

DAVID A. WIBERG

Anningerstrasse 32/1/10, A-2340 Mödling, Austria • +43.2236.864.028 • dave.wiberg@outlook.com

OBJECTIVE

To provide tools and analyses to help implement effective, efficient, and sustainable integrated water management strategies, working across disciplines such as political science, demography, economics, management, engineering, ecology, agronomy, and chemistry to identify portfolios of cost-effective and innovative water management options that work consistently together across sectors and scales of management.

EXPERIENCE

Acting Director, Water Program, International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria (1/2014-present)

- Developed and Managed IIASA's Water Program
- Coordinated and Managed the Water Futures and Solutions Initiative (WFaS), consisting of multiple international organizations, research centers, and stakeholder groups across several sectors
- Developed and wrote research plans and successful proposals for funded research
- Presented IIASA's work internationally.
- Co-coordinated cross-cutting water research activities within IIASA.

Research Scholar, Land Use Change and Agriculture (LUC) Program, IIASA (1/97-1/2014)

- Developed models and methodologies for calculating regional water supply, demand, and costs of management options, assessing impacts of land use, climate, and social change.
- Participated in the continuing development of the Agro-Ecological Zones (AEZ) agricultural assessment models, databases, and online information portals, as well as the Harmonized World Soil Database (HWSD) and viewer software.
- Organized several institutions as a work block leader on the large integrated research projects WATCH, which brought together climate modelers and hydrologic modelers to improve our assessments of the global hydrologic cycle, and SCENES, which used participatory approaches to develop future water scenarios that are quantified and analyzed with model systems..
- Supervised Ph.D. students as part of IIASA's YSSP (Young Scientist Summer program).
- Coordinated the YSSP program within the Land Use Change and Agriculture Program.
- Served on IIASA's staff association committee, improving the working conditions of the staff.

Research Assistant, University of Colorado, Boulder, CO (8/99-12/99)

- Added a water quality modeling component to the river basin modeling software (WOW!!) for the U.S. EPA

Laboratory Assistant, Physics Department, Gustavus Adolphus College, 1990-1993.

- Prepared experiments, instructed and lectured students on laboratory techniques, procedures, and reports.

Grounds Crew, Trout Lake Golf Course, summers 1988-1993.

- Organized a crew of eight to perform construction and landscaping projects.
- Assisted in designing and building a pump house for irrigation water supply.

CONSULTING

U.N. World Water Assessment Program, 2001

Strzepek & Associates, 2000

Bureau of Reclamation, U.S. Department of the Interior, 1995-1996

- Developed object-oriented river basin modeling and management software (WOW!!) for Microsoft Windows.

EDUCATION

Ph.D., Department of Civil, Environmental, and Architectural Engineering, University of Colorado, Boulder, 2002

- Ph.D. Dissertation Title: Development of Regional Economic Supply Curves for Surface Water Resources and Climate Change Assessments: A Case Study of China, defended April 26, 2002

M.S. Department of Civil, Environmental, and Architectural Engineering, University of Colorado, Boulder, 1998

- M.S. Thesis Title: Climate Change Impacts on Reservoir Operation: The Effect of Changing Mean and Variance of Inflow Time Series

B.A. Department of Physics, Economics minor, Gustavus Adolphus College, St. Peter, MN, 1993

- Graduated with Honors, Cum Lauda; concentrations in Mathematics, Music, and Scandinavian Studies; Dean's list; Collegiate Fellow residence hall assistant and counselor; led outdoor trips for the Gustavus Outdoor Enthusiasts

SKILLS AND INTERESTS

Computer: C++, Java, Visual Basic, Fortran, GAMS, ArcGIS, HTML

Language: Fluent in English. Proficient in German and Swedish

PUBLICATIONS

FAO/IIASA/ISRIC/ISSCAS/JRC, 2012. Harmonized World Soil Database (Version 1.2). IIASA, Laxenburg, Austria and FAO, Rome.

Fischer G, Winiwarter W, Cao G-Y, Ermolieva T, Hizsnyik E, Klimont Z, Wiberg D, Zheng XY (2012). Implications of population growth and urbanization on agricultural risks in China. *Population & Environment*, 33(2-3):243-258 (March 2012) (Published online 10 May 2011).

