

# CURRICULUM VITAE

## **REMEGIO B. CONFESOR JR., Ph.D.**

### **Research Scientist**

Division of Environment and Natural Resources/ Department of Soil and Landuse

Norwegian Institute of Bioeconomy Research (NIBIO)

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### **EXECUTIVE SUMMARY**

- More than 25 years of experience in hydrological research and environmental management focusing on nonpoint source pollution, agricultural best management practices, watershed & water resources management, and climate change impacts.
- At least 15 years of experience in field- and watershed-scale hydrologic modeling (e.g. Soil and Water Assessment Tool (SWAT), Hydrological Predictions for the Environment (HYPE), Generalized Watershed Loading Functions (GLWF), Agricultural Policy/Environmental eXtender (APEX), Nutrient Tracking Tool (NTT), etc.) for agricultural management, hydrology, and water quality.
- Author and co-author of relevant scientific articles in peer-reviewed international journals.
- Successful collaboration with different sectors of the society: from federal, state, and local policymakers and regulators to farmers, private industries, non-government organizations (NGOs), and general stakeholders.
- Track record in securing project funding as project director, principal investigator, and co-principal investigator in numerous collaborative and interdisciplinary scientific projects totaling at least US\$5M.

### **AREAS OF INTEREST**

Subsurface drainage, erosion, soil carbon, nitrogen and phosphorus movement, runoff and sediment transport processes, climate impact mitigation and adaptation, field/watershed hydrology and management, water quality, soil-water-plant relationships, integrated hydrologic-watershed-economic modeling, Pareto optimization, automatic parameter estimation, multi-criteria and systems analysis, GIS resource applications.

### **ACADEMIC QUALIFICATION**

*Ph.D. in Agricultural and Biological Engineering, 2004.* The Pennsylvania State University, University Park, PA.

*M.S. in Agricultural Engineering, 1997.* University of the Philippines Los Baños, Laguna, Philippines.

*B.S in Agricultural Engineering, 1989.* University of the Philippines Los Baños, Laguna, Philippines.

## PROFESSIONAL EXPERIENCE

### *Water Resources management, field- and watershed-scale modeling, water quality.*

Research Scientist: Feb 2021 - present; Division of Environment and Natural Resources/ Department of Soil and Landuse. Norwegian Institute of Bioeconomy Research (NIBIO)

Senior Consultant: Feb 2017- Jan 2021, Civil and Environmental Consultants, Inc.

Asst. Professor: Jan 2019-Jan 2021; Senior Research Scientist: Jan 2016-Jan 2021; Research Scientist: Oct 2008-Dec. 2015. National Center for Water Quality Research. (NCWQR), Heidelberg University, 310 E Market St., Tiffin, OH.

- Developed and established the NCWQR's modeling program on agricultural management, hydrology, and water quality at field- to watershed-scales. Models used are the Agricultural Policy/Environmental eXtender (APEX), the Soil and Water Assessment Tool (SWAT), Hydrological Predictions for the Environment (HYPER), and the Nutrient Tracking Tool (NTT).
- Explored the effects of climate change and agricultural practices (e.g., tillage, nutrient management, crop management) on nitrogen, phosphorus, and sediment exports from Lake Erie watersheds using field-scale and large basin-scale models. Developed climate impact indicators for the Western Lake Erie Basin, OH, USA and recommended research focus and mitigation approaches to stakeholders.
- Studied and implemented pay for performance and other market-based conservation principles for nutrient reduction.
- Collaborated with other researchers in the Great Lakes region in developing and implementing research projects related to agricultural nutrient export mitigation.
- Developed and wrote grant proposal projects to various federal, state, and local agencies (U.S. EPA, USDA, NSF, Ohio Sea Grant, Great Lakes Commission, Lake Erie Commission, etc.) for funding.
- Published peer reviewed articles related to agronomy, hydrology, watershed management, and interpretation of the chemistry of flowing waters and estimation of pollutant loadings and their impacts on Lake Erie and its tributaries.

Post-doctoral Research Associate: Dec. 2004 - Sep. 2008. Department of Agricultural and Resource Economics, Oregon State University / USDA-ARS, National Forage Seed Production Research Center, 3450 SW Campus Way, Corvallis, Oregon.

- Helped develop a method that dynamically links a distributed hydrologic model to an economic model using a multi-objective evolutionary/genetic algorithm for Pareto optimization.
- Tasks included: 1) hydrologic modeling (e.g., automatic parameter estimation/calibration and inverse modeling, uncertainty and sensitivity analysis, and multi-criteria/systems analysis), 2) computer programming, 3) development and writing of project proposals for funding, 4) database management, and 5) Published

peer reviewed articles.

Graduate Research Assistant: Jan 2000 - May 2004, Department of Agricultural and Biological Engineering, Penn State University, University Park, PA, USA.

- Conceptualized, planned, and implemented research in potential pollutant movement from a compost site and operation.
- Wrote research proposals for funding on watershed management and modeling projects.

Fellowship grant award: Spring 2003, Department of Agricultural and Biological Engineering, Penn State University, University Park, PA, USA.

- Identified existing and emerging potential water quality problems in the Spring Creek watershed.
- Recommended actions to help mitigate these problems.

Study Leader: 1999, University of the Philippines Mindanao (UP Mindanao), “Sediment quantification of Davao River and its effect on Davao gulf” research project. I conceptualized, planned, and implemented research experiments on monitoring and measuring nutrient and suspended solids loads in Davao River and Davao Gulf, Philippines.

Study Leader: 1999, UP Mindanao "Ground water assessment of Davao City, Philippines" research project. I conceptualized, planned, and implemented research experiments and surveys related ground water supply of Davao City, Philippines.

