

# **Philip Walter Gassman**

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## **Education**

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Ph.D., Environmental Science, Iowa State University, Ames, Iowa, 2008

M.S., Agricultural Engineering, Iowa State University, Ames, Iowa, 1986

B.S., Agricultural Engineering, Iowa State University, Ames, Iowa, 1984

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## **Work Experience**

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Associate Scientist, Center for Agricultural and Rural Development, Iowa State University, Ames, Iowa,  
June 2008 to present

Assistant Scientist III, Center for Agricultural and Rural Development, Iowa State University, Ames,  
Iowa, August 1998 to June 2008

Assistant Scientist II, Center for Agricultural and Rural Development, Iowa State University, Ames,  
Iowa, July 1993 to August 1998

Research Associate III, Center for Agricultural and Rural Development, Iowa State University, Ames,  
Iowa, July 1989 to July 1993

Research Assistant, Center for Agricultural and Rural Development, Iowa State University, Ames, Iowa,  
November 1987 to July 1989

Research Analyst, Center for Agricultural and Rural Development, Iowa State University, Ames, Iowa,  
January 1987 to November 1987

Graduate Research Assistant, Agricultural Engineering Department, Iowa State University, Ames, Iowa,  
1984 to 1986

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## **Grants (PI and Co-PI)**

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National Science Foundation, Social and biophysical models to integrate local food systems, climate dynamics, built forms, and environmental impacts in the urban FEWS nexus. 2020-2023 (with Janette Thompson and others), \$1,386,810

National Science Foundation, An Integrated Big Data Framework for Water Quality Issues in the Upper Mississippi River Basin. 2018-2020, \$1,000,000 (\$100,000 to CARD).

U.S. Department of Energy, A Hierarchical Evaluation Framework for Assessing Climate Simulations Relevant to the Energy-Water-Land Nexus. 2016-2018, (with W. Gutowski and others) \$4,190,259 (\$110,417 to CARD).

Texas AgriLife Research, Texas A&M Univ. System. Technical Assistance on the Conservation Effects Assessment Project (CEAP) for Modeling. 2016-2017, \$15,000.

Texas AgriLife Research, Texas A&M Univ. System. Technical Assistance for the i\_APEX Software in Support of the Conservation Effects Assessment Project. 2015-2016, \$15,000.

Iowa Water Center, Cost-Effectiveness of Reverse Auctions for Watershed Nutrient Reductions in the Presence of Climate Variability. 2014-2015 (with A. Valcu and C.L. Kling), \$30,000.

Texas AgriLife Research, Texas A&M Univ. System. Technical Assistance on the Conservation Effects Assessment Project (CEAP). 2014-2015, \$15,000.

U.S. Department of Agriculture, National Institute of Food and Agriculture. Climate Change, Mitigation, and Adaptation In Corn-Based Cropping Systems. 2011-2015 (with L. Wright-Morton, C.L. Kling, and 39 others), \$20,000,000 (\$641,571 to CARD).

Texas AgriLife Research, Texas A&M Univ. System. Technical Assistance on the Conservation Effects Assessment Project (CEAP). 2013-2014, \$15,000.

National Science Foundation. Northern Gulf of Mexico Hypoxia and Land Use in the Watershed: Feedback and Scale Interactions. 2010-2013 (with C.L. Kling, M. Jha, R. Srinivasan, J. Arnold, N. Rabalais, R.E. Turner, S. Rabotyagov, and M. Moskal), \$1,373,369 (\$655,289 to CARD).

U.S. Environmental Protection Agency (Region 7). Improving a Watershed Scale Model to Integrate Wetlands into Watershed Planning. 2010-2012 (with M. Soupier, W. Crumpton, M. Helmers, and M. Jha), \$303,390 (\$27,120 to CARD).

Texas AgriLife Research, Texas A&M Univ. System. Ongoing Development and Maintenance of the Interactive APEX (i\_APEX) Software in Support of the National CEAP Modeling Study. 2011-2012, \$30,000.

University of Iowa, Iowa Flood Center. Impact of Land Use and Climate change on Flood Risk and Ecosystem Services for Major Iowa Watersheds. 2010-2011 (with C.L. Kling), \$100,000.

U.S. Department of Agriculture, Economic Research Service. Economics of Markets for Agricultural Greenhouse Gases. 2010-2011 (with C.L. Kling), \$109,000.

U.S. Department of Agriculture, Economic Research Service. The supply of greenhouse gas offsets from agriculture and their water quality effects in the Upper Mississippi River Basin. 2010-2011 (with C. Kling and M. Jha), \$100,000.

U.S. Environmental Protection Agency. A Market Feasibility Assessment for a Reverse Auction in the Boone River Watershed. 2009-2011 (with C.L. Kling, M. Jha, K. Schilling, C. Wolter, and S. Rabotyagov), \$200,000.

U.S. Environmental Protection Agency. A Market Feasibility Assessment for a Reverse Auction in the Walnut Creek Watershed. 2009-2011 (with C.L. Kling, M. Jha, K. Schilling, C. Wolter, and S. Rabotyagov), \$200,000.

U.S. Environmental Protection Agency. A Market Feasibility Assessment for Water Quality Trading and Reverse Auctions in the Raccoon River Watershed. 2009-2011 (with C.L. Kling, M. Jha, K. Schilling, C. Wolter, and S. Rabotyagov), \$200,000.

U.S. Department of Agriculture, Natural Resources Conservation Service. Modeling and Analytical Assistance for the Conservation Effects Assessment Project (CEAP). 2009-2010, \$25,000.

