

Paul J. Block, PhD, PE

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PROFESSIONAL PREPARATION:

Ph.D. in Civil Engineering, University of Colorado, 2006

Thesis: *Integrated Management of the Blue Nile Basin in Ethiopia: Precipitation Forecast, Hydropower, and Irrigation Modeling*

Advisors: Dr. Kenneth Strzepek & Dr. Balaji Rajagopalan

M.S. in Civil Engineering, University of Colorado, 2004

Thesis: *Inclusion of Climate Variability in an Agro-Economic Model: Analytic Applications in Ethiopia*

Advisor: Dr. Kenneth Strzepek

B.S. in Civil Engineering, Valparaiso University, 1995

Independent Study Project: *Determining the Dimensions of a Discharge Well's Capture Zone*

Graduated Magna cum Laude

APPOINTMENTS:

- 2019- Associate Professor, Civil and Environmental Engineering, University of Wisconsin - Madison
- 2013-2019 Assistant Professor, Civil and Environmental Engineering, University of Wisconsin - Madison
- 2011- Affiliate, Columbia Water Center, Columbia University
- 2011-2013 Assistant Professor, Civil, Architectural, and Environmental Engineering, Drexel University
- 2009-2011 Associate Research Scientist, IRI, Columbia University;
Researcher, Columbia Water Center, Columbia University
- 2007-2009 Postdoctoral Research Scientist, IRI, Columbia University
- 2006-2007 Assistant Professor Adjunct, Civil, Environmental, and Architectural Engineering, University of Colorado
- 2005-2006 Research Assistant, Civil, Environmental, and Architectural Engineering, University of Colorado, and International Food Policy Research Institute, Washington DC
- 2005 Research Assistant, National Center for Atmospheric Research, Boulder, Colorado and Electric Power Research Institute, Palo Alto, California
- 2003-2004 Teaching Assistant, Civil, Environmental, and Architectural Engineering, University of Colorado
- 2001-2003 Project Engineer, Short Elliot Hendrickson Inc., Rochester, Minnesota
- 2001-2003 Instructor, Rochester Community and Technical College, Rochester, Minnesota
- 1997-1999 Project Manager and Engineer, Environmental Concepts and Design, St. Paul, Minnesota
- 1993-1994 Staff Engineer (Co-op), Harza Engineering Company, Chicago, Illinois

RESEARCH PROPOSALS & FUNDING AWARDED:

1. *From Forecasts to Action (F2A): Enabling Proactive Societal Responses to Hydrological Extremes*, NASA, PI, 2022-2025; \$350,000
2. *Coordinating Water Markets and Critical Infrastructure Management to Build Community Resilience to Extreme Drought*, NSF, co-PI, 2022-2025; \$700,000
3. *Subseasonal-to-Seasonal Forecast of Hydro-Ecological Extremes in the Amazon Basin*, NASA SERVIR, co-PI, 2022-2025; \$650,000
4. *Livelihoods and Economic Recovery (PPE Exploratory Grant)*, UNDP, co-PI, 2020-2021; \$60k
5. *CAREER: Leveraging Hydro-climatic Processes to Advance Season-ahead Cyanobacteria Prediction and Beach Management*, NSF, PI, 2019-2024; \$510,000; NSF INTERN supplement awarded 2020; \$34,500; NSF Supplement 2023; \$90,000
6. *Season-ahead Drought Prediction in Southern Peru to Support Water Resources Management - Continuation*, Southern Peru Copper Corporation, PI, 2019-2023; \$332,000
7. *Development of a Forecast-based Flood and Health Risk Management System to Support Advanced Disaster Preparedness*, Wisconsin Alumni Research Foundation, PI, 2018-2019; \$439,000
8. *Independent Review of Study quantifying the effects of water conservation practices and other field characteristics on on-farm water use in the Garwood Irrigation Division*, Lower Colorado River Authority, PI, 2018; \$15,000
9. *Leveraging satellite-derived products and physically-based models to develop cyanobacteria predictions for Lake Mendota*, University of Wisconsin, PI, 2017-2019; \$39,000
10. *Building precipitation and groundwater forecast tools for Wisconsin's Central Sands*, University of Wisconsin System Applied Research Grant, PI, 2017-2018; \$49,000
11. *INFEWS/TI: Understanding Multi-scale Resilience Options for Climate-Vulnerable Africa*, NSF, co-PI (B. Zaitchik, JHU, PI), 2016-2021; \$3,000,000
12. *Seasonal Prediction of HKH Hydrological Extremes with the South Asia Land Data Assimilation System*, NASA, co-PI, (B. Zaitchik, JHU, PI), 2016-2019; \$480,000
13. *Index Insurance as a Climate Risk Management Tool*, Center for Climatic Research at UW-Madison, PI, 2016-2017; \$9,000
14. *NILE_NEXUS: Opportunities for a sustainable food-energy-water future in the Blue Nile Mountains of Ethiopia*, Belmont Forum, co-PI (B. Zaitchik, JHU, PI), 2016-2019; \$1,000,000
15. *Taming water in Ethiopia: An interdisciplinary approach to improve human security in a water-dependent emerging region*, NSF PIRE, co-PI (E. Anagnostou, UConn, PI), 2016-2020; \$4,275,000
16. *Flood Prediction to Support Advanced Disaster Preparedness and Public Health Risks: Understanding, Development, and Application*, Global Health Institute (University of Wisconsin), PI, 2016-2017; \$50,000
17. *The Sands of Time: Developing and evaluating groundwater forecasts in Wisconsin's Central Sands*, University of Wisconsin, PI, 2016-2017; \$55,000

18. *Season-ahead Drought Prediction in Southern Peru to Support Water Resources Management*, Southern Peru Copper Corporation, PI, 2015-2016; \$232,000; supplement 2017-2018; \$20,000
19. *Agroecosystem-based Climate Resilience Strategies in the Blue Nile Headwaters of Ethiopia – FEW Supplemental Request*, NSF, co-PI (B. Zaitchik, JHU, PI), 2015-2016; \$297,000.
20. *Projecting Nile Basin Climate for GERD Reservoir Filling and Downstream Impacts*, United Nations – WIDER, PI, 2015-2016; \$12,000
21. *Flood prediction: Can a global scale analysis be informative?*, University of Wisconsin, PI, 2015-2016; \$39,000
22. *Predicting Water Quality Extremes using Season-ahead Climate Information*, NOAA SARP, PI, 2014-2015; \$100,000
23. *Historic and Future Flows of Wisconsin Rivers and Associated Impacts on River Island Resources*, Wisconsin Department of Natural Resources, PI, 2014-2015; \$90,000
24. *Seasonal Prediction of Hydro-Climatic Extremes in the Greater Horn of Africa under Evolving Climate Conditions to Support Adaptation Strategies*, NOAA IDS (T. Tadesse, UNL, PI), 2013-2016; \$1,400,000
25. *Integrated Seasonal Drought Forecast-Adaptive Management System for the Lower Colorado River Basin in Texas*, NOAA SARP, co-PI (D. Watkins, Mich Tech, PI), 2013-2015; \$285,000
26. *Predicting Change: A mentorship and collaboration plan to foster knowledge advancement across physical and social science systems*, Drexel Career Development Award, PI, 2012-2013; \$7,500
27. *Elucidating near-term climate change information to guide water resources decisions and foster sustainability*, Earth Institute at Columbia University, PI, 2010; \$34,000
28. *Continuation and Expansion of the Water Capture System in Koraro, Ethiopia*, Pulitzer Family Foundation, Co-PI (U. Lall, Columbia, PI), 2010; \$250,000
29. *Tailoring Extreme Weather and Climate Information Products in Preparedness for Climate Change*, IFRC, Co-PI (S. Mason, Columbia, PI), 2010; \$120,000
30. *Nile Basin Initiative training and model development*, World Bank, PI, 2009; \$20,000
31. *Economics of Adaptation to Climate Change in Ethiopia*, World Bank, PI, 2009; \$50,000
32. *Water and Climate Risk Management Training*, UNESCO, PI, 2009; \$15,000
33. *Coming Down the Mountain: Understanding the Vulnerability of Andean Communities to Hydroclimatologic Variability and Global Environmental Change*, Inter-American Institute for Global Change Research, Co-PI (C. Brown, Columbia, PI), 2007-2009; \$50,000
34. Joint Assembly Student Grant, 2006; \$300
35. *Integrated Management of the Blue Nile Basin in Ethiopia*, U.S. Agency for International Development (USAID) through the International Food Policy Research Institute (IFPRI), PI, 2005-2006; \$30,000
36. *Model for the Assessment of Greenhouse Gas Induced Climate Change*, Electric Power Research Institute (EPRI), PI, 2005; \$20,000