### ***Irrigation/Water Management/Soil-Water-Plant Relationships***

Study Leader and University of the Philippines Mindanao Coordinator: Oct 1998-Dec 1999, “Comprehensive Irrigation Research and Development Umbrella Program,” in collaboration with the Department of Agriculture Region XIII.

- I conceptualized, planned, and implemented research experiments and surveys related to irrigation water supply and management.

Research Assistant: Apr 1992 - Jun 1997, The International Rice Research Institute (IRRI), Los Baños, Philippines.

- I conceptualized, planned, and implemented research experiments in soil-water-plant relationships and water management.
- I then supervised field experiments and data gathering, analyzed data, and interpreted results. Instrumentation installed were micro-lysimeters, V-notch weirs, soil moisture tensiometers, etc.
- I also wrote research findings for reporting at IRRI, seminars, workshops, and journal publications.

Research Assistant: Oct 1988 - Jan 1989, University of the Philippines Los Baños (UP Los Baños).

- Implemented research in the survey and evaluation of the domestic water supply

system of the University of the Philippines Los Baños.

### ***Solid Waste Management/Composting***

Graduate Research Assistant: Jan 2000 - May 2004.

- I conceptualized, planned, and implemented research on potential pollutant movement from a compost site and operation.
- I also helped write research proposals for funding.

Research Assistant: Oct 1988 - Jun 1989, UP Los Baños, Philippines.

- I planned and designed biodegradable solid-waste digester.
- Surveyed the solid waste disposal system of selected major Philippine cities through ocular site inspection and interviews.

### ***Academic Teaching***

*Asst Professor, Heidelberg University, Tiffin, OH.* I developed and taught a 3-unit Geographic Information Systems (GIS) course. This course is now a requirement for the Environmental Science curriculum major at Heidelberg University.

*Instructor, University of the Philippines Mindanao: Jun 1997 - Dec 1999.* Lecturer in Natural Sciences I (Physics), Natural Sciences II (Geology), and Fortran Programming.

*Instructor, University of the Philippines Los Baños: Jun 1989 - Mar 1992.* Lecturer in Basic Engineering Graphics, Engineering Mechanics, Basic Engineering Thermodynamics and Heat Transfer, Fluid Mechanics, and Computer Applications for Engineers.

### ***Extension/Outreach***

I organized and formed a joint board of supervisors of five (Crawford, Erie, Sandusky, Seneca, Wyandot) Soil and Water Conservation Districts (SWCDs) in the Sandusky watershed to facilitate uniform implementation of the CIG project tasks.

I also organized and facilitate training workshop for the Nutrient Tracking Tool (NTT). I trained the Soil & Water Conservation Districts staff about Nutrient Tracking Tool and I provided technical help and trouble-shooting.

Organized and hosted the “How Clean is Our Water” public forum. 21 October 2016.

Organized and hosted the “Web-based Tools Training for 516(e) Great Lakes Sediment Transport Program” conducted by the U.S. Army Corps of Engineers. 06 March 2014.

I also gave research presentations and acted as resource person to conferences, symposiums, and stakeholders’ meetings.

### **PAST AND CURRENT EXTERNALLY-FUNDED RESEARCH GRANTS**

***Co-Principal Investigator.*** “Phosphorus load reduction trading program”. Funding Source: U.S. EPA Great Lakes National Program Office- Great Lakes Restoration Initiative (Prime: Conservation Technology Information Center (CTIC), \$479,782; Subaward: \$130,637). March, 2020 – February, 2023. (0.5 mo/yr).

**Co-Principal Investigator.** “Conservation Kick, Connecting Communities”. Funding Source: U.S. EPA Great Lakes National Program Office- Great Lakes Restoration Initiative (Prime: Great Lakes Commission (GLC), \$290, 000; Subaward: \$60,000). March, 2020 – February, 2023. (1 mo/yr).

**Co-Principal Investigator.** “Innovative Use of the Nutrient Tracking Tool in the Lower Riley Creek watershed”. Funding Source: Great Lakes Commission (Prime: Blanchard River Watershed Partnership, \$199,362; Subaward: \$17,000). February, 2020 – January, 2022. (0.5 mo/yr).

**Principal Investigator:** Linking watersheds, lakes, and climate change: a multi-model approach in reducing nutrient exports and algal blooms. Funding Source: European Centre for Medium-Range Weather Forecasts (ECMWF) (Prime: Swedish Meteorological and Hydrological Institute, SMHI). October, 2017 – February 28, 2019. Eur 61,404.00

**Co-Principal Investigator:** Evaluating the 4R Nutrient Stewardship Concept and Certification Program in the Western Lake Erie Basin (<http://4rcertified.org/research/>). Funding Source: International Plant Nutrition Institute (IPNI), The Fertilizer Institute (TFI), Canadian Fertilizer Institute (CFI)-4R Research Fund (Prime: USDA-ARS, \$1,250,000). July 2014 – October, 2019. (1.5 mo/yr).

**Co-Principal Investigator:** How quickly can target phosphorus reductions be met? Robust predictions from multiple watershed and lake models. Funding Source: Ohio Board of Regents, (Prime: Ohio State University, \$255,757). June 2016-May 2018. (1 mo/yr).

**Co-Principal Investigator/Lead Technical Scientist:** Model-at-the-Farm, Measure-at-the-Watershed Pay-for-Performance Conservation. Funding Source: U.S. EPA Great Lakes National Program Office-Great Lakes Restoration Initiative (Prime: Winrock International, \$500,000). June 2016 – May 2019. (2 mo/yr).

**Principal Investigator/Project Director:** Verification and Enhancement of NRCS-USDA Nutrient Tracking Tool with a Suite of Best Management Practices (BMPs). Funding Source: USDA-NRCS- CIG, (Federal: \$591,655; Non-federal match:\$591,655). October 1, 2013 – September 30, 2017 (1-yr no cost-extension). (2 mo/yr federal; 2 mo/yr non-federal match).