U.S. Environmental Protection Agency (Region 7). Development of SWAT Hydrologic Parameters for Specific Iowa Landform Regions. 2009-2010 (with M. Jha, K. Schilling, C. Wolter, and M. Buyck). \$76,797 total (\$65,421 CARD subcontract).

National Science Foundation. Biofuels and the Hydrologic Cycle. 2008-2010 (with R.P. Anex, B.K. Gelder, M.K. Jha, and R.W. Arritt). \$307,903 total (\$74,907 CARD subcontract).

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## Awards and Honors

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SWAT 2018 Global Ambassador Award (at 2018 International SWAT Conference, Brussels, Belgium)  
2018 Iowa State University Regents Award for Staff Excellence  
2017 Most Cited Paper Award for scientific contribution to the SWAT model (at 2017 International SWAT Conference, Warsaw, Poland)  
2016 USDA National Institute of Food and Agriculture Partnership Award for the Climate Change, Mitigation, and Adaption in Corn-based Cropping Systems team (L. Wright-Morton: team leader)  
2013 SWAT Ambassador Award for an integral role in documenting all major SWAT model events, reviewing papers, and helping to conduct several SWAT conferences in Asia (at 2013 International SWAT Conference, Toulouse, France)  
2013 Iowa State University College of Agriculture and Life Sciences Dean's Citation for Extraordinary Contributions (as part of the Science Assessment Team, Iowa Nutrient Reduction Strategy)  
2012 Outstanding Associate Editor for the Journal of Environmental Quality (published by the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America).  
2010 Transactions of the ASABE Soil and Water Division invited research paper (with J.R. Williams, S. Wang, A. Saleh, E. Osei, L. Hauck, C. Izaurralde, and J. Flowers)  
2010 Iowa State University College of Agriculture and Life Sciences Professional and Scientific Research Award.  
2008 Iowa State University Professional and Scientific Research Award.  
2008 Iowa State University College of Agriculture and Life Sciences Team Award (with C. Kling, H.F. Hennessy, M. Jha, T. Campbell, and S. Secchi).  
2007 Transactions of the ASABE Soil and Water Division invited research paper (with M.R. Reyes, C.H. Green, and J.G. Arnold).  
2006 American Agricultural Economics Association Annual Meeting Second Place Poster Presentation: (with S. Secchi, M. Jha, K. Kurkalova, C.L. Kling, and H. Feng).  
2005 American Agricultural Economics Association Annual Meeting Second Place Poster Presentation: (with S. Secchi, M. Jha, L. Kurkalova, H. Feng, T. Campbell, and C.L. Kling).  
2004 American Agricultural Economics Association Annual Meeting Second Place Poster Presentation: (with C.L. Kling, H. Feng, L. Kurkalova, S. Secchi, M. Jha, T. Campbell, A. Bhaskar, C. Burkart, S. Sengupta, and R. Olson.).  
2003 American Agricultural Economics Association Annual Meeting First Place Poster Presentation: (with C.L. Kling, L. Kurkalova, S. Secchi, and M. Jha).  
Alpha Epsilon Honor Society, Iowa Pi Chapter

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## Professional Activities

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**Professional Societies:** American Society of Agricultural and Biological Engineers (ASABE); Soil and Water Conservation Society (SWCS); American Geophysical Union (AGU); Asian Association for Agricultural Engineering (AAAE); American Society of Agronomy (ASA); World Association of Soil and Water Conservation (WASWAC); Association of Agricultural, Biological and Food Engineers (AOCABFE)

**Journal Editor:** Section Editor, International Journal of Agricultural and Biological Engineering (2012-2019); Journal of Environmental Quality (ASA journal; 2010-2012); International Journal of Agricultural Engineering (AAAE journal; 2009-2011; served as Guest Editor for SWAT model special issues or sections in all three journals

**Professional Conference Committees (Session Moderator; Paper Chairman, etc.):**

Soil and Water Assessment Tool (SWAT) conferences: 18 conferences in Asia, Europe, North America and South America

ASAE/ASABE conferences: six conferences in North America and South America

**Modeling Workshops (lead organizer or key supporting role)**

Simulation of Riparian Zones with SWAT, September 9-10, 2004, Iowa State Univ., Ames, IA  
SWAT ArcView-Based Modeling Workshop, February 21-22, 2006, Iowa State Univ., Ames, IA  
SWAT ArcGIS-Based Modeling Workshop, March 16-20, 2009, Iowa State Univ., Ames, IA  
SWAT Autocalibration Mini-Workshop, October 20, 2010, Iowa State Univ., Ames, IA  
eRAMS Workshops, Iowa State University, October 28, 2011 and May 21, 2013  
HAWQS SWAT workshop, September 12-13, 2018

**Plenary, Invited or Keynote Speaker:**

2018 International SWAT Conf., Indian Institute of Tech. Madras, January 10-12, 2018, Chennai, India  
2017 5<sup>th</sup> Soil and Water Assessment Tool Conference & Workshop in South East & East Asia (SWAT SEEA V), October 23-26, 2017, Selangor, Malaysia  
2016 International SWAT Conference, July 27-29, 2016, Beijing, China  
Canadian Great Lakes Region Watershed Modeling Workshop, April 26-28, 2016, University of Guelph, Guelph, Ontario, Canada  
2015 SWAT Conference, October 14-16, 2015, Purdue University, West Lafayette, Indiana  
2015 International SWAT-Asia Conference IV (SWAT-Asia IV), October 19-23, 2015, Tsukuba, Japan  
TUAT-MARCO Joint International Workshop on Rice Paddy Module Development in SWAT 2014; November 18-19, 2014, Tokyo, Japan  
3rd SWAT Conference & Workshop in South East and East Asia (SWAT SEEA III); June 16-22, 2013, Bogor, Indonesia  
Agricultural Hydrology and Water Quality II, American Water Resource Association (AWRA) Spring Conference, March 25-27, 2013, St. Louis, MO  
2011 International Conference on Agricultural Engineering New Technology (ICAE2011), May 27-29, 2011, Zibo, Shandong, China  
Modeling Summit 2011, Soil and Water Conservation Society, March 29-31, 2011, Denver, CO  
Second Southeast Asia SWAT Conference, January 6-7, 2011, Ho Chi Minh City, Vietnam  
2009 International Agricultural Engineering Conference, December 7-10, 2009, Bangkok, Thailand  
1st Symposium of Integrated Management of Water Resources, March 26-28, 2008, University of Passo Fundo, Passo Fundo, Brazil.