PEER-REVIEWED PUBLICATIONS:

- Beal, M., G. Wilkinson, and P. Block, 2023. Large scale seasonal forecasting of peak season algae metrics in the Midwest and Northeast U.S. *Water Research*, 229, 119402. doi.org/10.1016/j.watres.2022.119402.
- Yang, M., G. Wang, S. Wu, P. Block, R. Lazin, S. Alexander, J. Lala, M. Haider, Z. Dokou, E. Atsbeha, M. Koukoulou, X. Shen, M. Pena, E. Nikolopoulos, A. Bagtzoglou, and E. Anagnostou, 2023. Seasonal prediction of crop yields in Ethiopia using an analog approach. *Agricultural and Forest Meteorology*, 331, 109347. doi.org/10.1016/j.agrformet.2023.109347.
- Lala, J., M. Regassa, Y. Zhang, L. You, and P. Block, 2023. Incorporating seasonality into an agro-economic model of Ethiopia. *Journal of Water Resources Planning and Management*, 194(2): 05022018. doi.org/10.1061/JWRMD5.WRENG-5785.
- Lala, J., D. Lee, J. Bazo, and P. Block, 2022. Evaluating prospects for subseasonal-to-seasonal forecast-based anticipatory action from a global perspective. *Weather and Climate Extremes*, p.100510. doi.org/10.1016/j.wace.2022.100510.
- Wheeler, K., M. Jeuland, K. Strzepak, J. Hall, E. Zagana, G. Abdo, T. Basson, D. Blackmore, P. Block, and D. Whittington, 2022. Comment on ‘Egypt’s water budget deficit and suggested mitigation policies for the Grand Ethiopian Renaissance Dam filling scenarios’. *Environmental Research Letters* 17(8): 088003, doi.org/10.1088/1748-9326/ac7e5e.
- Alexander, S., and P. Block, 2022: Integration of seasonal precipitation forecast information into local-level agricultural decision-making using an agent-based model to support community adaptation, *Climate Risk Management* 36, 100417, doi.org/10.1016/j.crm.2022.100417.
- Lee, D., J.Y. Ng, S. Galelli, and P. Block, 2022. Unfolding the relationship between seasonal forecast skill and value in hydropower production: a global analysis. *Hydrology and Earth System Sciences* 26(9): 2431-2448, doi.org/10.5194/hess-26-2431-2022.
- Wirz, C.D., D. Brossard, K. Curtis, and P. Block, 2022. The risk of relocation: risk perceptions and communication surrounding the tradeoffs between floods and economic opportunities in Iquitos, Peru. *Journal of Risk Research*, 1-16, doi.org/10.1080/13669877.2022.2077413.
- Vavrus, S.J., F. Wang, and P. Block, 2022. Rainy season precipitation forecasts in coastal Peru from the North American Multi-Model Ensemble. *International Journal of Climatology*, doi.org/10.1002/joc.7586.
- Atsbeha, E., E. Holzer, S. Negatu, K. Kirksey, S. Alexander, P. Block, and E. Anagnostou, 2022. Probability games, workshops and the social world of international science communication. *Bulletin of the American Meteorological Society*, 103(8), E1747-E1761, doi.org/10.1175/BAMS-D-21-0024.1.
- Beal, M., B. O’Reilly, C. Soley, K. Hietpas, and P. Block, 2022. Variability of summer cyanobacteria abundance: can season-ahead forecasts improve beach management? *Lake and Reservoir Management*, doi.org/10.1080/10402381.2022.2084799.
- Lala, J., J. Bazo, V. Anand, and P. Block, 2021: Optimizing forecast-based actions for extreme rainfall events, *Climate Risk Management*, 34, 100374, doi.org/10.1016/j.crm.2021.100374.
- Beal, M., B. O’Reilly, K. Hietpas, and P. Block, 2021: Development of a sub-seasonal cyanobacteria prediction model by leveraging local and global scale predictors, *Harmful Algae* 108, 102100, doi.org/10.1016/j.hal.2021.102100.
- Lala, J., M. Yang, G. Wang, and P. Block, 2021: Utilizing rainy season onset predictions to enhance maize yields in Ethiopia, *Environmental Research Letters*, 16(5), 054035, doi.org/10.1088/1748-9326/abf9c9.

- Yang, G. and P. Block, 2021: Water sharing policies conditioned on hydrologic variability to inform reservoir operations, *Hydrology and Earth System Sciences* 25:3617-3634, doi.org/10.5194/hess-25-3617-2021.
- Keating, C., D. Lee., J. Bazo, and P. Block, 2021: Leveraging multi-model season-ahead streamflow forecasts to trigger advanced flood preparedness in Peru, *Natural Hazards Earth System Sciences* 21:2215-2231, doi.org/10.5194/nhess-21-2215-2021.
- Yang, G., B. Zaitchik, H. Bahr, and P. Block, 2021: A Bayesian adaptive reservoir operation framework incorporating streamflow non-stationarity, *Journal of Hydrology* 594, doi.org/10.1016/j.jhydrol.2021.125959.
- Lee, D., H. Ahmadul, J. Patz, and P. Block, 2021: Predicting social and health vulnerability to floods in Bangladesh, *Natural Hazards Earth System Sciences* 21:1807-1823, doi.org/10.5194/nhess-21-1807-2021.
- Yang, G., S. Guo, P. Liu, and P. Block, 2021: Sensitivity of forecast value in multiobjective reservoir operation to forecast lead time and reservoir characteristics, *Journal of Water Resources Planning and Management* 147(6), 04021027, doi.org/10.1061/(ASCE)WR.1943-5452.0001384.
- Alexander, S., E. Atsbeha, S. Negatu, K. Kirksey, D. Brossard, E. Holzer, and P. Block, 2020: Development of an interdisciplinary, multi-method approach to seasonal climate forecast communication at the local scale, *Climatic Change* 162(4):2021-2042, doi.org/10.1007/s10584-020-02845-9.
- Lala, J., S. Tilahun, and P. Block, 2020: Predicting rainy season onset in the Ethiopian highlands for agricultural planning, *Journal of Hydrometeorology* 21(7):1675-1688, doi.org/10.1175/JHM-D-20-0058.1.
- Gari, Y., P. Block, G. Assefa, M. Mekonnen, and S.A. Tilahun, 2020: Quantifying the United Nations' Watercourse Convention Indicators to Inform Equitable Transboundary River Sharing: Application to the Nile River Basin, *Water* 12(9):2499, doi:10.3390/w12092499.
- Alexander, S., G. Yang, G. Addisu, and P. Block, 2020: Forecast-informed reservoir operations to guide hydropower and agriculture allocations in the Blue Nile Basin, Ethiopia, *International Journal of Water Resources Development* 1-26, doi.org/10.1080/07900627.2020.1745159.
- Delorit, J., and P. Block, 2020: Cooperative water trade as a hedge against scarcity: Accounting for risk attitudes in the uptake of forecast-informed water option contracts, *Journal of Hydrology* 583:124626, doi.org/10.1016/j.jhydrol.2020.124626.
- Yang, G., S. Guo, P. Liu, and P. Block, 2020: Integration and evaluation of forecast-informed multi-objective reservoir operations, *Journal of Water Resources Planning and Management* 146(6), 04020038, doi.org/10.1061/(ASCE)WR.1943-5452.0001229.
- Moradi, A., A. Dariane, G. Yang, and P. Block, 2020: Long-range reservoir inflow forecasts using large-scale climate predictors, *International Journal of Climatology* 40(13):5429-5450, doi.org/10.1002/joc.6526.
- Delorit, J., D. Parker, and P. Block, 2019: An Agro-economic approach to framing perennial farm-scale water resources demand management for water right markets, *Agricultural Water Management* 218:68-81, doi.org/10.1016/j.agwat.2019.03.029.
- Giuliani, M., M. Zaniolo, A. Castelletti, G. Davoli, and P. Block, 2019: Detecting the state of the climate system via artificial intelligence to improve seasonal forecasts and inform reservoir operations, *Water Resources Research* 55(11):9133-9147, doi.org/10.1029/2019WR025035.

