

ANDY VANLOOCKE
Promotion and Tenure Vita

Assistant Professor

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Iowa State University of Science and Technology

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EDUCATION

- 2012 Ph.D. University of Illinois at Urbana-Champaign, Atmospheric Science
 2009 M.S. University of Illinois at Urbana-Champaign, Atmospheric Science
 2007 B.S. Ohio State University, Geography: specialization Atmospheric Science

PROFESSIONAL EXPERIENCE

- 2014 to pres. Assistant Professor, Department of Agronomy, Iowa State University of Science and Technology
Nine month appointment; 60% Research, 40% Teaching
- 2012– 2013 Postdoctoral Research Associate, USDA Agricultural Research Service, Urbana
- 2008 – 2012 Graduate Research Assistant, Department of Atmospheric Sciences, UIUC
- 2007 Graduate Teaching Assistant, Department of Atmospheric Sciences, UIUC

HONORS AND AWARDS

- 2012 Procter & Gamble Student Research Award Finalist
- 2007-2008 Dept. Atm. Sci. UIUC Ogura Award for Teaching Excellence (honorable mention)
- 2007 Named to UIUC “List of Teachers Ranked as Excellent” (including “outstanding” rankings)

SUMMARY OF EXTERNALLY FUNDED GRANTS AT IOWA STATE UNIVERSITY¹

- Total external funding as Principal Investigator (PI): \$ XXX,XXX
 - \$ XXX,XXX of this from federal sources
- Total external funding under direct control as Co- Principal Investigator (Co-PI): \$ XXX,XXX

EXTERNALLY FUNDED COMPETITIVE GRANTS AT IOWA STATE UNIVERSITY

1. PI Name, co-PIs Names. Funding Agency Funding Program “Title” \$XXX,XXX.

Role:

INTENRALLY FUNDED COMPETITIVE GRANTS AT IOWA STATE UNIVERSITY

1. PI **Andy VanLoocke**, Linderman M, Petrov A, Takle G, **Iowa EPSCoR Seed Grant**, “AirBorne Hyperspectral Imaging of the Story County Wind Farm.” \$20,000.

¹ Dollar amounts do not match goldsheet values. See individual footnotes for each grant.

FUNDED GRANTS PRIOR TO IOWA STATE UNIVERSITY

1. PI Carl J Bernacchi, co-PI **Andy VanLoocke**. 2012. **Illinois Water Resource Center**, “The Impacts of Cellulosic Biofuel Feedstock Production on Midwest US Hydrologic Cycle.” \$32,000

INVITED PRESENTATIONS

Letters of invitation available upon request

3. **National Council for Science and the Environment** 16th National Conference and Global Forum on Science, Policy and the Environment, Washington, DC 2016
Author/Title: VanLoocke A, Slattery RA, Archontoulis SA, Bernacchi CJ, Teh S, Roby MR. Water as a limiting factor for agricultural production at the regional scale.
Significance: This invitation was a result of my reputation for conducting measurement and modeling research on crop water use (i.e evapotranspiration) and water use efficiency at a range of scales.
2. **Ecological Society of America** Annual Meeting, Baltimore, MD 2015.
Author/Title: VanLoocke A, Roby MR, Ferin KM, Jensen JL. Agroecosystem water use in the context of global change.
Significance: This invitation was a result of my reputation for conducting measurement and modeling research on the impacts of global change (including land use change) on key hydrologic cycle processes. It was also a result of my program’s research on crop water use (i.e evapotranspiration) and water use efficiency.
1. **ASA, CSSA, & SSSA** International Annual Meetings, Tampa, FL 2013.
Author/Title: VanLoocke A, Bernacchi CJ, Twine TE, Kucharik C. Scaling Biogeochemical Processes to Quantify the Impacts of Regional Scale Land-Use-Change in the Context of Bioenergy.
Significance: This invitation was a result of my PhD thesis research and growing reputation for modeling carbon, water, and nitrogen cycles of perennial biofuel crops.

