

Curriculum Vitae

Dominik Wisser

Center for Development Research (ZEFc)
University of Bonn
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PERSONAL

Date of Birth: July 1st, 1972

Place of Birth: Berlin, Germany

Citizenship: German

EDUCATION

Dr.-Ing. (Ph. D.) - Civil Engineering (Hydrology and Water Resources Management), University of Bochum, Germany, 2009. Modeling of Irrigation and Reservoirs in Regional and Global Water Cycles (Advisor: Prof. A. Schumann).

M.Sc. - Water Resources Engineering and Management (WAREM), University of Stuttgart, Germany, 2002. Modeling of the Lufira river catchment (Malawi) for the investigation of different land use scenarios (Advisor: Prof. A. Bárdossy).

Dipl.-Ing (FH) – Civil Engineering, University of Siegen, Germany, 1999. Statistical Analysis of Heavy Rainfall in Nairobi, Kenya (Advisor: Prof. J. Jensen).

PROFESSIONAL EXPERIENCE

since 11/2012. *Senior Scientist*, Center for Development Research (ZEF), University of Bonn. Responsible for large scale assessments of climate change impacts of water use for irrigation, domestic, and livestock and downstream effects using an integrated hydrological supply and demand model (WBMPPlus) within the West African Science Service Center for Climate Change and Adapted Land Use (WASCAL).

since 02/2013. *Affiliated Research Assistant Professor*, Institute for the Study of Earth, Oceans, and Space, University of New Hampshire, NH, USA.

02/2011 - 10/2012. *Post Doctoral Research Associate*, Department of Physical Geography, Utrecht University, The Netherlands. Global hydrological modeling for water scarcity assessments; improvement of water use in the PCRGLOBWB hydrological model, validation of a Global Water Scarcity Information Service to improve seasonal forecasting of water scarcity (www.glowasis.eu).

11/2009 - 02/2011. *Research Scientist and Post Doctoral Research Associate*, Complex Systems Research Center, University of New Hampshire, Durham, NH (USA). Hydrological and carbon cycle modeling in Arctic regions, taking into account wetlands and peatlands.

06/2008 - 08/2008. *Web Mapping Analyst*, Global Water Systems Project (GWSP), Bonn, Germany. Mapped annotated data sets showing the linkages and elements of change related to the state of the global water system - Digital Water Atlas (www.atlas.gwsp.org).

01/2006 - 10/2009. *Research Scientist*, Water Systems Analysis Group, University of New Hampshire, Durham, NH (USA). Macroscale hydrological modeling of human interventions in the water cycle, focusing on the effect of irrigation and reservoirs on water availability at the river basin scale and the implications of changes in water resources and population dynamics for food production; main developer of the water use components of the WBMPlus hydrological model.

04/2002 - 12/2005. *Research Scientist*, Institute of Hydrology, Water Resources Management and Environmental Engineering, Ruhr-University Bochum, Germany. Coordinated water resources assessment and developed water demand models for regions in Southern Europe with partners from 5 countries in the project 'Developing Strategies for Regulating and Managing Water Resources and Demand in Water Deficient Regions' (EU funded). Wrote concise reports on the state of water resources in water deficient regions in Southern Europe.

2001. *Junior Consultant*, Smallholder Floodplains Development Program, Lilongwe, Malawi. Responsible for the coordination of data collection and data management among different agencies, as well as for the training of local experts. Wrote a comprehensive report on the assessment of irrigation potential in Malawi based on land and water constraints.

1999. *Research Assistant*, Centre for Water and Environment (fwu), University of Siegen, Germany. Statistical analysis of storm surges in the German Bight. Analyzed sea level data for stations in the North Sea.

1994. *Student Assistant*, Bjoernsen Consulting Engineers, Koblenz, Germany. Surveyed several waste disposal sites and assisted in construction supervision.

TEACHING AND CAPACITY BUILDING EXPERIENCE

2002 - 2005. *Lecturer*, Department of Civil Engineering, Ruhr-University Bochum, Germany. Gave lectures and exercise on hydrology, GIS in hydrology and water resources management (graduate and undergraduate level).