Zhang, Y., L. You, D. Lee, and P. Block, 2019: Integrating Climate Prediction and Regionalization into an Agro-economic Model to Guide Agricultural Planning, *Climatic Change* 158:435-451, doi.org/10.1007/s10584-019-02559-7.

Blum, A., B. Zaitchik, S. Alexander, S. Wu, Y. Zhang, S. Shukla, T. Yimanie Alemneh, and P. Block, 2019: A Grand Prediction: Communicating and evaluating 2018 summertime Upper Blue Nile rainfall and streamflow forecasts in preparation for Ethiopia's new dam, *Frontiers in Water* 1:3, https://doi.org/10.3389/frwa.2019.00003.

Delorit, J., and P. Block, 2019: Using seasonal forecasts to inform water market-scale option contracts, *Journal of Water Resources Planning and Management* 145(5), doi.org/10.1061/(ASCE)WR.1943-5452.0001068. *Winner of 2020 Best Research-Oriented Paper Award.*

Alexander, S., S. Wu, and P. Block, 2019: Model selection based on sectoral application scale for increased value of hydroclimate prediction information, *Journal of Water Resources Planning and Management* 145(5), doi.org/10.1061/(ASCE)WR.1943-5452.0001044.

Delorit, J. and P. Block, 2018: Promoting competitive water resource use efficiency at the water-market scale: An inter-cooperative demand equilibrium-based approach to water trading, *Water Resources Research* 54(8):5394-5421, doi.org/10.1029/2017WR022323.

Lee, D., P. Ward, and P. Block, 2018: Identification of symmetric and asymmetric responses in seasonal streamflow globally to ENSO phase, *Environmental Research Letters* 13(4), doi.org/10.1088/1748-9326/aab4ca.

Mortensen, E. and P. Block, 2018: ENSO index-based insurance for agricultural protection in southern Peru, *Geosciences (invited, special issue)* 8(2), 64, doi.org/10.3390/geosciences8020064.

Lee, D., P. Ward, and P. Block, 2018: Attribution of large-scale climate patterns to seasonal peak-flow and prospects for prediction globally, *Water Resources Research* 54: 916-938, doi.org/10.1002/2017WR021205.

Wu, S., M. Notaro, S. Vavrus, E. Mortensen, R. Montgomery, J. De Pierola, P. Block, 2018: Efficacy of tendency and linear inverse models to predict southern Peru's rainy season precipitation, *International Journal of Climatology* 38:2590-2604. doi.org/10.1002/joc.5442.

Mortensen, E., S. Wu, M. Notaro, S. Vavrus, R. Montgomery, J. De Pierola, C. Sanchez, and P. Block, 2018: Regression-based season-ahead drought prediction for southern Peru conditioned on large-scale climate variables, *Hydrology and Earth Systems Sciences* 22:287-303, doi.org/10.5194/hess-22-287-2018.

Zhang, Y., S. Moges, and P. Block, 2018: Does objective cluster analysis serve as a useful precursor to seasonal precipitation prediction at local scale? Application to western Ethiopia, *Hydrology and Earth Systems Sciences* 22:143-157, doi.org/10.5194/hess-22-143-2018.

Delorit, J. and P. Block, 2017: Evaluation of model-based seasonal streamflow and water allocation forecasts for the Elqui Valley, Chile, *Hydrology and Earth System Sciences* 21:4711-4725, doi.org/10.5194/hess-21-4711-2017.

Zhang, Y., S. Erkyihun, and P. Block, 2016: Filling the GERD: Evaluating hydroclimatic variability and impoundment strategies on Blue Nile riparian countries, *Water International (invited, special issue)* 41(4):593-610, doi.org/10.1080/02508060.2016.1178467.

Taye, M., T. Tadesse, G. Senay, and P. Block, 2016: The Grand Ethiopian Renaissance Dam: a Source of Cooperation or Contention?, *Journal of Water Resources Planning and Management* 142(11):02516001, doi.org/10.1061/(ASCE)WR.1943-5452.0000708.

Zimmerman, B., D. Vimont, and P. Block, 2016: Utilizing the State of El Nino/Southern Oscillation as a Means for Season-Ahead Precipitation Predictor Selection, *Water Resources Research* 52(5):3761-3774, doi.org/10.1002/2015WR017644.

Zhang, Y., S. Moges, and P. Block, 2016: Optimal Cluster Analysis for Objective Regionalization of Seasonal Precipitation in Regions of High Spatial-Temporal Variability: Application to Western Ethiopia, *Journal of Climate* 39:3697-3717, doi.org/10.1175/JCLI-D-15-0582.1.

Reis, J., T. Culver, P. Block, and M. McCartney, 2016: Evaluating the impact and uncertainty of reservoir operation for malaria control as the climate changes in Ethiopia, *Climatic Change* 136(3-4):601-614, doi.org/10.1007/s10584-016-1639-8.

Taye, M., P. Willems, and P. Block, 2015: Implications of climate change on hydrological extremes in the Blue Nile basin: A review, *Journal of Hydrology: Regional Studies* 4 (2015):280-293, doi.org/10.1016/j.ejrh.2015.07.001.

Lee, D., P. Ward, and P. Block, 2015: Defining Flood Seasons Globally using Temporal Streamflow Patterns, *Hydrology and Earth System Sciences* 19:4689-4705, doi.org/10.5194/hess-19-4689-2015.

Gyawali, R., S. Greb, and P. Block, 2015: Temporal changes in streamflow and attribution of changes to climate and land use in Wisconsin watersheds, *Journal of the American Water Resources Association* 51(14):1138-1152, doi.org/10.1111/jawr.12290.

Zhang, Y., P. Block, M. Hammond, and A. King, 2015: Ethiopia's Grand Renaissance Dam: Implications for Downstream Riparian Countries, *Journal of Water Resources Planning and Management* 141(9):05015002, doi.org/10.1061/(ASCE)WR.1943-5452.0000520.

Dinku, T., P. Block, J. Sharoff, K. Hailermariam, D. Osgood, J. Del Corral, R. Cousin, and M. Thomson, 2014: Bridging critical gaps in climate services and applications in Africa, *Earth Perspectives* 1:15, doi.org/10.1186/2194-6434-1-15.

Robertson, A., W. Baethgen, P. Block, U. Lall, A. Sankarasubramanian, F. Souza Filho, and K. Verbist, 2014: Climate risk management for water in semi-arid regions, *Earth Perspectives* 1:12, doi.org/10.1186/2194-6434-1-12.

King, A., and P. Block, 2014: An Assessment of Reservoir Filling Policies for the Grand Ethiopian Renaissance Dam, *Journal of Water and Climate Change* 5(2): 233-243, doi.org/10.2166/wcc.2014.043.

Baker, J., P. Block, K. Strzpek, R. de Neufville, 2013: Power of Screening Models for Developing Flexible Design Strategies in Hydropower Projects: Case Study of Ethiopia, *Journal of Water Resources Planning and Management* 140(12):04014038, doi.org/10.1061/(ASCE)WR.1943-5452.0000417.

Block, P., and L. Goddard, 2012: Statistical and Dynamical Climate Predictions to Guide Water Resources in Ethiopia, *Journal of Water Resources Planning and Management* 138(3):287-298, doi.org/10.1061/(ASCE)WR.1943-5452.0000181.

Block, P., and K. Strzepek, 2012: Power Ahead: Meeting Ethiopia's Energy Needs Under a Changing Climate, *Review of Development Economics* 16(3):476-488, doi.org/10.1111/j.1467-9361.2012.00675.x.

