregating a new box model in MATLAB.

Summer Undergraduate Research Fellow

Summers 2007, 2008

National Institute of Standards and Technology (NIST) in Gaithersburg, MD

Mentor: Larry Reeker, Ph.D.

- Researched autonomy in intelligent systems in the Information Technology Lab.
- Examined the future of linguistics by studying Noam Chomsky's Linear Bounded Automata problem and the restrictions it defines.

TEACHING EXPERIENCE**Graduate Teaching Assistant**

Fall 2015; Fall 2017

University of Arizona in Tucson, AZ

- Mentored students in an Introduction of Global Change course; Lectured in an integrative learning classroom with multi-media.

Adjunct Faculty of Mathematics

Fall 2013 – Spring 2014

Howard Community College in Columbia and Laurel, MD

- Instructed students in pre and introductory algebra concepts.

Graduate Teaching Assistant

Fall 2010 – Summer 2012

University of Maryland in College Park, MD

- Developed and lead discussions for Calculus I and II for Life Science Majors focusing on the application of calculus to ecology.
- Created database using analysis of past group work problems.

PUBLICATIONS

- Smith, W.K., J.A. Biederman, R.L. Scott, D.J.P. Moore, M. He, J.S. Kimball, D. Yan, **A. Hudson**, et al. (2017). Evidence of a robust relationship between solar-induced chlorophyll fluorescence and gross primary productivity across dryland ecosystems of southwestern North America. Submitted to *Geophysical Research Letters*.
- Hudson, A.R.**, R. Alfaro-Sanchez, S. Belmecheri, D.J.P. Moore, and V. Trouet (2017). Summer temperature extremes in the northern Rockies: A tree-ring- based reconstruction (1670-2014) from the Bighorn Mountains, WY. Session: Past atmospheric variability inferred from paleoclimate proxies. Abstract submission for AGU Fall Meeting 2017.
- Belmecheri, S., F. Babst, **A.R. Hudson**, J. Betancourt, V. Trouet. (2017). Northern Hemisphere Jet Stream position indices as diagnostic tools for climate and ecosystem dynamics. *Earth Interactions*.
- Hudson, A.R.**, S. Belmecheri, D.J.P. Moore, and V. Trouet (2016). Validating the Spring Jet Stream Indices Using Extended Spring Index (SI-x) Models. Abstract submission for AGU Fall Meeting 2016.
- Tjaden, Bob, Dan Rider, Elliott Campbell, and **Amy Hudson**. (2015). Maryland's Forest Resources in a Dynamic Environment: Assessing the future confidence and sustainability of Maryland's forest industry. Report for the Maryland Department of Natural Resources. http://dnr2.maryland.gov/forests/Documents/sfc/SFC_ConfidenceIndex.pdf.
- Hudson, A.R.** and D.R. Tilley. (2014). Assessing uncertainty in emergy evaluations using Monte Carlo simulations. *Ecological Modelling*. 271, 52-61. doi:10.1016/j.ecolmodel.2013.05.018.
- Hudson, A.R.** (2013). Assessing the uncertainty of emergy analyses with Monte Carlo simulations (Master's thesis). Retrieved from Dissertations and Theses database. <http://hdl.handle.net/1903/13863>.
- Hudson, A.R.** and L.H. Reeker. (2007). Standardizing measurements of autonomy in the artificially intelligent. *Performance Metrics for Intelligent Systems Workshop*. Paper presented at PerMIS'07 Workshop, Courtyard Gaithersburg Washington Center, Gaithersburg, MD, 28-30 August (pp.70-75). New York, NY: ACM. doi:10.1145/1660877.1660886.

PRESENTATIONS

- Hudson, A.** (2017). *The Winds above, the Flowers below: How the Jet Stream Influences Changing Seasonal Cues and Plant Growth*. Presented for University of Arizona Science Café in Tucson, AZ.
- (2017). *The Power of Citizen Science*. Interviewed by Claire Rogers with the Desert Leaf: Plan of Action column for the December issue.
- Hudson, A.** (2017). *Climate change and dendrochronology*. Presented for NASA Space Grant Event: Hands-on, inquiry-based STEM curriculum development with high school teachers at the University of Arizona, Tucson, AZ.
- Hudson, A.** (2017). *Capturing fluxes 8 miles above us with plant growth events in our backyard*. Presented for the Tree-Ring Day of Earthweek at the University of Arizona, Tucson, AZ.
- Hudson, A.** (2016). *Validating the Spring Jet Stream Indices using Extended Spring Index (SI-x) models*. Poster presented 12-16 Dec. at the American Geophysical Union's Fall Meeting in San Francisco, CA.
- Hudson, A.** (2015). *Trees track the shifting of the North Pacific Jet Stream*. Presented at the Institute of the Environment's Environmental Grad Blitz at the University of Arizona, Tucson, AZ.
- Hudson, A.** (2012). *Valuing ecosystem services using emergy analyses: the importance of quantifying emergy uncertainty values*. Guest lecture conducted in the ENST689V Valuing Ecosystem Services course at the University of Maryland, College Park, MD.
- Hudson, A.** (2012). *Addressing uncertainty in emergy analyses with Monte Carlo simulations*. Presented at the 12th Annual American Ecological Engineering Society (AEES) Meeting: Coupling Natural & Human Systems, ESF Campus, Syracuse, NY.
- Hudson, A.** (2011). *Modeling uncertainty in emergy accounting: assessing variability in the solar transformity of corn production*. Poster presented at the 11th Annual Meeting of the American Ecological Engineering Society (AEES): Engineering for Ecosystem Services, Renaissance Hotel, Asheville, NC.
- Hudson, A.** (2010). *Grab-and-go system's analysis and suggestions for updates & Emergy: an accounting tool for the gulf oil spill*. Presented at the Mickey Leland Energy Fellowship annual conference in Pittsburgh, PA.
- Hudson, A.** (2009). *MLEF Program Application Modifications*. Presented at the Mickey Leland Energy Fellowship annual conference in Houston, TX.
- Hudson, A.** (2009). *Climate Sensitivity: Oceanic Heat Dispersal*. Presented at the Louis Stokes Alliance for Minority Participation Undergraduate Research Program Symposium in College Park, MD.