CLASSROOM TEACHING AT IOWA STATE UNIVERSITY

2015-present **Agron 106X** Global Agriculture in a Changing World

- 150 minutes of lecture per week, VanLoocke provides lecture instruction and one graduate assistant grades homework.
- Taught every Fall Semester with average enrollment of XX students.
- Fall 2015 teaching evaluations yielded **X.XX/5.00** for “Overall Instructor Score”.
Agronomy Undergraduate Mean = X.XX/5.00

SUMMARY OF CAREER PUBLICATIONS

- 9 peer-reviewed journal articles
- 1 conference proceeding
- 1 report to the European Commission Joint Research Centre Institute for Energy & Transport.

- Google Scholar total citations = 203; h-index = 6; i10-index = 6

<http://scholar.google.com/citations?user=oYisWMkAAAAJ&hl=en>

PEER-REVIEWED PUBLICATIONS – MAJOR EFFORT AT IOWA STATE UNIVERSITY

1. Bernacchi CJ **VanLoocke A**. 2015 Terrestrial ecosystems in a changing environment: A dominant role for water. *Annual Reviews of Plant Biology*. DOI: 10.1146/annurev-arplant-043014-114834.
Role: 100% of my effort occurred while at ISU.
Contribution: 60%, concept; 60%, analysis, 40%, writing; 40% editing
Significance: This invited review paper reflects my understanding of the role water will play in ecosystem (managed and unmanaged) function under global change, including increasing CO₂, temperature, O₃ and drought. I originally lead the development of the concept, and my co-author assisted in improving upon the concept and in the execution of the supporting material from peer reviewed literature as well as the data analysis, writing and editing.

PEER REVIEWED PUBLICATIONS – MAJOR EFFORT PRIOR TO IOWA STATE UNIVERSITY

8. Bagley J, Bernacchi CJ, Davis SC, Georgescu M, Hussain MZ, Miller J, Nesbitt S, **VanLoocke A**. (2014) The biophysical link between climate, water, and vegetation in bioenergy agro-ecosystems. *Biomass and Bioenergy*, 71, 187-201. Role. 10% of my effort occurred at University of Illinois, 90% at the United States Department of Agriculture.
7. Kucharik CJ, **VanLoocke A**, Lenters JD, Motew MM. (2013) Miscanthus establishment and overwintering in the Midwest US: Can strategic residue management reduce the risk of lethal soil temperatures? *PLoS ONE*, 8, e68847. Role. 50% of my effort occurred at University of Illinois, 50% at the United States Department of Agriculture.
6. Bernacchi CJ, Bagley J, Serbin SP, Ruiz-Vera U, **VanLoocke A**. (2013) Modeling C3 photosynthesis from the chloroplast to the ecosystem. *Plant Cell & Environment*, 36, 1641-1657. Role. 10% of my effort occurred at University of Illinois, 90% at the United States Department of Agriculture.
5. Hussain MZ, **VanLoocke A**, Siebers M, Markelz RJC, Ruiz-Vera U, Leakey ADB, Ort DR, Bernacchi CJ. (2013) Growth of maize at future CO₂ concentrations decreases canopy evapotranspiration and soil water depletion. *Global Change Biology*, 19, 1572-1584. Role. 50% of my effort occurred at University of Illinois, 50% at the United States Department of Agriculture.
4. **VanLoocke A**, Twine TE, Zeri M, Bernacchi CJ. (2012) A regional comparison of water-use-efficiency for miscanthus, switchgrass and maize. *Agricultural and Forest Meteorology*, 164, 82-95. Role. 100% of my effort occurred at University of Illinois: this was a dissertation chapter.

3. **VanLoocke A**, Betzelberger AM, Ainsworth EA, Bernacchi CJ. (2012) Rising ozone concentrations decrease soybean evapotranspiration and water use efficiency whilst increasing canopy temperature. *New Phytologist*, 195, 164-171. Role. 100% of my effort occurred at University of Illinois: this was a dissertation chapter.
2. Hickman GC, **VanLoocke A**, Dohleman FG, Bernacchi CJ. (2010) A comparison of canopy water use for maize and two perennial grass species identified as potential bioenergy crops. *Global Change Biology Bioenergy*, 2, 157-168. Role. 100% of my effort occurred at University of Illinois
1. **VanLoocke A**, Bernacchi CJ, Twine TE. (2010) The impacts of Miscanthus x. giganteus production on the Midwest U.S. hydrologic cycle. *Global Change Biology Bioenergy*, 2, 180-191. (*in the top 10% of most cited articles in Global Change Biology Bioenergy published since January 2010*). Role. 100% of my effort occurred at University of Illinois: this was a MS thesis chapter.

