



NATHAN C. YOUNG, Ph.D.

THE WATER INSTITUTE
OF THE GULF



Experience Profile

Nathan Young is Associate Director of the Iowa Flood Center at the University of Iowa's IIHR—Hydroscience & Engineering. Nathan has worked as a consulting engineer and academic researcher in field of river hydraulics, performing field measurements, laboratory experiments, and numerical simulations for river flows in support of a broad range of applications, including fish passage, aquatic habitat assessment, nutrient transport, and flood risk management.

Professional Experience

The Water Institute of the Gulf

- *Senior Research Scientist: Engineering* 2020 – Present

IIHR—Hydroscience & Engineering

May 2008 – Present

- *Research Engineer*

Iowa Flood Center

July 2009 – Present

- *Associate Director*

Lucile A. Carver Mississippi Riverside
Environmental Research Station

July 2015 – Present

- *Director*

Department of Civil and Environmental Engineering May 2008 – Present

- *Adjunct Associate Professor*

Iowa Geological survey

July 2013 – July 2016

- *Interim Director*

The University of Arkansas
Agricultural Experiment Station

July 2007 – May 2008

- *Research Scientist*

Arkansas State University

August 2006 – May 2008

- *Assistant Professor of Civil Engineering*

IIHR – Hydroscience & Engineering
The University of Iowa

January 2002 – August 2006

- *Graduate Research Assistant*

HDR Engineering, Inc.

January 2000 – January 2002

- *Water Resources Engineer*

WEST Consultants, Inc.

August 1999 – January 2000

- *Hydraulic Engineer*

Company Role

Senior Research Scientist:
Engineering

Project Role / Focus Areas

- Community vulnerability & resilience
- Floodplain management
- Disaster preparedness and response
- Public risk awareness

Education

- Ph.D. – Civil and Environmental Engineering, The University of Iowa - 2006
- M.S. – Civil and Environmental Engineering, The University of Iowa - 2000
- B.S. – Civil and Environmental Engineering, The University of Iowa - 1998

Professional Membership

- Professional Engineer (Iowa – 18990)
- American Society of Civil Engineers
- Environmental and Water Resources Institute
- International Association of Hydraulic Research

Selected projects

Lower Missouri River Real-time Flood Inundation, Planning, and Response Tools (2020-present). In response to 2019 record flooding on the Missouri River along Iowa's western border, the project seeks to leverage federal data and resources in creating a series of tools to better communicate immediate flood risks and to inform flood response and planning. Project objectives include development of a web-based, public-facing real-time flood inundation forecast tool and a series of detailed hydraulic models to estimate levee failure impacts.

Iowa Watershed Approach Project (2016-present). The Iowa Watershed Approach is a \$96.9M multidisciplinary, multi-agency program addressing issues associated with the devastating and dangerous floods Iowa communities experience year after year. Through a holistic approach, the IWA seeks to reduce flood risk, improve water quality, increase resilience, engage stakeholders, improve the quality of life for vulnerable populations, and develop a program that is scalable and replicable in other areas.

Iowa Statewide Floodplain Mapping Program (2010-2016). In cooperation with the Iowa Department of Natural Resources, the Iowa Flood Center team developed floodplain maps showing probability, extent, and depth of flooding for every Iowa stream draining more than one square mile. The floodplain maps are a critical resource to help citizens, emergency managers, and other community decision-makers identify and communicate Iowa's flood hazards.

Iowa Flood Center Base Activities (2009-present). Following the historic floods of 2008, the State of Iowa established the Iowa Flood Center (IFC) under the auspices of IIHR—Hydroscience & Engineering at the University of Iowa. The IFC is currently our nation's only center focused solely on flood-related research, education, and service. Since 2009, the IFC has developed an extensive network of stream-stage sensors and rain gauges, a radar network, and other remote-sensing instruments deployed across the state in support of flood-related monitoring and modeling. The IFC develops detailed interactive flood inundation maps for the state's most vulnerable river communities. The IFC maintains the nation's most comprehensive user-friendly, publicly accessible flood-related online platform, the Iowa Flood Information System (IFIS). Users can monitor precipitation, river and stream levels, flood warnings, and many other real-time variables.

Selected Publications

1. Rojas, M.; Quintero, F.; **Young, N.** (2020). Analysis of Stage–Discharge Relationship Stability Based on Historical Ratings. *Hydrology*. July, 2020.
2. Meulemans, Jones, Schilling, **Young**, and Weber (2020). Assessment of Spatial Nitrate Trends in an Eastern Iowa Watershed using Boat-deployed sensors. *Environmental Science and Technology*. January, 2020.
3. Antolini, Tate, Dalzell, **Young**, Johnson, and Hawthorn (2019). Flood Risk Reduction from Agricultural Best Management Practices. *Journal of the American Water Resources Association*. November, 2019.
4. Krajewski, Ceynar, Demir, Goska, Kruger, Langel, Mantilla, Niemeier, Quintero, Seo, Small, Weber, and **Young** (2017). Real-Time Flood Forecasting and Information System for the State of Iowa. *Bulletin of the American Meteorological Society*. March, 2017.
5. Chen, B., Krajewski, W.F., Goska, R., and **Young, N.C.** (2017). Using LiDAR Surveys to Document Floods: A Case Study of the 2008 Iowa Flood. *Journal of Hydrology*. March, 2017.

Selected Conference Proceedings and Presentations

1. **Young, N.C.**, Schilling, K., and Schroeder, H. (2015). Application of LiDAR-derived Topography and Floodplain Mapping Data in Screening Potential Oxbow Lake Restoration Sites. International Association of Hydro-environmental Research World Congress. Delft - Den Haag, Netherlands. June, 2015.
2. Mondloch, R., **Young, N.C.**, and Weber, L.J. (2014). Characterization of Agricultural Floodplain Scour using One-dimensional Hydraulic Simulation. American Society of Civil Engineers 2014 Environmental and Water Resources Congress. June 2014.
3. Thomas, N.W., Weber, L.J., and **Young, N.C.** (2014). Iowa Watersheds Project: Planning and Assessment of Flood Reduction Strategies in Agricultural Watersheds. Proceedings of the International Conference on Fluvial Hydraulics, RIVER FLOW 2014. Lausanne, Switzerland. September 2014.
4. Wunsch, M., **Young, N.C.**, and Weber, L.J. (2013). Performance of Distributed Reservoir Storage in Mitigating Flood Impacts for a Small Agricultural Watershed. 35th International Association of Hydro-environmental Research World Congress. Chengdu, China. September 2013.
5. Piotrowski, J., Gilles, D. and **Young, N.C.** (2012). Community-Based Inundation Map Libraries for Communicating Flood Risk. International Association for HydroEnvironment Engineering and Research Third International Symposium on Shallow Flows. Iowa City, Iowa. June 2012.