Kwon, H-H, F.A. Souza Filho, P. Block, L. Sun, U. Lall, D.S. Reis Jr., 2012: Uncertainty Assessment of Hydrologic and Climate Forecast Models in Northern Brazil, *Hydrological Processes* 26(25):3875-3885, doi.org/10.1002/hyp.8433.

Block, P., 2011: Tailoring seasonal climate forecasts for hydropower operations, *Hydrology and Earth System Sciences* 15:1355-1368, doi.org/10.5194/hess-15-1355-2011.

Block, P., and K. Strzepek, 2010: Economic Analysis of Large-scale Upstream River Basin Development on the Blue Nile in Ethiopia Considering Transient Conditions, Climate Variability, and Climate Change, *Journal of Water Resources Planning and Management* 136(2):156-166, doi.org/10.1061/(ASCE)WR.1943-5452.0000022.

Block, P., A. Souza Filho, L. Sun, and H. Kwon, 2009: A Streamflow Forecasting Framework using Multiple Climate and Hydrological Models, *Journal of the American Water Resources Association* 45(4):828-843, doi.org/10.1111/j.1752-1688.2009.00327.x.

Block, P., and B. Rajagopalan, 2009: Statistical-Dynamical Approach for Streamflow Modeling at Malakal, Sudan, on the White Nile River, *Journal of Hydrologic Engineering* 14(2):185-196, doi.org/10.1061/(ASCE)1084-0699(2009)14:2(185).

Block, P., K. Strzepek, M. Rosegrant, and X. Diao, 2008: Impacts of Considering Climate Variability on Investment Decisions in Ethiopia, *Journal of Agricultural Economics* 39:171-181, doi.org/10.1111/j.1574-0862.2008.00322.x.

Morin, J., P. Block, B. Rajagopalan and M. Clark, 2008: Identification of Large Scale Climate Patterns Affecting Snow Variability in the Eastern United States, *International Journal of Climatology* 28(3):315-328, doi.org/10.1002/joc.1534.

Block, P., and B. Rajagopalan, 2007: Interannual Variability and Ensemble Forecast of Upper Blue Nile Basin Kiremt Season Precipitation, *Journal of Hydrometeorology* 8(3):327-343, doi.org/10.1175/JHM580.1.

OTHER PUBLICATIONS:

Roland, H., D. Lee, C. Wirz, K. Curtis, K. Malecki, D. Brossard, and P. Block: Stakeholder's perspectives on flood risk and vulnerability in Peru. *A report from the University of Wisconsin-Madison 2020 project*, 2021.

Yang, G. and P. Block: Statistical Testing of Water Saving in the Garwood Irrigation District. *Report commissioned by the Lower Colorado River Authority (Texas)*, August 2020.

Teferi Taye, M., Semu Moges, and P. Block, 2020: Evaluation of the CMIP5 climate model for precipitation projections over the upper Blue Nile basin in *Climate Variability and Change in Africa: Perspectives, Experiences, and Sustainability*. J. Matondo, B. Alemaw, and W. Sandwidi, editors. Sustainable Development Goals Series, Springer; ISBN 9783030315429.

Alexander, S., P. Block, A. Blum, S. Shukla, S. Wu, T. Yimane, B. Zaitchik, and Y. Zhang, 2018: *Average to above average Blue Nile River flow expected in 2018*, Climate Hazards Group, University of California – Santa Barbara. <http://blog.chg.ucsb.edu/?p=364>.

Zhang, Y., S.T. Erkyihun, and P. Block, 2017: From projecting hydroclimate variability to filling the GERD: Upstream hydropower generation and downstream releases in *The Grand Ethiopian Renaissance Dam and the Nile Basin: Implications for transboundary water cooperation*. Z. Yihdego, A. Rieu-Clarke, and A. Cascao, editors. Earthscan Studies in Water Resource Management; ISBN 9781138064898.

Block, P. 2016: Tailoring Seasonal Climate Forecasts for Hydropower Operations in *Meteorology and Energy Security: Simulations, Projections, and Management*. P.S. Samuel, editor. CRC Press; ISBN 9781771883863.

Attendees at MIT workshop, 2015: The Grand Ethiopian Renaissance Dam: An Opportunity for Collaboration and Shared Benefits in the Eastern Nile Basin, MIT, Cambridge, MA, 17 pages.

Cervigni, R. and co-authors, 2010: The Economics of Adaptation to Climate Change: Ethiopia, The World Bank: Washington D.C., 96 pages.

Block, P. and C. Brown, 2008: Does Climate Matter? Evaluating the Effects of Climate Change on Future Ethiopian Hydropower, *Planning for an uncertain future - Monitoring, integration, and adaption. Proceedings of the Third Interagency Conference on Research in the Watersheds*, United States Geological Survey, R. Webb and D. Semmens, editors.

Baroang, K. M., M. Hellmuth, and P. Block, 2009: Identifying uncertainty and defining risk in the context of the WWDR-4. *Discussion Paper prepared for the United Nations World Water Assessment Program*, Perugia, Italy, 33 pages.

Block, P., 2008: Mitigating the Effects of Hydrologic Variability in Ethiopia: An Assessment of Investments in Agriculture and Transportation Infrastructure, Energy, and Hydroclimatic Forecasting, R4d paper 1, The CGIAR Challenge Program on Water and Food, Colombo, Sri Lanka, 53 pages.

Block, P., U. Lall, Y. Kaheil, A. Khalil, and M. Hellmuth, 2008: Applications of Insurance Mechanisms in Water Resources. Paper presented at a workshop on 'Technical Issues in Index Insurance', held 7–8 October 2008 at IRI, Columbia University, New York.

Block, P., 2008: An Assessment of Investments in Agriculture and Transportation Infrastructure, Energy, and Hydroclimatic Forecasting to Mitigate the Effects of Hydrologic Variability in Ethiopia, *CPWF Working Paper 01*, The CGIAR Challenge Program on Water and Food, Colombo, Sri Lanka, 53 pages.

Brown, C., A. Greene, P. Block, and A. Giannini, 2008: Review of downscaling methods for Africa climate applications, IRI Technical Report 08-05, Columbia University Academic Commons.

Block, P., K. Strzepek, and B. Rajagopalan, 2007: Integrated management of the Blue Nile Basin in Ethiopia: Hydropower and irrigation modeling, *IFPRI Discussion Paper 700*, International Food Policy Research Institute (IFPRI): Washington, D.C., 25 pages.

Sadoff, C. and co-authors, 2006: Ethiopia: Managing water resources to maximize sustainable growth, *A World Bank Water Resources Assistance Strategy for Ethiopia*, The World Bank: Washington D.C., 73 pages.

Block, P., K. Strzepek, M. Rosegrant, and X. Diao, 2006: Impacts of considering climate variability on investment decisions in Ethiopia, *EPT Discussion Paper 150*, International Food Policy Research Institute (IFPRI): Washington, D.C., 38 pages.

SELECTED PRESENTATIONS (2015-PRESENT):

Roland, H., D. Lee, C. Wirz, K. Curtis, K. Malecki, D. Brossard, and P. Block: Perspectives on Flood Risk, Vulnerability, and Early Warnings in Peru. *American Geophysical Union Fall Meeting*, Chicago, IL,

December 2022.

Beal, M. and P. Block: Remote Sensing of Harmful Algae Indicators for a Small Inland Lake Using Sentinel-2 and Sentinel-3 Imagery. *American Geophysical Union Fall Meeting*, Chicago, IL, December 2022.

Alexander, S., M. Calice, D. Scheufele, D. Brossard, N. Krause, D. Wright, and P. Block: The impact of extreme precipitation events and their variability on climate change beliefs. *Annual Society of Risk Analysis (SRA) Conference*, Tampa, Florida, December 2022.

Block, P.: Applications of seasonal forecasts for water resources management and disaster preparedness (invited.) *Council of State and Territorial Epidemiologists / Center for Disease Control and Prevention*, Atlanta, GA, October 2022.

Shafiee-Jood, M., P. Block, J. Delorit, M. Giuliani, M. Rivera, and N. Voisin: Opportunities for Advancing the Integration of Probabilistic Sub-seasonal to Seasonal Hydroclimatic Forecasts in Water Systems Operations and Management. *INFORMS Annual Meeting*, Indianapolis, IN, October 2022.