**Co-Principal Investigator:** Expanding Ag Retailer Roles in Resource Management. Funding Source: Great lakes Protection Fund (Prime: IPM Institute of North America, Inc, \$795,000). December, 2014 – September, 2018. (1.5 mo/yr).

**Co-Principal Investigator:** Support for Scioto River monitoring station at Chillicothe with water quality analyses and calculation of NPDES inputs. Funding Source: City of Columbus, Division of Sewerage and Drainage, \$40,000. December, 2016. (0.5 mo/yr).

**Co-Principal Investigator:** Assessment of Nutrient/Eutrophication Dynamics in Western Lake Erie. Funding Source: U.S. EPA Great Lakes National Program Office- Great Lakes Restoration Initiative (Prime: Ohio Lake Erie Commission, \$500,000). December 1, 2013 – May 31, 2016. (2 mo/yr).

**Sub-award Project Director (took over when Pete Richards retired):** Extreme events

impacts on water quality in the Great Lakes: Prediction and management of nutrient loading in a changing climate. Funding Source: NSF-WSC2 Initiative (Prime: University of Michigan), Heidelberg University sub- award: \$243,448.65 until June 30, 2016. (1 mo/yr).

***Co-Principal Investigator:*** Identifying the best strategy to reduce phosphorus loads to Lake Erie from agricultural watersheds. Funding Source: Ohio Board of Regents (Prime: Heidelberg University, \$251,565). June 2015-May 2016. (1 mo/yr).

***Co-Principal Investigator:*** WBLE Multi-Model Comparison Funding Source: Erb Family Foundation (Prime: University of Michigan Water Center). Subaward: \$17, 670.00. July 2015-May 2016. (2 mo/yr).

## **PROFESSIONAL AND HONOR SOCIETY AFFILIATIONS**

AWRA, The American Water Resources Association.

SWCS, Soil and Water Conservation Society.

ASABE, The American Society of Agricultural and Biological Engineering.

IAGLR. International Association for Great Lakes Research.

SSSA, Soil Science Society of America.

PSAE, Philippine Society of Agricultural Engineers.

CSSP, Crop Science Society of the Philippines.

Gamma Sigma Delta, The Honor Society of Agriculture.

Alpha Epsilon, The Honor Society of Agricultural, Food, and Biological Engineering.

## **FELLOWSHIPS, AWARDS, AND HONORS**

Competitive Grants Program of the College of Agricultural Sciences, Penn State University. 2003. Fellowship Award, Trout Unlimited, Inc. and the Spring Creek Monitoring Project, State College, PA.

17th Annual Graduate Exhibition, Penn State University. 3rd Place in Engineering Category, 2002.

Best Paper Award, 26th Annual Scientific Conference of the Pest Management Council of the Philippines, La Trinidad, Benguet, Philippines, 1995.

Highest Score, Philippine Professional Agricultural Engineering Licensure Exam, 1991.

## **OTHER PROFESSIONAL AND RELATED ACTIVITIES**

### ***Journal Manuscript Reviewer:***

Science of the Total Environment

Applied Engineering in Agriculture

Journal of Irrigation and Drainage Engineering

Journal of the American Water Resources Association

Journal of Environmental Quality

Transactions of the ASABE

Soil Science

Compost Science and Utilization

***Judge:***

Pennsylvania Junior Academy of Science State Meet, May 2002 and May 2003.

Annual Graduate Exhibition, Pennsylvania State University, April 2003 and April 2004.

**OTHER SYNERGISTIC ACTIVITIES**

1. Member, Diversity, Equity, and Inclusion Committee (DEIC), Heidelberg University. November, 2019-present.
2. Member, Sustainable Phosphorus Alliance Modelling working group. November, 2019-present. (<https://phosphorusalliance.org/modeling-group/>).
3. Member, Rotary Club, Tiffin, OH, USA. May, 2019-present.
4. Invited Participant, Phosphorus Field to Watershed Modeling Workshop. Sponsored by the Sustainable Phosphorus Alliance. August 23-24, 2018. Columbus OH.
5. Invited Participant, Improving Models of Nutrient Loading and Harmful Algal Blooms through a Watershed-scale Approach that Emphasizes Soil Health and Upland Farming Practices. Sponsored by the Cooperative Institute for Great Lakes Research (CIGLR). July 16-18, 2018. University of Michigan, Ann Arbor, MI.
6. Vice-President, Board of Trustees, Franciscan Earth Literacy Center, Tiffin, OH.
7. Member, Steering Committee, Sandusky River Watershed Coalition. 2013-2016.
8. Invited speaker, Great Lakes SWAT Modeling Workshop, sponsored by the University of Michigan, the International Joint Commission, and LimnoTech, May 18-19, 2013, Ann Arbor, MI.
9. Invited speaker Bi-national Workshop on Sharing Agricultural Science, Technology and Data to Improve Great Lakes Water Quality. Ontario Ministry of Agriculture and Food and Ontario Ministry of Rural Affairs, June 13-14, 2013, Ivey Spencer Leadership Center, London, ON, Canada.
10. Invited speaker at the Great Lakes Sedimentation Workshop sponsored by the Great Lakes Commission and the US Army Corps of Engineers, May 14, 2013, Ann Arbor, MI.
11. Invited speaker at the Lake Erie Ecosystem Priority Workshop hosted by the International Joint Commission, Windsor Canada, February 2013.

**PUBLICATIONS**

***Peer Reviewed Journal Publications***

Olaoye IA, RB Confesor, JD Ortiz. 2021. Effect of Projected Land Use and Climate Change on Water Quality of Old Woman Creek Watershed, Ohio. *Hydrology* 8(2):62.