Fischer G, Winiwarter W, Ermolieva T, Cao G-Y, van Velthuizen H, Klimont Z, Schoepp W, van Veen W, Wiberg D, Wagner F (2012). Sustainable agriculture in China: Estimation and reduction of nitrogen impacts. In: *Managing Safety of Heterogeneous Systems*, Y. Ermoliev, M. Makowski, K. Marti (eds), Springer-Verlag, Heidelberg, Germany pp.327-350 (February 2012).

Kabat P, Cosgrove CE, Wiberg D (2012). Alternative water futures. *Options* (IIASA, Laxenburg, Austria) Summer 2012.

Fischer G, Hizsnyik E, Prieler S, Wiberg D (2011). Scarcity and abundance of land resources: Competing uses and the shrinking land resource base. SOLAW Background Thematic Report - TR02; FAO, Rome, Italy.

Harding R, Best M, Blyth E, Hagemann S, Kabat P, Tallaksen LM, Warnaars T, Wiberg D, Weedon GP, van Lanen H, Ludwig F, Haddeland I (2011). WATCH: Current knowledge of the terrestrial global water cycle. *Journal of Hydrometeorology*, 12(6):1149-1156 (December 2011).

Maeda EE, Wiberg D, Pellikka PKE, 2011. Estimating reference evapotranspiration using remote sensing and empirical models in a region with limited ground data availability in Kenya. *Applied Geography*, 31(1):251-258.

Fischer G, Winiwarter W, Ermolieva T, Cao G-Y, Qui H, Klimont Z, Wiberg D, Wagner F, 2010. Integrated modeling framework for assessment and mitigation of nitrogen pollution from agriculture: concept and case study for China. *Agriculture, Ecosystems and Environment*, 136(1-2):116-124.

Wiberg D, Fischer G, KC S, 2010. Projecting European population, gdp, energy, and agricultural land use based on a participatory scenario development process. Brussels: European Commission, SCENES (Water Scenarios for Europe and Neighbouring States) Integrated Project.

Fischer G, van Velthuizen H, Hizsnyik E, Wiberg D, 2009. Potentially obtainable yields in the semi-arid tropics. Global Theme on Agroecosystems, Report no. 54. International Crops Research Institute for the Semi-Arid Tropics, Patancheru 502 324, Andhra Pradesh, India.

Björklund G, Connor R, Goujon A, Hellmuth M, Moriarty P, Rast W, Warner K, Winpenny J, Hoekstra A, Wiberg D. Chapter 2: demographic, economic and social drivers. In: The 3rd United Nations world water development report: Water in a Changing World. Paris: UNESCO. p 29-32.

FAO/IIASA/ISRIC/ISSCAS/JRC, 2008. Harmonized World Soil Database (Version 1.0) (DVD). FAO, Rome. [ISBN 9789251060810].

Fischer G, Tubiello FN, van Velthuizen HT, Wiberg D, 2007. Climate change impacts on irrigation water requirements: effects of mitigation, 1990-2080. *Technological Forecasting & Social Change (Special Issue: Greenhouse Gases - Integrated Assessment)*, 74(7):1083-1107.

Liu J, Wiberg D, Zehnder A, Yang H, 2007. Modeling the role of irrigation in winter wheat yield, crop water productivity, and production in China. *Irig. Sci.* 26:21-33.

Wiberg D, 2007. Enorma utmaningar för säkert vatten i Kina. *Miljöforskning*: Nr. 4-2007:20-21.

Shah M, Xepapadeas A, Entsua-Mensah REM, Fisher G, Haslberger A, Jensen F, Mirza MMQ, Sartzetakis E, Simons H, Delgado CL, and others, 2005. Chapter 6: food and ecosystems. In: Chopra K, Leemans R, Kumar P, Simons H. *Ecosystems and human well-being: policy responses, findings of the responses working group, Millenium Ecosystem Assessment Series Vol. 3*. Washington DC: Island Press. p 175-209.

Wiberg D, Strzepek KM, 2005. Development of regional economic supply curves for surface water resources and climate change assessments: a case study of China. IIASA Research Report RR-05-001.

Wiberg D, Strzepek K, 2004. Climate change: a boon or a bane to water resources management in China. In: Potential climate changes and sustainable water management. Warsaw: Publications of the Institute of Geophysics Polish Academy of Sciences, E-4 (377), pp. 79-84.

Wiberg D, Strzepek K, Kirshen, P, Conway D, 2003. Impact of climate variability and change on surface water storage: engineering, economics, and institutions. Dialogue for Water and Climate.

Wiberg D, Strzepek K, 2003. The impacts of climate change on regional surface water supply from reservoir storage in China. Proceedings: 1st International Yellow River Forum on River Basin Management, Volume I, pp. 248-266. Zhengzhou, China: Yellow River Conservancy Publishing House.

