## **Mary C Hill**

### Department of Geology, 170D Slawson, University of Kansas, Lawrence, KS 66045 mchill@ku.edu

### Professional Preparation

Hope College, Holland, MI Geology and Business Administration B.S. 1976

Michigan State University, Lansing, MI Civil Engineering (CE basics, hydrology) 1976-1977

Princeton University, Princeton, NJ Civil Engineering – Water Resources M.S.E 1978

Princeton University, Princeton, NJ Civil Engineering – Water Resources Ph.D. 1985

### Appointments

2014-Present Full Professor, Department of Geology, University of Kansas

2015-2018 DOE project consultant, West Valley, NY nuclear waste storage, through Professor Greg Tucker, University of Colorado

2006-2012 Research Advisor, Groundwater Hydrology, National Research Program (NRP), U.S. Geological Survey (USGS)

2001-2014 Project Chief, “Modeling and uncertainty of complex groundwater systems”. NRP

1993-2014 DOE projects via the Nevada Water Science Center, USGS. Yucca Mountain and other parts of the Death Valley regional flow system. Chief advisor, model calibration.

2008-2014 GS-ST (Senior Scientist), USGS

1994-2008 Progressed through GS-13, 14, and 15, Research Hydrologist, NRP, USGS

1987-1994 GS-12 Research Hydrologist, NRP, Lakewood CO, USGS

1981-1987 GS-11/12 Hydrologist, New Jersey District, U.S. Geological Survey (USGS)

### Relevant Products

1. Barron, Robert W., **Mary C. Hill** (2019) A wedge or a weight? Critically examining nuclear power’s viability as a low carbon energy source from an intergenerational perspective. Energy Research & Social Science, Volume 50, April 2019, Pages 7-17. https://www.sciencedirect.com/science/article/pii/S2214629618303888?via%3Dihub
2. Foglia, L., Mehl, S.W., **Hill, M.C.,** and Burlando, P. (2013). Evaluating model structure adequacy: The case of the Maggia Valley groundwater system, southern Switzerland, Water Resources Research, 49, doi:10.1029/2011WR011779.
3. Yolanda Gil, Suzanne A Pierce, Hassan Babaie, Arindam Banerjee, Kirk Borne, Gary Bust, Michelle Cheatham, Imme Ebert-Uphoff, Carla Gomes, **Mary Hill**, John Horel, Leslie Hsu, Jim Kinter, Craig Knoblock, David Krum, Vipin Kumar, Pierre Lermusiaux, Yan Liu, Chris North, Victor Pankratius, Shanan Peters, Beth Plale, Allen Pope, Sai Ravela, Juan Restrepo, Aaron Ridley, Hanan Samet, Shashi Shekhar (2019) Intelligent systems for geosciences: an essential research agenda. Communications of the ACM, 62(1):76-84. DOI:10.1145/3192335
4. Brookfield, A. E., **Hill, M. C.,** Rodell, M., Loomis, B. D., Stotler, R. L., Porter, M. E., & Bohling, G. C. (2018). In situ and GRACE-based groundwater observations: similarities, discrepancies, and evaluation in the High Plains aquifer in Kansas. Water Resources Research, 54, 8034–8044. <https://doi.org/10.1029/2018WR023836>
5. **Hill, M.C**., and Tiedeman, C.R., 2007, Effective groundwater model calibration, with analysis of sensitivities, predictions, and uncertainty: Wiley, New York.

**Other significant products**

1. **Hill, M. C.**, Dmitri Kavetski, Martyn Clark, Ming Ye, Mazdak Arabi, Dan Lu, Laura Foglia, and Steffen Mehl. 2015. Practical use of computationally frugal model analysis methods. Groundwater. DOI: 10.1111/gwat.12330
2. Rakovec, O., **Hill, M.C.,** Clark, M. P., Weerts, A. H., Teuling, A. J., Uijlenhoet, R. (2014). Distributed Evaluation of Local Sensitivity Analysis (DELSA), With Application to Hydrologic Models: Water Resources Research, 50, doi:10.1002/2013WR014063.
3. Laniak, G.F., Olchin, G., Goodall, J., Voinov, A., **Hill, M**., Glynn, P., Whelan, G., Hughes, A. (2013) Integrated environmental modeling: A vision and roadmap for the future. Environmental Modelling and Software, 39, pp. 3-23.
4. Poeter, E.P., and **M.C. Hill**, 2007, MMA, A computer code for Multi-Model Analysis: U.S. Geological Survey Techniques and Methods 6-E3, 113 p.