<https://doi.org/10.3390/hydrology8020062>

Olaoye IA, RB Confesor, JD Ortiz. 2021. Impact of Agricultural Practices on Water Quality of Old Woman Creek Watershed, Ohio. *Agriculture* 11(5):426.

<https://doi.org/10.3390/agriculture11050426>

- Olaoye IA, RB Confesor, JD Ortiz. 2021. Impact of Seasonal Variation in Climate on Water Quality of Old Woman Creek Watershed Ohio Using SWAT. *Climate* 9(3):50. <https://doi.org/10.3390/cli9030050>
- Evenson Grey R, Margaret Kalcic, Yu-Chen Wang, Dale Robertson, Donald Scavia, Jay Martin, Noel Aloysius, Anna Apostel, Chelsie Boles, Michael Brooker, Remegio Confesor, Awoke Teshager Dagnew, Tian Guo, Jeffrey Kast, Haley Kujawa, Rebecca Logsdon Muenich, Asmita Murumkar, Todd Redder. 2021. Uncertainty in critical source area predictions from watershed-scale hydrologic models. *Journal of Environmental Management* 279: 111506. <https://doi.org/10.1016/j.jenvman.2020.111506>
- Martin Jay F, Margaret M Kalcic, Noel Aloysius, Anna M Apostel, Michael R Brooker, Grey Evenson, Jeffrey B Kast, Haley Kujawa, Asmita Murumkar, Richard Becker, Chelsie Boles, Remegio Confesor, Awoke Dagnew, Tian Guo, Colleen M Long, Rebecca L Muenich, Donald Scavia, Todd Redder, Dale M Robertson, Yu-Chen Wang. 2021. Evaluating Management Options to Reduce Lake Erie Algal Blooms Using an Ensemble of Watershed Models. *Journal of Environmental Management* 280:111710. <https://doi.org/10.1016/j.jenvman.2020.111710>
- Kujawa, H., M. Kalcic, J. Martin, N. Aloysius, A. Apostel, J. Kast, A. Murumkar, G. Evenson, R. Becker, C. Boles, R. Confesor, A. Dagnew, T. Guo, R. L. Muenich, T. Redder, D. Scavia, Y.C. Wang. 2020. The hydrologic model as a source of nutrient loading uncertainty in a future climate. *The Science of Total Environment* <https://doi.org/10.1016/j.scitotenv.2020.138004>
- Guo, T., R. Confesor, A. Saleh, and K. King. 2020. Crop growth, hydrology, and water quality dynamics in agricultural fields across the Western Lake Erie Basin: Multi-site verification of the Nutrient Tracking Tool (NTT). *Science of the Total Environment* <https://doi.org/10.1016/j.scitotenv.2020.138485>
- D.B. Baker, L.T. Johnson, R.B. Confesor, J.P. Crumrine, T. Guo, N.F. Manning. 2019. Needed: Early-term adjustments for Lake Erie phosphorus target loads to address western basin cyanobacterial blooms. *Journal of Great Lakes Research* <https://doi.org/10.1016/j.jglr.2019.01.011>
- Choquette, A.F., R.M. Hirsch, J.C. Murphy, L.T. Johnson, and R.B. Confesor, Jr. 2019. Tracking changes in nutrient delivery to western Lake Erie: approaches to compensate for variability and trends in streamflow. *Journal of Great Lakes Research* 45(1):21-39.
- Amanda M. Nelson, Daniel N. Moriasi, Mansour Talebizadeh, Jean L. Steiner, Remegio B. Confesor, Prasanna H. Gowda, Patrick J. Starks, Haile Tadesse. 2017. Impact of length of dataset on streamflow calibration parameters and performance of APEX model. *Journal of the American Water Resources Association* 53(5): 1164-1177. DOI: 10.1111/1752-1688.12564
- Scavia D, M Kalcic, R L Muenich, J Read, N Aloysius, J Arnold, C Boles, R Confesor, M Gildow, J Martin, T Redder, S Sowa, H Yen. 2017. Multiple models guide strategies for agricultural nutrient load reductions. *Frontiers on Ecology and the Environment* 15(3): 126-132. doi:10.1002/fee.1472.
- Baker, D.B, L.T Johnson, R. B. Confesor, J. Crumrine. 2017. Vertical Stratification of Soil



Phosphorus as a Concern for Dissolved Phosphorus Runoff in the Lake Erie Basin. *Journal of Environmental Quality*. doi: 10.2134/jeq2016.09.0337