2001. *Workshop organizer and convener*, Smallholder Floodplains Development Programme, Lilongwe, Malawi. Trained local experts in GIS, management of hydrological and meteorological data and software to estimate irrigation water requirements.

since 2012. *Guest lecturer*. Regular short term (1-2 week, 2 times per year) courses at the University of Abomey-Calavi, Benin on Climate change and water resources, geospatial data management and hydrology at the Center for Development Research (ZEF). Supervision of graduate students.

AWARDS AND FELLOWSHIPS

2006. *Ph.D. Scholarship*, German Academic Exchange Service (DAAD), Visiting scholar at the Water Systems Analysis Group

1998. DAAD Scholarship for the Institute for Meteorological Training and Research, Nairobi, Kenya

PROPOSALS

Collaborative Research: *Crops, Climate, Canals and the Cryosphere in Asia - Changing Water Resources around the Earth's Third Pole* (\$827,492), S. Frohling, D. Wisser, R. Lammers, C. Li (funded; National Science Foundation)

STUDENT SUPERVISION

Meghan Salmon, Ph.D.: *Mapping irrigated areas using remote sensing data*, Boston University, committee member, finished Oct. 2013

Danielle Grogan, Ph.D.: *Irrigation and food security in South East Asia*, University of New Hampshire, committee member, ongoing

Ganiyu Oyerinde, Ph.D.: *Impacts on climate change and population growth on water resources in the Niger river basin*, University of Abomey-Calavi, Benin, committee member and host for 4 month research stay, ongoing

Moussa Ibrahim, Ph.D., *Spatial and temporal dynamics of the Niger inland delta and implications for water availability in the Niger basin*, University of Abomey-Calavi, Benin, committee member and host for 4 month, ongoing

TECHNICAL SKILLS

Considerable experience with managing large data sets; programming and scripting languages (R, Python, Perl, MATLAB), geo-spatial extensions and software packages (NCAR-NCL, GDAL, PCRASTER, QGIS, ArcGIS, ArcInfo), operating systems (Linux, Windows (XP,7), MacOS), and standard software (MS office, OpenOffice) as well as web programming (UMN webserver, CSS, KML)

PROFESSIONAL SOCIETY MEMBERSHIP

Member of the American Geophysical Union (AGU)

Member of the European Geophysical Union (EGU)

LANGUAGES

German (native language), English (fluent), French (basic), Dutch (basic)

2015

1. **Wisser D**, Müller M, Sylla M B, Ibrahim B 2015, Mid-21st-century changes in precipitation characteristics in West Africa with implications for crop production, *Environmental Research Letters*, in revision
2. Grogan D S, Zhang F, Prusevich A, Lammers R B, **Wisser D**, Glidden S, Li C and Frolking S 2015 Quantifying the link between crop production and mined groundwater irrigation in China. *The Science of the total environment* **511** 161–75
3. Salmon J M, Friedl M A, Frolking S, **Wisser D** and Douglas E M 2015 Global rain-fed, irrigated, and paddy croplands: A new high resolution map derived from remote sensing, crop inventories and climate data *International Journal of Applied Earth Observation and Geoinformation* **38** 321–34