**ASABE Committees:** NRES-21 Hydrology Group (2010-2021), and NRES-26 Sustainable Land Resources (2011-2021); served as vice- chairman or chairman of NRES-26 during 2012-2015.

**Program of Study (POS) Committees:**

Iowa State University: Previously served on PhD committees for Dr. Rohith Gali and Dr. Charles Ikenberry, Agricultural and Biosystems Engr. Dept. (Major Professors: Dr. Michelle Soupier)  
Iowa State University: Currently serve on the PhD committees for Ms. Areba Syed and Mr. Timothy Neher, Agricultural and Biosystems Engr. Dept. (Major Professor: Dr. Michelle Soupier) and for Ms. Alexandra Caruthers, Geological and Atmospheric Sciences (Major Professor: William Gutowski)

**Other institutions:**

Previously served on PhD committees for Dr. Awoke Teshager, Southern Illinois Univ. (Major Professors: Dr. Silvia Secchi and Dr. Justin Schoof) and Dr. Kieu Le, North Carolina A&T Univ. (Major Professor: Dr. Manoj Jha)

**Adjunct Associate Professor:** Appointment with the Iowa State University Agricultural and Biosystems Engineering Dept., Feb. 1, 2019 to Jan. 31, 2024.

**Journal Reviewer:** Agricultural Water Management, Agronomy J., Canadian Biosystems Engineering, Ecological Economics, Ecological Modelling, Economics Research International, Environmental Management, Environmental Modelling & Software, Environmental Processes, GCB Bioenergy, Environmental Science and Pollution Research, Hydrological and Earth System Sciences, Hydrological Processes, Hydrology Research, Hydrological Sciences J., International J. of Agricultural and Biological Engineering, International Agricultural Engineering J., J. of Arid Environments, J. of Agricultural and Applied Economics, J. of the American Water Resources Association, J. of Cleaner Production, J. of Environmental Quality, J. of Environmental Management, J. of Hydrologic Engineering, J. of Hydrology, J. of Soil and Water Conservation Society, Land Degradation & Development, Science of the Total Environment, Soil Science Society of America Journal, Transactions of the ASABE, Water Resources Research, Water SA

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## Journal Articles in Review or to be Submitted

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- Gassman, P.W.**, J. Jeong, J. Boulange, B. Narasimhan, T. Kato, H. Somura, H. Watanabe, S. Eguchi, Y. Cu, M.-K. Kim, A. Sakaguchi, L.H. Tu, R. Jiang and J.G. Arnold. 2021. Simulation of rice paddy systems in SWAT: current methods, improved modified approaches and recommendations for developing a rice paddy simulation module. *International Journal of Agricultural and Biological Engineering* (to be submitted).
- Thompson, J.R., B. Ganapthysubramanian, M. Dorneich, **P. Gassman**, C. Krejci, M. Liebman, A. Nair, U. Passe, K.. Rosentrater, N. Schwab, T. Stone, Y. Wang, Y. Zhou. 2021. Iowa Urban FEWS: Integrating Social and Biophysical Models for Exploration of Urban Food, Energy and Water Systems (FEWS). *Frontiers in Big Data* (submitted).
- Tuppad, P., V.R. Keesara, B. Narasimhan, D. Maski, **P.W. Gassman**, R. Srinivasan and A.K. Gosain. 2021. Applications of Soil and Water Assessment Tool (SWAT) in India – A review of current status, data, challenges and future research needs. *Journal of Hydrology* (submitted).

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## Journal Articles Published or In Press

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- Chen, M., Y. Cui, **P.W. Gassman** and R. Srinivasan. 2021. Impact of watershed delineation and climate datasets density on runoff for a large basin using the SWAT model within HAWQS. *Water*. 13(4): 422. Doi: 10.3390/w13040422.
- Arnold, J., M. White, P. Allen, **P. Gassman** and K. Bieger. 2020. Conceptual framework of hydrologic connectivity for a national agroecosystem model based on transport processes and management. *Journal of the American Water Resources Association*. Doi: 10.1111/1752-1688.12890.
- Ha, M., M. Wu, M.D. Tomer, **P.W. Gassman**, T.M. Isenhardt, J.G. Arnold, M.J. White, E. Parish, K.S. Comer, and B. Belden.. 2020. Biomass production with conservation practices for two Iowa watersheds. *Journal of the American Water Resources Association*. 56(6): 1030-1044. Doi: 10.1111/1752-1688.12880.
- Eini, M.R., S. Javadi, M. Delavar, **P.W. Gassman** and B. Jarihani. 2020. Development of alternative SWAT-based models for simulating water budget components and streamflow for a karstic-influenced watershed. *Catena*. 195: 104801. Doi: 10.1016/j.catena.2020.104801.
- Tan, M.-L., **P. Gassman**, X. Yang and J. Haywood. 2020. A review of SWAT applications, performance and future needs for simulation of hydro-climatic extremes. *Advances in Water Resources*. 143: 103662. Doi: 10.1016/j.advwatres.2020.103662.
- Prokopy, L.S., B.M. Gramig, A. Bower, S.P. Church, B. Ellison, **P.W. Gassman**, K.Genskow, D. Gucker, S.G. Hallett, J. Hill, N. Hunt, K.A. Johnson, I. Kaplan, J.P. Kelleher, H. Kok, M. Komp, P. Lammers, S. LaRose, M. Liebman, A. Margenot, D. Mulla, M.J. O'Donnell, A.W. Peimer, E. Reaves, K. Salazar, C. Schelly, K. Schilling, S. Secchi, A.D. Spaulding, D. Swenson, A.W. Thompson, J.D. Ulrich-Schad. 2020. The urgency of transforming the Midwestern U.S. landscape into more than corn and soybean. *Agriculture and Human Values*. 37: 537–539. Doi: 10.1007/s10460-020-10077-x.

