

Curriculum Vitae

GUANG YANG

Associate Professor

College of Hydrology and Water Resources, Hohai University

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RESEARCH INTERESTS & EXPERTISE

- Multi-objective optimization in water resources
- Forecast-informed reservoir operation
- Water resources system operation based on machine learning
- Operationalizing equity in multipurpose water systems

EDUCATION

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| Ph.D. 2013.09-2018.06 | Wuhan University, Wuhan, China Hydrology and Water Resources Advisor: Dr. Shenglian Guo Dissertation: Multi-objective Optimal Operations of Cascade Reservoirs Based on Data mining (Outstanding Doctoral Dissertation in Water Resources, China) |
| Visiting student 2016.09-2017.12 | Georgia Institute of Technology, Atlanta, USA Advisor: Dr. Aris P. Georgakakos |
| B.Eng 2009.09-2013.06 | Wuhan University, Wuhan, China, Hydrology and Water Resources |

WORKING EXPERIENCE

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|-----------------|---|-------------------------|
| 2023.02-date | Hohai University, Nanjing, China | Associate Professor |
| 2021.02-2023.01 | Politecnico di Milano, Milano, Italy | Postdoctoral researcher |
| 2018.08-2021.01 | Georgia Institute of Technology, Atlanta, USA | Postdoctoral researcher |

RESEARCH EXPERIENCE

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|-----------------|---|
| 2021.02-date | <ul style="list-style-type: none">● Post-Doctoral Research Associate, Politecnico di Milano. Projects:<ul style="list-style-type: none">– <i>IN-WOP: Mind the Water Cycle Gap: Innovating Water Management Optimisation Practice</i> (NO. WaterJPI-JC-2018_07); funded by Water Joint Programming Initiative (from 2019/07 to 2022/06, total granted: € 150,000).– <i>AWESOME: mAnaging Water, Ecosystems and food across sectors and Scales in the sOuth Mediterranean</i> (NO. 1942); funded by Partnership for research and innovation in the Mediterranean area (PRIMA) (from 2020/05 to 2023/10, total granted: € 513,375).– <i>STREAM: SusTainable REservoir mAnagement in water- stressed Mediterranean areas</i> (NO. 2981); funded by the Foundation of Prince Albert II of Monaco (from 2021/06 to 2022/09, total granted € 18,430) |
| 2018.08-2021.01 | <ul style="list-style-type: none">● Post-Doctoral Research Associate, University of Wisconsin-Madison. Projects:<ul style="list-style-type: none">– <i>INFEWS/TI: Understanding multi-scale resilience options for climate-vulnerable Africa</i> (NO. 1639214); funded by the US National Science Foundation (from 2016/09 to 2020 08, total granted \$ 2,999,021).– <i>Statistical Evaluation of Agriculture Water Use Purchases</i>; funded by the Lower Colorado River Authority, Austin, Texas, US. |

- 2015.09-2018.06 • Research Assistant, Wuhan University. Project: *Interaction between hydrology and society - New theories and methods* (NO. 51539009); funded by Chinese National Natural Science Foundation.
- 2014.09-2016.06 • Research Assistant, Wuhan University. Projects:
 - *Reservoir operation* (NO. 51422907); funded by Chinese National Natural Science Foundation.
 - *Hydrological probability distribution estimation theory and method considering non-stationarity under climate change* (NO. 51190094); funded by Chinese National Natural Science Foundation.
 - *Multi-objective joint optimization in reservoir operation for cascade hydropower stations*; funded by Chengdu Engineering Corporation Limited, China.
- 2013.09-2014.06 • Research Assistant, Wuhan University. Project: *Flood utilization for Danjiangkou reservoir and related flood control system*; funded by Ministry of Water Resources, China.
- 2011.09-2012.06 • Principle research participant in environmental protection projects of Starbucks, China Soong Ching Ling Foundation.
- Principle research participant in scientific research program for undergraduates, Wuhan University. *Wetland design and its application for the control of non-point source pollution*.