PUBLICATIONS IN PREPARATION OR REVIEW

VanLoocke A, Archontoulis S. Management strategies for closing the water and nitrogen yield gap for maize in Iowa. In Prep.

Slattery S, **VanLoocke A**, Ort DR. Reductions in chlorophyll content improve photosynthesis and light use efficiency at the leaf but not canopy level. In Prep.

Khoeler I, Ruiz-Vera U, **VanLoocke A**, Long S, Clemente T, Bernacchi CJ. Over expression of SBPase increases photosynthesis at elevated CO₂ and temperature. In Prep.

VanLoocke A, Twine TE, Kuchairk CJ, Bernacchi CJ. Water quality and quantity in the context of large-scale cellulosic biofuel production in the Mississippi Atchafalaya river basin. In Prep.

Miller JM, **VanLoocke A**, Gomez-Casanovas N, Bernacchi CJ. Candidate perennial bioenergy grasses have a higher albedo than annual row crops in the Midwestern U.S. Submitted to Global Change Biology Bioenergy

EDUCATIONAL TOOLS

Carl J. Bernacchi, Justin E. Bagley, Shawn P. Serbin, Ursula M. Ruiz-Vera, David M. Rosenthal, **Andy VanLoocke** "Modeling Diurnal Photosynthesis":

<http://demonstrations.wolfram.com/ModelingDiurnalPhotosynthesis/>

Wolfram Demonstrations Project. Published: March 21, 2013

Carl J. Bernacchi, Justin E. Bagley, Shawn P. Serbin, Ursula M. Ruiz-Vera, David M. Rosenthal, **Andy VanLoocke** "Modeling Photosynthetic Responses to Light":

<http://demonstrations.wolfram.com/ModelingPhotosyntheticResponsestoLight/>

Wolfram Demonstrations Project. Published: March 21, 2013

Carl J. Bernacchi, Justin E. Bagley, Shawn P. Serbin, Ursula M. Ruiz-Vera, David M. Rosenthal, **Andy VanLoocke** "Modeling Photosynthetic Responses to Carbon Dioxide" :

<http://demonstrations.wolfram.com/ModelingPhotosyntheticResponsestoCarbonDioxide/>

Wolfram Demonstrations Project. Published: March 21, 2013

Carl J. Bernacchi, Justin E. Bagley, Shawn P. Serbin, Ursula M. Ruiz-Vera, David M. Rosenthal, **Andy VanLoocke** “Modeling Photosynthetic Responses to Temperature”

<http://demonstrations.wolfram.com/ModelingPhotosyntheticResponsestoTemperature/>

Wolfram Demonstrations Project. Published: March 21, 2013

Carl Bernacchi, **Andy VanLoocke**. “Modeling Transpiration of Leaves”

<http://demonstrations.wolfram.com/ModelingTranspirationofLeaves/>

Wolfram Demonstrations Project. Published: October 7, 2014

GOVERNEMENT REPORTS

Bernacchi CJ, **VanLoocke A**, Nesbitt SW. Impact of land use change due to bioenergy on Midwestern US hydrology. Joint Research Centre on the European Commission Report, *Bioenergy and Water*.

CONFERENCE PROCEEDINGS

Sautter E, **VanLoocke A**, Box J. (2007) Measurements of Central Ohio Shortwave Cloud Radiative Effect: Assessment of Solar Power Potential. American Solar Energy Society Conference Technical Paper.