- Chen, M., **P.W. Gassman**, R. Srinivasan, Y. Cui and R. Arritt. 2020. Analysis of alternative climate datasets and evapotranspiration methods for the Upper Mississippi River Basin using SWAT within HAWQS. *Science of the Total Environment*. 720: 137562. Doi: 10.1016/j.scitotenv.2020.137562.
- He, R., X. Yang, **P.W. Gassman**, C. Yu and G. Wang. 2019. Spatiotemporal characterization of nutrient pollution source compositions in the Xiaohong River Basin, China. *Ecological Indicators* 107: 105676. Doi: 10.1016/j.ecolind.2019.105676.
- Tan M.-L., **P.W. Gassman**, R. Srinivasan, J.G. Arnold and X. Yang. 2019. A review of SWAT studies in Southeast Asia: Applications, challenges and future directions. *Water* 11(5): 914. Doi: 10.3390/w11050914.
- Kannan, N., S. Chinnasamy, M. White, S. Mehan, J. Arnold and **P. Gassman**. 2019. Some challenges in hydrologic model calibration for large-scale studies: A case study of SWAT model application to Mississippi-Atchafalaya River Basin. *Hydrology* 6(1): 17. Doi: 10.3390/hydrology6010017.
- Malone, R.W., S. Herbstritt, L. Ma, T. Richard, R. Cibin, **P.W. Gassman**, H. Zhang, D. Karlen, J. Hatfield, J. Obrycki, M. Helmers, D. Jaynes, T. Kaspar, T. Parkin and Q. X. Fang. 2019. Corn stover harvest and N losses in central Iowa. *Science of the Total Environment* 663: 776-792. Doi: 10.1016/j.scitotenv.2019.01.328.
- Schilling, K.E., **P.W. Gassman**, A. Arenas, C. Jones and J. Arnold. 2019. Quantifying the Contribution of Tile Drainage to Water and Nutrient Export using Analytical Methods and Numerical Models. *Science of the Total Environment* 657: 297-309. Doi: 10.1016/j.scitotenv.2018.11.340.
- Wang, Y., **P.W. Gassman**, Y. Wang and Y. Pu. 2018. Analysis of journal content characteristics and metrics reported in the Clarivate Analytics Journal Citation Reports and Web of Science Core Collection Agricultural Engineering categories. *International Journal of Agricultural and Biological Engineering* 11(5): 1-26. Doi: 10.25165/j.ijabe.20181105.3083.
- Le, K.N., M.K. Jha, M.R. Reyes, J. Jeong, L. Doro, **P.W. Gassman**, L. Hok, S. Boulakia and J.C. de Moraes Sá. 2018. Calibrating the EPIC model for crop yield simulation under conservation agriculture and conservation tillage systems in Cambodia. *Agricultural Systems* 166: 90-100. Doi: 10.1016/j.agsy.2018.08.003.
- Le, K.N., M.K. Jha, J. Jeong, **P.W. Gassman**, M.R. Reyes, L. Doro, D.Q. Tran and L. Hok. 2018. Evaluation of long-term SOC and crop productivity within conservation systems using GFDL CM2.1 and EPIC. *Sustainability* 10(8): 2665. Doi: 10.3390/su10082665.
- Le, K.N., M.K. Jha, M.R. Reyes, J. Jeong, L. Doro, **P.W. Gassman**, L. Hok, S. Boulakia and J.C. de Moraes Sá. 2018. Evaluating carbon sequestration under conservation agriculture and conservation tillage systems in Cambodia using EPIC. *Agriculture Ecosystems & Environment*. 251: 37-47. Doi: 10.1016/j.agee.2017.09.009.
- Gassman, P.W.**, A. Valcu-Lisman, C.L. Kling, Y. Panagopoulos, C. Raj, I. Chaubey, C.F. Wolter, K.E. Schilling. 2017. Assessment of Bioenergy Cropping Scenarios for the Boone River Watershed in North Central Iowa, United States. *Journal of the American Water Resources Association*. 53(6): 1336–1354. Doi: 10.1111/1752-1688.12593.