Block, P., J. Lala, and J. Bazo: Preparing for hydrologic extremes through anticipatory actions (invited.) *OU WaTER Conference*, University of Oklahoma, September 2022.

Block, P., M. Beal, C. Soley, B. O'Reilly, and K. Hietpas: Predictability of Lake Mendota Summertime Water Quality (invited.) *CLA Clean Lakes 101*, Madison, WI, June 2022.

Block, P., J. Lala, and J. Bazo: Enhancing anticipatory actions for disaster preparedness considering physical and social factors (invited.) *European Geophysical Union (EGU)*, Vienna, Austria, May 2022.

Beal, M. and P. Block: Large-scale Season-Ahead Forecasting of Algae Abundance in Inland Lakes. *North Central Region Water Network Harmful Algal Bloom Research Symposium*, virtual, January 2022.

Lala, J., M. Dereje, L. You, and P. Block: Seasonal and subseasonal hydroclimatic information for economic development in Ethiopia. *American Geophysical Union Fall Meeting*, New Orleans, LA, December 2021.

Block, P., J. Lala, C. Keating, and J. Bazo: Optimizing forecast-based actions to prepare for extreme rainfall in Peru. *American Geophysical Union Fall Meeting*, New Orleans, LA, December 2021.

Beal, M. and P. Block: Leveraging Local and Global Scale Variables for Large-scale Forecasting of Peak-season Algae Abundance in Inland Lakes. *American Geophysical Union Fall Meeting*, New Orleans, LA, December 2021.

Block, P. and J. Lala: Connection Actions with Forecasts: Utilizing Season-ahead Hydrologic Predictions to Foster Pre-disaster Preparedness and Planning (invited). *American Geophysical Union Fall Meeting*, New Orleans, LA, December 2021.

Kraft, L. and P. Block: Utilizing season-ahead forecast for managing reservoir operations in the Tekeze basin, Ethiopia. *World Environmental and Water Resources Congress (ASCE)*, virtual, June 2021.

Lala, J., J. Bazo, V. Anand, and P. Block: Optimal forecast-based actions for extreme rainfall in Peru. *World Environmental and Water Resources Congress (ASCE)*, virtual, June 2021.

Keating, C., D. Lee, J. Bazo, and P. Block: Use of statistical streamflow forecasts to improve triggering of advanced flood preparedness actions in Peru. *World Environmental and Water Resources Congress (ASCE)*, virtual, June 2021.

Alexander, S. and P. Block: Integration of climate forecast information into local-level decision-making using an agent-based model to support community adaptation in the Blue Nile Basin, Ethiopia. *World Environmental and Water Resources Congress (ASCE)*, virtual, June 2021.

Lala, J., J. Bazo, V. Anand, and P. Block: Optimizing forecast-based actions for extreme rainfall in Peru. *European Geophysical Union (EGU)*, Vienna, Austria (virtual), April 2021.

Beal, M., B. O'Reilly, K. Hietpas, and P. Block: Development of Season Ahead Water Quality Forecasts for Eutrophic Lakes. *UW-Madison Global Health Symposium*, University of Wisconsin-Madison, April 2021. **Received best student poster award.**

Beal, M., B. O'Reilly, K. Hietpas, and P. Block: Development and Assessment of Season-Ahead Water Quality Forecasts in Wisconsin Lakes. *Wisconsin American Water Resources Association*, virtual, March 2021.

Block, P.: The Grand Ethiopian Renaissance Dam: Challenges and opportunities for a new era of regional cooperation. *People to People; invited panel speaker*, March 2021.

Alexander, S. and P. Block: Integration of climate forecast information into local-level decision-making using an agent-based model to support community adaptation in the Blue Nile Basin, Ethiopia. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2020.

Beal, M., B. O'Reilly, K. Hietpas, and P. Block: Development and Assessment of Sub-seasonal Cyanobacteria Abundance Forecasts in Lake Mendota, WI. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2020.

Yang, G., and P. Block: Forecast-informed water sharing policies to guide operations for upstream and downstream management of the Grand Ethiopian Renaissance Dam. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2020.

Lala, J., M. Yang, G. Wang, and P. Block: Impacts of rainy season onset uncertainty on maize yields in Ethiopia. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2020.

Lee, D., H. Ahmadul, and P. Block: Flood-Health Vulnerability and Predictability of Observed Flood Impacts using Flood Forecast and Satellite Inundation in Bangladesh. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2020.

Block, P.: Addressing vulnerability to variability: exploring novel techniques to support advanced disaster preparedness. *Fundamental of Global Health Course*, UW-Madison, October 2020.

Giuliani, M., M. Zaniolo, P. Block, and A. Castelletti: Data-driven control of water reservoirs using an emulator of the climate system. International Federation of Automatic Control World Congress, Germany (virtual), July 2020.

Block, P. and G. Yang: Discussion on GERD Forecasts and Transboundary Policies. *Eastern Nile Research Universities and Centres Scientific Dialogues*, UW-Madison (virtual), July 2020.

Block, P.: Predicting cyanobacteria and beach closings in Lake Mendota. *Planetary Health Partnership Workshop*, UW-Madison, June 2020.

Lala, J., J. Bazo, and P. Block: Designing a multi-objective framework for forecast-based action of extreme rains in Peru. *European Geophysical Union (EGU)*, Vienna, Austria (virtual), May 2020.

Zaniolo, M., M. Giuliani, P. Block, and A. Castelletti: Dynamic retrieval of informative inputs for multi-sector reservoir policy design with diverse spatio-temporal objective scales. *European Geophysical Union (EGU)*, Vienna, Austria (virtual), May 2020.

Dang, T.D., K. Chowdhury, P. Block, and S. Galelli: Forecast-informed operation of transboundary water-energy systems: a case study in the lower Mekong River Basin. *European Geophysical Union (EGU)*, Vienna, Austria (virtual), May 2020.

Trombetta, G., A. Castelletti, M. Giuliani, M. Zaniolo, and P. Block: From individualistic behavior to full cooperation: optimal management policy design under varying cooperation levels in the Nile River basin. *European Geophysical Union (EGU)*, Vienna, Austria (virtual), May 2020.

Ng, J.Y., D. Lee, S. Galelli, and P. Block: Benefits and limits of season-ahead forecasts for hydropower production: a global analysis. *European Geophysical Union (EGU)*, Vienna, Austria (virtual), May 2020.

Yang, G. and P. Block: A forecast-informed reservoir operation framework incorporating climate indices. *European Geophysical Union (EGU)*, Vienna, Austria (virtual), May 2020.

Block, P. and D. Lee: Predicting floods and flood-health vulnerability to support pre-disaster management in Peru. *European Geophysical Union (EGU)*, Vienna, Austria (virtual), May 2020.

Block, P., G. Yang, Y. Zhang, and B. Zaitchik: Reservoir management at multiple scales: Where should we focus most? (Invited.) *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Block, P., and B. O'Reilly: Leveraging satellite products for enhanced season-ahead water quality prediction. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Alexander, S., P. Block, D. Brossard, E. Atsbeha, S. Negatu, K. Kirksey, and E. Holzer: A multi-method approach to communication and integration of seasonal climate information in the Blue Nile Basin, Ethiopia. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Zaniolo, M., M. Giuliani, P. Block, and A. Castelletti: Neuro-Evolutionary Policy Search for Identifying Key Inputs to Operate Multi-objective Reservoirs Exhibiting Variable Dynamics. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Yang, G., and P. Block: Forecast-informed reservoir operations using a Bayesian approach. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Delorit, J., and P. Block: Season-ahead hydrologic forecasts for end-users: Tailoring optimized sectoral water rights trade to account for heterogeneous risk attitudes. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Dokou, Z., P. Block, and co-authors: Seasonal forecasting in the Blue Nile Basin, Ethiopia for ensuring food and water security. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Lala, J., S. Alexander, and P. Block: Statistical forecasts of Ethiopia's Kiremt rainy season for rainfed agricultural planning. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Duc Dang, T., K. Chowdhury, P. Block, and S. Galelli: Improving the performance of transnational water-energy systems through the use of seasonal rainfall forecasts: a case study in the Mekong River basin. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Lee, D., J. Bazo, and P. Block: Prediction of flood-health vulnerability and risk to support pre-disaster management in Peru. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Giuliani, M., M. Zaniolo, A. Castelletti, G. Davoli, and P. Block: Do we really need inflow forecasts to improve reservoir operations? *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2019.