Hudson, A. (2008). *Why is the LBA problem so interesting and still not solved by Mathematics?*
Presented at the VIP Symposia on Internet related research with elements of MIT (VIPSI) 2008
Conferences, Tivat, Montenegro.

Hudson, A. (2007). *Standardizing measurements of autonomy in the artificially intelligent.* Presented at
the VIP Symposia on Internet related research with elements of MIT (VIPSI) 2007 Conferences,
Bled, Slovenia.

HONORS/ AWARDS

- Nominated for the UA College of Science Galileo Circle Scholarship Spring 2018
- Nominated for an International P.E.O. scholarship Fall 2017
- School of Natural Resources Student Leadership award Spring 2017
- W.F. and Margie McCaughey Student Endowment (\$1,263) Summer 2017
- Alsie French and Edmund Schulman Memorial Scholarship (\$700) Spring 2017
- Carson Scholar and Biosphere2 Fellowship (\$5,000) Spring 2017 – Fall 2017
- Travel and Lodging awards for annual AEES Conferences Summers 2011, 2012
- College Park Scholar Citation- Advocates for Children Fall 2005 – Spring 2007

WORKSHOPS, SKILLS, RELEVANT COURSEWORK

- **Attended Workshops:** Alan Alda Science Communication Workshop, 2018
Effectively Comm. Science- Expert Witness Training Academy, 2017
Natl. Center for Atmospheric Research Environmental Modeling Workshop, 2016
Natl. Ecological Observatory Network Data Institute, 2016
- **Skills:** Microsoft Office- Word, Excel, Powerpoint; SAS; MATLAB; C; Qualtrics; R; Perl6; Bash
Field work in delineating wetlands, water quality, water bird surveying, submerged aquatic
vegetation sampling, GPS, YSI
- **Graduate coursework:** communication, valuing ecosystem services, biostatistics, uncertainty
modeling and analysis, invasive ecology, wetland soils, ecological design, industrial ecology,
climate dynamics, spatio-temporal analysis, time-series analysis, environmental statistics,
dryland ecohydrology, dendrochronology, general circulation observations and modeling
Undergraduate coursework: biology, restoration ecology, advanced calculus, differential
equations, linear algebra, economics, C programming

ACTIVITIES/ MEMBERSHIPS

Tree-Ring Society Member	Fall 2017 – Present
American Geophysical Union Member	Summer 2016 – Present
Earth Science Women’s Network	Winter 2016 – Present
National Developmental College Director for USA Ultimate	Fall 2014 – Present
Girls Ultimate Movement ambassador	Summer 2015 – Present
Maryland Women’s Ultimate Frisbee Club Team Coach	Fall 2010 – Spring 2014
Graduate Association Treasurer	Spring 2010 – Spring 2012

REFERENCES

Valerie Trouet, Ph.D. Associate Professor in SNRE and Geosciences

Relationship to Applicant: PhD advisor

Work Address: 1215 E Lowell Street
Tucson, AZ 85721

Work Phone: 520.626.8004

Website: <http://trouetlab.arizona.edu/>

Email: trouet@ltrr.arizona.edu*

David Moore, Ph.D. Associate Professor in SNRE

Relationship to Applicant: PhD advisor

Work Address: ENR2 N225
1064 E Lowell Street
Tucson, AZ 85721

Website: <http://djpmoore.tumblr.com/home>

Email: davidjpmoore@email.arizona.edu*

Robert Tjaden, Ph.D. Extension Specialist, Professor

Relationship to Applicant: Former principle investigator and faculty advisor

Work Address: 1433 Agricultural Engineering Bldg. #142
College Park, MD 20742

Work Phone: 301.405.1179

Website: <http://www.enst.umd.edu/people/Tjaden/index.cfm>

Email: rtjaden@umd.edu*

* Preferred method of contact