- Panagopoulos, Y., **P.W. Gassman**, C.L. Kling, R. Cibin and I. Chaubey. 2017. Water Quality Assessment of Large-Scale Bioenergy Cropping Scenarios for the Upper Mississippi and Ohio-Tennessee River Basins. *Journal of the American Water Resources Association*. 53(6): 1355–1367. Doi: 10.1111/1752-1688.12594.
- Cibin, R, I. Chaubey, R.L. Muenich, K.A. Cherkauer, **P. Gassman**, C. Kling and Y. Panagopoulos. 2017. Influence of Bioenergy Crop Production and Climate Change on Ecosystem Services. *Journal of the American Water Resources Association*. 53(6): 1323–1335. Doi: 10.1111/1752-1688.12591.
- Kling, C.L., I. Chaubey, C. Raj, **P.W. Gassman** and Y. Panagopoulos. 2017. Policy Implications from Multi-Scale Watershed Models of Biofuel Crop Adoption across the Corn Belt. *Journal of the American Water Resources Association*. 53(6): 1313–1322. Doi: 10.1111/1752-1688.12592.
- Ikenberry, W. Crumpton, J. Arnold, C.M. Soupir and **P. Gassman**. 2017. Evaluation of Existing and Modified Wetland Equations in the SWAT Model. *Journal of the American Water Resources Association*. Doi: 10.1111/1752-1688.12570.
- Ikenberry, C., M. Soupir, M. Helmers, W. Crumpton, J. Arnold and **P. Gassman**. 2017. Simulation of Daily Flow Pathways, Tile-Drain Nitrate Concentrations, and Soil-Nitrogen Dynamics Using SWAT. *Journal of the American Water Resources Association*. Doi: 10.1111/1752-1688.12569.
- Teshager, A., **P.W. Gassman**, S. Secchi and J. Schoof. 2017. Simulation of targeted pollutant-mitigation -strategies to reduce nitrate and sediment hotspots in agricultural watershed. *Science of the Total Environment* 607–608: 1188-1200. Doi: 10.1016/j.scitotenv.2017.07.048.
- Valcu-Lisman, A.M., **P.W. Gassman**, R. Arritt, T. Campbell and D.E Herzmann. 2017. Cost-effectiveness of reverse auctions for watershed nutrient reductions in the presence of climate variability: An empirical approach for the Boone River watershed. *Journal of Soil and Water Conservation* 72(3): 280-295. Doi: 10.2489/jswc.72.3.280.
- Tan, M.L., **P.W. Gassman** and A.P. Cracknell. 2017. Assessment of long-term gridded precipitation products for streamflow modelling in tropical river basins. *Water* 9(3): 229. Doi: 10.3390/w9030229.
- Wangpimool, W., K. Pongput, N. Tangtham, S. Prachansri and **P.W. Gassman**. 2017. The impact of Para Rubber expansion on streamflow and other water balance components of the Nam Loei Basin, Thailand. *Water* 9(1): 1. Doi: 10.3390/w9010001.
- Valcu-Lisman, A.M., C.L. Kling and **P.W. Gassman**. 2016. The optimality of using marginal land for bioenergy crops: Tradeoffs between food, fuel, and environmental services. *Agricultural and Resource Economics Review*. 45(2): 217–245. Doi: 10.1017/age.2016.20.
- Teshager, A.W., **P.W. Gassman**, J. Schoof and S. Secchi. 2016. Assessment of impacts of agricultural and climate change scenarios on watershed water quantity and quality, and crop production. *Hydrology and Earth System Sciences* 20(8): 3325-3342. Doi: 10.5194/hess-20-1-2016.
- Teshager, A.W., **P.W. Gassman**, S. Secchi, J. Schoof and G. Misgna. 2016. Modeling agricultural Watersheds with the Soil and Water Assessment Tool (SWAT): Calibration and validation with a novel procedure for spatially explicit HRUs. *Environmental Management*. 57(4): 894–911. Doi: 10.1007/s00267-015-0636-4.

- Anderson, C.A., B.A. Babcock, Y. Peng, **P.W. Gassman** and T.D. Campbell. 2015. Placing Bounds on Extreme Temperature Response of Maize. *Environmental Research Letters* 10(124001). Doi: 10.1088/1748-9326/10/12/124001.
- Gassman, P.W.**, M.K. Jha, C.F. Wolter and K.E. Schilling. 2015. Application of the Soil and Water Assessment Tool (SWAT) Model for the Raccoon River Watershed Master Plan. *American Journal of Environmental Sciences*. 11(4): 227-244. Doi: 10.3844/ajessp.2015.227.244.
- Gassman, P.W.** and W. Yingkuan. 2015. IJABE Special SWAT Issue: Innovative modeling solutions for water resource problems. *International Journal of Agricultural and Biological Engineering* 8(3): 1-8. Doi: 10.3965/j.ijabe.20150803.1763.
- Bressiani D. de A., **P.W. Gassman**, J.G. Fernandes, L.H.P. Garbossa, R. Srinivasan, N.B. Bonumá and E.M. Mendiondo. 2015. A review of SWAT (Soil and Water Application Tool) applications in Brazil: Challenges and prospects. *International Journal of Agricultural and Biological Engineering* 8(3): 9-35. Doi: 10.3965/j.ijabe.20150803.1765.
- Panagopoulos, Y., **P.W. Gassman**, R.W. Arritt, D.E. Herzmann, T.D. Campbell, A. Valcu, M.K. Jha, C.L. Kling, R. Srinivasan, M. White and J.G. Arnold. 2015. Hydrologic, water quality and crop productivity impacts of climate change in the Ohio-Tennessee River Basin. *International Journal of Agricultural and Biological Engineering* 8(3): 36-53. Doi: 10.3965/j.ijabe.20150803.1497.
- Can, T., X.-l. Chen, L.U. Jian-zhong, **P. Gassman**, S. Sauvage, J.-M. Sanchez Perez. 2015. Using the SWAT model to assess different landuse scenarios impact on the Water budget of Fuhe River, China. *International Journal of Agricultural and Biological Engineering* 8(3): 95-109. Doi: 10.3965/j.ijabe.20150803.1132.
- Panagopoulos, Y., **P.W. Gassman**, M.K. Jha, C.L. Kling, T. Campbell, R. Srinivasan, M. White and J.G. Arnold. 2015. Towards the development of an integrated modeling system for the Corn Belt: A refined regional modeling approach. *Journal of Hydrology* 524: 348–366. Doi: 10.1016/j.jhydrol.2015.02.039
- Jha, M., **P.W. Gassman**, and Y. Panagopoulos. 2015. Regional changes in nitrate loadings in the Upper Mississippi River Basin under predicted mid-century climate. *Regional and Environmental Change* 15(3): 449-460. Doi: 10.1007/s.10113-013-05539-y.
- Rabotyagov, S., T. Campbell, M. White, J. Arnold, J. Atwood, L. Norfleet, C. Kling, **P. Gassman**, A. Valcu, J. Richardson, G. Turner, and N. Rabalais. 2014. Cost-Effective Targeting of Conservation Investments to Reduce the Northern Gulf of Mexico Hypoxic Zone. *Proceedings of the National Academy of Sciences of the United States of America* 111(52): 18530-18535. Doi: 10.1073/pnas.1405837111.
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### Selected Conference/Proceedings Papers