- Helen Jarvie, Laura Johnson, Andrew Sharpley, Douglas Smith, David Baker, Tom Bruulsema, Remegio Confesor. 2017. Increased soluble phosphorus loads to Lake Erie: unintended consequences of conservation practices? *Journal of Environmental Quality*. doi: 10.2134/jeq2016.07.0248
- Ford W., K. King, M. Williams, R. Confesor. 2016. Modified APEX model for Simulating Macropore Phosphorus Contributions to Tile Drains. *Journal of Environmental Quality*. doi:10.2134/jeq2016.06.0218
- Mark R. Williams, Kevin W. King, Gregory A. LaBarge, Remegio B. Confesor and Norman R. Fausey. 2016. Edge-Of-Field Evaluation of the Ohio Phosphorus Risk Index. *Journal of Environmental Quality*. doi:10.2134/jeq2016.05.0198
- Watson, S., C. Miller, G. Arhonditsis, G. Boyer, M. Charlton, **R. Confesor**, D. Depew, T. Höök, S. Ludsin, G. Matisoff, S. McElmurry, M. Murray, P. Richards, Y. Rao, M. Steffen, S. Wilhelm. 2016. Harmful algal blooms and the re-eutrophication of Lake Erie: past, present and future management scenarios. *Harmful Algae* 56:44-66. DOI: 10.1016/j.hal.2016.04.010.
- Stow, C.A., Y. Cha, L.T. Johnson, **R. Confesor**, R.P. Richards. 2015. Long-Term and Seasonal Trend Decomposition of Maumee River Nutrient Inputs to Western Lake Erie. *Environmental Science & Technology* 49(6):3392-3400.
- D.B. Baker, **R. Confesor**, D.E. Ewing, L.T. Johnson, J.W. Kramer, B.J. Merryfield. 2014. Phosphorus loading to Lake Erie from the Maumee, Sandusky and Cuyahoga rivers: The importance of bioavailability. *Journal of Great Lakes Research* 40(3): 502–517.
- D.B. Baker, D.E. Ewing, L. T. Johnson, J.W. Kramer, B. J. Merryfield, **R.B. Confesor Jr.**, R.P. Richards, A. A. Roerdink. 2014. Lagrangian analysis of the transport and processing of agricultural runoff in the lower Maumee River and Maumee Bay. *Journal of Great Lakes Research* 40(3): 479- 495.
- Johnson, L.T., D.B. Baker, **R.B. Confesor**, K.A. Krieger, and R.P. Richards. 2014. Research to help Lake Erie: Proceedings of the “Phosphorus along the land-river-lake continuum” research planning and coordination workshop. *Journal of Great Lakes Research* 40(3): 574-577.
- Michalak, A.M., E.J. Anderson, D. Beletsky, S. Boland, N.S. Bosch, T.B. Bridgeman, J.D. Chaffin, K.Cho, **R. Confesor**, I. Daloglu, J.V. DePinto, M.A. Evans, G.L. Fahnenstiel, L. He, J.C. Ho, L. Jenkins, T. H. Johengen, K.C. Kuo, E. LaPorte, X. Liu, M.R. McWilliams, M.R. Moore, D.J. Posselt, R.P Richards, D. Scavia, A.L. Steiner, E. Verhamme, D.M. Wright, and M.A. Zagorski. 2013. Record-setting algal bloom in Lake Erie caused by agricultural and meteorological trends consistent with expected future conditions. *Proceedings of the National Academy of Sciences of the United States of America*, 110(16):6448-6452.
- Gebremariam, S.Y., J.F. Martin, C. DeMarchi, N.S. Bosch, **R. Confesor**, S. A. Ludsin. 2014. A comprehensive approach to evaluating watershed models for predicting river flow regimes critical to downstream ecosystem services. *Environmental Modelling & Software*

61:121-134.

- Richards, R.P., I. Alameddine, J.D. Allan, D.B. Baker, N.S. Bosch, **R. Confesor**, J.V. DePinto, D.M. Dolan, J.M. Reutter, and D. Scavia. 2013. DISCUSSION: "Nutrient Inputs to the Laurentian Great Lakes by Source and Watershed Estimated Using SPARROW Watershed Models" by Dale M. Robertson and David A. Saad. J. American Water Resources Association, 49(3):715-724.
- Smith, Michael B., Victor Koren, Ziya Zhang, Yu Zhang, Seann M. Reed, Zhengtao Cui, Fekadu Moreda, Brian A. Cosgrove, Naoki Mizukami, Eric A. Anderson, and **DMIP 2 Participants**. 2012. Results of the DMIP Oklahoma experiments. Journal of Hydrology 418-419:17-48.
- Whittaker, G., **R. Confesor Jr.**, M. DiLuzio, J. G. Arnold. 2010. Detection of Over-parameterization and Overfitting in an Automatic Calibration of SWAT. Transactions of the American Society of Agricultural and Biological Engineers (ASABE) 53(5): 1487-1499.
- Whittaker, G., **Confesor, R.**, Griffith, S.M., Färe, R., Grosskopf, S., Steiner, J.J., Muller-Warrant, G.W., Banowetz, G.M. 2009. A hybrid genetic algorithm for multiobjective problems with activity analysis-based local search. European Journal of Operational Research 193(1): 195-203.
- Confesor, R.B. Jr.**, J.M. Hamlett, R.D. Shannon, and R.E. Graves 2009. Potential Pollutants from Farm-, Food-, and Yard-Waste Composts at Differing Compost Ages. Part II. Potential Leaching of Nutrients Under Column Experiments. *Compost Science and Utilization* 17(1):6-17.
- Confesor, R.B. Jr.**, J.M. Hamlett, R.D. Shannon, and R.E. Graves 2008. Potential Pollutants from Farm-, Food-, and Yard-Waste Composts at Differing Compost Ages. Part I: Change in Chemical Properties. *Compost Science and Utilization* 16(4):228-238.
- Whittaker, G., **R. Confesor Jr.**, S.M. Griffith, R. Färe, S. Grosskopf, J.J. Steiner, G.W. Mueller-Warrant, G.M. Banowetz. 2007. A Hybrid Genetic Algorithm for Multiobjective Problems with Activity Analysis based Local Search. In press, European Journal of Operational Research doi: 10.1016/j.ejor.2007.10.050
- Confesor, R.B. Jr.** and G. Whittaker. 2007. Automatic calibration of hydrologic models with multi-objective evolutionary algorithm and Pareto optimization. *Journal of the American Water Resources Association* 43(4): 981-989. doi: 10.1111/j.1752-1688.2007.00080.x
- Confesor, R.B. Jr.**, J.M. Hamlett, R.D. Shannon, and R.E. Graves 2007. Movement of Nitrogen and Phosphorus Downslope and Beneath a Manure and Organic-Waste Composting Site. *Compost Science and Utilization* 15(2):119-126.
- Tuong, T.P., P.P. Pablico, M. Yamauchi, **R.B. Confesor Jr.**, and K. Moody. 2000. Increasing water productivity and weed suppression of wet-seeded rice: effect of water management and rice genotypes. *Experimental Agriculture* 36:71-89.