### Synergistic Activities

*1. Service to professional societies*

* Initiated AGU Hydrology Section Technical Committee on Hydrologic Uncertainty in 2013; chair 2013-2016. In addition to its role in the Hydrology Section, this technical committee addresses the pervasive need for uncertainty quantification in many sections of AGU.
* IUGG, US National Committee, 2010-2015.
* President, International Commission for Groundwater (ICGW), IAHS, 2005-2009
* Associate Editor, past *Water Resources Research*, *Groundwater*, current *EMS*

*2. Software, instructional material*, and t*ext book (referenced above)* for modeling of environmental systems, including data needs assessment (value of improved information), sensitivity analysis, calibration, prediction, and uncertainty. Focused on hydrologic systems. Taught over 30 short and semester courses nationally and internationally 1984-2016. The book and teaching materials continue to be used to teach these topics nationally and internationally.

*3. Professional Recognition*

* AGU (American Geophysical Union), Fellow, 2016
* NSF (National Science Foundation) CSDMS (Community Surface Dynamics Modeling Systems) Program, Lifetime Achievement Award, 2016.
* IAHS (International Association of Hydrological Sciences), Dooge International Hydrology Prize, 2015.
* NGWA (National Ground Water Association), M. King Hubbert Award, 2005. Distinguished Darcy lecturer, 2001: 45 talks in 8 countries.
* GSA (Geological Society of America), Fellow, 2003
* ASCE (American Society of Civil Engineers), Walter L. Huber Engineering Res Prize, 2000.

*4. Co-Creator and organizer* of the MODFLOW and More conference series. Held 10 times 1998-2019. Editor or co-editor of three issues of Groundwater with selected conference papers. Initiated dedication of the 2008 conference to policy issues and edited special policy edition of Groundwater.

5. Developed new active-learning Honors seminar on the Food-Energy-Water nexus. Taught Fall 2015-2018. Taught in part at Kansas Youth Water Advocates (KYWA) April 2018 workshop, Garden City, KS.

#### **Other Personnel**

#### **Postdoctoral Associates and current affiliation**

Robert W Barron, KU 2016-2018. Industrial Engineer. Assistant Professor, Western New England Univ.

Benjamin Jerome Gray, KU 2016-2017. Anthropologist. Postdoc, University of Montana.

Tristan P Wellman, USGS NRP 2007-2009. Hydrologist, USGS, Lakewood, CO.

Gilbert R Barth, USGS NRP 1999-2001. Civil Engineer. SS Papadopoulos and Associates, Boulder, CO.

#### **Students** (\*Sole advisor. From the USGS I co-advised students, often at level of a full advisor):

\*Jirapat Phetheet, KU, MS expected 2020 \*Andrew Banks, KU, MS expected 2019

\*Misty Porter, KU, MS 2017, PhD expected 2021

Dan Lu, Ph.D., Florida State University 2012. Permanent staff scientist,Oak Ridge National Lab.

Laura Foglia, ETH, Zurich, Ph.D 2006. Research faculty, UC Davis; Walker and Associates*.*

Heidi Christiansen Barlebo, Danish Technical University, PhD 2000. Chair, Hydrology GEUS.

Gilbert Barth, U of Colorado, Boulder, PhD 1999. SS Papadopoulos, Inc

Steffen Mehl, U of Colorado, Boulder, MS 1998, PhD 2003*.* Prof, California State Univ, Chico

Evan Anderman, Colorado School of Mines, PhD 1996. Freelance photographer.