INTERNSHIPS

- 2012.07-2012.08 • Summer intern at Changjiang water resources commission, China
- 2010.07-2010.08 • Summer intern at agricultural irrigation research center, Hubei Province, China

CONFERENCE PRESENTATIONS

- [1] [Yang, G.](#), Giuliani, M., Castelletti, A.: Operationalizing equity in multipurpose water systems control. *2nd IFAC Workshop on Control Methods for Water Resource Systems*, Milano, Italy. 22–23 September 2022 (Oral)
- [2] Giuliani, M., [Yang, G.](#), Stefano G.: From forecast-informed reservoir operations to integrated forecast-control design. *2nd IFAC Workshop on Control Methods for Water Resource Systems*, Milano, Italy. 22–23 September 2022 (Oral)
- [3] [Yang, G.](#), Giuliani, M., Matta, E., Piuri, V., Castelletti, A.: Dynamic Water-Energy-Food nexus management in transboundary river basins incorporating water infrastructure operation and demand control. *European Geosciences Union (EGU) General Assembly*, Vienna, Austria. 23–27 May 2022 (Oral)
- [4] Piuri, V., [Yang, G.](#), Giuliani, M.: Exploring the potential of desalination and aquaponics in the integrated management of arid river basins: the case of the Nile River basin. *European Geosciences Union (EGU) General Assembly*, Vienna, Austria. 23–27 May 2022 (Oral)
- [5] Crippa, N., [Yang, G.](#), Grillakis, M., Koutroulis, A., Giuliani, M.: Assessing the value of seasonal forecasts in informing reservoir operations in water-stressed Mediterranean basins. *European Geosciences Union (EGU) General Assembly*, Vienna, Austria. 23–27 May 2022 (Oral)
- [6] [Yang, G.](#), Giuliani, M.: Operationalizing equity in multipurpose water systems operations. *American Geophysical Union (AGU) Fall Meeting*, New Orleans, LA. 2021.12.16 (Oral)
- [7] [Yang, G.](#), & Block, P.: Transboundary water sharing policies conditioned on hydrologic variability to inform reservoir operations. *6th Nile Basin Development Forum (NBDF)*, Online. 2021.03.30 (Oral)

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- [8] [Yang, G.](#), & Block, P.: 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*, Online. 2020.12.15
 - [9] [Yang, G.](#), & Block, P.: A forecast-informed reservoir operation framework incorporating climate indices. *European Geosciences Union (EGU) General Assembly*, Online. 2020.05.06
 - [10] [Yang, G.](#), Block, P.: Forecast-informed reservoir operations using a Bayesian approach. *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA. 2019.12.11
 - [11] Block, P. [Yang, G.](#), Zhang, Y., Zaitchik, B.: Reservoir management at multiple scales: Where should we focus most? *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA. 2019.12.11 (Oral)
 - [12] [Yang, G.](#), & Block, P.: 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. 2019.05.23 (Oral)
 - [13] [Yang, G.](#), Guo, S., Liu, P., Block, P.: Integrating and assessing multi-objective reservoir operation with forecasting information. *American Geophysical Union (AGU) Fall Meeting*, Washington, DC. 2018.12.11

HONOR & AWARDS

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| ASCE 2021 Outstanding Reviewer of the <i>Journal of Water Resources Planning and Management</i> | 2021 |
| Outstanding Doctoral Dissertation Award in Water Resources, China | 2019 |
| National Merit Scholarship, China | 2012, 2017 |
| National Zhou Peiyuan Mechanical Competition, China (3 rd place) | 2011 |
| Mathematical Modeling Contest, Central China (2 nd place) | 2012 |
| A-level scholarship, Wuhan University | 2012, 2013, 2016, 2017 |
| Excellent graduates, Wuhan University | 2009~2013 |
| Academic Excellence Award, Wuhan University | 2010, 2011, 2012, 2013 |