Block, P.: Addressing vulnerability to variability: exploring novel techniques to support advanced disaster preparedness. *Demography Seminar*, UW-Madison, November 2019.

Block, P.: Seasonal climate forecasts for water and disaster management. *Climate Variability, Climate Change, and Impacts on Health in Peru Conference*, Universidad Peruana Cayetano Heredia, Lima, Peru, June 2019.

Block, P.: Novel risk management tools and strategies. *Managing Financial Risk in Environmental Systems Workshop*, Stanford University, May 2019.

Block, P., J. Lala, D. Lee, V. Anand, and J. Sydnor: Hydroclimatic and social factors for forecast-based financing programs. *World Environmental and Water Resources Congress (ASCE)*, Pittsburgh, PA, May 2019.

Lala, J., D. Lee, V. Anand, J. Sydnor, and P. Block: Shifting the burden: Preparing for disasters with forecast-based financing mechanisms. *World Environmental and Water Resources Congress (ASCE)*, Pittsburgh, PA, May 2019.

Yang, G. and P. Block: Impacts of climate change on reliability-based multi-objective reservoir operating rules for the Grand Ethiopian Renaissance Dam. *World Environmental and Water Resources Congress (ASCE)*, Pittsburgh, PA, May 2019.

Block, P., S. Wu, B. Zaitchik, S. Shukla, A. Blum, S. Alexander, and Y. Zhang: Uncovering a regime shift in Ethiopian highland summertime precipitation with implications for seasonal prediction. *European Geophysical Union (EGU)*, Vienna, Austria, April 2019.

Block, P.: Building Resiliency: Infrastructure in the Age of Climate Change Panel. *Earth Day Conference*, Madison, WI, April 2019.

Block, P.: Planetary Health: Recognizing Earth's Limits To Advance Health for All Panel. *Global Health Institute Symposium*, UW-Madison, April 2019.

Wirz, C., D. Brossard, and P. Block: Development of A Forecast-based Flood and Health Risk Management System to Support Advanced Disaster Preparedness in Peru, *CALS Go-Global Symposium* (winner of best poster award), UW-Madison, April 2019.

Block, P., S. Wu, B. Zaitchik, S. Shukla, A. Blum, S. Alexander, and Y. Zhang: Uncovering a regime shift in Ethiopian highland summertime precipitation with implications for seasonal prediction. *American Geophysical Union (AGU) Fall Meeting*, Washington, DC, December 2018.

Castelletti, A., M. Zaniolo, M. Giuliani, and P. Block: Improving seasonal forecasts through the state of multiple large-scale climate signals to inform water management. *American Geophysical Union (AGU) Fall Meeting*, Washington, DC, December 2018.

Lee, D. and P. Block: Assessment of a flood-induced health risk prediction system. *American Geophysical Union (AGU) Fall Meeting*, Washington, DC, December 2018.

Alexander, S. and P. Block: Coupling Local-scale Hydroclimate Forecasts with Multi-purpose Reservoir Models for Enhanced Water Management in the Blue Nile Basin, Ethiopia. *American Geophysical Union (AGU) Fall Meeting*, Washington, DC, December 2018.

Zhang, Y., L. You, D. Lee, and P. Block: Integrating Climate Prediction and Regionalization into an Agro-economic Model to Guide Agricultural Planning. *American Geophysical Union (AGU) Fall Meeting*, Washington, DC, December 2018.

Estep, M., J. Delorit, J. Kasprzyk, and P. Block: Informing Many-Objective Decision-Making for Water Rights Allocations and Trading Dynamics Conditioned on a Streamflow Prediction Regime in the Elqui River Basin. *American Geophysical Union (AGU) Fall Meeting*, Washington, DC, December 2018.

Simane, B., B. Zaitchik, D. Mueller-Mahn, G. Gilioli, A. Sciarretta, P. Block, and J. Foltz: Options for building resilience and food security in the highlands of Ethiopia. *American Geophysical Union (AGU) Fall Meeting*, Washington, DC, December 2018.

Blum, A., B. Zaitchik, S. Wu, Y. Zhang, S. Alexander, S. Shukla, P. Block, and T. Yimanie: Forecast for Blue Nile river flow in 2018: evaluation and regional responses. *American Geophysical Union (AGU) Fall Meeting*, Washington, DC, December 2018.

Block, P. and D. Lee: Ten Days for Flood Protection: a game exploring risk, uncertainty, and probability in the context of forecasts and flood management. *Climate, People, and the Environment Program Seminar Series*, UW-Madison, October 2018.

Block, P. and E. Mortensen: Exploring forecast-based financing options to mitigate agricultural losses. *World Environmental and Water Resources Congress (ASCE)*, Minneapolis, MN, June 2018.

Delorit, J. and P. Block: Water-coloring inside the lines: Developing demand-based inter-growers' cooperative water market interaction rulesets to promote market-scale economic efficiency within existing water law. *World Environmental and Water Resources Congress (ASCE)*, Minneapolis, MN, June 2018.

Lee, D. and P. Block: Development of a flood-induced health risk prediction model: A case study for Africa. *World Environmental and Water Resources Congress (ASCE)*, Minneapolis, MN, June 2018.

Alexander, S. and P. Block: Coupling local-scale hydroclimate forecasts with reservoir operation models for enhanced water management in the Blue Nile Basin, Ethiopia. *World Environmental and Water Resources Congress (ASCE)*, Minneapolis, MN, June 2018.

Delorit, J. and P. Block: Do season-ahead water right allocation forecast informed option contracts improve water market-scale economic performance? An application to the Elqui Valley, Chile. *World Environmental and Water Resources Congress (ASCE)*, Minneapolis, MN, June 2018.

Zhang, Y., D. Lee, and P. Block: Integrating predictive information into an agro-economic model to guide agricultural planning. *World Environmental and Water Resources Congress (ASCE)*, Minneapolis, MN, June 2018.

Montgomery, R., P. Block, M. Notaro, S. Vavrus, S. Wu, E. Mortensen, J. DePierola: Using predictive and global climate models to improve understanding of droughts in southern Peru. *World Environmental and Water Resources Congress (ASCE)*, Minneapolis, MN, June 2018.

Delorit, J. and P. Block: The value of season-ahead forecast information: Can season-ahead water right allocation forecasts inform option contracts and improve water market-scale economic efficiency in

agriculture dominated basins? *European Geophysical Union (EGU) General Assembly*, Vienna, Austria, April 2018.

Zaniolo, M., M. Giuliani, A. Castelletti, and P. Block: Improving the management of extreme weather events using teleconnection-based seasonal hydroclimatic forecasts. *European Geophysical Union (EGU) General Assembly*, Vienna, Austria, April 2018.

Block, P.: Approaches to reducing vulnerability to variability: seasonal forecasts, financial tools, and water markets. *University of Iowa*, Iowa City, Iowa, March 2018.

Block, P.: Approaches to reducing vulnerability to variability: seasonal forecasts, financial tools, and water markets. *University of Colorado – Boulder*, Boulder, Colorado, February 2018.

Block, P.: Addressing vulnerability to variability: forecasts to support flood preparedness and public health risks, *Global Health Track Seminar, Department of Pediatrics*, February 2018.

Block, P., S. Alexander, and S. Wu: Development and Evaluation of Season-ahead Precipitation and Streamflow Predictions for Sectoral Management in Western Ethiopia. *American Geophysical Union (AGU) Fall Meeting*, New Orleans, LA, December 2017.

Delorit, J. and P. Block: Water Market-scale Agricultural Planning: Promoting Competing Water Resource Use Efficiency Through Agro-Economics. *American Geophysical Union (AGU) Fall Meeting*, New Orleans, LA, December 2017.

Lee D., and P. Block: Development of a flood-induced health risk prediction model for Africa. *American Geophysical Union (AGU) Fall Meeting*, New Orleans, LA, December 2017.