Wiberg D, 2002. Development of regional economic supply curves for surface water resources and climate change assessments: a case study of China. Ph.D. Dissertation. University of Colorado at Boulder.

Wiberg D, 2001. Indicators and indices for the World Water Development Report: data and input from the Global Agro-Ecological Zoning Methodology. Report for the Indicator Development Unit of the World Water Assessment Program. Paris: UNESCO.

Fischer G and Wiberg D, 2001. Climate Change impacts on water-stressed agriculture in northeast china. In: Makowski M, Nakayama H, editors. Natural environment management and applied systems analysis. IR-01-021. Laxenburg, Austria. International Institute for Applied Systems Analysis.

Wiberg D and Strzepek KM, 2000. CHARM: A hydrologic model for land use and climate change studies in China. Laxenburg, Austria. International Institute for Applied Systems Analysis. IR-00-072.

Wiberg D, 1999. Impacts of land use and climate change on water resources: examples from China. In: Amendola A, Linnerooth-Bayer J, editors. Proceedings of the euroconference on global change and catastrophe risk management: flood risks in Europe. IIASA, Laxenburg, Austria, 6-9 June, <http://www.iiasa.ac.at/Research/RMP/june99>.

Wiberg, D, 1999. Planning and managing China's water resources. Options. International Institute for Applied Systems Analysis. Laxenburg, Austria. <http://www.iiasa.ac.at/Admin/INF/OPT/Summer99/>

Wiberg, D, 1998. Climate change impacts on reservoir operation: the effect of changing mean and variance of inflow time series. M.S. Thesis. University of Colorado.

PRESENTATIONS

August, 2012. Stockholm, Sweden. UN-Water Stakeholder Dialogue: Green Accounting and World Water Scenarios for Our Future. Presented: "Water Futures and Solutions: World Water Scenarios Project."

August, 2012. Laxenburg, Austria. Integrated Modeling of Robust Food, Energy, and Water Security Management Solutions. Presented: "Water Modeling Issues: Integration and Scale."

April, 2012. Vienna, Austria. UN IAEA, Climate, Land, Energy, Water (CLEW) Research Coordination Meeting. Presented, "Land-Use Assessment for CLEW: Introduction to Agro-Ecological Zoning: A Framework to Assess the capability and alternative uses of land."

December, 2011. Roorkee, India. TIFAC-IIASA-NIH Workshop, National Institute of Hydrology, Roorkee. Presented, "Variability, Resilience, Adaptation, and Optimization."

March, 2011. Hungarian Academy of Sciences, Budapest, Hungary. Future of European Waters: How should policy be adapted? Presented: "Scenarios for Driving Forces."

November, 2010. Amsterdam, The Netherlands. WATCH General Assembly. Presented: "WB2: Past, Present and Future Population, Land, and Water Use: Progress Update"

September, 2010. Helsinki, Finland. SCENES All-Partner Meeting. Presented: "Projecting European Population, Gdp, Energy, and Agricultural Land Use Based on a Participatory Scenario Development Process."

September, 2010. Islamabad, Pakistan. Consultation on Collaboration on Food, Water, Energy and Climate. Presented: "IIASA's Watershed: Water-Related Research in IIASA's Programs."

September, 2010. New Delhi, India. TIFAC-IIT-IIASA Workshop on Water Resource Management and Sustainability. Presented, "IIASA's Watershed: Water-Related Research in IIASA's Programs."

June, 2010. Laxenburg, Austria. YSSP Introductory Workshop. Presented: "Land Use Change and Agriculture."

November, 2009. Potsdam, Germany. WATCH General Assembly. Presented: "WB2: Past, Present and Future Population, Land, and Water Use: Progress Update"

November, 2008. Beijing, China. Water and Climate Change Workshop. Presented: "Lands, Demands, and Plans: China's Changing Agricultural Sector and its Impacts on Land and Water Management, Welfare, and the Environment."

November, 2008. Beijing, China. IIASA-Peking University Symposium: Urbanization and Environment in China. Presented: "Nutrient Management in Agriculture to Mitigate Environmental and Health Risks"

November, 2008. Bratislava, Slovakia. WATCH General Assembly. Presented: "WB2: Past, Present and Future Population, Land, and Water Use: Progress Update"

October, 2008. Almaty, Kazakhstan. CaspiLog3. Presented: "Integrated Water Resource Management and the Caspian Basin."