Publication List

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JOURNAL PAPERS

- [1] [Yang, G.](#), Giuliani, M., & Castelletti, A. (2023) Operationalizing equity in multipurpose water systems. *Hydrology and Earth System Sciences*, 27(1), 69–81.
- [2] [Yang, G.](#), & Block, P. (2021) Water sharing policies conditioned on hydrologic variability to inform reservoir operations. *Hydrology and Earth System Sciences*, 25(6), 3617-3634.
- [3] [Yang, G.](#), Zaitchik, B., Badr, H., & Block, P. (2021) A Bayesian adaptive reservoir operation framework incorporating streamflow non-stationarity. *Journal of Hydrology*, 594(3), 125959.
- [4] [Yang, G.](#), Guo, S., Liu, P., & Block, P. (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.
- [5] [Yang, G.](#), Guo, S., Liu, P., & Block, P. (2020). Integration and evaluation of forecast-informed multi-objective reservoir operations. *Journal of Water Resources Planning and Management*, 146(6), 04020038.
- [6] [Yang, G.](#), Guo, S., Liu, P., Liu, X., & Yin, J. (2020). Heuristic input variable selection in multi-objective reservoir operation. *Water Resources Management*, 34(1), 617-636.
- [7] [Yang, G.](#), Guo, S., Liu, P., Li, L., & Xu, C. (2017). Multiobjective reservoir operating rules based on cascade reservoir input variable selection method. *Water Resources Research*, 53(4), 3446-3463.
- [8] [Yang, G.](#), Guo, S., Liu, P., Li, L., & Liu, Z. (2017). Multiobjective Cascade Reservoir Operation Rules and Uncertainty Analysis Based on PA-DDS Algorithm. *Journal of Water Resources Planning and Management*, 143(7), 04017025.
- [9] [Yang, G.](#), Guo, S., Li, L., Hong, X., & Wang, L. (2016). Multi-objective operating rules for Danjiangkou reservoir under climate change. *Water Resources Management*, 30(3), 1183-1202.
- [10] [Yang, G.](#), Giuliani, M., & Galelli, S. (2022) Valuing the co-design of streamflow forecast and reservoir operation models. *Journal of Water Resources Planning and Management*, in review.
- [11] [Yang, G.](#), & Block, P. (2022) Enhancing season-ahead streamflow forecasts with GCMs, climate indices, and their interactions. *Journal of Water Resources Planning and Management*, in review.
- [12] Crippa, N., Grillakis, M., Tsilimigkras, A., [Yang, G.](#), Giuliani, M., & Koutroulis, A. (2022) Seasonal forecast-informed reservoir operation. Potential benefits for a water-stressed Mediterranean basin. *Climate Services*, in review.
- [13] [Yang, G.](#), Giuliani, M., Matta, E., Piuri, E., & Castelletti, A. (2022) Dynamic Water-Energy-Food nexus management in transboundary river basins incorporating water infrastructure operation and demand control. To be submitted.
- [14] Alexander, S., [Yang, G.](#), Addisu, G., & Block, P. (2020) Forecast-informed reservoir operations to guide hydropower and agriculture allocations in the Blue Nile Basin, Ethiopia. *International Journal of Water Resources Development*, 37(2): 1-26.