Zaitchik, B., P. Block and authors: Multi-scale Food Energy and Water Dynamics in the Blue Nile Highlands (Invited.) *American Geophysical Union (AGU) Fall Meeting*, New Orleans, LA, December 2017.

Ng, J., D. Lee, S. Galleli, and P. Block: Determining the effect of key climate drivers on global hydropower production. *American Geophysical Union (AGU) Fall Meeting*, New Orleans, LA, December 2017.

Giuliani, M., A. Castelletti, and P. Block: Improving seasonal forecasts of hydroclimatic variables through the state of multiple large-scale climate signals. *American Geophysical Union (AGU) Fall Meeting*, New Orleans, LA, December 2017.

Block, P.: Nile hydropolitics and the GERD: Current and future challenges. *Politecnico di Milano*, Milan, Italy, July 2017.

Block, P.: State of the art uncertainty analysis in hydroclimate modeling Panel. *World Environmental and Water Resources Congress (ASCE)*, Sacramento, CA, May 2017.

Delorit, J., D. Parker, and P. Block: An agro-economic approach to farm-scale water resources management for water rights markets. *World Environmental and Water Resources Congress (ASCE)*, Sacramento, CA, May 2017.

Lee, D., P. Ward, and P. Block: Using season-ahead streamflow predictions to estimate flood-induced health risks for early warning. *World Environmental and Water Resources Congress (ASCE)*, Sacramento, CA, May 2017.

Mortensen, E. and P. Block: Exploring ENSO-based index insurance for agricultural protection in southern Peru. *World Environmental and Water Resources Congress (ASCE)*, Sacramento, CA, May 2017.

Alexander, S. and P. Block: Evaluation of season-ahead precipitation predictions at various scales: Koga watershed, Blue Nile Basin, Ethiopia. *World Environmental and Water Resources Congress (ASCE)*, Sacramento, CA, May 2017.

McGuire, C. and P. Block: Exploring precipitation forecasts to guide decision-making in Wisconsin's Central Sands. *World Environmental and Water Resources Congress (ASCE)*, Sacramento, CA, May 2017.

Lee, D. and P. Block: A flood-induced health risk prediction model: understanding and development. *Global Health Institute (UW-Madison) Symposium*, April 2017.

Zaitchik, B., J. Foltz, M. Ozdogan, B. Simane, S. Siddiqui, and P. Block: Multi-scale Food, Energy, and Water Dynamics in the Blue Nile Highlands. *American Meteorological Society Annual Meeting*, Boston, Massachusetts, January 2017.

Zaitchik, B., D. Ghatak, S. Kumar, F. Policelli, and P. Block: Opportunities and Challenges for Hydrological Analysis in the HKH: Emerging experiences from the South Asia Land Data Assimilation System. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, California, December 2016.

Block, P. and Y. Zhang: Integrating predictive information into an agro-economic model to guide agricultural planning. *European Geophysical Union (EGU) Annual Meeting*, Vienna, Austria, April 2017.

Samale, C., P. Block, M. Giuliani, and A. Castelletti: Improving seasonal forecasts through the state of large-scale climate signals. *European Geophysical Union (EGU) Annual Meeting*, Vienna, Austria, April 2017.

McGuire, C. and P. Block: Exploring groundwater forecasts to guide decision-making in Wisconsin's Central Sands. *Wisconsin section of the American Water Resources Association*, Elkhart Lake, Wisconsin, March 2017.

Tassew Erkyihun, S., D. Lee, and P. Block: Streamflow Simulation Conditioned on Global Scale Sea Surface Temperatures. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, California, December 2016.

Lee, D., P. Ward, and P. Block: A Preliminary Season-ahead Prediction of Global Flood Risks. *World Environmental and Water Resources Congress (ASCE)*, West Palm Beach, FL, May 2016.

Block, P.: ENSO & Floods. *Understanding Risk*, Venice, Italy, May 2016.

Lee, D., P. Ward, and P. Block: A Preliminary Season-ahead Prediction of Global Flood Risks. *World Environmental and Water Resources Congress (ASCE)*, West Palm Beach, FL, May 2016.

Zhang, Y. and P. Block: Predicting Seasonal Precipitation and Integrating Predictive Information into an Agro-economic Model to Guide Agricultural Management. *World Environmental and Water Resources Congress (ASCE)*, West Palm Beach, FL, May 2016.

Delorit, J. and P. Block: Multi-stage Season-ahead Streamflow Forecasts to Inform Water Rights Based Reservoir Allocation Strategies. *World Environmental and Water Resources Congress (ASCE)*, West Palm Beach, FL, May 2016.

Mortensen, E. and P. Block: Season-ahead Drought Prediction for Enhanced Water Resources Management in Southern Peru. *World Environmental and Water Resources Congress (ASCE)*, West Palm Beach, FL, May 2016.

Lee, D., P. Ward, and P. Block: A Preliminary Evaluation of Season-ahead Flood Prediction Conditioned on Large-scale Climate Drivers. *European Geophysical Union General Assembly*, Vienna, Austria, April 2016.

Block, P.: Water for Development: The Utility of Precipitation and Streamflow Forecasts in Sectoral Decision-Making. *American Meteorological Society Annual Meeting*, New Orleans, Louisiana, January 2016.

Zhang, Y., S. Moges, and P. Block: Comparison of Season-ahead Prediction Techniques on Regionalized Grid-level Precipitation: Application to Western Ethiopia. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, California, December 2015.

Lee, D., P. Ward, and P. Block: A Preliminary Evaluation of Season-ahead Flood Risks Globally. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, California, December 2015.

Zimmerman, B. and P. Block: Utilizing the State of ENSO as a Means for Season-ahead Predictor Selection. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, California, December 2015.

Block, P.: Precipitation Forecasts and Water Resources Management in Ethiopia. *Africa and the Environment Symposium*, October 2015.

A Look at Ethiopia's Grand Dam Plan: Implications for Downstream Countries. *Global Science at the Wisconsin Science Festival*, October 2015.

Block, P.: A Look at Ethiopia's Grand Dam Plan: Implications for Riparian Countries. *Wednesday Nite @ The Lab Public Science Series*, September 2015.

Block, P.: Filling the Grand Ethiopian Renaissance Dam and Implications for Riparian Neighbors. *World Water Congress XV (IWRA)*, Edinburgh, Scotland, May 2015.

Zimmerman, B. and P. Block: Utilizing the State of ENSO as a Means for Season-ahead Predictor Selection. *World Environmental and Water Resources Congress (ASCE)*, Austin, TX, May 2015.

Grzegorzewski, M., D. Watkins, and P. Block: Coupling Reservoir Inflow Forecasts and Decision Tools: Bolstering Decision-making in the Lower Colorado River Basin. *World Environmental and Water Resources Congress (ASCE)*, Austin, TX, May 2015.

Zhang, Y. and P. Block: Regionalization and Prediction of Seasonal Precipitation in Ethiopia. *World Environmental and Water Resources Congress (ASCE)*, Austin, TX, May 2015.

Lee, D., P. Ward, and P. Block: Flood Prediction: Can a Global Scale Analysis be Informative? *World Environmental and Water Resources Congress (ASCE)*, Austin, TX, May 2015.

Gyawali, R., S. Greb, and P. Block: Application of hydraulic and regression based models to assess hydrologic impacts on Wisconsin River Islands. *World Environmental and Water Resources Congress (ASCE)*, Austin, TX, May 2015.

Block, P.: Filling the Grand Ethiopian Renaissance Dam: Implications for Riparian Countries. *Blue Nile Water Institute 2nd National Symposium*, Bahir Dar, Ethiopia, April 2015.