2014

4. Haddeland I, Heinke J, Biemans H, Eisner S, Flörke M, Hanasaki N, Konzmann M, Ludwig F, Masaki Y, Schewe J, Stacke T, Tessler Z D, Wada Y and **Wisser D** 2014 Global water resources affected by human interventions and climate change. *Proceedings of the National Academy of Sciences of the United States of America* **111** 3251–6
5. Dankers R, Arnell N W, Clark D B, Falloon P D, Fekete B M, Gosling S N, Heinke J, Kim H, Masaki Y, Satoh Y, Stacke T, Wada Y and **Wisser D** 2014 First look at changes in flood hazard in the Inter-Sectoral Impact Model Intercomparison Project ensemble. *Proceedings of the National Academy of Sciences of the United States of America* **111** 3257–61
6. Davie J, Falloon P D, Kahana R, Dankers R, Betts R, Portmann F T, **Wisser D**, Clark D B, Ito A, Masaki Y, Nishina K, Fekete B, Tessler Z, Wada Y, Liu X, Tang Q, Hagemann S, Stacke T, Pavlick R, Schaphoff S, Gosling S N, Franssen W and Arnell N 2013 Comparing projections of future changes in runoff from hydrological and biome models in ISI-MIP *Earth System Dynamics* **4** 359–74
7. Elliott J, Deryng D, Müller C, Frieler K, Konzmann M, Gerten D, Glotter M, Flörke M, Wada Y, Best N, Eisner S, Fekete B M, Folberth C, Foster I, Gosling S N, Haddeland I, Khabarov N, Ludwig F, Masaki Y, Olin S, Rosenzweig C, Ruane A C, Satoh Y, Schmid E, Stacke T, Tang Q and **Wisser D** 2014 Constraints and potentials of future irrigation water availability on agricultural production under climate change *Proceedings of the National Academy of Sciences* **111** 3239–44
8. Piontek F, Müller C, Pugh T A M, Clark D B, Deryng D, Elliott J, Colón González F de J, Flörke M, Folberth C, Franssen W, Frieler K, Friend A D, Gosling S N, Hemming D, Khabarov N, Kim H, Lomas M R, Masaki Y, Mengel M, Morse A, Neumann K, Nishina K, Ostberg S, Pavlick R, Ruane A C, Schewe J, Schmid E, Stacke T, Tang Q, Tessler Z

- D, Tompkins A M, Warszawski L, **Wisser D** and Schellnhuber H J 2014 Multisectoral climate impact hotspots in a warming world. *Proceedings of the National Academy of Sciences of the United States of America* **111** 3233–8
9. Prudhomme C, Giuntoli I, Robinson E L, Clark D B, Arnell N W, Dankers R, Fekete B M, Franssen W, Gerten D, Gosling S N, Hagemann S, Hannah D M, Kim H, Masaki Y, Satoh Y, Stacke T, Wada Y and **Wisser D** 2014 Hydrological droughts in the 21st century, hotspots and uncertainties from a global multimodel ensemble experiment. *Proceedings of the National Academy of Sciences of the United States of America* **111** 3262–7
10. Oyerinde G T, Hountondji F C C, **Wisser D**, Diekkrüger B, Lawin A E, Odofin A and Afouda A 2014 Hydro-climatic changes in the Niger basin and consistency of local perceptions *Regional Environmental Change* 1–11
11. Schewe J, Heinke J, Gerten D, Haddeland I, Arnell N W, Clark D B, Dankers R, Eisner S, Fekete B M, Colón-González F J, Gosling S N, Kim H, Liu X, Masaki Y, Portmann F T, Satoh Y, Stacke T, Tang Q, Wada Y, **Wisser D**, Albrecht T, Frieler K, Piontek F, Warszawski L and Kabat P 2014 Multimodel assessment of water scarcity under climate change. *Proceedings of the National Academy of Sciences of the United States of America* **111** 3245–50
12. Wada Y, **Wisser D** and Bierkens M F P 2014 Global modeling of withdrawal, allocation and consumptive use of surface water and groundwater resources *Earth System Dynamics* **5** 15–40
- 2013**
13. Treat C C, **Wisser D**, Marchenko S and Frohking S 2013 Modelling the effects of climate change and disturbance on permafrost stability in northern organic soils *Mires and Peat* **12** 1–17
14. Wada Y, **Wisser D**, Eisner S, Flörke M, Gerten D, Haddeland I, Hanasaki N, Masaki Y, Portmann F T, Stacke T, Tessler Z and Schewe J 2013 Multimodel projections and uncertainties of irrigation water demand under climate change *Geophysical Research Letters* **40** 4626–32
15. Wei J, Dirmeyer P A., **Wisser D**, Bosilovich M G and Mocko D M 2013 Where Does the Irrigation Water Go? An Estimate of the Contribution of Irrigation to Precipitation Using MERRA *Journal of Hydrometeorology* **14** 275–89
16. **Wisser D**, Frohking S, Hagen S and Bierkens M F P 2013 Beyond peak reservoir storage? A global estimate of declining water storage capacity in large reservoirs *Water Resources Research* **49**
- 2012**
17. López R, Del Castillo C E, Miller R L, Salisbury J and **Wisser D** 2012 Examining

organic carbon transport by the Orinoco River using SeaWiFS imagery *Journal of Geophysical Research: Biogeosciences* **117** G03022