## Book Chapter

- Meals, D.W., P. Richards, **R. Confesor**, K. Czajkowski, J. Bonnell, D.L. Osmond, D.L.K. Hoag, J. Spooner, and M.L. McFarland. 2012. Rock Creek Watershed, Ohio: National

Institute of Food and Agriculture-Conservation Effects Assessment Project. *In*: D. L. Osmond, D. W. Meals, D. Hoag, and M. Arabi (eds). How to build better agricultural conservation programs to protect water quality: The National Institute of Food and Agriculture-Conservation Effects Assessment Project Experience. Soil and Water Conservation Society, Ankeny, Iowa. pp. 316-326.

Tuong, T.P, K.T. Ingram, J.D. Siopongco, **R.B. Confesor Jr.**, A.A. Boling, U. Singh, M.C.S. Wopereis. 1995. Performance of Dry-Seeded Rainfed Lowland Rice in Response to Agro-hydrology and N- fertilizer Management. In K.T. Ingram (ed) Rainfed Lowland Rice. *Agricultural Research for High- Risk Environment*. Manila, Philippines: IRRI, International Rice Research Institute. 248 p.

### **Project/Technical Reports**

Confesor, R.B. and Guo, T. 2019. Climate change effects on major drivers of harmful algal blooms (HABs): best management practices and HAB severity. Technical report, D422Lot1.SMHI.5.1.1B, Detailed workflows of each case-study on how to use the CDS for CII production and climate adaptation. Copernicus Climate Change Service.

([https://climate.copernicus.eu/sites/default/files/2019-02/NCWQR\\_Technical\\_report.pdf](https://climate.copernicus.eu/sites/default/files/2019-02/NCWQR_Technical_report.pdf))

Donald Scavia, Margaret Kalcic, Rebecca Logsdon Muenich, Noel Aloysius, Jeffrey Arnold, Jay Atwood, Chelsie Boles, Remegio Confesor, Joseph DePinto, Marie Gildow, Jay Martin, Jennifer Read, Todd Redder, Dale Robertson, Scott Sowa, Yu-Chen Wang, Michael White, and Haw Yen. 2016. Shaping Lake Erie Agriculture Nutrient Management via Scenario Development. Compiled by the University of Michigan Water Center with funding from the Fred A. and Barbara M. Erb Family Foundation.

**Confesor, R.B., Jr.** 2012. Modeling dissolved phosphorus exports in Lake Erie watersheds (LEPF Grant No. 397-10). Final report to Ohio Lake Erie Commission, Sandusky, Ohio. (Available at <http://lakeerie.ohio.gov/LinkClick.aspx?fileticket=jzPF-2y1zos%3d&tabid=61>)

**Confesor, R. B. Jr.** and J. M. Hamlett. 2003. Spring Creek watershed water quality analysis. A final project report to Trout Unlimited, Inc. (State College, PA, USA) Fellowship Award.

Colvin, R.W., Giannico, G.R., Herlihy, A.T., Gerth, W.J., Confesor, R.B., Fare, R.G., Garcia, T.S., Griffith, S.M., Grosskopf, S.P., McComb, B.C., Whittaker, G.W., Mueller Warrant, G.W. 2008. Assessing trade-offs between crop production and ecological services: the Calapooia Basin. Seed Production Research at Oregon State University. 127: 78-79.

### ***Presentations and Conference Proceedings***

T Guo, **R Confesor**, A Sharma, LA Marshall, L Johnson. 2019. Residual error analyses of hydrologic and water quality model simulations. American Geophysical Union Fall Meeting 2019. San Francisco, CA, USA.

**Confesor. R.B.**, T. Guo, A. Saleh, K. King. 2018. Identifying Best Management Practices to Reduce Nutrient and Sediment Loads: Watershed- vs Field-scale. 73rd SWCS International Annual Conference Albuquerque, New Mexico, Jul 29 – Aug 1, 2018.