RESEARCH EXPERIENCE:

Associate Research Scientist, 2009-2011 & Postdoctoral Research Scientist, 2007-2009

International Research Institute for Climate and Society (IRI), Columbia University

Researcher, 2008-2011

Columbia Water Center, Columbia University

Advisors: Dr. Upmanu Lall & Dr. Casey Brown

- Sustainability and climate risk management of water resources

- Effect of climate variability and change on water systems, particularly in developing countries
- Hydrologic forecasting and uncertainty
- Index insurance for flooding and agriculture
- Policy and mechanisms for increased reliability and poverty reduction through water management

Doctoral Research Assistant, 2005-2006

Department of Civil, Environmental, and Architectural Engineering, University of Colorado, and the International Food Policy Research Institute (IFPRI), Washington, DC

Advisors: Dr. Balaji Rajagopalan (UCB), Dr. Mark Rosegrant (IFPRI) & Dr. Kenneth Strzepek (UCB)

- Assessment of interannual variability and ensemble forecast of precipitation in Ethiopia
- Stochastic analysis of hydropower and irrigation investments in Ethiopia under climate change, considering implications to downstream riparian countries.

Research Assistant, 2005

National Center for Atmospheric Research, Boulder, Colorado, and Electric Power Research Institute, Palo Alto, California

Advisers: Dr. Tom Wigley (NCAR) & Dr. Allen Manne (Stanford)

- Creation of a climate model depicting appropriate life cycles and impacts of greenhouse gases, dependent upon emission levels, to mimic MAGICC
- Aggregation of climate model with the energy policy model MERGE to form a complete integrated assessment model for emission optimization.

Masters Research Assistant, 2004

Department of Civil, Environmental, and Architectural Engineering, University of Colorado

Advisor: Dr. Kenneth Strzepek

- Hydroclimatic and water resources modeling evaluating viable trade-offs between investment in agricultural irrigation and/or road construction in Ethiopia

TEACHING EXPERIENCE:

Assistant/Associate Professor, *University of Wisconsin – Madison, 2013-*

- Fluid Mechanics, Hydroclimatology for Water Resources, Water Resources Systems Analysis, Civil and Environmental Decision-Making, Design Practicum (Freshman)

Assistant Professor, *Drexel University, 2011-2013*

- Open Channel Flow, Watershed Analysis, Hydroclimatology, Fluid Mechanics

Co-Instructor, *Columbia University, 2009-2011*

- Management and Development of Water Systems

Assistant Professor Adjunct, *University of Colorado, 2006-2007*

- Modeling of Hydrologic Systems, Senior Design, Introduction to Geomatics (co-instructor)

Teaching Assistant, *University of Colorado, 2003-2004*

- Undergraduate Fluid Mechanics

Instructor, *Rochester Community and Technical College, Rochester, Minnesota, 2001-2003*

- Introduction to Engineering and Fluid Mechanics for civil engineering technology students

Instructor, *Liberian Refugee School, Toulepleu, Ivory Coast, 1999-2000*

- Math and physics courses for high school level refugee students

ADDITIONAL PROFESSIONAL EXPERIENCE:

Project Engineer, *Short Elliott Hendrickson Inc., Rochester, Minnesota, 2001-2003*

- Civil and municipal engineering work, primarily utility extension design, storm water design, site grading plans, and construction observation

Project Manager and Engineer, *Environmental Concepts and Design, St. Paul, Minnesota, 1997-1999*

- Environmental, civil, and hydrogeologic engineering, primarily subsurface conditions, groundwater monitoring and analysis, landfill design, monitoring, and construction oversight.

Staff Engineer, *Harza Engineering Company, Chicago, Illinois, 1993-1994*

- Cooperative engineering opportunity in water, structural, and geotechnical divisions

AWARDS AND RECOGNITION:

Elected Fellow of the Environment & Water Resources Institute (ASCE)	2021
UW-Madison Emil Steiger Distinguished Teaching Award	2020
UW-Madison Teaching Academy Fellow	2020-
Fulbright Teaching and Research Scholar	2020-2021
Winner of Best Research-Oriented Paper Award, <i>Journal of Water Resources Planning and Management</i>	2020
Polygon Outstanding Engineering Faculty Teaching Award	2014
Drexel University Career Development Award	2012
Best Reviewer Award, <i>Journal of Water Resources Planning and Management</i>	2010
DISCCRS Scholar (Dissertation Initiative for the Advancement of Climate Change Research) for early career professionals; NSF sponsored	2008
NCAR Colloquium on Climate & Health Invited Participant	2006
Joint Assembly Student Grant Awardee	2006
IFPRI/USAID Fellowship	2005-06
Graduate Teacher Program Teacher Training Certificate, University of Colorado at Boulder	2005
Tau Beta Pi – National Engineering Honor Society, Valparaiso University	1995
Distinguished Student Award, Valparaiso University	1995

LICENSURE:

Licensed Professional Engineer in Colorado

PROFESSIONAL AFFILIATIONS:

American Geophysical Union	American Society of Civil Engineers, EWRI
European Geophysical Union	Tau Beta Pi National Engineering Society

UNIVERSITY OF WISCONSIN - MADISON AFFILIATIONS:

Center for Climatic Research	Freshwater and Marine Sciences
Latin American, Caribbean & Iberian Studies Program	African Studies Program
Gaylord Nelson Institute for Environmental Science	Wisconsin Energy Institute
Master of Public Health Program Affiliate Faculty	Global Health Institute

TRAININGS AND CURRICULUM DEVELOPMENT:

Short Course on Hydroclimatic Prediction (UPV, Valencia, Spain)	2019
Development of Serious Games for NASA workshop	2017, 2018
Training Institute on Adaptive Management of Water Resources	2012
Hydrologic outlooks for hydrologists (training trainers)	2010
Water and climate risk management for NOAA Africa Desk scientists	2010
Water and climate risk management for Ethiopian water professionals	2009
Hydroclimatic forecast tools for Chilean scientists	2007

SERVICE:

Associate Editor, Journal of Water Resources Planning and Management (ASCE)

Journal Reviewer: Advances in Water Resources, Bulletin of the American Meteorological Society, Climatic Change, Earth Science Informatics, Energy Science and Engineering, Environmental Modelling & Software, Geophysical Research Letters, Hydrological Processes, Hydrology and Earth System Sciences, International Journal of Climatology, Journal of Hydrologic Engineering, Journal of Hydrology, Journal of Hydrometeorology, Journal of Water Resources Planning & Management, Theoretical and Applied Climatology, Water, Water Resources Research

Proposal Reviewer: National Science Foundation, National Academy of Sciences, NOAA Climate Program Office, Department of Energy, US Bureau of Reclamation, Sea Grant, UW-Madison

Scientific member of the World Climate Research Programme's Regional Information for Society committee, 2023-

UW-Madison Harmful and Intimidating Behavior Liaison, 2022-

Water Resources Management Program Faculty Committee, UW-Madison, 2017-

Executive and Advisory board member for UW-Madison Global Health Institute (co-chair 2019-2021) and Wisconsin Without Borders, 2017-

Center for Climatic Research Science Council, UW-Madison, 2018-2021

Conflict of Interest Committee, UW-Madison, 2022-

Lower Colorado River Authority Science Advisory Panel, 2021

Engineers without Borders Faculty mentor, UW-Madison, 2014-2019

College of Engineering NSF CAREER proposal panel, UW-Madison, 2019

WMO Climate and Hydrology Expert Group on Seasonal Streamflow Forecasting

ASCE EWRI International Council Technical Executive Committee; track chair for past conferences

ASCE EWRI Environmental and Water Resources Systems Committee past-chair; task committee lead

International Federation of the Red Cross Forecast-based Financing Dialogue Platform

Session convener/moderator for 2012-2022 AGU Fall Meetings and EWRI Congress

Session convener/moderator for 2017-2018, 2020 EGU Annual Meeting

Session convener/moderator for 2017 XVI World Water Congress

Session convener/moderator for 2018 CUAHSI Conference

Session convener/moderator for 2018 Nelson Institute Earth Day Conference

Energy Summit 2014 (UW) panel organizer, chair, moderator

Session chair for January 2010 Conference on Water Resources in Ethiopia, Addis Ababa, Ethiopia

Panel participant: *Adapting to climate change: the water challenge*, Earth Institute, Columbia University 2010

Postdoctoral search committee, Columbia University

REU summer internship mentor at Drexel University 2012

IRI/International Federation of the Red Cross summer internship mentor 2009, 2010

Hosted undergraduate student from Ecole Nationale Supérieure des Mines de Nancy (France), Mar-Aug 2011

A+ Freshman Engineering Council (pedagogical committee)