November, 2007. Barcelona, Spain. WATCH General Assembly. Presented: "WB2: Past, Present and Future Population, Land, and Water Use: Progress Update"

October, 2007. Vienna, Austria. IIASA Water Dialog Meeting. Presented: "Water as a cross-cutting activity"

June, 2007. Laxenburg, Austria. IIASA Water Day. Presented: "An Introduction to Water Science at IIASA."

June, 2007. Laxenburg, Austria. IIASA Water Day. Presented: "Development of Regional Economic Supply Curves for Surface Water Resources and Climate Change Assessments: A Case Study of China"

May, 2007. Baku, Azerbaijan. CaspiLog2. Presented: "Land Use, Agricultural Indicators, and Climate Change in the Caspian Sea Basin: Where are the Impacts?"

March, 2007. Oxford, England. WATCH Start-up. Presented: "WB2: Past, Present and Future Population, Land, and Water Use: Activity Plan"

March, 2007. Cairo, Egypt. Task Force on Population, Human Capital, and Water in Egypt. Presented: "Population Growth in a Context of Limited Water Resources."

August, 2006. Laxenburg, Austria. Presented: "IIASA Dialog on Water Science: Proposal to the Internal Research Committee."

May, 2006. Istanbul, Turkey. Caspian Dialog. Presented: "Land and Water Resources: Do We Have Enough, and What Does 'Enough' Mean?"

January, 2006. Wallingford, England. WATCH Proposal Meeting. Presented: "WB2: Past, Present and Future (PPF) Population and Land Use: Proposal"

February, 2005. Wageningen, Netherlands. VIEWS Proposal Meeting. Presented: "A3. Water for Agriculture, Water for Health, Water for Industry"

September, 2004. Toledo, Spain. Prudence final meeting. Presented: "The Relevance of Climate Model Resolution on the Analysis of European Agricultural Policy Scenarios under Climatic Change."

August, 2004. IIASA, Laxenburg, Austria. Task Force on Population, Human Capital, and Water in Egypt. Presented: "Water Resource Modeling in Egypt."

October 2003. Zhengzhou, China. International Yellow River Forum on River Basin Management. Presented: "The Impacts of Climate Change on Regional Surface Water Supply from Reservoir Storage in China."

September, 2003. Warsaw, Poland. CLIMWAT workshop. Presented: "Climate Change: A Boon or a Bane to Water Resource Management in China?"

September 2003. ICRISAT, Patancheru, India. Project Inception and Planning Workshop on Water Scarcity and Food Security in Tropical Rainfed Water Scarcity Systems: A Multi-level Assessment of Existing Conditions, Response Options and Future Potentials. Presented: "Land-use: From Policy and Parcels to Pixels and Back."

December 2002. Dhaka, Bangladesh. Synthesis Workshop, Dialogue on Water and Climate. Presented: "Impact of Climate Variability and Change on Surface Water Storage: Engineering, Economics, and Institutions."

November 2002. University of Colorado at Boulder. Presented: "Modeling Regional Water Supply Systems: Scale Issues in Reservoir Aggregation"

January 2001. Center for Environmental Systems Research. University of Kassel. Kassel, Germany. Presented: "Integrating Biophysical and Socioeconomic Factors in Modeling Regional and Global Food Systems."

December 2000. Columbo, Sri Lanka. Meeting on Modeling for the World Water Development Report. Presented: "Integrating Biophysical and Socioeconomic Factors in Modeling Regional and Global Food Systems."

July 2000. International Institute for Applied Systems Analysis. Laxenburg, Austria. Workshop on Natural Environment Management and Applied Systems Analysis. Presented: "Climate Change Impacts on Water-stressed agriculture in Northeast China."

June 1999. International Institute for Applied Systems Analysis. Laxenburg, Austria. Global Catastrophe Risk Management: Flood Risks in Europe. Presented: "Impacts of Land Use and Climate Change on Water Resources: Examples from China."

September 1998. Vienna Technical University. Presented: "Issues in Water Resource Management: Modeling the Effects of Land Use and Climate Change on Water Supply."

SOFTWARE

GAEZv3.0 – Global Agro-Ecological Zones

HWSD – Harmonized World Soil Database

CHARM – a hydrologic model designed for land use change and climate change studies in data-scarce regions.

WOW!! – river basin simulation software, written for Microsoft Windows in C++, for examining the impacts of management decisions on water quantity and quality in developed river basins.