UNDERGRADUATE DEGREE ADVISING

2015 Advised eight (10) Agronomy undergraduate students. All freshman or sophomores. I have not received reviews.

2014 Advised eight (8) Agronomy undergraduate students. All freshman or sophomores. I have not received reviews.

SUMMARY OF PRIMARY RESEARCH ADVISING

- **Total Undergraduates:** three
- **Total MS:** two
- **Total PhD:** one
- **Total Post-Doctoral:** #

UNDERGRADUATE RESEARCH ADVISING

2015 Ms. Kelsie Ferin, Meteorology major at Iowa State Univ. (Meteorology Senior Thesis)

2014 Ms. Selina Teh, Biology major at Iowa State Univ. (ISU URA)

2014 Ms. Jennifer Jensen, Environmental Science major at Iowa State Univ. (ISU URA)

GRADUATE AND POST-DOCTORAL ADVISING AT IOWA STATE UNIVERSITY

Under my direct supervision (3)

No.	Name	Degree	Department	Conferred	Current Employer
3	Gabriel McNunn	PhD	Agronomy ¹	In progress	-
2	Matthew Roby	MS	Agronomy	In progress	-

1	Kaitlin Togliatti ²	MS	Agronomy	In progress	-
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¹ Graduate Program in Environmental Science: ² co-advisor with Dr. Sotirios Archontoulis

Committee Service (8)

No.	Name	Degree	Department	Conferred	Current Employer
8	Mauricio Tejera	PhD	Agronomy	In progress	-
7	Ahmad Samman	PhD	GEAT	In progress	-
6	Bradley Carlberg	PhD	GEAT	In progress	-
5	Race Higgins	PhD	Agronomy	In progress	-
4	Victoria Walker	MS	Agronomy	In progress	-
3	John Lawson	PhD	GEAT	In progress	-
2	Taleena Sines	PhD	Agronomy	In progress	-
1	Hamze Dokoohaki	PhD	Agronomy	In progress	-

TEACHING SCHOLARSHIP

N/A

INTERVIEWS AT IOWA STATE UNIVERSITY

N/A

TEACHING, ADVISING, PROMOTION & GRANT WORKSHOPS

2015	Strategies for Obtaining Tenure: Panel Discussion
2015	CALS P&T Workshop for Assistant Professors
2015	Faculty Peer Review a Win-Win Process
2015	Project LEA/RN workshop and bi-weekly LE/ARN community professional development
2014	Fall Advising Summit
2014	Advising Theory and Models
2014	Strategies for Obtaining Tenure: Panel Discussion
2014	Award-Winning Faculty Series: Aligning Your Course with Learning Objectives. Creates Efficiency
2014	NSF CAREER Grant workshop
2014	CALS P&T Workshop for Assistant Professors
2014	Write Winning Grant Proposals

SERVICE TO IOWA STATE UNIVERSITY

2014-present	One-on-One Orientation Tours for Prospective Undergraduates (3)
2014-present	Department of Agronomy Ad-hoc Committee on Freshman Curriculum
2014-present	College of Agricultural and Life Sciences Ad-hoc Committee on Unmanned Aircraft Systems
2014-present	Department of Agronomy Undergraduate Assessment Committee

- 2014 Agro-IBIS agroecosystem modeling workshop
- 2014 Atmospheric Science Undergraduate Research Thesis Committee
- 2014 Panel Member: EnSci 690 - Applying/interviewing for/landing a faculty job

SERVICE TO EXTERNAL SCIENTIFIC COMMUNITY

- 2015 NSF Ad-hoc Reviewer for a proposal
- 2014 BARD Binational Agricultural Research & Development Review Panel
- 2014 NASA Postdoctoral Fellowship Program Review Panel
- 2013–present Plant, Cell and Environment Editorial Review Board Member

PRE-PUBLICATION JOURNAL REVIEWS

Total Reviews Completed at Iowa State (8)

No.	Name	Number of Reviews
16	Agricultural and Forest Meteorology	2
15	Water Resources Research	1
14	Agricultural Water Management	1
13	Agronomy Journal	3
12	Biomass and Bioenergy	1
11	Earth System Dynamics	-
10	Ecological Modelling	-
9	Environmental Research Letters	-
8	Global Change Biology	-
7	Global Change Biology – Bioenergy	-
6	Journal of Applied Meteorology and Climate	-
5	Journal of Hydrology	-
4	Photosynthesis Research	-
3	Plant, Cell & Environment	-
2	Plant Physiology	-
1	PLoS ONE	-