- Margaret Kalcic, Yu-Chen Wang, Jay Martin, Noel Aloysius, Anna Apostel, Haley Kujawa, Jeffrey Kast, Rebecca Muenich, Awoke Teshager, Donald Scavia, Chelsie Bholes, Tod Redder, **Remegio Confesor**, Tian Guo. 2018. How certain are nutrient loading hotspots simulated by SWAT? A case study in the Western Lake Erie basin. Annual International Meeting. American Society of Agricultural and Biological Engineers. Detroit, MI. Jul 29 – Aug 1, 2018.
- Tian Guo, **Remegio Confesor**, Ali Saleh, Kevin King. 2018. Multi-objective and multi-site calibration of APEX/NTT at 19 fields across Northwest Ohio. Annual International Meeting. American Society of Agricultural and Biological Engineers. Detroit, MI. Jul 29 – Aug 1, 2018.
- Confesor, R.B.** and T. Guo. 2018. Climate change effects on major drivers of harmful algal blooms (HABs): best management practices and HAB severity. Copernicus Climate Change Service 422 Lot1 General Assembly. Swedish Meteorological and Hydrological Institute, Norrköping, Sweden. 15-18 April 2018.
- Confesor, R.B.** 2018. Identifying water quality-related problems, understanding their causes, and finding solutions: the necessity of monitoring and modeling. Vietnam Water Week. March 4-7, Hanoi, Vietnam.
- Confesor, R.B.** 2017. Modeling the Influence of Agricultural Practices on Watershed Export of Phosphorus. Invited Presentation. 8th Lake Erie Millennium Network Meeting. Windsor, Ontario, CA. February 21-23, 2017.
- Confesor, R.B.** 2017. A holistic approach to the HABs problem: linking the environment, economics, and policy. Invited Panel Presentation. Ohio Association of Economists and Political Scientists Conference. 15-16 September, 2017, Tiffin, OH.
- Confesor, R.B.**, Ellen Ewing, Jakob Boehler, David Baker, Saptashati Biswas, Laura Johnson, Jack Kramer, Barbara Merryfield, Nancy Miller, Peter Richards, and Aaron Roerdink. 2016. The success of the Heidelberg Tributary Loading Program (HTLP): There is more than only the long-term data. 21st Century Watershed Technology Conference and Workshop. Quito, Ecuador. December 3 - 9, 2016.
- Confesor, R.B.**, Kalcic, M., Logsdon, R.M., Scavia, D., Aloysius, N.R., Arnold, J.G., Atwood, J., Boles, C., Depinto, J.V., Gildow, M., Martin, J., Redder, T.M., Robertson, D.M., Sowa, S.P., White, M.J., and Yen, H. 2016. Achieving Nutrient Load Reduction Targets in the Western Lake Erie Basin: A Multi-Model Approach. International Association for Great Lakes Research. University of Guelph. Guelph, Ontario. 6-10 June 2016.
- Baker, D.B., Johnson, L.T., and **Confesor, R.B.** Implications of Phosphorus Stratification for Targeting Dissolved Phosphorus Reduction Programs. International Association for Great Lakes Research. University of Guelph. Guelph, Ontario. 6-10 June 2016.
- Johnson, L.T., King, K.W., Williams, M.R., **Confesor, R.B.**, And Baker, D.B. 2016. Linking 4R nutrient stewardship at the farm to water quality from the field to watershed. International Association for Great Lakes Research. University of Guelph. Guelph, Ontario. 6-10 June 2016.
- Confesor, R.B.** Targeting Critical Source Areas or Hotspots: A New Paradigm for NW Ohio.

2015. 44th Annual Water Management Association of Ohio (WMAO) Conference, Moving The Needle: Policies, Programs, and People that Drive Change. Doubletree by Hilton, Columbus, Ohio. 17-18 November 2015.
- RConfesor, LJohnson, DBaker, and KKrieger. 2015. Shooting a moving target: a dissolved phosphorus problem paradigm. 70th Annual Soil and Water Conservation Society Conference. Sheraton Greensboro at Four Seasons, Greensboro, NC. 28 July 2015.
- Confesor, R.B., Johnson, L.T., Baker, D.B., and Krieger, K. 2015. Reducing nutrient loading: are we targeting the right sources and implementing the right solution? International Association for Great Lakes Research. University of Vermont, Burlington, VT. 25-29 May 2015.
- Baker, D.B., Johnson, L.T., Confesor, R.B., and Krieger, K. Changing Location, Timing and Composition of Phosphorus Inputs to Lake Erie: Challenges for Modelers. International Association for Great Lakes Research. University of Vermont, Burlington, VT. 25-29 May 2015.
- Stow, C.A., Cha, Y., Johnson, L.T., Confesor, R.B., and Richards, R.P., Long-Term and Seasonal Trend Decomposition of Maumee River Nutrient Inputs to Western Lake Erie. . International Association for Great Lakes Research. University of Vermont, Burlington, VT. 25-29 May 2015.
- Confesor, R.B.** Modeling the Impacts of Best Management Practices (BMP) Adoption at the Watershed Scale. 2014. International Association for Great Lakes Research. McMaster University. Hamilton, Ontario. 27 May 2014.
- Johnson, L.T., Baker, D.B., Richards, R.P., Roerdink, A.R., Confesor, R.B., Kramer, J.W., Ewing, D.E., And Merryfield, B.J. 2014. Historical and seasonal trends in nitrogen loading from Lake Erie tributaries. International Association for Great Lakes Research. McMaster University. Hamilton, Ontario. 27 May 2014.
- Confesor, R.B.** SWAT Calibration: What Are We Missing? 2014. SWAT Workshop sponsored by University of Michigan and International Joint Commission. Ann Arbor, MI. 18 March 2014.
- Confesor, R.B.** Modeling the Effects of Best Management Practices (BMPs) on Nutrient and Sediment Exports. 2013. Millennium Network Workshop. Windsor, Ontario. 30 October 2013.
- Confesor, R.B.** Watershed modeling: improving calibration and understanding model parameterization and uncertainty. 2013. Bi-national Workshop on Sharing Agricultural Science, Technology and Data to Improve Great Lakes Water Quality. Ontario Ministry of Agriculture and Food and Ontario Ministry of Rural Affairs. Ivey Spencer Leadership Center, London, Ontario, Canada. 13 June 2013.
- Confesor, R.B.** A Review of Agricultural BMPs in Reducing Total Phosphorus and Dissolved Reactive Phosphorus Loads to Lake Erie. 2013. International Association for Great Lakes Research, West Lafayette, Indiana. 6 June 2013.
- Baker, D.B., Johnson, L.T., Confesor, R.B., Richards, R.P., Roerdink, A.R., Kramer, J.W., Ewing, D.E., and Merryfield, B.J. 2013. Bioavailable Phosphorus Loading to Lake Erie from the Maumee and Sandusky Watersheds: Trends and Management Implications.

International Association for Great Lakes Research, West Lafayette, Indiana. 6 June 2013.

Mcelmurry, S.P., Confesor, R.B., Richards, R.P., and Miller, C.J. 2013. Use of Urban BMPs to Reducing Phosphorus Loads to Lake Erie. International Association for Great Lakes Research, West Lafayette, Indiana. 6 June 2013.

**Confesor, R.B.** The National Center for Water Quality Research: from Landscape to Lake Erie Continuum. Great Lakes Sedimentation Workshop, Great Lakes Commission and the US Army Corps of Engineers. Ann Arbor, Michigan. 14 May 2013.