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- [15] Moradi, A. M., Dariane, A. B., [Yang, G.](#), & Block, P. (2020). Long-Range Reservoir Inflow Forecasts Using Large-Scale Climate Predictors. *International Journal of Climatology*. <https://doi.org/10.1002/joc.6526>
- [16] Gu, L., Yin, J., Zhang, H., Wang, H. M., [Yang, G.](#), & Wu, X. (2020). On future flood magnitudes and estimation uncertainty across 151 catchments in mainland China. *International Journal of Climatology*. <https://doi.org/10.1002/joc.6725>
- [17] Dodangeh, E., Singh, V. P., Pham, B. T., Yin, J., [Yang, G.](#), & Mosavi, A. (2020). Flood Frequency Analysis of Interconnected Rivers by Copulas. *Water Resources Management*, 34(11), 3533-3549.
- [18] He, S., Guo, S., [Yang, G.](#), Chen, K., Liu, D., & Zhou, Y. (2019). Optimizing Operation Rules of Cascade Reservoirs for Adapting Climate Change. *Water Resources Management*, 34(1): 101-120.
- [19] Feng, M., Liu, P., Guo, S., David, J. Y., Cheng, L., [Yang, G.](#), & Xie, A. (2019). Adapting reservoir operations to the nexus across water supply, power generation, and environment systems: An explanatory tool for policy makers. *Journal of Hydrology*, 574, 257-275.
- [20] Yin, J., Guo, S., Wu, X., [Yang, G.](#), Xiong, F., & Zhou, Y. (2019). A meta-heuristic approach for multivariate design flood quantile estimation incorporating historical information. *Hydrology Research*, 50(2), 526-544.
- [21] Wu, X., Guo, S., Yin, J., [Yang, G.](#), Zhong, Y., & Liu, D. (2018). On the event-based extreme precipitation across China: Time distribution patterns, trends, and return levels. *Journal of Hydrology*, 562, 305-317.
- [22] Yin, J., Guo, S., Liu, Z., [Yang, G.](#), Zhong, Y., & Liu, D. (2018). Uncertainty analysis of bivariate design flood estimation and its impacts on reservoir routing. *Water Resources Management*, 32(5), 1795-1809.
- [23] Xie, A., Liu, P., Guo, S., Zhang, X., Jiang, H., & [Yang, G.](#) (2017). Optimal Design of Seasonal Flood Limited Water Levels by Jointing Operation of the Reservoir and Floodplains. *Water Resources Management*, 1-15, doi: 10.1007/s11269-017-1802-7.
- [24] Liu, Z., Guo, S., Zhang, H., Liu, D., & [Yang, G.](#) (2016). Comparative study of three updating procedures for real-time flood forecasting. *Water Resources Management*, 30(7), 2111-2126.
- [25] Hong, X., Guo, S., Wang, L., [Yang, G.](#), Liu, D., Guo, H., & Wang, J. (2016). Evaluating Water Supply Risk in the Middle and Lower Reaches of Hanjiang River Basin Based on an Integrated Optimal Water Resources Allocation Model. *Water*, 8(9), 364.
- [26] Wang, Y., Guo, S., [Yang, G.](#), Hong, X., & Hu, T. (2014). Optimal early refill rules for Danjiangkou Reservoir. *Water Science and Engineering*, 7(4), 403-419.
- [27] [Yang, G.](#), Guo, S., Chen, K., & Wu, X. (2017) Multi-objective cascade reservoir optimal operation rules based on decision factors selection. *Journal of Hydraulic Engineering*, 48(8): 914-923.
- [28] [Yang, G.](#), Guo, S., Liu, P., & Li, L. (2016) PA-DDS algorithm for multi-objective reservoir operation. *Journal of Hydraulic Engineering*, 47(6): 789-797.
- [29] [Yang, G.](#), Guo, S., & Li, L. (2015) Flexible Decision-Making for Cascade Reservoir Operation Considering Ecological Flow. *Journal of Huazhong University of Science and Technology (Natural Science Edition)*, 43(9), 114-122.
- [30] [Yang, G.](#), Guo, S., Hong X., Wang L., & Li, L. (2015) Multi-Objective Operation Rules under Future

- [31] [Yang, G.](#), Guo, S., & Zhou, Y. (2013). Real-Time and Dynamic Control of Water Level Operating Scheme during Flood Season for the Ankang Reservoir. *Journal of Water Resources Research*, 2, 248-254.
- [32] Liu, Z., Guo, S., Hu, Y., & [Yang, G.](#) (2015) Flood Probability Distribution Estimation under the Influence of Upstream Reservoir Regulation Based on Monte Carlo Method. *Water Power*, 41(8), 17-22.
- [33] Li, L., Guo, S., Zhou, Y., [Yang, G.](#), & Yin, J. B. (2014). Optimal Daily Operation of Cascade Hydropower Stations. *Journal of Water Resources Research*, 3, 291-297.