SELECTED SUBMITTED/UNFUNDED GRANTS AT IOWA STATE UNIVERSITY

2015

8. Archontoulis SA, Castellano MJ, **VanLoocke A**, Dietzel R, Licht M. Cropping systems modeling tools to improve soybean management and yield in Iowa. **Submitted to Iowa Soybean Association**
\$179,914
7. Asheesh Singh, Sotirios Archontoulis, **VanLoocke A**, Kevin Price, Baskar Ganapathysubramanian, Soumik Sarkar. Strategic breeding approaches to increase yield using high throughput phenotyping,

predictive phenomics and advanced crop modelling. **Submitted to USDA Foundational Program – Plant Breeding.** \$499,807

6. Heaton EA, **VanLoocke A**, Schulte L, Darr M, Helmers M, Rosentrater K, Muth D, Gronstal Anderson I. Delivering a replicable, integrated, landscape design template that simultaneously improves bioenergy production, land owner profitability, and environmental performance. **Submitted to DOE Landscape Design** \$4,967,408 + \$1,241,852 cost share.

2014

5. Al-Kaisi, M. Archontoulis, S. Hart, C. **VanLoocke, A.** Anapalli, C. Andales, A. Elmore, R. Kumar, S. Nielsen, D. Strock, J. Vigil, M. Sustaining Resilient Agricultural Cropping Systems Across a Wide Water Availability Gradient in the Central U.S. **USDA NIFA** \$5,000,000.
4. **A VanLoocke**, Michael Castellano, Emily Heaton, Maria Salas-Fernandez. Ecosystem services of producing high-yielding sorghum in the rain-fed Midwest US. **USDA NIFA** \$499,808 – *received High Priority*.
3. Singh AK, **VanLoocke A**, Castellano M, Singh A, Mueller D. Breeding for yield using high throughput phenotyping platform. **USDA NIFA** \$499,000
2. **VanLoocke A**, Ainsworth EA. Combining field data with crop models to understand the drivers of historical yield gains for Iowa soybeans. **Iowa Soybean Association** \$125,211
1. Heaton EA, **VanLoocke A**, Hunt CB, Mitchell RB. A Coupled Field and Modeling Approach for Quantifying the Environmental Impacts of Genetic Improvements in Switchgrass. **USDA BRAG** \$499,000

VOLUNTEERED PROFESSIONAL MEETING PRESENTATIONS

* Indicates I was a the presenting author

- If the presenter was a student under my direct supervision they are underlined.

2015

5. **VanLoocke A**, Teh S, Kantipudi R, Koester R, Ainsworth EA 2015. An analysis and evaluation of the sensitivity of an agroecosystem model to variation in key photosynthetic parameters. **American Society of Plant Biologists**, Minneapolis MN
4. Teh S, Kantipudi R, **VanLoocke A** 2015. Quantifying Crop Model Sensitivity to Photosynthetic Parameterization: A Case Study on Soybean Yields. **R.F. Baker Plant Breeding Symposium**. Ames, IA.

2014

3. Roby M, Salas Fernandez M, Heaton M, **VanLoocke A** 2014. A comparison of water use and water-use-efficiency of maize and biomass sorghum in the rain-fed Midwest. American Geophysical Union. San Francisco CA.
2. **VanLoocke A***, Slattery R, Bernacchi CJ Zhu X, Ort DR 2014. Do soybean leaves have too much chlorophyll? Measurements of vertical profiles of light in typical and reduced chlorophyll mutants. **American Society of Plant Biologists**. Portland, OR.
1. **VanLoocke A***, Slattery R, Bernacchi CJ Zhu X, Ort DR 2014. Do soybean leaves have too much chlorophyll? Measurements of vertical profiles of light in typical and reduced chlorophyll mutants. **Gordon Research Conference on CO2 Assimilation in Plants: Genome to Biome**. Waterville Valley, NH

SOCIETY MEMBERSHIPS

American Society of Agronomy

American Geophysical Union

American Society of Plant Biologists

International Society of Photosynthesis Research

American Meteorological Society