**Confesor, R.B.** Phosphorus Load Exports from Lake Erie Agricultural Lands. American Water Resources Association's Spring Specialty Conference Agricultural Hydrology and Water Quality II. St. Louis, Missouri. 25 March 2013.

**Confesor, R.B.** Reducing Phosphorus Loads to Lake Erie: Best Management Practices (Agricultural) Literature Review. Lake Erie Ecosystem Priority (LEEP) Science Synthesis Workshop, the International Joint Commission (IJC). Windsor, Ontario. 26 February 2013.

**Confesor, R.B. Jr.,** R. P. Richards, D. Baker. Modeling Sediment and Nutrient Exports From Lake Erie Watersheds. Annual meeting of the International Association for Great Lakes Research. Cornwall, ON, Canada. May 13-1, 2012.

**Confesor, R.B. Jr.,** R. Peter Richards, J. Arnold, G. Whittaker. Modeling Dissolved Phosphorus Exports in Lake Erie Watersheds. Paper presented at the 2011 ASABE Annual International Meeting, Louisville, Kentucky August 7 – 10, 2011. Paper Number 1111060.

Baker, D.B. J.W. Kramer, D.E. Ewing, B.M. Merryfield, **R.B. Confesor,** and R.P. Richards. A Comparison of Mixing Zones between Storm and Base Flows for Major Ions, a Dissolved and Particulate Nutrients: A Case Study in the Lower Maumee River, Maumee Bay and Nearshore Waters of the Western Basin of Lake Erie. Annual meeting of the International Association for Great Lakes Research. Duluth, MN. 1 June 2011.

Whittaker, G., R. Färe, S. Grosskopf, A. Herlihy, **R. Confesor, Jr.** 2010. Calculation of optimal trade-offs between farm profit, water quality, and fish diversity. Oral presentation at the 2010 Land Grant and Sea Grant National Water Conference.

**Confesor, R.B. Jr.,** G.W. Whittaker, R. Färe, and S. Grosskopf. 2008. Sustainability of Biomass Feedstock Production, Removal, and Transport. Paper presented at the American Institute of Chemical Engineers (AIChE) Annual Meeting, November 16-21, 2008 in Philadelphia, Pennsylvania, USA.

**Confesor, R.B. Jr.,** G.W. Whittaker, R. Färe, and S. Grosskopf. 2008. A Malmquist-Based Water Quality Index (WQI). Paper presented at the American Water Resources Association (AWRA) Annual Water Resources Conference, November 17-20, 2008 in New Orleans, Louisiana, USA.

**Confesor, R.B. Jr.** and G.W. Whittaker. 2007. Bootstrapping input (forcing) variables for model prediction uncertainty. Poster presented in the American Water Resources Association (AWRA) Annual Water Resources Conference, November 12-15, 2007 in Albuquerque, New Mexico, USA.

- Confesor, R.B. Jr.**, G.W. Whittaker, R. Färe, and S. Grosskopf. 2007. Dynamic integration of a biophysical model to an economic model. Poster presented in the American Water Resources Association (AWRA) Annual Water Resources Conference, November 12-15, 2007 in Albuquerque, New Mexico, USA.
- Confesor, R.B. Jr.** and G.W. Whittaker. 2007. Sensitivity Analysis and interdependence of the SWAT model parameters. ASABE Paper No. 072101, 2007 ASAE Annual Meeting (Minneapolis, MN). St. Joseph, MI.
- Färe, R., S. Grosskopf, G.W. Whittaker, and **R.B. Confesor Jr.** Assessing Trade-Offs between Crop Production and Ecological Services. Paper presented at the CAER Conference on Policy Choices for Salinity Mitigation: Bridging the Disciplinary Divides. February 1-2, 2007, Coogee Surf Club, Sydney, Australia.
- Confesor, R.B. Jr.** and G.W. Whittaker. 2006. Multi-Objective Automatic Calibration of a Semi-Distributed Watershed Model using Pareto Ordering Optimization and Genetic Algorithm. Paper No. 062128, 2006 ASAE Annual Meeting (Portland, OR). St. Joseph, MI.
- Confesor, R.B. Jr.** and T.P. Tuong. 2001. Modified Philip's cumulative infiltration equation for cracked soils. In D. D. Bosch and K. W. King. (eds.) *Proceedings, Preferential flow, Water movement and chemical transport in the environment, 2nd International Symposium*, 3-5 Jan 2001, Ala Moana Hotel Honolulu, Hawaii. American Society of Agricultural Engineers. pp. 245-248.
- Castillo, E., R.J. Cabangon, A.A. Boling, **R.B. Confesor**, T.P. Tuong, and U. Singh. 1998. Drought response of lowland rice as affected by crop establishment and control release fertilizers. Paper presented at the 14 Annual Scientific Conference of the Federation of Crop Science Societies of the Philippines, Cebu City, 19-24 Apr 1998.
- Confesor, R.B. Jr.**, and T.P. Tuong. 1997. Hydraulic Properties and Crack Pattern of Dried Puddled Soils Under Transplanted and Wet-Seeded Rice. Paper presented at the 13th Annual Scientific Meeting of the Federation of Crop Science Societies of the Philippines, Supreme Hotel, Baguio City, May, 1997.
- Pablico, P.P, M. Yamauchi, T.P. Tuong, **R.B. Confesor** and K. Moody. 1995. Performance of anaerobic direct-seeding technique under different water and tillage systems. In R. Ishii and T. Horie (Eds.) *Crop research in Asia: Achievements and Perspective*. Proceedings of the 2nd Asian Crop sciences Conference, 21-23 August, 1995, the Fukui Prefectural University, Fukui, Japan, pp. 216-219.