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**Gassman P.W.**, C. Balmer, M. Siemers and R. Srinivasan, The SWAT Literature Database: Overview of database structure and key SWAT literature trends. Proceedings of the 2014 International SWAT Conference, July 28 - August 1, Pernambuco, Brazil. Texas Water Resources Institute Technical Report – TR-472. Available at: <http://swat.tamu.edu/conferences/2014/>.

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Panagopoulos, Y., **P.W. Gassman**, C.L. Kling, T.D. Campbell, M.K. Jha, R. Srinivasan, M.J. White and J.G. Arnold. 2013. The development of SWAT modelling systems for large Corn Belt river basins. Part 2: Model performance and evaluation. Proceedings of the 13th International Conference on Environmental Science and Technology (CEST2013), Sept. 5-7, Athens, Greece (<http://cest2013.gnest.org/>).

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**Gassman, P.W.**, J.G. Arnold, R. Srinivasan, and M. Reyes. 2010. The worldwide use of the SWAT Model: Technological drivers, networking impacts, and simulation trends. In: Proceedings of the Watershed Technology Conference, February 21-24, American Society of Agricultural and Biological Engineers, Earth University, Costa Rica.

Arnold, J.G., **P.W. Gassman**, and M.J. White. 2010. New Developments in the SWAT ecohydrology model. In: Proceedings of the Watershed Technology Conference, February 21-24, American Society of Agricultural and Biological Engineers, Earth University, Costa Rica.

Jha, M., S. Rabotyagov, C. Kling, **P. Gassman** and E. Takle. 2009. Effect of potential future climate change on the cost-effective nonpoint source pollution reduction strategies in the Upper Mississippi River Basin. Climate Change: Global Risks, Challenges and Decisions, March 10-12, Copenhagen, Denmark. IOP Conference Series: Earth and Environmental Science. 6: 342024. Doi: 10.1088/1755-1307/6/4/342024.

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## Selected Poster Paper Presentations

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- Demir, I. W.P. Krajewski, C.S. Jones, K. Schillin, L.J. Weber, J.S. Lee, R.E. Warner and **P.W. Gassman**. 2018. An integrated big data framework for water quality issues in the Upper Mississippi River Basin. Midwest Big Data Hub 2018 All-Hands Meeting, November 6-7, Case Western Reserve University, Cleveland, OH.
- Panagopoulos, Y., **P.W. Gassman**, C.L. Kling, A. Valcu, T. Campbell, R. Srinivasan, J.G. Arnold, M.J. White, R.W. Arritt, D.E. Herzmann and M.K. Jha. 2017. An overview of Corn Belt region ecohydrological modeling at CARD. Presented at the Advancing Sustainability: College of Agriculture & Life Sciences, April 13, Iowa State Univ., Ames, IA.
- Valcu-Lisman, A.M., **P.W. Gassman**, R. Arritt, T. Campbell, and D.E. Herzmann. 2017. Cost-effectiveness of reverse auctions for watershed nutrient reductions in the presence of climate variability: An empirical approach for the Boone River Watershed. Presented at the Advancing Sustainability: College of Agriculture & Life Sciences, April 13, Iowa State Univ., Ames, IA.
- Keiser, D. J. Comito, J. Downing, **P. Gassman**, M. Helmers, T. Isenhardt, C. Kling and K. Meyers. 2015. The value of water quantity versus quality: Assessing the tradeoffs between agricultural yields and downstream uses of water resources. Presented at the USDA-NIFA NIWQP and AFRI Annual Project Directors' Meeting, July, Washington, D.C. and at the Advancing Sustainability: College of Agriculture & Life Sciences, April 13, 2017, Iowa State Univ., Ames, IA.
- De Kok-Mercado, O., C. Tornquist, and **P.W. Gassman**. 2013. A synthesis of Corn Belt region soil carbon field studies in relation to carbon cycling model testing needs. Presented at the 2013 ASA, CSSA, and SSSA Annual Meetings, November 3-6, Tampa, FL.
- De Kok-Mercado, O. and **P.W. Gassman**. 2013. Soil carbon dynamics as influenced by tillage management in the Corn Belt. Presented at the Science With Practice Poster Session, April 30, Iowa State Univ., Ames, IA.
- Gassman, P.W.**, A.M. Valcu, Y. Panagopoulos, C.L. Kling, T. Campbell, M. Siemers, C. Tornquist, R. Srinivasan, M. White, J. Arnold, M. Jha, J. Richardson, M.L. Moskal, and S. Rabotyagov. 2012. An integrated modeling system for corn-based cropping systems in the U.S. Cornbelt region. Presented at the New Science/Technology Fair, Joint Meeting of the Gulf of Mexico Hypoxia Task Force and the National Association of State Departments of Agriculture, September 12, Iowa State University BioCentury Farm, Boone, IA.
- Gassman, P.W.**, A.M. Valcu, Y. Panagopoulos, C.L. Kling, T. Campbell, M. Siemers, C. Tornquist, R. Srinivasan, M. White, and J. Arnold. 2012. An integrated modeling system for assessing the impacts of climate change and alternative management systems in corn-based cropping systems in the U.S. Cornbelt region. Presented at the 2012 Climate and Corn-based Cropping Systems CAP (CSCAP) Annual Project Meeting, Aug. 6-9, Wooster, OH.