2011

18. Frohling S, Milliman T, Palace M, **Wisser D**, Lammers R and Fahnestock M 2011 Tropical forest backscatter anomaly evident in SeaWinds scatterometer morning overpass data during 2005 drought in Amazonia *Remote Sensing of Environment* **115** 897–907
19. Lehner B, Liermann C R, Revenga C, Vörösmarty C, Fekete B, Crouzet P, Döll P, Endejan M, Frenken K, Magome J, Nilsson C, Robertson J C, Rödel R, Sindorf N and **Wisser D** 2011 High-resolution mapping of the world's reservoirs and dams for sustainable river-flow management *Frontiers in Ecology and the Environment* **9** 494–502
20. Salisbury J, Vandemark D, Campbell J, Hunt C, **Wisser D**, Reul N and Chapron B 2011 Spatial and temporal coherence between Amazon River discharge, salinity, and light absorption by colored organic carbon in western tropical Atlantic surface waters *Journal of Geophysical Research: Oceans* **116** C00H02
21. **Wisser D**, Marchenko S, Talbot J, Treat C and Frohling S 2011 Soil temperature response to 21st century global warming: the role of and some implications for peat carbon in thawing permafrost soils in North America *Earth System Dynamics* **2** 121–38

2010

22. Fekete B M, **Wisser D**, Kroeze C, Mayorga E, Bouwman L, Wollheim W M and Vörösmarty C 2010 Millennium Ecosystem Assessment scenario drivers (1970–2050): Climate and hydrological alterations *Global Biogeochemical Cycles* **24** 1–12
23. **Wisser D**, Fekete B M, Vörösmarty C J and Schumann A H 2010 Reconstructing 20th century global hydrography: a contribution to the Global Terrestrial Network-Hydrology (GTN-H) *Hydrology and Earth System Sciences* **14** 1–24
24. **Wisser D**, Frohling S, Douglas E M, Fekete B M, Schumann A H and Vörösmarty C J 2010 The significance of local water resources captured in small reservoirs for crop production – A global-scale analysis *Journal of Hydrology* **384** 264–75

2009

25. Fekete B M, Wollheim W M, **Wisser D** and Vörösmarty C J 2009 Next generation framework for aquatic modeling of the Earth System *Geoscientific Model Development Discussions* **2** 279–307

2008

26. **Wisser D**, Frohking S, Douglas E M, Fekete B M, Vörösmarty C J and Schumann A H
2008 Global irrigation water demand: Variability and uncertainties arising from
agricultural and climate data sets *Geophysical Research Letters* **35** 1–5

before 2006

27. **Wisser, D.** (2004), Common Trends of Water use in the Mediterranean, the
EUWaterStrategyManProject, Proceedings of the Advanced Study Course Sustainable
use of water on Mediterranean Islands: Conditions, Obstacles and Perspectives,
Centre for Environmental Research Publications, Münster
28. Nikkanen, R.; **D. Wisser**, A. H. Schumann (2004), Anwendung von Indikatoren zur
Beschreibung wasserwirtschaftlicher Verhältnisse auf unterschiedlichen räumlichen
und zeitlichen Skalen, *Hydrologie und Wasserbewirtschaftung*, 48(1)
29. Jensen, J., T. Frank, **D. Wisser** (2000), DATAN- An MS Excel based tool for
estimating design values in hydrology; in: Yufin, S. A. (ed.) *Geoecology and
Computers*, Balkema, Rotterdam