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## Selected Conference and Other Research-Related Presentations

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- Caruthers, A. L., M. Chen, **P. Gassman** and W.J. Gutowski. 2020. Using the Soil and Water Assessment Tool to Evaluate the Performance of Dynamically Downscaled Regional Climate Models. 101st AGU Annual Meeting. December 1-17, virtual.
- Tan, M.L., **P. Gassman**, X. Yang and J. Haywood. 2019. A review of SWAT applications, performance and future needs for simulation of hydro-climatic extremes. 2019 SWAT-SEA Conference, October 24-25, Siem Reap, Cambodia.
- Gassman, P.W.**, S.K. Mickelson, K.E. Schilling, C.F. Wolter and C.S. Jones. 2018. Application of SWAT for the Boone River Watershed in north central Iowa, U.S.: Implications of different nutrient load estimation techniques for model testing. 2018 International SWAT Conference, September 19-21, Brussels, Belgium.
- Gassman, P.W.**, R.W. Arritt, A.M. Valcu-Lisman, Y. Panagopoulos, D. Herzmann and R. Srinivasan. 2018. The application of SWAT for developing climate model evaluation metrics within a hierarchical framework. 2018 International SWAT Conference, September 19-21, Brussels, Belgium.
- A. Valcu-Lisman, **P. Gassman**, C. Kling, Y. Panagopoulos, R. Arritt, D. Herzmann, J. Arbuckle and G. Roesch-McNally. 2018. A new approach for predicting farmers adaptive behavior at the large watershed scale: Implications for water quality under climate change. Geological Society of America North Central Section Annual Meeting, April 16-17, Ames, Iowa.
- Dolph, C.L., A.T Hansen, E. Foufoula-Georgiou, S. Rabotyagov, P. Belmont, P. Wilcock, C. Kling, J. Finlay, K. Gran, B. Dalzell, S.J. Cho, T. Campbell, **P. Gassman**, J. Czuba, C. Braudrick, P. Hawthorne, E. Lonsdorf and A. Baker. 2018. Environmental sustainability in agricultural landscapes: an example of how basic science can lead management and policy decisions. Water Sustainability and Climate Annual Meeting, January 29, 2018. Washington, D.C.
- Gassman, P.W.**, M.L. Tan, S. Akhavan, M. Mehrabi, R. Srinivasan, J.G. Arnold and K. Abbaspour. 2018. SWAT 2018: Global impacts and future horizons. International SWAT Conference, Indian Institute of Technology Madras, January 10-12, Chennai, India
- A. Valcu-Lisman, C. Kling, **P. Gassman**, Y. Panagopoulos, R. Arritt, D. Herzmann, J. Arbuckle and G. Roesch-McNally. 2017. An innovative approach for predicting farmers' adaptive behavior at the large watershed scale: Implications for water quality and crop yields. American Geophysical Union Fall Meeting, December 11-15, New Orleans, LA.
- Gassman, P.W.**, S. Mickelson, K. Schilling and C. Wolter. 2017. Brief Overview of SWAT and the application of the SWAT ecohydrological model for the Boone River Watershed in north central Iowa, United States. October 26, Southwest University, Chongqing, China.
- Gassman, P.W.**, K. Schilling and C. Wolter. 2017. Application of SWAT for the Boone River watershed in north central Iowa, U.S. Part 1: Implications of different nutrient load estimation techniques for model testing. The 5<sup>th</sup> Soil and Water Assessment Tool Conference & Workshop in South East & East Asia (SWAT SEEA V). October 23-26, Bangi Selangor, Malaysia. Programme & Abstracts Book, pp. 16-17.

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## Selected CARD Articles and Reports

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- Jones, C., **P.W. Gassman** and K.E. Schilling. 2019. The urgent need to address nutrient imbalance problems in Iowa's high-density livestock regions. *Agricultural Policy Review*. Fall 2019:6-9, 15. Center for Agricultural and Rural Development, Iowa State University, Ames, IA. Available at: [https://www.card.iastate.edu/ag\\_policy\\_review/](https://www.card.iastate.edu/ag_policy_review/).
- Valcu, A., **P. Gassman**, C. Kling and R.W. Arritt. 2016. Cost-effectiveness of Reverse Auctions for Watershed Nutrient Reductions in the Presence of Climate Variability. Final Report to the Iowa Water Center. Center for Agricultural and Rural Development, Iowa State University, Ames, IA.
- Anderson, C.J., B.A. Babcock, Y. Peng, **P.W. Gassman** and T.D. Campbell. 2015. Late-1990s Climate Shift Impact on Corn Yield in Iowa. *Iowa Agricultural Policy Review* (Winter 2015), Center for Agricultural and Rural Development, Iowa State University, Ames, IA. Available at: [http://www.card.iastate.edu/ag\\_policy\\_review/?issue=Winter-2015](http://www.card.iastate.edu/ag_policy_review/?issue=Winter-2015)
- Kling, C.L., Y. Panagopoulos, A. Valcu, **P.W. Gassman**, S. Rabotyagov, T. Campbell, M. White, J.G. Arnold, R. Srinivasan, M.K. Jha, J. Richardson, R.E. Turner, and N. Rabalais. 2014. Land use model integrating agriculture and the environment (LUMINATE): Linkages between agricultural land use, local water quality and hypoxic concerns in the Gulf of Mexico basin. Working Paper 14-WP 546, Center for Agricultural and Rural Development, Iowa State University, Ames, IA.
- J. Gonzalez-Ramirez, A. Valcu, C. Kling, and **P. Gassman**. 2014. Cropland Cash Rental Rates Estimates and Carbon Supply Curves for the Upper Mississippi River Basin: Final Report. Submitted to USDA-ERS. Center for Agricultural and Rural Development, Iowa State University, Ames, IA.
- Gassman, P.W.**, K. Schilling, C. Wolter, and M.K. Jha. 2011. Development of SWAT hydrologic parameters for specific Iowa landform regions. Report submitted to the Iowa Department of Natural Resources, Watershed Improvement section, Des Moines, IA.
- Gassman, P.W.**, J.R. Williams, S. Wang, A. Saleh, E. Osei, L. Hauck, C. Izaurralde, and J. Flowers. 2009. The Agricultural Policy Environmental Extender (APEX) model: An emerging tool for landscape and watershed environmental analyses. Technical Report 09-TR 49. CARD, Iowa State Univ., Ames, IA.
- Gassman, P.W.**, S. Secchi, M. Jha, and C.L. Kling. 2008. Application of the SWAT model to the Boone River watershed: Modeling system description, model calibration and validation, and scenario results. Submitted to The Nature Conservancy, January, 2008.
- Santhi, C., **P.W. Gassman**, S. Secchi, and R. Srinivasan. 2008. Comparison of land use estimates from three different data sources for the Upper Mississippi River Basin. CARD, Iowa State Univ., Ames, IA. Technical Report 08-TR 48. CARD, Iowa State Univ., Ames, IA.
- Kling, C., S. Rabotyagov, M. Jha, H. Feng, J. Parcel, **P. Gassman** and T. Campbell. 2007. Conservation practices in Iowa: Historical investments, water quality, and gaps. A Report to the Farm Bureau, Iowa Corn Growers Association, Iowa Soybean Association, and Leopold Center for Sustainable Agriculture. CARD, Iowa State Univ., Ames, IA.

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## Other Research Reports

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- Gassman, P.W.** 2021. Environmental issues associated with aquifer storage and recharge (ASR) systems. In: Banking Groundwater: A study examining aquifer storage and recovery for groundwater sustainability in Minnesota (Section 3: Engineering and environmental requirements). Available at: <https://www.wrc.umn.edu/banking-groundwater-managed-aquifer-recharge>.
- Gassman, P.W.** 2021. Aquifer storage and recovery case study - Site: Des Moines and Ankeny, Iowa. In: Banking Groundwater: A study examining aquifer storage and recovery for groundwater sustainability in Minnesota (Section 7: Case Studies). Available at: <https://www.wrc.umn.edu/banking-groundwater-managed-aquifer-recharge>.
- Rabotyagov, S., C. Kling, **P. Gassman**, N. Rabalais and R.E. Turner. 2014. Economists must work together with scientists to address the problem of ‘dead zones’ such as the one in the Gulf of Mexico. The London School of Economics and Political Science (LSE). Available at <http://blogs.lse.ac.uk/usappblog/2014/03/26/economists-must-work-together-with-scientists-to-address-the-problem-of-dead-zones-such-as-the-one-in-the-gulf-of-mexico/>.
- P.W. Gassman** and M. Jha. 2011. Application of the Soil and Water Assessment Tool (SWAT) Model for the Raccoon River Watershed Master Plan. Submitted to AGREN, Inc., Carroll, Iowa (in support of Raccoon Master Plan development). Available at: <http://www.agren-inc.com/raccoon/reports.html>.
- Gassman, P.W.** 2008. A simulation assessment of the Boone River watershed: baseline calibration/validation results and issues, and future research needs. Ph.D. Dissertation. Iowa State University, Ames, Iowa.
- Kanwar, R., **P.W. Gassman** and A. Saleh. 2003. Implementation of different manure/nutrient management systems to protect water quality at different hydrologic scales in the Maquoketa watershed. Completion Report to the Iowa Department of Natural Resources (for Component #3 on the “Use of SWAT Model” of the Iowa Water Quality Protection Project). Department of Agricultural and Biosystems Engineering, Iowa State Univ., Ames, IA.
- Osei, E., **P. Gassman**, and A. Saleh. 2000. Livestock and the Environment: A National Pilot Project: Economic and environmental modeling using CEEOT. PR0002. Texas Institute for Applied Environmental Research (TIAER), Tarleton State Univ., Stephenville, Texas.
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- Keith, G., S. Norvell, R. Jones, C. Maguire, E. Osei, A. Saleh, **P. Gassman**, and J. Rodecap. 2000. CEEOT-LP modeling for the Upper Maquoketa River watershed, Iowa: Final report PR003. Texas Institute for Applied Environmental Research (TIAER), Tarleton State Univ., Stephenville, Texas.
- Flowers, J., E. Osei, L. Hauck, **P. Gassman**, and A. McFarland. 1998. Livestock and the environment: A national pilot project: Manure nutrient application rates and other assumptions underlying APEX runs. TIAER Information Bulletin 98-03. Texas Institute for Applied Environmental Research (TIAER), Tarleton State Univ., Stephenville, Texas.